chinova resources

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Progressive Rehabilitation and Closure Plan



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1. Introduction

1.1 Purpose

This Progressive Rehabilitation and Closure Plan (PRCP) has been developed by Chinova Resources (Cloncurry) Pty Ltd for the Cloncurry Mining Project. The PRCP describes the strategy, activities and resources required to progressively rehabilitate, decommission, and ultimately relinquish the mining leases associated with the Cloncurry Mining Project. The PRCP has been prepared in accordance with Section 126 of the *Environmental Protection Act 1994* (EP Act) and considers the Department of Environment, Tourism, Science and Innovation's (DETSI) guideline *ESR/2019/4964 - Progressive rehabilitation and closure plans (PRC plans)* Version 3.01 – 16 September 2024 (PRCP Guideline), and comprises two main components:

- Rehabilitation Planning Part – describing site characteristics and surroundings, regulatory requirements, stakeholder engagement, post-mining land use, rehabilitation goals, rehabilitation methodology, landform designs, risk assessment and monitoring programs; and
- PRCP Schedule – Schedule of progressive rehabilitation activities and milestones.

The PRCP Schedule (A-PRCP-NEW-100785960) was approved 23 July 2026.

1.2 Scope

This PRCP is applicable across all phases of the Cloncurry Mining Project (CMP) and is relevant to all areas of the project.

2. Legal and Other Requirements

2.1 Mineral Resources Act 1989

The *Mineral Resources Act 1989 (MR Act)* regulates resource activities in Queensland. The MR Act requires resource companies to obtain a resource authority which provides companies with the right to enter land and undertake the approved activity. The MR Act applies to mining leases and informs the requirement for lease surrender.

2.2 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) is the principal legislation for protecting environmental values potentially affected by the resource industry in Queensland. The EP Act grants the Queensland Government the power and means to assess, approve, and prescribe conditions on mining projects.

The EP Act requires that all areas of disturbed land within the relevant mining tenure be rehabilitated to support a suitable Post-Mining Land Use (PMLU) or managed as a Non-Use Management Area (NUMA). Any disturbed land must also be identified as a PMLU. Sections 126C and 126D stipulate the requirements for PRCPs and schedules, respectively.

Under the EP Act, the Queensland Government is responsible for the issuing of an environmental authority (EA) to carry out a mining activity and approval of a PRCP schedule for a proposed PRCP. The EP Act also prescribes the requirements for surrendering an EA, including the preparation of final rehabilitation reports and post-mining management reports.

2.3 Environmental Authority

The CMP activities are authorised under Environmental Authority (EA) EPML00701913.

Activities that pose a risk to the environment are defined as environmentally relevant activities (ERAs) under the *Environmental Protection Act 1994*. All ERAs must be listed and described in the environment authority (EA) and are allocated an aggregate environmental score (AES) that represents their level of environmental risk. The ERAs listed on the EA EPML00701913 are given in Table 1.

Table 1: **Environmentally Relevant Activities**

ERA Number	Description of Activity	Aggregate Environmental Score
7 3(d)	Explosives manufacturing: 200t/yr or more	10
8(5)	Chemical storage 200m3 or more of chemicals that are liquids, in containers of at least 10m^3, other than chemicals mentioned in items 1 to 3	31
31 2(b)	Mineral processing; >100,000t/yr	280
33	Crushing, milling, grinding or screening material: >5,000t/yr	0
60 1(d)	Waste disposal facility (any combination of regulated waste, general waste and limited regulated waste — and 200,000t/yr	119
60 2(a)	Waste disposal facility (any combination of general waste and no more than 10% limited regulated waste):	18
63 1(a)(i)	Sewage treatment: 21-100EP with treated effluent discharged to an infiltration trench or irrigation scheme	14
63 1(b)(i)	Sewage treatment: more than 100 but not more than 1500EP with treated effluent discharged to an infiltration trench or irrigation scheme	TBC
Schedule 3 (16)	Mining gold ore	216
Schedule 3 (17)	Mining copper ore	217
Schedule 3 (19)	Mining metal ore, other than a metal ore mentioned in item 11, 12, 13, 14, 15, 16, 17 or 18	158

2.4 Guideline: Progressive Rehabilitation and Closure Plans

This guideline, prepared by the DETSI, contains information to assist applicants in developing a PRCP as part of a site-specific EA application for a new mining activity, and for existing EA holders transitioning their mining activity to the PRCP framework. The administering authority must consider this guideline when making a decision about a PRCP schedule under section 176A of the EP Act.

3. Project Overview and History

3.1 Site Overview

The Cloncurry Mining Project consists of a number open cut and underground copper/ gold, molybdenum/ rhenium and cobalt mines located approximately 140 km south-east of Mount Isa in north-west Queensland. The project is located along a 30km line of mineralisation. The current approved mine areas that makeup the CMP are the Starra Line (including Starra 222, Starra 244, Starra 254 and Starra 276), Mount Dore, Merlin, Mount Elliott, Lady Ella, Mount Cobalt, and Victoria.



Figure 1: Cloncurry Mine Project Area Overview

3.2 Site History

The Selwyn mineral field is considered one of the most mineralised and prospective areas in the state of Queensland. Mineralisation is predominantly in the form of iron-oxide copper-gold (IOCG) deposits. The operations are some of the oldest in Australia with mining activities commencing in the region in the late 1880's. Historical summaries of CMP operations and key milestones are provided in the sections below.

3.2.1 Mount Elliott

Table 2: Mount Elliott Mining History

Year/ Period	Milestone/ Activity
Late 1880's	Mount Elliott deposit discovered.
1901	Mining at Mount Elliott commences as a small open-cut pit operation, followed by the development of an underground mine.
1909	The Mount Elliott processing and smelting facility is constructed onsite and commences production.
1920	Mining at Mount Elliott ceases due to falling ore grades and labour unrest. Smelting operations at Mount Elliott produced 24,800 tonnes of copper and 34,000 ounces of gold between 1909 and 1920.
1993	Arimco Mining Pty Ltd resumes underground mining at Mount Elliott.
1999	Arimco placed into receivership resulting in the suspension of mining at Mount Elliott. Mount Elliott is purchased by Selwyn Queensland Pty Ltd (Selwyn Mines), and mining recommences.
2003	Mining is suspended and Mount Elliott placed into care and maintenance. Selwyn Mines Limited placed into administration. The Selwyn Mine's assets are purchased by IVN (Selwyn) Pty Ltd.
2004-2013	IVN (Selwyn) Pty Ltd changes names to Ivanhoe Cloncurry Mines Pty Ltd. Exploration activities discover of the SWAN deposit. The SWAN initial pre-feasibility mining study is completed.
2013 - Current	Chinova Resources Cloncurry Mines Pty Ltd acquires the Cloncurry Project, including Mount Elliott, from Ivanhoe Cloncurry Mines Pty Ltd. Continued exploration, and care and maintenance activities.

3.2.2 Lady Ella

Table 3: Lady Ella Mining History

Year/ Period	Milestone/ Activity
1994	Mining lease ML90061 granted to Arimco Mining Pty Ltd following exploration and discovery of a copper/gold anomaly at Lady Ella.
1999	Arimco placed into receivership. Arimco assets are acquired by Selwyn Queensland Pty Ltd (Selwyn Mines).
2002	Selwyn Mines commence operations at Lady Ella on 5 July 2002 to provide supplementary ore feed to the Selwyn Processing facility located at Starra.
2003	Mining operations cease on 17 February 2003 having produced 395,533 tonnes of ore (Stott 2003). Lady Ella placed into care and maintenance. Selwyn Mines Limited placed into administration. The Selwyn Mines assets, including Lady Ella, are purchased by IVN (Selwyn) Pty Ltd.
2003 - Current	Continued exploration, and care and maintenance activities.

3.2.3 Starra Line (including Merlin and Mount Dore)

Table 4: Starra Line (including Merlin and Mount Dore) Mining History

Year/ Period	Milestone/ Activity
Late 1880's	Small scale artisan mining commences around the Mount Dore and Starra Line deposits.
1950's to 1980's	Extensive exploration activities occur along the Starra Line under various companies.
1987	Cyprus Minerals Australia complete the Selwyn Project Environment Impact Assessment Study (Lewis, 1987). Construction of the Selwyn Processing Facility and Starra mine infrastructure commences.
1988	Mining of the Starra Line mines commences under Cyprus Minerals Australia, both open cut and underground operations are established including Starra 222, Starra 244, Starra 251, Starra 257 and Starr 276.
1993	Arimco Mining Pty Ltd acquires the Starra tenements from Cyprus Minerals Australia.
1999	Arimco Mining Pty Ltd is placed into receivership and mining operations cease. Selwyn Queensland Pty Ltd (Selwyn Mines) acquires Arimco's Cloncurry Mines' assets and recommences mining and processing activities

2003	Selwyn Queensland Pty Ltd (Selwyn Mines) is placed into receivership, mining and processing activities at Starra cease. The Selwyn Mine's assets are purchased by IVN (Selwyn) Pty Ltd.
2004	IVN (Selwyn) Pty Ltd changes names to Ivanhoe Cloncurry Mines Pty Ltd.
2004-2012	Ivanhoe undertake extensive exploration campaigns across the Starra tenements. Exploration discovers the Mount Dore and Merlin deposits. The Merlin portal and 2km of decline is installed.
2013	Chinova Resources Cloncurry Mines Pty Ltd acquires the Cloncurry Project, including the Starra Line assets, from Ivanhoe Cloncurry Mines Pty Ltd. Chinova Resources Cloncurry Mines Pty Ltd recommences mining at the Starra 276 underground operation. Ore from the Starra 276 underground operation was hauled to the Osborne Processing facility (50km south).
2014	The Starra 276 mining campaign ceases. A mining trial is completed at Merlin from the underground decline. The Merlin mine is placed in care and maintenance.
2016-2017	Mount Dore project EA amendment approved, the project however is not developed.
2020	Chinova Resources Cloncurry Mines Pty Ltd commences the Osborne Extended Mine Life (EML) Project. The EML involved mining of the Starra 254 open pit (previously the 257 and 251 pits) and Starra 222 open pit, along with the establishment of supporting infrastructure (administrative offices, workshops, haul roads and services). Ore mined at Starra is transported by road train to the Osborne Processing Facility 50 km south of the Starra Line.
2025-2026	The EML mining campaign at Starra ceases. Chinova Resources Cloncurry Mines Pty Ltd recommences mining at Merlin. Ore mined at Merlin is transported by road train to the Osborne Processing Facility 50 km south of the Starra Line.

3.2.4 Victoria

Table 5: Victoria Mining History

Year/ Period	Milestone/ Activity
1970's to 1990's	Multiple exploration campaigns are undertaken around the Victoria deposits.
1994	Arimco commence mining at Victoria, ore is transported to the Selwyn Processing Facility.
1995	Mining activities at Victoria cease and the site is placed in care and maintenance.

1999-2004	The Cloncurry Project assets are acquired initially by Selwyn Queensland Pty Ltd (Selwyn Mines) and then by IVN (Selwyn) Pty Ltd, which transfers the operations name to Ivanhoe Cloncurry Mines Pty Ltd. Care and maintenance activities continue.
2004-2012	Ivanhoe Australia undertake several further exploration campaigns in and around the Victoria site.
2013	Chinova Resources Cloncurry Mines Pty Ltd acquires the Cloncurry Project, including the Victoria site, from Ivanhoe Cloncurry Mines Pty Ltd
2013-2022	Ongoing exploration and care and maintenance activities.

3.2.5 Mt Cobalt

Table 6: Mount Cobalt Mining History

Year/ Period	Milestone/ Activity
1919	The Mt Cobalt deposit is discovered, mining and processing of Cobalt ore commences onsite.
1934	Mining at Mt Cobalt ceases following a fire in the main shaft.
1977	A modern mining lease is pegged out by Cyprus Minerals Australia in 1977 and has been continuously held since this date.
1993	Arimco Mining Pty Ltd acquires the Mt Cobalt tenements from Cyprus Minerals Australia.
Mid 1990's	Approximately 8000 tonnes of cobalt ore from a waste rock stockpile (on now expired mining lease 2466) is removed for processing offsite.
1999 - 2004	The Cloncurry Project assets are acquired initially by Selwyn Queensland Pty Ltd (Selwyn Mines) and then by IVN (Selwyn) Pty Ltd, which transfers the operations name to Ivanhoe Cloncurry Mines Pty Ltd.
2013	Chinova Resources Cloncurry Mines Pty Ltd acquires the Cloncurry Project, including the Mt Cobalt site, from Ivanhoe Cloncurry Mines Pty Ltd

3.3 Current and Proposed Activities

Chinova currently lacks final site plans which spatially reflect the maximum disturbance limits authorised under Schedule A – Table A1 of the EA. However, with the exception of exploration, all authorised disturbance listed in Table A1 has been fully integrated into the approved PRCP Schedule. Exploration-related disturbance will be managed and rehabilitated separately, in accordance with the *Eligibility criteria and standard conditions for exploration and mineral development projects*.

Because Chinova's finalised site plans are unavailable, the disturbance area currently captured within the PRCP spatial data is less than the total maximum footprint authorised under the EA. To bridge this gap, a consolidated reconciliation table (Table 7) has been provided which details:

- The maximum disturbance authorized under EA Schedule A – Table A1; and
- The actual disturbance footprint captured within the PRCP spatial data.

The current PRCP spatial data captures a total of 692.12 ha of disturbance. This figure excludes general exploration activities, but includes the core sheds and exploration laydown areas captured under the authorised disturbance for exploration.

Table 7: PRCP Spatial Data Disturbance Areas

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
Waste Rock Dump (WRD)	Mt Elliott WRD	3.66	3.66
	Lady Ella WRD	5.41	5.41
	257 WRD S	13	-
	257 WRD W	3.43	3.43
	251 WRD	4.7	0.15
	244 WRD E	10.6	10.36
	244 WRD W	9.7	4.57
	222 WRD	14.21	14.21
	222 WRD N	14.3	8.83
	Victoria WRD	4.79	4.79
	Victoria WRD 2	0.9	0.9
	Merlin WRD	10	6.73
	276 WRD	9	6.4
	Mt Dore North WRD	23.3	23.3
	Mt Dore South WRD	18.2	18.2
	Starra 254 WRD	60	53.96
	Starra 254 PAF Cell	21.8	5.39
	Starra 244 Pit PAF Cell	6.4	-
	Starra 222 WRD Extended	15.4	15.23
Ore Stockpile	251 Ore Stockpile	0.6	0.19
	Victoria Ore Stockpile	1.8	1.8
	222 Copper Oxide	7.8	2.71

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	Merlin Ore Stockpile	Within Merlin WRD footprint	Within Merlin WRD footprint
	276 Ore Stockpile	Within 276 WRD footprint	Within 276 WRD footprint
	Lady Ella Ore Stockpile	3.1	2.73
	Mt Elliott Ore Stockpile	Within ROM footprint	Within ROM footprint
	Starra 254 Oxide / Low Grade	5.1	4.28
Run of Mine (ROM)	Mt Elliott ROM	3	3.0
	Selwyn Mill ROM	Part of Ore Stockpile	Part of Ore Stockpile
	Merlin ROM	2	0.76
	276 ROM	1.5	1.25
	Lady Ella ROM	Part of Ore Stockpile	Part of Ore Stockpile
	Mt Dore ROM/ Agglomerator/ Crusher	12.9	9.14
	Starra 254 ROM	10.11	7.65
	Starra 222 ROM	3.4	3.4
Processing Area	Old Selwyn Mill	8.8	2.42
	Merlin Concentrator	1	0.84
	Mt Dore Process Plant	1.1	1.10
	Mt Dore Process Ponds	5.9	5.53
Heap Leach	Mt Dore ROM/ Process/ Heap Leach Surrounds	23.8	12.95
	Heap Leach	1.73	1.73
	Mt Dore Heap Leach Pad	28.7	28.59
Portals	Mt Elliott Portal	0.4	0.40
	Merlin Portal	0.32	0.32

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	276 Portal	0.37	0.37
	251 Portal	0.3	0.05
	222 Decline	Within Pit 222 footprint	Within Pitt 222 footprint
Open Cut Pit	Lady Ella Pit	3.3	3.21
	257 Pit	Within Starra 254 footprint	Within Starra 254 footprint
	251 Pit	Within Starra 254 footprint	Within Starra 254 footprint
	244 Pit	5.8	5.8
	222 Pit	9.57	9.57
	Victoria Pit N	1.6	1.6
	Victoria Pit S	1	1
	Mt Dore North Pit	6.9	6.9
	Mt Dore South Pit	28.7	19.67
	Starra 254	23.64	23.64
Subsidence	Mt Elliott Subsidence	0.52	0.52
	244 Subsidence	0.04	-
Tailings Storage Facility (TSF)	Eastern TSF	42.91	42.91
	Southern TSF	49	31.09
Water Storages and Sediment Dams (SD)	Mt Elliott Southern SD	0.32	0.32
	Mount Elliott Evaporation Dam	1.99	1.99
	Mount Elliott WRD Containment Dam	Within Mount Elliott WRD footprint	Within Mount Elliott WRD footprint
	Mount Elliott Exploration SD	0.35	0.35
	Lady Ella SD	0.63	0.63
	Lady Ella Northern SD	0.57	0.57
	Lady Ella Southern SD	0.21	0.21
	Lady Ella ROM Dam	Within Lady Ella ROM footprint	Within Lady Ella ROM footprint

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	276 SD W	2	1.42
	276 SD NW	TBA	-
	257 Northern SD	0.09	0.09
	257 North-Western SD	TBA	-
	257 Western SD	TBA	-
	251 Northern SD	TBA	-
	251 North-Western SD	TBA	-
	251 Southern SD	0.18	0.18
	Lake Wyche	12.04	12.04
	222 Northern SD	1.2	1.2
	222 Western SD	0.07	0.07
	222 Southern SD	0.19	0.19
	Victoria SD	0.6	0.42
	Merlin SD (North of WRD)	0.29	0.29
	Merlin SD (Paste Plant)	0.5	-
	Merlin 1 Environment Dam (General Infrastructure)	19	0.43
	Merlin 2 Environment Dam (ROM and WRD)	1	0.92
	Merlin 3 Environment Dam (WRD)	0.12	0.12
	Merlin PAF Dam 2	0.1	0.1
	Eastern TSF Duck Pond	0.12	0.12
	Eastern TSF Seepage Pond	0.07	0.07
	Selwyn Pregnant Liquor Pond	0.05	0.05

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	Selwyn SD	0.26	0.26
	Mt Dore ROM Dam	0.98	0.98
	Mt Dore North WRD Environment Dam 1	0.36	-
	Mt Dore North WRD Environment Dam 2	0.34	-
	Mt Dore South WRD Environment Dam	0.73	-
	254 ROM Dam	0.51	0.51
	Starra 254 LG Stockpile Pond	0.8	-
	254 WRD Sediment Dam 1	1.92	1.92
	254 WRD Sediment Dam 2	1.2	0.86
	254 WRD Sediment Dam 3	1.89	1.89
	254 WRD Sediment Dam 4	1.52	1.52
	Starra 254 PAF Dam	Within 254 WRD area	Within 254 WRD area
	Starra 222 ROM Pad Pond	0.2	-
	254 Turkeys Nest	0.2	-
Topsoil Stockpiles	276 Soil Stockpile	0.75	-
	Merlin Soil Stockpile	1.5	0.30
	222 Soil Stockpile	3.6	1.95
	Mt Dore North WRD Soil Stockpiles	1.2	-
	Mt Dore North Pit Soil Stockpile	0.88	-
	Mt Dore South WRD Soil Stockpiles	2.54	-

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	Mt Dore South Pit Soil Stockpile	1.72	-
	Mt Dore Process Plant Soil Stockpile	1.83	-
	Mt Dore Leach Pad Soil Stockpile	3.45	-
	Starra 254	4.98	4.98
	Starra 222	2	-
Exploration	Exploration	37.54	5.04
Ancillary Infrastructure	276 Infrastructure	1.2	1.2
	Merlin Paste Plant	1.25	-
	Merlin Infrastructure	8	6.60
	Donghui Village (formerly Mt Dore Camp)	13	7.34
	Merlin-Osborne Power Line	113	-
	Merlin Power Substation	TBD	-
	STD Power Spur Line & Transformer	TBD	-
	Mt Dore Equipment Parking	3.8	3.8
	Mt Dore Laydown Area	4.4	4.40
	Mount Elliott Infrastructure	1.2	1.20
	Borrow Areas	12.89	12.89
	Starra 254		
	254 Explosives Magazines (2)	0.6	0.6
	254 Water truck Fill Point	0.3	-

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	254 Dewatering Pipeline	1	-
	Selwyn Precinct		
	Selwyn Precinct Offices & Ablutions	0.4	0.19
	Selwyn Precinct Workshop	0.9	0.36
	Selwyn Precinct Go-Bay	0.3	-
	Selwyn Precinct Warehouse	0.2	-
	Selwyn Precinct Fuel Storage	0.4	0.25
	Selwyn Precinct Boilermakers	0.7	0.23
	Selwyn Precinct STP	0.2	0.02
	Selwyn Precinct RO	0.1	0.03
	Selwyn Precinct Waste Trench	0.6	0.12
	Selwyn Precinct Batch Plant	0.4	-
	Starra 222		
	Selwyn – 222 Powerline	1.2	-
	222 Fuel Storage Power generation	0.7	-
	222 Offices & Ablutions	0.5	1.51
	222 Workshop	0.8	
	222 Go-bay	0.3	
	222 Jacking pad	0.2	-

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	222 Laydown/UG Power Generation	1.1	-
	222 STP	0.2	-
	222 RO Plant	0.1	-
	222 Header Tank	0.1	-
	222 Water Truck Fill	0.1	0.1
	222 Batch Plant	0.3	0.3
	222 Air-rises (2)	0.3	-
	Starra Raw Water Tank	0.29	0.29
	Laydowns	2.89	2.89
Pipelines	Tailings Line	3.65	-
	Merlin-Osborne Water Line	Within power line footprint	-
	Tailings Pipeline Access Road	7.3	-
	De-watering Line	5.6	-
	Selwyn Precinct Raw Water	1.1	--
	Starra 254 Dewater / Waste	0.6	-
	Selwyn Precinct Dewatering Pipeline	1	-
	Selwyn to Starra 222 Raw water	1.7	-
	Starra 222 Raw water	0.9	-
	Starra 222 Dewater / Waste	0.6	-
Roads and Tracks	Merlin Roads	6.4	6.4
	276 Roads	6.5	5.77

Mine Domain	Mine Feature	Authorised Maximum Disturbance (ha)	PRCP Spatial Data Footprint (ha)
	Other Roads	85	82.46
	Haul Road	113	73.96
	Donghui Village Roads	0.74	0.74
	Starra 254 Haul Roads	8.1	7.76
	Starra 222 Haul Roads West	9.2	-
	Starra 222 Haul Roads East	11.2	6.11

Note 1: PRCP Schedule footprint within the above table totals 692.15 ha. Disturbance values have been rounded to two decimal places, and accordingly does not accurately reflect the total disturbance captured by rehabilitation and improvement areas within the spatial data, as referenced prior to Table 7 (692.12 ha).

Note 2: Features where the PRCP Schedule Footprint (ha) is identified as "-", the feature currently does not exist on ground, nor does Chinova have any formalised plans including a location and extent of disturbance for this feature.

3.3.1 Mount Elliott

3.3.1.1 Current Activities

The Mount Elliott mine is currently in a state of care and maintenance. Its specific mine features are detailed below in Table 8. The features captured within the PRCP spatial data are illustrated in Figure 2; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 8: Mount Elliott Mine Features

Domain	Feature	Disturbance Area (ha)
Waste Rock Dump	Mt Elliott WRD	3.66
ROM	Mt Elliott ROM	3
Portals	Mt Elliott Portal	0.4
Subsidence	Mt Elliott Subsidence	0.52
Water Storages and Sediment Dams	Mt Elliott Southern SD	0.32
	Mount Elliott Evaporation Dam	1.99
	Mount Elliott WRD Containment Dam	Within Mount Elliott WRD footprint
	Mount Elliott Exploration SD	0.35
Ancillary Infrastructure	Mt Elliott Infrastructure	1.2
Roads and Tracks	Other Roads	24.67
Heritage	QLD Heritage listed Mount Elliott mine features including remnant smelter buildings and chimney.	N/A

3.3.1.2 Proposed Activities

The Mount Elliott mine area is host to two large low-grade copper-gold mineral resources known as SWAN and Mount Elliott. The SWAN project is proposed to be mined as a block cave mine and the Mount Elliott deposit via an open cut operation. There are currently no firm timeframes for further developing this resource into a mine and is dependent on additional regulatory approvals, favourable commodity prices and significant capital investment.

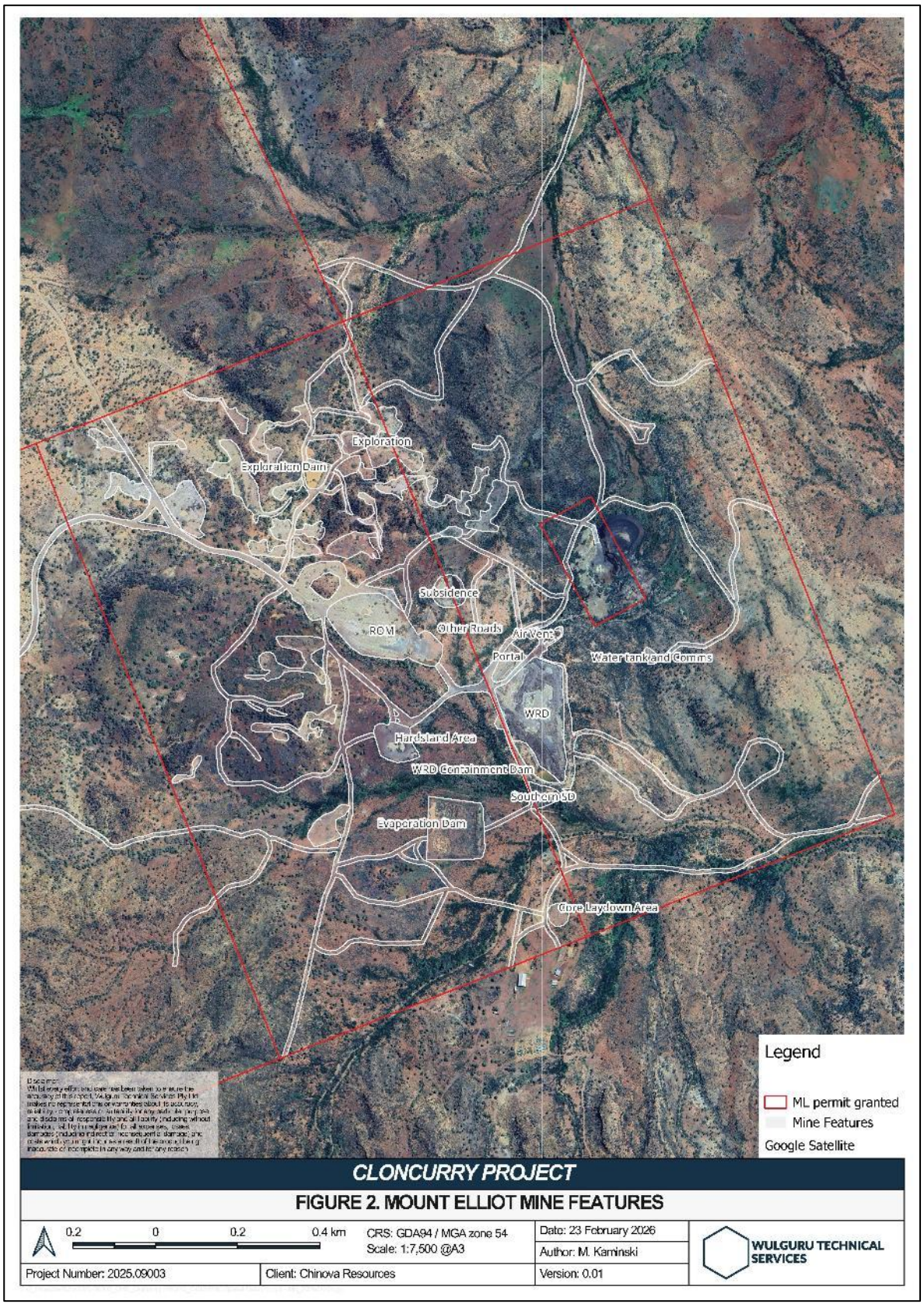


Figure 2: Mount Elliott Mine Features

3.3.2 Lady Ella

3.3.2.1 Current Activities

The Lady Ella mine is currently in a state of care and maintenance. Its specific mine features are detailed below in Table 9. The features captured within the PRCP spatial data are illustrated in Figure 3; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 9: Lady Ella Mine Features

Domain	Feature	Disturbance Area (ha)
Waste Rock Dump	Lady Ella WRD	5.41
Ore Stockpile	Lady Ella Ore Stockpile	3.1
ROM	Lady Ella ROM	Part of Ore Stockpile
Open Cut Pit	Lady Ella Pit	3.3
Water Storages and Sediment Dams	Lady Ella SD	0.63
	Lady Ella Northern SD	0.57
	Lady Ella Southern SD	0.21
	Lady Ella ROM Dam	Within Lady Ella ROM footprint
Roads and Tracks	Other Roads	7.41

3.3.2.2 Proposed Activities

Proposed activities at Lady Ella will include ongoing care and maintenance, monitoring, mine closure and rehabilitation activities. The Lady Ella project contains a residual defined copper resource within the lease that may be mined in the future subject to additional regulatory approvals, favourable commodity prices and significant capital investment.

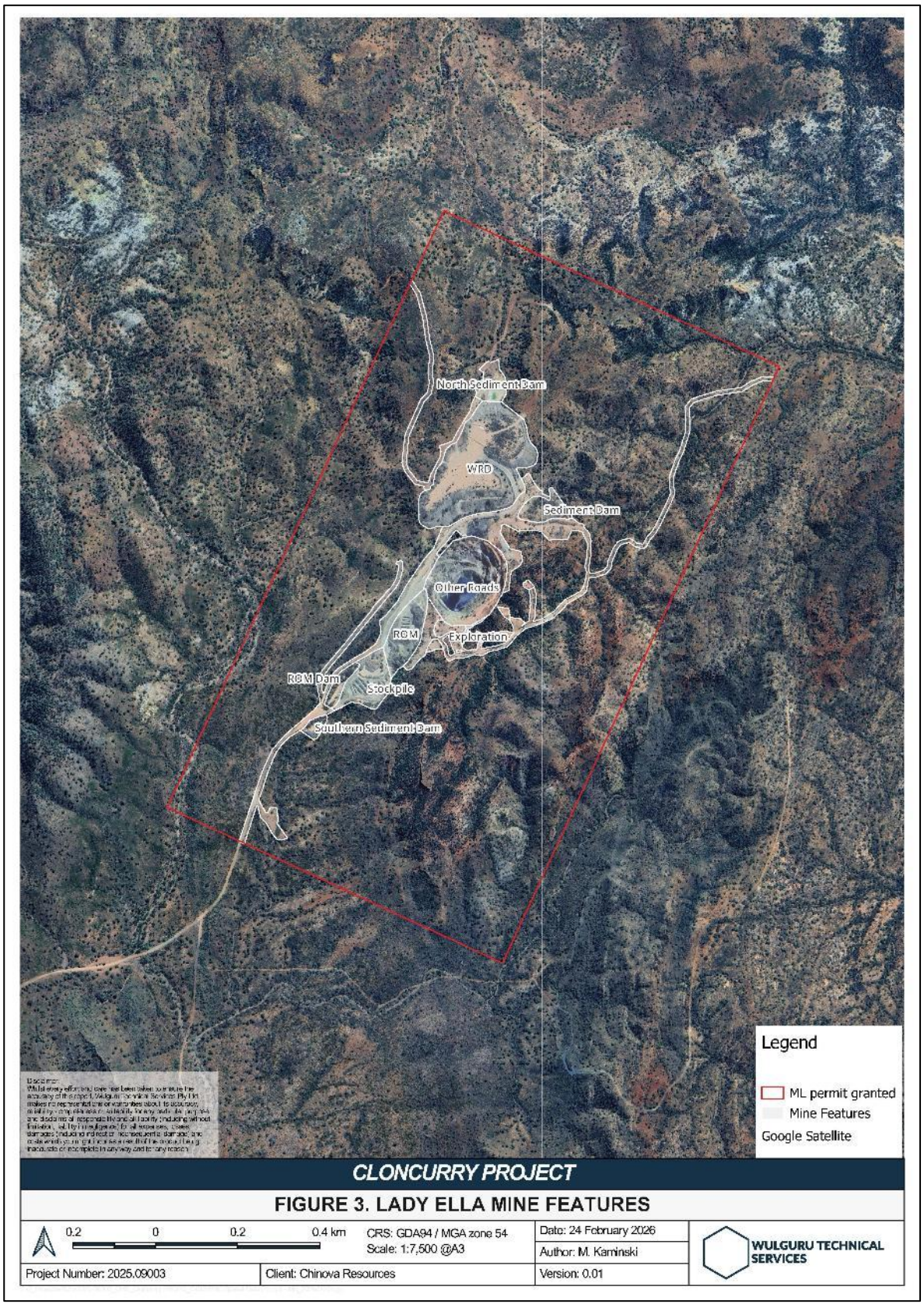


Figure 3: Lady Ella Mine Features

3.3.3 Merlin

3.3.3.1 Current Activities

The Merlin mine is currently in a state of care and maintenance. Its specific mine features are detailed below in Table 10. The features captured within the PRCP spatial data are illustrated in Figure 4; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 10: Merlin Mine Features

Domain	Feature	Disturbance Area (ha)
Waste Rock Dump	Merlin WRD	10
ROM	Merlin ROM	2
Processing Area	Merlin Concentrator	1
Portals	Merlin Portal	0.32
Water Storages and Sediment Dams	Merlin SD (North of WRD)	0.29
	Merlin SD (Paste Plant)	0.5
	Merlin 1 Environment Dam (General Infrastructure)	19
	Merlin 2 Environment Dam (ROM and WRD)	1
	Merlin 3 Environment Dam (WRD)	0.12
	Merlin PAF Dam 2	0.1
Topsoil Stockpiles	Merlin Soil Stockpile	1.5
Ancillary Infrastructure	Merlin Paste Plant	1.25
	Merlin Infrastructure	8.0
Roads and Tracks	Merlin Roads	6.4

3.3.3.2 Proposed Activities

The Merlin project is a partially developed underground molybdenum and rhenium mine. The Merlin project is anticipated to mine 500,000 tpa of ore and produce on average 4,700 tpa of molybdenum and 7 tpa rhenium. Chemical grade molybdenum oxide and rhenium as ammonium perrhenate will be produced as saleable products.

Proposed mining methods include a combination drift-and-fill (approximately 60% by ore tonnes) and long hole open stoping (approximately 40% by ore tonnes). Ore mined at Merlin will be transported by road train to the Osborne Processing Facility 50 km south of the Starra Line.

The proposed mine life for Merlin based on the known mineral reserves is approximately 15 years. Chinova is currently intensifying operations at Merlin with the goal of recommencing mining in 2026.

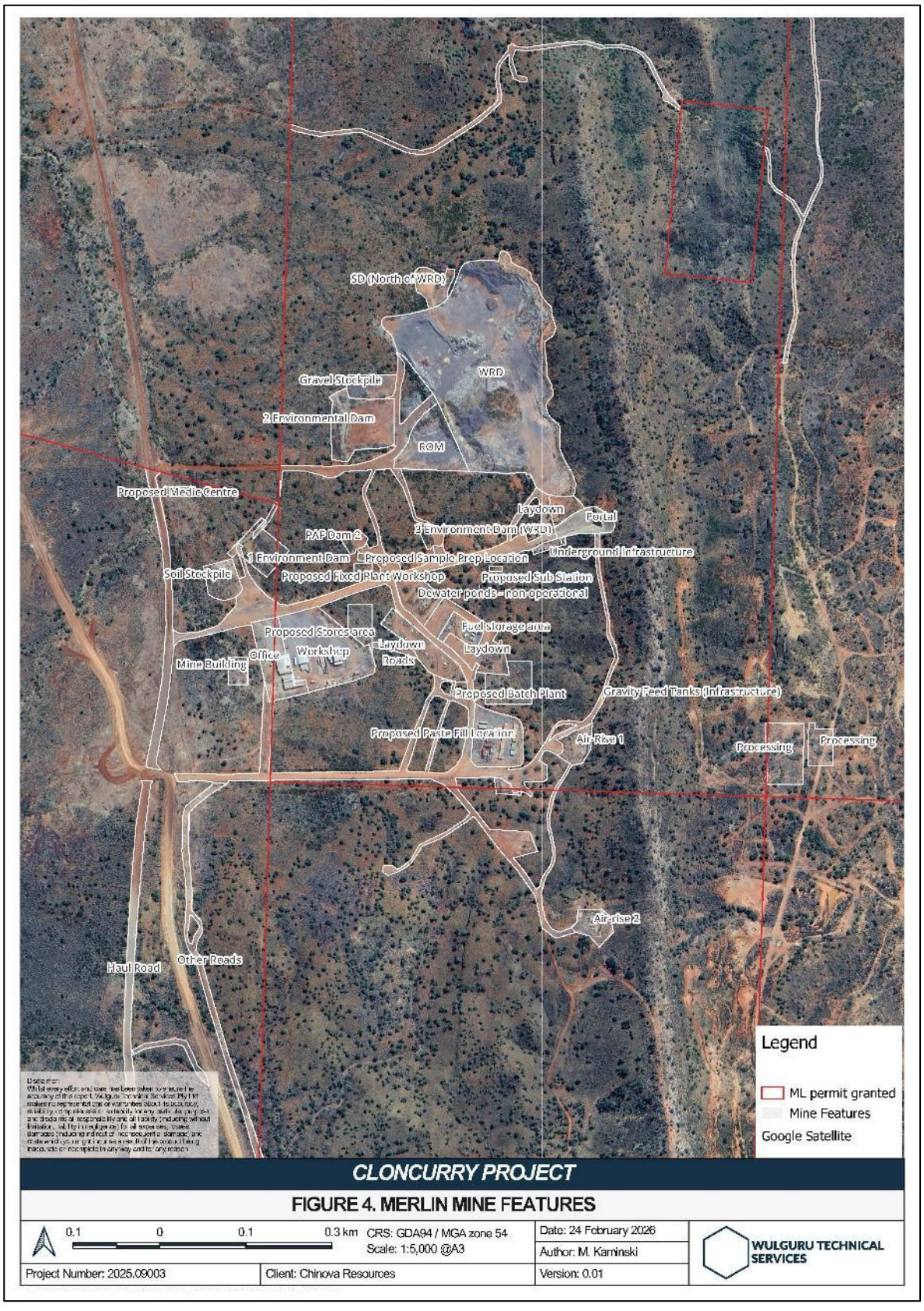


Figure 4: Merlin Mine Features

3.3.4 Mount Dore

3.3.4.1 Current Activities

The Mount Dore Project consists of a proposed copper oxide open cut mine and heap leach processing facility. The mine operations and processing plant is fully permitted however construction of the project has not commenced. The specific mine features for Mount Dore are detailed below in Table 11. The features captured within the PRCP spatial data are illustrated in Figure 5; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 11: Mount Dore Mine Features

Domain	Feature	Disturbance Area (ha)
Waste Rock Dump	Mt Dore North WRD	23.3
	Mt Dore South WRD	18.2
ROM	Mt Dore ROM / Agglomerator / Crusher	12.9
Processing Area	Mt Dore Process Plant	1.1
	Mt Dore Process Ponds	5.9
Heap Leach	Mt Dore ROM/ Process/ Heap Leach Surrounds	23.8
	Mt Dore Heap Leach Pad	28.7
Open Cut Pit	Mt Dore North Pit	6.9
	Mt Dore South Pit	28.7
Water Storages and Sediment Dams	Mt Dore ROM Dam	0.98
	Mt Dore North WRD Environment Dam 1	0.36
	Mt Dore North WRD Environment Dam 2	0.34
	Mt Dore South WRD Environment Dam	0.73
Topsoil Stockpiles	Mt Dore North WRD Soil Stockpiles	1.2
	Mt Dore North Pit Soil Stockpile	0.88
	Mt Dore South WRD Soil Stockpiles	2.54
	Mt Dore South Pit Soil Stockpile	1.72
	Mt Dore Process Plant Soil Stockpile	1.83
	Mt Dore Leach Pad Soil Stockpile	3.45
Exploration	Exploration	5.05
Ancillary Infrastructure	Donghui Village (formerly Mt Dore Camp)	13
	Mt Dore Equipment Parking	3.8

	Mt Dore Laydown Area	4.4
Roads and Tracks	Other Roads	6.6
	Haul Road	6.03
	Donghui Village Roads	0.74

3.3.4.2 Proposed Activities

The Mount Dore project centres around two large, low-grade copper deposits containing primarily copper oxide minerals. Ore produced by the project is proposed to be processed through a crusher/ agglomeration plant, heap leach/ solvent extraction process and electrowinning plant to produce copper cathode. The currently authorised proposed mine and processing facility is envisioned to include the additional features detailed in Table 11 and Figure 5. It is understood that Chinova must submit an application to amend the EA to include additional features prior to undertaking the Mount Dore project. This application will be submitted prior to Chinova undertaking the project, should Chinova deem it feasible to do so.

The Mount Dore project has a current mine life of 12+ years. Mining of the Mount Dore project is proposed to commence in 2031.

3.3.4.3 Mount Dore Resource

An assessment was undertaken in accordance with the Joint Ore Reserves Committee's (JORC) 'Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves' to identify the resource available at Mount Dore (Ivanhoe Australia Ltd 2013). This assessment was completed in September 2011 and was undertaken by Peter McCarthy, John Horton, and Graeme Miller, all of whom are sufficiently experienced and qualified to be considered as a 'Competent Person' as defined under the JORC code.

This assessment estimated the Mount Dore copper resource, at a 0.25% copper cut-off, contained:

- 86 million tonnes at 0.55% copper in an *Indicated Mineral Resource*; and
- 58 million tonnes at 0.47% copper in an *Inferred Mineral Resource*.

Annual production from this resource would total approximately 19,000 t of LME A-grade copper.



Figure 5: Mount Dore Mine Features

3.3.5 Starra Mine

3.3.5.1 Current Activities

The current Starra mining campaign involves the expansion of the Starra 222 and Starra 254 open pits. The Starra mining area also encompasses a number of legacy mining areas including Starra 244, Starra 251 and Starra 257 open pits, and former underground operations including Starra 222, Starra 244, Starra 251, Starra 257 and Starra 276. The current Starra mining campaign operates as a "satellite" site, all ore produced is trucked by road train to the Osborne processing facility 55km to the south. The current Starra mining campaign was completed 2026. Starra mine features are described in Table 12. The features captured within the PRCP spatial data are illustrated within Figure 6; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 12: Starra Mine Features'

Domain	Feature	Disturbance Area (ha)
Waste Rock Dumps (WRDs)	257 WRD S	13
	257 WRD W	3.43
	251 WRD	4.7
	244 WRD E	10.6
	244 WRD W	9.7
	222 WRD	14.21
	222 WRD N	14.3
	276 WRD	9
	Starra 254 WRD	60
	Starra 254 PAF Cell	21.8
	Starra 244 Pit PAF Cell	6.4
	Starra 222 WRD Extended	15.4
Ore Stockpile	251 Ore Stockpile	0.6
	222 Copper Oxide	7.8
	Starra 254 Oxide / Low Grade	5.1
Run of Mine (ROM)	276 ROM	1.5
	Starra 254 ROM	10.11
	Starra 222 ROM	3.4
Processing Area	Old Selwyn Mill	8.8
Heap Leach	Heap Leach	1.73

Portals	276 Portal	0.37
	251 Portal	0.3
Open Cut Pit	244 Pit	5.8
	222 Pit	9.57
	Starra 254 (incl. 257 and 251 Pits)	23.64
Subsidence	244 Subsidence	0.04
Tailings Storage Facility (TSF)	Eastern TSF	42.91
	Southern TSF	49
Water Storage and Dams (SD)	276 SD W	2
	257 Northern SD	0.09
	251 Southern SD	0.18
	Lake Wyche	12.04
	222 Northern SD	1.2
	222 Western SD	0.07
	222 Southern SD	0.19
	Eastern TSF Duck Pond	0.12
	Eastern TSF Seepage Pond	0.07
	Selwyn Pregnant Liquor Pond	0.05
	Selwyn SD	0.26
	254 ROM Dam	0.51
	Starra 254 LG Stockpile Pond	0.8
	254 WRD Sediment Dam 1	1.92
	254 WRD Sediment Dam 2	1.2
	254 WRD Sediment Dam 3	1.89
	254 WRD Sediment Dam 4	1.52
	Starra 222 ROM Pad Pond	0.2
	254 Turkeys Nest	0.2
Topsoil Stockpiles	276 Soil Stockpile	0.75
	222 Soil Stockpile	3.6
	Starra 254	4.98

	Starra 222	2
Ancillary Infrastructure	276 Infrastructure	1.2
	Merlin-Osborne Power Line	113
	Borrow Areas	12.89
	254 Explosives Magazines (2)	0.6
	254 Water Truck Fill Point	0.3
	254 Dewatering Pipeline	1
	Selwyn Precinct Offices & Ablutions	0.4
	Selwyn Precinct Workshop	0.9
	Selwyn Precinct Go-Bay	0.3
	Selwyn Precinct Warehouse	0.2
	Selwyn Precinct Fuel Storage	0.4
	Selwyn Precinct Boilermakers	0.7
	Selwyn Precinct STP	0.2
	Selwyn Precinct RO	0.1
	Selwyn Precinct Waste Trench	0.6
	Selwyn Precinct Batch Plant	0.4
	Selwyn – 222 Powerline	1.2
	222 Fuel Storage Power generation	0.7
	222 Offices & Ablutions	0.5
	222 Jacking pad	0.2
	222 Laydown/UG Power Generation	1.1
	222 STP	0.2
	222 RO Plant	0.1
	222 Header Tank	0.1
	222 Water Truck Fill	0.1
	222 Batch Plant	0.3
	222 Air-rises (2)	0.3
	Starra Raw Water Tank	0.29
	Laydowns	2.89

Pipelines	Tailings Line	3.65
	Merlin-Osborne Water Line	Within power line footprint
	Tailings Pipeline Access Road	7.3
	De-watering Line	5.6
	Selwyn Precinct Raw Water	1.1
	Starra 254 Dewater / Waste	0.6
	Selwyn Precinct Dewatering Pipeline	1
	Selwyn to Starra 222 Raw water Pipeline	1.7
	Starra 222 Raw water Pipeline	0.9
	Starra 222 Dewater / Waste Pipeline	0.6
Roads and Tracks	276 Roads	6.5
	Other Roads	85
	Haul Roads	113
	Starra 254 Haul Roads	8.1
	Starra 222 Haul Roads West	9.2
	Starra 222 Haul Roads East	11.2

3.3.5.2 Proposed Activities

Proposed future activities at the Starra mining areas include underground mining at Starra 222, ongoing rehabilitation of legacy areas and investigation of mine extension opportunities.

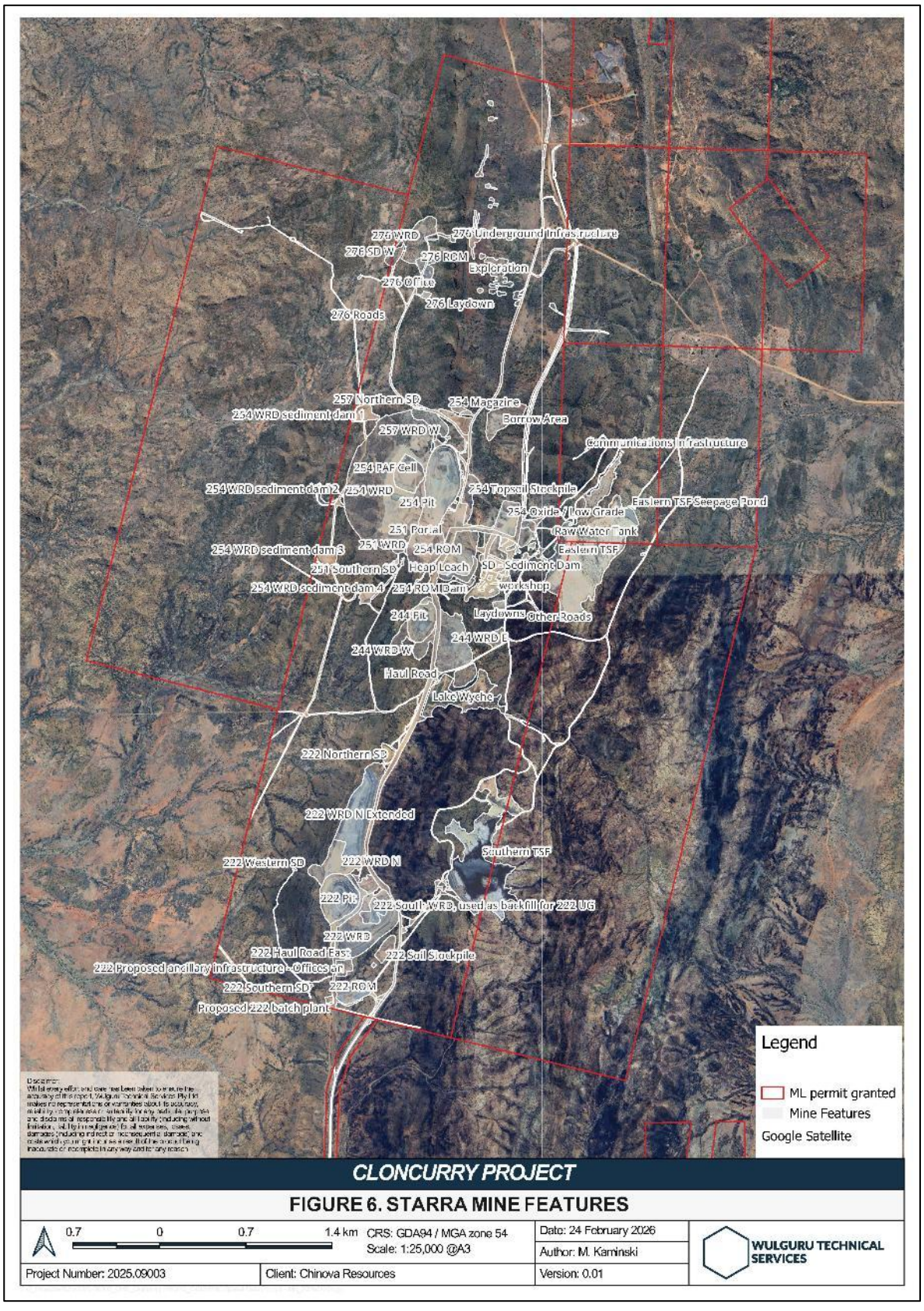


Figure 6: Starra Mine Features

3.3.6 Victoria

3.3.6.1 Current Activities

The Victoria mine is currently in a state of care and maintenance. Its specific mine features are detailed below in Table 13. The features captured within the PRCP spatial data are illustrated in Figure 7; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 13: Victoria Mine Features

Domain	Feature	Disturbance Area (ha)
Waste Rock Dumps (WRDs)	Victoria WRD	4.79
	Victoria WRD 2	0.9
Ore Stockpile	Victoria Ore Stockpile	1.8
Open Cut Pit	Victoria Pit N	1.6
	Victoria Pit S	1
Water Storages and Sediment Dams (SD)	Victoria SD	0.6
Ancillary Infrastructure	Laydowns	2.89
Roads and Tracks	Other roads	2.48

3.3.6.2 Proposed Activities

A significant mineral resource remains in the vicinity of both existing Victoria pits. Chinova Resources are in the process of confirming the viability of future operations to exploit this resource. Any additional activities at the Victoria site will require additional regulatory approvals to proceed.

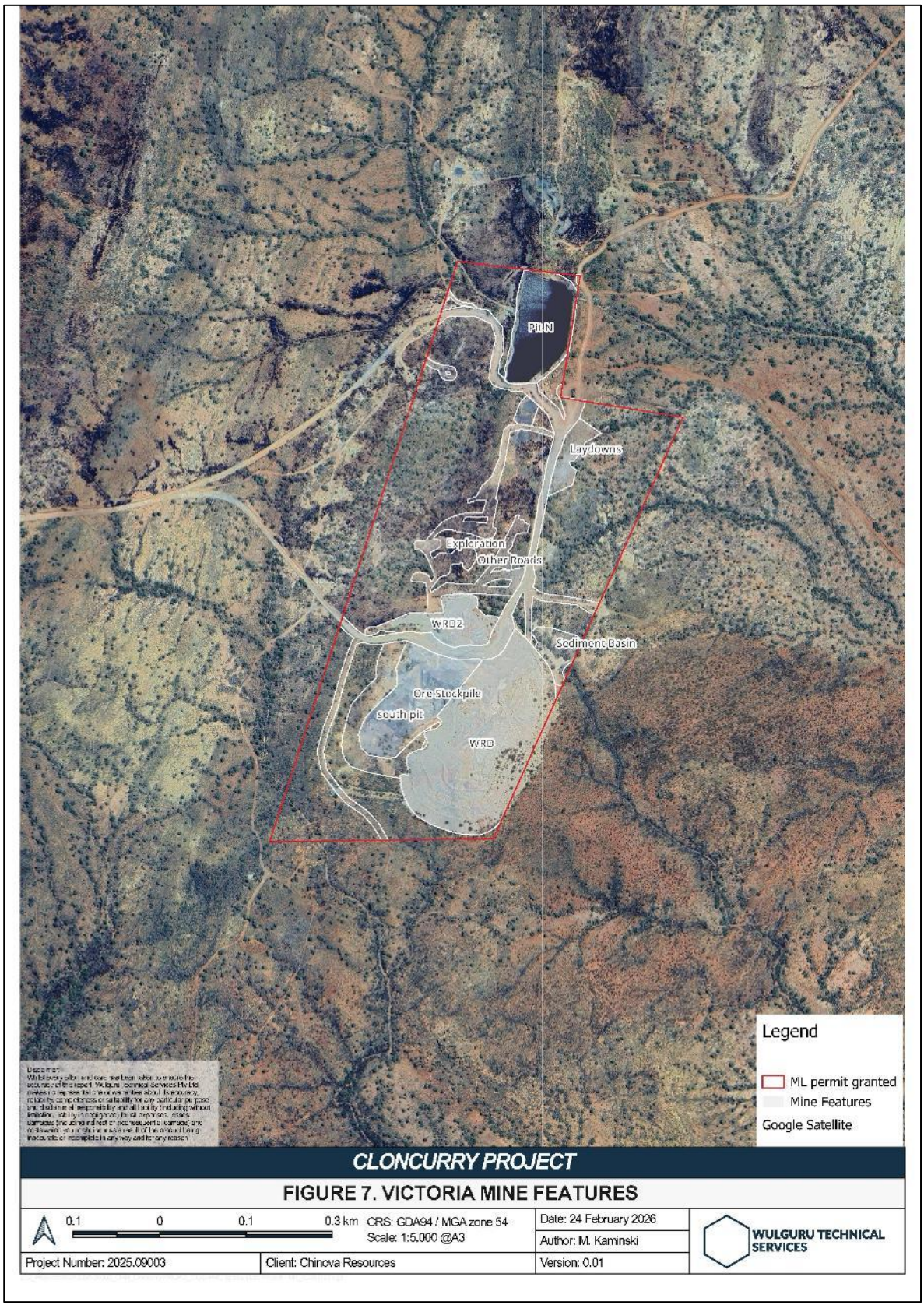


Figure 7: Victoria Mine Features

3.3.7 Mount Cobalt

3.3.7.1 Current Activities

The are no current activities at Mount Cobalt. Its specific mine features are detailed below in Table 13. The features captured within the PRCP spatial data are illustrated in Figure 8; note that these mapped footprints represent current data and may not reflect the absolute maximum extent authorised under EA Table A1.

Table 14: Mount Cobalt Mine Features

Domain	Feature	Disturbance Area (ha)
Roads and Tracks	Other roads	2.96
Historical Mount Cobalt mine	Underground workings Remnant Smelter and buildings Waste rock dump	N/A

3.3.7.2 Proposed Activities

The Mount Cobalt area is prospective for cobalt and copper-gold mineralisation. There are a number of defined deposits within the existing mining lease and adjacent leases. However, there are currently no detailed plans to restart mining within the lease. Proposed activities will continue to be related to exploration and progressive rehabilitation of exploration disturbance.

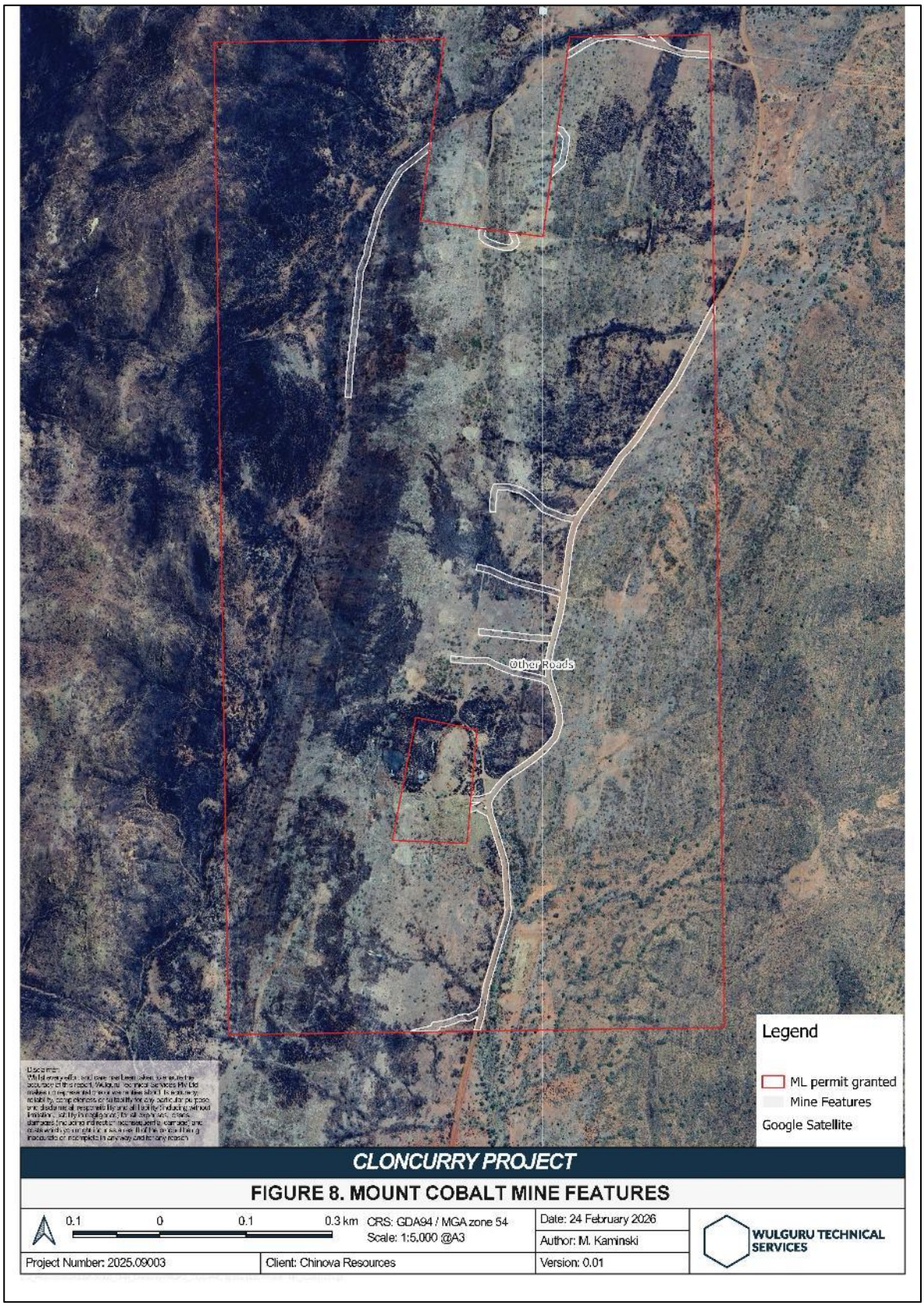


Figure 8: Mount Cobalt Mine Features

3.4 Tenure

3.4.1 Mining Tenements

The CMP encompasses 22 current mining leases within the Mount Isa mining district (Table 15). All the leases are held by Chinova Resources Cloncurry Mines Pty Ltd (CRCM).

Table 15: **Cloncurry Project Mining Leases**

Tenure	Number	Name	Area (ha)	Grant Date	Expiry Date	Status	Holder
ML	2454	Reward Claim	3.966	22/11/1973	30/11/2025	Granted	CRCM
ML	2566	Marilyn 1	32.37	06/12/1973	31/05/2029	Granted	CRCM
ML	2688	Mount Dore Extended No. 1	125.48	21/06/1979	30/6/2040	Granted	CRCM
ML	2689	Mount Dore Extended No. 2	129.60	27/04/1978	31/05/2029	Granted	CRCM
ML	2690	Mount Dore Extended No. 3	129.60	24/08/1987	31/05/2029	Granted	CRCM
ML	2691	Mount Dore Extended No. 4	120.46	12/07/1979	31/07/2040	Granted	CRCM
ML	2692	Mount Dore Extended No. 5	129.60	24/08/1978	31/05/2029	Granted	CRCM
ML	2693	Mount Dore Extended No. 6	129.60	24/08/1978	31/05/2029	Granted	CRCM
ML	2694	Mount Dore Extended No. 7	106.34	14/09/1978	31/05/2029	Granted	CRCM
ML	2732	Cobalt Bloom No.1	120.92	12/05/1988	31/05/2029	Granted	CRCM
ML	2733	Selwyn Hematites No. 1	1363.40	12/05/1988	31/05/2029	Granted	CRCM
ML	2734	SWAN No.1	129.4	21/06/1990	30/06/2031	Granted	CRCM
ML	2735	SWAN No.2	129.4	21/06/1990	30/06/2031	Granted	CRCM
ML	2736	SWAN No.3	125.43	21/06/1990	30/06/2031	Granted	CRCM
ML	2737	SWAN No.4	129.30	21/06/1990	30/06/2031	Granted	CRCM
ML	2738	SWAN No. 5	129.40	21/06/1990	30/06/2031	Granted	CRCM
ML	2745	Selwyn Hematites No. 3	688.00	31/05/1986	31/05/2029	Granted	CRCM

ML	2746	Selwyn Hematites No. 2	627.73	12/05/1988	31/05/2029	Granted	CRCM
ML	90043	Victoria	33.40	10/03/1994	31/03/2024	Granted	CRCM
ML	90061	Lady Ella	144.00	02/02/1995	28/02/2025	Granted	CRCM
ML	90215	Access North	74.93	26/07/2012	31/07/2030	Granted	CRCM
ML	90217	Access South	379.21	26/07/2012	31/07/2030	Granted	CRCM

3.4.2 Property Tenure

The Cloncurry Mining Project is underlain by two separate pastoral holdings, public road, and unallocated state land (Table 16 and Figure 9). The two pastoral holdings are:

- Chatsworth Station held by MDH Pty Ltd; and
- Starcross Station held by Chinova Resources Cloncurry Mines Pty Ltd.

Table 16: Landholder Details

Lot and Plan	Landholder	Tenement
5364 on SP278014	Chinova Resources Pty Ltd	ML 2733 ML 2745 ML 2746 ML 90215 ML 90217
13 on SP223510	MDH Pty Ltd	ML 2733 ML 2745 ML 2746 ML 90040 ML 90215 ML 90217
Selwyn-Toolebuc Road	Cloncurry Shire Council	ML 2733 ML 2690 ML 2691 ML 2693
2566 on AP22389	The State of Queensland	ML 2566
2688 on AP22389	The State of Queensland	ML 2688
2689 on AP22389	The State of Queensland	ML 2689
2690 on AP22389	The State of Queensland	ML 2690
2691 on AP22389	The State of Queensland	ML 2691
2692 on AP22389	The State of Queensland	ML 2692
2693 on AP22389	The State of Queensland	ML 2693
2694 on AP22389	The State of Queensland	ML 2694
5328 on SP271692	MDH Pty Ltd	ML 90040

		ML 90158 ML 90217
Unnamed roads	Cloncurry Shire Council	ML 90217

3.4.3 Traditional Owners and European Heritage

The Yulluna People, represented by the Yulluna Aboriginal Corporation (YAC), are the recognised Native Title holders of the Cloncurry project.

The majority of the Cloncurry mining leases were granted prior to the enactment of the *Native Title Act 1993* and pre-date obligations to obtain Native Title agreements.

Chinova operates in accordance with an existing Cultural Heritage Management Plan (CHMP). Cultural heritage matters are dealt with in accordance with the arrangement of the CHMP.

The historical Mount Elliott Mining Complex is a significant European heritage site. The complex is located within the Mount Elliott mine area and is entered in the Queensland Heritage Register for its significant contribution to initiating extractive industries in north-west Queensland. Additional historical remnant mining infrastructure also exists at Mount Cobalt.

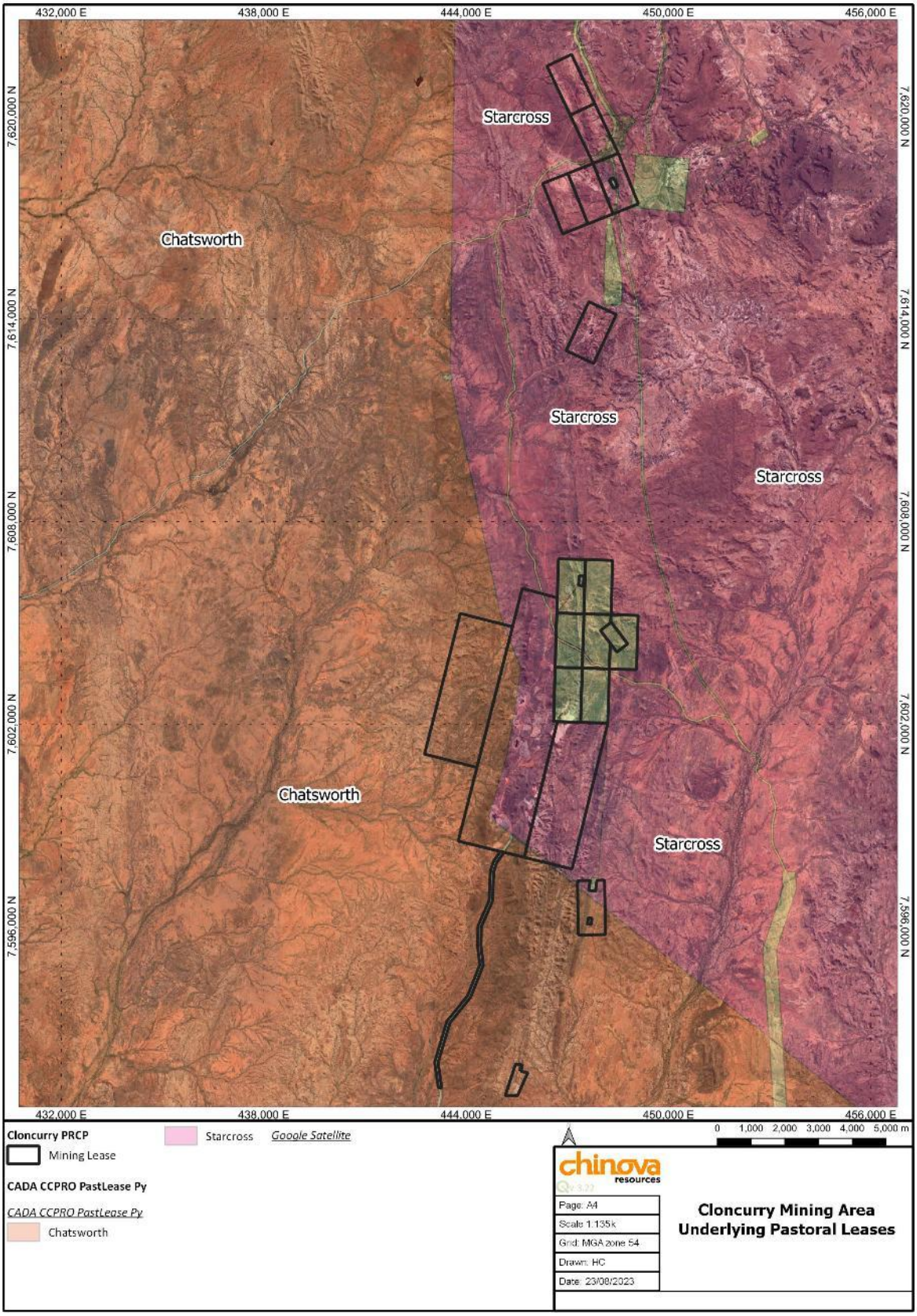


Figure 9: Cloncurry Project Area – Underlying Properties (note: green polygons are Unallocated State Land)

3.5 Resources and Reserves

Within the Cloncurry Project there are a number of significant defined copper (Cu), gold (Au), molybdenum (Mo), and rhenium (Re) deposits that Chinova propose to develop subject to market conditions, capital investment and additional regulatory approvals. The defined mineral resources are detailed below in Table 17.

Table 17: Mineral Resources Statement for Cloncurry Project

Deposit	Tonnes (Mt)	Cu%	Au%	Mo%	RE ppm	Cut-off	Source	Year
Mount Dore	113.3	0.54	0.10			0.25% eCu	Mount Dore Resource Update (Reseval)	2020
Victoria	6.4	1.12	0.13			0.6% eCu	Victoria-Stuart Mineral Resource Update (Reseval)	2020
Merlin	6.4	0.03		1.50	26.0	0.3% Mo	Merlin Molybdenum/ Rhenium Project Feasibility Report November (internal)	2014
Starra 222	20.4	0.55	0.86			0.5% eCu	Starra 222 Mineral Resource November (internal)	2020
Starra 254	12.8	1.63	0.69			0.5% eCu	Starra 254 Mineral Resource November (internal)	2020
Starra 276	6.1	1.14	0.48			0.5% eCu	-	2018
Lady Ella	0.65	0.70	0.60			0.5% eCu	Lady Ella Remnant Mineral Resource – (internal)	2021
Mount Elliott	24.8	0.94	0.50			0.5% eCu	Mount Elliott - SWAN Resource Update (Reseval)	2017
Corbould West	11.3	0.86	0.49			0.5% eCu	Mount Elliott - SWAN Resource Update (Reseval)	2017
SWAN	317.7	0.56	0.34			0.5% eCu	Mount Elliott - SWAN Resource Update (Reseval)	2017

4. Community Consultation

4.1 Overview

These relevant stakeholder groups to the development, operation and rehabilitation of the Cloncurry Project Area are presented in Table 18.

Table 18: Cloncurry Project Stakeholders.

Chinova Workforce • Chinova employees • Contractors • Unions	**Federal Government** • Department of Industry, Science, Energy and Resources • Department of Agriculture, Water and the Environment	**Traditional Owners** • Yulluna
Local and State Government • Cloncurry Regional Council • Department of Environment and Science • Department of Resources • Department of State Development, Infrastructure, Local Government and Planning • Department of Transport and Main Roads • Department of Agriculture and Fisheries	**Landholders** Underlying properties • Starcross • Chatsworth • Unallocated State Land Neighbouring properties • Farley • Burnham • Kheri • Cowie • Devoncourt • Pilgrim	**Non-Government Agencies** • Queensland Resources Council • Minerals Council of Australia • Local news/media
Neighbouring Mines • Phosphate Hill • Cannington Mine	**Communities** • Mt Isa • Cloncurry • Townsville • McKinlay • Dajarra • Boulia	**Utilities, Services and Corporations** • Logistics suppliers • Fuel suppliers • Gas suppliers/pipeline operator • Airlines (Aerlink)

4.2 Community Consultation Plan

In order to comply with section 126C(1)(c)(iv) of the EP Act, the rehabilitation planning part must include a community consultation plan detailing how ongoing consultation will be carried out in relation to the rehabilitation to be carried out under the PRCP.

Chinova has developed a Community Consultation Plan that outlines a clear approach to how stakeholders will be engaged during planning and closure of the Cloncurry project area. Chinova recognises that closure and rehabilitation of the Cloncurry Project area will have different impacts on different groups. As a result, the Community Consultation Plan identifies community engagement objectives for different stakeholder groups.

The overall approach of the Community Consultation Plan is to seek to identify and assess key stakeholder issues and respond to these issues in a way that builds trust in Chinova's closure and rehabilitation planning approach. The approach to consultation is critical to providing a high level of transparency and fairness to ensure community and stakeholder acceptance.

The guiding consultation objectives are as follows:

- Maintain and develop stakeholder relationships.
- Explain the mine closure and rehabilitation process to stakeholders.
- Provide timely, accurate and credible information to stakeholders until final closure is achieved.
- Provide key stakeholders opportunities to provide input into to what final closure and post mine land use will look like.
- Consider identified issues and mitigation measures when refining closure planning requirements.
- Record and respond to any concerns or complaints in a timely manner.

The stakeholder groups that have been identified as those likely to be most interested or impacted and therefore require greater levels of engagement in the development of this PRCP are:

- Underlying landholders
- Traditional owners – Yulluna people
- Local government – Cloncurry Regional Council
- State government – Department of Environment and Science/Department of Resources
- Chinova workforce and contractors

Should any proposed changes to the PRCP or schedule be required, stakeholders will be engaged as part of the amendment process. Table 19 provides an overview of the key engagement objectives, consultation methods, frequency, the information that will be released and how feedback will be considered during consultation of the development, progressive rehabilitation, or amendments to the PRCP and/or schedule.

Table 19: Stakeholder Consultation Plan

Objective	Engagement Type	Proposed Frequency	Stakeholder	Released Information	How feedback is considered
Inform	Toolbox talks/Pre-starts	Ongoing	Workforce	Mine Planning Rehabilitation performances and milestones	Support internal messaging in line with key rehabilitation milestones and activities. Provide information on Life of Mine discussions, decisions, milestones, and closure timeframes.
	Manager briefings Written reporting and/or face-to-face engagement	Monthly	Workforce	Mine planning Rehabilitation performances and milestones	Development of performance objectives, goals, and action items. Provide information on Life of Mine discussions, decisions, milestones, and closure timeframes.
	Social Media (LinkedIn) Contribute to social media plan	Ongoing	All	Rehabilitation milestones Rehabilitation performance and case studies	Promote rehabilitation activities occurring onsite. Engaged stakeholders will be informed about rehabilitation progress.
	Meet/email or phone call Locals Day	Ongoing Annual	Directly affected landholders Traditional Owners Adjacent landholders Local and State governments	PRCP maps Summary documents including mine life and rehabilitation updates Landholder agreements Rehabilitation photos and reports	Provide updates on rehabilitation progress against the PRCP schedule and discuss any feedback.

Objective	Engagement Type	Proposed Frequency	Stakeholder	Released Information	How feedback is considered
Consult	Meetings Meet to discuss PRC Plan and schedule and gather feedback or PMLU's or proposed amendments to the PRCP/schedule Meetings to discuss opportunities to be involved in rehabilitation work programs Discuss opportunities to transition infrastructure/ timing of transfer to support pastoral activities.	One or more meetings as required Quarterly (Yulluna)	Directly affected landholders Traditional Owners Adjacent Landholders Local and State governments	Maps Summary documents and expert reports Progress reports PRCP Schedule PRCP amendment material	Feedback will be considered in the context PMLU and landform design and where relevant feedback will be incorporated in the final version of the PRCP.
	Site visit Opportunity to consult on landform design and gather feedback on rehabilitation progress Local's Day	Ongoing Annual	Directly affected landholders Traditional Owners State Government	Site tours Presentations Summary information and expert reports	Feedback will be considered in the context PMLU and landform design and where relevant feedback will be incorporated in the PRCP.

4.3 Community Consultation Register

Table 20 details the consultation completed by Chinova. The register is aligned with the Guideline for Progressive Rehabilitation and Closure Plans and Section 126C(1)(c)(iii) of the EP Act.

Table 20: Community Consultation Register for PRCP

Date	Stakeholder	Consultation type	Information Provided	Issues Raised	How issues were considered	Outcomes	Commitments
2/11/2020	Various	Meeting	2020 Locals Day Discussed the proposed EA Amendment and PRCP for Cloncurry Project Area, (EML Project).	N/A	N/A	N/A	N/A
15/12/2020	Yulluna	Meeting	Chinova's EML project and the coinciding Cloncurry Project's PRCP and EA amendment	Children Dreaming site	Cultural Heritage Awareness presentation Considering vibration and associated testing	Further engagement on EML project	Further engagement on EML project
2/11/2021	Various	Meeting	2021 Locals Day Discussed the proposed EA Amendment and PRCP for Cloncurry Project Area, (EML Project) and circulated the draft PRCP for individuals' review and comment.	N/A	N/A	N/A	N/A
9/12/2021	Chatsworth Station	Phone/email	Landholder Agreement of permanent infrastructure	Infrastructure that will remain post closure	N/A	Agreement of permanent infrastructure	Landholder Agreement
13/12/2021	Starcross Station	Phone/email	Landholder Agreement of permanent infrastructure	Infrastructure that will remain post closure	N/A	Agreement of permanent infrastructure	Landholder Agreement
01/11/2022	Various	Meeting	2022 Locals Day Discussed PRCP development progress and proposed PMLUs.	N/A	N/A	N/A	N/A
8/3/2023	Yulluna	Meeting	Children Dreaming monitoring,	Update on Children	Children Dreaming Site Management	Site visit	Continue progressing actions

Date	Stakeholder	Consultation type	Information Provided	Issues Raised	How issues were considered	Outcomes	Commitments
			employment opportunities and 244 pit final landform.	Dreaming management.			
20/3/2023	Yullana	Site visit	Visit of Selwyn industrial area, Merlin, Children Dreaming and Victoria.	N/A	N/A	Ongoing actions to be updated during next stakeholder meeting	Continue progressing actions
09/05/2023	MDH	Consultation meeting	Meeting to discuss PMLU's. Confirmed that as per landholder agreements permanent infrastructure would be transferred post-closure. Discussed rehabilitation opportunities including providing input into seed mixes for PMLU's of grazing.	N/A	N/A	Further discussion around seed mixes for rehabilitated areas.	Chinova to provide ongoing opportunities for landholder to provide into land rehabilitation
15/05/2023	Yulluna	Consultation meeting	Meeting to advise proposed PMLU's and request feedback. Discuss potential opportunities for YAC assistance during the rehabilitation process.	N/A	N/A	N/A	N/A.
07/11/2023	Various	Meeting	2023 Locals Day Chinova provided updates on the EML project, exploration and the PRCP.	N/A	N/A	N/A	N/A
27/09/2024	Yulluna	Meeting	Meeting to discuss current status of Chinova, provide an	N/A	N/A	N/A	N/A

Date	Stakeholder	Consultation type	Information Provided	Issues Raised	How issues were considered	Outcomes	Commitments
			update on Children Dreaming Study and discuss dates for quarterly catch ups.				
01/10/2024	MDH	Meeting	Meeting to provide an update and discuss current operations for Chinova.	N/A	N/A	N/A	N/A
24/10/2024	Yulluna	Meeting	Update on Chinova's operation, receivership matters, EML project, Children Dreaming study and Amethyst Castle.	Amethyst Castle management and damage by tourists.	Review of interim and long term management measures.	N/A	Continue progressing actions
04/11/2025	Various	Meeting	2025 Locals Day Discussed the PRCP.	N/A	N/A	N/A	N/A

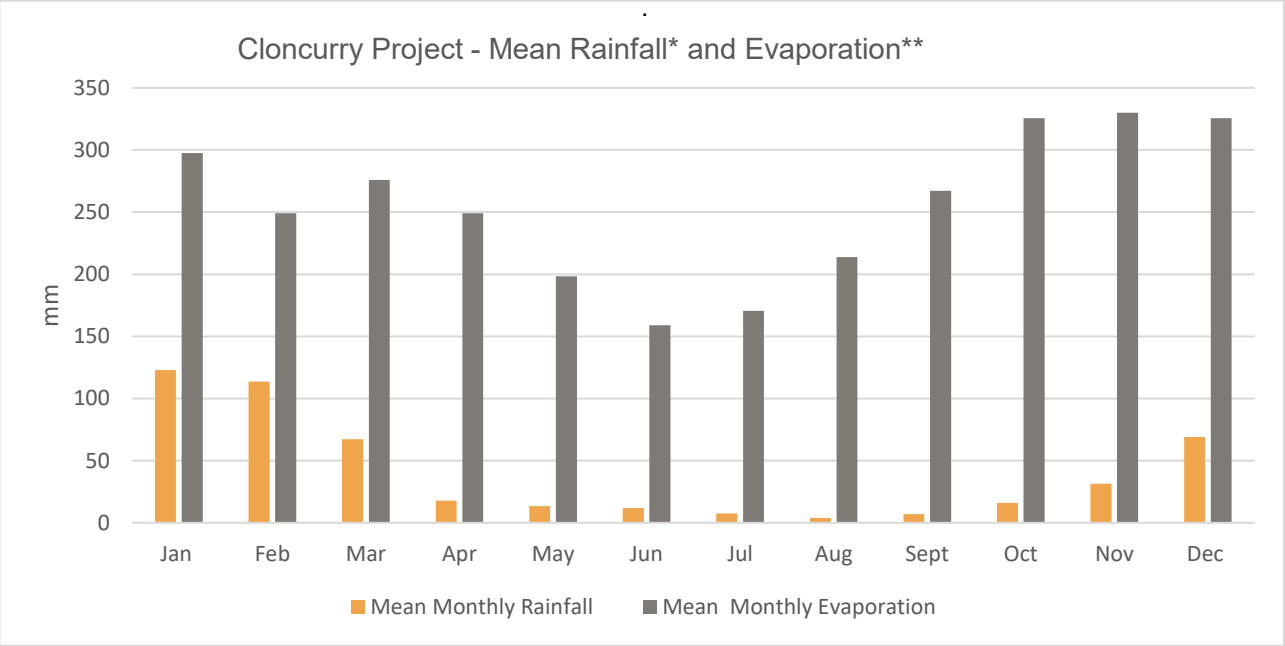
5. Rehabilitation Planning – Common Baseline Information

5.1 Climate

The Cloncurry Project area experiences a semi-arid climate characterised by distinct wet and dry seasons. The wet season occurs between November and March with rainfall typically occurring in high intensity short duration events. Annual wet season rainfall totals are variable ranging from 102mm to 1205mm, with a mean of 402mm. The dry season occurs between April and October with historic annual rainfall totals ranging from no rainfall to 254mm, with a mean of 77mm. Evaporation substantially exceeds precipitation over both seasons (Figure 10).

Temperature in the Cloncurry Project area has a mean range of 25ºC to 38 ºC in the summer months and a mean range of 10ºC to 25ºC in winter.

The predominant wind direction over the year is either south or southeast based BOM wind roses of 9am and 3pm wind speed and direction at Boulia, Cloncurry, and Mount Isa.



*Rainfall data sourced from Bureau of Meteorology weather station 029008 (Cloncurry McIlwraith), data period 1884 to 2023

**Evaporation data sourced from Bureau of Meteorology weather station 029127 (Mount Isa Aero), data period 1975 to 2016

Figure 10: Cloncurry Project – Rainfall and Evaporation

5.2 Sensitive Receptors

In accordance with the PRCP Guideline, a review of potential sensitive receptors in proximity to the CMP has been undertaken to understand impacts from the proposed rehabilitation strategies. The PRCP Guideline does not define a sensitive receptor, so consideration has been given to definitions in the EP Regulation (2019) and the project EA.

EP Reg (2019) defines sensitive receptor as a sensitive receptor under any relevant environmental protection policies. The environmental protection policies (EPP) are:

- Environmental (Noise) Protection Policy

- Environmental (Air) Protection Policy
- Environmental (Water and Wetland Biodiversity) Protection Policy

The only EPP that defines sensitive receptor is the EPP (Noise) as meaning an area or place where noise is measured.

The CMP EA does not define sensitive receptors, instead the EA refers to “sensitive place” as defined below.

A “sensitive place” is:

a) immediately outside a dwelling, mobile home or caravan park, residential marina or other residential premises; or
b) immediately outside a motel, hotel or hostel; or
c) immediately outside a kindergarten, school, university or other educational institution; or
d) immediately outside a medical centre or hospital; or
e) immediately outside a protected area; or
f) immediately outside a park or garden.

For Chinova to undertake a sensible review of potential impacts to sensitive receptors and include any findings into the development of the rehabilitation methodology, the EA definition of sensitive place has been used to broadly mean the same as a sensitive receptor. Potential sensitive receptors have been mapped in Figure 11 which shows the only potential sensitive receptors are homesteads associated with nearby pastoral leases. Figure 11 shows there are no sensitive receptors within 10km of the CMP. Given the distance from mining activities to potential sensitive receptors it is likely that rehabilitation methodologies will not have an impact. As a result, there are no sensitive receptors to be included in the PRCP spatial mapping or for rehabilitation planning. The outcomes from stakeholder consultation plan remain the most relevant community considerations.

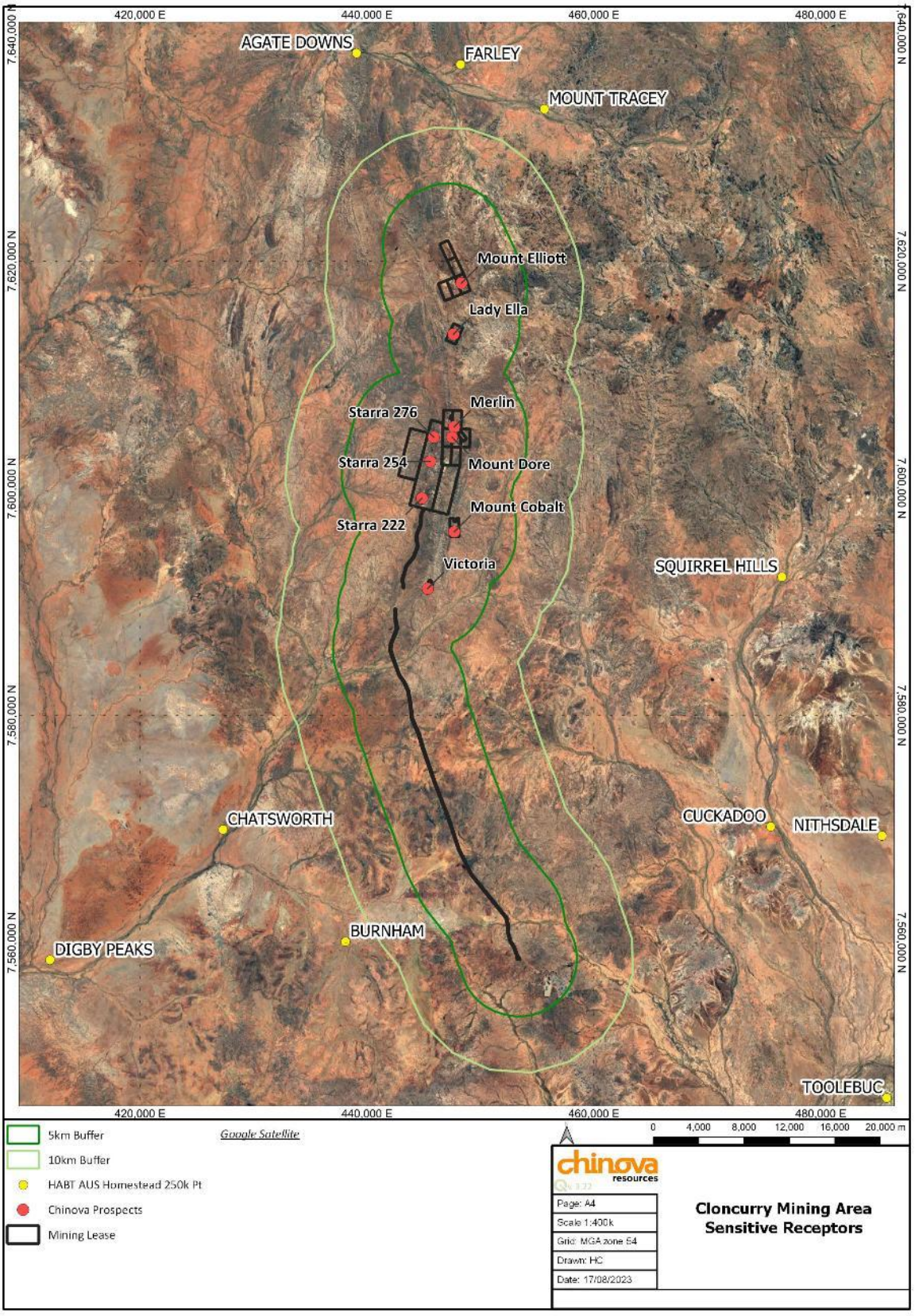


Figure 11: Location of Potential Sensitive Receptors for CMP.

6. Rehabilitation Planning – Mount Elliott

6.1 Baseline Information

6.1.1 Site Topography

The Mount Elliott (Mt Elliott) mine is located within the broad geographic region known as the Selwyn Ranges, an elongated dissected peneplain that acts as a major continental divide, with the rivers north of the Selwyn Range flowing into the Gulf of Carpentaria while those south of the range flowing into the Lake Eyre basin.

The Mount Elliott mine is on the northern end of the range, in an area characterised by moderate ridges with elevations ranging from 350 to 430 m AHD. Mine infrastructure occupies the low gradient areas between ridges at approximate elevations between 390 to 400 m AHD.

The area surrounding Mount Elliott mine comprises of deeply weathered ridges and isolated plateaus separated by alluvial plains that have formed by slope retreat, leaving ridges of more resistant lithologies.

6.1.2 Geological Setting

The project area is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite (AGE, 2025a) (Figure 12). The contact between these units is broadly described as unconformable (Table 21, Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust (AGE, 2025a).

The Mount Elliott mine is associated with a northwest-southeast trending fault zone within units belonging to the Kuridala Group. At the mine scale, the Kuridala Group is subdivided into: microdiorite, metadolerite, basalt, and amphibolite. The Stavely Formation crops out to the west of the Kuridala Group; the contact may be an unconformity or a fault. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east.

The Gilbert River Formation is also present at Mount Elliott as isolated and uplifted outcrops. These outcrops are not regionally contiguous with the greater expanse of the Gilbert River Formation. Younger (Tertiary to Quaternary) cover units (colluvium and alluvium) are generally present in topographic lows and have limited thickness (typically <15 m).

Mineralisation is typically associated with silicification, potassic alteration, and quartz and/or carbonate veining. The Mount Elliott area generally shows a north-east dipping sequence comprising (from base up) metasediments, calc-silicate breccia, banded calc-silicates, marble schist, basalt, phyllite and black shale. Contact relationships of the meta-basalts indicate they had an intrusive emplacement (AMC, 2012). Other intrusives include medium grained diorite and late stage microdiorite dykes. Regional metamorphism at lower amphibolite facies has affected all lithologies.

Table 21: Major geologic units (from Geoscience Australia, 2022)

Group	Formation	Member	Description	Age
Alluvium (Qa)			Clay, silt, sand and gravel; flood-plain alluvium	Quaternary (<2.58 Ma)
Colluvium (TQr)			Clay, silt, sand, gravel and soil; colluvial and residual deposits	Tertiary to Quaternary (<66 Ma)
-	Gilbert River Formation (JKg)		Clayey quartz sandstone, some sublabile and glauconitic sandstone; minor ferruginised shale; locally bioturbated	Early Cretaceous to Late Jurassic (131-157 Ma)
Williams Supersuite	Squirrel Hills Suite	Squirrel Hills Granite (PLgis)	Porphyritic biotite and hornblende-biotite granite; minor equigranular granite, pyroxene-bearing granite and aplite	Calymmian (1511 +/- 9 Ma)
		Yellow Waterhole Granite (PLgiy)	Non-porphyritic and porphyritic hornblende-biotite and biotite granite; minor aplite	Calymmian (1493 – 1510 +/- 8 Ma)
	Mount Dore Granite (PLgid)		Equigranular hornblende-biotite and biotite granite, minor aplite	Calymmian (1509 +/- 22 – 1516 +/- 10 Ma)
Kuridala Group (previously known as Kuridala Formation)	dolerites and metadolerites		Metadolerite, meta basalt and amphibolite; mainly sills, intruding units of the Kuridala Group	Statherian
	Starcross Formation (PLrs)	New Hope Sandstone (PLrn)	Very thick to thick beds of very coarse to coarse grained quartz sandstone, locally interbedded with micaceous pelitic schist. In places exhibits normal grading associated with flat lamination and rare ripple cross-lamination	Statherian (1600 – 1662 +/- 22 Ma)
		-	Thin to thick-bedded, fine to medium-grained meta psammite and mica schist containing garnet, staurolite and andalusite	Statherian (1600 – 1679 Ma)
	Answer Slate (PLa)		Dark grey, carbonaceous slate, phyllite and metasiltstone grading into mica schist; minor feldspathic quartzite and chert. Possible felsic tuff horizon	Statherian (1610 – 1654 +/- 11 Ma)
	Hampden Slate (PLrh)		Graphitic slate and metasiltstone; minor schist, calcareous and banded calc-silicate rocks. Includes subaerial ignimbrite	Statherian (1600 – 1659 +/- 15 Ma)
-	Staveley Formation (PLs)		Calcareous to ferruginous, feldspathic and siliceous arenite, siltstone and mudstone, minor marble, conglomerate; matrix-supported	Statherian (1725 +/- 3 – 1743 +/- 4 Ma)

Group	Formation Member	Description	Age
		breccias of calcareous sandstone and siltstone; local massive ironstone lenses	
-	Gin Creek Granite (PLgg)	Foliated and non-foliated biotite granite, tourmaline-muscovite granite; minor pegmatite, aplite; schistose and gneissic inclusions common	Statherian (1741 +/- 7 Ma)
-	Double Crossing Metamorphics (PLdc)	Metasiltstone, metasandstone, quartz-feldspar-mica gneiss and schist, migmatitic gneiss; minor amphibolite, quartzite; feldspathic quartzite, quartz-hematite rock, and quartz-tourmaline rock; abundant granite, aplite and pegmatite veins. Some metabasalt	Statherian (1740 +/- 6 – 1752 +/- 4 Ma)

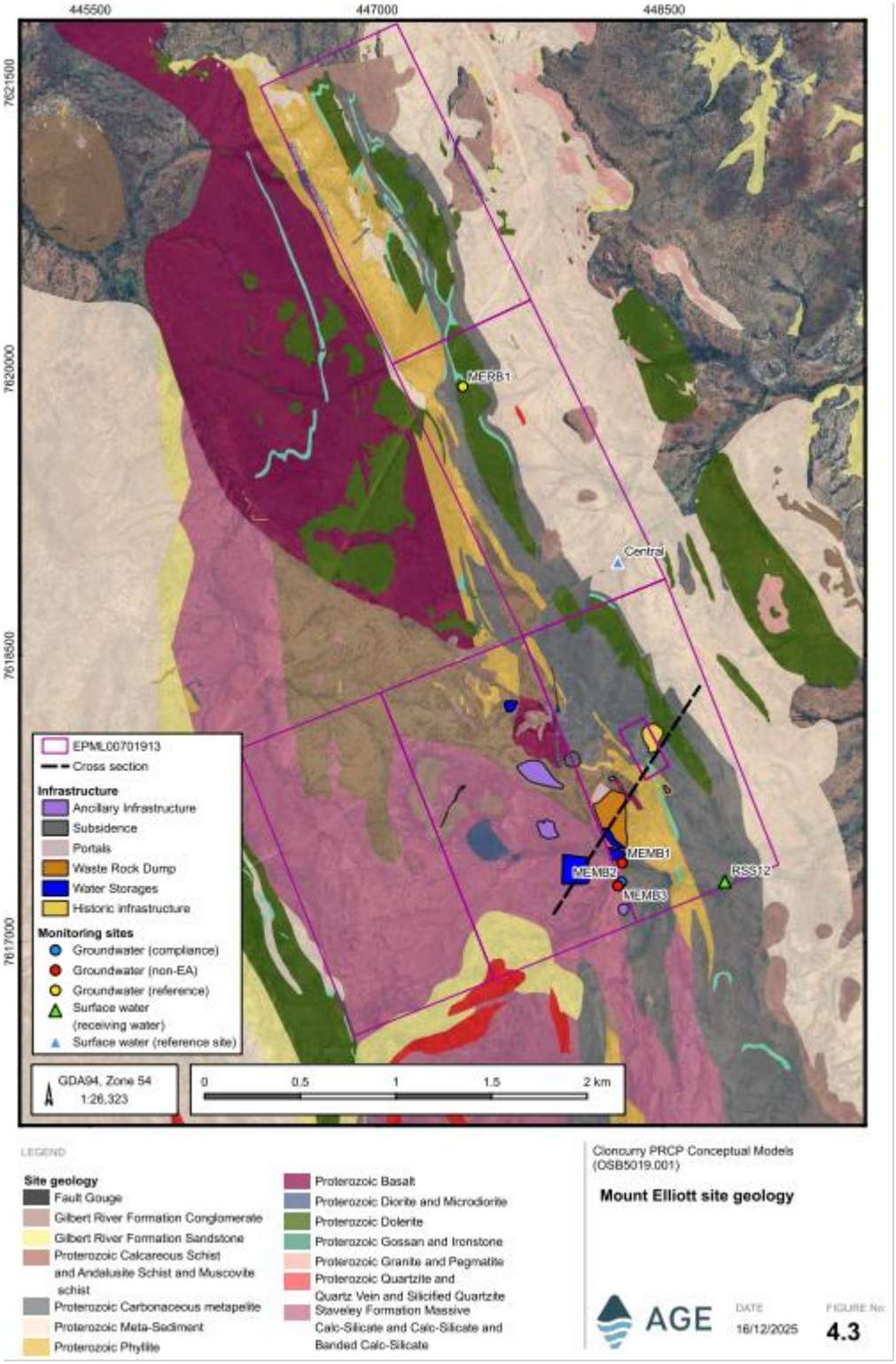


Figure 12: Mount Elliott Site Geology (AGE, 2025a)

6.1.3 Hydrology and fluvial networks

The Mount Elliott mine straddles the divide between the Lake Eyre and Gulf of Carpentaria drainage divisions. The majority of the Mount Elliott project including previously disturbed areas sits within the Flinders Basin, Cloncurry River sub-basin of the Gulf region. A small section on the western side drains into the Georgina River sub-basin, part of the Georgina basin of Lake Eyre (Figure 13).

The Mount Elliott area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flow into Maggie Creek approximately 5km to the east. Maggie Creek drains into the Cloncurry River to the north-east which then drains to the Flinders River and eventually reports to the Gulf.

There are no listed environmental values and water quality objectives for the Gulf or Lake Eyre region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has maintained a reference monitoring location at Mount Elliott since at least 2011. The monitoring location (known as Central) is located on a tributary of Maggie Creek and is not impacted by mining activities. Summary of water quality data for the Central monitoring location is provided in Table 22. In addition, Chinova regularly monitors water quality in its environmental dams across Mount Elliott and undertakes an annual receiving environmental monitoring program (REMP) across the project area.

Table 22: Summary of water quality results for reference water site (Central) at Mount Elliott

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	82	6.61	6.61	7.24	6.92	6.26
Electrical Conductivity (uS/cm)	91	61.73	52	160	87	20
Sulphates (mg/L)	91	3.92	2.60	9.4	4.5	1.5
Dissolved Aluminium (mg/L)	92	0.657	0.42	1.945	1.1	0.16
Dissolved Arsenic (mg/L)	92	0.003	0.003	0.003	0.003	0.003
Dissolved Boron (mg/L)	92	0.012	0.009	0.05	0.013	0.005
Dissolved Cadmium (mg/L)	92	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	92	0.001	0.001	0.002	0.001	0.001
Dissolved Cobalt (mg/L)	92	0.004	0.001	0.011	0.003	0.001
Dissolved Copper (mg/L)	92	0.045	0.024	0.124	0.0368	0.016
Fluoride (mg/L)	91	0.105	0.100	0.200	0.130	0.070
Dissolved Iron (mg/L)	92	0.552	0.380	1.49	0.862	0.202

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
Dissolved Lead (mg/L)	92	0.002	0.001	0.002	0.001	0.001
Dissolved Manganese (mg/L)	92	0.110	0.009	0.609	0.118	0.005
Dissolved Mercury (mg/L)	92	0.0001	0.0001	0.0001	0.00005	0.00005
Dissolved Molybdenum (mg/L)	88	0.001	0.001	0.001	0.001	0.001
Dissolved Nickel (mg/L)	92	0.002	0.001	0.004	0.002	0.001

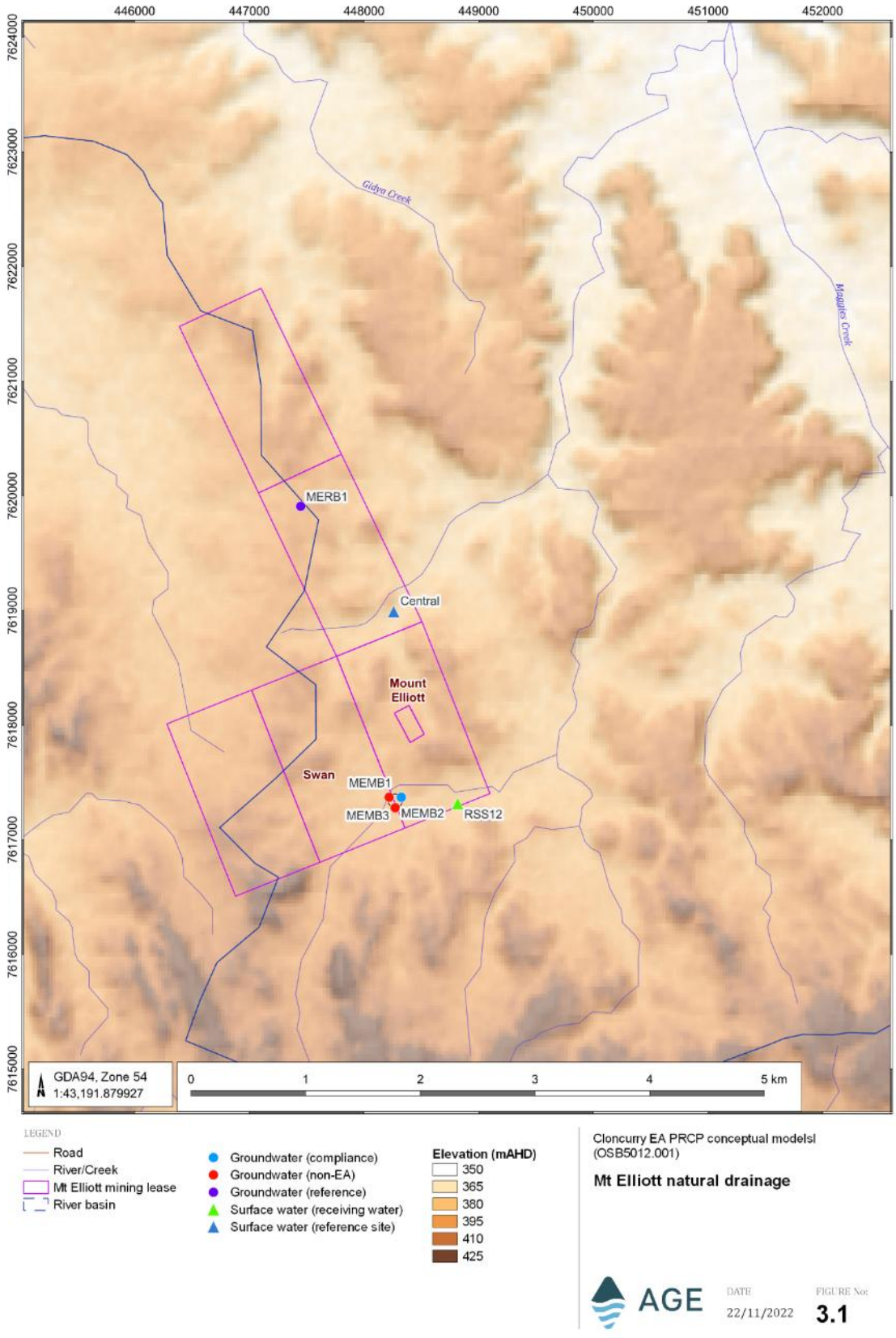


Figure 13: Mount Elliott Natural Drainage (AGE, 2023)

6.1.4 Groundwater

Groundwater conditions at Mount Elliott are described in detail by AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations.

6.1.4.1 Hydrostratigraphy

The hydrostratigraphic unit that hosts the target ore is the Kuridala Group, which is a lithologically variable basement unit. Other potential hydrostratigraphic units near Mount Elliott are the Staveley Formation, and the younger cover units, although the latter are very unlikely to be saturated.

Kuridala Group

Most groundwater at the site is likely hosted in the metasediments and associated dolerite intrusives of the Kuridala Group. Approximately 13 km south of the Mount Elliott site (in the Merlin area), the Kuridala Group hosts the Mount Dore Aquifer, which is the most productive aquifer in the region (RLA, 2011a). Due to the Proterozoic age and metamorphic nature of the Kuridala Group, it is likely that these rocks did not originally have preserved primary porosity. Thus, groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing, weathering, and possibly by delamination of the shallower units.

Staveley Formation

The Staveley Formation crops out over most of the area of ML2735, where surface infrastructure includes the ROM and the dewatering pond. In general, the Staveley Formation is understood to have lower permeability than the Kuridala Group. As with the Kuridala Group, the upper delaminated zones of the Staveley Formation can also host fissures in the open bedding planes that can temporarily contain water, although this is typically in-filled by secondary deposition, resulting in permeability that is generally low (RLA, 2011a).

Cover units

The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. Other minor cover units, including small patches of the Gilbert River Formation are mapped in and around the site. These units have variable primary porosity, which is dependent on the size and properties of the comprising grains and the degree of cementation and compaction of these units. Available evidence indicates that groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated. As such, these units do not host a significant groundwater resource.

6.1.4.2 Groundwater Levels

Mining and associated groundwater withdrawals have occurred over a period of more than 100 years at Mount Elliott; therefore, no baseline groundwater levels prior to mining are available. Hydrographs from the monitoring bores at Mount Elliott (MEMB1, MEMB2, MEMB3, and MERB1 (Figure 14) and locations of monitoring bores depicted in Figure 15.

Additional groundwater level data Measurements of at Mount Elliott has occurred in five main phases: in 1989, prior to major dewatering efforts; in 1993, as dewatering was commencing; in 2011, eight years after dewatering ceased; on 31 of August 2019; and on 22 October 2022 (for the purposes of this report).

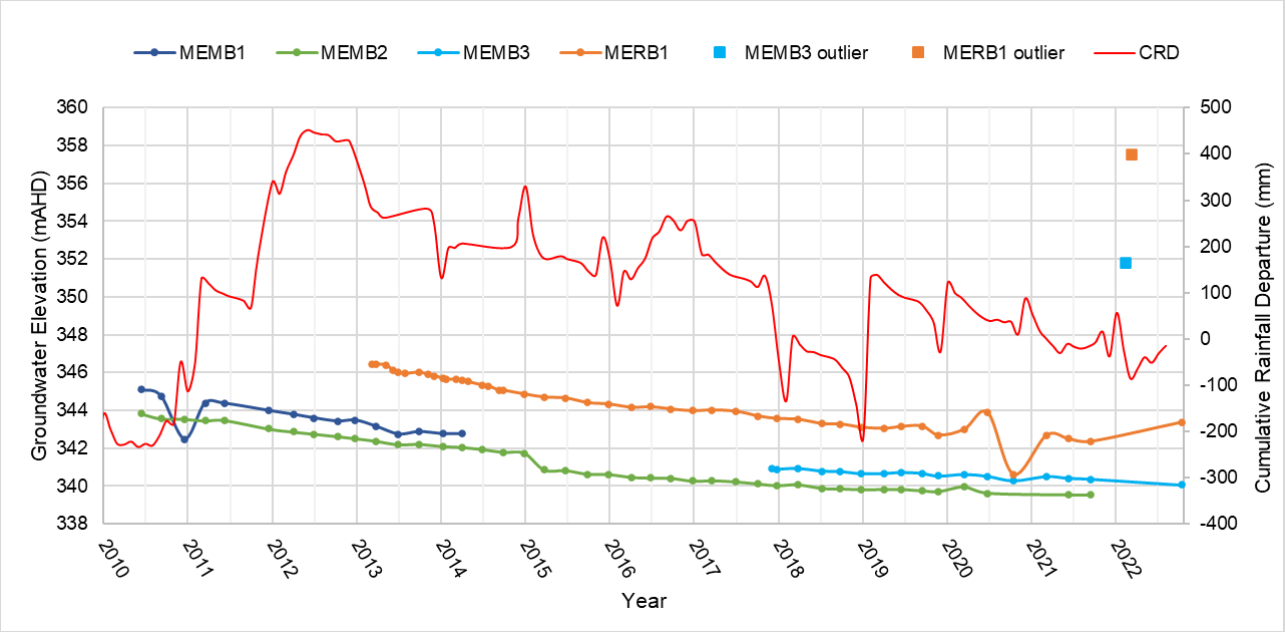


Figure 14: Groundwater hydrographs for MEMB1, MEMB2, MEMB3, and MERB1 with CRD

The following observations were derived by AGE (2023) from the groundwater level data which is supported by potentiometric mapping (Figure 16 and Figure 17).

- there was a shallow cone of depression in the immediate vicinity of the Mount Elliott Mine in 1989 that was likely residual drawdown as a result of mining between 1901 and 1920;
- groundwater levels in the immediate vicinity of the Mount Elliott Mine likely rose between 1989 and 1994;
- from around 1994 and prior to 2011, the cone of depression at Mount Elliott became significantly deeper (relative to 1989) as a result of dewatering activities commencing in 1993 and ceasing in 2003;
- groundwater levels in the proximal area to the mine, which show the most significant drawdowns in 2011, have recovered significantly since 2011;
- groundwater levels from bores further from the voids, but within the area influenced by the drawdown, have declined slowly over the last decade; this includes the monitoring bores; and
- groundwater levels at the most distal sites (outside the area of influence of depressurisation) have differing trends from Mount Elliott bores, and from each other.
- There remains a deep regional potentiometric surface approximately 30 m to 50 m below natural surface;

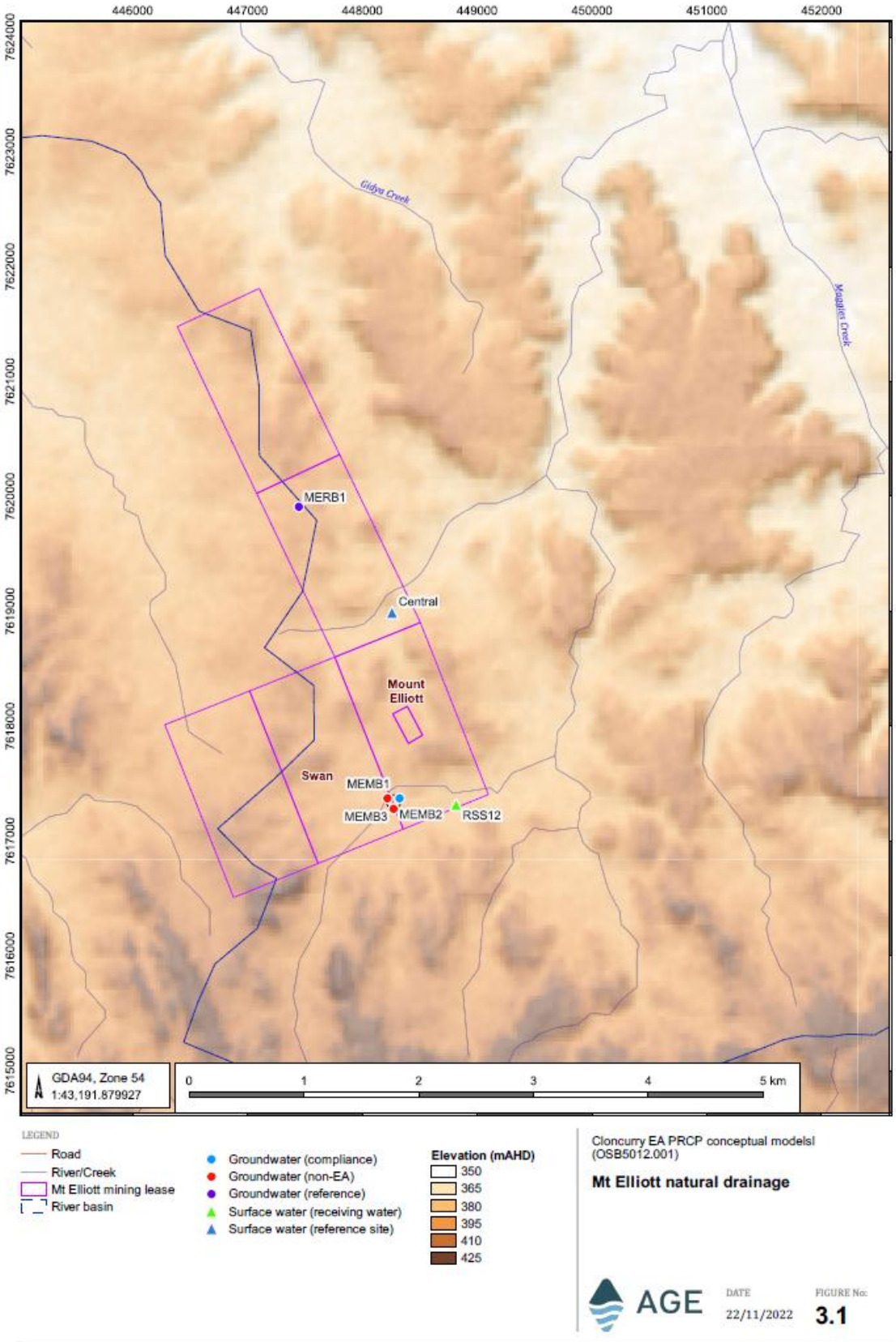


Figure 15: Mount Elliott groundwater monitoring locations (AGE, 2023)

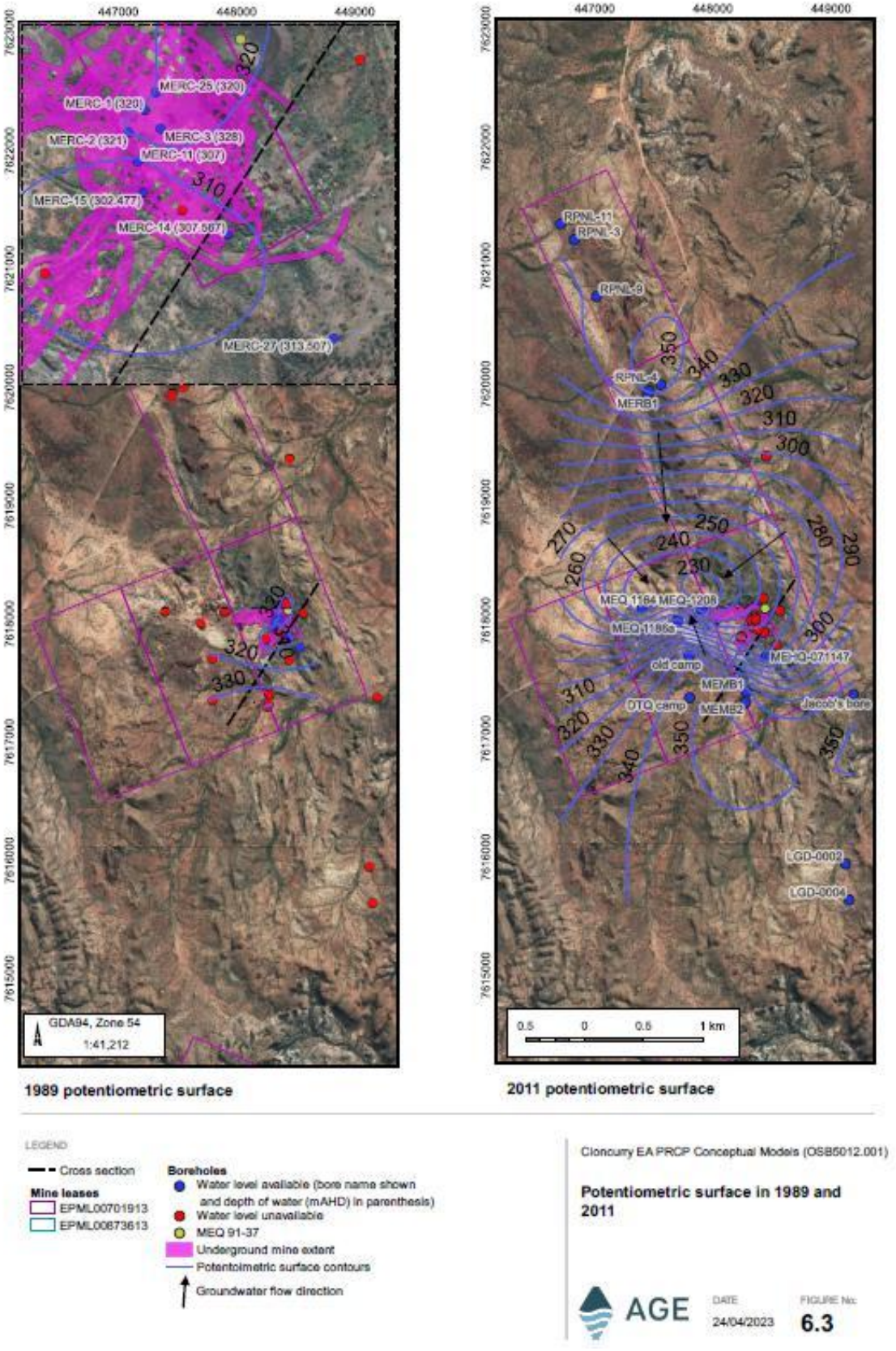


Figure 16: Mount Elliott potentiometric surface 1999 and 2011

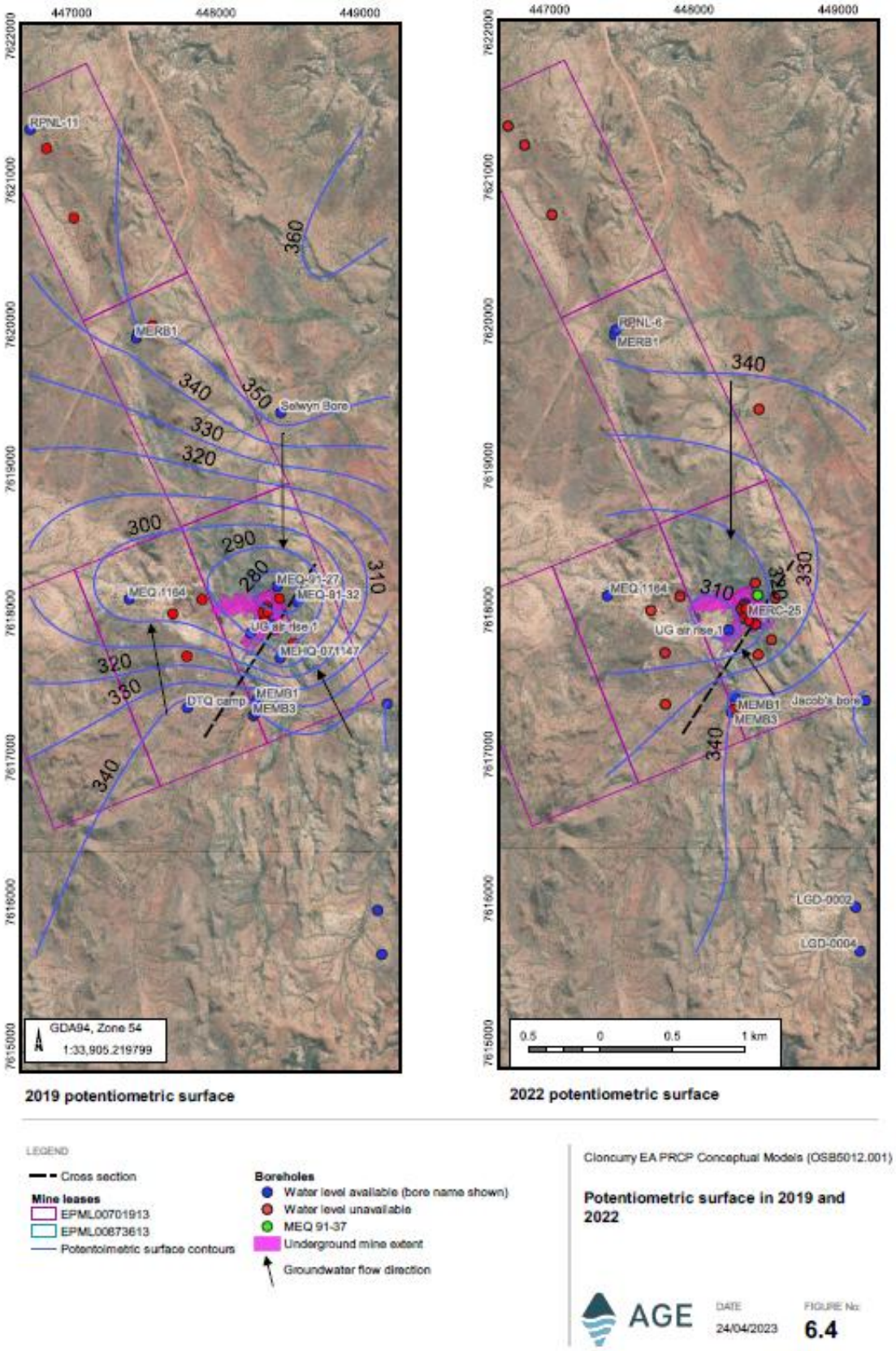


Figure 17: Mount Elliott potentiometric surface 2019 and 2022

6.1.4.3 Groundwater Quality

There are four bores at Mount Elliott with historic and current water quality data: MEMB1, MEMB2, MEMB3, and MERB1 (Table 23). Bores MEMB1, MEMB2, and MEMB3 are located in close (<100 m) proximity to each other; MEMB3 is the current EA compliance bore and MEMB2 and MEMB1 have been historical compliance bores. MERB1 is a historic reference bore for the site and is currently an EA interpretation bore. MERB1 is located approximately 2.7 km north-northwest of the cluster of the three other bores.

Table 23: Water quality monitoring network

Site/Bore	Easting	Northing	Bore status	Surface RL (m AHD)	Total Depth (m)	Depth Screened (m)	Notes
MEMB1	448280	7617413	Historic compliance bore	381.028	159	Unknown	Went dry in 2012
MEMB2	448276	7617313	Historic compliance bore	382.385	99	Unknown	Replacement for MEMB1
MEMB3	448259	7617294	EA compliance bore	381.82	60	30-60	Replacement for MEMB2
MERB1	447447	7619909	Historic refence bore/current EA Interpretation bore	396.498	99	14-92	Drilled in March, 2013

Groundwater samples from the monitoring bores MEMB2, MEMB3 have a calcium dominated cation composition (with significant magnesium) and a sulfate dominated anion composition. In contrast, MERB1 is more magnesium rich, with a more strongly sulfate-dominated anion composition. The sulfate dominance in all samples is expected given the potential for sulfide oxidation due to mineralisation in the host rocks (Figure 18).

Groundwater quality in the monitoring bores is neutral to slightly acidic (Figure 19). The groundwater from the reference bore (MERB1) generally has lower pH values, with a trend that is decreasing over time. The trend of decreasing pH in MERB1 groundwater is concurrent with increasing EC and sulfate concentration at this bore (Figure 20 and Figure 21). Bore MEMB3 has a generally higher EC than bore MEMB2, which is indicative of groundwater quality that is heterogeneous, either with depth (bore construction details for MEMB2 are unknown) or over short lateral distances (the bores are less than 20 m apart).

The concentrations of sulfate and metals (Figure 22) in groundwater is consistent with the measured pH values and EC concentrations. This is consistent with rock-water interactions in mineralised zones that result in generation of acid, detectable metal concentrations, higher overall solute concentrations, and elevated sulfate concentrations.

In summary, the water quality at Mount Elliott is typical of groundwater in mineralised areas of the Mount Isa region (AGE, 2025a). Although baseline groundwater quality water is not available, water quality in the monitoring bores is very rarely of poorer quality than the groundwater from the reference bore, indicating that the site water quality is commensurate with regional groundwater.

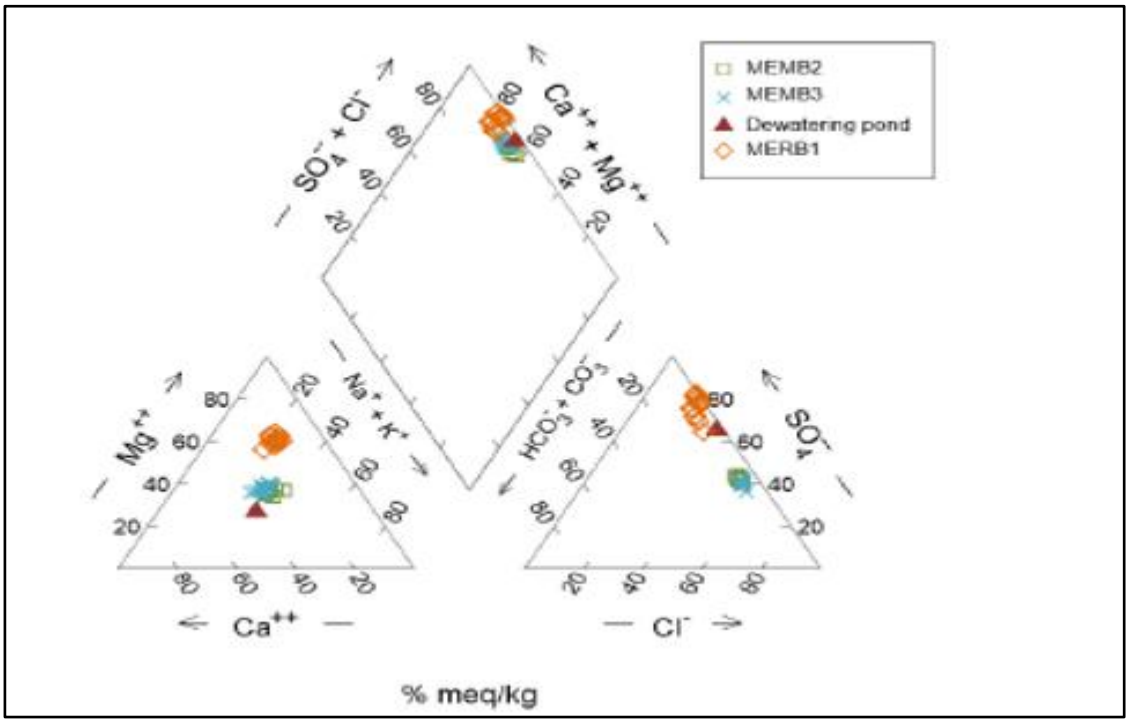


Figure 18: Mount Elliott groundwater composition

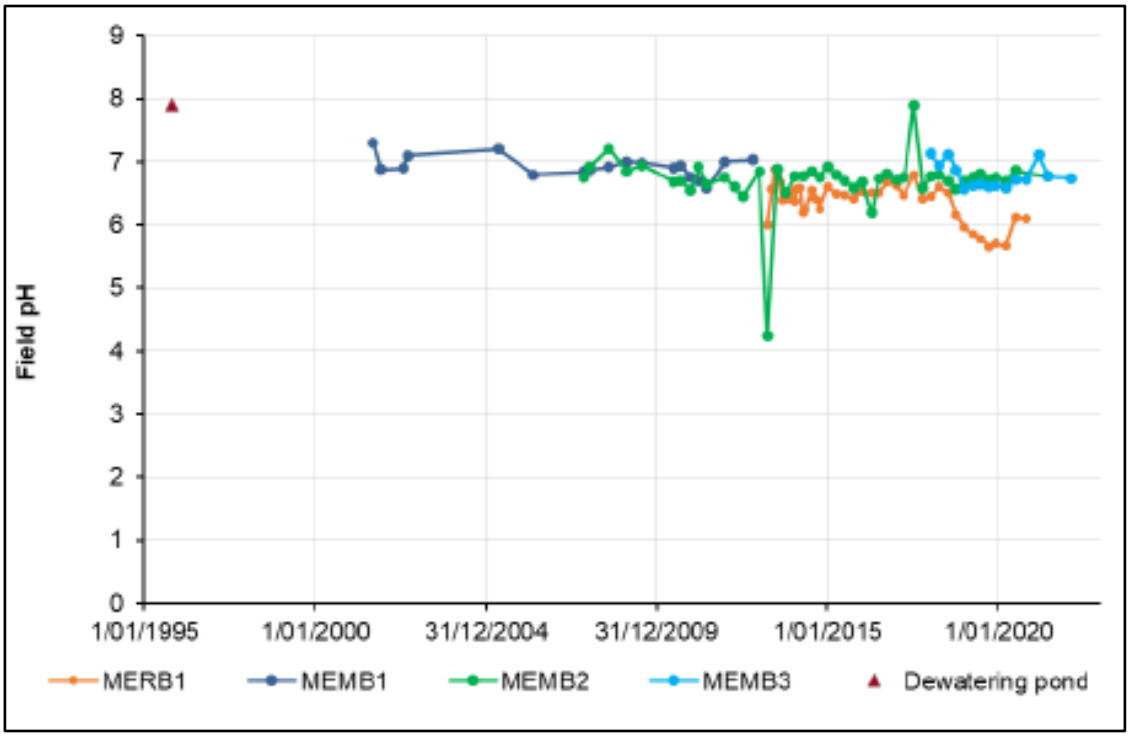


Figure 19: Mount Elliott groundwater pH levels

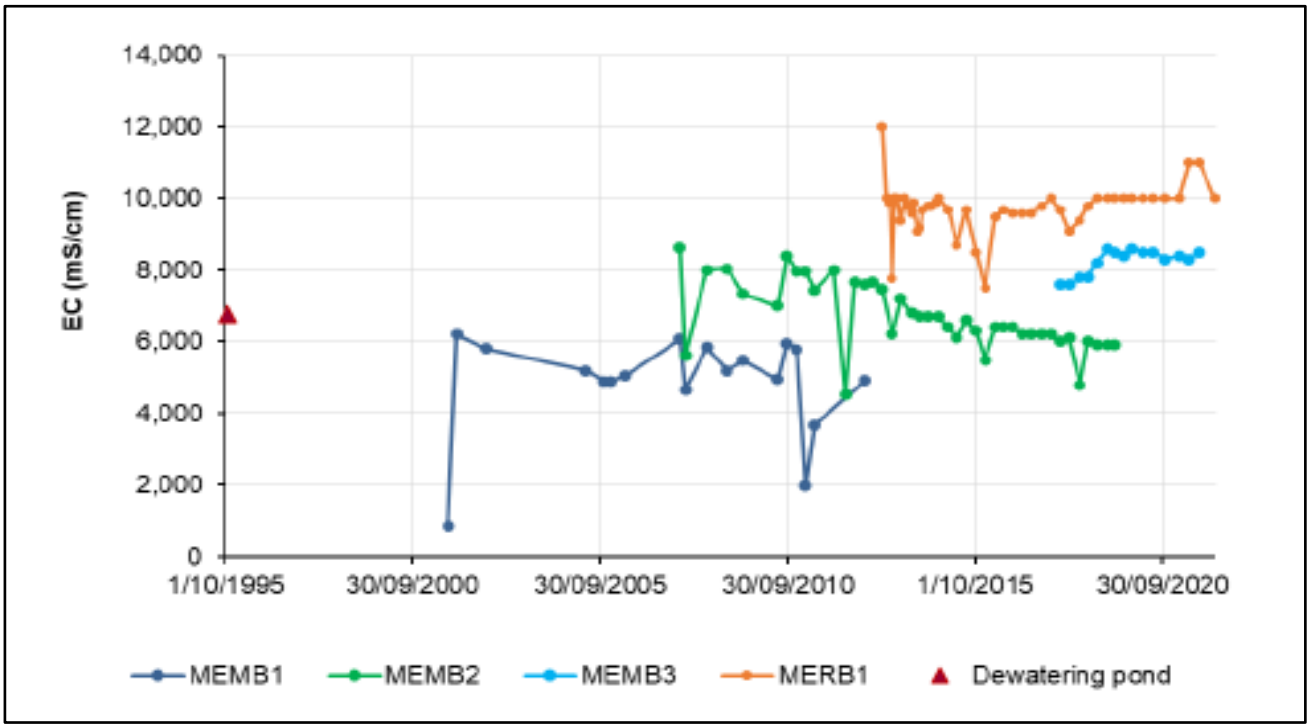


Figure 20: Mount Elliott groundwater electrical conductivity concentrations

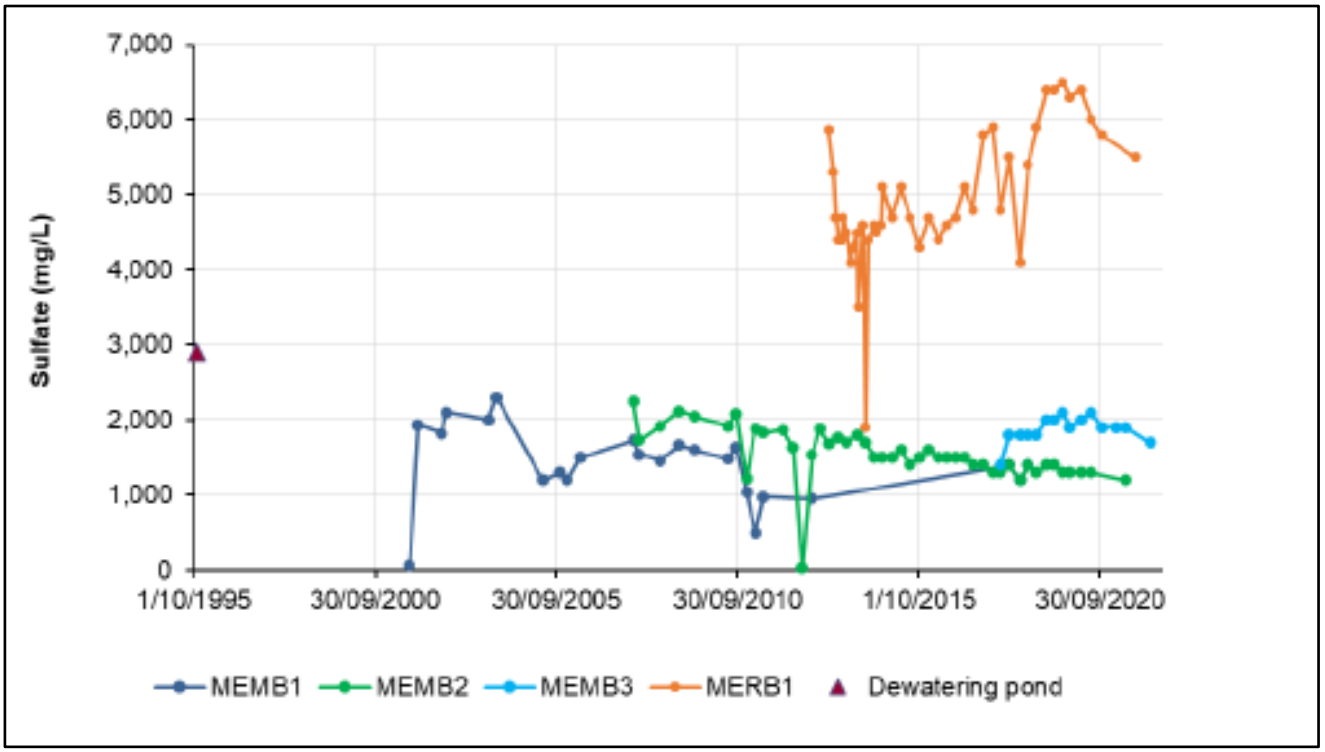


Figure 21: Mount Elliott groundwater sulphate concentrations

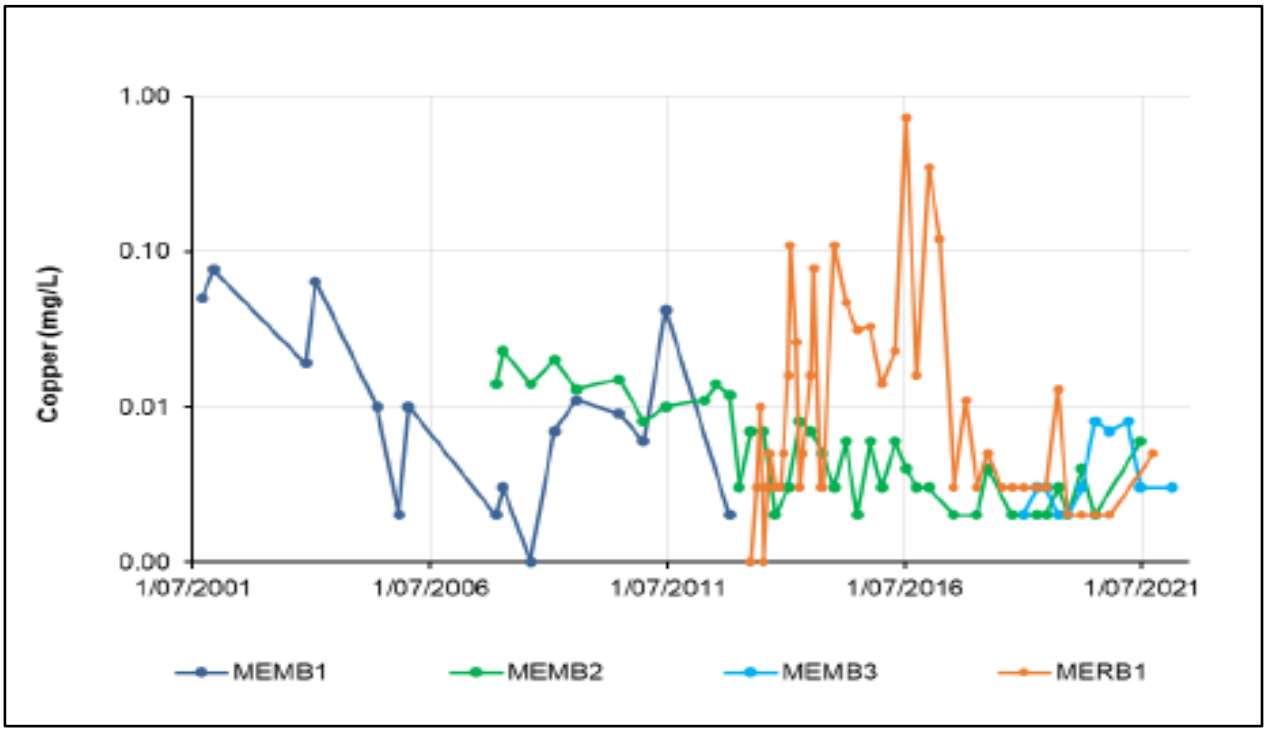


Figure 22: Mount Elliott groundwater copper concentrations

6.1.4.4 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater in the site area is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions (AGE, 2025a). The bulk component of this recharge is rainfall recharge, with infiltration below the ephemeral streams being a smaller volume. Conceptually, water from streams or bank storage that reaches the water table and becomes recharge is, by definition, groundwater-surface water interaction. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months: January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated regional recharge rate was calculated using a chloride mass balance method (AGE, 2021a) to be between 3% of annual rainfall and 6%. This equates to approximately 10 mm to 20 mm of recharge annually, based on a long-term average regional rainfall of 345 mm/yr. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

Due to the depth to water generally being >30 mBGL, there is likely minimal discharge via evapotranspiration (AGE, 2025a). Across Mount Elliott, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral, and the water table does not intersect the deepest points of creek incision.

6.1.4.5 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the relevant units present at Mount Elliott are presented in Table 24. Properties for the Kuridala Group are sourced from a combination of rising and falling head tests and historic reports which used pumping tests. The hydraulic properties of the Staveley Formation are estimated for the site using rising and falling head tests in bores located at other sites.

An assessment of fractured flow at Mount Elliott, presumably for bores completed in the Kuridala Group, was undertaken by PPK Consultants Pty Ltd in 1994 (PPK, 1994). Pumping tests undertaken at that time yielded

transmissivity estimates between 4.39 m2/d and 12.82 m2/d and storativity estimates between 1 x 10-6 and 3.14 x 10-2 (PPK, 1994). This suggested that groundwater storage in joints and fractures at Mount Elliott was limited, and that there is limited hydraulic connection between the underground workings and joints and fractures in the surrounding rock (PPK, 1994).

Estimates of hydraulic conductivity from other investigations for the Kuridala Group range from 1 x 10-6 m/day to 34 m/day (Table 24); however, many of these values come from the Mount Dore Aquifer, which is a productive zone within the Kuridala Group (RPS, 2011). The northern boundary of the Mount Dore Aquifer is understood to be located approximately 10 km south of the Mount Elliott mine lease (RPS, 2011). The closest Kuridala Group bore to Mount Elliott that has hydraulic test data is LE03, located 3 km south of Mount Elliott at Lady Ella mine. The bore construction log for LE03 suggests little fracturing in the screened interval (AGE, 2022a) and an estimated hydraulic conductivity value of <0.1 m/day, which is close to the ranges given for unfractured zones of the Kuridala Group at Mount Dore (1 x 10-6 m/day to 0.03 m/day; RPS, 2011).

Although very limited fracturing was observed during the drilling of the Kuridala Group nearby (LE03), there may be a shallow zone of higher permeability present at Mount Elliott due to surficial weathering causing delamination. Previous work by RLA (2011b) has described a shallow “perched” aquifer, inferred from large differences in water levels observed in bores and voids within proximity to one another. RLA concluded that these shallow and deep groundwater systems are different entities at Mount Elliott, with limited hydraulic connectivity between them.

Hydraulic conductivity estimates from bores constructed in the Staveley Formation vary from 0.04 m/day to 0.24 m/day and the bore logs of these bores (where available) suggest little fracturing in their screened lithologies. These bores are in the Mount Dore and Starra areas (>10 km south of Mount Elliott).

Table 24: Hydraulic Properties

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Elliott (likely MEWB-93-8 and MEWB-93-9)	Kuridala Group	-	-	-	50 to 250**	4.39 to 12.82	If thickness = 100 m, then K = 0.04 to 0.1 m/day If thickness = 10 m thick, then K = 0.4 to 1.2 m/day
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1×10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384×10^{-5}

Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1*
Mount Dore MB257	Staveley Formation	Unfractured	25.5 - 40.5	0.0125	-	-	0.185 to 0.243
Mount Dore MB257a	Staveley Formation	Unfractured	-	~0.001	-	-	<0.1
Mount Dore MB2a	Staveley Formation	-	20 - 40		-	-	0.04 to 0.18
Starra MB244	Staveley Formation	Unfractured	32.5 - 44.5	0.008	-	-	0.07 to 0.123
Starra STDMB5	Staveley Formation	Unfractured	75 - 90	0.105	-	-	-

6.1.4.6 Environmental Values

The applicable environmental values for the Mount Elliott site have been defined by AGE (2023) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there are no mapped aquatic GDEs within the Mount Elliott mining project. Moderate potential aquatic GDEs are mapped along Maggies Creek, about 10 km north-northeast the site. There are undocumented accounts of groundwater seepage occurring along Maggies Creek in these distal areas. As such, areas of potential aquatic GDEs are likely present along Maggies Creek.

The terrestrial GDE mapping shows that the mining lease area and surrounds have low and moderate potential for groundwater dependence. Just over 1 km from the ML boundary, there are parts of Maggies Creek and its tributary drainage lines that are mapped as high potential GDEs.

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Mount Elliott, but groundwater is used for livestock (beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius of Mount Elliott site resulted in the identification of four bores apart from those considered part of the Mount Elliott monitoring network (Table 25). All four bores are now recorded as “Abandoned and Destroyed”, and none of their records show their original purposes. Given the regional context, it is likely that livestock watering is an applicable groundwater value.

Table 25: Registered bores with 10 km of Mount Elliott

Bore ID	Easting	Northing	Bore depth (mBGL)	Screened interval (mBGL)	Ground RL (mAHD)	Screened Lithology	Bore Status
RN2059	451798	7618398	NR	NR	NR	NR	Abandoned and destroyed
RN7536	440188	7615284	46.6	NR	NR	Staveley Formation	Abandoned and destroyed

RN7537	440966	7614795	30.8	NR	NR	Staveley Formation	Abandoned and destroyed
RN7538	443595	7611330	NR	NR	NR	NR	Abandoned and destroyed

Industrial Use

It is likely that mine water was used for industrial water supply between 1901 and 1920. More recently, the main industrial user of groundwater in the region is Chinova itself. During operational times, the mine historically extracted water from the open voids via sumps and dewatering bores to maintain dry working conditions.

6.1.5 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the is 'Fz43' (Mackenzie *et al,* 2000). Soil type Fz43 is primarily associated with dissected plateaux or mesas with steep scarps & narrow gently undulating valleys.

Lewis (1987) described the soil classes within the broader Starra area. The three main soil classes present at Mount Elliott are Skeletal, Manbulloo and Forsayth. The most common soil type are skeletal soils which are shallow soils, less than 25 cm deep, frequently stony and lacking profile differentiation, normally occurring on the steeper slopes of the landscape. The Manbulloo soils have fine sandy profiles, light brown to reddish brown colour; massive structure and generally neutral to slightly acidic. Manbulloo soils are associated with stream channels and associated narrow alluvial areas. Forsayth soils are massive at surface, the subsoil has a very weak irregular medium to coarse angular or subangular blocky structure, and below this the structure is massive. When thin coarser-textured surfaces (sandy clay loam) are present they have very weak, coarse to very coarse platy structure. The Forsayth soils are associated with landscapes of low relief carrying Eucalyptus Forest or various woodlands or grasslands. The parent materials are diverse, being alluvial or colluvial materials or derived from sedimentary or metamorphic or igneous rocks in situ.

The land system at Mount Elliott is predominantly classified as Kuridala. The Kuridala land system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered Kuridala land system unsuited for grazing (or virtually so) because it is rugged, stony, or barren. A small portion of the eastern section of Mount Elliott is mapped as the Torwood land system. The Torwood system consists of broken sandstone country and mostly carries dense lancewood over bare ground or sparse grasses and is considered unsuited to grazing (Perry, 1954).

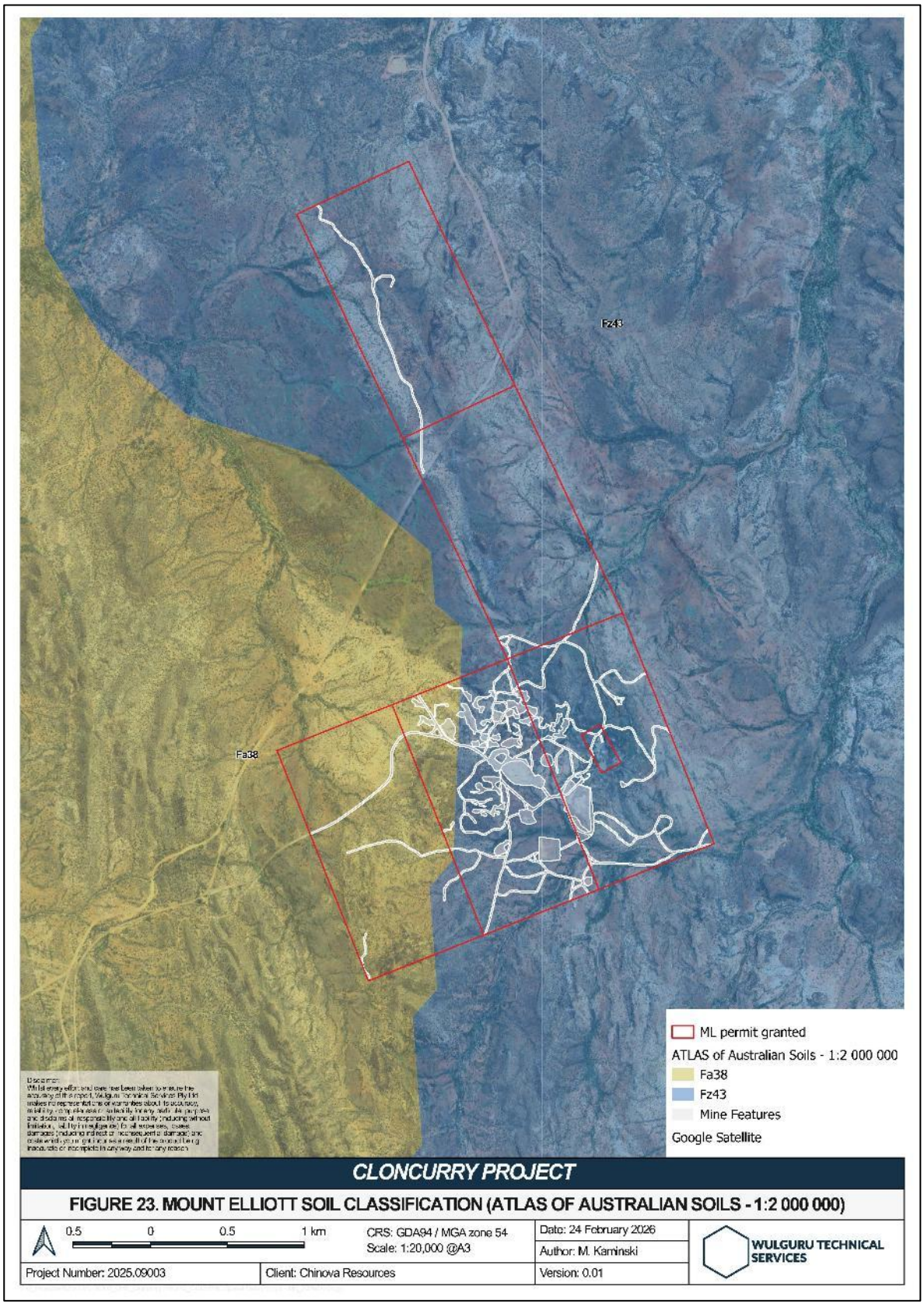


Figure 23: Mount Elliott Soils (Atlas of Australian Soils – 1:2 000 000)

6.1.6 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness (Lewis, 1987). This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the broader CMP (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested by Lewis (1987) that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

6.1.7 Vegetation Communities and Ecological Data

The dominant broad vegetation group (BVG 19) across the CMP consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer. Around some riparian areas and alluvial plains, *Eucalyptus camaldulensis* open forest and woodlands occur (BVG 16). Surveys also identified a small patch of gidgee (*Acacia cambagei*) open forest to tall shrubland (BVG 26), typically found on red earths.

A total of six regional ecosystems (RE) have been identified within the Mount Elliott area (Table 26). All six have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains). One regional ecosystem has a Biodiversity status of Endangered, being RE 1.3.7 - *Eucalyptus camaldulensis* woodland on channels and levees. RE 1.3.7 occurs over a small area on the southern section of the Mount Elliott mining leases and corresponds with BVG 16. These areas are considered to have high ecological value due to presence of habitat for hollow dependent species, and migratory waterbirds, and providing local and regional connectivity. The RE is considered Endangered due to its regional degradation by high grazing pressure. Direct impacts are associated with trampling, while secondary impacts are associated with intrusion of exotic pasture species, principally buffel grass (*Cenchrus ciliaris*).

Previous baseline ecological reports for the CMP have assessed the presence of conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 26: **Regional ecosystems within the Mount Elliott Project Area**

BVG	RE	RE description	Biodiversity Status	VMA Status
16	1.3.7	*Eucalyptus camaldulensis* woodland on channels and levees	Endangered	Least Concern
19	1.10.4	*Eucalyptus leucophloia* low open woodland on sandstone plateaus	No concern	Least Concern

BVG	RE	RE description	Biodiversity Status	VMA Status
	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.5.3	*Eucalyptus leucophloia* low open woodland to woodland on sandy and gravelly red soils	No concern	Least Concern
	1.5.4	*Eucalyptus leucophylla* and/or *Corymbia terminalis* low open woodland on red earths	No concern	Least Concern
26	1.5.16	*Acacia cambagei* low woodlands on red earths	No concern	Least Concern

6.1.8 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 27).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 27: Conservation significant species recorded within the Project Area.

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

6.1.9 Pre-Mining Land Use

The Mount Elliott mining area has long history of mining activity. Briefly, the Mount Elliott deposit was discovered in the late 1880's and mining commenced in 1901 as a small open cut pit operation. The orebody was then developed as an underground operation. From 1909 to 1919 the smelter at Mount Elliott produced 24,800 tonnes of copper and 34,000 ounces of gold. Mining ceased in 1920 due to falling ore grades and labour unrest. Modern mining recommenced in 1993 and continued to 2003. The major activities onsite have been ongoing exploration and care and maintenance activities. Land use in the general area also included low intensity grazing, the historic smelter site as a registered state heritage site, and the small historic (and abandoned) town of Selwyn.

6.2 Post Mining Land Use

6.2.1 Rehabilitation Planning and Objectives

Determining appropriate PMLU's is critical in mine rehabilitation planning. For a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

a) The land is safe and structurally stable; and
b) There is no environmental harm being caused by anything on or in the land; and
c) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives (condition E3):

a) Safe for humans and wildlife
b) Non-polluting
c) Stable
d) Able to sustain an agreed post-mining land use
e) Revegetated with species endemic to the area with no declared pest species; and
f) Compliant with all conditions of the environmental authority.

The EA (primary land outcome document) does not specify specific rehabilitation objectives and rehabilitation success measures for Mount Elliott. Instead, the criteria were to be nominated in a Post Mine Land Use Plan (PMLUP). The most recent PMLUP is the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, for the purposed of this PRCP, Chinova have developed new rehabilitation objectives for land disturbed by mining activities (Table 28) based on expert reports including AGE (2023, 2025), ATCW (2023) and NGH (2023). In addition, the PRCP schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 28: Mount Elliott Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)
		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)
	Erosion	Mine waste is not exposed by erosion processes.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum)

		Erosion does not impact the PMLU.	No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall
	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196.
Supports a viable vegetation community	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved PRCP Schedule, detailed within Table 189.

6.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

a) Is viable, having regard to the use of land in the surrounding region, and
b) Satisfies at least one of the following -
    a. The use is consistent with how the land was used before mining activity was carried out on the land
    b. The use is consistent with a development approval relating to the land
    c. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    d. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The proposed rehabilitation areas for Mount Elliott are presented in Table 29 and illustrated within Figure 24, with the final proposed PMLUs shown in Figure 25. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area.

Accordingly, the rehabilitation area and PMLUs illustrated within Figure 24 and Figure 25 may not accurately reflect the disturbance areas presented within Table 29.

Chinova and previous operators have undertaken rehabilitation on selected features across the site, predominantly including exploration and the removal of buildings and mineralised waste (2011). Locations of the previous rehabilitation are shown in Figure 26.

However, the documentation of these historic rehabilitation areas is limited. Available records are largely qualitative and consist of brief descriptions, which have been summarised in Table 29. None of these rehabilitation areas have been fully rehabilitated or progressively certified. As a result, all areas identified as 'existing rehabilitation' will be required to progress through the full suite of rehabilitation milestones outlined in the PRCP schedule. Where an area of existing rehabilitation already meets the criteria for a particular milestone, it will advance directly to the next rehabilitation stage. This approach ensures that all rehabilitation areas, regardless of when works originally occurred, achieve the standards required for final relinquishment.

Table 29: Mount Elliott PMLU's and Rehabilitation Areas

Rehabilitation Planning Areas	Disturbance (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
RA1 Mount Elliott Waste Rock Emplacement	3.3	0	3.3	Low intensity grazing	Native Vegetation	N/A
RA2 Mount Elliott Built Infrastructure including ROM, dewatering pond, buildings pads, communication infrastructure, and Mount Elliott dams	7.15	0	7.15	Low intensity grazing	Low intensity grazing	Mineralised material removed in 2011. Buildings removed in 2011. Exploration areas progressively rehabilitated.
RA3 Mount Elliott Underground mine disturbance including portal, air vents, subsidence and infrastructure within subsidence exclusion bunding	3.70	0	3.70	Low intensity grazing	Native Vegetation	N/A

RA4 Mount Elliott Permanent Infrastructure including access tracks	21.96	0	0	Low intensity grazing	Permanent Infrastructure	N/A

6.2.2.1 Assessment of Alternative Post-Mining Land Uses – Mount Elliott Waste Rock Emplacement

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Mount Elliott WRE as low intensity grazing, consistent with the pre-mining land use; however, due to the requirements of the engineered cover system which will be applied to this disturbance, alternative PMLUs have been assessed in accordance with the EP Act to determine the most appropriate and sustainable outcome. This assessment establishes the precedent for all disturbance areas throughout the Cloncurry Project which will have an engineered cover system installed (i.e., select ROM pads, WRDs, heap leach pads, tailings storage facilities).

Low intensity Grazing

Low intensity grazing aligns with the historical and surrounding use of the Project area and therefore was considered a logical PMLU; however, the WRE requires installation of an engineered cover system designed to limit infiltration, manage erosion, and prevent exposure of mineralised or potentially acid forming material. The long-term performance of the cover systems is dependent on maintaining surface integrity and preventing excessive erosion or localised disturbance.

Grazing activities introduce risks that are incompatible with the performance requirements of the engineered cover systems. Livestock access may result in compaction, disturbance, vegetation removal, and the formation of preferential flow paths, which may increase infiltration and compromise the stability of the underlying waste material. In addition, grazing pressure can contribute to the development of localised erosion features, preventing compliance with the adopted soil loss performance criteria. Given that the WRE must achieve defined erosion and infiltration limits to remain physically and chemically stable, livestock integration introduces unacceptable risk to the geotechnical and hydraulic functionality of the engineered barrier. Accordingly, low intensity grazing is not considered an appropriate PMLU for the WRE due to the erosion and stability requirements of the engineered cover system.

Native Vegetation

Rehabilitation of the WRE to a PMLU of native vegetation has been assessed as a viable and appropriate PMLU. An engineered cover system will be installed to limit infiltration, manage erosion, and prevent exposure of mineralised or potentially acid forming material. Long-term stability of the landform is dependent on maintaining the integrity of this cover system. A native vegetation outcome is compatible with these design requirements as it minimises disturbance to the cover profile and reduces the likelihood of compaction, trafficking and localised erosion that may occur under a grazing land use.

Establishment of native vegetation consistent with the surrounding broad vegetation community will provide surface stabilisation, improve erosion resistance and support long-term physical and chemical stability. This outcome also delivers a beneficial environmental outcome by restoring ecosystem function and habitat values across the rehabilitated landform. The WRE can be designed and rehabilitated to achieve the required stability criteria, including erosion performance targets and infiltration limits, while sustaining a self-supporting native vegetation community. Accordingly, a native ecosystem PMLU satisfies the requirements of section 111A of the EP Act, as the land can be made safe, stable, non-polluting and capable of sustaining this land use in the long term.

Non-Use Management Area (NUMA)

A NUMA is defined in the EP Act as an area of land that cannot be rehabilitated to a stable condition after all relevant activities carried out on the land have ended. A NUMA can only be considered after alternative PMLU options have been assessed. For the Mount Elliott WRE, available erosion and cover system modelling indicates that the landform can achieve long-term physical and chemical performance objectives. The WRE is capable of meeting defined erosion and infiltration criteria and can support a sustained vegetated cover. Accordingly, as the WRE can achieve a clearly defined native vegetation outcome, a NUMA designation would be inconsistent with the demonstrated rehabilitation capacity of the WRE and is not considered appropriate.

PMLU Determination

Following assessment of the feasible alternatives, rehabilitation of the Mount Elliott WRE to a native ecosystem PMLU is considered the most appropriate outcome. While low intensity grazing aligns with historical land use, it introduces risks to the erosion and infiltration performance of the engineered cover system and is therefore not suitable. A NUMA outcome is also not appropriate, as the landform can sustain a stable and beneficial land use. Rehabilitation to a native ecosystem provides a conservative, risk-based outcome that ensures long-term physical and chemical stability while delivering a beneficial environmental outcome consistent with statutory requirements.

6.2.2.2 PMLU Justification

Justification of proposed PMLUs is provided in Table 30. In summary, the post-mining land use at Mount Elliott is constrained by pre-mining land capability, final landform geometry, engineered cover system requirements and localised geotechnical considerations, including areas of potential subsidence associated with historical underground workings.

While the pre-mining land use was low intensity grazing, not all disturbance areas are suitable to be returned to grazing. Areas incorporating engineered cover systems require long-term protection of surface integrity to achieve defined infiltration and erosion performance criteria. Grazing activities may introduce compaction, disturbance and localised erosion that could compromise the stability and performance of these engineered systems. Accordingly, these areas will be rehabilitated to a native vegetation PMLU to protect cover system integrity and ensure compliance with long-term physical and chemical stability objectives.

In addition, areas identified as having a residual risk of subsidence associated with historical underground workings have also been assigned a native vegetation PMLU. The potential for localised ground movement within this area is not conducive to ongoing grazing activities. Assigning a native vegetation outcome minimises surface loading and ongoing disturbance and represents a more conservative and risk-based land use in these locations.

Areas not constrained by engineered cover requirements or subsidence risk will be returned to low intensity grazing, consistent with the surrounding regional land use and land capability. As requested by the underlying landholder, key pieces of infrastructure will be retained, including roads and tracks, to support ongoing grazing operations. The Mount Elliott Southern Sediment Dam has been identified within the landholder agreement for transfer on closure; however, as the water quality within this structure exceeds livestock water quality guideline values, this structure will be decommissioned and rehabilitated on closure.

The stakeholder consultation process for the Cloncurry Project identified no objections to the proposed PMLUs. Landholder agreements are in place (provided separately). In addition, the historical disturbance associated with the heritage-listed Mount Elliott mine and smelter complex will remain within the broader PMLU of low intensity grazing.

Table 30: PMLU Justification

PMLU Consideration	Justification
Is viable, having regard to the use of land in the surrounding region	The proposed PMLUs are low intensity grazing, native vegetation and permanent infrastructure to support low intensity grazing. These land uses are consistent with the land capability of the area (see Section 6.1.5) and the dominant rural land use of the Cloncurry region. Low intensity grazing remains appropriate for areas where landform design and rehabilitation methods do not rely on engineered cover systems and where no subsidence risk is present. For disturbance areas incorporating engineered cover systems, or where residual subsidence risk has been identified, native vegetation is the most viable land use as it avoids disturbance that may compromise erosion, infiltration or geotechnical stability performance criteria.
Satisfies at least one of the following:	
a) The use is consistent with how the land was used before mining activity was carried out on the land	As outlined Section 6.1.9, the pre-mining and surrounding land use is low intensity grazing of beef cattle. Returning suitable areas to low intensity grazing is consistent with the past and current use of the land. For areas requiring engineered cover systems or where subsidence risk is present, native vegetation represents a compatible land use that maintains land stability while remaining consistent with the broader rural and ecological landscape.
b) The use is consistent with a development approval relating to the land	No relevant development approvals.

c) The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act	**Cloncurry Shire Planning Scheme**
	
	Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural Zone (Cloncurry Shire Council, 2016). The purpose of the Rural Zone of the Cloncurry Shire is to:
	
	• Provide for rural uses and activities;
	• Provide for other uses and activities that are compatible with –
	  ○ Existing and future rural uses and activities;
	  ○ The character and environmental features of the zone;
	• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
	
	The proposed PMLUs of low intensity grazing, native vegetation and supporting infrastructure are consistent with these objectives. Rehabilitation to native vegetation for engineered or subsidence-

	prone landforms supports long-term land capability and environmental protection within the rural context. **Northwest Regional Plan 2010-2031** The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning. The Regional Plan identifies both mining and rural production as significant primary industries within the region, and details the need for appropriate management of mining development to ensure it complements other industries. The plan also places importance on climate change and one that is well managed to maintain biodiversity, ecological processes, water resources, and scenic amenity. The proposed PMLUs support a safe, stable, and non-polluting post-mining landscape and are consistent with the regional planning objectives. **Commonwealth Legislation** N/A
d) The use will deliver, or is aimed at delivering, a beneficial environmental outcome.	Rehabilitation to native vegetation on engineered or subsidence-prone landforms delivers a beneficial environmental outcome by restoring ecosystem function, stabilising soils, and providing habitat consistent with surrounding vegetation communities. Exclusion of grazing from these areas reduces the risk of erosion, infiltration exceedance and geotechnical instability, and supports long-term physical and chemical stability. Low intensity grazing across suitable areas maintains regional land use continuity while ensuring compliance with environmental performance objectives.

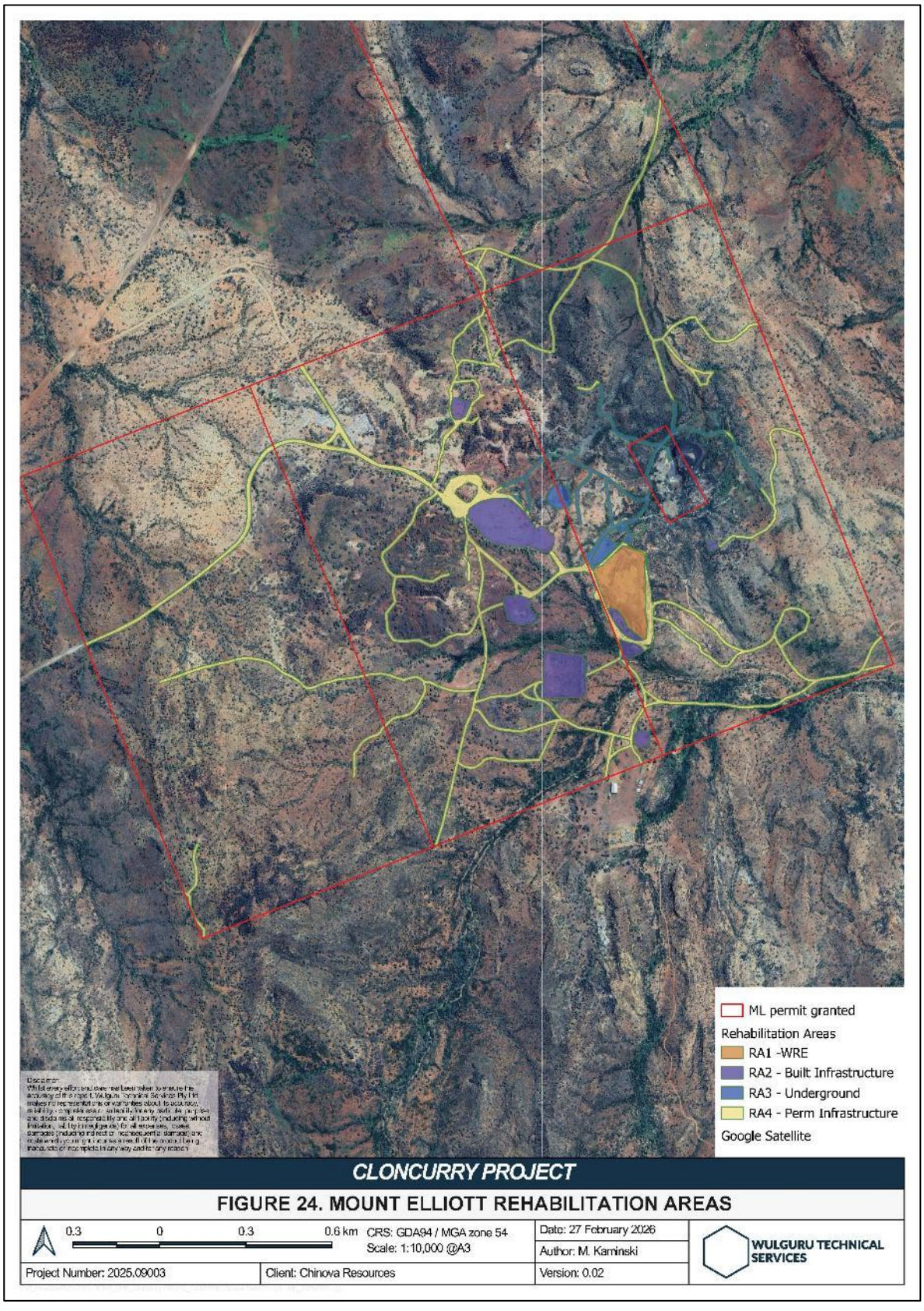


Figure 24: Mount Elliott Rehabilitation Areas

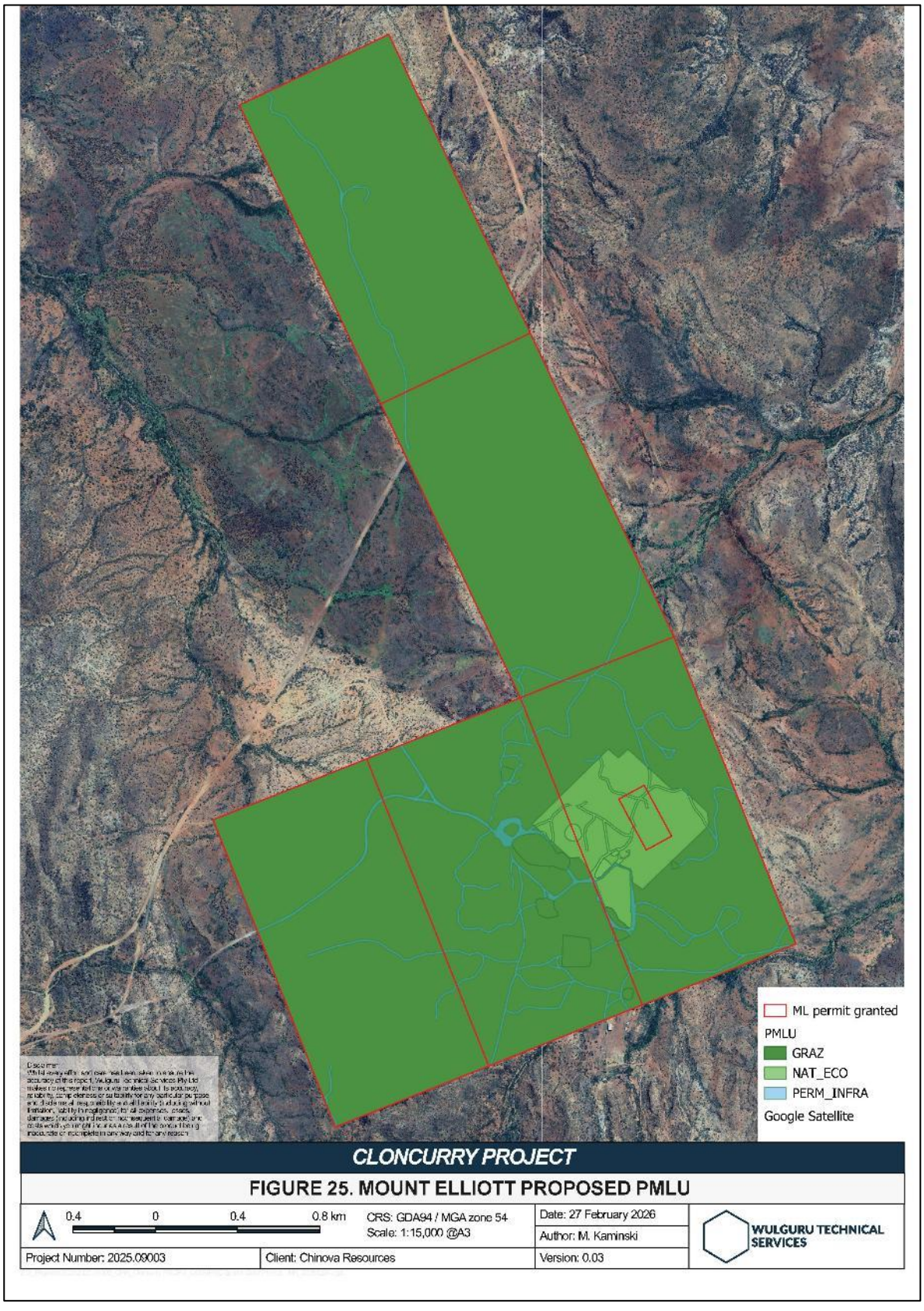


Figure 25: Proposed PMLU (Mt Elliott)

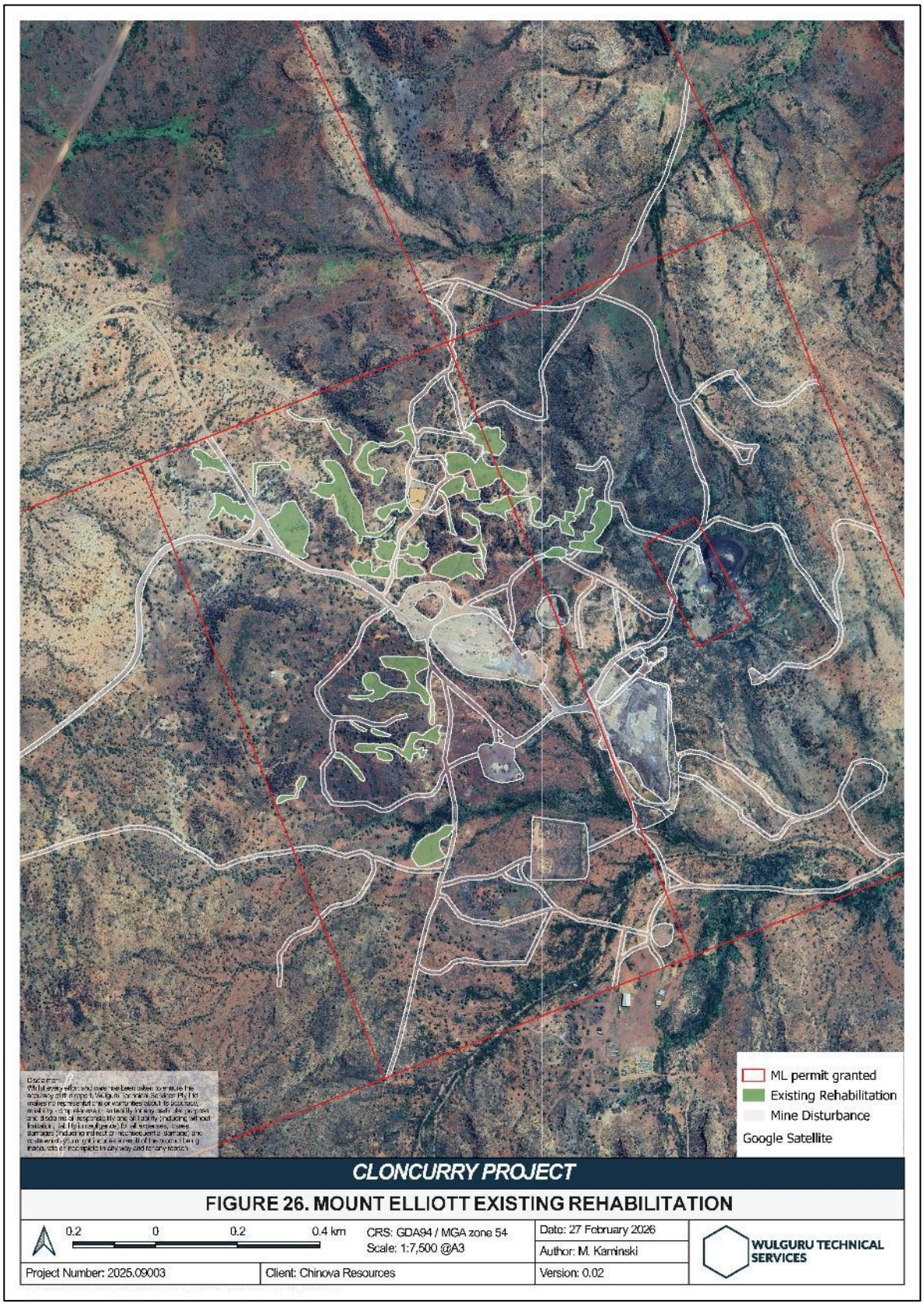


Figure 26: Mount Elliott Existing Rehabilitation

6.2.3 Rehabilitation/Improvement Planning

The Mount Elliott project contains significant copper and gold mineralisation that is proposed to be developed through future mining campaigns. It is highly likely mining activities will recommence to access the remaining copper and gold metal. Preliminary project scoping and economic evaluation of a future mining operation has identified opportunities to mine an open cut pit above the existing Mount Elliott underground workings followed by a large block cave operation to the west, to access the SWAN orebody.

If additional development does occur, it is highly preferential to reuse existing disturbed areas for mine infrastructure rather than disturb new areas. As a result, the land currently available for progressive rehabilitation at Mount Elliott is limited as presented in Table 31.

Table 31: Availability for Progressive Rehabilitation (Mount Elliott)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Waste Rock Dump			
Mt Elliott WRD	2036	3.3	Available for rehabilitation following determination of future mining options at Mount Elliott. Material characterisation of the WRE shows that it contains copper mineralisation potentially suitable for processing at the future SWAN/Mt Elliott project. The material could also be used to backfill underground open stopes which is necessary prior to commencing the proposed open cut and block cave mining campaigns. For the purpose of the PRCP, the Mount Elliott WRE will continue to be held in state of care and maintenance for up to 10 years. Following this period, if no further mining occurs at Mount Elliott, the WRE will be rehabilitated.
ROM and Ancillary Infrastructure			
Mt Elliott ROM	2036	3.0	Existing disturbance will remain for potential redevelopment as part of future mining operations. This will minimise the need to disturb additional areas. Mineralised material was removed from the area during previous site clean-up in 2011. For the purpose of the PRCP, the Mount Elliott ROM will continue to be held in a state of care and maintenance for up to 10 years. Following this period, if no further mining occurs at Mount Elliott, the ROM will be rehabilitated. Additionally, for the purposes of this PRCP the ROM area will be converted to a borrow pit to support the capping of the WRE and backfill of underground surface openings.
Mt Elliott Evaporation Dam **Mt Elliott Infrastructure (hardstand, communications infrastructure, laydowns)**	2036	3.12	Existing disturbance will remain for potential redevelopment as part of future mining operations. This will minimise the need to disturb additional areas. Buildings and equipment were removed during the previous site clean-up. Hardstand areas remain as well as essential groundwater monitoring bores. Rehabilitation works will commence 10 years following the completion of mining.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Mt Elliott Southern SD **Mt Elliott Exploration SD** **Mt Elliott WRD Containment Dam**	2044	1.03	Water storages and sediment basins are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits. Following final closure, water storages and sediment basins will be handed over to the landholder to support grazing activities. Landholder agreement in place to facilitate the transfer of this infrastructure at mine closure; however, as long-term water quality modelling has not been undertaken, this structure will conservatively be fully rehabilitated.
Exploration			
Exploration (drill pads and associated disturbance)	Rehabilitation in progress.	-	Existing drill pads are from resource definition drilling of the Elliott and SWAN deposits. Future proposed mining operations will further disturb these areas through development of open cut pits and underground infrastructure. Drill sites have been progressively rehabilitated with sumps filled in and exploration holes capped. These areas are under rehabilitation but have not been progressively certified. Exploration disturbance will be rehabilitated in accordance with the standards conditions for exploration and mineral development pojects.
Underground Disturbance			
Mt Elliott Portal **Mt Elliott Infrastructure (ventilation shafts)**	2036	0.47	Available for rehabilitation if a decision is made to undertake no further mining by 2036.
Mt Elliott Subsidence	2036	0.52	The preferred option is to rehabilitate the area as part of the extensive underground backfilling required prior to recommencing underground and open cut mining.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
			If a decision is made to undertake no further mining, progressive rehabilitation can commence by sourcing suitable material from material stockpiles throughout the Cloncurry project.
Roads and Tracks			
Other Roads – within geotechnical exclusion zone	2036	2.71	Tracks located within the proposed exclusion zone above underground workings will be available for rehabilitation by 2036, should no further mining be undertaken.
Other Roads - Permanent	2059	21.96	Tracks are required to ensure ongoing access for monitoring and maintenance activities. Following completion of rehabilitation activities, access tracks will be handed over to the landholder to provide access for grazing. Landholder agreement in place to facilitate the transfer of this infrastructure at mine closure.

6.3 Non-Use Management Areas

For the purposes of this PRCP, no Non Use Management Areas (NUMAs) are proposed for Mount Elliott.

6.4 Voids in Flood Plains

In accordance with section 126D(3) of the EP Act, if the land subject to 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff, 2019 (ARR) (Ball, et al, 2019).

Flood modelling of the Mount Elliott area in accordance with the EP Act demonstrates that the portal would not be within the 0.1% AEP flood extent. However, the modelling has showed that the portal would be affected by the Probable Maximum Flood (PMF) level (WRM, 2023) (Appendix 2). This is not considered a material risk as the portal will be backfilled during closure to be commensurate with the surrounding landscape.

6.5 Rehabilitation and Management Methodology

Full implementation of the decommissioning and rehabilitation program will result in a post mining final landform that broadly reflects the pre-mining condition. Mining activities at Mount Elliott has included significant development including underground mine access and infrastructure, waste rock emplacements and built infrastructure.

The rehabilitation and management methodology described herein for the Mount Elliott area is specific to the rehabilitation of the existing Mount Elliott disturbance. Where possible rehabilitation activities resulting in additional disturbance (borrow sites, sediment structures) have been located in areas likely to be subject to future mining activities.

6.5.1 General Rehabilitation Principles

6.5.1.1 RA1 Mount Elliott Waste Rock Emplacement

Rehabilitation of the Mount Elliott waste rock emplacement (WRE) will require specific treatment relevant to the geochemical characteristics of the stored waste. The current characterisation of the Mount Elliott WRE shows the emplacement contains potential acid forming (PAF) material.

For the purposes of this PRCP the PAF cover system designed by ATCW is proposed (ATCW crest cover option C4). Modelling undertaken by ATCW (2024) concluded that this cover system design satisfied the adopted performance criterion that net infiltration into the underlying waste does not exceed 35 mm per annum, thereby limiting water ingress into the PAF material. The modelling also demonstrates that the C4 configuration provides the second most optimum plant growing days per year of the cover designs assessed (refer Section 6.5.7.1).

The C4 cover incorporates a reduced permeability layer, appropriate for PAF material as it reduces infiltration, thereby minimising risk of long-term acid generation and contaminant mobilisation. The C4 cover

design is most appropriate for the geochemical risk profile of the Mount Elliott WRE and aligns with the closure objective of achieving a stable and non-polluting landform.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Mount Elliott WRE. Further detail is provided on this requirement within Section 6.5.7.2.

Rehabilitation of the Mount Elliott WRE will involve:

- Reprofiling the WRE crest (plateau) to a grade of 0.5%, draining to the WRE containment pond (south).
- Reprofiling the WRE batters to angle of repose.
- Application of the batter cover system (ATCW mineralised waste batter treatment)
- Application of a crest cover system (ATCW crest cover option C4).
- The domain will be revegetated in accordance with the Cloncurry Project revegetation strategy (NGH, 2023).
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

6.5.1.2 RA2 Mount Elliott Built Infrastructure

Most infrastructure used to support the Mount Elliott mining operations have progressively been decommissioned and removed. The remaining infrastructure includes workshop concrete slabs, water supply tanks, communications infrastructure, exploration sediment dam, dewatering pond, ROM pad, and core laydown area. The ROM pad is disused by Chinova and currently does not contain any won material.

The decommissioning and rehabilitation strategy for this infrastructure will include:

- All areas will be de-energised, and all services disconnected.
- Residual mine affected water will be transferred to the Mount Elliott underground.
- Impacted sediment (approximately 0.5m) removed from sediment dams and disposed at a licensed facility authorised to receive such waste.
- Components identified as salvageable for beneficial reuse will be decommissioned and removed.
- Components identified as recyclable scrap metal will be demolished and transferred to a metal recycler.
- Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings, will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no re-use value will be disposed of at a licensed facility authorised to receive such waste.
- Areas will be assessed for contamination (metals, sulphate, salinity) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

The Mount Elliott WRD containment dam will be retained until surface runoff from the covered Mount Elliott WRE demonstrates surface water rehabilitation milestone criteria for RM9 - achievement of surface requirements (Native vegetation) have been met. Rehabilitation of the Mount Elliott WRD Containment Dam will include:

- residual potentially mine affected water will be transferred to the Mount Elliott underground.
- Impacted sediment (approximately 0.5m) removed from sediment dams and disposed at a licensed facility authorised to receive such waste.

- Areas will be assessed for contamination and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

6.5.1.3 RA3 Underground Mine Disturbances and Infrastructure within Subsidence exclusion zone

Several underground mining campaigns at Mount Elliott have resulted in the excavation of extensive underground voids and surface openings required to service the underground operations (access and ventilation). The surface openings developed for the Mount Elliott underground include:

- Box-cut portal and access decline.
- Two (2) ventilation shafts.

Any underground excavation has the potential to fail and propagate to the surface resulting in an inability to achieve a stable condition. Accordingly, an exclusion zone has been proposed by Quantum Geotechnical (2023 and 2025) (refer Figure 39). Any disturbance within this exclusion zone will be entirely rehabilitated.

Once Chinova confirms no further access to the Mount Elliott underground is required, rehabilitation of the openings (box-cut portal, ventilation shafts) and the subsidence area will consist of backfilling to the surface with material sourced from available stockpiles throughout the Cloncurry Project (refer Table 39). Backfill will consist of general fill up to 2 m below ground level, with the remaining 2 m backfilled with growth media.

A detailed backfill methodology will be prepared for the surface openings and the subsidence area prior to backfilling commencing. This methodology will confirm the precise placement of material, compaction requirements, and whether a material surcharge above the final surface is required to accelerate material consolidation.

Roads and tracks within the exclusion zone will be rehabilitated. The strategy for these works will include:

- Areas will be assessed for contamination and contaminated materials (i.e., hydrocarbon contaminated soils), which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

6.5.1.4 RA4 Permanent Infrastructure - Roads and Tracks

Roads and tracks will not be rehabilitated until all remaining rehabilitation works at Mount Elliott have been completed. Following completion of all remaining rehabilitation works, roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement.

6.5.2 Hydrogeology

The hydrogeology of Mount Elliott was investigated by AGE in 2023 (Appendix 1) to meet the requirements of the PRCP. Groundwater hydro-stratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in Section 6.1.4. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Mount Elliott to assist with determining appropriate containment and management requirements.

6.5.2.1 Conceptual Hydrological Model

The groundwater system in the Mount Elliott area is conceptualised in Figure 27. The cross-section line is aligned with the dewatering pond, the WRE, and the historic workings (including the underground voids and the slag heap). The cross section is sub-perpendicular to the regional strike of the geological formations. This cross section depicts the infrastructure features that are the main potential sources of solutes to groundwater at Mount Elliott.

There is a cone of depression at Mount Elliott as a result dewatering during the most recent mining campaign between 1993 and 2003. The cone of depression is near the underground workings, but also underlies part of the WRE. The cone of depression directs groundwater flow from under the WRE towards the void. The dewatering pond and the monitoring bores are just beyond the mapped cone of hydraulic gradients and declining water levels at bores near the dewatering pond indicate that it is likely that flow towards the voids is occurring at these locations. Throughout all monitoring periods, there has been a negligible hydraulic gradient between the groundwater beneath the dewatering pond (approximately represented by DTQ camp bore) and the site monitoring bores. Currently, groundwater flow beneath the dewatering pond is inferred to be northward, towards the remnant zone of drawdown.

A regional flow direction similar to that of surface water drainage can be inferred for groundwater flow outside the influence of the cone of depression (Figure 27). Very little drawdown is present in the massive calc-silicates of the Staveley Formation when compared to the drawdown in the Kuridala units and other metasediments to the east. This likely indicates that there is a hydraulic barrier between the formations, and / or that the massive Staveley Formation has very low hydraulic conductivity.

There are no groundwater receptors indicated on the cross section (Figure 27). Ecosystem use of groundwater at Mount Elliott is considered unlikely due to the depth to groundwater generally being >30 m. There are no pastoral users of groundwater near the cross section and there is no inferred groundwater-surface water interaction due to the depth of the water table and the shallow stream incision.

6.5.2.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2025) to assess potential impacts to groundwater from Mount Elliott (Table 33) (See Appendix 1 for the full analysis).

Site infrastructure that has the potential to be a source of solutes to groundwater includes: the underground workings, the WRE and associated containment pond, the historic dewatering pond, former ROM pad, and the historic slag heap. The dewatering pond is dry and disused, and the ROM pad was rehabilitated in 2012. Both of these features may have generated seepage in the past, and this is considered as a potential source. The main future sources of solutes to groundwater are the WRE and the underground voids. The historic slag heap is not discussed as it is a remnant from mining prior to 1920.

The potential receptors include:

- distal (~10 km from site) mapped areas along Maggies Creek with potential for aquatic GDEs.
- mapped areas with potential for terrestrial GDEs on the ML and along Maggies Creek, Gidya Creek, and Limestone Creek.
- groundwater bores used for livestock watering.
- water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to the receptor. The AGE (2023) impact assessment indicates that:

- there is no past or future impact predicted for potential aquatic GDEs regarding water access or water quality from any source.

- there is no past or future impact predicted for potential terrestrial GDEs as a result of groundwater drawdown.
- there is no past or future impact predicted for potential terrestrial GDEs regarding the underground workings as a source.
- it is unlikely that there are past or future impacts to potential terrestrial GDEs from solutes transported below the water table from any source.
- there is a likely past impact and possible future impact predicted for potential terrestrial GDEs from diffusion or migration of solutes in the unsaturated zone regarding WRD and containment pond, dewatering pond; and former ROM pad.
- there is no past or future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source.
- there is past impact (and possible future impact) for groundwater used for industrial uses due to drawdown; and,
- there are no past or future impacts for groundwater used for industrial uses regarding water quality for beneficial use.

6.5.2.3 Contaminants of Concern

Contaminants of Concern (CoCs) were identified by AGE (2025b, Appendix 16) for each mining area under the Cloncurry Project through a review of the detailed geochemical assessment completed by RGS (2011), with additional consideration given to potential CoCs identified by the current EA. All CoCs were individually interrogated by AGE to determine which are present in ground or surface water in the Project areas, which eliminates potential CoCs that are insoluble in water at the conditions observed for the various sites. CoCs were further interrogated against generalised geochemical data and contaminant solubility.

The CoCs proposed for closure differ from the EA operational monitoring parameters because the EA list has not been rationalised against geochemical data and includes some parameters that are not expected to pose a long-term post-closure risk. In addition to the selected CoCs, AGE recommends the routine measurement of alkalinity and major ions to support interpretation of hydrochemistry and geochemical trends. Turbidity should also be measured for interpretation of surface-water quality.

The CoCs identified by AGE as relevant to closure monitoring at Mount Elliott are summarised in Table 32, with justification for inclusion or exclusion provided within Appendix 16.

Table 32: Mount Elliott CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Chromium (ug/L)	Y
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Fluoride (mg/L)	N

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
Manganese (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y

6.5.2.4 Hydrogeology Closure Considerations

Based on the updated hydrogeology assessment for Mount Elliott the following measures are proposed for closure:

- Ongoing groundwater quality and level monitoring to confirm limited risks to the receiving environment.
- Investigation of additional groundwater bores to demonstrate groundwater levels and quality for closure.

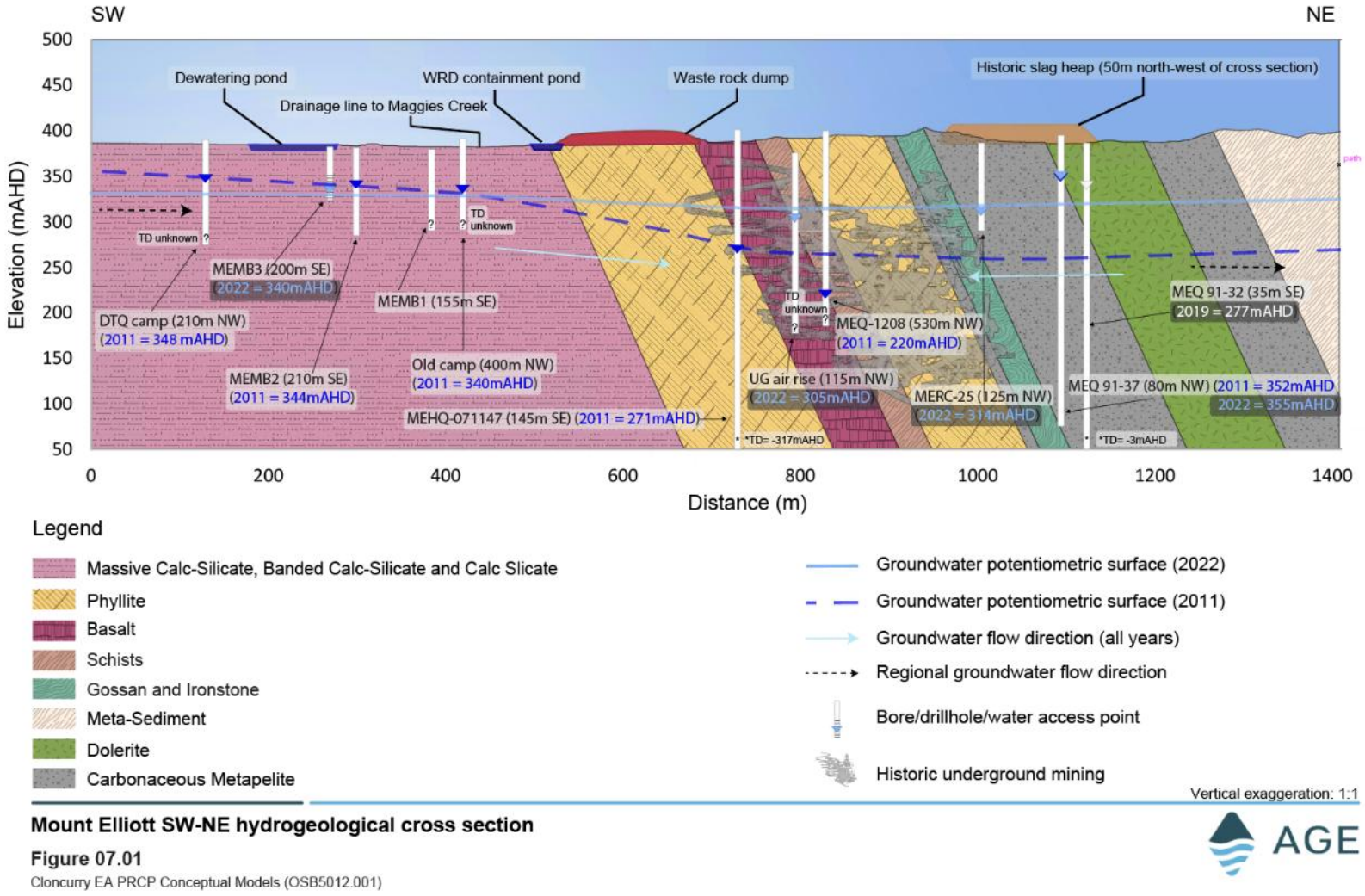


Figure 27: Mount Elliott Northeast-southwest Hydrological Cross Section (AGE, 2025a)

Table 33: Source-Pathway-Receptor Analysis for Mount Elliott

Source (and associated risk)	Receptor (and likelihood that receptor is present)	Potential Pathway	Evidence that pathway is present / absent	Impact
Drawdown from past dewatering **As groundwater was extracted during periods of mining, a cone of depression has developed and intermittently changed in depth and extent.**	**Mapped areas with potential for aquatic GDEs** **Very low**: within 9 km of site. **Moderate**: ~10 km north-northeast of site along Maggies Creek.	If groundwater discharge to the surface water features in question had been reduced as a consequence of drawdown, there could be impacts to the GDE.	**Not present:** The historical records of the cone of depression show that is it mainly contained within the MLs) and does not impact groundwater beneath Maggies Creek. There is no reduction of groundwater levels beneath the potential aquatic GDEs.	No past or future impact is predicted.
Underground workings **Acid and sulfate-enriched drainage generation within the underground workings is possible due to the exposure of sulfide-bearing ore to oxidation. In addition, the WRD drains to the catchment dam and portal.**	**Mapped areas with potential for aquatic GDEs** **Very low**: within 9 km of site. **Moderate**: ~10 km north-northeast of site along Maggies Creek.	If this water were to flow away from the voids to the north-northeast and reach the zone shallow enough to intersect Maggies Creek, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel 10 km without natural attenuation.	**Not present, unlikely to be present in the future**: Groundwater impacted by the voids is at least 30 m deeper than the regional water table and has been deeper in the past. There is no hydraulic gradient from the underground to the north-northeast, due to the cone of depression, which is likely to persist for decades. If the drawdown at the mine fully recovered over time (e.g., >100 years), the re-established hydraulic gradient is likely to be to the east-northeast, in line with surface drainage, but the distance (~10km) to the potential GDEs is likely to great to allow transport without considerable natural attenuation.	No past and highly unlikely future impact is predicted.
WRD and associated containment pond **The WRD is acid generating and has previously developed seepage, which was collected in the pond after 2011. As mentioned above, most of the WRD currently drains to the portal, limiting seepage directly below the WRD. Infiltration of seepage below the WRD is possible, whereby solutes may have reached the water table.**	**Mapped areas with potential for aquatic GDEs** **Very low**: within 9 km of site. **Moderate**: ~10 km north-northeast of site along Maggies Creek.	If seepage were to flow towards the north northeast and reach the zone shallow enough to intersect Maggies Creek, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel 10 km without natural attenuation.	**Not present:** The historical records of the hydraulic gradients beneath the WRD show that they are consistently towards the underground mine. If the drawdown at the mine fully recovered over time (e.g. >100 years), the re-established hydraulic gradient is likely to be to the east-northeast, in line with surface drainage, but the distance (~10km) to the potential GDEs is likely to great to allow transport without considerable natural attenuation. At closure, the WRD will either be removed or capped with an engineered cover, reducing the long-term potential for seepage generation.	No past and highly unlikely future impact is predicted.

Dewatering pond **The dewatering pond held saline and sulfate-enriched groundwater extracted from the underground and dewatering bores for at least a decade (1993 to 2003). Some portion of the dewater that did not evaporate may have infiltrated the regolith beneath the pond and could reach the water table over time. The pond no longer holds water, but accumulation of salts due to water evaporation is likely to have occurred, and ongoing infiltration of rainwater in the pond will likely be saline.**	**Mapped areas with potential for aquatic GDEs** **Very low**: within 9 km of site. **Moderate**: ~10 km north-northeast of site along Maggies Creek.	If saline water originating from dewatering pond seepage were to flow towards the north-northeast and reach the zone shallow enough to intersect Maggies Creek, it could impact the GDEs.	**Not present:** The historical records of the hydraulic gradients beneath the dewatering pond show that they are consistently towards the underground mine. If the drawdown at the mine fully recovered over time (e.g., >100 years), the re-established hydraulic gradient is likely to be to the east, in line with surface drainage; however, the pond is unlikely to be used to manage water in the future; therefore, the potential source has been removed.	No past or future impact is predicted.
Former ROM pad **From 1993 to 2003, the ROM pad was active, and infiltration of high-sulfate and saline water likely occurred. In 2012 the PAF material of the ROM was removed; therefore, subsequent infiltration is likely unimpacted.**	**Mapped areas with potential for aquatic GDEs** **Very low**: within 9 km of site. **Moderate**: ~10 km north-northeast of site along Maggies Creek.	If sulfate-enriched water beneath the ROM were to flow towards the north-northeast and reach the zone shallow enough to intersect Maggies Creek, it could impact the GDEs.	**Not present:** The historical records of groundwater level beneath the ROM show that they are consistently low in that area, and it forms part of the centre of the cone of depression. Over this period of recovery, ROM drainage would have become benign. This is due to the majority of remnant mineralised material on the ROM having already been removed with further decontamination to occur as part of final site clean-up. As such the source is likely to be removed before a pathway becomes potentially present.	No past or future impact is predicted.
Drawdown from past dewatering **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Low:** regional groundwater is 30 to 50 mBGL and all recorded groundwater levels are >30 mBGL.	If groundwater levels beneath the terrestrial GDEs had been lowered, vegetation access to water could have been restricted. If the terrestrial GDEs are reliant only on moisture in the unsaturated zone, drawdown of the water table is not a pathway that can affect the availability of that water.	**Drawdown present but is not a pathway:** Records show that moderate rates of groundwater level decline are present in areas beneath the terrestrial GDE zones (e.g., MEMB3). It is not expected that this decline could act as a pathway for impact, as the terrestrial GDEs are likely to be reliant on moisture above the water table. **Not present:** There is no pathway for mining activities to change the amount of soil moisture or vadose zone water that is	No past or future impact is predicted as a result of drawdown.

			available to the terrestrial GDEs. This is dictated by the amount of rainfall, infiltration, and evaporation.	
Underground workings **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are no likely terrestrial GDEs that directly overlie the underground workings.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of the underground voids could be connected via a pathway.	**Not present and unlikely in future:** In the zone of the underground workings, the groundwater levels are very deep (e.g., MERC-25 is 74 mBGL and UG air rise 1 is 71 mBGL in 2022) and the drawdown will persist for decades based on past observations. Even after recovery (>100 years), the regional water table is >30 mBGL and remnant solutes in the water are unlikely to be accessible to vegetation. **Not present:** There are no likely terrestrial GDEs that directly overlie the underground workings, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past or future impact is predicted.
WRD and associated containment pond **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are likely terrestrial GDEs that are directly adjacent to the WRD and containment pond.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the WRD and the containment pond could form a viable pathway for impact.	**Not present and unlikely in future:** The historical records of the hydraulic gradients beneath the WRD show that they are consistently towards the underground mine. As such, once impacted seepage below the WRD reached the water table, it would be drawn toward the voids. The water table is not shallow enough to be easily accessible to vegetation. At closure, the WRD will either be removed or capped with an engineered cover, reducing the long-term potential for seepage generation. **Possible:**	Potential impact from solutes transported below the water table is unlikely now, or in the future. Current and / or future impact from diffusion or migration of solutes in the unsaturated zone is likely (quantification of impact would require collection of further data) Once the WRD is covered this

			Prior to reaching the water table, impacted seepage below the WRD or the containment pond will likely follow a topographic gradient as it infiltrates. This means that diffusion or slow migration of unsaturated seepage toward the regolith beneath the drainage line to the south is possible. This would be accessible to vegetation, as it could be present in the upper 20 m of the subsurface.	potential impact is significantly reduced.
Dewatering pond **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are likely terrestrial GDEs that are directly adjacent to the dewatering pond.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present in all directions, so flow direction is not highly relevant. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the dewatering pond could form a viable pathway for impact.	**Not present and unlikely in future** The historical records of the hydraulic gradients beneath the dewatering pond show that they are consistently towards the underground mine. As such, once impacted seepage below the dewatering pond reached the water table, it would be drawn toward the voids. The water table is not shallow enough to be easily accessible to vegetation. The dewatering pond is now dry, and infiltration will eventually become benign. **Possible in the past** Prior to reaching the water table, impacted seepage below the dewatering pond will likely follow a topographic gradient as it infiltrates. This means that diffusion or slow migration of unsaturated seepage toward the regolith beneath the drainage line to the north or east is possible. This would be accessible to vegetation, as it could be present in the upper 20 m of the subsurface. The likelihood of this pathway is reduced now that the pond is dry and unlikely to be used in the future.	Potential impact from solutes transported below the water table is unlikely in the past and negligible in the future due to non-use. Future impact from diffusion or migration of solutes in the unsaturated zone is negligible due to non-use.

Former ROM pad **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are likely terrestrial GDEs that are directly adjacent to the former ROM pad. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a (Figure 11.2).	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present in all directions, so flow direction is not highly relevant. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the former ROM pad could form a viable pathway for impact.	**Not present and unlikely in future** The historical records of groundwater level beneath the ROM show that they are consistently low in that area, and it forms part of the centre of the cone of depression. If the drawdown at the mine fully recovered over time (e.g., >100 years), the re-established groundwater level beneath the ROM is inconsequential, as ROM drainage would have become benign. **Possible in the past** Prior to reaching the water table, impacted seepage below the former ROM pad would likely have followed a topographic gradient as it infiltrated. This means that diffusion or slow migration of unsaturated seepage toward the regolith beneath the drainage line to the southeast is possible. This would be accessible to vegetation, as it could be present in the upper 20 m of the subsurface. Seepage below the ROM could have been generated up to 2012, when it was rehabilitated.	Potential impact from solutes transported below the water table is unlikely now, or in the future. Current and / or past impact from diffusion or migration of solutes in the unsaturated zone is likely (quantification of impact would require collection of further data). Future impact from diffusion or migration of solutes in the unsaturated zone is unlikely.
Drawdown from past dewatering **Risks as described above.**	**Groundwater bores used for livestock watering.** There are no livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater levels at the locations of potential livestock bores had been lowered, groundwater user access to water could have been restricted.	**Not present:** The historical records of the cone of depression show that is it mainly contained within the MLs and does not impact the known bores (>10 km from site). The future potential for viable livestock bores to be present closer to site is severely limited due to the pre-existing groundwater quality (e.g., reference bore MERB1 has sulfate concentration >5,000 mg/L).	No past or future impact is predicted.

Underground workings; WRD and associated containment pond; dewatering pond; and former ROM pad **Risks as described above.**	**Groundwater bores used for livestock watering** There are no livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater below or near these infrastructure locations was impacted by enriched solute loads, and it flowed towards existing or theoretical future bores in any direction, the water quality at those bores could be impacted.	**Not present and unlikely in future:** The theoretical future bores, if they ever exist, are unlikely to be located close enough to be impacted by the very slow groundwater velocity.	No past or future impact is predicted.
Drawdown from past dewatering **Risks as described above.**	**Water used for industrial purposes (mining)** Groundwater was used at the mine for limited applications (e.g., dust suppression).	If groundwater levels at the locations of potential industrial bores had been lowered, groundwater user access to water could have been restricted.	**Drawdown present** Records show that moderate to rapid rates of groundwater level decline are present in areas where groundwater has been extracted for industrial purposes. The groundwater extraction for use is itself the pathway for the impact.	Past impact has occurred and is quantified by the depth of the cone of depression around the mine over time (Section 6). Future impact is likely if dewatering or groundwater production is resumed for any reason.
Underground workings; WRD and associated containment pond; dewatering pond; and former ROM pad **Risks as described above.**	**Water used for industrial purposes (mining)** Water quality of the groundwater is saline, and therefore limits the beneficial use in for industrial purposes.	If groundwater quality at the locations of potential industrial bores had been altered to exceed certain water quality objectives (WQOs), impacts may be experienced by the groundwater user.	**Not present:** Water quality changes that may have occurred are unlikely to have changed the utility of water used for industrial purposes (i.e., solute concentrations for regional groundwater are already greater than most WQOs).	Past changes to groundwater quality beneath infrastructure is likely, but this was not an impact to industrial users due to the original groundwater composition. Future impacts are unlikely.

6.5.3 Flooding

The potential impacts of flooding on the Mount Elliott final closure design were initially assessed by WRM (WRM, 2023; WRM, 2025) (Appendix 2 and Appendix 19).

WRM developed hydrological and hydraulic models for drainage features nearby the Mount Elliott mine features. The models were developed for drainage features classified as second order watercourses or greater in the Queensland Globe database, or watercourses with catchments draining to mining infrastructure.

The WRM hydrological model was developed using a unified river basin simulator (URBS) hydrological modelling package. The URBS model determined the design discharges for the 1% (1 in 100), 0.1% (1 in 1000) AEP, and Probable Maximum Flood (PMF) design flood events. The flow behaviour of the design discharges was then determined using a two-dimensional TUFLOW hydrodynamic model.

The modelled flood depths for the Mount Elliott study area shown in Figure 28 to Figure 30, with the modelled flood surface water velocities shown in Figure 31 to Figure 33.

The model results demonstrate:

- The rehabilitated portal would not be within the 0.1% AEP flood extent. However, would be affected by Probable Maximum Flood.
- The WRE catch dam would receive runoff from the eastern gullies for all three events and over the dam wall for the PMF.
- Flood velocities over the rehabilitated portal and WRE area are generally low, with predicted peak velocities typically less than about 0.5 m/s for all three events. Flow over these areas is primarily sheet flow, rather than concentrated channel flow.
- Velocities along the perimeter of the RE and the gullies draining the eastern side of the WRE are slightly elevated, but remain low (0.5 to 1.0 m/s).
- The WRE catch dam receives inflows from the eastern gullies with low to moderate approach velocities (mostly <1.0 m/s) for the 1% AEP event
- The highest velocities in the model domain (up to approximately 1.5 to 2.0 m/s) occur within the main drainage line downstream of the WRE catch dam, where flows are confined within the existing channel and the floodplain narrows. No key closure infrastructure is located within its reach, and these higher velocities are largely limited to the existing watercourse.

During final rehabilitation, the WRE catch dam will be maintained until water quality is compliant with closure requirements.



Figure 28: Mount Elliott flood depths and extents, 1% AEP (WRM, 2023)

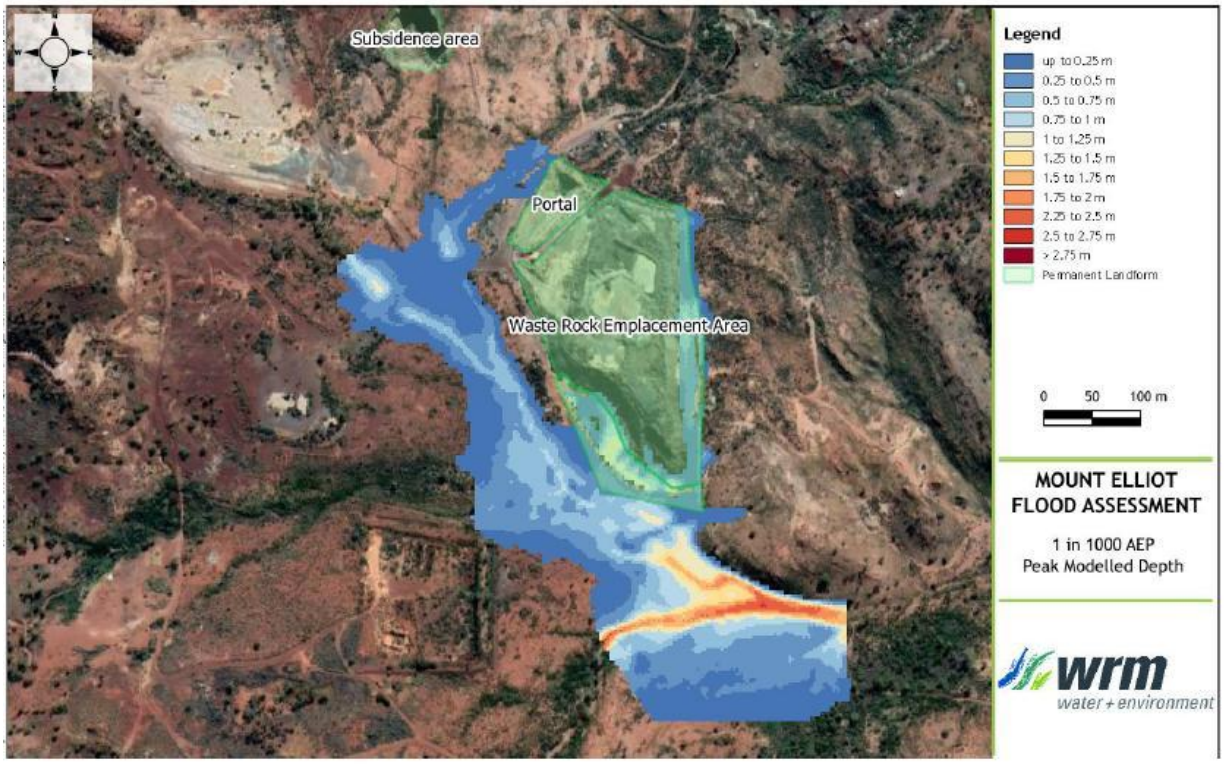


Figure 29: Mount Elliott flood depths and extents, 0.1% AEP (WRM, 2023)

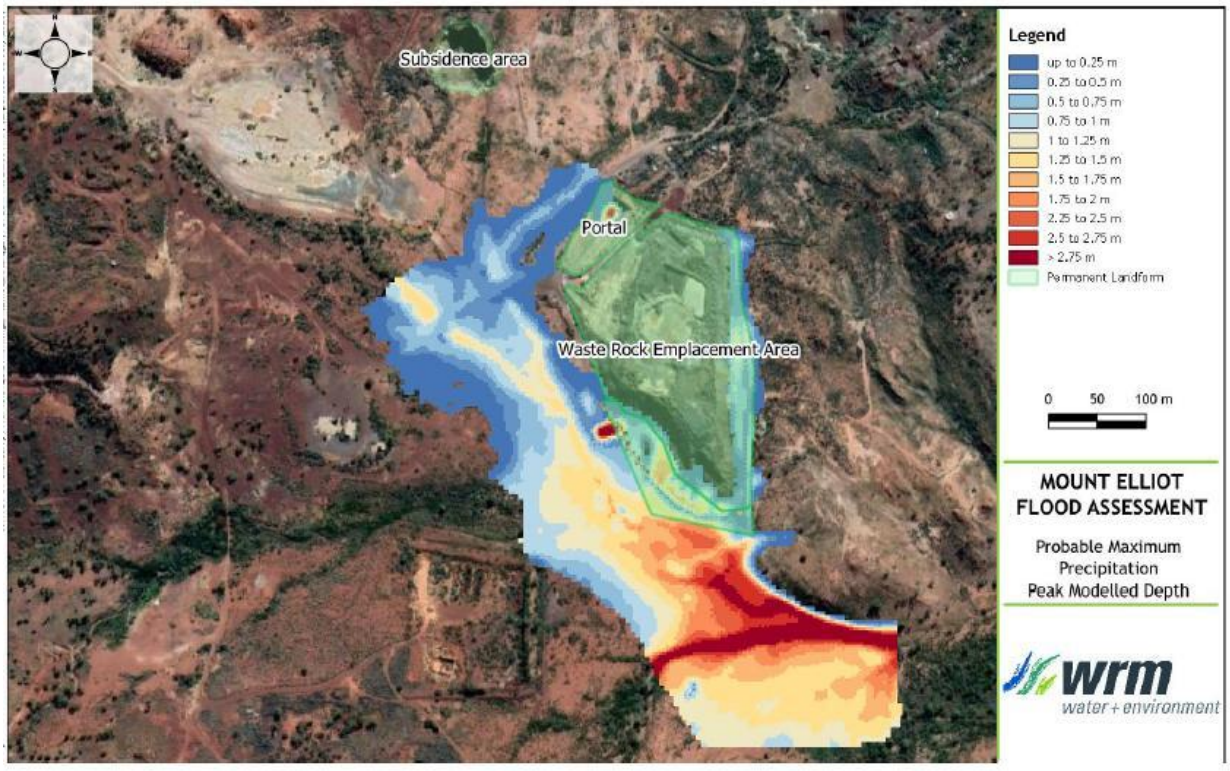


Figure 30: Mount Elliott flood depths and extents, PMF (WRM, 2023)

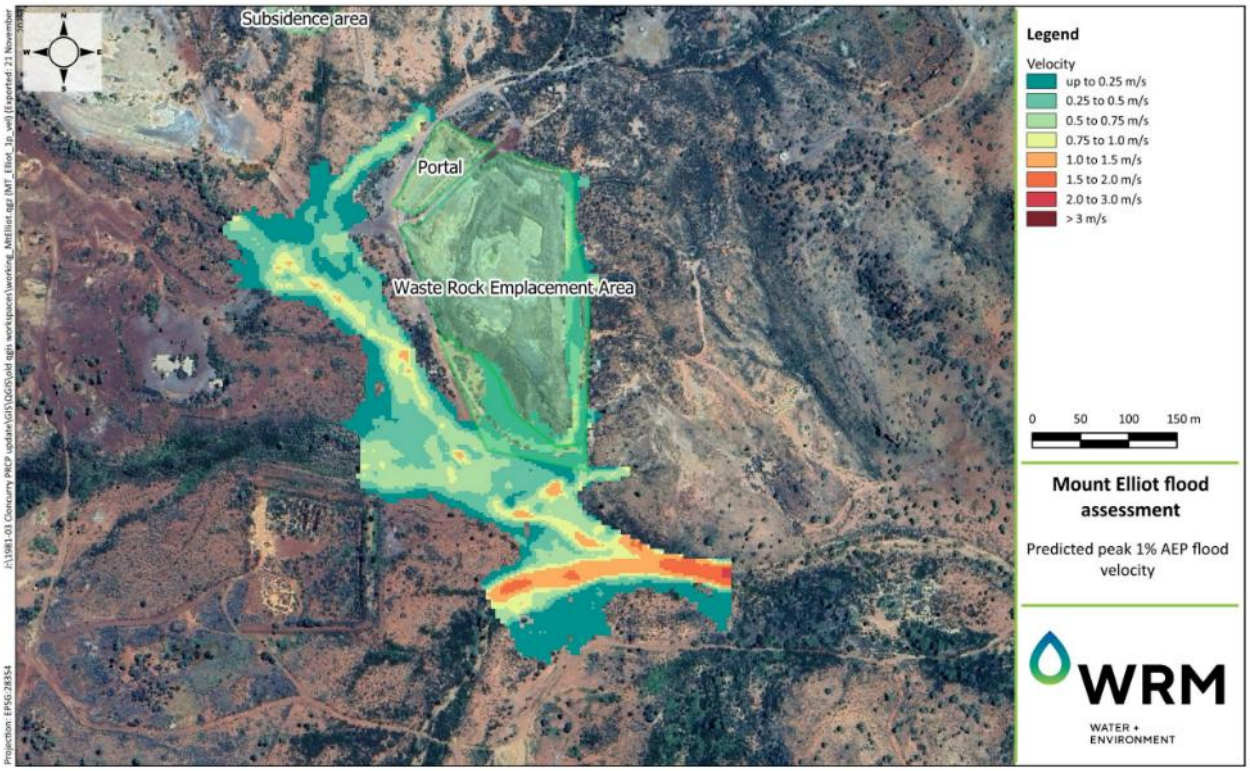


Figure 31: Mount Elliott flood velocity extent, 1% AEP (WRM, 2025)

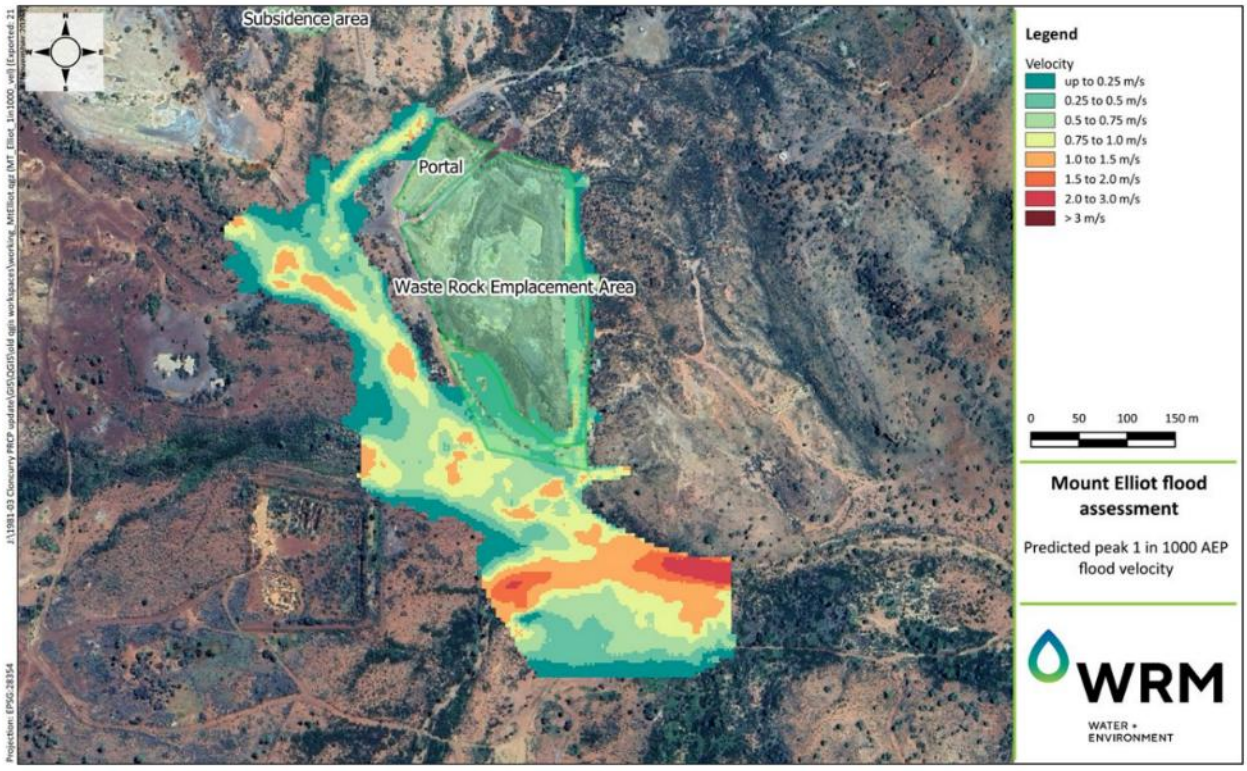


Figure 32: Mount Elliott flood velocity extents, 0.1% AEP (WRM, 2025)

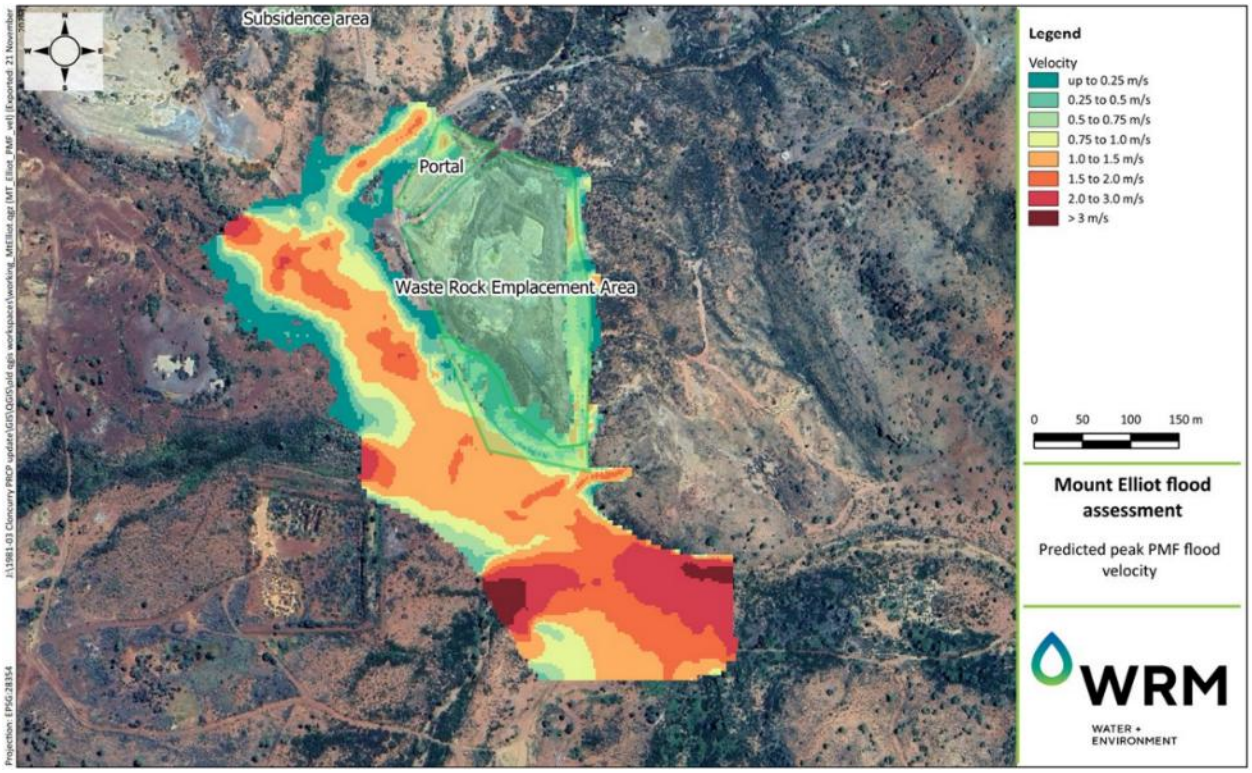


Figure 33: Mount Elliott flood velocity extents, PMF (WRM, 2025)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Mount Elliott specified in Table 34. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;
(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 34: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Mount Elliott	Mount Elliott WRD	10/12/2036	10/12/2032

6.5.4 Soil and Capping Material Assessment

An inventory of suitable soils and geological materials is required to implement the various rehabilitation strategies proposed for the Mount Elliott site. Materials are required to backfill surface openings, backfill the subsidence area and cover the WRE.

The material types and their geotechnical properties required at the Mount Elliott site are described in Table 35.

Table 35: Mount Elliott Rehabilitation Materials Specifications

Material Type	Material Description	Material Specification
Reduce Permeability Layer (RPL)	Material when compacted forms a low hydraulic conductivity "barrier" layer	- Gravel content less than 50%; - Fines content (material particle size <0.075mm) greater than 30%; and - Clay content (material particle size <0.002mm) greater than or equal to 10%.
Rock Mulch/ Growth Medium	Material suitable for plant growth.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Well graded material - Fines content (material particle size <0.075mm) of approximately 30%; - Sand fraction (material particle size >0.075mm and <4.75mm) of approximately 30%; - Gravel (>4.75mm) of approximately 50%; and - Non-plastic to low plasticity fines.
Rock Armour	Provide a very high level of resistance to erosion along high slope and/or high velocity drainage.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Predominantly coarse rock (material particle size >75mm) of greater than 70%. - Minimal fines content.
General Fill	Cut and fill requirements for landform shaping	- Fines content (material particle size <0.075mm) less than 15%; - Sand content (material particle size <4.75mm) of 25-100%; and - Maximum particle size 150mm. - The plasticity index should not be greater than 12.

ATCW (2023b) digitally redesigned the landforms associated with Mount Elliott in accordance with the design principles described in subsequent sections. Based on the landform reprofiling and cover system requirements, Chinova have also estimated the quantities of materials required to rehabilitate the Mount Elliott project area (Table 36).

Table 36: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Footprint (ha)	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
Mount Elliott WRE	3.29	39,480	19,740	82,000 (NAF Rind)	TBA Volume to be determined at detailed design.
Mount Elliott Portal	0.4	-	-	10,000	-
Mount Elliott Underground Subsidence Area	0.52	-	-	60,000	-

6.5.4.1 Rehabilitation Material Characterisation

Development of the Mount Elliott project occurred at a time when limited rehabilitation knowledge and regulation existed. No rehabilitation materials were retained, and no soil assessment activities occurred during site establishment or over the course of the operation.

A site-wide material characterisation investigation has been undertaken to identify the potential location and quality of available rehabilitation materials (SGME, 2025) (Appendix 21). The investigation identified two potential borrow pit locations as a source of rehabilitation material at Mount Elliott; Mount Elliott Borrow Pit 1 (MEBP1) and Mount Elliott Borrow Pit 2 (MEBP2) (Figure 34). Soil samples were taken from both MEBP1 and MEBP2 for analysis.

The investigation concluded that material from both MEBP1 and MEBP2 were unsuitable for rehabilitation. The geochemical and physical properties of MEMP1 and MEMP2 discussed in detail in Appendix 21 and are summarised in Table 37.

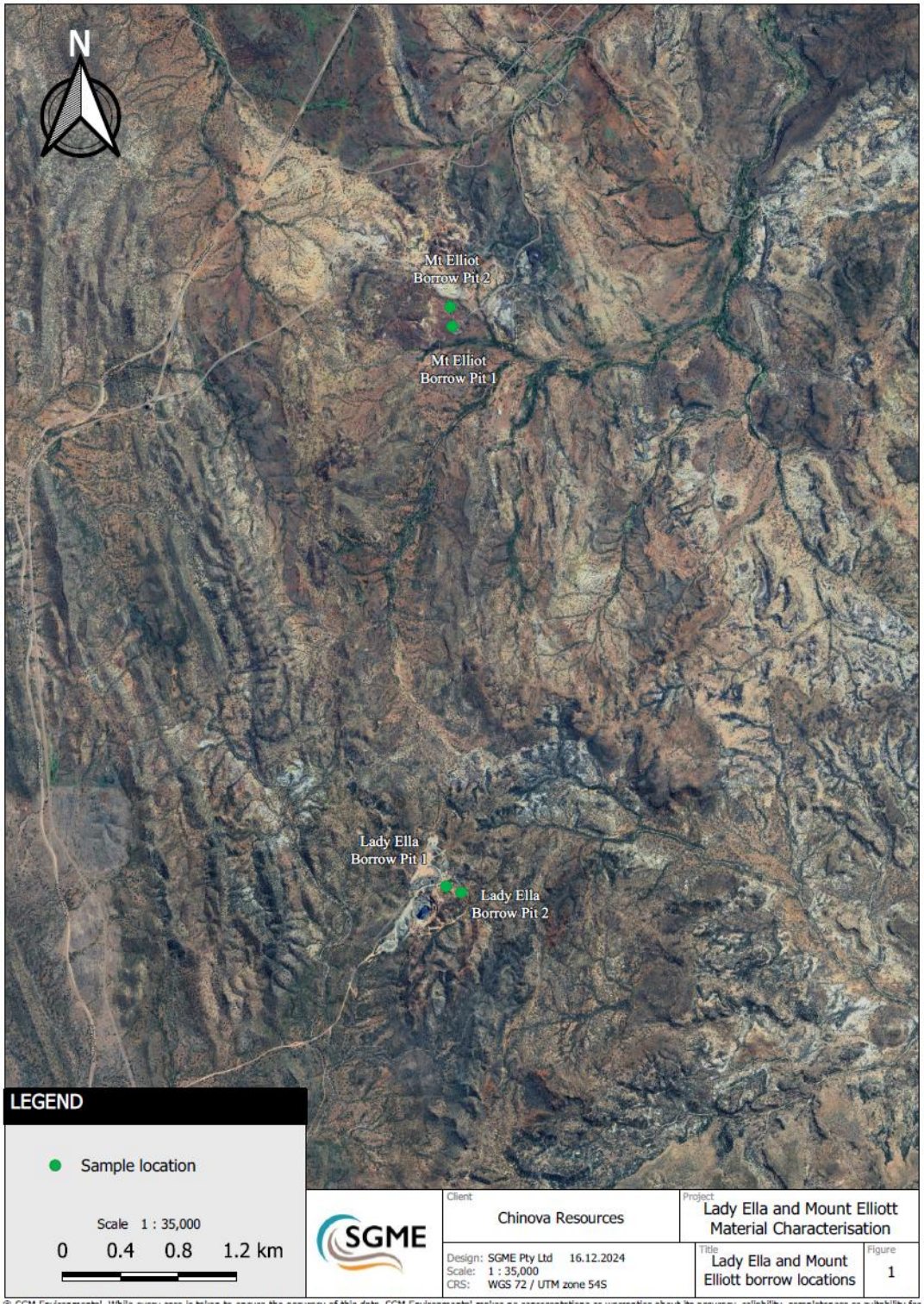


Figure 34: Mount Elliott – Borrow Pit Locations

Table 37. Mount Elliott Borrow Pit Material Characterisation

Location	Key Characteristics	Most Suitable Cover Use	Recommended Treatment / Management
MEBP1	• Slightly acidic (pH 6.3) – within suitable range • Low fertility – deficient organic matter (1.3%) and phosphorus (2 mg/kg) • Low CEC (3.4 meq/100 g) – poor nutrient retention • Moderate sodicity (Na 1.1 meq/100 g; ESP 7%) but non-dispersive • Very low permeability (1.6×10^{-10} m/s) • Potentially Acid Forming – Low Capacity (PAF-LC) • Slightly plastic (13%) with shrink–swell behaviour	• Unsuitable for use for any cover use due to PAF risk and poor structure.	• Consider lime treatment only if reuse as topsoil is unavoidable and add organic matter and phosphorus to improve fertility.
MEBP2	• Strongly acidic (pH 4.6) – outside optimal range • Very low fertility – low organic matter (1.0%) and P (5 mg/kg) • Adequate CEC (16 meq/100 g) but deficient in Ca, Mg, and K • Elevated Cu (150 mg/kg) – toxic to plants and livestock • Low permeability (1.6×10^{-10} m/s) • Slight sodic tendencies but non-dispersive • Potentially Acid Forming – Low Capacity (PAF-LC)	• Unsuitable for any cover use (topsoil, base, or RPL) due to acidity, metal toxicity, and PAF risk.	• Avoid use and disturbance where possible • If exposed, encapsulate beneath non-PAF or inert material • Manage runoff to prevent acid and metal leachate • Consider lime treatment only if reuse unavoidable, but not recommended for cover systems

6.5.4.2 Material Balance

A site-wide material balance assessment (refer Table 36) was prepared by Chinova to identify potential sources of material across the Cloncurry Project suitable for rehabilitation works. The material balance was developed in accordance with SGME's material characterisation investigations (2025, Appendix 21). SGME's investigations confirmed that the materials available from the sources detailed in Table 36 are generally suitable for use in rehabilitation, subject to the management measures and treatments identified in the respective assessments.

The results of SGME's material characterisation, together with the estimated volumes of material required for each rehabilitation area, are presented within the corresponding Soil and Capping Material Assessment sections relevant to each mining area. These findings inform the allocation of materials to specific rehabilitation components (e.g. growth media, general fill, reduced permeability layer and rock armouring). A consolidated summary of the total rehabilitation material requirements for closure is provided in Table 39. Based on the current material balance, there is sufficient suitable material available onsite to undertake the proposed rehabilitation works.

The volume of material potentially available from the Mount Dore North and South pits has not been included in this assessment. The material characterisation investigation undertaken by SGME (2025b) for these areas was limited to surface sampling and is not considered representative of the material profile that would be encountered during full pit development. Should Chinova proceed with the Mount Dore Project, additional material characterisation will be undertaken during operations to confirm the quality, geochemical classification and geotechnical suitability of materials for rehabilitation purposes. The site-wide material balance will be updated accordingly to reflect any additional confirmed material sources. It is noted that while the available material from the Mount Dore North and South pits have not been included within the material balance, the required rehabilitation material for the Mount Dore heap leach (including surrounds) and waste rock emplacements have been included within the estimated quantities of material required for rehabilitation works (Table 38).

It is additionally noted that where material stockpiles are inaccessible to heavy vehicles, these stockpiles have not been included within this summary. Accordingly, material accounted for within Table 38 are readily available for use within rehabilitation works.

Table 38: Estimated Available Material for Proposed Construction and Rehabilitation Works

Location	Available Volume (m^3)	Material Type
Merlin WRE	54,245	General fill
222 WRE North	2,733,083	RPL General fill
222 WRE South	2,144,037	Liner or basal cover material
244 Pit Stockpile N	26,904	General fill
244 WRE East	895,181	Rock mulch General fill

254 East Clay Stockpile	222,741	Growth media
254 North Stockpile	156,071	Growth media
254 WRD	5,062,153	Growth media

Table 39: Cloncurry Project Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Footprint (ha)	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
Mount Elliott WRE	3.29	39,480	19,740	82,000 (NAF Rind)	TBA
Mount Elliott Portal	0.4	8,000	-	10,000	-
Mount Elliott Underground Subsidence Area	0.52	10,400	-	60,000	-
Lady Ella WRE	5.41	64,800	32,400	145,000 m3 (NAF Rind)	-
Merlin WRE/ROM	7.48	89,814	11,227	-	TBA
Mount Dore WRE	41.4	496,800	62,100	-	TBA
Mount Dore Heap Leach (incl. heap leach surrounds)	41.5	498,000	62,250	-	TBA
244 WRE E	10.59	127,095	15,886	-	TBA
254 WRE	53.96	647,462	80,933	-	TBA
222 N WRE	22.89	274,694	34,337	-	TBA
222 WRE and 222 Copper Oxide	16.91	202,908	25,364	-	TBA
Eastern Tailings Dam	42.9	514,900	257,450	-	TBA

Southern Tailings Dam	30.2	362,817	45,352	-	TBA
244 Pit	5.8	69,524	8,961	-	TBA
254 ROM/Selwyn Heap Leach	9.38	112,576	14,072	-	TBA
257 WRD W	3.43	41,130	5,141	-	TBA
276 Underground	0.37	-	-	10,000	-
Victoria WRE/Ore Stockpile/South Pit	8.47	101,714	84,762	-	TBA

TBA – Estimated volumes of rock armour for closure to be estimated during detailed design.

6.5.5 Waste characterisation

The mining of copper and gold ore at Mount Elliott produced quantities of sub-economical waste rock. Most waste rock produced was used to backfill underground voids. During operations, when void space was not available, some waste rock was transported to the surface to be stockpiled on the Mount Elliott WRE. Since the establishment of the emplacement the stockpile has also been utilised to dispose of mineralised site clean-up waste and soils.

The sub-economical determination for Mount Elliott waste rock was made at a time when commodity prices were vastly different to the current situation. The recent surge in global metal prices has substantially reduced the ore grade cut-off for copper, gold and other rare earth metals. The Mount Elliott WRE contains sufficient copper grade to make it an economic ore source should a processing facility be established nearby in the future.

No geochemical characterisation of Mount Elliott waste rock was completed during operations. An in-situ geochemical characterisation of the Mount Elliott WRE was undertaken by RGS in 2011 (Appendix 4). Two sonic cores were drilled (WDQ016 and WDQ017) to a depth of 13m and 17m within the Mount Elliott WRE (Figure 36). Representative samples were collected every meter and tested for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water-soluble metals. RGS (2011) applied the geochemical material classification criteria presented in Table 40 to determine geochemical risk.

Table 40: Geochemical Classification Criteria – Mount Elliott Waste Rock

Geochemical Classification	Total Sulfur	Final NAG pH	NAPP (kg H_2SO_4/t)	ANC/MPA Ration
Non-Acid Forming (Barren)	≤ 0.1	-	-	-
Non-Acid Forming	> 0.1	≥ 4.5	≤ 0	> 2

Potentially Acid Forming	> 0.1	< 4.5	> 0	< 2
Uncertain	> 0.1	< 4.5	< 0	< 2
	> 0.1	≥ 4.5	> 0	< 2

The RGS (2011) assessment reported that Mount Elliott waste rock had an increased risk of acid generation, low factor of safety (ANC:MPA ratio < 2) and was characterised as a mixture of NAF and PAF (Figure 32). The waste rock material also contained elevated levels of salinity and metals including copper, cobalt, and manganese.

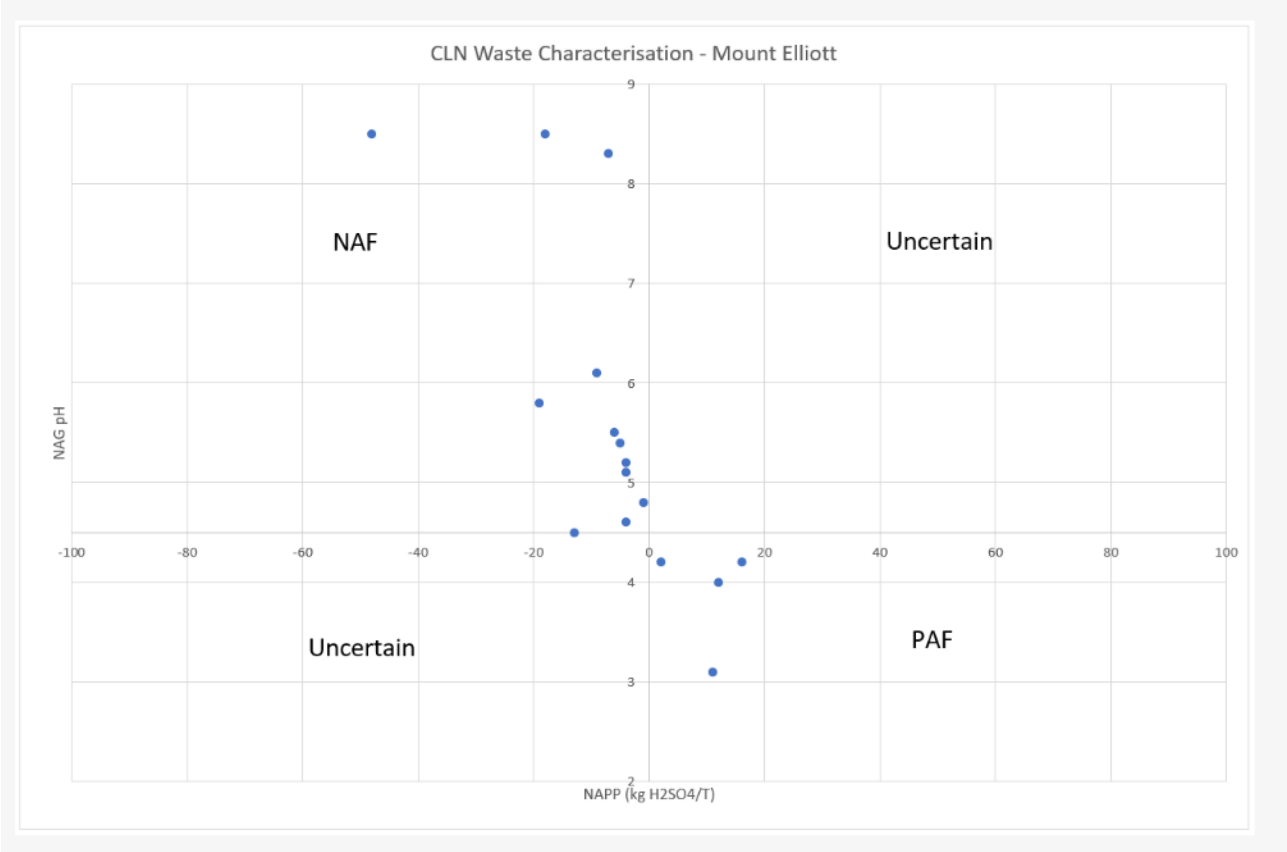


Figure 35: Mount Elliott WRE Waste Characterisation

The Mount Elliott ROM was used to stockpile run-of-mine copper and gold ore during Mount Elliott operations. Residual ore stockpiles and the ROM surface were excavated and disposed to the Mount Elliott WRE in 2011. Further sampling of the ROM surface and sub-soil was undertaken in 2023 the results indicate that the ROM area is non-acid forming (NAF) however contains elevated salinity (sulphate) and total metals (copper and cobalt) at surface.



Figure 36: Mount Elliott Waste Rock Sampling Locations

6.5.6 Geotechnical Study

Quantum Geotechnical (2023 and 2025) have undertaken an updated assessment and numerical modelling of the long-term stability of the Mount Elliott underground voids. Full details of the assessment are provided in Appendix 8.

6.5.6.1 Underground Mine Development

Modern mining at Mount Elliott commenced in 1993 and continued until it was placed in care and maintenance in 2003. Mining involved:

- three development sublevels in the Mount Elliott Upper Zone, 1235m, 1265m and 1285m
- six development sublevels in the Lower and Corbould Zones, 1060m, 1130m, 1160m, 1190m, 1232m, and 1252m and
- development within the Footwall Zone from 1105m, 1130m and 1160m sublevels (Figure 37).

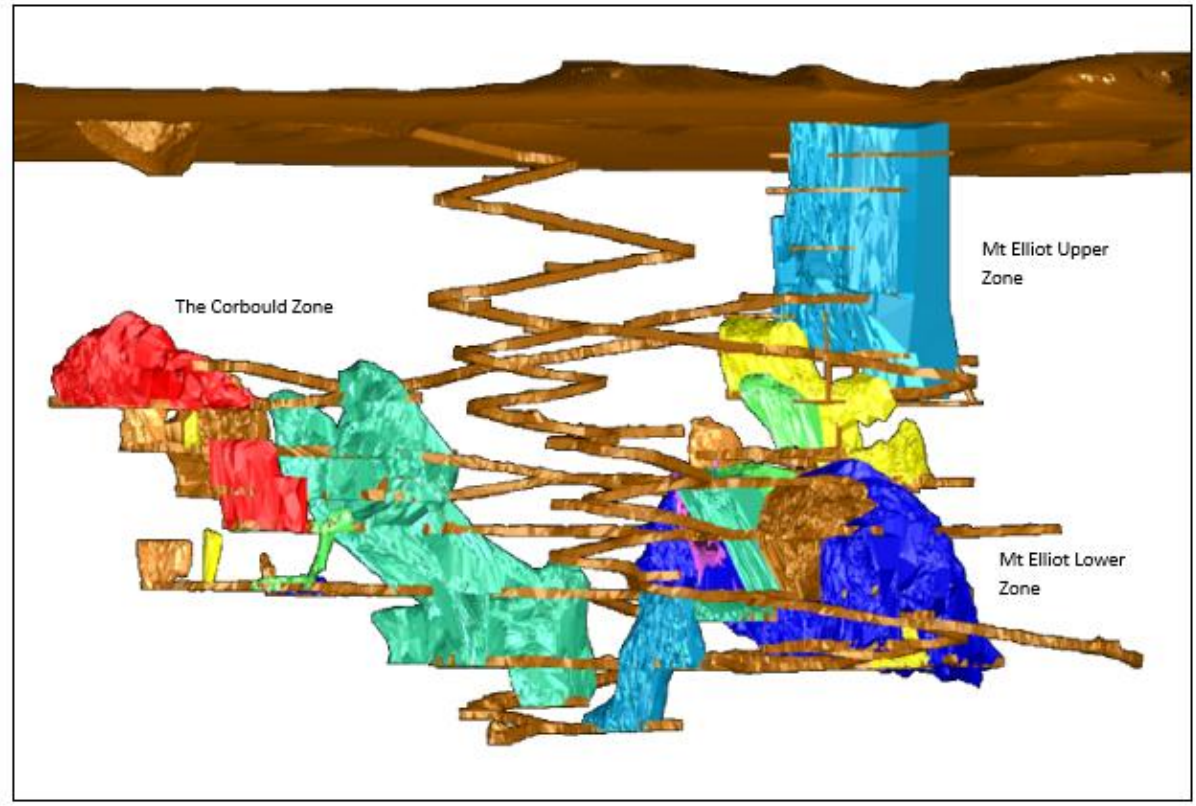


Figure 37: Mount Elliott Underground Workings (looking west)

After re-commissioning in 1994, the Mount Elliott mine produced 5.06 million tonnes of Cu/Au ore. Large stope voids were created during this period, with particular attention paid to designing stable shapes with smooth arched/domed profile to enhance self-supporting backs. However, two breakthroughs to surface occurred under Arimco's ownership, both of which were predicted (Quantum, 2023). The two breakthroughs were:

- In January 1995, the U1 stope crown pillar failed through to surface following a production firing that was later believed to contain undocumented mine openings that subsequently breached the base of oxidation, eventually unravelling to surface. The oxidised zone was an area of known weakness.

- In 2003, the largest Corbould Zone Stope, the 1025/1232FW self-mined and broke through to surface. As with the U1 stope it is believed the 1025/1232FW stope broke through the base of oxidation and slowly unravelled leading to breakthrough to surface.

In addition, there are still large, unfilled stopes at Mount Elliott and a portion of the decline has since collapsed making the former workings inaccessible.

6.5.6.2 Surface Subsidence Risk and Control

The key geotechnical risks associated with the underground workings at Mount Elliott, which includes the following:

- Potential decline-related subsidence within the weathered metasediments near surface.
  - Numerical modelling indicates a zone of potential subsidence extending approximately 70 m laterally from the portal entrance (Figure 38). The first ~160 m of the decline is supported by steel sets, mesh and rock bolts, which are expected to remain functional for another 50 to 100 years. Once these supports corrode, failure within the oxide zone could migrate upward. Based on the analogue Corbould stope collapse, any future decline is expected to produce a surface subsidence footprint of approximately 6 m diameter and up to 4 m deep.
- Long-term stope hanging-wall behaviour within the Corbould Zone
  - Previous modelling identified localised hanging-wall relaxation but noted that the stope crowns occur within competent skarn rock mass, which has a minimum cover of ~100–190 m, depending on stope location. Updated analysis confirmed that although the upper Corbould stope (1025/1232FW) once produced a surface sinkhole (2003 event), remaining Corbould and Mount Elliott stopes have sufficient competent skarn cover to prevent future propagation of failure to surface. Nonetheless, due to historical failure and the presence of intersecting structures, a subsidence exclusion zone remains necessary.
- Potential surface instability around the fresh air vent (FAR).
  - Modelling indicates ~3 m of ‘failed material’ around the FAR collar, associated with highly weathered near-surface sediments. This material would have been excavated during construction. The remainder of the rise is stable, and anecdotal evidence suggests the rise is concrete-lined, which would significantly extend its structural life and reduce collapse risk. Visual monitoring from outside the fenced exclusion area is recommended.

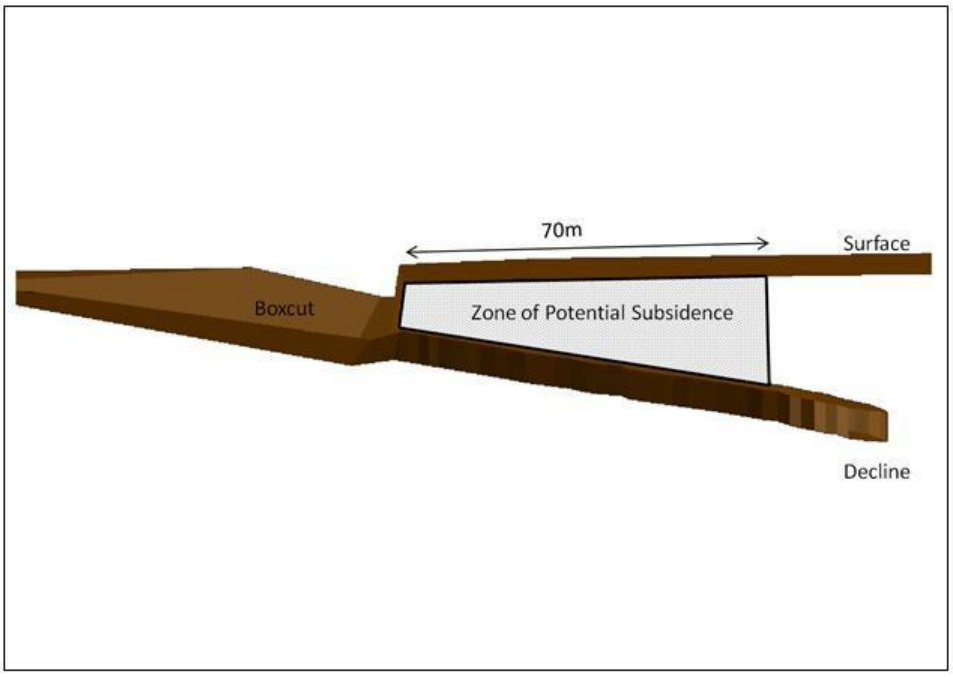


Figure 38: Mount Elliott decline zone of predicted subsidence (Quantum, 2023)

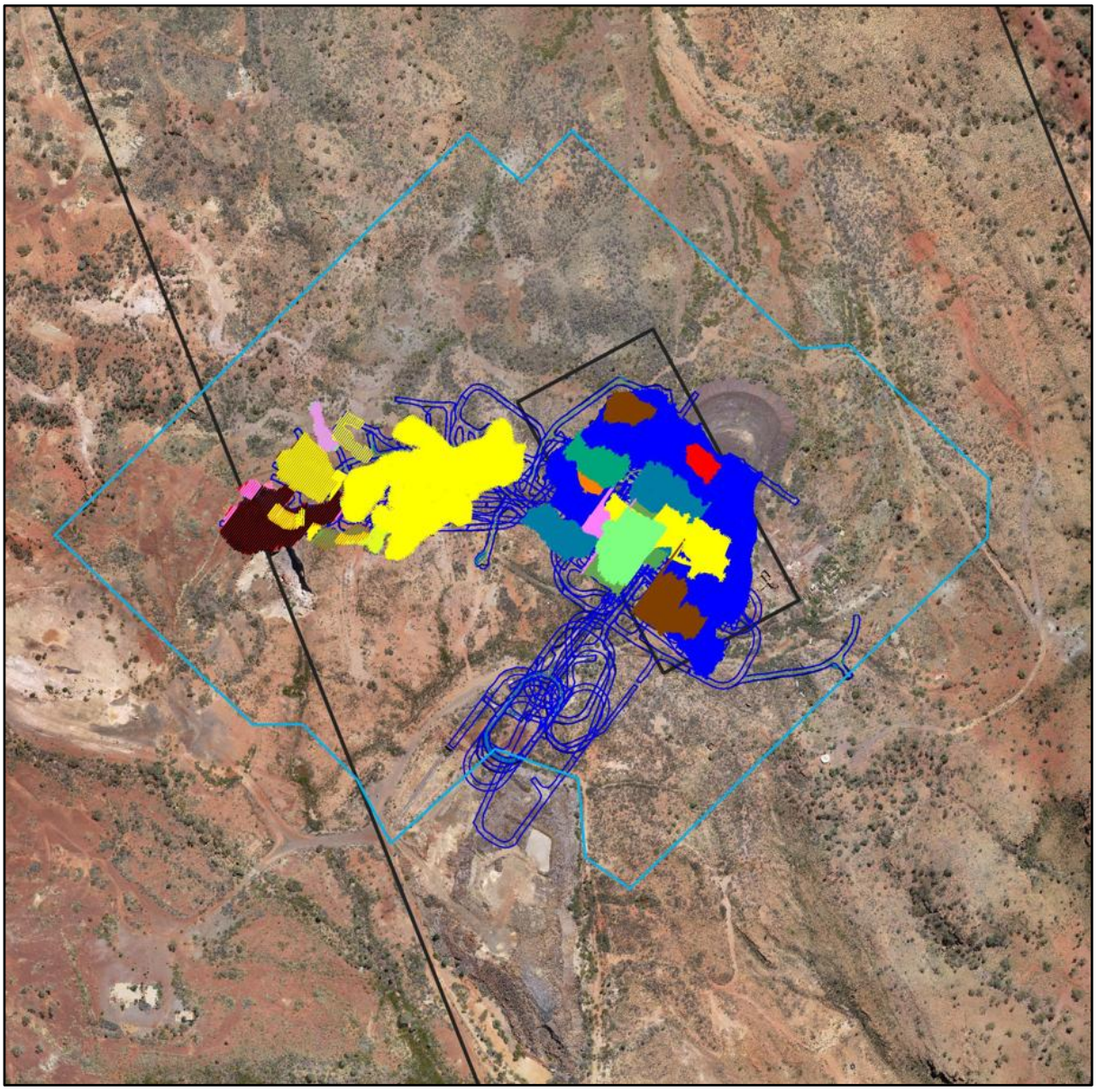
6.5.6.3 Rehabilitation Considerations

Based on the updated numerical modelling, Quantum (2023 and 2025) has recommended the following management requirements:

- A final abandonment bund is to be installed around areas of potential instability (Figure 39).
- Backfill the ventilation shafts to the surface.
- Subsidence exclusion zone bunding or fencing established around the main decline subsidence zone until confirmation that no further mining will occur (Figure 40).
- Backfill any areas of the decline that can be safely accessed.
- Backfill the box-cut portal to the surface.

Chinova must additionally comply with the requirements of Condition PRCP16 and PRCP17 of the approved PRCP Schedule.

- **PRCP16:** Prior to the backfilling of underground workings, a detailed backfill methodology developed by a RPEQ in line with existing geotechnical reporting must be submitted to the administering authority.
- **PRCP17:** On completion of milestone Rehabilitation Milestone 4 for each relevant RA, an "As-Constructed Report" prepared which details and justifies all variations to the report submitted in PRCP16, including a certification from an independent AQP that such variations will not affect the design performance of the works included must be submitted to the administering authority.



Note: Dark blue outlined polygon is the Mount Elliott underground; Teal outlined polygon is the proposed exclusion zone.

Figure 39: Proposed Mount Elliott Exclusion Zone and Bunding (Quantum, 2023)

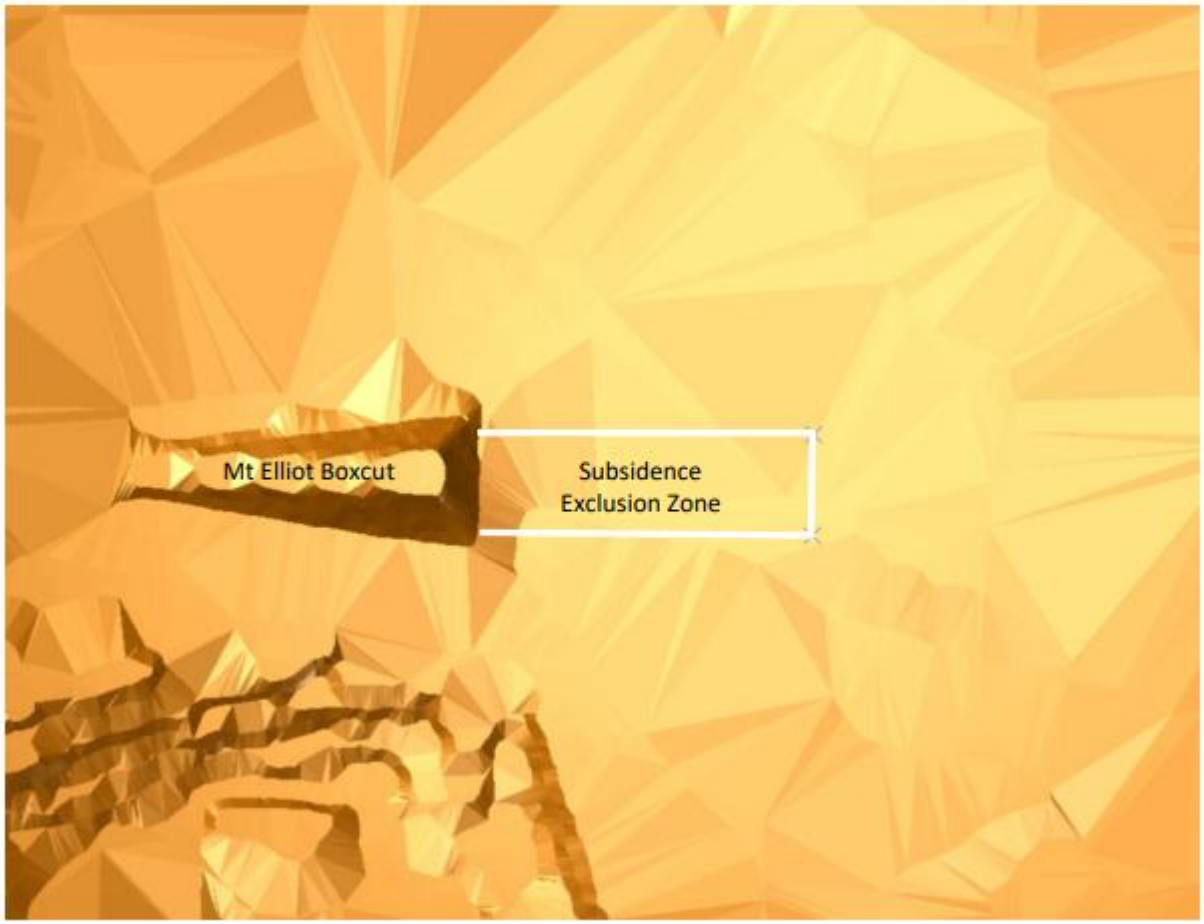


Figure 40: Proposed Mount Elliott boxcut exclusion zone (Quantum, 2025)

6.5.7 Landform and Cover Design

6.5.7.1 Cover Designs

The geochemical properties of the waste rock contained in the Mount Elliott WRE present a risk of mobilising oxidation products to the receiving environment. To mitigate this risk, a suitable cover system is required to limit water and oxygen ingress into the mineralised waste.

ATCW were engaged in 2022 to develop closure strategies for mineralised water storages across Chinova's assets, including the Mount Elliott WRE. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified five (5) potential cover system configurations with the ability to meet the Cloncurry rehabilitation objectives and transition to the proposed PMLU's. These configurations are shown in Figure 41 and include:

- Option 1: Queensland Government (DES) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.
    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.

- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armour (rind)
- Option 5: Store and release cover system:
    - 0.15m.
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.
- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The modelling results identified the most suitable cover system for the Mount Elliott WRE is:

- Cover Option C4 (Potentially Acid Forming (PAF) Cover) consisting of
    - 0.60 m – reduced permeability layer;
    - 1.20 m - Growth Media (Rock Mulch).

The modelling showed the cover system achieved the water flux criteria while also providing the second most optimum plant growing days per year. In comparison, the DES default cover was found to generate too much surface runoff resulting in reduced PAM. In addition, the 1.2m ISL store and release cover is the simplest and most cost-effective cover to construct, with all cover materials available on site.

To treat the exposed emplacement batters ATCW designed geometric batter slopes with 20m wide terraces placed every 10m (vertical) with a rind cover consisting of unreactive waste rock/rock mulch at a nominal thickness of 10m (Figure 37). This approach would result in slopes that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling of the proposed landforms using the Water Erosion Prediction Project (WEPP) model to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 28) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or constructed from rock / rock mulch, with suitable armouring or construction

materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability.

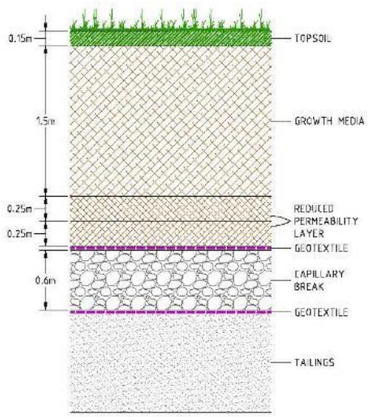
Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

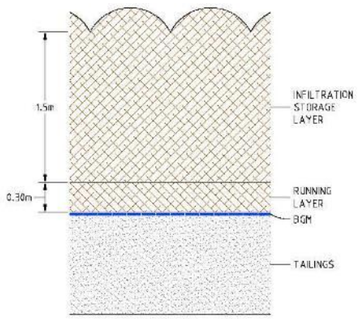
- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.



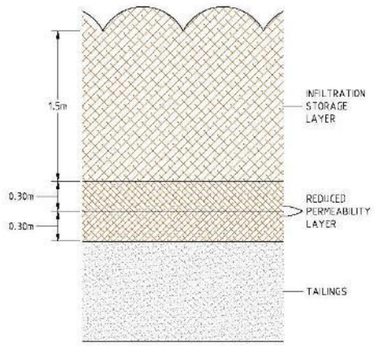
DES DEFAULT

OPTION C1
(REFER TO NOTES 1, 2, 3, 6)



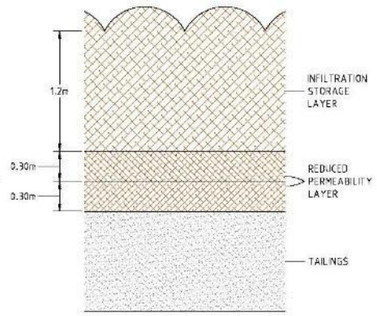
BITUMINOUS GEOMEMBRANE

OPTION C2
(REFER TO NOTES 4, 5, 7)



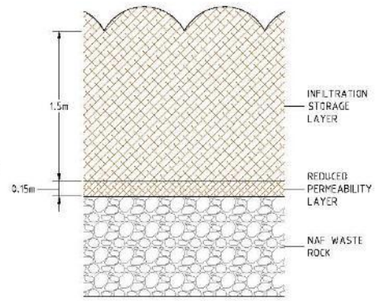
STORE AND RELEASE

OPTION C3
(REFER TO NOTES 6, 7)



STORE AND RELEASE

OPTION C4
(REFER TO NOTES 6, 7)



STORE AND RELEASE

OPTION C5
(REFER TO NOTES 6, 7)

NOTE:

1. GROWTH MEDIA LAYER TO BE COMPRISED OF ROCK MULCH, PLACED AS A SINGLE LAYER AND LEVELED WITH TRACK DOZER.
2. GEOTEXTILE TO COMPRISE BIDUM A64 OR APPROVED EQUIVALENT, PENDING DETAILED DESIGN.
3. CAPILLARY BREAK LAYER TO BE COMPRISED OF CLEAN ROCK.
4. BITUMINOUS GEOMEMBRANE LAYER TO COMPRISE COLETANCHE ES4 OR APPROVED EQUIVALENT, PENDING DETAILED DESIGN.
5. RUNNING LAYER TO BE COMPRISED OF SELECT ROCK MULCH (INCREASED FINES) PLACED TO PROVIDE MECHANICAL PROTECTION OF THE BGM.
6. REDUCED PERMEABILITY LAYER TO BE COMPRISED OF ROCK MULCH, PLACED IN LAYERS AS SPECIFIED, WITH MOISTURE CONDITIONING AND COMPACTION TO ACHIEVE 98% MODIFIED COMPACTION.
7. INFILTRATION STORAGE LAYER TO BE COMPRISED OF ROCK MULCH, PLACED AS A PADDOCK DUMP TO PROVIDE A HIGHLY TEXTURED AND 'LOOSE' SOIL.

No.	DESCRIPTION	DATE	DRAWN	CHECKD	APPRD
A	ISSUE FOR REVIEW				

SCALE: AS SHOWN	
JOB No.	122075-06
DATE	JULY 2023
DESIGN	JM
DRAWN	SDM
CHECKED	JM
APPROVED	JM

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CHINOVA RESOURCES PTY LTD
OSBORNE MINE

CLOSURE STRATEGIES FOR MINERALISED WASTE FINAL LANDFORMS
CREST TREATMENTS OPTIONS FOR MINERALISED WASTE

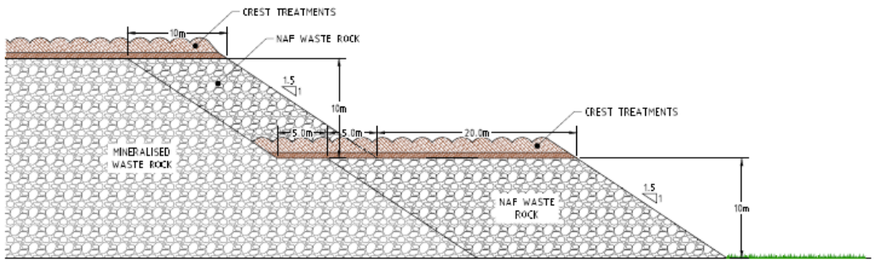
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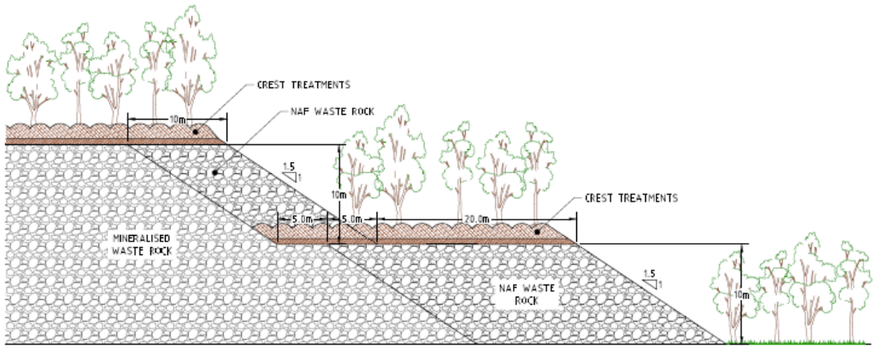
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SHEET 1 OF 1

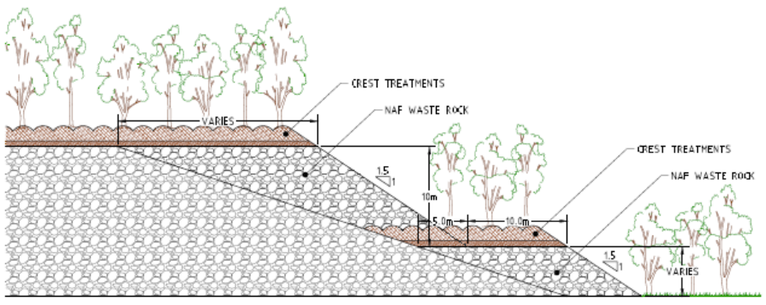
Figure 41: Crest Treatment Option for Mineralised Waste (ATCW, 2024)



BATTER TREATMENTS FOR MINERALISED WASTE (POST CONSTRUCTION, TYPICAL)
N.T.S



BATTER TREATMENTS FOR MINERALISED WASTE (MATURE, TYPICAL)
N.T.S



BATTER TREATMENTS FOR STARRA 254 ROM AND SELWYN HEAP LEACH (MATURE, TYPICAL)
N.T.S

						SCALE	AS SHOWN
						JOB No.	122075-06
						DATE	JULY 2023
						DESIGN	JM
						DRAWN	SM
						CHECKED	
A	ISSUE FOR REVIEW					APPROVED	
No.	DESCRIPTION	DATE	DRAWN	CHECKD	APPRD		

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CLOSURE STRATEGIES FOR MINERALISED WASTE FINAL LANDFORMS
BATTER TREATMENTS FOR MINERALISED WASTE

DWG No. Figure 01
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SHEET 1 OF 1

Figure 42: Mineralised Waste Batter Treatments (ATCW, 2024)

6.5.7.2 Final landform

The final landform to remain on the Mount Elliott site that is a substantial departure from the pre-mine condition is the WRE. The subsidence area and portal will be backfilled to be commensurate with the surrounding landscape.

At the current stage of the Mount Elliott project, the location and geometry of the major site landforms have been established. The design process for this PRCP has considered the existing status of the landforms as much as possible, and where appropriate, prioritised the use of suitable materials sourced from existing emplacements/ stockpiles and/or disturbances for use as backfill and cover system construction materials.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind.
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

To meet the landform design principals the final Mount Elliott WRE landform will require reprofiling and the application of an appropriate cover system (Section 6.5.1.1).

3D representations of the current and proposed final landforms (including PMLUs) at the Mount Elliott project area are provided in Figure 43 and Figure 44. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7).

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Mount Elliott specified in Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and
(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and
(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:

(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 41: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Mount Elliott	Mount Elliott WRD	10/12/2036	10/12/2034

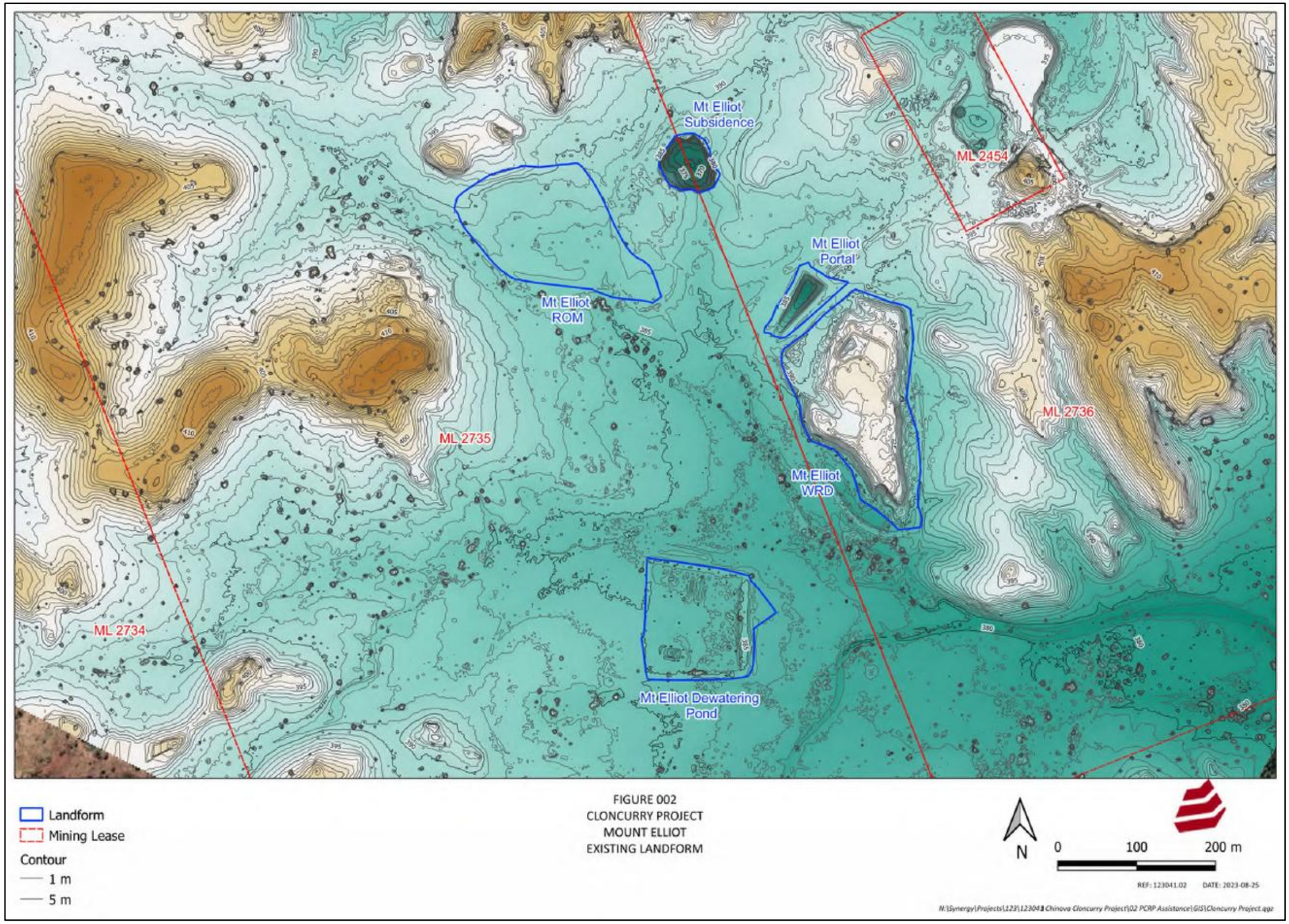


Figure 43: Mount Elliott Existing Landform (ATCW, 2023b).

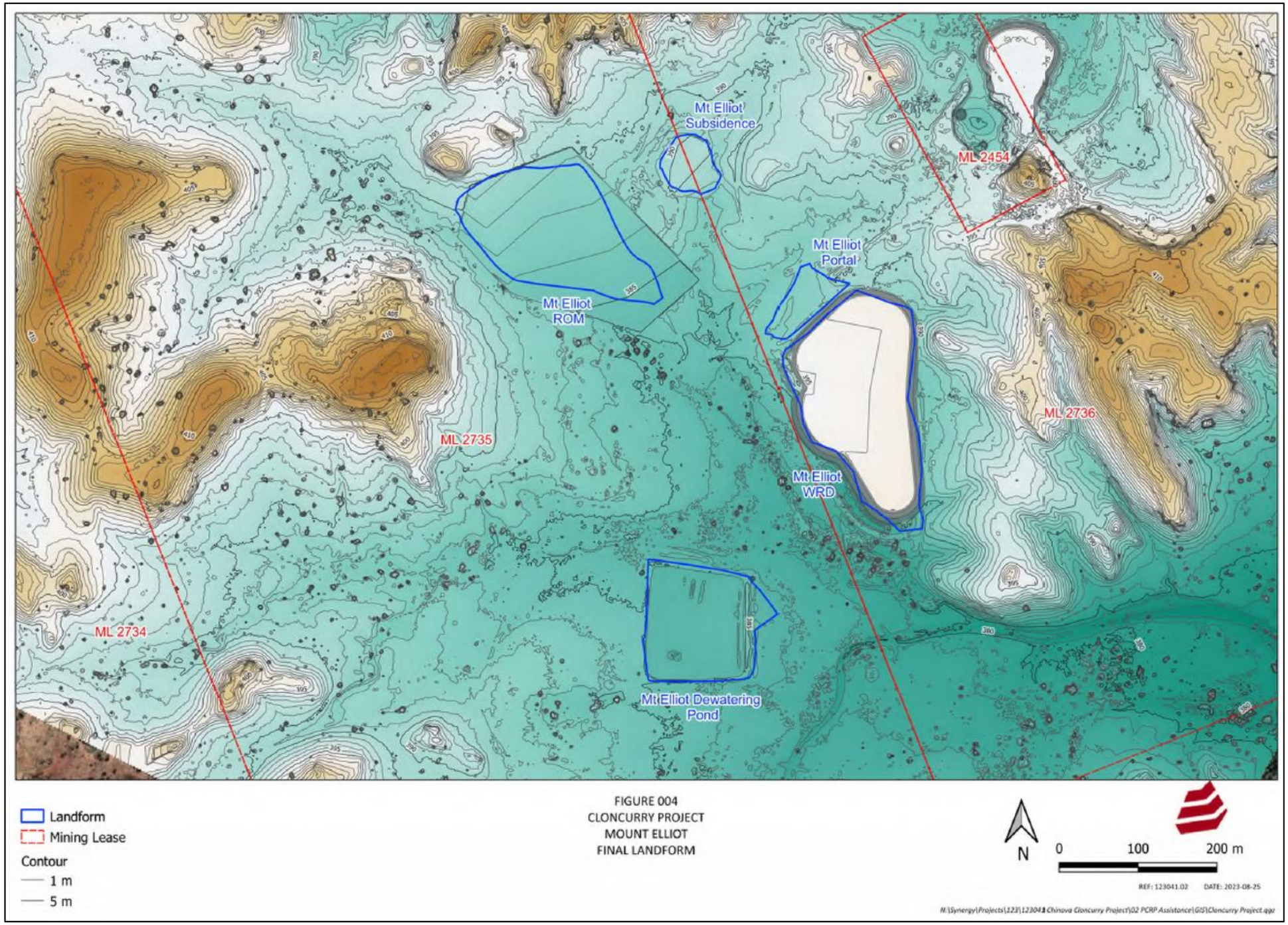


Figure 44: Mount Elliott Conceptual Final Landform

6.5.8 Water Management

The existing water management network at Mount Elliott has been illustrated in Figure 45 and includes:

- WRE containment dam – contains water runoff and seepage generated from the southern portion of the WRE.
- WRE diversion bund – directs clean surface runoff away from the north-eastern embankment of the WRE.
- The Mount Elliott underground portal – runoff and seepage from the northern portion of the WRE is directed to the portal for permanent disposal.
- SWAN sediment dam – treats surface runoff from the SWAN exploration areas prior to release.
- Mount Elliott Sediment Dam – treats surface runoff from the general Mount Elliott mining area (including the ROM) prior to release.

Limited water quality data is available from the WRE containment dam and sediment basins. What limited data does exist, shows that runoff/ seepage generated from the WRE is characterised by elevated levels of salinity, sulphate and dissolved metals, consistent with the material characterisation data. The water quality from the sediment basins is circum-neutral, with low concentrations of salinity, sulphate and metals (Table 42).

The proposed management strategy for surface water during the rehabilitation, post-closure maintenance and monitoring period is described below:

- Installation of an appropriate cover system on the WRE, in accordance with an engineered design, to minimise the opportunity for water movement downward into the waste (seepage) and upward by capillary rise. The cover system will incorporate highly textured surfaces that promote storage of rainfall and significantly slow the generation of surface runoff.
- Directing surface runoff from the WRE to the WRE containment dam or underground portal until it can be demonstrated that the runoff is of suitable quality for release in accordance with the Cloncurry Project EA.
- Continue to maintain the sites sediment basins to treat runoff from rehabilitated landforms prior mine to release to the receiving environment.
- Continued implementation of the Cloncurry Project Receiving Environment Monitoring Program (REMP) to identify any impacts from the mine on the receiving environment.

The WRE closure strategy includes the installation of a crest store and release cover system and 10m embankment rind. These treatments will be effective in minimising seepage from the landform; therefore, no long-term seepage intervention or collection controls are proposed at Mount Elliott. In addition, all water storages at Mount Elliott are low volume and evaporate entirely during the dry season; therefore, not dewatering activities are required.

Once surface runoff generated on rehabilitated landforms achieves surface water quality limits as per the rehabilitation milestone criteria, water storages will be decommissioned and rehabilitated.

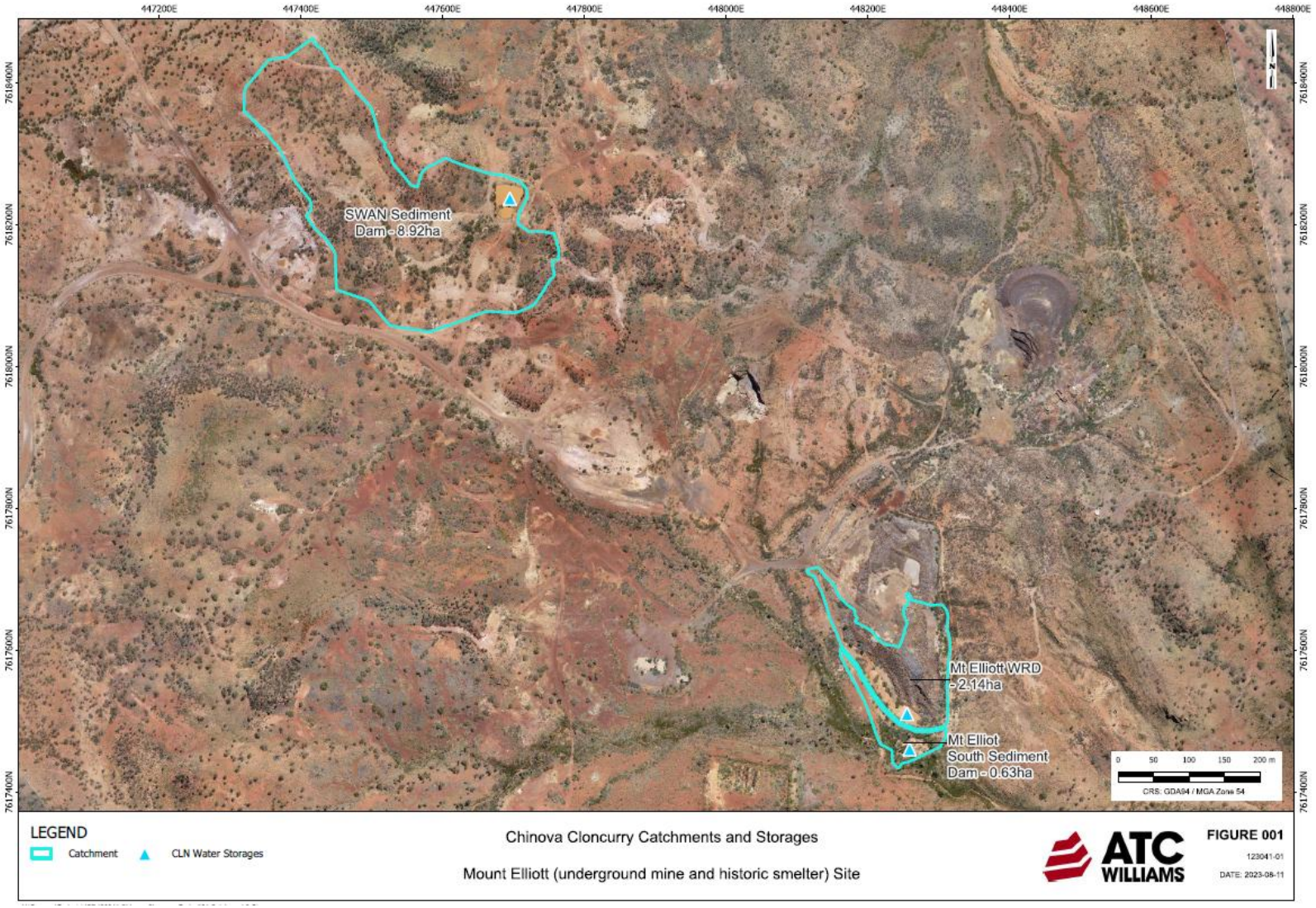


Figure 45: Mount Elliott existing surface water catchments (ATCW, 2023a)

Table 42: Mount Elliott Environmental Dam Water Quality

	Unit	EQL	Livestock Trigger Values	ME SD	ME SD	ME WRD Dam	ME WRD Dam	ME WRD Dam	ME WRD Dam
				11 Feb 2022	14 Feb 2024	10 Feb 2014	15 Nov 2016	18 Mar 2018	07 Mar 2020
pH (Lab)	-	0		7.4	4.57	6.6	5.7	4.8	5.1
Electrical Conductivity (Lab)	µS/cm	5	5970	100	2470	440	1,300	1,100	970
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.2	1000	15	1560	150	620	580	450
Aluminium	mg/L	0.005	5	0.56	7.89	-	-	2.8	1.6
Arsenic	mg/L	0.003	0.5	<0.003	0.004	-	-	0.004	<0.003
Beryllium	mg/L	0.0001		<0.0001	-	-	-	0.0030	0.0026
Bismuth	mg/L	0.0005		<0.0005	-	-	-	<0.0005	<0.0005
Boron	mg/L	0.005	5	0.027	0.07	-	-	0.047	0.024
Cadmium	mg/L	0.0001	0.01	<0.0001	0.0021	-	-	0.0007	0.0004
Calcium	mg/L	0.2	1,000	10	235	-	-	100	84
Chromium (III+VI)	mg/L	0.001	1	<0.001	<0.001	-	-	<0.001	<0.001
Cobalt	mg/L	0.001	1	<0.001	1.34	-	-	0.56	0.32
Copper	mg/L	0.001	1	0.16	57.8	-	-	30	13
Iron	mg/L	0.005		<0.001	0.08	<0.001	0.004	0.004	<0.001
Lead	mg/L	0.001	0.1	<0.001	0.002	-	-	0.003	<0.001
Magnesium (filtered)	mg/L	0.1		4.0	198	-	-	63	47
Manganese	mg/L	0.005		0.040	3.43	-	-	1.5	0.88
Mercury	mg/L	0.00005	0.002	<0.00005	<0.0001	-	-	<0.00005	<0.00005
Molybdenum	mg/L	0.001	0.15	<0.001	0.001	-	-	<0.001	<0.001
Nickel	mg/L	0.001	1	0.004	1.04	-	-	0.39	0.21
Rhenium	mg/L	0.05		<0.05	<0.001	-	-	<0.05	<0.05
Selenium	mg/L	0.003	0.02	<0.003	0.02	-	-	0.010	0.008
Silver	mg/L	0.001		<0.001	<0.001	-	-	<0.00005	<0.00005
Tin	mg/L	0.002		<0.002	-	-	-	<0.002	<0.002
Uranium	mg/L	0.0005	0.2	<0.5	0.093	-	-	0.047	0.014
Zinc	mg/L	0.005	20	<0.005	0.705	-	-	0.34	0.18

* Dissolved metals results displayed.

6.5.8.1 Surface Water Contaminants of Concern

Potential CoCs at Mount Elliott were identified by AGE (refer Section 6.5.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 43.

Table 43: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE	Sulphate, salinity, metals, suspended solids
Rehabilitated disturbed areas	Suspended solids, metals
Final reshaped drainage lines and batters	Suspended solids, turbidity

6.5.8.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for the Mount Elliott final landform to manage runoff based on anticipated water quality and the measures to capture, release or divert water from each site. The conceptual drainage plan was prepared to identify:

- Potential contaminants of concern
- Site catchment aeras and land uses
- Mine water storage locations, function, and capacity (if required);
- Sediment dam and drain locations to manage runoff from rehabilitation areas;
- Flood protection bunds and diversions (if required); and
- Dewatering and treatment infrastructure (if required).

The potential sources/pathways of contaminants during the post-closure are represented through the post-closure water management system for Mount Elliott, which includes the following:

- Final void water management
  - The Mount Elliott portal to be backfilled during closure and reshaped to be commensurate with the surrounding landscape. No water management will be required.
- Surface water management
  - Runoff from the rehabilitated WRD will be managed through ME_SD1, the Mount Elliott WRE Containment Dam used during operations, to ensure adequate sediment removal before release to the receiving waters;
  - Runoff from the rehabilitated WRD will be conveyed by surface water drains around the perimeter to the sediment dam;
  - Contour banks, plateau drains and drop structures constructed where necessary once the final landform is reshaped, to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dam. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - Runoff from the local clean water catchment upstream (east) of the WRD will be diverted around the eastern side of the WRD to the tributary to the south.

The conceptual drainage plan has been illustrated within Figure 46, with the proposed dam sizing and release locations for ME_SD1 detailed within Table 44.

Figure 46: Mount Elliott conceptual drainage plan (WRM, 2025)

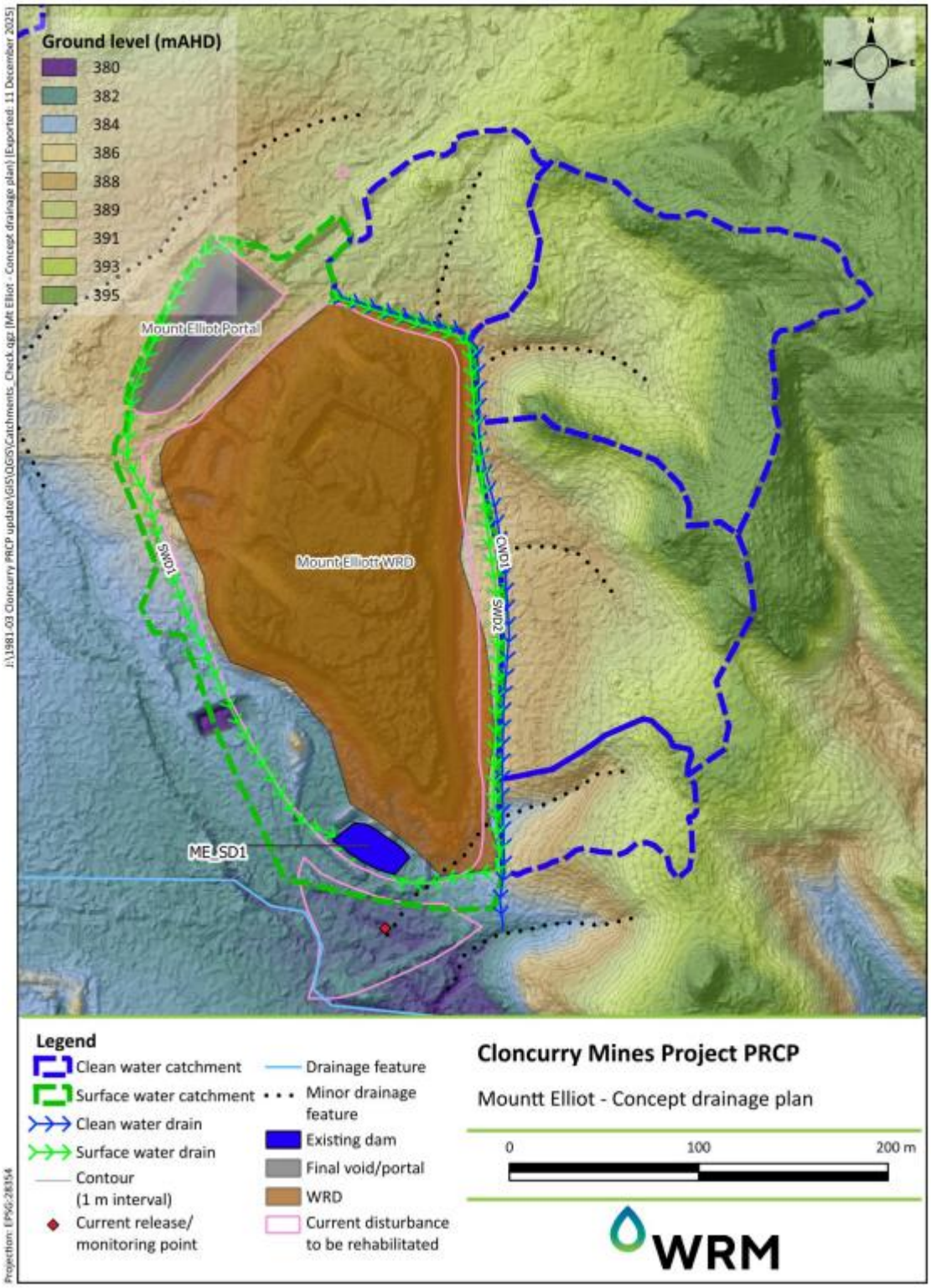


Table 44: ME_SD1 Proposed Dam Sizing and Release Locations (WRM, 2025)

Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
4.9	1.75	1.92	0.06	4148255	7617496	Mount Elliott WRD	Unmapped drainage feature of Maggies Creek

6.5.9 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

6.5.9.1 Mount Elliott Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 45.

Table 45: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable) Install stock fencing to protect planting (if required).	Preferably immediately prior to wet season (November-December). In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable	Ecological monitoring: immediately after wet season

	growth/development of revegetation	(March-April) and annually thereafter.
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g. supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Supplementary seeding prior to wet season. Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

6.5.9.2 Mount Elliott Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 46: Mount Elliott Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum* • *Bothriochloa ewartiana*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

6.5.9.3 Mount Elliott Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 47. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 47: Mount Elliott Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

7. Rehabilitation Planning – Lady Ella

7.1 Baseline Information

7.1.1 Climate

Refer to section 5.1 for details on climate for the Lady Ella mine.

7.1.2 Site Topography

The topography of the Lady Ella mine is dominated by a ridge associated with the Selwyn Range, an elongated dissected peneplain that acts as a major continental divide, with the rivers north of the Selwyn Range flowing into the Gulf of Carpentaria while those south of the range flowing into the Lake Eyre basin.

The ridge line is orientated approximately north-south with most of the Lady Ella mine located on the southerly slope of the ridge. Elevations across the mine vary from approximately 430m to 380m AHD.

Most of the mine infrastructure is located within a narrow valley with the waste rock dump located at the top of the ridge at 430m AHD, before descending to the pit level at approximately 410m AHD with the ROM area at the lower level at approximately 390m AHD. The narrow valley continues to slope south-west into flatter plains between broken ridges.

Areas surrounding Lady Ella mine comprises of deeply weathered ridges and isolated plateaus separated by wide river plains that have formed by slope retreat, leaving strike parallel ridges of more resistance lithologies.

7.1.3 Geological Setting

The Cloncurry Project area is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite. The contact between these units is broadly described as unconformable (Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust.

The Lady Ella mine is associated with north-northeast and north-west trending faults within units belonging to the Kuridala Formation. At the mine scale, the breccia dips eastward and is underlain to the west by mica schists of the Kuridala Formation and is overlain to the east by schist and calc-silicate metasediments of Stavely Formation. A pod of amphibolite crops out on the east face of the pit and a second amphibolite body has been intersected at depth in the northernmost areas. These units have been crosscut by several narrow pegmatite dykes. The Gilbert River Formation is present at Lady Ella as isolated and uplifted outcrops. These outcrops are not regionally contiguous with the greater expanse of the Gilbert River Formation (Figure 47). Regionally, the Gilbert River Formation represents a Mesozoic aquifer of the Great Artesian Basin (GAB).

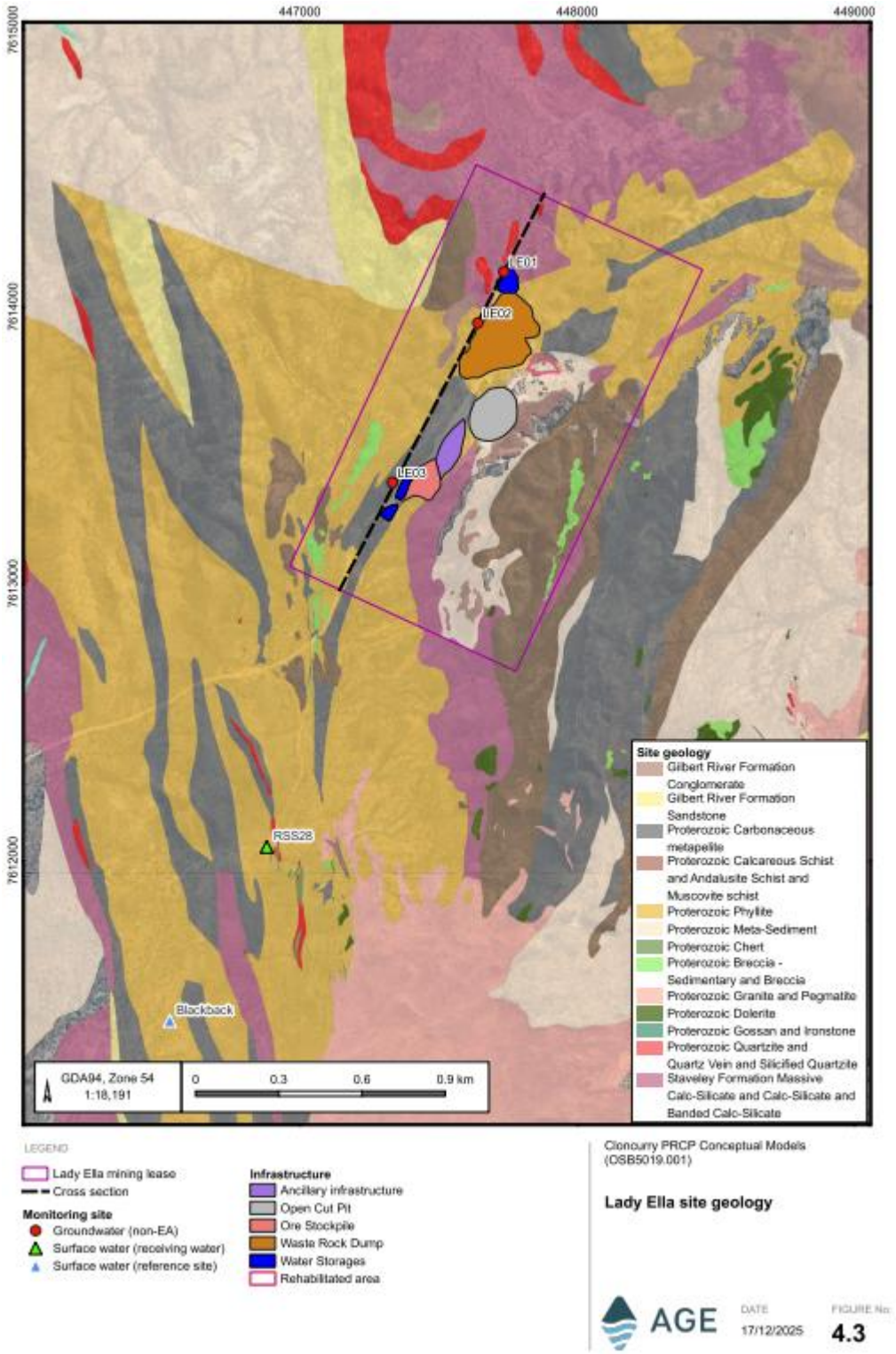


Figure 47: Lady Ella site geology (AGE, 2025a)

7.1.4 Hydrology and fluvial networks

The Lady Ella mine straddles the divide between the Lake Eyre and Gulf of Carpentaria drainage divisions. The majority of Lady Ella including previously disturbed areas sits within the Georgina Basin, Georgina River sub-basin of the Lake Eyre region. A small section on the north-eastern side drains into the Flinders Basin, Cloncurry River sub-basin, part of the Gulf of Carpentaria region.

The Lady Ella area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flows into Gin Creek approximately 26km to the south-west. Gin Creek flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia.

There are no listed environmental values and water quality objectives for the Lake Eyre or Gulf of Carpentaria region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has undertaken surface water monitoring since commencement of mining with modern records available since 2013. The receiving water reference monitoring location (known as Blackback) is located on a tributary of Gin Creek and is not impacted by mining activities (Figure 48). Summary of water quality data for the Blackback monitoring location is provided in Table 48.

Table 48: Summary of water quality results for reference water site (Blackback) near Lady Ella

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	40	6.26	6.14	7.03	6.48	5.93
Electrical Conductivity (uS/cm)	45	28.6	22	79	30.6	15
Sulphates (mg/L)	46	1.75	0.9	5.52	2.6	0.5
Dissolved Aluminium (mg/L)	45	0.25	0.2	0.80	0.32	0.080
Dissolved Arsenic (mg/L)	44	0.0036	0.003	0.003	0.003	0.003
Dissolved Boron (mg/L)	43	0.011	0.006	0.05	0.014	0.005
Dissolved Cadmium (mg/L)	43	0.0001	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	44	0.001	0.001	0.001	0.001	0.001
Dissolved Cobalt (mg/L)	45	0.002	0.001	0.0084	0.001	0.001
Dissolved Copper (mg/L)	45	0.020	0.015	0.0394	0.022	0.011
Fluoride (mg/L)	44	0.0697	0.05	0.1085	0.1	0.05
Dissolved Iron (mg/L)	44	0.228	0.18	0.6665	0.294	0.0996
Dissolved Lead (mg/L)	45	0.00104	0.001	0.001	0.001	0.001
Dissolved Manganese (mg/L)	45	0.03244	0.005	0.14	0.0176	0.005
Dissolved Mercury (mg/L)	43	0.00005	0.00005	0.0001	0.00005	0.00005
Dissolved Molybdenum (mg/L)	40	0.001	0.001	0.001	0.001	0.001
Dissolved Nickel (mg/L)	45	0.00104	0.001	0.001	0.001	0.001



Figure 48: Lady Ella EA surface water monitoring locations

7.1.5 Groundwater

Groundwater conditions at Lady Ella are described in detail in by AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations.

7.1.5.1 Hydrostratigraphy

Lady Ella is comprised of three main hydrostratigraphic units, the Kuridala Group, the Gilbert River Formation, and the younger cover units. Younger cover units are also present on the leases however these are not saturated (AGE, 2025a).

Kuridala Group (Hampden Slate)

Groundwater at the site is hosted in the Hampden Slate formation of the Kuridala group. The Hampden Slate is one of the least permeable members of the Kuridala Group. Due to the Proterozoic age and metamorphic nature of the Kuridala Group, it is unlikely that these rocks have preserved primary porosity. Thus, groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing, which was observed during drilling observation at groundwater bore LE03, wherein the only observed interception of water was in association with a fractured quartz vein (AGE, 2025a).

Gilbert River Formation

At Lady Ella, the Gilbert River Formation is a primarily a siltstone, with variable amounts of quartzose sand and gravel content and a capping conglomerate, which is well cemented (AGE, 2025a). This unit has primary porosity, which is variable, depending on the size and properties of the comprising grains and the degree of cementation and compaction of these units. This cap conglomerate is a prominent ridge-forming lithology with extensive surface expressions on the northern section of the ML. The thickness of the Gilbert River Formation at Lady Ella is up to 51 m.

Recently installed monitoring bores LE01 and LE02 both intercepted the Gilbert River Formation during drilling, with the base of the intercepted unit at 396 mAHD and 384 mAHD, respectively. Both bores were drilled bellow the base of the Gilbert River Formation and no water was intercepted in either the Gilbert River Formation or the underlying shales/slates. The screened interval of these bores is at the base of the Gilbert River Formation, as this was deemed to be the interval with the highest potential to contain water. Both LE01 and LE02 and have remained dry since construction, indicating that the Gilbert River Formation is not saturated at Lady Ella. Based on this understanding, the Gilbert River Formation is not considered a saturated hydrostratigraphic unit (AGE, 2025a).

Other cover units

The characteristics of the younger cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. These units have variable primary porosity, which is dependent on the size and properties of the comprising grains and the degree of cementation and compaction of these units. Groundwater level at the site is inferred to be below the base of these units, indicating that these sediments are generally unsaturated (AGE, 2025a).

7.1.5.2 Groundwater Levels

There are no compliance, observation or reference bores associated with Lady Ella, as a result there are no historical groundwater records available. In 2022, AGE was engaged to install three groundwater bores at Lady Ella (LE01, LE02 and LE03) targeting the Hampden Slate and the contact between the Hampden Slate and Gilbert River Formation to investigate groundwater onsite (Figure 49). Recent groundwater levels from these bores are provided in Table 49.

Table 49: Groundwater Levels at Lady Ella

Bore	Easting MGA94	Northing MGA94	Type	Hydrostratigraphic Unit	Average SWL RL (mAHD)	TOC RL (mAHD)
LE01	447736	7614157	Non-EA	Gilbert River Formation	Dry	421
LE02	447642	7613942	Non-EA	Gilbert River Formation	Dry	435.8
LE03	447334	7613366	Non-EA	Hampden Slate	347.3	378.8

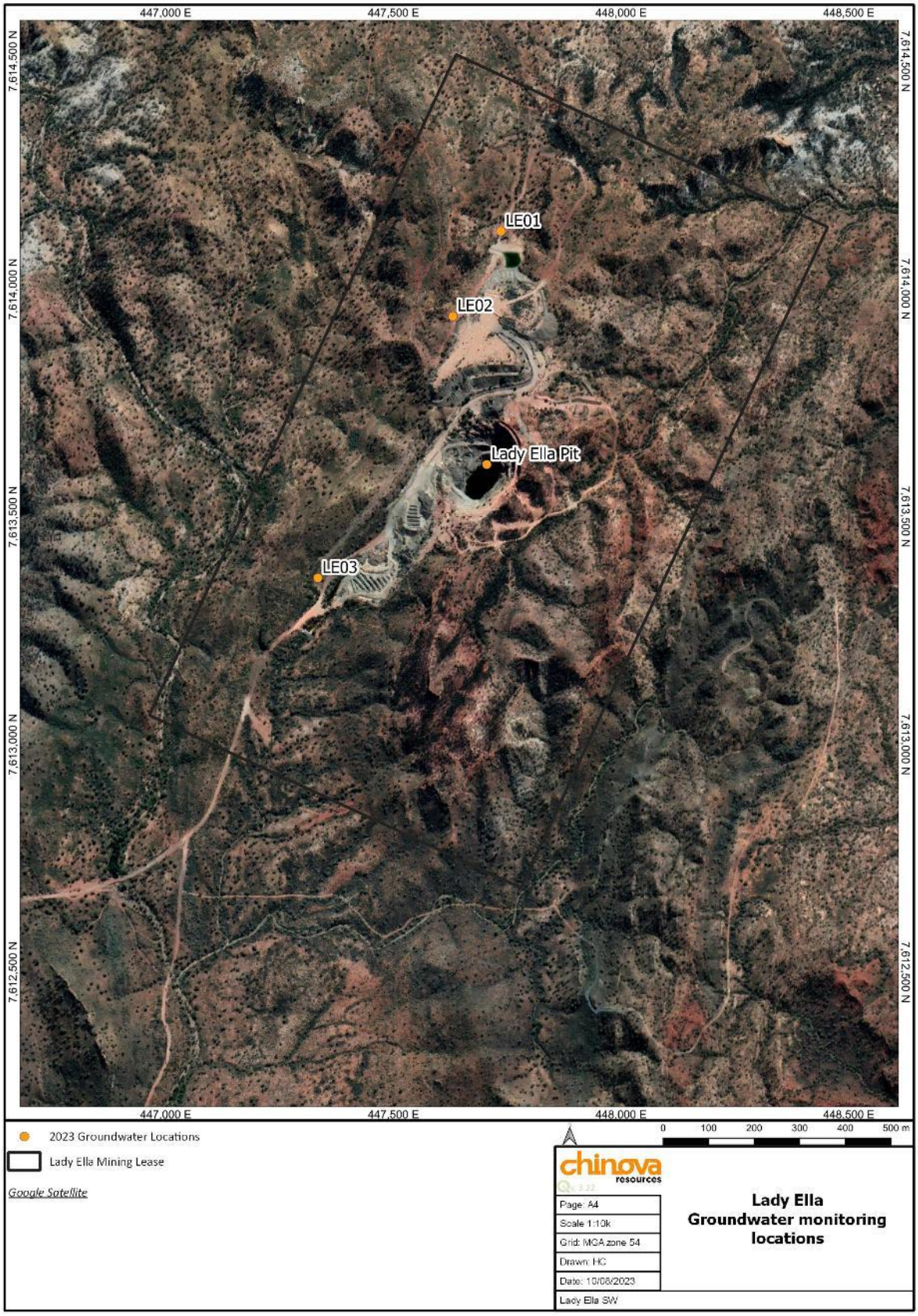


Figure 49: Lady Ella Groundwater Monitoring Locations

7.1.5.3 Groundwater Quality

LE03 is the only bore that holds water out of the three monitoring bores that were constructed at this site in 2022. Water samples are taken from LE03 quarterly, the results are presented in Table 50. The water is alkaline with a pH of 7.7 to 8.1 and an electrical conductivity between 3,700 and 4,500 µS/cm. Sulfate ranges from 870 to 1,400mg/L and dissolved copper is below LOR to 0.0052 mg/L.

Table 50: Lady Ella Groundwater Quality at LE03

Parameter	Unit	LE03 26 Feb 2022	LE03 23 Mar 2022	LE03 26 Jul 2022	LE03 02 Feb 2023	LE03 27 May 2023
pH	-	8.1	7.9	8.1	7.8	7.7
Electrical Conductivity (Lab)	µS/cm	4,500	3,900	3,700	3,900	3,900
Sulphur as Sulphate, SO4 (filtered)	mg/L	1,400	960	900	920	870
Chloride (filtered)	mg/L	790	70	520	590	520
Fluoride (filtered)	mg/L	0.60	0.23	0.17	0.27	0.32
Sodium (filtered)	mg/L	500	250	470	460	410
Total Dissolved Solids (Lab) (filtered)	mg/L	3,800	3,000	2,600	2,900	3,400
Total Suspended Solids (Lab)	mg/L	450	170	240	<5	<5
Aluminium (filtered)	mg/L	0.077	0.023	0.030	0.026	0.008
Arsenic (filtered)	mg/L	0.006	<0.003	0.003	0.003	<0.003
Beryllium (filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (filtered)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (filtered)	mg/L	0.13	0.10	0.10	0.11	0.12
Cadmium (filtered)	mg/L	0.000021	0.000024	<0.0001	<0.0001	<0.0001
Calcium (filtered)	mg/L	310	160	94	170	210

Chromium (III+VI) (filtered)	mg/L	0.004	0.023	0.006	0.001	0.001
Cobalt (filtered)	mg/L	0.0010	0.0027	0.001	0.001	<0.001
Copper (filtered)	mg/L	0.0052	0.0040	0.002	<0.001	<0.001
Iron (filtered)	mg/L	0.007	<0.005	0.017	0.011	0.060
Lead (filtered)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (filtered)	mg/L	260	150	140	160	170
Manganese (filtered)	mg/L	0.069	0.021	0.035	0.25	0.25
Mercury (filtered)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum (filtered)	mg/L	0.053	0.014	0.013	0.010	0.004
Nickel (filtered)	mg/L	0.006	0.006	0.004	0.005	0.001
Rhenium (filtered)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium (filtered)	mg/L	0.019	0.014	<0.003	<0.003	<0.003
Tin (filtered)	mg/L	<0.002	0.007	<0.002	0.005	<0.002
Uranium (filtered)	mg/L	0.072	0.058	0.037	0.042	0.051
Zinc (filtered)	mg/L	<0.005	<0.005	0.007	0.013	<0.005

7.1.5.4 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater at Lady Ella is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions. The bulk component of this recharge is in the Kuridala Group and occurs as rainfall recharge, with infiltration below the ephemeral streams being a smaller volume. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months; January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated regional recharge rate was calculated using a chloride mass balance method (AGE, 2021a) to be between 3% and 6% of annual rainfall. This equates to approximately 10 mm to 20 mm of recharge annually. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

The main discharge processes for the site are potential evapotranspiration from the pit and any shallower areas of the water table and lateral through-flow. Due to the depth to water generally being >30 mBGL, there is likely minimal discharge via evapotranspiration. Across the Lady Ella site, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral, and the water table does not intersect the deepest points of creek incision (AGE, 2025a)

7.1.5.5 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the Kuridala Group are summarised in Table 51. AGE (2023) sourced hydraulic properties from a combination of rising and falling head tests and historic reports which used pumping tests.

The hydraulic conductivity from bore LE03 is <0.1 m/day and this bore was also observed to have a very slow (several days) water level recovery following development (AGE, 2022a). The bore construction log for LE03 suggests little fracturing in the screened interval (AGE, 2022a) and the estimated hydraulic conductivity value for this bore is similar to ranges given for unfractured zones of the Kuridala Group (1 x10 - 6 m/day to 0.03 m/day).

Table 51: Hydraulic Properties

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Elliott (Likely MEWB-93-8 and MEWB-93-9)	Kuridala Group	-	-	-	50 to 250	4.39 to 12.82	If thickness = 100 m, then K = 0.04 to 0.1 m/day If thickness = 10 m thick, then K = 0.4 to 1.2 m/day
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1 x 10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384x10-5
Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1
Mount Dore (MB10)	Kuridala Group	Unfractured	45.7 - 51	-	-		2.64384x10-5

Mount Dore (MB2	Kuridala Group	-	20-41	-	-	-	0.04 to 0. 18

7.1.5.6 Environmental Values

The applicable environmental values for the Lady Ella site have been defined by AGE (2023) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there are no high potential mapped GDEs within the Lady Ella mining lease. There are, however, potential for GDE's within the broader Lady Ella area.

The ecological mapping strongly supports the presence of terrestrial GDEs near the Lady Ella ML. However, the bores on the site document that the shallowest depth to groundwater is >30m, which is not within reach of most vegetation roots. Although a rooting depth of 20 m is accepted as possible for some eucalypts, it is unlikely that these tree communities are reliant on presence of water below the water table. A more likely situation is that the infiltration of some surface water flow into short term storage within the vadose zone sustains the trees between wet seasons (i.e. the moisture held in the unsaturated regolith and alluvium cover of the drainage lines) (AGE, 2025a). In addition, along the Mort River there are also zones of low and moderate potential aquatic GDE, but these are distal (>5 km) from the Lady Ella site.

For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Lady Ella area, as mapped by the Queensland Wetland Database (DSITI, 2015). As a precautionary approach, potential aquatic GDEs are considered potentially present in area where they are mapped along the Mort River; however, these areas are considered too distal (>5 km) for aquatic GDEs to be considered potential receptors at Lady Ella.

In summary, AGE (2025a) found a moderate potential terrestrial GDEs to the east of the ML and low potential terrestrial GDEs to the south of the ML.

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Mount Elliott, but groundwater is used for livestock (beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius of Mount Elliott site resulted in the identification of four bores apart from those considered part of the Mount Elliott monitoring network (Table 52). All four bores are now recorded as "Abandoned and Destroyed", and none of their records show their original purposes. Given the regional context, it is likely that livestock watering is an applicable groundwater value.

Table 52: Registered bores with 10 km of Lady Ella

Bore ID	Easting	Northing	Bore depth (mBGL)	Screened interval (mBGL)	Ground RL (mAHD)	Screened Lithology	Bore Status
RN2059	451798	7618398	NR	NR	NR	NR	Abandoned and destroyed

RN7536	440188	7615284	46.6	NR	NR	Staveley Formation	Abandoned and destroyed
RN7537	440966	7614795	30.8	NR	NR	Staveley Formation	Abandoned and destroyed
RN7538	443595	7611330	NR	NR	NR	NR	Abandoned and destroyed

Industrial Use

The main industrial user of groundwater in the region is Chinova itself. Chinova did not extract water from Lady Ella, and given the low hydraulic conductivity measured at the site and the low pit inflow recorded during historic mining, future industrial use is considered unlikely or very limited.

7.1.6 Soil Types, Properties and Productivity

The development of Lady Ella did not include any detailed soil assessment. According to the Digital Atlas of Australian Soils, the dominant soil type at Lady Ella is the is 'Fz43' (Australian Soil Resource Information System, 2013 (Figure 50)). Soil type Fz43 is primarily associated with dissected plateaux or mesas with steep scarps & narrow gently undulating valleys. Soil type FZ38 is present on the southwestern section of the mining lease and is associated with moderately to strongly undulating lands with occasional low hills.

The land system at Lady Ella is classified as Kuridala. The Kuridala land system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered Kuridala land system unsuited for grazing (or virtually so) because it is rugged, stony, or barren.

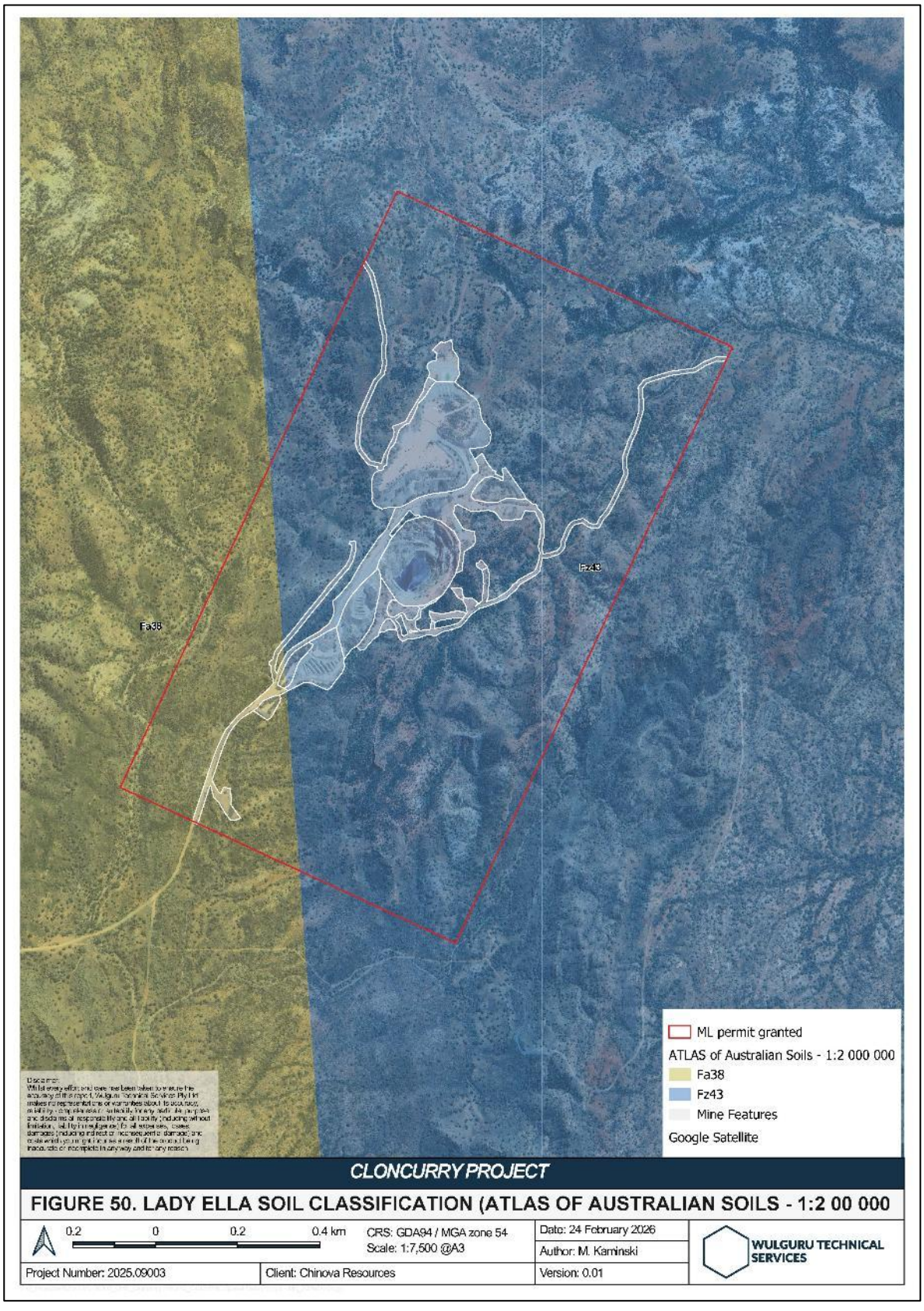


Figure 50: Lady Ella Soil Classification (Australian Atlas of Soils 1: 2 000 000)

7.1.7 Land Stability

Soils in the broad project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Lewis, 1987). The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the broad project had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

7.1.8 Vegetation Communities and Ecological Data

The dominant broad vegetation group (BVG 19) at Lady Ella consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer.

A total of six regional ecosystems (RE) have been identified within the Lady Ella area (Table 53). All six have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains). All RE's have a biodiversity status of No Concern.

Previous baseline ecological reports for the Cloncurry Project Area (Place, 2012) have assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 53: Regional ecosystems within the Lady Ella Project Area

BVG	RE	RE description	Biodiversity Status	VMA Status
19	1.10.4	*Eucalyptus leucophloia* low open woodland on sandstone plateaus	No concern	Least Concern
	1.11.2	*Eucalyptus leucophloia* low open woodland	No concern	Least Concern
	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.3.13	*Eucalyptus leucophylla* woodland on levees and minor drainage lines	No concern	Least Concern

	1.7.1	*Eucalyptus leucophloia* low open woodland on silcrete and lateritic surfaces	No concern	Least Concern
	1.7.5	*Acacia shirleyi* low woodland on lateritic scarps and hills	No concern	Least Concern

7.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 54).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 54: Conservation significant species recorded within the Project Area

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

7.1.10 Pre-Mining Land Use

Small scale mining of predominantly small shafts into the footwall schist has occurred in the Lady Ella area since the early 1900's. Modern mining commenced in 2002 and ceased in 2003 (Sprott 2003). Since 2003, mining activities have predominantly been exploration and care and maintenance activities, as well as the reclamation of ROM and stockpiled materials in 2025.

Limited low intensity grazing is also a past and current (broadly across the pastoral lease) land use. As outlined by Perry (1954) the area is considered unsuitable or almost unsuitable as grazing land. Despite this original assessment of land capability, low intensity grazing does persist.

7.2 Post Mining Land Use

7.2.1 Rehabilitation Planning and Objectives

Determining appropriate rehabilitation objectives is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

d) The land is safe and structurally stable; and
e) There is no environmental harm being caused by anything on or in the land; and
f) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives (condition E3):

g) Safe for humans and wildlife
h) Non-polluting
i) Stable
j) Able to sustain an agreed post-mining land use
k) Revegetated with species endemic to the area with no declared pest species; and
l) Compliant with all conditions of the environmental authority.

The EA (primary land outcome document) does not specify rehabilitation objectives and rehabilitation success measures for the Lady Ella site. Instead, the criteria were to be nominated in a PMLUP, the recent of which being the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, for the purposed of this PRCP, Chinova have developed new rehabilitation objectives for land disturbed by mining activities (Table 55) based on expert reports including AGE (2023), ATCW (2023) and NGH (2023). In addition, the PRC schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 55: Lady Ella Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)
		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)

	Erosion	Mine waste is not exposed by erosion processes. Erosion does not impact the PMLU.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum) No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall
	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196
Supports a viable vegetation community	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved PRCP Schedule, detailed within Table 189.
Non-Use Management Areas	Sufficient Improvement	Minimise risk to the surrounding environment.	Void water balance modelling.

			Direct measurement of surface water levels. Direct measurement of groundwater and pit water quality.

7.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

a. Is viable, having regard to the use of land in the surrounding region, and
b. Satisfies at least one of the following –
    a. The use is consistent with how the land was used before mining activity was carried out on the land
    b. The use is consistent with a development approval relating to the land
    c. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    d. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The proposed rehabilitation areas for Lady Ella are presented in Table 56 and illustrated within Figure 53, with the final proposed PMLUs shown in Figure 51. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area and PMLUs illustrated within Figure 51 and Figure 53 may not accurately reflect the disturbance areas presented within Table 56.

Chinova and previous operators have undertaken rehabilitation on selected features across the site, predominantly including exploration and the removal of surface infrastructure. Locations of the previous rehabilitation are shown in Figure 53.

However, the documentation of these historic rehabilitation areas is limited. Available records are largely qualitative and consist of brief descriptions, which have been summarised in Table 56. None of these rehabilitation areas have undergone progressive certification. As a result, all areas identified as ‘existing rehabilitation’ will be required to progress through the full suite of rehabilitation milestones outlined in the PRCP schedule. Where an area of existing rehabilitation already meets the criteria for a particular milestone, it will advance directly to the next rehabilitation stage. This approach ensures that all rehabilitation areas, regardless of when works originally occurred, achieve the standards required for final relinquishment.

Table 56: Lady Ella PMLU’s and Rehabilitation and Improvement Areas

Rehabilitation Planning Areas	Disturb. (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
IA1 Lady Ella Open Pit	3.3	0	0	Native Vegetation	NUMA	N/A

RA5 Lady Ella WRE	5.41	0	5.41	Native Vegetation	Native Vegetation	N/A
RA6 Lady Ella built infrastructure including, ROM, material stockpile, and dams	4.51	0	4.14	Native Vegetation	Native Vegetation	N/A Drill holes capped. Pads ripped to promote revegetation. Not progressively certified.
RA7 Lady Ella Permanent Infrastructure Roads and Tracks	7.41	0	0	Native Vegetation	Permanent Infrastructure	N/A

7.2.2.1 PMLU Justification

Table 57 outlines the justification for the proposed PMLU's. Effectively the post mine land use at the Lady Ella is constrained by the pre-mining land capability, post mine landforms, and viable vegetation communities. As pre-mining land use is considered to be native vegetation with some limited grazing, the primary post mining PMLU will primarily be native vegetation; although rehabilitation activities will not restrict the underlying landholder from undertaking grazing activities in the future if desired. The Lady Ella pit will be a non-use mining area (NUMA) as approved by the EA.

As requested by the underlying landholder, key pieces of infrastructure will be retained including roads and tracks to support access across the property. The Lady Ella sediment dams are currently proposed for transfer to the landholder on closure; however, water quality within these structures exceed livestock water quality guideline limits. Accordingly, these structures will be decommissioned and rehabilitated on closure. The stakeholder consultation process for the Cloncurry project identified no objections to the proposed PMLU's for Lady Ella.

Table 57: PMLU Justification

PMLU Consideration	Justification
Is viable, having regard to the use of land in the surrounding region	The PMLU's proposed are native vegetation and permanent infrastructure as requested by the landholder. Based on the available information including pre-mining land use, land capability, topography, erosion and slope of the area, native vegetation is the most achievable PMLU for Lady Ella. A PMLU of low intensity grazing has not been proposed due to the steep topography which is erodible if surface soils are disturbed.
Satisfies at least one of the following: **e) The use is consistent with how the land was used before mining**	As outlined section 7.1.10 the pre-mining land use and surrounding land use is native vegetation. Returning most of the land to native vegetation is consistent with the past and current use of the land.

	activity was carried out on the land	
f)	**The use is consistent with a development approval relating to the land**	No relevant development approvals.

g)	**The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act**	**Cloncurry Shire Planning Scheme**
		
		Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural zone (Cloncurry Shire Council, 2016). The overall purpose of the Rural zone of the Cloncurry Shire is to:
		
		• Provide for rural uses and activities;
		• Provide for other uses and activities that are compatible with –
		  ○ Existing and future rural uses and activities;
		  ○ The character and environmental features of the zone;
		• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
		
		Returning the area to native vegetation will maintain the capacity of the land and is consistent with the Cloncurry Planning Scheme.
		
		Northwest Regional Plan 2010-2031
		
		The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning.
		
		The Regional Plan supports both mining and rural production to ensure they are not adversely affected by other land use activities. The Regional Plan identifies the CMP an existing mining area and therefore provides limited guidance on the future land use intent for the site.
		
		Commonwealth Legislation
		
		N/A

h)	**The use will deliver, or is aimed at delivering, a beneficial environmental outcome.**	The revegetation approach for native vegetation aims to restore the land to a condition that targets the species diversity, composition, and structure of the broad vegetation group and similar to analogue sites. These areas will provide beneficial environmental outcomes as it will provide both habitat and ecosystem services.

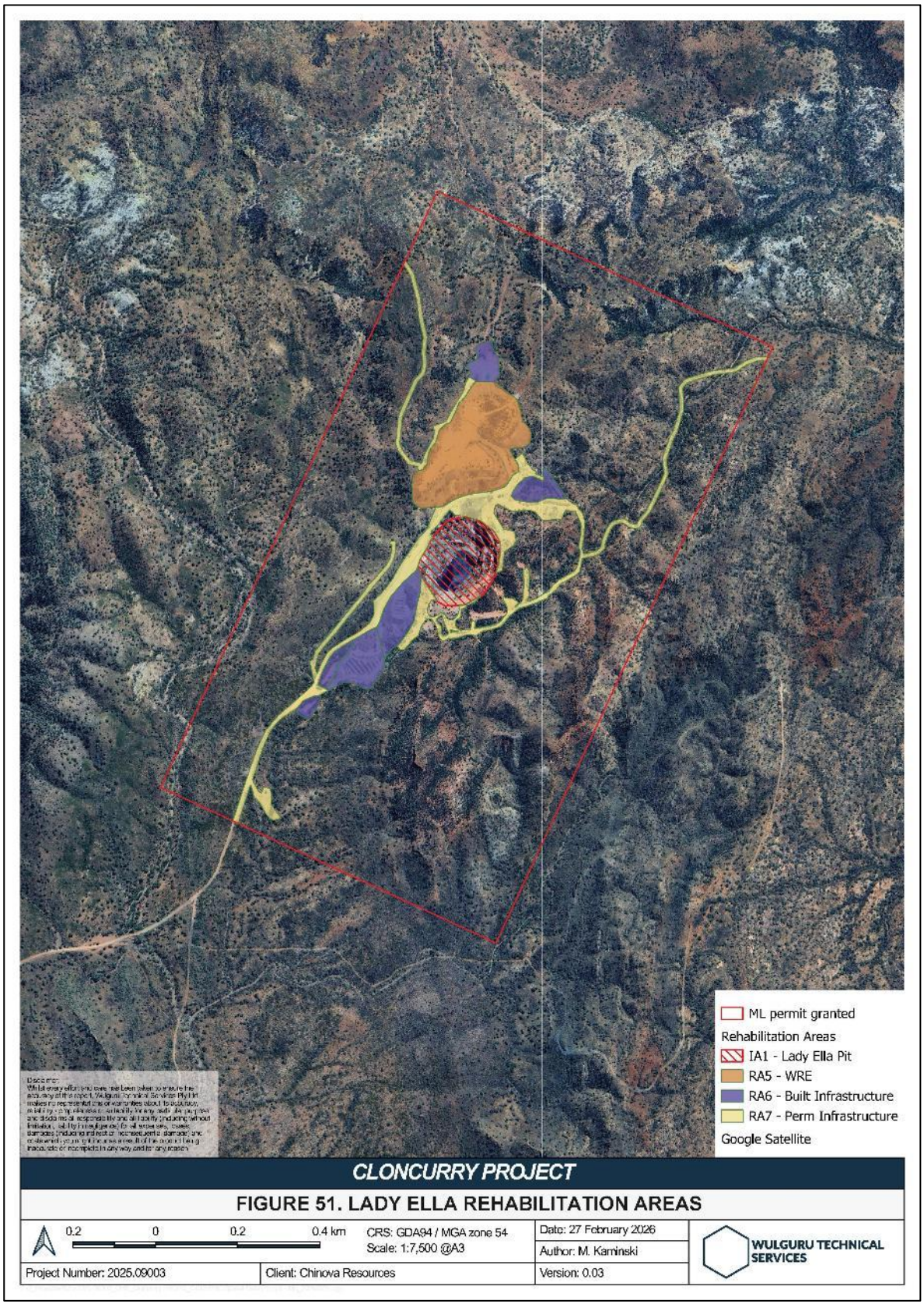


Figure 51: Lady Ella – Rehabilitation Areas

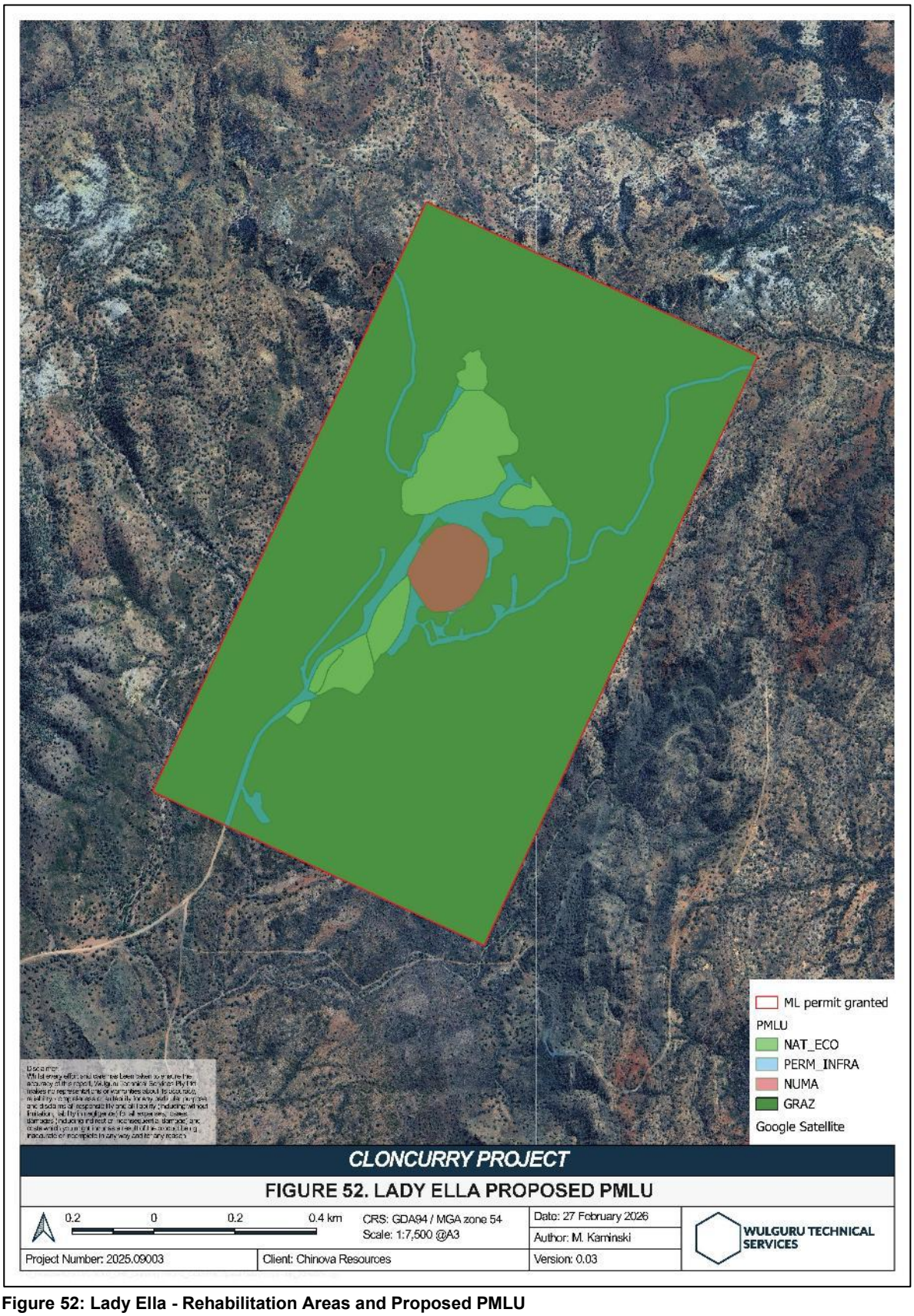


Figure 52: Lady Ella - Rehabilitation Areas and Proposed PMLU



Figure 53: Lady Ella Existing Rehabilitation

7.2.3 Rehabilitation/Improvement Planning

The Lady Ella project contains a residual defined copper and gold resource as outlined in Section 3.5. Future mining of the remnant Lady Ella deposit is dependent on favourable commodity prices and capital investment. Due to the residual resource at the mine, Chinova will maintain the site in care and maintenance for up to 10 years, if after 10 years no further mining occurs at Lady Ella the site will undergo final rehabilitation.

If additional development does occur, it is highly preferential to use existing disturbed areas for mine infrastructure rather than disturb new areas. As a result, the land currently available for progressive rehabilitation at Lady Ella is limited as presented in Table 58.

Table 58: Availability for Progressive Rehabilitation (Lady Ella)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Waste Rock Dump			
Lady Ella WRD	2036	5.41	Available for rehabilitation following determination of future mining options at Lady Ella. For the purpose of the PRCP, the Lady Ella WRE will continue to be held in a state of care and maintenance for up to 10 years. Following this period, if no further mining occurs at Lady Ella, the WRE will be rehabilitated.
Ore Stockpile, ROM and Ancillary Infrastructure			
Lady Ella Ore Stockpile **Lady Ella ROM** **Lady Ella ROM Dam**	2036	3.1	The existing ROM disturbance will remain as a preferred location for future mining operations. This will minimise the need to disturb additional areas. Mineralised material will be prioritised for removal as part of ongoing care and maintenance activities. For the purpose of the PRCP, the Lady Ella Ore Stockpile, ROM, and ROM Dam will continue to be held in a state of care and maintenance for up to 10 years. Following this period, if no further mining occurs at Lady Ella, these features will be rehabilitated.
Lady Ella SD **Lady Ella Northern SD** **Lady Ella Southern SD**	2044	1.41	Water storages are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits. Landholder agreement in place to facilitate the transfer of this infrastructure at mine closure; however, as long-term water quality modelling has not been undertaken, this structure will conservatively be fully rehabilitated.
Roads and Tracks			

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Other Roads – Permanent	2056	7.41	Tracks are required to ensure ongoing access for monitoring and maintenance activities. Following completion of rehabilitation activities, access tracks will be handed over to the landholder for continued access. A landholder agreement in place to facilitate the permanent transfer of access tracks to the underlying landholder at mine closure.

7.3 Non-Use Management Areas

In accordance with the PRCP Guideline:

- where a NUMA has already been identified in a land outcome document and is able to be transitioned into the 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.
- any 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.

For the purposes of this PRCP, the Lady Ella open cut pit has been defined as a NUMA in the EA EPML00701913 (land outcome document) and information requirements outlined in 126C(1)(g) or (h) or 126D(2) or (3) of the EP Act are not required to be provided.

Section 7.5 provides further detail regarding management of the Lady Ella open cut pit to demonstrate sufficient improvement prior to surrender of the environmental authority.

7.4 Voids in Flood Plains

In accordance with section 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff (ARR).

A review of surface hydrology of the Lady Ella area in accordance with the EP Act demonstrates the Lady Ella open pit is not located within a flood plain (WRM, 2023).

7.5 Rehabilitation and Management Methodology

7.5.1 General Rehabilitation Principles

Full implementation of the proposed decommissioning and rehabilitation program will result in a post mining final landform that broadly reflects the pre-mining condition. Mining activities at Lady Ella has included significant development including an open pit, waste rock emplacement and built infrastructure.

The rehabilitation and management methodologies described herein for the Lady Ella area is specific to the rehabilitation of the existing Lady Ella disturbance. A summary of the activities and treatments for the Lady Ella rehabilitation domains is provided in following sections.

7.5.1.1 RA5 Lady Ella - Waste Rock Emplacements

Based on the current configuration and characterisation of the Lady Ella WRE the application of a cover system on the WRE is complex. The available geochemical characterisation information indicates the emplacement contains mostly unreactive (low risk) overburden with a small amount of near-orebody reactive waste placed over the final surface of the emplacement. Further, the emplacement contains batter surfaces which drain to multiple separate catchments.

For the purposes of this PRCP the PAF cover system designed by ATCW is proposed (ATCW crest cover option C4). Justification for the application of this cover design to areas containing PAF has been provided within Section 7.5.6.1.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Lady Ella WRE. Further detail is provided on this requirement within Section 7.5.6.2.

A final decision on whether to install the cover system will be the subject of further options and cost analysis, and stakeholder engagement.

Rehabilitation of the Lady Ella WRE will involve:

- Reprofiling the WRE crest (plateau) to a grade of 0.5%, draining to the Lady Ella pit and northern sediment dam.
- Reprofiling the WRE batters to angle of repose with a 10m berm installed between a 10m vertical batter lift height.
- Application of a batter cover system (ATCW mineralised waste batter treatment)
- Application of a crest cover system (ATCW crest cover option C4).
- The domain will be revegetated in accordance with the Cloncurry Project revegetation strategy (NGH, 2023).
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

7.5.1.2 RA6 Lady Ella - Built Infrastructure

The majority of supporting infrastructure to the Lady Ella mining operations has been progressively decommissioned and removed. The remaining infrastructure at Lady Ella includes the ROM (including ROM Dam) and ore stockpile.

Material characterisation of the Lady Ella ROM identified residual material with ore grade levels of copper. This material was generally considered PAF and had elevated salinity and metal concentrations (refer Section 7.5.5). Chinova intend on reprocessing this material; however, if it is not processed, residual material from the Lady Ella ROM will be relocated to the Lady Ella WRE prior to the installation of the proposed cover system, which is appropriately designed for PAF material.

The decommissioning and rehabilitation strategy for this infrastructure will include:

- Residual mine affected water from the Lady Ella sediment and ROM dams will be transferred to the Lady Ella pit.
- Impacted sediment (approximately 0.5m) removed from the Lady Ella sediment and ROM dams and disposed at a licensed facility authorised to receive such waste.
- Residual ore grade material from the ROM processed or transferred to the Lady Ella WRE.
- Areas will be assessed for contamination (sulphate, salinity, metals) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

7.5.1.3 RA7 Lady Ella - Permanent Infrastructure - Roads and Tracks

Roads and tracks will not be rehabilitated until all remaining rehabilitation works at Lady Ella have been completed. Following completion of all remaining rehabilitation works, roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement.

7.5.1.4 IA1 – Lady Ella Pit

The rehabilitation management strategy for the Lady Ella Residual Void is as follows:

- Installation of safety bunds and signage as per geotechnical report and verification that these are installed as per the geotechnical requirements.
- Annual aerial survey and Lidar to validate geotechnical and hydrology models.
- Predictive void hydrological modelling and void water quality modelling re-run at the end of mine life and calibrated against final landform (refer condition PRCP12 of Final PRCP Schedule).
- Certification that the residual void will not cause environmental harm and is safe to humans and livestock.

7.5.2 Hydrogeology

The hydrogeology for Lady Ella was investigated by AGE in 2023 to meet the requirements of the PRCP guideline (Appendix 1). Groundwater hydrostratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in section 7.1.5. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Lady Ella to assist with determining appropriate containment and management requirements for closure.

7.5.2.1 Conceptual Hydrological Model

To conceptualise the groundwater flow system, AGE (2023) reviewed existing data for ground elevation, infrastructure, geology, and water levels (as available) to produce an interpretative northeast-southwest hydrogeological cross section (Figure 54).

The cross-section line is aligned with the new groundwater bores and highlights the relationship between the Gilbert River Formation and the underlying units. The cross section is also aligned with major site infrastructure, including, the pit, the WRD, the ore stockpile, and the catch dam. The erosional contact between the Gilbert River Formation and underlying Kuridala Group is depicted as undulating and the overall thickness of the Gilbert River Formation increases to the northeast, where the formation is more extensively mapped.

This cross section depicts the infrastructure features that are the main potential sources of solutes to groundwater at Lady Ella. The water table is depicted at the water level inferred from LE03 as well as the Lady Ella pit; however, given the extremely low water flows noted for both the pit and LE03, it is possible that the water at the site is potentially better conceptualised as isolated to fractures. The northern sediment dam is known to contain water and the inferred source of this water is infiltration through the WRD; this infiltration is depicted in the cross section as is the absence of further infiltration of this water into the Gilbert River Formation at LE01.

Interaction between the hydrostratigraphic units is unknown but unlikely at Lady Ella. There are no groundwater receptors indicated on the cross sections. Ecosystem use of groundwater at Lady Ella is unlikely due to the considerable (>30 m) depth to groundwater. There are no pastoral users of groundwater near the cross section and groundwater-surface water interaction is unlikely to the groundwater depth at the site (AGE, 2025a).

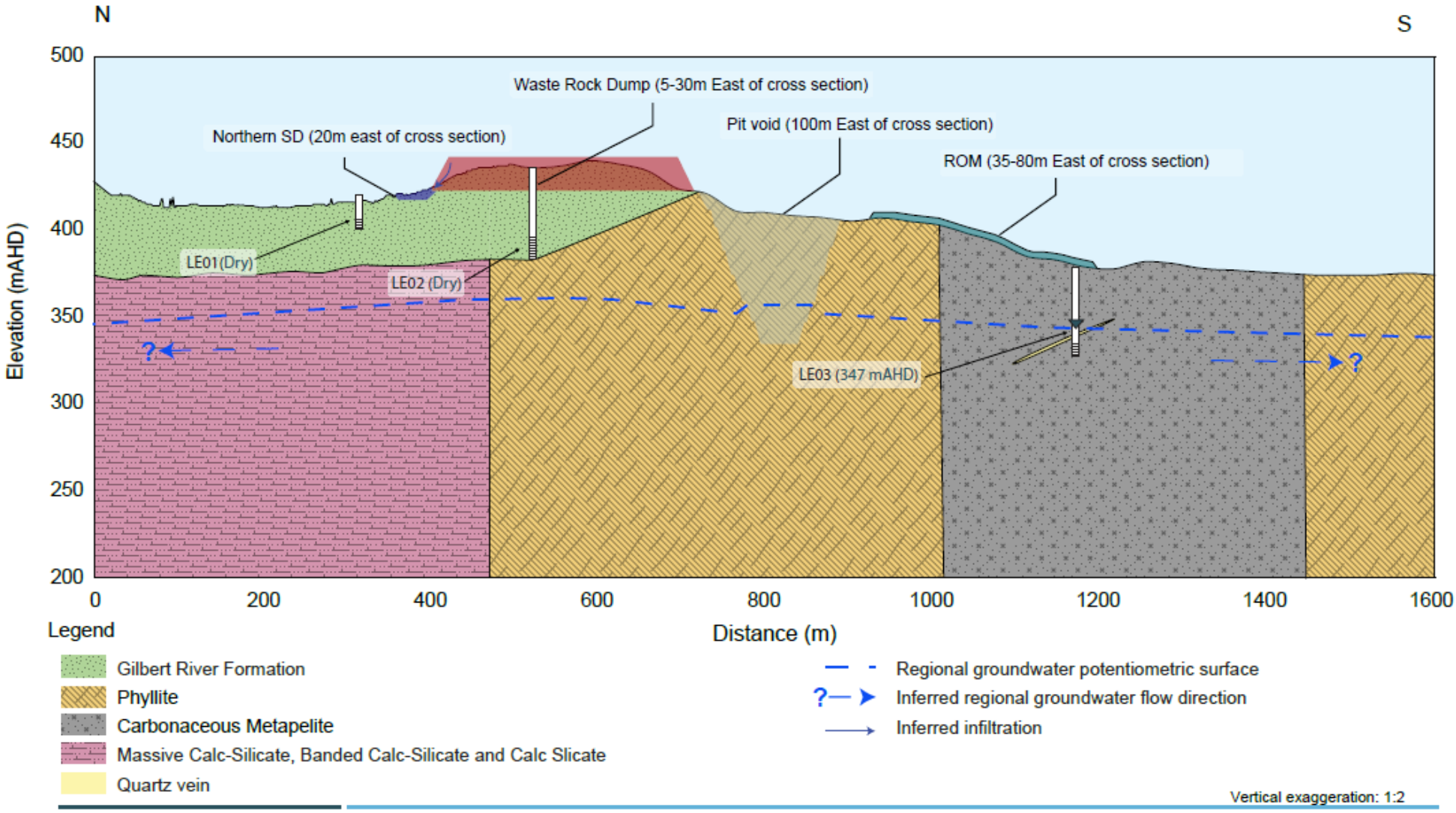


Figure 54: Lady Ella Conceptual Site Model (AGE, 2025a)

7.5.2.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2025a) to assess potential impacts to groundwater from Lady Ella (Table 60). Groundwater levels are relatively deep in the Lady Ella area, and due to the historic nature of the mine and the fact that the pit may not have intercepted water, any drawdown that might have occurred is either in in the recovery or post-recovery stage. As such, future drawdown impacts are not expected, and this impact assessment primarily considers potential changes in groundwater quality.

Site infrastructure that has the potential to be a source of solutes to groundwater includes: the Lady Ella pit, the WRE and the northern sediment dam, and the ROM and associated retention pond. All these features may have generated solutes in the past and solutes are known to have been generated from the ROM and associated retention ponds. The WRE contains potential PAF material. The main future sources of solutes to groundwater are the open pit, the WRE and northern sediment dam, the ROM and associated retention pond; although the risks associated with these potential sources will lessen in closure.

The potential receptors include:

- Mapped areas along the Mort River tributary with potential for terrestrial GDEs;
- Groundwater bores used for livestock watering; and
- Water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to a receptor. The AGE (2025a) impact assessment presented in Table 60 indicates that:

- There is no past or future impact predicted for potential aquatic GDEs regarding water access or water quality from any source;
- There is no past or future impact predicted for potential terrestrial GDEs as a result of groundwater drawdown;
- There is no past or future impact predicted for potential terrestrial GDEs regarding the pit as a source;
- It is unlikely that there are past or future impacts to potential terrestrial GDEs from solutes transported below the water table from any source;
- There is an unlikely past impact and possible future impact predicted for potential terrestrial GDEs from diffusion or migration of solutes in the unsaturated zone regarding the WRD and northern sediment dam. However, a recently installed unsaturated zone monitoring bore (LEO1), which has remained perennially dry, indicates that impact is unlikely.
- There is no past or future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source; and,
- There is no past impact and no future impact for groundwater used for industrial uses regarding water access or water quality from any source.

7.5.2.3 Contaminants of Concern

The methodology used to identify relevant CoCs has been detailed within Section 6.5.2.3. The CoCs identified by AGE as relevant to closure monitoring at Lady Ella are summarised in Table 59, with justification for inclusion or exclusion provided within Appendix 16.

Table 59: Lady Ella CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Arsenic (ug/L)	Y
Chromium (ug/L)	Y
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Fluoride (mg/L)	N
Selenium (ug/L)	Y
Uranium (ug/L)	Y
Zinc (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y

7.5.2.4 Hydrogeology Closure Considerations

Based on the updated hydrogeology assessment for Lady Ella the following measures are proposed for closure:

- Ongoing groundwater quality and level monitoring to confirm limited risks to the receiving environment.

Table 60: Source-Pathway-Receptor analysis for Lady Ella (AGE, 2025a)

Source (and associated risk)	Receptor (and likelihood that receptor is present)	Potential Pathway	Evidence that pathway is present / absent	Impact
Drawdown from past dewatering **As groundwater was extracted during periods of mining, a cone of depression has developed and intermittently changed in depth and extent.**	**Mapped areas with potential for aquatic GDEs** **Not present within 5 km of site.**	If groundwater discharge to the surface water features in question had been reduced as a consequence of drawdown, there could be impacts to the GDE.	**Not present:** No historic pit inflows were recorded, and the host formation is very impermeable.	No past or future impact is predicted.
Pit void **Acid and sulfate-enriched drainage generation within the is possible due to the exposure of sulfide-bearing ore to oxidation.**	**Mapped areas with potential for aquatic GDEs** **Not present within 5 km of site.**	If this water were to flow away from the void and reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present**: There is minimal groundwater interaction with the void and groundwater that is present is at least 30 mBGL. The distance (>15km) to the potential GDEs is likely too great to allow transport in the impermeable formation without considerable natural attenuation.	No past or future impact is predicted.
WRD and associated northern sediment dam: **The WRD is acid generating and has previously developed seepage, which is collected in the sediment dam. Infiltration of seepage below the WRD or northern sediment dam is possible, whereby solutes may potentially reach the water table. Pooling of seepage in the sediment results in a large portion being lost to evaporation; however, some portion may also infiltrate the regolith beneath the dam and could infiltrate to the water table over time. A monitoring bore (LEO1) was recently installed to monitor for this potential seepage; this bore has been dry since installation. This risk**	**Mapped areas with potential for aquatic GDEs** **Not present within 5 km of site.**	If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present**: There is minimal groundwater interaction with the void and groundwater that is present is at least 30 mBGL. The distance (>15km) to the potential GDEs is likely to great to allow transport in the impermeable formation without considerable natural attenuation.	No past or future impact is predicted.

will decrease in closure as the WRD is capped.				
Lady Ella Sediment dam: **Drainage from this area is unlikely to serve as a source of solutes, but since sulfide-bearing ore is potentially present, it is considered as a potential, but unlikely source.**	**Mapped areas with potential for aquatic GDEs** **Not present within 5 km of site.**	If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present**: Groundwater that is present is at least 30 mBGL and unlikely to receive solutes from the surface. The distance (>15km) to the potential GDEs is likely to great to allow transport in the impermeable formation without considerable natural attenuation.	No past or future impact is predicted.
Former ROM area and associated retention pond. **The ROM area is acid generating and has previously developed solute enriched drainage, which is collected in the retention pond. Infiltration of seepage below the ROM area, retention pond, or drainage extending from the retention pond is possible. However, the ability of these solutes to reach the water table is considerably reduced by the impermeably of the rock below these features and the depth to water being >30mBGL. These risks will decrease in closure as PAF material is removed from the ROM area.**	**Mapped areas with potential for aquatic GDEs** **Not present within 5km of site.**	If seepage were to flow to the watertable, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present**: Groundwater that is present is at least 30 mBGL and unlikely to receive solutes from the surface. The distance (>15km) to the potential GDEs is likely to great to allow transport in the impermeable formation without considerable natural attenuation.	No past or future impact is predicted.

Drawdown from past dewatering **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Low:** regional groundwater is 30 mBGL and groundwater is not present near the surface in the Gilbert River Formation, even along drainage lines.	If groundwater levels beneath the terrestrial GDEs had been lowered, vegetation access to water could have been restricted. If the terrestrial GDEs are reliant only on moisture in the unsaturated zone, drawdown of the water table is not a pathway that can affect the availability of that water.	**Drawdown is not present and is not a pathway** Records show that there was minimal groundwater inflows to the pit. **Not present** There is no pathway for mining activities to change the amount of soil moisture or vadose zone water that is available to the terrestrial GDEs. This is dictated by the amount of rainfall, infiltration, and evaporation. Although clearing for mining may have increased infiltration (e.g., due to decreased transpiration), this is not linked to impacts from groundwater changes.	No past or future impact is predicted as a result of drawdown.
Pit Void **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are no likely terrestrial GDEs that directly overlie the area immediately adjacent to the pit. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG. There are areas of BVG 16a east of the ML, with the closest being approximately 1 km from the pit.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the east and are ~1 km from the pit. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of pit water could be connected via a pathway.	**Not present** In area of the pit, the groundwater levels are very deep (>30mBGL) and remnant solutes in the water (if present) are unlikely to be accessible to vegetation. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the pit and pit water levels are >30 mBGL; therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past or future impact is predicted.

WRD and associated northern sediment dam: **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** As described above.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the east and are ~0.8 km from this infrastructure. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the WRD and the containment pond could form a viable pathway for impact.	**Not present** In area of the WRD, the groundwater levels are very deep (>30mBGL) and remnant solutes in the water (if present) are unlikely to be accessible to vegetation. **Possible, but unlikely** Prior to reaching the water table, impacted seepage below the WRD or the northern sediment dam will likely follow a topographic gradient as it infiltrates. This means that diffusion or slow migration of unsaturated seepage toward the regolith beneath the drainage line near the northern sediment dam is possible. This could be accessible to vegetation, but the persistent lack of water in LE01 suggests that this is highly unlikely. This source- pathway connection is even more unlikely post-closure due to capping of the WRD.	No past or future impact is predicted. Future impact from diffusion or migration of solutes in the unsaturated zone is unlikely.
Lady Ella Sediment dam: **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** As described above.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the east and are ~1 km from this infrastructure. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the magazine area could form a pathway for impact.	**Not present** The groundwater levels are likely very deep (>30mBGL) and remnant solutes in the water (if present) are unlikely to be accessible to vegetation. **Possible, but unlikely** Prior to reaching the water table, impacted seepage will likely follow a topographic gradient as it infiltrates. This means that diffusion or slow migration of unsaturated seepage is possible. This could be accessible to vegetation.	No past or future impact is predicted. Future impact from diffusion or migration of solutes in the unsaturated zone is highly unlikely.

Former ROM area and associated retention pond. **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** There are no likely terrestrial GDEs that directly overlie the area immediately adjacent to the pit. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a. There are areas of BVG 16a south of the ML (topographically downgradient from this infrastructure), with the closest being approximately 3 km away.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the south and are ~3 km from this infrastructure. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage below the magazine area could form a pathway for impact.	**Not present** In ROM area, the groundwater levels are likely very deep (>30mBGL) and remnant solutes in the water (if present) are unlikely to be accessible to vegetation. **Possible, but highly unlikely** Prior to reaching the water table, impacted seepage will likely follow a topographic gradient as it infiltrates. This means that diffusion or slow migration of unsaturated seepage is possible. This could be accessible to vegetation.	No past or future impact is predicted. Future impact from diffusion or migration of solutes in the unsaturated zone is highly unlikely.
Drawdown from past dewatering **Risks as described above.**	**Groundwater bores used for livestock watering** There are four livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater levels at the locations of potential livestock bores had been lowered, groundwater user access to water could have been restricted.	**Not present:** No historic pit inflows were recorded, and the host formation is very impermeable.	No past or future impact is predicted.
Pit Void; WRD and northern sediment dam; magazine area and associated sediment dam; and ROM area and associated detention pond. **Risks as described above.**	**Groundwater bores used for livestock watering** There are four livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater below or near these infrastructure locations was impacted by enriched solute loads, and it flowed towards existing or theoretical future bores in any direction, the water quality at those bores could be impacted	**Not present and unlikely in future:** The theoretical future bores, if they ever exist, are unlikely to be located close enough to be impacted due to the very slow groundwater velocity.	No past or future impact is predicted.

Drawdown from past dewatering **Risks as described above**	**Water used for industrial purposes (mining)** Groundwater is used by Chinova in the region.	If groundwater levels at the locations of potential industrial bores had been lowered, groundwater user access to water could have been restricted.	**Not present:** No historic pit inflows were recorded, and the host formation is very impermeable.	No past or future impact is predicted.
Pit Void; WRD and northern sediment dam; magazine area and associated sediment dam; and ROM area and associated detention pond. **Risks as described above**	**Water used for industrial purposes (mining)** Water quality of the groundwater is saline, and therefore limits the beneficial use in for industrial purposes. Water supply is also likely very limited as observed by low permeability in LE03 and in negligible pit inflow rates.	If groundwater quality at the locations of potential industrial bores had been altered to exceed certain water quality objectives (WQOs), impacts may be experienced by the groundwater user.	**Not present:** Water quality changes that may have occurred are unlikely to have changed the utility of water used for industrial purposes (i.e., solute concentrations for regional groundwater are already greater than most WQOs).	No past or future impact is predicted.

7.5.3 Flooding

The potential impacts of flooding on the Lady Ella final closure design were assessed by WRM (WRM, 2023 and 2025) (Appendix 2 and 18).

WRM reviewed the hydrology characteristics at Lady Ella. Lady Ella is located in the upper headwaters of two first order watercourses (Figure 55). There is no external catchment that drains to the site. The Waste Rock emplacement area drains northwards eventually to the Cloncurry River and the ROM drains southwards to the Georgina River basin. As there is no catchment or drainage features that drain to the Lady Ella site, flood modelling of the final landform was not undertaken.

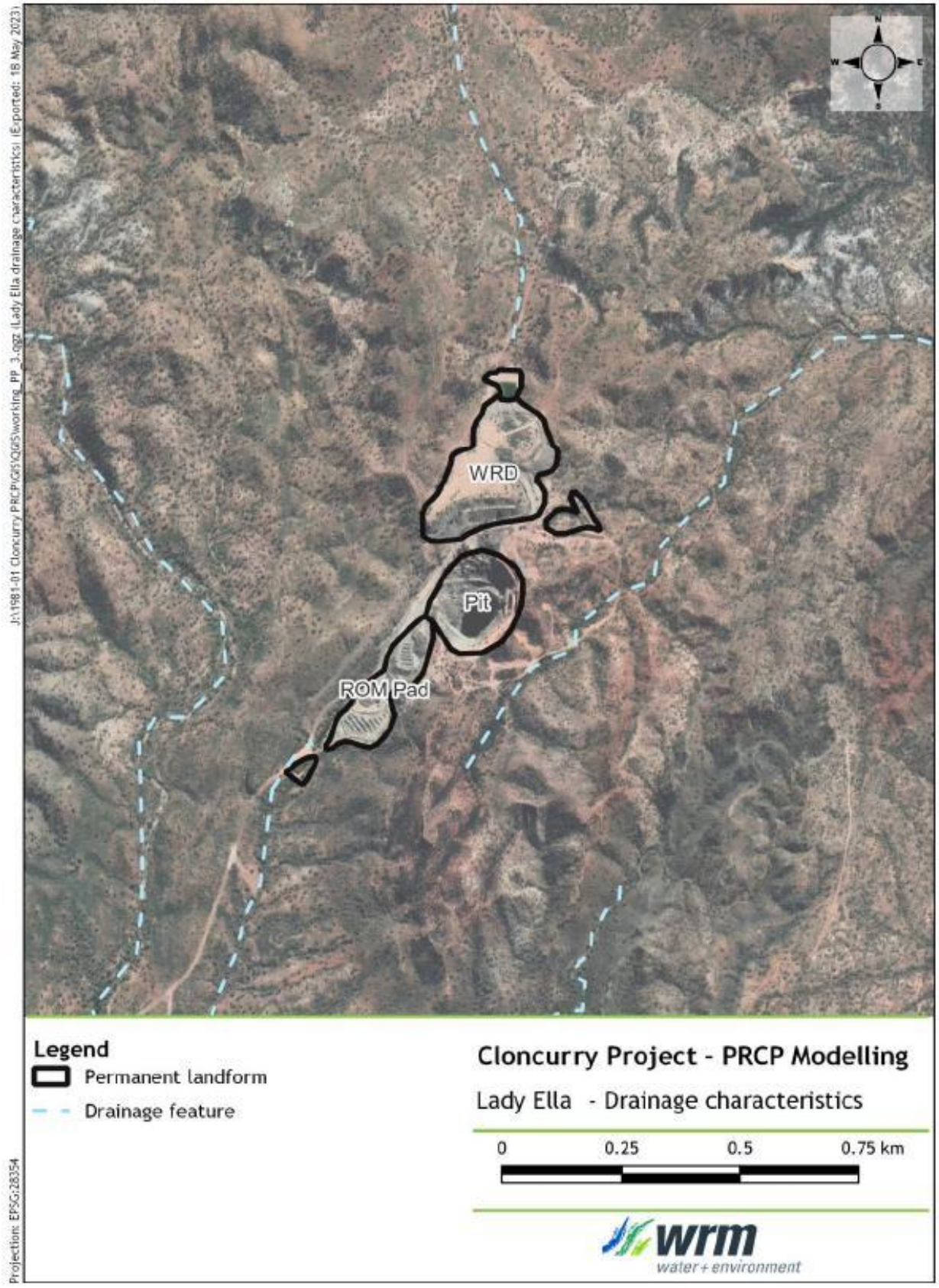


Figure 55: Lady Ella Drainage Characteristics (WRM, 2023)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Lady Ella specified in Table 34. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;
(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 61: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Lady Ella	Lady Ella WRD	10/12/2036	10/12/2032

7.5.4 Soil and Capping Material Assessment

An inventory of materials is required to implement the various rehabilitation strategies proposed for the Lady Ella site. Materials are required to cover the WRE and provide growth medium in decontaminated areas. To complete this work the following material types and geotechnical properties (Table 62) are likely to be required.

Table 62: Lady Ella Rehabilitation Materials Specifications

Material Type	Material Description	Material Specification
Reduce Permeability Layer (RPL)	Material when compacted forms a low hydraulic conductivity "barrier" layer	- Gravel content less than 50%; - Fines content (material particle size <0.075mm) greater than 30%; and - Clay content (material particle size <0.002mm) greater than or equal to 10%.
Rock Mulch/ Growth Medium	Material suitable for plant growth.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Well graded material - Fines content (material particle size <0.075mm) of approximately 30%; - Sand fraction (material particle size >0.075mm and <4.75mm) of approximately 30%; - Gravel (>4.75mm) of approximately 50%; and - Non-plastic to low plasticity fines.
Rock Armour	Provide a very high level of resistance to erosion along high slope and/or high velocity drainage.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Predominantly coarse rock (material particle size >75mm) of greater than 70%. - Minimal fines content.
General Fill	Cut and fill requirements for landform shaping	- Fines content (material particle size <0.075mm) less than 15%; - Sand content (material particle size <4.75mm) of 25-100%; and - Maximum particle size 150mm. - The plasticity index should not be greater than 12.

7.5.4.1 Rehabilitation Material Characterisation

A material characterisation investigation was undertaken at Lady Ella to identify the potential location and quality of available rehabilitation materials (SGME, 2025a) (Appendix 21). The investigation identified two landforms as potential sources for rehabilitation materials; the Lady Ella Borrow Pit 1 (LEBP1) and Lady Ella Borropw Pit 2 (LEBP2) (Figure 56).

The investigation concluded that rehabilitation material at LEBP1 and LEBP2 are suitable to be used as RPL (SGEM, 2025a). The geochemical and physical properties of LEMP1 and LEMP2 discussed in detail in SGME 2025a and Table 63.

It is understood that borrow pits are not authorised at Lady Ella. Accordingly, the identified borrow pits at Lady Ella have not been included when assessing available material onsite. As outlined within Section 6.5.4.2, sufficient material is available throughout the Cloncurry Project to undertake rehabilitation works as required. Should Chinova require access to the rehabilitation material identified at LEBP1 and LEBP2, an EA amendment application will be submitted.

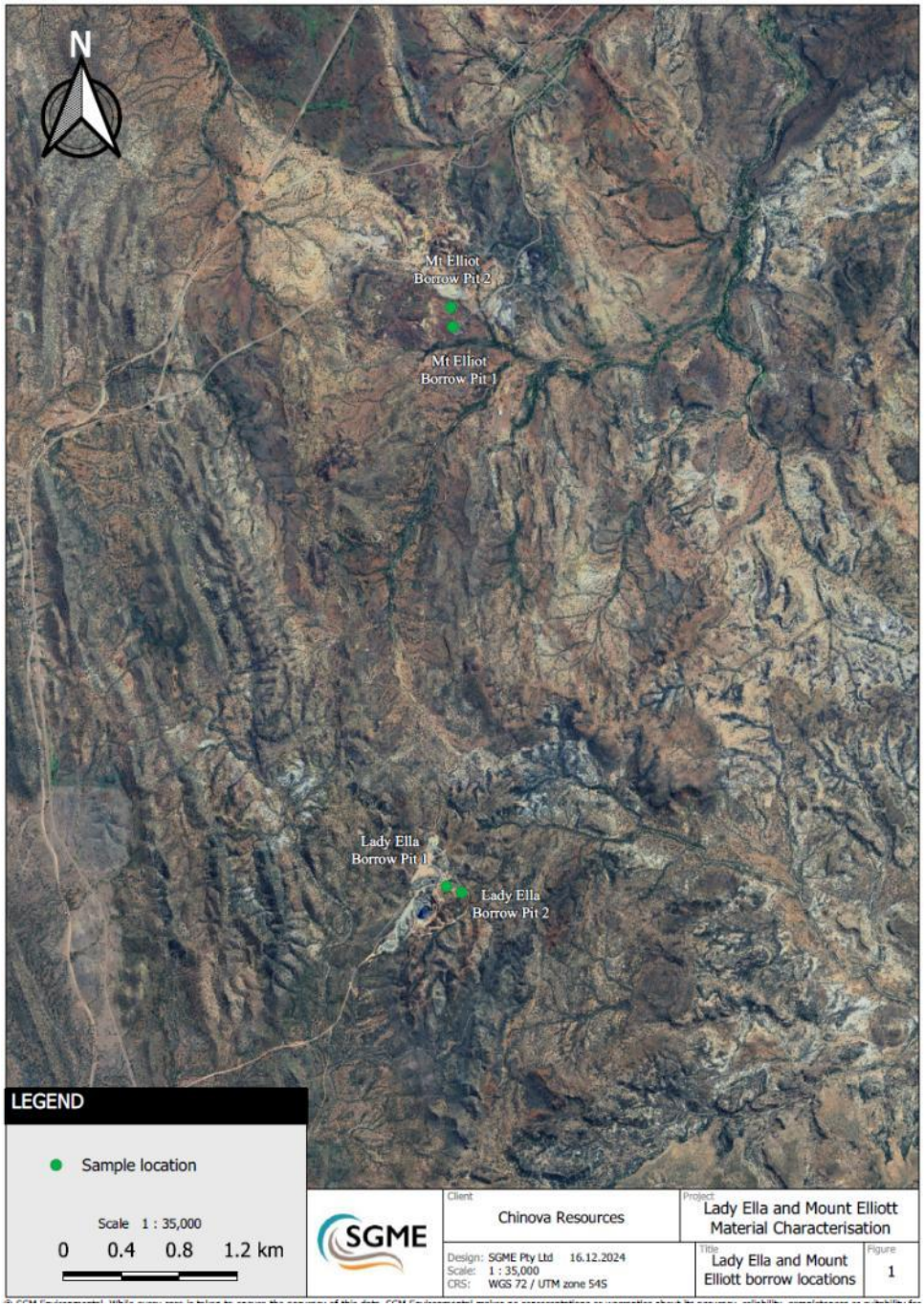


Figure 56: Lady Ella Borrow Pit

Table 63: Material Characterisation – Lady Ella

Location	Key Characteristics	Most Suitable Cover Use	Recommended Treatment / Management
LEBP1	• Slightly acidic (pH 5.5) – below optimal range (6.0–7.5) • Very low fertility – low organic matter (0.5%) and extractable P (<1 mg/kg) • Very low CEC (1.6 meq/100 g) – poor nutrient retention • Deficient Ca, Mg, K; slightly elevated Na (0.12 meq/100 g) → mild sodicity • ESP 7.5%, ESI 0.003 – moderately sodic; potential dispersion • Negative NAPP and low NAGpH → uncertain classification (UC/NAF) • Very low permeability (5.1×10^{-8} m/s) – minimal drainage • Non-plastic (stable), but dispersive behaviour confirmed by pinhole testing	RPL	Screening of soils may be necessary to avoid particle segregation within the RPL.
LEBP2	• Slightly acidic–neutral (pH 6.6) – within optimal range • Very low fertility – low OM (0.65%) and P (<1 mg/kg) • Low CEC (5.7 meq/100 g) – weak nutrient retention • Deficient Ca and K; adequate Mg (3.4 meq/100 g) but excessive proportion (59.7%) causing nutrient imbalance • Elevated Na (0.62 meq/100 g); ESP 10.8%, ESI 0.002 – sodic and dispersive	RPL	Screening of soils may be necessary to avoid particle segregation within the RPL.

	• Ca:Mg ratio (0.44) → poor structure and high erosion risk • NAF – non-acid forming, no AMD risk • Very low permeability (5.1×10^{-8} m/s), non-plastic and stable		

7.5.4.2 Material Balance

No rehabilitation materials were retained, and no soil assessment activities occurred during the establishment of the Lady Ella site or over the course of the mining campaign. The estimated quantities of materials required to rehabilitate the Lady Ella area are provided in Table 64.

As detailed within Section 6.5.4.2, there is sufficient material onsite to undertake all proposed rehabilitation works. Accordingly, required rehabilitation material will be sourced from available stockpiles at Starra to enable appropriate rehabilitation works to be undertaken.

Table 64: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Footprint (ha)	Estimated volume of Growth Medium (m^3)	Estimated volume of Capillary Break/ Drainage Material (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
Lady Ella WRE	5.41	64,800 m^3	N/A	32,400 m^3	NAF Rind: 145,000 m^3	TBC*

*Armour rock quantities to be confirmed by future detailed cover system designs

7.5.5 Waste Characterisation

To access the Lady Ella copper deposit significant volumes of non-ore bearing overburden (waste rock) was excavated and deposited on the Lady Ella WRE or placed to construct the Lady Ella ROM pad. No geochemical characterisation of Lady Ella waste rock was completed during operations.

Since completion of mining three phases of geochemical characterisation work of the Lady Ella site has been completed as follows:

- In-situ geochemical characterisation of the Lady Ella WRE and ROM was undertaken by RGS in 2011.
- In-situ geochemical characterisation of the Lady Ella WRE by Chinova in 2020.
- In-situ geochemical characterisation of the Lady Ella WRE by Chinova in 2022-2023.

In 2011, two cores were drilled (WDQ018 and WDQ019) to a depth of 14m and 18m within the Lady Ella WRE, and one core was drilled within the Lady Ella ROM pad. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water-soluble metals. RGS (2011) reported that the waste

material within the WRE was NAF, with low levels of salinity and elevated soluble metal levels including aluminium, cobalt, copper, manganese and nickel. In contrast the Lady Ella ROM was considered generally PAF material with elevated salinity and metal concentrations consistent with the presence of residual ore stockpiles.

In 2020, Chinova completed surface sampling across the WRE crest and batters as well as at the Lady Ella sediment basin in August 2020. The program involved collecting rock samples from Lady Ella from the surface (0cm to 30cm) and sub-surface (1m to 3m) for laboratory analysis.

To supplement the existing waste characterisation information across Lady Ella, a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10)(Figure 58). The program involved collecting an additional six waste rock samples from Lady Ella from the surface (0cm to 30cm) using hand tools and immediately placing the material into sealed plastic bags (approximately 2kg per sample) for laboratory analysis.

Results from the recent sampling round indicates that waste rock sampled at Lady Ella is predominantly NAF but it is evident that some waste rock placed within the facility (Lady Ella East batter) has an elevated risk of acid generation, low factor of safety (ANC:MPA ratio < 2) and is classified as PAF/Uncertain (Figure 57). In addition, the Lady waste rock sampled has a low risk of saline runoff and most metals tested were only sparingly soluble in water except for soluble copper (Cu) and aluminium (Al) that were at concentrations exceeding livestock watering trigger values (Chinova 2023).

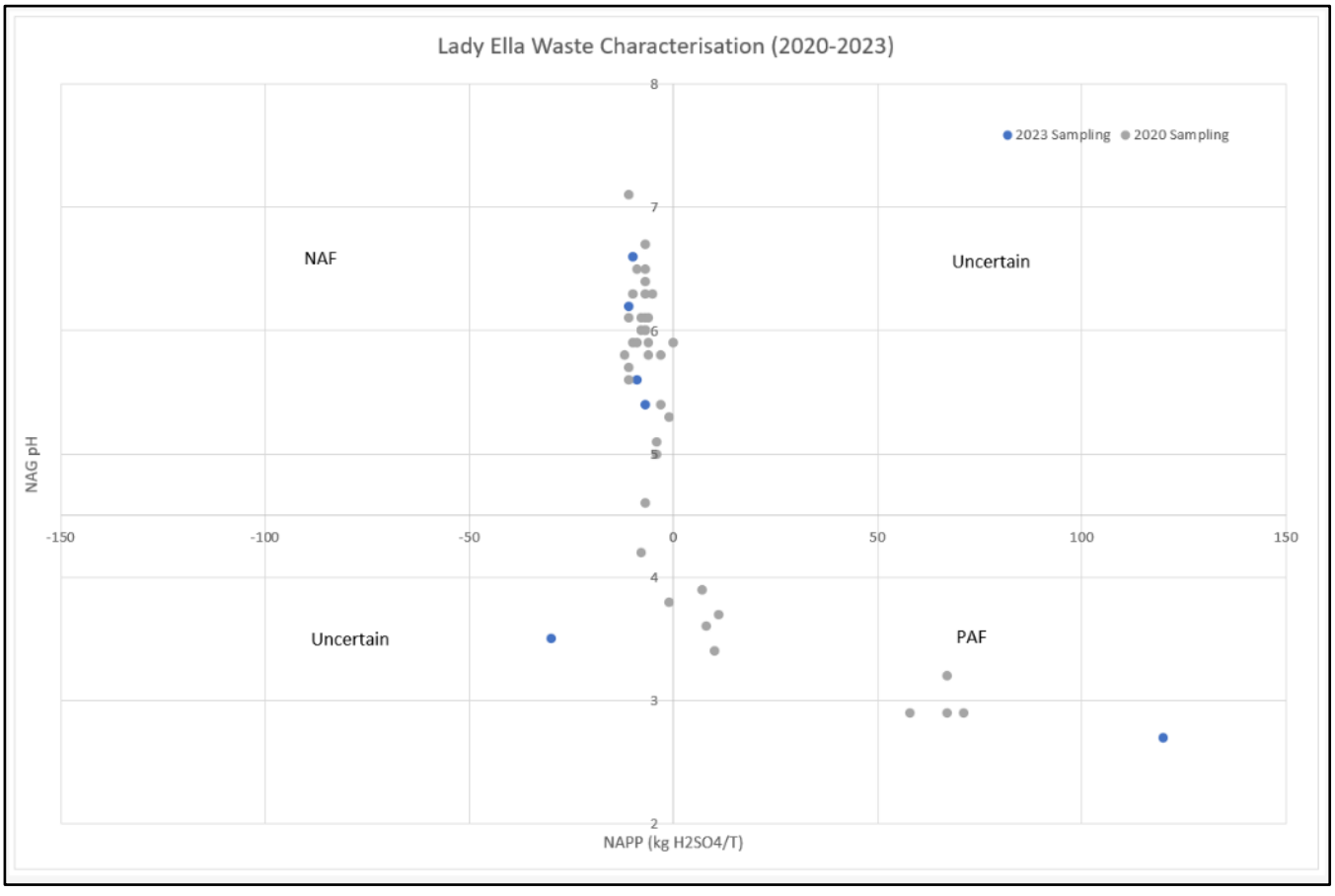


Figure 57: Lady Ella Waste Material Characterisation (2020-2023)

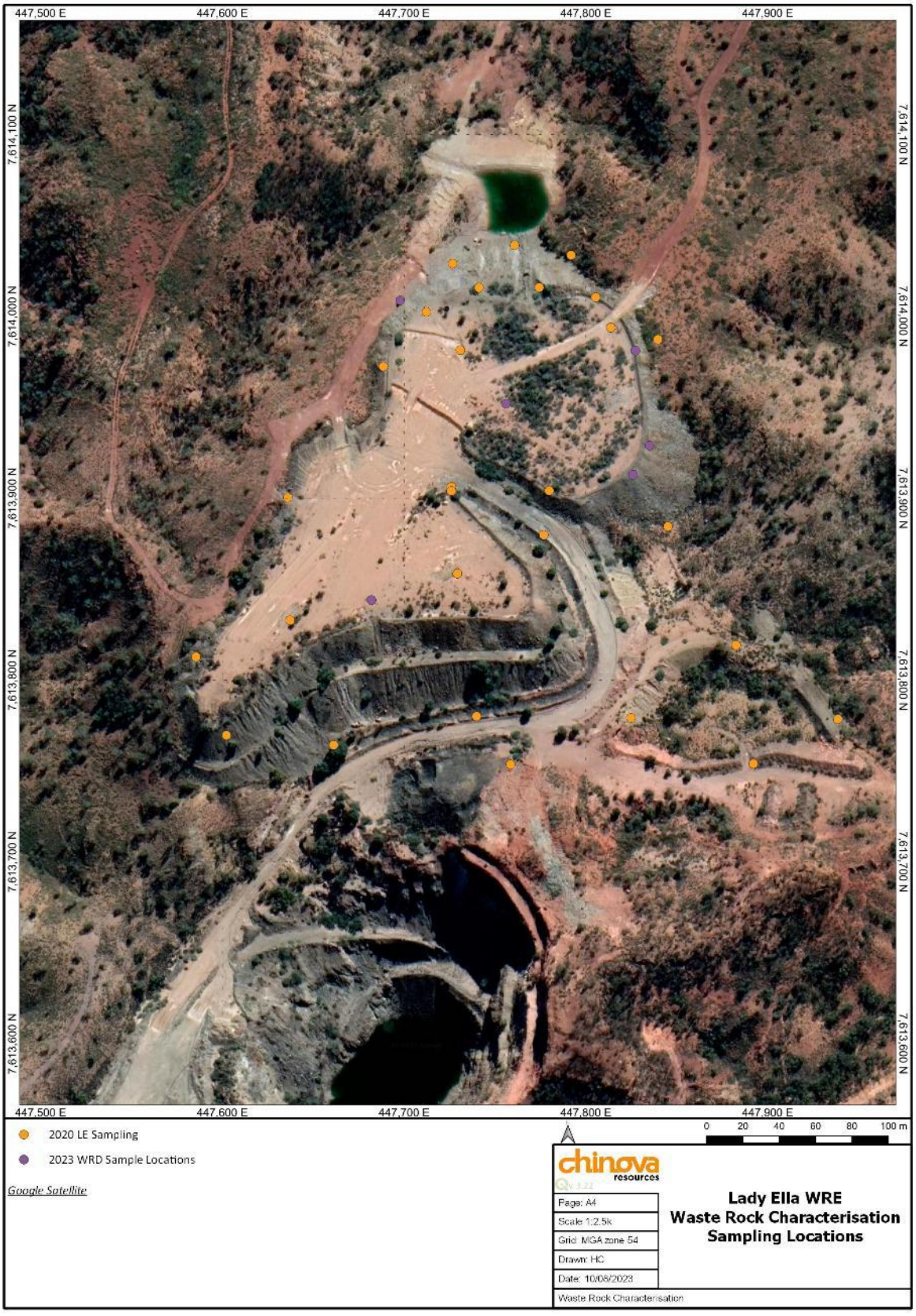


Figure 58: Lady Ella Waste Rock Characterisation Sampling Locations

7.5.6 Landform and Cover Design

7.5.6.1 Cover Designs

The geochemical properties of the waste rock contained in the Lady Ella WRE presents a risk of mobilising oxidation products to the receiving environment. To mitigate this risk, a suitable cover system is required to limit water and oxygen ingress will be placed over the WRE.

ATCW were engaged in 2022 to develop closure strategies for mineralised waste storages across Chinova's assets, including the Lady Ella WRE. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified four (5) potential cover system configurations with the ability to meet the Cloncurry rehabilitation objectives and transition to the agreed PMLU. These configurations are shown in Figure 41 and include:

- Option 1: Queensland Government (DETSI) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.
    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.
- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armour (rind)
- Option 5: Store and release cover system:
    - 0.15m.
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.
- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The modelling results identified the most suitable cover system for the Lady Ella WRE is:

- Cover Option C4 (Potentially Acid Forming (PAF) Cover) consisting of
    - 0.60 m of reduced permeability layer;
    - 1.20 m of Growth Media (Rock Mulch).

The modelling showed the cover system achieved the water flux criteria while also providing the second most optimum plant growing days per year. In comparison, the DES default cover was found to generate too

much surface runoff resulting in reduced PAM. In addition, the 1.2m ISL store and release cover is the simplest and most cost-effective cover to construct, with all cover materials available on site.

To treat the exposed emplacement batters ATCW designed geometric Batter Slopes with 20m wide terraces placed every 10m (vertical) with a rind cover consisting of unreactive waste rock/ rock mulch at a nominal thickness of 10m (Figure 37). This approach would result in slopes that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling (WEPP) of the proposed landforms to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 55) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or constructed from rock/rock mulch, with suitable armouring or construction materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability (ATCW, 2025).

Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.

7.5.6.2 Final landform

The final landform to remain on the Lady Ella site that is a substantial departure from the pre-mine condition is the WRE and residual void. The ROM will have all material removed to natural ground.

At the current stage of the Lady Ella project, the location and geometry of the major site landforms have been established. The design process for this PRCP has considered the existing status of the landforms as much as possible, and where appropriate, prioritised the use of suitable materials sourced from existing emplacements/ stockpiles and/or disturbances for use as backfill and cover system construction materials.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind.
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

To meet the landform design principals the final Lady Ella WRE landform will require reprofiling and the application of an appropriate cover system (Section 7.5.6.1).

A 3D representation of the current and proposed final landforms (including PMLUs) at the Lady Ella project area are provided in Figure 59 and Figure 60. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7)

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Lady Ella specified in Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and
(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and
(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:

(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 65: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Lady Ella	Lady Ella WRD	10/12/2036	10/12/2034

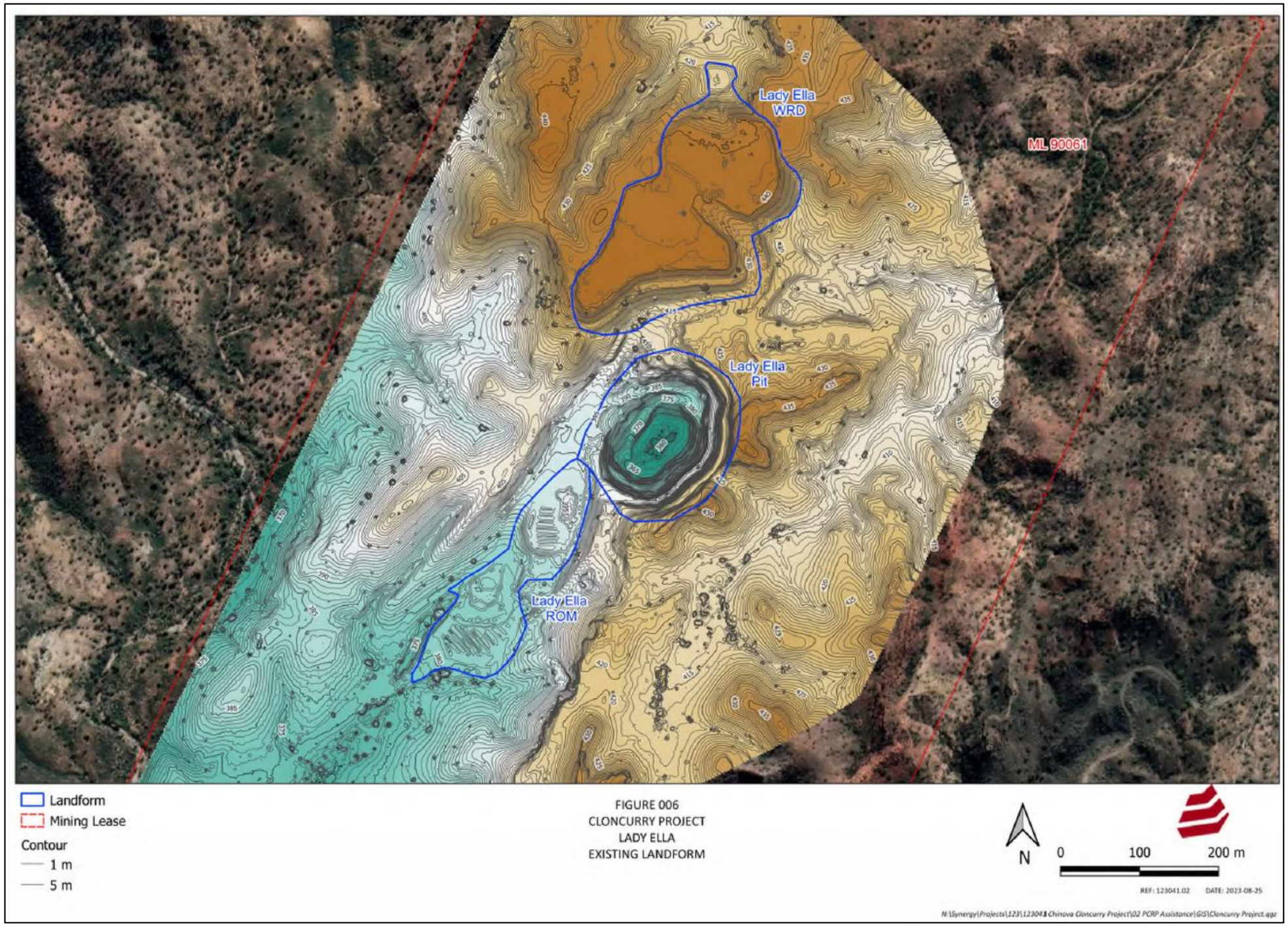


Figure 59: Lady Ella Existing Landform

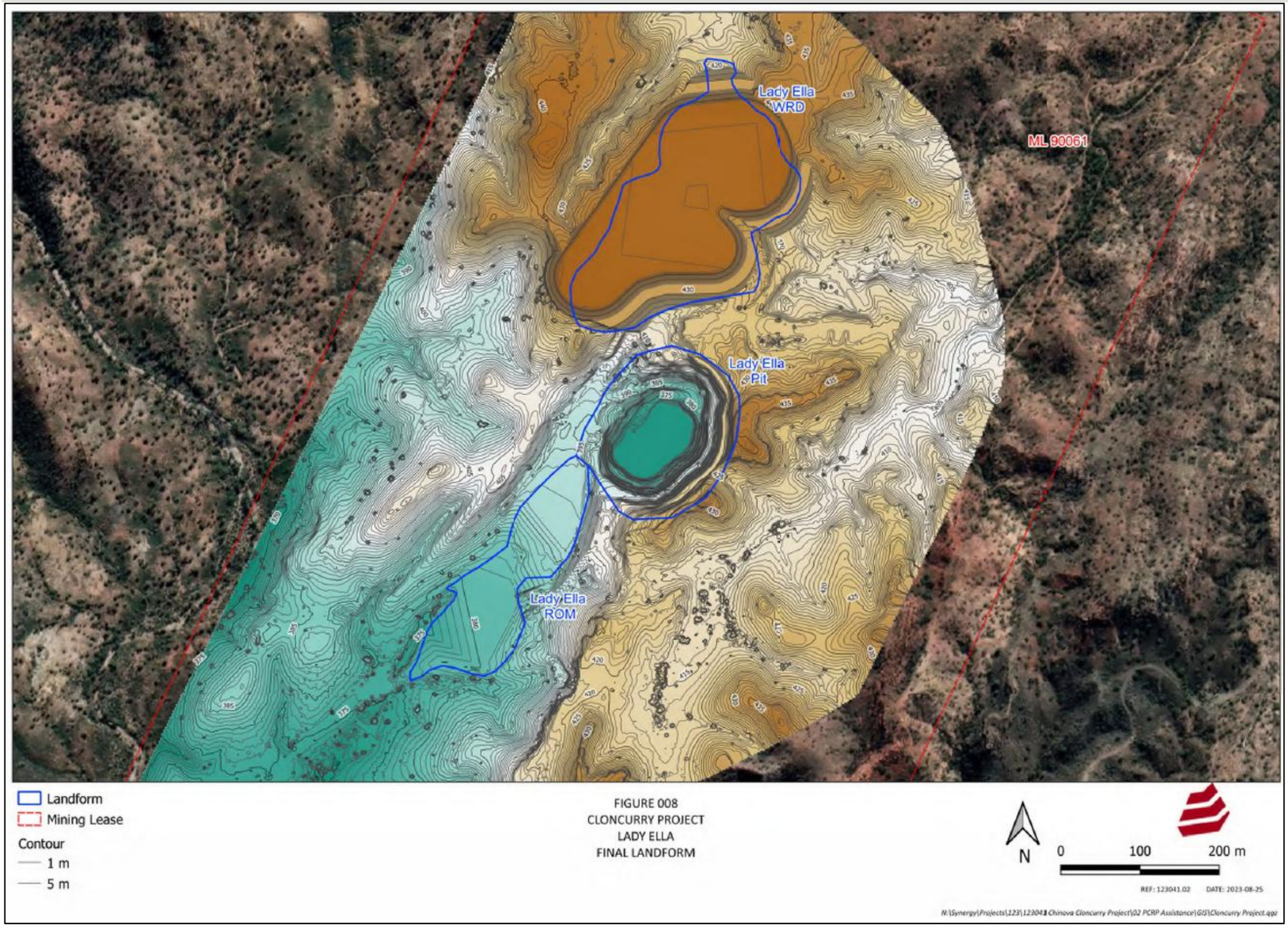


Figure 60: Lady Ella Conceptual Final Landform

7.5.7 Lady Ella Residual Void

7.5.7.1 Overview

The site consists of the Lady Ella open pit (3.2 ha). The Lady Ella pit contains a residual resource that could be subject to further mining in the future. The Lady Ella pit is an approved residual void and non-use management area.

7.5.7.2 Pit Design Plan and Current Dimensions

Figure 61 shows the Lady Ella Pit at the end of mining in 2003. The pit is approximately 220m by 180m and approximately 40-60m deep from the pit rim. Note that due to the steep topography the pit rim varies between 423m – 394.5 mAHD.

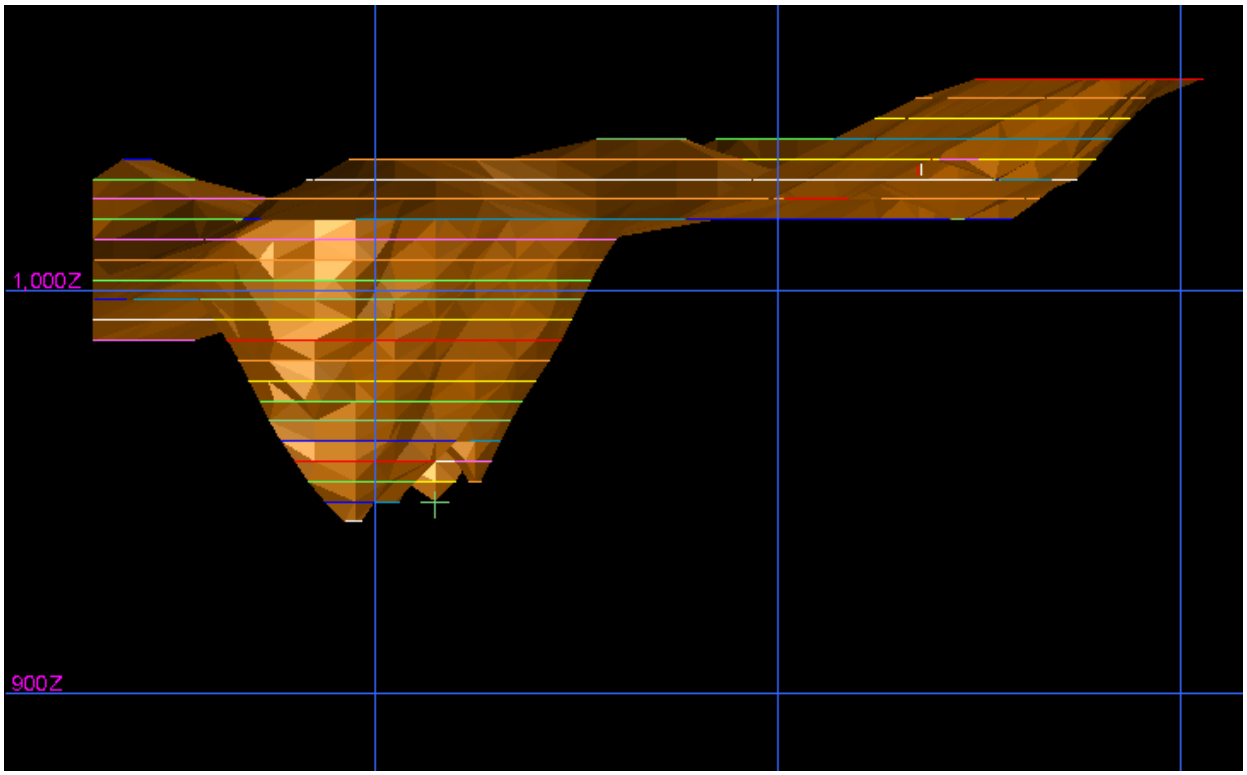


Figure 61: Lady Ella Pit Shell at cessation of mining

7.5.7.3 Pit Void Catchment Area

The catchment area was delineated using digital elevation model (DEM) data, whereby the catchment area is defined by the topography. Elevational data was used in combination with geomorphic inferences from satellite imagery to estimate catchment delineation. The Lady Ella pit catchment area has been estimated to be approximately 8ha.

7.5.7.4 Lady Ella Pit Water Quality

A review of historical water quality records from 2013 to 2023 (Table 66) shows that water in the Lady Ella Pit regularly exceeds trigger values for livestock and protection of 95% of freshwater species for slightly to moderately disturbed systems (ANZECC 2000) for metals including aluminium, cadmium, cobalt, copper, manganese, nickel, and zinc.

Table 66: Lady Ella Pit water quality

	Unit	EQL	ANZECC 2000 FW 95%	ANZECC 2000 Livestock	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit	Lady Ella Pit
					26 Feb 2023	11 Feb 2016	16 May 2015	19 Feb 2015	04 Aug 2014	03 Nov 2014	09 May 2014	16 May 2013	17 Nov 2013
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.5		1000	740	2,300	6,700	5,600	4,700	6,800	4,500	6,000	8,300
Electrical Conductivity (Lab)	µS/cm	5		5760	1,400	3,500	8,300	7,500	7,300	9,000	6,500	8,000	11,000
Fluoride (filtered)	mg/L	0.05		2	1.9	1.2	1.2	1.0	1.6	0.98	2.8	1.7	27
pH (Lab)	-	0			4.6	3.7	3.5	3.6	3.7	3.6	3.7		
Hardness as CaCO3 (filtered)	mg/L	1			480	1,600						3,700	5,000
Total Suspended Solids (Lab)	mg/L	5			<5	12						9	20
Aluminium	mg/L	0.005	0.055	5	4.1	16	39	31	30	38	27	35	44
Aluminium (filtered)	mg/L	0.005	0.055	5	3.9	16						35	44
Arsenic	mg/L	0.003		0.5	<0.003	0.055	0.12	0.093	0.052	0.10	0.074	0.090	0.13
Arsenic (filtered)	mg/L	0.003		0.5	<0.003	0.049						0.090	0.13
Beryllium	mg/L	0.0001			0.014	0.056	0.15	0.12	0.11	0.14	0.093		
Beryllium (filtered)	mg/L	0.0001			0.014	0.055							
Bismuth	mg/L	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Bismuth (filtered)	mg/L	0.0005			<0.0005	<0.0005						<0.0005	<0.0005
Boron	mg/L	0.005	0.37	5	0.013	0.040	0.11	0.083	0.077	0.098	0.070	0.096	0.13
Boron (filtered)	mg/L	0.005	0.37	5	0.012	0.043						0.095	0.11
Cadmium	mg/L	0.0001	0.0002	0.01	0.0008	0.0050	0.015	0.0076	0.011	0.014	0.0093	0.012	0.017
Chromium (III+VI)	mg/L	0.001		1	<0.001	0.002	<0.003	<0.003	<0.002	<0.003	<0.002	0.004	<0.003
Chromium (III+VI) (filtered)	mg/L	0.001		1	<0.001	0.001						<0.002	<0.003
Cobalt	mg/L	0.001		1	1.1	4.5	12	10	8.7	11	7.0	8.9	12
Cobalt (filtered)	mg/L	0.001		1	1.1	4.5						8.9	12
Copper	mg/L	0.001	0.0014	0.4	92	330	840	620	630	720	590	650	860
Copper (filtered)	mg/L	0.001	0.0014	0.4	91	330						650	860
Iron	mg/L	0.005			0.16	1.8	7.0	1.5	3.1	4.2	1.1	11	13
Iron (filtered)	mg/L	0.005			0.090	0.90						11	13
Lead	mg/L	0.001	0.0034	0.1	<0.001	0.007	0.016	0.014	0.004	0.013	0.011	0.015	0.013
Lead (filtered)	mg/L	0.001	0.0034	0.1	<0.001	0.006						0.013	0.013
Magnesium (filtered)	mg/L	0.05			72	280						580	850
Manganese	mg/L	0.005	1.9		6.1	27	91	53	49	74	43	46	67
Manganese (filtered)	mg/L	0.005	1.9		6.1	27						46	67

Mercury	mg/L	0.00005	0.0006	0.002	<0.00005	<0.00005	<0.0001	<0.00005	<0.00005	0.00005	<0.00005	0.0033	0.00007
Mercury (filtered)	mg/L	0.00005	0.0006	0.002	<0.00005	<0.00005						0.0019	0.00005
Molybdenum	mg/L	0.001		0.15	<0.001	<0.001	0.004	<0.002	<0.002	<0.003	0.005	<0.002	<0.003
Molybdenum (filtered)	mg/L	0.001		0.15	<0.001	<0.001						<0.002	<0.003
Nickel	mg/L	0.001	0.011	1	0.61	2.7	7.8	6.2	5.6	7.1	4.7	6.4	9.0
Nickel (filtered)	mg/L	0.001	0.011	1	0.60	2.7						6.3	9.0
Selenium	mg/L	0.003	0.011	0.02	0.006	0.057	0.16	0.13	0.10	0.13	0.096	0.11	0.17
Selenium (filtered)	mg/L	0.003	0.011	0.02	0.006	0.056						0.11	0.18
Silver	mg/L	0.00005	0.00005		<0.0005	0.00012	0.00015	0.00037	0.0054	0.0061	0.00042	0.0030	0.0046
Silver (filtered)	mg/L	0.00005	0.00005		<0.0005	<0.00005						0.0030	0.0027
Tin	mg/L	0.002			<0.002	<0.002	<0.006	<0.004	<0.004	<0.006	<0.004	<0.004	<0.006
Tin (filtered)	mg/L	0.002			<0.002	<0.002						<0.004	<0.006
Uranium	µg/L	0.5		200	20	94	220	150	220	240	130	180	<0.5
Uranium (filtered)	µg/L	0.5		200	20	94						170	<0.5
Zinc	mg/L	0.005	0.008	20	0.29	1.4	2.8	2.2	2.3	2.9	2.0	2.3	3.4
Zinc (filtered)	mg/L	0.005	0.008	20	0.28	1.4						2.3	3.4

7.5.7.5 Predicted Void Water Quality

WRM (2025) undertook initial void hydrology modelling to predict long-term water quality, as well as water level behaviour (refer Section 7.5.7.6), within residual voids. A void water balance model was developed through GoldSim, which was used to predict long-term water quality over a 500-year period. Available rainfall and evaporation data from the past 136 years was looped to create an indicative long-term climate sequence.

Key components of the GoldSim model included:

- Final void geometry;
- Final void characteristics, including full storage volume and full storage level;
- Rainfall and evaporation;
- Catchment runoff;
- Groundwater flowrates; and
- Water quality (surface and groundwater).

Available groundwater and waste rock characterisation data for each mining area were assessed to identify potential long-term CoCs (WRM, 2025). This assessment concluded EC and sulphate as the only CoCs relevant to long-term void water quality.

Long-term water quality modelling concluded that the average long term concentrations of EC and sulphate for the Lady Ella void are within the permissible livestock drinking water quality limit and are below average EC and sulphate levels recorded at LE03.

In accordance with Condition PRCP12 of the approved PRCP Schedule, at the end of the Lady Ella life of mine (2036), Chinova will commission predictive hydrological modelling and void water quality modelling which is calibrated against the final landform. This modelling will demonstrate that the water quality and level within each residual void will not cause environmental harm to the surrounding environment, the residual voids will continue to act as groundwater sinks, and there is no environmental harm beyond the boundaries of the Project mining leases.

Table 67: Lady Ella Pit Water Quality (WRM, 2025)

CoC	Livestock Drinking Water Guideline Limit	Average (mg/L)	80th Percentile (mg/L)	Average Groundwater Quality Concentrations (LE03)
Electrical Conductivity	2,400[1]	210	549	3323
Sulphate	422[2]	154	402	846.7

[1] Guideline value of Salinity from Table 3.8 (dairy cattle) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

[2] Guideline value of Salinity from Table 3.7 (cattle – high concentrate) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

7.5.7.6 Void Hydraulic Modelling

Void hydrology modelling was undertaken by AGE (2023, 2025a). AGE developed a pit water balance model to assess the water balance for the Lady Ella pit and compare this to proposed closure plans. The water balance was calculated on a monthly basis. The principal water balance components are:

Inputs:

- runoff (calculated as average rainfall over the catchment area, multiplied by a runoff coefficient);
- direct rainfall over the pit; and
- groundwater inflow (if applicable).

Outputs:

- evaporation (calculated as average pan evaporation multiplied by a coefficient); and
- groundwater outflow (if applicable)

A full description of AGE's modelling has been provided within Appendix 1 and 19.

In summary, minimal groundwater inflow was observed during mining; however, a pit lake developed during the first wet season. Groundwater modelling indicates that while this pit is technically a groundwater source, the rates of groundwater movement out of the pit are very low. As such, there is minimal exchange of water between the pit and the host rock (AGE, 2025a).

The final void water levels for this pit are expected to remain well below the spill level, with no risk of overtopping, including under exceptionally wet conditions (AGE, 2025a). The likelihood of the pit lake stratifying is low due to the shallow nature of the void and its predicted tendency to overturn (AGE, 2025a).

As detailed within Section 7.5.7.5, predicted long-term water quality for identified CoCs (EC and sulphate) is beneath permissible livestock drinking water quality limits and the average groundwater EC and sulphate levels recorded within the Lady Ella operational area. Further, there is minimal risk to EVs due to the slow flow rates in the impermeable host rock and the absence of groundwater users in the vicinity of the pit (AGE, 2025a).

A summary of void water modelling results has been presented in in Table 68.

Table 68: Lady Ella Pit Water Balance (AGE, 2023; AGE, 2025a)

Pit	Existing water level (mAHD)	Current status	Equilibrium water level -closure conditions (mAHD)	Closure Status
Lady Ella	358 to 367	Source	355	Source

The PRCP guidelines also requires an assessment of the potential for voids to overtop. This was also evaluated by simulating a yearly water budget for a 1% and 5% AEP precipitation scenarios. In all instances the pit lake has significant excess capacity and there is no risk of overtopping.

Table 69: Lady Ella Risk of Overtopping (AGE, 2023)

Pit	Pit Crest (mAHD	Water level after 5%AEP year (mAHD)	Remaining capacity after 5% AEP year (m3)	Water level after 1%AEP year (mAHD)	Remaining capacity after 1% AEP year (m3)
Lady Ella	394.5	364	334,400	368	304,800

The PRCP guidelines requires an assessment of the potential for voids to stratify. The process of stratification of pit lakes can occur through chemical (e.g., salinity and redox state) and physical

mechanisms, (e.g., temperature) This stratification involves the segregation of the lake level by specific parameters. AGE (2023) found that the risk of the pit stratify was low due to its shallow nature and likelihood to overturn.

Table 70: Lady Ella Assessment of Likelihood of Void Stratification (AGE,2023)

Pit	Equilibrium water level -closure conditions (mAHD)	Pit base (mAHD)	Equilibrium lake depth (m)	Likelihood of stratification in closure (rational)
Lady Ella	355	334.5	20.5	low, the pit lake is shallow and likely to overturn

7.5.8 Geotechnical Stability – Lady Ella Open Cut Pit

Quantum Geotechnical have undertaken an updated assessment and numerical modelling of the long-term stability of the Lady Ella open cut pit. Full details of the assessment are provided in Appendix 8.

7.5.8.1 Pit Stability

Pit wall stability was reviewed by Quantum (2023) by comparing a survey pick-up of the pit, taken upon completion of mining in December 2002 with a lidar image taken in July 2021. The two Digital Terrain Models (DTMs) were overlain and sliced along the section lines shown in Figure 62. Figure 63 and Figure 64 show that very little change has occurred over the last two decades and the high wall in particular has seen very little erosion or fall off. Of note, the west wall has seen some fall-off, most likely sliding along foliation planes that dip into the pit.

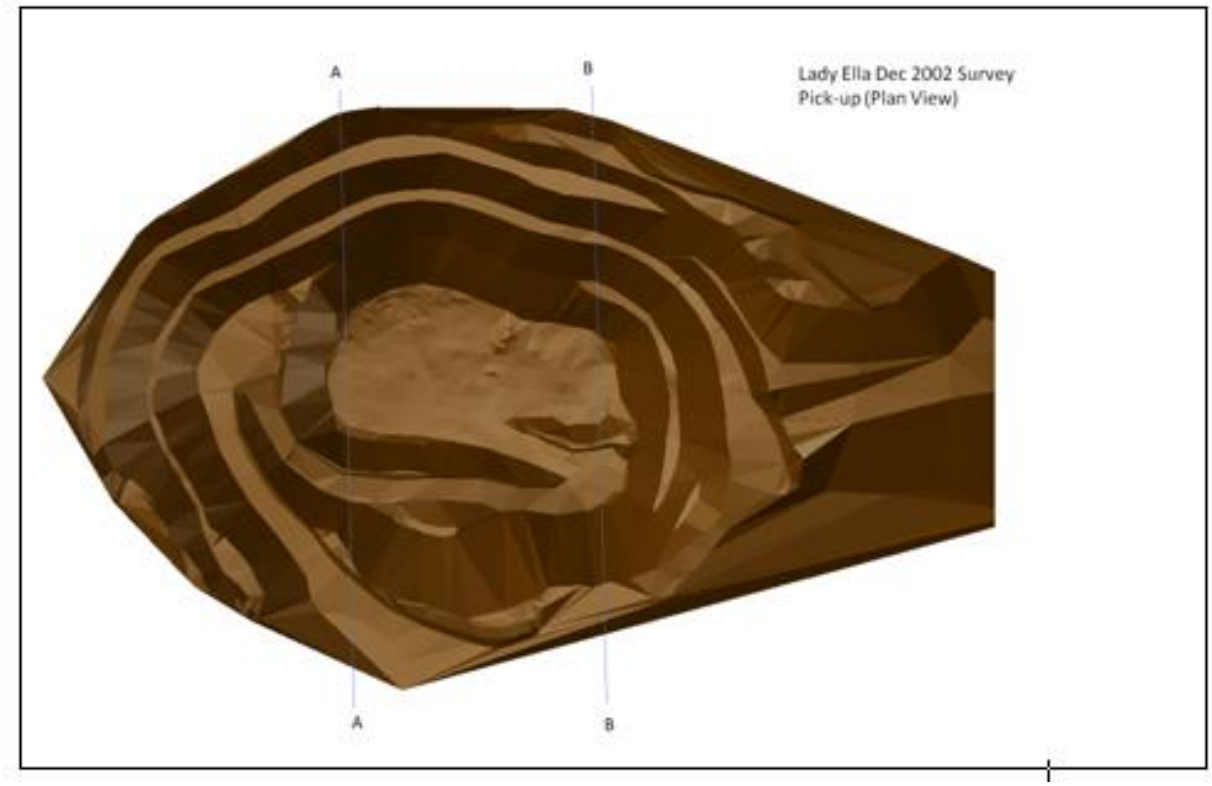


Figure 62: Plan view of the Lady Ella pit (December 2002)

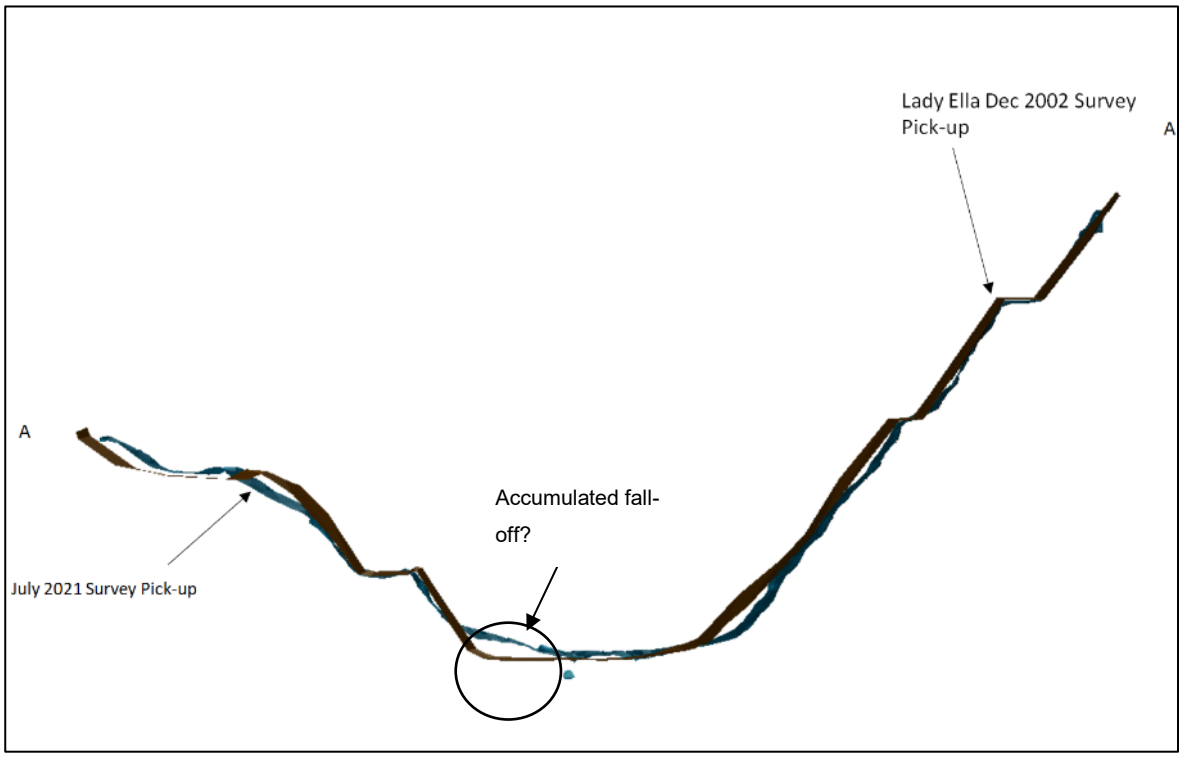


Figure 63: Cross Section A, comparing survey pick-ups taken in 2002 and 2021.

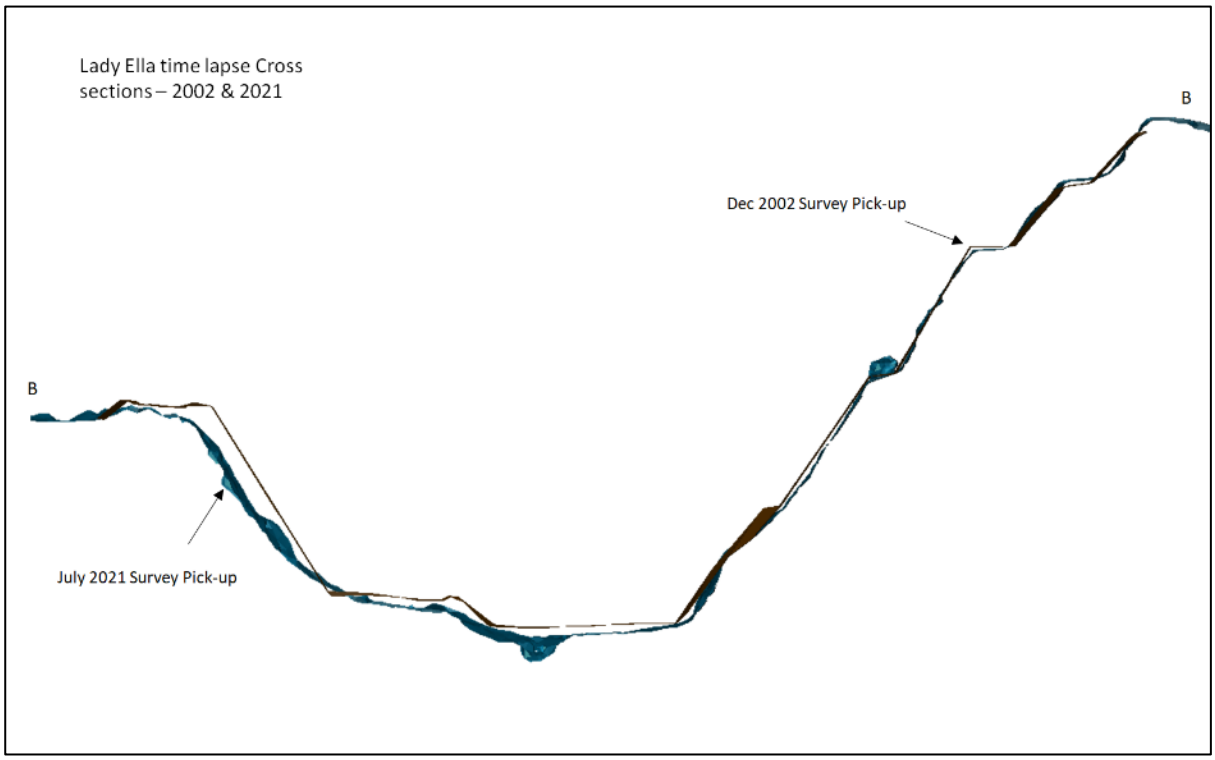


Figure 64: Cross Section B, comparing survey pick-ups taken in 2002 and 2021.

7.5.8.2 Pit Wall Stability Risk and Control

Numerical modelling of Lady Ella pit was undertaken to assess the likelihood of future pit wall instability by Quantum (2023) using a Map3D model.

In summary results of the modelling show:

- that stress driven failure is unlikely in the upper three benches, extending down to ~55m below surface on the eastern side.
- Tensional stress at the northern end of the pit appears greater than the south, particularly in the lowest two benches suggesting that undercutting of the benches above could occur (Figure 65). To date there is no physical evidence to support this. If significant unravelling did occur it is likely the broken material would, at some point, form a buttress to arrest further failure.

In addition, the weathered Mesozoic sediments at the pit crest will likely erode over time. The southwest side of the pit appears to have experienced the most fall-off around the east dipping fault.

Bunding will be required to restrict future access to pit workings (Quantum, 2023). Placement of the bund will account for future erosion of the Mesozoic sediments. Bunds will be placed at sufficient distance from the crest outside of a 25° degree line drawn from the base of the unit to surface plus, an additional 10m as shown below in Figure 66 . Bunding is to be placed a minimum of 50m from the pit crest.

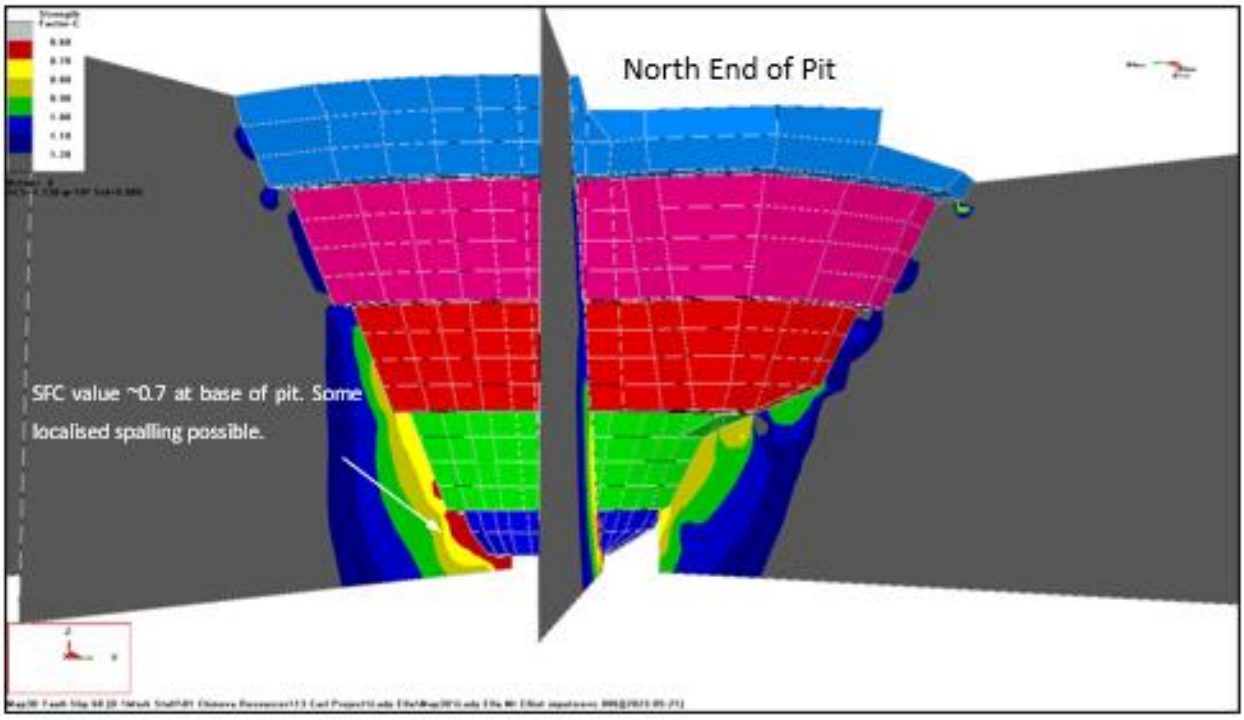


Figure 65: Lady Ella Pit Map3D model showing area of potential spalling at base of pit.

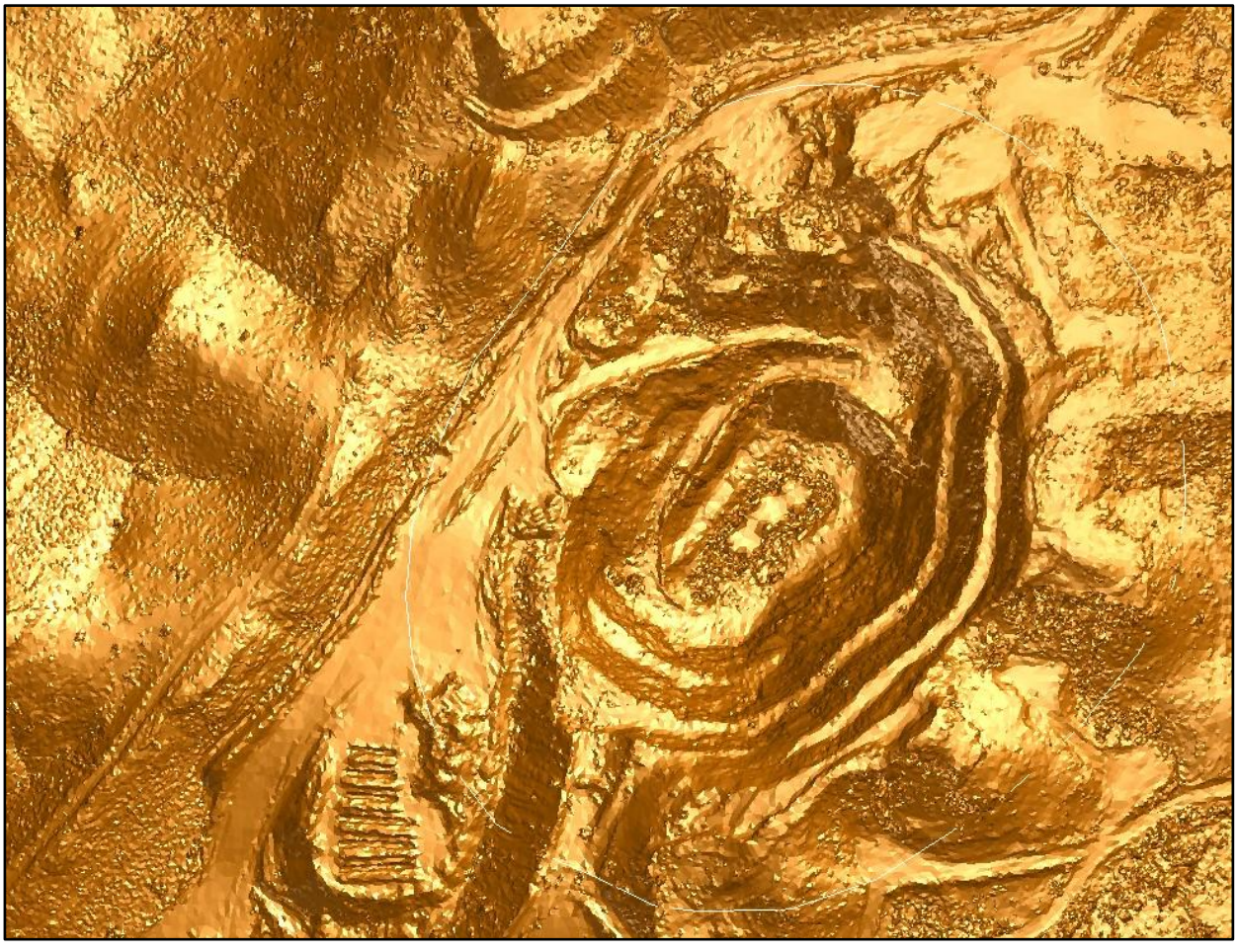


Figure 66: Closure bunding location Lady Ella Pit (white line).

7.5.8.3 Rehabilitation Considerations

In order to ensure the Lady Ella Pit, is as stable as possible, the following rehabilitation activities will occur:

- Diversion drainage will be installed where possible within the existing void catchment to direct rainfall runoff away from the void.
- A bund will be established around the entire void perimeter. The bund will be constructed in accordance with Quantum (2023).
- Groundwater monitoring will occur post closure to demonstrate no impacts to groundwater are occurring.
- Geotechnical monitoring will occur to verify the instability predictions made by the void geotechnical assessment completed above.

7.5.9 Water Management

The proposed management of surface water during the rehabilitation, post-closure maintenance and monitoring period is described below. Potential impacts and implications to groundwater values are discussed in section 7.5.2 as a result, this section will focus on surface water management.

The mine has been in care and maintenance since 2002. Surface runoff flows from mine landforms and reports to either the Lady Ella pit, northern sediment dam (LENSD), eastern sediment dam (LEESD), or southern sediment dam (including ROM overflow dam). These storages have been illustrated within Figure 67. The Lady Ella southern sediment dam and ROM overflow dam are illustrated as the Lady Ella Overflow Dam within this figure and are equipped with an automatic pump system which returns the water to the open pit.

There is limited water quality data from the environmental dams at Lady Ella (Table 71). The water quality data available shows that runoff from the WRE to LENSD contains reduced pH and elevated copper concentrations, consistent with the WRE material characterisation. The water quality in the LEESD is circum-neutral, with low concentrations of salinity, sulphate and metals. The water quality in the LESSD is reduced to circum-neutral pH, with elevated copper concentrations.

The proposed management strategy for surface water during the rehabilitation, post-closure maintenance and monitoring period is described below:

- Installation of an appropriate cover system on the WRE, in accordance with an engineered design, to minimise the opportunity for water movement downward into the waste (seepage) and upward by capillary rise. The cover system will incorporate highly textured surfaces that promote storage of rainfall and significantly slow the generation of surface runoff.
- Directing surface runoff from the WRE to the Lady Ella Open Pit and Northern Sediment Dam.
- Continue to maintain the sites sediment basins to treat runoff from rehabilitated landforms prior mine to release to the receiving environment.
- Maintain the Lady Ella southern sediment dam pump back system until it can be demonstrated that the runoff is of suitable quality for release in accordance with the Cloncurry Project EA.
- Continued implementation of the Cloncurry Project Receiving Environment Monitoring Program (REMP) to identify any impacts from the mine on the receiving environment.

Once surface runoff generated on rehabilitated landforms achieves surface water quality limits as per the rehabilitation milestone criteria, water storages will be decommissioned and rehabilitated.



Figure 67: Lady Ella existing surface water catchments (ATCW, 2023a).

Table 71: Lady Ella Environmental Dam Water Quality

	Unit	EQL	Livestock Trigger Values	LEESD 21 Feb 2020	LEESD 11 Nov 2021	LENSD 13 Feb 2021	LENSD 12 Feb 2022	LENSD 17 Feb 2024	LENSD 17 Nov 2025	LESSD 19 Feb 2023	LESSD 20 Feb 2023
pH (Lab)	-	0		7.1	7.1	4.7	5.5	4.42	4.77	5.2	7.3
Electrical Conductivity (Lab)	µS/cm	5	5970	120	30	590	560	952	553	550	640
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.2	1000	2.7	3.9	260	240	548	220	260	260
Aluminium	mg/L	0.005	5	0.17	0.76	-	0.78	2.51	0.51	0.43	0.40
Arsenic	mg/L	0.003	0.5	<0.003	<0.003	-	<0.003	0.001	<0.001	<0.003	<0.003
Beryllium	mg/L	0.00001		0.000032	0.0002	-	0.0086	-	-	-	-
Bismuth	mg/L	0.0005		<0.0005	<0.0005	-	<0.0005	-	-	-	-
Boron	mg/L	0.005	5	0.025	0.014	-	0.010	<0.05	<0.05	<0.005	0.006
Cadmium	mg/L	0.0001	0.01	<0.0001	<0.0001	-	0.0008	0.0012	0.0004	0.0006	0.004
Calcium	mg/L	0.2	1,000	4.4	0.59	-	24	45	25	24	25
Chromium (III+VI)	mg/L	0.001	1	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.001	1	<0.001	0.001	-	0.44	0.743	0.230	0.28	0.26
Copper	mg/L	0.001	1	0.038	0.12	-	29	66.7	19.9	35	31
Iron	mg/L	0.005		2.0	0.71	-	0.016	<0.05	<0.05	0.056	0.072
Lead	mg/L	0.001	0.1	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	0.1		5.5	0.78	-	26	55	25	26	27
Manganese	mg/L	0.005		0.005	0.029	-	0.92	1.63	0.727	0.7	0.77
Mercury	mg/L	0.00005	0.002	<0.00005	<0.00005	-	<0.00005	<0.0001	<0.0001	<0.00005	0.00005
Molybdenum	mg/L	0.001	0.15	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.001	1	0.001	0.001	-	0.22	0.385	0.115	0.18	0.17
Rhenium	mg/L	0.05		<0.05	<0.05	-	<0.05	<0.001	<0.001	<0.05	<0.05
Selenium	mg/L	0.003	0.02	<0.003	<0.003	-	0.007	<0.01	<0.004	0.005	0.005

Silver	mg/L	0.001		<0.00005	<0.00005	-	<0.001	<0.001	<0.001	<0.0005	<0.0005
Tin	mg/L	0.002		<0.002	<0.002	-	<0.002	-	-	-	-
Uranium	mg/L	0.0005	0.2	<0.0005	<0.0005	-	0.0021	0.009	<0.001	2.9	2.5
Zinc	mg/L	0.005	20	<0.005	0.010	-	0.071	0.091	0.035	0.10	0.11

* Dissolved metals results displayed.

7.5.9.1 Surface Water Contaminants of Concern

Potential CoCs at Lady Ella were identified by AGE (refer Section 7.5.2.36.5.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 72.

Table 72: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE and Ore Stockpile	Sulphate, salinity, pH, metals
Open pit and pit walls*	Copper, arsenic, zinc, sulphate
Rehabilitated disturbed areas	Suspended solids, turbidity, metals
Final reshaped drainage lines and batters	Suspended solids, turbidity

* As detailed within Section 7.5.7.6, the Lady Ella Pit is unlikely to release to surface waters (i.e., overtop).

7.5.9.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for Lady Ella post-closure. A description of the methodology used to prepare this drainage plan has been provided within Section 6.5.8.2. The post-closure water management system for Lady Ella includes the following:

- Final void water management
  - During the post-mining stage, the Lady Ella pit will fill with water until an equilibrium level is reached.
- Surface water management
  - Runoff from the rehabilitated WRD will be managed through:
    - LE_SD1 (similar footprint to the Lady Ella Northern Sediment Dam used during
    - operations);
    - LE_SD2 (similar footprint to the Lady Ella East Sediment Dam used during operations);
    - LE_SD3 (similar footprint to the Lady Ella ROM Overflow Dam used during operations);
    - The sediment dams will capture water conveyed via surface water drains proposed around the perimeter of the WRD or along the existing ramps. Sediment dams will be required to ensure adequate sediment removal before release to the receiving waters.
  - Contour banks, plateau drains and drop structures will be constructed where necessary, once the final landform is reshaped, to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - There are no clean water management measures proposed for the Lady Ella final landform.

The conceptual drainage plan has been illustrated within Figure 68, with the proposed dam sizing and release locations for LE_SD1, LE_SD2, and LE_SD3 defined within Table 73.

Figure 68: Lady Ella conceptual drainage plan (WRM, 2025)

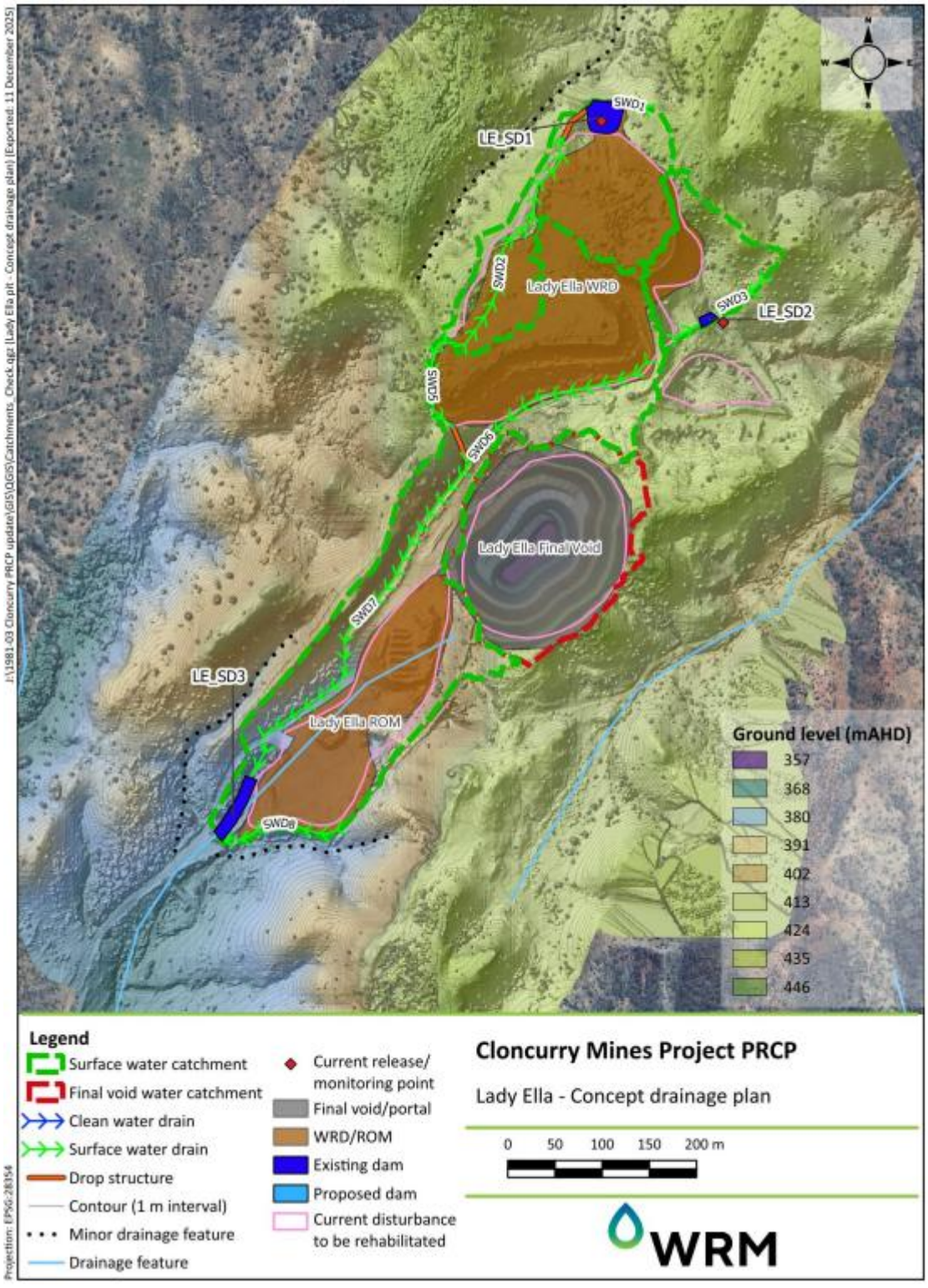


Table 73: Lady Ella Proposed Dam Sizing and Release Locations (WRM, 2025)

Storage	Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
LE_SD1	3.0	1.07	1.18	0.04	447744	7614079	Lady Ella WRD	Unmapped drainage feature of Maggies Creek
LE_SD2	1.0	0.36	0.39	0.01	447873	7613848	Lady Ella WRD	Unmapped drainage feature of Mort River
LE_SD3	9.0	3.21	3.53	0.11	447349	7613307	Lady Ella WRD	Unmapped drainage feature of Gin Creek

7.5.9.3 Seepage intervention and collection controls

Below the northern batter of the Lady Ella WRE the LENSD collects runoff and infiltration water from the structure. LENSD will be maintained on site throughout closure and rehabilitation activities to collect and evaporate contaminated water. Any remaining water in the structure at closure will be returned to the pit along with contaminated sediment.

7.5.9.4 Surface water diversions and long-term management requirements

Surface diversions/bunding will be installed around the open pit to minimise catchment areas. The WRE is located on the top of the catchment and receives little runoff from the surrounding environment.

7.5.9.5 Dewatering requirements

There is no requirement for dewatering to facilitate the planned future rehabilitation activities. During the dry season the environmental dams are usually dry.

7.5.9.6 On-going water management

The remaining risks to surface water include:

- Contaminated surface water generated by the WRE; and
- Contaminated surface water generated by the ROM.

The on-going water management activities in the medium to long term will be similar to those that have been put in place to date. Impacted surface water runoff will continue to be directed towards the environmental dams and open pit. Site surface water monitoring will be ongoing including annual REMP to provide sufficient data that surface water quality can continue to meet environmental authority requirements and WQO's for stock watering over the long term to support future relinquishment of the mining lease.

Should additional structures (i.e., bunding, water storages) be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.

Once final rehabilitation works are completed, ongoing monitoring of dam water quality and receiving environment will be undertaken to demonstrate that runoff will meet rehabilitation milestone criteria. The existing sediment dams will be retained until runoff water quality meets rehabilitation milestone criteria, following which they will be rehabilitated pursuant to the methods described in the Revegetation Plan.

7.5.10 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

7.5.10.1 Lady Ella Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 74.

Table 74: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable) Install stock fencing to protect planting (if required).	Preferably immediately prior to wet season (November-December). In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable growth/development of revegetation	Ecological monitoring: immediately after wet season (March-April) and annually thereafter.
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g.	Supplementary seeding prior to wet season.

	supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

7.5.10.2 Lady Ella Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 75: Lady Ella Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum* • *Bothriochloa ewartiana*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

7.5.10.3 Lady Ella Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 76. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 76: Lady Ella Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

8. Rehabilitation Planning – Merlin

8.1 Baseline Information

8.1.1 Climate

Refer to section 5.1 for details on climate for the Merlin mine.

8.1.2 Site Topography

The Merlin mine is located within the Starra ridge line a locally dominant topographical feature of which forms part of the Selwyn Ranges. The Starra ridge is characterized by two sub-parallel (eastern and western ironstones), more or less continuous ridges, of low to moderate relief, that extend above a flat plain. The Starra ridge attains heights of approximately 440m AHD.

The Merlin mine infrastructure is located on the eastern ridge on the predominantly gently sloping area at an approximate elevation of 370m AHD. Areas south and west of the Starra ridge have a more gently sloping topography with isolated peaks attaining heights of 390m AHD. The broader topography comprises of deeply weathered ridges and isolated plateaus separated by wide river plains that have formed by slope retreat, leaving strike parallel ridges of more resistance lithologies.

8.1.3 Geological Setting

The Cloncurry Project area is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite (Figure 69). The contact between these units is broadly described as unconformable (Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust.

At the mine scale, the Merlin mine is associated with the Mount Dore fault zone and contact of the meta-sedimentary Kuridala and Stavely formations (Figure 70). The molybdenite mineralisation occurs mainly in breccia infill and is hosted within black carbonaceous and grey micaceous meta-siltstones, grey meta-shales with thicker beds of phyllite and schist. The mineralisation is north-east trending dipping toward the east approximately 40 to 60 degrees and occurs at the base of the phyllite unit of the Kuridala Formation. Mount Dore Granite is present and acts as a footwall to the mineralisation.

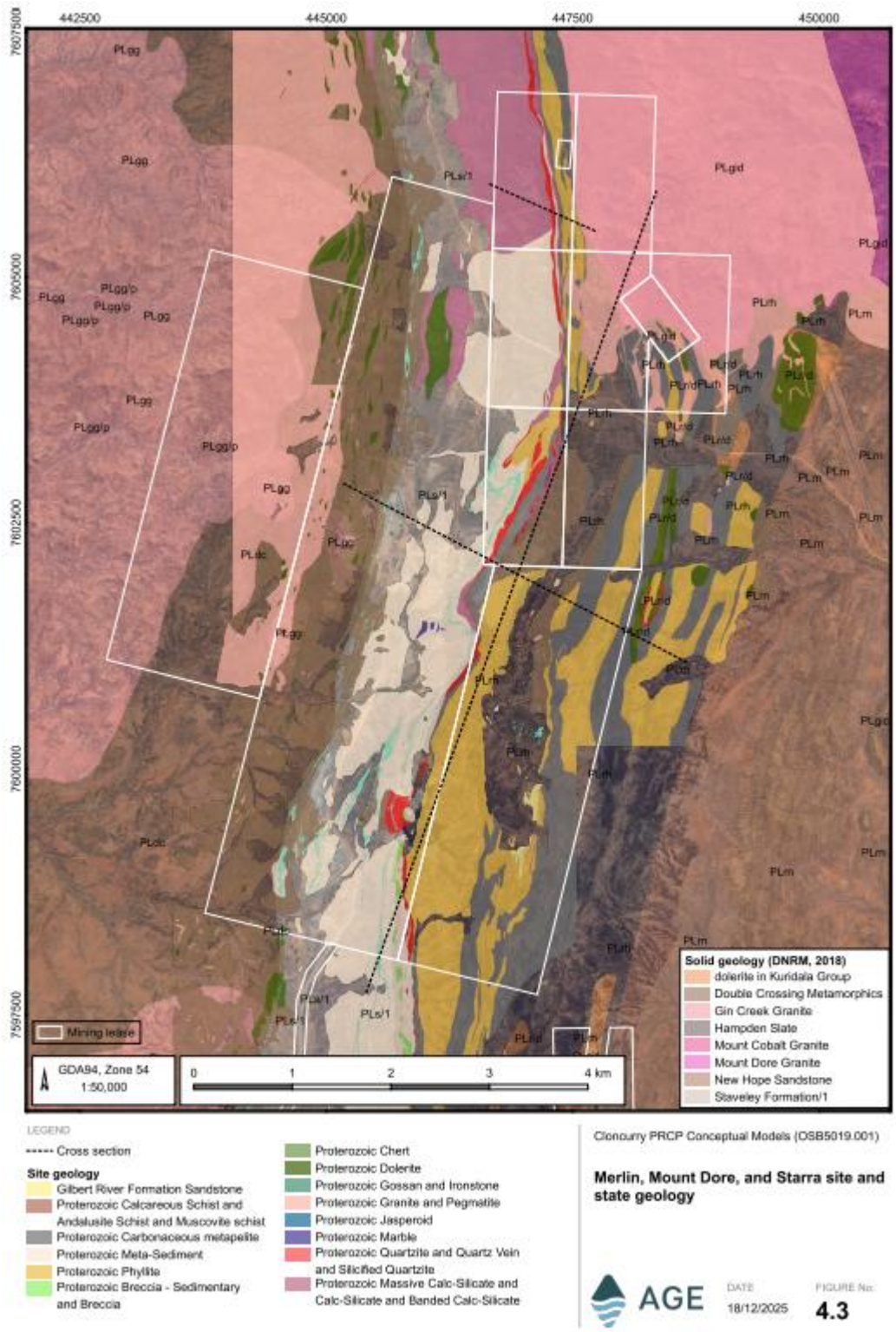


Figure 69: Site Geology at Merlin, Mount Dore and Starra mines (AGE, 2025a)

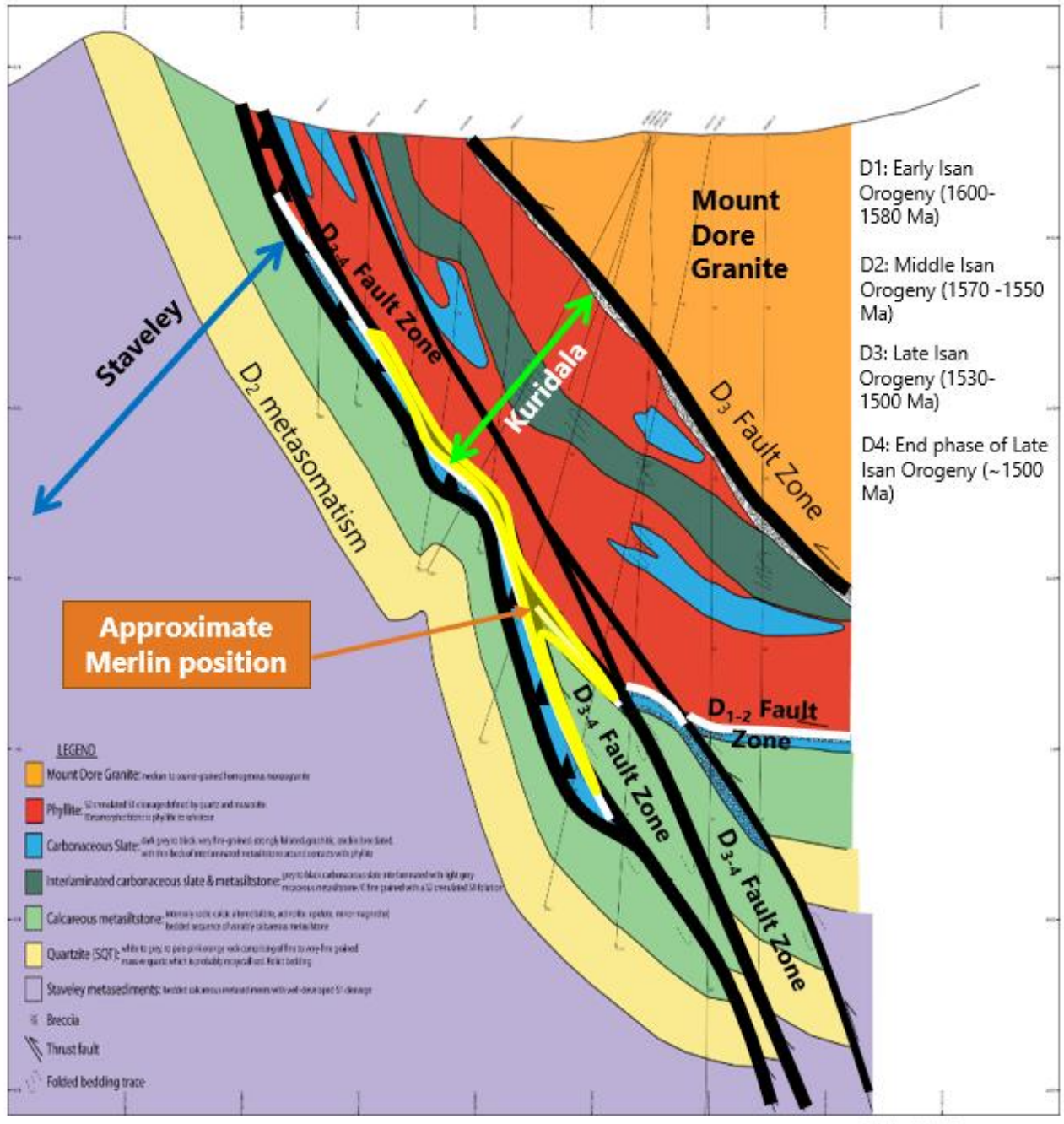


Figure 70: Merlin Local Geology

8.1.4 Hydrology and fluvial networks

The Merlin mine is located in the Lake Eyre drainage division within the Georgina Basin, Georgina River sub-basin.

The Merlin, Mount Dore and Starra Line area is dissected by small ephemeral drainage lines (Figure 71)(flowing for only short durations during and immediately after wet season rainfall) which flows into Gin Creek approximately 7km to the west. Gin Creek flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia.

There are no listed environmental values and water quality objectives for the Lake Eyre of Gulf of Carpentaria region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has maintained a reference monitoring location at Starra since 1985 (BS01 – Pyramid). The monitoring location is located above Lake Wyche in an area that has not been impacted by mining activities. Summary of water quality data for the BS01-Pyramid monitoring location is provided in Table 77.

Table 77: Summary of water quality results for reference water site (BS01-Pyramid) for the Starra Line area

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	96	6.16	6.07	7.22	6.52	5.70
Electrical Conductivity (uS/cm)	99	34.98	28.00	70.40	48.00	19.00
Sulphates (mg/L)	98	4.54	3.55	10.15	6.00	2.00
Dissolved Aluminium (mg/L)	59	0.31	0.24	0.90	0.44	0.10
Dissolved Arsenic (mg/L)	67	0.0043	0.0030	0.0100	0.0030	0.0030
Dissolved Boron (mg/L)	58	0.0134	0.0075	0.0500	0.0150	0.0050
Dissolved Cadmium (mg/L)	59	0.0002	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	59	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Cobalt (mg/L)	59	0.0014	0.0010	0.0031	0.0010	0.0010
Dissolved Copper (mg/L)	94	0.0289	0.0105	0.0596	0.0500	0.0060
Fluoride (mg/L)	86	0.0580	0.0500	0.1000	0.0500	0.0500
Dissolved Iron (mg/L)	73	0.4578	0.2800	1.2400	0.5400	0.1100
Dissolved Lead (mg/L)	95	0.0162	0.0010	0.1132	0.0050	0.0010
Dissolved Manganese (mg/L)	62	0.0599	0.0210	0.2562	0.0536	0.0050
Dissolved Mercury (mg/L)	58	0.0004	0.0001	0.0001	0.0001	0.0001
Dissolved Molybdenum (mg/L)	52	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Nickel (mg/L)	59	0.0011	0.0010	0.0020	0.0010	0.0010



Figure 71: Merlin hydrology and existing surface water monitoring locations

8.1.5 Groundwater

Groundwater conditions at Merlin are described in detail by AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations.

8.1.5.1 Hydrostratigraphy

The hydrostratigraphic unit that hosts the Merlin and Mount Dore deposits is the Kuridala Group, and the Staveley Formation hosts the Starra Line deposits. Both the Kuridala Group and Staveley Formation are lithologically variable metasedimentary basement units. Other potential hydrostratigraphic units near the site are the Mount Dore Granite, Gin Creek Granite, double Crossing Metamorphics, and younger cover units.

Kuridala Group

Most groundwater at the site is likely hosted in the metasediments and associated Footwall Quartzite of the Kuridala Group. The Kuridala Group hosts the Mount Dore Aquifer and is the most productive hydrostratigraphic unit in the region (RLA, 2011). The Mount Dore Aquifer is considered a confined and hydraulically isolated, fractured-rock aquifer (Rockwater, 2011). Groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing. Higher fracture density and, hence permeability, are associated with network of bedding-parallel and cross cutting shears and the presence of albite and silica alteration. In particular, the silica alteration produces rocks that tend to fracture brittlely; a key manifestation of this is the Footwall Quartzite. The intensity of this alteration is associated with proximity to the Mount Dore Granite, and it is assumed that this alteration decreases to the south.

Stavely Formation

The Staveley Formation crops out over most of the Starra Line area. In general, the Staveley Formation is understood to have considerably lower permeability than the Kuridala Group. As with the Kuridala Group, the upper delaminated zones of the Staveley Formation can also host fissures in the open bedding planes that can contain water, although this is typically in-filled by secondary deposition, resulting in permeability that is generally low (RLA, 2011a). Increased permeability has been reported in highly fractured zones of the Staveley Formation associated with faults (RPS, 2011), but apart from these zones and the ironstones discussed below, this unit is otherwise considered competent and of low permeability (Rockwater, 2010).

Fracturing and dissolution in the ironstone zones within the Staveley Formation creates localised zones of higher permeability (RLA, 2011). These ironstones are also associated with the mineralisation of the Starra Line Deposits. As such, it is reported (RLA, 2011) that the ironstones may create small, discrete zones of higher permeability. The ironstones are generally isolated lenses, although there might be some hydraulic connectivity between lenses via thin ironstone bands (RLA, 2011).

Mount Dore Granite, Gin Creek Granite, and Double Crossing Metamorphics

Granitic sequences that are associated with the William-Naraku Batholith are found throughout the region. These units have open joints and fractures that allow for groundwater flow, forming fractured rock aquifers (RLA, 2011). The Mount Dore Granite is located east of the Merlin/Mount Dore area and forms the eastern boundary of the Mount Dore Aquifer. The Gin Creek Granite and the associated Double Crossing Metamorphics are located west of the Starra area. The contact between the Staveley Formation and the Gin Creek Granite/Double Crossing Metamorphics is also a faulted (and potentially brecciated); however, the low permeability of the Staveley Formation likely limits movement of water across this contact (AGE, 2021a).

Cover Units

The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. Other minor cover units are mapped in and around the site. These units have variable primary porosity, which is

dependent on the size and properties of the comprising grains and the degree of cementation and compaction of these units. Groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated.

8.1.5.2 Groundwater Levels

Groundwater level monitoring in the Merlin area began around 2010, prior to the development of the Merlin infrastructure, although some groundwater extractions are known to have occurred in the 1980s. At the peak of withdrawal from the Merlin borefield, Chinova operated and monitored a network of up to 18 bores near Merlin Mine (Figure 72). The purpose of these bores has variably been observation, extraction, and compliance, either for the purposes of EA compliance or borefield performance reporting. Most of the monitored bores are screened in the Kuridala Group, but groundwater monitoring bores WB27 and MLMB1 (formerly called MDQ383) are used to assess the impact of the dewatering operation on groundwater in the Staveley Formation.

Water levels in the Merlin/Mount Dore area are characterised temporally in hydrographs (Figure 73 and Figure 74) and spatially in potentiometric maps (Figure 75). The main feature of these water level characterisations is a distinct cone of depression associated with the Merlin borefield. Hydrographs of groundwater level elevation for the bores in the central section of the Merlin borefield show that dewatering had the desired impact in causing drawdown in groundwater levels at Merlin. However, due to lower extraction rates after February 2015, the decline in groundwater elevation reversed.

In contrast, bore WB27 was not impacted by the either initial pumping or subsequent reduced pumping rates; this was expected due to WB27 being screened in the Staveley Formation.

There are two bores completed in the Kuridala Group (MDWB16 and MDWB12/12a), which help to define the extent of the Mount Dore Aquifer. Similarly, MDWB12 and replacement bore MDWB12a, which are located approximately 2.5 km south of the Merlin borefield are not impacted by dewatering. This indicates that, within the Kuridala Group, the impact of dewatering is restricted to a few kilometres.

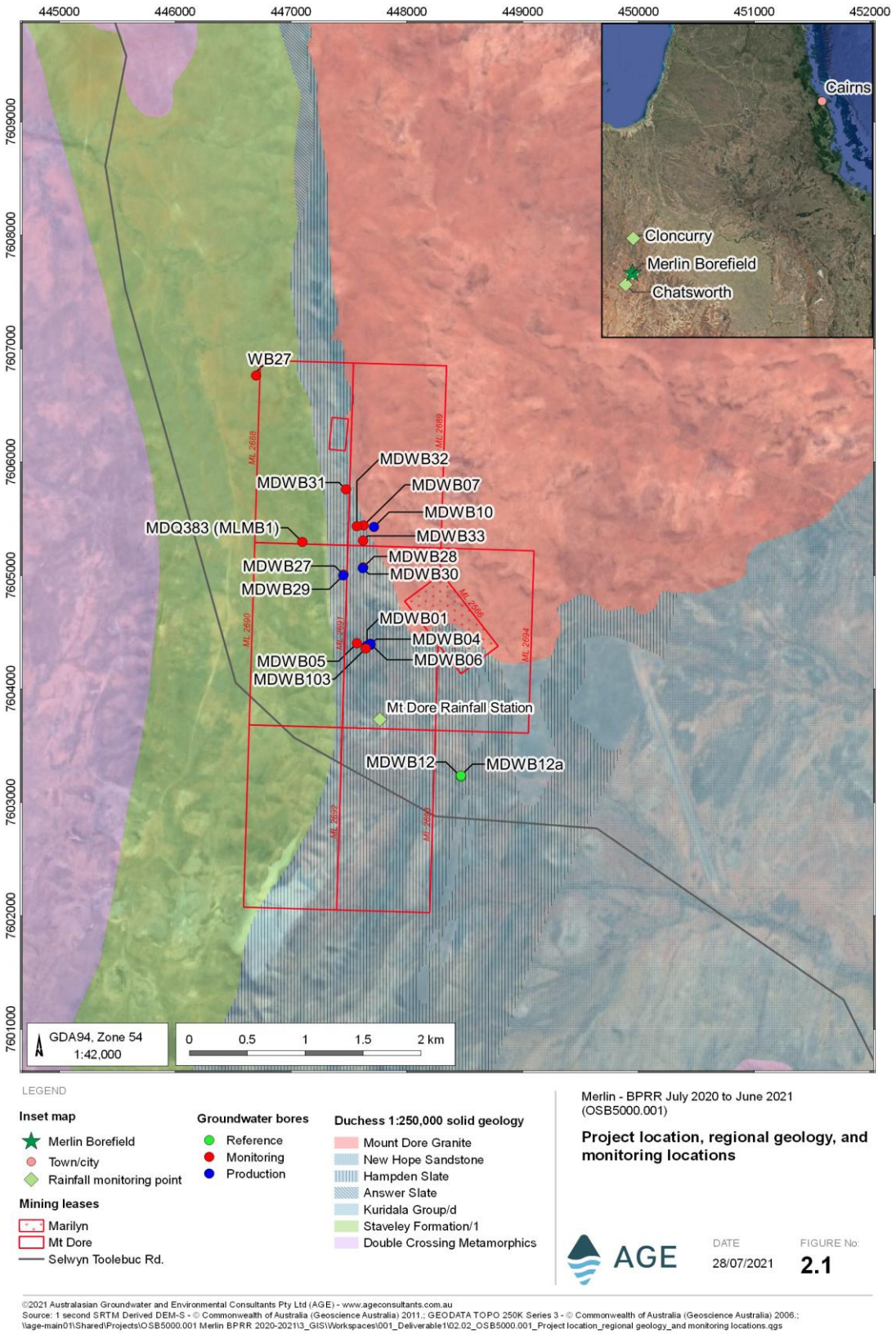


Figure 72: Merlin Groundwater Bores

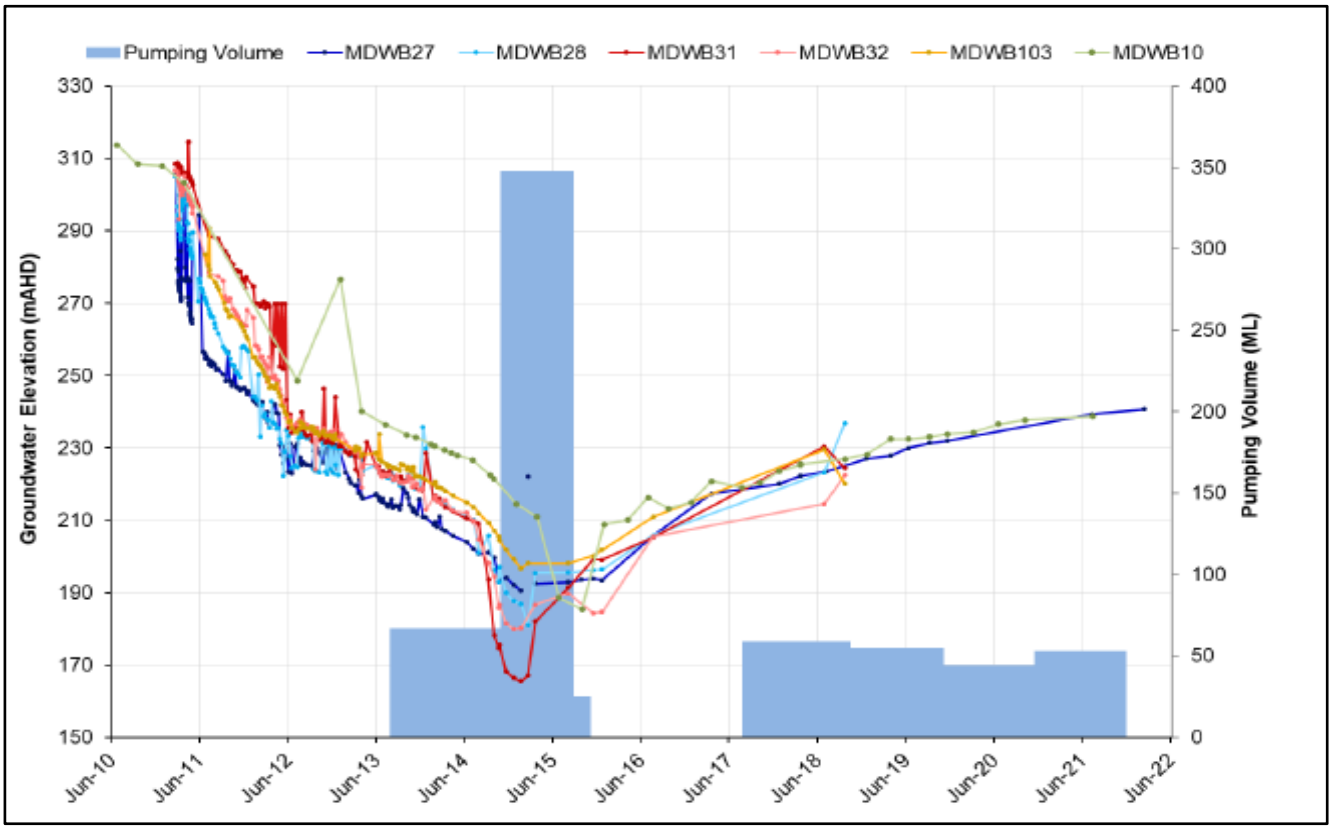


Figure 73: Hydrograph of Merlin Bores with available pumping data (AGE, 2023)

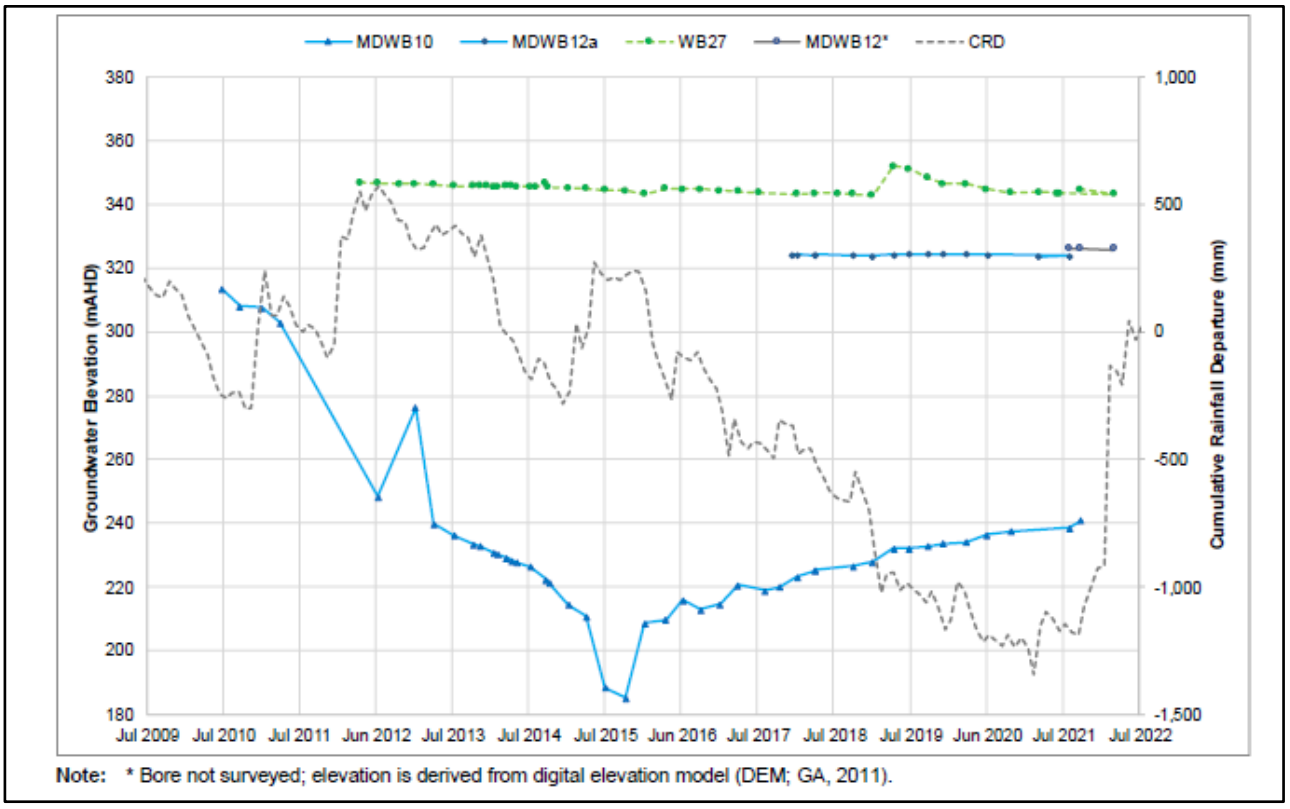


Figure 74: Hydrograph of bores defining the extent of the Mount Dore Aquifer (AGE, 2023)

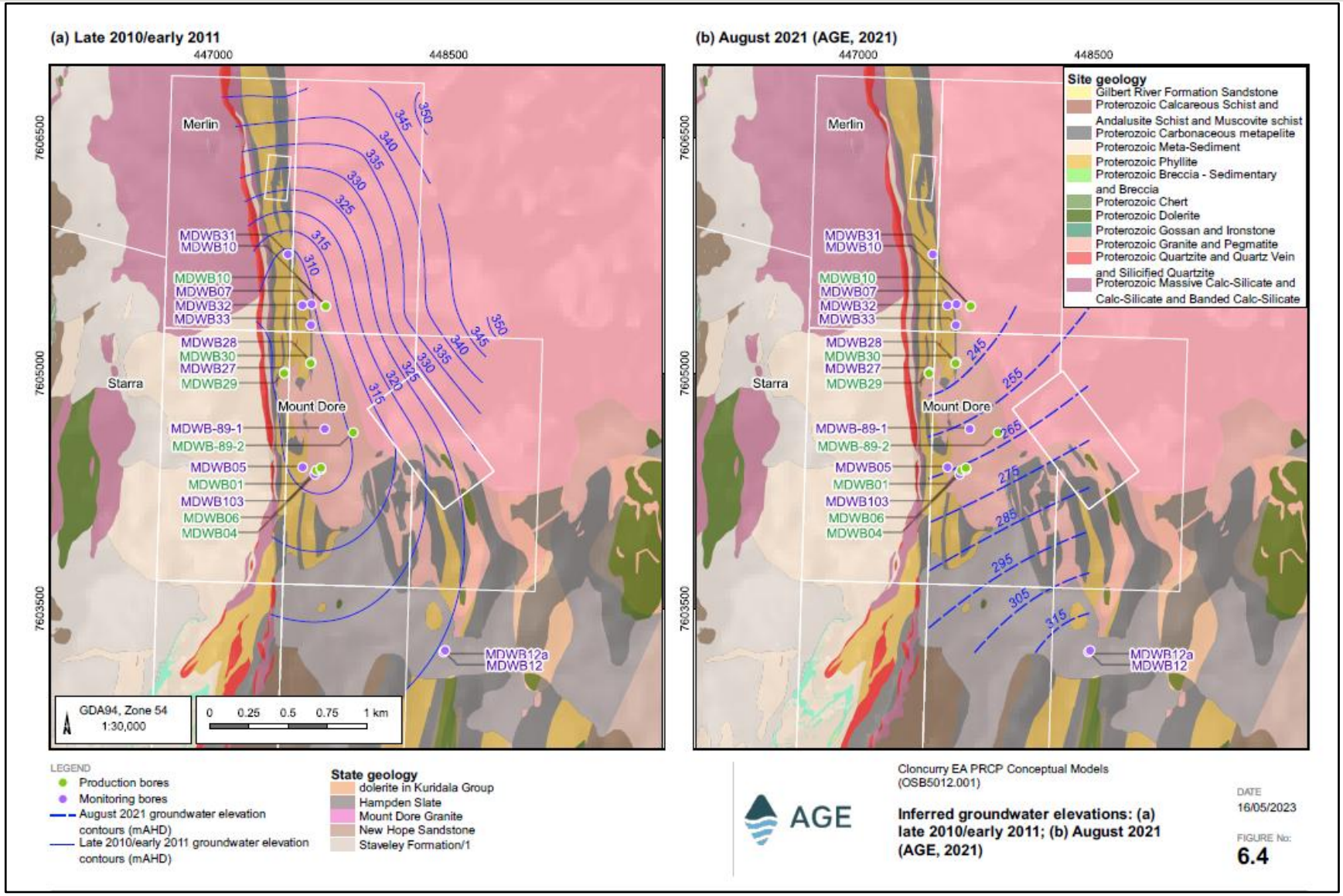


Figure 75: Potentiometric map of the Merlin Borefield (AGE, 2025a)

8.1.5.3 Groundwater Quality

Groundwater monitoring results for the Merlin area is presented in Figure 76 to Figure 79 for MDWB10 and MDWB12a which are the most relevant EA compliance bores in the Merlin area. MDWB10 is located within the Merlin borefield and MDWB12a is located approximately 2.5 km south of the Merlin borefield and is not impacted by dewatering/Merlin mine activities and as a result provides a useful reference point. The results show:

- Groundwater pH values both within the borefield and outside the borefield are circum-neutral.
- Sulphate levels in MDWB10 is lower than MDWB12a and remains stable over time.
- Electrical conductivity levels in MDWB10 are lower than MDWB12a and remain stable over time.
- Groundwater in both bores have low levels of dissolved metals (typified by copper level).

In summary, the water quality in the Merlin, Mount Dore, and Starra area is typical of groundwater in mineralised areas of the Mount Isa region. Although baseline groundwater quality water is not available, water quality in the monitoring bores is very rarely characterised by trends of increasing solutes and site water quality is commensurate with that of regional groundwater.

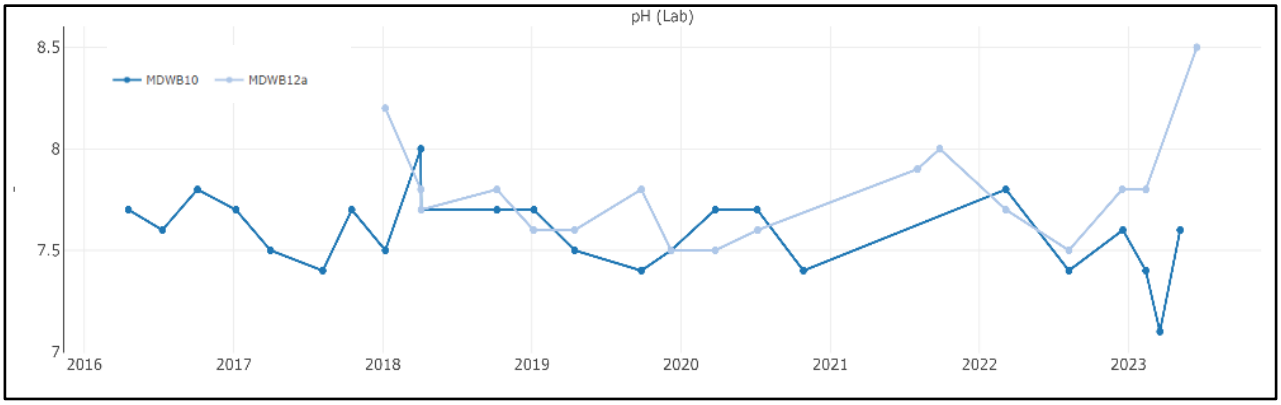


Figure 76: Groundwater Quality (pH) Merlin

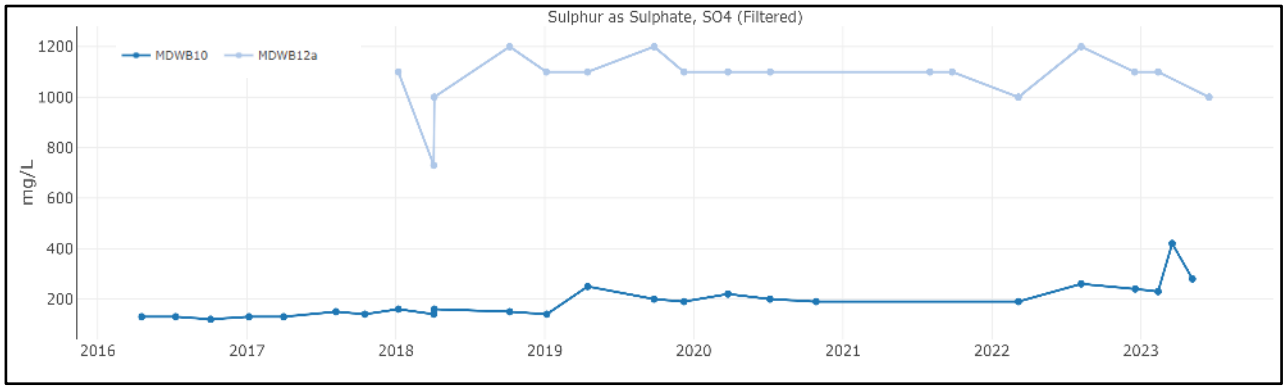


Figure 77: Groundwater Quality (Sulphate) Merlin

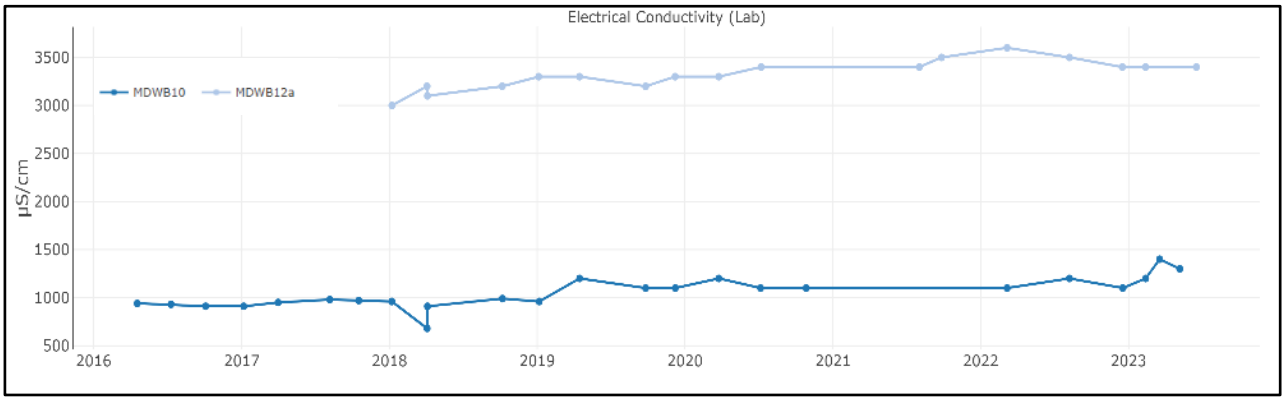


Figure 78: Groundwater Quality (Electrical Conductivity) Merlin

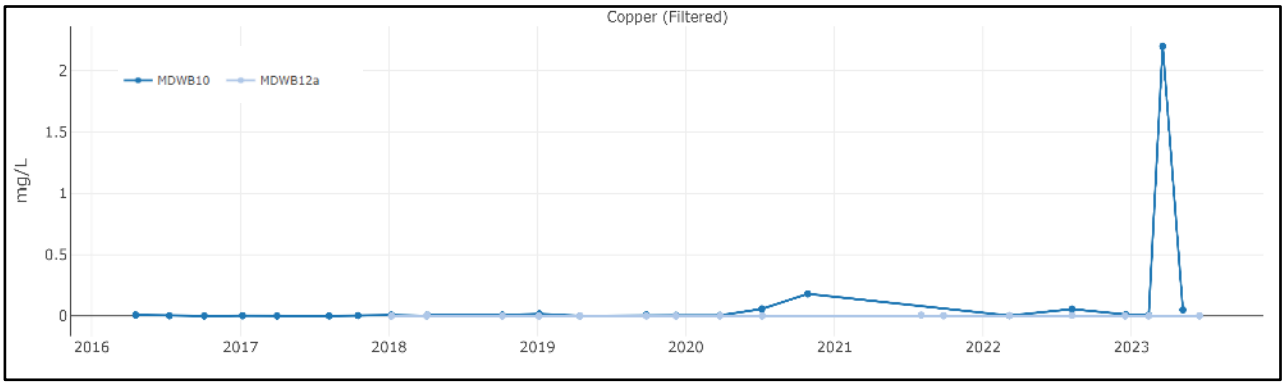


Figure 79 Groundwater Quality (Dissolved Copper) Merlin

8.1.5.4 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater in the site area is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions (AGE, 2025a). The bulk component of this recharge is rainfall recharge, with infiltration below the ephemeral streams being a smaller volume. Conceptually, water from streams or bank storage that reaches the water table and becomes recharge is, by definition, groundwater-surface water interaction. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months: January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated recharge rate was calculated using a chloride mass balance method (AGE, 2021a) to be between 3% and 6% of annual rainfall. This equates to approximately 10 mm to 20 mm of recharge annually, based on a long-term average regional rainfall of 345 mm/yr. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

Prior to mine development, it was likely that lateral inflow to the area occurred from north to south. However, since the development of the Starra mines and dewatering at Merlin, several cones of depression have developed in the potentiometric surface. The initial drawdown and subsequent recovery of these cones of depression has occurred at deep and shallow levels of the sequence, due to development, abandonment, and occasional redevelopment of underground workings.

Due to the depth to water generally being >30 mBGL, there is likely minimal discharge via evapotranspiration. Across the area, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral, and the water table does not intersect the deepest points of creek incision. According to the Queensland Wetlands Database there are no springs in

either in the site area or surrounds (AGE, 2025a). This observation matches the conceptualisation described above of negligible groundwater discharge to natural surface water features.

8.1.5.5 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the relevant units present in the area are presented below and summarised in Table 78. Properties for the Kuridala Group are sourced from a combination of rising and falling head tests and historic reports which used pumping tests. The hydraulic properties of the Staveley Formation are estimated for the site using rising and falling head tests in bores locate in the area. The hydraulic properties of crystalline rocks are inferred from modelling studies and from heads tests conducted in the Gin Creek Granite and Double Crossing Metamorphics. Published values for igneous and metamorphic rocks, and shale are also presented for comparison.

Estimates of hydraulic conductivity from investigations for the Kuridala Group range from 1 x 10-6 m/day to 34 m/day; with many of these values coming from the Mount Dore Aquifer. The variability in the range of hydraulic properties represents variable degrees of fracturing within the lithologically diverse Kuridala Group. Hydraulic properties were also observed during pumping from the Merlin borefield.

The unmineralized Staveley Formation is characterised by very low permeability. These properties are represented by results from bore WB27, which bore is characterised by a low airlift yield and low transmissivity. Hydraulic conductivity estimates from bores constructed in the Gin Creek Granite and Double Crossing Metamorphics vary from 0.08 m/day to 0.91 m/day and the bore logs of these bores suggest fracturing in their screened lithologies. These bores are west of the Starra areas, near the contact with the Staveley Formation.

Table 78: Hydraulic Properties

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Elliott (Likely MEWB-93-8 and MEWB-93-9)	Kuridala Group	-	-	-	50 to 250	4.39 to 12.82	If thickness = 100 m, then K = 0.04 to 0.1 m/day If thickness = 10 m thick, then K = 0.4 to 1.2 m/day
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1×10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384x10-5
Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1

Mount Dore (MB10)	Kuridala Group	Unfractured	45.7 - 51	-	-		2.64384x10-5
Mount Dore (MB2	Kuridala Group	-	20-41	-	-	-	0.04 to 0. 18

8.1.5.6 Environmental Values

The applicable environmental values for the Merlin site have been defined by AGE (2023) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there are no high potential mapped GDEs within the Merlin area. There are, however, areas of mapped moderate potential GDE's within Merlin area; and more broadly high potential GDE areas associated with the Mort River to east-southeast of the project.

The presence of moderate potential GDE's around Merlin are unlikely because groundwater is >50 mBGL (AGE, 2025a). However, the high potential terrestrial GDEs that are mapped along the Mort River may be present as they correlate to mapped areas of BVG 16a which is an open forest or woodland containing, among other species, red river gums. As the river red gum relies on sub-soil moisture, its presence strongly supports the existence of terrestrial GDEs.

For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Merlin area, as mapped by the Queensland Wetland Database (DSITI, 2015). As a precautionary approach, potential aquatic GDEs are considered potentially present in area where they are mapped along the Mort River; however, these areas are considered too distal (>5 km) for aquatic GDEs to be considered potential receptors at Merlin.

In summary, AGE (2023) found a potential for aquatic and terrestrial GDEs to be present along the alignments of the Mort River, which represent potential receptors.

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Merlin, but groundwater is used for livestock (beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius resulted in the identification of four bores (Table 79). All four bores are now recorded as "Abandoned and Destroyed", and none of their records show their original purposes. Given the regional context, it is likely that livestock watering is an applicable groundwater value.

Table 79: Registered bores with 10 km of Merlin

Bore ID	Easting	Northing	Bore depth (mBGL)	Screened interval (mBGL)	Ground RL (mAHD)	Screened Lithology	Bore Status
RN2059	451798	7618398	NR	NR	NR	NR	Abandoned and destroyed
RN7536	440188	7615284	46.6	NR	NR	Staveley Formation	Abandoned and destroyed
RN7537	440966	7614795	30.8	NR	NR	Staveley Formation	Abandoned and destroyed
RN7538	443595	7611330	NR	NR	NR	NR	Abandoned and destroyed

Industrial Use

The main industrial user of groundwater in the region is Chinova itself. Chinova extracts water from the Mount Dore aquifer for use across the area including for dust suppression and raw water for the RO plant.

8.1.6 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the area is 'Fz29' and 'Fz38' (Australian Soil Resource Information System, 2013) (Figure 80). Soil type Fz29 is associated steep stony hills and low ranges on highly folded quartzites, shales, and slates with extensive areas of rock exposures and Fz38 is associated with moderately to strongly undulating lands with occasional low hills.

There are three land systems at Merlin mine area Mount Elliott, Kuridala and Quamby as described by Perry (1954). The majority of the Merlin mine infrastructure is located on the Kuridala land system. The Mount Elliott system exists on the ridge and eastern side of the ride. A small section of Quamby land system exists in the northwest section of the Merlin mine area.

The Kuridala and Mount Elliott land system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered both land systems unsuited for grazing (or virtually so) because it is rugged, stony, or barren. The Quamby system in contrasts is described as sparsely timbered undulating plains with occasional low hills. It mostly has shallow soils carrying short grass pastures but wetter areas carry mid-height grasses and shallow stony soils carry spinifex. Perry (1954) considered areas containing Quamby country is suitable for light grazing.

Soils have previously been described at Merlin as predominantly Skeletal, Cockatoo and Manbulloo classes (broadly in Lewis, 1987). Skeletal soils are shallow soils, less than 25 cm deep, frequently stony and lacking profile differentiation, normally occurring on the steeper slopes of the landscape. The Manbulloo soils have fine sandy profiles, light brown to reddish brown colour; massive structure and generally neutral to slightly acidic. Manbulloo soils are associated with stream channels and associated narrow alluvial areas. Cockatoo soils have coarse sandy profiles, variable colour from red to yellow and light grey with either single grain or massive structure. Cockatoo soils are generally associated with lower slope areas.

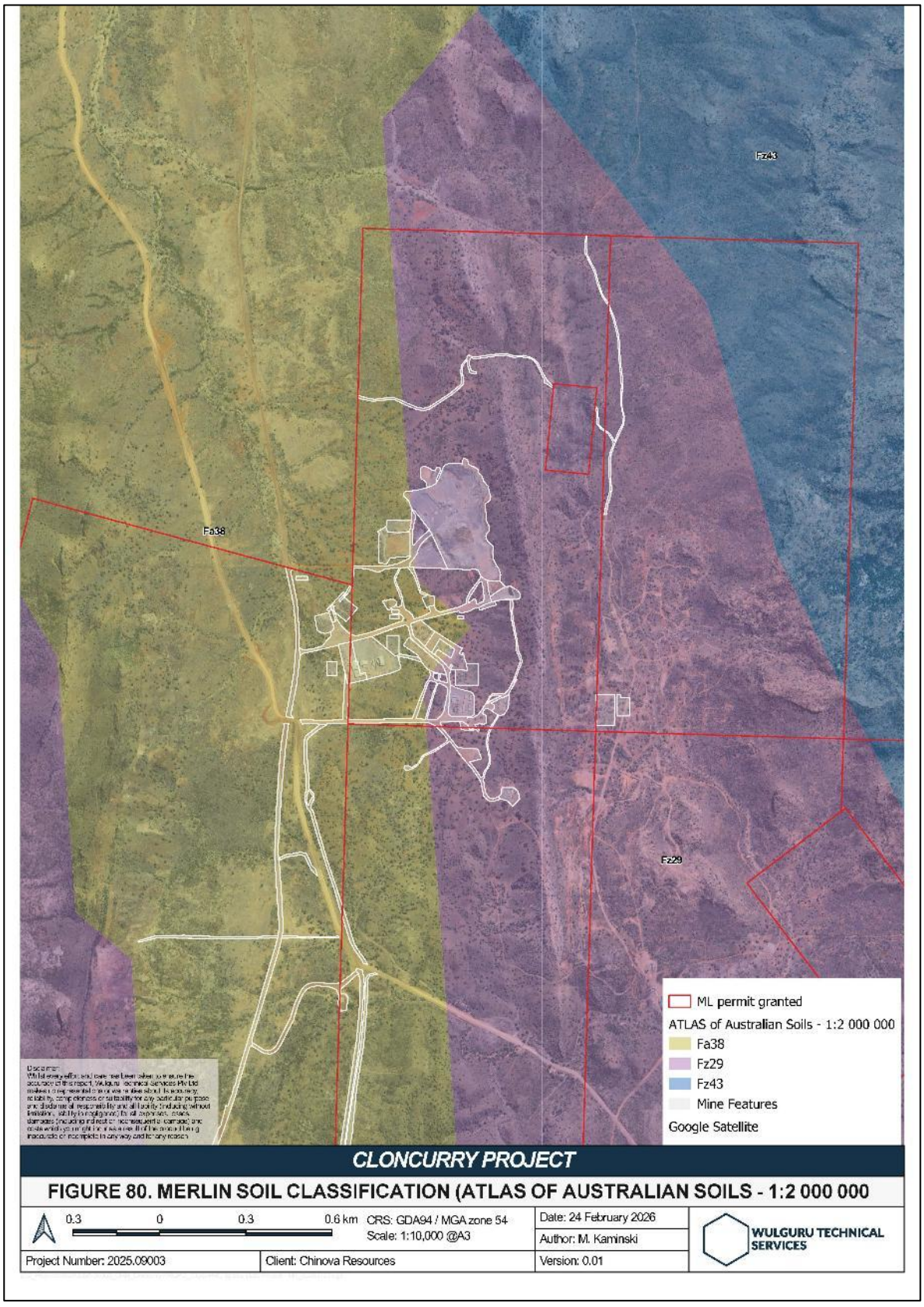


Figure 80: Merlin Soil Classification (Atlas of Australian Soils – 1:2 000 000)

8.1.7 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the project area (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

8.1.8 Vegetation Communities and Ecological Data

Ground truthing surveys (Place, 2012) have identified that the dominant broad vegetation group (BVG 19) at Merlin consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer.

A total of eight regional ecosystems (RE) have been identified within the Merlin area (Table 80). All six have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains). All RE's have a biodiversity status of No Concern.

Previous baseline ecological reports for the Cloncurry Project Area have (Place, 2012) assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 80: Regional ecosystems within the Project Area.

BVG	RE	RE description	Biodiversity Status	VMA Status
19	1.10.4	*Eucalyptus leucophloia* low open woodland on sandstone plateaus	No concern	Least Concern
	1.11.10	Mixed low open woodland on metamorphic plains	No concern	Least Concern
	1.11.2	*Eucalyptus leucophloia* low open woodland	No concern	Least Concern
	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.12.1	*Eucalyptus leucophloia* low open woodland on granites	No concern	Least Concern
	1.12.3	*Eucalyptus leucophylla* and/or *Corymbia terminalis* +/- *C. aparrerinja* low open woodland on igneous rocks	No concern	Least Concern

	1.5.3	*Eucalyptus leucophloia* low open woodland to woodland on sandy and gravelly red soils	No concern	Least Concern
	1.5.4	*Eucalyptus leucophylla* and/or *Corymbia terminalis* low open woodland on red earths	No concern	Least Concern

8.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 81).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 81. Conservation significant species recorded within the Project Area.

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

8.1.10 Pre-Mining Land Use

Small scale mining of predominantly small shafts has occurred in the Starra, Merlin and Mount Dore areas since the early 1900's. Modern mining commenced in 1988 by Arimco Mining via open cut mining of oxide gold deposits, and subsequently underground mining producing copper-gold concentrate from mainly sulphide ore.

Limited grazing may also have occurred historically. Anecdotal discussions with the underlying pastoral lessee suggest that areas along the drainage features were the main cattle grazing areas particularly during drought conditions which provide grazing opportunities when preferred plains areas are depleted.

8.2 Post Mining Land Use

8.2.1 Rehabilitation Planning and Objectives

Determining appropriate PMLU's is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

g) The land is safe and structurally stable; and
h) There is no environmental harm being caused by anything on or in the land; and
i) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives that must be incorporated into the PMLU decision-making process (condition E3):

m) Safe for humans and wildlife
n) Non-polluting
o) Stable
p) Able to sustain an agreed post-mining land use
q) Revegetated with species endemic to the area with no declared pest species; and
r) Compliant with all conditions of the environmental authority.

The EA (primary land outcome document) does not specify rehabilitation objectives and rehabilitation success measures for the Merlin site. Instead, the criteria were to be nominated in a PMLUP, the recent of which being the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, for the purposed of this PRCP, Chinova have developed new rehabilitation objectives for land disturbed by mining activities (Table 82) based on expert reports including AGE (2023), ATCW (2023) and NGH (2023). In addition, the PRC schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 82: Merlin Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)
		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)
	Erosion	Mine waste is not exposed by erosion processes. Erosion does not impact the PMLU.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum) No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall

	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196
Supports a viable vegetation community	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved PRCP Schedule, detailed within Table 189.

8.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

c. Is viable, having regard to the use of land in the surrounding region, and
d. Satisfies at least one of the following -
    a. The use is consistent with how the land was used before mining activity was carried out on the land
    b. The use is consistent with a development approval relating to the land
    c. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    d. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The PMLU's and rehabilitation areas adopted for Merlin are presented in Table 83, Figure 81 and Figure 82. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area and PMLUs

illustrated within Figure 81 and Figure 82 may not accurately reflect the disturbance areas presented within Table 83.

Table 83: Merlin PMLU's and Rehabilitation Areas

Rehabilitation Planning Areas	Disturbance (ha)	Existing Rehabilitation (ha)	To be Rehabilitated (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
RA8 Merlin ROM and Waste Rock Emplacement	12	0	12	Low intensity grazing	Native Vegetation	N/A
RA9 Merlin Built Infrastructure, laydown areas and dams	32.19	0	32.19	Low intensity grazing	Low intensity grazing	N/A
RA10 Merlin Underground Infrastructure	0.89	0	0.89	Low intensity grazing	Low intensity grazing	N/A
RA11 Merlin Permanent Infrastructure	6.4	0	0	Low intensity grazing	Permanent Infrastructure	N/A

8.2.2.1 Assessment of Alternative Post-Mining Land Uses – Merlin Waste Rock Emplacement and ROM

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Merlin WRE and ROM as low intensity grazing, consistent with the pre-mining land use. However, due to the requirements of the engineered cover systems that will be installed across these disturbance areas, alternative PMLUs have been assessed in accordance with the EP Act to determine the most appropriate and sustainable long-term outcome.

An assessment of PMLU options for areas requiring engineered cover systems is provided in Section 6.2.2.1. That assessment determined that, although low intensity grazing aligns with historical and surrounding land use, it presents risks to the erosion and infiltration performance objectives of the engineered cover system and is therefore not considered suitable. Livestock access has the potential to compromise surface stability, increase compaction, and create localised erosion features, introducing avoidable uncertainty to long-term landform performance.

A NUMA was also considered; however, this is not appropriate as the landforms can be rehabilitated to achieve long-term physical and chemical stability and are capable of sustaining a beneficial land use.

Rehabilitation of the Merlin WRE and ROM to a native ecosystem PMLU represents a conservative, risk-based outcome that protects the integrity of the engineered cover system, ensures compliance with erosion

and infiltration performance criteria, and delivers a beneficial environmental outcome consistent with the requirements of the EP Act.

8.2.2.2 Assessment of Alternative PMLUs – Merlin Portal and Decline

The 2016 Cloncurry Project Rehabilitation Plan identified the PMLU for the Merlin portal and decline as nature conservation. Retention of the decline and associated underground infrastructure did not consider alignment with surrounding land use and environmental values, nor was retention of these structures identified within the relevant landholder agreements.

Closure planning and geotechnical assessment demonstrate that the Merlin portal and associated underground infrastructure can be fully decommissioned, backfilled and rehabilitated to a safe, stable and non-subsiding condition. In accordance with the EP Act, alternative PMLUs have therefore been reassessed to determine the most appropriate and sustainable long-term outcome for the Merlin portal area.

This assessment also applies to other underground portals and declines across the Cloncurry Project, except for the Mount Elliott portal and decline, which will be rehabilitated to a native ecosystem PMLU.

Native Vegetation

Rehabilitation to a native vegetation PMLU was assessed as a viable alternative. Geotechnical modelling confirms that, following backfilling of the first 30 m of underground development, complete backfilling of the portal box-cut, and filling of ventilation shafts, the land will be geotechnically stable and not subject to subsidence or surface instability (Quantum Geotechnical, 2023).

While a native vegetation outcome is achievable and compatible with long-term stability, this land use would introduce land management restrictions. Establishment of native vegetation does not preclude grazing in the surrounding landscape; however, designating the area solely for native vegetation would unnecessarily constrain future land use where broader pastoral use is appropriate and consistent with adjacent areas.

Accordingly, while native vegetation is feasible, it is not considered the most suitable or representative PMLU for the Merlin portal area.

Low Intensity Grazing

Low intensity grazing reflects the historical and surrounding land use of the Project area and is consistent with landholder expectations and agreements. Geotechnical modelling confirms that, following backfilling of the first 30 m of underground development, the land will be geotechnically stable and not subject to subsidence or surface instability (Quantum Geotechnical, 2023).

The proposed rehabilitation strategy will result in a landform that is safe, stable, non-polluting, and capable of supporting grazing in the long term. Surface rehabilitation and revegetation will provide erosion resistance and ground cover comparable to surrounding pastoral land. The backfilled box-cut will be capped with growth media of sufficient depth and quality to support the specified pasture species, ensuring a carrying capacity equivalent to pre-mining levels. Grazing pressures can be managed through standard pastoral practices and do not introduce risks to long-term land stability under the demonstrated post-closure conditions.

Low intensity grazing is therefore considered a suitable and sustainable PMLU that aligns with the surrounding environment and represents an appropriate use of the rehabilitated land.

Nature Conservation

Nature conservation was previously identified as the PMLU for the Merlin portal and decline on the basis that the portal could provide a man-made cave suitable for bat habitat. However, the relevant landholder agreements do not provide for retention of the portal and decline, and these features are therefore required to be fully decommissioned and rehabilitated.

Rehabilitation will include backfilling of the portal box-cut, backfilling of the first 30 m of underground development. As a result, the portal and associated underground openings will no longer exist and will not provide habitat features conducive to nature conservation outcomes.

Accordingly, a nature conservation PMLU is no longer appropriate for the Merlin portal and underground infrastructure area.

PMLU Determination

Following assessment of feasible alternatives, rehabilitation of the Merlin portal and underground infrastructure area to a low intensity grazing PMLU is considered the most appropriate outcome. Retention of the portal and decline for nature conservation is not provided for under the relevant landholder agreements and, as such, these features must be fully rehabilitated and backfilled and will no longer provide habitat features such as man-made cave environments.

Geotechnical assessment confirms the rehabilitated landform will be safe, stable, non-polluting and not subject to subsidence. Low intensity grazing aligns with surrounding land use and landholder agreements and represents a sustainable long-term post-mining land use consistent with the EP Act.

8.2.2.3 PMLU Justification

Justification of proposed PMLUs is provided in Table 84. In summary, the post-mining land use at Merlin is constrained by pre-mining land capability, final landform geometry, engineered cover system requirements and viable vegetation communities.

While the pre-mining land use was low intensity grazing, not all disturbance areas are suitable to be returned to grazing. Areas incorporating engineered cover systems require long-term protection of surface integrity to achieve defined infiltration and erosion performance criteria. Grazing activities may introduce compaction, disturbance and localised erosion that could compromise the stability and performance of these engineered systems. Accordingly, these areas will be rehabilitated to a native vegetation PMLU to protect cover system integrity and ensure compliance with long-term physical and chemical stability objectives.

Areas not constrained by engineered cover requirements or subsidence risk will be returned to low intensity grazing, consistent with the surrounding regional land use and land capability. This includes areas associated with underground portal and decline. The first 30 m of the decline will be backfilled, portal sealed, and surface rehabilitated in accordance with closure planning and landholder agreements, resulting in a landform suitable for grazing. As requested by the underlying landholder, key pieces of infrastructure will be retained, including roads and tracks, to support ongoing grazing operations. The stakeholder consultation process for the Cloncurry Project identified no objections to the proposed PMLUs. Landholder agreements are in place (provided separately).

Table 84: PMLU Justification

PMLU Consideration	Justification
Is viable, having regard to the use of land in the surrounding region	The proposed PMLUs are low intensity grazing, native vegetation and permanent infrastructure. These land uses are consistent with the land capability of the area (see Section 8.1.6) and the dominant rural land use of the Cloncurry region. Low intensity grazing remains appropriate for areas where landform design and rehabilitation methods do not rely on engineered cover systems, including rehabilitated portal and decline areas following full backfilling and surface rehabilitation. For disturbance areas incorporating engineered cover systems, native vegetation is the most viable land

	use as it avoids disturbance that may compromise erosion or infiltration performance criteria.
Satisfies at least one of the following:	
a) The use is consistent with how the land was used before mining activity was carried out on the land	As outlined Section 8.1.10, the pre-mining and surrounding land use is low intensity grazing of beef cattle. Returning suitable areas to low intensity grazing is consistent with the past and current use of the land. For areas requiring engineered cover systems, native vegetation represents a compatible land use that maintains land stability while remaining consistent with the broader rural and ecological landscape.
b) The use is consistent with a development approval relating to the land	No relevant development approvals.

c) The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act	**Cloncurry Shire Planning Scheme**
	
	Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural Zone (Cloncurry Shire Council, 2016). The purpose of the Rural Zone of the Cloncurry Shire is to:
	
	• Provide for rural uses and activities;
	• Provide for other uses and activities that are compatible with –
	  ○ Existing and future rural uses and activities;
	  ○ The character and environmental features of the zone;
	• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
	
	The proposed PMLUs of low intensity grazing, native vegetation and supporting infrastructure are consistent with these objectives. Rehabilitation to native vegetation for engineered landforms supports long-term land capability and environmental protection within the rural context.
	
	Northwest Regional Plan 2010-2031
	
	The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning.
	
	The Regional Plan identifies both mining and rural production as significant primary industries within the region, and details the need for appropriate management of mining development to ensure it complements other industries. The plan also places importance on climate change and one that is well managed to maintain

	biodiversity, ecological processes, water resources, and scenic amenity. The proposed PMLUs support a safe, stable, and non-polluting post-mining landscape and are consistent with the regional planning objectives. **Commonwealth Legislation** N/A
d) The use will deliver, or is aimed at delivering, a beneficial environmental outcome.	Rehabilitation to native vegetation on engineered landforms delivers a beneficial environmental outcome by restoring ecosystem function, stabilising soils, and providing habitat consistent with surrounding vegetation communities. Exclusion of grazing from these areas reduces the risk of erosion, infiltration exceedance and geotechnical instability, and supports long-term physical and chemical stability. Low intensity grazing across suitable areas maintains regional land use continuity while ensuring compliance with environmental performance objectives.

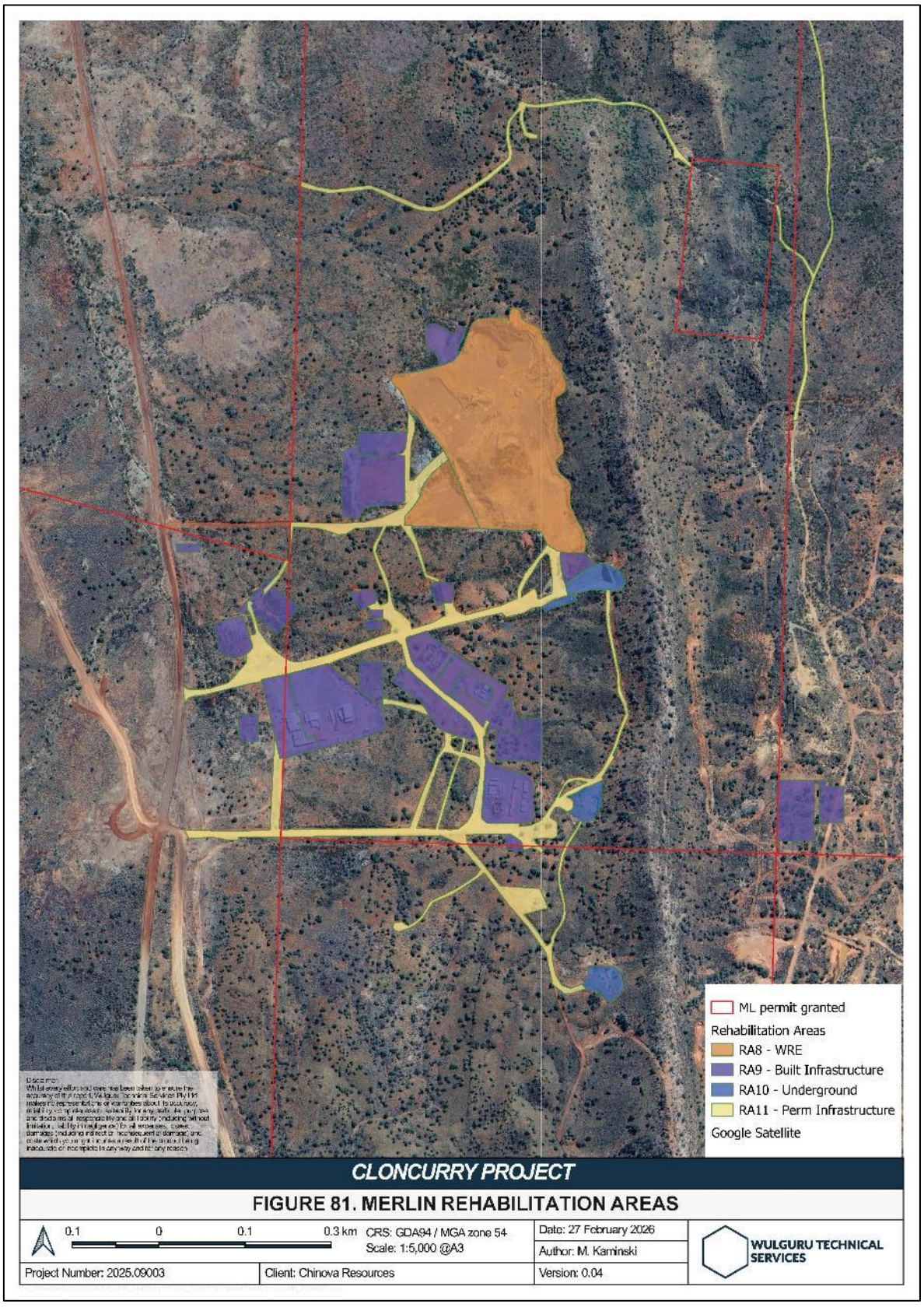


Figure 81: Merlin - Rehabilitation Areas

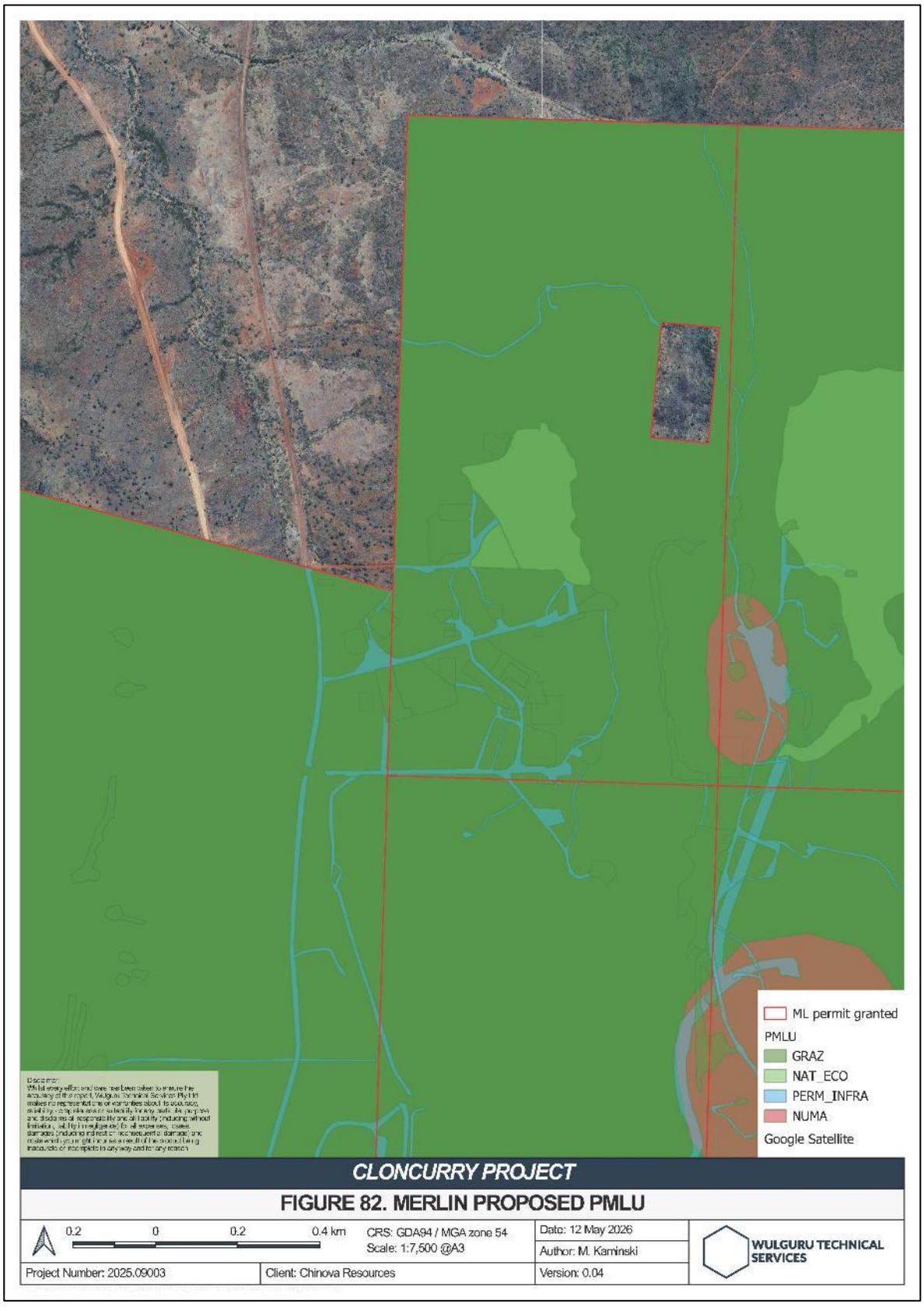


Figure 82: Merlin – Proposed PMLU

8.2.3 Rehabilitation/Improvement Planning

The Merlin project is a partially developed underground molybdenum and rhenium mine. The Merlin project is anticipated to mine 500,000 tpa of ore and produce on average 4,700 tpa of molybdenum and 7 tpa rhenium.

Chinova will recommence mining at Merlin in 2026 which will continue for approximately 15 years. Following the cessation of mining, Chinova will before the mine is available for rehabilitation. As a result, the land currently available for progressive rehabilitation at Merlin is limited as presented in

Table 85: Availability for Progressive Rehabilitation (Merlin)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Waste Rock Dump			
Merlin WRD	2041	10	Underground mining at Merlin is scheduled to conclude in 2041. The WRE is an essential component of the Merlin mine. Contributions to the WRE will cease in line with the completion of mining at Merlin, after which the WRE will be rehabilitated.
ROM			
Merlin ROM	2041	2	ROM will be utilised to stockpile 'run of mine' ore prior to transport to the Osborne Processing Facility and is an essential component of the Merlin mine. While mining continues at Merlin, the ROM will continue to be required. Current mining operations are planned to conclude in 2041. Following conclusion of mining at Merlin, the ROM will be rehabilitated.
Infrastructure			
Merlin Concentrator **Merlin Paste Plant**	2041	2.25	Although ore extracted from Merlin will be processed at the Osborne Processing Facility, processing infrastructure, including paste fill and batch plant, are essential for the development of the Merlin mine. This infrastructure will no longer be required following the cessation of mining at Merlin, after which the processing infrastructure will be rehabilitated.
Merlin Infrastructure **Merlin Soil Stockpile**	2041	8.93	Built infrastructure required to support mining operations at Merlin. Existing buildings and proposed buildings including clinic, vehicle workshops, administration building, etc, are essential components of the Merlin mine development. Current mining operations are planned to conclude in 2041. Following conclusion of mining at Merlin, built infrastructure will be rehabilitated.
Merlin Portal	2041	0.89	Available for rehabilitation following the completion of mining at Merlin. The portal and underground infrastructure (i.e., air rise vents and dewatering facilities) are essential

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Merlin Infrastructure (air vents)			components of the Merlin mine development. Following the cessation of mining at Merlin, underground infrastructure will be rehabilitated.
Water Storages			
Merlin SD (North of WRD), Merlin SD (Paste Plant), Merlin 1 Environment Dam (General Infrastructure), Merlin 2 Environment Dam (ROM and WRD), Merlin 3 Environment Dam (WRD), Merlin PAF Dam 2	2049	21.01	Water storages are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits.
Roads and Tracks			
Other Roads – Permanent	2056	6.4	Roads are required for access for mining and then monitoring and maintenance activities. Following cessation of mining these areas will be transferred to the landholder.

8.3 Non-Use Management Areas

For the purposes of this PRCP, no Non Use Management Areas (NUMAs) are proposed for Merlin.

8.4 Voids in Flood Plains

In accordance with section 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff (ARR).

A review of hydrology at Merlin in accordance with the EP Act demonstrates the portal is not located within a flood plain (WRM, 2023). In addition, the Merlin portal will be be backfilled and sealed at closure.

8.5 Rehabilitation and Management Methodology

Full implementation of the proposed decommissioning and rehabilitation program will result in a post mining final landform that broadly reflects the pre-mining condition. The mining and processing of molybdenum/ rhenium ore at Merlin will result in significant development including underground mine access and infrastructure, waste rock emplacements, crushing and mineral concentrating circuits and supporting built infrastructure.

The rehabilitation and management methodologies described herein for the Merlin project area is specific to the rehabilitation of the current and authorised Merlin disturbance. A summary of the activities and treatments for the Merlin rehabilitation domains is provided in following sections.

8.5.1 General Rehabilitation Principles

8.5.1.1 RA8 Merlin - WRE and ROM

Through the proposed mining campaign for Merlin, the ROM will be used to temporarily store ore prior to transfer to the Osborne Mine for processing, while the WRE will receive waste rock for permanent storage. Characterisation of the material requiring storage on the ROM and WRE concluded this material will consist of NAF.

For the purposes of this PRCP, the NAF cover system designed by ATCW is proposed (ATCW crest cover option C5). Modelling undertaken by ATCW (2024) concluded that this cover configuration satisfied the adopted performance criteria for NAF material, including the effective management of infiltration and surface water runoff, while optimising plant available moisture.

The C5 cover system is considered appropriate for NAF material as the primary closure risk relates to erosion stability and surface water management, rather than acid generation and contaminant mobilisation. Unlike the PAF cover (C4), a reduced permeability layer is not required. Rather, the C5 configuration promotes retention of rainfall within the growth medium for evapotranspiration, limiting net percolation while supporting vegetation growth.

ATCW's (2024) modelling demonstrated that the C5 design achieves acceptable net infiltration rates for NAF material and provides favourable plant growing days per year, supporting the establishment of a stable, self-

sustaining vegetated landform consistent with the nominated PMLU. The configuration also promotes long-term erosion resistance through adequate cover thickness and surface stability measures.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Merlin WRE and ROM. Further detail is provided on this requirement within Section 8.5.7.2.

Rehabilitation of the Merlin WRE and ROM will involve:

- Sampling of the ROM surface to verify the handling of ore in the area has not changed the material geochemical characteristics.
- Reprofiling the WRE crest (plateau) to a grade of 0.5%, draining in an easterly direction to the ridge/ emplacement interface then to the south to Merlin 2 Environment Dam (ROM and WRE).
- Reprofiling the WRE batters to angle of repose with a 10m berm installed between a 10m vertical batter lift height.
- Application of a crest cover system (ATCW crest cover option C5).
- The domain will be revegetated in accordance with the Cloncurry Project revegetation strategy (NGH, 2023).
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

8.5.1.2 RA9 Merlin - Built Infrastructure

Current built disturbance includes administration building/camp, workshop, fuel storage area, laydown areas and water storages. Future approved infrastructure includes a crushing and mineral concentrating plant, paste-fill plant and significant supporting infrastructure.

The decommissioning and rehabilitation strategy for the Merlin built infrastructure areas will be:

- Product charge including fuel, concentrate and reagents will be removed from the infrastructure.
- All areas will be de-energised, and all services disconnected.
- Residual mine affected water will be transferred to a Starra Pit.
- Impacted sediment (approximately 0.5m) removed from sediment dams and disposed at a licensed facility authorised to receive such waste.
- Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no re-use value will be disposed of at a licensed facility authorised to receive such waste.
- Areas will be assessed for contamination (sulphate, metals) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

8.5.1.3 RA10 Merlin - Underground Infrastructure

The underground infrastructure at Merlin will be treated as follows:

- Infrastructure will be de-energised and services disconnected.
- Surface Infrastructure will be decommissioned. Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no-reuse value will be disposed of at a licensed facility authorised to receive such waste.

- Areas will be assessed for contamination and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The ventilation shaft voids will be backfilled to the surface.
- The fist 30m of underground development will be backfilled to mitigate potential surface subsidence, followed by the sealing of the underground portal with a fibrecrete barricade. The boxcut portal will be backfilled to the natural topographical surface.
- The domain will be revegetated in accordance with the Cloncurry revegetation strategy (NGH, 2023).
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

8.5.1.4 RA11 Merlin – Permanent Infrastructure – Roads and Tracks

Roads and tracks will not be rehabilitated until all remaining rehabilitation works at Merlin have been completed. Following completion of all remaining rehabilitation works, roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement.

8.5.2 Hydrogeology

The hydrogeology of the Merlin area was investigated by AGE in 2023 to meet the requirements of the PRCP guideline (Appendix 1). Groundwater hydrostratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in Section 8.1.5. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Merlin to assist with determining appropriate containment and management during operation and closure.

8.5.2.1 Conceptual Hydrological Model

To conceptualise the groundwater flow system, AGE (2023) reviewed existing data for ground elevation, infrastructure, geology, and water levels (as available) to produce an interpretative northwest to southeast hydrogeological cross section (Figure 83). This conceptual builds on previous models (Rockwater 2010, Rockwater, 2011b) and observations of the drawdown from the Merlin borefield.

The west to east cross section in the Merlin area is oriented perpendicular to the strike of the main geological units and is aligned with the Merlin underground and proposed northern Mount Dore pit. The cross section indicates that the cone of depressurisation from the Merlin borefield is limited to the Kuridala Group and within the area north of MDWB12a. The conceptualisation also indicates that the contact between the Stavely Formation and the Kuridala Group is a boundary to flow, that the Footwall Quartzite is particularly thick at this location, and that the Mount Dore Granite is a zone of recharge.

Ecosystem use of groundwater in the area is unlikely due to the considerable (>20 m) depth to groundwater. There are no pastoral users of groundwater near the cross section and groundwater-surface water interaction is unlikely to the groundwater depth at the site.

8.5.2.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2025a) to assess potential impacts to groundwater from the Merlin mine (Table 87). The main sources of solutes to groundwater are from the underground void, ROM and WRE.

The potential receptors include:

- mapped areas along the Mort River tributary with potential for aquatic or terrestrial GDEs;
- groundwater bores used for livestock watering; and
- water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to a receptor. The AGE (2025a) impact assessment presented in Table 87 indicates that:

- there is no past or future impact predicted for potential aquatic GDEs regarding drawdown or water quality;
- It is unlikely to have been past impact regarding water quality or drawdown on potential aquatic GDEs;
- there is no past and highly unlikely future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source; and
- there is past impact and future impact for groundwater used for industrial uses regarding water access due to dewatering.

8.5.2.3 Contaminants of Concern

The methodology used to identify relevant CoCs has been detailed within Section 6.5.2.3. The CoCs identified by AGE as relevant to closure monitoring at Merlin are summarised in Table 86, with justification for inclusion or exclusion provided within Appendix 16.

Table 86: Merlin CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Arsenic (ug/L)	Y
Chromium (ug/L)	Y
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Fluoride (mg/L)	N
Lead (ug/L)	Y
Molybdenum (µg/L)	Y
Selenium (ug/L)	Y
Uranium (ug/L)	Y
Zinc (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y
Free Cyanide (mg/L)	Y
Total Cyanide (mg/L)	Y

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
WAD Cyanide (mg/L)	Y

8.5.2.4 Hydrogeology Closure Considerations

Based on the updated hydrogeology assessment for Merlin, ongoing groundwater quality and level monitoring will be undertaken in closure to confirm potential limited risks to the receiving environment.

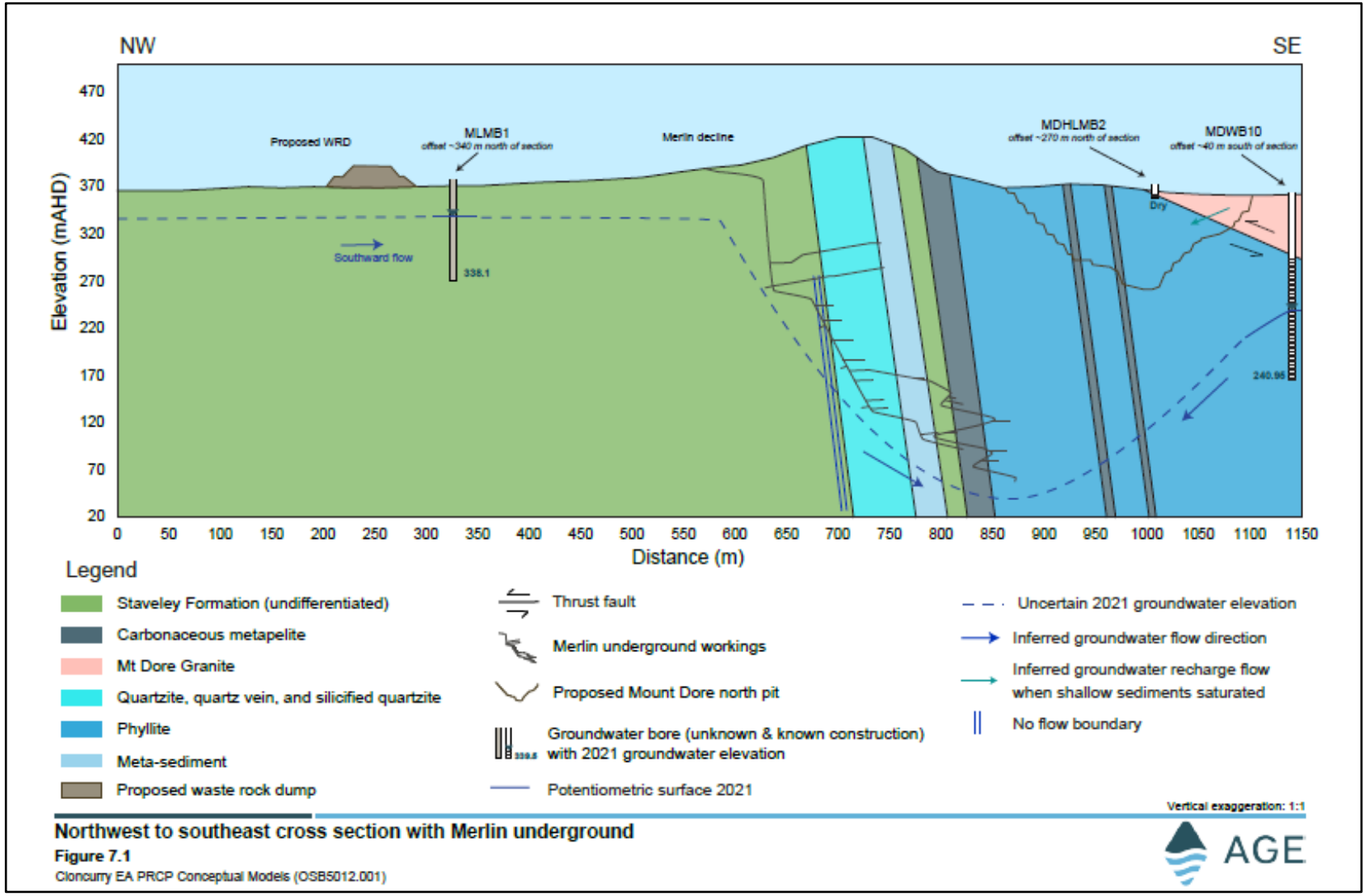


Figure 83:Northwest to southeast cross section with Merlin underground (AGE, 2025a)

Table 87: Source-Pathway-Receptor analysis for Merlin (AGE, 2025a)

Source (and associated risk)	Receptor	Potential Pathway	Evidence that pathway is present / absent	Predicted Impact
Drawdown from past dewatering **As groundwater was extracted during periods of mining, a cone of depression has developed and intermittently changed in depth and extent. This cone of depression will also change in depth and extent in the future and will be deepest when Merlin is fully dewatered. However, the range of future drawdown is projected to be commensurate with that has historically occurred and has been modelled.**	**Mapped areas with potential for aquatic GDEs.** **Not present** within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If groundwater discharge to the surface water features in question had been reduced as a consequence of drawdown, there could be impacts to the GDE.	**Not present:** No historic drawdown has been recorded at MDWB12/12a, which is located between the Merlin void and the potential receptors. Future drawdown is predicted to be commensurate with historic drawdown.	No past or future impact is predicted.
Merlin underground void **However, the risk is generally considered low for the Merlin area because it is underground due to waste rock characteristics.**	**Mapped areas with potential for aquatic GDEs.** **Not present** within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If this water were to flow away from the voids and reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not currently present, highly unlikely in the future**: This transport could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine voids. At that time transport towards the southeast (toward the Mort River) is possible. However, the distance (>5km) to the potential GDEs is likely to great to allow transport in the relatively impermeable formation without considerable natural attenuation.	No past impact is predicted. Future impact is highly unlikely.

Existing (WRD, sediment dams) and future (expanded WRD, ROM, sediment dam, and pastefill plant) infrastructure for Merlin that is located above the Staveley Formation **The existing and future WRD is potentially acid generating and there is other proposed surface infrastructure (e.g., ROM and surface water storage) that has the potential to serve as sources of solutes. Infiltration of seepage below the WRDs or this other infrastructure is possible, whereby solutes may potentially reach the water table.**	**Mapped areas with potential for aquatic GDEs** **Not present** **Areas that do exist are located to the southeast along stretches of the Mort River.**	**If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >7 km without natural attenuation.**	**Not present:** **This infrastructure is located above the Staveley Formation in an area where there is limited groundwater connectivity between the Staveley Formation and the Kuridala Group (the hydrostratigraphic unit with the potential GDEs).**	**No past impact is predicted.**
Drawdown from past or future dewatering of the Merlin void **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a (Figure 11.2). **Potentially Present:**	If groundwater levels beneath the terrestrial GDEs had been lowered, vegetation access to water could have been restricted. If the terrestrial GDEs are reliant only on moisture in the unsaturated zone, drawdown of the water table is not a pathway that can affect the availability of that water.	**Not present:** No historic drawdown has been recorded at MDWB12/12a, which is located between the Merlin void and the potential receptors. Future drawdown is predicted to be commensurate with historic drawdown. **Not Present** There is no pathway for mining activities to change the amount of soil moisture or vadose zone water that is available to the terrestrial GDEs. This is dictated by the amount of rainfall, infiltration, and evaporation. Although clearing for mining	No past or future impact is predicted

	There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries.		may have increased infiltration (e.g., due to decreased transpiration), this is not linked to impacts from groundwater changes.	
Merlin underground void Risks as described above.	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a (Figure 11.2).	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast along the reaches of the Mort River and >5 km from the voids. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of pit water could be connected via a pathway.	**Not present, highly unlikely in the future** In area of the voids, the groundwater levels are currently very deep (>30mBGL) and remnant solutes in the water (if present) only likely to be accessible to vegetation if it firstly reaches the watertable and is then transported towards the southeast (toward the Mort River). This transport could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine voids. However, the distance to the potential GDEs is likely too great to allow transport in the relatively impermeable formation without considerable natural attenuation. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the Merlin underground or proposed pits and pit water levels are >30 mBGL, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past impact is predicted. Future impact is highly unlikely.
Drawdown from past or future dewatering of the Merlin void Risk as described above.	**Groundwater bores used for livestock watering** There is one existing livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater levels at the locations of potential livestock bores had been lowered, groundwater user access to water could have been restricted.	**Not present, unlikely future impact** No historic impacts on groundwater bores has been recorded. Future drawdown is predicted to be commensurate with historic drawdown and will be followed by a period of recovery	No past and highly unlikely future impact is predicted.

Drawdown from past or future dewatering of the Merlin void and Mount Dore pits **Risk as described above.**	**Water used for industrial purposes (mining)** Groundwater is used by Chinova in the region.	If groundwater levels at the locations of potential industrial bores had been lowered, groundwater user access to water could have been restricted.	**Present, decreasing future impact** Groundwater has been variably used by Chinova and drawdown has planned and monitored. In closure, drawdown will be followed by a period of recovery	Current impact is observed, recovery will occur

8.5.3 Flooding

The potential impacts of flooding on the Merlin final closure design were assessed by WRM (WRM, 2023 and 2025) (Appendix 2 and 18).

WRM reviewed the hydrology characteristics at Merlin. There are no significant drainage features across the project mining area (Figure 84). Given that there is no catchment or drainage features that drain to the Merlin site, flood modelling of the final landform has not been undertaken.

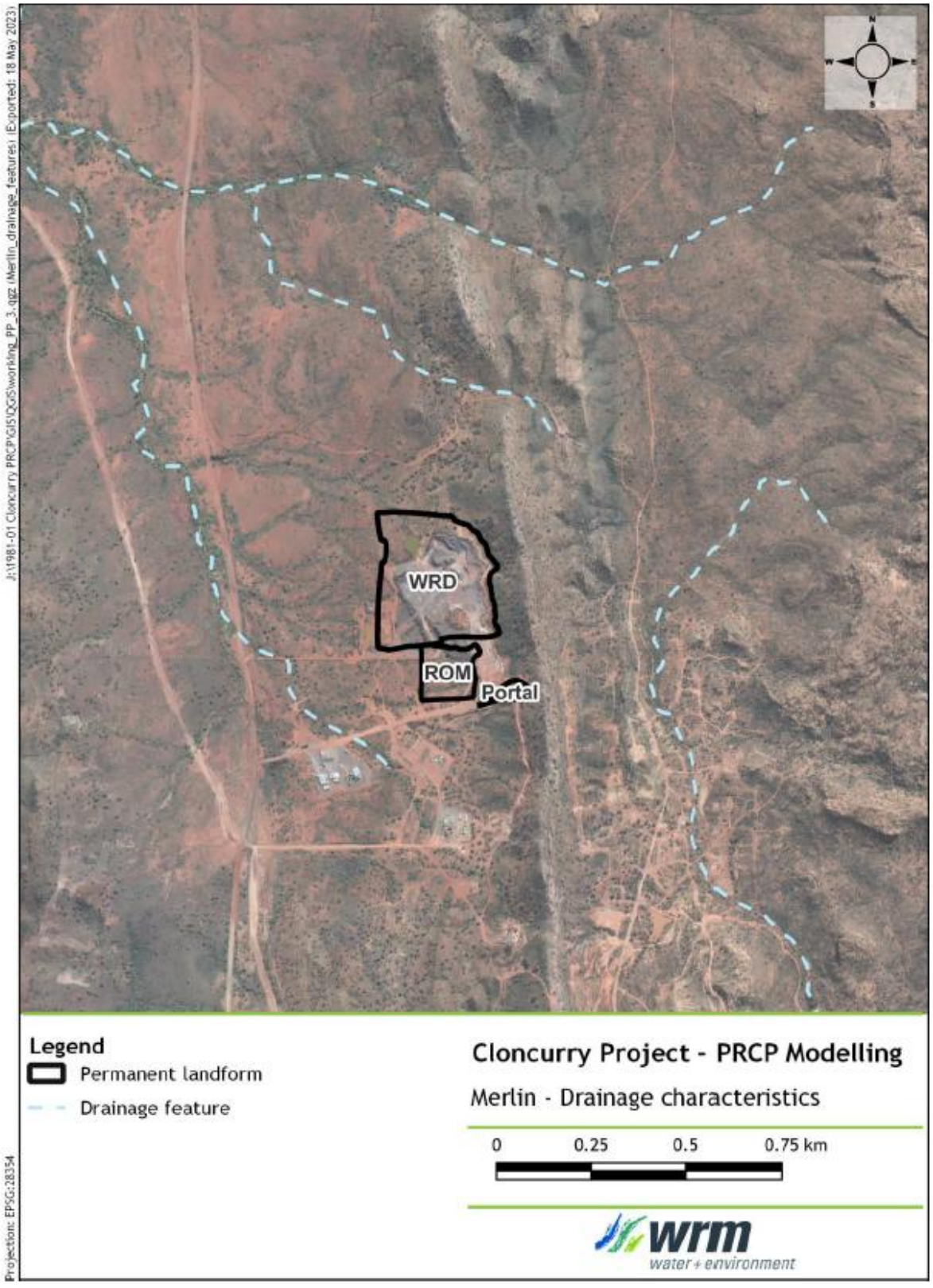


Figure 84: Merlin Drainage Characteristics (WRM, 2023)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Merlin specified in Table 88. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;
(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 88: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Merlin	Merlin WRD	10/12/2041	10/12/2037
	Merlin ROM	10/12/2041	10/12/2037

8.5.4 Soil and Capping Material Assessment

An inventory of suitable soils and geological materials is required to implement the various rehabilitation strategies proposed for the Merlin site. Materials are required to backfill the portal and provide growth medium for the WRE and other disturbed areas.

To complete this work the following material types and geotechnical properties are likely to be required as outlined in Table 89.

Table 89: Merlin Rehabilitation Materials Specification

Material Type	Material Description	Material Specification
Rock Mulch/ Growth Medium	Material suitable for plant growth.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Well graded material - Fines content (material particle size <0.075mm) of approximately 30%; - Sand fraction (material particle size >0.075mm and <4.75mm) of approximately 30%;

		- Gravel (>4.75mm) of approximately 50%; and - Non-plastic to low plasticity fines.
Rock Armour	Provide a very high level of resistance to erosion along high slope and/or high velocity drainage.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering - Predominantly coarse rock (material particle size >75mm) of greater than 70%. - Minimal fines content
General Fill	Cut and fill requirements for landform shaping	- Fines content (material particle size <0.075mm) less than 15%; - Sand content (material particle size <4.75mm) of 25-100%; and - Maximum particle size 150mm. - The plasticity index should not be greater than 12.

8.5.4.1 Rehabilitation Material Characterisation

A material characterisation investigation has been undertaken at Merlin to identify the potential location and quality of available rehabilitation materials (SGME, 2025b). The investigation focussed on the Merlin WRE for use in rehabilitation (refer Figure 85).

The geochemical and physical properties of Merlin WRE are discussed in detail in SGME (2025b) and Table 90.

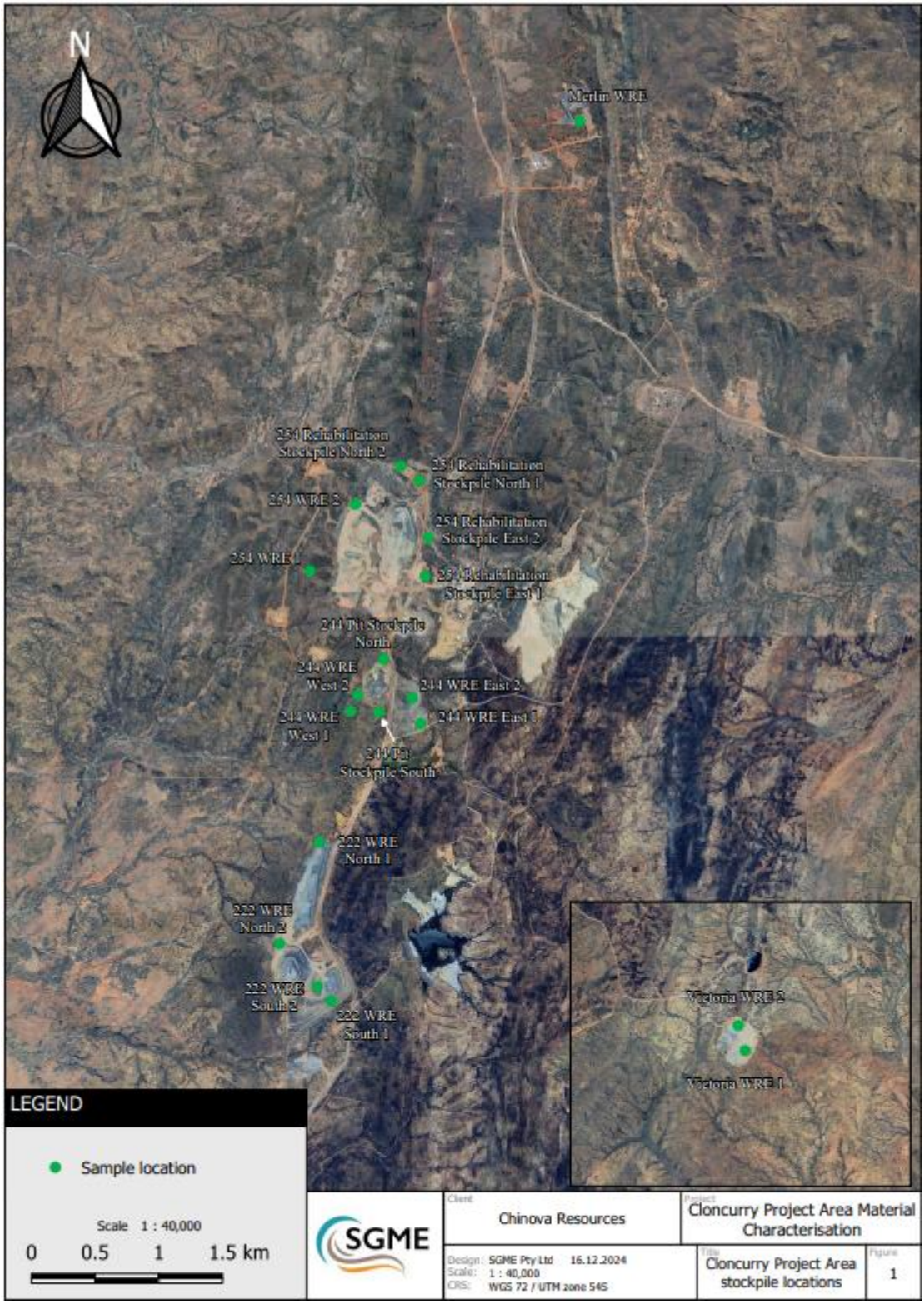


Figure 85: Cloncurry Project Area Material Characterisation Sample Locations

Table 90: Material Characterisation – Merlin WRE

Location	Sample ID	Material Characteristic	Material Suitability	
Merlin WRE	MWRE	• Strongly alkaline (pH 9.2), may reduce micronutrient availability (iron, manganese). • Low electrical conductivity (EC) and low chloride – minimal salinity hazard. • Low organic matter and cation exchange capacity (CEC) – poor nutrient retention. • Non-sodic to slightly sodic. • Sandy to silty texture with low plasticity. • Moderate to high permeability – freely draining but low water-holding capacity. • Low to moderate dispersion potential – generally stable when compacted.	Growth media	Requires correction with organic matter or acidifying fertilisers to reduce pH and improve CEC

8.5.4.2 Material Balance

The estimated quantities of materials required to rehabilitate the Merlin area are provided in Table 77. A site-wide material balance has been detailed within Section 6.5.4.2 (Table 38), which concluded that sufficient appropriate material is currently available onsite to undertake all proposed rehabilitation works.

As detailed within Table 38, insufficient material is currently available on the Merlin WRE to fully rehabilitate both the Merlin WRE and ROM. Additional growth material will be sourced from the material stockpiles at Starra to rectify this shortfall.

Table 91: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Footprint (ha)	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
WRE/ROM	7.48	89,814	11,227	N/A	TBA – subject to final detailed designs

8.5.5 Waste Characterisation

8.5.5.1 Waste Rock

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Merlin, geochemical testing of waste rock materials from the Merlin Project was completed in mid-2010 for 16 drill core samples representing waste rock materials likely to be encountered during the decline development. The drill core samples were tested for static ABA and total metals at ALS Laboratory in Brisbane (RGS 2011). The waste rock comprised 1m drill core intervals from four drill holes through the Merlin Project waste rock and mineralised zone.

The results indicate that away from the hanging wall and footwall of the mineralised zone, all waste rock samples have a low to negligible risk of acid generation, a high factor of safety and are classified as NAF. Some hanging wall and footwall waste rock materials may have a low factor of safety and were classified as PAF (RGS 2011). The concentration of most trace metals tested in the water extracts is low, predominantly below the level of reporting, and below the trigger values for livestock watering. The exception was the phyllite waste rock which contained elevated levels of soluble arsenic (0.16 mg/L). The waste rock was considered pH-neutral to alkaline (pH 6.8 to 9.5) with low electrical conductivity values (254 to 902 µS/cm) (RGS 2011).

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional six samples from waste rock stockpiled on the Merlin ROM/WRD. The latest round of results for Merlin indicates that the material has a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2), low salinity levels, soluble metals concentrations generally below level of reporting and is classified as NAF.

8.5.5.2 Tailings

URS (2011) provided a geochemical characterisation of the tailings from the future Merlin processing circuit. Geochemical analysis found that the Mo/Re process tailings solids are:

- NAF, with substantial excess ANC;
- Expected to have negligible risk of acid generation and a very high factor of safety in terms of its potential to generate acid.
- Moderately saline with levels recorded at 940 µS/cm.

- Apart from Mo, dissolved metal concentrations were sparingly soluble.

8.5.6 Geotechnical Study

Quantum Geotechnical (2023 and 2025) have undertaken an assessment and numerical modelling of the long-term stability of the Merlin underground voids. Full details of the assessment are provided in Appendix 8. Quantum

8.5.6.1 Underground Mine Development

The Merlin mine plan proposes to mine the deposit using two methods; long hole open stoping (LHOS) and drift and fill (DAF) with all stope voids completely backfilled with pastefill. Access to the underground will be by the existing box-cut portal and access decline with ventilation supplied by two (existing) ventilation shafts.

The surface openings at the Merlin mine are already in place and consist of (Figure 81):

- Box-cut portal and access decline
- South Return Air Raise (RAR) – ventilation shaft
- Central Fresh Air Raise (FAR) – ventilation shaft

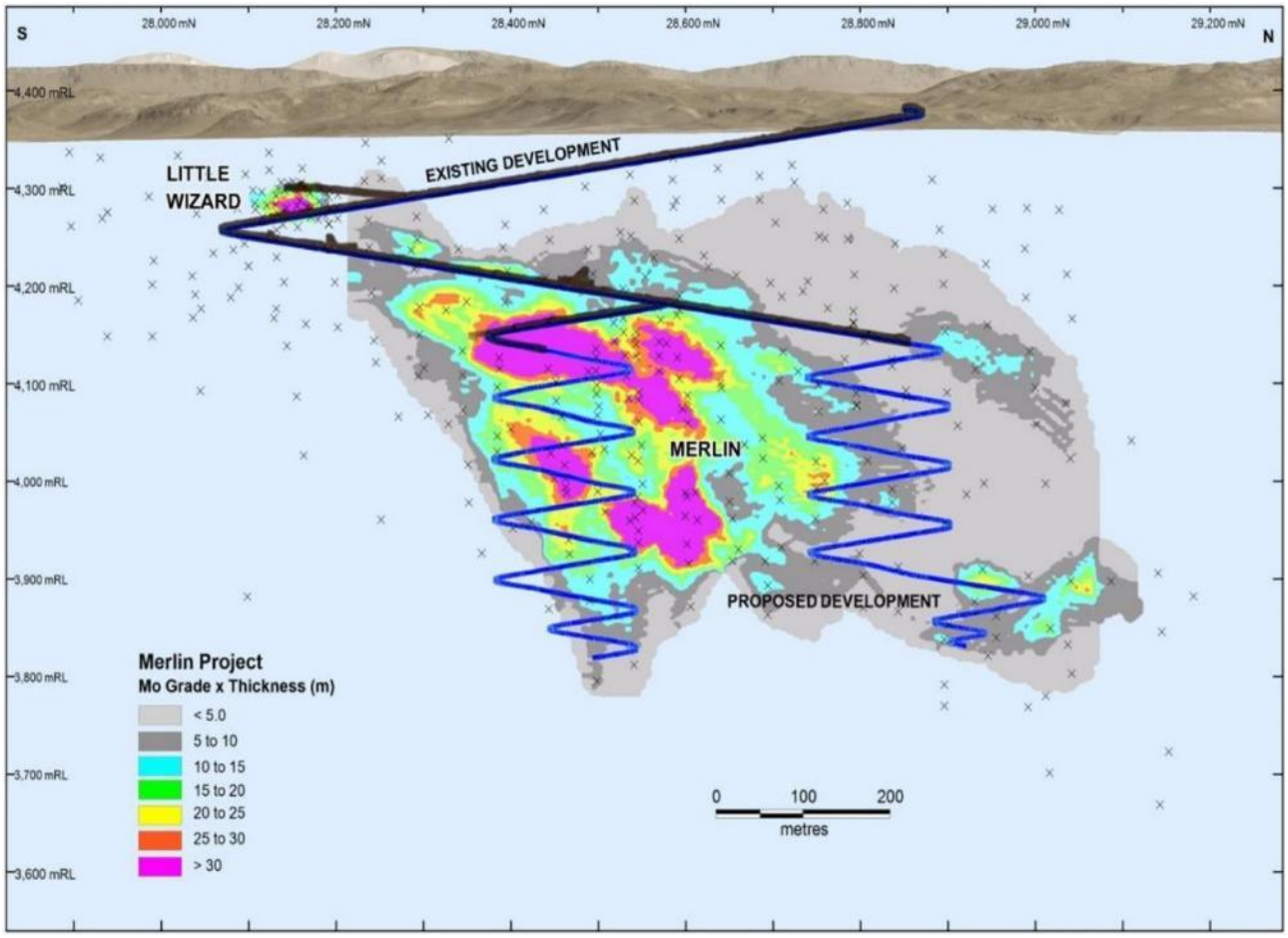


Figure 86: Current and future underground development at Merlin

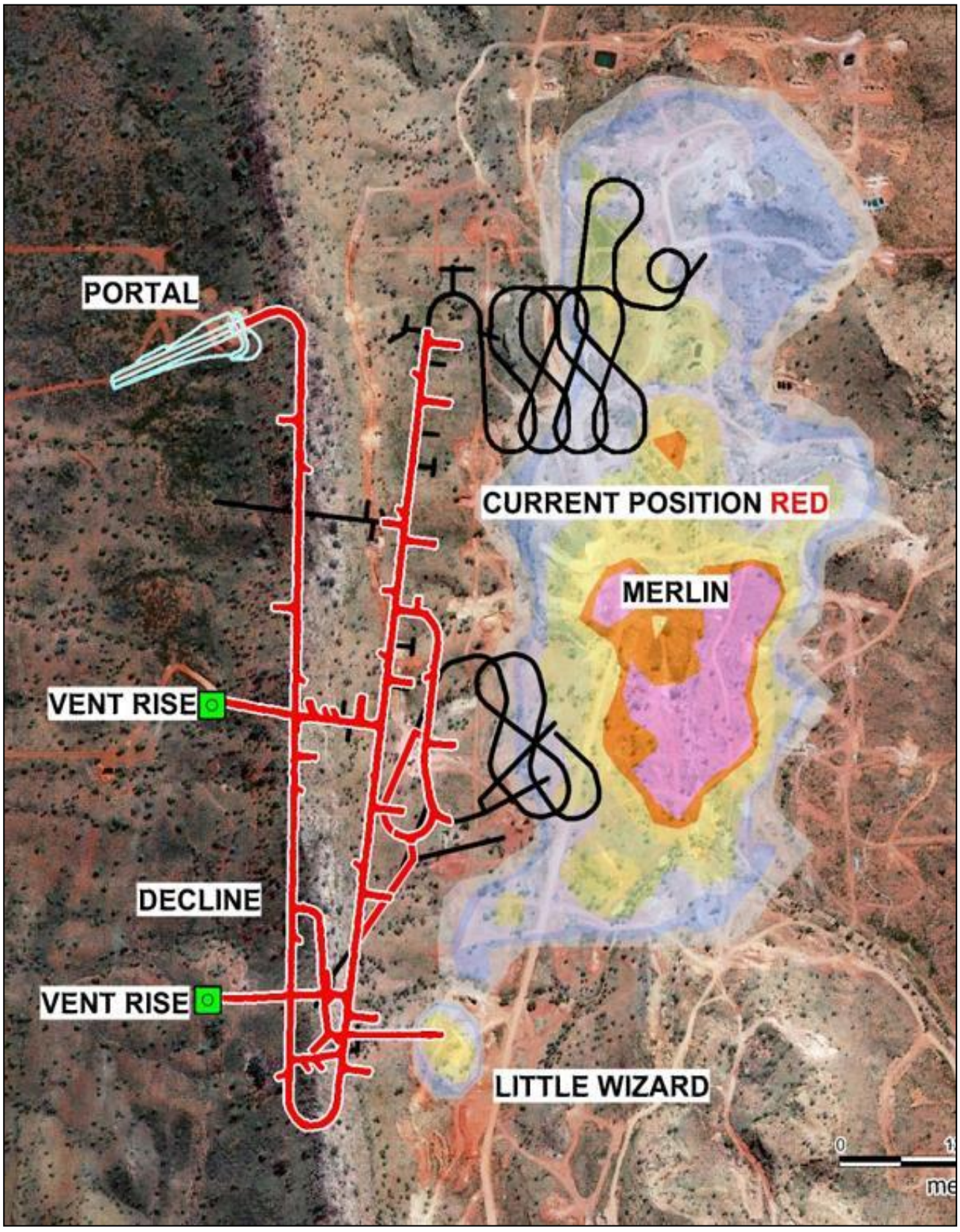


Figure 87: Merlin mine development showing surface infrastructure.

8.5.6.2 Surface Subsidence Risk and Control

Numerical modelling of the Merlin underground mine was undertaken to estimate stress levels around existing underground openings, in addition to the as yet unmined stoping block at Merlin by Quantum (2023) using a Map3D model.

In summary results of the modelling (Figure 88) indicate that:

- Hanging wall or footwall instability with stopes is unlikely based on the proposed paste fill mining methodology.
- Stress levels along the entire length of the decline are too low to induce instability. Therefore, the risk of stress induced collapse of development drives, leading to subsidence at surface, is considered so low that mitigation measures are not required. However, the above does not preclude the possibility of structurally driven failure.
- Both vent air raises are also indicated to remain stable.
- Modelling indicates that the ground approximately 5 m back from the crest of the upper bench of the Southern RAR boxcut may destabilise overtime if unsupported. This deformation is limited to the bench crest and does not present a risk of collapse or void migration to the surface. As mining is recommencing at Merlin in 2026, the upper bench should be monitored visually every six months, with records kept of the inspection. Following the completion of mining, the Southern RAR's upper bench will either be completely backfilled.

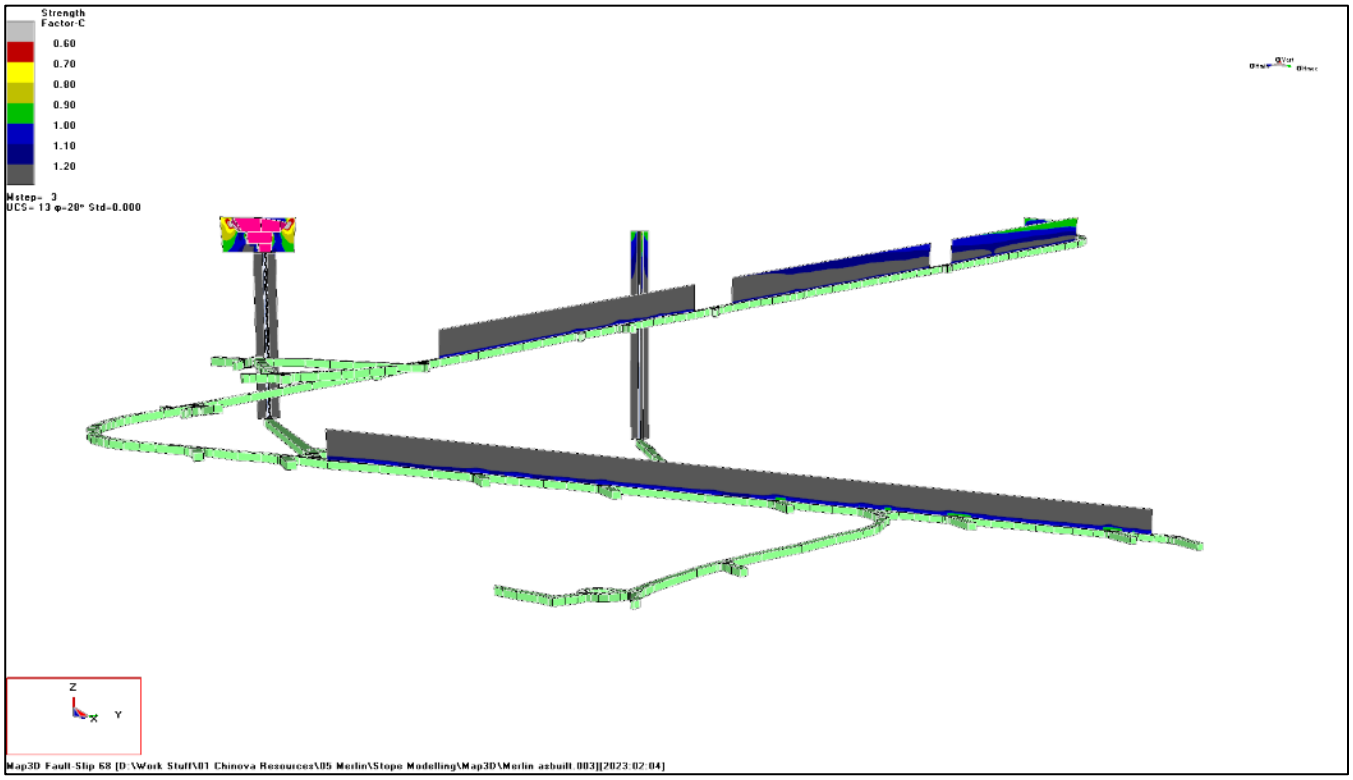


Figure 88: Map3D model of Merlin with stress grids (Quantum, 2023)

8.5.6.3 Rehabilitation Considerations

Based on the updated numerical modelling, Quantum (2023 and 2025) has recommended the following management requirements for closure:

- Backfill the first 30m of lateral development to mitigate against surface subsidence from the main decline collapsing.
- Backfill the FAR and RAR vent rises.
- The southern RAR's upper bench is to either be battered back to a stable slope angle (25 degrees) or the boxcut completely backfilled.

Chinova must additionally comply with the requirements of Condition PRCP16 and PRCP17 of the approved PRCP Schedule.

- **PRCP16:** Prior to the backfilling of underground workings, a detailed backfill methodology developed by a RPEQ in line with existing geotechnical reporting must be submitted to the administering authority.
- **PRCP17:** On completion of milestone Rehabilitation Milestone 4 for each relevant RA, an "As-Constructed Report" prepared which details and justifies all variations to the report submitted in PRCP16, including a certification from an independent AQP that such variations will not affect the design performance of the works included must be submitted to the administering authority.

8.5.7 Landform and Cover Design

8.5.7.1 Cover Designs

ATCW were engaged in 2022 to develop closure strategies for mineralised waste storages across Chinova's assets. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified five (5) potential cover system configurations with the ability to meet the rehabilitation objectives and transition to the agreed PMLUs. These configurations are shown in Figure 41 and include:

- Option 1: Queensland Government (DETSI) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.
    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.
- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armour (rind)
- Option 5: Store and release cover system:
    - 0.15m RPL
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.

- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The waste characterisation of the Merlin WRE demonstrates that the material will be NAF with low salinity and dissolved metals concentrations. ATCW has designed rehabilitation strategies for unreactive waste emplacements including a proposed cover system. The unreactive waste cover system's primary functional objective is to maximise plant available moisture by limiting water loss as both runoff, and water movement into the waste emplacement. This cover configuration is as follows:

- Cover Option C5 (Non-Acid Forming (NAF) Cover):
    - 0.15 m of Clay/RPL
    - 1.20 m of Growth Media (Rock Mulch)/ISL.

To treat the exposed emplacement batters ATCW designed geometric Batter Slopes with 20m wide terraces placed every 10m (vertical) (Figure 37). This approach would result in slopes that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling (WEPP) of the proposed landforms to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 28) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or constructed from rock/rock mulch, with suitable armouring or construction materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability.

Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable

and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.

8.5.7.2 Final Landform

The only final landform that will remain on the Merlin site that is a substantial departure from the pre-mine condition is ROM/WRE area. The portal and air vents will backfilled to be commensurate with the surrounding landscape and there will be minor reshaping required once built infrastructure is removed.

At the current stage of the Merlin operational life, the broad footprint of the major site landforms have been established. The design process for this PRCP has considered the existing status of the landforms as much as possible, and where appropriate, prioritised the use of suitable materials sourced from existing emplacements/ stockpiles and/or disturbances for use as backfill and cover system construction materials.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

WRE/ROM

At closure the WRE/ROM area will have the following treatments applied:

- Reshape plateau (base and cross grade 0.5 %).
- Focus drainage to the south-west against natural topography
- Apply a NAF cover system.

3D representations of the current and final landforms (including PMLUs) at the Merlin project area are provided in Figure 89 and Figure 90. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7).

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Merlin specified in Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and
(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and
(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:

(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 92: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Merlin	Merlin WRD	10/12/2041	10/12/2039
	Merlin ROM	10/12/2041	10/12/2039

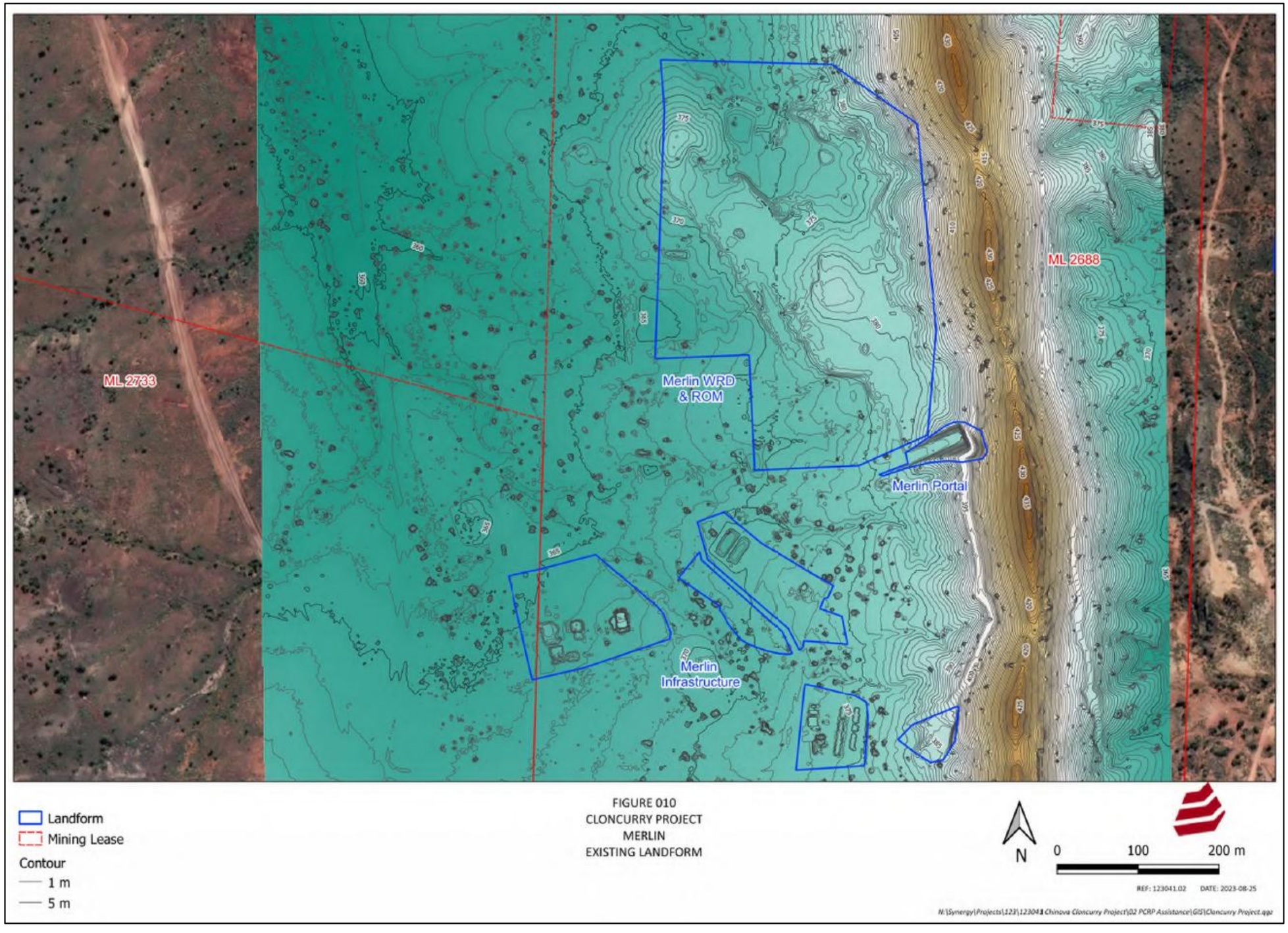


Figure 89: Merlin Existing Landform (ATCW, 2023b)

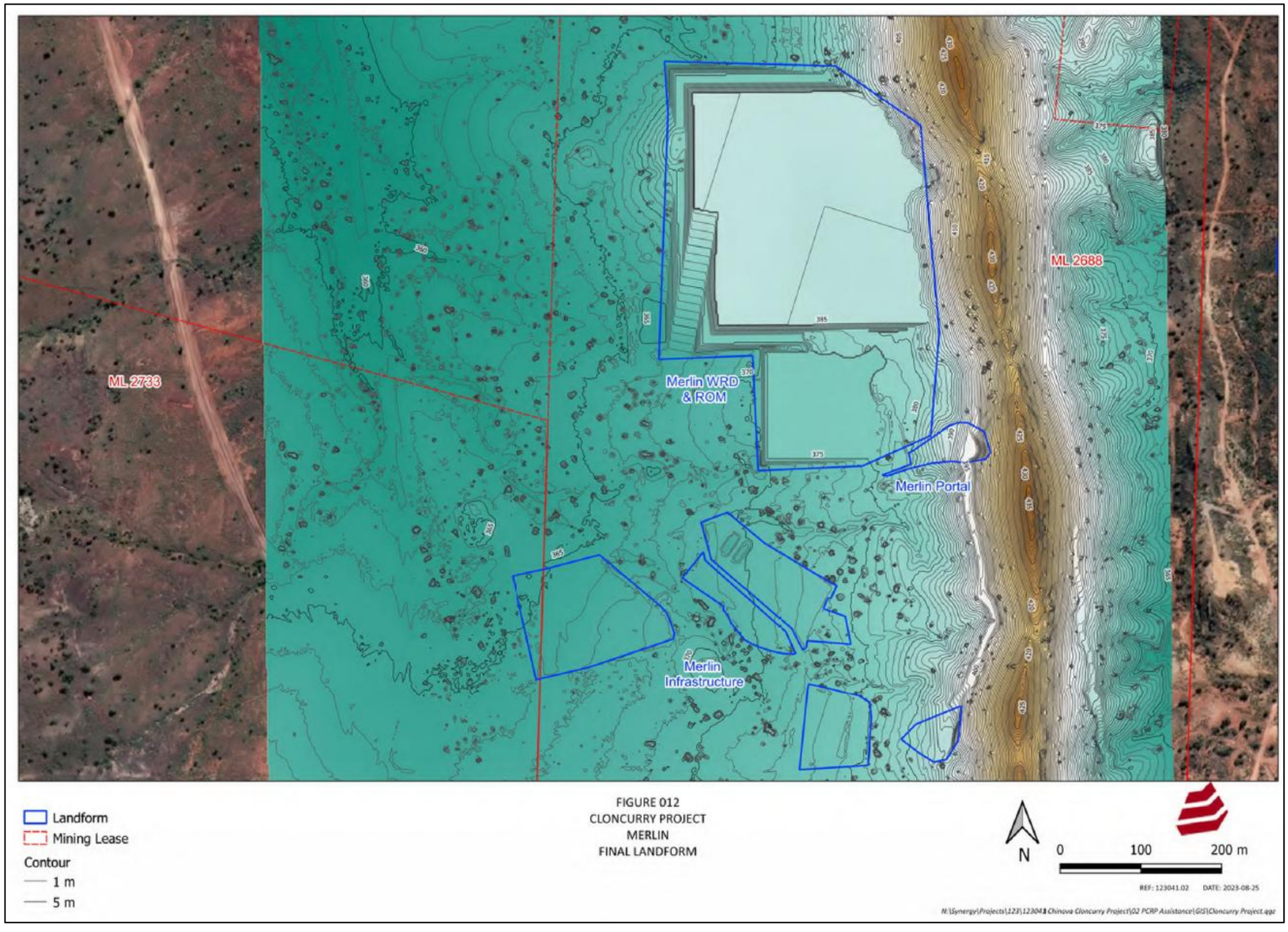


Figure 90: Merlin Final Landform

8.5.8 Water Management

The proposed management of surface water during the rehabilitation, post-closure maintenance and monitoring period is described below. Potential impacts and implications to groundwater values are discussed in previous sections as a result, this section will focus on surface water management.

The mine has been in care and maintenance since 2014. As detailed within Section 8.5.2.2, the main source of potential solutes onsite is the WRE and ROM areas and future processing area. Potential CoCs at Merlin have been detailed within Section 8.5.2.3.

Surface runoff flows from mine landforms and reports to a number of environmental and sediment dams (Figure 92). There is limited water quality data from the environmental dams at Merlin as they only hold water for a short amount of time following rainfall. The latest water quality results are presented in Table 93. The water quality data shows that runoff from the WRE is alkaline, with low levels of salinity, electrical conductivity, and most metals except slightly elevated levels of dissolved molybdenum. The water quality in the sediment basins that receive stormwater from other site infrastructure is neutral, with low pH, sulphate and dissolved metal concentrations. The surface water monitoring results are consistent with the characterisation of the waste rock.

The water management strategy onsite for closure will include:

- Installation of an appropriate cover system on the WRE, in accordance with an engineered design, to minimise the opportunity for water movement downward into the waste (seepage) and upward by capillary rise.
- Installation of upslope drainage to divert clean water away from the site.
- Removal of processing infrastructure and contaminated land assessment. Any contaminated material placed back in the Merlin underground or in a Starra pit.
- Surface runoff from the WRE directed to the environmental dams.
- Development of an updated Water Balance Model (GoldSim) for closure conditions.
- Installation of additional sediment basins to treat stormwater from mine areas prior to discharge to the receiving environment. Ongoing monitoring will determine whether these sediment basins are necessary. Should they be deemed necessary, approval for these additional structures will be sought prior to their construction.
- Continued implementation of a Receiving Environment Monitoring Program (REMP) to identify any impacts from the mine on the receiving environment.

Table 93: Merlin Environmental Dam Water Quality

	Unit	EQL	Livestock Trigger Values	MLPAF1	MLPAF1	MLPAF2	MLPAF2	MLPAF3	MLPAF3	MLROM	MLROM	MLWRDN
				14 Feb 2022	13 Jan 2026	06 Feb 2022	13 Jan 2026	04 Feb 2024	13 Jan 2026	13 Feb 2022	17 Nov 2025	04 Feb 2024
pH (Lab)	-	0		7.3	7.88	7.3	7.81	7.64	7.59	6.7	7.17	7.91
Electrical Conductivity (Lab)	µS/cm	5	5970	100	136	63	171	101	108	27	57	445
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.2	1000	4.6	4	3.2	15	4	7	1.1	1	81
Aluminium	mg/L	0.005	5	3.2	<0.01	5.1	<0.01	0.03	0.01	2.8	0.12	<0.01
Arsenic	mg/L	0.003	0.5	<0.003	<0.001	<0.003	<0.001	<0.001	<0.001	<0.003	<0.001	0.001
Beryllium	mg/L	0.00001		0.0001	-	0.0001	-	-	-	0.0004	-	-
Bismuth	mg/L	0.0005		<0.0005	-	<0.0005	-	-	-	<0.0005	-	-
Boron	mg/L	0.005	5	0.018	<0.05	0.020	<0.05	<0.05	<0.005	0.013	<0.05	<0.005
Cadmium	mg/L	0.0001	0.01	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	0.0002
Calcium	mg/L	0.2	1,000	9.1	10	3.9	1-	7	6	2.1	5	28
Chromium (III+VI)	mg/L	0.001	1	0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001
Cobalt	mg/L	0.001	1	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/L	0.001	1	0.026	0.012	0.027	0.012	0.007	0.007	0.022	0.014	0.004
Iron	mg/L	0.005		2.5	<0.05	4.2	<0.05	0.07	0.005	1.7	0.12	<0.05
Lead	mg/L	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	0.1		3.1	5	2.8	6	4	4	1.5	2	9
Manganese	mg/L	0.005		0.010	<0.001	0.014	<0.001	<0.001	<0.001	0.006	0.001	<0.001
Mercury	mg/L	0.00005	0.002	<0.00005	<0.0001	<0.00005	<0.0001	<0.0001	<0.0001	<0.00005	<0.0001	<0.0001
Molybdenum	mg/L	0.001	0.15	0.020	0.027	0.008	0.015	0.006	0.006	0.003	0.008	0.824
Nickel	mg/L	0.001	1	0.008	<0.001	0.006	<0.001	<0.001	0.002	0.003	<0.001	<0.001
Rhenium	mg/L	0.05		<0.05	<0.001	<0.05	<0.001	<0.001	<0.001	<0.05	<0.001	0.002
Selenium	mg/L	0.003	0.02	<0.003	<0.004	<0.003	<0.004	<0.01	<0.004	<0.003	<0.004	<0.01
Silver	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Tin	mg/L	0.002		<0.002	-	<0.002	-	-	-	<0.002	-	-
Uranium	mg/L	0.0005	0.2	0.0006	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.001	0.014
Zinc	mg/L	0.005	20	<0.005	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

* Dissolved metals results displayed.

8.5.8.1 Surface Water Contaminants of Concern

Potential CoCs at Merlin were identified by AGE (refer Section 8.5.2.36.5.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 94.

Table 94: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE and ROM	Sulphate, metals
Rehabilitated disturbed areas	Suspended solids, turbidity
Final reshaped drainage lines and batters	Suspended solids, turbidity

8.5.8.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for Merlin post-closure. A description of the methodology used to prepare this drainage plan has been provided within Section 6.5.8.2. The post-closure water management system for Merlin includes the following:

- Final void water management
  - The portal will be backfilled and rehabilitated to be commensurate with the surrounding landscape. No water will require management.
- Surface water management
  - Runoff from the rehabilitated WRD will be managed through:
    - ML_SD1 (similar footprint to the Merlin Dam 3 used during operations);
    - ML_SD2 (similar footprint to the Merlin Misc Disturbance ROM Dam used during operations);
    - ML_SD3 (captures runoff from the southern portion of the WRD);
    - The sediment dams will capture water conveyed via surface water drains proposed around the perimeter of the WRD or along the existing ramps. Sediment dams will be required to ensure adequate sediment removal before release to the receiving waters.
  - Contour banks, plateau drains and drop structures will be constructed where necessary, once the final landform is reshaped, to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - Runoff from the local clean water catchment draining from the eastern side of the waste rock dump will be conveyed around the waste rock dump via proposed clean water drains CWD1 and CWD2.

The conceptual drainage plan has been illustrated within Figure 91, with the proposed dam sizing and release locations for ML_SD1, ML_SD2, and ML_SD3 are defined within

Table 95.

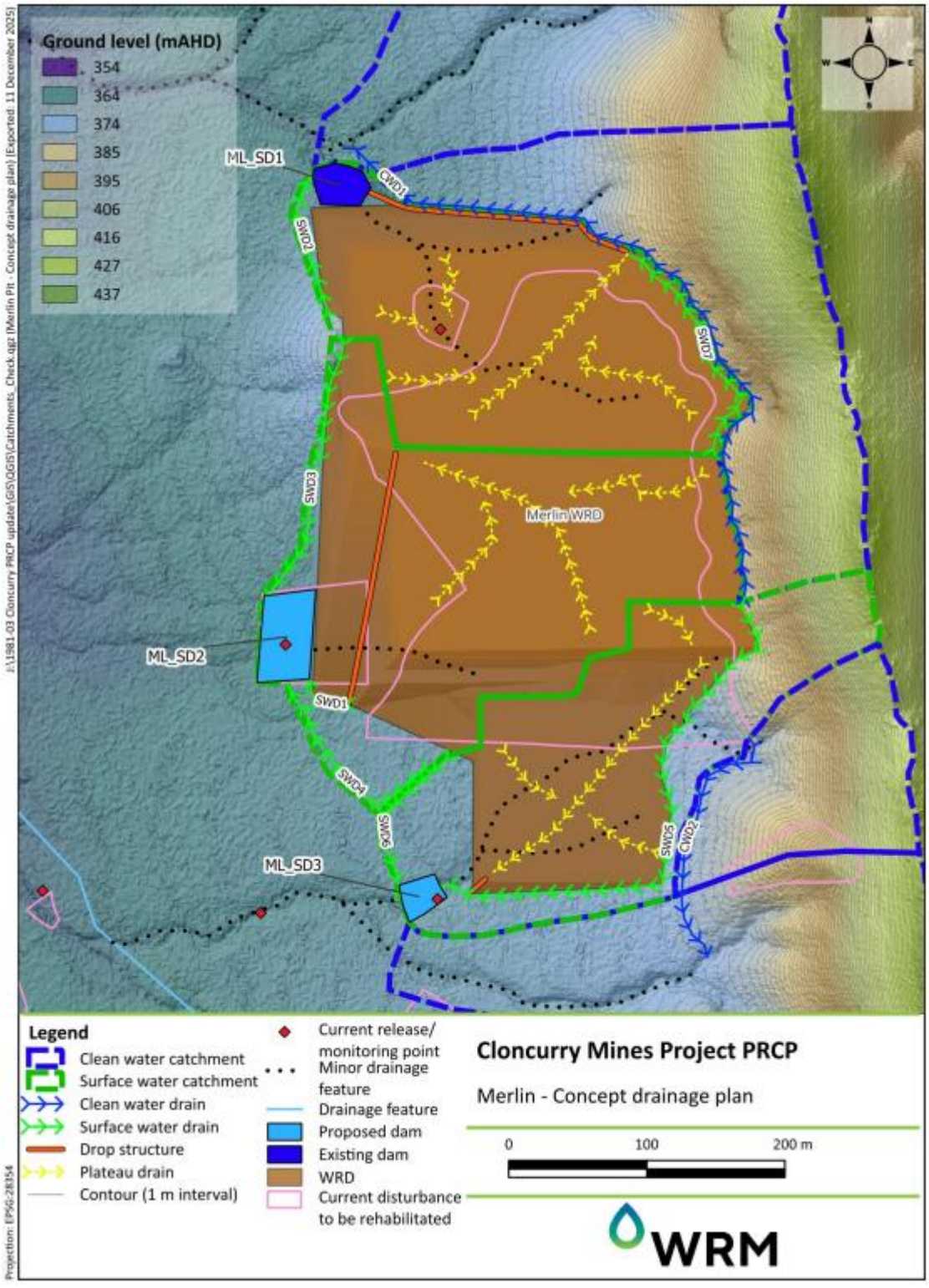


Figure 91: Merlin conceptual drainage plan (WRM, 2025)

Table 95: Merlin Proposed Dam Sizing and Release Locations (WRM, 2025)

Storage	Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
ML_SD1	4.6	1.64	1.80	0.05	445276	7600370	Merlin WRD	Unmapped drainage feature of Gin Creek
ML_SD2	7.1	2.53	2.78	0.08	444925	7598678	Merlin WRD	Unmapped drainage feature of Gin Creek
ML_SD3	4.4	1.57	1.72	0.05	444454	7599427	Merlin WRD	Unmapped drainage feature of Gin Creek

8.5.8.3 Seepage intervention and collection controls

There are no seepage collection controls in place or proposed to be installed at the Merlin site.

8.5.8.4 Surface water diversions and long-term management requirements

Surface diversions/bunding exists around the WRE to minimise catchment area. The surface diversions will be maintained until rehabilitation objectives have been met.

8.5.8.5 Dewatering requirements

There is no requirement for dewatering to facilitate the planned future rehabilitation activities. During the dry season the environmental dams are usually dry.

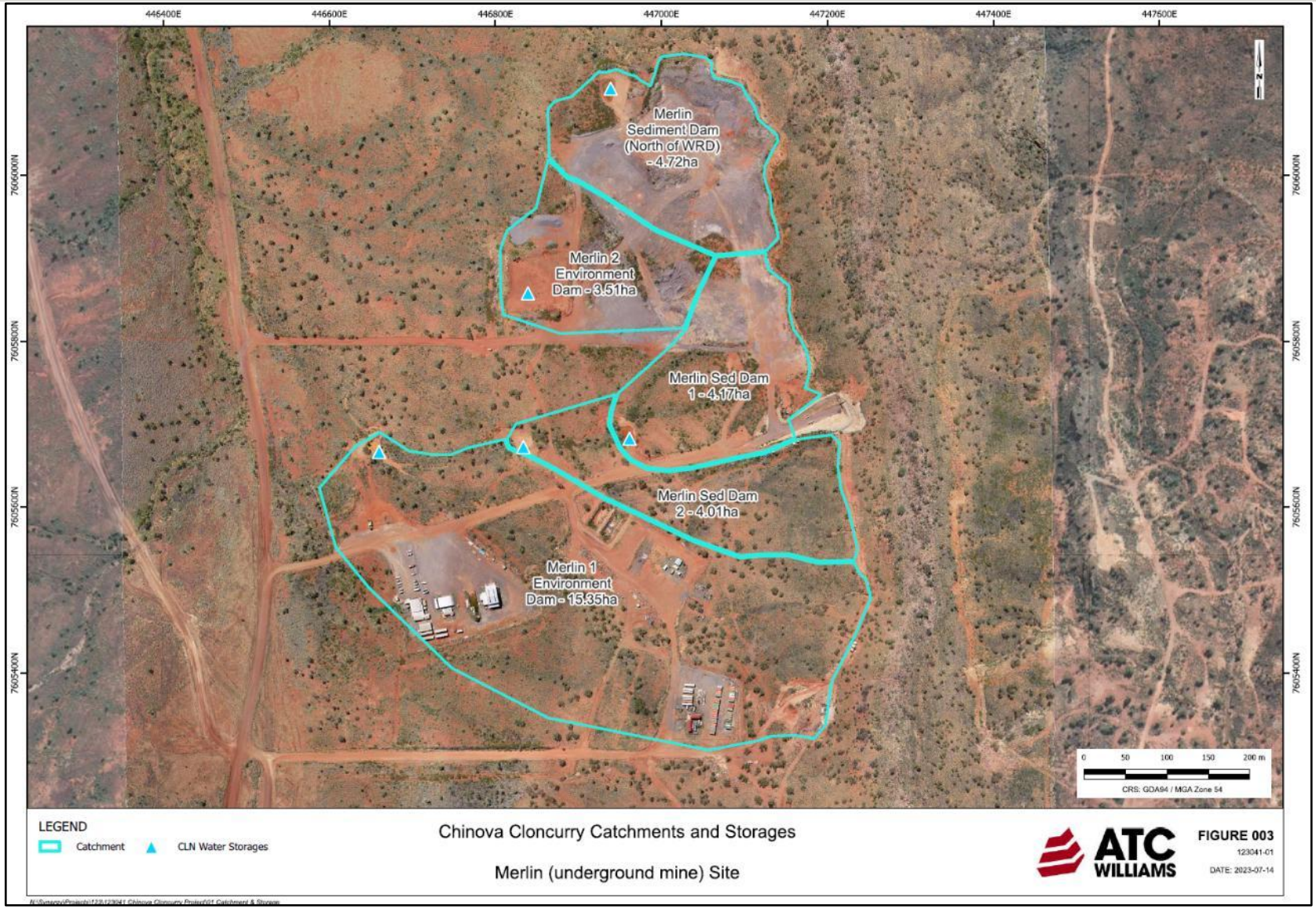


Figure 92: Merlin Mine Surface Water Catchments

8.5.8.6 On-going water management

The remaining risks to surface water include:

- Contaminated surface water generated by the WRE; and
- Contaminated surface water generated by the ROM and future processing area.

The on-going water management activities in the medium to long term will be similar to those that have been put in place to date. Impacted surface water runoff will continue to be directed towards the environmental dams. Site surface water monitoring will be ongoing including annual REMP to provide sufficient data that surface water quality can continue to meet environmental authority requirements and WQO's for stock watering over the long term to support future relinquishment of the mining lease.

Should additional structures (i.e., bunding, water storages) be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.

Once final rehabilitation works are completed, ongoing monitoring of sediment and environmental dam water quality and receiving environment will be undertaken to demonstrate that runoff will meet rehabilitation milestone criteria. The existing dams will be retained until runoff water quality meets rehabilitation milestone criteria, following which they will be rehabilitated pursuant to the methods described in the Revegetation Plan.

8.5.9 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

8.5.9.1 Merlin Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 96.

Table 96: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable) Install stock fencing to protect planting (if required).	Preferably immediately prior to wet season (November-December). In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable growth/development of revegetation	Ecological monitoring: immediately after wet season (March-April) and annually thereafter.
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g. supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Supplementary seeding prior to wet season. Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

8.5.9.2 Merlin Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 97: Merlin Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

8.5.9.3 Merlin Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 98. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 98: Merlin Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

9. Rehabilitation Planning – Mount Dore

9.1 Baseline Information

9.1.1 Climate

Refer to section 5.1 for details on climate for the Mount Dore mine.

9.1.2 Site Topography

The planned Mount Dore mine will be located on the eastern side of the Starra ridge which is a locally dominant topographical feature and forms part of the southern side of Selwyn Ranges. The Starra ridge is characterized by two sub-parallel (eastern and western ironstones), more or less continuous ridges, of low to moderate relief, that extend above a flat plain. The Starra ridge attains heights of approximately 440m AHD.

The planned open cut pits will encompass Mount Dore a moderate peak with a height of 380m AHD. The proposed heap leach pads and associated infrastructure are planned to be located on low sloping areas between Mount Dore and the Starra ridge.

Areas south and west of the Starra ridge have a more gently sloping topography with isolated peaks attaining heights of 390m AHD.

9.1.3 Geological Setting

The Cloncurry Project area is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite. The contact between these units is broadly described as unconformable (Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust (Figure 93).

The Mount Dore Copper deposit is predominantly a secondary Copper deposit formed within a major north-south striking, reactivated D1 structure – the Mount Dore fault zone, and hosted within carbonaceous meta-sediments, phyllites and schists of the Kuridala Group (Figure 94). Due to the ‘porosity’ of the structure the secondary Copper mineralisation extends to a considerable depth – up to 400m from the surface. The Mount Dore deposit sits within the Supergene Zone of the deposit with mineralization occurring in the form of chrysocolla, pseudo-malachite, azurite, cuprite, chalcotrichite and native copper in the upper portion and transitioning to chalcocite and accessory covellite with minor native copper towards the base of partial oxidation. Mineralisation generally occurs as matric fill breccia and within K-Feldspar and carbonate rich veining. Disseminated mineralisation is prevalent but does not contribute significantly to grade.

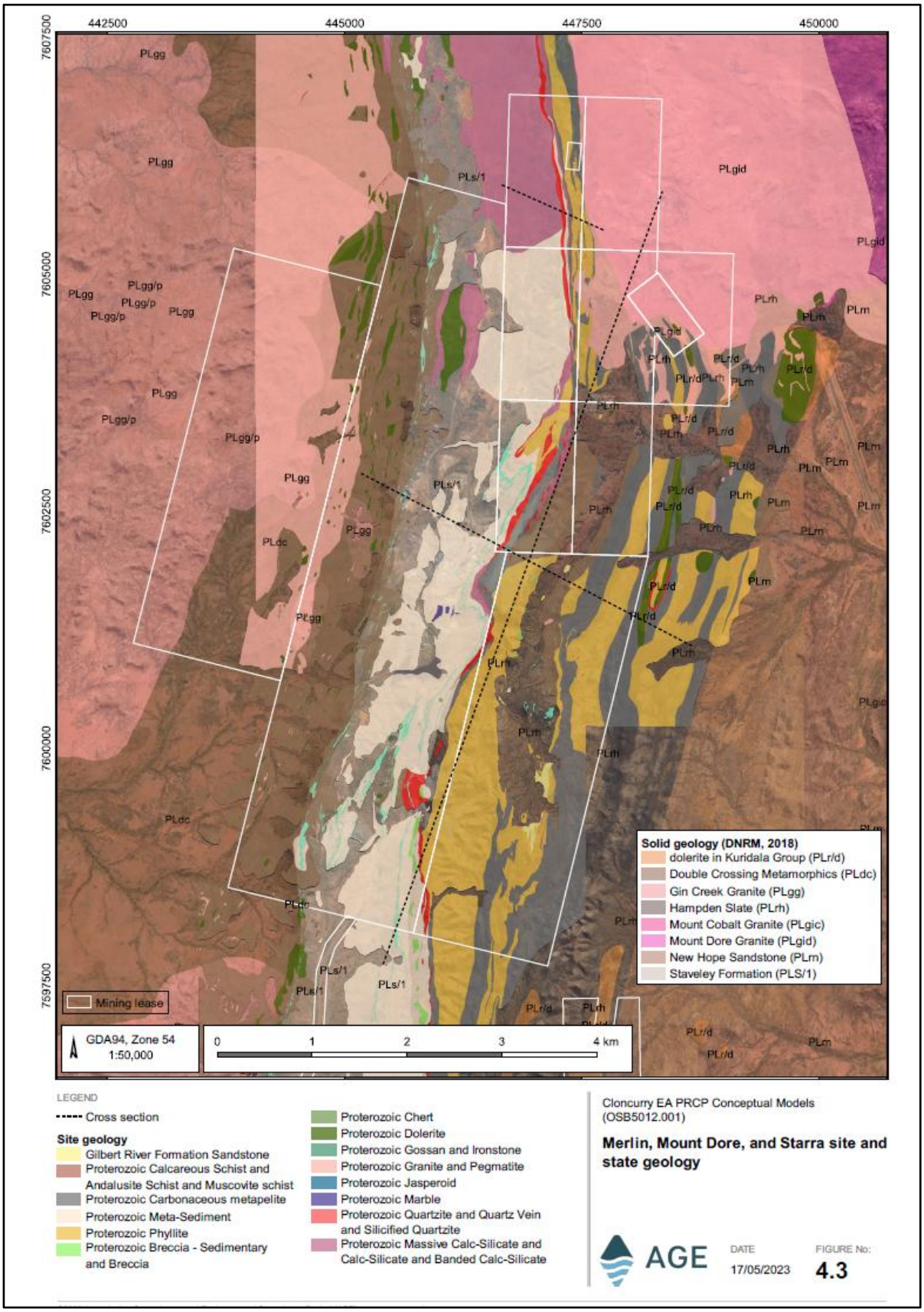


Figure 93: Merlin, Mount Dore and Starra Geology

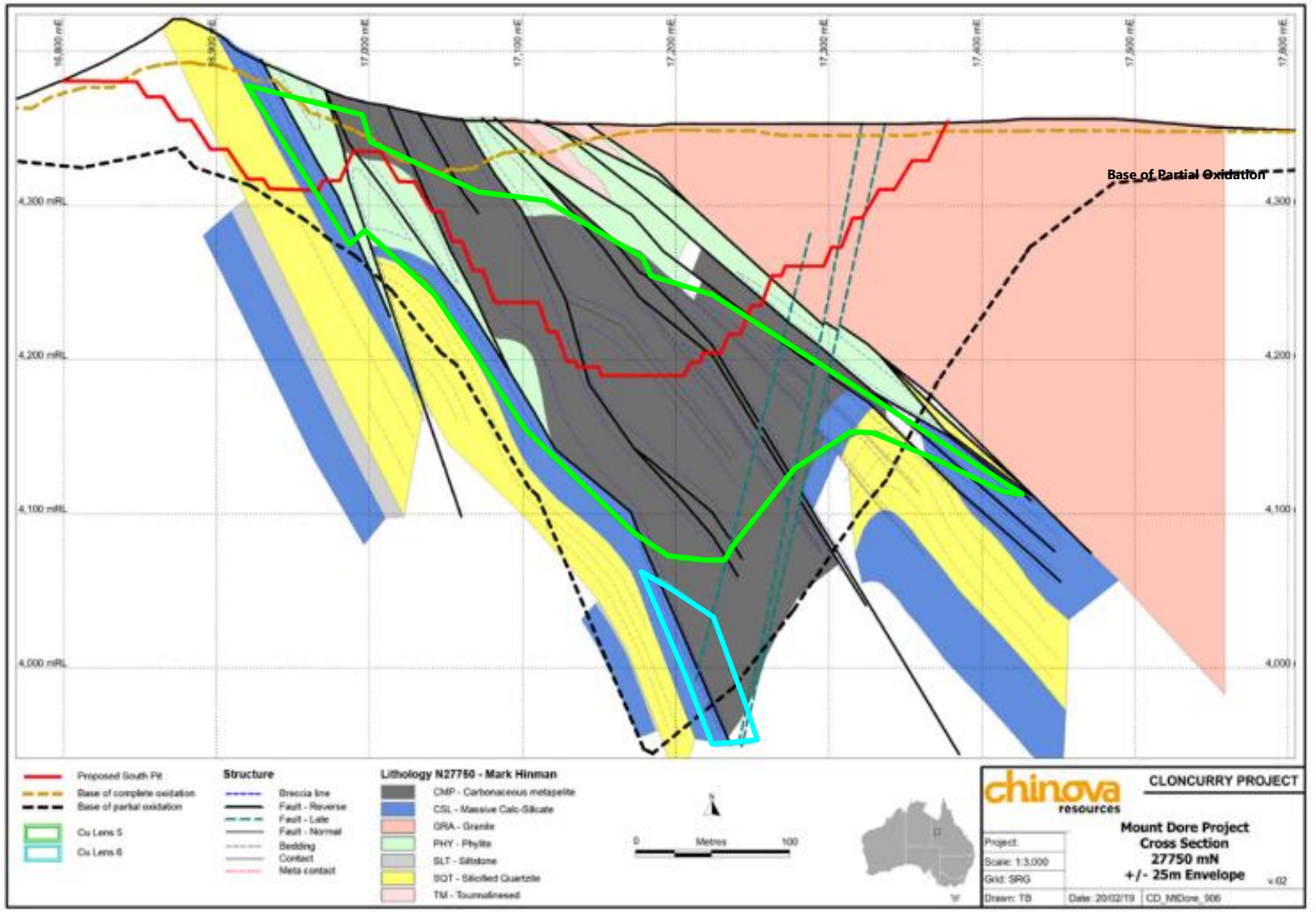


Figure 94: Mount Dore Local Geology

9.1.4 Hydrology and fluvial networks

The Mount Dore mine is located in the Lake Eyre drainage division within the Georgina Basin, Georgina River sub-basin.

The Merlin, Mount Dore and Starra Line area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flows into Gin Creek approximately 7km to the west. Gin Creek flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia. Drainage features and proposed sediment dams are provided in Figure 95.

There are no listed environmental values and water quality objectives for the Lake Eyre of Gulf of Carpentaria region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has maintained a reference monitoring location at Starra since 1985 (BS01 – Pyramid). The monitoring location is located above Lake Wyche in an area that has not been impacted by mining activities. Summary of water quality data for the BS01-Pyramid monitoring location is provided in Table 99.

Table 99: Summary of water quality results for reference water site (BS01-Pyramid) for the Starra Line area

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	96	6.16	6.07	7.22	6.52	5.70
Electrical Conductivity (uS/cm)	99	34.98	28.00	70.40	48.00	19.00
Sulphates (mg/L)	98	4.54	3.55	10.15	6.00	2.00
Dissolved Aluminium (mg/L)	59	0.31	0.24	0.90	0.44	0.10
Dissolved Arsenic (mg/L)	67	0.0043	0.0030	0.0100	0.0030	0.0030
Dissolved Boron (mg/L)	58	0.0134	0.0075	0.0500	0.0150	0.0050
Dissolved Cadmium (mg/L)	59	0.0002	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	59	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Cobalt (mg/L)	59	0.0014	0.0010	0.0031	0.0010	0.0010
Dissolved Copper (mg/L)	94	0.0289	0.0105	0.0596	0.0500	0.0060
Fluoride (mg/L)	86	0.0580	0.0500	0.1000	0.0500	0.0500
Dissolved Iron (mg/L)	73	0.4578	0.2800	1.2400	0.5400	0.1100
Dissolved Lead (mg/L)	95	0.0162	0.0010	0.1132	0.0050	0.0010
Dissolved Manganese (mg/L)	62	0.0599	0.0210	0.2562	0.0536	0.0050
Dissolved Mercury (mg/L)	58	0.0004	0.0001	0.0001	0.0001	0.0001
Dissolved Molybdenum (mg/L)	52	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Nickel (mg/L)	59	0.0011	0.0010	0.0020	0.0010	0.0010

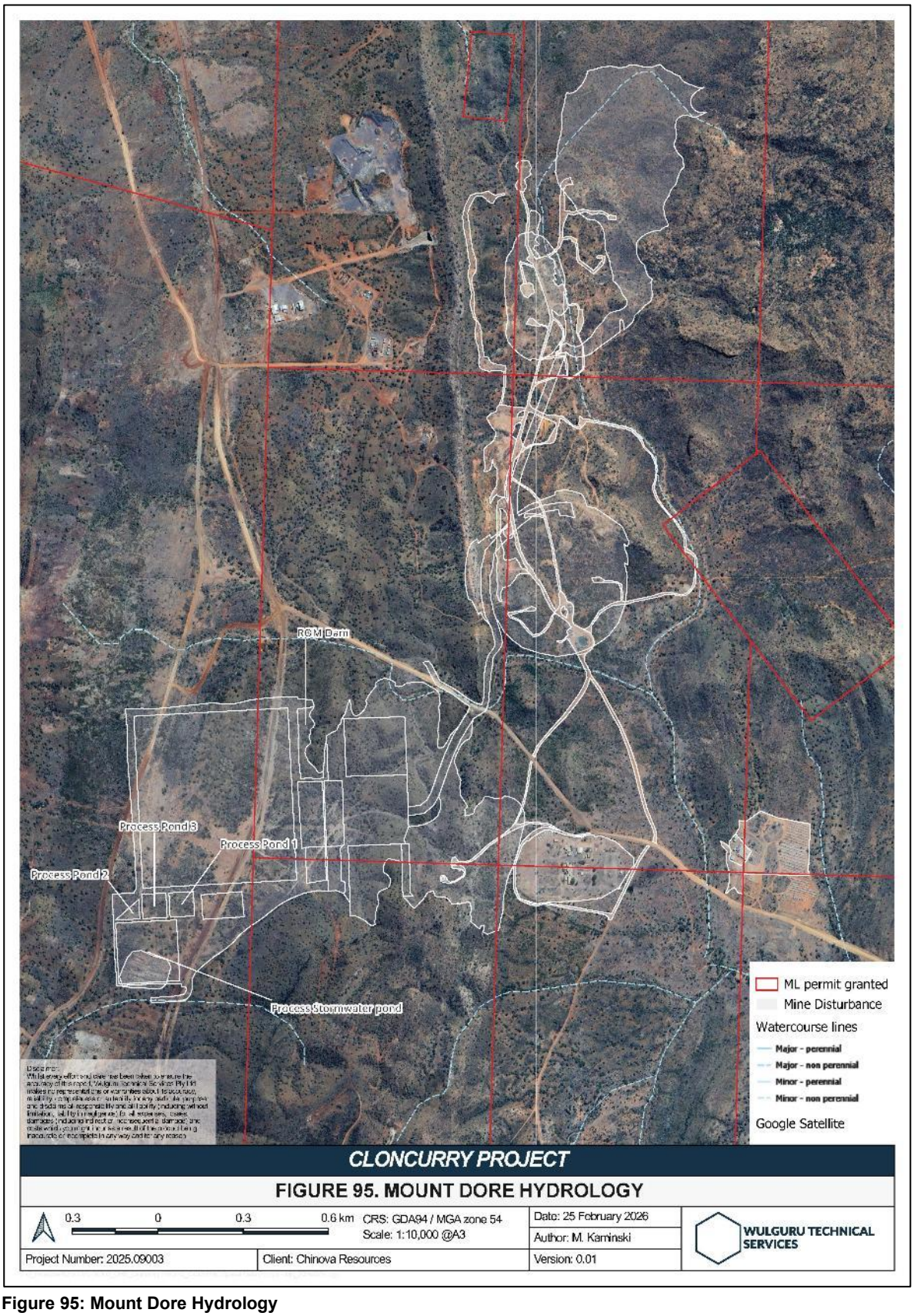


Figure 95: Mount Dore Hydrology

9.1.5 Groundwater

Groundwater conditions at Mount Dore are described in detail by AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations. As the proposed Mount Dore mine overlays the Merlin deposit groundwater conditions are substantially the same as described in Section 8.1.5 and have been repeated here for completeness.

9.1.5.1 Hydrostratigraphy

The hydrostratigraphic unit that hosts the Merlin and Mount Dore deposits is the Kuridala Group. Both the Kuridala Group and Staveley Formation are lithologically variable metasedimentary basement units. Other potential hydrostratigraphic units near the site are the Mount Dore Granite, Gin Creek Granite, double Crossing Metamorphics, and younger cover units.

Kuridala Group

Most groundwater at the site is likely hosted in the metasediments and associated Footwall Quartzite of the Kuridala Group. The Kuridala Group hosts the Mount Dore Aquifer and is the most productive hydrostratigraphic unit in the region (RLA, 2011). The Mount Dore Aquifer is considered a confined and hydraulically isolated, fractured-rock aquifer (Rockwater, 2011). Groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing. Higher fracture density and, hence permeability, are associated with network of bedding-parallel and cross cutting shears and the presence of albite and silica alteration. In particular, the silica alteration produces rocks that tend to fracture brittlely; a key manifestation of this is the Footwall Quartzite. The intensity of this alteration is associated with proximity to the Mount Dore Granite, and it is assumed that this alteration decreases to the south.

Stavely Formation

The Staveley Formation crops out over most of the Starra Line area. In general, the Staveley Formation is understood to have considerably lower permeability than the Kuridala Group. As with the Kuridala Group, the upper delaminated zones of the Staveley Formation can also host fissures in the open bedding planes that can contain water, although this is typically in-filled by secondary deposition, resulting in permeability that is generally low (RLA, 2011a). Increased permeability has been reported in highly fractured zones of the Staveley Formation associated with faults (RPS, 2011), but apart from these zones and the ironstones discussed below, this unit is otherwise considered competent and of low permeability (Rockwater, 2010).

Fracturing and dissolution in the ironstone zones within the Staveley Formation creates localised zones of higher permeability (RLA, 2011). These ironstones are also associated with the mineralisation of the Starra Line Deposits. As such, it is reported (RLA, 2011) that the ironstones may create small, discrete zones of higher permeability. The ironstones are generally isolated lenses, although there might be some hydraulic connectivity between lenses via thin ironstone bands (RLA, 2011).

Mount Dore Granite, Gin Creek Granite, and Double Crossing Metamorphics

Granitic sequences that are associated with the William-Naraku Batholith are found throughout the region. These units have open joints and fractures that allow for groundwater flow, forming fractured rock aquifers (RLA, 2011). The Mount Dore Granite is located east of the Merlin/Mount Dore area and forms the eastern boundary of the Mount Dore Aquifer. The Gin Creek Granite and the associated Double Crossing Metamorphics are located west of the Starra area. The contact between the Staveley Formation and the Gin Creek Granite/Double Crossing Metamorphics is also a faulted (and potentially brecciated); however, the low permeability of the Staveley Formation likely limits movement of water across this contact (AGE, 2021a).

Cover Units

The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. Other minor cover units are mapped in and around the site. These units have variable primary porosity, which is dependent on the size and properties of the comprising grains and the degree of cementation and compaction of these units. Groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated.

9.1.5.2 Groundwater Levels

Groundwater level monitoring in the Merlin area began around 2010, prior to the development of the Merlin infrastructure, although some groundwater extractions are known to have occurred in the 1980s. At the peak of withdrawal from the Merlin borefield, Chinova operated and monitored a network of up to 18 bores near Merlin Mine (Figure 96). The purpose of these bores has variably been observation, extraction, and compliance, either for the purposes of EA compliance or borefield performance reporting. Most of the monitored bores are screened in the Kuridala Group, but groundwater monitoring bores WB27 and MLMB1 (formerly called MDQ383) are used to assess the impact of the dewatering operation on groundwater in the Staveley Formation.

Water levels in the Merlin/Mount Dore area are characterised temporally in hydrographs (Figure 97 and Figure 98) and spatially in potentiometric maps (Figure 99). The main feature of these water level characterisations is a distinct cone of depression associated with the Merlin borefield. Hydrographs of groundwater level elevation for the bores in the central section of the Merlin borefield show that dewatering had the desired impact in causing drawdown in groundwater levels at Merlin. However, due to lower extraction rates after February 2015, the decline in groundwater elevation reversed.

In contrast, bore WB27 was not impacted by the either initial pumping or subsequent reduced pumping rates; this was expected due to WB27 being screened in the Staveley Formation.

There are two bores completed in the Kuridala Group (MDWB16 and MDWB12/12a), which help to define the extent of the Mount Dore Aquifer. Similarly, MDWB12 and replacement bore MDWB12a, which are located approximately 2.5 km south of the Merlin borefield are not impacted by dewatering. This indicates that, within the Kuridala Group, the impact of dewatering is restricted to a few kilometres.

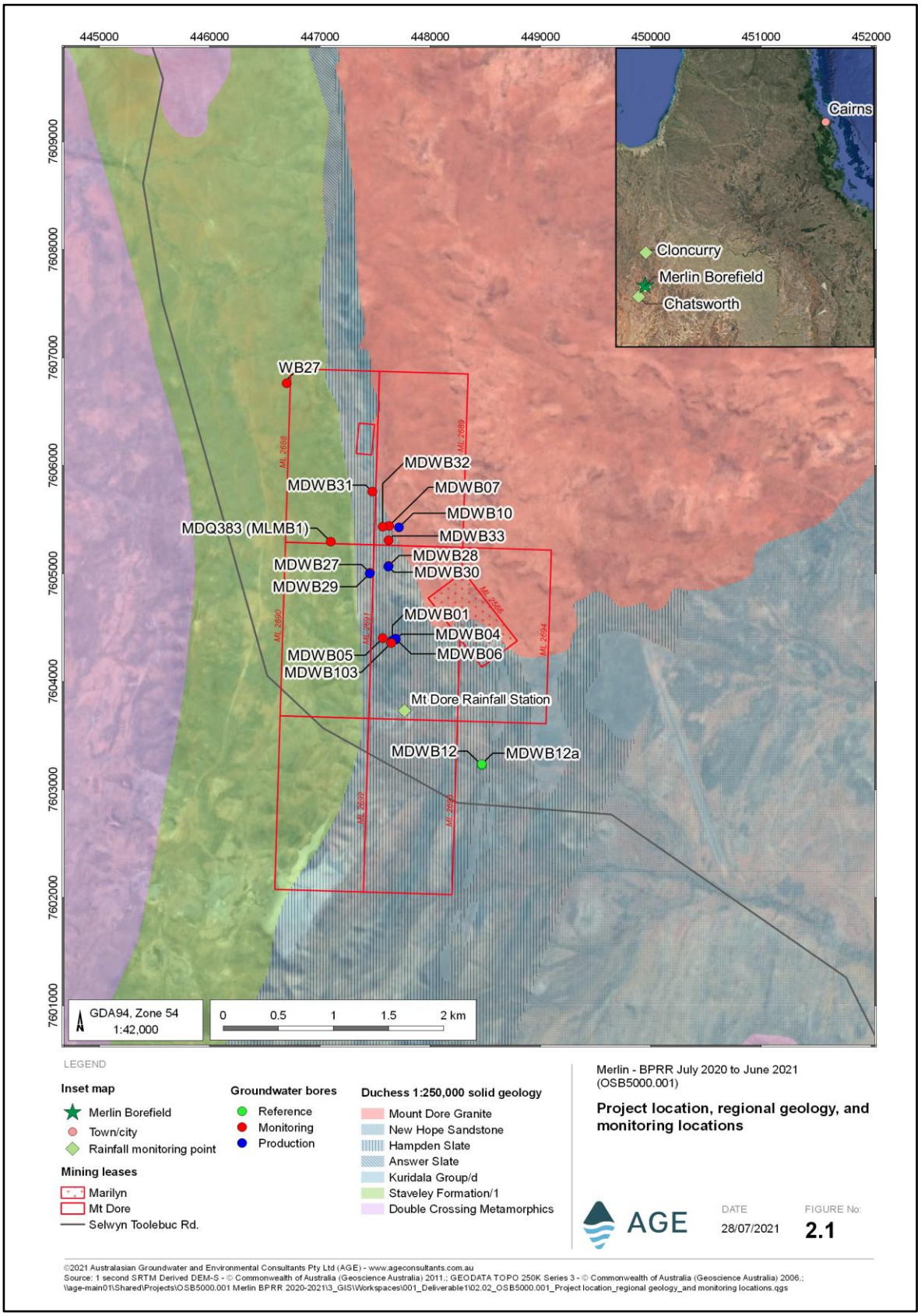


Figure 96: Merlin Borefield Groundwater Bores

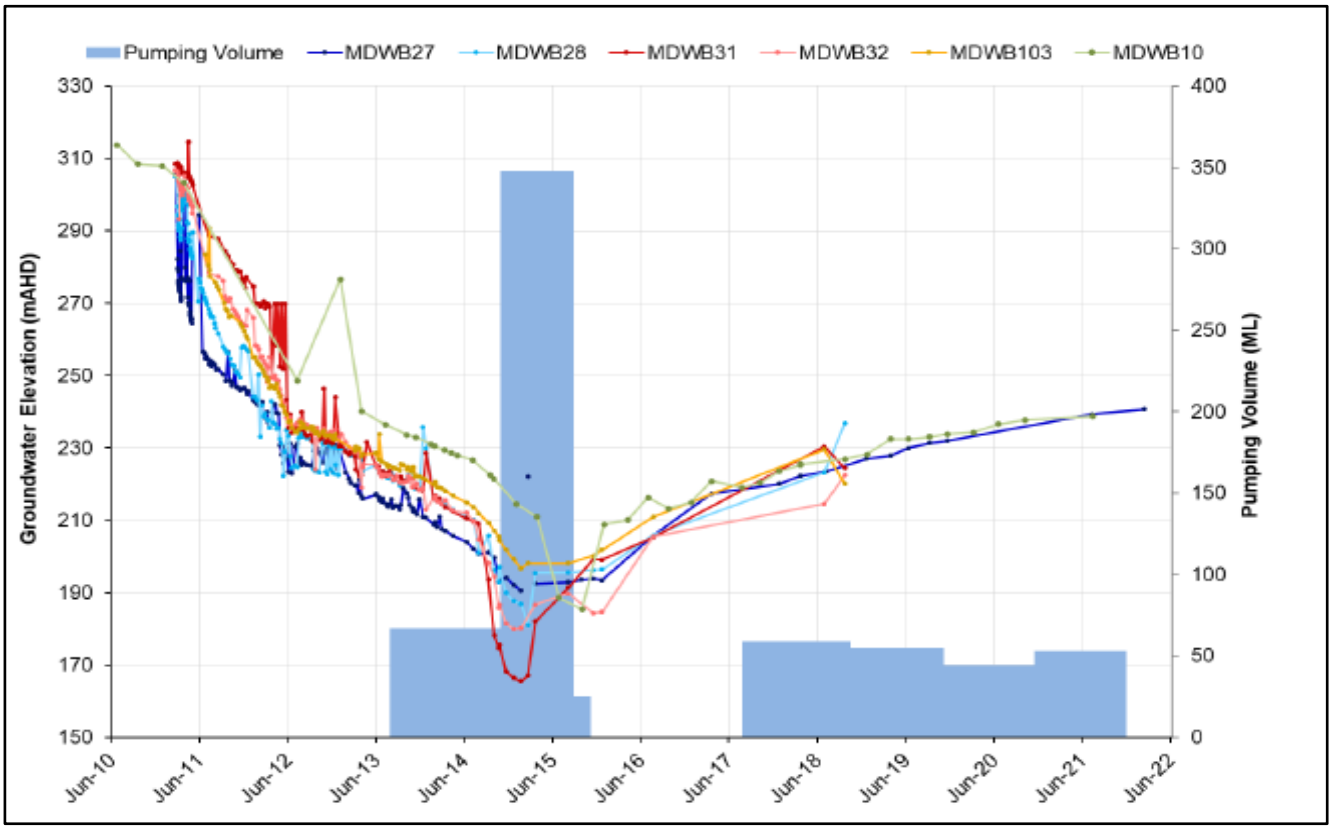


Figure 97: Hydrograph of Merlin/Mount Dore Bores with available pumping data (AGE, 2025a)

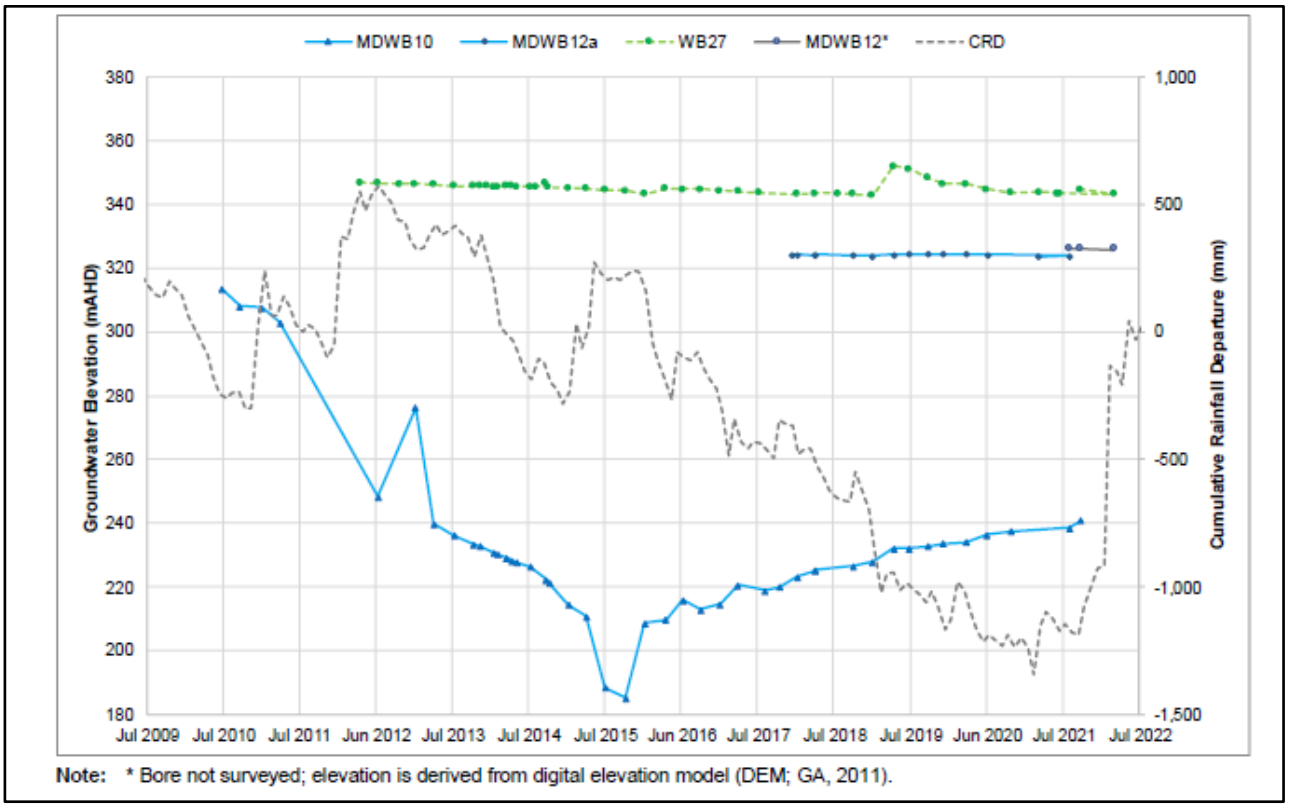


Figure 98: Hydrograph of bores defining the extent of the Mount Dore Aquifer (AGE, 2025a)

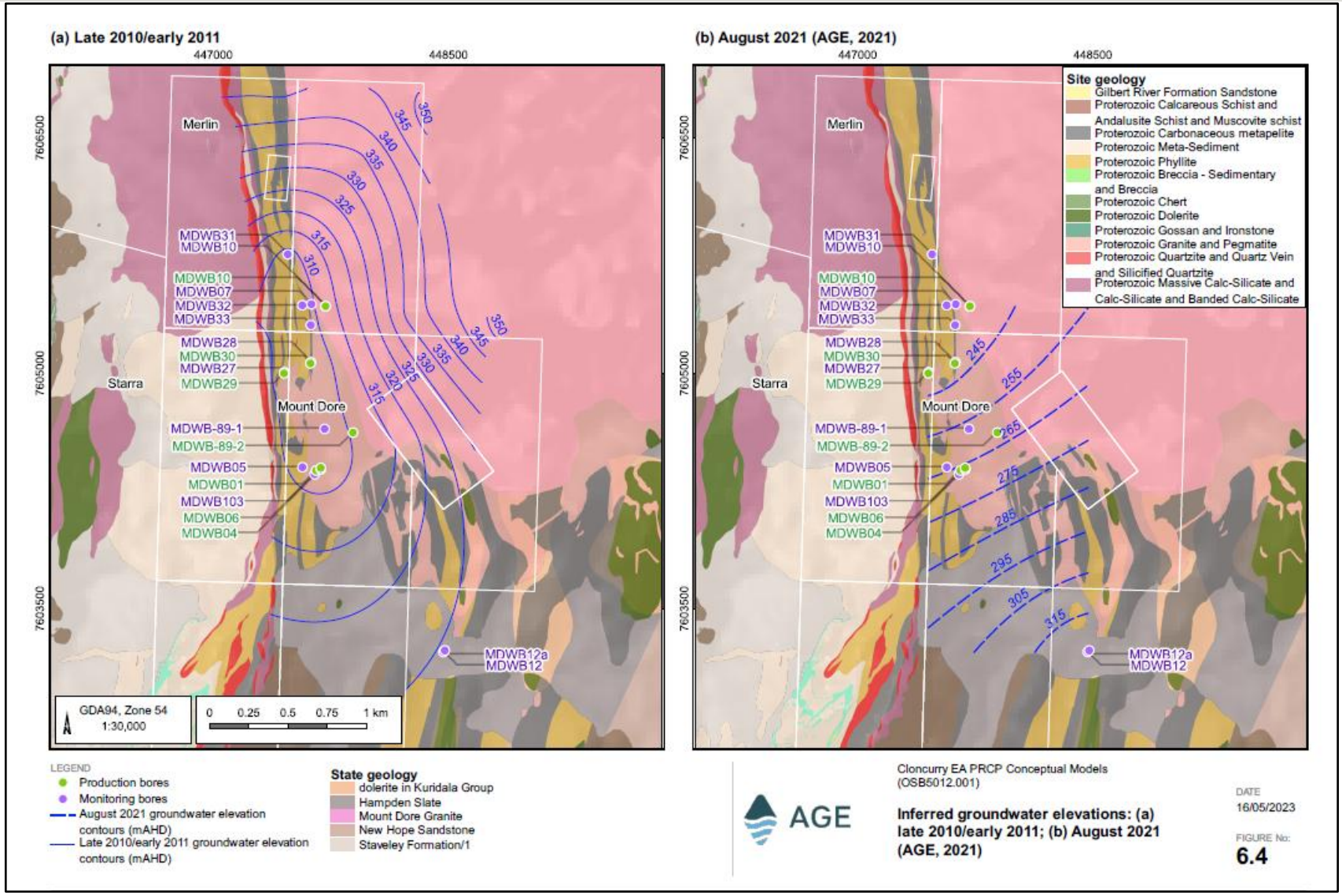


Figure 99: Potentiometric map of the Merlin Borefield (AGE, 2025a)

9.1.5.3 Groundwater Quality

Groundwater monitoring results for the Merlin and Mount Dore area presented in Figure 100 to Figure 103 for MDWB10 and MDWB12a which are the most relevant EA compliance bores in the Merlin and Mount Dore area. MDWB10 is located within the Merlin borefield and MDWB12a is located approximately 2.5 km south of the Merlin borefield area is not impacted by dewatering/Merlin mine activities and as a result provides a useful reference point. The results show:

- Groundwater pH values both within the borefield and outside the borefield are circum-neutral;
- Sulphate levels in MDWB10 is lower than MDWB12a and remain stable over time;
- Electrical conductivity levels in MDWB10 is lower than MDWB12a and remain stable over time; and
- Groundwater in both bores have low levels of dissolved metals (typified by copper level).

In summary, the water quality in the Merlin, Mount Dore, and Starra area is typical of groundwater in mineralised areas of the Mount Isa region. Although baseline groundwater quality water is not available, water quality in the monitoring bores is very rarely characterised by trends of increasing solutes and site water quality is commensurate with that of regional groundwater.

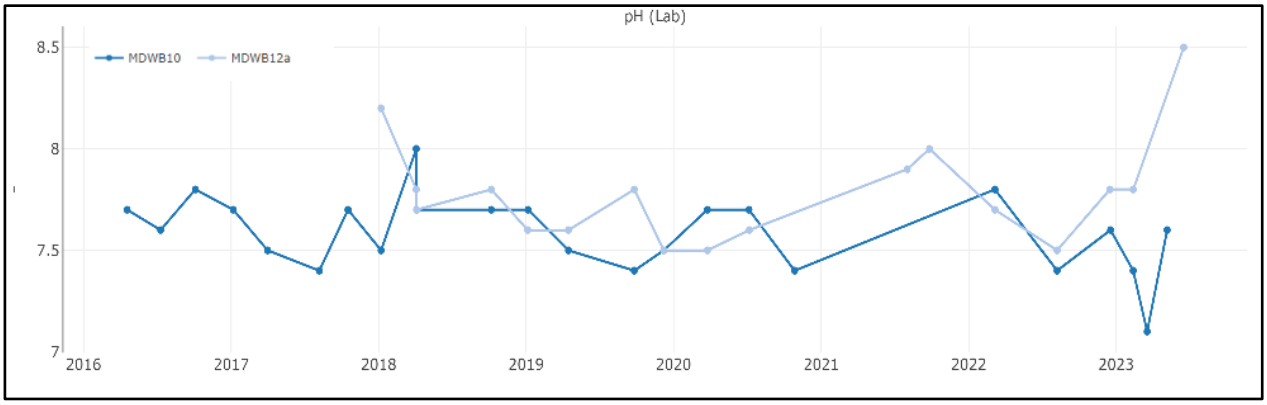


Figure 100: Groundwater Quality (pH) Merlin/Mount Dore

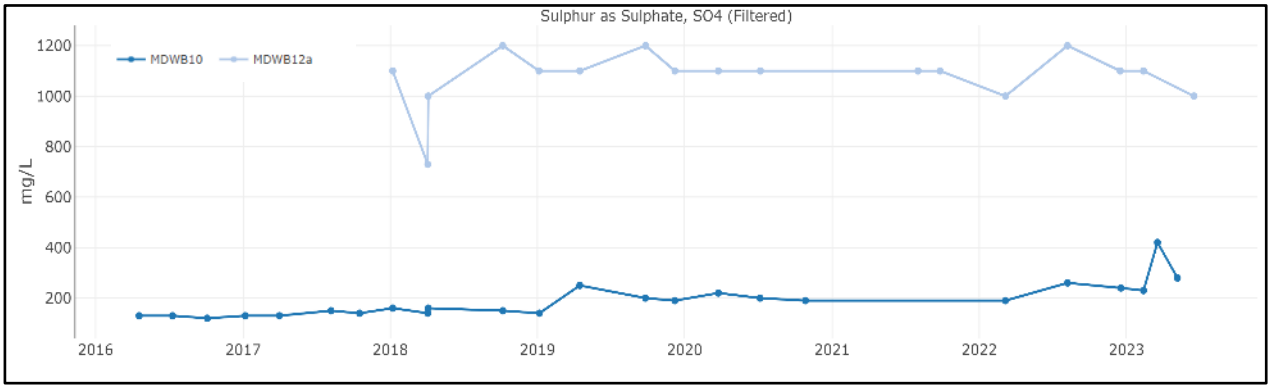


Figure 101: Groundwater Quality (Sulphate) Merlin/Mount Dore

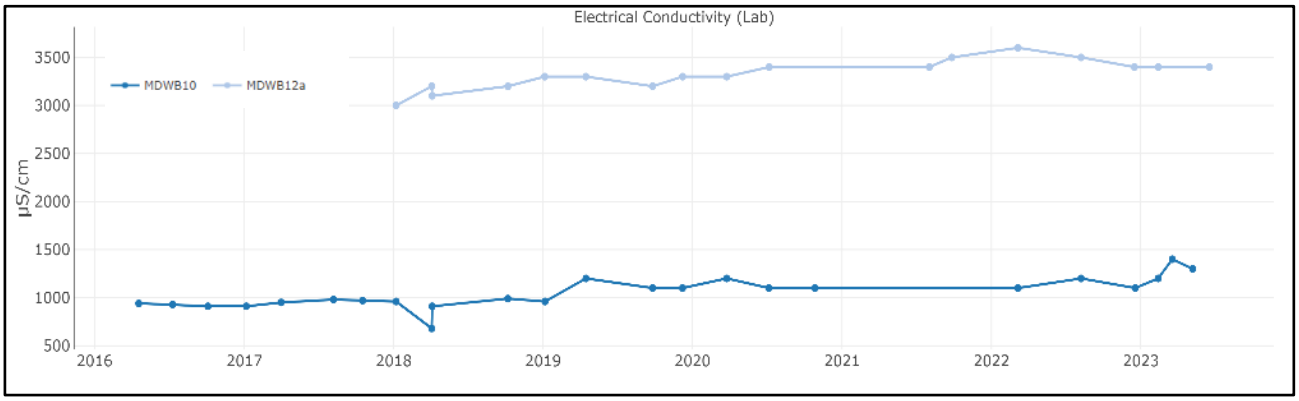


Figure 102: Groundwater Quality (Electrical Conductivity) Merlin/Mount Dore

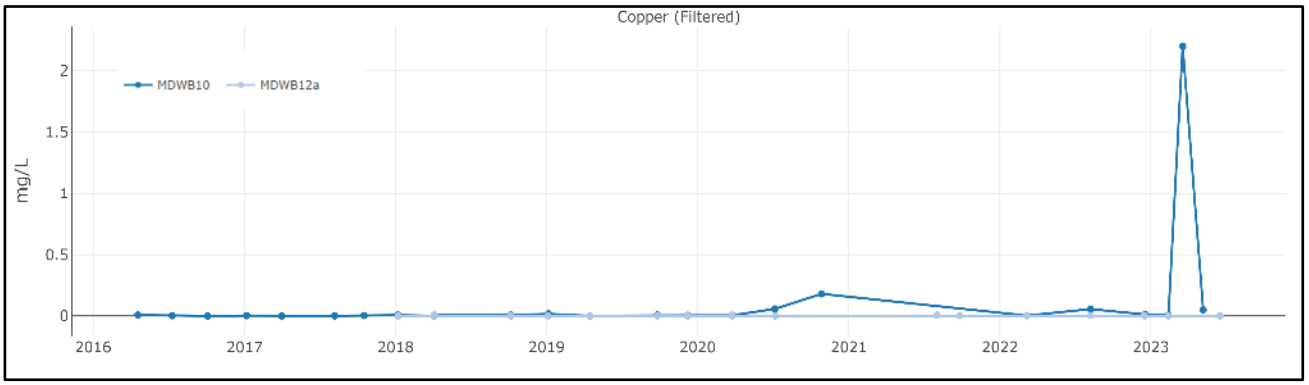


Figure 103 Groundwater Quality (Dissolved Copper) Merlin/Mount Dore

9.1.5.4 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater in the site area is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions (AGE, 2025a). The bulk component of this recharge is rainfall recharge, with infiltration below the ephemeral streams being a smaller volume. Conceptually, water from streams or bank storage that reaches the water table and becomes recharge is, by definition, groundwater-surface water interaction. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months: January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated recharge rate was calculated using a chloride mass balance method (AGE, 2021a) to be between 3% and 6% of annual rainfall. This equates to approximately 10 mm to 20 mm of recharge annually, based on a long-term average regional rainfall of 345 mm/yr. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

Prior to mine development, it was likely that lateral inflow to the area occurred from north to south. However, since the development of the Starra mines and dewatering at Merlin, several cones of depression have developed in the potentiometric surface. The initial drawdown and subsequent recovery of these cones of depression has occurred at deep and shallow levels of the sequence, due to development, abandonment, and occasional redevelopment of underground workings.

Due to the depth to water generally being >30 mBGL, there is likely minimal discharge via evapotranspiration. Across the area, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral, and the water table does not intersect the deepest points of creek incision. According to the Queensland Wetlands Database there are no springs in

either in the site area or surrounds (AGE, 2025a). This observation matches the conceptualisation described above of negligible groundwater discharge to natural surface water features.

9.1.5.5 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the relevant units present in the area are presented below and summarised in Table 85. Properties for the Kuridala Group are sourced from a combination of rising and falling head tests and historic reports which used pumping tests. The hydraulic properties of the Staveley Formation are estimated for the site using rising and falling head tests in bores locate in the area. The hydraulic properties of crystalline rocks are inferred from modelling studies and from heads tests conducted in the Gin Creek Granite and Double Crossing Metamorphics. Published values for igneous and metamorphic rocks, and shale are also presented for comparison.

Estimates of hydraulic conductivity from investigations for the Kuridala Group range from 1 x 10-6 m/day to 34 m/day; with many of these values coming from the Mount Dore Aquifer. The variability in the range of hydraulic properties represents variable degrees of fracturing within the lithologically diverse Kuridala Group. Hydraulic properties were also observed during pumping from the Merlin borefield.

The unmineralized Staveley Formation is characterised by very low permeability. These properties are represented by results from bore WB27, which bore is characterised by a low airlift yield and low transmissivity. Hydraulic conductivity estimates from bores constructed in the Gin Creek Granite and Double Crossing Metamorphics vary from 0.08 m/day to 0.91 m/day and the bore logs of these bores suggest fracturing in their screened lithologies. These bores are west of the Starra areas, near the contact with the Staveley Formation.

Table 100: Hydraulic Properties

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Elliott (Likely MEWB-93-8 and MEWB-93-9)	Kuridala Group	-	-	-	50 to 250	4.39 to 12.82	If thickness = 100 m, then K = 0.04 to 0.1 m/day If thickness = 10 m thick, then K = 0.4 to 1.2 m/day
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1 x 10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384x10-5

Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1
Mount Dore (MB10)	Kuridala Group	Unfractured	45.7 - 51	-	-		2.64384x10-5
Mount Dore (MB2	Kuridala Group	-	20-41	-	-	-	0.04 to 0. 18

9.1.5.6 Environmental Values

The applicable environmental values for the Mount Dore site have been defined by AGE (2023) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, are high potential mapped terrestrial GDEs within the Mount Dore area. There are, also areas of mapped moderate potential GDE's within Merlin area; and more broadly high potential GDE areas associated with the Mort River to east-southeast of the project area.

The high potential for groundwater dependence areas around mount Dore is unlikely because groundwater is >50 mBGL. However, the areas mapped as high potential terrestrial GDEs along the Mort River correlate with BVG 16a vegetation which is an open forest or woodland containing, among other species, red river gums. As the river red gum relies on sub-soil moisture, its presence strongly supports the existence of terrestrial GDEs along Mort River.

For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Mount Dore area, as mapped by the Queensland Wetland Database (DSITI, 2015). As a precautionary approach, potential aquatic GDEs are considered potentially present in area where they are mapped along the Mort River; however, these areas are considered too distal (>5 km) for aquatic GDEs to be considered potential receptors at Mount Dore.

In summary, AGE (2023) found a potential for aquatic and terrestrial GDEs to be present along the alignments of the Mort River as such represent potential receptors.

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Mount Dore, but groundwater is used for livestock (beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius of the site resulted in the identification of four bores apart from those considered part of the monitoring network (Table 101). All four bores are now recorded as "Abandoned and Destroyed", and none of their records show their original purposes. Given the regional context, it is likely that livestock watering is an applicable groundwater value.

Table 101: Registered bores with 10 km of Mount Dore

Bore ID	Easting	Northing	Bore depth (mBGL)	Screened interval (mBGL)	Ground RL (mAHD)	Screened Lithology	Bore Status
RN2059	451798	7618398	NR	NR	NR	NR	Abandoned and destroyed
RN7536	440188	7615284	46.6	NR	NR	Staveley Formation	Abandoned and destroyed
RN7537	440966	7614795	30.8	NR	NR	Staveley Formation	Abandoned and destroyed
RN7538	443595	7611330	NR	NR	NR	NR	Abandoned and destroyed

Industrial Use

The main industrial user of groundwater in the region is Chinova itself. Chinova extracts water from the Mount Dore aquifer for use across the area including for dust suppression and raw water for the RO plant.

9.1.6 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the area is 'Fz29' (Australian Soil Resource Information System, 2013) (Figure 104). Soil type Fz29 is associated steep stony hills and low ranges on highly folded quartzites, shales, and slates with extensive areas of rock exposures.

The Mount Dore area is mapped as the Mount Elliott land system. The Mount Elliott system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered the land systems unsuited for grazing (or virtually so) because it is rugged, stony, or barren.

Soils have previously been described at Starra as predominantly Cockatoo and Manbulloo. Skeletal soils are shallow soils, less than 25 cm deep, frequently stony and lacking profile differentiation, normally occurring on the steeper slopes of the landscape (Lewis, 1987). The Manbulloo soils have fine sandy profiles, light brown to reddish brown colour; massive structure and generally neutral to slightly acidic. Manbulloo soils are associated with stream channels and associated narrow alluvial areas. Cockatoo soils have coarse sandy profiles, variable colour from red to yellow and light grey with either single grain or massive structure. Cockatoo soils are generally associated with lower slope areas.

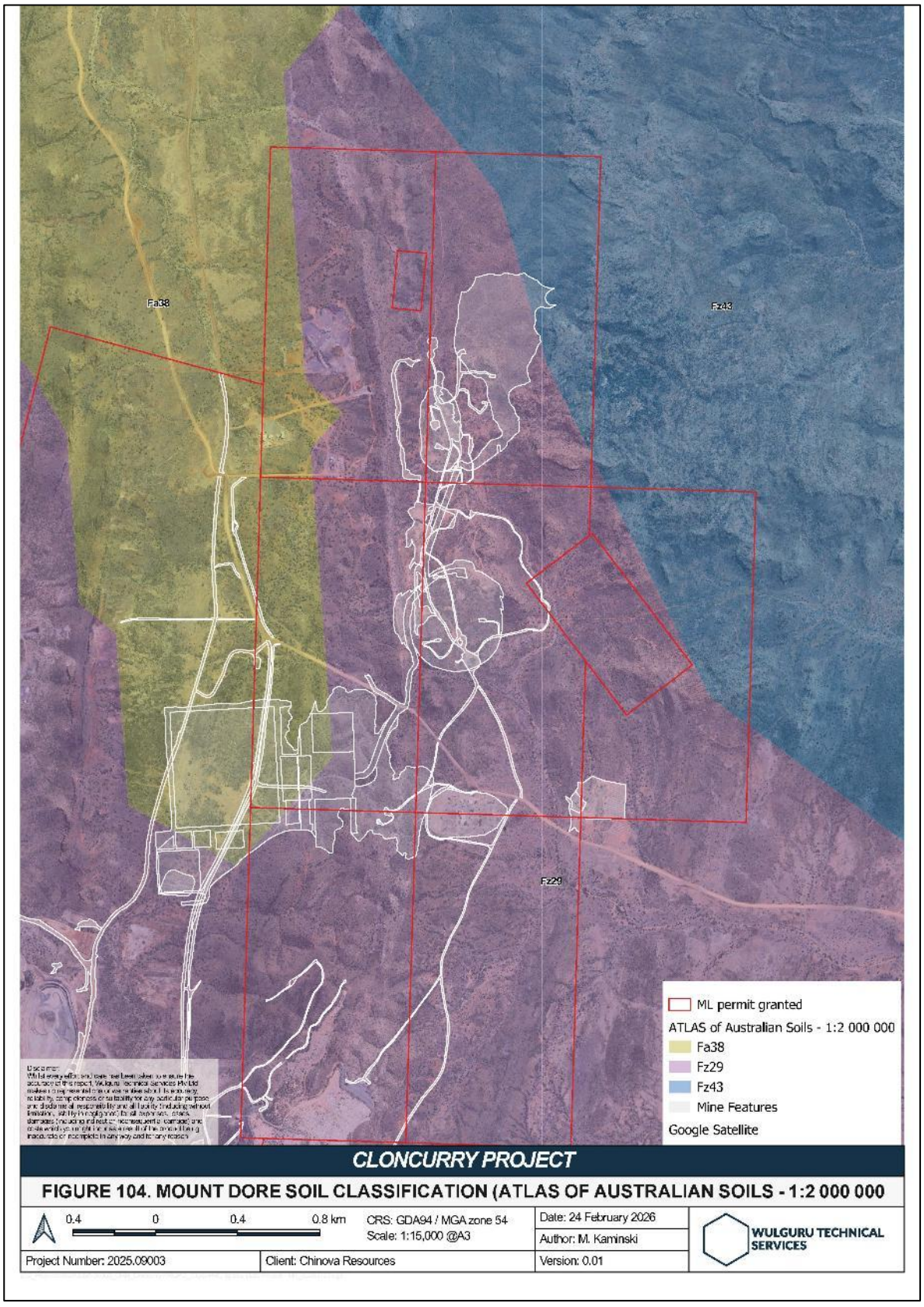


Figure 104: Mount Dore Soil Classification (Atlas of Australian Soils – 1:2 000 000)

9.1.7 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the project area (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

9.1.8 Vegetation Communities and Ecological Data

Ground truthing surveys have identified that the dominant broad vegetation group at Mount Dore consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer (BVG 19).

A total of nine regional ecosystems (RE) have been identified within the Mount Dore area (Table 102). All nine have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains).

One regional ecosystem has a Biodiversity status of Endangered, being RE 1.3.7 - *Eucalyptus camaldulensis* woodland on channels and levees. RE 1.3.7 occurs over a small area on the southern section of the Mount Dore project and corresponds with BVG 16. These areas are considered to have high ecological value due to presence of habitat for hollow dependent species, and migratory waterbirds, and providing local and regional connectivity. The RE is considered Endangered due to its regional degradation by high grazing pressure. Direct impacts are associated with trampling, while secondary impacts are associated with intrusion of exotic pasture species, principally buffel grass (*Cenchrus ciliaris*).

Previous baseline ecological reports for the Cloncurry Project Area have (Place, 2012) assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 102. Regional ecosystems within the Project Area.

BVG	RE	RE description	Biodiversity Status	VMA Status
16	1.3.7	*Eucalyptus camaldulensis* woodland on channels and levees	Endangered	Least Concern
19	1.10.4	*Eucalyptus leucophloia* low open woodland on sandstone plateaus	No concern	Least Concern
	1.11.2	*Eucalyptus leucophloia* low open woodland	No concern	Least Concern

	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.12.1	*Eucalyptus leucophloia* low open woodland on granites	No concern	Least Concern
	1.12.3	*Eucalyptus leucophylla* and/or *Corymbia terminalis* +/- *C. aparrerinja* low open woodland on igneous rocks	No concern	Least Concern
	1.3.13	*Eucalyptus leucophylla* woodland on levees and minor drainage lines	No concern	Least Concern
	1.5.4	*Eucalyptus leucophylla* and/or *Corymbia terminalis* low open woodland on red earths	No concern	Least Concern
26	1.5.16	*Acacia cambagei* low woodlands on red earths	No concern	Least Concern

9.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 103).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 103. Conservation significant species recorded within the Project Area.

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

9.1.10 Pre-Mining Land Use

Small scale mining of predominantly small shafts has occurred in the Starra, Merlin and Mount Dore areas since the early 1900's. Modern mining commenced in 1988 by Cypress via open cut mining of oxide gold deposits, and subsequently underground mining producing copper-gold concentrate from mainly sulphide ore.

Grazing of native vegetation has also occurred historically but would have been limited to valley floor, along creek lines and plains areas. Areas of steep topography would have had limited grazing due to difficult access.

9.2 Post Mining Land Use

9.2.1 Rehabilitation Planning and Objectives

Determining appropriate PMLU's is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

a) The land is safe and structurally stable; and
b) There is no environmental harm being caused by anything on or in the land; and
c) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives that must be incorporated into the PMLU decision-making process (condition E3):

a) Safe for humans and wildlife
b) Non-polluting
c) Stable
d) Able to sustain an agreed post-mining land use
e) Revegetated with species endemic to the area with no declared pest species; and
f) Compliant with all conditions of the environmental authority.

The EA (primary land outcome document) does not specify rehabilitation objectives and rehabilitation success measures for the Cloncurry Project. Instead, the criteria were to be nominated in a PMLUP, the recent of which being the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, for the purposed of this PRCP, Chinova have developed new rehabilitation objectives for land disturbed by mining activities (Table 104) based on expert reports including AGE (2023), ATCW (2023) and NGH (2023). In addition, the PRC schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 104: Mount Dore Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)

		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)
	Erosion	Mine waste is not exposed by erosion processes. Erosion does not impact the PMLU.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum) No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall
	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196
Supports a viable vegetation community.	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved

			PRCP Schedule, detailed within Table 189.
Non-Use Management Areas	Sufficient Improvement	Minimise risk to the surrounding environment	Void water balance modelling Direct measurement of surface water levels Direct measurement of groundwater and pit water quality.

9.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

a) Is viable, having regard to the use of land in the surrounding region, and
b) Satisfies at least one of the following -
    i. The use is consistent with how the land was used before mining activity was carried out on the land
    ii. The use is consistent with a development approval relating to the land
    iii. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    iv. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The PMLU's and rehabilitation areas proposed for Mount Dore are presented in Table 105. Figure 105 outlines the Mount Dore rehabilitation areas and

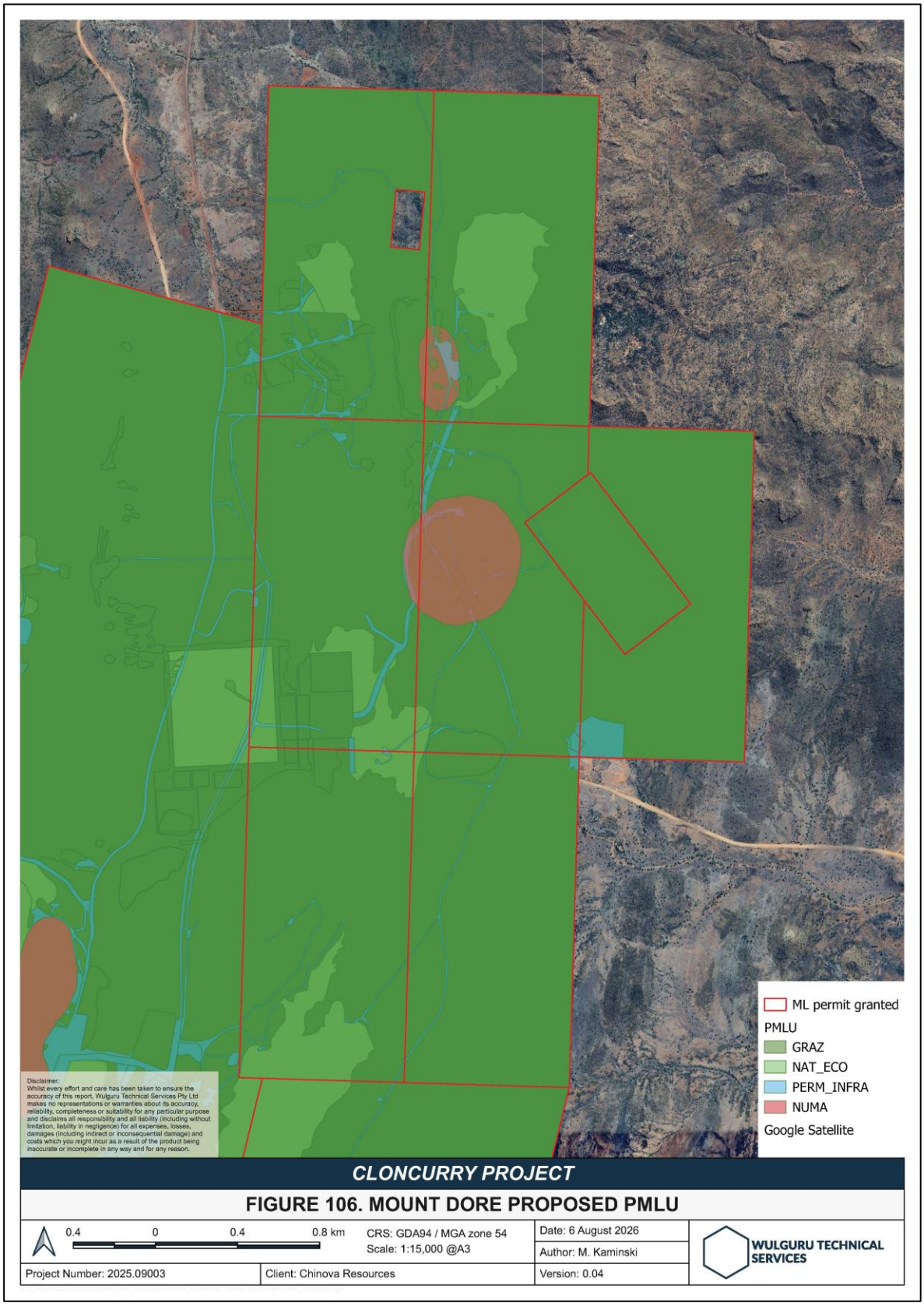


Figure 106 depicts the proposed Mount Dore PMLU's. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area and PMLUs illustrated within Figure 105

and

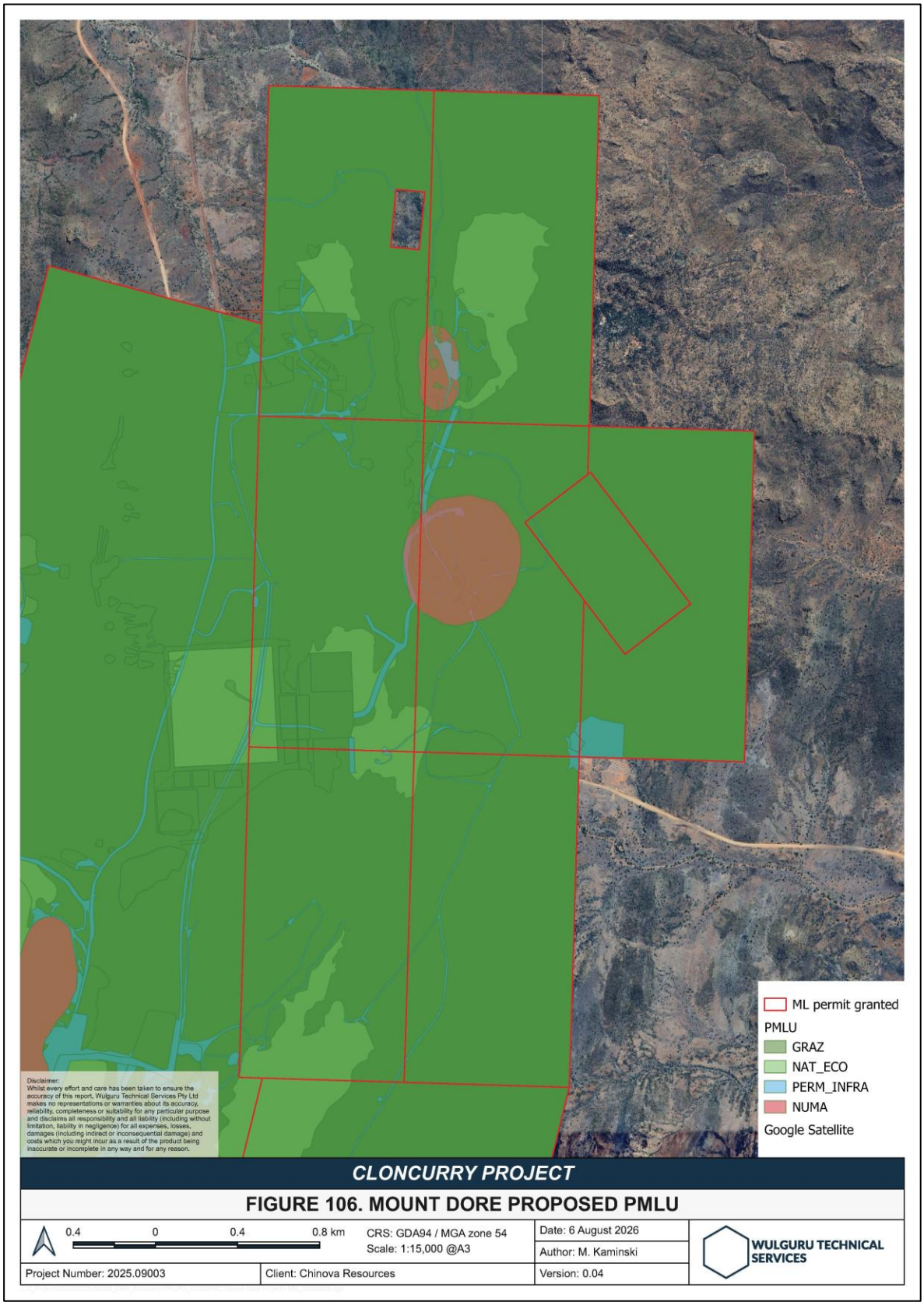

ML permit granted
PMLU
GRAZ
NAT_ECO
PERM_INFRA
NUMA
Google Satellite
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CLONCURRY PROJECT
FIGURE 106. MOUNT DORE PROPOSED PMLU
0.4 0 0.4 0.8 km
CRS: GDA94 / MGA zone 54
Scale: 1:15,000 @A3
Date: 6 August 2026
Author: M. Kaminski
Project Number: 2025.09003
Client: Chinova Resources
Version: 0.04
WULGURU TECHNICAL SERVICES

Figure 106 may not accurately reflect the disturbance areas presented within Table 105.

Table 105: Mount Dore PMLU's and Rehabilitation Areas

Rehabilitation Planning Areas	Disturbance (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
IA4 Mt Dore North and South Pits	35.6 (proposed)	0	0	Native Vegetation	NUMA	N/A
RA12 Mount Dore Waste Rock Emplacement and Mount Dore Heap Leach	70.2 (proposed)	0	70.2	Low intensity grazing	Native Vegetation	N/A
RA13 Mount Dore Built Infrastructure including proposed ROM, Processing Plant and Process Ponds	78.93 (proposed)	0	78.93	Low intensity grazing	Low Intensity grazing	Mount Dore camp infrastructure partially demolished. Mount Dore Landfill capped in 2021.
RA14 Mount Dore Permanent Infrastructure	18.42	0	0	Low Intensity grazing	Permanent infrastructure	N/A

9.2.2.1 Assessment of Alternative PMLUs – Mount Dore Waste Rock Emplacement and Heap Leach

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Mount Dore WRE and Heap Leach as low intensity grazing, consistent with the pre-mining land use. However, due to the requirements of the engineered cover systems that will be installed across these disturbance areas, alternative PMLUs have been assessed in accordance with the EP Act to determine the most appropriate and sustainable long-term outcome.

An assessment of PMLU options for areas requiring engineered cover systems is provided in Section 6.2.2.1. That assessment determined that, although low intensity grazing aligns with historical and surrounding land use, it presents risks to the erosion and infiltration performance objectives of the engineered cover system and is therefore not considered suitable. Livestock access has the potential to

compromise surface stability, increase compaction, and create localised erosion features, introducing avoidable uncertainty to long-term landform performance.

A NUMA was also considered; however, this is not appropriate as the landforms can be rehabilitated to achieve long-term physical and chemical stability and are capable of sustaining a beneficial land use.

Rehabilitation of the Mount Dore WRE and Heap Leach to a native ecosystem PMLU represents a conservative, risk-based outcome that protects the integrity of the engineered cover system, ensures compliance with erosion and infiltration performance criteria, and delivers a beneficial environmental outcome consistent with the requirements of the EP Act.

9.2.2.2 Assessment of Alternative PMLUs – Mount Dore North and South Pits

The 2016 Cloncurry Project Rehabilitation Plan identified the rehabilitation objective for the Mount Dore North and South pits as bunding and fencing to manage stock access; however, a PMLU of low-intensity grazing was also applied. Updated long-term pit void water quality modelling undertaken by WRM (2025) indicates that the water quality within the Mount Dore North and South Pits will not be suitable for livestock consumption (refer Section 9.4.6.4). Accordingly, a PMLU of low-intensity grazing is not compatible with the proposed rehabilitation measures or the long-term characteristics of the pits. The Mount Dore North and South Pits have been approved as NUMAs, as per the approved PRCP Schedule.

9.2.2.3 PMLU Justification

Table 106 provides justification for the PMLU selection at Mount Dore. The PMLUs are constrained by pre-mining land capability, final landform geometry, engineered cover system requirements, geochemical conditions and the viability of post-mining vegetation communities.

Pre-mining land use across the Mount Dore area is broadly characterised by low intensity grazing; however, this land use was primarily limited to plains and areas adjacent to drainage features. Rocky ridges and ranges, such as the Selwyn Range, provided limited grazing value prior to mining. Accordingly, the primary post-mining land use objective is to return suitable areas to low intensity grazing, while recognising that not all disturbance areas are capable of sustaining this land use in the long term.

Areas incorporating engineered cover systems, including waste rock emplacements and heap leach, require long-term protection of surface integrity to achieve defined erosion, infiltration and geochemical performance criteria. Grazing activities have the potential to introduce compaction, surface disturbance and localised erosion that could compromise the stability and performance of these engineered systems. As a result, these areas will be rehabilitated to a native vegetation PMLU to ensure long-term physical and chemical stability.

Based on geochemical characterisation and long-term pit void water quality modelling undertaken by WRM (2025), the Mount Dore North and South pits will form terminal pit lakes with water quality unsuitable for livestock consumption. Accordingly, these pits have been established as NUMAs. This outcome reflects the predicted water quality, avoids the need for extensive backfilling or ongoing active management, and provides a safe, stable and non-polluting landform consistent with statutory rehabilitation requirements.

Built infrastructure areas, including existing buildings associated with the former Mount Dore camp and the proposed processing plant, will be rehabilitated to low intensity grazing where landform design allows. Key infrastructure required by the landholder, including the exploration core shed and laydowns, roads and tracks, will be retained to support ongoing pastoral use. Stakeholder consultation for the Cloncurry Project identified no objections to the proposed PMLUs for Mount Dore.

Table 106: PMLU Justification

PMLU Consideration	Justification
Is viable, having regard to the use of land in the surrounding region	Proposed PMLUs at Mount Dore include low intensity grazing, native vegetation and permanent infrastructure to support grazing. These land uses reflect the land capability of the area and the dominant pastoral land use of the region. Low intensity grazing is viable for areas where final landforms are compatible with stock access and where rehabilitation does not rely on engineered cover systems. Native vegetation is the most viable PMLU for areas incorporating engineered covers or where landform constraints such as slope, erosion risk, geochemical considerations or cover integrity requirements preclude grazing.
Satisfies at least one of the following: **a) The use is consistent with how the land was used before mining activity was carried out on the land**	Pre-mining and surrounding land use is low intensity grazing of beef cattle. Returning suitable areas to grazing is consistent with historical land use. For areas where grazing is not compatible with long-term land stability or environmental performance requirements, including engineered cover systems, alternative PMLUs represent safe and stable outcomes that remain compatible with the broader rural landscape.
b) **The use is consistent with a development approval relating to the land**	No relevant development approvals.

c) **The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act**	**Cloncurry Shire Planning Scheme**
	
	Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural zone (Cloncurry Shire Council, 2016). The overall purpose of the Rural zone of the Cloncurry Shire is to:
	
	• Provide for rural uses and activities;
	• Provide for other uses and activities that are compatible with –
	  ○ Existing and future rural uses and activities;
	  ○ The character and environmental features of the zone;
	• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
	
	The Cloncurry Shire is a significant beef producing region. The proposed PMLU of low intensity cattle grazing is consistent with previous and current land uses in the area.
	
	Northwest Regional Plan 2010-2031
	
	The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and

	maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning. The Regional Plan supports both mining and rural production to ensure they are not adversely affected by other land use activities. The Regional Plan identifies the CMP an existing mining area and therefore provides limited guidance on the future land use intent for the site. However, the proposed post-mining land use outcomes are consistent with the broader intent of supporting stable, compatible land uses following the cessation of mining activities. **Commonwealth Legislation** N/A
d) **The use will deliver, or is aimed at delivering, a beneficial environmental outcome.**	Rehabilitation to native vegetation on engineered or subsidence-prone landforms delivers a beneficial environmental outcome by restoring ecosystem function, stabilising soils, and providing habitat consistent with surrounding vegetation communities. Exclusion of grazing from these areas reduces the risk of erosion, infiltration exceedance and geotechnical instability, and supports long-term physical and chemical stability. Low intensity grazing across suitable areas maintains regional land use continuity while ensuring compliance with environmental performance objectives.

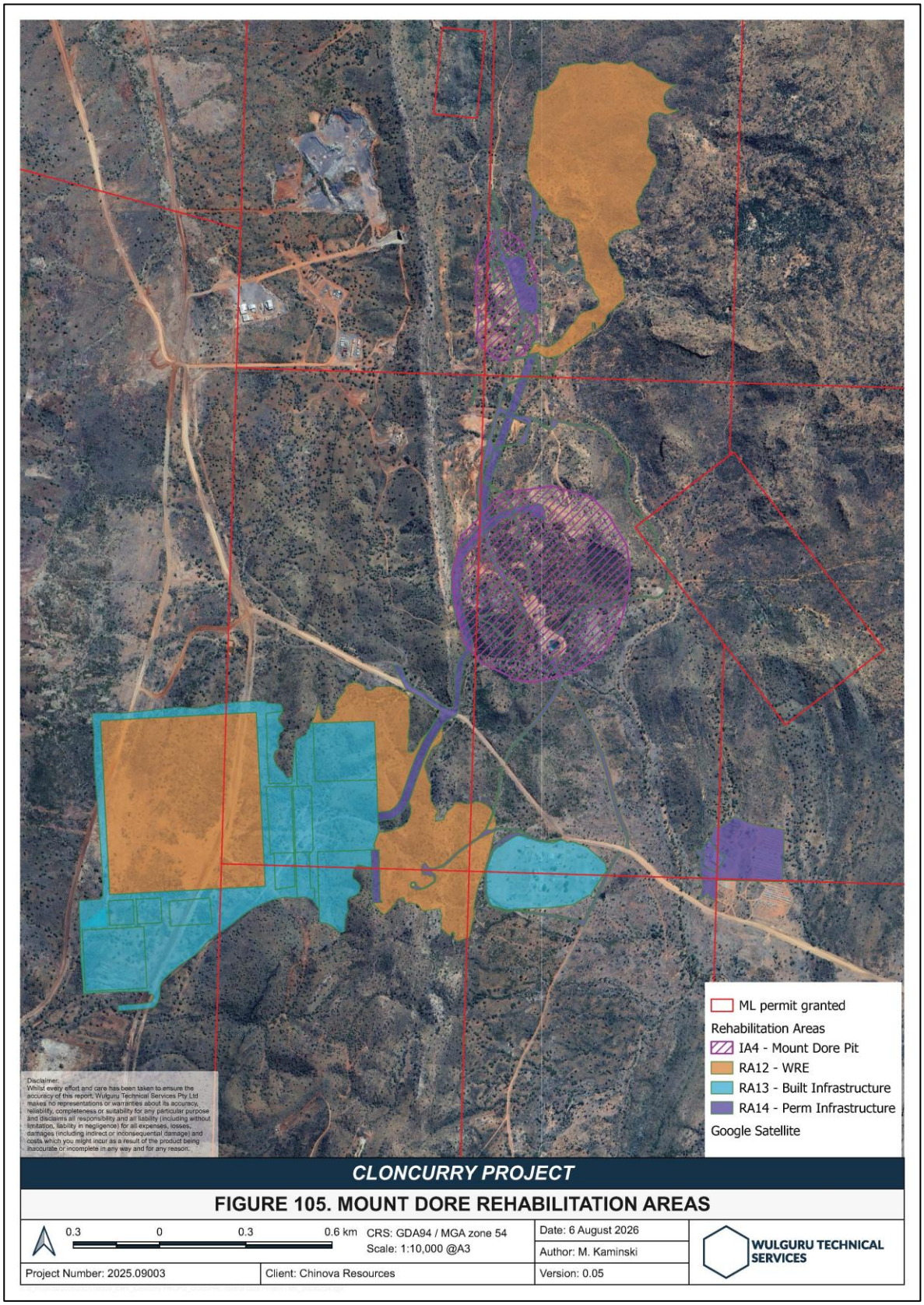


Figure 105: Rehabilitation Areas (Mount Dore)

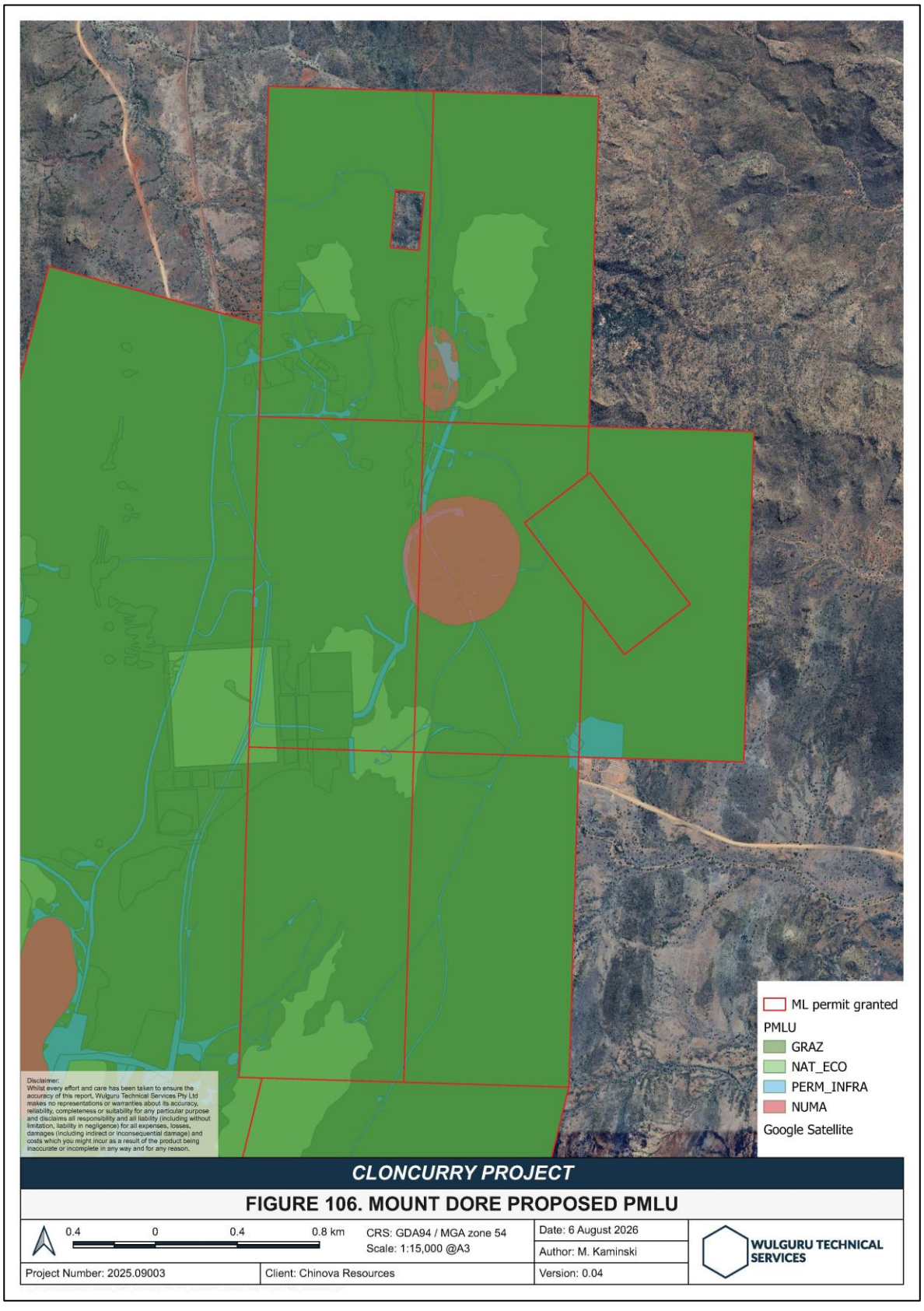


Figure 106: Mount Dore Mine PMLU areas

9.2.3 Rehabilitation/Improvement Planning

The Mount Dore Copper Heap Leach Project is proposed to commence operations in 2031 subject to favourable commodity prices, optimised feasibility studies and capital investment. Based on the current mineral reserve, the proposed mine life is approximately 12 years.

Despite the significant uncertainties with the project and number of dependencies required to be met prior to commencing operations, for the purposes of this PRCP, it is assumed that full production commences in 2031 as per the current life of mine schedule and will continue for approximately 12 years before being placed in care and maintenance. It is then assumed that the assets will be held for a period of up to 10 years depending on further mine studies and additional reserves that may be processed at Mount Dore. That is, the initial pits designs do not deplete the copper/gold reserves at Mount Dore. Once a decision is made to undertake no further mining or processing at Mount Dore the facilities will be available for rehabilitation.

As most infrastructure required for the Mount Dore development has not been constructed to date, there is minimal areas available for progressive rehabilitation (Table 107).

Table 107: Availability for Progressive Rehabilitation (Mount Dore)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Waste Rock Dumps and Heap Leach			
Mt Dore North WRD, Mt Dore South WRD, Mt Dore Heap Leach Pad, Mt Dore ROM / Process / Heap Leach Surrounds	2043	94.0	The WRE's to support the Mount Dore project have not yet been constructed. For the purpose of the PRCP, it is assumed that production at Mount Dore will commence in 2031 and continue for 12 years based on the current resource. As a result, the WRE will not be available for rehabilitation until 2043.
ROM and Processing Infrastructure			
Mt Dore ROM / Agglomerator / Crusher, Mt Dore Process Plant, Mt Dore Process Ponds	2043	19.9	Infrastructure to support the Mount Dore project is yet to be constructed. For the purpose of the PRCP, it is assumed that production at Mount Dore will commence in 2031 and continue for 12 years based on the current resource. As a result, these areas will not be available for rehabilitation until 2043.
Infrastructure			
Mt Dore North WRD Soil Stockpiles, Mt Dore North Pit Soil Stockpile, Mt Dore South WRD Soil Stockpiles, Mt Dore South Pit Soil Stockpile, Mt Dore Process Plant Soil Stockpile, Mt Dore Leach Pad Soil Stockpile, Donghui Village (formerly Mt Dore Camp), Mt Dore Equipment Parking, Mt Dore Laydown Area	2043	32.82	Infrastructure to support the Mount Dore project is yet to be constructed. For the purpose of the PRCP, it is assumed that production at Mount Dore will commence in 2031 and continue for 12 years based on the current resource. As a result, these areas will not be available for rehabilitation until 2043.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Exploration (Coreshed and exploration laydown for transfer to landholder)	2043	5.05	The Mount Dore core shed is required to remain for ongoing mining and exploration activities. Upon cessation of all mining activities the core shed will be transferred to the underlying landholder
Water Storages			
Mt Dore ROM Dam, Mt Dore North WRD Environment Dam 1, Mt Dore North WRD Environment Dam 2, Mt Dore South WRD Environment Dam	2043	2.41	Water storages are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits.
Roads and Tracks			
Other Roads, Haul Road, Donghui Village Roads	2063	13.37	Roads are required for access for mining and then monitoring and maintenance activities. Following cessation of mining these areas will be transitioned to the underlying landholder.

9.2.4 Interim Land Management Prior to Mining

Chinova do not currently have a commencement date for mining at Mount Dore, within commencement of mining remaining contingent on favourable commodity prices, further optimisation of feasibility studies, and the availability of capital investment. At present, the majority of infrastructure required to support mining operations has not yet been constructed. Existing site infrastructure is limited to access roads and tracks, remnants of the former Mount Dore camp, the exploration core shed, and disturbance associated with the bore monitoring network and prior exploration activities.

Until mining begins, Chinova will continue to manage the Mount Dore Project area in accordance with Chinova's existing erosion and sediment control, water management, and dust management plans. These measures, along with the requirements of the Environmental Authority, will be implemented to minimise environmental harm and maintain site stability prior to the commencement of operations.

9.3 Non-Use Management Areas

The information requirements outlined in Section 126C(1)(g) and (h), and 126D(2) and 3 of the EP Act have been addressed relating to the Mount Dore North and South Pits within this PRCP. Section 9.4 provides further detail regarding management of the NUMA's to demonstrate sufficient improvement prior to surrender of the environmental authority.

9.4 Rehabilitation and Management Methodology

9.4.1 General Rehabilitation Principles

Full implementation of the proposed decommissioning and rehabilitation program will result in a post mining final landform that facilitates a PMLU of low intensity grazing. The proposed Mount Dore project will result in significant development including crushing and processing infrastructure, heap leach pad, waste rock emplacements and residual voids.

The rehabilitation and management methodologies described herein for the Mount Dore area are specific to the rehabilitation of the current and authorised Mount Dore disturbance. A summary of the activities and treatments for the Mount Dore rehabilitation domains is provided in following sections.

9.4.1.1 RA12 Waste Rock Emplacement and Heap Leach Area

Characterisation undertaken for the material requiring storage on the Mount Dore WREs and heap leach stockpiles concluded that this material would consist of NAF (refer Section 9.4.5). For the purposes of this PRCP, the NAF cover system designed by ATCW is proposed (ATCW crest cover option C5). Justification for the application of this cover design to areas containing NAF has been provided within Section 9.4.7.1.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Mount Dore WREs and heap leach area. Further detail is provided on this requirement within Section 9.4.7.2.

Rehabilitation of the Mount Dore WRE's and heap leach stockpile will involve:

- Decommission and remove residual infrastructure and equipment.
- Sampling of the heap leach stockpile to verify the material geochemical characteristics.
- Reprofiling the WRE crest (plateau) to a grade of 0.5%, draining to designated and armoured drainage lines.

- Reprofiling the WRE batters to angle of repose with a 10m berm installed between each 10m vertical batter lift height where required.
- Application of a NAF crest cover system (ATCW crest cover option C5).
- The domain will be revegetated in accordance with the Cloncurry Project revegetation strategy (NGH, 2023).
- Ongoing monitoring and maintenance to assess the PMLU trajectory.

9.4.1.2 RA13 Mount Dore Built Infrastructure

The decommissioning and rehabilitation strategy for the Mount Dore built infrastructure areas will be:

- Product charge including fuel and reagents will be removed from the infrastructure.
- All areas will be de-energised, and all services disconnected.
- Residual mine affected water will be transferred to a Starra Pit.
- Impacted sediment (approximately 0.5m) removed from water storages and disposed at a licensed facility authorised to receive such waste.
- Components identified as salvageable for beneficial reuse will be decommissioned and removed.
- Components identified as recyclable scrap metal will be demolished and transferred to a metal recycler.
- Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings, will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no re-use value will be disposed of at a licensed facility authorised to receive such waste.
- Areas will be assessed for contamination (sulphate, metals) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry project revegetation strategy.

Current built disturbance includes administration building/camp, workshop, fuel storage area, laydown areas and water storages. Future approved infrastructure includes a crushing and mineral concentrating plant, paste-fill plant and significant supporting infrastructure.

9.4.1.3 RA14 Mount Dore Retained Infrastructure

The exploration core shed, exploration laydown area, and roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement. Roads and tracks will not be rehabilitated until all remaining rehabilitation works at Mount Dore have been completed.

9.4.1.4 IA4 – Mount Dore North and South Pits

The rehabilitation management strategy for the Mount Dore North and South Pits is as follows:

- Installation of safety bunds and signage as per geotechnical report and verification that these are installed as per the geotechnical requirements.
- Annual aerial survey and Lidar to validate geotechnical and hydrology models.
- Predictive void hydrological modelling and void water quality modelling re-run at the end of mine life and calibrated against final landform (refer condition PRCP12 of Final PRCP Schedule).
- Certification that the residual void will not cause environmental harm and is safe to humans and livestock.

9.4.2 Hydrogeology

The hydrogeology of the Mount Dore area was investigated by AGE in 2023 and revised in 2025 to meet the requirements of the PRCP guideline (Appendix 1 and 19). Groundwater hydrostratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in Section 8.1.5. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Mount Dore to assist with determining appropriate containment and management during operation and closure.

9.4.2.1 Conceptual Hydrological Model

To conceptualise the groundwater flow system, AGE (2025a) reviewed existing data for ground elevation, infrastructure, geology, and water levels (as available) to produce an interpretative northwest to southeast hydrogeological cross section (Figure 107). This conceptual builds on previous models (Rockwater 2010, Rockwater, 2011b) and observations of the drawdown from the Merlin borefield.

The west to east cross section in the Mount Dore area is oriented perpendicular to the strike of the main geological units and is aligned with the proposed northern Mount Dore pit. The cross section indicates that the cone of depressurisation from the Merlin borefield is limited to the Kuridala Group and within the area north of MDWB12a. The conceptualisation also indicates that the contact between the Stavely Formation and the Kuridala Group is a boundary to flow, that the Footwall Quartzite is particularly thick at this location, and that the Mount Dore Granite is a zone of recharge.

Ecosystem use of groundwater in the area is unlikely due to the considerable (>20 m) depth to groundwater. There are no pastoral users of groundwater near the cross section and groundwater-surface water interaction is unlikely to the groundwater depth at the site.

9.4.2.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2025a) to assess potential impacts to groundwater from the future Mount Dore mine infrastructure (Figure 107). Potential sources of solutes to groundwater includes the Mount Dore pits, WRDs, coreshed, heap leach pad, and sediment dams.

The potential receptors include:

- mapped areas along the Mort River tributary with potential for aquatic or terrestrial GDEs;
- groundwater bores used for livestock watering; and
- water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to a receptor. The AGE (2025a) impact assessment presented in Table 109 indicates that:

- there is no past or future impact predicted for potential aquatic GDEs regarding drawdown or water quality;
- It is unlikely to have been past impact regarding water quality or drawdown on potential aquatic GDEs;
- there is no past and highly unlikely future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source; and
- there is past impact and future impact for groundwater used for industrial uses regarding water access due to dewatering.

9.4.2.3 Contaminants of Concern

The methodology used to identify relevant CoCs has been detailed within Section 6.5.2.3. The CoCs identified by AGE as relevant to closure monitoring for Mount Dore are summarised in Table 108, with justification for inclusion or exclusion provided within Appendix 16.

Table 108: Mount Dore CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Arsenic (ug/L)	Y
Chromium (ug/L)	Y
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Fluoride (mg/L)	N
Lead (ug/L)	Y
Molybdenum (yg/L)	Y
Selenium (ug/L)	Y
Uranium (ug/L)	Y
Zinc (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y
Free Cyanide (mg/L)	Y
Total Cyanide (mg/L)	Y
WAD Cyanide (mg/L)	Y

9.4.2.4 Hydrogeology Closure Considerations

Based on the updated hydrogeology assessment for Merlin the following measures are proposed for closure:

- Ongoing groundwater quality and level monitoring to confirm limited risks to the receiving environment.

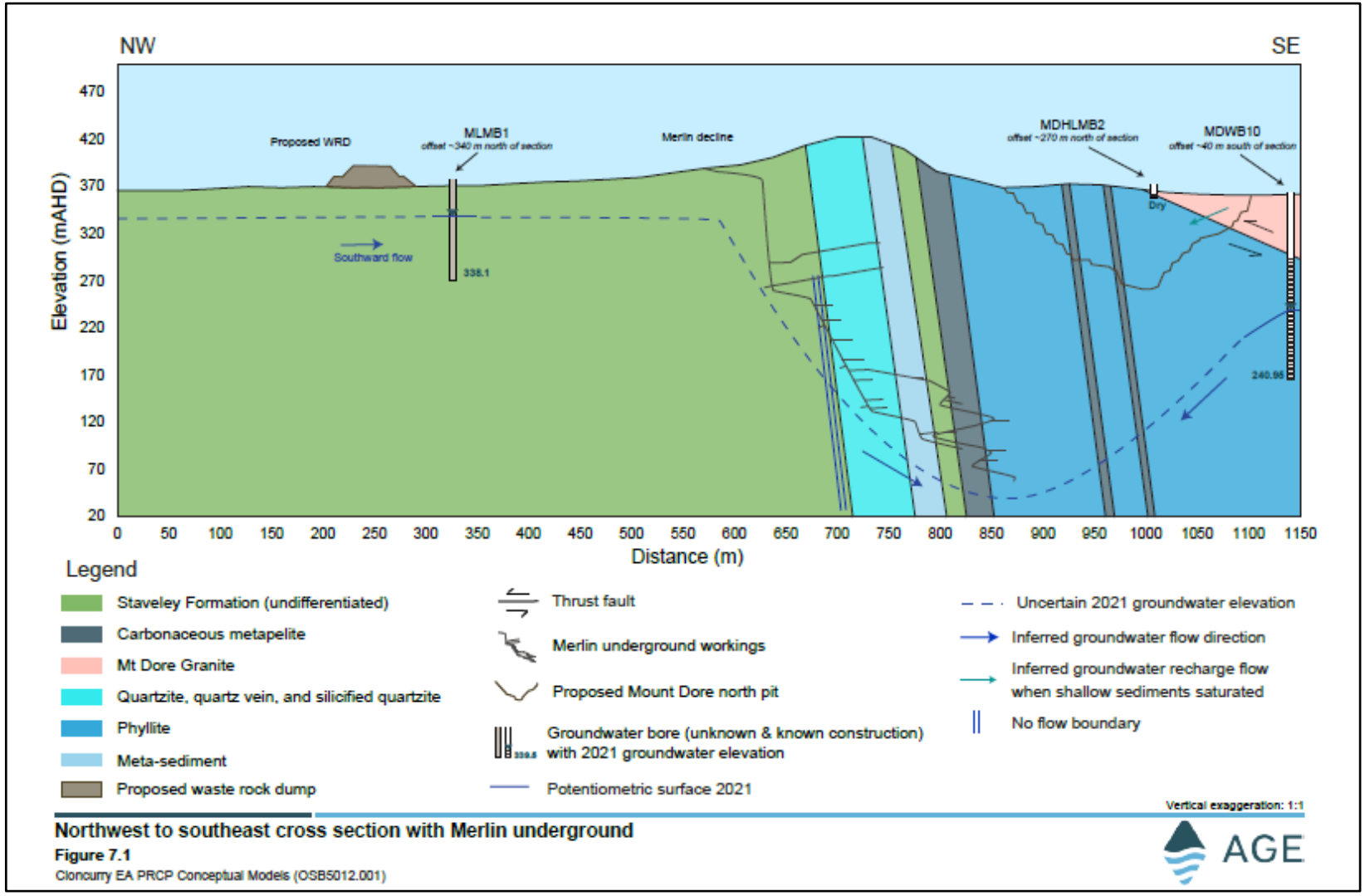


Figure 107:Northwest to southeast cross section with Mount Dore (AGE, 2025a)

Table 109: Source-Pathway-Receptor analysis for Mount Dore (AGE, 2025a)

Source (and associated risk)	Receptor	Potential Pathway	Evidence that pathway is present / absent	Predicted Impact
Drawdown from future dewatering of Mount Dore pits **As groundwater was extracted during periods of mining, a cone of depression has developed and intermittently changed in depth and extent. This cone of depression will also change in depth and extent in the future and will be deepest when Merlin is fully dewatered. However, the range of future drawdown is projected to be commensurate with that has historically occurred and has been modelled.**	**Mapped areas with potential for aquatic GDEs.** **Not present** within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If groundwater discharge to the surface water features in question had been reduced as a consequence of drawdown, there could be impacts to the GDE.	**Not present:** No historic drawdown has been recorded at MDWB12/12a, which is located between the Merlin void and the potential receptors. Future drawdown is predicted to be commensurate with historic drawdown.	No past or future impact is predicted.
Future Mount Dore Pits. **Acid and sulfate-enriched drainage generation within these voids is possible due to the exposure of sulfide-bearing ore to oxidation. However, the risk is generally considered low for the Mount Dore pits due to waste rock characteristics. Furthermore, the Mount Dore North pit is assumed to have a PLMU of water storage, containing relatively fresh water due to high surface water input**	**Mapped areas with potential for aquatic GDEs.** **Not present** within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If this water were to flow away from the voids and reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not currently present, highly unlikely in the future**: This transport could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine voids. At that time transport towards the southeast (toward the Mort River) is possible. However, the distance (>5km) to the potential GDEs is likely to great to allow transport in the relatively impermeable formation without considerable natural attenuation.	No past impact is predicted. Future impact is highly unlikely.

Future Mount Dore WRDs, coreshed, and surface water storage located above the Kuridala Group	**Mapped areas with potential for aquatic GDEs** **Not present** within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not currently present, highly unlikely in the future**: There is no existing surface infrastructure in the Mount Dore area that could generate seepage. When the future infrastructure is built, the transport of this seepage could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine void. At that time transport towards the southeast (toward the Mort River) is possible. However, the distance (>5km) to the potential GDEs is likely to great to allow transport in the relatively impermeable formation without considerable natural attenuation.	No past impact is predicted. Future impact is highly unlikely.
Mount Dore Heap Leach pad **The future heap leach pad may host material that contains cyanide and is potentially acid generating. Infiltration of seepage below the pad or associated infrastructure is possible, whereby solutes may potentially reach the water table.**	**Mapped areas with potential for aquatic GDEs** **Not present** within 7 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >7 km without natural attenuation.	**Not currently present, highly unlikely to be present in the future**: This infrastructure is located above the Staveley Formation, but in an area where there is shallow groundwater connectivity between the Staveley Formation and the Kuridala Group (the hydrostratigraphic unit with the potential GDEs). Groundwater flow directions in the area of the proposed heap leach are not currently to the southeast (towards the potential GDEs); however, this may change as mounding associated with the Eastern TSF subsides. Thus, there is a theoretical potential future pathway towards the potential GDEs. If this theoretical pathway ever does exist, it is highly unlikely that flow over this distance would occur without significant natural attenuation.	No past impact is predicted. Future impact is highly unlikely.
Drawdown from future dewatering of the Mount Dore pits	**Mapped areas with potential for terrestrial GDEs**	If groundwater levels beneath the terrestrial GDEs had been	**Not present:** No historic drawdown has been recorded at MDWB12/12a, which is located between the Merlin	No past or future impact is predicted

Risks as described above.	**Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a (Figure 11.2). **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries.	lowered, vegetation access to water could have been restricted. If the terrestrial GDEs are reliant only on moisture in the unsaturated zone, drawdown of the water table is not a pathway that can affect the availability of that water.	void and the potential receptors. Future drawdown is predicted to be commensurate with historic drawdown. **Not Present** There is no pathway for mining activities to change the amount of soil moisture or vadose zone water that is available to the terrestrial GDEs. This is dictated by the amount of rainfall, infiltration, and evaporation. Although clearing for mining may have increased infiltration (e.g., due to decreased transpiration), this is not linked to impacts from groundwater changes.	
Future Mount Dore Pts **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast along the reaches of the Mort River and >5 km from the voids. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow	**Not present, highly unlikely in the future** In area of the voids, the groundwater levels are currently very deep (>30mBGL) and remnant solutes in the water (if present) only likely to be accessible to vegetation if it firstly reaches the watertable and is then transported towards the southeast (toward the Mort River). This transport could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine voids. However, the distance to the potential GDEs is likely too great to allow transport in the relatively impermeable formation without considerable natural attenuation. **Not present**	No past impact is predicted. Future impact is highly unlikely.

	atlas, and areas of BVG 16a (Figure 11.2).	expressions of pit water could be connected via a pathway.	There are no likely terrestrial GDEs that are directly adjacent to the Merlin underground or proposed pits and pit water levels are >30 mBGL, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	
Future dewatering of the Mount Dore pits **Risk as described above.**	**Groundwater bores used for livestock watering** There is one existing livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater levels at the locations of potential livestock bores had been lowered, groundwater user access to water could have been restricted.	**Not present, unlikely future impact** No historic impacts on groundwater bores has been recorded. Future drawdown is predicted to be commensurate with historic drawdown and will be followed by a period of recovery	No past and highly unlikely future impact is predicted.
Future dewatering Mount Dore pits **Risk as described above.**	**Water used for industrial purposes (mining)** Groundwater is used by Chinova in the region.	If groundwater levels at the locations of potential industrial bores had been lowered, groundwater user access to water could have been restricted.	**Present, decreasing future impact** Groundwater has been variably used by Chinova and drawdown has planned and monitored. In closure, drawdown will be followed by a period of recovery	Current impact is observed, recovery will occur

9.4.3 Flooding

The potential impacts of flooding on the proposed Mount Dore final landforms were assessed by WRM (WRM, 2023; WRM, 2025) (Appendix 2 and Appendix 19).

WRM developed hydrological and hydraulic models for drainage features nearby Mount Dore. The models were developed for drainage features classified as second order watercourses or greater in the Queensland Globe database, or watercourses with catchments draining to mining infrastructure.

The WRM hydrological model was developed using a unified river basin simulator (URBS) hydrological modelling package. The URBS model determined the design discharges for the 1% (1 in 100), 0.1% (1 in 1000) AEP, and Probable Maximum Flood (PMF) design flood events. The flow behaviour of the design discharges was then determined using a two-dimensional TUFLOW hydrodynamic model.

The modelled flood depths for the Mount Dore study area shown in Figure 108 to Figure 110, with the flood velocities shown in Figure 111 and Figure 113.

The model results demonstrate:

- the unconstructed North Pit will be located on and inundated by Feature 1.
- Parts of the North WRD will cross Feature 1 downstream of the North Pit.
- The southern section of the unconstructed South Pit will be inundated by Feature 2 for all three events.
- Bunding around the southern edge of the South Pit has been modelled to prevent pit inundation. The bund will have a crest elevation above the 0.1% AEP event, which has a level of at least 348.4 mAHD.
- The unconstructed Mount Dore Processing Area will be inundated for the three events.
- The unconstructed North final void is located within Feature 1, where flood velocities during the 1% and 0.1% AEP events are generally up to 1.5 m/s.
- Under the PMF, velocities increase locally to 1.5 to 2.5 m/s within the main drainage line upstream and downstream of the final void footprint.
- Sections of the proposed North WRD intersect Feature 1 downstream of the North final void. Predicted velocities along this reach remain generally 0.5 to 1.5 m/s for the 1% and 0.1% AEP events, increasing to 2.0 m/s in the PMF, particularly where the flow path constricts.
- The southern extent of the South final void is inundated by Feature 2 across all events. Predicted velocities are generally below 1.0 m/s for the 1% and 0.1% AEP events but increase to 1.0 to 1.5 m/s during the PMF, particularly along the western edge where flows converge.
- The unconstructed Mount Dore Processing Area is inundated under all three events. Velocities range from 0.25 to 1.0 m/s for the 1% and 0.1% AEP events but increase significantly under the PMF, where peak velocities reach 1.5 to 2.5 m/s, particularly at the central confluence immediately upstream of the existing access road.

As a result of the flood modelling, Chinova propose to:

- Install control measures around the North Pit during runoff during the operational phase.
- The location North WRD will be optimised during construction to remove it from the drainage feature.
- The location of the processing area will be optimised during construction to remove areas from potential flood impacts.
- Chinova propose a bund around the southern edge of the final void with a crest level above the 0.1% AEP flood (≥348.4 mAHD). The velocity results confirm that this bund will effectively prevent inflows with moderate velocities from entering the final void for all design events up to 0.1% AEP.



Figure 108: Mount Dore Proposed Infrastructure flood depths and extents (1% AEP)



Figure 109: Mount Dore Proposed Infrastructure flood depths and extents (0.1% AEP)

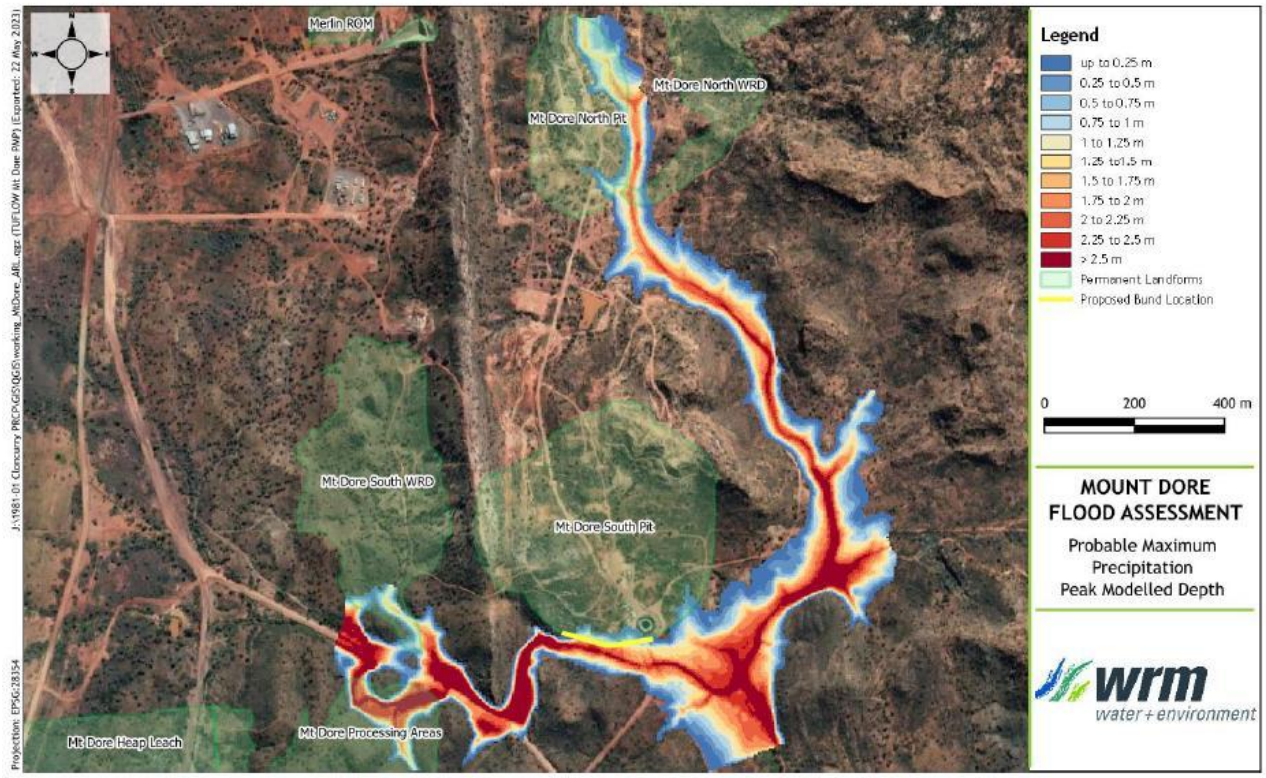


Figure 110: Mount Dore Proposed Infrastructure flood depths and extents (PMF)



Figure 111: Mount Dore Proposed Infrastructure flood velocities and extents (1% AEP)



Figure 112: Mount Dore Proposed Infrastructure flood velocities and extents (0.1% AEP)

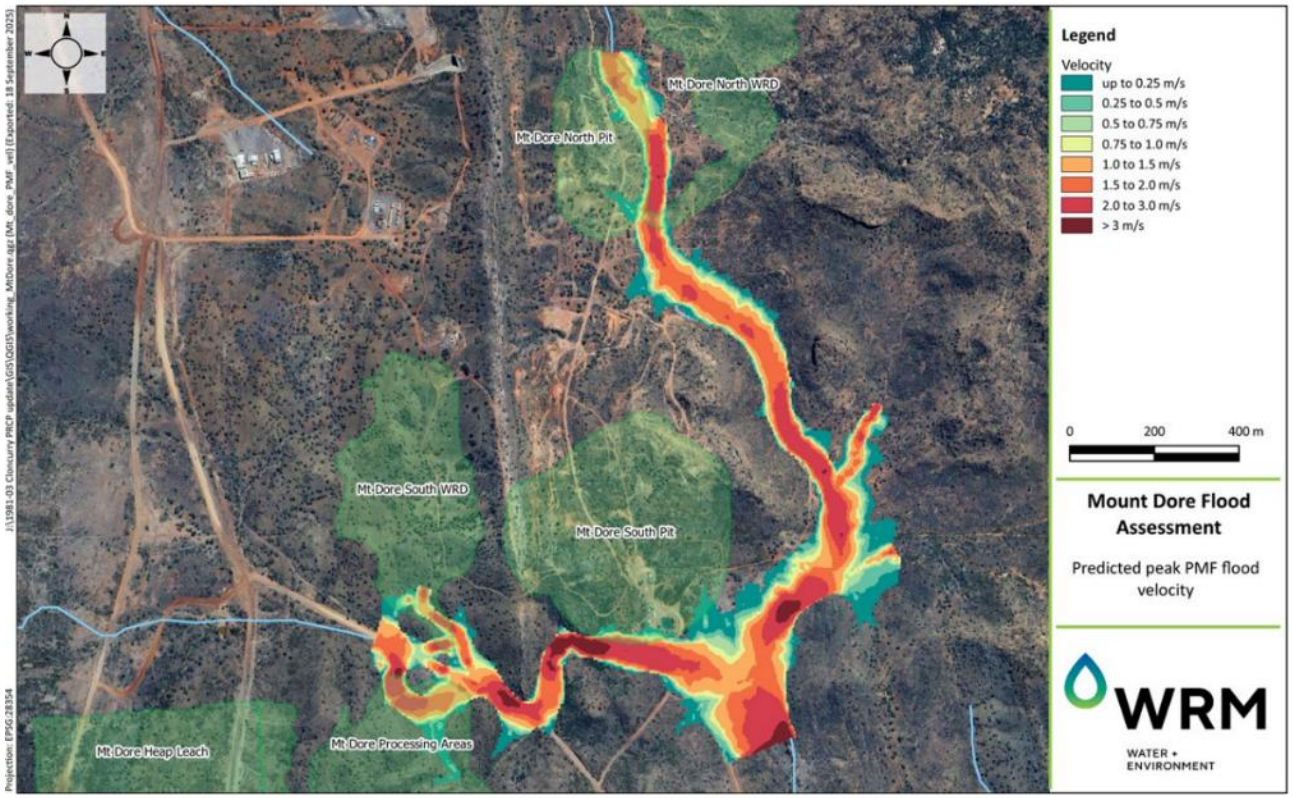


Figure 113: Mount Dore Proposed Infrastructure flood velocities and extents (PMF)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Mount Dore specified in Table 110. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;
(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 110: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Mount Dore	Mt Dore North WRD	10/12/2043	10/12/2039
	Mt Dore South WRD	10/12/2043	10/12/2039
	Mt Dore Heap Leach Pad	10/12/2043	10/12/2039

9.4.4 Soil and Capping Material Assessment

To construct and implement the rehabilitation strategies for the Mount Dore site, a suitable inventory of soils and geological materials is required. Materials are required to construct cover systems for the ROM, WRE and heap leach residue.

The material types and their geotechnical properties required at Mount Dore are described in Table 111.

Table 111: Mount Dore Rehabilitation Materials Specification

Material Type	Material Description	Material Specification
Reduce Permeability Layer (RPL)	Material when compacted forms a low hydraulic conductivity “barrier” layer	- Gravel content less than 50%; - Fines content (material particle size <0.075mm) greater than 30%; and - Clay content (material particle size <0.002mm) greater than or equal to 10%.
Rock Mulch/ Growth Medium	Material suitable for plant growth.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Well graded material

		- Fines content (material particle size <0.075mm) of approximately 30%; - Sand fraction (material particle size >0.075mm and <4.75mm) of approximately 30%; - Gravel (>4.75mm) of approximately 50%; and - Non-plastic to low plasticity fines.
Rock Armour	Provide a very high level of resistance to erosion along high slope and/or high velocity drainage.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering - Predominantly coarse rock (material particle size >75mm) of greater than 70%. - Minimal fines content
General Fill	Cut and fill requirements for landform shaping	- Fines content (material particle size <0.075mm) less than 15%; - Sand content (material particle size <4.75mm) of 25-100%; and - Maximum particle size 150mm. - The plasticity index should not be greater than 12.
Topsoil	Growth medium	- Consistent with surrounding topsoil

9.4.4.1 Rehabilitation Material Characterisation

A material characterisation investigation has been undertaken at Mount Dore to identify the potential location, quality, and quantity of available rehabilitation materials (SGME 2025c). The investigation focused on two landforms including Mount Dore Pit North (MDPN) and Mount Dore Pit South (MDPS) for use in rehabilitation (Figure 114) located on the existing ML. Surface soil samples were taken from both MDPN and MDPS and analysed.

The geochemical and physical properties of MDPN and MDPS are discussed in detail in SGME (2025c) and Table 112.

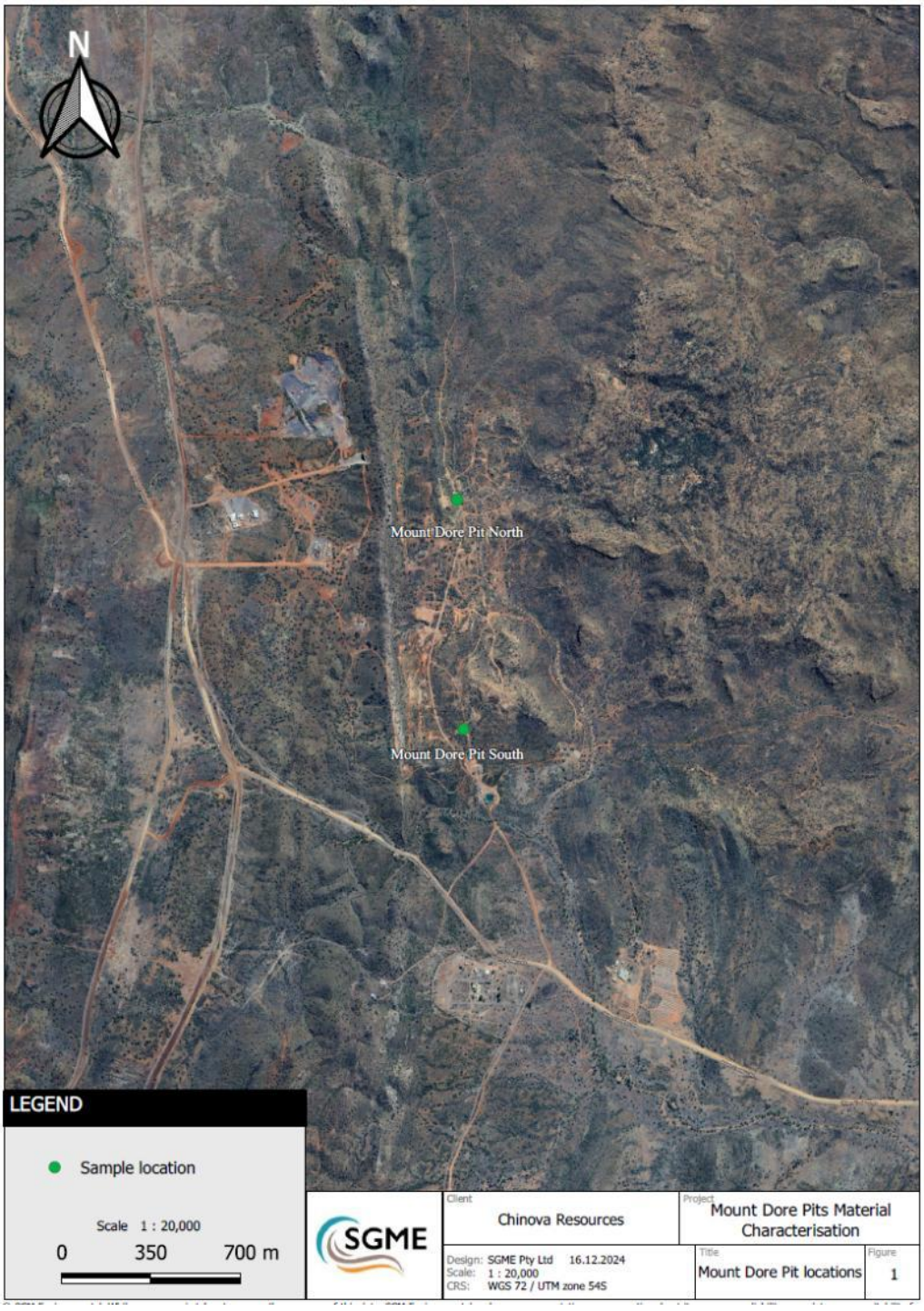


Figure 114. **Mount Dore Pits**

Table 112: Material Characterisation – Mount Dore Pit North and Mount Dore Pit South

Location	Key Characteristics	Material Suitability	Recommended Treatment / Management
MDPN	• Slightly alkaline (pH 7.3), non-saline (EC 160 µS/cm) • Very low fertility – low CEC (4.4 meq/100 g), OM (0.96%), and P • Strongly sodic (Na 1.3 meq/100 g; ESP 28.2%) with poor Ca:Mg ratio (0.67) • Dispersive (ESI 0.01; Emerson Class 2) and erosion-prone • NAF-barren – no acid generation risk • Very low permeability (4.8×10^{-9} m/s) – limited drainage • Non-plastic, poorly graded (silty-sand dominant)	Potentially suitable as low-permeability barrier or growth media (with treatment). Not suitable for rock armour or structural fill.	• Apply gypsum (5–10 t/ha) to reduce sodicity and dispersion • Avoid placement on slopes; use only on flat or gently graded areas • Implement erosion and sediment controls (ESCs) • Compact carefully to minimise piping • Add organic matter to improve structure and fertility if used as growth media
MDPS	• Slightly acidic–neutral (pH 6.7), non-saline (EC 120 µS/cm) • Very low fertility – low CEC (3.4 meq/100 g), OM (0.64%), and P • Strongly sodic (ESP 17.2%) and dispersive (ESI 0.01; Emerson Class 2)	Potentially suitable as growth media or low-permeability barrier (with treatment). Unsuitable for rock armour or fill.	• Apply gypsum (5–10 t/ha) to correct sodicity • Restrict use to flat or low-gradient areas to reduce erosion • Avoid over compaction; manage moisture during placement • Implement ESCs and surface stabilisation (e.g., mulch or

	• Poor Ca:Mg ratio (0.69) – structural instability • NAF-barren – no AMD risk • Very low permeability (1.6×10^{-9} m/s) – suitable for low-permeability cover • Slightly plastic (4%) – minimal shrink–swell • Predominantly sand with some silt/clay		vegetation) • No fertiliser inputs recommended – rely on natural nutrient cycling

9.4.4.2 Material Balance

The main areas requiring application of a rehabilitation material will be the WRE's and heap leach. Based on the final landform and cover design developed by ATCW the volume of different rehabilitation material has been estimated (Table 113). Rock armouring will be used to stabilise batters, diversion drains and spillways as required. It is not anticipated that further borrow pits will be required for rehabilitation works. These conceptual values will continue to be refined and developed as designs for the infrastructure are finalised.

As detailed within Section 6.5.4.2, there is sufficient material onsite to undertake all proposed rehabilitation works. Accordingly, required rehabilitation material will be sourced from available stockpiles at Starra, or from the developed Mount Dore North and South Pits (subject to further material characterisation investigations) to enable appropriate rehabilitation works to be undertaken.

Table 113: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
WRE's	453,600	56,700	-	TBA
Heap Leach	496,800	62,100	-	TBA

9.4.5 Waste Characterisation

9.4.5.1 Waste Rock

In 2013, RGS was commissioned to undertake a geochemical assessment of mine materials from the proposed Mount Dore project (Appendix 11). The investigation involved collecting 433 samples of mine

materials (410 waste rock and 23 ore) from 54 drill holes at the proposed Mount Dore mine. The samples represented the main mine material types likely to be encountered during development at the proposed mine. All 433 samples were dispatched to ALS Brisbane laboratory for static geochemical characterisation.

Following receipt and interpretation of the static geochemical test results, 10 Kinetic Leach Column (KLC) tests were set up at the RGS in-house laboratory. The KLC tests comprised eight waste rock samples and two ore samples representing the main lithological rock types likely to be generated. The KLC tests for waste rock and ore commenced in August 2012 were operated under a monthly watering and leaching cycle for the first four leach events (3 months) and were operated with quarterly watering and leaching for a further 9 months, until August 2013.

The main findings of the geochemical assessment were:

- Most of the ore and waste rock materials is likely to be Non-Acid Forming (NAF) and have a low risk of acid generation.
- A relatively small amount of identified Potentially Acid Forming (PAF) waste rock materials (0.7 % or 1.4 Mt out of a total of 198 Mt) will be generated and is closely associated with the mineralised ore zones.
- Initial and ongoing surface runoff and seepage from most ore and waste rock materials will be pH neutral to slightly alkaline and have a low level of salinity.
- Dissolved metal concentrations in surface runoff and leachate from most mine materials will likely be low (below laboratory limit of reporting) and should not impact upon the quality of surface and groundwater resources at relevant storage facilities. Minor exceptions include molybdenum and selenium.

9.4.5.2 Heap Leach Residue

In 2016, RGS was commissioned to undertake a geochemical assessment of heap leach residue for the Mount Dore project (Appendix 12). The investigation involved collecting three representative composite samples of heap leach residue material which were submitted to ALS Environmental laboratory for static geochemical characterisation tests. The samples were then subjected to kinetic geochemical tests at RGS Environmental in Brisbane.

The main findings of the geochemical assessment were:

- The heap leach residue is likely to be classified as NAF and have a low risk of generating additional acidity through sulphide oxidation.
- Initial and ongoing surface runoff and seepage from heap leach residue materials is likely to be slightly acidic and contain a relatively low concentration of dissolved salts.
- Some of the heap leach materials are enriched with a number of metal/metalloids (arsenic, cadmium, copper, lead and zinc).
- The dissolved concentrations of cadmium copper and lead in leachate from some materials are persistently elevated compared to ANZECC (2000) stock watering guidelines.

9.4.6 Mount Dore Residual Voids

9.4.6.1 Overview

The proposed residual voids known as North Pit and South Pit are authorised under the Cloncurry EA Schedule A - Table A1 - Authorised Mining Activities and Locations. Key aspects of the residual voids and considerations for the decommissioning and closure strategy are described in more detail in the subsequent sections.

9.4.6.2 Design Plan and Final Dimensions

Table 114 details the proposed dimensions of the final voids. These void dimensions are indicative only and subject to future optimisation.

Table 114: Mount Dore Residual Void Dimensions

Dimensions	North Pit	South Pit
Surface Footprint (ha)	6.9	28.7
Length (m)	444	510
Width of Void (m)	216	450
Depth to pit floor (mbgl)	52	94
Overall Slope (degrees) (crest to toe)	42	42

9.4.6.3 Pit Void Catchment Area

The catchment area was delineated using digital elevation model (DEM) data, whereby the catchment area is defined by the topography. Based on the DEM the catch for North pit is 1,448,400m^2 and for South Pit 230,000m^2.

9.4.6.4 Predicted Void Water Quality

The methodology used to predict long-term water quality within the onsite residual voids has been detailed within Section 7.5.7.5.

Long-term water quality modelling concluded that the average long-term concentrations of EC and sulphate for the Mount Dore North and Mount Dore South Pits exceed the permissible livestock drinking water quality limits and average groundwater EC and sulphate levels recorded across the Mount Dore operational area.

In accordance with Condition PRCP12 of the approved PRCP Schedule, at the end of the Mount Dore life of mine (2043), Chinova will commission predictive hydrological modelling and void water quality modelling which is calibrated against the final landform. This modelling will demonstrate that the water quality and level within each residual void will not cause environmental harm to the surrounding environment, the residual voids will continue to act as groundwater sinks, and there is no environmental harm beyond the boundaries of the Project mining leases.

Table 115: Mount Dore Pit Water Quality (WRM, 2025)

CoC	Mount Dore Pit	Livestock Drinking Water Guideline Limit	Average (mg/L)	80th Percentile (mg/L)	Average Groundwater Quality Concentrations
Electrical Conductivity	North	2,400[1]	37523	58221	3400
	South		17196	26369	

Sulphate	North	422[2]	18152	28166	1100
	South		8319	12758	

[1] Guideline value of Salinity from Table 3.8 (dairy cattle) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

[2] Guideline value of Salinity from Table 3.7 (cattle – high concentrate) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

9.4.6.5 Void Hydrology and Water Balance

AGE (2023; 2025a) undertook void water balance modelling for Mount Dore North and South pit residual voids. The closure status of the Mount Dore residual voids is provided in Table 116. Table 117 and Table 118 provides summaries of the void overtopping and stratification risks.

The Mount Dore North Pit is planned to be a void in closure. Groundwater modelling results and modelled pit water level indicate that at all pit levels, groundwater will flow into the pit, classifying the pit as a terminal groundwater sink (AGE, 2023; AGE, 2025a). The final water levels for the pit will remain well below the spill level and there is no risk in overtopping, even under exceptionally wet conditions (AGE, 2023). There is potential for the pit lake to stratify due to its depth (up to 50 m) and relatively high salinity; however, because the pit is a sink, the potential for pit stratification has no implications for the impact assessment.

Similarly to the Mount Dore North Pit, the Mount Dore South Pit is planned to be a void in closure, has been confirmed a terminal groundwater sink, and has no risk of overtopping (AGE, 2023). There is a moderate risk of pit stratification due to its depth (approx. 150 m) and relatively high salinity; however, because the pit is a terminal sink, the potential for pit stratification has no implications for the impact assessment.

Table 116: Summary of Void modelling for Mount Dore (AGE, 2023; AGE, 2025a)

Pit	Current Status	Equilibrium water level - closure conditions (mAHD)	Closure status
Mount Dore North	Planned pit	342	Sink
Mount Dore South	Planned pit	333	Sink

Table 117: Summary of overtopping risk assessment for Mount Dore (AGE, 2023)

Pit	Pit Crest (mAHD	Water level after 5%AEP year (mAHD)	Remaining capacity after 5% AEP year (m3)	Water level after 1%AEP year (mAHD)	Remaining capacity after 1% AEP year (m3)
Mount Dore North	394.5	364	334,400	368	304,800
Mount Dore South	369.7	350	1,737,000	356	1,345,000

Table 118: Mount Dore assessment of void water quality the likelihood of void stratification (AGE, 2023)

Pit	Equilibrium water level - closure conditions (mAHD)	Pit base (mAHD)	Equilibrium lake depth (m)	Likelihood of stratification in closure (rational)
Mount Dore North	342	334.5	67	possible, but unlikely due to relatively shallow depth and seasonal inflow
Mount Dore South	333	275	128	possible due to pit depth and lack of seasonal inflow

9.4.6.6 Geotechnical Stability

Quantum Geotechnical have undertaken an updated assessment and numerical modelling of the geotechnical stability of the proposed Mount Dore North and South pits. Full details of the assessment are provided in Appendix 8. In summary, results of the modelling (Figure 115 to Figure 116) indicates that:

- Stress levels are relatively low and that any instability would be tensional in nature i.e. the ground relaxing rather than crushing.
- Poor conditions are present at the pit crest in the upper three benches of the east wall of each pit. This is due to the highly weathered metasediments. The west wall is modelled to experience slightly larger pit crest loss as it sits in the shadow of the principal stress direction following excavation of the pit.
- The key geotechnical risk appears to be the aquifer fault that crosscuts the South pit northwest to southeast and passes very close to and parallel with the southwest corner of the North pit. As the fault is subvertical and perpendicular to the south pits walls it is unlikely to any present regional stability issues. However, where the fault sits behind the southwest corner of the North pit, water pressures could destabilise the wall.

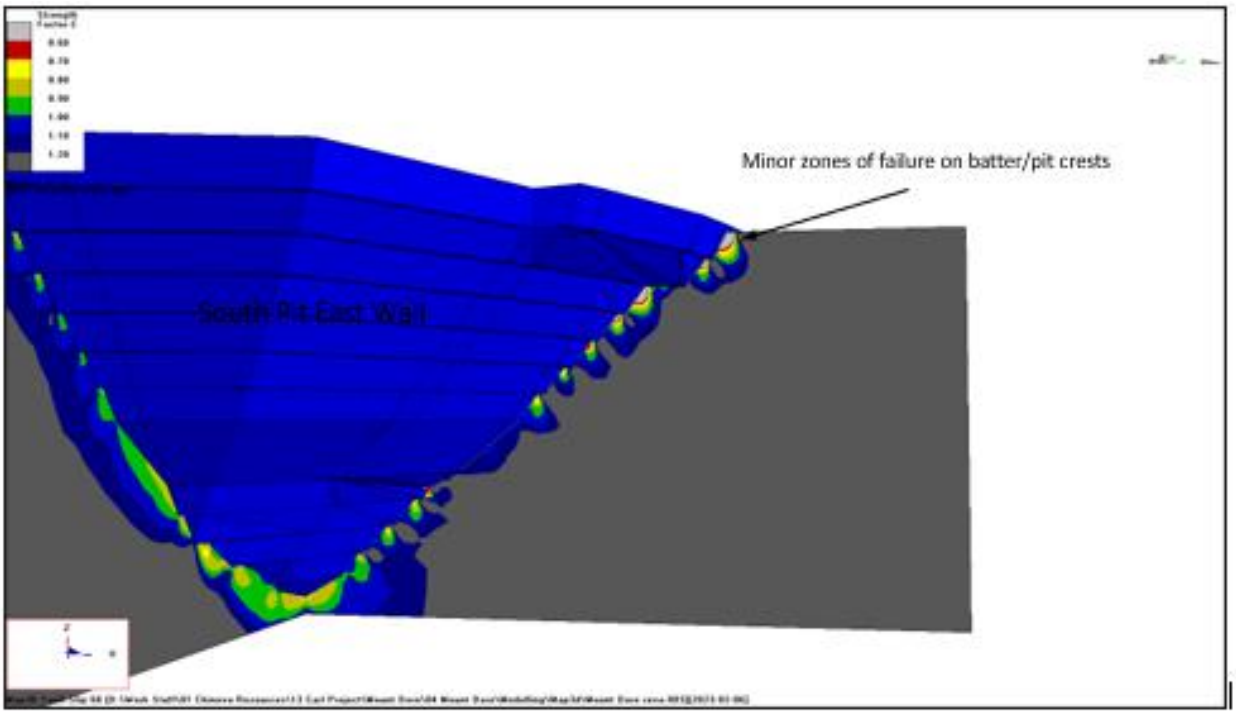


Figure 115: Mount Dore Map3D model showing stress in south pit hanging wall (looking north).

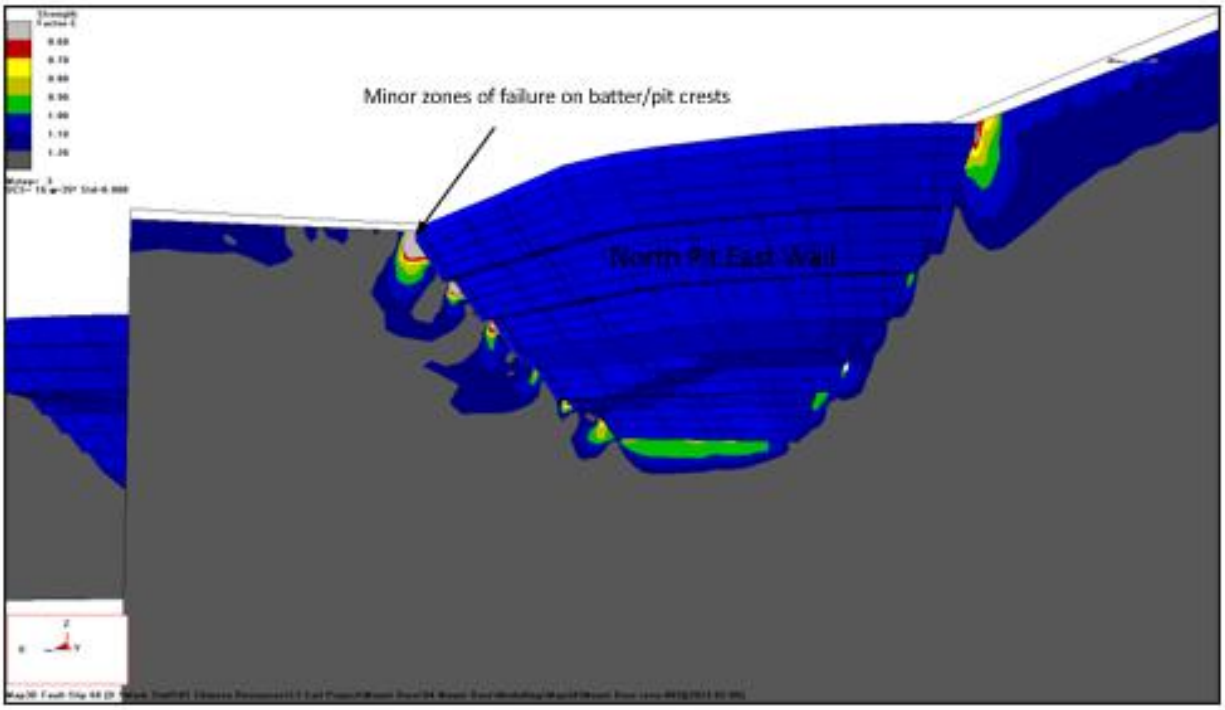


Figure 116: Map3D model showing the east wall of the north pit.

Closure bunding will need to take account of potential localised crest loss and ensure that bunding is placed a sufficient distance from the pit edge (25° angle from the base of the failure plane plus 10m) to ensure safety. The bund will need to be placed at least 56m from the crest of each pit (Figure 117). The bund will be constructed from fresh, non-acid forming, rock to a height of 2.4m with a 6m base.

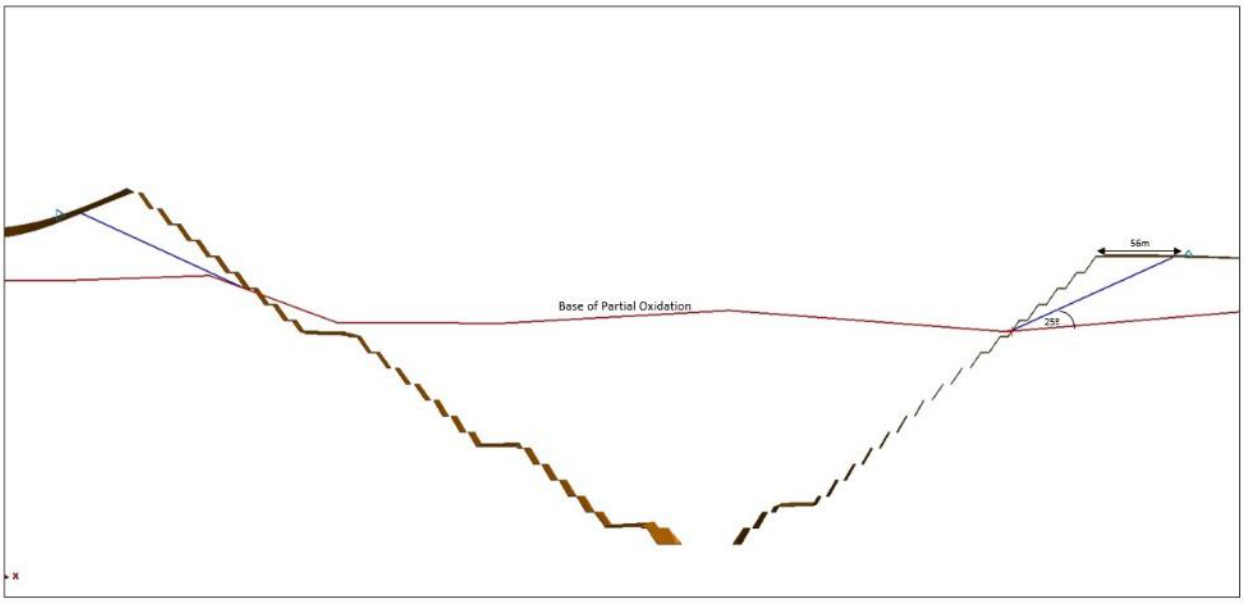


Figure 117: Proposed Bund Location at Mount Dore (Quantum, 2023)

9.4.6.7 Residual Void Improvements

Management for final void closure will include:

- Update models with additional data (e.g., groundwater inflow, inflow water chemistry, and waste rock characterisation).
- Update geotechnical modelling to confirm principal stress direction in the Mount Dore region once more data is available.
- Review catchment areas to provide updated surface water inflows.
- Implement routine sampling program (pit water quality, SWL, groundwater) when mining commences in the area.

9.4.7 Landform and Cover Design

9.4.7.1 Cover Designs

ATCW were engaged in 2022 to review and develop closure strategies for mineralised waste storages across Chinova's assets, including the proposed Mount Dore WRE's. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified five (5) potential cover system configurations with the ability to meet the rehabilitation objectives and transition to the agreed PMLU. These configurations include:

- Option 1: Queensland Government (DES) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.

    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.
- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armouring (rind)
- Option 5: Store and release cover system:
    - 0.15m.
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.
- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The waste characterisation shows the final WRE's will be inert with any PAF waste material produced at Mount Dore approved to be disposed of in the Starra 244 and 254 pit. ATCW has designed rehabilitation strategies for unreactive waste emplacements including a proposed cover system. The unreactive waste cover system's primary functional objective is to maximise PAM by limiting water loss as both runoff, and water movement into the waste emplacement. This cover configuration is as follows:

- Cover Option C5 (Non-Acid Forming (NAF) Cover):
    - 0.15 metres (m) of Clay/RPL
    - 1.20 m of Growth Media (Rock Mulch)/ISL.

To treat the exposed emplacement batters ATCW designed geometric Batter Slopes with 20m wide terraces placed every 10m (vertical) (Figure 37). This approach would result in slopes that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling (WEPP) of the proposed landforms to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 104) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or

constructed from rock/rock mulch, with suitable armouring or construction materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability.

Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.

9.4.7.2 Final Landform

The final landforms that will remain at the Mount Dore site that are a substantial departure from the pre-mine condition are the WRE's, heap leach pad and residual voids.

At the current planning stage of the Mount Dore project, the location and geometry of the major site landforms are subject to further optimisation. As a result, the post mine landforms are conceptual. Figure 118 shows the existing landform at Mount Dore, Figure 119 shows the Mount Dore mine at operation and

Figure 120 shows the proposed final landform. The representations were developed by ATCW (2023b) by digitally reshaping landforms in accordance with the landform and cover system designs described above.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

At closure the WRE areas will have the following treatments applied:

- Reshape plateau (base and cross grade 0.5 %).
- Focus drainage to the north and north-west.
- Apply NAF Cover.

At closure the Heap Leach area will have the following treatments applied:

- Plateau (base and cross grade 1.0 %).
- Drainage to north-east.
- Apply NAF Cover.

A 3D representation of the current (2023) pre-mining, operational and final landforms for the Mount Dore area are provided Figure 118 to Figure 120. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7).

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Mount Dore specified in Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and
(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and

(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:
(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 119: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Mount Dore	Mt Dore North WRD	10/12/2043	10/12/2041
	Mt Dore South WRD	10/12/2043	10/12/2041
	Mt Dore Heap Leach Pad	10/12/2043	10/12/2041

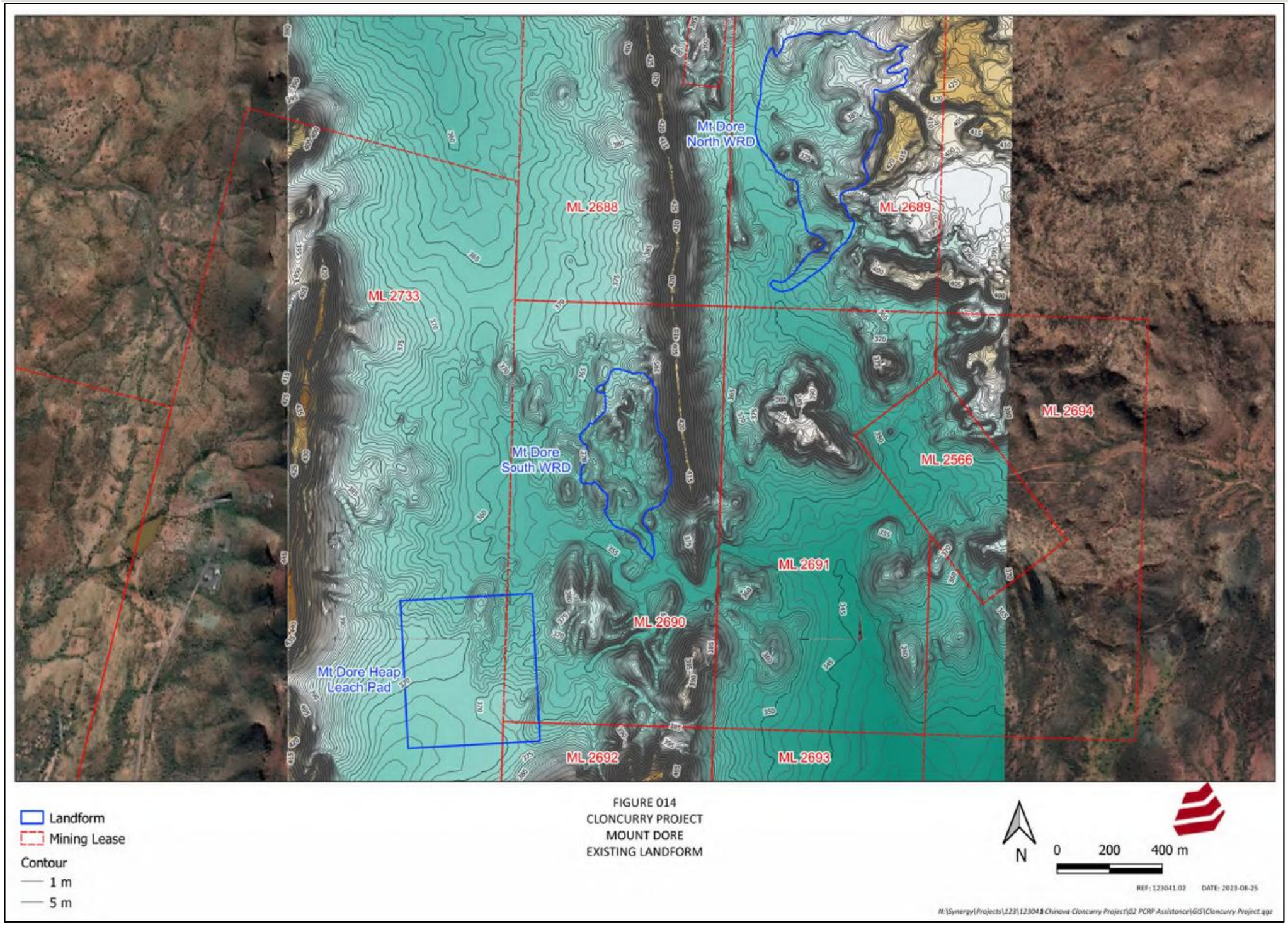


Figure 118: Mount Dore Pre-Mining Landform (ATCW, 2024)



Figure 119: Mount Dore Operational Landform (ATCW, 2024)

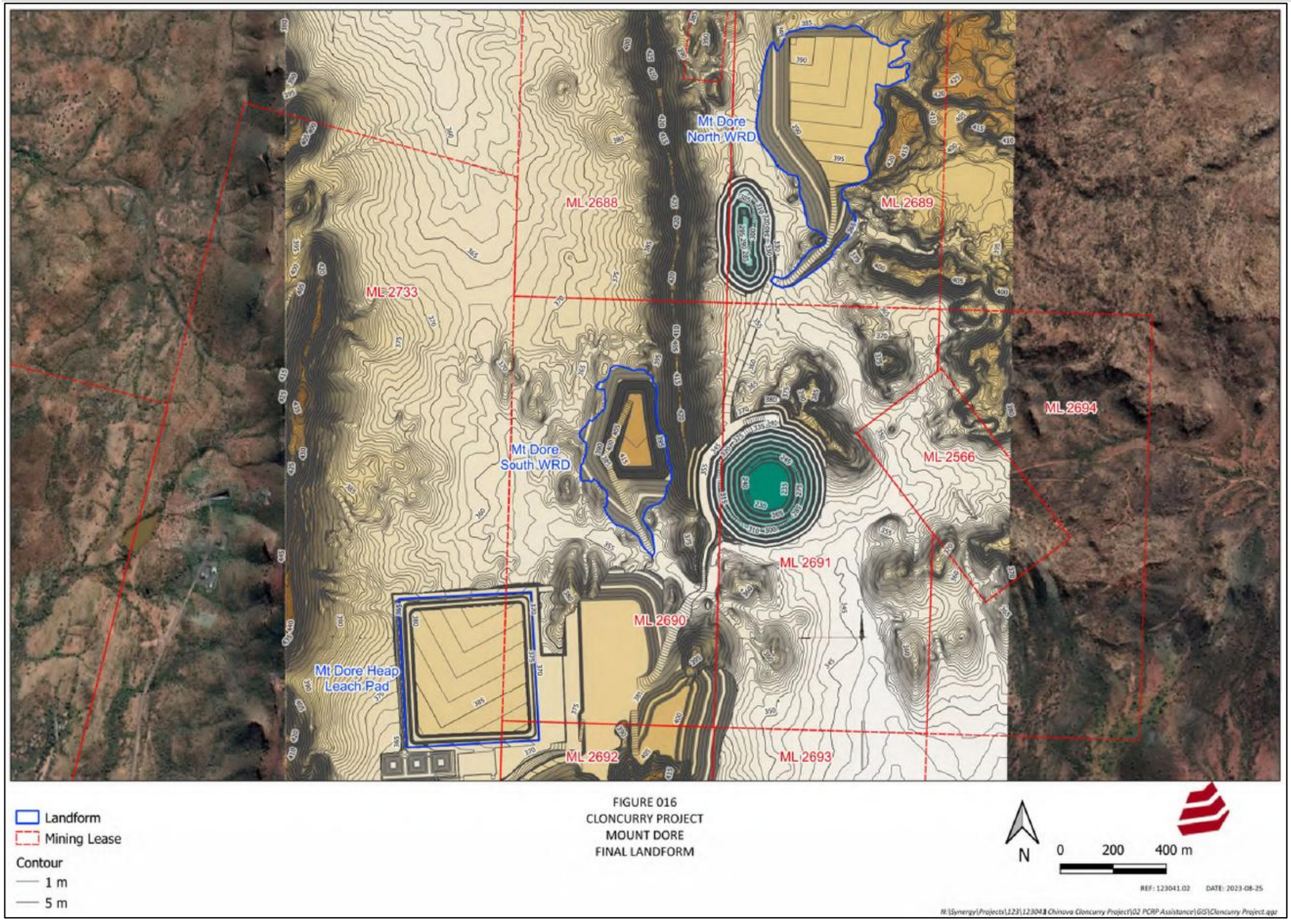


Figure 120: Mount Dore Post Mine Landform (ATCW, 2024)

9.4.8 Water Management

The proposed management of surface water during the rehabilitation, post-closure maintenance and monitoring period is described below. Potential impacts and implications to groundwater values are discussed in previous sections as a result, this section will focus on surface water management.

The main landforms that have the potential to pose a risk to surface water quality is the WRE's, heap leach and processing areas. Potential CoCs at Mount Dore have been detailed within Section 9.4.2.3.

The objective of water management strategy for the proposed Mount Dore mine at closure will be to ensure surface water quality meets livestock watering WQO's. At closure this will achieved by:

- Installing a cover system on the waste rock emplacement, heap leach and ROM areas as per an engineered design to minimise contact of water with waste material.
- Decommissioning and rehabilitating the processing area including ponds with all contaminated material disposed of to a Starra pit.
- Maintaining and installation of additional sediment basins to treat stormwater from mine areas prior to discharge to the receiving environment. Ongoing monitoring will determine whether these sediment basins are necessary. Should they be deemed necessary, approval for these additional structures will be sought prior to their construction.
- Developing a Water Balance Model (GoldSim or similar) for closure conditions to ensure appropriate water storages are in place.
- Continuing routine surface water monitoring program.

As outlined in Section 9.4.5, some waste may have elevated salinity and metal concentrations which require a cover system to be installed over the waste to ensure water does not come in contact with the material. Once rehabilitated water quality from these installations will improve and will be monitoring until the runoff is commensurate with the surrounding undisturbed landscape. Sediment dams constructed downstream of the landforms will be an appropriate management measure. Water management structures will be maintained and monitored until the water quality achieves surface rehabilitation criteria and water in the sediment basin meets ANZECC (2000) trigger levels for stock water and poses no environmental risk to the receiving environment.

9.4.8.1 Surface Water Contaminants of Concern

Potential CoCs at Mount Dore were identified by AGE (refer Section 9.4.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 120.

Table 120: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE	Sulphate, metals
Rehabilitated disturbed areas	Suspended solids, turbidity
Final reshaped drainage lines and batters	Suspended solids, turbidity
Heap leach	Cyanide

9.4.8.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for Mount Dore North and South post-closure. A description of the methodology used to prepare the drainage plans has been provided within Section 6.5.8.2. The post-closure water management system for Mount Dore includes the following:

Mount Dore North:

- Final void water management
  - During the post-mining stage, the Mount Dore North pit will fill with water until an equilibrium level is reached.
- Surface water management
  - The rehabilitated WRD runoff will be managed through six sediment dams (MD_SD1 to MD_SD6) to ensure adequate sediment removal prior to release to the receiving waters.
  - Surface water drains are proposed around the perimeter of the WRD to convey runoff to the proposed sediment dams.
  - Contour banks, drop structures will be constructed to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - Runoff from the local clean water catchment draining from eastern side of the WRD, will be conveyed around the WRD via a proposed clean water drain (CWD1).
  - A permanent final landform is proposed along the eastern edge of the final void to prevent flood ingress from the northern clean water catchment. A clean water drain (CWD2) is proposed along the eastern edge of the final landform to convey clean water runoff from the drainage feature around the final landform.

Mount Dore South:

- Final void water management
  - During the post-mining stage, the Mount Dore South pit will fill with water until an equilibrium level is reached.
- Surface water management
  - There are no surface water catchments requiring management for the Mount Dore South final landform.
- Clean water management
  - A permanent final landform is proposed along the southeastern edge of the final void and within the valley of the southwestern corner of the void to prevent flood ingress from clean water catchments. A clean water drain (CWD1) is proposed along the southwestern edge of the final landform to convey clean water runoff from the drainage feature around the final landform.

The conceptual drainage plan for Mount Dore North and South has been illustrated within Figure 121 and Figure 122, with the proposed dam sizing and release locations for MD_SD1 to MD_SD6 defined within Table 121.

Figure 121: Mount Dore North conceptual drainage plan (WRM, 2025)

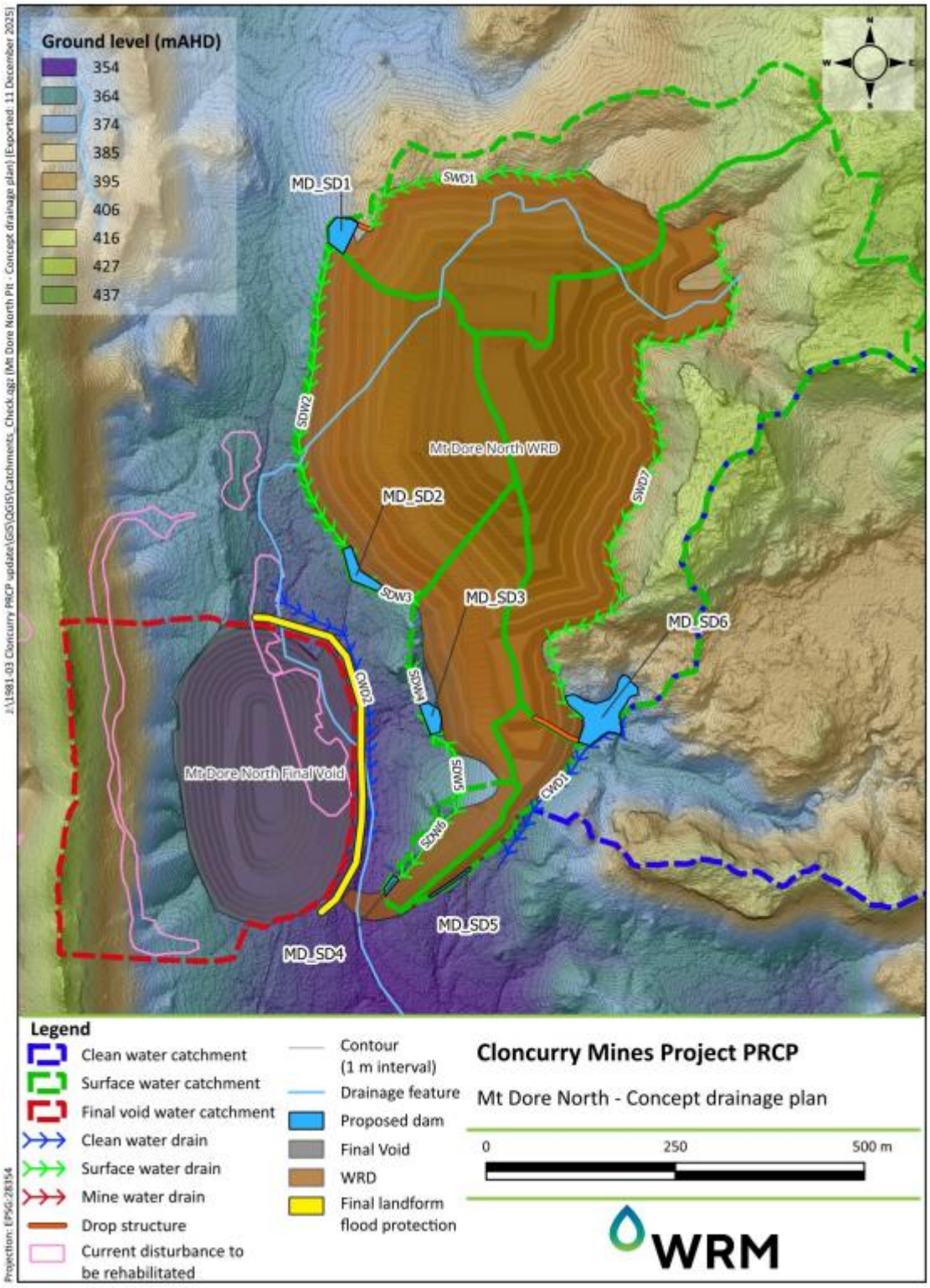


Figure 122: Mount Dore South conceptual drainage plan (WRM, 2025)

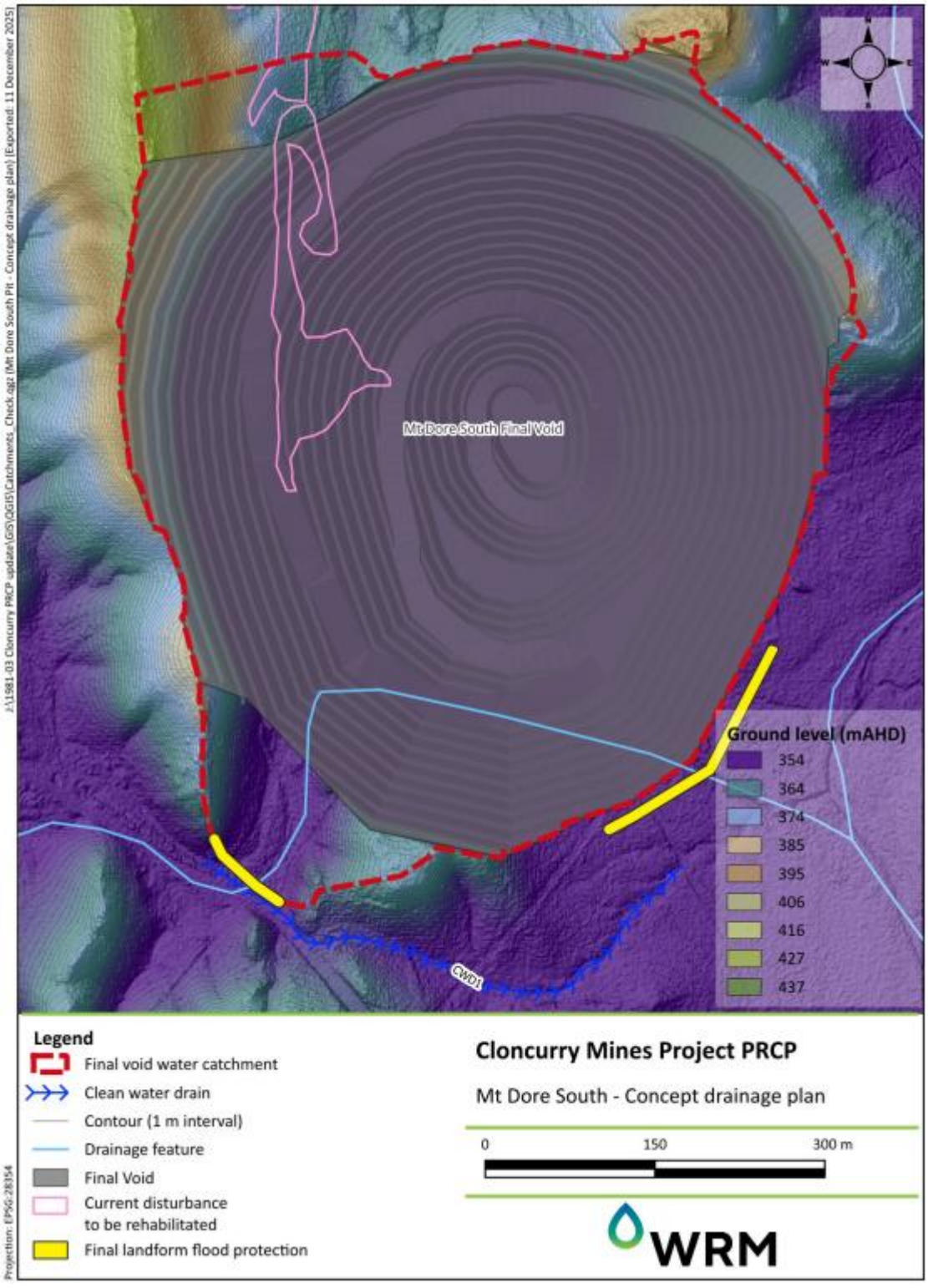


Table 121: Mount Dore Proposed Dam Sizing and Release Locations (WRM, 2025)

Storage	Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
MD_SD1	10.8	3.85	4.23	0.13	447640	7606218	Mount Dore WRD	Unmapped drainage feature of Mort River
MD_SD2	8.9	3.17	3.49	0.11	447669	7605773	Mount Dore WRD	Unmapped drainage feature of Mort River
MD_SD3	4.0	1.43	1.57	0.07	447769	7605585	Mount Dore WRD	Unmapped drainage feature of Mort River
MD_SD4	1.2	0.43	0.47	0.01	447713	7605365	Mount Dore WRD	Unmapped drainage feature of Mort River
MD_SD5	1.3	0.46	051	0.02	447775	7605353	Mount Dore WRD	Unmapped drainage feature of Mort River
MD_SD6	23.0	8.19	9.01	0.41	447987	7605553	Mount Dore WRD	Unmapped drainage feature of Mort River

9.4.8.3 Seepage intervention and collection controls

There are no seepage intervention or other collection proposed for Mount Dore.

9.4.8.4 Surface water diversions and long-term management requirements

During operations it is proposed to divert clean surface water away from the open cut pits. At closure these will be removed.

9.4.8.5 Dewatering requirements

During operations, the North and South pits will require dewatering to maintain safe work conditions. The pit water will be transferred to the existing evaporation dam (Southern TSF). At closure dewatering of the pits will cease.

9.4.8.6 On-going water management

Impacted surface water runoff will be directed towards sediment dams. Not all water storages which are required for the full development of the Mount Dore Heap Leach Project are currently authorised under the EA. In accordance with condition PRCP15 of the PRCP Schedule, should Chinova proceed with the development of Mount Dore, additional approvals will be sought for all required water storages and sediment control structures.

Site surface water monitoring will be ongoing including the annual REMP to provide sufficient data that surface water quality can meet environmental authority requirements and WQO's for stock watering over the long term to demonstrate closure requirements. Water storages will be retained until runoff water quality meets rehabilitation milestone criteria, following which it will be rehabilitated pursuant to the methods described in the Revegetation Plan.

9.4.9 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

9.4.9.1 Mount Dore Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 122.

Table 122: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable) Install stock fencing to protect planting (if required).	Preferably immediately prior to wet season (November-December). In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable	Ecological monitoring: immediately after wet season (March-April) and annually thereafter.

	growth/development of revegetation	
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g. supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Supplementary seeding prior to wet season. Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

9.4.9.2 Mount Dore Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 123: Mount Dore Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum* • *Bothriochloa ewartiana*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

9.4.9.3 Mount Dore Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 124. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 124: Mount Dore Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

9.5 Voids in Flood Plains

In accordance with section 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff, 2019 (ARR) (Ball, et al, 2019).

Flood modelling of the Mount Dore area in accordance with the EP Act shows that without controls the unconstructed North and South pit will be inundated by unnamed drainage features (WRM, 2023) (Appendix 2). This is not a material concern as bunding, and diversion drains can be designed as part of future mine optimisation works.

10. Rehabilitation Planning – Starra

10.1 Baseline Information

10.1.1 Climate

Refer to section 5.1 for details on climate for the Starra Line mines.

10.1.2 Site Topography

The Starra mines are located along the Starra ridge the locally dominant topographical feature which forms part of the Selwyn Ranges. The Starra ridge is characterized by two sub-parallel (eastern and western ironstones), more or less continuous ridges, of low to moderate relief, that extend above a flat plain. The Starra ridge attains heights of approximately 440mAHD. Elevations are generally higher on the northern end and lower and more gently sloping at the southern extent (Figure 123).

The Starra industrial area is situated between the two ridge lines at approximately 360 mAHD, the existing tailings storage facilities located in valleys with peaks on either side is at approximately 400mAHD and the open cut pits are located on the western ridgeline at approximate elevations of between 380m to 400m AHD. The steepest areas (10%-30 grades) are associated with the ridges which slope down into a narrow valley floor. Areas south and west of the Starra ridge have a more gently sloping topography with isolated peaks attaining heights of 390m AHD.

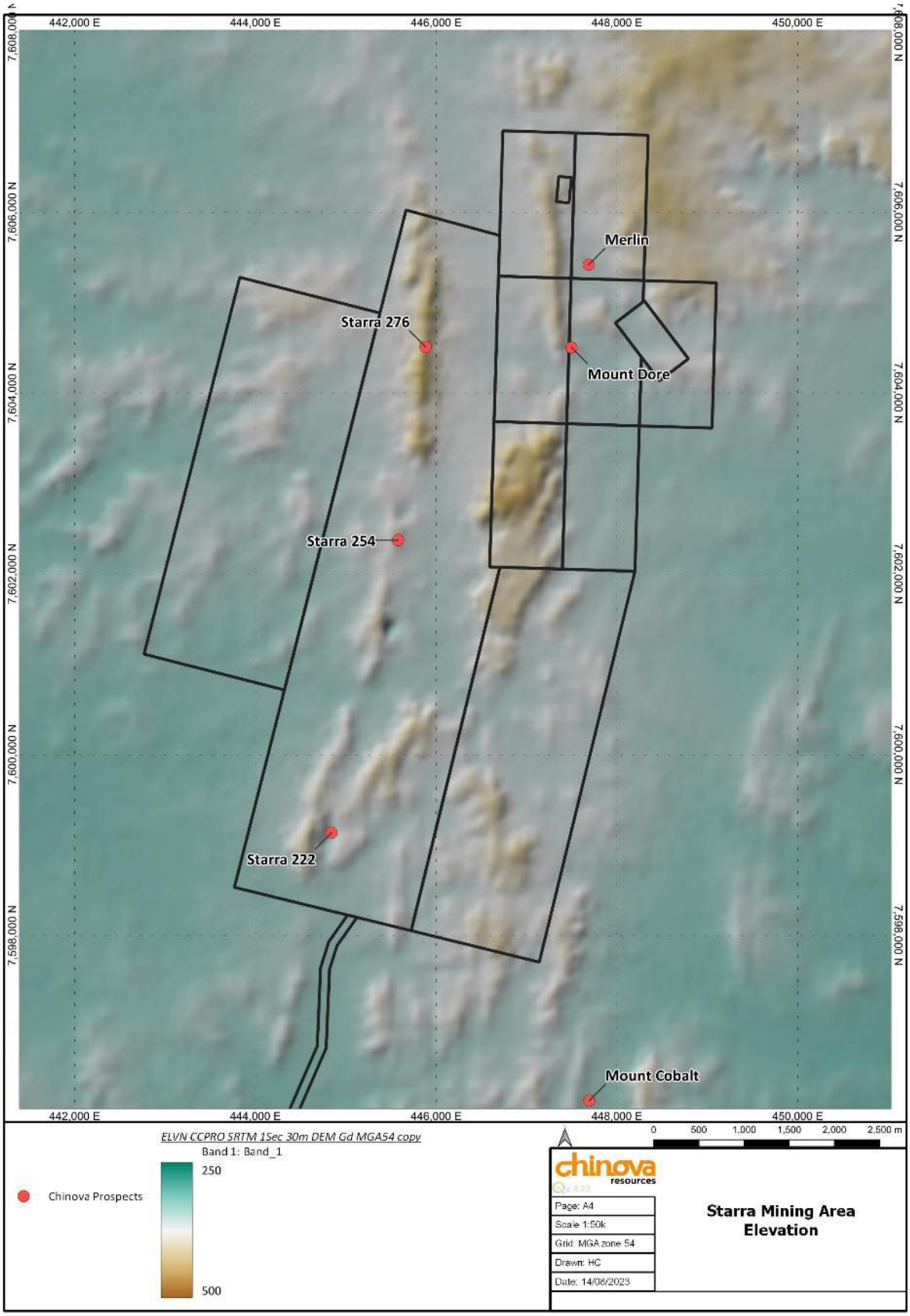


Figure 123: Starra Mining Area Elevation (mAHD)

10.1.3 Geological Setting

The Cloncurry Project is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite. The contact between these units is broadly described as unconformable; however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust.

The primary geologic unit of the Starra mines is the Staveley Formation, which largely consists of calc-silicate metasedimentary rocks. The Staveley Formation stratigraphically overlies the Gin Creek Granite and Double Crossing Metamorphics, which largely consists of metasediments, schists, and gneiss. Stratigraphically overlying the Staveley Formation is a silicified quartzite, known as the footwall quartzite, which forms a resistant ridge to the east of the Project area. To the east, the Kuridala Group consists primarily of sandstone, shale, slate, phyllite, and schist. At the north-eastern boundary of the Project, a thrusted contact forms the upper boundary between the Kuridala Group and the Mount Dore Granite.

At a mine scale. The ironstones within the Staveley Formation host the mineralisation. The ironstones are steeply dipping, sub-parallel units that form the prominent ridges. The copper-gold mineralisation is found within the western ironstone ridge. Mineralisation assemblages typically include hematite, gold, bornite, magnetite, chalcocite, chalcopyrite and anhydrite, with minor pyrite, as well as accessory calcite, sericite, and abundant chlorite.

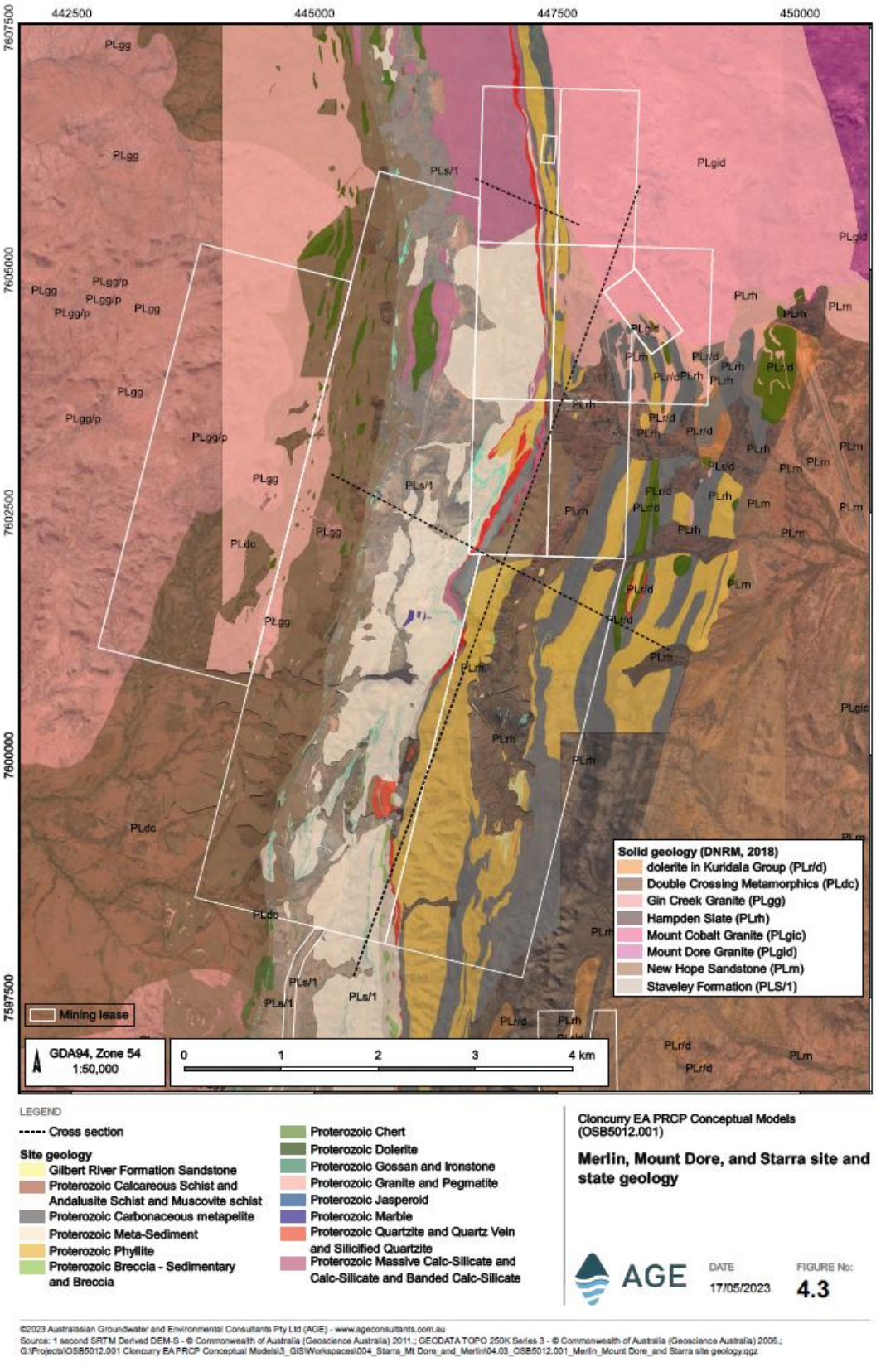


Figure 124: Starra Line Geology

10.1.4 Hydrology and fluvial networks

The Starra Line is located in the Lake Eyre drainage division within the Georgina Basin, Georgina River sub-basin. The Merlin, Mount Dore and Starra Line area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flows into Gin Creek approximately 7km to the west. Gin Creek flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia.

There are no listed environmental values and water quality objectives for the Lake Eyre region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has maintained a reference monitoring location at Starra since 1985 (BS01 – Pyramid). The monitoring location is located above Lake Wyche in an area that has not been impacted by mining activities. Summary of water quality data for the BS01-Pyramid monitoring location is provided in Table 125. In addition, Chinova undertakes regular monitoring of water storages and receiving environment (upstream and downstream) across the project area (Figure 125).

Table 125:Summary of water quality results for reference water site (BS01-Pyramid) for the Starra Line area

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	96	6.16	6.07	7.22	6.52	5.70
Electrical Conductivity (uS/cm)	99	34.98	28.00	70.40	48.00	19.00
Sulphates (mg/L)	98	4.54	3.55	10.15	6.00	2.00
Dissolved Aluminium (mg/L)	59	0.31	0.24	0.90	0.44	0.10
Dissolved Arsenic (mg/L)	67	0.0043	0.0030	0.0100	0.0030	0.0030
Dissolved Boron (mg/L)	58	0.0134	0.0075	0.0500	0.0150	0.0050
Dissolved Cadmium (mg/L)	59	0.0002	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	59	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Cobalt (mg/L)	59	0.0014	0.0010	0.0031	0.0010	0.0010
Dissolved Copper (mg/L)	94	0.0289	0.0105	0.0596	0.0500	0.0060
Fluoride (mg/L)	86	0.0580	0.0500	0.1000	0.0500	0.0500
Dissolved Iron (mg/L)	73	0.4578	0.2800	1.2400	0.5400	0.1100
Dissolved Lead (mg/L)	95	0.0162	0.0010	0.1132	0.0050	0.0010
Dissolved Manganese (mg/L)	62	0.0599	0.0210	0.2562	0.0536	0.0050
Dissolved Mercury (mg/L)	58	0.0004	0.0001	0.0001	0.0001	0.0001
Dissolved Molybdenum (mg/L)	52	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Nickel (mg/L)	59	0.0011	0.0010	0.0020	0.0010	0.0010

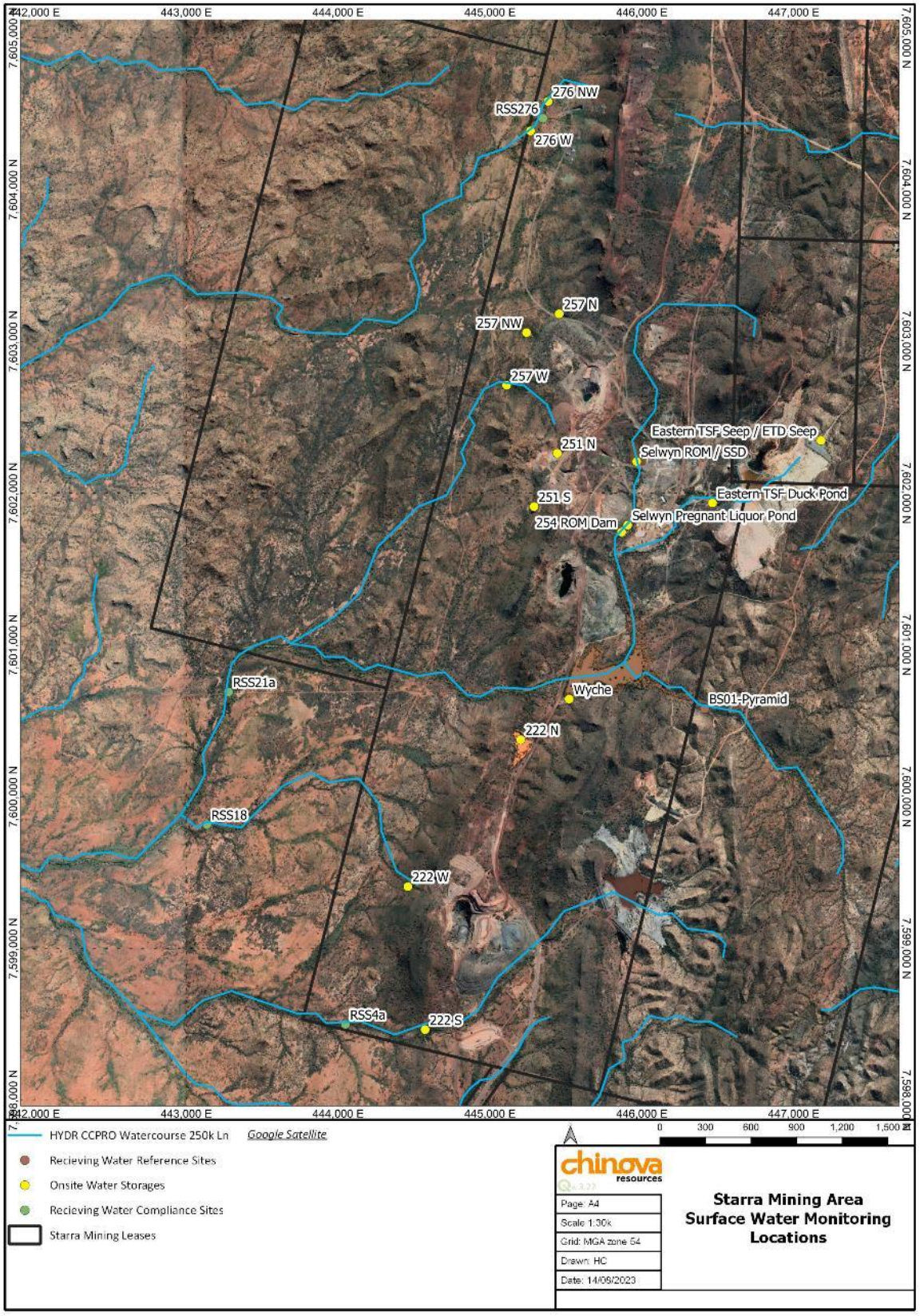


Figure 125: Starra Mining Surface Water Monitoring Sites

10.1.5 Groundwater

Groundwater conditions at Starra are described in detail in AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations.

10.1.5.1 Hydrostratigraphy

The hydrostratigraphic unit that hosts the Starra deposits is the Staveley Formation. Major infrastructure including ETSF and STSF staddle both the Stavely Formation and Kuridala Group. The Starra 254 WRE overlays the Double Crossing Metamorphics. Younger cover units exist in drainage areas.

Kuridala Group

Most groundwater at the site is likely hosted in the metasediments and associated Footwall Quartzite of the Kuridala Group. The Kuridala Group hosts the Mount Dore Aquifer and is the most productive hydrostratigraphic unit in the region (RLA, 2011). The Mount Dore Aquifer is considered a confined and hydraulically isolated, fractured-rock aquifer (Rockwater, 2011). Groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing. Higher fracture density and, hence permeability, are associated with network of bedding-parallel and cross cutting shears and the presence of albite and silica alteration. In particular, the silica alteration produces rocks that tend to fracture brittlely; a key manifestation of this is the Footwall Quartzite. The intensity of this alteration is associated with proximity to the Mount Dore Granite, and it is assumed that this alteration decreases to the south.

Stavely Formation

The Staveley Formation crops out over most of the Starra Line area. In general, the Staveley Formation is understood to have considerably lower permeability than the Kuridala Group. As with the Kuridala Group, the upper delaminated zones of the Staveley Formation can also host fissures in the open bedding planes that can contain water, although this is typically in-filled by secondary deposition, resulting in permeability that is generally low. Increased permeability has been reported in highly fractured zones of the Staveley Formation associated with faults (RPS, 2011), but apart from these zones and the ironstones discussed below, this unit is otherwise considered competent and of low permeability (Rockwater, 2010).

Fracturing and dissolution in the ironstone zones within the Staveley Formation creates localised zones of higher permeability (RLA, 2011). These ironstones are also associated with the mineralisation of the Starra Line Deposits. As such, it is reported (RLA, 2011) that the ironstones may create small, discrete zones of higher permeability. The ironstones are generally isolated lenses, although there might be some hydraulic connectivity between lenses via thin ironstone bands (RLA, 2011).

Mount Dore Granite, Gin Creek Granite, and Double Crossing Metamorphics

Granitic sequences that are associated with the William-Naraku Batholith are found throughout the region. These units have open joints and fractures that allow for groundwater flow, forming fractured rock aquifers (RLA, 2011). The Mount Dore Granite is located east of the Merlin/Mount Dore area and forms the eastern boundary of the Mount Dore Aquifer. The Gin Creek Granite and the associated Double Crossing Metamorphics are located west of the Starra area. The contact between the Staveley Formation and the Gin Creek Granite/Double Crossing Metamorphics is also a faulted (and potentially brecciated); however, the low permeability of the Staveley Formation likely limits movement of water across this contact (AGE, 2021a).

Cover Units

The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. Other minor cover units are mapped in and around the site. These units have variable primary porosity, which is

dependent on the size and properties of the comprising grains and the degree of cementation and compaction of these units. Groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated.

10.1.5.2 Groundwater Levels

Routine groundwater level monitoring occurs across the Starra project. Table 126 provides details of the groundwater monitoring network and locations of the bores are shown in Figure 126. The monitoring network in the Starra area is generally organised around the main potential contaminant sources including Eastern and Southern TSF.

Water levels in the Starra area are characterised temporally in hydrographs and spatially in potentiometric maps (Figure 127 and Figure 128). Groundwater is present at varying depths below surface across the Starra area, but the depth to groundwater is generally >20 mBGL. The main groundwater level features are groundwater mounding associated with the Eastern TSF and groundwater level drawdown associated with mining of the Starra line. The area around Eastern TSF is characterised by the highest potentiometric surfaces. The mounding associated with the Eastern TSF is contiguous across the shallow contact between the Staveley Formation and the Kuridala Group. Within the Kuridala Group, a potentiometric surface of approximately 325 mAHD is located around MDWB12/MDWB12a. This potentiometric surface forms a groundwater pressure head divide between the Merlin borefield and the area of the Starra line, defining the southern extent of the Mount Dore Aquifer.

Historical mining between the late 1980's to 2000 resulted in a cone of depression around Starra 222 and Starra 251 that is still evident in 2021 potentiometric mapping (Figure 129). A second deep (<50 mAHD) cone of depressurisation is present at Starra 276 associated with dewatering between 2012 and 2014. More recently dewatering at Starra 254 and Starra 222 has occurred as part of the EML project.

Table 126: Location of groundwater monitoring bores in the Starra Area

Bore	Easting	Northing	Screen interval (m)	Elevation of (mAHD)	Screen stratigraphy	Current status
MB2a	447370	7602595	20-40	356.36	Kuridala Group	Compliance
MB3	446417	7601998	28-40	357.41	Staveley Formation	Compliance
MB4	446316	7601957	28-40	354.13	Staveley Formation	Compliance
MB5	446327	7601594	28-40	358.98	Staveley Formation	Compliance
MB6	445840	7601551	26-38	347.3	Staveley Formation	Compliance
MB7	446482	7600488	30-50#	351.8	Kuridala Group	Compliance
MB8	446953	7601276	20–40	363.9	Kuridala Group	Compliance
MB9	447277	7601973	20–40	363.9	Kuridala Group	Compliance
MB10	447618	7603099	15–30	354.8	Kuridala Group	Compliance

MB11	444848	7601863	16-28	345	Gin Creek Granite	Compliance
MB12	444825	7602377	33-42	350.9	Double Crossing Metamorphics	Compliance
MB244	445577	7601295	32.5-44.5	357	Staveley Formation	Compliance
MDHLMB5	446461	7604315	3.5-5	366	Staveley Formation	Compliance
MDHLMB7	446260	7603158	3.5-5	369.8	Staveley Formation	Compliance
MDHLMB8	446506	7604445	24-30	363.8	Staveley Formation	Compliance
MDHLMB9	446244	7603049	24-30	370.9	Staveley Formation	Compliance
MDWB12a	448477	7603235	22-60	339.74	Kuridala Group	Compliance
STDMB1	445655	7599272	28-40	351.83	Staveley Formation	Compliance
STDMB2	445801	7598973	28-40	358.94	Kuridala Group	Compliance
STDMB3	446205	7599936	28-40	361.46	Kuridala Group	Compliance
STDMB5	445683	7599270	75-90	355.1	Staveley Formation	Compliance
Mort River	452677	7600388	4.5-62	319.11	Kuridala Group	Interpretation
MDWB10	447716	7605428	64-190	358.356	Mount Dore Granite, Kuridala Group	Compliance
WB27	446698	7606763	Unknown	361.17	Unknown	not on EA
MDWB27	447453	7605008	Unknown	361.169	Unknown	not on EA
MDWB16	447371	7607946	Unknown	359.288	Unknown	not on EA

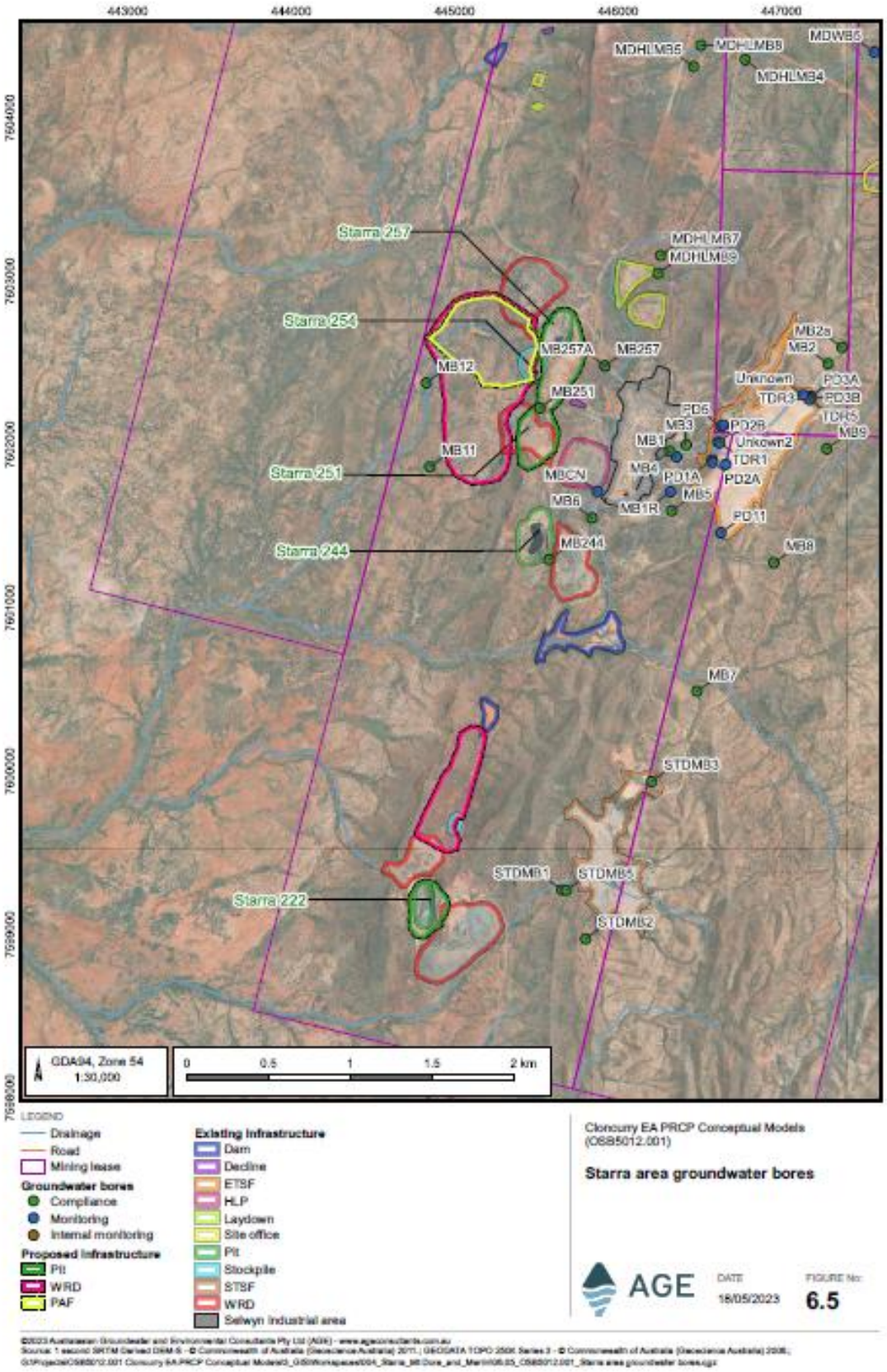


Figure 126: Groundwater bore locations

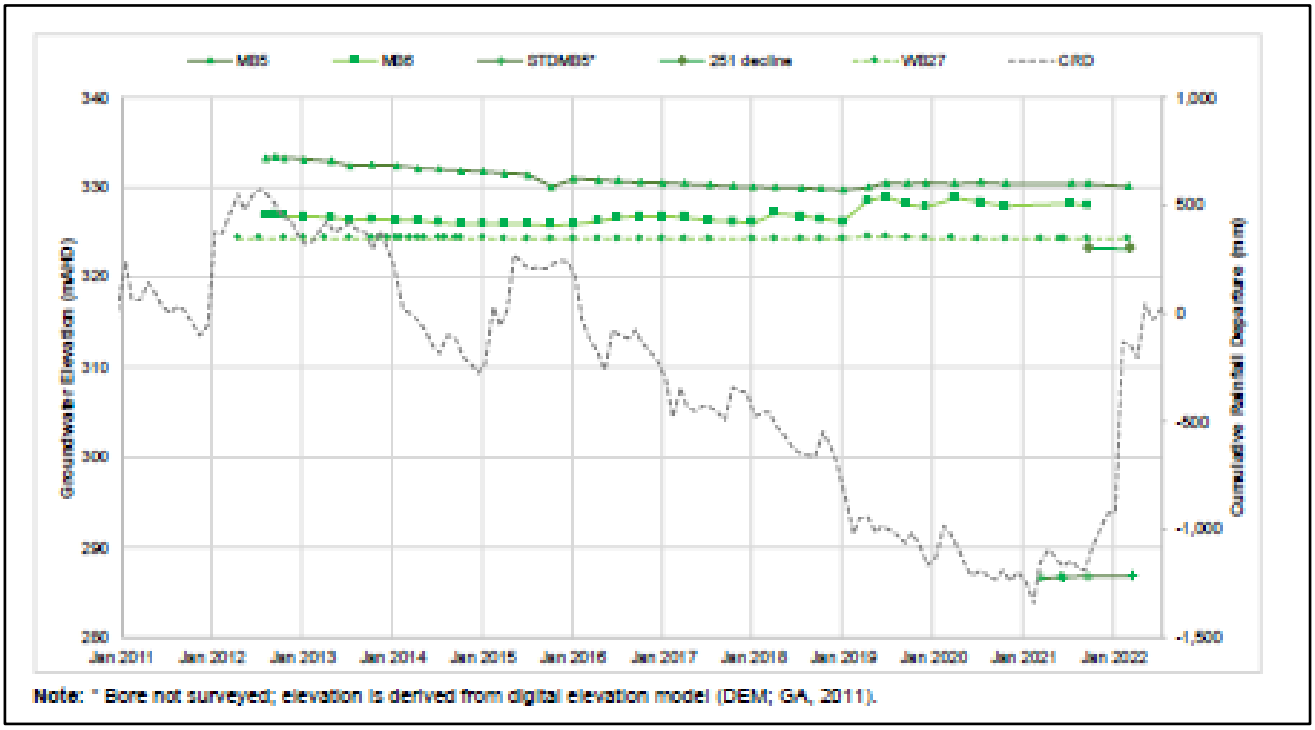


Figure 127: Hydrographs of representative bores in the Stavely Formation

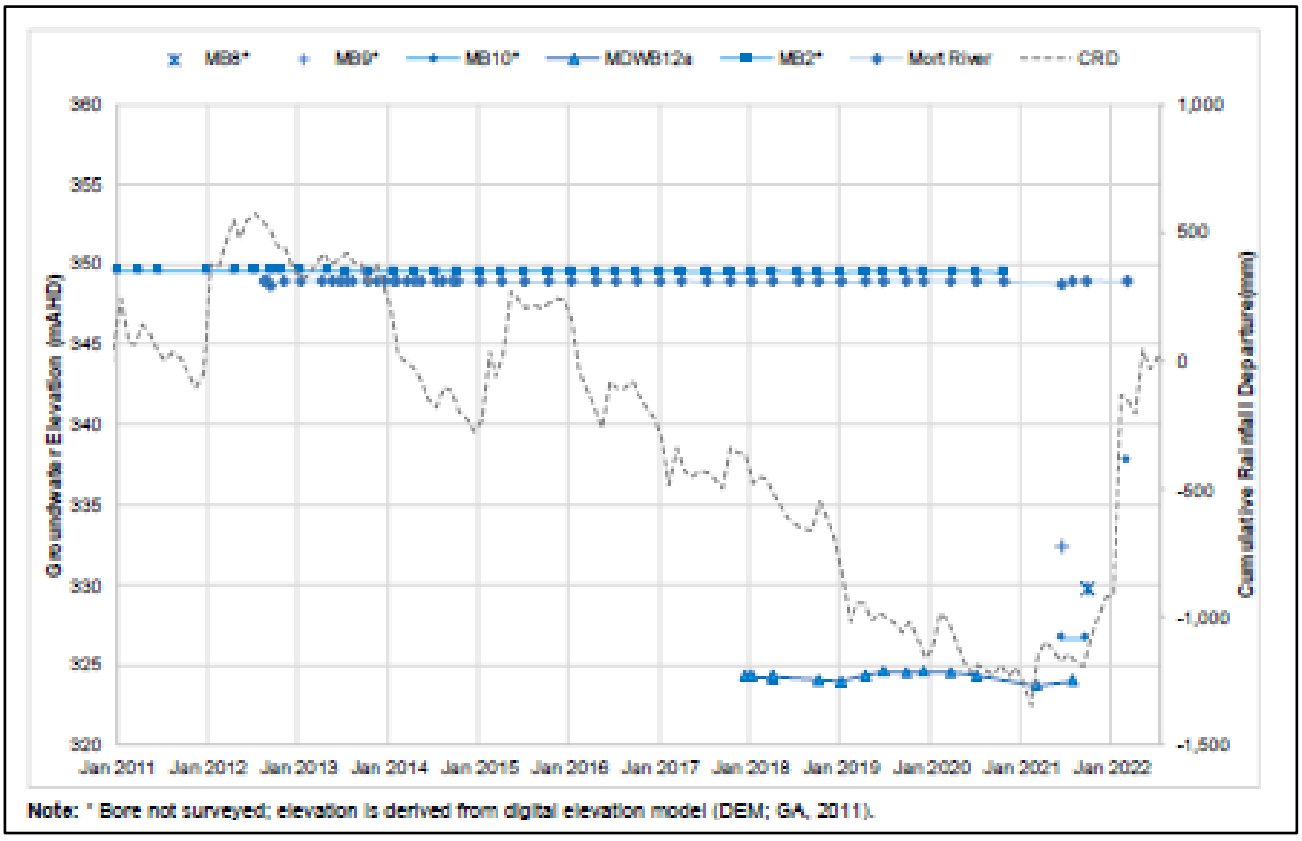


Figure 128: Hydrographs of representative bores in the Kuridala Group

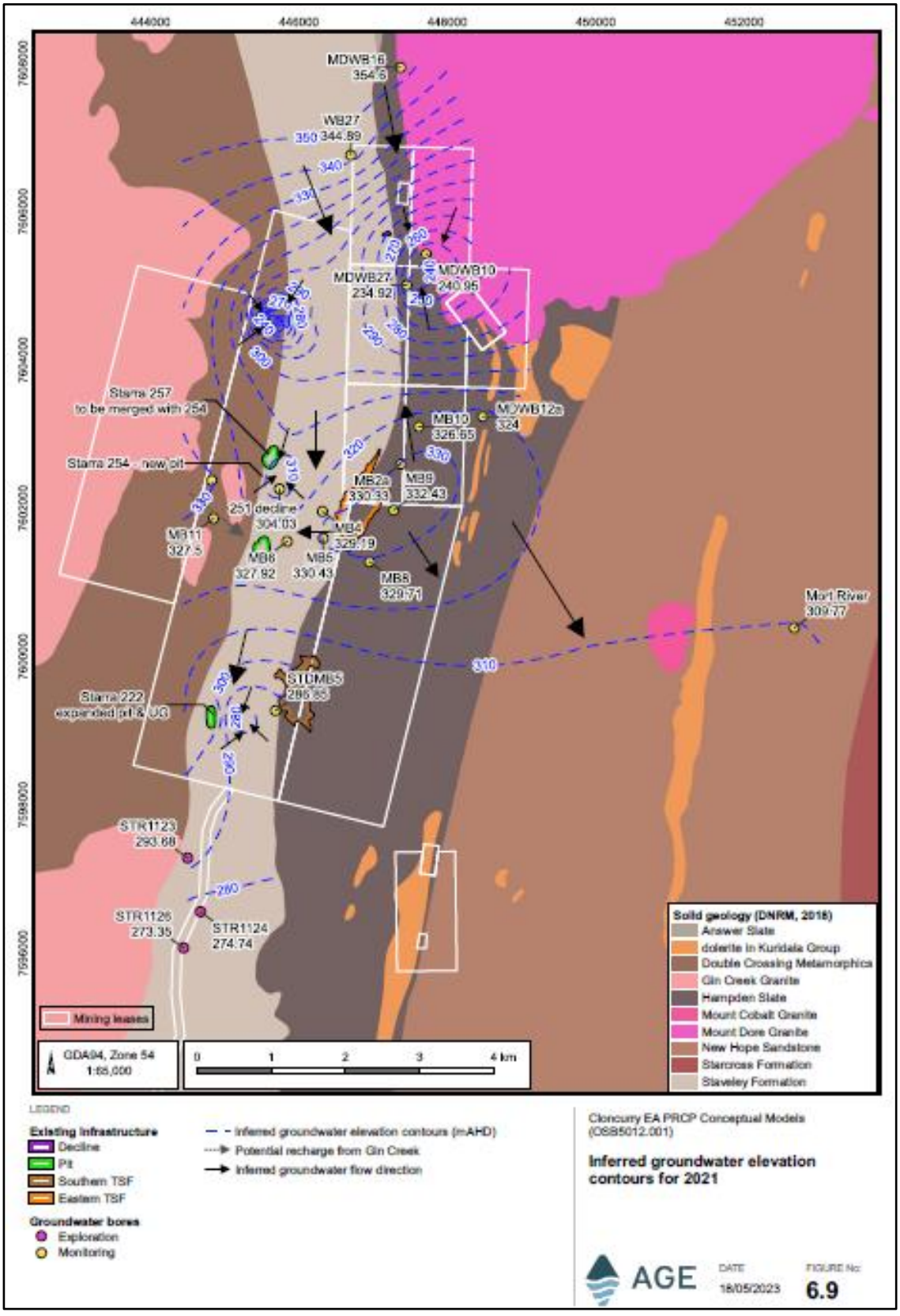


Figure 129: Groundwater levels across Starra (2021)

10.1.5.3 Groundwater Quality

Groundwater quality at Starra varies spatially and is broadly circum-neutral with salinity ranging from fresh to saline (EC >750 µS/cm). The heterogeneity of groundwater chemistry at the Project reflects the presence of mineralised zones within complex geologic structures that can hold and transmit water. Mineralised areas are associated with higher concentrations of sulfate and dissolved metals. The anion composition is generally either mixed or dominated by sulfate or chloride; a few bores (e.g. MLMB1 and MDWB10) are carbonate/bicarbonate dominated (Figure 130)Figure 130: Piper diagram of groundwater monitoring bores (AGE, 2022). This variability in composition is due to variable degrees of water-rock interactions across geologically diverse site, with sulfate being more dominant in mineralised areas.

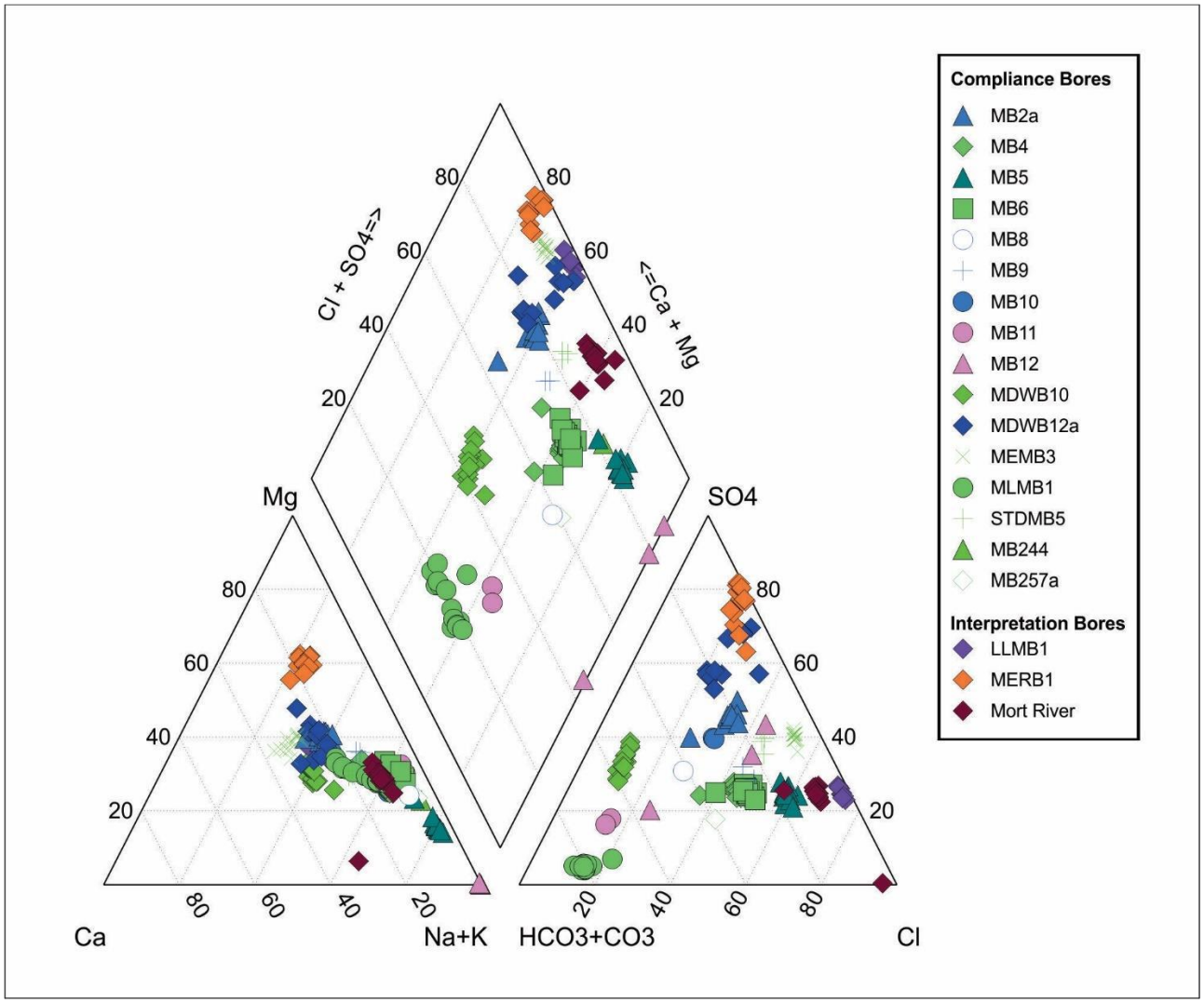


Figure 130: Piper diagram of groundwater monitoring bores (AGE, 2022)

AGE undertook a detailed review of groundwater trends in 2022. The review found that groundwater quality over time has been relatively stable for the vast majority of parameters and at the vast majority of bores.

The only significant trend identified by AGE (2022) is associated with potential historical seepage from Eastern TSF. This trend is limited to a few toxicants (chromium, copper, and possibly molybdenum) and to a few bores (MB4, MB5, and MB6) (Figure 131 to Figure 134). The data shows an increasing solute concentration in these bores between 2014 and 2017. Despite, indications of historical seepage there is a

low potential for environmental harm, due to both the absence of nearby receptors and the generally low (below or well below default WOQ) concentrations of these solutes.

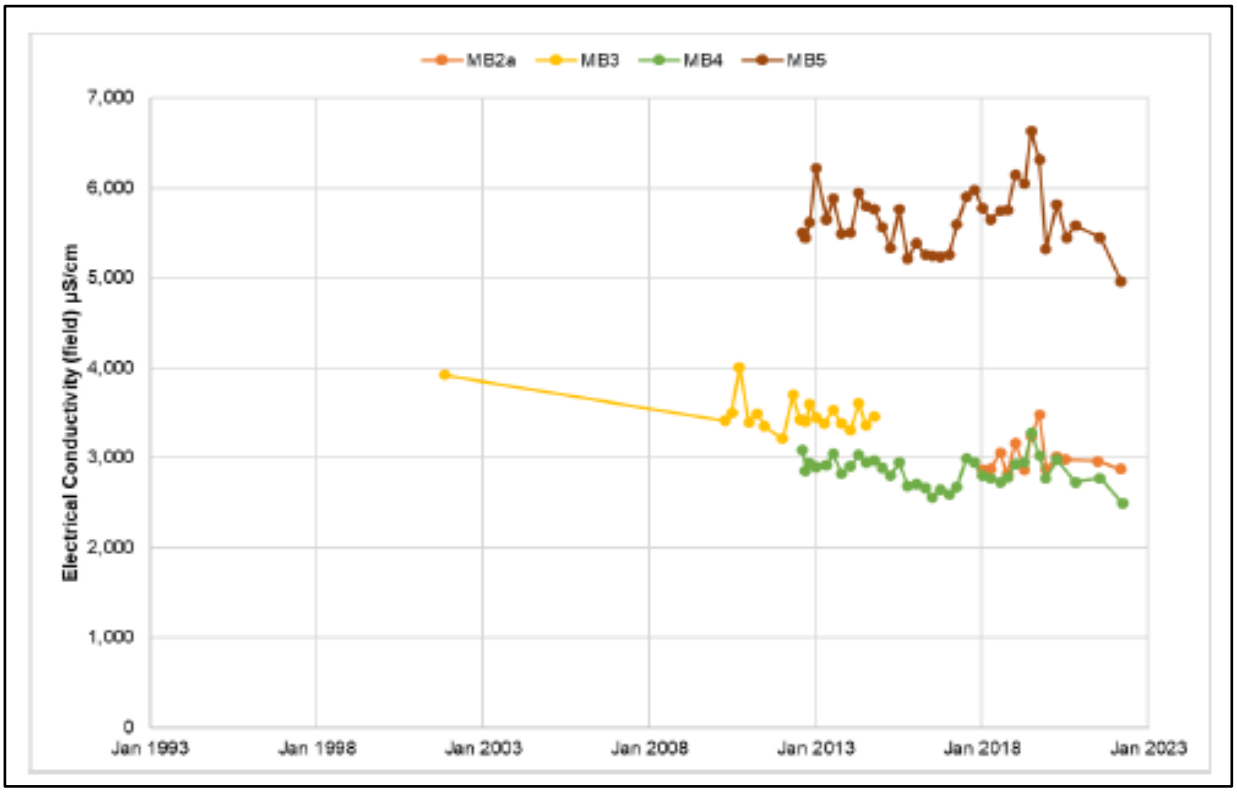


Figure 131: Field EC for bore near Eastern TSF

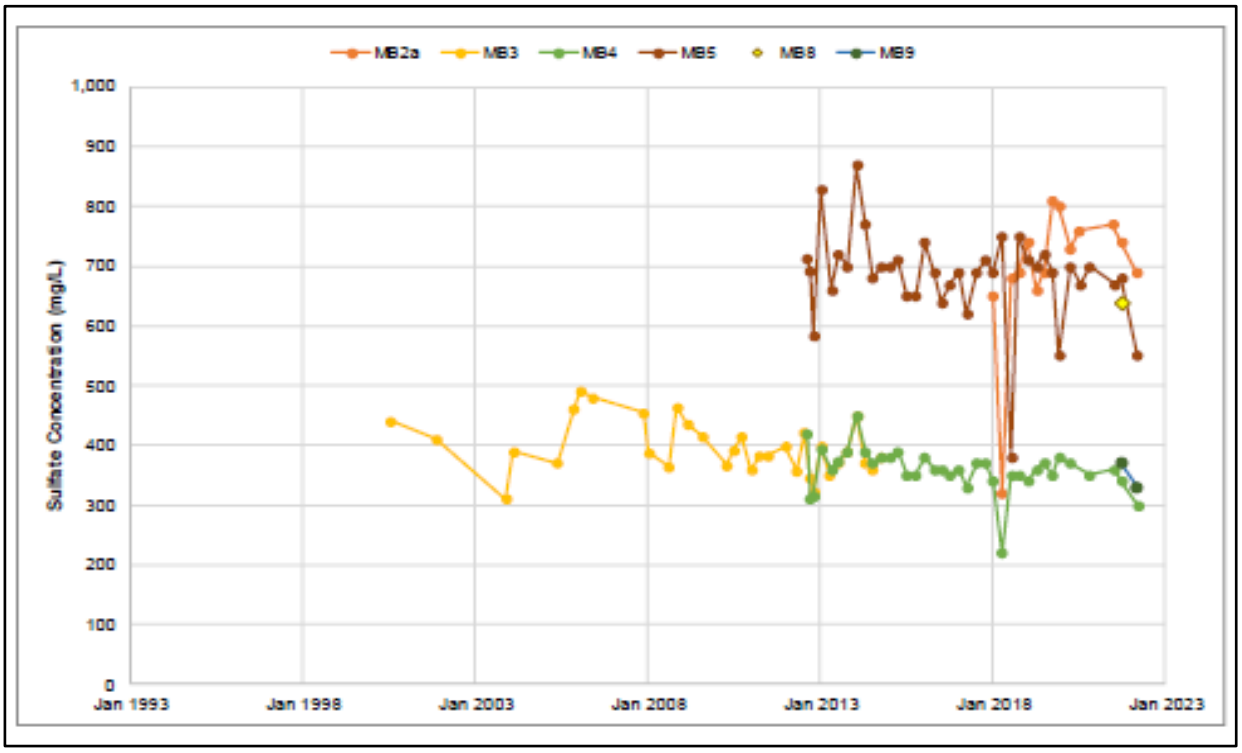


Figure 132: Concentration of Sulphate for bore near Eastern TSF

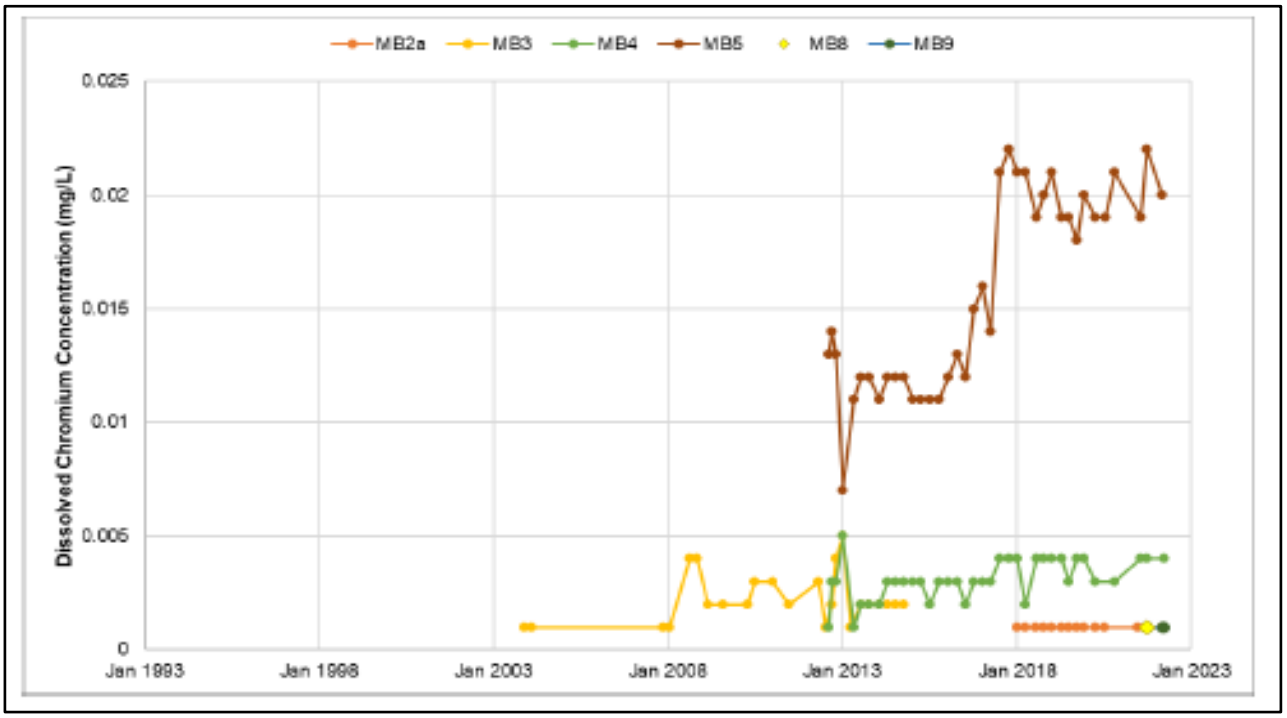


Figure 133: Concentration of Chromium for bore near Eastern TSF

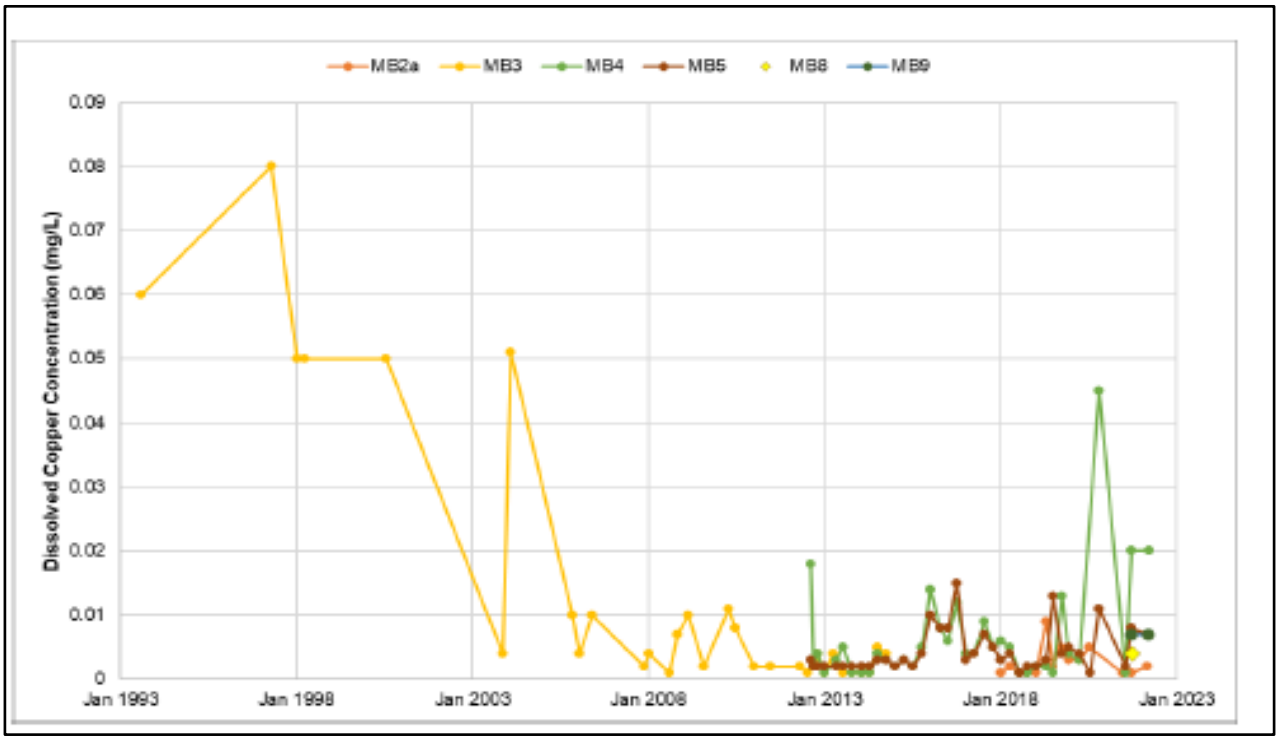


Figure 134: Concentration of Copper for bore near Eastern TSF

10.1.5.4 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater in the site area is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions (AGE, 2025a). The bulk component of this recharge is rainfall recharge, with infiltration below the ephemeral streams being a smaller volume. Conceptually, water from streams or bank storage that reaches the water table and becomes recharge is, by definition, groundwater-surface water interaction. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months: January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated recharge rate was calculated using a chloride mass balance method (AGE, 2021a) to be between 3% and 6% of annual rainfall. This equates to approximately 10 mm to 20 mm of recharge annually, based on a long-term average regional rainfall of 345 mm/yr. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

Prior to mine development, it was likely that lateral inflow to the area occurred from north to south. However, since the development of the Starra mines and dewatering at Merlin, several cones of depression have developed in the potentiometric surface. The initial drawdown and subsequent recovery of these cones of depression has occurred at deep and shallow levels of the sequence, due to development, abandonment, and occasional redevelopment of underground workings.

Due to the depth to water generally being >30 mBGL, there is likely minimal discharge via evapotranspiration. Across the area, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral, and the water table does not intersect the deepest points of creek incision. According to the Queensland Wetlands Database there are no springs in either in the site area or surrounds (AGE, 2025a). This observation matches the conceptualisation described above of negligible groundwater discharge to natural surface water features.

10.1.5.5 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the relevant units present in the area are presented below and summarised in Table 127.

The unmineralized Staveley Formation is characterised by very low permeability. Recent hydrologic testing of bores MB257 and MB257a (located adjacent to each other but screened at different depths) support the understanding, at depth, the Staveley Formation is generally impermeable (hydraulic conductivity values <0.1 m/day) but may delaminate and become more permeable near the surface.

Hydraulic conductivity estimates from bores constructed in the Gin Creek Granite and Double Crossing Metamorphics vary from 0.08 m/day to 0.91 m/day and the bore logs of these bores suggest fracturing in their screened lithologies. These bores are west of the Starra areas, near the contact with the Staveley Formation.

Properties for the Kuridala Group are sourced from a combination of rising and falling head tests and historic reports which used pumping tests. The hydraulic properties of the Staveley Formation are estimated for the site using rising and falling head tests in bores locate in the area. The hydraulic properties of crystalline rocks are inferred from modelling studies and from heads tests conducted in the Gin Creek Granite and Double Crossing Metamorphics. Published values for igneous and metamorphic rocks, and shale are also presented for comparison.

Estimates of hydraulic conductivity from investigations for the Kuridala Group range from 1 x 10-6 m/day to 34 m/day; with many of these values coming from the Mount Dore Aquifer. The variability in the range of

hydraulic properties represents variable degrees of fracturing within the lithologically diverse Kuridala Group. Hydraulic properties were also observed during pumping from the Merlin borefield.

Table 127: Hydraulic Properties

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Elliott (Likely MEWB-93-8 and MEWB-93-9)	Kuridala Group	-	-	-	50 to 250	4.39 to 12.82	If thickness = 100 m, then K = 0.04 to 0.1 m/day If thickness = 10 m thick, then K = 0.4 to 1.2 m/day
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1×10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384x10-5
Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1
Mount Dore (MB10)	Kuridala Group	Unfractured	45.7 - 51	-	-		2.64384x10-5
Mount Dore (MB2	Kuridala Group	-	20-41	-	-	-	0.04 to 0. 18
Mount Dore (MB257)	Staveley Formation	Unfractured	25.5 - 40.5	0.0125			0.185 to 0.243
Mount Dore (MB257a)	Staveley Formation	Unfractured	99-135	~0.001			<0.1
Starra (MB244)	Staveley Formation	Unfractured	32.5 - 44.5	0.008			0.07 to 0.123
STDMB5	Staveley Formation	Unfractured	75 - 90	0.105			
Mount Dore Granite	Mount Dore Granite	Fractured					<0.01

(Mount Dore Aquifer							~ 0.004
MB11	Gin Creek Granite	Fractured	33 - 42	0.17			0.17 to 0.91
MB12	Gin Creek Granite/Double Crossing Metamorphics	Fractured	18 - 27	0.17			0.08 to 0.13

10.1.5.6 Environmental Values

The applicable environmental values for the Starra site have been defined by AGE (2023) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there are high potential mapped terrestrial GDEs within the Starra area. There are, also areas of mapped moderate potential GDE's within Merlin area; and more broadly high potential GDE areas associated with the Mort River to east-southeast of the project area.

The presence of terrestrial GDE's around Starra is unlikely because groundwater is >50 mBGL. However, the areas mapped as high potential terrestrial GDEs along the Mort River correlate with BVG 16a vegetation which is an open forest or woodland containing, among other species, red river gums. As the river red gum relies on sub-soil moisture, its presence strongly supports the existence of terrestrial GDEs along Mort River.

For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Starra area, as mapped by the Queensland Wetland Database (DSITI, 2015). As a precautionary approach, potential aquatic GDEs are considered potentially present in area where they are mapped along the Mort River; however, these areas are considered too distal (>5 km) for aquatic GDEs to be considered potential receptors.

In summary, AGE (2023) found a potential for aquatic and terrestrial GDEs to be present along the alignments of the Mort River and as such represent potential receptors.

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Merlin, but groundwater is used for livestock (beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius resulted in the identification of four bores (Table 128). All four bores are now recorded as "Abandoned and Destroyed", and none of their records show their original purposes. Given the regional context, it is likely that livestock watering is an applicable groundwater value.

Table 128: Registered bores with 10 km

Bore ID	Easting	Northing	Bore depth (mBGL)	Screened interval (mBGL)	Ground RL (mAHD)	Screened Lithology	Bore Status
RN2059	451798	7618398	NR	NR	NR	NR	Abandoned and destroyed

RN7536	440188	7615284	46.6	NR	NR	Staveley Formation	Abandoned and destroyed
RN7537	440966	7614795	30.8	NR	NR	Staveley Formation	Abandoned and destroyed
RN7538	443595	7611330	NR	NR	NR	NR	Abandoned and destroyed

Industrial Use

The main industrial user of groundwater in the region is Chinova itself. Chinova extracts water from the Mount Dore aquifer for use across the area including for dust suppression and raw water for the RO plant.

10.1.6 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the area is 'Fz29' (Australian Soil Resource Information System, 2013) (Figure 135). Soil type Fz29 is associated steep stony hills and low ranges on highly folded quartzites, shales, and slates with extensive areas of rock exposures.

The Starra area is mapped as the Kuridala land system (Perry, 1954). The Kuridala system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered the land systems unsuited for grazing (or virtually so) because it is rugged, stony, or barren.

Soils have previously been described at Starra by Lewis (1987) as predominantly Skeletal, Cockatoo and Manbulloo. Skeletal soils are shallow soils, less than 25 cm deep, frequently stony and lacking profile differentiation, normally occurring on the steeper slopes of the landscape. The Manbulloo soils have fine sandy profiles, light brown to reddish brown colour; massive structure and generally neutral to slightly acidic. Manbulloo soils are associated with stream channels and associated narrow alluvial areas. Cockatoo soils have coarse sandy profiles, variable colour from red to yellow and light grey with either single grain or massive structure. Cockatoo soils are generally associated with lower slope areas.

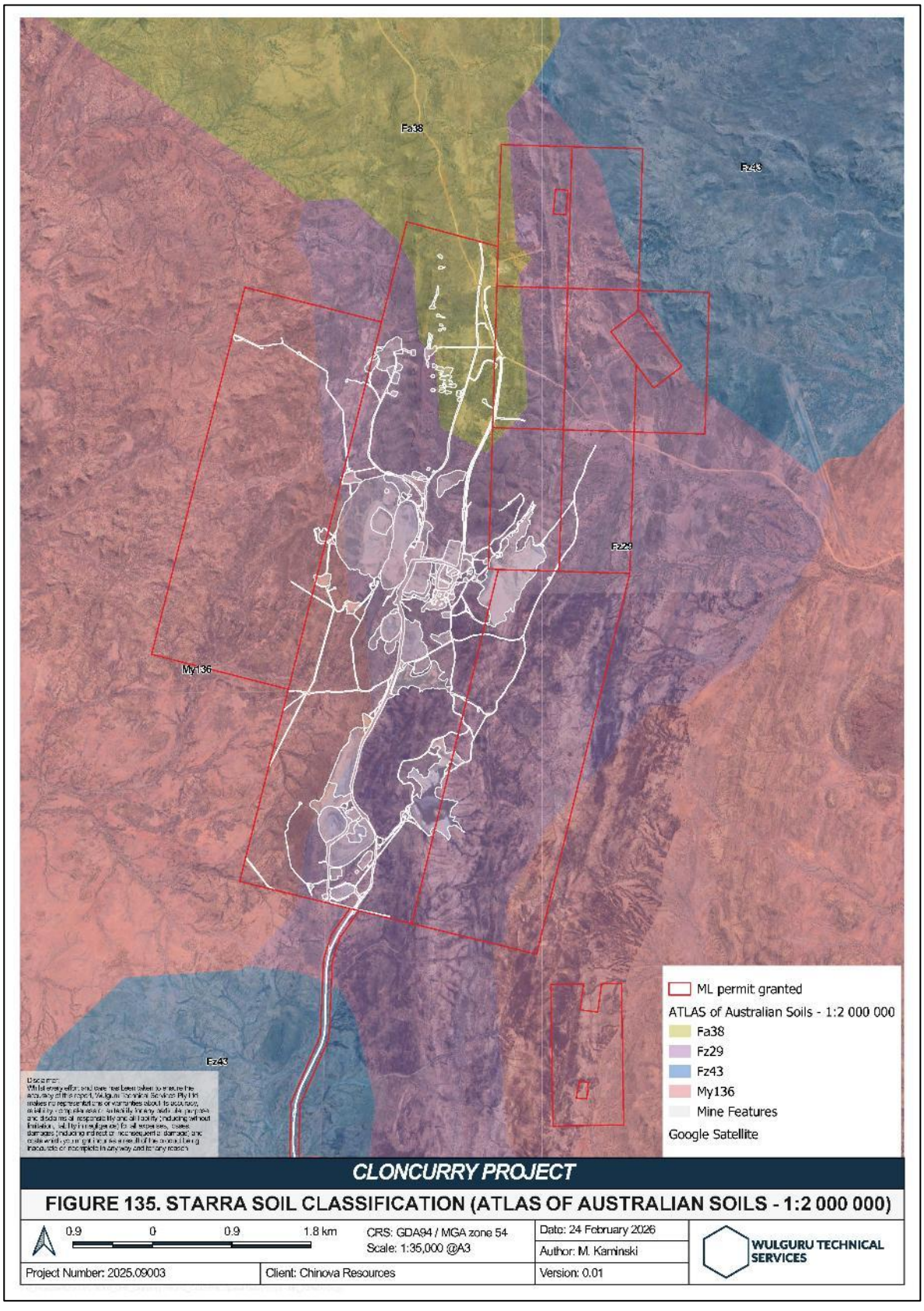


Figure 135: Starra Soil Classification (Atlas of Australian Soils – 1:2 000 000)

10.1.7 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the project area (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

10.1.8 Vegetation Communities and Ecological Data

Ground truthing surveys (Place, 2012) have identified that the dominant broad vegetation group at Starra consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer (BVG 19).

A total of nine regional ecosystems (RE) have been identified within the Starra area (Table 129). All nine have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains).

One regional ecosystem has a Biodiversity status of Endangered, being RE 1.3.7 - *Eucalyptus camaldulensis* woodland on channels and levees. RE 1.3.7 occurs over a small area on the southern section of the Starra area and corresponds with BVG 16. These areas are considered to have high ecological value due to presence of habitat for hollow dependent species, and migratory waterbirds, and providing local and regional connectivity. The RE is considered Endangered due to its regional degradation by high grazing pressure. Direct impacts are associated with trampling, while secondary impacts are associated with intrusion of exotic pasture species, principally buffel grass (*Cenchrus ciliaris*).

Previous baseline ecological reports for the Cloncurry Project Area have (Place, 2012) assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 129: Regional ecosystems within the Project Area

BVG	RE	RE description	Biodiversity Status	VMA Status
16	1.3.7	Eucalyptus camaldulensis woodland on channels and levees	Endangered	Least Concern
19	1.10.4	Eucalyptus leucophloia low open woodland on sandstone plateaus	No concern	Least Concern

	1.11.2	Eucalyptus leucophloia low open woodland	No concern	Least Concern
	1.11.3	Corymbia terminalis and/or Eucalyptus leucophylla low open woodland on metamorphics	No concern	Least Concern
	1.12.3	Eucalyptus leucophylla and/or Corymbia terminalis +/- C. aparrerinja low open woodland on igneous rocks	No concern	Least Concern
	1.3.13	Eucalyptus leucophylla woodland on levees and minor drainage lines	No concern	Least Concern
	1.5.4	Eucalyptus leucophylla and/or Corymbia terminalis low open woodland on red earths	No concern	Least Concern
	1.5.6	Atalaya hemiglauca, Ventilago viminalis, Grevillea striata low open woodland on red earth plains	No concern	Least Concern
26	1.5.16	Acacia cambagei low woodlands on red earths	No concern	Least Concern

10.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 130).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 130: Conservation significant species recorded within the Project Area

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

10.1.10 Pre-Mining Land Use

Small scale mining of predominantly small shafts has occurred in the Starra, Merlin and Mount Dore areas since the early 1900's. Modern mining commenced in 1988 by Arimco Mining via open cut mining of oxide

gold deposits, and subsequently underground mining producing copper-gold concentrate from mainly sulphide ore. Grazing of native vegetation by beef cattle is a past and current land use across the entire project area.

10.2 Post Mining Land Use

10.2.1 Rehabilitation Planning and Objectives

Determining appropriate PMLU's is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

a) The land is safe and structurally stable; and
b) There is no environmental harm being caused by anything on or in the land; and
c) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives that must be incorporated into the PMLU decision-making process (condition E3):

a) Safe for humans and wildlife
b) Non-polluting
c) Stable
d) Able to sustain an agreed post-mining land use
e) Revegetated with species endemic to the area with no declared pest species; and
f) Compliant with all conditions of the environmental authority.

Condition E3 of EPML00701913 excludes Starra 244 pit, Starra 254 pit and Starra 222 pit from meeting the above rehabilitation objectives. Instead, Schedule E – Table E1 specifies the rehabilitation requirements of:

- 244 Pit as 'water not fit for use' and 'use as storage of tailings and PAF waste rock'
- 254 Pit as 'water not fit for use' and 'use as storage of tailings and PAF waste rock'
- 222 Pit as 'water not fit for use'.

Additionally, Chinova note that PMLUs were to be nominated in a PMLUP, the recent of which being the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, Chinova have developed rehabilitation objectives for land disturbed by mining activities (Table 131) based on expert reports including AGE (2023), ATCW (2023) and NGH (2023). In addition, the PRC schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 131: Starra Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)
		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)
	Erosion	Mine waste is not exposed by erosion processes. Erosion does not impact the PMLU.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum) No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall
	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196

	Retained surface water storages (permanent infrastructure)	Water quality is suitable for use as stock water for beef cattle	Direct measurement of surface water Meets WQO for livestock watering (beef cattle)
Supports a viable vegetation community	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved PRCP Schedule, detailed within Table 189.
Non-Use Management Areas	Sufficient Improvement	Minimise risk to the surrounding environment	Void water balance modelling Direct measurement of surface water levels Direct measurement of groundwater and pit water quality.

10.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

a) Is viable, having regard to the use of land in the surrounding region, and
b) Satisfies at least one of the following -
    i. The use is consistent with how the land was used before mining activity was carried out on the land
    ii. The use is consistent with a development approval relating to the land
    iii. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    iv. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The proposed PMLUs and rehabilitation areas for Starra are presented in Table 132 and illustrated in Figure 136, with the final proposed Starra PMLUs shown in

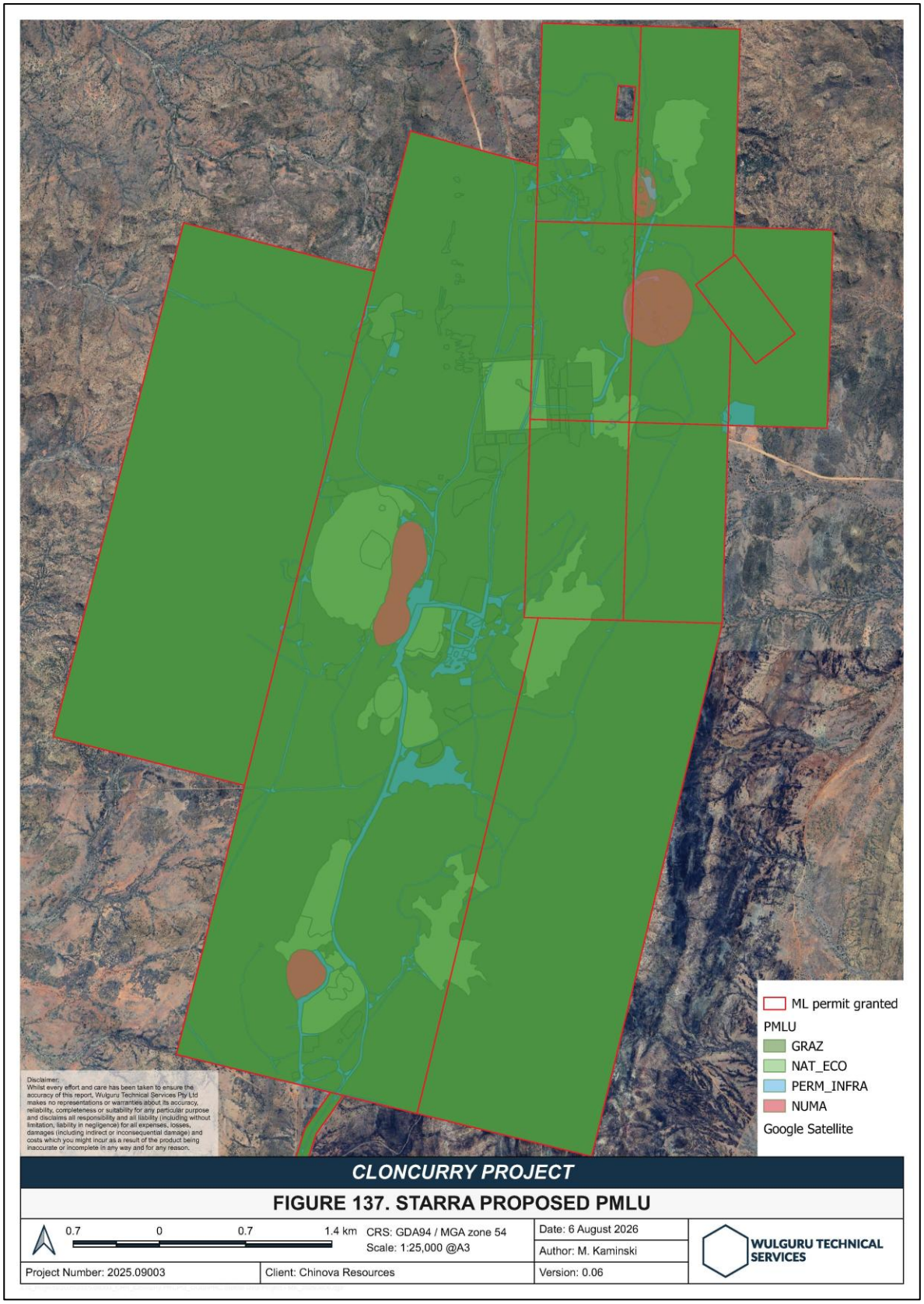


Figure 137. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area

and PMLUs illustrated within Figure 136 and

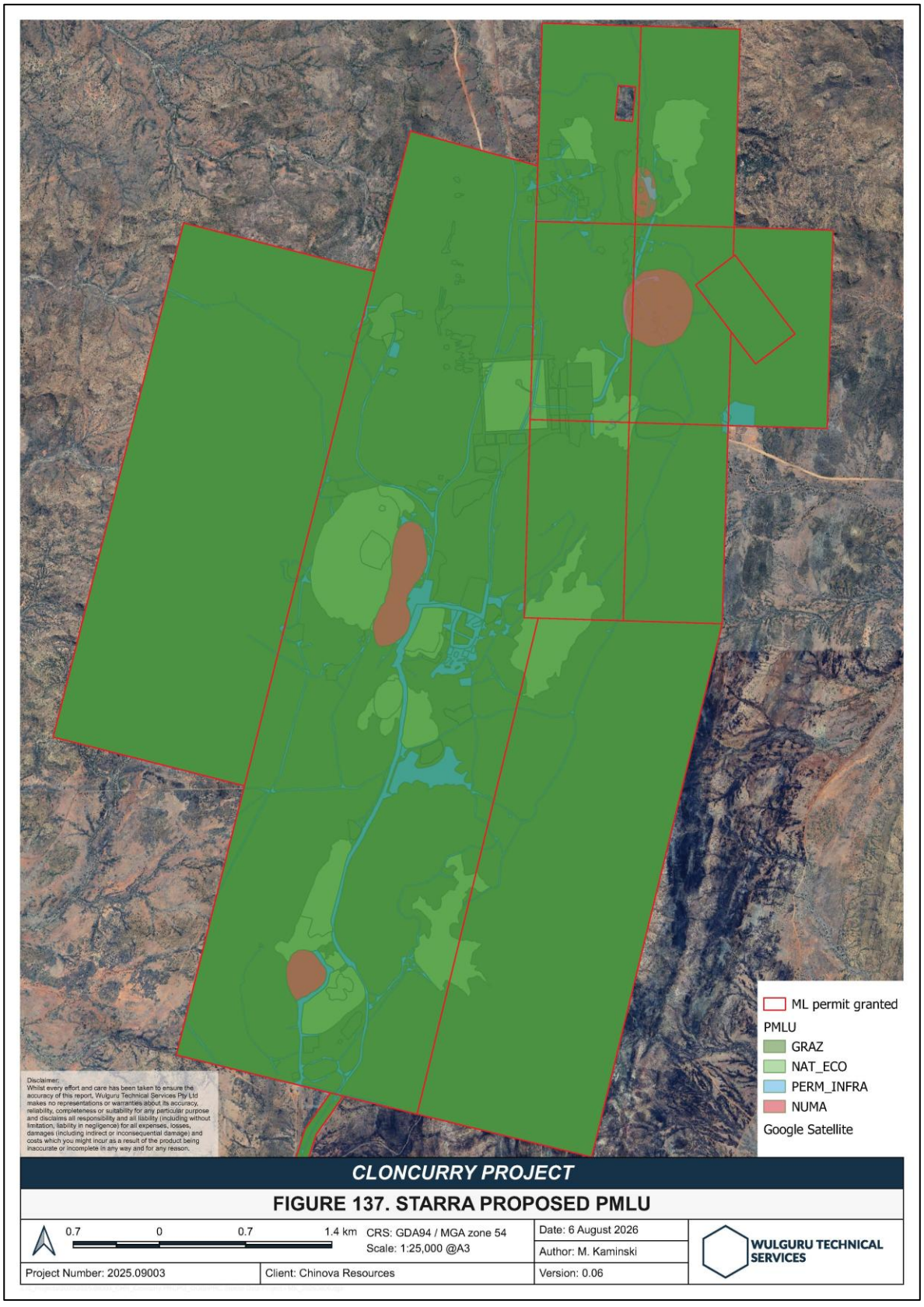


Figure 137 may not accurately reflect the disturbance areas presented within Table 132.

Chinova and previous operators have undertaken rehabilitation works on selected features across the site, predominantly including exploration, laydown and borrow areas, the 251 decline, and the 276 WRD and ROM areas. Locations of this previous rehabilitation are shown in Figure 138.

However, documentation of these historic rehabilitation activities is limited. Available records are largely qualitative and consist of brief descriptions, which have been summarised in Table 132. None of these rehabilitation areas have undergone progressive certification. As a result, all areas identified as 'existing rehabilitation' will be required to progress through the full suite of rehabilitation milestones outlined in the PRCP schedule. Where an area of existing rehabilitation already meets the criteria for a particular milestone, it will advance directly to the next rehabilitation stage. This approach ensures that all rehabilitation areas, regardless of when works originally occurred, achieve the standards required for final relinquishment.

Table 132: Starra PMLU and Progressive Rehabilitation

Rehabilitation Planning Areas	Disturb. (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
IA2 – 222 Pit	9.57	0	0	Low intensity grazing	NUMA	N/A
IA3 – 254 Pit	23.64	0	0	Low intensity grazing	NUMA	N/A
RA15 – Tailings Storage Facilities	91.91	0	91.91	Low intensity grazing	Native Vegetation	Dust mitigation cover installed in 2009.
RA16 – WRE's and 254 High Grade ROM and 244 Pit	210.08	0	210.08	Low intensity grazing	Native Vegetation	276 ROM pad and WRD rehabilitated in 2016.
RA17 – Underground Infrastructure	1.31	0	1.31	Low intensity grazing	Low intensity grazing	251 portal and vent shafts have been backfilled as part of the development of the 254 pit. Remaining infrastructure includes 276 UG and 222 UG development.
RA18 – Starra Built Infrastructure including Starra industrial area, laydown areas,	200.04	0	200.04	Low intensity grazing	Low intensity grazing	Ancillary infrastructure around 276 removed, areas ripped and seeded.

magazine, borrow pits, exploration, ROM Areas (excluding 254 High Grade ROM), and non-permanent water storages and sediment						Drill holes plugged and sumps filled in between 2015 and 2021.
RA19 – Permanent Dams	12.04	0	0	Low intensity grazing	Permanent infrastructure	N/A
RA20 – Permanent Roads and Tracks	187.51	0	0	Low intensity grazing	Permanent infrastructure	N/A

10.2.2.1 Assessment of Alternative PMLUs – Starra Waste Rock Emplacements, ROM, Heap Leach, 244 Pit, and Tailings Dams

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Starra WREs, ROM, heap leach, and tailings dams as low intensity grazing, consistent with the pre-mining land use. The Starra 244 pit, which was originally proposed to be retained as a residual void, will instead be fully backfilled and capped with an engineered cover system. Due to the requirements of the engineered cover systems that will be installed across these disturbance areas, alternative PMLUs have been assessed in accordance with the EP Act to determine the most appropriate and sustainable long-term outcome.

An assessment of PMLU options for areas requiring engineered cover systems is provided in Section 6.2.2.1. That assessment determined that, although low intensity grazing aligns with historical and surrounding land use, it presents risks to the erosion and infiltration performance objectives of the engineered cover system and is therefore not considered suitable. Livestock access has the potential to compromise surface stability, increase compaction, and create localised erosion features, introducing avoidable uncertainty to long-term landform performance.

A NUMA was also considered; however, this is not appropriate as the landforms can be rehabilitated to achieve long-term physical and chemical stability and are capable of sustaining a beneficial land use.

Rehabilitation of the Starra WREs, ROM, heap leach, and tailings dams to a native ecosystem PMLU represents a conservative, risk-based outcome that protects the integrity of the engineered cover system, ensures compliance with erosion and infiltration performance criteria, and delivers a beneficial environmental outcome consistent with the requirements of the EP Act.

10.2.2.2 Assessment of Alternative PMLUs – Starra Declines

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Starra declines and portals as nature conservation, based on the retention of the portal as a man-made cave feature.

Subsequent closure planning has confirmed that retention of the portal and decline is not provided for under the relevant landholder agreements and these features are therefore required to be rehabilitated.

An assessment of PMLU options for declines and portals is provided in Section 8.2.2.2, which considered nature conservation, native vegetation and low intensity grazing in the context of updated geotechnical information and the proposed rehabilitation strategy.

The assessment determined that a nature conservation PMLU is no longer appropriate, as the portal and decline were originally intended to provide a man-made cave habitat but will not be retained and will be fully backfilled as part of closure. Native vegetation was assessed as a feasible alternative; however, this land use would unnecessarily restrict future pastoral use where no residual stability, safety or environmental constraints remain.

Rehabilitation of the portals and declines to a low intensity grazing PMLU represents the most appropriate outcome. Geotechnical assessment confirms that, following backfilling, the rehabilitated landform will be safe, stable, non-polluting and not subject to subsidence. Low intensity grazing aligns with surrounding land use and landholder agreements and provides a sustainable long-term land use consistent with the requirements of the EP Act.

10.2.2.3 PMLU Justification

Table 133 provides justification for the PMLU selection. In summary, the post mine land use at Starra is constrained by the pre-mining land capability and post mine landforms. As pre-mining land use is considered to be broadly low intensity grazing, the primary post mine land use outcome is to return the land to low intensity grazing. Areas to be returned to low intensity grazing PMLU include the Selwyn industrial area, laydown areas and exploration areas. Note, while Chinova has classified all the land at Starra as having a pre-mining land capability of low intensity grazing, as discussed in previous sections the reality is that some areas (ridges and outcrops) interspersed within the more preferential grazing areas (plains and gullies) are unlikely to be accessed by stock and contain limited vegetation cover. As such, it should be recognised that the low intensity grazing PMLU proposed is a wholistic classification and should be considered as the broad land use on a project scale.

Areas incorporating engineered cover systems, including but not limited to the 244 Pit, Starra WREs, TSFs and 254 ROM, require long-term protection of surface integrity to achieve defined infiltration and erosion performance criteria. Grazing activities may introduce compaction, disturbance and localised erosion that could compromise the stability and performance of these engineered systems. Accordingly, these areas will be rehabilitated to a native vegetation PMLU to protect cover system integrity and ensure compliance with long-term physical and chemical stability objectives.

The Starra 222 and 254 pits will be NUMAs as authorised in the EA. As requested by the underlying landholder, key pieces of infrastructure will be retained including hardstand areas, production bores, dams, roads, and tracks. As requested by the underlying landholder, key pieces of infrastructure will be retained including roads and tracks, and water storages to support access across the property. Water quality within the water storages proposed for transfer on closure exceed livestock water quality guideline limits. Accordingly, these structures will be fully rehabilitated on closure.

The stakeholder consultation process for the Starra identified no objections to the proposed PMLU's. Landholder agreements have been provided as evidence of agreement to retain infrastructure.

Table 133: PMLU Justification

PMLU Consideration	Justification

Is viable, having regard to the use of land in the surrounding region	The PMLU's proposed are low intensity grazing, native vegetation, and permanent infrastructure to support low intensity grazing. Based on the available information including material characterisation and rehabilitation methodologies, low intensity grazing with careful management is an achievable PMLU for most areas. Native vegetation is also an achievable PMLU for the WRE's, TSF's and 254 ROM/Heap Leach areas where disturbances are not suitable for a grazing PMLU due to possible constraints such as slope angle, incompatibility of soil cover design, erosional stability, and due to the potential presence of metals, PAF or potential saline waste rock.
Satisfies at least one of the following: e) **The use is consistent with how the land was used before mining activity was carried out on the land**	As previously outlined the pre-mining land use and surrounding land use is low intensity grazing of beef cattle. Returning most of the land to low intensity grazing is consistent with the past and current use of the land.
f) **The use is consistent with a development approval relating to the land**	No relevant development approvals.

g) **The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act**	**Cloncurry Shire Planning Scheme**
	
	Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural zone (Cloncurry Shire Council, 2016). The overall purpose of the Rural zone of the Cloncurry Shire is to:
	
	• Provide for rural uses and activities;
	• Provide for other uses and activities that are compatible with –
	  ○ Existing and future rural uses and activities;
	  ○ The character and environmental features of the zone;
	• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
	
	The Cloncurry Shire is a significant beef producing region. The proposed PMLU of low intensity cattle grazing is consistent with previous and current land uses in the area.
	
	Northwest Regional Plan 2010-2031

	The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning. The Regional Plan supports both mining and rural production to ensure they are not adversely affected by other land use activities. The Regional Plan identifies the CMP an existing mining area and therefore provides limited guidance on the future land use intent for the site. **Commonwealth Legislation** N/A
h) **The use will deliver, or is aimed at delivering, a beneficial environmental outcome.**	The revegetation approach for native vegetation aims to restore the land to a condition that targets the species diversity, composition, and structure of the broad vegetation group and similar to analogue sites. These areas will provide beneficial environmental outcomes as it will provide both habitat and ecosystem services.

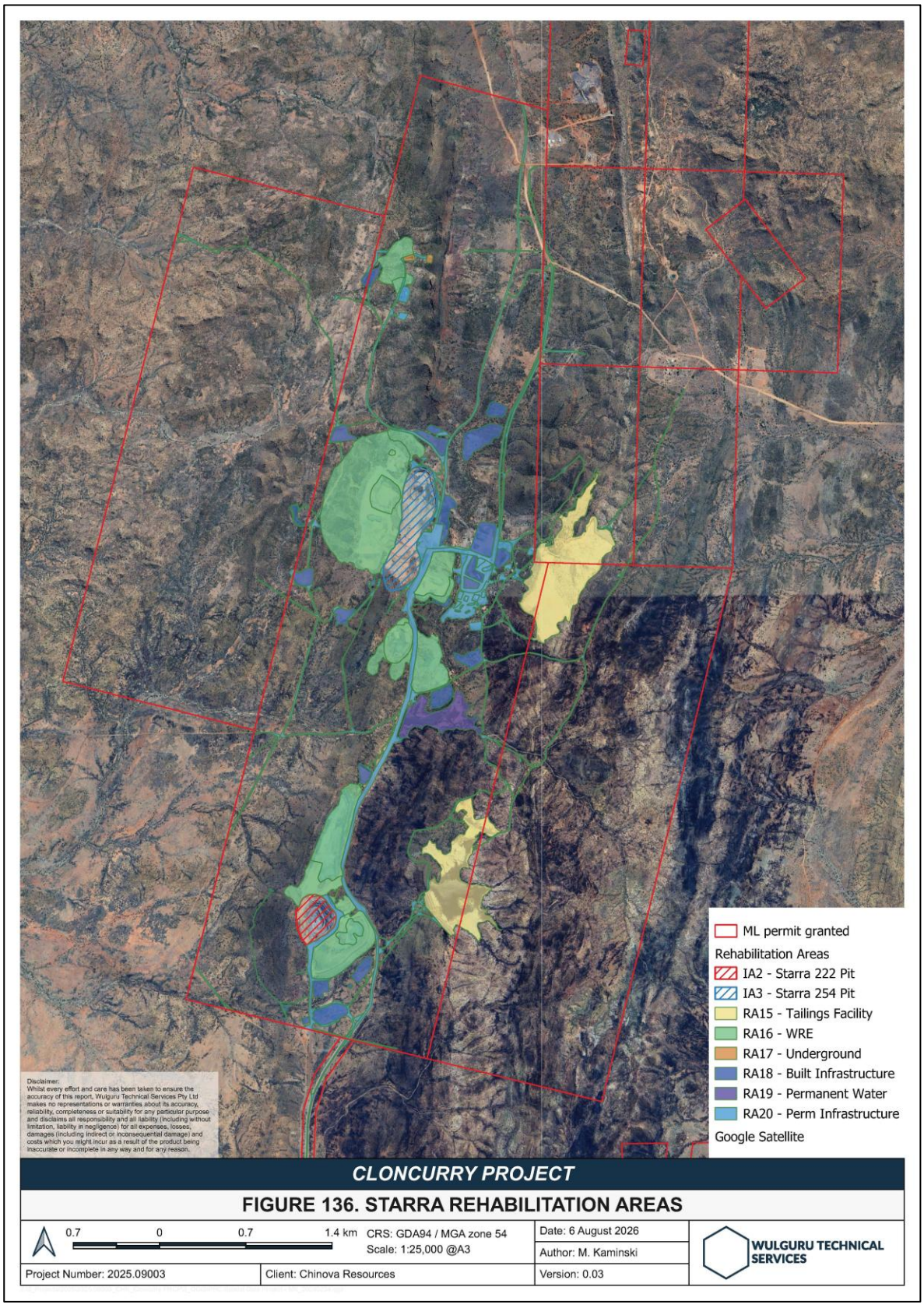


Figure 136: Rehabilitation Areas and Improvement Areas for Starra

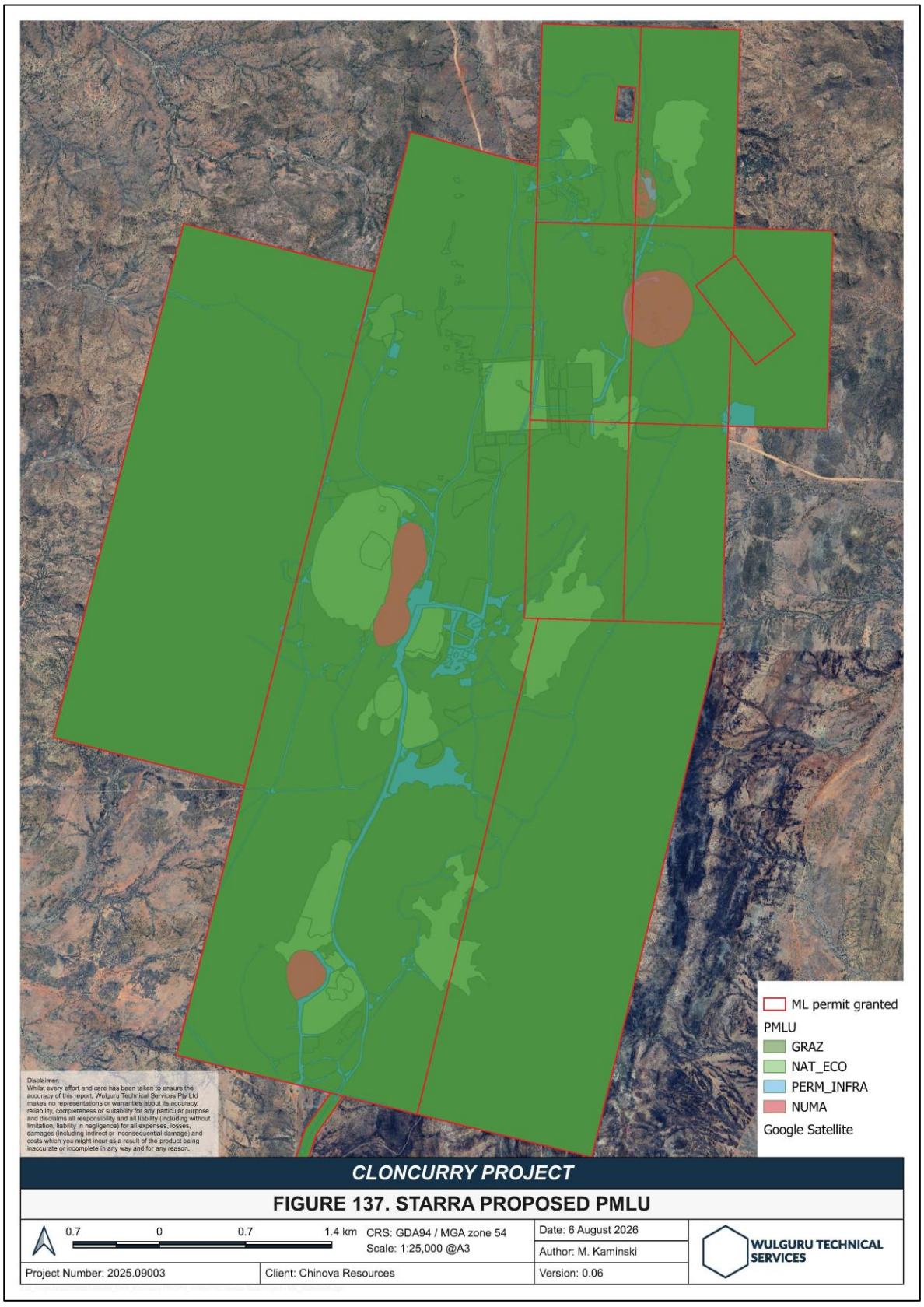


Figure 137: Proposed PMLU's for Starra

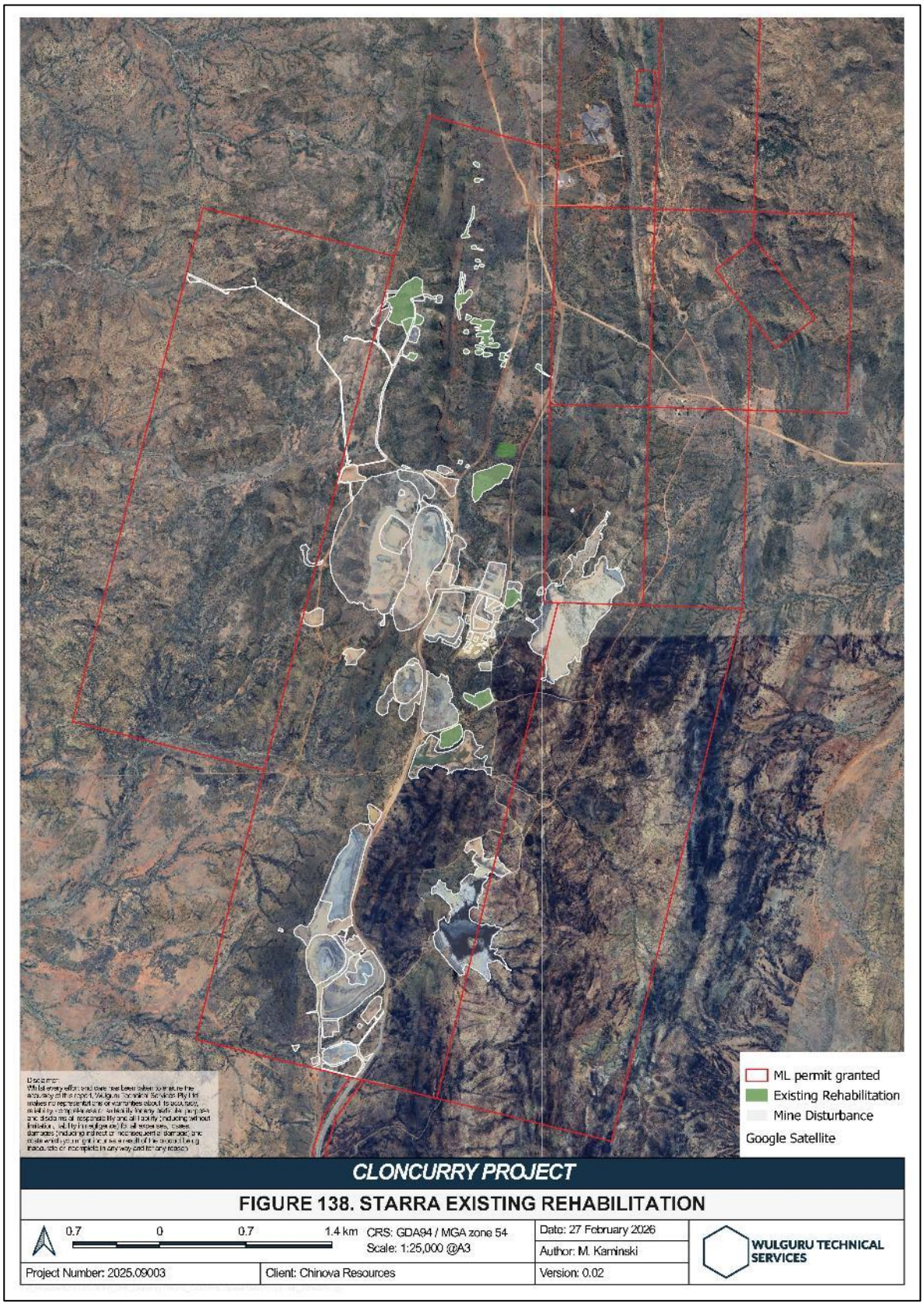


Figure 138: Existing Rehabilitation Areas for Starra

10.2.3 Rehabilitation/Improvement Planning

The Starra mining area has been mined intermittently since 1988. The recently completed Extended Mine Life (EML) project involved the expansion of the Starra 222 and Starra 254 open pits.

As detailed in section 3.5, Starra has a number of additional mining options including (but not limited to) recommencing operations at the 222 underground, 276 underground, potential 236 open cut, reprocessing of tailings in Eastern TSF and a further 254 pit extension. In additional the Selwyn Industrial Area is the central administration hub for activities in the area.

As a result, most of the infrastructure within the Starra area is required for the ongoing operations and development activity as such progressive rehabilitation is limited to areas as detailed in Table 134.

Table 134: Availability for Progressive Rehabilitation (Starra)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Waste Rock Dumps, Ore Stockpiles, ROMs, and Heap Leach			
Starra 222 North WRE **Starra 222 WRD Extended**	2047	29.7	Contributions to the Starra 222 N WRE will cease in line with the completion of open cut mining in the Starra 222 pit. The Starra 222 N WRE contains materials suitable for use in rehabilitation across the project area. Final rehabilitation of the Starra 222 N WRE cannot occur until all landforms in the Starra area are rehabilitated. The final landform scheduled for rehabilitation in the Starra area is the STSF in 2047.
Starra 254 WRE **Starra 254 Pit PAF Cell**	2036	81.8	The Starra 254 WRE and Starra 254 Pit PAF Cell will continue to be held in a state of care and maintenance for up to 10 years. Following this period, if not further mining occurs at Starra, these features will be rehabilitated.
257 WRD S, 257 WRD W, 251 WRD, 244 WRD E, 244 WRD W, 222 WRD, 276 WRD, Starra 244 Pit PAF Cell, 244 Pit, 251 Ore Stockpile, 222 Copper Oxide, Starra 254 Oxide / Low Grade	2036	90.34	Material characterisation of legacy WRE's have identified opportunities to use the material for rock mulch and general fill which will minimise the requirement for additional borrow pits. Legacy WRE's will be prioritised for use as rehabilitation materials.
Starra 222 ROM, Starra 254 ROM, 276 ROM, Heap Leach	2043	16.74	Required to support ongoing mining operations at Starra, Merlin and Mount Dore.
Tailings Storage Facilities			
Eastern TSF	2036	42.91	There is a defined copper/gold/cobalt resource with the Eastern TSF. As a result, Chinova is proposing to hold the TSF in care and maintenance for a minimum period of 10 years.
Southern TSF	2043	49	Southern TSF is required to be maintained as the primary mine dewatering storage facility for proposed future developments at Starra, including the Mount Dore and Merlin mines.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Infrastructure			
Old Selwyn Mill, 276 Soil Stockpile, 222 Soil Stockpile, Starra 254 (Stockpile), Starra 222 (Stockpile), Merlin-Osborne Power Line, Borrow Areas, 254 Explosives Magazine, 254 Water Truck Fill Point, 254 Dewatering Pipeline, Selwyn Precinct Offices & Ablutions, Selwyn Precinct Workshop, Selwyn Precinct Go-Bay, Selwyn Precinct Warehouse, Selwyn Precinct STP, Selwyn Precinct RO, Selwyn Precinct Waste Trench, Selwyn Precinct Batch Plant, Selwyn – 222 Powerline, 222 Fuel Storage Power Generation, 222 Offices & Ablutions, 222 Jacking pad, 222 Laydown/UG Power Generation, 222 STP, 222 RO Plant, 222 Header Tank, 222 Water Truck Fill, 222 Batch Plant	2043	156.62	Required to support ongoing mining operations at Starra, Merlin and Mount Dore.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
276 Portal, 251 Portal, 244 Subsidence, 222 Air Rises (2), 276 Infrastructure (rises)	2036	1.31	A large portion of Starra underground infrastructure has been backfilled during the EML project, including underground ventilation shafts associated with Starra 222, 244, 251 and 257 underground operations, and the 251 portal. The Starra 276 underground mine contains a copper/gold resource that Chinova may mine in the future. The underground infrastructure associated with Starra 276 will be maintained to support future potential mining activities.
Tailings Line, Merlin-Osborne Water Line, Tailings Pipeline Access Road, De-watering Line, Selwyn Precinct Raw Water, Starra 254 Dewater / Waste, Selwyn Precinct Dewatering Pipeline, Selwyn to Starra 222 Raw Water Pipeline, Starra 222 Raw Water Pipeline, Starra 222 Dewater/Waste Pipeline	2043	22.45	Required to support ongoing mining operations at Starra, Merlin and Mount Dore.
Buildings and Hardstand – Permanent **Selwyn Boilermakers Workshop, 276 Infrastructure, Selwyn Precinct Fuel Storage, Starra Raw Water Tank, Laydowns**	2043	4.66	Landholder agreements are in place to facilitate the transfer of this infrastructure at mine closure.
Water Storages			

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
254 Turkeys Nest	2036	0.2	Rehabilitation works will commence 10 years following the completion of mining.
Eastern TSF Duck Pond **Eastern TSF Seepage Pond**	2045	0.19	Eastern TSF Duck Pond and Eastern TSF Seepage pond required until water quality from the Eastern TSF meets the rehabilitation milestone requirements, identified within the PRCP Schedule as 2045.
276 SD W, 257 Northern SD, 251 Southern SD, 222 Northern SD, 222 Western SD, 222 Southern SD, Selwyn Pregnant Liquor Pond, Selwyn SD, 254 ROM Dam, Starra 254 LG Stockpile Pond, 254 WRD Sediment Dam 1, 254 WRD Sediment Dam 2, 254 WRD Sediment Dam 3, 254 WRD Sediment Dam 4, Starra 222 ROM Pad Pond	2051	12.08	Water storages are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits and stock watering WQO's.
Lake Wyche – Permanent	2059	12.04	Water storages are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits and stock watering WQO's. Following final closure, water storages will be handed over to the landholder to support grazing activities.
Roads and Tracks			
276 Roads, Other Roads, Haul Road, Starra 254 Haul Roads, Starra 222 Haul Road West, Starra 222 Haul Road East	2068	182.85	Landholder agreements are in place to facilitate the transfer of this infrastructure at mine closure.

10.3 Non-Use Management Areas

In accordance with the PRCP Guideline:

- where a NUMA has already been identified in a land outcome document and is able to be transitioned into the 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.
- any 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.

For the purposes of this PRCP, the Starra 222 and Starra 254 open cut pits has been defined as a NUMA in the EA EPML00701913 (land outcome document). While the Starra 244 pit is also an approved NUMA the pit will be backfilled with waste rock material which will allow a native vegetation PMLU to be established/

Information requirements outlined in 126C(1)(g) or (h) or 126D(2) or (3) of the EP Act are not required to be provided. Section 10.5 provides further detail regarding management of the NUMA's to demonstrate sufficient improvement prior to surrender of the environmental authority.

10.4 Voids in Flood Plains

In accordance with section 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff, 2019 (ARR) (Ball, et al, 2019).

Flood modelling of the Starra area in accordance with the EP Act demonstrates that the Starra 254, 244 and 222 open pits are not located within a flood plain (WRM, 2023) (Appendix 2).

10.5 Rehabilitation and Management Methodology

10.5.1 General Rehabilitation Principles

Full implementation of the proposed decommissioning and rehabilitation program will result in a post mining final landform that broadly reflects the pre-mining condition. Mining and processing of ore at Starra area has included significant development including processing infrastructure, tailings storage facilities, waste rock emplacements, water management structures and extensive supporting infrastructure.

The rehabilitation and management methodologies described herein for the Starra area is specific to the rehabilitation of the current and authorised disturbances.

A summary of the activities and treatments for the rehabilitation domains is provided in following sections.

10.5.1.1 RA15 - Tailings Storage Facilities

Rehabilitation of aboveground TSF's at Starra (ETSF and STSF) will require specific activities and treatments relevant to the geochemical characteristics of the stored material. Rehabilitation of the ETSF to date has included the installation of a 0.5m dust cover across the facility in 2009, to mitigate the generation of wind-borne tailings dust. The STSF remains operational, and is currently utilised as an evaporation dam.

Eastern Tailings Storage Facility

Geochemical characterisation concluded that tailings stored within the ETSF present a risk of mobilising oxidation products, acid generation, and elevated concentrations of soluble metals, particularly copper and cobalt (refer Section 10.5.4.2). Accordingly, a PAF cover system (ATCW crest cover option C4) has been proposed to limit water and oxygen ingress into the tailings. Justification for the application of this cover design to areas containing PAF has been provided within Section 10.5.5.1.

It is noted that the ESTF contains commercial quantities of copper, gold and cobalt, and that future demand for these metals means it is likely the ETSF will be re-processed at some point. Never-the-less, the conceptual rehabilitation of the ESTF will involve:

- Reprofiling the tailings surface to a 1% grade sloping to a central drain discharging via the existing TSF spillway.
- Application of a crest cover system (ATCW crest cover option C4).
- Final surface preparation including installation of erosion furrows.
- The domain will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

Southern Tailings Storage Facility

Following the conclusion of dewatering activities across the Merlin, Mount Dore and Starra mines, the Southern TSF will undergo final rehabilitation. The STSF will undergo an initial dewatering and consolidation phase, followed by the installation of an appropriate cover system to manage the geochemical risk presented by the facility.

Geochemical characterisation concluded that tailings stored within the STSF are predominantly NAF with a low risk of acid generation and elevated levels of electrical conductivity and sulphate resulting from mine dewatering activities (refer Section 10.5.4.1). Accordingly, a NAF cover system (ATCW crest cover option C5) has been proposed. Justification for the application of this cover design to areas containing NAF has been provided within Section 10.5.5.1.

Rehabilitation of the STSF will involve:

- Breaching the TSF embankment to allow the STSF to drain to a spillway constructed in natural ground on the western side of the facility.
- Reprofile the TSF crest to drain to the spillway.
- Application of crest cover system (ATCW crest cover C5)
- Final surface preparation including installation of erosion furrows.
- The domain will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

10.5.1.2 RA16 - Waste Rock Emplacements and 254 ROM/Heap Leach

The various mining campaigns at Starra since the late 1980's has resulted in the establishment of a number of WRE's across the project area. Rehabilitation of Starra WRE's will require specific treatments relevant to the geochemical characteristics of the stored waste. Generally, waste rock stored in the historic Starra WRE's is un-reactive and characterised as NAF. Accordingly, a NAF cover system (ATCW crest cover option C5) has been proposed. Justification for the application of this cover design to areas containing NAF has been provided within Section 10.5.5.1.

The EML mining campaign mined some mineralised and low-level PAF waste rock from the Starra 254 pit. This waste was stored in the Starra 244 pit and within the 254 WRE, in engineered cells specifically designed and constructed to encapsulate and manage the geochemical risk associated with the waste. An additional emplacement lift (minimum 10m) of NAF waste will be installed on the backfilled 244 pit and the 254 WRE, followed by the application of an appropriate cover system. The Starra 244 pit and the Starra 254 WRE will be constructed to their final landform design geometry and will not require significant reprofiling prior to cover installation.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Starra WREs. Further detail is provided on this requirement within Section 10.5.5.2.

The rehabilitation of the various waste rock emplacements and 254 ROM/heap leach at Starra will require the following treatments:

- Reprofile to a final landform geometry in accordance with a detailed engineered design (legacy WRE's only).
- Application of a crest cover system (ATCW - Cover Option C5).
- Each WRE will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

10.5.1.3 RA17 - Underground Mining Infrastructure

The majority of portals and air vents at Starra have been progressively rehabilitated or been excavated during pit cutbacks, such as the development of 254 and 222 pits. The remaining underground mining infrastructure in the Starra area will be treated as follows:

- The 251 access decline will be collapsed (using explosives) and any subsequent surface subsidence backfilled to the surface.
- Infrastructure will be decommissioned and either salvaged, scrapped or disposed to an open pit.
- Remaining shaft voids (276 underground) will be backfilled to the surface with un-reactive waste rock and revegetated.

- Remaining box-cut portals and declines will be backfilled in accordance with the geotechnical study requirements. The box-cut portals will be backfilled to the surface to create a landform that is commensurate with the surrounding natural topography.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

10.5.1.4 RA18 – Starra Built Infrastructure

The decommissioning and rehabilitation strategy for built infrastructure associated with the Starra area will include:

- All areas will be de-energised, and all services disconnected.
- Residual mine affected water will be transferred to a Starra Pit.
- Impacted sediment (approximately 0.5m) removed from water storages and sediment dams and disposed at a licensed facility authorised to receive such waste.
- Components identified as salvageable for beneficial reuse will be decommissioned and removed.
- Components identified as recyclable scrap metal will be demolished and transferred to a metal recycler.
- Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings, will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no re-use value will be disposed of at a licensed facility authorised to receive such waste.
- Areas will be assessed for contamination (sulphate, metals, hydrocarbons) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

In addition, exploration areas will be decommissioned by plugging the drill hole(s) and backfilling any sumps. The sites are then rehabilitated by reprofiling the land commensurate with the surrounding the pre-mining condition.

10.5.1.5 RA19 – Starra Permanent Infrastructure – Water Storages

The rehabilitation strategy for permanent water storages is as follows:

- residual potentially mine affected water will be transferred to a Starra pit.
- impacted sediment (approximately 0.5m) removed and disposed at a licensed facility authorised to receive such waste.
- transferred to the landowner in accordance with the relevant landholder agreement.

10.5.1.6 RA20 – Starra Permanent Infrastructure – Infrastructure and Roads

Permanent infrastructure, where required, will be decommissioned and transferred to the landholder in accordance with the relevant landholder agreement.

Haul roads, access roads and tracks will not be rehabilitated until all remaining rehabilitation works at Starra, Mount Dore, Merlin, Lady Ella and Mount Elliott have been completed. Following completion of all remaining rehabilitation works, roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement.

10.5.1.7 IA2 and IA3 - Residual Voids

The rehabilitation management strategy for the residual voids will be as follows:

- Installation of safety bunds and signage as per the Starra geotechnical study and verification that these are installed as per the geotechnical requirements.
- Annual monitoring aerial survey and Lidar to validate geotechnical and hydrology models.
- Predictive void hydrological modelling and void water quality modelling re-run at the end of mine life and calibrated against final landform (refer condition PRCP12 of Final PRCP Schedule).
- Certification that the residual void will not cause environmental harm and is safe to humans and livestock.

10.5.2 Soil and Capping Material Assessment

The estimated quantities of materials required to rehabilitate the Starra area are provided in Table 136. The material quantities were estimated by Chinova based on the relevant cover system design proposed by ATCW (2023b). Based, on the landform reshaping and proposed cover systems, quantities of materials could be calculated. Note, some of the minor legacy WRE's including Starra 244 N/W/S consist of weathered oxide sub-soil material and now have good vegetation cover and require no further treatment.

10.5.2.1 Rehabilitation Material Characterisation

A material characterisation investigation has been undertaken at Starra to identify the potential location, quality, and quantity of available rehabilitation materials (SGME 2025b). The investigation focused on nine landforms for use in rehabilitation (Figure 139), including:

- 222 North WRE;
- 222 South WRE;
- 244 Pit Stockpile North;
- 244 Pit Stockpile South;
- 244 East WRE;
- 244 West WRE;
- 254 Rehabilitation Stockpile East (topsoil stockpile);
- 254 Rehabilitation Stockpile North (topsoil stockpile); and
- 254 WRE.

Surface soil samples were taken from these locations and analysed.

The geochemical and physical properties of are discussed in detail in SGME 2025b and are summarised in Table 135.

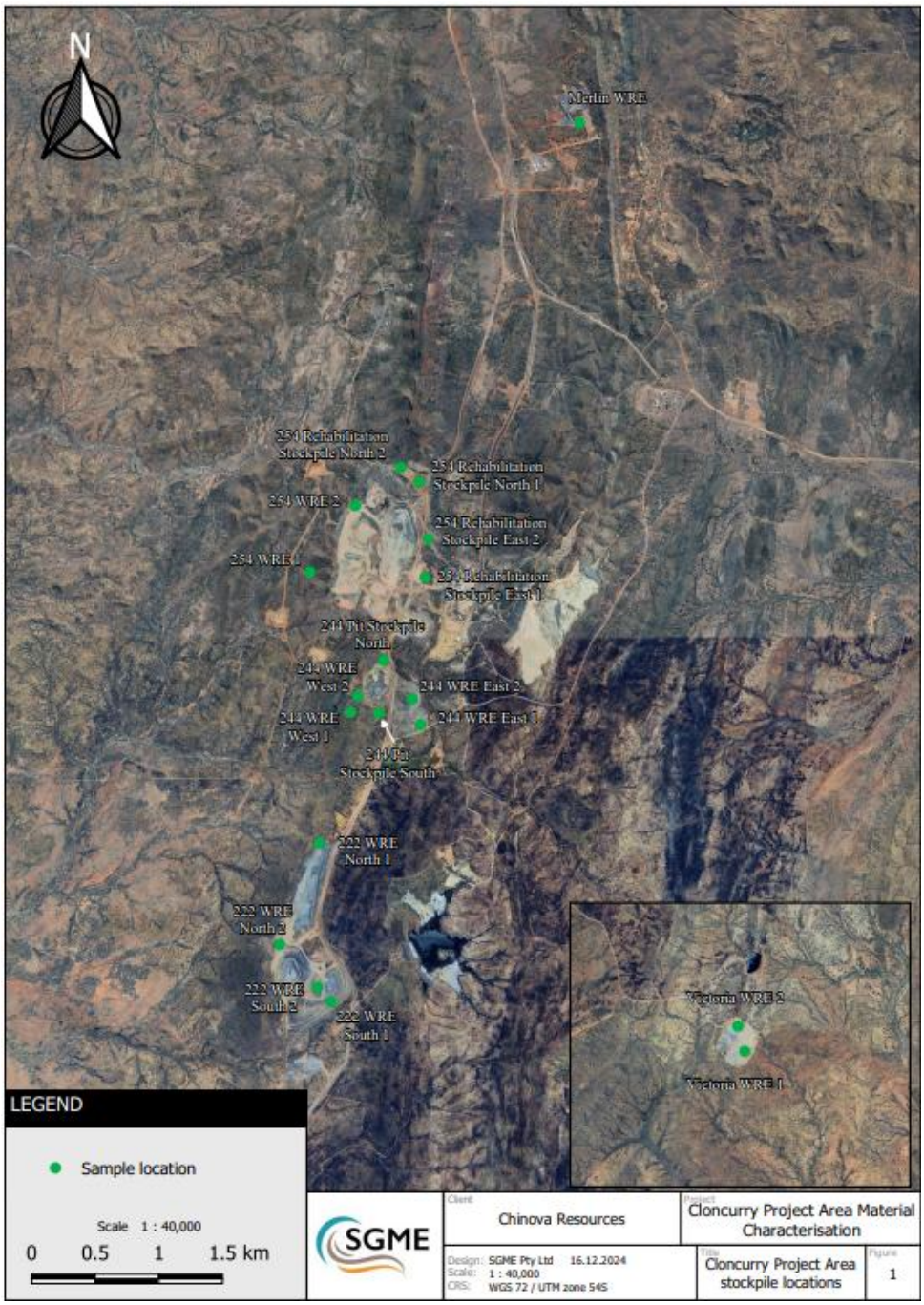


Figure 139: Cloncurry Project Area Material Characterisation Sample Locations

Table 135: Material Characterisation – Starra

Location	Sample ID	Key Characteristics	Material Suitability	Recommended Treatment / Management
222 WRE	WREN1	• Neutral (pH 7); • Potentially Acid Forming – Low Capacity (Total S 0.79%; NAPP +9 kg H_2SO_4/t); • Non-saline (EC not elevated); Low sodicity (ESP 1.5%); • Non-dispersive (ESI 0.4; Emerson Class 6); • Moderate permeability (k = 7.0×10^{-7} m/s); • Non-plastic	Unsuitable due to PAF classification	-
	WREN2	• Neutral to slightly alkaline (pH 7.4); • Non-acid forming (Total S 0.084%; NAPP −5 kg H_2SO_4/t); • Strongly sodic (ESP 19.3%); • Dispersive (ESI 0.01; Emerson Class 2); • Moderate permeability (k = 7.0×10^{-7} m/s); • Fines ~35%	RPL	Strict management for dispersivity
222 WRE South	WRES1	• Moderately alkaline (pH 8.7); • Non-acid forming (Total S 0.072%; NAPP −6 kg H_2SO_4/t); • Sodic (ESP 15.7%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 4.2×10^{-9} m/s); • Moderate plasticity (PI 16%)	General fill	Amelioration required
	WRES2	• Strongly alkaline (pH 9.2);	RPL	Amelioration required

		• Non-acid forming (Total S 0.021%; NAPP −15 kg H_2SO_4/t); • Strongly sodic (ESP 19.5%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 4.2×10^{-9} m/s); • Moderate plasticity (PI 16%)		
244 Pit Stockpile North	244N	• Alkaline (pH 8.1); • Non-saline (EC 72 µS/cm); • Non-acid forming – barren (Total S 0.02%; NAPP −1 kg H_2SO_4/t); • Strongly sodic (ESP 31.5%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 5.6×10^{-9} m/s); • Low plasticity (PI 6%); • Very low organic matter (0.39%); • Very low phosphorus (1 mg/kg)	General fill	Amelioration required
244 Pit Stockpile South	244S	• Strongly alkaline (pH 8.9); • Non-saline (EC 190 µS/cm); • Non-acid forming – barren (Total S 0.011%; NAPP −5 kg H_2SO_4/t); • Moderately sodic (ESP 10.2%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 1.0×10^{-8} m/s); • Low plasticity (PI 8%); • Very low organic matter (0.41%)	General fill / rock mulch	For use as general fill, amelioration required. For use as rock mulch, requires amelioration with gypsum to reduce dispersivity potential.

244 WRE East	WREE1	• Strongly alkaline (pH 9.2); • Non-saline (EC 36 µS/cm); • Non-acid forming – barren (Total S 0.007%; NAPP −10 kg H_2SO_4/t); • Strongly sodic (ESP 21.1%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 7.3×10^{-9} m/s); • Moderate plasticity (PI 14%)	RPL	Meets RPL requirements
	WREE2	• Strongly alkaline (pH 9.4); • Slightly saline (EC 400 µS/cm); • Non-acid forming (Total S 0.053%; NAPP −12 kg H_2SO_4/t); • Moderately sodic (ESP 10.5%); • Dispersive (ESI 0.0; Emerson Class 2); • Low permeability (k = 7.3×10^{-9} m/s); • Moderate plasticity (PI 14%)	Unsuitable for use in rehabilitation	-
244 WRE West	WREW1	• Neutral (pH 7.3); • Slightly saline (EC 470 µS/cm); • Non-acid forming – barren (Total S 0.03%; NAPP −4 kg H_2SO_4/t); • Strongly sodic (ESP 21.3%); • Dispersive (ESI 0.02; Emerson Class 2); • Low permeability (k = 5.7×10^{-9} m/s); • Low plasticity (PI 8%)	Growth media / general fill	For use as growth media, amelioration required. For use as general fill, material will need careful management due to sodicity.

	WREW2	• Neutral (pH 7.3); • Uncertain classification – NAF (Total S 0.022%; NAPP −1 kg H_2SO_4/t); • Extremely sodic (ESP 43.6%); • Dispersive (ESI 0.01; Emerson Class 6); • Low permeability (k = 5.7×10^{-9} m/s); • Low plasticity (PI 8%)	Unsuitable for use in rehabilitation	-
254 Rehab Stockpile East	254 RSE1	• Non-acid forming – barren (Total S 0.009%; NAPP −7 kg H_2SO_4/t); • Strongly sodic (ESP 24.8%); • Dispersive (ESI 0.01; Emerson Class 2); • Very low permeability (k = 2.3×10^{-9} m/s); • High plasticity (PI 23%); • Moderate CEC (29 meq/100g)	Growth media	Application of gypsum or other treatment.
	254 RSE2	• Non-acid forming – barren (Total S 0.031%; NAPP −8 kg H_2SO_4/t); • Strongly sodic (ESP 27.1%); • Dispersive (ESI 0.01; Emerson Class 2); • Very low permeability (k = 2.3×10^{-9} m/s); • High plasticity (PI 23%); • Moderate CEC (23 meq/100g)	Growth media	For use as growth media, pH suitable for vegetation, limitations in P, N, and OM
254 Rehab Stockpile North	254 RSN1	• Non-acid forming – barren (Total S 0.007%; NAPP −3 kg H_2SO_4/t); • Slightly sodic (ESP 4.8%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 1.4×10^{-8} m/s);	Growth media	For use as growth media, pH suitable for vegetation, limitations in P, N, and OM

		• Low plasticity (PI 7%); Low CEC (7.8 meq/100g)		
	254 RSN2	• Non-acid forming – barren (Total S 0.02%; NAPP −2 kg H_2SO_4/t); • Moderately sodic (ESP 11.2%); • Dispersive (ESI 0.01; Emerson Class 2); • Very low permeability (k = 1.8×10^{-9} m/s); • Moderate plasticity (PI 13%); • Low CEC (4.1 meq/100g)	Growth media	Amelioration required
254 WRE	254 WRE1	• Non-acid forming (Total S 0.051%; NAPP −20 kg H_2SO_4/t); • Moderately sodic (ESP 14%); • Dispersive (ESI 0.02; Emerson Class 2); • Very low permeability (k = 1.8×10^{-9} m/s); • Moderate plasticity (PI 13%); • Moderate CEC (23 meq/100g)	Growth media	

10.5.2.2 Material Balance

The estimated quantities of materials required to rehabilitate the Starra area are provided in Table 136. A site-wide material balance has been detailed within Section 6.5.4.2 (Table 38), which concluded that sufficient appropriate material is currently available onsite to undertake all proposed rehabilitation works.

Table 136: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
244 WRE E	127,095	15,886	-	TBA
254 WRE*	645,190	80,649	-	TBA

222 N WRE^	168,903	21,114	-	TBA
222 S WRE	170,440	21,113	-	TBA
Eastern Tailings Dam	514,900	257,450	-	TBA
Southern Tailings Dam	362,817	45,352	-	TBA
244 Pit	69,524	8,961	-	TBA
254 ROM/Selwyn Heap Leach	112,576	14,072	-	TBA
257 WRD W	41,130	5,141	-	TBA
276 Underground	-	-	10 000 m^3	-

*The proposed 254 WRE design was undertaken by ATCW (2023b) and includes the existing Starra 251 WRE, Starra 257 N WRE and Starra 257 W WRE.
^ The 222 N WRE includes the legacy 222N waste rock emplacements.

10.5.3 Waste Characterisation

The Starra mine area contains 9 waste rock emplacements of which 7 are considered legacy structures (built before 2000) and two are considered modern structures under development as part of the EML project. The location of the WRE's is shown in Figure 128. Note, several previous legacy WRE's have now been covered by either Starra 222 N or the Starra 254 WRE's. In addition, the 276 WRE area was cleared but never utilised as a WRE. The below sections provide a brief overview of characterisation of the waste contained within the structures.

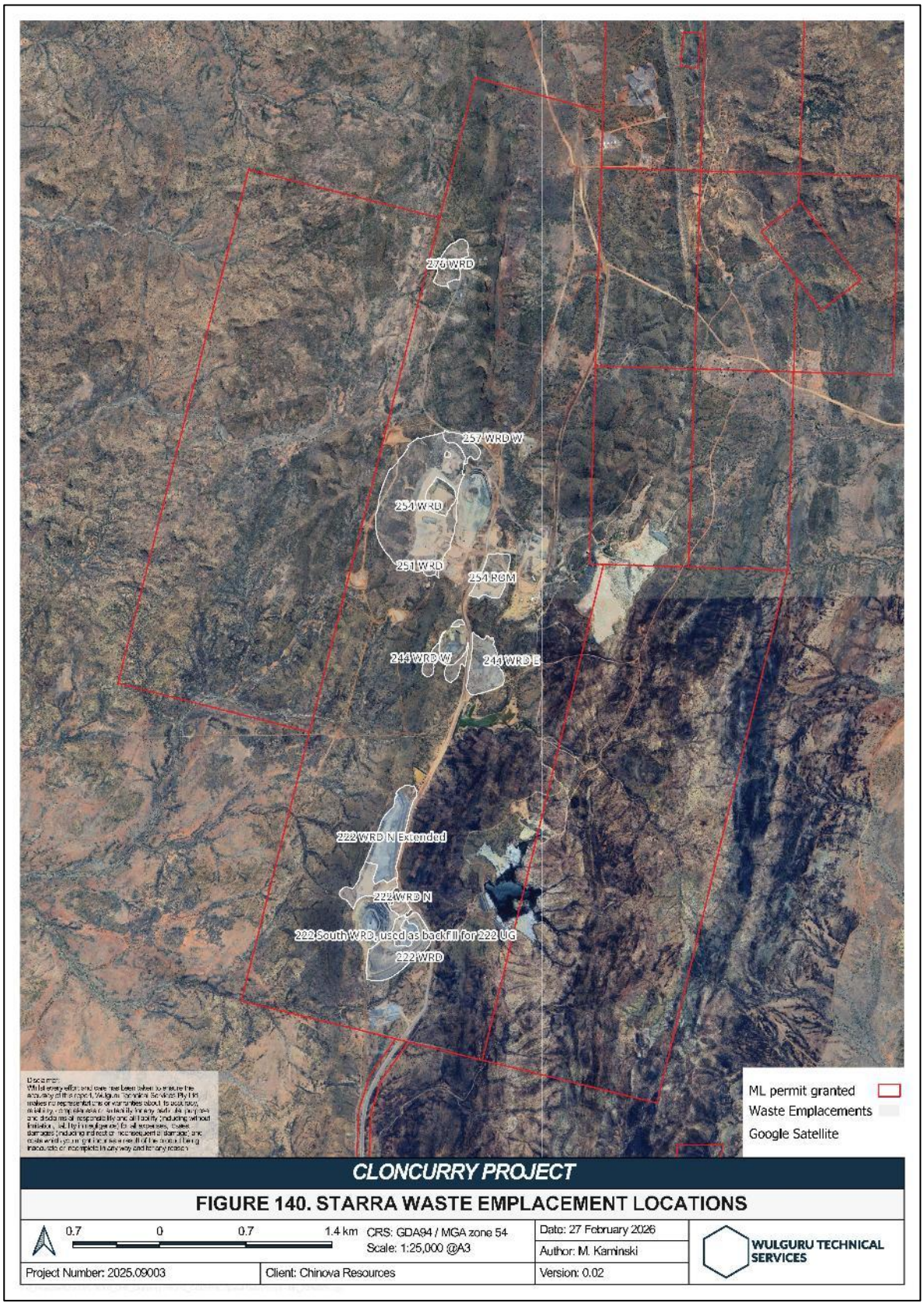


Figure 140: Starra Waste Emplacement Locations

10.5.3.1 Starra 222 North WRE

In 2020, RGS completed a geochemical assessment of waste rock from the Starra 222 deposit (Appendix 14). As part of the investigation a total of 131 samples were collected Starra 222 waste rock and ore from depths ranging from 252m to 420m below surface. The drill core samples were bagged, labelled, sealed, and transferred to ALS in Stafford, Queensland for static geochemical testing.

The geochemical assessment found that:

- waste rock samples at Starra 222 are classified as NAF with low sulfide sulfur and excess ANC.
- Initial contact water with waste rock and ore materials is likely to be slightly to moderately alkaline and have a low salinity value. The main source of alkalinity is in the form of bicarbonate.
- The majority of metals/metalloids in waste rock and ore are likely to be sparingly soluble and generally remain within applied freshwater aquatic ecosystem and livestock drinking water quality guideline criteria under the observed slightly alkaline pH conditions (ANZECC & ARMCANZ, 2000). Aluminium and copper may be marginally more soluble than other elements tested, although for copper, this is expected given that this is the target economic element at the Starra deposits.

10.5.3.2 Starra 222 South WRE

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Starra 222 South WRE, four cores were drilled (WDQ003 to WDQ006) to a maximum depth of 23m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that the waste material had a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2) and characterised as NAF. The waste rock material also had low to moderate electrical conductivity levels and most soluble metal were below limit of reporting.

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional four samples from the Starra 222 South WRE. Samples were collected near surface (0-30cm), placed in a sealed plastic bag, and transported to SGS laboratory for static geochemical testing. The latest result demonstrate that the waste rock has low to negligible risk of acid generation, a high factor of safety (ANC:MPA ratio > 2) and is classified as NAF. Starra 222 South WRD results showed variable salinity risk from low to high (250 to 3300 µS/cm). In addition, while most soluble metals were below the limit of reporting aluminium (Al) and copper (Cu) at concentrations exceeded ANZECC (2000) livestock trigger values.

10.5.3.3 Starra 254 WRE

In 2020, RGS completed a geochemical assessment of waste rock from the Starra 254 deposit (Appendix 14). As part of the investigation a total of 113 samples were collected Starra 254 waste rock and ore from depths ranging from 0m to 122m below surface. The drill core samples were bagged, labelled, sealed, and transferred to ALS in Stafford, Queensland for static geochemical testing.

The geochemical assessment found that:

- The majority of waste rock samples at Starra 254 are classified as NAF with low sulphide sulfur and excess ANC. Some of the Calc-Silicate Altered Metasediment materials located in the footwall and some of the Footwall Schist was categorised as PAF and Uncertain.

- The EC(1:5) of the 113 waste rock and ore samples ranges from 71 to 1,350 µS/cm and is typically low (median 184 µS/cm).
- The majority of metals/metalloids in waste rock and ore are likely to be sparingly soluble and generally remain within applied freshwater aquatic ecosystem and livestock drinking water quality guideline criteria under the observed slightly alkaline pH conditions (ANZECC 2000). Aluminium and copper levels were marginally more soluble than other elements tested, although for copper, this is expected given that this is the target economic element at the Starra deposits.

10.5.3.4 Starra 244 East WRE

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Starra 244 East WRE, two cores were drilled (WDQ007 to WDQ008) to a maximum depth of 20m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that the waste material had a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2) and characterised as NAF. The waste rock material also had low to moderate electrical conductivity levels and most soluble metal were below limit of reporting.

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional sample from the surface of the Starra 244 East WRE, placing it in a sealed plastic bag and transporting to SGS laboratory in Cairns for static geochemical testing. The latest result demonstrate that the waste rock has low to negligible risk of acid generation, a high factor of safety (ANC:MPA ratio > 2) and is classified as NAF. Starra 244 East waste rock sample had moderate salinity risk (1200 µS/cm). In addition, all measured soluble metals were below the limit of reporting with the exception of copper (0.01mg/kg) which is well within ANZECC (2000) trigger values for livestock watering.

10.5.3.5 Starra 244 West WRE, Starra 244 WRE North WRE and 244 South WRE

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional four samples from the Starra 244 West/North and South WRE's. Samples were collected near surface (0-30cm), placed in a sealed plastic bag, and transported to SGS laboratory for static geochemical testing. The latest result demonstrate that the waste rock has low to negligible risk of acid generation, a high factor of safety (ANC:MPA ratio > 2) and is classified as NAF. Starra 244 N/S/W WRE's had low to moderate salinity risk from low to high (110 to 970 µS/cm). In addition, most metals were sparingly in water and generally below the limit of reporting.

10.5.3.6 Starra 257 North WRE

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Starra 257 North WRE, a single core was drilled (WDQ025) to 8m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that the waste material had a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2) and characterised as NAF. The waste rock material also had low electrical conductivity levels and most soluble metal were below limit of reporting.

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional sample from the surface of the Starra 257 North WRE, placing it in a sealed plastic bag and transporting to SGS laboratory in Cairns for static geochemical testing. The latest result demonstrates that the waste rock has low to negligible risk of acid generation, a high factor of safety (ANC:MPA ratio > 2) and is classified as NAF. The Starra 257 North waste rock sample had very salinity risk (98 µS/cm). In addition, all measured soluble metal results were below the limit of reporting with the exception of copper (0.87 mg/kg), cobalt (0.01 mg/kg) and nickel (0.02 mg/kg) which is well within ANZECC (2000) trigger values for livestock watering.

10.5.3.7 Starra 254 ROM (previously Selwyn Heap Leach and Starra 251 WRE)

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Starra 254 ROM (known as the Selwyn Heap Leach Pad at the time), a single core was drilled (WDQ011) to 17m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that the waste material had a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2) and characterised as NAF. The waste rock material also had low electrical conductivity levels and soluble metal results were below limit of reporting.

To supplement the existing waste characterisation information across Cloncurry Project Area a targeted waste characterisation program was completed by Chinova between November 2022 and April 2023 (Chinova, 2023) (Appendix 10). The program involved collecting an additional sample from the batter surface of the Starra 254 ROM which was considered likely remnant heap leach material, placing it in a sealed plastic bag and transporting to SGS laboratory in Cairns for static geochemical testing. The latest result demonstrates that the waste rock has low to negligible risk of acid generation, a high factor of safety (ANC:MPA ratio > 2) and is classified as NAF. The Heap Leach/254 ROM waste rock sample had low-moderate salinity risk (850µS/cm). In addition, all measured soluble metals were below the limit of reporting with the exception of copper (0.09 mg/kg), cobalt (0.14 mg/kg) and uranium (0.02 mg/kg) which is well within ANZECC (2000) trigger values for livestock watering.

10.5.4 Tailings Waste Characterisation

The Starra mining area contains two tailings storage facilities known as Eastern TSF and Southern TSF. Available waste characterisation information for the two structures is provided below.

10.5.4.1 Southern Tailings Storage Facility

In 2020, RGS was commissioned to undertake a geochemical characterisation of Southern Tailings Storage Facility (Appendix 13). Representative tailings samples were collected from five locations using excavator trenching at 1 m intervals from surface up to a depth of 7 m and sampled from the excavator bucket. A total of 30 samples were collected across five sites. The samples were collected in 20 L plastic buckets, and then labelled, sealed, and transferred to the ALS Environmental laboratory (ALS) for geochemical testing.

As a result of the geochemistry testing RGS (2020) found that:

- The majority of tailings material in the STD are NAF with a low risk of acid generation and high factor of safety with respect to AMD. A small proportion of tailings samples tested (≈7%) were PAF. The PAF samples were obtained from depths greater than 4m.

- The pH of the tailing's samples was pH neutral to slightly alkaline, with the lowest pH values generally recorded for near-surface (0-1 m) tailings.
- The electrical conductivity in the near-surface tailings was elevated compared to the bulk tailings, due to weathering (sulphide oxidation) in these materials over the past 17 years. In general, EC values tend to decrease with depth through the tailings profile.
- Total metal concentrations in tailings material were not significantly enriched compared to median crustal abundance in unmineralised soils. The main exception was copper and to a much lesser extent cobalt and uranium, which would be expected for tailings produced from copper ore.
- The majority of metals/metalloids in tailings are likely to be sparingly soluble and generally remain within applied livestock drinking water quality guideline criteria under the observed neutral to slightly alkaline pH conditions (ANZECC & ARMCANZ, 2000). Specifically, copper solubility was limited and surface water and seepage concentrations for this element are expected to be almost two orders of magnitude less than the relevant livestock drinking water quality guideline criterion.

10.5.4.2 Eastern Tailings Storage Facility

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At the Eastern Tailings Storage Facility (Eastern TSF), a single core was drilled (WDQ013) to 35m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that:

- Some tailings materials, located in the top 10m of the tailings profile have a possible/increased risk of acid generation and a lower factor of safety with respect to AMD.
- Tailings located at a depth of more than 10m at the Eastern Tailings Dam appear to be geochemically different from the upper 10m and were classified as NAF.
- The current pH of the tailings through the profile was pH neutral to slightly alkaline, with the lowest pH (6.5) recorded for the surface (0-1m) tailings.
- Tailings in the upper 10m of the tailings profile have elevated electrical conductivity, probably due to sulphide oxidation in these materials. Overall, electrical conductivity values steadily decrease with depth through the tailings profile.
- Total metal concentrations were not significantly enriched compared to average crustal abundance.
- The concentration of soluble sulphate may exceed the applied ANZECC water quality guideline criterion (1,000 mg/L) in near surface tailings, but steadily decreases in value with depth in the tailings profile.
- Trace metals from tailings were sparingly soluble and remain within applied ANZECC water quality guideline criteria under neutral to slightly alkaline pH conditions.

10.5.5 Landform and Cover Design

10.5.5.1 Cover Designs

ATCW were engaged in 2022 to develop closure strategies for mineralised water storages across Chinova's assets. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified five (5) potential cover system configurations with the ability to meet the rehabilitation objectives and transition to the agreed PMLU. These configurations include:

- Option 1: Queensland Government (DES) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.
    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.
- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armour (rind)
- Option 5: Store and release cover system:
    - 0.15m.
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.
- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The modelling results identified the most suitable cover system for emplacements containing PAF waste is:

- Cover Option C4 (Potentially Acid Forming (PAF) Cover) consisting of
    - 0.60 m – Reduced Permeability Layer.
    - 1.20 m - Growth Media (Rock Mulch).
    - Nominal 10 m NAF waste rock armour (rind)

For NAF waste the most suitable cover system is:

- Cover Option C5 (Non-Acid Forming (NAF) Cover):
    - 0.15 m – Reduced Permeability Layer.
    - 1.20 m of Growth Media (Rock Mulch).

The modelling showed the ATCW designed store and release cover systems achieved the water flux criteria while also providing the most optimum plant growing days per year. In comparison, the DES default cover was found to generate too much surface runoff resulting in reduced PAM. In addition, the 1.2m ISL store and release cover is the simplest and most cost-effective cover to construct, with all cover materials available on site.

For the purposes of this PRCP the PAF cover system has been applied to ETSF, all other mineralised waste emplacements will have the NAF cover system applied.

To treat the exposed emplacement batters ATCW designed geometric Batter Slopes with 20m wide terraces placed every 10m (vertical), with a rind cover consisting of unreactive waste rock/ rock mulch at a nominal thickness of 10m will be applied to the PAF cover systems (Figure 37). This approach would result in slopes

that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling (WEPP) of the proposed landforms to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 132) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or constructed from rock/rock mulch, with suitable armouring or construction materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability.

Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.

10.5.5.2 Final Landforms

The final landforms that will remain at Starra that are a substantial departure from the pre-mine condition include:

- ETSF
- STSF
- 254 WRE (including 257 and 251 WRE's)
- 222 N WRE
- 222 S WRE
- 244 E WRE
- 254 ROM pad/heap leach
- Residual Voids (222, 254 and backfilled 244)

The remaining infrastructure areas will be reprofiled to be commensurate with the natural landscape.

At the current stage of the Starra project, the location and geometry of the major site landforms have been broadly established. The design process for this PRCP has considered existing status of the landforms as much as possible and where appropriate has prioritised the rehandling of suitable material in existing emplacements for capping material thus reducing the number of post mine landforms.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

To meet the landform design principles above the legacy WRE's and TSF's will require reprofiling. The below summarises the high-level reprofiling requirements to achieve landform outcomes as developed by ATCW (2023b) (Appendix 7).

- **Eastern Tailings Dam**
  - Place 50 m wide drain (1 Vertical (V) :10 Horizontal (H) side slope, grade out 1%)
  - Apply PAF Cover
  - Reshape plateau (base and cross grade 1 %)
  - Focus drainage to the west
- **Southern Tailings Dam**
  - Apply NAF Cover
  - Breach embankment to the crest of NAF Cover.
  - Spillway constructed on a ridge.
  - Drainage to the south-west.
- **222 S WRD**
  - Reshape plateau (base and cross grade 1.0 %).
  - Focus drainage to the north-west.
  - Apply NAF Cover.
- **254 WRD**
  - Construct 254 WRD in accordance with the design.
  - Apply NAF Cover.
- **244 WRD E**
  - Reshape plateau (base and cross grade 3 %)
  - Focus drainage to the south-east.
  - Reshape batters to repose (37°)
  - Apply NAF Cover
- **276 Portal**
  - Backfill to natural surface.
  - Contour to natural ground.
- **244 Pit**
  - Backfill
  - Apply PAF Cover
- **254 ROM/Selwyn Heap Leach**
  - Construct batters (34°) and benches (maximum bench width (12 m) and height (8 m))
  - Reshape plateau (base grade 0.5 %)
  - Apply NAF Cover
- **ROM and Industrial Precinct**
  - Remove 0.5 m of material, reshape depression edges to 45°.

3D representations of the current and proposed final landforms (including PMLUs) at the Mount Elliott project area are provided in Figure 141 to Figure 146. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7).

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Starra specified in Table 137Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and

(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and
(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:

(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 137: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Starra	247 WRD W	10/12/2036	10/12/2034
	251 WRD	10/12/2036	10/12/2034
	251 Ore Stockpile	10/12/2036	10/12/2034
	244 WRD E	10/12/2036	10/12/2034
	244 WRD W	10/12/2036	10/12/2034
	244 Pit	10/12/2036	10/12/2034
	222 WRD	10/12/2036	10/12/2034
	222 WRD N	10/12/2047	10/12/2045
	Starra 222 WRD Extended	10/12/2047	10/12/2045
	276 WRD	10/12/2043	10/12/2041
	276 ROM	10/12/2043	10/12/2041

	Starra 254 WRD	10/12/2036	10/12/2034
	Starra 254 PAF Cell	10/12/2036	10/12/2034
	254 ROM	10/12/2043	10/12/2041
	Heap Leach	10/12/2043	10/12/2041
	Eastern TSF	10/12/2043	10/12/2041
	Southern TSF	10/12/2036	10/12/2034

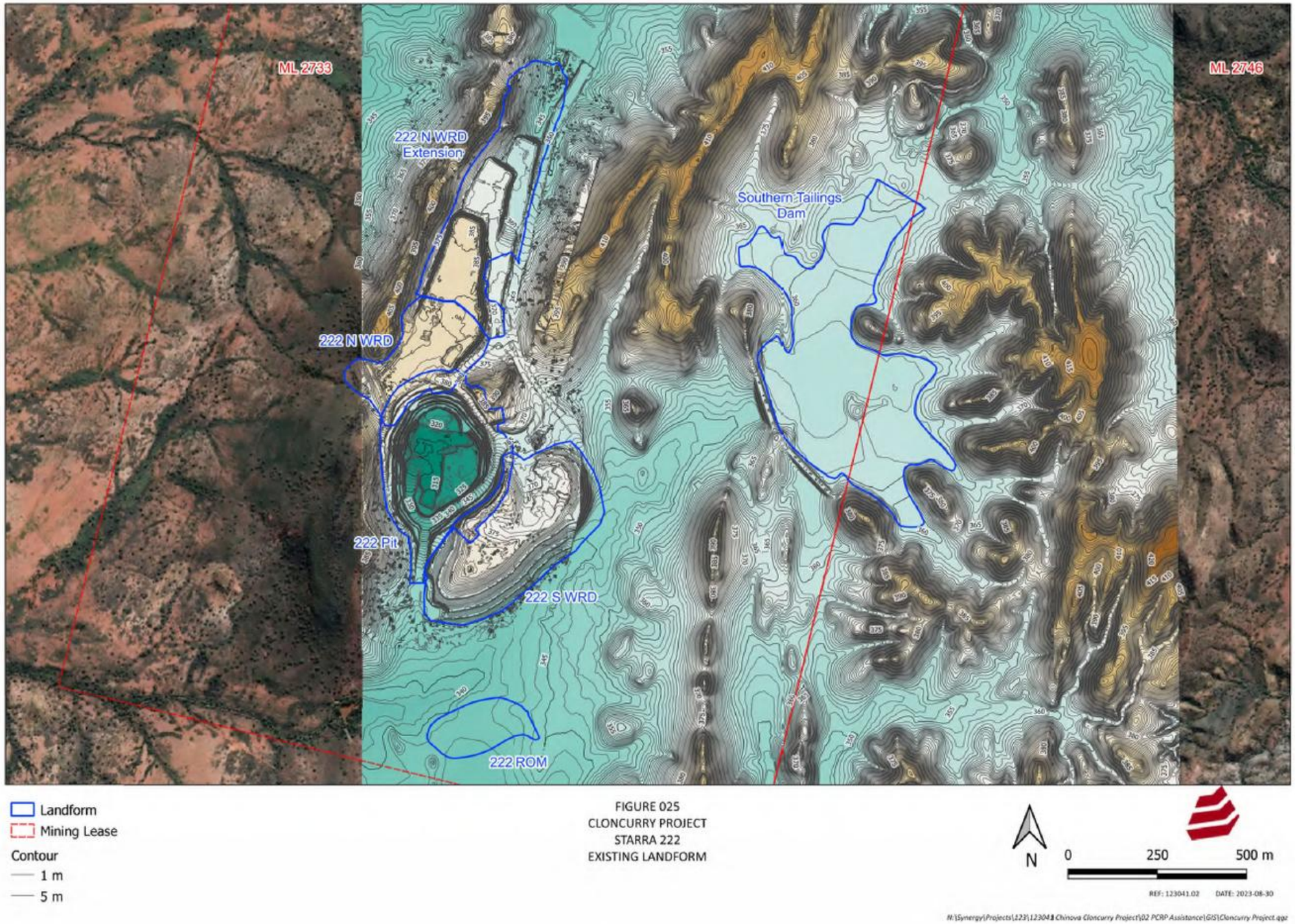


Figure 141: Starra 222 and STSF existing landforms

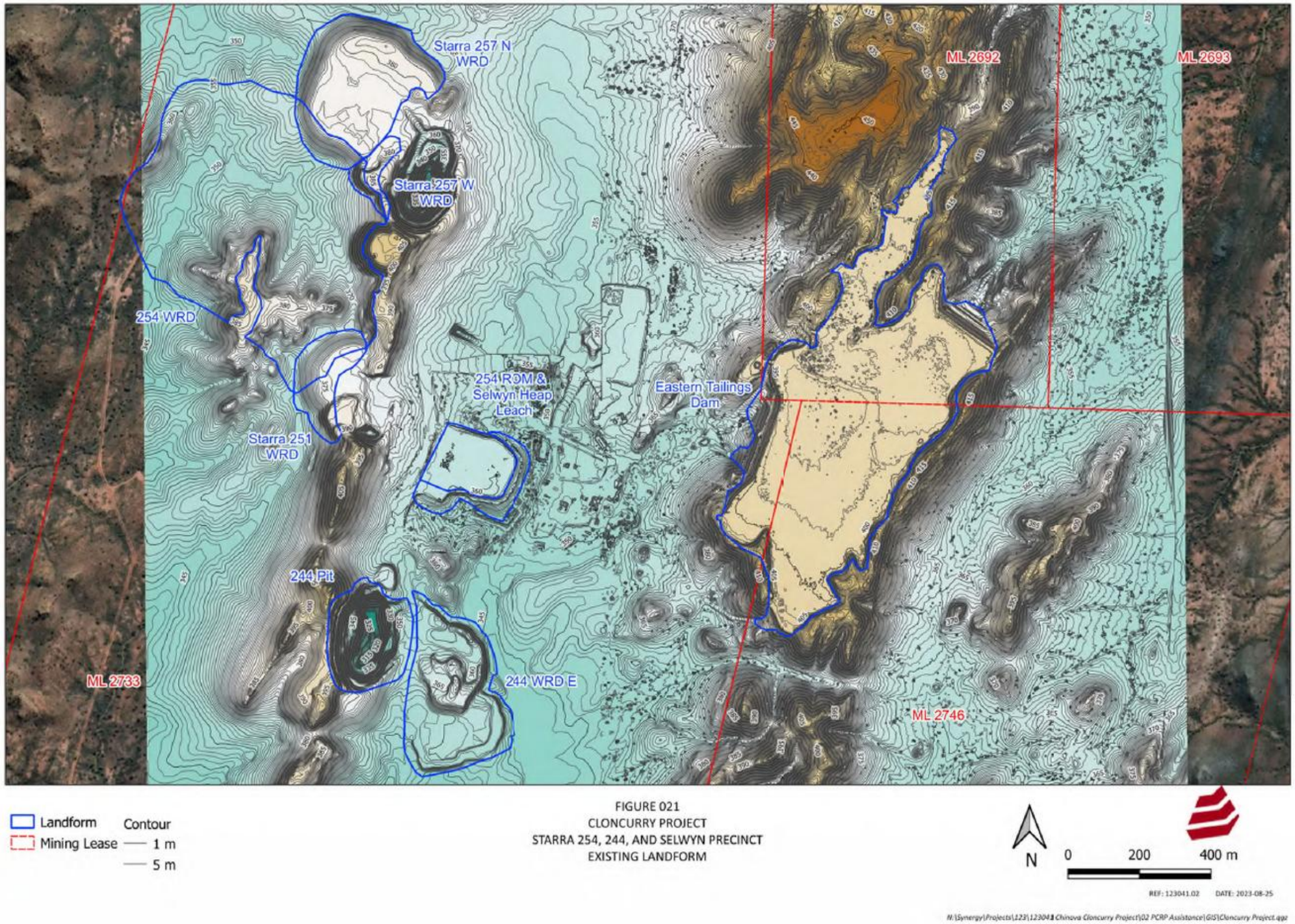


Figure 142: Starra 244, 254, ETSF and industrial precinct existing landforms

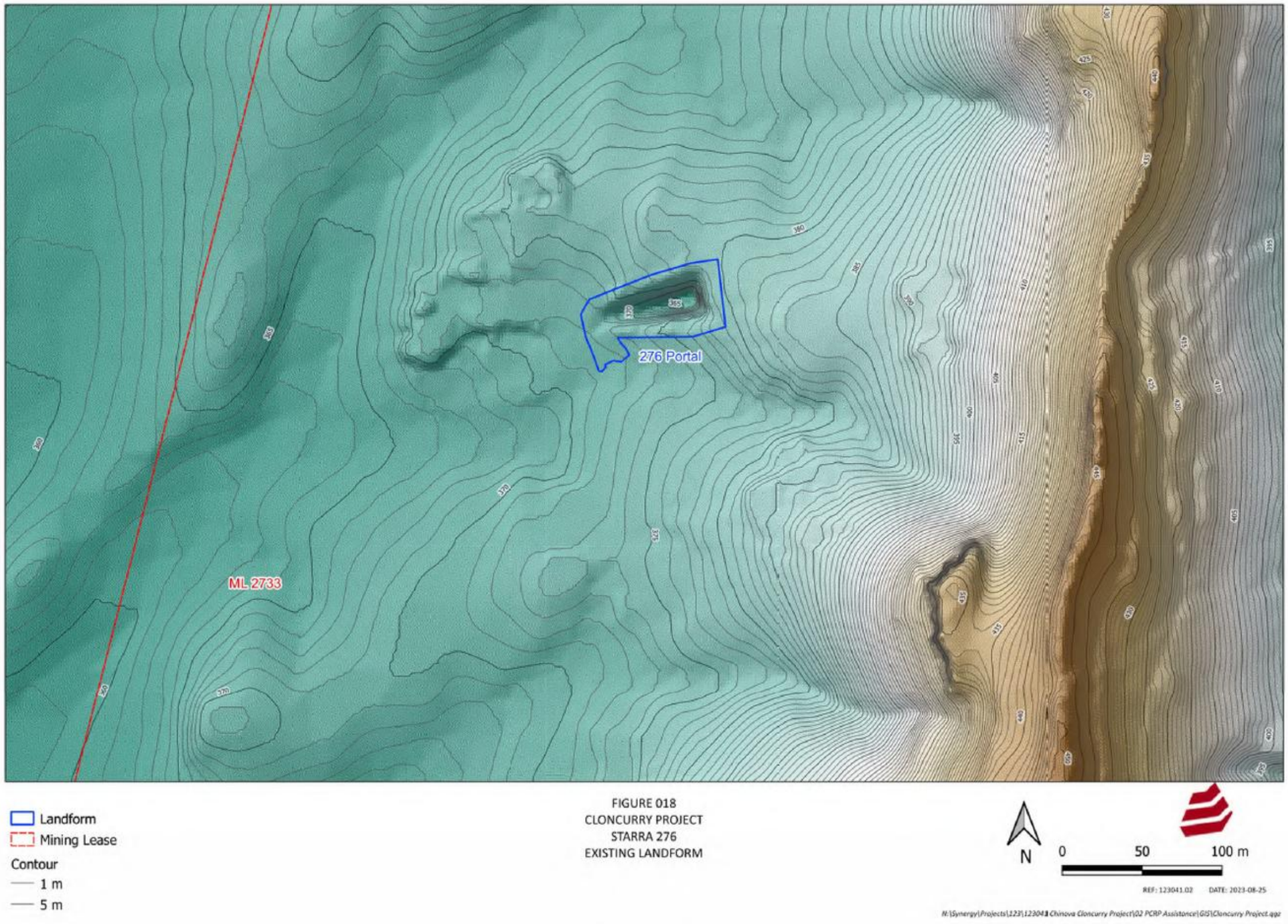


Figure 143: Starra 276 existing landforms

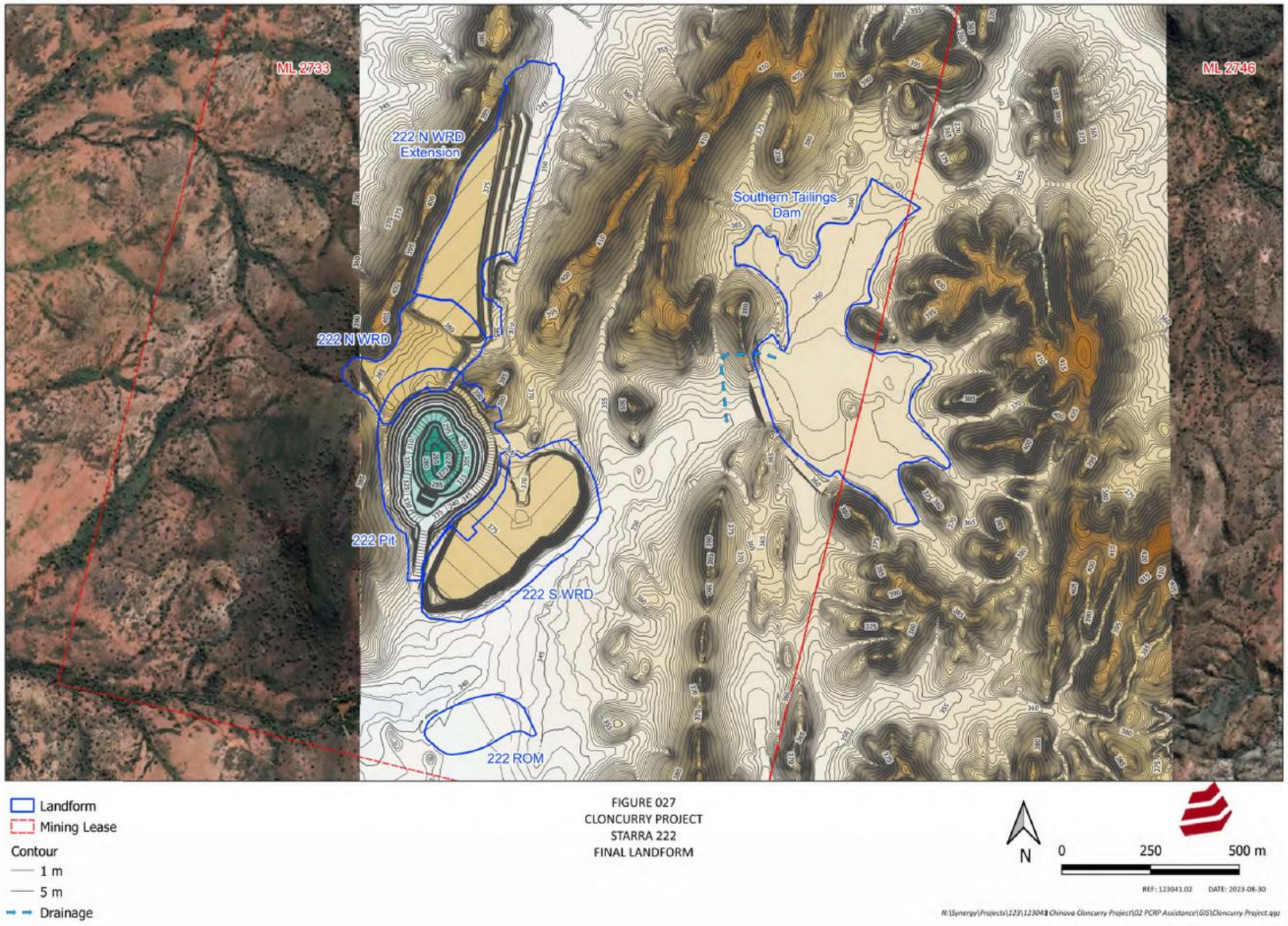


Figure 144: Starra 222 and STSF Conceptual Final Landforms

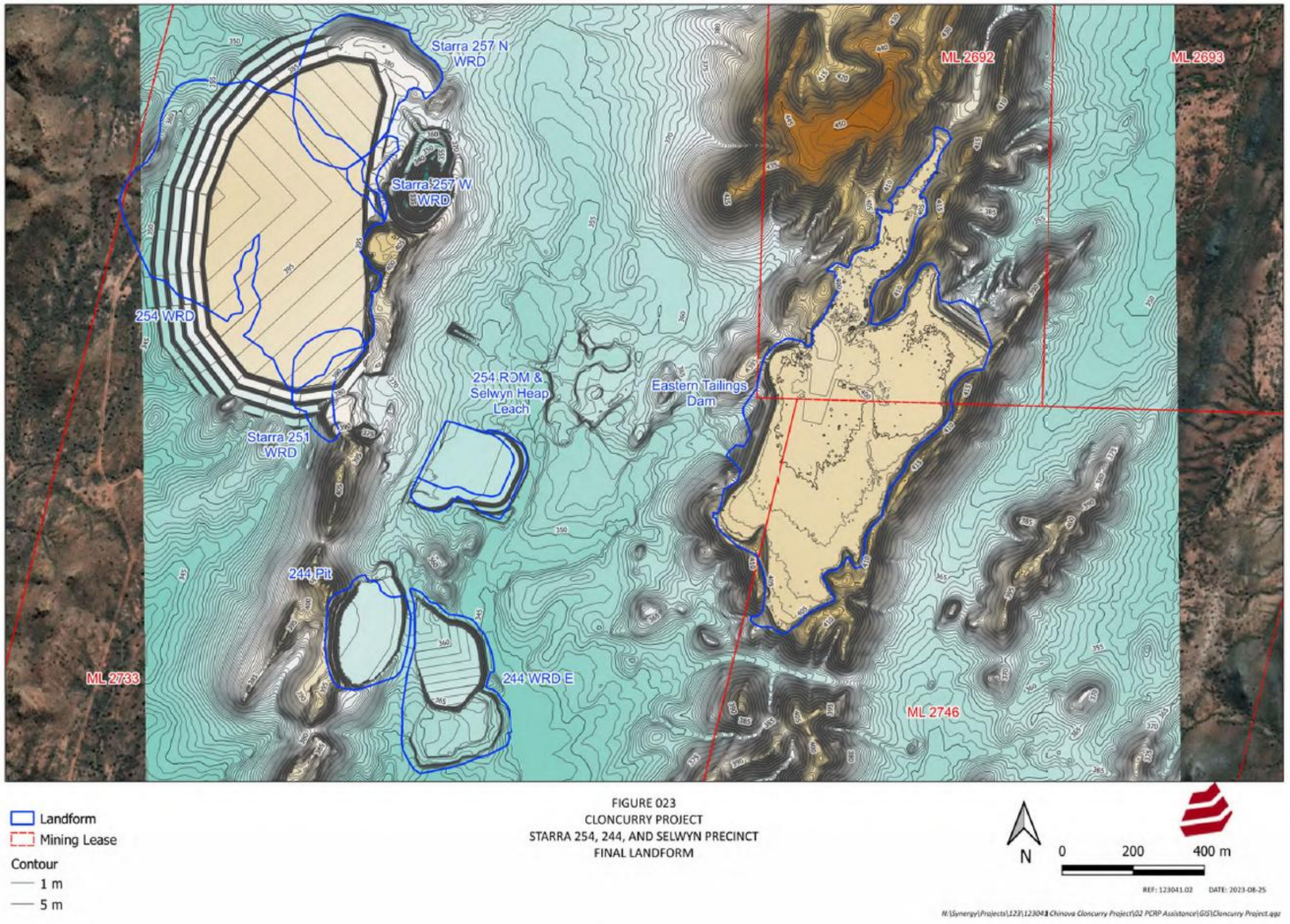


Figure 145: Starra 244, 254, ETSF and industrial Conceptual Final Landforms

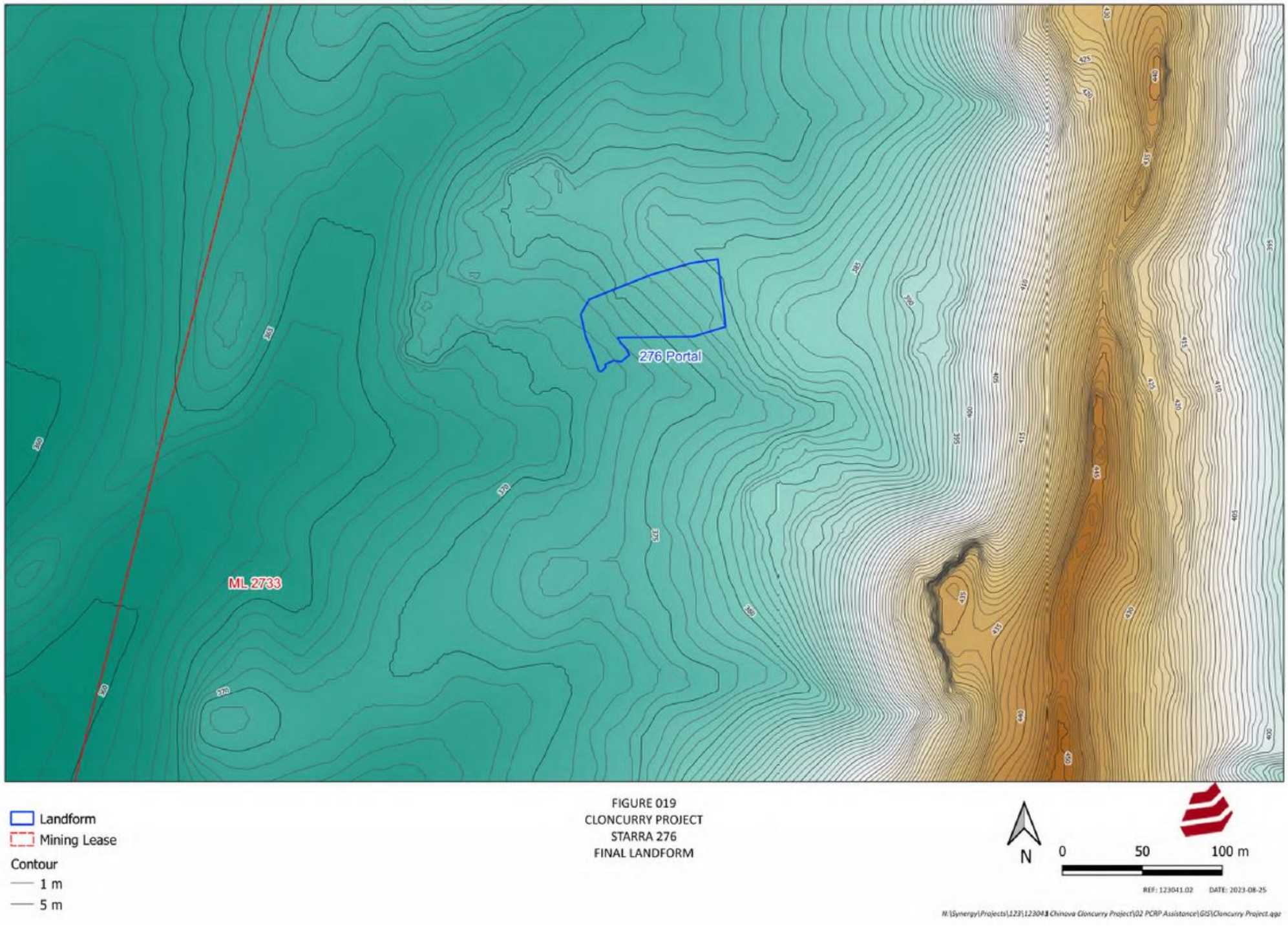


Figure 146: Starra 276 Conceptual Final Landforms

10.5.6 Tailings Storage Facilities

Existing tailings storage facilities at CMP include Eastern Tailings Storage Facility (ETSF) and Southern Tailings Storage Facility (STSF). In addition, the Starra 254 pit is approved to receive PAF waste rock and tailings.

There are no updated designs or operational information available for the disposal of tailings to the Starra 254 pit. Any of the original design information would be for the much smaller Starra 257 pit which is now encompassed within the Starra 254 pit and considered obsolete. Chinova has and will continue to process ore from the Cloncurry Project at the Osborne Processing Facility. Tailings produced during the processing of this ore is stored within the authorised TSFs under this Project. If the decision is made to process ore at Starra, the tailings disposal strategy for Starra 254 pit will be reviewed.

The layout of the Eastern TSF is shown in Figure 147. ESTF consists of two separate storages, the CIL and flotation storages which were formed by the construction of four dams from approximately 1987 to 1988. Following the original construction, a number of wall lifts were designed and constructed until the facility was decommissioned in 2003. There is an external spillway on the western boundary and two seepage collection ponds, Duckpond on the western boundary and the Northern Seepage Pond (also called ETD Seepage) on the northern boundary. ETSF was covered with material excavated from the hills that surround the facility in 2009 for dust suppression.

The Southern TSF, shown in Figure 148. The facility was commissioned in 2001 and decommissioned in 2003 and comprises three constructed embankments. There is a spillway on the northern embankment. The facility is only partially filled with tailings. In 2010-2011 it was converted to a water storage / evaporation facility.

Both tailings storage facilities were constructed as valley fills with earth and rock embankments. The base of each structure is unlined with a relatively finely ground tailings with ~60% passing 38µm. Tailings were sub-aerially disposed at an average 55% slurry density using rotating spigots to maximise drying and consolidation. The slurry density as deposited was ~1.4t/m3.

Available ‘As Constructed’ drawings are provided in Appendix 9. See section 10.5.4 for information on the geochemical characterisation.

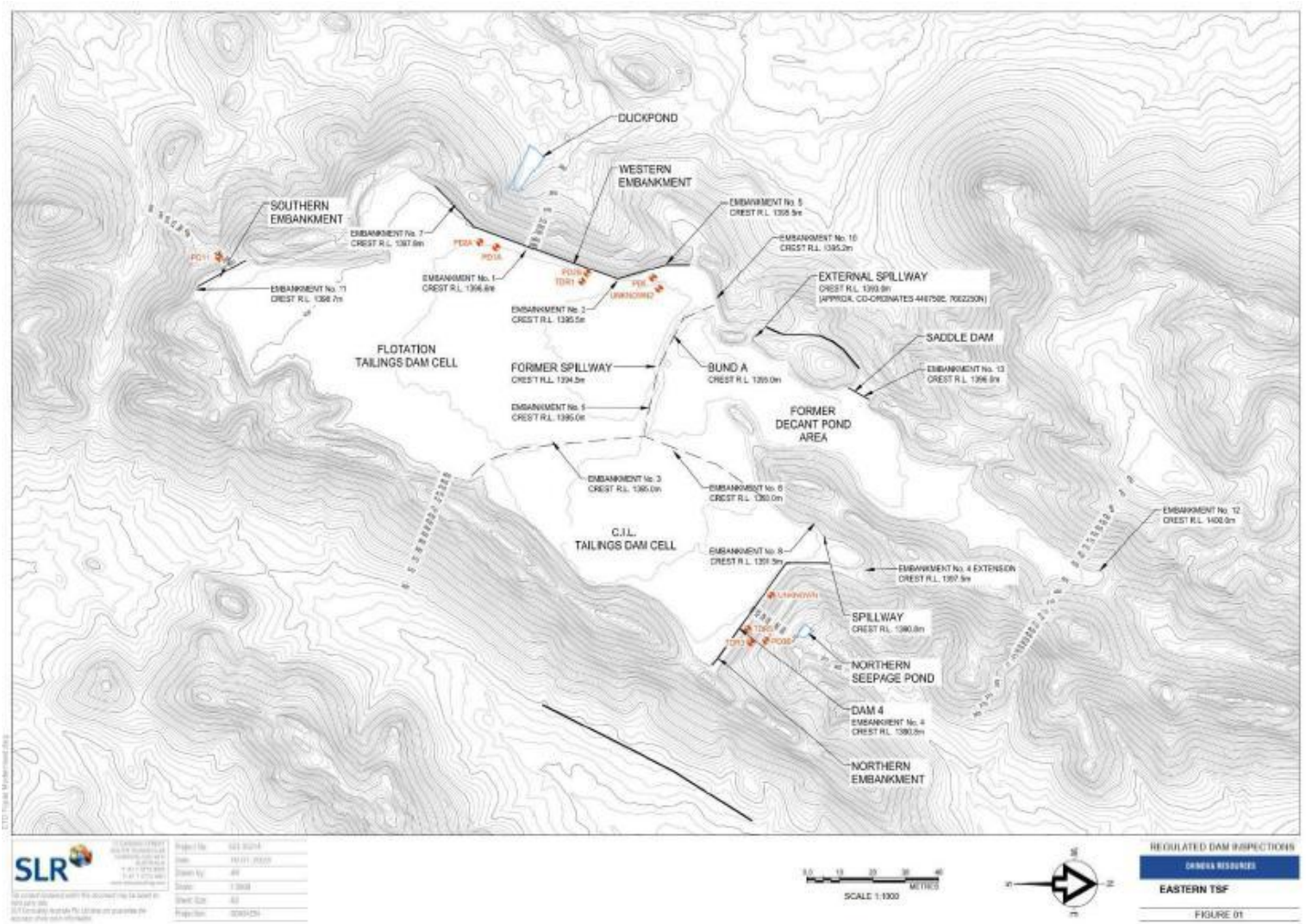


Figure 147: ETSF Layout

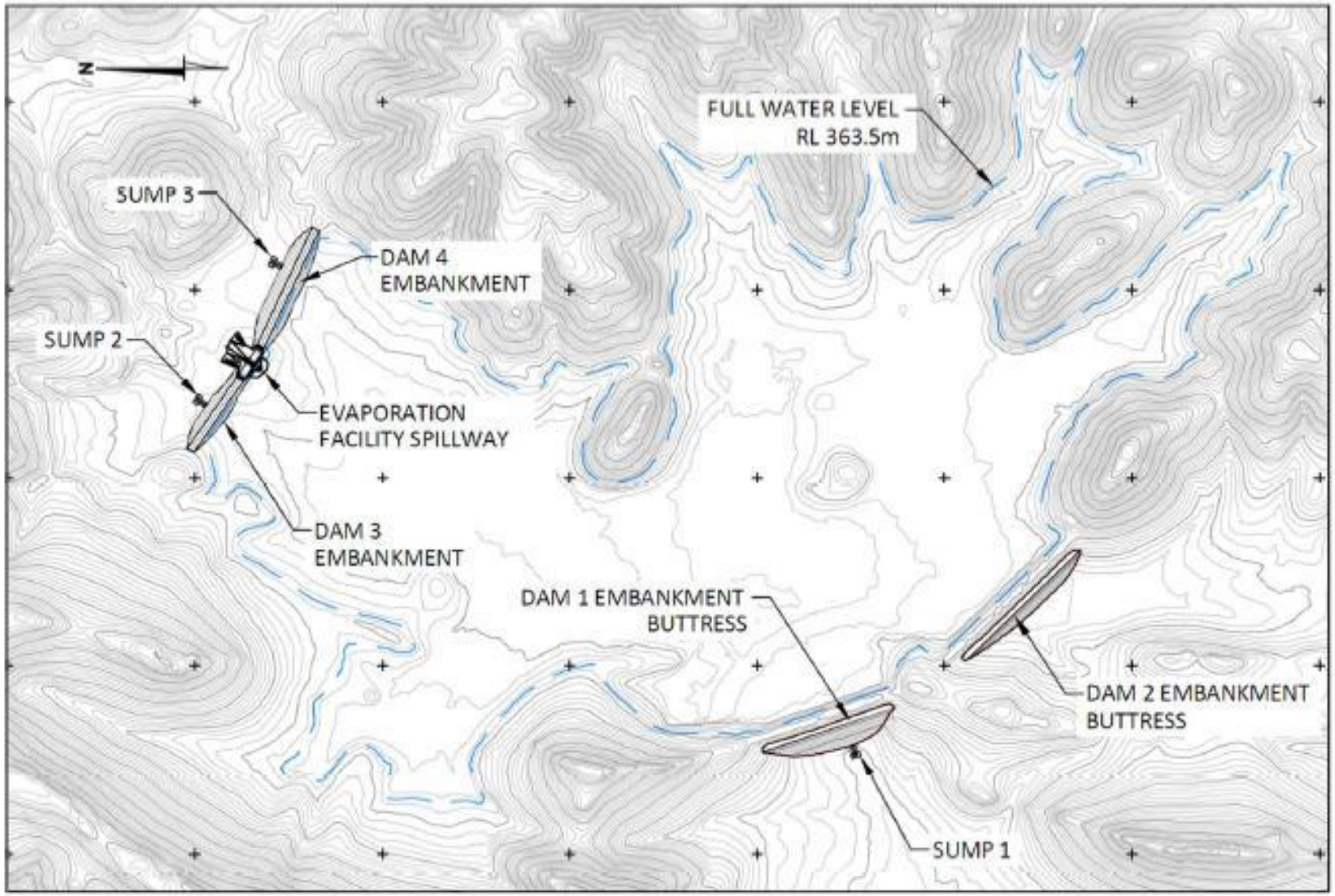


Figure 148: STSF Layout

10.5.7 Residual Voids

10.5.7.1 Overview

The Starra area consists of three approved residual voids known as Starra 222, Starra 244 and Starra 254. Both Starra 244 and 254 are approved to receive PAF waste rock and tailings. Note, 244 pit is being progressively backfilled and will not be a residual void at closure.

10.5.7.2 Pit Design and Final Dimension

Figure 149 to Figure 151 provide the proposed final pit shells for Starra 222, Starra 244 and Starra 254. The final pit dimensions are:

- Starra 222 – approximately 500m by 340m with a total surface footprint of 12.98ha.
- Starra 244 – approximately 289m by 390m with a total surface footprint of 6.80ha.
- Starra 254 – approximately 1000m by 270m with a total surface footprint of 24.15ha.

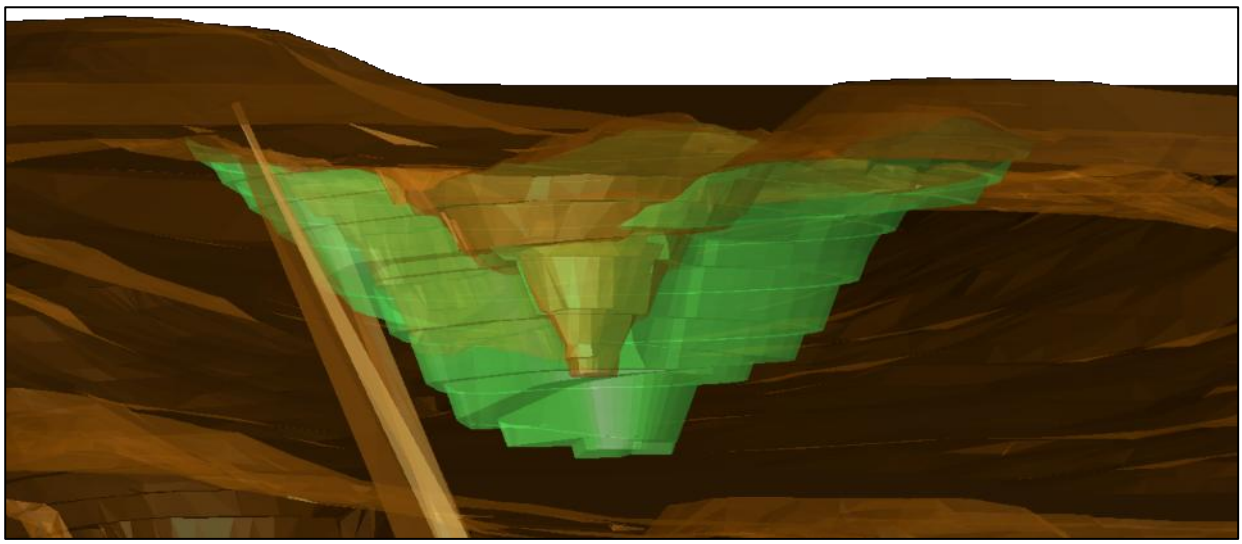


Figure 149: Starra 222 final pit shell (Quantum Geotechnical, 2023)

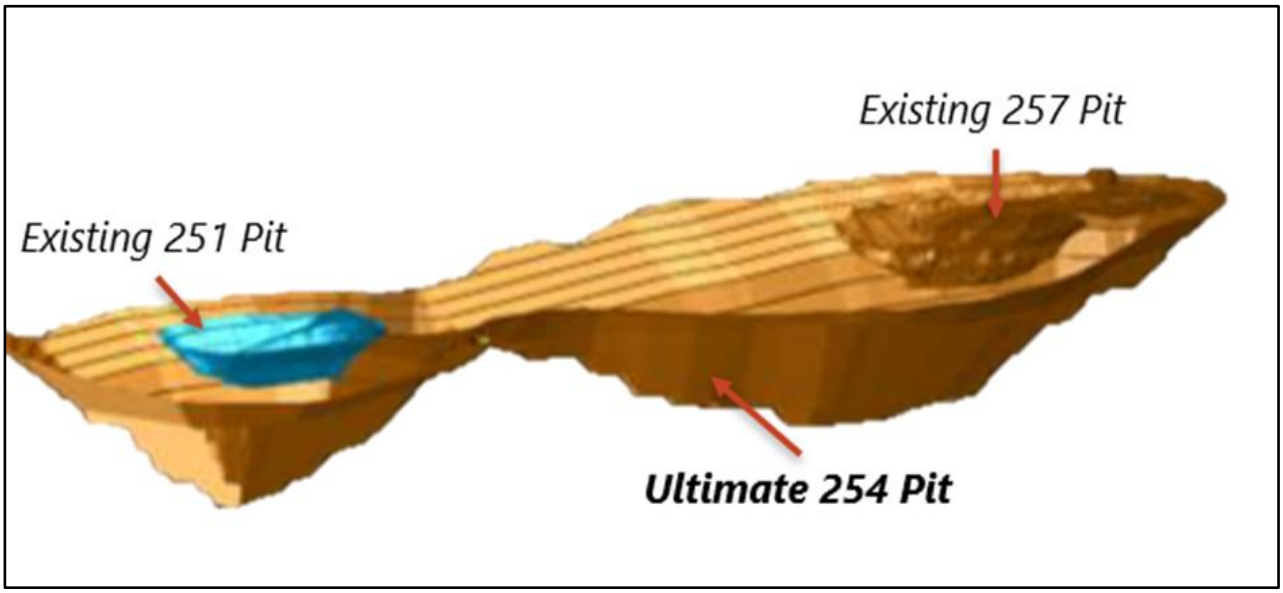


Figure 150: Starra 254 final pit shell

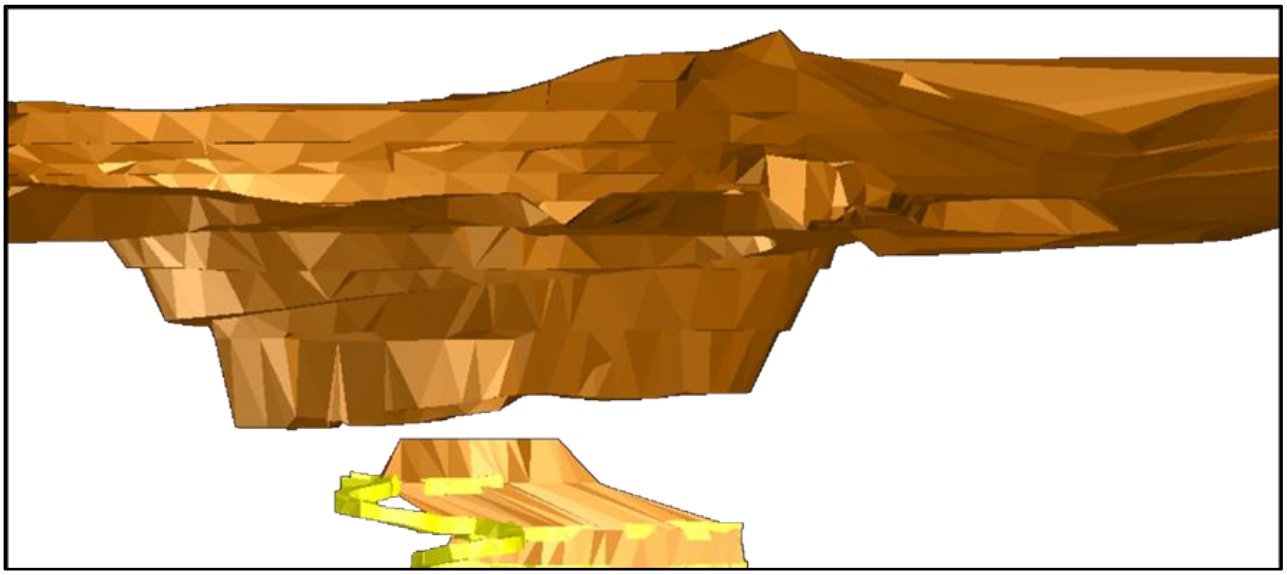


Figure 151: Starra 244 pit shell prior to backfill

10.5.7.3 Catchment Areas

The catchment area was delineated using digital elevation model (DEM) data, whereby the catchment area is defined by the topography. Elevational data was used in combination with geomorphic inferences from satellite imagery to estimate catchment areas.

Table 138: Catchment area of pits (includes pit lakes)

Pit	Catchment area (m2)
Starra 222	66300
Starra 244	67000
Starra 254	250000

10.5.7.4 Void Groundwater Modelling

As detailed within Section 10.5.7.1, Starra 244 Pit will be backfilled and capped, and will not be a residual void post closure, whilst Starra 254 North Pit and Starra 254 South Pit will be substantially backfilled. Accordingly, only the results from the groundwater modelling undertaken by AGE (2023, Appendix 1) for Starra 222 pit is discussed below.

The modelling for Starra 222 pit shows that the pit will remain dry as it is well above the water table (Table 139). Conceptually, the means that water that flows into the pit either evaporates completely or seeps into the unsaturated zone. Given the small surface area of the catchment and the historic absence of an ephemeral pit lake, it is likely that the vast majority of water outputs are via evaporation. As such, it is predicted that this pit will remain dry in perpetuity. As the pit will remain dry there is no risk of void stratification.

Table 139:Risk of overtopping

Pit	Pit Crest (mAHD	Water level after 5%AEP year (mAHD)	Remaining capacity after 5% AEP year (m3)	Water level after 1%AEP year (mAHD)	Remaining capacity after 1% AEP year (m3)
Starra 222	381	Dry	2,236,000	Dry	2,236,000

10.5.7.5 Predicted Void Water Quality

The methodology used to predict long-term water quality within the onsite residual voids has been detailed within Section 7.5.7.5. As identified within Sections 10.5.7.1 and 10.5.7.4, Starra 244 pit will no longer be a residual void post closure, Starra 254 pits are proposed to be substantially backfilled, and Starra 222 will remain dry. Predicted void water quality modelling has conservatively been provided for Starra 222, Starra 254 North and Starra 254 South pits.

Long-term water quality modelling indicates that average long-term concentrations of electrical conductivity (EC) and sulphate in the Starra 254 North and Starra 254 South pits are predicted to exceed permissible livestock drinking water quality limits and the average EC and sulphate concentrations observed in groundwater monitoring within the Starra operational area. In contrast, predicted long-term EC and sulphate concentrations in the Starra 222 pit are below livestock drinking water quality limits and comparable to, or lower than, average groundwater EC and sulphate levels recorded across the Starra operational area.

In accordance with Condition PRCP12 of the approved PRCP Schedule, at the end of the Starra life of mine (2036), Chinova will commission predictive hydrological modelling and void water quality modelling which is calibrated against the final landform. This modelling will demonstrate that the water quality and level within each residual void will not cause environmental harm to the surrounding environment, the residual voids will continue to act as groundwater sinks, and there is no environmental harm beyond the boundaries of the Project mining leases.

Table 140: Starra Pit Water Quality (WRM, 2025)

CoC	Mount Dore Pit	Livestock Drinking Water Guideline Limit	Average (mg/L)	80th Percentile (mg/L)	Average Groundwater Quality Concentrations
	254 North	2,400[1]	6873	9349	4490

Electrical Conductivity	254 South		367908	261407	
	222		40	168	8300
Sulphate	254 North	422[2]	8703	11839	446.5
	254 South		465865	331008	
	222		6	27	969

[1] Guideline value of Salinity from Table 3.8 (dairy cattle) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

[2] Guideline value of Salinity from Table 3.7 (cattle – high concentrate) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

10.5.7.6 Geotechnical Stability

Quantum Geotechnical have undertaken an updated assessment and numerical modelling of the geotechnical stability of the Starra open cut and underground residual voids. Full details of the assessment are provided in Appendix 8.

10.5.7.7 Starra 222 Open Cut

Numerical modelling of the Starra 222 pit was undertaken to assess the likelihood of future pit wall instability by Quantum (2023) using a Map3D model.

The modelling results indicate:

- that sigma 1 stress levels are relatively low and that any instability would be tensional in nature – the ground relaxing - rather than crushing.
- Modelling indicates that all pit walls will largely remain stable (see Figure 152), with just minor spalling of the pit crest in the weathered metasediments. At least two regional scale faults sit at the edge of the cutback footprint. The footwall shear has already showed signs of spalling in the upper weathered sediments – this is likely to continue over time. The regional fault that crosscuts the north wall has already caused some batter crest loss and is likely to worsen over time.
- Failure indicated in the hanging wall of old stoping blocks does not migrate up to destabilise pit walls. Some localised sections of the original development, located close to the cutback walls in deeper parts of the pit, may experience overbreak into the excavation.

Based on the modelling, bunding will need to take account of localised batter failure in the upper weathered bench and ensure that barricades are placed a sufficient distance from the pit edge (25° angle from the base of oxidation plus 10m) to take account of future erosion (see Figure 144).

Grid 2

Grid 3

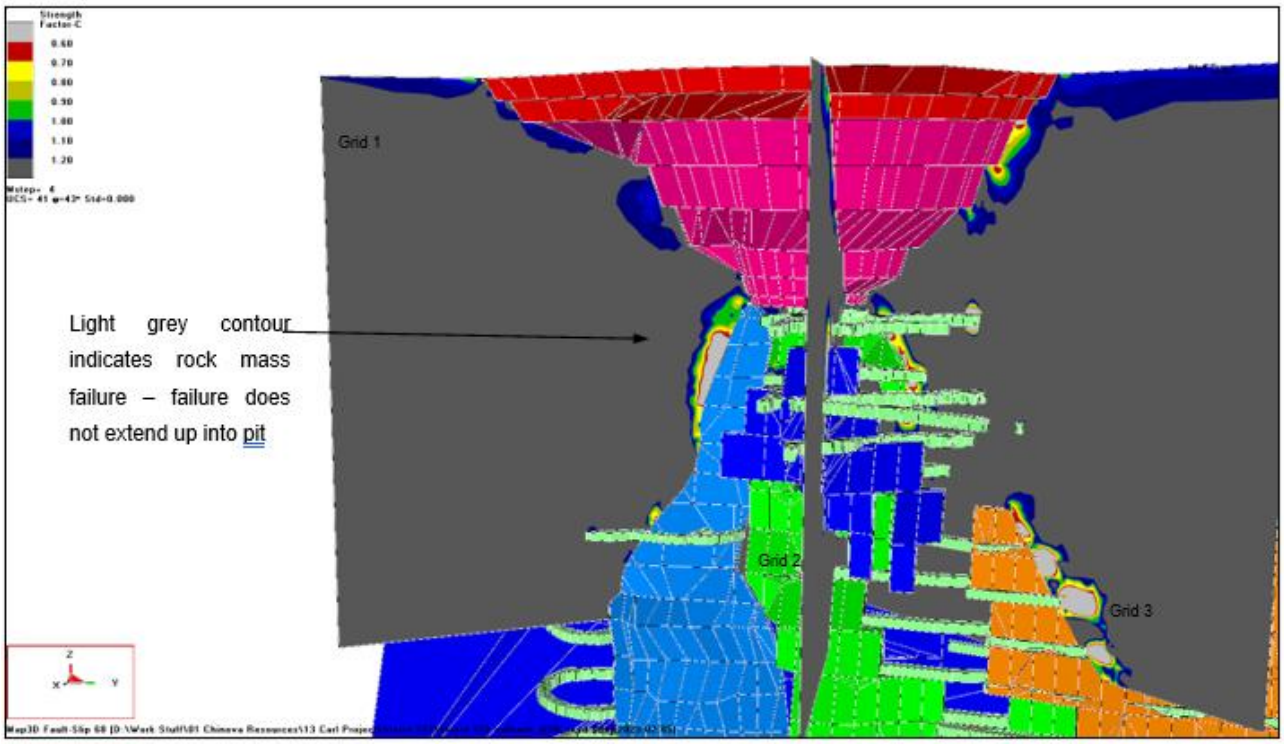


Figure 152: Starra 222 Hanging wall (looking west) (Quantum, 2023).

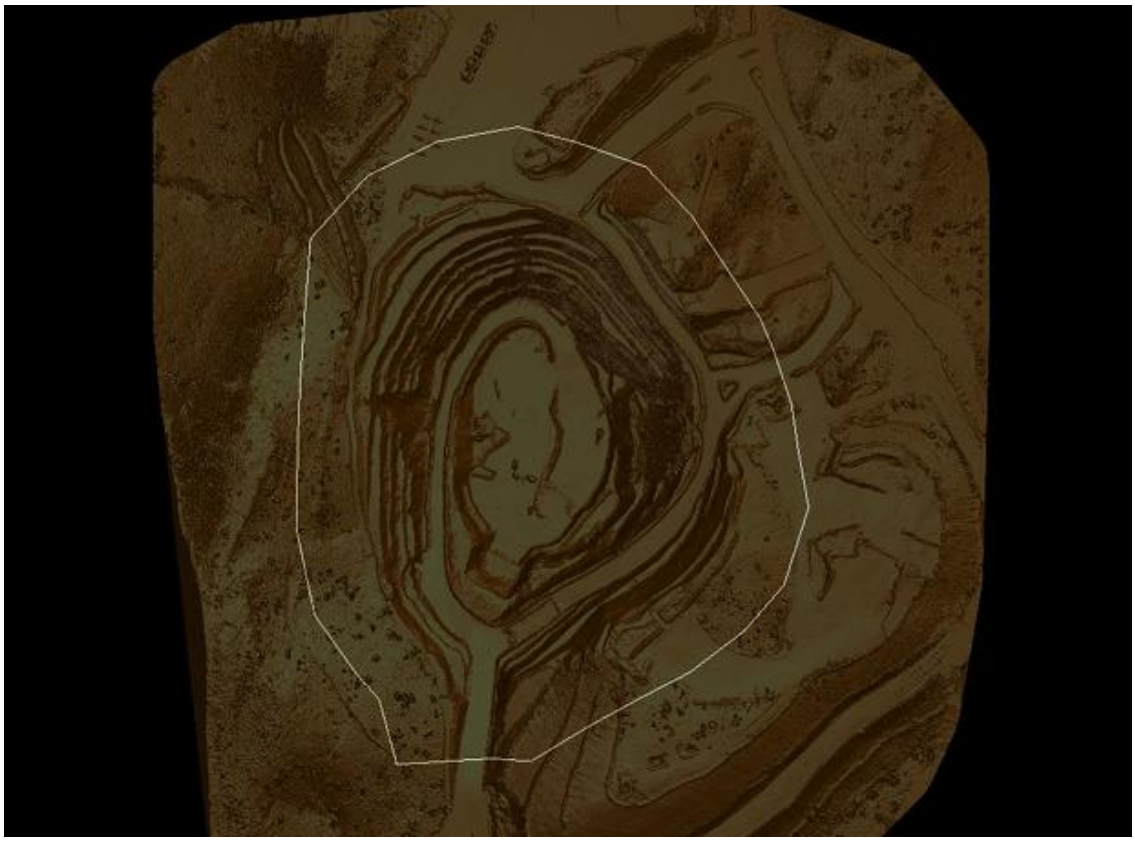


Figure 153: Location of Starra 222 Closure Bund (Quantum, 2023).

10.5.7.8 Starra 254 Open Cut

Numerical modelling of the Starra 254 pit was undertaken to assess the likelihood of future pit wall instability by Quantum (2023) using a Map3D model. Due to the close proximity of Starra 251 and Starra 257 underground mines and the influence the historical workings will have on redistributing stress toward the Starra 254 pit cutback, all three were modelled together.

The modelling results indicate:

- Most of the walls will remain stable with minor crest or berm loss in the oxidised metasediments of the southern section. The northern section is modelled to experience more numerous episodes of berm loss on the footwall side of the pit, including in the fresh material, but each area is small and there is no indication of multi-bench or total wall failure (see Figure 154).
- The key geotechnical risk appears to be potential toppling failure of the east wall exacerbated by the presence of the east/west to east northeast, west southwest trending fault structures. At least four such structures are known to cross the Starra 254 footprint, two of which have almost certainly contributed to past instability. Long term, lower wall stability is likely to be promoted by the presence of water once mining is complete.

The modelling indicates that closure bunding will need to be placed a minimum of 60m from pit crest and composed of fresh, non-acid forming rock, 2.4m high with a 6m base (Figure 155).

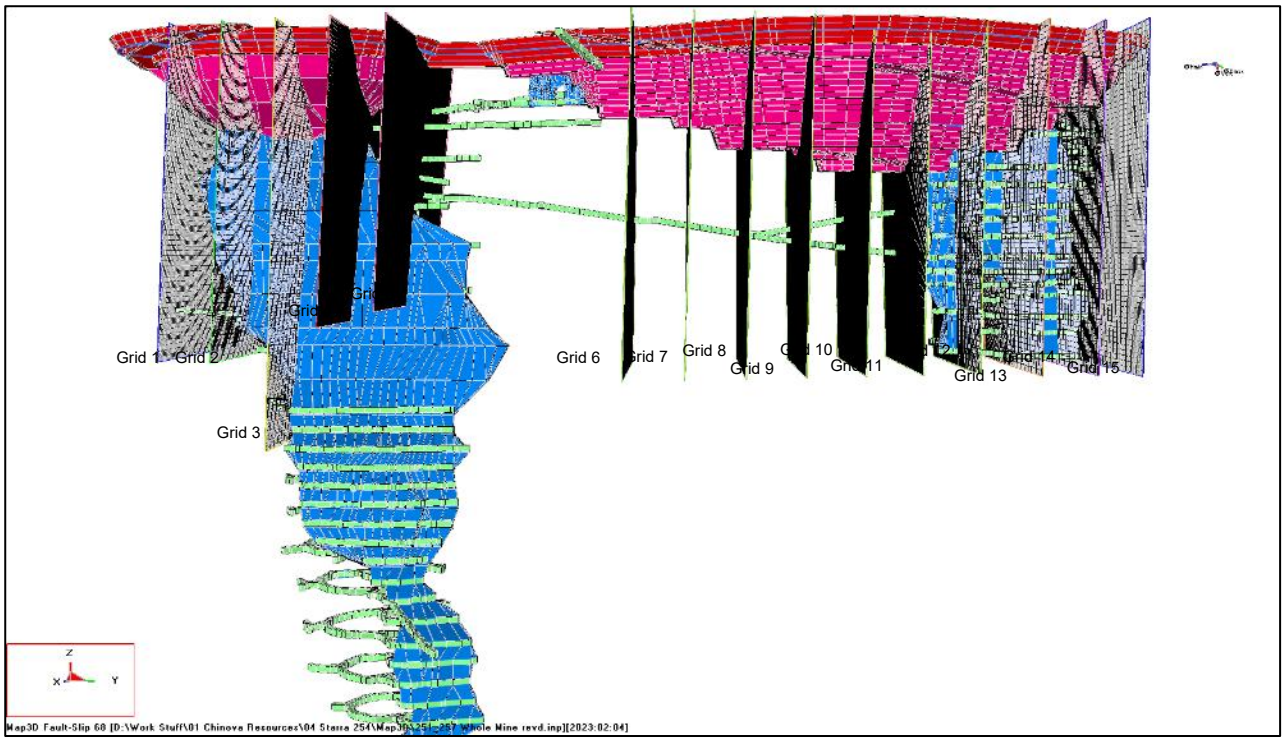


Figure 154: Starra 254 Map3D model with stress calculation grids.



Figure 155: Starra 254 Closure bunding location.

10.5.8 Underground workings

Quantum Geotechnical (2023 and 2025) have undertaken an updated assessment of the long-term stability of the Starra underground workings.

Where Chinova propose the backfilling of underground workings within Sections 10.5.8.1 to 10.5.8.5 below, Chinova must additionally comply with the requirements of Condition PRCP16 and PRCP17 of the approved PRCP Schedule.

- **PRCP16:** Prior to the backfilling of underground workings, a detailed backfill methodology developed by a RPEQ in line with existing geotechnical reporting must be submitted to the administering authority.
- **PRCP17:** On completion of milestone Rehabilitation Milestone 4 for each relevant RA, an "As-Constructed Report" prepared which details and justifies all variations to the report submitted in PRCP16, including a certification from an independent AQP that such variations will not affect the design performance of the works included must be submitted to the administering authority.

10.5.8.1 Starra 222 Underground

Numerical modelling of the Starra 222 underground workings (past and proposed) was undertaken to assess the likelihood of future surface stability by Quantum (2023) using a Map3D model.

The modelling results (see Figure 156) indicates:

- Results of the modelling show that sigma 1 stress levels are relatively low and that any instability would be tensional in nature – the ground relaxing - rather than crushing.
- The top of the main decline should remain stable even when all ground support has corroded.
- Pit cutback exposures showed minimal instability. During excavation of the Starra 222 cutback in 2023, several old underground workings were intersected. These areas experienced only localised instability of 2–3 m in backs of old drives, with no bench-scale or surface-scale failures observed. This operational evidence confirms the low subsidence risk indicated by the numerical modelling.
- Overbreak in underground stopes will not propagate upwards. Modelling identified localised hanging-wall and footwall overbreak within several stopes, with maximum hanging-wall overbreak of ~7m and footwall break of ~14 m, located approximately 180 m below surface. The stopes are backfilled and any rock mass relaxation or overbreak will be contained by backfill, preventing upward migration and eliminating the risk of surface subsidence.
- Potential footwall relaxation does not emerge at surface. Although modelling suggests that larger failures could occur in footwall zones due to the stress ‘shadow’ in the deposit, these areas are well below surface and any movement is expected to be restricted to underground excavations. A large footwall failure in March 2023 generated a natural buttress, further reducing any future movement potential.

Modelling indicates for closure; the new vent rises constructed as part of the resumption of underground mining will need to be filled. The original vent rises will, by necessity, be backfilled as the cutback proceeds. The new decline will be constructed from inside the enlarged pit and the portal constructed at a depth that negates the risk of any future collapse migrating to surface.

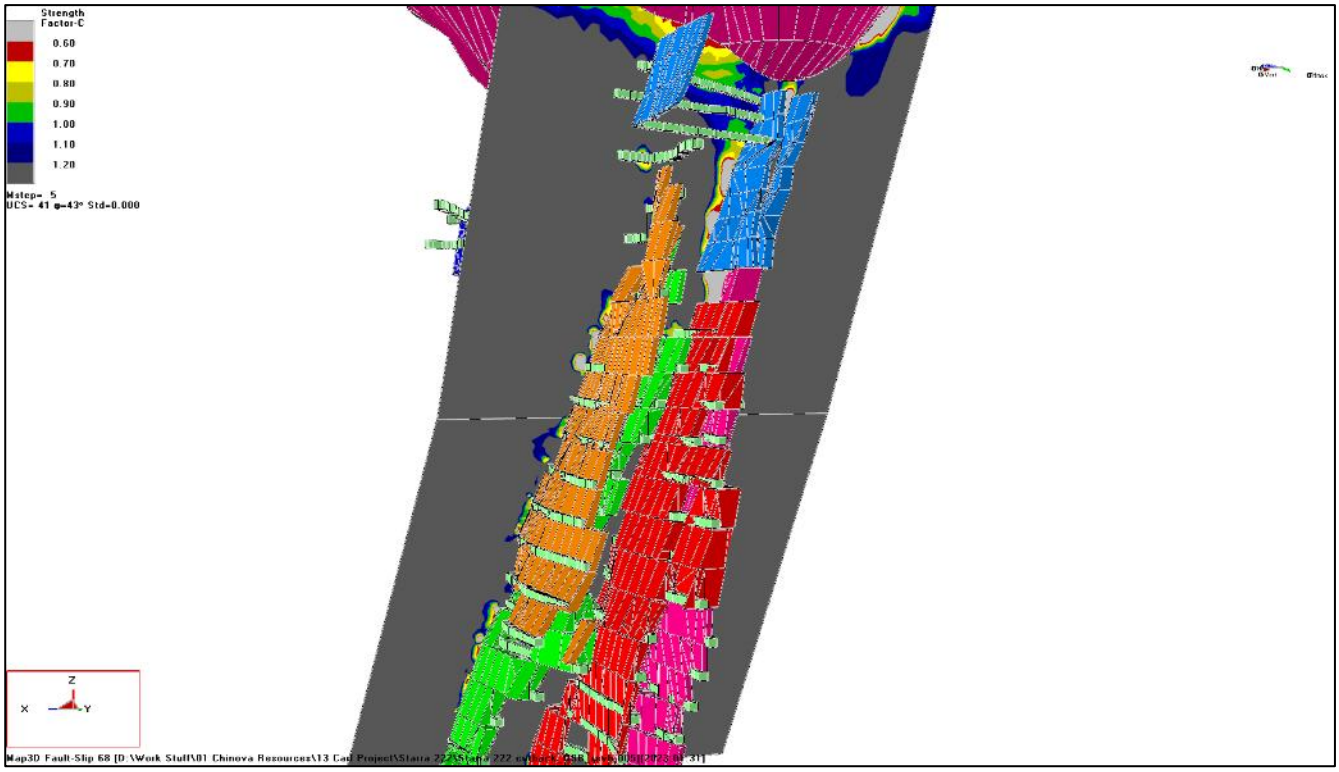


Figure 156: Stress on the stope hanging wall

10.5.8.2 Starra 244 Underground

Numerical modelling of the Starra 244 underground workings was undertaken to assess the likelihood of future surface stability by Quantum (2023) using a Map3D model. As the Starra 244 open pit was to be filled to its eastern rim by completion of the Starra 254 cutback mining campaign, only the western wall and underground underwent numerical analysis.

The modelling results (see Figure 157) indicates:

- Sigma 1 stress levels are relatively low and that any instability would be tensional in nature – the ground relaxing - rather than crushing.
- The portal entrance to Starra 244/251/257 was backfilled in preparation for the Starra 254 cutback. Approximately 40 m of the decline (between 80 m and 120 m) was removed or fired out (Figure 158), with the first ~80 m of the decline believed to have remained open. If this section of the decline were to collapse following deterioration of ground support, the predicted surface expression would be a subsidence footprint approximately 6 m wide and up to 4 m deep.
- Hanging-wall vent rises requires future backfilling. The vent rise remains unfilled but is capped and in use for dewatering. Modelling indicates that the surface leg of the rise will require backfilling for closure once the infrastructure is no longer required.

Surface access will require exclusion and monitoring. Quantum recommends fencing/bunding an exclusion zone 20 m wide (10 m either side of decline centreline) extending from the backfilled boxcut to the pit crest, with 6 monthly stability inspections, until safe backfilling or firing of the decline can occur.

In addition, as the Starra 244 open pit will be filled to its eastern rim upon completion of the Starra 254 cutback, closure bunding is only required around the western wall. The bund is to be placed 50m from the pit crest of the western wall.

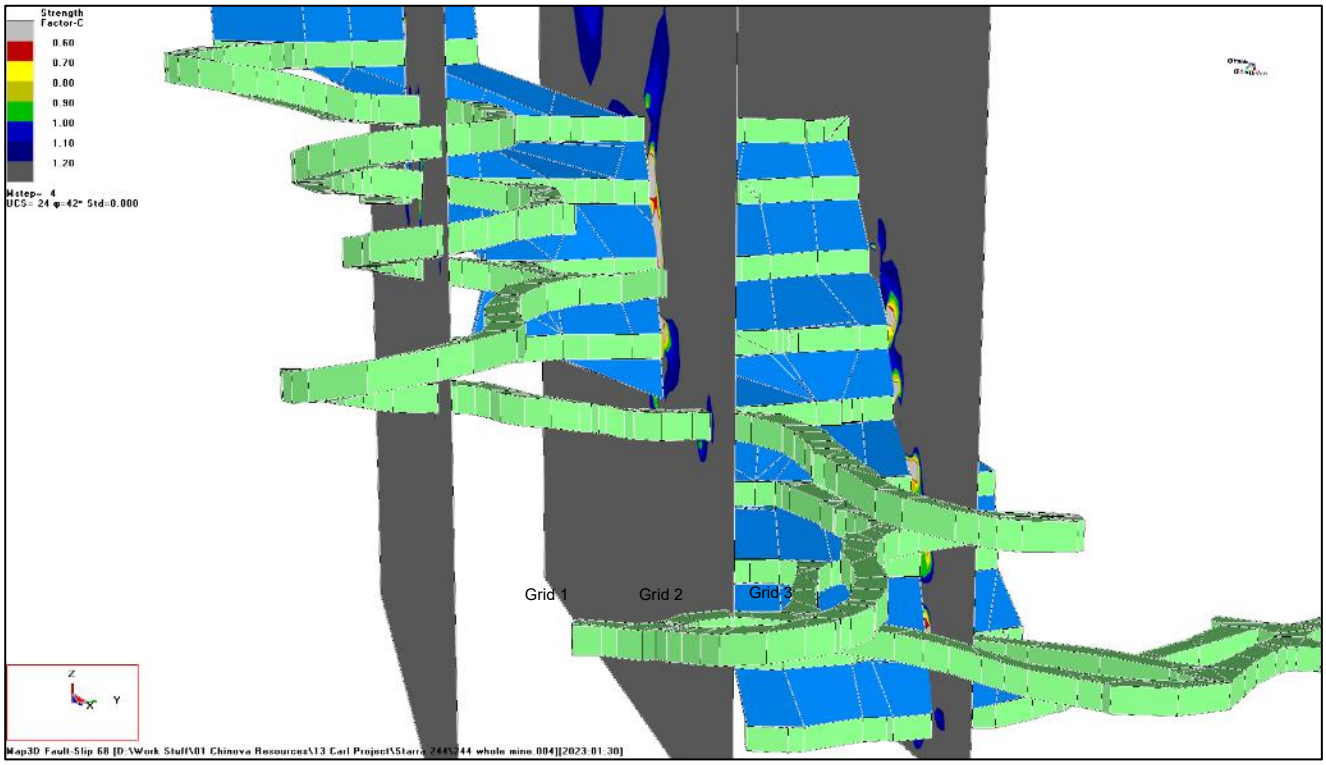


Figure 157: Stress in the stope hanging wall.

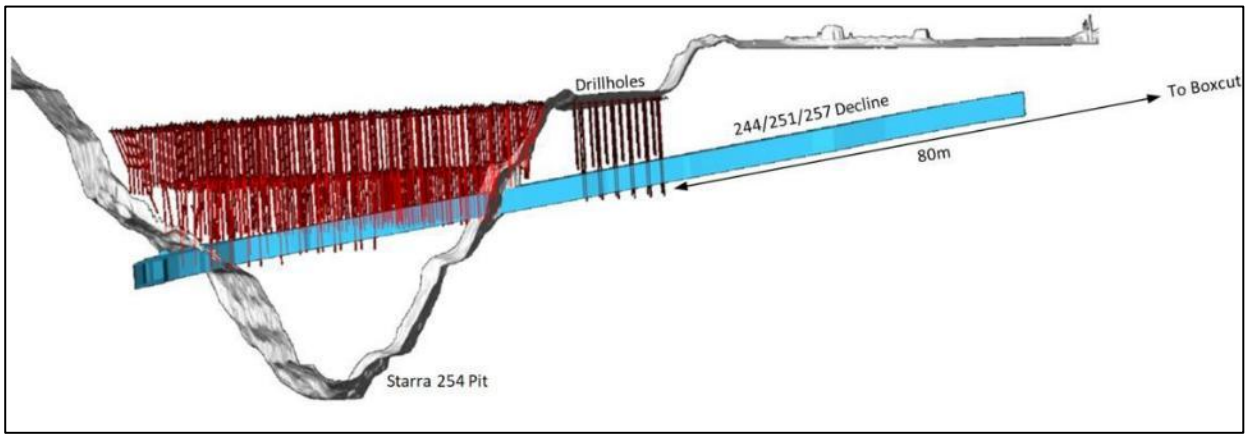


Figure 158: Starra 244/251/257 decline and Starra Open Pit Cutback.

10.5.8.3 Starra 251 Underground

Numerical modelling of the Starra 251 underground workings was undertaken to assess the likelihood of future surface stability by Quantum (2023) using a Map3D model. Due to their proximity to Starra 251 and 257 undergrounds were modelled together.

The modelling results (see Figure 159) indicates:

- Sigma 1 stress levels are relatively low and that any instability would be tensional in nature – the ground relaxing - rather than crushing.
- Development drive collapse leading to surface subsidence is highly unlikely.
- Extensive rock mass failure in the hanging wall is possible. The stress would have accumulated during the stope extraction mining step when the hanging wall relaxed under tensional forces. However, as the stoping block is subsequently backfilled the portions of failed hanging wall will simply rest on the backfill and not propagate to surface.
- Less significant ‘failure’ on the footwall side of the stoping block may occur in the future, which again does not propagate up toward Starra 254 pit walls.
- As stated within Section 10.5.8.2, the first ~80 m of decline into Starra 244/251/257 is likely to have remained open. If this section of the decline were to collapse following deterioration of ground support, the predicted surface expression would be a subsidence footprint approximately 6 m wide and up to 4 m deep. Surface access will require exclusion and monitoring as per Section 10.5.8.2.

Both the north and south vent rises fall within the footprint of the Starra 254 cutback and have been backfilled.

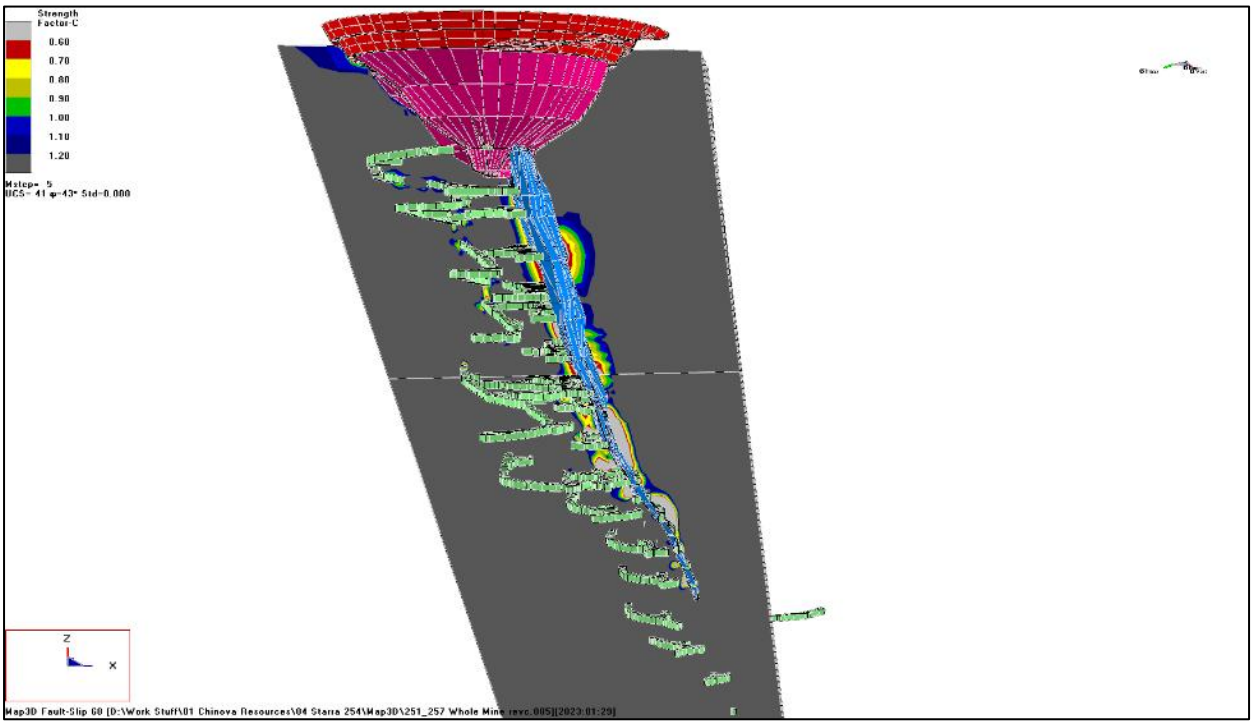


Figure 159: Starra 251 modelling results for Grid 4 following full extraction (looking North).

10.5.8.4 Starra 257 Underground

Numerical modelling of the Starra 257 underground workings was undertaken to assess the likelihood of future surface stability by Quantum (2023) using a Map3D model. Due to their proximity to Starra 257 and 251 undergrounds were modelled together. Only Starra 257 results are discussed here.

The modelling results (see Figure 160) indicates:

- that sigma 1 stress levels are relatively low and that any instability would be tensional in nature – the ground relaxing - rather than crushing.
- In summary, development drives are indicated very stable.
- Tight spiral decline but are unlikely to induce instability at surface.
- Some limited rock mass failure in the hanging wall near the top of the main zone and west zone stoping blocks may occur. Stress would have increased during the stope extraction phase of mining when the hanging wall relaxed under tensional forces. As the stoping block was subsequently backfilled the portions of damaged/failed hanging wall would rest on the backfill, reducing the risk of further damage or unravelling of the rock mass.
- Smaller, less numerous, areas of elevated stress on the footwall side of the stoping blocks. One of these zones, on the footwall side of the West Zone stoping block does encroach on the Starra 254 main ramp and may influence ramp stability. As with the hanging wall side however, modelled stress levels are highly unlikely to influence single bench or multi bench stability.
- As stated within Section 10.5.8.2, the first ~80 m of decline into Starra 244/251/257 is likely to have remained open. If this section of the decline were to collapse following deterioration of ground support, the predicted surface expression would be a subsidence footprint approximately 6 m wide and up to 4 m deep. Surface access will require exclusion and monitoring as per Section 10.5.8.2.

The mines vent rises fall within the footprint of the Starra 254 cutback and have been backfilled.

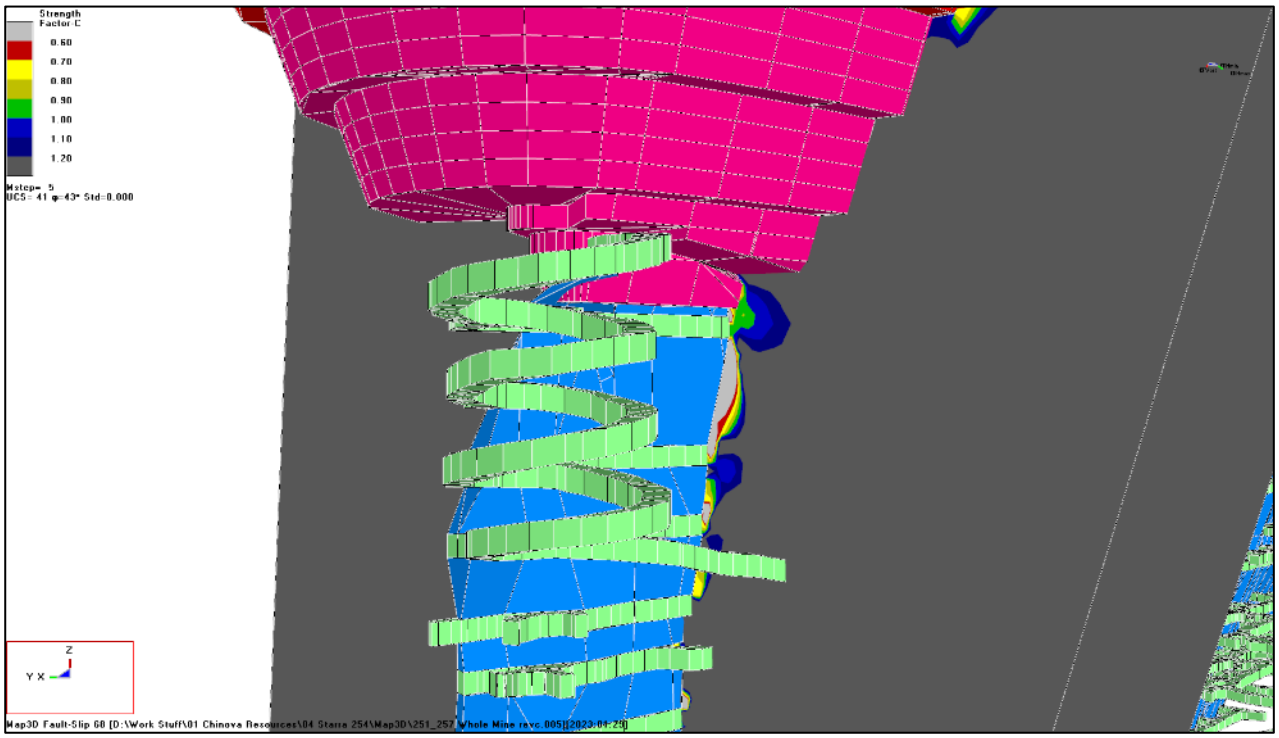


Figure 160: Stress in Starra 257 West Zone stoping block footwall.

10.5.8.5 Starra 276 Underground

Numerical modelling of the Starra 276 underground workings was undertaken to assess the likelihood of future surface stability by Quantum (2023) using a Map3D model.

The modelling results (see Figure 161 to Figure 163) indicates:

- Stress in the ground above the decline is between a factor of safety of 1.3 and 1.4 suggesting failure through to surface would be extremely unlikely.
- For the surface vent raises, once installed ground support has corroded beyond use, some localised, small scale slabbing around the boundary of excavations could occur.
- Some stress driven overbreak of stope hanging walls could occur. However, modelling suggests, even if the stoping block had been left unfilled the volume of modelled overbreak would not be sufficient to cause subsidence to surface.
- Failures are highly unlikely (FoS >1.0 above crowns) in later stoping blocks (2012-2014). Some localised hanging wall overbreak (~3.5m) possible in the 4125L double lift stopes. Again, due to the overbreak experienced at the time of mining these stopes were backfilled with development waste and are unlikely to pose a risk of surface subsidence.

For closure, modelling indicates that the decline will need to be backfilled for the first 119m of development. This will ensure any future overbreak in the drive does not migrate to surface. The surface legs of the mines ventilation system will also have to be filled as the shaft lining will, at some point in time, deteriorate beyond its usefulness.

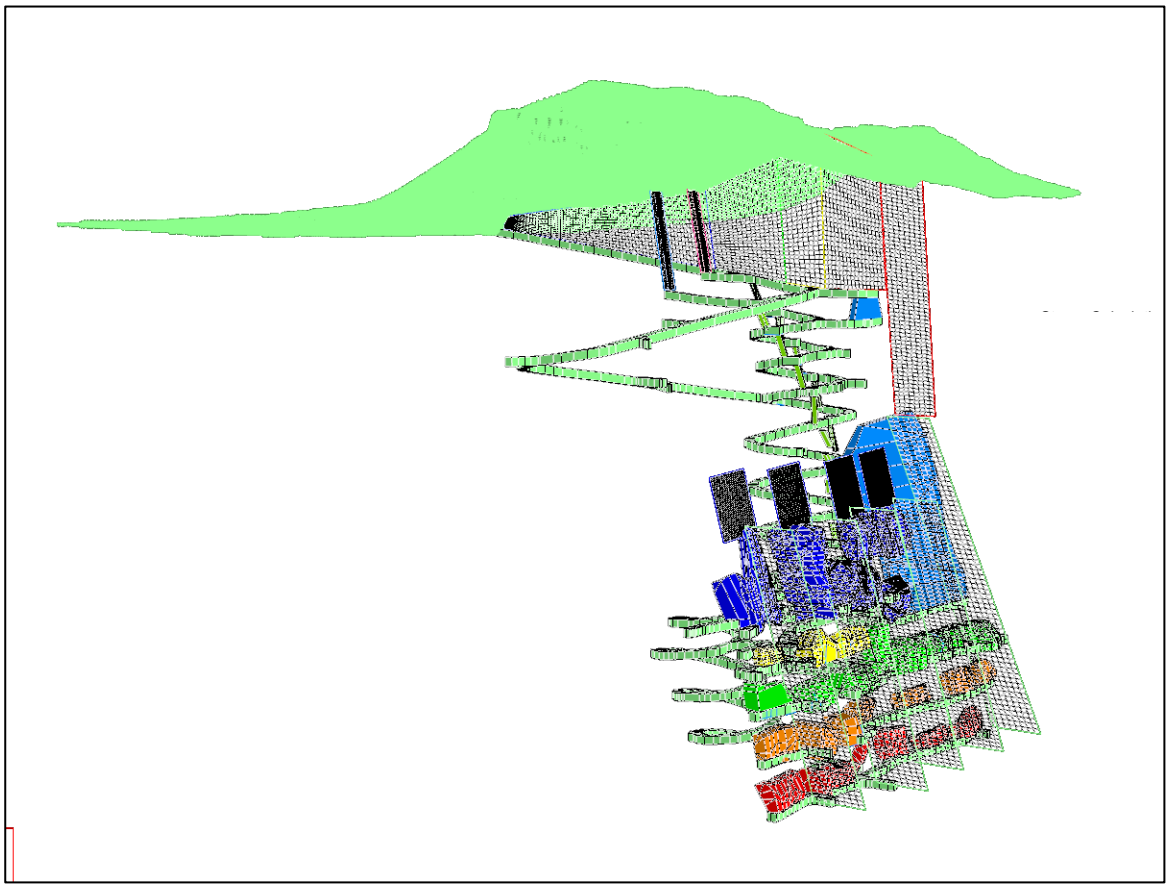


Figure 161: Map3D model of Starra 276 underground, with stress calculation grids.



Figure 162: Map3D modelling results of the upper main decline and surface vent rises.

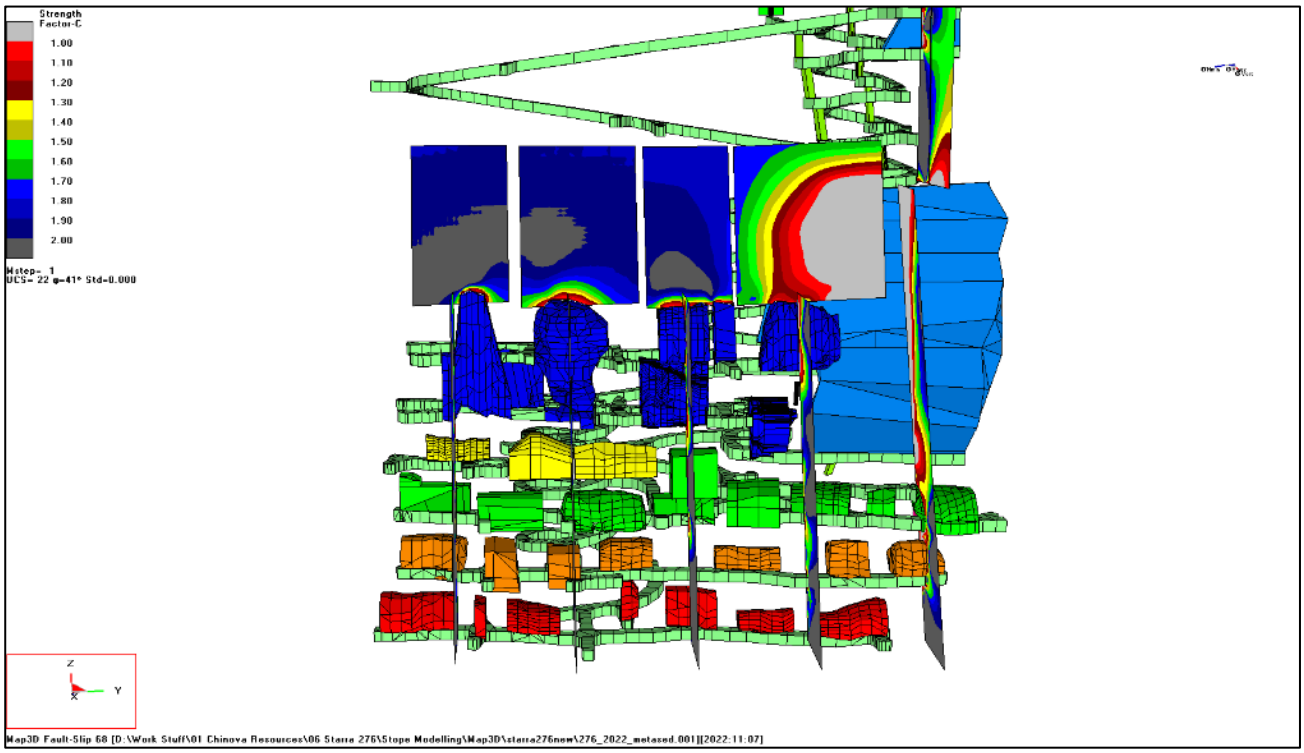


Figure 163: Map3D modelling results of stoping (looking West).

10.5.9 Hydrogeology

The hydrogeology of the Starra area was investigated by AGE in 2023 to meet the requirements of the PRCP guideline (Appendix 1). Groundwater hydrostratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in Section 10.1.5. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Starra to assist with determining appropriate containment and management during operation and closure.

10.5.9.1 Conceptual Hydrological Model

To conceptualise the groundwater flow system, AGE (2023) reviewed existing data for ground elevation, infrastructure, geology, and water levels (as available) to produce an interpretative northwest to southeast hydrogeological cross section (Figure 164 and Figure 165).

The northwest to southeast cross section is oriented perpendicular to the strike of the main geological units and is aligned with the Starra 257 pit and the Eastern TSF. The potentiometric high centred on monitoring bore MB2a is apparent in this cross section; this has been attributed to groundwater mounding associated with the Eastern TSF. Groundwater levels across the Stavely Formation are observed to rise from approximately 325 mAHD at the Starra 257 pit to 328 mAHD at MB4, which is located on the western side of the Eastern TSF. Between MB4 and MB2a, the potentiometric surface rises more steeply. Thus, the potentiometric high is under the Eastern TSF; it is also near the contact between the Stavely Formation and the Kuridala Group. The impact of dewatering of the Starra Line underground is likely limited to the Stavely Formation. The similarity of groundwater level trends in bores in the Kuridala Group and Staveley Formation suggests that some hydrologic connection exists at shallow levels across the lithologic boundary between the Stavely Formation and the Kuridala Group. However, a depth this contact is conceptualised as a barrier to flow, which is consistent with the decreased permeability with depth in bores MB257 and MB257a.

The southwest to northeast cross section is oriented subparallel to geological strike and is aligned with the Southern TSF, Eastern TSF, and Merlin borefield. The two main hydrogeologic features in this cross section are the potentiometric high centred on monitoring bore MB2a and the zone of depressurisation from the Merlin borefield.

Ecosystem use of groundwater in the area is unlikely due to the considerable (>20 m) depth to groundwater. There are no pastoral users of groundwater near the cross section and groundwater-surface water interaction is unlikely to the groundwater depth at the site.

10.5.9.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2023) to assess potential impacts to groundwater from the future Mount Dore mine infrastructure (Table 118). The potential sources of solutes to groundwater include the pits and underground voids, the Eastern and Southern TSFs, WRDS, the Selwyn industrial area, and sediment dams.

The potential receptors include:

- mapped areas along the Mort River tributary with potential for aquatic or terrestrial GDEs;
- groundwater bores used for livestock watering; and
- water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to a receptor. The AGE (2023) impact assessment presented in Table 120 indicates that:

- there is no past or future impact predicted for potential aquatic GDEs regarding drawdown;
- there is highly unlikely past impact and future impact on potential aquatic GDEs from solutes originating from the Eastern TSF;
- there is highly unlikely future impact on potential aquatic GDEs from solutes originating the Selwyn industrial area;
- there is no past or future impact predicted for potential terrestrial GDEs as a result of groundwater drawdown;
- there is unlikely past impact and lessening future impact for potential terrestrial GDEs from solutes originating from the Eastern TSF; - Historically, seepage from the Eastern TSF is potentially associated with increasing concentration trends that are limited to a few elements (chromium, copper, and possibly molybdenum) and to a few bores (MB4, MB5, and MB6). These trends are potentially indicative of seepage impacts, but the concentrations of these solutes are still generally low and at concentrations with minimum potential for environmental harm.
- here is no past of future impact predicted for potential terrestrial GDEs from diffusion or migration of solutes in the unsaturated zone; - out of an abundance of caution, this assessment should be revisited if changing water quality is detected in bores MB10 or MB11
- there is no past and highly unlikely future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source; and,
- there is past impact and future impact for groundwater used for industrial uses regarding water access due to dewatering. However, this impact is considered inconsequential due to the relatively small amounts of water hosted in the Staveley Formation.

10.5.9.3 Contaminants of Concern

The methodology used to identify relevant CoCs has been detailed within Section 6.5.2.3. The CoCs identified by AGE as relevant to closure monitoring for Starra are summarised in Table 141, with justification for inclusion or exclusion provided within Appendix 16.

Table 141: Starra CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Arsenic (ug/L)	Y
Chromium (ug/L)	Y
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Fluoride (mg/L)	N
Lead (ug/L)	Y
Molybdenum (yg/L)	Y
Selenium (ug/L)	Y
Uranium (ug/L)	Y
Zinc (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y
Free Cyanide (mg/L)	Y
Total Cyanide (mg/L)	Y
WAD Cyanide (mg/L)	Y

10.5.9.4 Hydrogeology Closure Considerations

Based on the updated hydrogeology assessment for Starra the following measures are proposed for closure:

- Ongoing groundwater quality and level monitoring to confirm limited risks to the receiving environment.

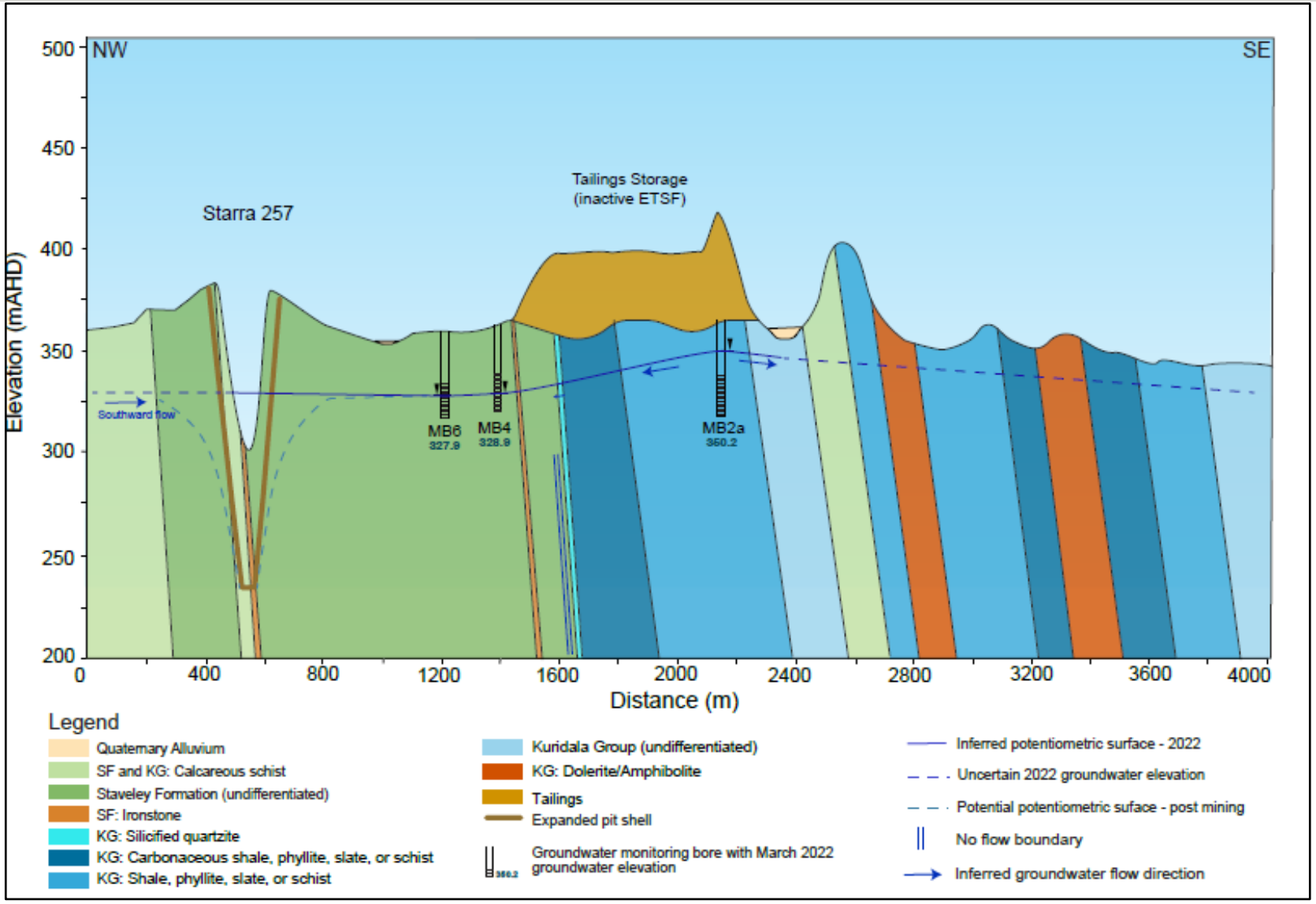


Figure 164: Conceptual northwest-southeast hydrogeological cross section near Starra 254 (AGE, 2025a)

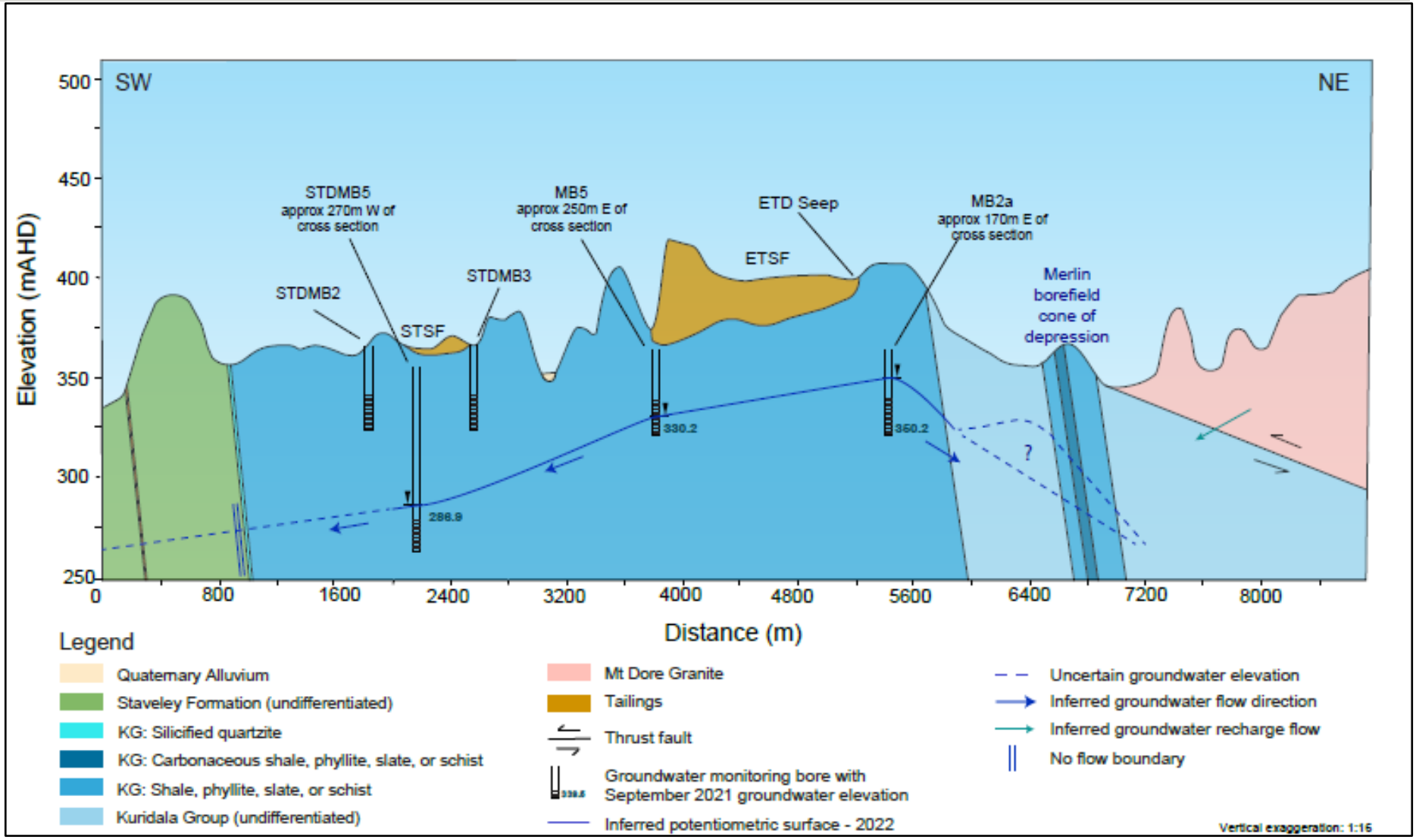


Figure 165: Conceptual southwest-northeast hydrogeological cross section (AGE, 2025a)

Table 142: Source-Pathway-Receptor analysis for the Starra area

Source (and associated risk)	Receptor	Potential Pathway	Evidence that pathway is present / absent	Predicted Impact
Drawdown from past or future dewatering of the Starra pits and underground **As groundwater was extracted during periods of mining, a cone of depression has developed and intermittently changed in depth and extent. The range of future drawdown is projected to be commensurate with that has historically occurred.**	**Mapped areas with potential for aquatic GDEs** Not present within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If groundwater discharge to the surface water features in question had been reduced as a consequence of drawdown, there could be impacts to the GDE.	**Not present:** No historic drawdown has been recorded at MDWB12/12a, which is located between the Starra voids and the potential receptors. Future drawdown is predicted to be commensurate with historic drawdown. Furthermore, due to the very low hydraulic conductivity associated with the Staveley Formation, this drawdown is predicated to be very limited.	No past or future impact is predicted.
Starra pits and underground **Acid and sulfate-enriched drainage generation within these voids is possible due to the exposure of sulfide-bearing ore to oxidation.**	**Mapped areas with potential for aquatic GDEs** Not present within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River	If this water were to flow away from the voids and reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present:** This transport could only occur after a period of groundwater level recovery, when groundwater flow is away from the mine voids. However, after that time transport directions will be towards the south (parallel to the Mort River). Furthermore, the distance (>5km) to the potential GDEs is likely to great to allow transport in the relatively impermeable formation without considerable natural attenuation.	No past or future impact is predicted.

Eastern TSF **This TSF has historically generated seepage with variable acidity and solute concentration and may due so in the future. However, historic seepage from this infrastructure has been lessened by recent capping measures and the potential for future seepage will lessen even further in closure, when the TSF is fully capped.**	**Mapped areas with potential for aquatic GDEs** Not present within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River	If seepage were to flow to the water table	**Not currently present, highly unlikely in the future:**	
Southern TSF, WRDs, sediment dams and other infrastructure located south of the Wyche dam **There is no evidence that this TSF has historically generated seepage. However, it is likely that this infrastructure has the ability to generate seepage with variable acidity and solute concentration. The potential for future seepage will lessen further in closure, when the TSF is capped.**	**Mapped areas with potential for aquatic GDEs** Not present within 5 km of site. Areas that do exist are located to the southeast along stretches of the Mort River.	If seepage were to flow to the water table, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >5 km without natural attenuation.	**Not present:** The watertable at this location is >50 mBGL and is, therefore, not considered a potential pathway. Irrespective of this, even if this theoretical seepage were to reach the watertable, transport direction is to the south (i.e. not the southeast).	No past or future impact is predicted.
WRDs, sediment dams (including Wyche), Selwyn Industrial area and other infrastructure located above the Staveley Formation and north of the Wyche dam	**Mapped areas with potential for aquatic GDEs** Not present within 7 km of the WRD. Areas that do exist are located to the	If seepage were to flow to the watertable, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs.	**Not present** This infrastructure is located above the Staveley Formation, but in an area where there is shallow groundwater connectivity between	No past impact is predicted. Future impact is highly unlikely.

The existing and future infrastructure is potentially acid generating. Infiltration of seepage below the infrastructure is possible, whereby solutes may potentially reach the water table.	southeast along stretches of the Mort River.	The pathway would also depend on groundwater velocities fast enough for solutes to travel >7 km without natural attenuation.	the Staveley Formation and the Kuridala Group (the hydrostratigraphic unit with the potential GDEs). Groundwater flow directions in the area of this infrastructure is not currently to the southeast (towards the potential GDEs); however, this may change as mounding associated with the Eastern TSF subsides. Thus, there is a theoretical potential future pathway towards the potential GDEs. If this theoretical pathway ever does exist, it is highly unlikely that flow over this distance would occur without significant natural attenuation.	
Starra 254 WRD **This WRD is designed with a designated PAF cell to capture and contain any potential acid/solute generating seepage. However, some potential for generation of acid or sulfate enriched seepage is present. A portion of this feature overlies the Gin Creek Granite and associated Double Crossing Metamorphics.**	**Mapped areas with potential for aquatic GDEs** Not present within 7 km of site. Areas that do exist are located to the southeast along stretches of the Mort River	If seepage were to flow to the watertable, which was then to reach the zone shallow enough to intersect local drainages, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel >7 km without natural attenuation.	**Not Present** The travel direction between the WRD and the receptors involves movement of groundwater across impermeable layers of the Staveley Formation.	No past or future impact is presented.
Drawdown from past or future dewatering of the Starra pits and underground **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines	If groundwater levels beneath the terrestrial GDEs had been lowered, vegetation access to water could have been restricted.	**Not present** No historic drawdown has been recorded at MDWB12/12a, which is located between the infrastructure and the potential receptors. Future drawdown is predicted to be	No past or future impact is predicted.

	likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries.	If the terrestrial GDEs are reliant only on moisture in the unsaturated zone, drawdown of the water table is not a pathway that can affect the availability of that water.	commensurate with historic drawdown. **Not Present** There is no pathway for mining activities to change the amount of soil moisture or vadose zone water that is available to the terrestrial GDEs. This is dictated by the amount of rainfall, infiltration, and evaporation. Although clearing for mining may have increased infiltration (e.g., due to decreased transpiration), this is not linked to impacts from groundwater changes.	
Starra pits and underground **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast along the reaches of the Mort River and >6 km from the voids. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above	**Not Present** In area of the voids, the groundwater levels are currently very deep (>30mBGL) and remnant solutes in the water are only likely to be accessible to vegetation if it, firstly, reaches the watertable and is then transported towards the southeast (toward the Mort River). This transport would require movement of groundwater at depth from the Staveley Formation into Kuridala Group and this will not occur due to the likely to the relatively impermeable nature of the Staveley formation at depth. **Not present**	No past or future impact is predicted.

		shallow expressions of pit water could be connected via a pathway.	There are no likely terrestrial GDEs that are directly adjacent to the underground and pits and pit water levels are >30 mBGL, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	
Eastern TSF **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast along the reaches of the Mort River and several km from the infrastructure. Flow to these areas without significant natural attenuation is unlikely. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of pit water could be connected via a pathway.	**Potentially present, less likely to be present in the future** In area of the Eastern TSF, the groundwater levels are currently (15 to 30 mBGL) and potential solutes in the water are only likely to be accessible to vegetation if it firstly reaches the watertable and is then transported towards the southeast (toward the Mort River, where the potential GDEs are mapped). This transport direction is implied by current contour maps. However, the distance to the potential GDEs is likely to great to allow transport in the relatively impermeable formation without considerable natural attenuation. The potential for impact in the future will lessen as seepage continues to abate. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the proposed infrastructure and levels are generally >20 mBGL, therefore,	Unlikely past and lessening potential for future impact.

			there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	
Southern TSF, WRDs, sediment dams and other infrastructure located south of the Wyche dam **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast, within the Kuridala Group along the reaches of the Mort River and several km from the infrastructure. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of seepage could be connected via a pathway.	**Not present:** This infrastructure is located above the Staveley Formation, but in an area where there is shallow groundwater connectivity between the Staveley Formation and the Kuridala Group (the hydrostratigraphic unit with the potential GDEs). Groundwater flow directions in the area of this infrastructure is not currently to the southeast (towards the potential GDEs); however, this may change as mounding associated with the Eastern TSF subsides. Thus, there is a theoretical potential future pathway towards the potential GDEs. If this theoretical pathway ever does exist, it is highly unlikely that flow over this distance would occur without significant natural attenuation. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the existing or proposed infrastructure, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past or future impact is predicted.

WRDs, sediment dams (including Wyche), Selwyn Industrial area and other infrastructure located above the Staveley Formation and north of the Wyche dam **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential from the GDE atlas, and areas of BVG 16a (Figure 11.2).	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast, within the Kuridala Group along the reaches of the Mort River and several km from the infrastructure. If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of seepage could be connected via a pathway.	**Not present:** This infrastructure is located above the Staveley Formation in an area where there is limited groundwater connectivity between the Staveley Formation and the Kuridala Group (the hydrostratigraphic unit with the potential GDEs) and in an area where groundwater levels are >50mBGL. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the existing or proposed infrastructure, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past or future impact is predicted.
Starra 254 WRD **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Potentially Present:** There are areas of BVG 16a and mapped potential GDEs to the southeast along the reaches of the Mort River and its tributaries. **Not Present:** There are no likely terrestrial GDEs that directly overlie the area of the MLs. This defines likely terrestrial GDEs as mapped areas of moderate or high potential	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. The mapped areas of potential terrestrial GDEs are present to the southeast, within the Kuridala Group along the reaches of the Mort River and >7 km from the infrastructure.	**Not present:** The travel direction between the WRD and the receptors involves movement of groundwater across impermeable layers of the Staveley Formation. **Not present** There are no likely terrestrial GDEs that are directly adjacent to the existing or proposed infrastructure,	No past or future impact is predicted. Future impact is highly unlikely but should be investigated if a change in water quality is detected in bores MB10 or MB11.

	from the GDE atlas, and areas of BVG 16a.	If the terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, only the zones directly above shallow expressions of seepage could be connected via a pathway.	therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	
Drawdown from past or future dewatering of the Starra pits and underground **Risks as described above.**	**Groundwater bores used for livestock watering** There is one functioning livestock watering bore documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering. Furthermore, the host hydrostratigraphic unit (the Staveley Formation) is relatively impermeable and often very deep and is unlikely to be used for this purpose.	If groundwater levels at the locations of potential livestock bores had been lowered, groundwater user access to water could have been restricted.	**Not present** No historic impacts on groundwater bores have been recorded. Future drawdown is predicted to be commensurate with historic drawdown and will be followed by a period of recovery.	No past and highly unlikely future impact
Starra pits and underground, Eastern TSF, Southern TSF, WRDs, sediment dams and other infrastructure located south of the Wyche dam, WRDs, sediment dams (including Wyche), Selwyn Industrial area and other infrastructure located above the Staveley Formation and north of the Wyche dam, Starra 276 WRD **Risks as described above.**	**Groundwater bores used for livestock watering** There is one functioning livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering. Furthermore, the host hydrostratigraphic unit (the Staveley Formation) is relatively impermeable and often very deep	If groundwater below or near these infrastructure locations was impacted by enriched solute loads, and it flowed towards existing or theoretical future bores in any direction, the water quality at those bores could be impacted.	**Not present and unlikely in future:** The theoretical future bores, if they ever exist, are potentially close enough to be impacted.	No past and highly unlikely future impact is predicted.

	and is unlikely to be used for this purpose.			
Drawdown from past or future dewatering of the Starra pits and underground **Risks as described above.**	**Water used for industrial purposes (mining)** Groundwater is used by Chinova in the region, but very little of this water comes from the Staveley Formation which does not host a productive aquifer.	If groundwater levels at the locations of potential industrial bores had been lowered, groundwater user access to water could have been restricted.	**Present, decreasing future impact** Groundwater has been variably used by Chinova, but little of this is from the Staveley Formation. In closure, drawdown will be followed by a period of recovery	Minimal past or future impact is predicted.
Starra pits and underground, Eastern TSF, Southern TSF, WRDs, sediment dams and other infrastructure located south of the Wyche dam, WRDs, sediment dams (including Wyche), Selwyn Industrial area and other infrastructure located above the Staveley Formation and north of the Wyche dam, Starra 276 WRD **Risks as described above.**	**Water used for industrial purposes (mining)** Water quality of the groundwater is saline, and therefore limits the beneficial use in for industrial purposes.	If groundwater quality at the locations of potential industrial bores had been altered to exceed certain water quality objectives (WQOs), impacts may be experienced by the groundwater user.	**Not present:** Water quality changes that may have or might occur are unlikely to have changed the utility of water used for industrial purposes (i.e., solute concentrations for regional groundwater are already greater than most WQOs).	No past or future impact is predicted

10.5.10 Flooding

The potential impacts of flooding on the Starra mine landforms were assessed by WRM (WRM, 2023; WRM, 2025) (Appendix 2 and Appendix 19).

WRM developed hydrological and hydraulic models for drainage features nearby the Starra mine area. The models were developed for drainage features classified as second order watercourses or greater in the Queensland Globe database, or watercourses with catchments draining to mining infrastructure.

The WRM hydrological model was developed using a unified river basin simulator (URBS) hydrological modelling package. The URBS model determined the design discharges for the 1% (1 in 100), 0.1% (1 in 1000) AEP, and Probable Maximum Flood (PMF) design flood events. The flow behaviour of the design discharges was then determined using a two-dimensional TUFLOW hydrodynamic model.

The modelled flood depths for the Starra mine area shown in Figure 166 to Figure 171, with the flood velocities show in Figure 172 and Figure 177.

The model results demonstrate:

- The Wyche dam wall would be overtopped for the 0.1% and PMF events.
- The edges of the 254 ROM, 244 East WRE and 222 South WRE are just inundated by all flood events.

Starra 244 and Starra 25:

- Velocities downstream of the 251 Portal reach 1.0 to 1.5 m/s for the 1% AEP event, increasing to 2.0 m/s in the PMF.
- The highest velocities in the study area occur at Wyche dam spillway, where PMF flows exceed 2.5 m/s, indicating high-energy channel conditions.
- Across the WRD 244, velocities remain low (less than 1.0 m/s) in the western region, indicating no significant erosion risk to these structures.
- Along the main creek, particularly between the WRD and the Wyche dam, velocities increase sharply where the flow is channelised.
- Wyche dam is confirmed to be the key controlling feature for both flood depth and velocity, behaving as expected under PMF conditions.

Starra 222:

- Velocities in the 1% and 1 in 1000 AEP events are generally 0.5 to1.5 m/s, increasing where the channel narrows.
- The PMF event produces velocities higher than 2.0 m/s.
- No critical final void or WRD infrastructure lies within high-velocity areas.

Closure planning and rehabilitation will consider flood impacts to the toe of legacy WRE's including ongoing downstream monitoring. The main risk is sediment laden water as material characterisation to date shows the waste rock is NAF with low salinity and soluble metal levels.

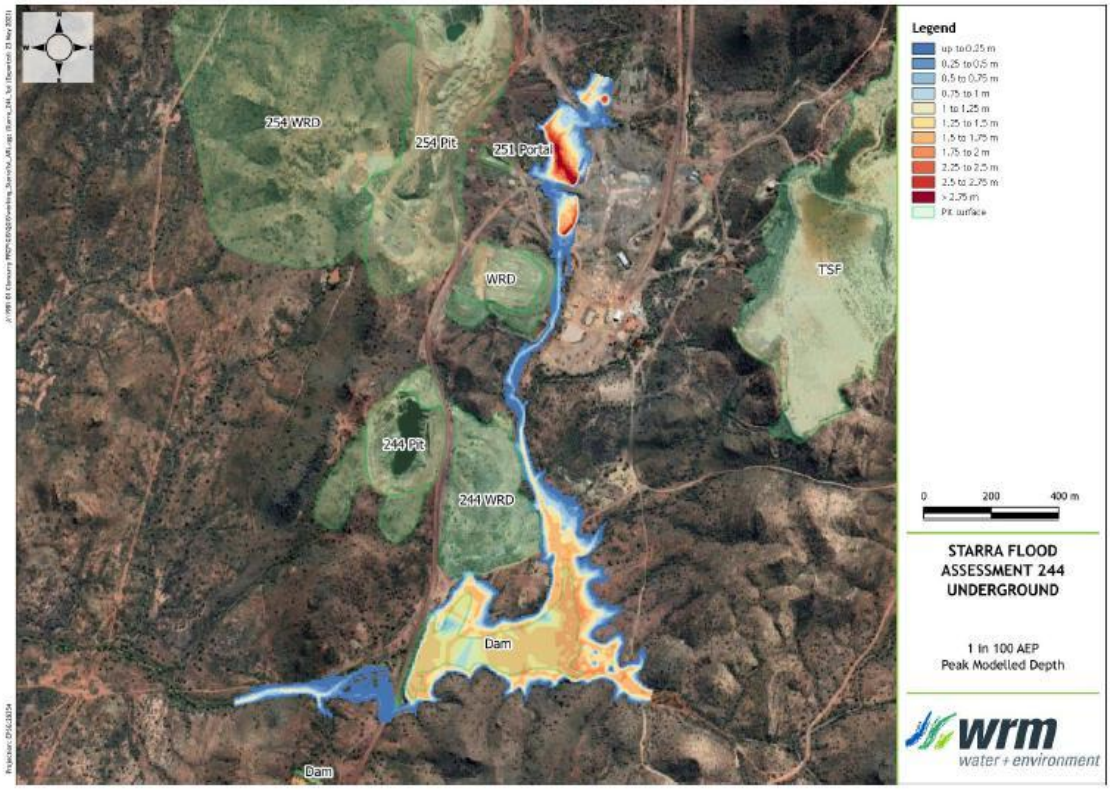


Figure 166: Starra 254/244 area flood depths and extents (1% AEP)

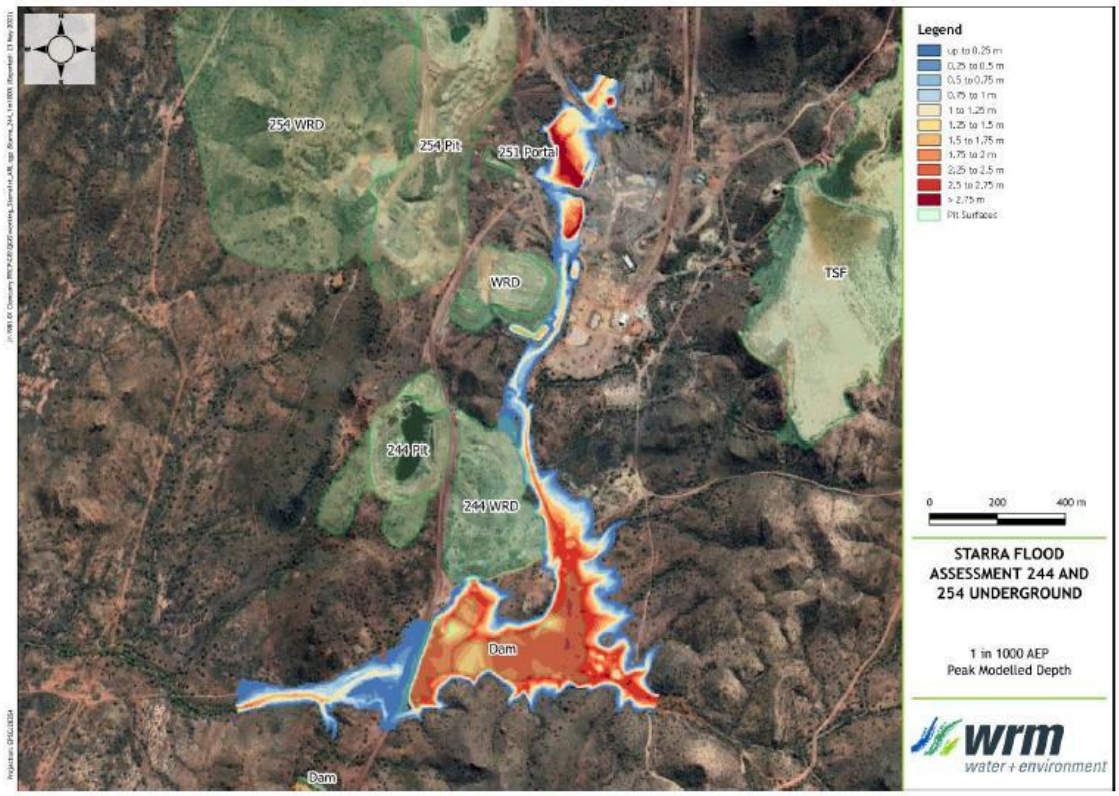


Figure 167: Starra 254/244 area flood depths and extents (0.1% AEP)

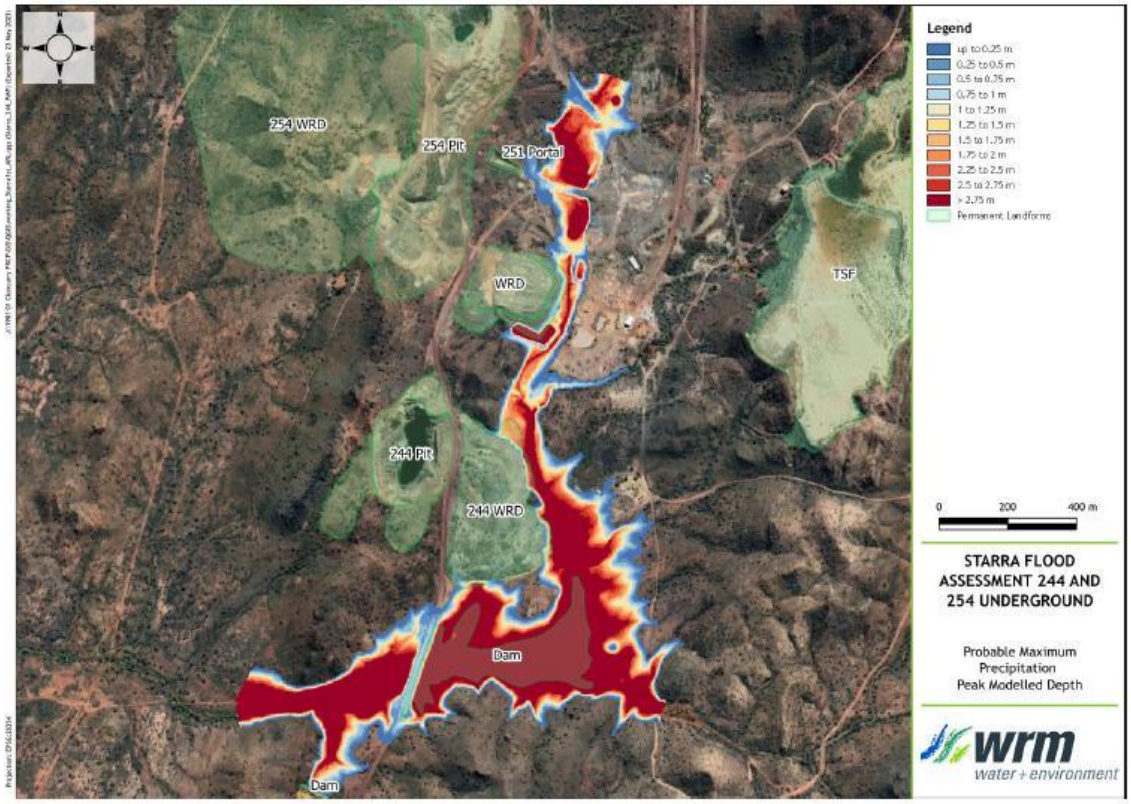


Figure 168: Starra 254/244 area flood depths and extents (PMF)



Figure 169: Starra 222 area flood depths and extents (1% AEP)

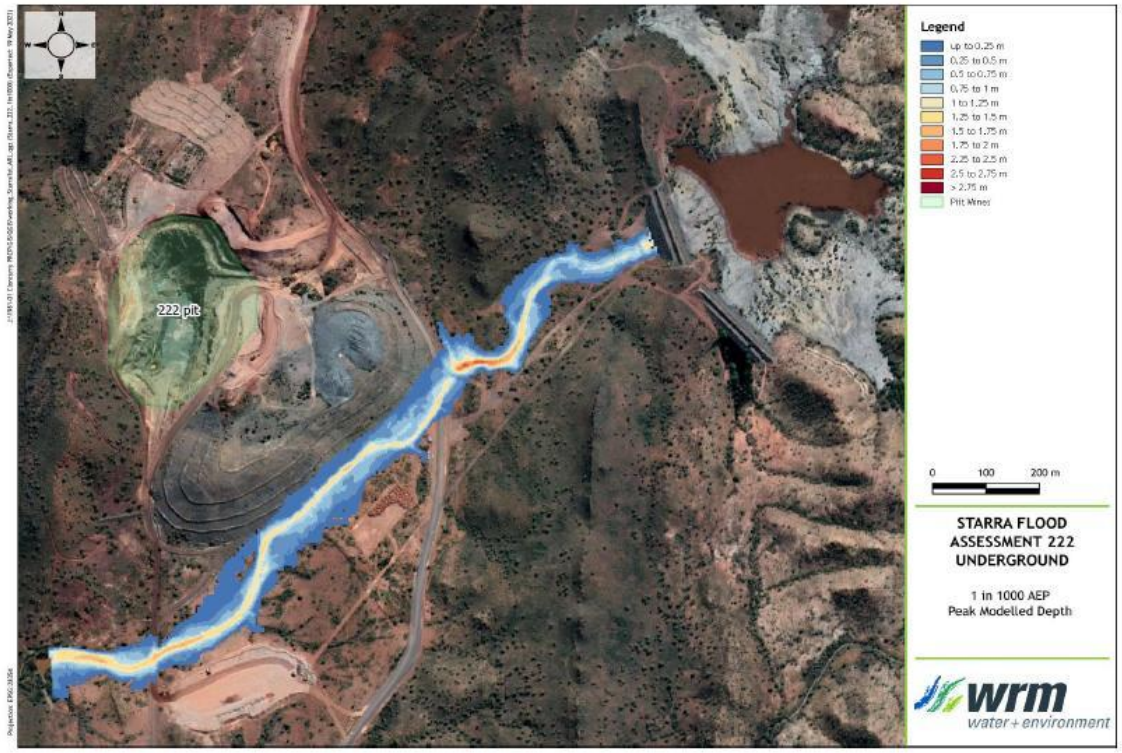


Figure 170: Starra 222 area flood depths and extents (0.1% AEP)

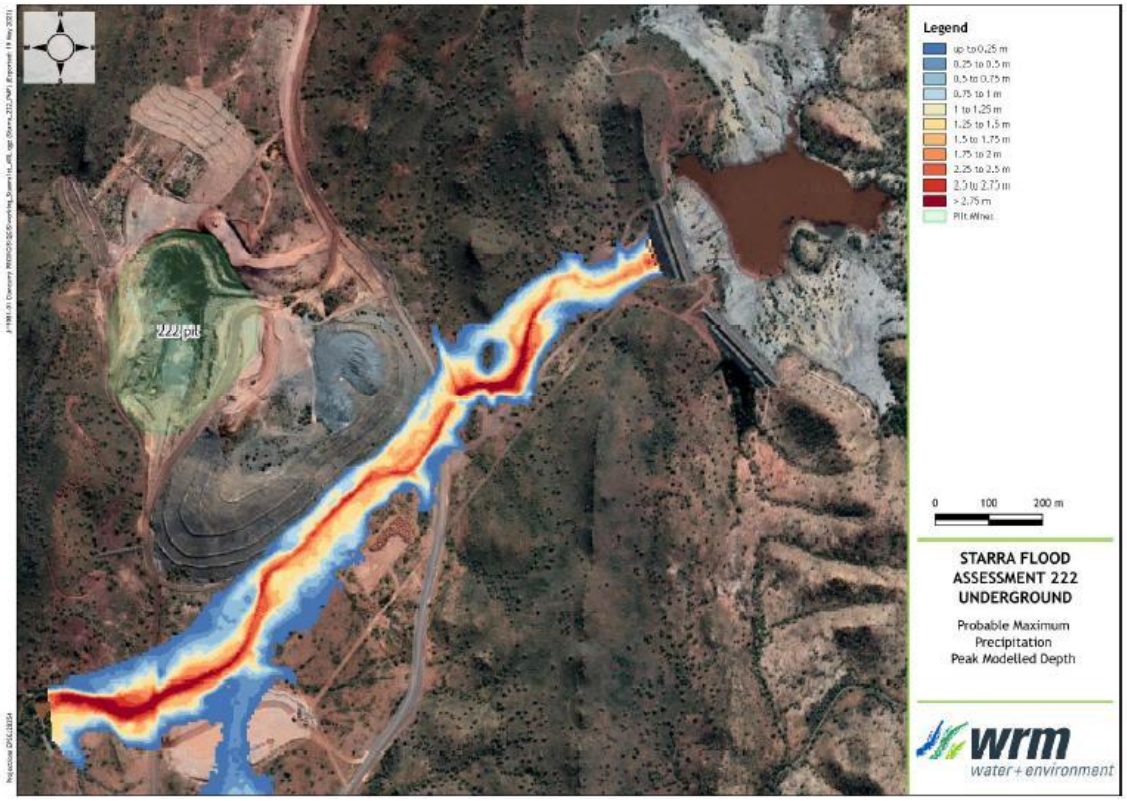


Figure 171: Starra 222 area flood depths and extents (PMF)

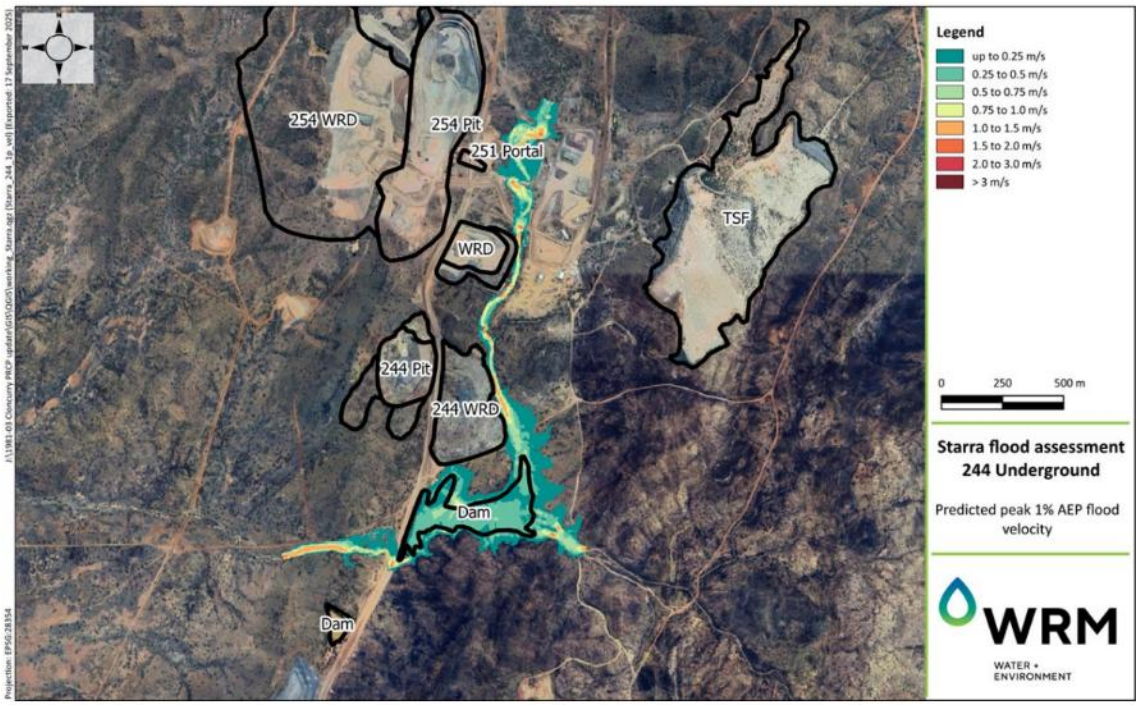


Figure 172: Starra 254/244 area flood velocities and extents (1% AEP)

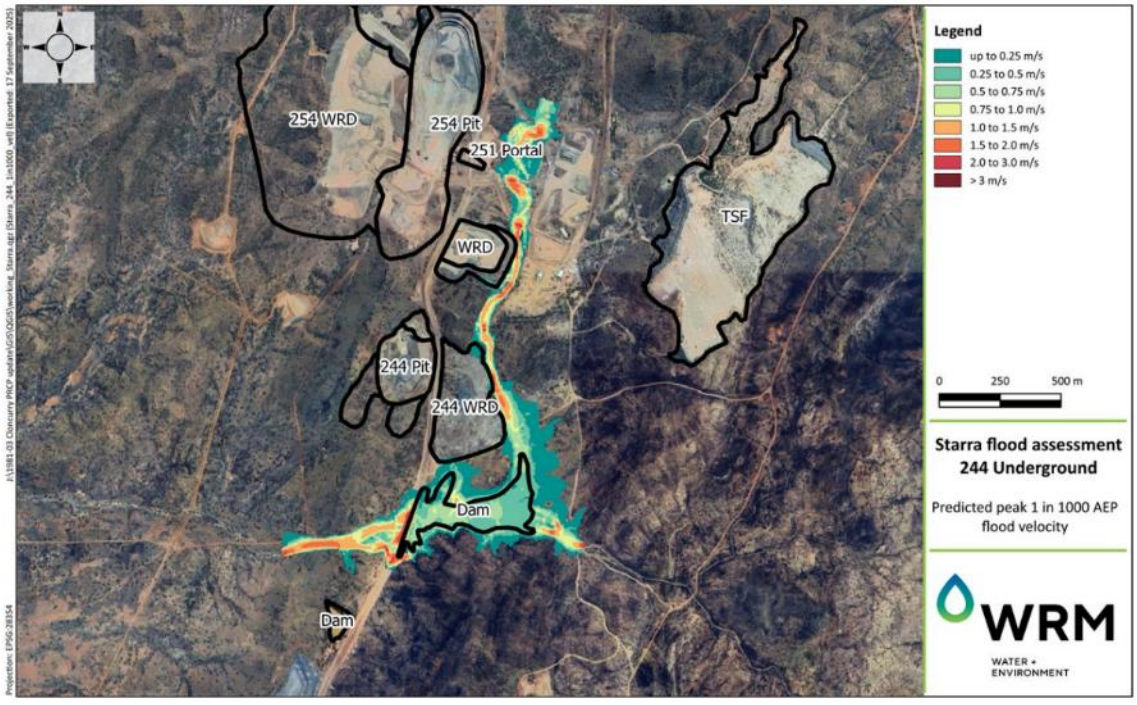


Figure 173: Starra 254/244 area flood velocities and extents (0.1% AEP)

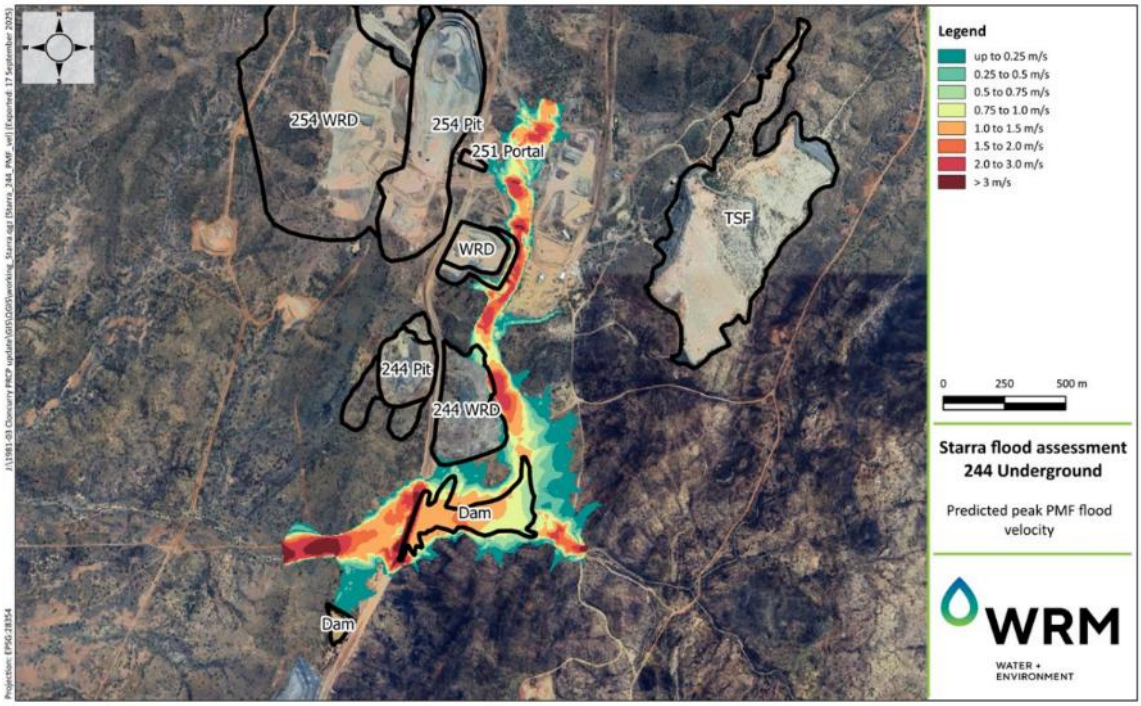


Figure 174: Starra 254/244 area flood velocities and extents (PMF)

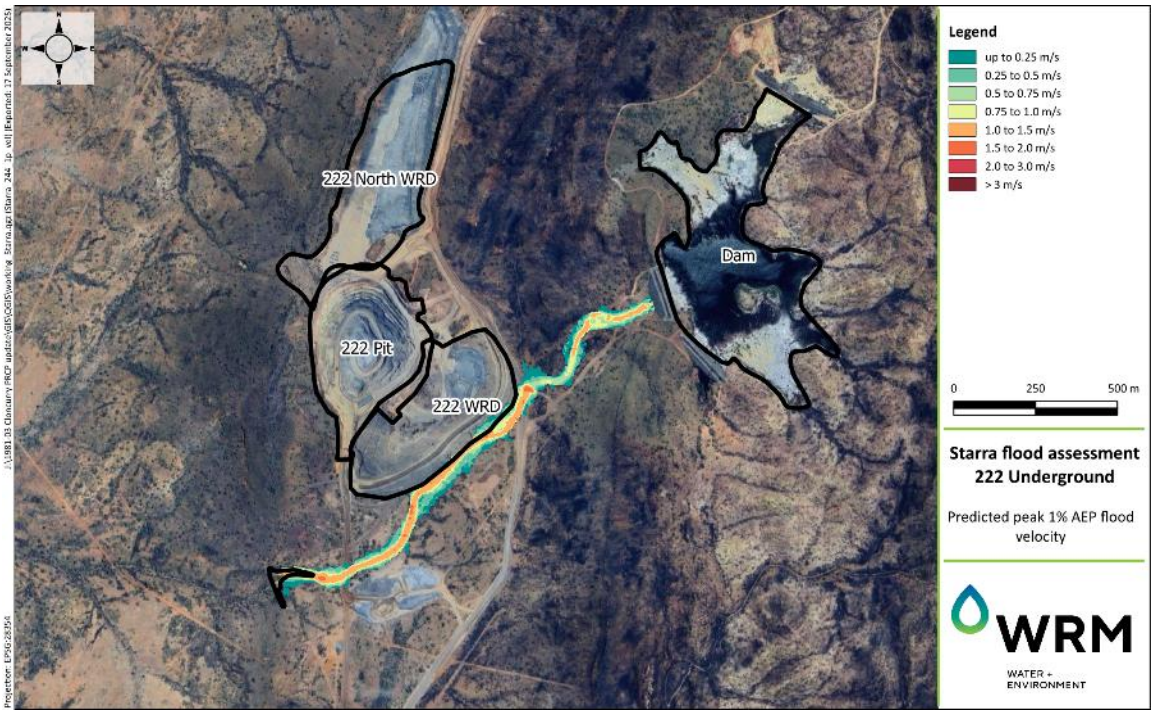


Figure 175: Starra 222 area flood velocities and extents (1% AEP)

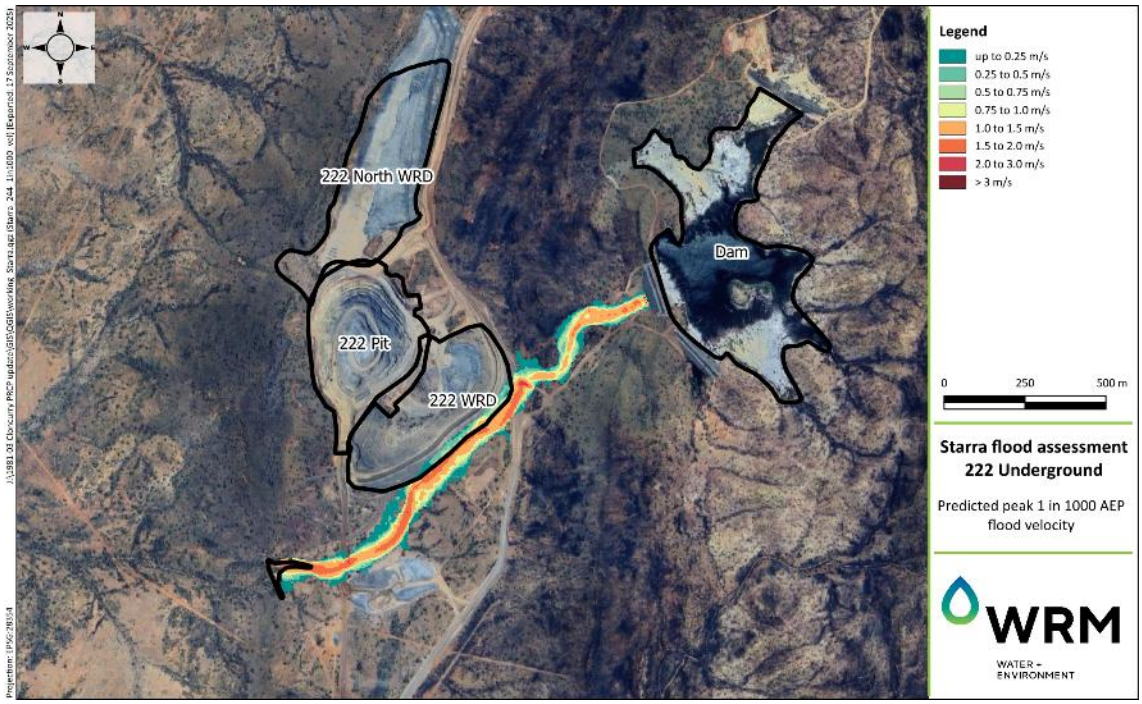


Figure 176: Starra 222 area flood velocities and extents (0.1% AEP)

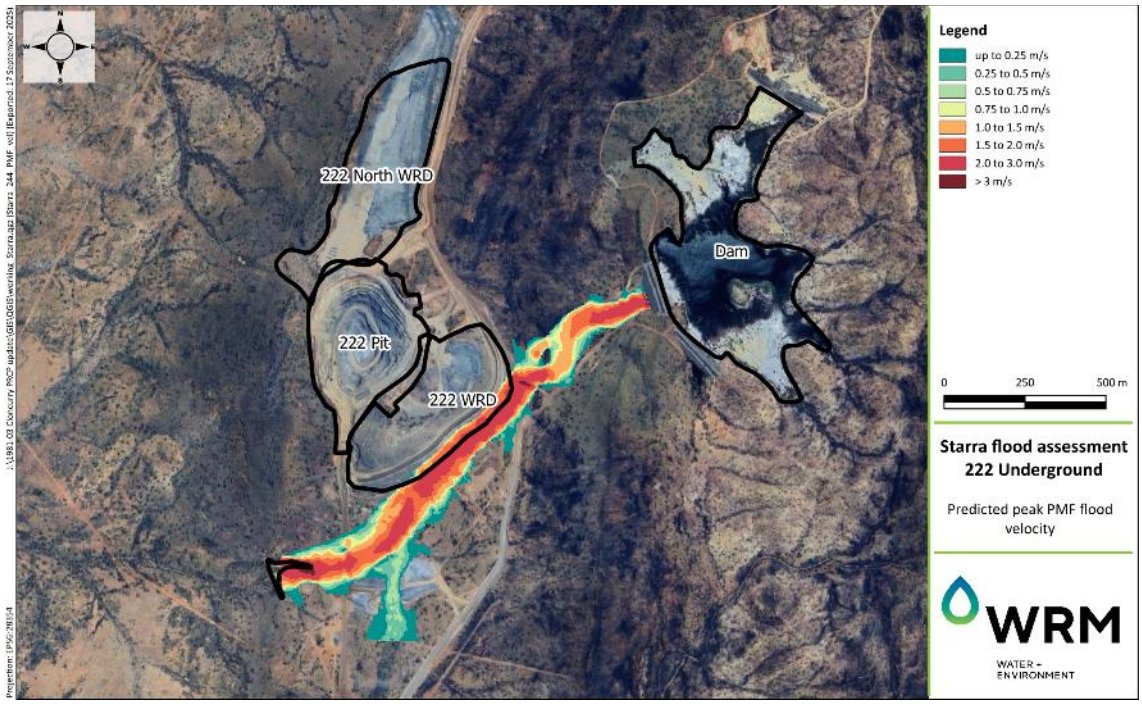


Figure 177: Starra 222 area flood velocities and extents (PMF)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Starra specified in Table 143Table 34. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;

(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 143: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Starra	247 WRD W	10/12/2036	10/12/2032
	251 WRD	10/12/2036	10/12/2032
	251 Ore Stockpile	10/12/2036	10/12/2032
	244 WRD E	10/12/2036	10/12/2032
	244 WRD W	10/12/2036	10/12/2032
	244 Pit	10/12/2036	10/12/2032
	222 WRD	10/12/2036	10/12/2032
	222 WRD N	10/12/2047	10/12/2043
	Starra 222 WRD Extended	10/12/2047	10/12/2043
	276 WRD	10/12/2043	10/12/2039
	276 ROM	10/12/2043	10/12/2039
	Starra 254 WRD	10/12/2036	10/12/2032
	Starra 254 PAF Cell	10/12/2036	10/12/2032
	254 ROM	10/12/2043	10/12/2039
	Heap Leach	10/12/2043	10/12/2039
	Eastern TSF	10/12/2043	10/12/2039
	Southern TSF	10/12/2036	10/12/2032

10.5.11 Water Management

The proposed management of surface water during the rehabilitation, post-closure maintenance and monitoring period is described below. Potential impacts and implications to groundwater values are discussed in previous sections as a result, this section will focus on surface water management.

The main source of potential solutes from the Starra area are from the WRE's, TSF's and industrial area (historical Selwyn mill). Potential CoCs at Starra have been detailed within Section 10.5.9.3.

Surface water runoff flows from mine landforms and disturbed areas at Starra and report to a number of environmental dams (Figure 180). The most significant environmental dam is Lake Wyche which ultimately receives runoff from the Selwyn Industrial Area, Eastern TSF, 244 East WRE, 254 ROM/heap leach, 254 LG ROM and a number of rehabilitated exploration areas and borrow pits. The other main environmental dams are 222 north sediment dam and sediment dams below the 254 WRE.

To represent the surface water quality across the Starra area water quality results for Lake Wyche have been presented in Table 150. The water quality data shows that runoff is neutral to slightly alkaline, with low levels of salinity with most metals sparingly soluble. Low concentrations of aluminium, copper, cobalt, iron and molybdenum have been detected but are well within the WQO's for livestock (beef cattle).

The water management strategy onsite for closure will involve:

- Installation of an appropriate cover systems on WREs and TSFs, in accordance with an engineered design, to minimise the opportunity for water movement downward into the waste (seepage) and upward by capillary rise.
- Removal of processing infrastructure and contaminated land assessment - any contaminated material placed back in a Starra pit.
- Surface runoff from the WRE directed to the containment structures or sediment dams.
- Development of an updated Water Balance Model (GoldSim) for closure conditions.
- Installation of additional sediment basins to treat stormwater from mine areas prior to discharge to the receiving environment. Ongoing monitoring will determine whether these sediment basins are necessary. Should they be deemed necessary, approval for these additional structures will be sought prior to their construction.
- Continued implementation of a Receiving Environment Monitoring Program (REMP) to identify any impacts from the mine on the receiving environment.
- Once surface rehabilitation requirements have been met transfer surface water infrastructure to the landholder.

Once full rehabilitation has been achieved all water management infrastructure associated with Starra are to be transferred to the underlying landholder for use in livestock watering.

Table 144: Lake Wyche Environmental Dam Water Quality

	Unit	EQL	Livestock Trigger Values	# of Result	# of Detect	Min Conc.	Max Conc.	Average* Conc.	Medium* Conc.
pH (Lab)	-	0		22	22	6.6	7.9	7.2	7.2
Electrical Conductivity (Lab)	µS/cm	5	5970	24	24	64	550	186	105
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.2	1000	24	24	1.5	160	39	19
Aluminium	mg/L	0.005	5	11	11	0.006	1.9	0.41	0.31
Arsenic	mg/L	0.003	0.5	11	0	ND	ND	ND	ND
Beryllium	mg/L	0.00001		11	0	ND	ND	ND	ND
Bismuth	mg/L	0.0005		11	3	0.0005	0.0005	0.0005	0.0005
Boron	mg/L	0.005	5	11	11	0.007	0.057	0.02	0.018

Cadmium	mg/L	0.0001	0.01	11	0	ND	ND	ND	ND
Calcium	mg/L	0.2	1,000	11	11	1.4	27	10	7.7
Chromium (III+VI)	mg/L	0.001	1	11	0	ND	ND	ND	ND
Cobalt	mg/L	0.001	1	11	2	0.001	0.003	0.00077	0.0005
Copper	mg/L	0.001	1	11	11	0.018	0.12	0.063	0.059
Iron	mg/L	0.005		11	11	0.03	1.4	0.46	0.31
Lead	mg/L	0.001	0.1	11	0	ND	ND	ND	ND
Magnesium	mg/L	0.1		11	11	1.7	17	5.9	3.4
Manganese	mg/L	0.005		11	8	ND	0.63	0.093	0.041
Mercury	mg/L	0.00005	0.002	11	0	ND	ND	ND	ND
Molybdenum	mg/L	0.001	0.15	11	3	ND	0.003	0.0011	0.0005
Nickel	mg/L	0.001	1	11	4	0.001	0.008	0.0013	0.0005
Rhenium	mg/L	0.05		11	0	ND	ND	ND	ND
Selenium	mg/L	0.003	0.02	11	0	ND	ND	ND	ND
Silver	mg/L	0.001		11	0	ND	ND	ND	ND
Tin	mg/L	0.002		11	0	ND	ND	ND	ND
Uranium	mg/L	0.0005	0.2	11	4	<0.0005	0.0015	0.00055	0.00025
Zinc	mg/L	0.005	20	11	2	<0.005	0.02	0.0044	0.0025

* Dissolved metals results displayed.

* A non-detect 0.5 multiplier has been applied

10.5.11.1 Surface Water Contaminants of Concern

Potential CoCs at Starra were identified by AGE (refer Section 9.4.2.39.4.2.36.5.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 145.

Table 145: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE	Sulphate, metals
Rehabilitated disturbed areas	Suspended solids, turbidity
Final reshaped drainage lines and batters	Suspended solids, turbidity
Heap leach	Cyanide
TSFs, ROM and ore stockpiles	Metals

10.5.11.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for Starra 222 and Starra 254 post-closure. A description of the methodology used to prepare the drainage plans has been provided within Section 6.5.8.2. The post-closure water management system for Starra includes the following:

Starra 222:

- Final void water management
  - During the post-mining stage, the Starra 222 pit will remain dry at closure (AGE, 2025a).
- Surface water management
  - The rehabilitated WRD runoff will be managed through:
    - St_222_SD1 (similar footprint to the 222 North Sediment Dam used during operations);
    - St_222_SD2 (captures runoff from the 222 South WRD);
    - St_222_SD3 (similar footprint to the 222 West Sediment Dam used during operations);
    - The sediment dams will capture water conveyed via surface water drains proposed around the perimeter of the WRD or along the existing ramps. Sediment dams will be required to ensure adequate sediment removal before release to the receiving waters.
  - Contour banks, plateau drains and drop structures will be constructed where necessary, once the final landform is reshaped, to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - Runoff from the local clean water catchment draining from the eastern side of the 222 North WRD will be conveyed along the haul road via CWD1 to the tributary downstream of St_222_SD1.

Starra 254:

- Final void water management
  - During the post-mining stage, the 254 North and South pits will fill with water until an equilibrium level is reached.
- Surface water management
  - The rehabilitated waste rock dump runoff will be managed through:
    - St_254_SD1 (similar footprint to the 254 Sediment Dam 1 used during operations);
    - St_254_SD2 (similar footprint to the 254 Sediment Dam 3 used during operations);
    - St_254_SD3 (captures runoff from the southern portion of the 251 WRD);
    - St_254_SD4 (similar footprint to the 251 South Sediment Dam used during operations);
    - St_254_SD5 (captures runoff from the eastern portion of the 254 WRD);
    - The sediment dams will capture water conveyed via surface water drains proposed around the perimeter of the waste rock dump or along the existing ramps. Sediment dams will be required to ensure adequate sediment removal before release to the receiving waters.
  - Contour banks, plateau drains and drop structures will be constructed where necessary, once the final landform is reshaped, to limit erosion of the landform during the rehabilitation stage, and surface water drains will convey runoff to the proposed sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - There are no surface water catchments requiring management for the Starra 254 final landform.

The conceptual drainage plan for Starra 222 and Starra 254 have been illustrated within Figure 178 and Figure 179, with the proposed dam sizing and release locations for St_222_SD1 to St_222_SD3, and St_254_SD1 to St_254_SD5 defined within Table 146.

Figure 178: Starra 222 conceptual drainage plan (WRM, 2025)

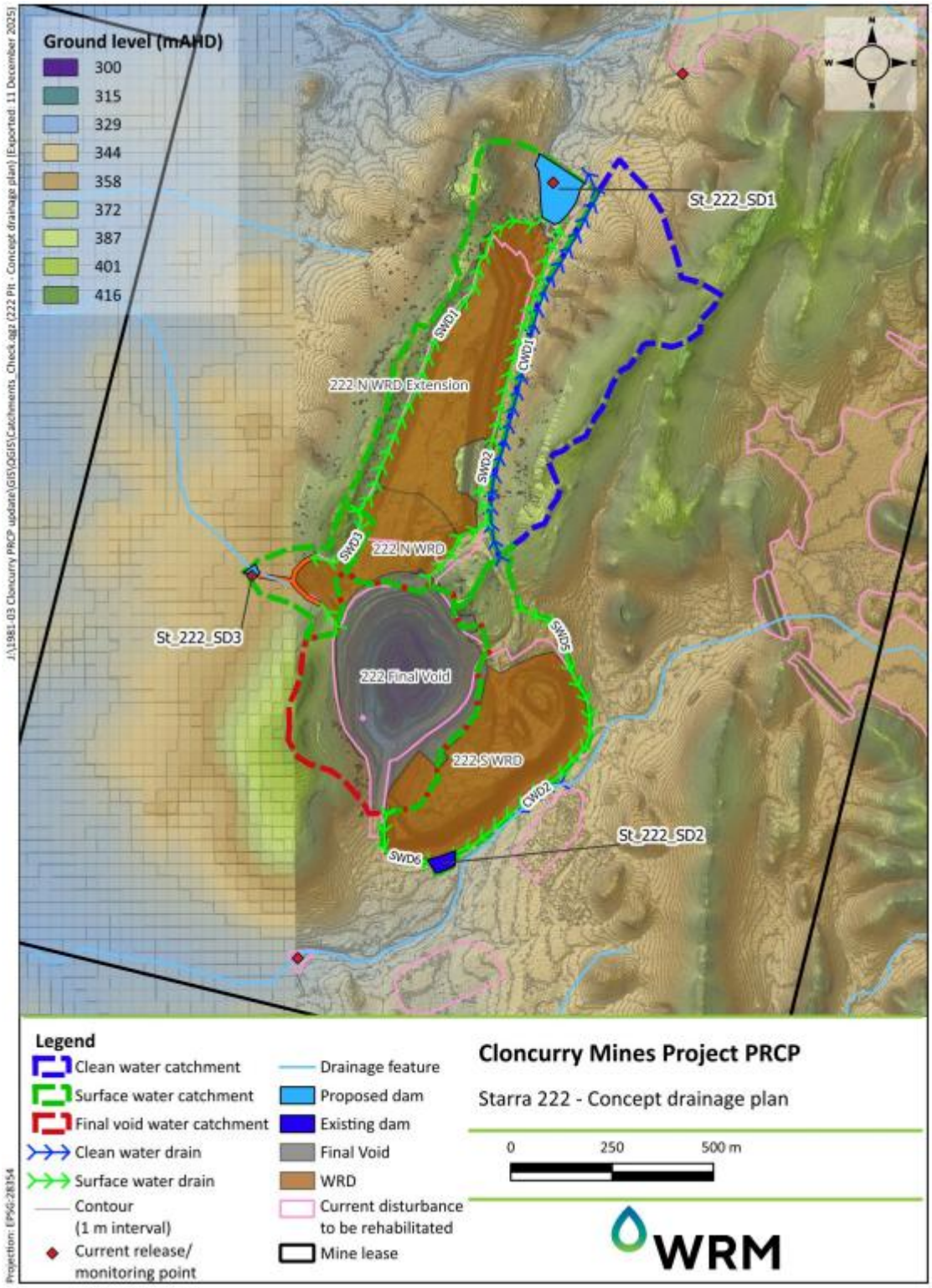


Figure 179: Starra 254 conceptual drainage plan (WRM, 2025)

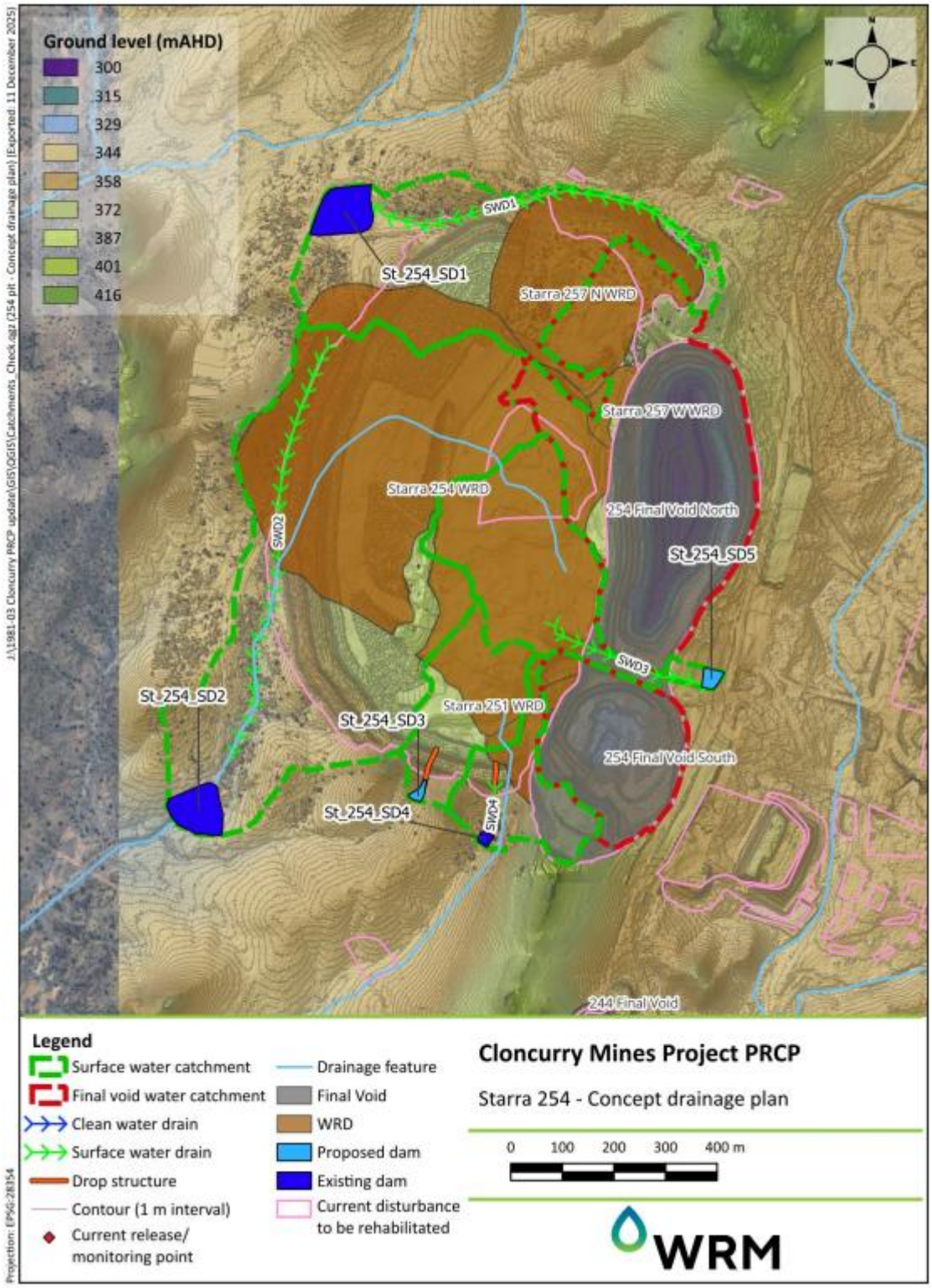


Table 146: Starra Proposed Dam Sizing and Release Locations (WRM, 2025)

Storage	Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
St_222_SD1	32.0	11.40	12.54	0.38	445053	7603146	Starra 222 WRD	Unmapped drainage feature of Gin Creek
St_222_SD2	18.0	6.41	7.05	0.21	444674	7601927	Starra 222 WRD	Unmapped drainage feature of Gin Creek
St_222_SD3	4.0	1.43	1.57	0.05	445137	7601971	Starra 222 WRD	Unmapped drainage feature of Gin Creek
St_254_SD1	19.0	6.77	7.45	0.23	445281	7601878	Starra 254 WRD	Unmapped drainage feature of Gin Creek
St_254_SD2	38.2	13.61	14.97	0.45	445741	7602217	Starra 254 WRD	Unmapped drainage feature of Gin Creek
St_254_SD3	5.5	1.96	2.16	0.07	445640	7591272	Starra 254 WRD	Unmapped drainage feature of Gin Creek
St_254_SD4	4.6	1.64	1.80	0.05	445430	7590999	Starra 254 WRD	Unmapped drainage feature of Gin Creek
St_254_SD5	10.1	3.60	3.96	0.12	447704	7596106	Starra 254 WRD	Unmapped drainage feature of Gin Creek

10.5.11.3 Seepage intervention and collection controls

There are seepage points associated with both the tailings storage facilities. Seepage points will continue to be managed and monitored through closure. When the seepage points are no longer required, they will be filled in with weathered clean rock mulch and revegetated.

ETSF Seepage Management

Seepage is collected at the western embankment toe (Duckpond) as well as the northern and southern embankment toes. The seepage is detained in small unlined ponds and either pumped back onto the TSF or allowed to evaporate. Seepage from ETSF is circum-neutral (~7.5), with elevated levels of salinity (~6195 µS/cm) and copper, cobalt and molybdenum concentrations that exceed livestock watering trigger values. Location of seepage points are provided in Appendix 9.

STSF Seepage Management

STSF was designed and built with rock armoured seepage sumps at Embankment 4 and Embankment 1. To date, no seepage has been recorded in these sumps. The STSF seepage sumps will continue to be monitored during operations and closure. Construction details of the sumps are provided in Appendix 9.

10.5.11.4 Surface water diversions and long-term management requirements

Surface diversions, culverts and drainage channels are utilised across the Starra area to manage surface water runoff. These will be maintained until rehabilitation objectives have been met.

10.5.11.5 Dewatering requirements

There is no requirement for dewatering to facilitate the planned future rehabilitation activities. During the dry season the environmental dams are usually dry.

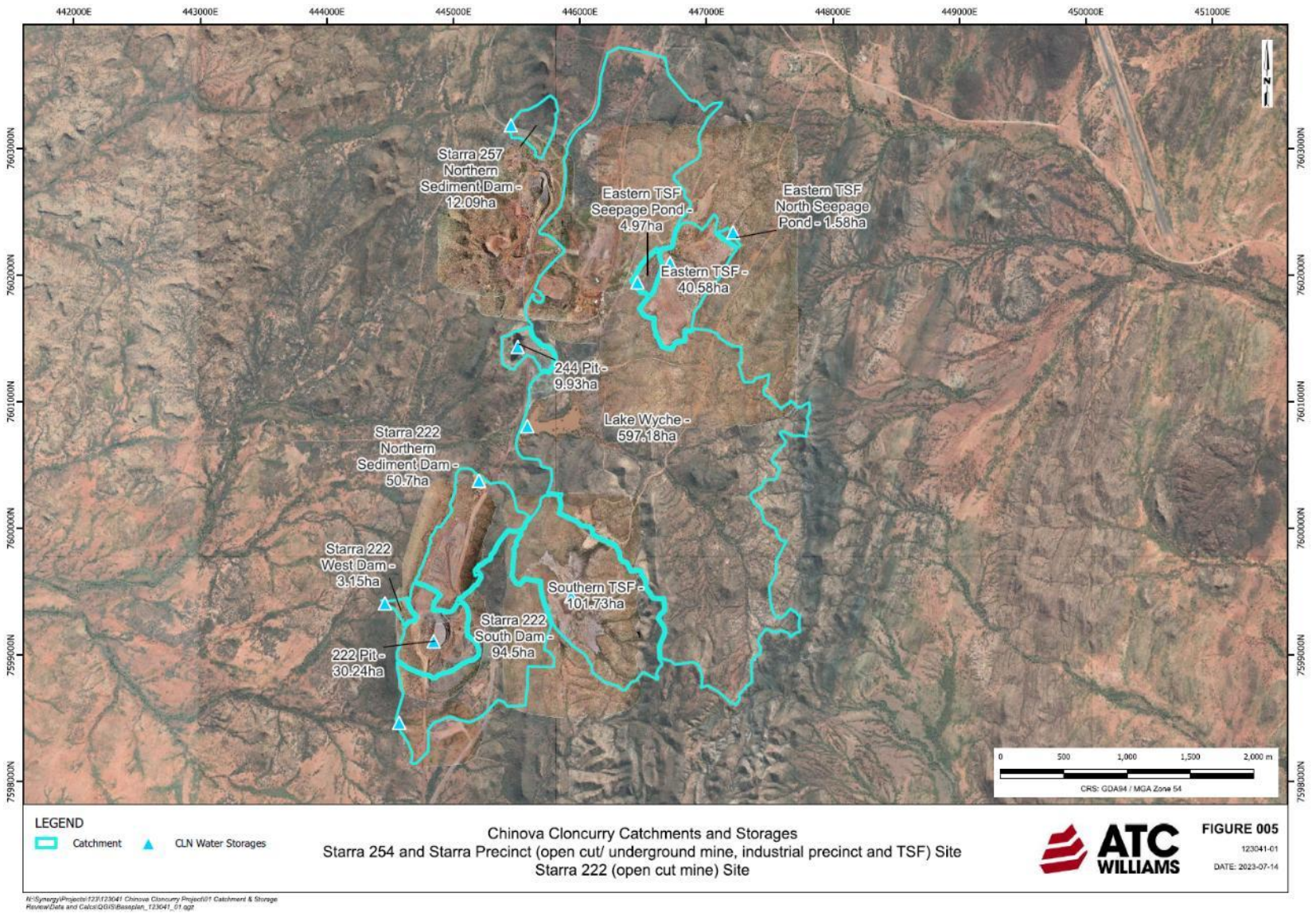


Figure 180: Starra Mine Surface Water Catchments

10.5.11.6 On-going water management

The risks to surface water include:

- Contaminated surface water generated by the WRE's.
- Contaminated surface water generated by the ROM area.
- Contaminated seepage generated by the TSF's.

The on-going water management activities in the medium to long term will be similar to those that have been put in place to date. Impacted surface water runoff will continue to be directed towards the environmental dams. Site surface water monitoring will be ongoing including annual REMP to provide sufficient data that surface water quality can continue to meet environmental authority requirements and WQO's for stock watering over the long term to support future relinquishment of the mining lease.

Once final rehabilitation works are completed, ongoing monitoring of dam water quality and receiving environment will be undertaken to demonstrate that runoff will meet rehabilitation milestone criteria. Water storages will be retained until runoff water quality meets rehabilitation milestone criteria, following which it will be rehabilitated pursuant to the methods described in the Revegetation Plan.

Additional ESC dams will be installed downstream of rehabilitated landforms to capture stormwater runoff, should ongoing monitoring of the receiving environment deem it necessary. Should these additional structures be deemed necessary, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.

10.5.12 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

10.5.12.1 Starra Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 147.

Table 147: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable)	Preferably immediately prior to wet season (November-December).

	Install stock fencing to protect planting (if required).	In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable growth/development of revegetation	Ecological monitoring: immediately after wet season (March-April) and annually thereafter.
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g. supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Supplementary seeding prior to wet season. Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

10.5.12.2 Starra Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 148: Starra Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum* • *Bothriochloa ewartiana*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

10.5.12.3 Starra Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 149. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 149: Starra Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

11. Rehabilitation Planning – Victoria

11.1 Baseline Information

11.1.1 Climate

Refer to section 5.1 for details on climate for the Victoria mine.

11.1.2 Site Topography

The Victoria mine is situated within the broad geographic region known as the Selwyn Ranges, an elongated dissected peneplain that acts as a major continental divide, with the rivers north of the Selwyn Range flowing into the Gulf of Carpentaria while those south of the range flowing into the Lake Eyre basin.

The Victoria mine is located on the southern end of the locally dominant feature known as the Starra ridge in an area characterised by moderate to low broken ridges with elevations ranging from 320 to 360 m AHD. Mine infrastructure occupies low gradient areas between peaks at elevations between 320 to 330 m AHD (Figure 181). The area surrounding Victoria mine comprises of flat to gently undulating, open or little timbered terrain which is frequently intersected by sparsely vegetated peaks.

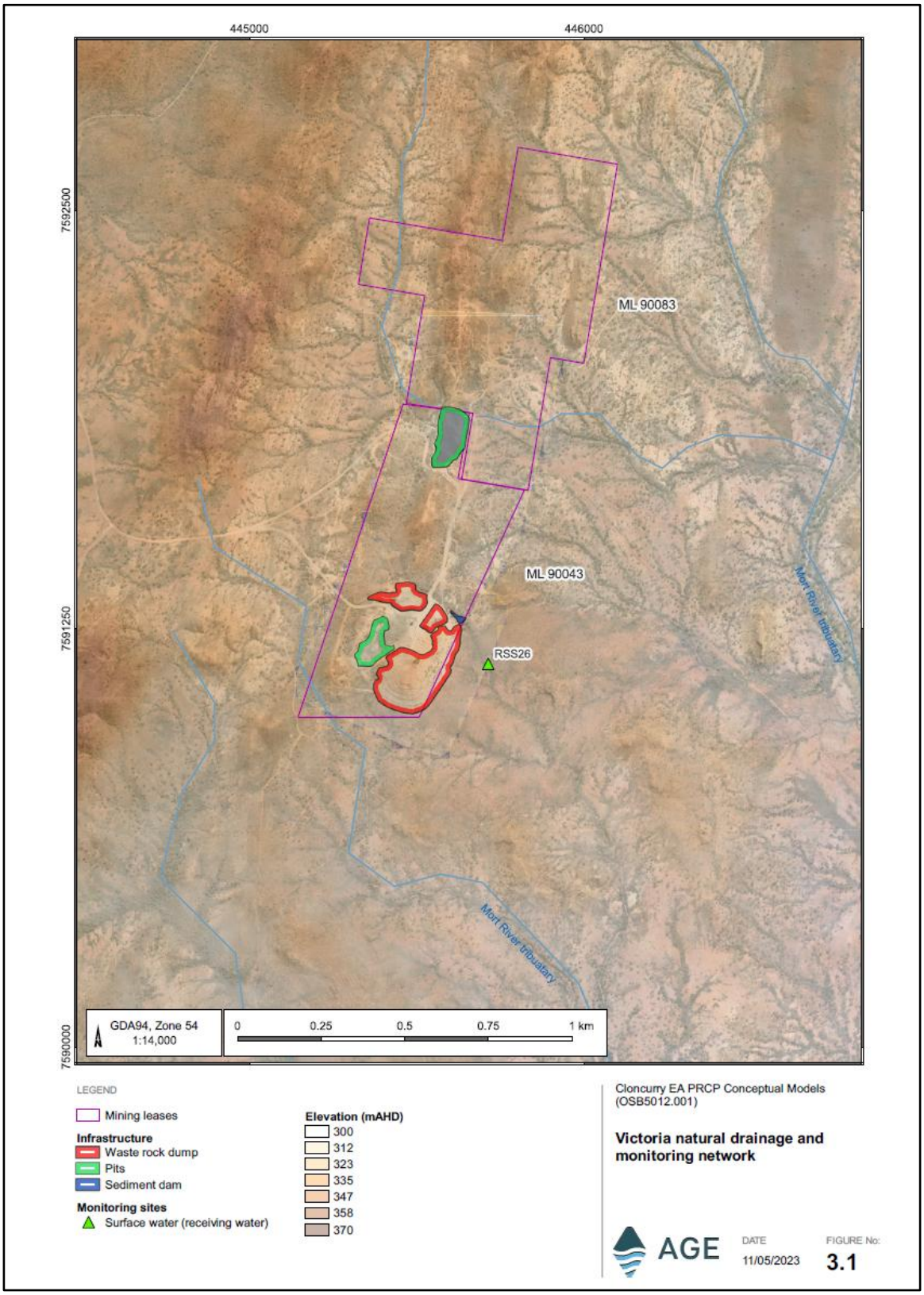


Figure 181: Victoria Mine – Elevation and Hydrology (AGE, 2025a)

11.1.3 Geological Setting

The Cloncurry Project is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite. The contact between these units is broadly described as unconformable (Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust.

The primary geologic unit at Victoria mine is the Kuridala Formation metasediments that have undergone intense deformation and silicification. The structural geology of the site is dominated by regional scale northwest–southeast striking faults. Yellow Waterhole Granite is present as competent hanging wall. Mineralisation at Victoria consists of secondary copper minerals: dominantly malachite and chrysocolla with minor chalcocite, native copper and azurite. Mineralisation is hosted in brecciated carbonaceous metapelites, phyllites, and silicified phyllites.

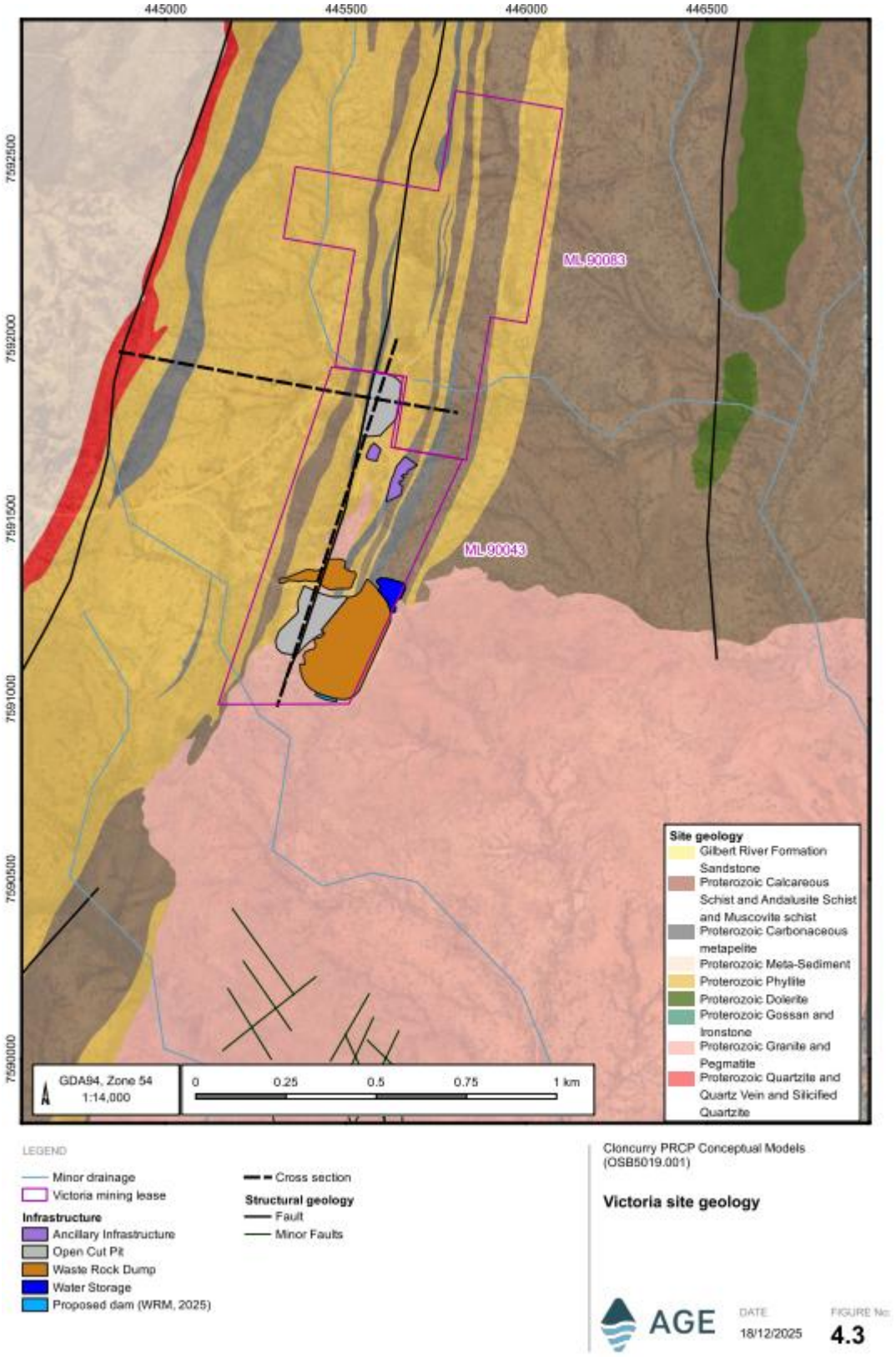


Figure 182: Victoria Site Geology (AGE, 2025a)

11.1.4 Hydrology and fluvial networks

The Victoria mine is located in the Lake Eyre drainage division within the Georgina Basin, Georgina River sub-basin.

The Victoria area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia. There are no listed environmental values and water quality objectives for the Lake Eyre region in schedule 1 of the EPP (Water and Wetland Biodiversity). In the absence of water quality objectives, the Queensland water quality guidelines (QWQG) apply as default objectives, which for freshwaters, default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines.

Chinova has maintained a reference monitoring location at Starra since 1985 (BS01 – Pyramid); the closest reference site to Victoria mine. The monitoring location is located above Lake Wyche in an area that has not been impacted by mining activities. Summary of water quality data for the BS01-Pyramid monitoring location is provided in Table 150. In addition, Chinova undertakes routine surface water sampling from the onsite sediment basin and downstream receiving water monitoring site (Figure 181).

Table 150: Summary of water quality results for reference water site (BS01-Pyramid)

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	96	6.16	6.07	7.22	6.52	5.70
Electrical Conductivity (uS/cm)	99	34.98	28.00	70.40	48.00	19.00
Sulphates (mg/L)	98	4.54	3.55	10.15	6.00	2.00
Dissolved Aluminium (mg/L)	59	0.31	0.24	0.90	0.44	0.10
Dissolved Arsenic (mg/L)	67	0.0043	0.0030	0.0100	0.0030	0.0030
Dissolved Boron (mg/L)	58	0.0134	0.0075	0.0500	0.0150	0.0050
Dissolved Cadmium (mg/L)	59	0.0002	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	59	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Cobalt (mg/L)	59	0.0014	0.0010	0.0031	0.0010	0.0010
Dissolved Copper (mg/L)	94	0.0289	0.0105	0.0596	0.0500	0.0060
Fluoride (mg/L)	86	0.0580	0.0500	0.1000	0.0500	0.0500
Dissolved Iron (mg/L)	73	0.4578	0.2800	1.2400	0.5400	0.1100
Dissolved Lead (mg/L)	95	0.0162	0.0010	0.1132	0.0050	0.0010
Dissolved Manganese (mg/L)	62	0.0599	0.0210	0.2562	0.0536	0.0050
Dissolved Mercury (mg/L)	58	0.0004	0.0001	0.0001	0.0001	0.0001
Dissolved Molybdenum (mg/L)	52	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Nickel (mg/L)	59	0.0011	0.0010	0.0020	0.0010	0.0010

11.1.5 Groundwater

Groundwater conditions at Victoria are described in detail in AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater characteristics at Victoria.

11.1.5.1 Hydrostratigraphy

The main hydrostratigraphic unit, the Hamden slate member of the Kuridala Group, at Victoria hosts both groundwater and ore. The Staveley formation occurs approximately 500 m east of Victoria and a Proterozoic granite unit (Yellow Waterhole Granite) is present on the southern end of Victoria. No cover units are mapped within the ML; cover units in the area are likely to be thin and are mapped along drainage lines.

Kuridala Group

The lithologic unit that comprises most of the Victoria site and likely hosts most of the groundwater is the Kuridala Group. Due to the Proterozoic age and metamorphic nature of the Kuridala Group, it is likely that these rocks have not preserved primary porosity. Thus, groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing, weathering, and possibly delamination of the shallower units (AGE, 2025a). AGE (2025a) found that it was unlikely that laminated zones creating higher permeability areas was present at Victoria as the area is mapped as slate.

Yellow Waterhole Granite

The Yellow Waterhole Granite is located on the south/south-eastern portion Victoria. Although the Yellow Waterhole Granite has not been specifically characterised, it is presumably very similar to the Mount Dore Granite. These granites are massive in texture and moderately fractured but only in the near surface (RLA, 2011). The contact between the Kuridala Group and the Yellow Waterhole Granite is considered intrusive; as such, the Yellow Waterhole Granite is presumed to be less fractured in the Victoria area when compared to the Mount Dore Granite near the Mount Dore Aquifer (AGE, 2025a).

Cover units

Cover units are present on the incised gullies off Victoria and also possibly as hillslope colluvium overlying the Yellow Waterhole Granite. The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise thin flood-plain alluvium and similar sediments comprise potential hillslope colluvium. These units have variable primary porosity, which is dependent on the size and properties of the comprising grains and the degree of cementation and compaction. These units are generally <15 m thick in the region and available evidence indicates that groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated. As such, these units do not host a significant groundwater resource.

11.1.5.2 Groundwater Levels

Groundwater levels at Victoria are not well understood and are constrained by water levels in the northern pit and water levels measured in bores ~ 5 km from the site (AGE, 2025a).

The northern pit holds water all year even through periods of drought in a high evaporation/low rainfall climate; this suggests there is likely groundwater inflow to this pit in addition to the surface water inflows. The base of this pit as shown on the Digital Elevation Model (DEM) is 23 m below the pit spillway (equivalent to 288 mAHD). It is assumed that the pit intercepts the water table; this constrains water levels to between 0 and 23 mBGL (AGE, 2025a).

The two nearest measured water levels are at Mount Cobalt (NDH0114) and Lucky Luke (LLMB1), which are 28 mBTOC (291.8 mAHD) and 54 mBTOC (246.5 mAHD), respectively (Table 151). Both bores are located approximately 5 km from Victoria; however, the water level at Mount Cobalt is considered more representative as it is in the same hydrostratigraphic unit (Kuridala Group) as Victoria. AGE (2023) estimated that the groundwater elevation of ~290 mAHD at Victoria is likely as it is consistent with the water level measured at Mount Cobalt.

Table 151: Water level measurements at Victoria and surrounding mine leases

Location	Date	Approximate distance (and direction) from ML	TD (m)*	SWL (mBTOC - bores; mBGL - pits)	SWL (mAHD)
LLMB1	23/03/2022	5 km SW (in Staveley Formation)	N/A	54.1	246.5
NDH0114	21/11/2022	5 km NNE (in Kuridala Group)	185	28.2	291.8
Victoria N pit	1994 to present	On ML	23	0-23	311-288

Notes: * For pits the total depth is the depth below the spill over point.

11.1.5.3 Groundwater Recharge and Discharge

The main recharge mechanism for groundwater in the area is via diffuse, deep drainage of rainfall, and point source recharge along drainage depressions. The bulk component of this recharge is in the Kuridala Group and occurs as rainfall recharge, with infiltration below the ephemeral streams being a smaller volume (AGE, 2025a). Conceptually, water from streams or bank storage that reaches the water table and becomes recharge is, by definition, groundwater-surface water interaction. According to long-term regional averages, there is a rainfall deficit for more than half the year, and the rainfall surplus only exceeds 10 mm in two months: January (average surplus of 16 mm) and February (average surplus of 15 mm). The estimated regional recharge rate was calculated by AGE (2021a) to be between 3% of annual rainfall and 6%. This equates to approximately 10 mm to 20 mm of recharge annually, based on a long-term average regional rainfall of 345 mm/yr. This low recharge rate is consistent with recharge rates for hard rock terrain and arid climate such as that of the site area.

The Yellow Waterhole Granite is located immediately southeast of the Kuridala group at Victoria. This situation is somewhat analogous to the area of the Mount Dore Aquifer, in that the Mount Dore Granite is located directly east of the Kuridala Group. Thus, the Yellow Waterhole Granite may form a leaky boundary with the Kuridala Group, with potential recharge to the Kuridala Group occurring across this boundary. However, the contact between the Kuridala Group and the granitics is a faulted in the area of the Mount Dore Aquifer, but likely intrusive near Victoria; this difference in the nature of the contact may decrease the potential for fractured rock recharge in the Yellow Waterhole Granite.

The main discharge processes for the site are potential evapotranspiration from the northern pit lake and shallower areas of the water table, and lateral through-flow. If there is inflow of groundwater to the northern pit, then this may represent a groundwater discharge via evaporation. Similarly, the northern pit has a drainage line that runs into it and depending on the groundwater elevation and hydraulic conductivity around the pit this groundwater recharge could occur during and proceeding wet months. Apart from this, there appears to be negligible discharge (baseflow) of groundwater to natural surface water features because creeks are ephemeral.

11.1.5.4 Groundwater Hydraulic Conductivity

Previous investigations of the hydraulic properties of the relevant units present at Victoria are presented below and summarised in Table 152. Properties for the Kuridala Group are sourced from a combination of rising and falling head tests and historic reports which used pumping tests. The hydraulic properties of the Staveley Formation are estimated for the site using rising and falling head tests in bores located at other Project sites. The hydraulic properties of crystalline rocks, including the Yellow Waterhole granite, are inferred from heads tests conducted in the Gin Creek Granite and Double Crossing Metamorphics.

Estimates of hydraulic conductivity from investigations for the Kuridala Group range from 1 x 10^{-6} m/day to 34 m/day: with many of these values coming from the Mount Dore Aquifer. The closest Kuridala Group bore to Victoria that has hydraulic test data is MB10, located 10 km north of the ML near Mount Dore. The bore has an estimated hydraulic conductivity value of 2.64 x 10^{-5}m/day, which is at the low end of ranges (generally associated with unfractured zones) for the Kuridala Group. If there are zones of fracturing similar to the Mount Dore Aquifer, then hydraulic conductivities on the order of 0.03 m/day to >10 m/day may exist within the Kuridala Group at Victoria. If fracturing associated with features present at the Mount Dore Aquifer is not present at Victoria, there may be a shallow zone of higher permeability present at Victoria due to surficial weathering causing delamination.

Hydraulic conductivity estimates from bores constructed in the Gin Creek Granite and Double Crossing Metamorphics vary from 0.08 m/day to 0.91 m/day and the bore logs of these bores suggest fracturing in their screened lithologies. These bores are west of the Starra areas (7-9 km away), near the contact with the Staveley Formation.

Table 152: Hydraulic Properties (AGE, 2023)

Bore	Formation	Lithology / rock type	Screen interval or depth (mBGL)	Airlift Yield (L/s)	Flow (m^3/d)	Transmissivity (m^2/d)	Average hydraulic conductivity (m/d)
Mount Dore Aquifer	Kuridala Group	Unfractured	-	-	-	-	1 x 10^{-6} to 0.03
Mount Dore Aquifer	Kuridala Group	Highly permeable & fractured	-	-	-	-	20 to 34
Mount Dore Aquifer	Kuridala Group	Fractured	-	-	-	-	0.03 to 10
Mount Dore MB10	Kuridala Group	Unfractured	45.7 - 51.7	-	-	-	2.64384x10^{-5}
Lady Ella LE03	Hampden Slate (Kuridala Group)	Unfractured	44 - 50	0.0025	-	-	<0.1*
Mount Dore MB257	Staveley Formation	Unfractured	25.5 - 40.5	0.0125	-	-	0.185 to 0.243
Mount Dore MB257a	Staveley Formation	Unfractured	-	~0.001	-	-	<0.1
Mount Dore MB2a	Staveley Formation	-	20 - 40		-	-	0.04 to 0.18
Starra MB244	Staveley Formation	Unfractured	32.5 - 44.5	0.008	-	-	0.07 to 0.123

Starra STDMB5	Staveley Formation	Unfractured	75 - 90	0.105	-	-	-
Starra MB11	Gin Creek Granite	Fractured	33 - 42	0.17			0.17 to 0.91
Starra MB12	Gin Creek Granite/Double Crossing Metamporphics	Fractured	18 - 27	0.17			0.08 to 0.13

11.1.5.5 Groundwater Quality

No groundwater quality data is available for the Victoria site. Ranges of pH and EC observed in other areas of the Kuridala Group (Table 153) suggest a large range of values that groundwater at Victoria could fall within, from relatively fresh, to 12,000 µS/cm, and acidic to alkaline. sulfate and copper values could be within a large range also.

Table 153: Water quality ranges observed in bores screened within the Kuridala Group in the region (AGE, 2025a)

Analyte	pH	EC	Total copper	Sulphate
Unit	pH units	µS/cm	mg/L	mg/L
Range	5.44 to 8.11	238 to 12000	0.001 to 2.3	1 to 6700

11.1.5.6 Environmental Values

The applicable environmental values for the Victoria have been defined by AGE (2025a) to include:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there is a moderate potential for GDEs within the Victoria mining lease, but this has not been confirmed with on-site ecological surveys. It is unlikely however that terrestrial GDE's exist onsite. Although, the groundwater potentiometric surface on the site is poorly constrained it is likely less than 23 mBGL which is within the rooting depth for some eucalypts. It is however, unlikely that these tree communities are reliant on presence of water below the water table. A more likely situation is that the infiltration of some surface water flow into short term storage within the vadose zone sustains the trees between wet seasons (i.e. the moisture held in the unsaturated regolith and alluvium cover of the drainage lines). With salinities reaching 12,000 µS/cm in the Kuridala Group, and much of the groundwater resource at neighbouring sites being saline, it is likely that water from the saturated zone at Victoria is also saline. This salinity would not be tolerated by riparian species. Therefore, soil moisture, or transient groundwater stored in regolith is a more likely source of water for these species than groundwater beneath the water table.

For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Victoria area, as mapped by the Queensland Wetland Database (AGE, 2025a).

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of Victoria, but groundwater is used for livestock (usually beef cattle) watering on properties in the greater region. This groundwater is sourced from a variety of aquifers in the area. A search of registered bores within a 10 km radius of Victoria resulted in the

identification of no registered bores apart from those considered part of the Chinova monitoring network. It is, therefore, unlikely that livestock watering is an applicable EV; however, it is possible that livestock watering is an applicable future groundwater EV.

Industrial Groundwater Use

The main industrial user of groundwater in the region is Chinova itself. During operational times, at nearby MLs, the mine extracts water from the open voids via sumps and dewatering bores to maintain dry working conditions. The most productive regional aquifer for water for the purposes of industrial use is the Mount Dore Aquifer, which conceptually has some similarities to the Victoria site; as such, there is potentially an industrial groundwater resource at Victoria. There is no other known industrial usage of groundwater within a 10 km radius of the Victoria site.

11.1.6 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the area is 'Fz29' (Australian Soil Resource Information System, 2013) (Figure 183). Soil type Fz29 is associated steep stony hills and low ranges on highly folded quartzites, shales, and slates with extensive areas of rock exposures.

The Victoria mining area is mapped as the Kuridala land system. The Kuridala system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered the land systems unsuited for grazing (or virtually so) because it is rugged, stony, or barren.

Soils have previously been described at Victoria as predominantly Skeletal, Cockatoo and Manbulloo. Skeletal soils are shallow soils, less than 25 cm deep, frequently stony and lacking profile differentiation, normally occurring on the steeper slopes of the landscape. The Manbulloo soils have fine sandy profiles, light brown to reddish brown colour; massive structure and generally neutral to slightly acidic. Manbulloo soils are associated with stream channels and associated narrow alluvial areas and valley floors. Cockatoo soils have coarse sandy profiles, variable colour from red to yellow and light grey with either single grain or massive structure. Cockatoo soils are generally associated with lower slope areas.

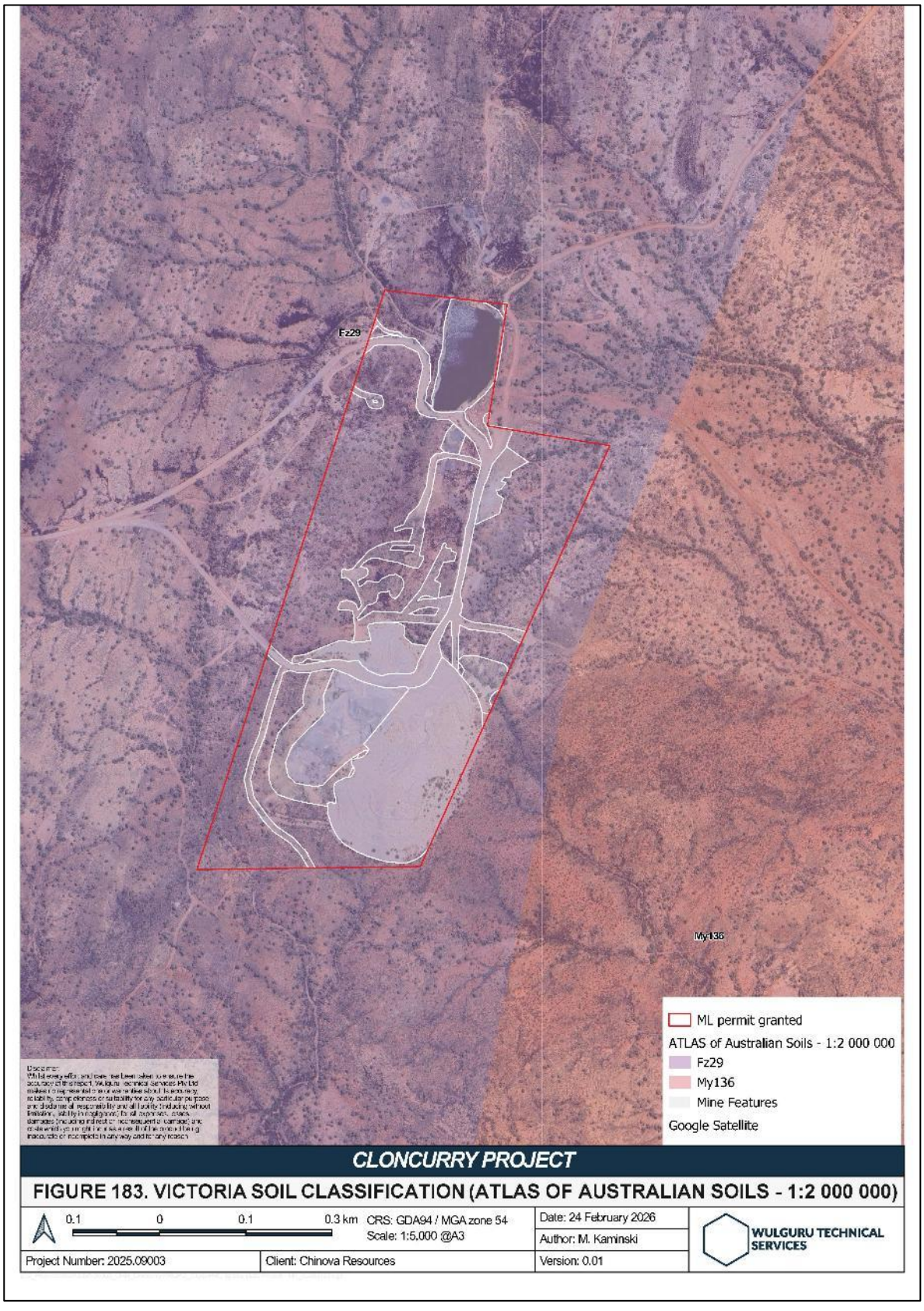


Figure 183: Victoria Soil Classification (Atlas of Australian Soils – 1:2 000 000)

11.1.7 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the project area (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

11.1.8 Vegetation Communities and Ecological Data

Previous vegetation surveys have identified that the dominant broad vegetation group at Victoria consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer (BVG 19).

A total of nine regional ecosystems (RE) have been identified within the Victoria area (Table 154). All nine have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains). All RE's have a biodiversity status of No Concern.

Previous baseline ecological reports for the Cloncurry Project Area have (Place, 2012) assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 154. Regional ecosystems within the Project Area.

BVG	RE	RE description	Biodiversity Status	VMA Status
19	1.10.4	*Eucalyptus leucophloia* low open woodland on sandstone plateaus	No concern	Least Concern
	1.11.2	*Eucalyptus leucophloia* low open woodland	No concern	Least Concern
	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.12.1	*Eucalyptus leucophloia* low open woodland on granites	No concern	Least Concern
	1.3.13	*Eucalyptus leucophylla* woodland on levees and minor drainage lines	No concern	Least Concern

	1.5.3	*Eucalyptus leucophloia* low open woodland to woodland on sandy and gravelly red soils	No concern	Least Concern
	1.5.6	*Atalaya hemiglauca*, *Ventilago viminalis*, *Grevillea striata* low open woodland on red earth plains	No concern	Least Concern
	1.7.1	*Eucalyptus leucophloia* low open woodland on silcrete and lateritic surfaces	No concern	Least Concern
26	1.5.16	*Acacia cambagei* low woodlands on red earths	No concern	Least Concern

11.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 155).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 155. Conservation significant species recorded within the Project Area.

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

11.1.10 Pre-Mining Land Use

Small scale mining of predominantly small shafts has occurred in the Starra, Merlin and Mount Dore areas since the early 1900's. Modern mining commenced in 1988 by Arimco Mining via open cut mining of oxide gold deposits at Starra, and subsequently underground mining producing copper-gold concentrate from mainly sulphide ore. The other main land use in the region is low intensity grazing by cattle.

11.2 Post Mining Land Use

11.2.1 Rehabilitation Planning and Objectives

Determining appropriate rehabilitation objectives is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

d) The land is safe and structurally stable; and
e) There is no environmental harm being caused by anything on or in the land; and
f) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives (condition E3) that must be met to achieve final rehabilitation.

g) Safe for humans and wildlife
h) Non-polluting
i) Stable
j) Able to sustain an agreed post-mining land use
k) Revegetated with species endemic to the area with no declared pest species; and
l) Compliant with all conditions of the environmental authority.

The EA (primary land outcome document) does not specify rehabilitation objectives and rehabilitation success measures for the Victoria area. Instead, the criteria were to be nominated in a PMLUP, the recent of which being the Cloncurry Project Rehabilitation Plan developed by RBC Environmental Consulting in 2016. However, the 2016 PMLUP is inconsistent with the requirements of the EA and does not include sufficient information regarding rehabilitation objectives and as a result, is considered irrelevant to this PRCP application. **To be clear, the 2016 PMLUP is not considered a valid land outcome document and is not referred to or relied on for this PRCP.**

Consequently, for the purposed of this PRCP, Chinova have developed new rehabilitation objectives for land disturbed by mining activities (Table 156) based on expert reports including AGE (2023), ATCW (2023) and NGH (2023). In addition, the PRC schedule provides detailed rehabilitation milestones and rehabilitation criteria to outline how mining disturbances will meet these rehabilitation objectives prior to relinquishment of the mining leases.

Table 156: Victoria Rehabilitation Objectives

Rehabilitation Objective	Element	Design Intention	Measure
Physically Stable	Slope Stability	Landform is stable under static load.	Stability analysis demonstrates a factor of Safety (FoS) >1.5 (ANCOLD 2019)
		Landform is stable under earthquake loading	Stability analysis demonstrates a FoS >1.1 (ANCOLD 2019)

	Erosion	Mine waste is not exposed by erosion processes. Erosion does not impact the PMLU.	Soil loss rate less than 5 t/ha/yr (average) and 10 t/ha/yr (maximum) No active areas of rill (>300 mm deep) or gully erosion.
Chemically Stable	Water flux through waste	Substantially limits the rate of infiltration and water flux through the mine waste.	Infiltration < 10% net rainfall
	Capillary Rise	Mine waste is not exposed to cyclic wetting and drying.	Upward flux < 1 % of net rainfall
	Receiving Environment (surface water, groundwater, and sediment)	Runoff from rehabilitated landforms does not contain elevated solutes.	Direct measurement of surface water and groundwater Compliance with the surface and groundwater quality limits identified within Appendix 5 and 8 of the Approved PRCP Schedule, detailed within Table 191, Table 192, and Table 196
	Open Pit Water Storages	Water quality is suitable for use to water beef cattle	Direct measurement of surface water Meets WQO for livestock watering (beef cattle)
Supports a viable vegetation community.	Viable vegetation	Vegetation community is consistent with PMLU.	Direct measurement of vegetation (QBEIS) Free of declared pest species. Meets BioCondition benchmark criteria as per Appendix 4 – Biocondition benchmark criteria of the approved PRCP

			Schedule, detailed within Table 189.

11.2.2 Post Mining Land Use and Justification

The EP Regulation requires that each PMLU –

c) Is viable, having regard to the use of land in the surrounding region, and
d) Satisfies at least one of the following -
    a. The use is consistent with how the land was used before mining activity was carried out on the land
    b. The use is consistent with a development approval relating to the land
    c. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    d. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The PMLU's and rehabilitation areas proposed for Victoria are presented in Table 157 and Figure 185. Final PMLU areas are provided Figure 184. As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area and PMLUs illustrated within Figure 184 and Figure 185 may not accurately reflect the disturbance areas presented within Table 157.

Table 157: Victoria PMLU's and Rehabilitation and Improvement Areas

Rehabilitation Planning Areas	Disturbance (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
RA21 Victoria North Pit Water Storage	1.6	0	0	Low intensity grazing	Water Storage	N/A
RA22 Victoria Waste Rock Emplacements and Victoria backfilled pit	8.49	0	8.49	Low intensity grazing	Native Vegetation	N/A
RA23 Built Infrastructure	1.12	0	1.12	Low intensity grazing	Low Intensity Grazing	N/A
RA24 Permanent Roads and Tracks	2.48	0	0	Low intensity grazing	Retained Infrastructure	N/A

11.2.2.1 Assessment of Alternative PMLUs – Victoria Wate Rock Emplacement, Backfilled Pit and Ore Stockpile

The 2016 Cloncurry Project Rehabilitation Plan previously identified the PMLU for the Victoria WRE, backfilled pit and ore stockpile as low intensity grazing, consistent with the pre-mining land use. Due to the requirements of the engineered cover systems that will be installed across these disturbance areas, alternative PMLUs have been assessed in accordance with the EP Act to determine the most appropriate and sustainable long-term outcome.

An assessment of PMLU options for areas requiring engineered cover systems is provided in Section 6.2.2.1. The assessment determined that, although low intensity grazing aligns with historical and surrounding land use, it presents risks to the erosion and infiltration performance objectives of the engineered cover system and is therefore not considered suitable. Livestock access has the potential to compromise surface stability, increase compaction, and create localised erosion features, introducing avoidable uncertainty to long-term landform performance.

A NUMA was also considered; however, this is not appropriate as the landforms can be rehabilitated to achieve long-term physical and chemical stability and are capable of sustaining a beneficial land use.

Rehabilitation of the Victoria WRE, backfilled pit and ore stockpile to a native ecosystem PMLU represents a conservative, risk-based outcome that protects the integrity of the engineered cover system, ensures compliance with erosion and infiltration performance criteria, and delivers a beneficial environmental outcome consistent with the requirements of the EP Act.

11.2.2.2 PMLU Justification

Table 158 provides justification on the PMLU selection for Victoria. In summary, the post mine land use at the Victoria is constrained by the pre-mining land capability, post mine landforms, and viable vegetation communities. As pre-mining land use is considered to be low intensity grazing, the primary post mine land use outcome is to return the land to low intensity grazing. The WRE, backfilled southern pit and ore stockpile will be returned to native ecosystem communities due to the need keep grazing animals off the landforms to protect the integrity of cover systems. The Victoria North pit contains good quality water and in accordance with consultation with the underlying landholder will be retained as a water storage to support grazing activities. The existing roads and tracks will be retained in accordance with the landholder agreement. The Victoria Sediment Dam and built infrastructure (laydowns) will be fully rehabilitated.

Table 158: PMLU Justification

PMLU Consideration	Justification
Is viable, having regard to the use of land in the surrounding region	The PMLU's proposed are low intensity grazing, native vegetation, water storage and permanent infrastructure to support low intensity grazing. Based on the available information including material characterisation and rehabilitation methodologies, low intensity grazing with careful management is an achievable PMLU for most areas. Native vegetation is an achievable PMLU for the WRE, backfilled southern pit, and ore stockpile, where engineered covers will be

	established over the existing disturbance. These engineered landforms are not suitable for a grazing PMLU due to possible constraints such as slope angle, incompatibility of soil cover design, erosional stability, and due to the potential presence of metals, PAF or potential saline waste rock. Based on the water quality of North Pit, the pit water balance modelling and feedback from the underlying landholder the pit will be retained as a water storage to support stock watering.
Satisfies at least one of the following: a) **The use is consistent with how the land was used before mining activity was carried out on the land**	As previously outlined the pre-mining land use and surrounding land use is low intensity grazing of beef cattle. Returning most of the land to low intensity grazing is consistent with the past and current use of the land.
b) **The use is consistent with a development approval relating to the land**	No relevant development approvals.

c) **The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act**	**Cloncurry Shire Planning Scheme**
	
	Under the Cloncurry Shire Planning Scheme 2016 (the Planning Scheme), the CMP is within the Rural zone (Cloncurry Shire Council, 2016). The overall purpose of the Rural zone of the Cloncurry Shire is to:
	
	• Provide for rural uses and activities;
	• Provide for other uses and activities that are compatible with –
	  ○ Existing and future rural uses and activities;
	  ○ The character and environmental features of the zone;
	• Maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.
	
	The Cloncurry Shire is a significant beef producing region. The proposed PMLU of low intensity cattle grazing is consistent with previous and current land uses in the area.
	
	Northwest Regional Plan 2010-2031
	
	The CMP is situated within the planning area for the Northwest Regional Plan 2010 (Regional Plan), which is developed and maintained by the Queensland Department of State Development, Infrastructure, Manufacturing and Planning.

	The Regional Plan supports both mining and rural production to ensure they are not adversely affected by other land use activities. The Regional Plan identifies the CMP an existing mining area and therefore provides limited guidance on the future land use intent for the site. **Commonwealth Legislation** N/A
d) **The use will deliver, or is aimed at delivering, a beneficial environmental outcome.**	The revegetation approach for native vegetation aims to restore the land to a condition that targets the species diversity, composition, and structure of the broad vegetation group and similar to analogue sites. These areas will provide beneficial environmental outcomes as it will provide both habitat and ecosystem services.

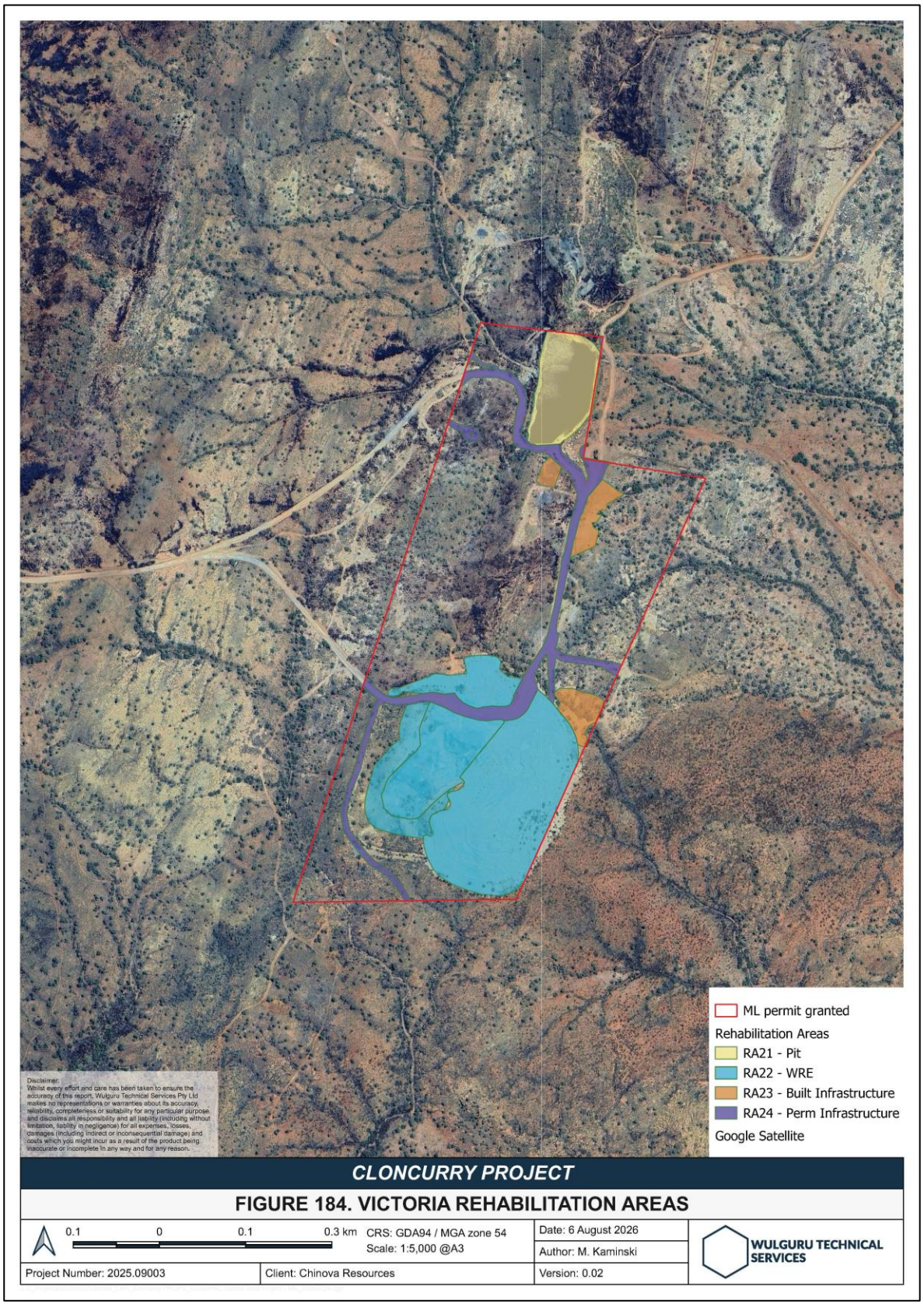


Figure 184: Rehabilitation Areas and Proposed PMLU (Victoria)

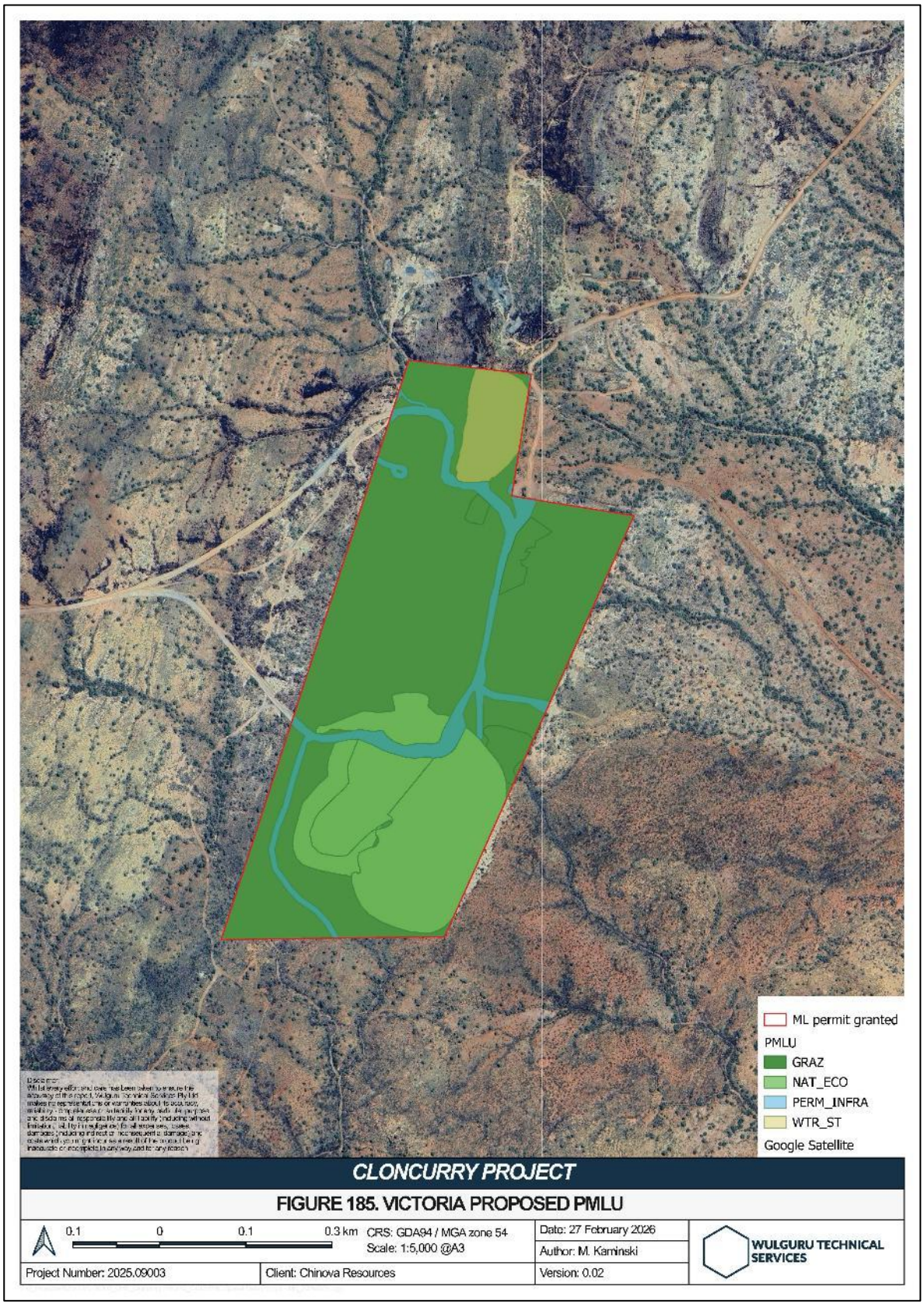


Figure 185: Victoria Rehabilitation Areas

11.2.3 Rehabilitation/Improvement Planning

The Victoria project contains a defined copper and gold resource as outlined in Section 3.5. The proposed Victoria project involves the development of three resources at Victoria, Victoria North and Stuart (separate lease not part of the CMP) to provide additional ore to the heap leach operations proposed at Mount Dore. Indicative timeframes for developing this deposit are dependent on commencing Mount Dore operations. Based on the project schedule the Victoria pits may be developed in 2026/2027 dependent on favourable commodity prices, substantial capital investment and approval of amendments to the EA.

As there is mineral resource at Victoria, Chinova will maintain the site in care and maintenance for up to 10 years and if after this time no further mining occurs the site will undergo final rehabilitation.

If additional development does occur, it is highly preferential to use existing disturbed areas for mine infrastructure rather than disturb new areas. As a result, the land currently available for progressive rehabilitation at Victoria is limited as presented in Table 159.

Table 159: Availability for Progressive Rehabilitation (Victoria)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Water Storage			
Victoria North Pit	2036	1.6	The future Victoria project involves expanding and redeveloping the Victoria North Pit. The pit will be available for final rehabilitation once a decision is made regarding future mining activities on the lease. For the purposes of the PRCP, and in line with current approvals the Victoria North Pit will be transitioned to a source of water for livestock in the event no further mining occurs.
Waste Rock Emplacement			
Victoria WRD, Victoria WRD 2, Victoria Ore Stockpile	2036	7.49	Available for rehabilitation following determination of future mining options at Victoria. Material characterisation has demonstrated the material is benign and suitable for use across the project area including for roads and rehabilitation. For the purpose of the PRCP, the WRE will not be available for rehabilitation for the next 10 years. Following this period if no further mining occurs, the WRE will be rehabilitated.
Victoria Pit South	2036	1	Available for rehabilitation following determination of future mining options at Victoria. The future Victoria project involves expanding and redeveloping the Victoria South Pit. The pit will be available for final rehabilitation once a decision is made regarding future mining activities on the lease. For the purpose of the PRCP, the pit will not be available for rehabilitation for the next 10 years. Following this period if no further mining occurs, the backfilled pit will be rehabilitated.
Built Infrastructure			
Laydowns	2036	0.52	Existing disturbance will remain for potential redevelopment as part of future mining operations. This will minimise the need to disturb additional areas.

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
			For the purpose of the PRCP, the laydowns will continue to be held in a state of care and maintenance for up to 10 years. Following this period, if no further mining occurs at Victoria, the laydowns will be rehabilitated.
Victoria SD	2044	0.6	Sediment basins are required to manage runoff from disturbance areas until water quality can be demonstrated to comply with EA limits. Landholder agreement in place to facilitate the transfer of this infrastructure at mine closure; however, as water long-term quality modelling has not been undertaken, this structure will conservatively be fully rehabilitated.
Other Roads	2056	2.48	Tracks are required to ensure ongoing access for monitoring and maintenance activities. Following completion of rehabilitation activities, access tracks will be handed over to the landholder for access and support livestock grazing. Landholder agreement in place to facilitate the transfer of this infrastructure at mine closure.

11.3 Non-Use Management Areas

For the purposes of this PRCP, no Non Use Management Areas (NUMAs) are proposed for Victoria.

11.4 Voids in Flood Plains

In accordance with section 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.

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a floodplain. A void is considered to be located in a floodplain if 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% (1 in 1000) annual exceedance probability (AEP) for a relevant watercourse under the guideline Australian Rainfall and Runoff, 2019 (ARR) (Ball, et al, 2019).

The Victoria Pit North is located across a drainage feature (Feature 1). Feature 1 is mapped as a first order minor non perennial watercourse. Feature 1 drains south, changes direction and drains through the north pit and flows east. This feature joins with other first order non perennial watercourses before draining into Mort River. Given that Victoria Pit North will be a water supply dam with a PMLU and there are no drainage features around the south pit, no flood modelling has been proposed for the Victoria mine (WRM, 2023).

11.5 Rehabilitation and Management Methodology

11.5.1 General Rehabilitation Principles

Full implementation of the decommissioning and rehabilitation program will result in a post mining final landform that broadly reflects the pre-mining condition. Mining activities at Victoria has resulted in significant development including the establishment of open cut pits and WRE's.

The rehabilitation and management methodology described herein for the Victoria area is specific to the rehabilitation of the existing disturbance. Where possible rehabilitation activities resulting in additional disturbance (borrow sites, sediment structures) have been located in areas likely to be subject to future mining activities.

11.5.1.1 RA21 Victoria Pit Water Storage

The Victoria North Pit has established a pit lake containing water of a suitable quality for use by livestock. To ensure the pit will sustainably maintain a PMLU of water storage for stock use, the following actions will be undertaken during closure:

- Continued monitoring of in-pit water levels and water quality.
- Pit wall stability surveillance.
- Predictive void hydrological modelling and void water quality modelling re-run at the end of mine life and calibrated against final landform (refer condition PRCP12 of Final PRCP Schedule).
- Provision of suitable reclaim pump(s) and reticulation systems to support livestock operations.

11.5.1.2 RA22 Victoria Waste Rock Emplacements

Material characterisations undertake for waste rock material concluded that this material would consist of NAF with low risk of acid generation, low electrical conductivity and most soluble trace metals tested were below the limit of reporting (refer Section 11.5.5). For the purposes of this PRCP, the NAF cover system

designed by ATCW is proposed (ATCW crest cover option C5). Justification for the application of this cover design to areas containing NAF has been provided within Section 11.5.6.1.

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must complete a final landform closure design report for the Victoria WRE, ore stockpile and backfilled Victoria south pit. Further detail is provided on this requirement within Section 11.5.6.2.

Rehabilitation of the waste rock emplacements, ore stockpile, and backfilled Victoria south pit is as follows: follows:

- Reprofile the WRE crest (plateau) to a grade of 0.5%, draining to the Victoria Sediment Dam.
- Reprofile the WRE batters to angle of repose.
- Application of a crest cover system (ATCW – Cover Option C5).
- Each WRE will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

11.5.1.3 RA23 Victoria Built Infrastructure

The majority of this domain has been decommissioned and rehabilitated, the only remaining disturbances associated with this domain relate to miscellaneous cleared areas that may have been used as laydowns pads or temporary equipment storage areas, as well as the Victoria Sediment Dam. Rehabilitation of these areas will involve:

- Residual mine affected water will be transferred to a Starra Pit.
- Impacted sediment (approximately 0.5m) removed from water storages and sediment dams and disposed at a licensed facility authorised to receive such waste.
- Components of no re-use value will be demolished. Construction and demolition waste consisting of concrete, timber, glass, steel, and exploration drill cuttings, will be disposed of within either Starra 222, 244 or 254 pits. Remaining components of no re-use value will be disposed of at a licensed facility authorised to receive such waste.
- Areas will be assessed for contamination (sulphate, metals) and contaminated materials, which if confirmed, will be removed from site and disposed of at a licensed facility authorised to receive such waste.
- The land areas will be re-profiled to be commensurate with the pre-mining condition.
- The land areas will be revegetated in accordance with the Cloncurry revegetation strategy.
- Ongoing monitoring and maintenance to assess PMLU trajectory.

11.5.1.4 RA24 – Victoria Permanent Infrastructure – Roads and Tracks

Access roads and tracks will not be rehabilitated until all rehabilitation works at Victoria are completed. Following completion of all remaining rehabilitation works, roads and tracks will be decommissioned, investigated to determine whether any contamination is present, and transferred to the landholder in accordance with the relevant landholder agreement.

11.5.2 Hydrogeology

The hydrogeology of Victoria was investigated by AGE in 2023 (Appendix 1) to meet the requirements of the PRCP. Groundwater hydrostratigraphy, levels, recharge and discharge, hydraulic conductivity, quality, and current and future uses is summarised in Section 11.1.4. The below sections discuss the conceptual hydrological model and source-pathway-receptor analysis for Victoria in order to assist with determining appropriate containment and management requirements.

11.5.2.1 Conceptual Hydrological Model

The groundwater system in the Victoria area is conceptualised in Figures 168 and 169. The north-south cross section line is aligned with the pits, WRE, and is parallel to the regional strike of the geologic formations.

The cross section is sub-perpendicular to the regional strike of the geological formations. This cross section depicts the infrastructure features that are the main potential sources of solutes to groundwater at Victoria. The west-east cross section is aligned with the northern pit and is perpendicular to the regional strike of the geological formations. This cross section depicts a quartzite ridge, which regionally connects to the Footwall Quartzite to the west of the site.

Due to the contact between the Yellow Waterhole Granite and the Kuridala Group being intrusive (as opposed to faulted), the initial conceptual hydrogeologic model for the Victoria region is for a relatively low-yielding, fractured rock aquifer; however, the potential groundwater resource at Victoria is relatively unconstrained.

The conceptualisation is subject to uncertainty related to the spatial and temporal distribution of data; in particular, water levels have considerable uncertainty. Interaction between the hydrostratigraphic units is unknown at Victoria. There are no groundwater receptors indicated on the cross sections. Ecosystem use of groundwater at Victoria is unknown due to groundwater depth being poorly constrained. There are no pastoral users of groundwater near the cross section and groundwater-surface water interaction is unlikely given the regional context (AGE, 2025a).

11.5.2.2 Contaminant Transport within Groundwater

A source-pathway-receptor analysis has been developed by AGE (2025a) to assess potential impacts to groundwater from Victoria mine (See Appendix 1 for the full analysis).

Groundwater levels are poorly constrained in the Victoria area, but due to the historic nature of the mine and the fact that if the pits are not very deep and may not have intercepted water, any drawdown that might have occurred is either in in the recovery or post-recovery stage. As such, future drawdown impacts are not expected.

Site infrastructure that has the potential to be a source of solutes to groundwater includes: the open pit and WRE. The main future sources of solutes to groundwater are the WRE, the WRE and the remnant ore stockpile. Pit water quality from the Northern pit suggests that it is not a likely source of contaminants. The most important potential contaminants from these sites are salinity, acidity, sulfate, and dissolved metals (e.g. copper, cobalt, nickel, zinc).

The potential receptors include:

- mapped areas along Mort River with potential for aquatic GDEs.
- mapped areas with potential for terrestrial GDEs along Mort River
- groundwater bores used for livestock watering.
- water used for industrial purposes.

Groundwater is only considered a potential pathway if changes in groundwater flow, level, or quality (either present or future) connects the source to the receptor. The AGE (2023) impact assessment indicates that (Table 160):

- there is no past or future impact predicted for potential aquatic GDEs regarding water access or water quality from any source.

- there is no past or future impact predicted for potential terrestrial GDEs as a result of groundwater drawdown.
- there is no past or future impact predicted for potential terrestrial GDEs regarding the open pits as a source.
- it is highly unlikely that there are past or future impacts to potential terrestrial GDEs from solutes transported below the water table from any source.
- there is possible past and future impact for potential terrestrial GDEs from diffusion or migration of solutes in the unsaturated zone, but this is highly unlikely.
- there is no past or future impact predicted for groundwater bores used for livestock watering regarding water access or water quality from any source.
- there are no past or future impacts for groundwater used for industrial uses regarding water quality for beneficial use.

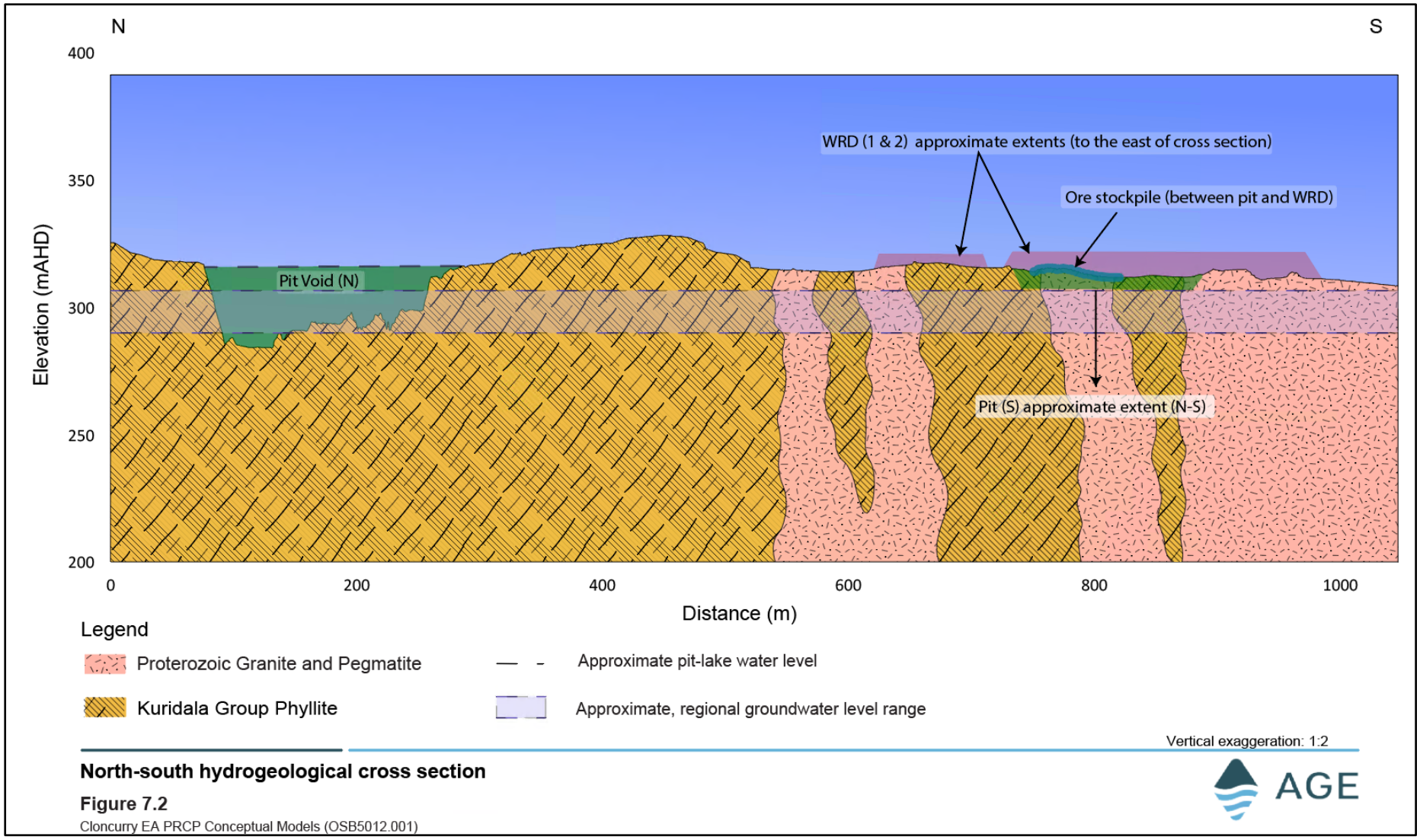


Figure 186: Victoria North-South Hydrogeological Cross Section (AGE,2023)

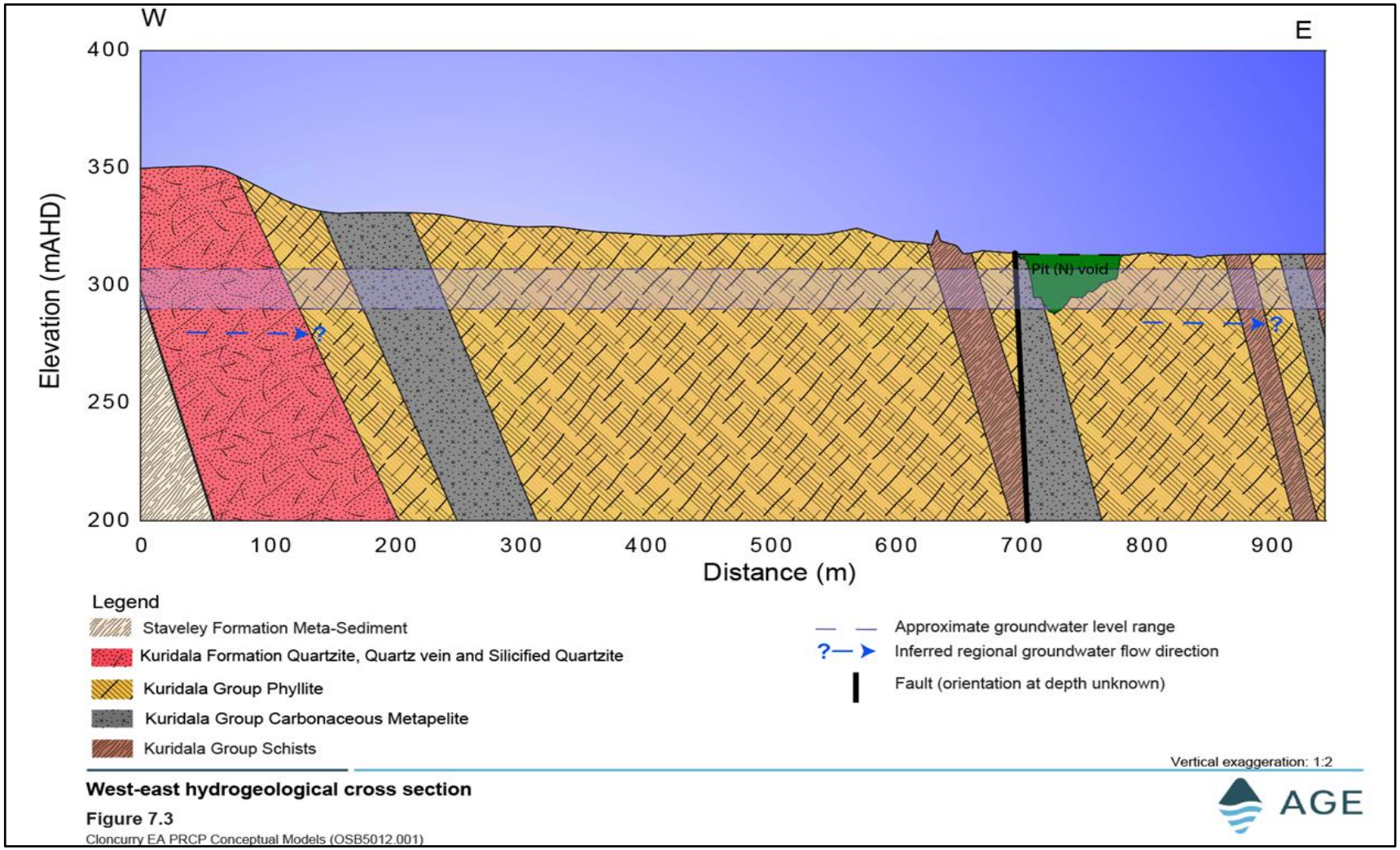


Figure 187: Victoria West-East Hydrologic Cross Section

Table 160: Source-Pathway-Receptor analysis for Victoria (AGE, 2025a)

Source (and associated risk)	Receptor	Potential Pathway	Evidence that pathway is present / absent	Predicted Impact
Pit Void (North) **Acid, saline, or sulfate-enriched drainage generation within the pit.** **This source has a low probability of being present as the pit water quality is generally very good**	**Mapped areas with potential for aquatic GDEs** **Low**: closest potential receptors are 2.5 km east of site, along the Mort River.	If this water were to flow away from the void to the and reach the zone shallow enough to intersect the Mort River, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel 2.5 km without natural attenuation.	**Potentially present:** Groundwater intercepting the void is likely. Flow directions and velocities are poorly constrained.	Past or future impact is highly unlikely.
Pit Void (South) **Acid, saline, or sulfate-enriched drainage generation within the pit.** **Additionally, these risks will not exist in closure when the pit is backfilled.**	**Mapped areas with potential for aquatic GDEs** **Low**: closest potential receptors are 2.5 km east of site, along the Mort River.	If this water were to flow away from the void to the and reach the zone shallow enough to intersect the Mort River, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel 2.5 km without natural attenuation.	**Not present:** Groundwater does not intercept the void.	No past or future impact is predicted.
WRDs **The WRD are potentially acid generating. Saline drainage and Infiltration of seepage below the WRD is possible, and this seepage may reach the water table. These risks will lessen in closure as the WRD is capped.**	**Mapped areas with potential for aquatic GDEs** **Low**: closest potential receptors are 2.5 km east of site, along the Mort River.	If this water were to flow away from the void to the and reach the zone shallow enough to intersect the Mort River, it could impact the GDEs. The pathway would also depend on groundwater velocities fast enough for solutes to travel 2.5 km without natural attenuation.	**Unlikely:** Movement of solutes in the unsaturated zone and then by the water table is possible. Groundwater flow is likely towards the potential receptor, but flow of 2.5 km distance without significant natural attenuation is unlikely.	Past or future impact is highly unlikely
Pit Void (North) **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs**	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. Flow direction	**Unlikely**	No past or future impact is predicted.

	Low (onsite): these are mapped areas of moderate potential GDEs, that do not correspond. **Moderate (uncertain):** Potential GDEs that correspond with BVG16a and are 2.5 km east of site, along the Mort River.	is relevant to potential GDEs along the Mort River. If the pit is above the water table and terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage could form a viable pathway for impact. This pathway only applies to GDEs directly above the infrastructure.	For the area on the ML, the groundwater levels are likely >20 mBGL and solutes in the water are unlikely to be accessible to vegetation. For the area along the Mort River, movement of solutes in the unsaturated zone and then by the water table is possible. Groundwater flow is likely towards the potential receptor, but flow of 2.5 km distance without significant natural attenuation is unlikely. **Not present** There are no likely terrestrial GDEs that directly overlie the area immediately adjacent to the pit, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	
Pit Void (South) **Risks as described above.**	**Mapped areas with potential for terrestrial GDEs** **Low (onsite):** these are mapped areas of moderate potential GDEs, that do not correspond with BVG 16a and are therefore unlikely to be GDEs. **Moderate (uncertain):** Potential GDEs that correspond with BVG16a and are 2.5 km east of site, along the Mort River.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. Flow direction is relevant to potential GDEs along the Mort River. If the pit is above the water table and terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage could form a viable pathway for impact. This pathway only applies to GDEs directly above the infrastructure.	**Unlikely** For the area on the ML, the groundwater levels are likely >20 mBGL and solutes in the water are unlikely to be accessible to vegetation. For the area along the Mort River, movement of solutes in the unsaturated zone and then by the water table is possible. Groundwater flow is likely towards the potential receptor, but flow of 2.5 km distance without significant natural attenuation is unlikely. **Not present** There are no likely terrestrial GDEs that directly overlie the area immediately adjacent to the pit, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past impact is predicted. Future impacts are not possible in closure, when the pit is infiled.

Risks as described above.	**Mapped areas with potential for terrestrial GDEs** **Low (onsite):** these are mapped areas of moderate potential GDEs, that do not correspond with BVG 16a and are therefore unlikely to be GDEs. **Moderate (uncertain):** Potential GDEs that correspond with BVG16a and are 2.5 km east of site, along the Mort River.	If impacted groundwater is present in the rooting zone of vegetation, then it could impact the GDEs. Flow direction is relevant to potential GDEs along the Mort River. If the pit is above the water table and terrestrial GDEs are reliant only on infiltrating moisture in the unsaturated zone, then migration or diffusion from infiltrating seepage could form a viable pathway for impact. This pathway only applies to GDEs directly above the infrastructure.	**Unlikely** For the area on the ML, the groundwater levels are likely >20 mBGL and solutes in the water are unlikely to be accessible to vegetation. For the area along the Mort River, movement of solutes in the unsaturated zone and then by the water table is possible. Groundwater flow is likely towards the potential receptor, but flow of 2.5 km distance without significant natural attenuation is unlikely. **Not present** There are no likely terrestrial GDEs that directly overlie the area immediately adjacent to the pit, therefore, there is no pathway for impact from infiltration or diffusion in the unsaturated zone.	No past impact is predicted. Future impact is decreased in closure, when the WRD is capped and the stockpile is removed.
Pits and WRDs **Risks as described above.**	**Groundwater bores used for livestock watering** **Very Low**: There are no livestock watering bores documented with 10 km of the site. Livestock watering is a known EV in the region, but water quality is often inconsistent with livestock watering.	If groundwater below or near these infrastructure locations was impacted by enriched solute loads, and it flowed towards existing or theoretical future bores in any direction, the water quality at those bores could be impacted	**Not present and unlikely in future:** The theoretical future bores, if they ever exist, are unlikely to be located close enough to be impacted by slow groundwater velocity.	No past impact and very unlikely future impacts
Pits and WRDs **Risks as described above.**	**Water used for industrial purposes (mining)** **Potential future use:** Due to potential similarities to the Mount	If groundwater quality at the locations of potential industrial bores had been altered to exceed certain water quality objectives (WQOs), impacts may be experienced by the groundwater user.	**Not present:** Water quality changes that may have occurred or might occur are unlikely to have changed the utility of water used for industrial purposes (i.e.	No past or future impact is predicted.

	Dore Aquifer, there is the potential for presence of an industrial ground water resource. Water quality of the groundwater is saline, and therefore limits the beneficial use in for industrial purposes.		solute concentrations for regional groundwater are already greater than most WQOs).	

11.5.2.3 Contaminants of Concern

The methodology used to identify relevant CoCs has been detailed within Section 6.5.2.3. The CoCs identified by AGE as relevant to closure monitoring for Victoria are summarised in Table 161, with justification for inclusion or exclusion provided within Appendix 16.

Table 161: Victoria CoCs

CoC Parameter (unit)	Parameter recommended for closure monitoring (Y/N)
EC (µS/cm)	Y
Turbidity (NTU)	Y – for interpretation only and only for surface waters
pH (pH units)	Y
Major ions (Ca, Cl, K, Mg, Na, HCO_3)	Y – for interpretation only
Cobalt (ug/L)	Y
Copper (ug/L)	Y
Uranium (ug/L)	Y
Zinc (ug/L)	Y
Nitrate as N (ug/L)	Y
Sulfate (mg/L)	Y

11.5.3 Flooding

The potential impacts of flooding on the Victoria final closure design were assessed by WRM (WRM, 2023) (Appendix 2).

WRM developed hydrological and hydraulic models for drainage features across the Cloncurry Project Area. The models were developed for drainage features classified as second order watercourses or greater in the Queensland Globe database, or watercourses with catchments draining to mining infrastructure.

WRM reviewed the hydrology characteristics at Victoria (Figure 188). The review found:

- The south pit and WRD are in the upper headwaters of minor drainage features with no external catchment draining to them.
- The Victoria North Pit is located across a drainage feature and has a proposed PMLU as a water storage. Void water balance behaviour modelling (WRM, 2025) concluded the pit is likely to overtop to the receiving environment (Section 11.5.7.6); however, modelled long-term pit water quality concluded that water within the pit will not exceed livestock water quality guidelines and is therefore suitable for livestock consumption. The North Pit acts as a significant hydrological sink within the localized drainage feature. During high-flow events, the void will provide peak-flow attenuation (lowering the velocity of downstream water) before reaching the spill point. Given the high factor of safety of the pit walls (Section 11.5.7.8), this periodic inundation does not pose a risk to landform integrity.

As there are no significant catchment or drainage features that interact with the Victoria South Pit or WRE, and the Victoria North Pit acts as a self-attenuating feature for a minor drainage line with benign water quality, detailed flood modelling was not required. The combination of high geotechnical factors of safety and

compliant water quality ensures that the final landform remains safe, stable, and non-polluting during extreme climatic events.

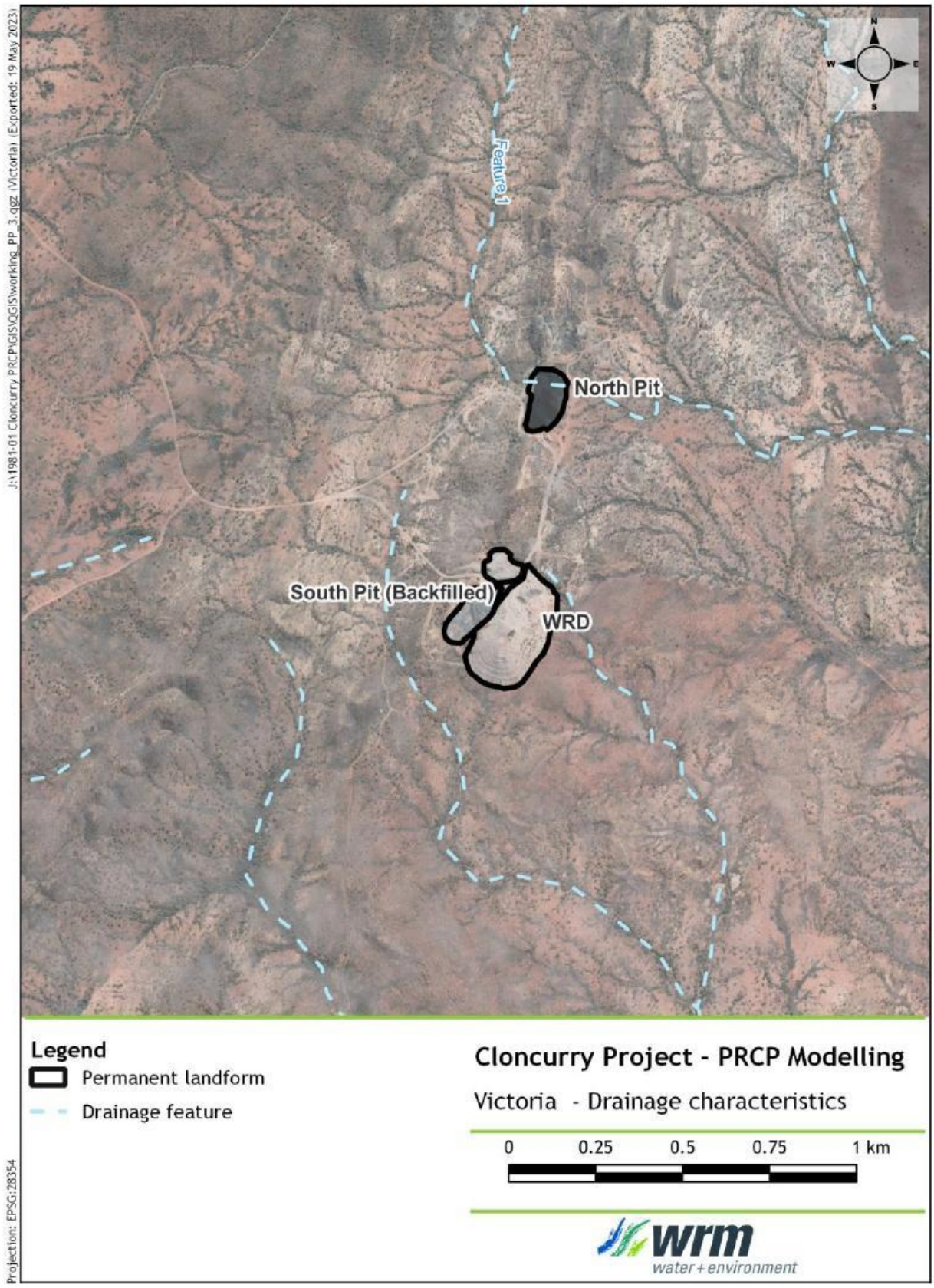


Figure 188: Victoria Drainage Characteristics (WRM, 2023)

In accordance with Condition PRCP13 of the approved PRCP Schedule, Chinova must complete a flood risk assessment for the final landform for all structures relevant to Victoria specified in Table 34. This flood risk assessment must:

(a) Be prepared by an independent AQP;
(b) Incorporates climate change in flood estimation in accordance with the Australian Rainfall and Runoff (ARR) Guideline 2019;
(c) Uses final landform topography and all permanent features;
(d) Avoids artificial hydraulic constraints that misrepresent realistic flood ingress or connectivity pathways;
(e) Assess flooding for at a minimum 0.1% AEP and PMF events;
(f) Include a Consequence Category Assessment (CCA) in accordance with the Manual for assessing consequence categories and hydraulic performance of structures (ESR/2016/1933) for Mount Dore void, Victoria void, and levees, where relevant;
(g) Document the assessment and demonstrate how the design of flood protection measures will prevent serious environmental harm to the receiving environment under all potential flood events; and
(h) Provide risk-proportionate design requirements for any measures required to prevent water ingress into residual voids including Mount Dore void Levee; and to prevent erosion, scouring and instability of residual voids, WRDs, retained dams, and drainage channels.

In accordance with PRCP14, a landform design plan and report for any flood protection structures must be developed and certified by a RPEQ that demonstrates that the landform is stable and provides protection against administering authority within 12 months of completing PRCP13.

Table 162: Flood Risk Assessment Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Flood risk assessment submission timeframe
Victoria	Victoria WRD	10/12/2036	10/12/2032
	Victoria WRD 2	10/12/2036	10/12/2032

11.5.4 Soil and Capping Material Assessment

To construct and implement the rehabilitation strategies for Victoria, a suitable inventory of soils and geological materials is required. Materials are required to construct cover systems for the WRE and back filled pit.

The material types and their geotechnical properties required at the Victoria site are described in Table 163.

Table 163: Victoria- Rehabilitation Materials Specification

Material Type	Material Description	Material Specification
Reduce Permeability Layer (RPL)	Material when compacted forms a low hydraulic conductivity “barrier” layer	- Gravel content less than 50%; - Fines content (material particle size <0.075mm) greater than 30%; and - Clay content (material particle size <0.002mm) greater than or equal to 10%.

Rock Mulch/ Growth Medium	Material suitable for plant growth.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering; - Well graded material - Fines content (material particle size <0.075mm) of approximately 30%; - Sand fraction (material particle size >0.075mm and <4.75mm) of approximately 30%; - Gravel (>4.75mm) of approximately 50%; and - Non-plastic to low plasticity fines.
Rock Armour	Provide a very high level of resistance to erosion along high slope and/or high velocity drainage.	- Chemically stable that does not generate acid or saline/metalliferous drainage on weathering - Predominantly coarse rock (material particle size >75mm) of greater than 70%. - Minimal fines content
General Fill	Cut and fill requirements for landform shaping	- Fines content (material particle size <0.075mm) less than 15%; - Sand content (material particle size <4.75mm) of 25-100%; and - Maximum particle size 150mm. - The plasticity index should not be greater than 12.
Topsoil	Growth medium	- Consistent with surrounding topsoil

11.5.4.1 Rehabilitation Material Characterisation

A material characterisation investigation has been undertaken at Victoria to identify the potential location, quality, and quantity of available rehabilitation materials (SGME 2025b). The investigation focused on the Victoria WRE (VWRE) for use in rehabilitation (Figure 189) located on the existing ML.

The geochemical and physical properties of the VWRE are discussed in detail in SGME 2025b and Table 164. The assessment confirmed that material at VWRE is structurally unstable, sodic, and nutrient-poor. It is unsuitable as-is for direct application as growth media, but could be improved with soil ameliorants such as gypsum and organic matter. It has low permeability, making it suitable for sub-surface layers in engineered covers, and must be protected from erosion.

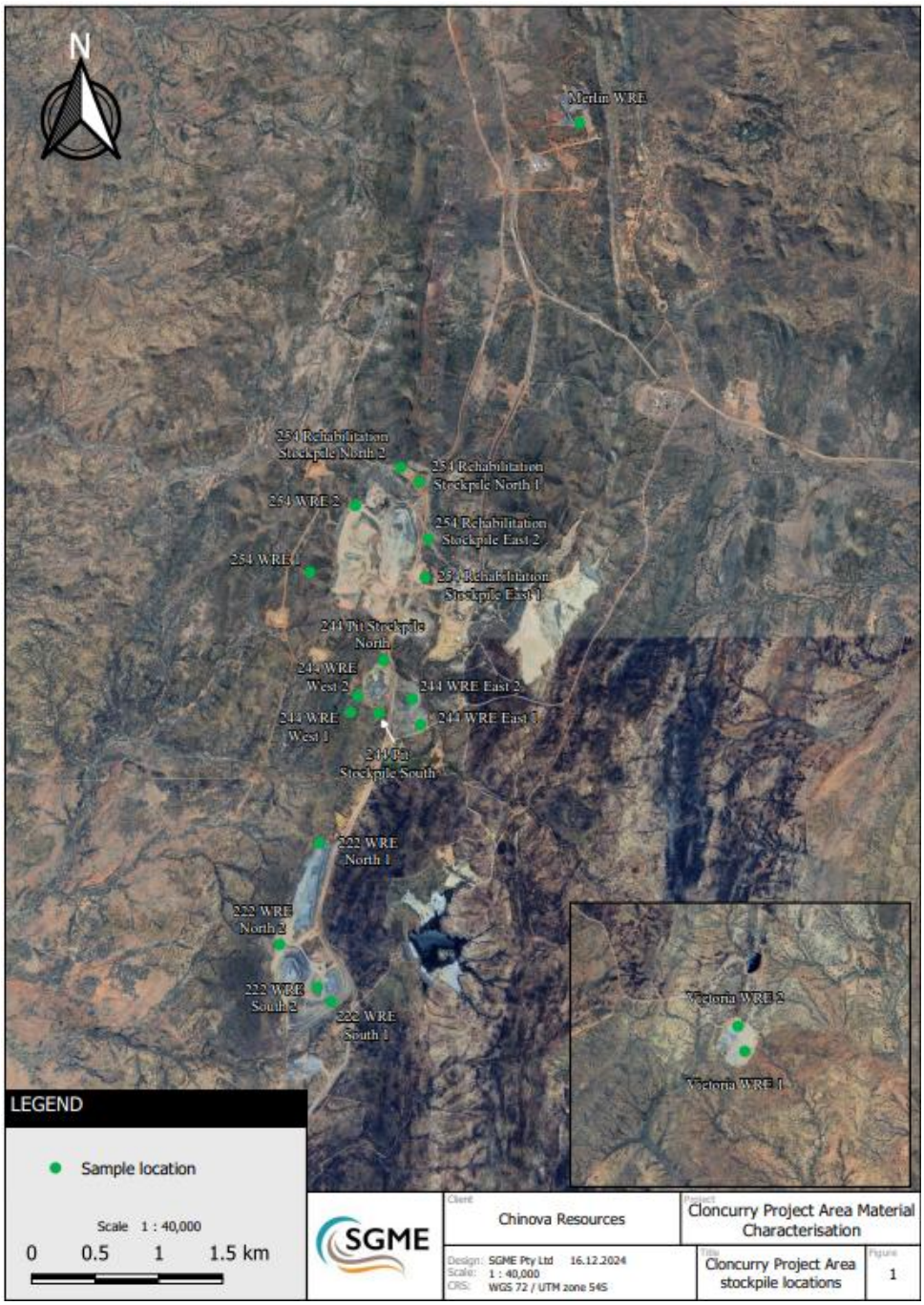


Figure 189: Cloncurry Project Area Material Characterisation Sample Locations

Table 164: Material Characterisation – Victoria

Location	Key Characteristics	Material Suitability	Recommended Treatment / Management
VWRE	• Neutral to slightly alkaline (pH 7.4 – 7.9); • Non-saline (EC 85 µS/cm); • Non-acid forming (Total S 0.018%; NAPP −6 kg H_2SO_4/t); • Moderately sodic (ESP 12.4%); • Dispersive (ESI 0.01; Emerson Class 2); • Low permeability (k = 6.5 × 10^{-9} m/s); • Low to moderate plasticity (PI 11%); • Low organic matter (0.6%); • Low phosphorus (3 mg/kg)	General fill and growth media	• Apply gypsum to address sodicity and dispersivity; • incorporate organic matter and nutrient amendments prior to use as growth media; • manage placement moisture and compaction; • implement erosion and sediment controls on exposed surfaces

11.5.4.2 Material Balance

The estimated quantities of materials required to rehabilitate the Victoria area are provided in Table 137. Although material available at the Victoria WRE would be suitable for use as general fill and growth media, a current volume of material within the Victoria WRE for rehabilitation is not available.

As detailed within Section 6.5.4.2, there is sufficient material onsite to undertake all proposed rehabilitation works. Accordingly, required rehabilitation material will be sourced from available stockpiles at Starra to enable appropriate rehabilitation works to be undertaken.

Table 165: Estimated Quantities of Material Required for Future Rehabilitation Works

Location	Footprint (ha)	Estimated volume of Growth Medium (m^3)	Estimated volume of Reduced Permeability Layer (m^3)	Estimated volume of General Fill (m^3)	Estimated volume of Rock Armouring (m^3)
WRE/Ore Stockpile/South Pit	8.47	101,714	84,762	N/A	TBA – subject to final detailed designs

11.5.5 Waste Characterisation

In 2011, RGS was commissioned to undertake a geochemical assessment of waste rock, ore, and tailings across the Cloncurry Project Area (Appendix 4).

At Victoria, a single core was drilled (WDQ001) was drilled into the waste rock to a depth of 8m. Representative samples were collected every metre and sent away for testing for acid-base-accounting parameters, net acid generating parameters, general physio-chemistry as well as total and water soluble metals. RGS (2011) reported that the waste material had a low risk of acid generation, high factor of safety (ANC:MPA ratio > 2) and characterised as NAF. The waste rock material was pH neutral to slightly alkaline, had low electrical conductivity levels and most soluble trace metals tested were below limit of reporting.

In 2015 and 2021, Chinova undertook further geochemical analysis of waste rock at Victoria as part of internal quality assurance practices. A systematic grid sampling campaign was undertaken in which 57 surface samples were collected across the waste rock emplacement. The results of the campaign showed that the waste rock material was pH neutral to slightly alkaline, had low electrical conductivity levels and most soluble trace metals tested were below limit of reporting. The material had a low risk of acid generation and was characterised as NAF.

11.5.6 Landform and Cover Design

11.5.6.1 Cover Designs

ATCW were engaged in 2022 to review and develop closure strategies for mineralised water storages across Chinova's assets, including the Victoria WRE. ATCW's process for developing these strategies followed the cover system design considerations and required inclusions stipulated in the PRCP Guideline (Appendix 5).

ATCW identified five (5) potential cover system configurations with the ability to meet the rehabilitation objectives and transition to the agreed PMLU. These configurations include:

- Option 1: Queensland Government (DES) default cover system configuration for high-risk mineralised waste:
    - 0.6m capillary break layer.
    - 0.5m reduced permeability layer.
    - 1.5m growth medium layer.
    - 0.15m top-soil layer.
- Option 2: Bituminous Geomembrane (BGM) cover system:
    - Reduced permeability layer formed by a continuous, seam welded layer of BGM.
    - 0.3m BGM protection layer.
    - 1.5m infiltration storage layer
- Option 3: Store and release cover system:
    - 0.6m RPL.
    - 1.5m ISL.
- Option 4: Store and release cover system:
    - 0.6m RPL.
    - 1.2m ISL.
    - Nominal 10 m NAF waste rock armour (rind)
- Option 5: Store and release cover system:
    - 0.15m.
    - 1.2m ISL.

These cover system configurations were numerically modelled to assess:

- Water balance: the fate of rainfall being lost through surface water runoff, evaporation or infiltrating into the cover system.
- Plant available moisture: available moisture within the cover profile to support vegetation growth.
- Water flux: the movement of water downward into the mine waste or upwards via capillary action.

The waste characterisation of the Victoria WRE and backfilled pit demonstrates that the material will be NAF with low salinity and dissolved metals concentrations. ATCW has designed rehabilitation strategies for unreactive waste emplacements including a proposed cover system. The unreactive waste cover system's primary functional objective is to maximise PAM by limiting water loss as both runoff, and water movement into the waste emplacement. This cover configuration is as follows:

- Cover Option C5 (Non-Acid Forming (NAF) Cover):
    - 0.15 m – Reduced Permeability Layer
    - 1.20 m - Growth Media (Rock Mulch)/ infiltration storage layer.

To treat the exposed emplacement batters ATCW designed geometric Batter Slopes with 20m wide terraces placed every 10m (vertical) (Figure 37). This approach would result in slopes that are relatively short (18m) and formed from material that contains significant gravels, cobbles and boulders. As described in detail in ATCW (2025), these short, rocky slopes improve global stability, provide good protection against rill and gully erosion but moisture recruitment via infiltration is poor. As a result, the combination of terraces and the cover promotes plant growth on flatter areas. This results in a landform with vegetated terraces and rocky slopes that blend naturally with the surrounding terrain. Analogous landforms (rocky scree slopes with limited to no vegetation cover) are common in the local area and are typically associated with stoney ridgelines. These types of micro-landform are consistent with the proposed post mining land uses.

ATCW (2025) undertook erosion modelling (WEPP) of the proposed landforms to inform conceptual erosion controls required for rehabilitated landforms (Appendix 6). Soil loss rates deemed appropriate for rehabilitated landforms at Chinova are 5 t/ha/year (refer Table 156) (ATCW, 2025). WEPP modelling indicates that slopes with a shallow gradient (0.5%) are deemed to have appropriate erosion rates up to 200 m, while steeper slopes (5%) may only reach 25 m without the need for drainage controls (ATCW, 2025). The WEPP erosion modelling also identified a requirement for landform batters to be armoured or constructed from rock/rock mulch, with suitable armouring or construction materials providing protection from gradual degradation and erosion by weathering, and resistance to short-term erosion and scouring caused by high-intensity rainfall events.

Drainage controls

The proposed final landforms include long, uninterrupted overland flow paths that have the potential to generate elevated runoff velocities during rainfall events. To mitigate this risk, drainage controls such as contour furrows will be incorporated into rehabilitated surfaces to reduce effective flow path lengths.

Contour furrows will act as hydraulic controls by interrupting surface runoff, promoting ponding and redistribution of flows at nominated slope intervals. This reduces flow velocity and depth, thereby limiting erosion during rainfall events. During higher-intensity rainfall, overtopping of furrows may occur; however, runoff velocities will remain significantly lower than those associated with unfurrowed surfaces.

By reducing kinetic energy and flow concentration, the drainage controls decrease the capacity for soil particle detachment and transport, thereby limiting inter-rill and rill erosion. In addition, furrows increase surface water residence time, promoting infiltration and acting as sediment traps that further enhance landform stability.

Batter rock armouring

The inclusion of a coarse, non-acid forming waste rock rind on landform batters alters erosional processes by reducing runoff velocity and increasing surface roughness. The coarse rock surface is inherently stable and resistant to erosive forces, with any erosion expected to be minimal and limited to the transport of fine-grained material from upslope areas.

The objectives of batter rock armouring are to:

- resist gradual degradation and erosion associated with weathering processes;
- protect against short-term erosion and scouring during high-intensity rainfall events; and
- maintain long-term landform integrity without reliance on active maintenance.

Batters will primarily comprise fresh, competent rock fill that is resistant to weathering and substantially less prone to sheet erosion than soil-based surfaces. Where required, a suitably graded filter layer or geotextile will be incorporated beneath the rock armouring to prevent the migration or loss of fine materials from the underlying substrate.

11.5.6.2 Final landform

The final landforms that will remain on the Victoria site that are a substantial departure from the pre-mine condition is the WRE/backfilled south pit and residual void.

At the current stage of the Victoria project, the location and geometry of the major site landforms have been established. The design process for this PRCP has considered existing status of the landforms as much as possible, and where appropriate, prioritised the use of suitable materials sourced from existing emplacements/ stockpiles and/or disturbances for use as backfill and cover system construction materials.

ATCW were engaged to develop a suite of landform design principles along with decommissioning and rehabilitation strategies for Chinova's mineral waste emplacements. These principles align with the rehabilitation objectives for the project and include:

- Landforms are assessed and designed to ensure they are not a risk of slumping or other forms of deformation due to the effects of gravity, saturation or earthquake loading in accordance with the ANCOLD guideline.
- Landforms are designed to minimise the opportunity for water movement downward into the waste and upward by capillary rise:
  - Landforms to be free draining to minimise the opportunity for water to pool and seep into the landform surface.
  - Landform crests to have a store and release cover system installed, incorporating a reduced permeability layer.
  - The exposed batters of mineralised landforms to be encapsulated in a NAF rind
- Landforms are designed to minimise erosion:
  - Crests are as flat as possible (0.5% to <5% gradient).
  - Surface runoff is directed to designated drainage features and away from landform batter slopes.
  - Cover systems incorporate erosion resistant materials such as rock mulch.
  - Cover systems develop a highly textured surfaces that promote storage of rainfall and significantly slow the generation of runoff.
  - Establishing vegetation as soon as possible on landforms.
  - Constructing short slope (batter) lengths that provide for small catchments and minimise the concentration of surface flows.
- Landforms will be generally arranged to maximise the development of a low slope plateau on the landform crest to support the transition to the PMLU – primarily, by ensuring the provision of plant available moisture in the cover system.

To meet the landform design principals the final Victoria WRE landform will require reprofiling and the application of an appropriate cover system (Section 11.5.1.2).

3D representations of the current and proposed final landforms (including PMLUs) at the Victoria project area are provided in Figure 190 and Figure 191. The final landforms depicted below incorporate the design principles and cover systems components as recommended by ATCW (Appendix 5, Appendix 7).

Final Landform Closure Design Report

In accordance with Condition PRCP18 of the approved PRCP Schedule, Chinova must engage an AQP to complete a final landform closure design report for all structures relevant to Victoria specified in Table 41. Condition PRCP19 details that the landform closure design report must at a minimum include:

(a) Detailed engineering designs; and
(b) Design aims and objectives of the final landform, including the cover system and batters; and
(c) The intended design life of the component parts of each relevant structure, including the cover, plateau, batters, access points, water management, and associated monitoring network; and
(d) Quality assurance and quality control required during construction; and
(e) How the cover system achieves a performance outcome equivalent to or better than the design provided in the PRC Plan dated 2 March 2026; and
(f) How the cover system performance will be assessed and demonstrated; and
(g) How the landform achieves acceptable geotechnical and erosional stability; and
(h) How the landform achieves an acceptable water quality outcome; and
(i) How redundancy of the monitoring network has been identified and built into the final design; and
(j) How the design, including the component parts, supports the achievement of the nominated PMLU; and
(k) How the design has been developed to account for the repair of any potential failure modes in the landform; and
(l) The critical design elements and associated assessment that support the achievement of a stable condition; and
(m) Where any assumed or inferred material properties have been used in the design or its assessment (inclusive of modelling):
    i. Provide a detailed discussion justifying why actual/measured properties were not used; and
    ii. How uncertainties regarding material properties may affect performance; and
    iii. How those uncertainties are managed.

Condition PRCP20 of the approved PRCP Schedule requires the final landform closure design report be independently peer reviewed and both the AQP who prepared the report and the independent reviewer, must provide a certification that the landform closure design report is:

(a) Fit for purpose; and
(b) Prepared in accordance with the relevant Australian standards; and
(c) If constructed as per the landform closure design report, the rehabilitated landform will achieve a stable condition in a post-closure context.

Table 166: Final Landform Closure Design Report Timeframes

Site	Relevant structures	Date feature is available for rehabilitation	Final landform closure report submission timeframe
Victoria	Victoria WRD	10/12/2036	10/12/2034
	Victoria WRD 2	10/12/2036	10/12/2034

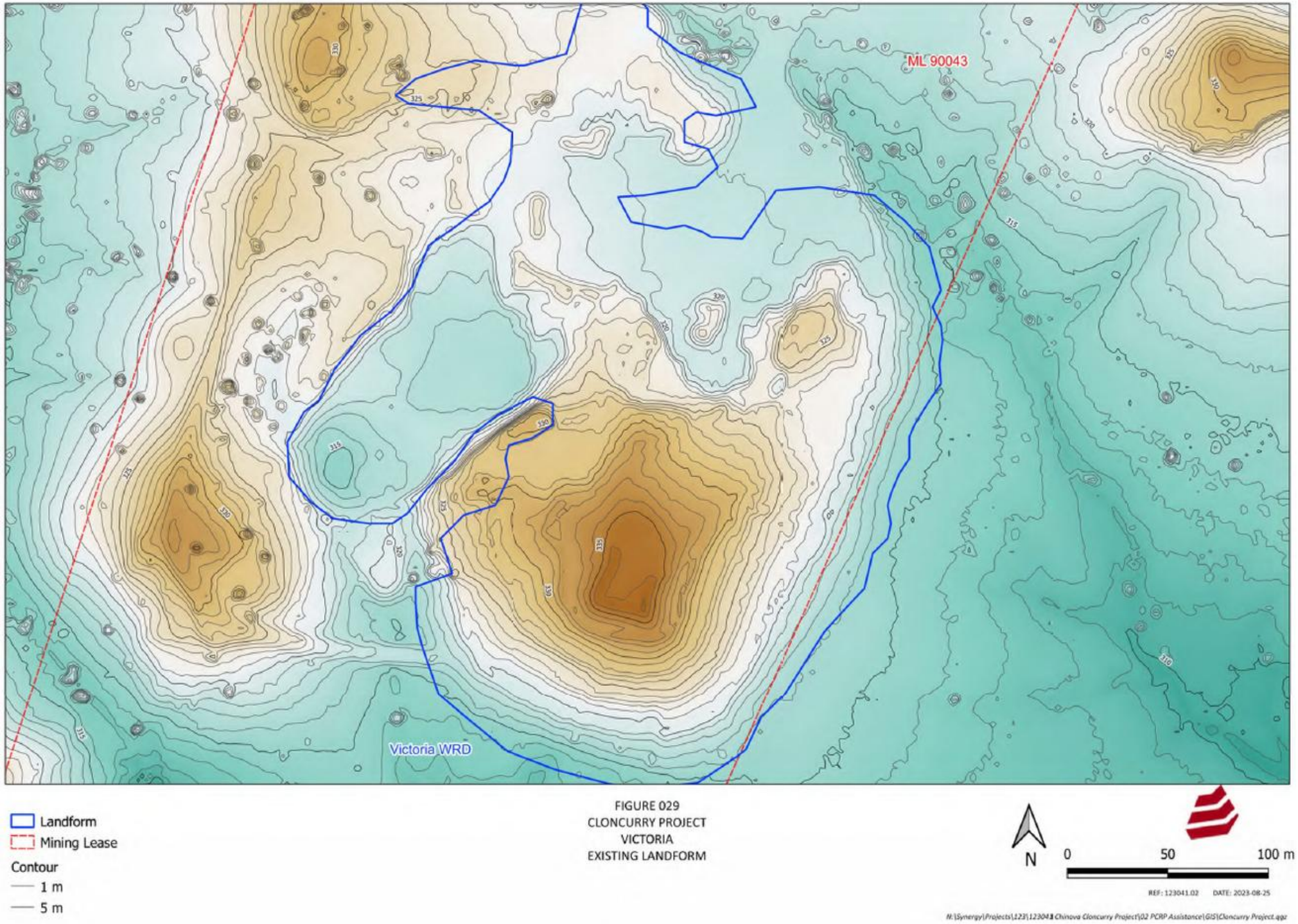


Figure 190: Victoria Existing Landform (ATCW, 2024)

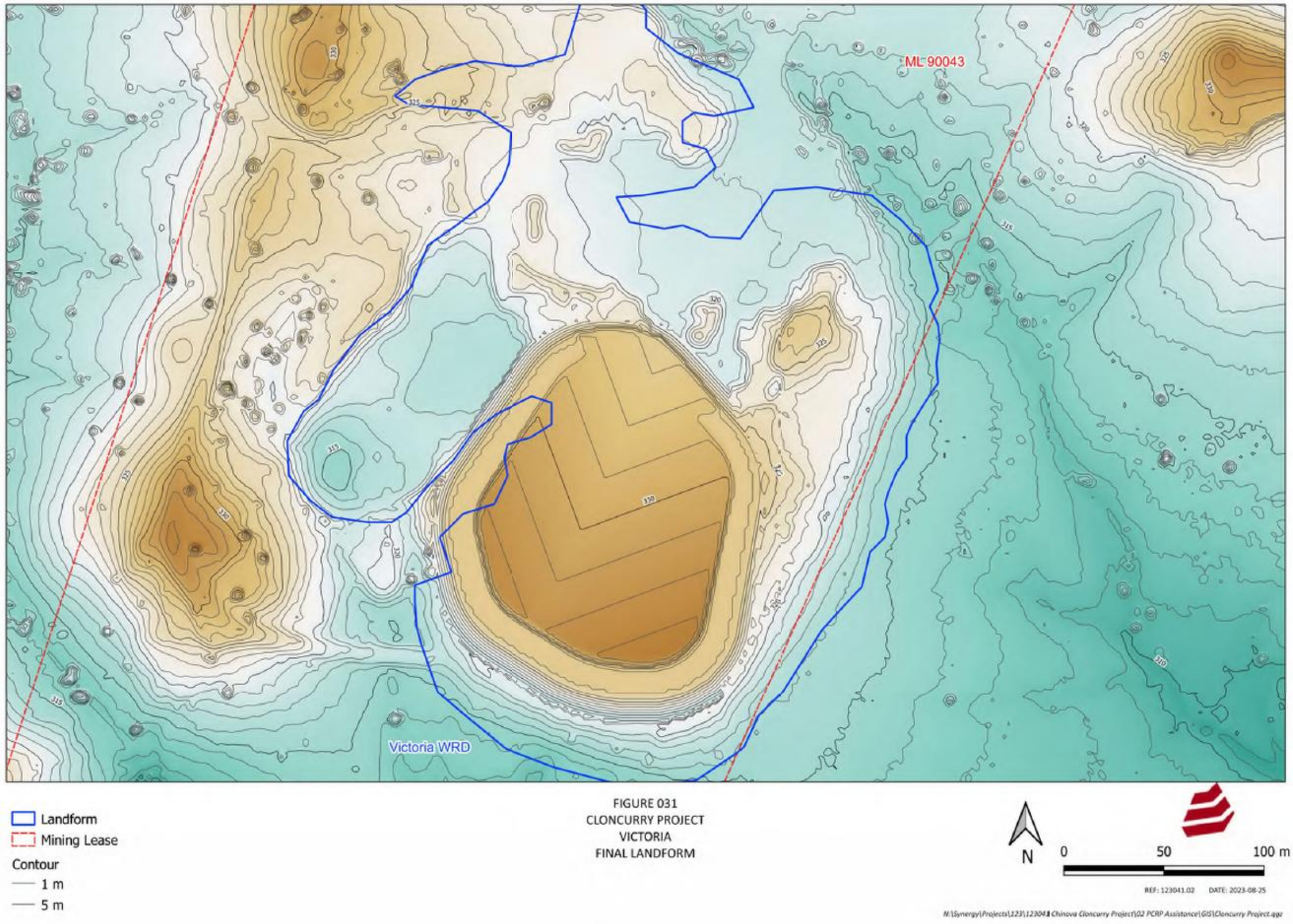


Figure 191: Victoria Final Landform (ATCW, 2024)

11.5.7 Residual Voids

11.5.7.1 Overview

The residual voids at Victoria known as North Pit and South Pit have been in care and maintenance since mining ceased in 1995. The South pit has been backfilled to its crest with waste rock mined from the North pit and the North pit contains good quality water.

The South pit was originally 46m deep with and overall slope angle of 50°. Batter angles in fresh rock were 75°. The North pit is even shallower being 25m deep with overall slope angle the same as the North pit. The surface footprint of North Pit is approximately 1.6ha while the South pit is approximately 3.82ha. Figure 192 and Figure 193 show the dimensions of the pits at cessation of mining.

As the South Pit is backfilled with waste rock to the surface, it will require the installation of an appropriate cover which is discussed in previous section. The remainder of this section will focus on North pit which is proposed to remain as a residual void with a PMLU of water storage.

11.5.7.2 Void Catchment Area

The catchment area was delineated using digital elevation model (DEM) data, whereby the catchment area is defined by the topography. Elevational data was used in combination with geomorphic inferences from satellite imagery to estimate catchment areas.

Table 167: Catchment area of pits (includes pit lakes)

Pit	Catchment area (m2)
Victoria North Pit	968,300

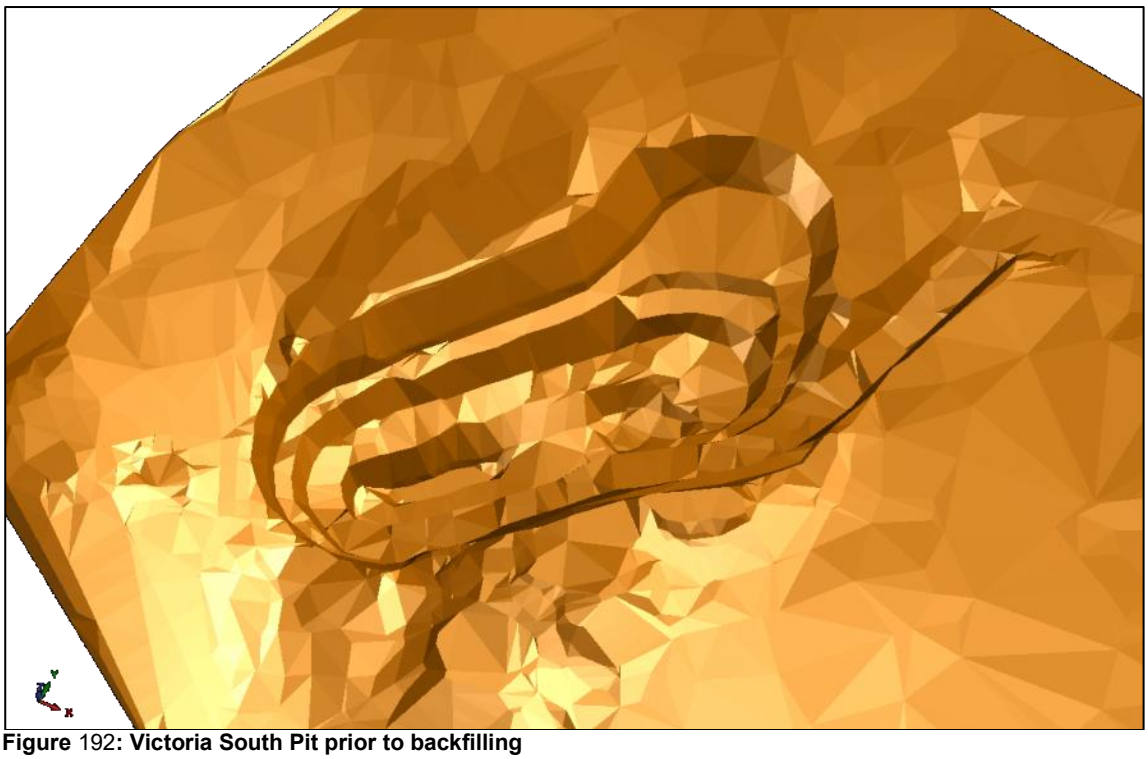


Figure 192**: Victoria South Pit prior to backfilling**

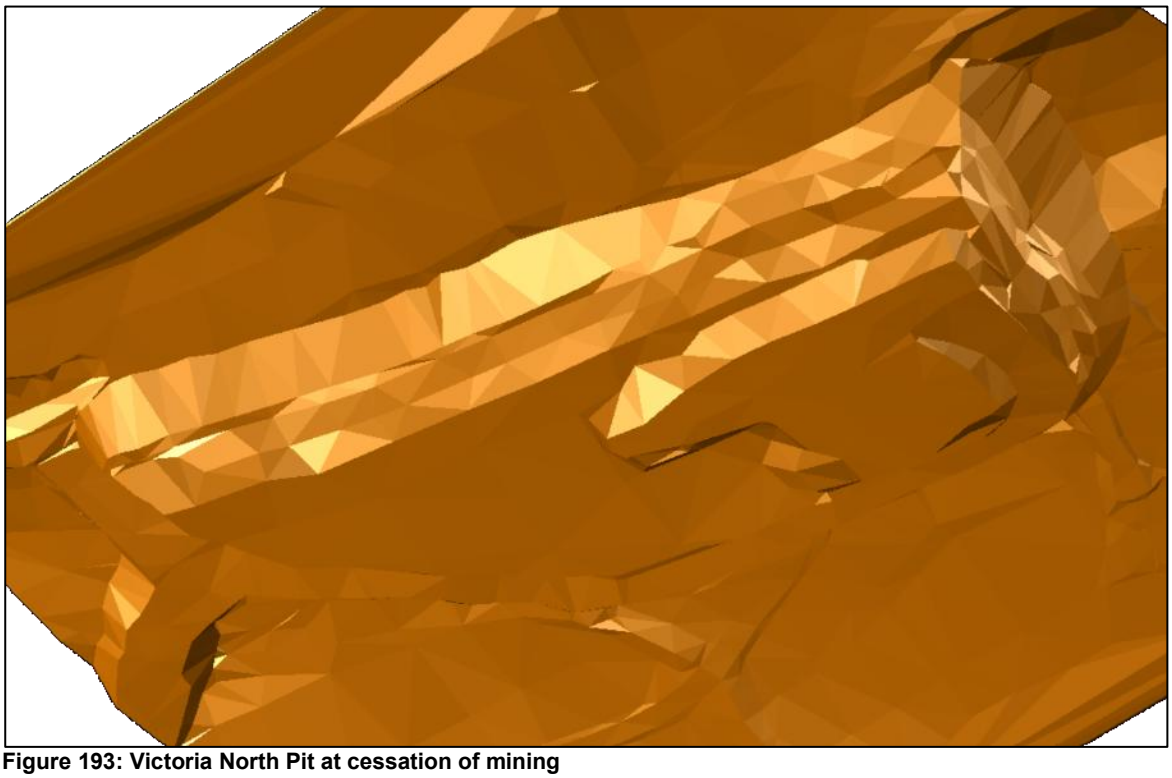


Figure 193: Victoria North Pit at cessation of mining

11.5.7.3 Void Groundwater Modelling

AGE (2023) completed updated void water balance modelling for Victoria North residual void (Appendix 1). Table 168 summarises the closure status of the residual voids and risk of overtopping.

The Victoria North pit currently hosts a pit lake that sits above the groundwater table and seasonally overflows. As discussed in the conceptual model for this site, the lake in this pit is above the water table in most years, but the persistence of water in this lake during drought conditions may indicate that groundwater flow into the pit occurs during the periods of low pit water levels. A theoretical water budget for this pit was developed by AGE (2023). This budget indicates a significantly positive surface water balance (on the order of 27,000 m^3/year); the majority of this surplus inflow is balanced by overflow; however, some flow to groundwater likely occurs.

Table 168: Summary of Void modelling for Victoria North (AGE, 2023)

Pit	Existing Water level (mAHD)	Current Status	Equilibrium water level - closure conditions (mAHD)	Closure status
Victoria North Pit	290 to 311	Sink/Seasonally overflowing	311	Source/Sink/Seasonally overflowing

11.5.7.4 Void Water Quality

Periodic water quality data is available from both the Victoria North pit (Table 169) shows that water quality in is circum-neutral, with very low levels of salinity, sulphates and dissolved metals. Water quality in the Victoria North is suitable for use for stock watering.

Table 169: Victoria North Pit Water Quality

	Unit	EQL	ANZECC 2000 Livestock	Vic Pit 20 May 2013	Vic Pit 15 Feb 2016	Vic Pit 16 Feb 2017	Vic Pit 28 Sep 2018	Vic Pit 09 Apr 2023
Sulphate SO4 (filtered)	mg/L	0.5	1000	5.9	3.6	3.4	3.0	4.0
Electrical Conductivity	µS/cm	5	5760	93	110	81	67	52
Fluoride (filtered)	mg/L	0.05	2	0.11	0.16	0.19	0.12	0.06
pH (Lab)	-	0		-	7.7	6.8	7.7	6.8
Aluminium (filtered)	mg/L	0.005	5	<0.005	<0.005	<0.005	0.015	0.35
Arsenic (filtered)	mg/L	0.003	0.5	<0.003	<0.003	<0.003	<0.003	<0.003
Beryllium (filtered)	mg/L	0.0001		-	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth (filtered)	mg/L	0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (filtered)	mg/L	0.005	5	<0.005	0.010	0.011	0.015	0.014
Chromium (filtered)	mg/L	0.001	1	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (filtered)	mg/L	0.001	1	0.002	<0.001	<0.001	<0.001	<0.001
Copper (filtered)	mg/L	0.001	0.4	0.10	0.016	0.016	0.037	0.028
Iron (filtered)	mg/L	0.005		0.042	0.024	0.026	0.082	0.16
Lead (filtered)	mg/L	0.001	0.1	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium (filtered)	mg/L	0.05		3.5	4.3	3.4	2.8	1.9
Manganese (filtered)	mg/L	0.005		0.056	<0.005	<0.005	<0.005	<0.005
Mercury (filtered)	mg/L	0.00005	0.002	0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Molybdenum (filtered)	mg/L	0.001	0.15	0.002	0.004	0.003	0.003	0.001
Nickel (filtered)	mg/L	0.001	1	0.002	<0.001	<0.001	<0.001	<0.001
Selenium (filtered)	mg/L	0.003	0.02	<0.003	<0.003	<0.003	<0.003	<0.003
Silver (filtered)	mg/L	0.00005		0.00006	<0.00005	<0.00005	<0.00005	<0.0005
Tin (filtered)	mg/L	0.002		<0.002	<0.002	<0.002	<0.002	<0.002
Uranium (filtered)	µg/L	0.5	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Zinc (filtered)	mg/L	0.005	20	0.019	<0.005	<0.005	<0.005	<0.005

11.5.7.5 Predicted Void Water Quality

The methodology used to predict long-term water quality within the onsite residual voids has been detailed within Section 7.5.7.5.

Long-term water quality modelling concluded the following:

- EC is below receiving water contaminant trigger levels (Schedule C – Table C5 of the EA) and livestock drinking water quality limits;
- Sulphate concentrations will be below livestock drinking water quality limits and the maximum concentration of sulphate during a release (overtopping event) (10.3 mg/L) will be below the receiving water contaminant trigger levels of 12 mg/L; and
- Both EC and sulphate is below 80th percentile values for historical groundwater quality.

In accordance with Condition PRCP12 of the approved PRCP Schedule, at the end of the Victoria life of mine (2036), Chinova will commission predictive hydrological modelling and void water quality modelling which is calibrated against the final landform. This modelling will demonstrate that the water quality and level within each residual void will not cause environmental harm to the surrounding environment, the residual voids will continue to act as groundwater sinks, and there is no environmental harm beyond the boundaries of the Project mining leases.

Table 170: Victoria Pit Water Quality (WRM, 2025)

CoC	Receiving Water Contaminant Trigger Levels (Schedule C – Table C5 of the EA)	Livestock Drinking Water Guideline Limit	Average (mg/L)	80th Percentile (mg/L)	80th Percentile of Groundwater Values
Electrical Conductivity	140.7 mg/L (210 µS/cm)	2,400[1]	104	91	3518
Sulphate	12 mg/L	422[2]	22	17	840

[1] Guideline value of Salinity from Table 3.8 (dairy cattle) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

[2] Guideline value of Salinity from Table 3.7 (cattle – high concentrate) of Livestock drinking water guidelines – Australia & New Zealand (ANZG, 2023)

11.5.7.6 Void Hydraulic Modelling

Void water balance behaviour modelling was undertaken for the Victoria North Pit as part of the predicted water quality assessment described in Section 7.5.7.5 (WRM, 2025) (Appendix 18). The modelling is based on a long-term water balance approach to assess pit lake behaviour, equilibrium water levels and the potential for overtopping over time. WRM's assessment concluded that the Victoria North Pit is likely to overtop and release to the receiving environment under closure conditions. This finding is consistent with previous assessments by AGE (2023), which did not undertake void modelling for this pit due to its history of overtopping and the expectation that overflow would continue post-closure.

Predicted long-term water quality within the pit lake is suitable for livestock consumption, with modelled concentrations of potential contaminants of concern below relevant livestock drinking water quality guideline values. On this basis, any overflow from the pit lake is not expected to result in unacceptable water quality impacts to the receiving environment.

Explicit assessment against discrete 1% and 5% AEP rainfall events was not undertaken as part of the WRM modelling. However, the long-term water balance modelling indicates that overtopping is likely to occur under the representative climatic conditions assessed.

11.5.7.7 Void stratification

An assessment of the likelihood of stratification during/after closure was undertaken by AGE (2023) based on the depth, geometry, and status of the voids (Table 171). AGE (2023) found the Victoria North Pit had a very low risk of stratification.

Table 171: Victoria assessment of void water quality the likelihood of void stratification (AGE, 2023)

Pit	Equilibrium water level -closure conditions (mAHD)	Pit base (mAHD)	Equilibrium lake depth (m)	likelihood of stratification in closure (rational)
Victoria North Pit	311	288	23	very low, pit overflows seasonally

11.5.7.8 Geotechnical Stability

Quantum Geotechnical have undertaken an updated assessment and numerical modelling of the long-term stability of the Victoria North. Full details of the assessment are provided in Appendix 8.

Numerical modelling of Victoria pits was undertaken to assess the likelihood of future pit wall instability by Quantum (2023) using a Map3D model.

The modelling results indicate (see Figure 194):

- that sigma 1 stress levels are relatively low and that any instability would be tensional in nature, the ground relaxing rather than crushing.
- In summary, the walls of both pits have a high factor of safety. There are some localised areas where spalling or toppling is possible but not complete batter failure or complete slope failure.

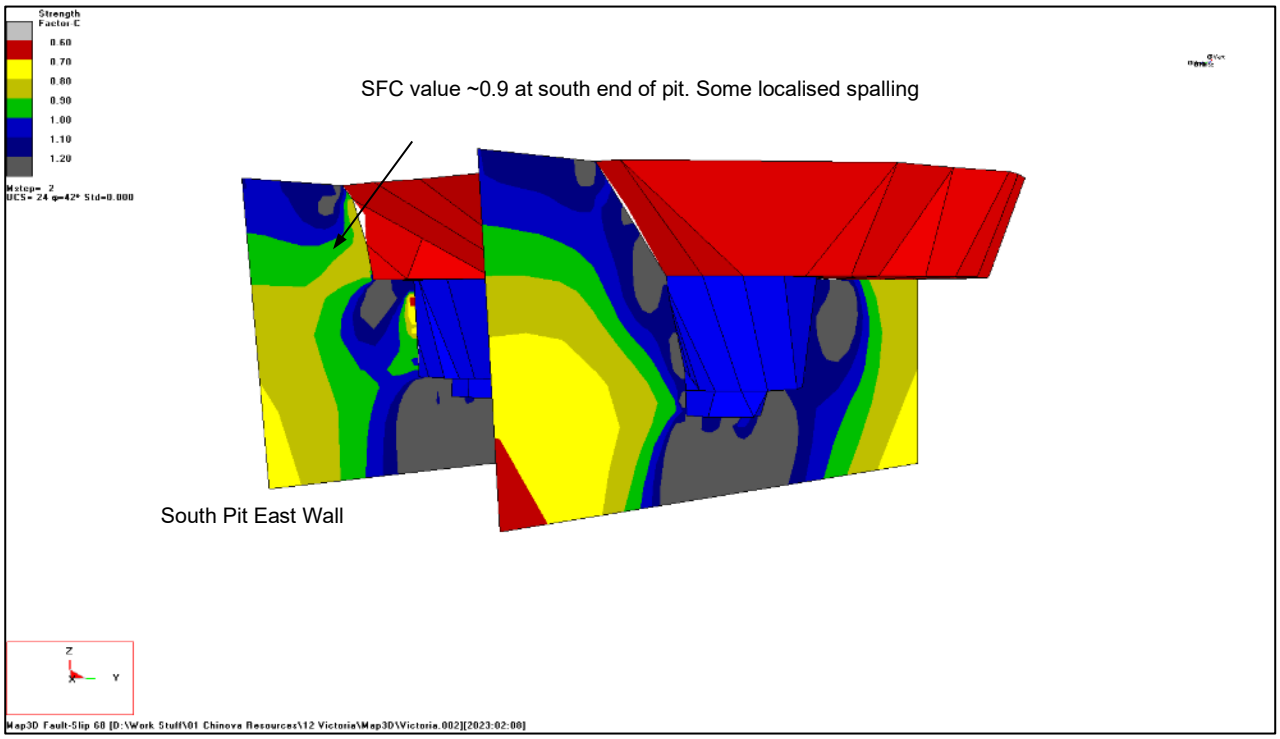


Figure 194: Map3D model showing stress in North pit.

11.5.8 Water Management

The proposed management of surface water during the rehabilitation, post-closure maintenance and monitoring period is described below. Potential impacts and implications to groundwater values are discussed in previous sections as a result, this section will focus on surface water management.

The mine has been in care and maintenance since 1994, the main source of potential solutes onsite is the WRE and backfilled pit. Potential CoCs at Victoria have been detailed within Section 11.5.2.3. Surface water runoff flows from mine landforms and disturbed areas at Victoria and report to the North pit or the Victoria environmental dam (Figure 196 and Figure 92).

There is limited water quality data from the existing environmental dam/sediment at Victoria as it only holds water for a short amount of time following rainfall. The latest water quality results are presented in Table 172. The water quality data shows that runoff from the Victoria mine into the Victoria sediment dam is circum-neutral to slightly acidic, with low salinity, low concentrations of sulphate and most metals except slightly elevated levels of copper (still within livestock trigger values). The South pit has been shown to contain good quality water and is unlikely to be a source of potential solutes.

The water management strategy onsite for closure will involve:

- Installation of a cover system on the waste rock emplacement as per engineered design to minimise contact of water with waste material.
- Surface runoff from the WRE directed to environmental dams.
- Development of an updated Water Balance Model (GoldSim) for closure conditions.
- Installation of additional sediment basins to treat stormwater from mine areas prior to discharge to the receiving environment. Ongoing monitoring will determine whether these sediment basins are necessary. Should they be deemed necessary, approval for these additional structures will be sought prior to their construction.

- Continued implementation of a Receiving Environment Monitoring Program (REMP) to identify any impacts from the mine on the receiving environment.

During the decommissioning and rehabilitation of the Victoria mine, the water risks will reduce as the Victoria WRE is reshaped and a suitable cover system installed. The surface water management network will be reviewed to ensure it is fit for purpose. For the purposes of the PRCP, the Victoria Sediment Dam will be fully rehabilitated once surface water quality from upstream PMLUs achieve surface water quality requirements of the applicable rehabilitation milestone.

Table 172: Victoria Environmental Dam Water Quality

	Unit	EQL	Livestock Trigger Values	VSD					
				06 Nov 2015	17 May 2016	18 Mar 2018	02 Mar 2019	11 Nov 2021	30 Nov 2025
pH (Lab)	-	0		6.0	6.5	6.7	6.9	7.7	7.14
Electrical Conductivity (Lab)	µS/cm	5	5970	150	58	170	580	61	157
Sulphur as Sulphate, SO4 (filtered)	mg/L	0.2	1000	33	8.2	24	91	8.9	27
Aluminium	mg/L	0.005	5	0.23	-	0.17	0.074	0.63	0.15
Arsenic	mg/L	0.003	0.5	<0.003	-	<0.003	<0.003	<0.003	0.002
Beryllium	mg/L	0.00001		<0.0001	-	<0.0001	<0.0001	<0.0001	-
Bismuth	mg/L	0.0005		<0.0005	-	<0.0005	<0.0005	<0.0005	-
Boron	mg/L	0.005	5	0.025	-	0.037	0.064	0.016	0.05
Cadmium	mg/L	0.0001	0.01	<0.0001	-	0.0001	<0.0001	<0.0001	<0.0001
Calcium	mg/L	0.2	1,000	4.7	-	5.2	15	1.6	
Chromium (III+VI)	mg/L	0.001	1	<0.001	-	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	0.001	1	0.009	-	<0.001	<0.001	0.003	<0.001
Copper	mg/L	0.001	1	0.21	-	0.11	0.11	0.13	0.192
Iron	mg/L	0.005		0.34	-	0.40	0.096	0.75	0.21
Lead	mg/L	0.001	0.1	<0.001	-	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	0.1		5.0	-	4.6	16	1.7	4
Manganese	mg/L	0.005		0.43	-	0.010	0.017	0.11	0.02
Mercury	mg/L	0.00005	0.002	<0.00005	-	<0.00005	<0.00005	<0.00005	<0.0001
Molybdenum	mg/L	0.001	0.15	<0.001	-	0.004	0.007	0.001	0.002
Nickel	mg/L	0.001	1	0.002	-	0.001	0.002	0.001	0.004
Rhenium	mg/L	0.05		<0.05	-	<0.05	<0.05	<0.05	<0.001
Selenium	mg/L	0.003	0.02	<0.003	-	<0.003	<0.003	<0.003	<0.004
Silver	mg/L	0.00005		<0.00005	-	<0.00005	0.00005	<0.00005	<0.001
Tin	mg/L	0.002		<0.002	-	<0.002	<0.002	<0.002	-
Uranium	mg/L	0.0005	0.2	0.0009	-	0.0007	0.0008	0.0012	<0.001
Zinc	mg/L	0.005	20	0.006	-	<0.005	<0.005	0.008	<0.005

* Dissolved metals results displayed.

11.5.8.1 Surface Water Contaminants of Concern

Potential CoCs at Victoria were identified by AGE (refer Section 11.5.2.39.4.2.36.5.2.3). Potential sources for surface water CoCs until landforms are rehabilitated are summarised within Table 173.

Table 173: Potential surface contaminant sources (AGE, 2025b)

Potential Source	Likely CoCs
WRE	Sulphate, metals
Rehabilitated disturbed areas	Suspended solids, turbidity
Final reshaped drainage lines and batters	Suspended solids, turbidity
Ore stockpiles	Metals, turbidity

11.5.8.2 Conceptual Drainage Plans

WRM (2025) has prepared a conceptual drainage plan for Victoria post-closure. A description of the methodology used to prepare the drainage plans has been provided within Section 6.5.8.2. The post-closure water management system for Victoria includes the following:

- Final void water management
  - During the post-mining stage, the Victoria north pit will fill with water until an equilibrium level is reached. The pit will be a flowthrough storage and will be used as a water source; and
  - The Victoria south pit has been completely backfilled.
- Surface water management
  - There are no surface water management measures proposed for the Victoria north pit final landform;
  - Runoff from the Victoria WRD will be managed through sediment dam V_SD1 (similar footprint to the Victoria Sediment Dam used during operations) and V_SD2 (captures runoff from the southern portion of the WRD) to ensure adequate sediment removal before release to the receiving waters.
  - Surface water drains are proposed around the perimeter of the WRD to convey runoff to the proposed and existing sediment dams. Should additional structures be required for ongoing water management, Chinova will ensure all relevant statutory approvals are obtained prior to their construction in accordance with PRCP15.
- Clean water management
  - There are no clean water management measures proposed for the Victoria north or south final landforms.

The conceptual drainage plan for Victoria has been illustrated within Figure 195, with the proposed dam sizing and release locations for V_SD1 and V_SD2 defined within Table 174.

Figure 195: Victoria conceptual drainage plan (WRM, 2025)

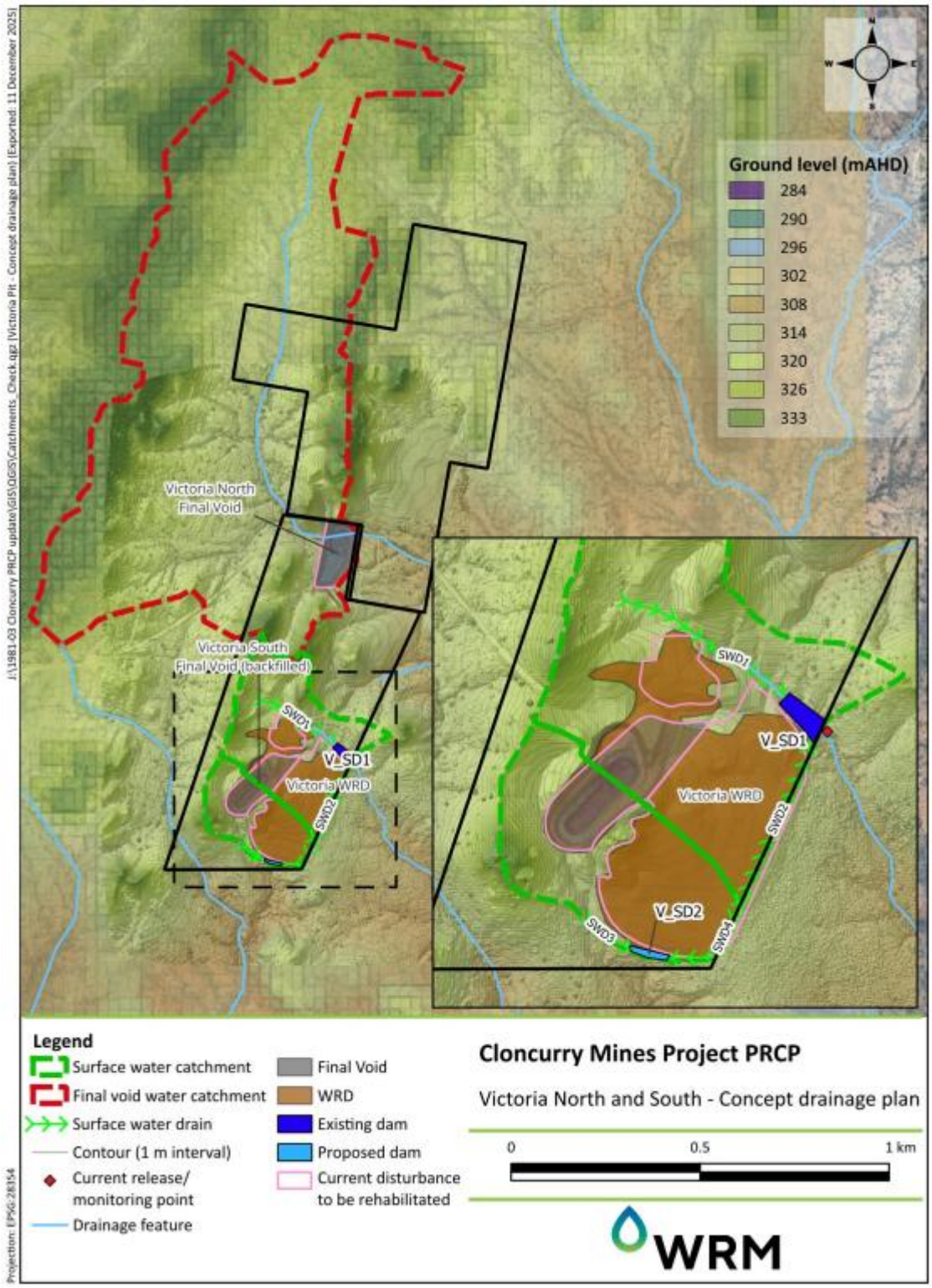


Table 174: Victoria Proposed Dam Sizing and Release Locations (WRM, 2025)

Storage	Max catchment area (ha)	Total required capacity (ML)	Total capacity with forebay (ML)	Dam surface area (ha)	Easting (GDA 2020, MGA 54)	Northing (GDA 2020, MGA 54)	Sediment dam water source	Receiving waters description
V_SD1	11.0	1.44	3.92	1.96	447744	7614079	Victoria WRD	Unmapped drainage feature of Mort River
V_SD2	5.0	0.65	1.78	1.96	447873	7613848	Victoria WRD	Unmapped drainage feature of Mort River

11.5.8.3 Seepage intervention and collection controls

There are no seepage collection controls in place or proposed to be installed at the Victoria site.

11.5.8.4 Surface water diversions and long-term management requirements

There are no existing surface diversions/bunding at Victoria.

11.5.8.5 Dewatering requirements

There is no requirement for dewatering to facilitate the planned future rehabilitation activities. During the dry season the environmental dams are usually dry.



Figure 196: Victoria Mine Current Surface Water Catchments (ATCW, 2023a)

11.5.8.6 On-going water management

The remaining risks at Victoria to surface water include:

- Contaminated surface water generated by the WRE; and
- Backfilled pit area.

The on-going water management activities in the medium to long term will be similar to those that have been put in place to date. Impacted surface water runoff will continue to be directed towards the sediment dam. Site surface water monitoring will be ongoing including annual REMP to provide sufficient data that surface water quality can continue to meet environmental authority requirements and WQO's for stock watering over the long term to support future relinquishment of the mining lease.

Once final rehabilitation works are completed, ongoing monitoring of sediment dam water quality and receiving environment will be undertaken to demonstrate that runoff will meet rehabilitation milestone criteria. The existing sediment dam will be retained until runoff water quality meets rehabilitation milestone criteria, following which it will be rehabilitated pursuant to the methods described in the Revegetation Plan.

Additional ESC dams will be installed downstream of rehabilitated landforms to catch stormwater runoff, should ongoing monitoring of the receiving environment deem it necessary. Chinova will seek all relevant statutory approvals for these additional structures prior to their construction, in accordance with PRCP15.

11.5.9 Revegetation

The objectives of the revised revegetation approach are as follows:

1. Areas are revegetated to include species representative of the pre-existing species composition, BVG19 (RE 1.11.2a/1.11.3a/1.11.3b) (RM7).
2. Revegetated landforms are comparable to the surrounding environment, evident by achievement of the modified BioCondition benchmark criteria as per Appendix 4 – BioCondition Benchmark Criteria of the approved PRCP Schedule (RM9).
3. Rehabilitated lands are self-sustaining, evident by natural recruitment and sustainable growth (RM9).

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

11.5.9.1 Victoria Revegetation Sequence

Revegetation will primarily focus on the seeding and establishment of native species as previous studies indicate that native flora provides increased potential for establishing a sustainable vegetation cover. No revegetation will be required for permanent infrastructure or NUMA's.

The general revegetation sequence is detailed in Table 175.

Table 175: Revegetation Sequence

Step	Activity	Timeframe/Optimal Season
Revegetation	Undertake direct seeding (if applicable)	Preferably immediately prior to wet season (November-December).

	Install stock fencing to protect planting (if required).	In sequence with, or immediately following final trim of topsoil or application of rock mulch.
Monitoring	Undertake monitoring in accordance with BioCondition methodology to ensure suitable growth/development of revegetation	Ecological monitoring: immediately after wet season (March-April) and annually thereafter.
Maintenance	Undertake maintenance activities to sustain revegetation if required (e.g. supplementary seeding, weed control). To be informed by results of the annual monitoring report.	Supplementary seeding prior to wet season. Weed control preferably to be undertaken prior to plants setting seed and while plants are actively growing (immediately after rain).

11.5.9.2 Victoria Seed Mixes

The revised revegetation methodology details that one BVG (19) will be applied to all rehabilitation areas which are being revegetated to simplify the methodology. Accordingly, a single seed mix, which will be applied to all areas to be revegetated, has been compiled, informed by the BVG descriptions, regional ecosystem technical descriptions, and site-specific surveys undertaken by NGH (NGH, 2023). A broad range of species have been proposed to increase diversity and to provide a greater number of options when sourcing seeds. Metal-tolerant species have also been included in the seed mix (i.e. acacias) as these can assist in achieving plant cover in areas that may be subject to metal toxicities.

Seed mixes for areas with the post-mining land use of low intensity grazing have an increased amount of 3P grasses; these are grasses that are palatable, perennial, and productive. 3P grasses are highly valued as pasture species and will be planted in higher densities within the grazing native ecosystem PMLU to assist with achieving a sustainable low intensity grazing land use.

Seed mixes will not be directly applied to the steep (≥30 degrees) rock armoured batters of cover systems as infiltration is poor and these slopes will support minimal vegetation acquired through natural colonisation (ATCW, 2024; NGH, 2023).

Table 176: Victoria Seed Mixes

Broad Vegetation Group	Native Grasses	Forbs/Sedges	Shrubs	Trees	3P Pasture Grasses*
BVG 19	• *Bothriochloa ewartiana* • *Chrysopogon fallax* • *Eragrostis elongata* (annual) • *Enneopogon polyphyllus* • *Eulalia aurea* • *Heteropogon contortus* • *Imperata cylindrica* • *Setaria surgens* (annual) • *Themeda triandra* • *Triodia molesta* • *Triodia sp.* • *Bothriochloa bladhii* • *Dichanium ferecundum* • *Bothriochloa ewartiana*	• *Brunoniella australis* • *Cleome viscosa* (dominant) • *Crotalaria medicaginea* • *Crotalaria* • *Cyanthillium cinereum* • *Dysphania rhadinostachya* • *Enchylaena tomentosa* • *Eustrephus latifolius* • *Evolvulus alsinoides* • *Heliotropium tenuifolium* • *Hibiscus sturtii* • *Phyllanthus virgatus* • *Tostellularia adscendens* • *Tephrosia brachyodon var. longifolia* (dominant) • *Senna Notabilis* • *Sesbania javanica*	• *Acacia hemsleyi* (dominant) • *Acacia excelsa* • *Santalum lanceolatum* (dominant) • *Sesbania benthamiana* (dominant) • *Gossypium australe* • *Grevillea striata*	• *Atalaya hemiglauca* (dominant) • *Corymbia terminalis* • *Eucalyptus camaldulensis var. obtuse* (dominant) • *Eucalyptus Leucophloia* • *Eucalyptus Leucophylla* • *Acacia cambagei*	• *Astrebla lappacea* • *Chrysopogon fallax* • *Enteropogon acicularis* • *Heteropogon contortus* • *Paspalidium spp.* • *Panicum decompositum*
Species selection instructions	3 – 4 of the above listed species, including at least one annual species	2 – 3 of the above listed species	3 – 4 of the above listed species	3 – 4 of the above listed species	3 – 5 of the above listed species to RAs identified as 'low intensity grazing' PMLU
Application rate	10 kg/ha	1 kg/ha	1 kg/ha	3 kg/ha	5 kg/ha

* 3P Pasture Grass species only to be applied to RAs identified as 'low intensity grazing' PMLU. 3P Pasture Grass species to be applied in addition to native grasses.

11.5.9.3 Victoria Revegetation Success Criteria

BioCondition benchmark criteria have been applied to monitor rehabilitation progression. These criteria have been compiled for BVG 19 based upon the vegetation benchmarks for RE 1.11.2a, 1.11.3a, and 1.11.3b, which were sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The compiled BioCondition benchmark criteria for BVG19 are presented in Table 177. The methodology for vegetation monitoring has been detailed within Section 15.1.2.2.

In accordance with Condition PRCP22 of the approved PRCP Schedule, Chinova must submit to the administering authority, via an amendment application, site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This amendment must be submitted to the administering authority prior to 12 June 2031.

Table 177: Victoria Revegetation Success Criteria

BioCondition Assessable Attributes	Weighting	Scores		Modified Benchmarks
		RM8	RM9	BVG19 = RE 1.11.2a/ 1.11.3a/11. 11.3b
				Vegetation benchmark
Recruitment of canopy species (% of trees)	5	≥ 20% of dominant canopy species	≥20 – 75% of dominant canopy* species present as regeneration	100
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	6
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	3
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	4
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	6
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	9
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	10
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	29
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	52
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	5
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	25
Total score	60	≥ 20	≥ 40	

12. Rehabilitation Planning – Mount Cobalt

12.1 Baseline Information

12.1.1 Climate

Refer to section 5.1 for details on climate for the Mount Cobalt mine.

12.1.2 Site Topography

The historical Mount Cobalt mine is situated within the broad geographic region known as the Selwyn Ranges, an elongated dissected peneplain that acts as a major continental divide, with the rivers north of the Selwyn Range flowing into the Gulf of Carpentaria while those south of the range flowing into the Lake Eyre basin.

Mt Cobalt mine is located on the eastern side of the locally dominant Starra ridge, in an area characterised by low to moderate ridges with elevations ranging from 340 to 390 m AHD. Mine infrastructure occupies the side of a ridge at approximately 340m AHD. The steepest gradients are associated with the ridges with slopes between 10% and 30%.

The area surrounding Mount Cobalt mine comprises of north-south ridge lines opening to flatter plains and valley floor areas.

12.1.3 Geological Setting

The Cloncurry Project is located within the Eastern Fold Belt of the Mount Isa Inlier and the geologic units of the area are mostly Palaeozoic in age and include: the Gin Creek Granite and associated Double Crossing Metamorphics, the Staveley Formation, the Kuridala Group, and the Mount Dore Granite. The contact between these units is broadly described as unconformable (Geoscience Australia, 2022); however, all Precambrian units in the region are heavily faulted, and, in detail, nearly all contacts occur along faults. The stratigraphic sequence is deformed such that most formation contacts trend north-northeast/south-southwest, with formations generally younging to the east. The Kuridala Group is locally intruded by a number of dolerites and basalts, which are sufficiently coeval to be considered part of the Kuridala Group. Mesoproterozoic granite intrusives, the Williams Supersuite, postdate the Kuridala Group and the contact between these units is considered an overthrust.

At the mine scale, the Mount Cobalt project straddles the contact between the Hampden Slate and New Hope Sandstone of the Kuridala Group. The Hampden Slate lithology is dominated by carbonaceous metapelite, schist and phyllite followed by layer parallel mafic intrusions. The gold-copper-cobalt mineralisation is hosted within an amphibolite unit, along a dilatant shear of the Mount Cobalt Shear Zone. The Mount Cobalt Shear Zone is identified along the contact of north-northeast trending and steeply east dipping quartz-mica-garnet schist and amphibolite.

12.1.4 Hydrology and fluvial networks

The Mount Cobalt mine is located in the Lake Eyre drainage division within the Georgina Basin, Georgina River sub-basin.

The Mount Cobalt area is dissected by small ephemeral drainage lines (flowing for only short durations during and immediately after wet season rainfall) which flows into the Mort River which continues southwest before entering the Burke River and eventually joining the Georgina River south of Boulia.

There are no listed environmental values and water quality objectives for the Lake Eyre region in schedule 1 of the EPP (Water and Wetland Biodiversity). In areas where no water quality objectives are scheduled, the Queensland water quality guidelines (QWQG) apply as default objectives. For freshwaters, the QWQG generally defaults to the ANZECC 2000 Guidelines categories of upland and lowland freshwaters.

However, for the Lake Eyre region it is considered that the ANZECC default freshwater types are not particularly useful and so no water types have been defined in the QWQG. The alternatives provided are to default to the ANZECC 2000 Guidelines (for the most similar water type) or to develop local guidelines. It should be noted that for these areas the ANZECC may not be particularly appropriate and the collection of at least some local data is strongly recommended.

Chinova has maintained a reference monitoring location at Starra since 1985 (BS01 – Pyramid); the closest reference site to the Mount Cobalt mine. The monitoring location is located above Lake Wyche in an area that has not been impacted by mining activities. Summary of water quality data for the BS01-Pyramid monitoring location is provided in Table 178. The environmental values of the surface water in the project have not specifically been defined but are likely to be limited to ecological values, recreation, and cultural and spiritual values. Due to the highly ephemeral nature of the systems, it is unlikely to have any significant agricultural values.

Table 178: Summary of water quality results for reference water site (BS01-Pyramid)

Parameter	Number of Results	Mean	Median	95th Percentile	80th Percentile	20th Percentile
pH	96	6.16	6.07	7.22	6.52	5.70
Electrical Conductivity (uS/cm)	99	34.98	28.00	70.40	48.00	19.00
Sulphates (mg/L)	98	4.54	3.55	10.15	6.00	2.00
Dissolved Aluminium (mg/L)	59	0.31	0.24	0.90	0.44	0.10
Dissolved Arsenic (mg/L)	67	0.0043	0.0030	0.0100	0.0030	0.0030
Dissolved Boron (mg/L)	58	0.0134	0.0075	0.0500	0.0150	0.0050
Dissolved Cadmium (mg/L)	59	0.0002	0.0001	0.0001	0.0001	0.0001
Dissolved Chromium (mg/L)	59	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Cobalt (mg/L)	59	0.0014	0.0010	0.0031	0.0010	0.0010
Dissolved Copper (mg/L)	94	0.0289	0.0105	0.0596	0.0500	0.0060
Fluoride (mg/L)	86	0.0580	0.0500	0.1000	0.0500	0.0500
Dissolved Iron (mg/L)	73	0.4578	0.2800	1.2400	0.5400	0.1100
Dissolved Lead (mg/L)	95	0.0162	0.0010	0.1132	0.0050	0.0010
Dissolved Manganese (mg/L)	62	0.0599	0.0210	0.2562	0.0536	0.0050
Dissolved Mercury (mg/L)	58	0.0004	0.0001	0.0001	0.0001	0.0001
Dissolved Molybdenum (mg/L)	52	0.0010	0.0010	0.0010	0.0010	0.0010
Dissolved Nickel (mg/L)	59	0.0011	0.0010	0.0020	0.0010	0.0010

12.1.5 Groundwater

Groundwater conditions at Mount Cobalt are described in detail by AGE (2025a) (Appendix 19). The below sections provide a short summary of the key groundwater considerations.

12.1.5.1 Hydrostratigraphy

The hydrostratigraphic unit that hosts the Mount Cobalt mine is the Kuridala Group, which is a lithologically variable basement unit. Other potential hydrostratigraphic units near the site are the younger cover units.

Kuridala Group

Most groundwater at Mount Cobalt is hosted in the Kuridala Group. Due to the Proterozoic age and metamorphic nature of the Kuridala Group, it is likely that these rocks do not have preserved primary porosity. Thus, groundwater flow and movement within the Kuridala Group is controlled by secondary porosity from fracturing, weathering, and possibly by delamination of the shallower units.

It has been reported (RLA, 2011a) that shallow, higher permeability zones may occur in the upper 10 m to 30 m of the laminated siltstones, shales, and phyllites of the Kuridala Group. These lithologies are less resistant to weathering and delaminate near the surface due to stress release, thereby developing fissures in the open bedding planes that can contain water (RLA, 2011a). However, the porosity created by this delamination is often in-filled by secondary deposition of minerals (e.g., calcite, iron and aluminium oxides, and sulfides) and clays. This infilling results in a bulk permeability that, while comparably higher than the unweathered sections of the Kuridala Group, is still generally low (RLA, 2011a). The extent to which the Kuridala Group is delaminated in the Mount Cobalt area is unknown.

Cover units

Cover units are present along the incised gullies of the site to the south and east. The characteristics of the cover units reflect the nature of the source rocks, weathering, transport, and depositional conditions. Poorly sorted clay, silt, sand, and gravel comprise the thin flood-plain alluvium. These units have variable primary porosity, which is dependent on the size and properties of the comprising grains and the degree of cementation and compaction. Available evidence indicates that groundwater levels at the site are inferred to be below the base of these units, indicating that these sediments are generally unsaturated. As such, these units do not host a significant groundwater resource.

12.1.5.2 Groundwater Levels

Groundwater data is available for one location within the Mount Cobalt ML (NDH0114). As this is the only data point for the area, there is a high degree of uncertainty with regard to the variations in groundwater level. Groundwater is at 28 mBTOC at NDHH0114 (Table 179) suggesting that the groundwater at Mount Cobalt may be at similar depths below the surface as groundwater at Mount Elliott and Lady Ella to the north. This groundwater level is also roughly consistent with the base of the historic underground workings.

Table 179: Recent groundwater levels observed within the Kuridala Group

Bore	Date of measurement	Groundwater level elevation (mAHD)	Depth to groundwater level (mBTOC)	Target Formation
NDH0114	21/11/2022	291.8	28.2	N/A
MB2a	26/09/2021	330.3	26.0	Kuridala Group
MB8	28/09/2021	329.7	34.2	Kuridala Group
MB9	19/06/2021	332.4	31.5	Kuridala Group
MB10	7/03/2022	337.8	17.0	Kuridala Group
MDWB12a	2/08/2021	324.0	15.7	Kuridala Group
MERB1	22/10/2022	343.0	39.0	Contact between undifferentiated Kuridala

				Group and Hampden Slate
Mort River	13/03/2022	308.6	10.5	Kuridala Group

12.1.5.3 Groundwater Quality

No groundwater quality data is available for the Mount Cobalt site. Ranges of pH and EC observed in other areas of the Kuridala Group (Table 180) suggest a large range of values that groundwater at Mount Cobalt could fall within, from relatively fresh, to 12,000 µS/cm, and acidic to alkaline. Sulfate and copper concentrations could also be within a large range. Due to the site hosting a polymetalic cobalt deposit, it is also likely that concentrations of cobalt and other associated metals are naturally elevated at this site.

Table 180: Water quality ranges observed in bores screened within the Kuridala Group

pH (pH units)	EC (µS/cm)	Total copper (mg/L)	Sulphate (mg/L)
5.44 to 8.11	238 to 12000	0.001 to 2.3	1 to 6700

12.1.5.4 Environmental Values

The applicable environmental values for the Mount Cobalt site are:

- ecosystem groundwater use (potential GDEs);
- agricultural groundwater use (livestock watering); and
- industrial groundwater use.

Ecosystem Groundwater Use

According to the GDE Atlas, there are no mapped aquatic potential GDEs within the Mount Cobalt area. Along the Mort River to the east there are also zones of low and moderate potential aquatic GDE. The most proximal of these areas is located approximately 2.5 km east of the site. For an aquatic GDE to be present, a surface expression of groundwater must be suspected or identified. There are no known springs in the Mount Cobalt area, as mapped by the Queensland Wetland Database. However, it is possible that surface expressions exist during the drier months along the Mort River.

The terrestrial GDE mapping shows that the Mount Cobalt area and surrounds have low and moderate potential for groundwater dependence, although this has not been confirmed with on-site ecological surveys. To the east of the ML along the Mort River there are zones of high potential terrestrial GDE

Agricultural Groundwater Use

Groundwater is not used for irrigation purposes in the vicinity of the Mount Cobalt site, but groundwater is used for livestock (usually beef cattle) watering on properties in the greater region.

A search of registered bores within a 10 km radius of Mount Cobalt site resulted in the identification of two bores (Table 181) one existing and one abandoned and destroyed bore. These bores purposes are not listed in their bore reports; however, it is likely that they were drilled for livestock watering. The existing bore (RN12922) is located almost 10 km west of Mount Cobalt, over a ridgeline and in a different hydrostratigraphic unit (the Staveley formation), both of which are likely to limit groundwater flow.

Table 181: Registered bores within 10 km of Mount Cobalt

No.	Easting	Northing	Date	Bore depth	Screen	Ground RL (mAHD)	Screen lithology	Status
12922	438061	759981	26-Sep-53	24.4	0 to 21.3	N/A	Kuridala Formation	Existing
184123	444734	760321	26-May-18	202	N/A	N/A	N/A	Destroyed

Industrial Use

The main industrial user of groundwater in the region is Chinova itself. During operational times, at nearby Starra Line the mine extracts water from the open voids via sumps and dewatering bores to maintain dry working conditions. There is no other known industrial usage of groundwater within a 10 km radius of Mount Cobalt site.

12.1.6 Soil Types, Properties and Productivity

According to the Digital Atlas of Australian Soils, the dominant soil type underlying the area is 'MY136' (Australian Soil Resource Information System, 2013) (Figure 197). Soil type MY136 is associated with gently undulating to undulating lands with occasional rock outcrop.

The Mount Cobalt area is mapped as the Kuridala and Quamby land system. The Kuridala system is described by Perry (1954) as consisting of rugged, stony hills and mountains on rocks of the Cloncurry complex and carrying scattered low trees, commonly snappy gum, box, or bloodwood, over spinifex. Although evergreen, the spinifex pastures are of little or no use for grazing except for short periods after burning. Perry (1954) considered the land systems unsuited for grazing (or virtually so) because it is rugged, stony, or barren. The Quamby system in contrasts is described as sparsely timbered undulating plains with occasional low hills. It mostly has shallow soils carrying short grass pastures, but wetter areas carry mid-height grasses and shallow stony soils carry spinifex. Perry (1954) considered areas containing Quamby country is suitable for low intensity grazing.

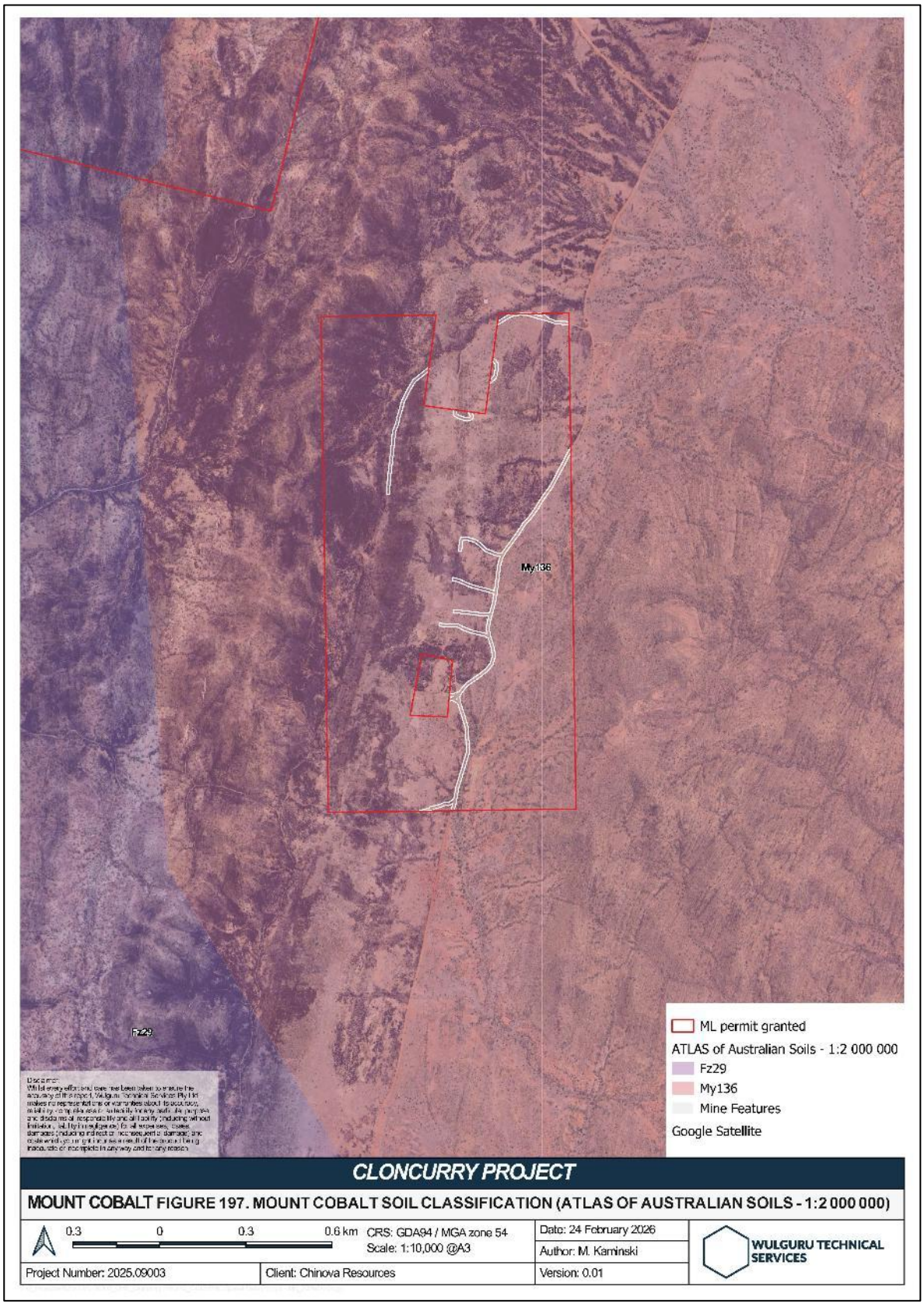


Figure 197: Mount Cobalt Soil Classification (Atlas of Australian Soils – 1:2 000 000)

12.1.7 Land Stability

Soils in the project area all contain gravel in excess of 20% and a rock or gravel mantle, often greater than 200mm and sometimes greater than 400mm in thickness. This mantle provides protection to the soils against erosion. If this mantle is removed, all these soils are susceptible to sheet or gully erosion either as a result of the non-cohesive fine sandy texture or dispersion as a result of sodicity (Manbulloo, Cockatoo, Forsayth classes).

The steep terrain of much of the landscape increases the risk of erosion upon disturbance although this is mitigated by the low annual rainfall >350 mm/yr.

Lewis (1987) found that the dominant soil types across the project area (Skeletal, Manbulloo, Forsayth, Cockatoo) had severe limitations including nutrient deficiencies, low water holding capacity, poor texture, shallow depth, copper toxicity and high salinity that made long term stabilisation of post mining slopes problematic. It was suggested that placement of a weather resistant rock layer on post mining landforms may provide the most effective long term stabilisation.

12.1.8 Vegetation Communities and Ecological Data

The dominant broad vegetation group at Mount Cobalt consists of eucalypt species low open woodlands, primarily dominated by snappy gum (*Eucalyptus leucophloia*) and/or Cloncurry box (*E. leucophylla*) with a spinifex (*Triodia molesta*) dominated ground layer (BVG 19).

A total of six regional ecosystems (RE) have been identified within the Mount Cobalt area (Table 182). All six have a management status under the *Vegetation Management Act (Qld) 1999* of Least Concern, the lowest conservation significance levels (greater than 30% of the pre-settlement RE remains). All RE's have a biodiversity status of No Concern.

Previous baseline ecological reports for the Cloncurry Project Area have (Place, 2012) assessed the presence of vegetation communities and conservation significant flora species. No Endangered, Vulnerable, or Near Threatened (EVNT) plants under the *Nature Conservation Act (QLD) 1992* (NC Act) or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during surveys to date.

Table 182: Regional ecosystems within the Project Area.

BVG	RE	RE description	Biodiversity Status	VMA Status
	1.11.2	*Eucalyptus leucophloia* low open woodland	No concern	Least Concern
	1.11.3	*Corymbia terminalis* and/or *Eucalyptus leucophylla* low open woodland on metamorphics	No concern	Least Concern
	1.3.4	*Acacia cambagei* low open woodland to woodland on alluvium, sometimes with *Eucalyptus leucophylla*	No concern	Least Concern
	1.5.3	*Eucalyptus leucophloia* low open woodland to woodland on sandy and gravelly red soils	No concern	Least Concern
	1.5.4	*Eucalyptus leucophylla* and/or *Corymbia terminalis* low open woodland on red earths	No concern	Least Concern

	1.5.6	*Atalaya hemiglauca*, *Ventilago viminalis*, *Grevillea striata* low open woodland on red earth plains	No concern	Least Concern

12.1.9 Fauna Presence and Populations

Four conservation significant species (listed under the NC Act or EBPCT Act) have been recorded within the Project Area or general site locality on previous surveys (Table 183).

Previously listed species have also been recorded during previous surveys, being the square-tailed kite (*Lophoictinia isura*) and Troughtons sheath-tail bat (*Taphozous troughtoni*), however, these species are no longer listed under the NC Act or EPBC Act.

Table 183: **Conservation significant species recorded within the Project Area.**

Scientific name	Common name	Extent	NC Act	EPBC Act
Tachyglossus aculeatus	short-beaked echidna	Recorded in the Starra 254 area. Expected to be present across the Project Area.	Special Least Concern	
Petrogale purpureicollis	purple-necked rock wallaby	Readily inhabits the Project Area.	Vulnerable	
Falco hypoleucos	grey falcon	Nomadic. Noted foraging over the Decline Area.		Vulnerable
Acanthopis antarcticus	common death adder	Found within the locality.	Vulnerable	

12.1.10 Pre-Mining Land Use

The Mount Cobalt deposit was originally discovered in 1919 and by the end of 1921, 500 tonnes of cobalt had been mined out. Mining ceased in 1934 following a fire in the main shaft. Since cessation of mining the area has been explored by a number of companies. Modern mining has been limited to the removal of approximately 8000 tonnes of cobalt ore from a waste rock stockpile (on a now expired ML) for processing offsite in the 1990's. In addition, low intensity grazing is a past and current land use.

12.2 Post Mining Land Use

12.2.1 Rehabilitation Planning and Objectives

Determining appropriate rehabilitation objectives is critical in mine rehabilitation planning. In order for a PMLU to be accepted, it must be rehabilitated to a stable condition in accordance with section 111A of the EP Act.

Land is in a stable condition if –

a) The land is safe and structurally stable; and
b) There is no environmental harm being caused by anything on or in the land; and
c) The land can sustain a PMLU.

In addition, EPML00701913 provides the following rehabilitation objectives (condition E3) that must be met to achieve final rehabilitation.

a) Safe for humans and wildlife
b) Non-polluting
c) Stable
d) Able to sustain an agreed post-mining land use
e) Revegetated with species endemic to the area with no declared pest species; and
f) Compliant with all conditions of the environmental authority.

There are no authorised mining activities for the Mount Cobalt. Disturbance activities are limited exploration activities. As a result, at this stage of the development no detailed rehabilitation objectives have been developed. This section will be updated in event that mining activities are approved.

12.2.2 Post Mining Land Use

The EP Regulation requires that each PMLU –

a) Is viable, having regard to the use of land in the surrounding region, and
b) Satisfies at least one of the following -
    i. The use is consistent with how the land was used before mining activity was carried out on the land
    ii. The use is consistent with a development approval relating to the land
    iii. The use is consistent with a use of the land, other than a use that is mining, permitted under State or Commonwealth Act, including, for example, a planning instrument under the Planning Act
    iv. The use will deliver, or is aimed at delivering, a beneficial environmental outcome.

The current land use is low intensity grazing. The only infrastructure that has been constructed by Chinova is access tracks which will transition to the landholder at relinquishment. The PMLU's and rehabilitation areas adopted for Mount Cobalt are presented in Table 184, Figure 198 and Figure 199.

As detailed within Section 3.3, the disturbance areas represented within the PRCP spatial data is less than the total maximum footprint authorised under the EA, however, the maximum footprint for authorised features have been captured under each rehabilitation area. Accordingly, the rehabilitation area and PMLUs illustrated within Figure 198 and Figure 199 may not accurately reflect the disturbance areas presented within Table 184.

Table 184: Mount Cobalt PMLU's and Rehabilitation and Improvement Areas

Rehabilitation Planning Areas	Disturbance (ha)	Existing Rehab (ha)	To be Rehab (ha)	Pre-Mining Land Use	Post Mining Land Use	Previous Rehabilitation Works
RA25 Mount Cobalt Permanent Infrastructure	2.96	0	0	Low intensity grazing	Permanent Infrastructure	N/A

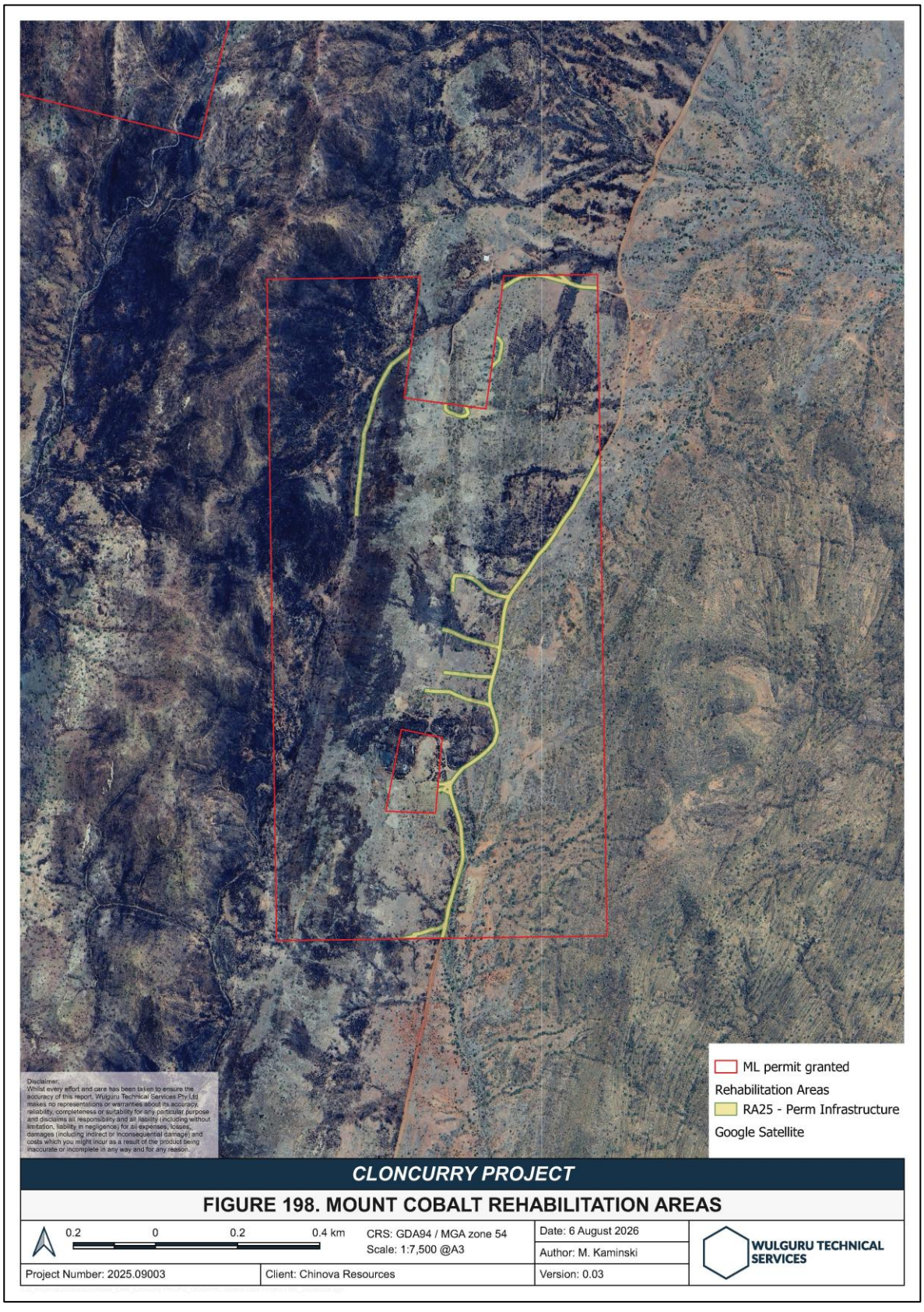


Figure 198: Rehabilitation Areas and Proposed PMLU (Mount Cobalt)

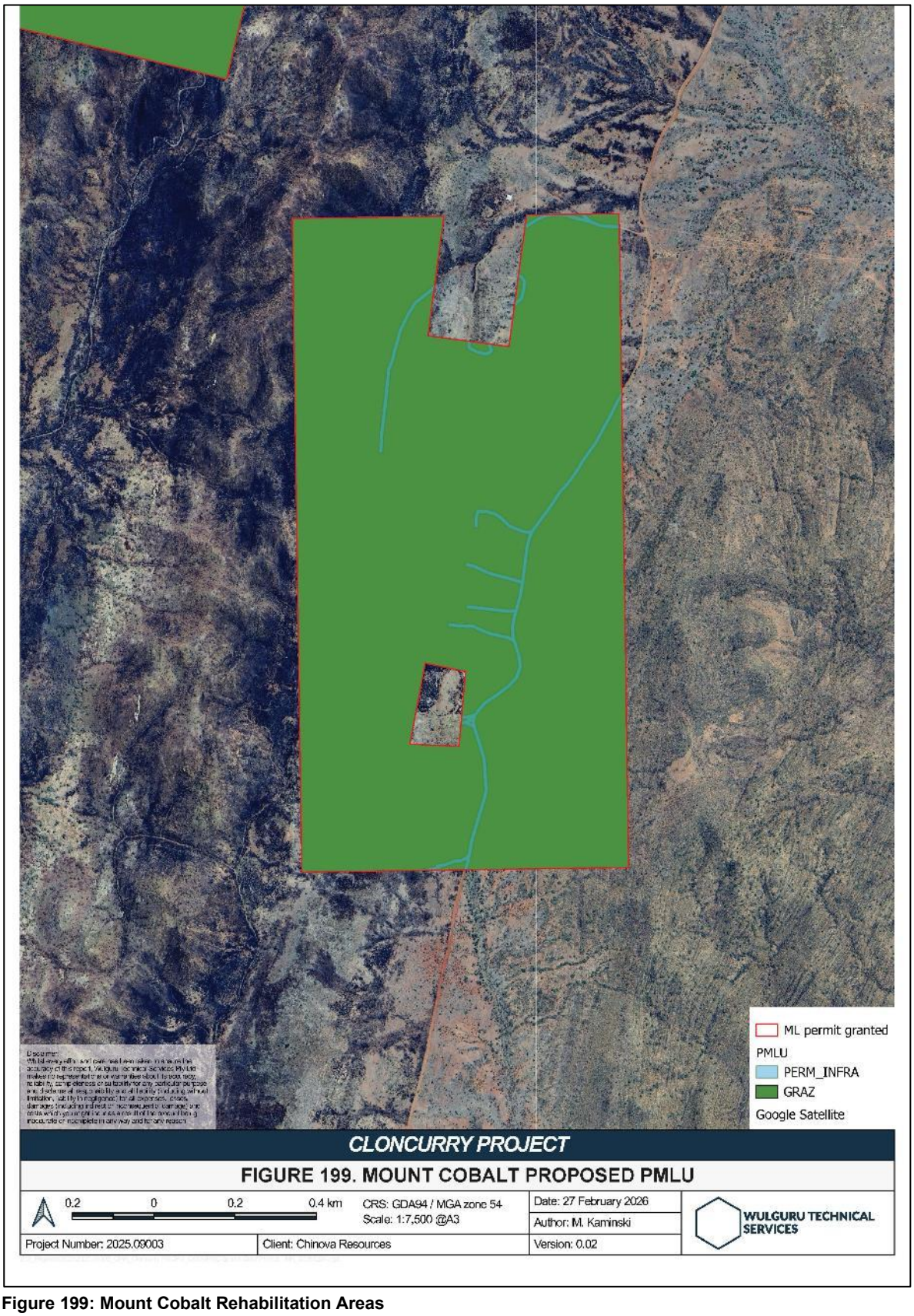


Figure 199: Mount Cobalt Rehabilitation Areas

12.2.3 Rehabilitation/Improvement Planning

For the purposes of this PRCP, and in line with current approvals no further mining will occur at Mount Cobalt. If further mining is proposed the PRCP will be amended.

Table 185: Availability for Progressive Rehabilitation (Mt Cobalt)

Domain and EA Feature	Year Available for Rehabilitation	Area Available (ha)	Progressive Rehabilitation Availability
Built Infrastructure			
Other Roads	2036	2.96	Roads and tracks are required for existing activities including monitoring, maintenance, and exploration. The roads and access tracks will remain permanently to support the post mining land use of low intensity grazing. Existing landholder agreement in place.

12.3 Non-Use Management Areas

For the purposes of this PRCP, no Non Use Management Areas (NUMAs) are proposed for Mount Cobalt.

12.4 Voids in Flood Plains

For the purposes of this PRCP, no voids are proposed for Mount Cobalt.

12.5 Rehabilitation and Management Methodology

There is no requirement to rehabilitate historical mining activities at Mount Cobalt. The only modern disturbance within the Mount Cobalt mining lease area is associated with access tracks which will be handed over to the landholder at relinquishment. In addition, there are no approved additional mining disturbances on the lease under the current EA that needs further rehabilitation consideration. In event that mining activities are proposed for Mount Cobalt the PRCP will be amended.

13. Risk Assessment

A closure and rehabilitation risk assessment has been prepared in accordance with Section 126C(1)(f) of the EP Act.

The risk management process at Chinova is detailed in the Risk Management Policy and Approach (CHR_HS_POL_04) which outlines the company's approach to managing risks consistent with the international risk management standard (ISO31000:2018). The risk management process involves the identification, analysis, evaluation, treatment and monitoring, reporting, recording and review of risks.

13.1 Risk Identification

Risk identification involves identifying sources of risk, areas of impacts, events and their causes and their potential consequences. Risks can be identified using a number of different tools and techniques. The closure and rehabilitation risk assessment was completed by internal stakeholders at Chinova and identified risks aggregated into key themes.

13.2 Risk Analysis and Evaluation

Following the identification risks an analysis was undertaken to develop a better understanding of the risks (Table 186). The risk analysis provides an input to risk evaluation and to decisions on whether risks need to be treated and on the most appropriate risk treatment strategies and methods. The Chinova risk assessment matrix (Figure 200) was used to provide a rating for each identified risk. The risk analysis involved consideration of:

- the likelihood of events and consequences
- the nature and magnitude of consequences
- complexity and connectivity
- time-related factors and volatility
- the effectiveness of existing controls
- sensitivity and confidence levels

13.3 Risk Treatment

Treatment measures have been developed following the identification and evaluation step to achieve a level of risk that is considered to be at an acceptable level (Table 186). The risk treatment process involved consideration and weighing-up a number of factors including cost-benefit, regulatory obligations, social responsibility, and environmental outcomes to select one or more options for mitigating the identified risks. The final proposed additional controls selected (Table 186) were chosen to ensure:

- Information and data gaps were appropriately addressed throughout operation and closure
- Continual review and improvement of landform design
- Compliance with regulatory requirements
- Meet obligations under landholder agreements
- Focus future rehabilitation works to address the highest risks
- Identify potential opportunities to reduce rehabilitation liability.

Timing and scheduling of the risk treatments including reporting and monitoring requirements are detailed in the relevant rehabilitation milestone (RM).

13.4 Risk Monitoring, Reporting and Review

Continuous monitoring and review of risk management processes and controls is essential to ensure that the management plan remains relevant. Factors that may affect the likelihood and consequences of an outcome may change over time. It is therefore necessary to monitor risks and their controls at regular intervals.

At Chinova Resources monitoring and reviewing is a planned part of the risk management process to:

- Analyse and learn lessons from events, changes, and trends.
- Detect changes in the external and internal context including changes to the risk itself which can require revision of risk treatments and priorities.
- Ensure that the risk control and treatment measures are effective in both design and operation.
- Identify emerging risks.
- Ensure audits and workplace inspections are conducted.
- Ensure listed control measures are in use and maintained.
- Ensure the risk register is up to date, monitored and reviewed on an ongoing basis.

In accordance with Chinova's risk management procedure the closure and rehabilitation risk assessment will be reviewed:

- Two (2) yearly; or
- When there is a significant change in business process or management strategy that may affect the accuracy of this document; or
- When there has been a significant event to which this document was relevant; or
- As a result of an audit finding (either internal or external).

chinova resources

CHINOVA RESOURCES - RISK MATRIX

CONSEQUENCE	CONSEQUENCE CATEGORY				
	Insignificant	Minor	Moderate	Major	Catastrophic
Safety & Health	First aid case – self treatment	Injury – site treatment and review	MTI/ RWDI, single lost time injury / Reversible impact on health	Multiple LTI admission to ICU/irreversible impact on health	Single fatality or loss of quality of life /impact on health ultimately fatal
Environmental	Very low environmental impact confined to small area and recovery in the same day.	Low environmental impact. Rapid recovery within 1 week. Impact contained to area currently impacted by operations	Moderate environmental impact recovered within 3 months and restricted to the mining lease or exploration tenement.	Major environmental impact. Severe contamination or damage only recoverable in the long term >1year. Considerable recovery effort required. Impact may extend beyond the lease boundary.	Severe regional environmental impact. Local species destruction and likely long recovery period. Widespread, chronic contamination with doubtful recovery. Extensive recovery required.
Legal & Regulatory	Single non-compliance or technical non-compliance with a permit condition or regulatory requirement that can be quickly and easily resolved with no consequences.	Repeated non-compliance or technical non-compliance with a permit or regulatory condition without potential to cause environmental harm or business impact.	Serious non-compliance with permit conditions or regulatory requirement requires reporting to the regulator, has the potential to cause environmental harm or cancellation of an exploration tenement, and attract fines or prosecution or business impact over 12 months.	Major breach of permit conditions or regulatory requirements with potential to cause serious environmental harm or cancellation of an exploration tenement, and attract significant prosecution action and large fines, and business impact over a number of years.	Major breach of permit conditions or regulatory requirements with potential to cause long term environmental harm or cancellation of mining lease, attract significant prosecution action and large fines and result in business suspension.
Reputation/ Community & Social	Slight impact/isolated impact – negligible or no media attention. / Community complaint resolved in a short timeframe (<2weeks).	Segmented incidents. / Community complaint resolved with a longer timeframe (>2weeks).	Systemic incidents – some limited media attention. / Repeated community complaints requiring company response or regional media attention.	Negative public exposure with significant impact – shareholder & ASX concern, extensive media attention. Repeated community complaints requiring company response or regional media attention.	Negative public exposure – dramatic undermining of stakeholder confidence. ASX suspends trading. Extensive media. / Severe, prolonged local community resistance greater than 3 years/ international media public exposure
Property damage or process loss	Loss/Damage of Equipment valued at <$50k	Loss/Damage of Equipment valued at <$150k	Loss/Damage of Equipment valued at <$0.5 million	Loss/Damage of Equipment valued at <$2.0 million	Loss/Damage of Equipment valued at >$2.0 million
Financial (1)	Market capitalisation impact is < $25 million	Market capitalisation impact is < $50 million	Market capitalisation impact is < $100 million	Market capitalisation impact is < $200 million	Market capitalisation impact is > $200 million
	Project cost is < 5%	Project cost is < 10%	Project cost is < 20%	Project cost is < 30%	Project cost is >30%
	Annual revenue impact is < $0.5 million	Annual revenue impact is < $5 million	Annual revenue impact is < $10 million	Annual revenue impact is < $20 million	Annual revenue impact is > $20 million
	Annual cost impact is < $0.2 million	Annual cost impact is < $1.0 million	Annual cost impact is < $2.5 million	Annual cost impact is < $5.0 million	Annual cost impact is > $5.0 million

RISK RATING TABLE			Insignificant – (Level 1)	Minor – (Level 2)	Moderate – (Level 3)	Major – (Level 4)	Catastrophic – (Level 5)
LIKELIHOOD	Almost Certain	A	The event will occur. The event occurs daily or monthly. (> 90% of occurring)	Medium	High	High	Extreme	Extreme
	Likely	B	The event is expected to occur. The event is likely to occur more than once annually. (67-89% of occurring)	Medium	High	High	Extreme	Extreme
	Possible	C	The event will occur under some circumstances. The event could occur once within 1 to 10 years. (34-66% occurring)	Medium	Medium	High	Extreme	Extreme
	Unlikely	D	The event has happened elsewhere. The event could occur within a 10 to 100 year period. (5-33% occurring)	Low	Medium	Medium	High	Extreme
	Rare	E	The event may occur in very exceptional circumstances. The event has rarely occurred in the industry. (< 5% of occurring)	Low	Low	Medium	Medium	High

RISK RANK	TOLERANCE	ESCALATION
Extreme	Eliminate, Substitute, implement specific action plans/procedures to manage & monitor	Immediate action required by CEO to advise Board. Site hazards/risks require signoff of the appropriate Site Senior Executive, notification to the relevant SLT member and a one page report to the Chief Executive Officer.
High	Engineered Controls to separate hazard and people, implement specific action plans/procedures to manage & monitor	Immediate management attention needed. Site hazards/risks require signoff of the appropriate Site Senior Executive, notification to the relevant General Manager and a one page report to the relevant SLT member. .
Medium	Proactively manage	Action required with monitoring by management
Low	Monitor and manage as appropriate	Managed by existing procedures

Figure 200: Chinova Risk Assessment Matrix

Table 186: Rehabilitation and Closure Risk Evaluation

Hazard/ Aspect	Current Controls	Likelihood	Consequence	Current Risk	Proposed Additional Controls	Likelihood	Consequence	Residual Risk	Relevant Rehabilitation Milestone
Underground void failure resulting in surface subsidence.	1. Mine design geotechnical controls 2. Underground development occurred in accordance with mine design 2. Long term (closure) geotechnical stability assessment completed. 3. Underground voids either backfilled or filled with water.	Possible	Major	High	1. Mount Elliott - Surface access restrictions (bunding) around subsidence risk areas. 2. Backfilling of surface openings in accordance with geotechnical study recommendations. 3. Update of geotechnical stability assessments as the various Cloncurry projects progress, or additional projects come online.	Unlikely	Major	High	RM4, RM8, RM9
Open cut pits fail to achieve a state of sufficient improvement for closure.	1. Mine design geotechnical controls 2. Pits constructed to design 2. Long term (closure) geotechnical stability assessment completed. 3. Some pits are (or planned to be) backfilled, or partially backfilled (Victoria South, Starra 244, Starra 254).	Unlikely	Moderate	Medium	1. Continued monitoring of pit wall stability 2. Installation of abandonment bunding in accordance with the geotechnical study. 3. Update the long term geotechnical stability study if proposed pit geometry changes.	Unlikely	Minor	Medium	MM1, MM2, MM3

Hazard/ Aspect	Current Controls	Likelihood	Consequence	Current Risk	Proposed Additional Controls	Likelihood	Consequence	Residual Risk	Relevant Rehabilitation Milestone
Inadequate design and construction of mineral waste emplacements resulting in an inability to achieve a stable condition.	1. Waste emplacement engineered designs and construction records. 2. Decades of emplacement observations and monitoring (regulated structure inspections). 3. Construction and waste materials properties generally understood - both geotechnical and geochemical properties. 4. Emplacement stability assessments complete.	Rare	Major	Medium	1. Verify historic emplacement designs meet contemporary standards (e.g. ANCOLD). 2. Continued routine (annual) statutory inspections	Rare	Moderate	Medium	RM5, RM6, RM8, RM9
Inadequate design and construction of mineral waste cover systems resulting in an inability to meet rehabilitation objectives.	1. Material geochemical characterisation complete and understood. 2. Cover design concept supported by material properties and numerical modelling. 3. Options analysis for the WRE and TSF cover systems conducted by suitably qualified engineers.	Unlikely	Major	High	1. Cover design concept and alternate cover system configurations will be subject to field trials. 2. Detailed design of cover system to consider outcomes from cover system field trials. 3. Cover installation to be overseen by a suitably qualified person/ organisation. 4. Construction documentation including: ITP's, as-built survey's, QA/ QC testing and construction report. 5. Cover performance monitoring program.	Rare	Major	Medium	RM3, RM5, RM6, RM7, RM8, RM9

Hazard/ Aspect	Current Controls	Likelihood	Consequence	Current Risk	Proposed Additional Controls	Likelihood	Consequence	Residual Risk	Relevant Rehabilitation Milestone
Insufficient availability of rehabilitation materials to achieve the final landform and rehabilitation	1. Conceptual material balance understood 2. Rehabilitation materials investigation complete - both geotechnical and geochemical properties. 3.Current materials stockpiles are mapped, surveyed and characterised. 4. Closure and cover system concepts designed using available local materials.	Possible	Major	High	1. Finalise detailed landform and cover designs and update material balance. 2. Detailed landform and cover designs will continue to consider onsite material availability3. Further investigation of potential borrow sources and EA amendments to authorise additional borrow disturbance. 4. Cover design concept and alternate cover system configurations will be subject to field trials.	Rare	Major	Medium	RM3, RM5, RM6, RM8, RM9
Excessive erosion of final landforms and cover systems resulting in exposure of mine waste and/or landform instability.	1. Landform designs have considered erosion risk and propose suitable treatments. 2. Rehabilitation material properties understood. 3. Erosion modelling of conceptual landforms predicts erosion rates are acceptable.	Possible	Major	High	1. Cover design concept and alternate cover system configurations will be subject to field trials, including erosion observations and review of drainage controls. 2. Calibration of erosion/ soil loss model. 3. Rehabilitation monitoring, including erosion observations, of existing final landforms.	Rare	Major	Medium	RM3, RM5, RM6, RM8, RM9
Inadequate understanding of site and receiving and environment conditions resulting in inappropriate rehabilitation criteria.	1. Extensive (multi-decade) receiving environment dataset. 2. Baseline studies and datasets. 3. Ongoing receiving environment monitoring program (REMP). 4. Rehabilitation monitoring program and dataset. 5. Source-Pathway-Receptor analysis 6. Conceptual site models.	Unlikely	Moderate	Medium	1. Continued delivery of statutory, REMP and rehabilitation monitoring programs. 2. Continual review and update of monitoring programs. 3. Continued refinement of rehabilitation criteria based on monitoring program findings.	Unlikely	Moderate	Medium	RM3, RM5, RM6, RM7, RM8, RM9

Hazard/ Aspect	Current Controls	Likelihood	Consequence	Current Risk	Proposed Additional Controls	Likelihood	Consequence	Residual Risk	Relevant Rehabilitation Milestone
Contamination to groundwater due to aquifer recharge in the vicinity of the mine landforms, and additional contaminant pathways being created.	1. Initial groundwater conceptual site models developed 2. Source-Pathway-Receptor analysis 3. Statutory groundwater monitoring program	Unlikely	Moderate	Medium	1. Calibrate the groundwater conceptual model. 2. Continued delivery of statutory and rehabilitation monitoring programs.	Unlikely	Moderate	Medium	RM8, RM9
Release of contaminated surface water (or non-compliance with EA conditions)	1. Water management infrastructure/ network 2. Waste emplacement operational and cover design objectives. 3. Retention of water management network throughout closure. 4. Surface water monitoring program	Likely	Minor	Medium	1. Develop and continually calibrate water balance models for the Cloncurry Project. 2. Continued delivery of statutory, REMP and rehabilitation monitoring programs. 3. Maintenance of water management infrastructure.	Possible	Minor	Medium	RM8, RM9
Vegetation fails to establish resulting in an inability to transition to the PMLU.	1. Revegetation strategy developed by suitably qualified consultants and include species endemic to the project area. 2. Landform and cover designs have considered re-vegetation and plant available moisture as a design objective. 3. Rehabilitation material properties understood.	Possible	Moderate	Medium	1. Continued delivery of rehabilitation monitoring program and refinement of revegetation strategy. 2. Cover system field trials to include re-vegetation studies.	Unlikely	Moderate	Medium	RM3, RM5, RM6, RM7, RM8, RM9

14. Rehabilitation Trials

There are no current rehabilitation trials occurring on the Cloncurry Project. Some historic monitoring of vegetation establishment and erosion on waste rock emplacements has occurred over the Project's life. Chinova may consider further rehabilitation trials to assess the effectiveness of proposed rehabilitation strategies. Rehabilitation trials will be prioritised for high-risk landforms and high-cost treatments. As noted in the PRCP Guideline, rehabilitation trials are not considered rehabilitation or management milestones for the PRCP Schedule. As such, no further discussion on rehabilitation trails have been included in the PRCP at this stage. However, the outcomes from trials completed will be incorporated into future iterations of the PRCP.

15. Monitoring and Maintenance

15.1 Milestone Monitoring Program

Annual rehabilitation monitoring reports will be prepared following the collection of monitoring data for the preceding year. These reports will present analyses of monitoring results and assess the rehabilitation progress over time as well as against milestone criteria. Ongoing rehabilitation monitoring and assessment will allow for the identification of challenges should they arise, and early remediation, ensuring rehabilitation success and certification in the long term.

Rehabilitation criteria, outcomes and strategies have been developed for each rehabilitation milestone. These strategies are supported through the technical studies included in the appendices. Contingency strategies if rehabilitation monitoring indicates milestone criteria are not being met are also provided. The rehabilitation monitoring program will help identify and quantify problems, risks and opportunities for corrective actions and adaptive management.

15.1.1 Desktop Monitoring

Desktop monitoring will be undertaken prior to onsite monitoring. Desktop monitoring will involve using LiDAR and aerial survey imagery to:

- Assess landform design through a Digital Elevation Model.
- Identify erosion areas to investigate during field surveys.
- Identify vegetation maintenance areas to investigate during filed surveys.
- Investigate void stability.
- Measure void water levels.

15.1.2 Vegetation Monitoring

A Rehabilitation Monitoring Program has been developed for the Cloncurry Project (Appendix 3). The rehabilitation monitoring program is designed to demonstrate that the rehabilitation objectives and rehabilitation milestones have been achieved. The program will:

- Compare monitoring results against rehabilitation milestone criteria.
- Determine the trajectory of rehabilitation success.
- Identify areas for improvement.
- Compare rehabilitation areas to analogue sites.
- Assess effectiveness of environmental controls.
- Assess vegetation health.
- Identify areas where seeding or the application of fertilizers/ameliorants may be required.

15.1.2.1 Analogue Sites

The monitoring program involves the measurement of rehabilitation success against analogue sites that represent pre-disturbance condition. Due to the historic nature of the clearing, vegetation across the Project was not ground-truthed prior to the disturbance occurring. To attempt to define pre-disturbance Regional Ecosystems (REs) across the disturbance footprint would be inaccurate due to the large areas and variety of terrains covered by the disturbance. However, defining vegetation as Broad-Vegetation Groups (BVGs) across the disturbance area, whilst not as fine scale, would be more accurate due to the coarse nature of BVG occurrence and therefore fewer assumptions required.

Four (4) analogue sites were identified by the NGH Rehabilitation Monitoring Program (Appendix 3, Table 187). Analogue sites were identified to represent the three main broad-vegetation groups and landscape positions of rehabilitation landforms.

Table 187: NGH Rehabilitation Monitoring Program - Analogue Sites

Site	BVG	Landscape Position	Easting	Northing
Analogue A	16	Riparian	-21.67567	140.51237
Analogue B	19	Flat	-21.64131	140.49296
Analogue C	19	Slope	-21.70714	140.47247
Analogue D	26	Flat	-21.67999	140.51753

In accordance with the revised revegetation strategy which dictates that one BVG (19) is to be applied to all areas which will be revegetated, the analogue sites defined by NGH have been revised to reflect BVG 19. In accordance with *Evaluating methods for assessing native ecosystem mine rehabilitation success* (Spain et al., 2025) at least three analogue sites have been defined per BVG. Analogue A and D were removed as they reflect BVG 16 and 26 respectively.

Two additional analogue sites have been added – Analogue E and F. Ground-truthing of the proposed analogue sites is yet to occur; however, it must will be undertaken prior to the commencement of the PRCP Schedule to confirm each site reflects BVG19 and to capture baseline ecological information. The proposed site have been identified, described, and illustrated through Table 188 and illustrated in Figure 201.

As per Condition PRCP22 of the approved PRCP Schedule, Chinova must submit site-specific BioCondition Benchmarks for Rehabilitation Areas as identified in Appendix 4 – BioCondition benchmark criteria of the PRCP Schedule. This must be submitted to the administering authority via an amendment application prior to 12 June 2031.

Table 188: Rehabilitation Monitoring Program - Analogue Sites

Site	BVG	Landscape Position	Easting	Northing	Indicative Description
Analogue B	19	Flat	-21.64131	140.49296	Low open woodlands dominated by *Eucalyptus leucophylla* (Cloncurry box) or less extensively *Corymbia terminalis* (western bloodwood) low open woodlands and related associations, mainly lower slopes and valleys
Analogue C	19	Slope	-21.70714	140.47247	Low open woodlands dominated by *Eucalyptus leucophloia* (snappy gum) with *Triodia* spp. dominated ground layer, mainly on hills and ranges
Analogue E	19	Flat	-21.66165	140.46621	Low open woodlands dominated by *Eucalyptus leucophloia* (snappy gum) with *Triodia* spp. dominated ground layer, mainly on hills and ranges

Analogue F	19	Slope	-21.58265	140.49679	Low open woodlands dominated by *Eucalyptus leucophloia* (snappy gum) with *Triodia* spp. dominated ground layer, mainly on hills and ranges

15.1.2.2 Monitoring Methodology

Field monitoring will collect data on:

i) Vegetation structure and floristics;

ii) Weed composition and abundance; and

iii) Site stability indicators (i.e., erosion metrics).

The *BioCondition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Manual* (Queensland Herbarium, 2015) will be implemented to assess the ecological values of rehabilitation and reference locations. Fixed monitoring plots will be developed within each RA and reference location to monitor vegetation development and erosional change over time. The monitoring plots will be 500 m^2 (10 m x 50 m) at a density of 1:9 ha (1:1,500 scale). This is the recommended minimum density described by the Queensland Mining Rehabilitation Commissioner.

The following indicators will be assessed:

- Pasture standing biomass
- Species cover and abundance
- Tree and large shrub biodiversity and structure
- Presence of weeds of national significance
- Erosional classes

Areas targeting grazing will include pasture composition and quality measures using photo standards on cardinal bearings (0, 90, 180, 270°) at each transect marker (start and end). Photo standards will be calibrated using similar pasture with species composition in local reference locations for the range of pasture quantity and quality. Cut dry weight or other quantitative biomass calibration will be conducted prior to rehabilitation using harvest and dry matter weights.

When rehabilitation areas become available, the monitoring methods will be consistent with the *BioCondition Assessment Manual*. Spatial monitoring will be conducted alongside field ecological methods and data collection as well as interim monitoring years at all rehabilitation and analogue sites.

15.1.2.2.1 Native and Non-Native Vegetation Indices

BioCondition benchmark data is provided for BVG19 in Table 189. Benchmark criteria will continue to be refined as data collection continues throughout the remaining life of mine.

Table 189: BioCondition Benchmark Criteria

		Scores		Native Vegetation benchmarks
BioCondition Assessable Attributes	**Weighting**	**RM8**	**RM9**	BVG 19 = RE 1.11.2a / 1.11.3a / 1.11.3b[1]
Recruitment of canopy species (% of trees)	5	≥ 20% dominant canopy species	≥20-75% of dominant canopy species present as regeneration	**100**
Tree canopy height (m)	5	≥ 25% of benchmark height	≥ 25% of benchmark height	**6**
Tree (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	**3**
Shrub (native) species richness	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	**4**
Grass (native) species richness*	5	≥ 25-90% of benchmark	≥ 25-90% of benchmark	**6**
Forb/other (native) species richness*	5	≥ 25-90% of benchmark	≥25-90% of benchmark	**9**
Tree canopy cover (%)	5	≥10% and ≤200% relative to benchmark	≥50% and ≤200% relative to benchmark	**10**
Shrub canopy cover (%)	5	≥10% relative to benchmark	≥50% and ≤200% relative to benchmark	**29**
Native perennial grass cover (%)	5	≥ 50% of benchmark	≥90% of benchmark	**52**
Litter (%)	5	≥ 10% of benchmark	≥ 50% of benchmark	**5**
Non-native plant cover (%)	10	<25% of vegetation cover	<25% of vegetation cover	**25**
Total score	**60**	**≥ 20**	**≥ 40**	

[1] Native vegetation benchmarks for regional ecosystems (RE) 1.11.2a, 1.11.3a and 1.113b are sourced from the Queensland Government's unpublished and draft BioCondition benchmarks. The native vegetation benchmarks stipulated in Appendix 4 may change over time and/or when the complete dataset is published on the Queensland Government BioCondition benchmark database. Where variations in benchmarks occur between Appendix 4 and the BioCondition benchmark database, the scores within Appendix 4 may require amendment to reflect the published benchmarks per the Queensland Government BioCondition benchmark database.

15.1.2.2.2 Species Richness

Species richness will be measured within the areas outlined below:

- Trees – 25 m radius around midpoint.
- Shrubs - 25 m radius around midpoint.
- Grass – 10 m radius around midpoint.
- Forbs - 10 m radius around midpoint.

Additional data including species, strata and dominance will be collected for each data point to provide context.

15.1.2.2.3 Canopy Cover

Tree canopy cover will be measured in accordance with the *BioCondition Assessment Manual Version 2.2*, using the line intersect method over a 50 m transect. When documenting canopy cover, each distinct layer must be documented and analysed separately. Weed species are considered a distinct category for the canopy cover assessment.

15.1.2.2.4 Recruitment of EDL

Recruitment of the ecologically dominant layer (EDL) will be monitored in accordance with the *BioCondition Assessment Manual Version 2.2*, by observing the proportion of EDL species regenerating (i.e., <5cm diameter at breast height (DBH)) within the plot area.

Recruitment is measured as the percentage of dominant species at a site that are actively regenerating. (e.g., if the corresponding reference sites have four dominant species, but only two of these species are present in the rehabilitation site, then the proportion is 50%).

15.1.2.2.5 Basal Area

Basal area will be used to determine the predominant species and structural composition. It will be measured using the Bitterlich method outlined in *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (Version 7.0)*. Stems greater than 1.3 m or equal to the gap in the Bitterlich stick at breast height will be recorded by layer (i., E, T1, T2, etc) and species.

15.1.2.2.6 Ground Cover

Ground cover (%) is to be monitored per methodology outlined in the *BioCondition Assessment Manual Version 2.2*, using 1 x 1 m quadrats located 10 m apart, on alternate sides along the transect. Each ground cover component is to be assessed so that the cover totals 100%. Values from each index will be averaged across the five quadrats.

15.1.2.2.7 Non-native Cover

Non-native cover (%) is to be monitored per methodology outlined in the *BioCondition Assessment Manual Version 2.2.* The percentage cover of exotic species at the site will be recorded.

15.1.2.3 Monitoring Schedule and Reporting

Monitoring will occur annually at the end of the wet season (March–May), when plant diversity and detectability are greatest. Supplementary visual inspections will be undertaken during the mid to late dry season during the first two years following rehabilitation establishment.

Consistent with PRCP guidance, monitoring frequency will be increased during the first two years following seeding, as this is the period of highest risk for seedling establishment. Increased early-stage monitoring will support the timely identification of intervention needs such as supplementary seeding, weed control, or other adaptive management measures.

Annual monitoring reports will present:

- A summary of the monitoring methodology applied;
- Results from analogue and rehabilitation sites;
- Assessment of rehabilitation performance against completion criteria;
- A summary of revegetation activities undertaken;
- Recommendations for intervention where monitoring identifies deviations from expected trends or underperformance; and
- Recommendations for certification of rehabilitation works.

The monitoring program — including performance indicators and completion criteria — will be reviewed every three to five years to ensure it remains fit for purpose, reflects monitoring outcomes, and supports the demonstration of long-term rehabilitation success.

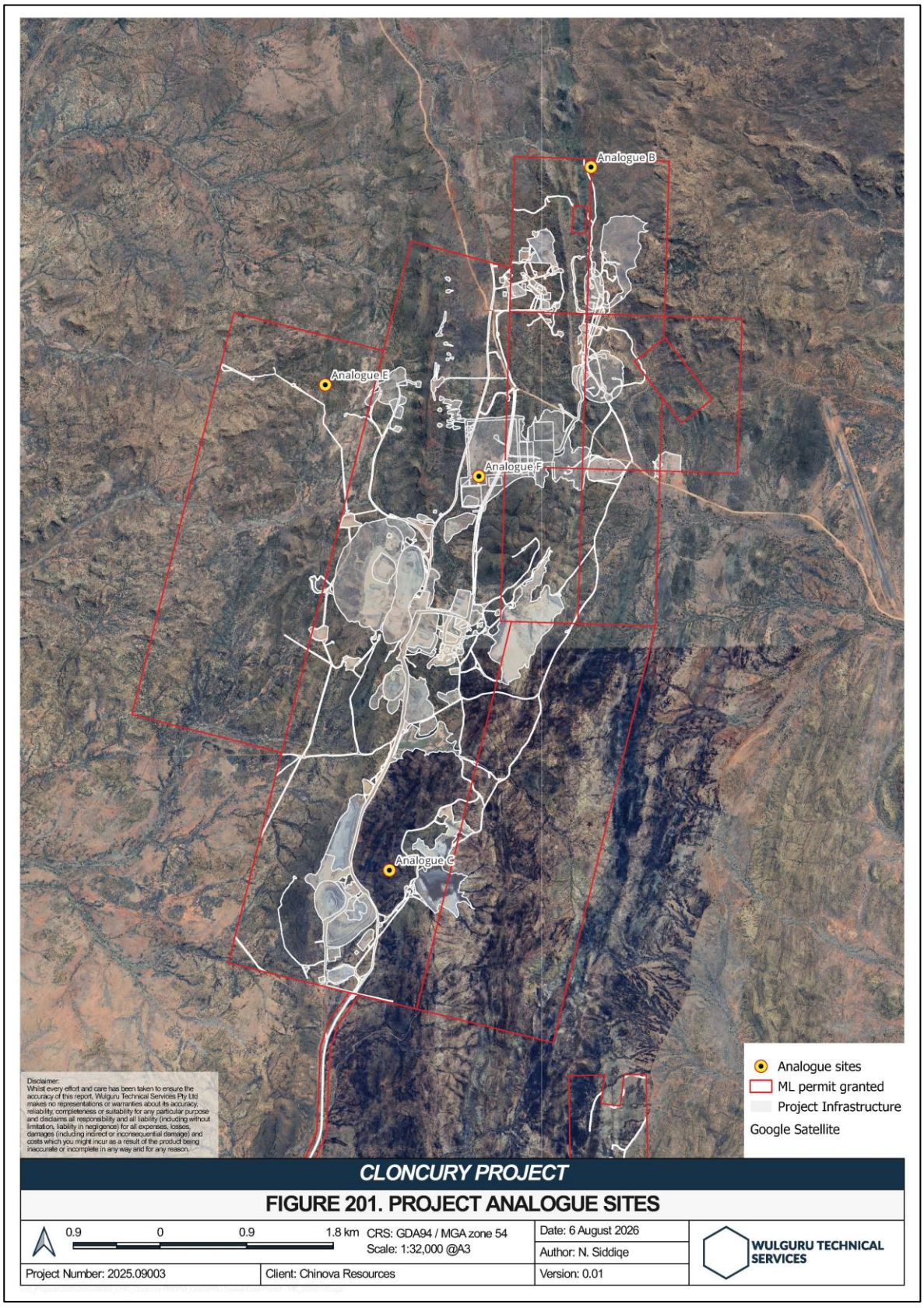


Figure 201: Cloncurry Project Analogue Sites

15.1.3 Groundwater Monitoring

A groundwater monitoring framework has been prepared by AGE (2025b) which has identified appropriate groundwater monitoring locations based off the groundwater source-pathway-receptor framework developed for the project. Changes to the impact sources and groundwater system in closure forms the basis for AGE's rationalisation of this groundwater monitoring network. The program's intent is to verify that contaminants do not occur within groundwater as a result of Chinova's closure activities.

Monitoring Locations

Groundwater monitoring locations identified by AGE are detailed within Table 190 and illustrated within Figure 202 to Figure 204. Two new bores have been proposed by AGE; one to the north of the Mount Elliott WRD (MEMB4) and the other to the south-west of the Lady Ella pit (LE04). Specification reports have been prepared by AGE for MEMB4 and LE04 (Appendix 20).

AGE concluded that, should Mount Dore be developed, five additional bores are to be installed adjacent the Mount Dore North and Mount Dore South pit to ensure the Mount Dore groundwater monitoring network is comprehensive in closure. As the development of Mount Dore is unconfirmed as of the writing of this report, specification reports for the proposed bores have not been prepared. Specification reports will be prepared once development of Mount Dore is confirmed.

AGE's impact assessment concluded that the risk of impact to any receptor in proximity to Victoria is very low under current conditions and accordingly, there are no groundwater monitoring bores located at the site. Given the long period of time since any activity has occurred at Victoria, no additional groundwater monitoring is deemed necessary unless the site were to be redeveloped (AGE, 2025b).

Monitoring Frequency

Monitoring will occur quarterly until an appropriately qualified person certifies that each area has reached a stable, non-polluting condition and no active water management is required.

Parameters

Groundwater quality limits have been derived by AGE based upon existing geochemical data and confirmed CoCs (refer Table 191 and Table 192). These limits have been derived accordance with the Department of Environment and Science (DES) *Using monitoring data to assess groundwater quality and potential environmental impacts* (2021), with reference to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018) (AGE, 2025c). Where insufficient data is available for AGE to derive bore specific limits, limits have been adapted from ANZG (2018) and ANZECC (2000).

As per Condition PRCP23 of the approved PRCP Schedule, Chinova must submit site-specific groundwater quality limits as identified in Appendix 8 of the PRCP Schedule. These limits must be submitted to the administering authority via an amendment application prior to 12 June 2031.

Table 190: Groundwater Monitoring Bores

Mining Area	Bore Name	Coordinates (GDA2020, MGA 54)	
		Latitude	Longitude
Mount Elliott	MEMB3	448259	7617294
	MEMB4 (proposed)	448150*	7617893*
Lady Ella	LE01	447736	7614127
	LE02	447642	77613942
	LE03	447334	7613366
	LE04 (proposed)	447584*	7613551*
Mount Dore	MDHLMB1	447755	7606481
	MDHLMB2	447657	7605795
	MDHLMB4	446778	7604356
	MDHLMB5	446461	7604315
	MDHLMB8	446506	7604445
	MDHLMB10	447748	7604214
	MDWB10	447716	7605428
	MDWB12a	448477	7603234
Merlin	MLMB1	447098	7605295
	MDHLMB3	446886	7605150
Starra	MB2a	447370	7602595
	MB3	446417	7601998
	MB4	446395	7602045
	MB5	446327	7601594
	MB6	445840	7601551
	MB7	446482	7600488
	MB8	446953	7601276
	MB9	447277	7601973
	MB10	447618	7603099
	MB11	444848	7601863

Mining Area	Bore Name	Coordinates (GDA2020, MGA 54)	
		Latitude	Longitude
	MB12	444825	7602377
	MB244	445577	7601295
	MB257	445919	7602481
	MDHLMB7	446260	7603158
	MDHLMB9	446506	7604445
	STDMB1	445655	7599272
	STDMB2	445801	7598973
	STDMB3	446205	7599936
	STDMB5	445683	7599270

* Location of bores provided in GDA94, MGA 54.

Figure 202. Mount Elliott Groundwater Monitoring Bores

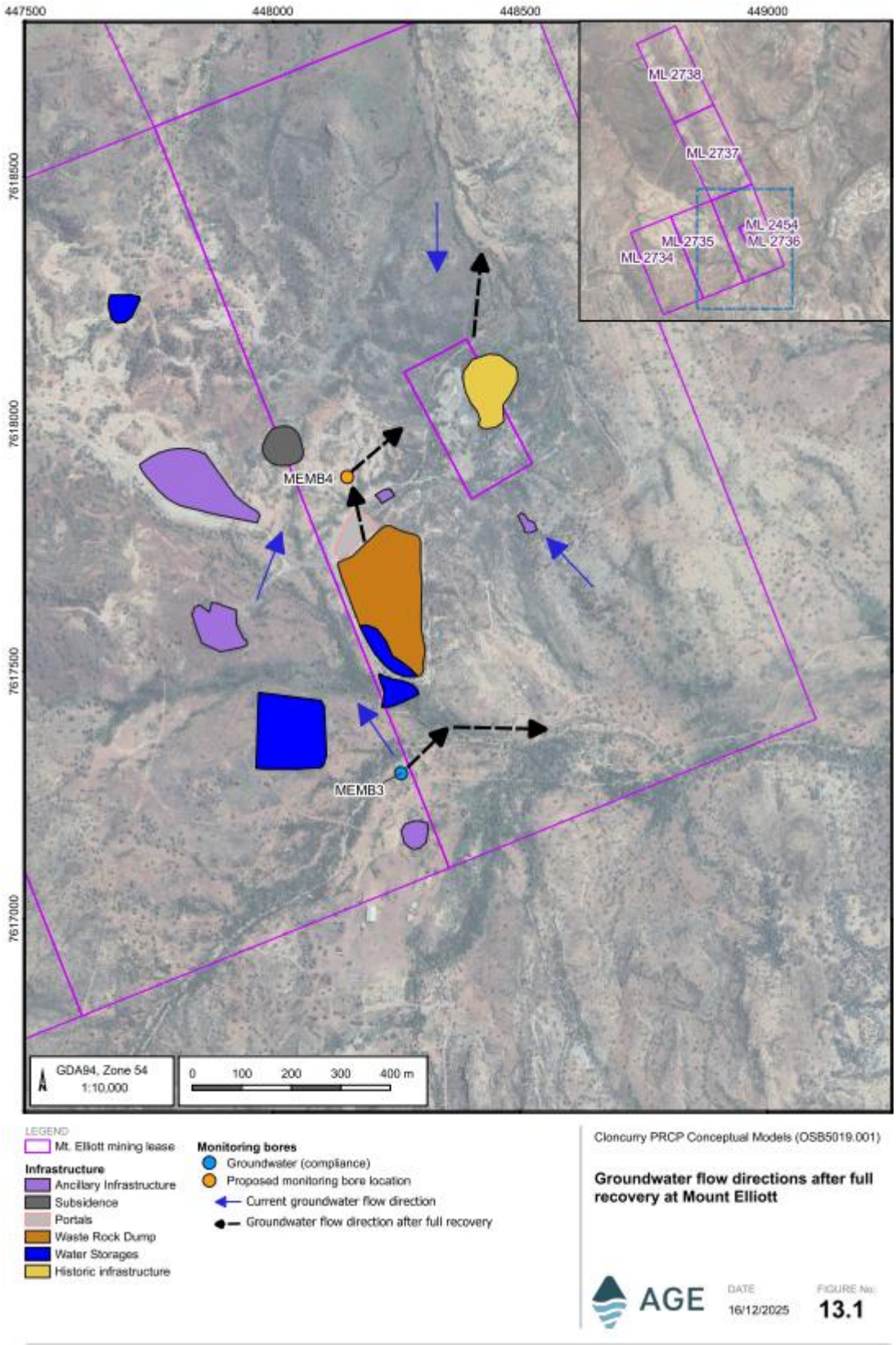


Figure 203. Lady Ella Groundwater Monitoring Bores

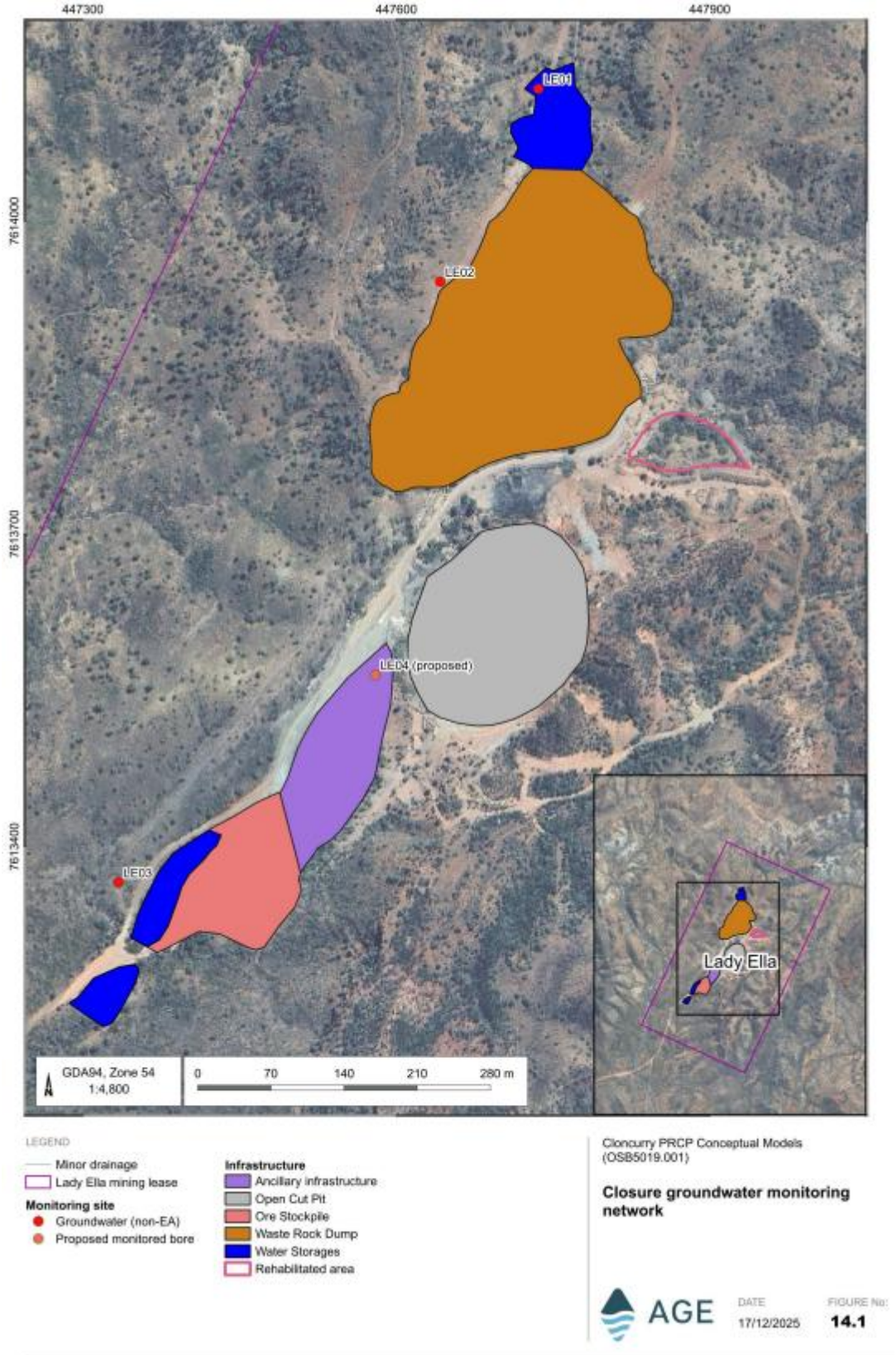


Figure 204. Starra, Mount Dore and Merlin Groundwater Monitoring Bores

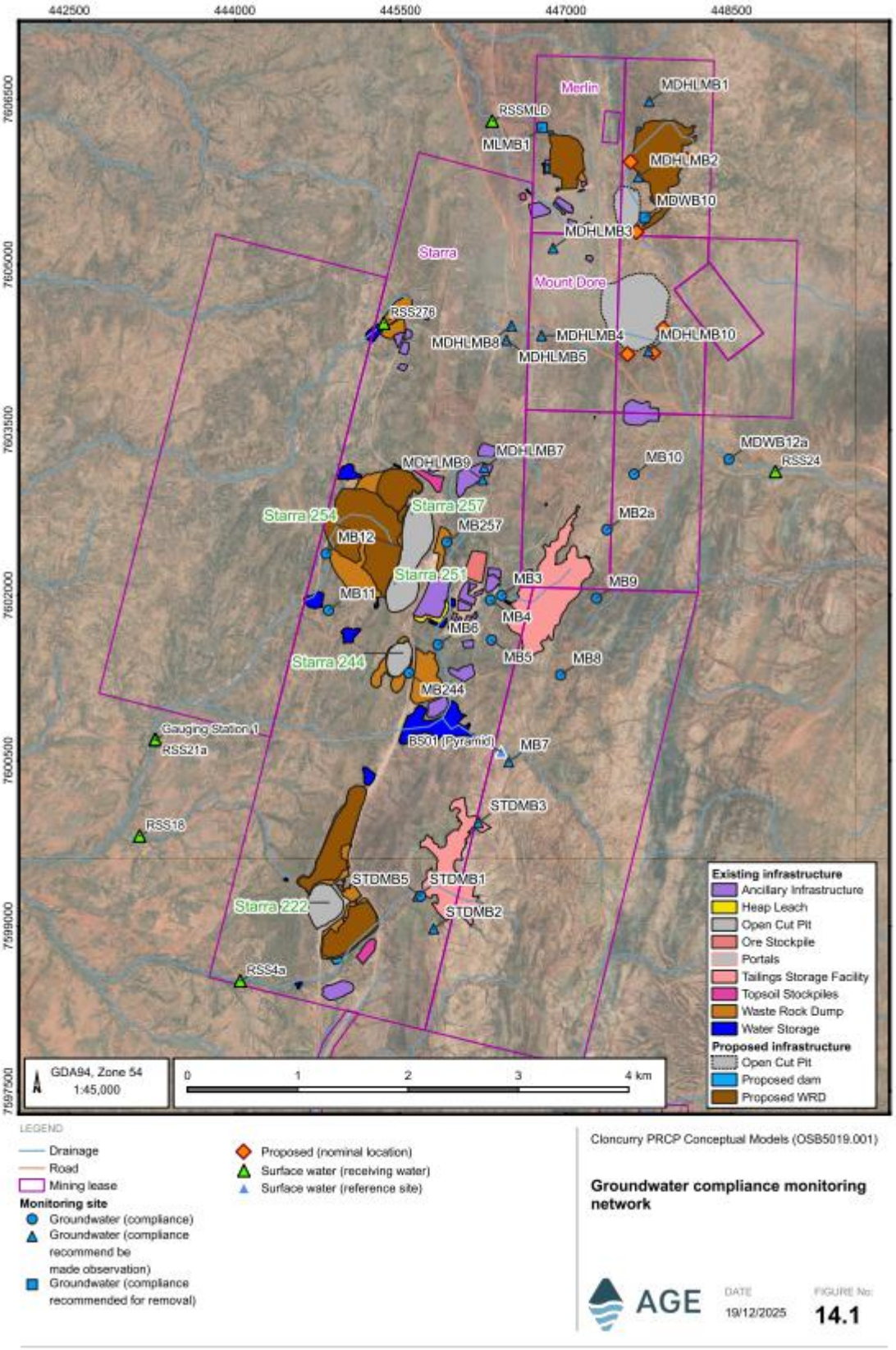


Table 191: Groundwater Quality Parameters and Proposed Limits

Quality characteristic (units)	Monitoring Bore *	Limit	Comment on limit
pH (pH units)	All bores	6.0 – 8.5	Site-specific
Electrical conductivity (µS/cm)	All bores	5,776	Site-specific
Sulfate (mg/L)	All bores	735	Site-specific
Fluoride (mg/L)	All bores	2	Site-specific
Cyanide (mg/L)	All bores	0.007	ANZG 2018
Nitrate (mg/L)	All bores	1.1	ANZG 2018
Arsenic - dissolved (µg/L)	All bores	13	ANZG 2018
Chromium - dissolved (µg/L)	All bores	4	Site-specific
Cobalt - dissolved (µg/L)	All bores	5	Site-specific
Copper - dissolved (µg/L)	All bores	15	Site-specific
Lead - dissolved (µg/L)	All bores	3.4	ANZG 2018
Manganese - dissolved (µg/L)	All bores	536	Site-specific
Molybdenum - dissolved (µg/L)	All bores	33	Site-specific
Selenium - dissolved (µg/L)	All bores	14	Site-specific
Uranium - dissolved (µg/L	All bores	55	Site-specific
Zinc - dissolved (µg/L)	All bores	40	Site-specific
Turbidity (NTU)	All bores	25	For interpretation purposes
Major ions (mg/L) **Calcium, chloride, potassium, magnesium, sodium, bicarbonate, carbonate**	All bores	-	For interpretation purposes
Hardness (mg/L)	All bores	-	For interpretation purposes
Water Level (mAHD)	All bores	-	For interpretation purposes

Notes:

- All metals and metalloids must be measured as ‘dissolved’ (from analysis of a field filtered sample) and total (unfiltered).
- Limits for metals and metalloids apply to dissolved results.
- ANZG (2018) Aquatic ecosystem protection for moderately disturbed system (95% protection)
- * Unless bore-specific values are provided in Table 192 below.

Table 192: Groundwater Quality Parameters and Proposed Limits – Bore-specific Limits

	MB2a	MB3	MB4	MB5	MB6	MBWB10	MDWB12a	MEMB3	MLMB1
Electrical Conductivity (µS/cm)	3,345	3,925	3,055	6,243	4,728	1,309	3,590	9,127	1,831
Sulfate (mg/L)	805	470	402	785	591	219	1,200	2,100	50
Arsenic - dissolved (µg/L)						83			
Chromium - dissolved (µg/L)	89			21		76		10	
Cobalt - dissolved (µg/L)	103					40		17	
Molybdenum - dissolved (µg/L)	6	5	46	33	11	30	40	12	67
Uranium - dissolved (µg/L)	62	7	47	270	55	20	110	125	
Zinc - dissolved (µg/L)						72			

15.1.4 Surface Water Monitoring

A surface water monitoring framework has been prepared by Terra Solutions (2025) which focusses on potential risks associated with rehabilitated landforms and the performance of final land uses (Appendix 17). The program's intent is to verify that contaminants do not occur in receiving or ex-operational waterbodies as a result of Chinova's closure activities.

15.1.4.1 Methodology

Surface water monitoring will be implemented in accordance with the most recent version of the *Cloncurry Project Receiving Environment Monitoring Program* (Terra Solutions, 2023). Monitoring methods are consistent with the ANZG (2018) *Guidelines for Fresh and Marine Water Quality* and the *National Water Quality Management Strategy* (NWQMS) sampling protocols.

Monitoring frequency and timing

Monitoring will occur monthly during flow until an appropriately qualified person certifies that each area has reached a stable, non-polluting condition and no active water management is required. Macroinvertebrate monitoring will be undertaken annually at the end of the wet season at the reference and impact sites as supplementary ecological verification monitoring in accordance with the REMP Design Document (Terra Solutions, 2023).

Receiving Environment Monitoring Locations

Reference and impact surface water monitoring locations have been detailed within Table 193 and Table 194, and illustrated within Figure 205.

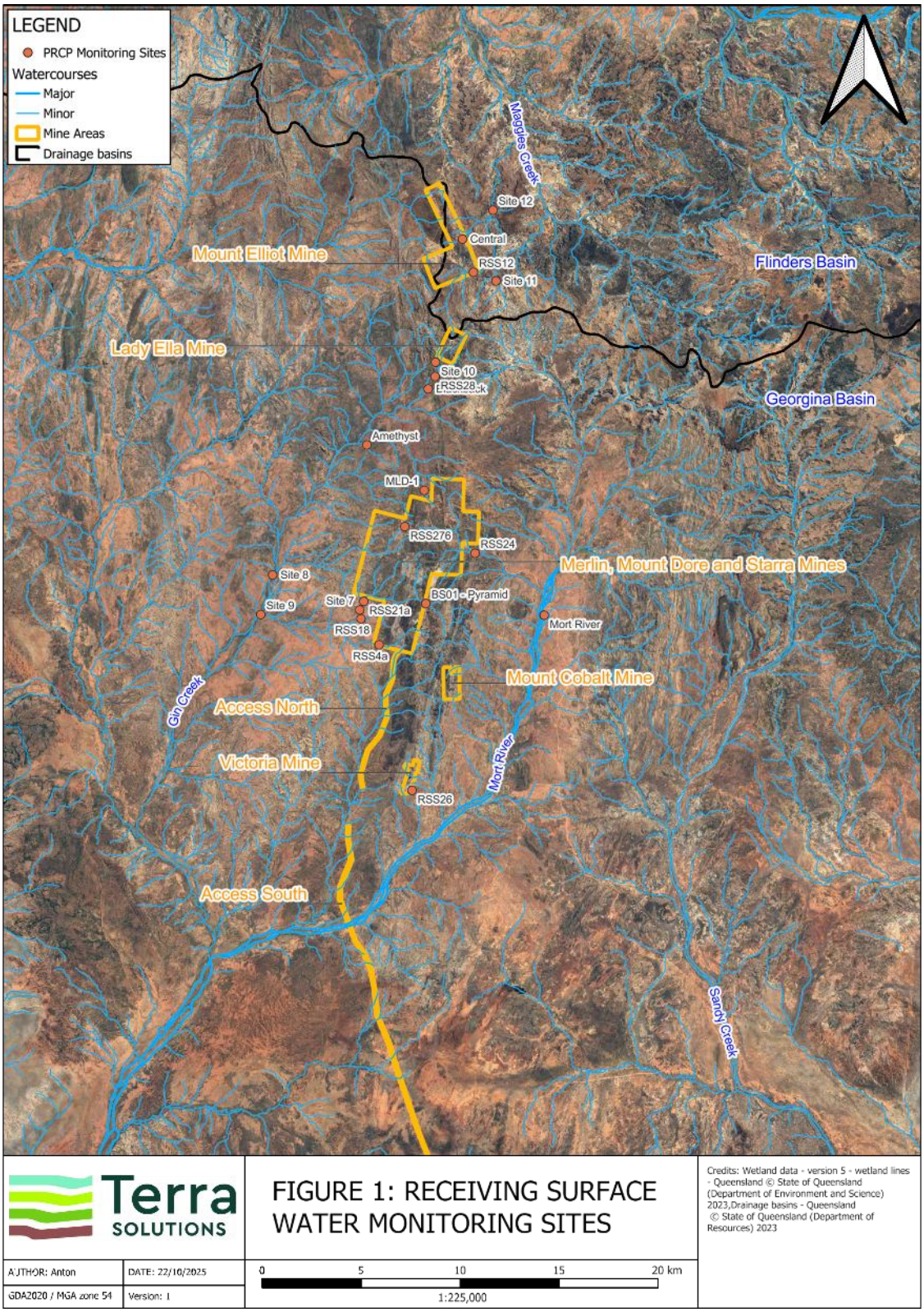


Figure 205. Surface Water Monitoring Locations

Sampling Approach

Samples will be collected in accordance with AS/NZS 5667.1:1998 Water Quality – Sampling Techniques and ANZECC/ARMCANZ 2000 Field Sampling Procedures. Field parameters (pH, EC, temperature, turbidity, DO, and redox potential) will be measured in-situ using calibrated meters. Laboratory analyses will be undertaken by NATA-accredited facility using standard methods consistent with APHA (2023).

Analytes

Surface water samples will be collected during flow events and analysed for pH, EC, DO, and TSS. Metals and metalloids listed in Table 195 will be analysed to assess potential contaminant mobilisation. TDS will be measured where applicable to evaluate salinity trends. Nutrients will be included where organic or process water inputs are present.

Site Specific Guideline Values

Extensive datasets are available across all reference sites within the Cloncurry Project. Accordingly, site specific guideline values (SSGVs) have been derived by Terra Solutions (2025b, Appendix 17) using methods recommended in the Queensland Water Quality Guidelines (QWQG, 2009/2013) and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018).

Statistical Approach:

- Metals and metalloids were assessed using the 95th percentile of reference site data, which captures the upper end of background concentrations while reducing the influence of extreme events. Datasets exceeded 40 to 100 samples per analyte. Accordingly, these percentiles are statistically stable and reliable.
- pH and dissolved oxygen were assessed as the 20th to 80th percentile range, reflecting the central band of natural variability.
- Physico-chemical indicators (i.e., EC, turbidity, and nutrients) were assessed at the 80th percentile, providing values that reflect normal background conditions while minimising the influence of occasional high-flow events.

SSGVs for each reference site were compared against EA surface water limits and ANZG (2018) guideline values. SSGVs have been adopted for closure as the primary benchmark as they best reflect the influence of mineralised geology on surface water quality. ANZG/EA values were only adopted where SSGVs were not reliable.

Data Interpretation

Monitoring results will be compared against the site specific guideline values for each catchment area (Table 196) and the relevant ANZG (2018) guideline values. Statistical evaluation of temporal trends and comparison with reference site data will be undertaken to determine whether rehabilitated areas are meeting closure criteria.

SSGVs have been developed from reference sites, and the receiving environment will be assessed as follows:

- Mt Elliott impact sites will be assessed against Central SSGVs.
- Lady Ella impact sites will be assessed against Blackback SSGVs.
- Mt Cobalt and Victoria will be assessed against Mort River SSGVs.
- Victoria impact sites will be assessed against Mort River SSGVs.
- Eastern flowing catchments from Merlin/Mount Dore/Starra will be assessed against Mort River SSGVs.

- Western flowing catchments from Merlin/Mount Dore/Starra will be assessed against Amethyst SSGVs.

Where results indicate exceedances or significant variation from baseline or SSGV conditions, a verification sampling round will be conducted to confirm results. If exceedances are confirmed, the potential source and mechanism will be investigated, and management measures will be reviewed in accordance with the PRCP adaptive management framework.

Table 193: Surface Water Reference Sites

Mining Area	Monitoring Location	Coordinates (MGA GDA94)		Description
		Latitude	Longitude	
Starra	Amethyst	443432	7608596	Reference site for the Starra Line – Mineralised catchment not disturbed by mining activities
	BS01 Pyramid	446413	7600581	Catchment upstream of Lake Wyche undisturbed by mining activities
Lady Ella	Blackback	446531	7611422	Reference site for the Mount Dore Line – Mineralised catchment not disturbed by mining activities
Mount Elliott	Central	448258	7618990	Reference site for the Mount Elliott area - Mineralised catchment not disturbed by mining activities
Merlin, Mount Dore, Mount Cobalt and Victoria	Mort River	4525604	7601118	Background site for Mort River Test

Table 194: Surface Water Impact Sites

Mining Area	Monitoring Location	Coordinates (MGA GDA94)		Description
		Latitude	Longitude	
Mount Elliott	RSS12	448817	7617316	Stream leaving Mount Elliott Area near southern boundary of ML2736
	Site 12	449808	7620453	Maggies Creek downstream of Mount Elliott Area and upstream of confluence with Mars Creek.
Starra Mine	RSS4a	444048	7598501	Stream leaving 222 pit area near southern boundary of ML2733
	RSS18	443136	7599817	Stream leaving main mining area, west of western boundary of ML2733.

	Site 9	438069	7600027	Gin Creek downstream of main mining area.
	RSS21a	443278	7600691	Stream leaving main mining area south of southern boundary of ML2745
Mount Dore	RSS24	448898	7603123	Stream leaving area downstream of tailings dam, south of southern boundary of ML2694 and Mount Dore North WRD, North Pit, South Pit and South WRD
	RSS276	445349	7604470	Stream leaving Area 276
	Mount Dore North Pit	447555	7605434	Pit to be retained as water storage post-closure, on ML2689.
	Mount Dore South Pit	447740	7604591	Pit to be retained as water storage post-closure, on ML2691.
	Mort River Test	452431	7600497	Downstream of Selwyn-Toolebuc Road.
Victoria	RSS26	444982	7604244	Stream leaving Victoria mine area
	Victoria North Pit Water Storage	445568	7591846	Pit to be retained as water storage post-closure, due to good water quality previously recorded.
Merlin	MLD-1	446332	7606304	Stream leaving Merlin mine area.
Lady Ella	RSS28	446881	7612050	Stream leaving Lady Ella mine area
	Lady Ella East Sediment Dam	447850	7613800	Pit to be retained as water storage post-closure, in the north of ML90061
	Lady Ella North Sediment Dam	447758	7614074	Pit to be retained as water storage post-closure, south-southeast of the north sediment dam on ML90061.
	Lady Ella Overflow Dam	447315	7613266	Pit to be retained as water storage post-closure, in the south of ML90061.

Table 195: Water Quality Testing Parameters

Analyte	Units
Physio-chemical properties	
pH	pH units
Dissolved oxygen	%
Electrical Conductivity	µS/cm
Temperature	°C
Turbidity	NTU
Total suspended solids (TSS)	mg/L
Metals and metalloids (total and dissolved)	
Aluminium	mg/L
Arsenic	mg/L
Boron	mg/L
Cadmium	mg/L
Chromium	mg/L
Cobalt	mg/L
Copper	mg/L
Iron	mg/L
Lead	mg/L
Manganese	mg/L
Mercury	mg/L
Molybdenum	mg/L
Nickel	mg/L
Rhenium	mg/L
Selenium	mg/L
Silver	mg/L
Uranium	mg/L
Zinc	mg/L
Major ions and cyanide	
Fluoride	mg/L

Analyte	Units
Sulphate (SO_4^{2-})	mg/L
Cyanide (free)	mg/L
Cyanide (WAD)	mg/L
Hardness (as CaCO3)	mg/L

Table 196: Surface Water Quality Criteria

Quality characteristic (units)	Starra Limit	Lady Ella Limit	Mt Elliott Limit	Merlin, Mount Dore, Mount Cobalt and Victoria Limit	Comment on limit
pH	5.9-8.0	6.0-6.5	6.3-6.9	6.2-6.8	Site-specific
Electrical Conductivity (µS/cm)	70	81	91	82	Site-specific
Turbidity (NTU)	25	896	2,500	2,361	Site-specific
Total suspended solids (TSS) (mg/L)	1,560	1,126	9,160	5,040	Site-specific
Sulphate (mg/L)	7	3	5	2.5	Site-specific
Fluoride (mg/L)	0.1	0.2	0.2	0.1	Site-specific
Cyanide (mg/L)	0.007	0.007	0.007	0.007	ANZG 2018
Nitrate (mg/L)	1.1	1.1	1.1	1.1	ANZG 2018
Arsenic - dissolved (µg/L)	13	13	13	13	ANZG 2018
Chromium - dissolved (µg/L)	1	1	1	1	ANZG 2018
Cobalt - dissolved (µg/L)	3	9	11	7	Site-specific
Copper - dissolved (µg/L)	35	87	124	6	Site-specific
Lead - dissolved (µg/L)	3.4	3.4	3.4	3.4	ANZG 2018
Manganese - dissolved (µg/L)	50	190	610	590	Site-specific
Molybdenum - dissolved (µg/L)	1	1	1	1	Site-specific
Selenium - total (µg/L)	10	10	10	5	Site-specific
Uranium - dissolved (µg/L)	0.5	0.5	0.5	0.5	ANZG 2018
Zinc - dissolved (µg/L)	18	16	18	8	Site-specific

Total recoverable hydrocarbons (C6-C9) (µg/L)	20	20	20	20	
Total recoverable hydrocarbons (C10-C36) (µg/L)	100	100	100	100	
Major ions (mg/L) Calcium, chloride, potassium, magnesium, sodium, bicarbonate, carbonate	For interpretation purposes				
Hardness (mg/L)	For interpretation purposes				

Notes:

- All metals and metalloids must be measured as 'dissolved' (from analysis of a field filtered sample) and total (unfiltered).
- Limits for metals and metalloids apply to dissolved results.
- ANZG (2018) Aquatic ecosystem protection for moderately disturbed system (95% protection)

15.1.5 Soil Monitoring

Soil monitoring will be conducted at all rehabilitation areas to monitor rehabilitation soils prior to use. A soil monitoring program will be developed for the Project, and will aim to:

- Optimise rehabilitation processes.
- Accurately measure utilisation of stockpile storage and soil reuse.
- Optimise stockpile management and reuse.

The soil monitoring program will identify the suitability of topsoil and growth media prior to use in rehabilitation. Extensions to the current LOM are likely given the abundance of potential resource, and material may potentially be stockpiled for a significant time before being used. A monitoring program will identify the need for any ameliorants or fertilisers, due to nutrient loss over time.

Samples will be collected, and soil profiles logged by an appropriately qualified person, and analysed at an accredited laboratory. The analytes proposed to be tested are detailed in Table 197. This analysis program may be amended, as additional information is made available from the rehabilitation trials and ongoing monitoring.

Where soil quality criteria are not met, correction actions are to be recommended prior to seeding or as part of ongoing rehabilitation management. Re-testing is to be undertaken to confirm suitability.

Table 197: Analysis Parameters for the Soil Monitoring Program

Parameter	Purpose	Target
pH	Identify variations that may inhibit plant growth and sustainability.	6 – 8.5
EC and Chloride	Identify areas that may inhibit germination and establishment.	≤ 1.5 (dS/m) (1,500 µS/cm)
Exchangeable Sodium Percentage (ESP)	The percentage of exchangeable cation capacity of the soil occupied by sodium.	Loams < 6% Clays < 15%
Exchangeable cations	Links to soil stability, fertility, nutrient availability, and structure.	N/A
Organic carbon	Indicates soil nutrient stores and soil structure. Variations can indicate successfulness.	
Major elements including N, P, K, S, Ca, and Mg.	Indicator of nutrients and potential for runoff or acid Metalliferous drainage.	
Trace elements including Mn, Fe, Zn, and Cu	All are important to the vegetation success.	

Metals	Metals that have been identified as occurring at elevated levels during material characterisation should be tested for during monitoring.	
Physical parameters	Soil texture and other characteristics will effect water entry and storage as well as impact on erosion, dispersion, and success.	
Field analysis	Gain an understanding of soil profile characteristics for interpretation purposes.	

15.1.6 Grazing Land Suitability Assessment

A land suitability assessment will be required to demonstrate the milestone criteria for RM12 (achievement of PMLU - low intensity grazing) is being achieved. An initial land suitability assessment will be undertaken 5 years after the commencement of monitoring to allow for vegetation to establish, with successive assessments carried out every 5 years until rehabilitation meets the milestone criteria.

15.1.7 Cover Performance Monitoring

15.1.7.1 Cover construction

During the construction of the SAR cover, compaction testing will be completed in a systematic manner at a rate of at least one (1) test location for every 3000 m^2 of RPL area. Testing will be completed using a grid methodology to ensure full coverage of the layer and to minimise the risk of positive bias.

Modified Dry Density (MDD) testing will be completed by a suitably trained technician using a nuclear gauge in accordance with AS 1289.5.8.1/4.

In conjunction within grid testing, judgement testing will be carried out at specific locations as and when required, including:

- For areas less than 10,000 m^2, additional tests should be completed so that at least five (5) tests are completed for each layer (ten overall).
- Areas of the RPL that became damaged or that fail to meet MDD criteria would been to be re-compacted and re-tested prior to lot acceptance.
- Installation of performance monitoring equipment would require the RPL to be formed around arrayed sensors. Special project testing would be required to confirm that the SAR Cover design intent was achieved.

A technical report documenting the as-constructed status of the SAR Cover should be prepared by a suitably qualified and experienced engineer.

15.1.7.2 SAR Performance Monitoring

ATCW (2025, Appendix 22) have prepared a performance monitoring program for the SAR covers to be implemented during and post cover installation. The objective of this program would be to gather sufficient evidence to support that the rehabilitation criteria has been satisfied, and that mining tenure could be relinquished.

The monitoring program will involve the installation of a series of automatic Sensor Array Stations during the cover construction. The instrument trees will be installed at strategic locations within the cover system to

measure in situ volumetric water content, matric suction, temperature and EC, to monitor movement of water through the SAR Cover and inform water balance modelling that would then be used to estimate water flux rates.

Each Sensor Array Station would comprise:

- Station components,
- Arrayed Volumetric Water Content (**VWC**) and Matric Suction (**MS**) sensors,
- One (1) Suction Plate Lysimeter (**SPL**),
- One (1) Vibrating Wire Piezometer (**VWP**), and
- One (1) digital camera.

The sensor array system is depicted in Figure 206 and includes the following:

  - Sensor A – 250 mm below Top of Waste (Waste – Upper Zone)
  - Sensor B – 50 mm above Top of Waste (RPL – Lower Zone)
  - Sensor C – 500 mm above Top of Waste (RPL – Upper Zone)
  - Sensor D – 800 mm above Top of Waste (ISL – Lower Zone)
  - Sensor E – 1300 mm above Top of Waste (ISL – Upper Zone)

A limited number of the Sensor Array Stations would be augmented with Automatic Weather Stations (AWS). Each AWS would monitor net radiation, air temperature, relative humidity wind speed, rainfall and barometric pressure.

Installation of the Sensor Array Stations will involve minor excavation of the emplaced waste material to install the sensor array mast as well as installation of the VWC and MS sensors located within the waste. Locations and density of monitoring stations within the cover systems is to be determined by an independent AQP on a case-by-case basis.

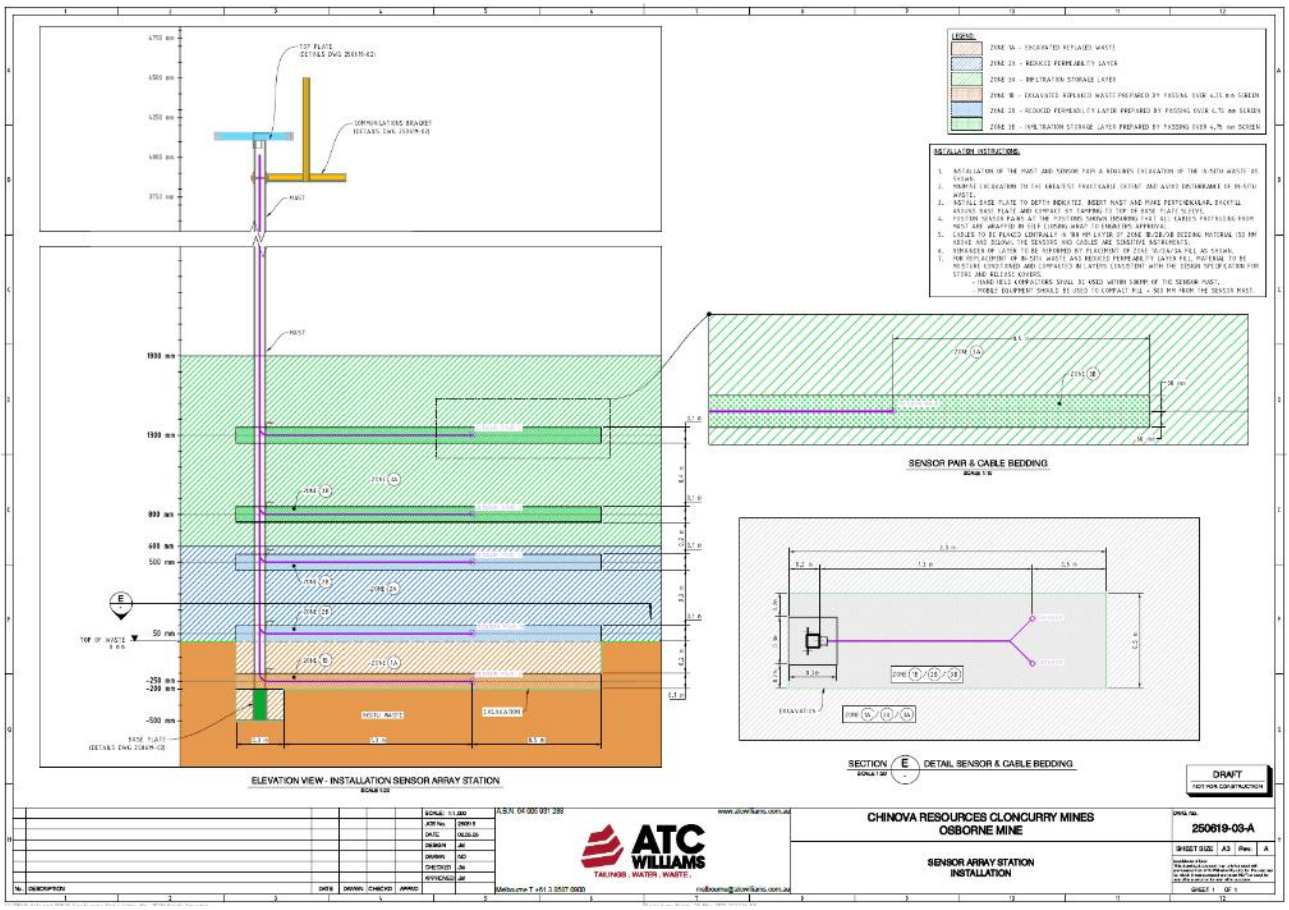


Figure 206. Proposed Sensor Array Station Installation

15.1.8 Landform and Erosion Monitoring

Reclamation materials at Cloncurry have been identified as having a high tendency for erosion (SGME, 2025). Accordingly, it is imperative that erosion monitoring is undertaken to identify any areas of potential erosion. Landform and erosion monitoring will identify:

- Presence and depth of erosion rilling;
- Cracking in cover system embankments;
- Areas of bare soil;
- Areas with low vegetation recruitment;
- Evidence of ponding across landforms; and
- Evidence of dieback surrounding the rehabilitation areas.

Cover systems will be assessed by a suitably qualified person to determine the geotechnical stability of the structure. If required, additional earthworks will be completed and a subsequent inspection will be undertaken until stability is achieved. In accordance with ATCW's erosion monitoring recommendations, high-resolution digital elevation models (DEMs) derived from multi-temporal LiDAR data is recommended to track the development of erosion and estimate total losses in t/ha/yr following the construction of cover systems (ATCW, 2025).

For all other RA's, a site survey (either on ground or using spatial techniques) will be undertaken to determine if surface contours have been effectively shaped to achieve the intended drainage pathways. This process will also identify any areas of erosion for maintenance.

Erosion targets will be assessed against the erosion classification framework described in Table 198. For the achievement of surface requirements (RM9 and RM10), no evidence of erosion classified as 'moderate' or 'severe' are to be identified.

Table 198: Erosion Classification Framework

Erosion Classification	Minor	Moderate	Severe
Sheet Erosion	Shallow soil deposits downslope	Partial exposure of roots; moderate soil deposits downslope.	Loss of surface horizon; subsoil exposure; root exposure; substantial soil deposits downslope.
Rill/gully erosion	<15 rills per transect[1] and <0.3 m deep	15-30 rills per transect[1] and <0.3 m deep	>30rills per transect[1] and/or any >0.3 m deep
Tunnel Erosion	Absent	Absent	Present
Mass Movement	Absent	Absent	Present

[1] *Australasian Soil and Land Survey Field Handbook* (NCST, 2009)

In accordance with Condition PRCP21 of the approved PRCP Schedule, Chinova must develop site-based criteria with which to assess sheet, rill, gully and tunnel erosion within 5 years of the approval of the PRCP Schedule. Criteria should be based on analogue site data and sufficient to quantify where erosion exists within the landscape which would not pose risk to final landform stability. The criteria should be supported by evidence and, reviewed and approved by an AQP.

15.1.9 Subsidence Monitoring

Subsidence monitoring will be undertaken to confirm that rehabilitated landforms associated with underground workings, portals, and declines remain safe and stable. Monitoring is intended to identify early indicators of ground movement to facilitate investigations and implementation of remedial action if required.

Subsidence monitoring will focus on areas where underground development has been decommissioned and backfilled, including portal box-cuts, declines, ventilation shafts, and associated disturbance areas. Monitoring will consist of visual inspections undertaken by a suitably qualified person, to identify surface expressions of subsidence, including, but not limited to:

- Ground cracking or tension fissures;
- Localised depressions or sinkholes;
- Differential settlement or surface undulation;
- Changes in drainage patterns or unexpected ponding; and

Any localised depressions, sinkholes, or surface undulation greater than 500 mm is to be investigated and appropriate remedial actions undertaken if required.

15.1.10 Data Analysis

Data collected for each site for each monitoring parameter will be collated and used to provide a measure of species richness, vegetation density and ground cover as well as groundwater and surface water quality. Data collected from rehabilitation sites will be compared to analogue sites, guideline values and EA/PRCP requirements to assess the progress of rehabilitation and achievement of completion criteria.

Monitoring data will be assessed and reported on an annual basis to provide replication and assess the trajectory of rehabilitation.

15.1.11 Quality Assurance

Samples collected will be sent to a NATA accredited laboratory for analysis. For surface water and groundwater samples, at a minimum, for every 10 sites sampled, one field blank, trip blank, and duplicate sample will be taken.

15.1.12 Monitoring Program Review

The monitoring program including performance indicators and completion criteria will be reviewed every two years to ensure the program remains fit for purpose and enables rehabilitation trajectory to be measured.

15.2 Maintenance

Maintenance activities on rehabilitated areas post-closure will be guided by general site inspections, aerial surveys and rehabilitation monitoring. Maintenance may include:

- Management of newly recruited vegetation (addition of fertiliser, re-seeding of failed vegetation recruitment) prior to its establishment within the ecosystem.
- Repair of eroded areas and damaged drainage systems.
- Improved management of surface water runoff through modifying landforms or structures.
- Upkeep of water management structures.
- Removing drainage that is not needed for long-term stability.
- Replacing and repairing fences and signage (where required).

It is expected that maintenance will be more intensive in the first years following closure and will gradually decrease as PLMUs begin to establish.

16. PRCP Schedule

16.1 Rehabilitation Milestones and Completion Criteria

The draft PRCP Schedule and post mining land use rehabilitation milestones and criteria and non-use management area milestones and criteria is discussed below (Table 199 and Table 200) and also provided in Appendix 15.

16.1.1 Selection of Rehabilitation Milestones and Criteria for Rehabilitation Areas

The proposed PRCP Schedule identifies the rehabilitation milestones applicable to the Cloncurry Mining Project. Each milestone is functionally a discrete work package required to achieve the overall PMLU. Prior to the development of the PRCP the site lacked clearly identified PMLU's for each disturbance domain. As a result, appropriate PMLU's have been identified for each mine project based on a number of key considerations including surrounding land use, stakeholder input, broad vegetation groups, site and landform constraints.

The proposed milestone criteria will be used to measure, track, and demonstrate progression of rehabilitation from one milestone to another over time. Monitoring will be undertaken as part of each milestone to assess whether the works undertaken have met the milestone criteria or whether rectification works are required.

The rehabilitation milestone criteria have been developed based on updated landform closure designs, historical groundwater and surface monitoring reports and updated revegetation planning program. The milestone criteria are a mix of physical, environmental, and ecological attributes. The criteria have been developed taking into consideration guidelines, standards and current knowledge from monitoring data and operational experience.

16.1.2 Selection of Management Milestones and Criteria for NUMA

Management milestones and criteria apply to the identified NUMA's and relate to reducing the effort required to manage the area as much as reasonably achievable. The residual voids have been assessed to have no sustainable long term land uses. Criteria propose reflect the stage of improvements from a minimising risk perspective and achievement of sufficient improvement.

Table 199: Cloncurry Mining Project Rehabilitation Milestones and Criteria

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
RM1	Infrastructure decommissioning and removal	1.1 With the exception of any infrastructure to remain as part of the post-mining land use (PMLU) or where infrastructure is agreed to be retained by the landholder as evidenced by a signed landholder agreement, the following are complete: (a) All services disconnected, terminated and removed. (b) All buildings and associated infrastructure dismantled and removed offsite. (c) All hardstand and concrete areas (bitumen, blue metal, aggregate etc) decommissioned and removed (d) Drillholes are capped and plugged in accordance with the *Eligibility criteria and standard conditions for exploration and mineral development projects* (ESR/2016/1985). (e) Machinery and equipment not required for rehabilitation removed from site. (f) All surface water drainage infrastructure that is not compatible with the sustainment of the PMLU has been removed. (g) All non-permanent water storages are dewatered, liners removed (where applicable) and structures desilted. (h) All fencing and associated foundations removed. (i) All pipelines drained and removed. (j) All waste not authorised to be disposed of on-site under Environmental Authority EPML00701913 removed. (k) All bores, sediment ponds and sumps decommissioned and rehabilitated. (l) Ventilation shafts and services (electricity, air and water) decommissioned and removed. 1.2 Below-ground infrastructure and services deeper than 0.5m in relation to the final landform surface may be retained provided:	Infrastructure is required to be removed from the site to enable surface treatment of areas.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		(a) All pipelines have been drained and capped of filled with inert material; and (b) All below-ground infrastructure to be retained is mapped; and (c) The intended PMLU is not compromised; and (d) There is no ongoing risk of environmental harm.	
RM2	Identification, remediation and removal of contaminated land	2.1 Contaminated land assessment (investigation, remediation and validation) completed by a SQP in accordance with appropriate guidance, including but not limited to the: EP Act, ASC NEPM and National Remediation Framework (NRF). 2.2 Contaminated material and hazardous material, as determined by the contaminated land assessment, is removed from site and disposed of at a licensed facility authorised to receive such waste. 2.3 Contaminated Land Auditor certifies that no contamination unsuitable for the PMLU remains or is occurring.	To determine that the final landform is safe, stable and non-polluting.
RM3	Landform development (reshaping and reprofiling)	3.1 All major earthworks (including reshaping, pushing/trimming) are completed in accordance with the design specification provided by an AQP that achieves an outcome that is safe, erosionally and structurally stable and appropriate to support the achievement of the PMLU. 3.2 Erosion and sediment control systems are installed as per the construction design and verified by an AQP. 3.3 Constructed landform achieves geotechnical stability with a Factor of Safety (FOS) ≥ 1.5, includes consideration of flood stress. 3.4 All landforms are shaped to be water shedding.	The final landform must be consistent with the surrounding land and profiled to limit erosion
RM4	Backfilling of underground workings	4.1 Detailed backfill methodology developed and certified by a RPEQ. 4.2 Ventilation shafts backfilled and sealed with inert material, in accordance with the certified RPEQ design. 4.3 For RA3, surface subsidence and Mount Elliott underground backfilled to surface. 4.4 For RA10, first 30 m of Merlin decline backfilled, Fresh Air Raise (FAR), Return Air Raise (RAR) and southern RAR's box cut completely backfilled. 4.5 For RA17, Starra decline collapsed and backfilled.	Ensuring the final landform must achieve a stable landform. Certification by a suitably qualified person will confirm is stable.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		4.6 For RA17, Starra box-cut portals and declines backfilled to surface. 4.7 RA3, RA10 and RA17 determined to be geotechnically stable by AQP geotechnical engineer. 4.8 For RA3, RA10 and RA17, safety bunding of a minimum of 2 m height is constructed around the perimeter of subsidence risk areas. The safety bunding must be constructed from non-weathered, non-dispersive dumped rock.	
RM5	Installation of cover system / capping.	5.1 Landform design report has been reviewed and a detailed cover system design is completed. 5.2 All potentially acid forming (PAF) material is located within an AQP designed and engineered cell, fully encapsulated in compacted non-acid forming (NAF) material. 5.3 Crest treatments have been applied, based on level of environmental risk, consistent with an engineered design with Quality Assurance/Quality Control measures specified by an AQP. 5.4 Batter treatments have been applied which are consistent with the engineering design with Quality Assurance/Quality Control measures specified by an AQP. 5.5 The cover system has been installed as per the design completed in RM5.1. 5.6 Cover system performance monitoring sensor array stations (ref. ATCW installation design) are installed in accordance with station density determined by an independent AQP. 5.7 An AQP has prepared an As-Constructed Report that details the works undertaken, and has certified that construction and encapsulation works were completed in accordance with design specifications, including: (a) Overall landform design requirements. (b) Sub grade preparation. (c) Crest treatment. (d) Batter treatment. (e) Drainage and flow conveyance. (f) Will achieve long-term stability, meaning there is a low likelihood of mass failure	The final landform must achieve a stable landform. Milestone will ensure slope angles, bench width, bench height and surface water drainage is suitable to achieve a stable landform. Certification by a suitably qualified person will confirm is stable. Stability assessments completed for the Project have determined that a high factor of safety can be achieved.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		5.8 Capping layer surface is water shedding and does not display surface ponding. 5.9 The cover system displays erosional stability and is geotechnically stable. 5.10 The cover is effective in mitigating the potential for migration of contaminants to the receiving environment.	
RM6	Surface preparation	6.1 Assessment of growth media characteristics and the development of an amelioration and physical treatment plan is completed by an AQP. 6.2 Ameliorant and physical treatments such as fertiliser, lime, gypsum and/or organic matter are applied as identified in criteria RM6.1. 6.3 Topsoil/growth media placement of a minimum depth of: (a) 1.2 m growth media for cover systems (**RA1, RA5, RA8, RA12, RA16 and RA23**); (b) 0.15 m for all other areas. 6.4 Deep ripping of compacted surfaces, typically to a depth of 150 to 400 mm, and at a spacing generally between 1.5 and 2.5 m, in accordance with the recommendations of an AQP. 6.5 Following amelioration, representative soil testing of growth media confirms: (a) pH in the range of 6 to 8.5; (b) Electrical conductivity (dS/m) ≤1.5 (1,500 µS/cm); and (c) Exchangeable sodium percentage (ESP) (%) < 6. 6.6 Growth media health and suitability is assessed and documented by an AQP as suitable for the PMLU and target vegetation establishment. 6.7 Surface and groundwater monitoring is underway (at least one year of sampling undertaken).	Ripping and application of growth media will encourage establishment of vegetation. Due to the long LOM, it is more appropriate to assess growth media quality prior to application.
RM7	Revegetation	7.1 Seeding completed using seed mix and sowing rates described in **Appendix 2: Seed mix and application rate** of the PRCP Schedule**.** 7.2 Non-native seed must not be used for the revegetation (except when sterile cover crops are used).	Species have been selected to recreate the historic native ecosystem and increase chance of establishment.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		<u>For RA1, RA5, RA8, RA12, RA15, RA16 and RA22:</u> 7.3 Deep rooting tree and shrub species are not included within seeding mixes applied to installed cover systems. 7.4 Direct seeding to not be undertaken on steep (≥30 degrees) rock armoured cover system batters.	
RM8	Achievement of Surface Requirements	8.1 No evidence of erosion classified as 'moderate' or 'severe' as defined by **Appendix 3 – Erosion Classification Framework** of the PRCP Schedule. 8.2 Engineering controls to reduce erosion rates (e.g., furrows) are constructed according to the design. 8.3 Any erosion will not compromise the achievement of a PMLU to a stable condition. 8.4 Erosion requiring intervention has been remediated and does not impact achievement of PMLU. 8.5 No evidence of scouring, instability or excessive sediment in or associated with engineered drainage structures or benches. 8.6 All areas are free draining and consistent with the surrounding environment. 8.7 Historical subsidence has been rectified and documented. 8.8 Surface subsidence generated by depression, as determined by subsidence monitoring, is no greater than 500 mm. 8.9 Weed presence is a less than 10% of total vegetative cover. 8.10 Species used in revegetation remain present and show evidence of natural recruitment (i.e., flowering and/or seeding). 8.11 Total groundcover (combination of vegetative cover, other organic material (i.e., sticks, leaf litter) and inorganic material (i.e., rocks)) ≥ 70%. 8.12 Surface water runoff collected from representative areas of rehabilitation when surface flow occur complies with **Appendix 5 – Surface water quality limits** of the PRCP Schedule. **Underground workings:**	Milestone has been applied 5 years post vegetation to guide early intervention as required.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		8.13 For RA3, RA10 and RA17 an AQP has certified that the backfill of the ventilation shafts, underground and subsidence, is complete and poses no unacceptable safety risks to humans or wildlife. **For RA1, RA5, RA8, RA12, RA15, RA16 and RA22:** 8.14 Cover system is safe and structurally stable. 8.15 There is no evidence of water ponding on the surface of the cover systems. 8.16 Shrubs and trees greater than 2 m in height are not present on the surface of the cover system. **Native vegetation PMLU (RA1, RA3, RA5, RA6, RA8, RA12, RA15, RA16 and RA22)** 8.17 A BioCondition assessment is completed by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's "BioCondition Assessment Manual' for Regional Ecosystems (REs). 8.18 The BioCondition assessment required under RM8.17 demonstrates achievement of the criteria specified as per **Appendix 4 – BioCondition Benchmark Criteria** of the PRCP Schedule.	
RM9	Achievement of PMLU to stable condition	9.1 No evidence of erosion classified as 'moderate' or 'severe' as defined by **Appendix 3 - Erosion classification framework** of the PRCP Schedule. 9.2 Engineering controls to reduce erosion rates (e.g., furrows) are constructed according to the design. 9.3 Any erosion will not compromise the achievement of a PMLU to a stable condition. 9.4 No evidence of scouring, instability or excessive sediment in or associated with engineered drainage structures or benches. 9.5 No ongoing surface subsidence. 9.6 Subsidence within the rehabilitation area does not present a safety hazard in the context of the PMLU. 9.7 Weed presence is a less than 10% of total vegetative cover. 9.8 There is no evidence of seepage occurring within the mining tenure.	Demonstrates that the PMLU has been achieved.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		9.9 Certification from an REPQ that the domain has achieved a stable condition, as defined within s111A of the Environmental Protection Act 1994. 9.10 Final landform survey confirms no built structures remain other than those that form part of a landholder agreement. 9.11 Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in **Appendix 6 – Surface water monitoring locations** of the PRCP Schedule, must not exceed the limits in **Appendix 5 - Surface water quality limits** of the PRCP Schedule, for a minimum of 5 consecutive years immediately prior to the milestone completion date. 9.12 If the surface water quality exceeds criteria RM9.11, the applicable upstream/reference site must be compared to the downstream site result; and quality result measured at a downstream site must be equal to or less than the quality result measured at the applicable upstream/reference site1. 9.13 For a minimum of five consecutive years immediately prior to the milestone completion date, groundwater quality must be monitored quarterly at, but not limited to, compliance bores/locations specified in **Appendix 7 – Groundwater monitoring locations** of the PRCP Schedule, for all quality characteristics listed in **Appendix 8 – Groundwater quality limits** of the PRCP Schedule. 9.14 Groundwater quality results must not exceed the limits in **Appendix 8 – Groundwater quality limits** of the PRCP Schedule, for 3 consecutive results. 9.15 Stream sediment quality at downstream monitoring sites (**Appendix 6 – Surface water monitoring locations** of the PRCP Schedule) undertaken twice yearly (at the end of wet season and end of dry season) complies with ANZECC/ARMCANZ	

[1] For pH, the quality result measured at the downstream location must be within the prescribed range. However, where pH at the downstream location is greater-than (>) the highest limit in the range, the pH at the applicable upstream location must be greater-than or equal-to (≥) the downstream location. Conversely, where pH at the downstream location is less than (<) the lowest limit in the range, the upstream pH at the applicable upstream location must be less-than or equal-to (≤) the downstream location.

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		(2000) Interim Sediment Quality Guidelines – low for a minimum of 3 consecutive years. **Native vegetation PMLU (RA1, RA3, RA5, RA6, RA8, RA12, RA15, RA16 and RA22)** 9.16 BioCondition assessment demonstrates achievement of the criteria specified as per **Appendix 4 – BioCondition Benchmark Criteria** of the PRCP Schedule**.** For **RA1, RA5, RA8, RA12, RA15, RA16 and RA22**: 9.17 There is no evidence of water ponding on the surface of the cover systems. 9.18 No evidence of salt rise through the cover system. 9.19 Shrubs and trees greater than 2m in height are not present on the surface of the cover system. 9.20 Results of monitoring gathered from monitoring stations established in RM5 demonstrate the following has been maintained for a minimum of 3 years: (a) Global factor of safety (FoS) > 1.5; (b) Infiltration < 10 % net rainfall; (c) Upward flux < 1 % of net rainfall; and (d) Volumetric water content of tailings does not respond to rainfall events. **Grazing PMLU (RA2, RA9, RA10, RA13, RA17, RA18 and RA23)** 9.21 Land suitability assessment by an AQP certifies land has achieved a post-mine land suitability the same as the pre-mining land suitability, as per the Guidelines for Agricultural Land Evaluation in Queensland. 9.22 Carrying capacity is suitable to support a sustainable level of grazing. 9.23 The rehabilitation area is safe for human access and use. 9.24 BioCondition assessment demonstrates achievement of the criteria specified as per **Appendix 4 – BioCondition Benchmark Criteria** of the PRCP Schedule.	

Milestone reference	Rehabilitation milestone	Milestone criteria	Justification
		Water Storage (RA19 and RA21) 9.25 All water storages and water infrastructure is safe and stable. 9.26 Water storages monitored quarterly, water must be of a suitable quality for native wildlife and/or livestock ingestion and must not exceed the stock water guidelines (ANZECC 2000), for a minimum of 5 consecutive years immediately prior to the milestone completion date. 9.27 Certification from an independent AQP that RM9.1 to RM9.26 have been achieved.	
RM10	Retained infrastructure	10.1 Formal acceptance and transfer of infrastructure to underlying landholder in accordance with the landholder agreement. 10.2 Infrastructure to be transitioned to a future landholder is: (a) Suitable in type and scale for the approved post-mine land use; (b) Verified by an AQP as fit for purpose and; (c) Accepted by signed agreement with the future landholder. 10.3 An AQP certifies that all infrastructure to be retained onsite is safe, stable and will not cause environmental harm. 10.4 Where engineered drainage structures are to be retained as permanent features (e.g. contour banks, bench drains, rock drains), it must be certified by an AQP that the structures are stable and can be expected to remain stable and functional in the long-term.	Demonstrate that permanent infrastructure has been accepted by the underlying landholder.

Table 200: Cloncurry Mining Project Improvement Area Milestones and Criteria

Management Milestone #	Rehabilitation Milestone	Rehabilitation Milestone Criteria
MM1	Achieve Final Landform	1.1 Pit wall landforms must: (a) prevent surface or seepage flow of floodwater into the void; (b) Be geotechnically stable when floodwater is against the creek-side batter; 1.2 Not be constructed with dispersive material 1.3 High walls battered to a maximum slope of 60 degrees. 1.4 Voids are assessed to be geotechnically stable by an AQP. 1.5 Final residual voids are not subject to inundation from floodwaters up to and including the 0.1% AEP. 1.6 The location of the voids and associated safety bunds does not cause instability or degradation to the land outside the NUMA. 1.7 Void water balance modelling at closure confirms residual voids do not over top. 1.8 The residual voids act as groundwater sinks post-closure, as demonstrated with water quality, water level and modelling data. 1.9 The water and quality in the voids do not and will not cause environmental harm to the receiving environment, as demonstrated by groundwater level, surface water and ground water quality monitoring and modelling.
MM2	Achievement of surface requirements	2.1 Safety bunding of a minimum of 2 m height is constructed around the perimeter of the void. 2.2 The safety bund must be constructed from non-weathered, non-dispersive dumped rockfill. 2.3 Fencing erected, where required to prevent access to the residual void, around the perimeter of the safety bund. 2.4 Warning signage (design in accordance with Australian standard) posted every 100 metres of the perimeter of the void.

Management Milestone #	Rehabilitation Milestone	Rehabilitation Milestone Criteria
MM3	Achievement of sufficient improvement	3.1 Landform is determined to be geotechnically stable by an AQP. 3.2 The highwall landform has been constructed in accordance with the final design. 3.3 The residual voids are safe to humans and livestock. 3.4 The water level and quality in the voids do not and will not cause environmental harm to the receiving environment, as demonstrated by groundwater level, ground water and surface water quality monitoring and modelling. 3.5 Erosion of the landform within the NUMA area will not negatively impact on stability of any adjacent rehabilitation areas, or their ability to sustain their PMLU.

17. Appendices

Appendix 1: AGE (2023) Report on Cloncurry Project PRCP Conceptual Models Report

Appendix 2: WRM (2023) Final Landform Flood Assessments Cloncurry Mining Project, prepared for Chinova Resources Cloncurry Mines Pty Ltd

Appendix 3: NGH (2023) Chinova Resources Revegetation Plan and Monitoring Program

Appendix 4: RGS Environmental Pty Ltd (2011) Geochemical Assessment of Ore, Waste Rock and Tailings Materials from the Ivanhoe Cloncurry Project. Prepared for Ivanhoe Cloncurry Mines Pty Ltd, Project Number: 091016.

Appendix 5: ATCW (2024) Osborne Mine Closure Strategies for Mineralised Waste Final Landforms, prepared for Chinova Resources Pty Ltd.

Appendix 6: ATCW (2025a) Landform Erosion Modelling, document reference: 250619-RO1-RevA, prepared for Chinova Resource Pty Ltd.

Appendix 7: ATCW (2023b) Cloncurry Project Conceptual Final Landform Design, prepared for Chinova Resources Pty Ltd.

Appendix 8: Quantum Geotechnical (2023) Cloncurry Project PRC Plan Geotechnical Assessment, Prepared for Chinova Resources.

Appendix 9: Tailings "As Constructed" Drawings

Appendix 10: Chinova Resources (2023) Memo - Geochemical assessment of waste material within the Cloncurry Project PRCP.

Appendix 11: RGS Environmental Pty Ltd (2013) Geochemical Assessment of Mine Materials from the Proposed Mt. Dore Copper Heap Leach Operation

Appendix 12:RGS Environmental Pty Ltd (2016) Geochemical Assessment of Heap Leach Residue Mount Dore Copper Heap Leach Project

Appendix 13: RGS Environmental Pty Ltd (2020) Southern Tailings Dam Geochemical Characterisation, prepared for Chinova Cloncurry Mines Pty Ltd. Project Number: 2020019

Appendix 14: RGS Environmental Pty Ltd (2020b) Geochemical Assessment of Waste Rock and Ore Starra 254 and Starra 222 Deposits. Prepared for Ivanhoe Cloncurry Mines Pty Ltd, Project Number: 2020030.

Appendix 15: PRC Schedule for Cloncurry Project

Appendix 16: AGE (2025b) Cloncurry Project PRCP Conceptual Models CoCs. Project No. OSB5019.001.

Appendix 17: Terra (2025b) Response to Request for Information – Water Management. Reference No. 202205-4.

Appendix 18: WRM (2025) Final Landform Water Management and Hydrology Assessment

Appendix 19: AGE (2025a) Report on Cloncurry Project PRCP Conceptual Models Report (Revised)

Appendix 20: AGE (2025c) Bore Specification Report

Appendix 21: SGME (2025) Material Characterisation Investigations

Appendix 22: ATCW (2025b) Proposed Performance Monitoring System for SAR Cover

18. References

Australian Government Bureau of Meteorology 2023, Monthly Rainfall Cloncurry McIllwraith St, Australia Government Bureau of Meteorology, viewed 02 February 2023, http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=029034

AMC Mining Consultants (2012) Scoping Study of the Mount Elliott Project, prepared for Ivanhoe Australia Limited, Brisbane.

ANZECC & ARMCANZ 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

Australian Government Bureau of Meteorology 2023, Climate Statistics for Australian Locations – Mount Isa Aero – Mean total evaporation (mm), Australia Government Bureau of Meteorology, viewed 02 February 2023, http://www.bom.gov.au/jsp/ncc/cdio/cvg/av?p_stn_num=029127&p_prim_element_index=34&p_display_type=statGraph&period_of_avg=ALL&normals_years=allYearOfData&staticPage=

Australian Soil Resource Information System. (2013). Atlas of Australian Soils. Retrieved from https://www.asris.csiro.au/themes/Atlas.html

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2014). Report on Mount Dore Aquifer Data Review and Preliminary Assessment [DRAFT]. Prepared for Chinova Resources Pty Ltd. Project No. G1693. June 2014

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2019). Mount Elliott Mine Conceptual Hydrogeological Model. Report prepared for Chinova Ltd, Project No. G1693B. October 2019.

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2021a). Starra Line EML Project Supporting Hydrogeology Information. Report prepared for Chinova Ltd, Project No. G1693G. April 2021.

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2023). Cloncurry Project PRCP Conceptual Models. Report prepared for Chinova Resources Pty Ltd. Project No. OSB5012.001. Version 3.02, July 2023.

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2025a). Report on Cloncurry Project PRCP Conceptual Models. Report prepared for Chinova Resources Pty Ltd, Project No. OSB5012.001. Version 2.01, November 2025.

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2025b). Cloncurry Project PRCP Conceptual Models CoCs. Report prepared for Chinova Resources Pty Ltd. Project No. OSB5019.001. November 2025.

Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). (2025c). Cloncurry PRCP Conceptual Hydrogeological Models – Bore Specification Report. Report Prepared for Chinova Resources Pty Ltd. Project No. OSB019.003. Version 01.02, December 2025.

ATCW (2023a) Memo – Chinova Cloncurry Project – Catchment and Storage Review, prepared for Chinova Resources Pty Ltd.

ATCW (2023b) Cloncurry Project Conceptual Final Landform Design, prepared for Chinova Resources Pty Ltd.

ATCW (2024) Closure Strategies for Mineralised Waste Final Landforms, prepared for Chinova Resources Pty Ltd.

ATCW (2025a) Cloncurry Project Erosion Modelling, prepared for Chinova Resources Pty Ltd.

ATCW (2025b) Proposed Performance Monitoring System for SAR Cover, prepared for Chinova Resources Pty Ltd.

BIM Metals (2019) Mount Dore – Victoria Heap Leach Feasibility Study, prepared for Chinova Resources Pty Ltd.

Chinova Resources (2014) Merlin Molybdenum/ Rhenium Feasibility Report (internal report).

Chinova Resources (2020) Mineral Resource Statement Starra 222 and 254 (internal report).

Chinova Resources (2021) Lady Ella Remnant Mineral Resources (internal report).

Chinova Resources (2023) Memo - Geochemical assessment of waste material within the Cloncurry Project PRCP.

Department of Environment and Heritage Protection (2009) Queensland Water Quality Guidelines, Version 3 (published July 2013).

Department of Environment and Science (DES). (2019). Guideline Progressive rehabilitation and closure plans (PRC plans). 2019. Department of Environment and Science, Queensland Government, Brisbane. Accessed October 2022.

Department of Science, Information Technology and Innovation (DSITI) and Department of Natural Resources and Mines (DNRM) (2015). Guideline for agricultural land evaluation in Queensland, Edn. 2. Queensland Government (DSITI and DNRM, Brisbane, Queensland.

GDE Atlas, BoM/DES (2016). Queensland Government, Queensland (2016) Groundwater dependent ecosystem mapping background.

Lewis and Associates (1987) Cyprus Minerals Australia, February 1987. Environmental Impact Assessment Study – Selwyn Properties North Queensland.

McKenzie, N.J., Jacquier, D.W., Ashton L.J. and Cresswell, H.P. (2000) Estimation of Soil Properties Using the Atlas of Australian Soils. CSIRO Land and Water Technical Report 11/00.

National Committee on Soil and Terrain (NCST) (2009) Australian Soil and Land Survey Field Handbook, Edn. 3 (published December 2024), CSIRO Publishing.

NGH Environmental (2023) Chinova Resources Revegetation Plan and Monitoring Program prepared for Chinova Cloncurry Mines Pty Ltd. Project Number: JW211650

Perry R.A et al (1964) General report on lands of the Leichhardt-Gilbert area, Queensland, 1953-54. CSIRO Australia

Place Design Group (2012) Mount Dore Mine Lease Expansion – Baseline Ecological Assessment.

PPK Consultants Pty Ltd, (1994). Mount Elliott Groundwater Testing. Report prepared for Arimco Mining Pty Ltd, February 1994.

Quantum Geotechnical (2023) Cloncurry Project PRC Plan Geotechnical Assessment, Prepared for Chinova Resources.

Quantum Geotechnical (2025) Cloncurry Project PRC Plan: Request for Information Response, Prepared for Chinova Resources.

Queensland Herbarium (2015) BioCondition Assessment Manual, Version 2.2, Brisbane.

Reseval (2017) Mount Elliott-SWAN Resource Update, prepared for Chinova Resources Limited.

Reseval (2020) Mount Dore Resource Update, prepared for Chinova Resources Limited.

Reseval (2020) Victoria Resource Update, prepared for Chinova Resources Limited.

RGS Environmental Pty Ltd (2011) Geochemical Assessment of Ore, Waste Rock and Tailings Materials from the Ivanhoe Cloncurry Project. Prepared for Ivanhoe Cloncurry Mines Pty Ltd, Project Number: 091016.

RGS Environmental Pty Ltd (2013) Geochemical Assessment of Mine Materials from the Proposed Mt. Dore Copper Heap Leach Operation, prepared for Ivanhoe Cloncurry Mines Pty Ltd, Project Number: 101121

RGS Environmental Pty Ltd (2016) Geochemical Assessment of Heap Leach Residue Mount Dore Copper Heap Leach Project, prepared for Chinova Cloncurry Mines Pty Ltd. Project Number: 201402.

RGS Environmental Pty Ltd (2020) Southern Tailings Dam Geochemical Characterisation, prepared for Chinova Cloncurry Mines Pty Ltd. Project Number: 2020019

RGS Environmental Pty Ltd (2020b) Geochemical Assessment of Waste Rock and Ore Starra 254 and Starra 222 Deposits. Prepared for Ivanhoe Cloncurry Mines Pty Ltd, Project Number: 2020030.

Rob Lait Associates Pty Ltd (RLA). (2011a). Ivanhoe Mines Cloncurry Regional Hydrogeology Assessment. April 2011.

Rob Lait Associates Pty Ltd (RLA). (2011b). Assessment of Groundwater Monitoring Bores at Mount Elliott, Eastern Tailings Dam and Selwyn. November 2011.

Rockwater Pty Ltd (Rockwater). (2010). Summary of the Mount Dore Aquifer. September 2010.

Rockwater Pty Ltd, (2011a), Merlin and Little Wizard Deposits. Mount Dore Aquifer Modelling Report (Final). Report prepared for Ivanhoe Australia. August 2011.

Rockwater Pty Ltd (Rockwater). (2011b). Mount Dore Aquifer Numerical Groundwater Modelling Review. October 2011.

RPS Australia East Pty Ltd. (2011). Mount Elliott / Mount Dore Water Supply Study. December 2011.

SGME. (2025). 24B018 – Cloncurry Project Area Material Characterisation Letter Report. October 2025.

Spain, C.S., Nuske, S., Gagen, E.J. (2025). Evaluating methods for assessing native ecosystem mine rehabilitation success,. Brisbane: Office of the Queensland Mine Rehabilitation Commissioner, Queensland Government.

Speight, J. G. (2009). ‘Landform’, in The National Committee on Soil and Terrain, Australian Soil and Land Survey Field Handbook, third edition. CSIRO Publishing, Melbourne, pg. 15-27.

Stott, M. (2003). Completion of Mining Report Lady Ella Open Pit. January 2003.

Terra Solutions. (2023). *Cloncurry Project Receiving Environment Monitoring Program*. January 2023.

Terra Solutions. (2025a). Cloncurry Mining Project – Response to Information Request, prepared for Chinova Resources Cloncurry Mines Pty Ltd.

Terra Solutions. (2025b). Cloncurry Mining Project – Response to Information Request – Water Management, prepared for Chinova Resources Cloncurry Mines Pty Ltd.

URS (2011) Geochemical Characterisation of Molybdenum-Rhenium Process Tailings - Ivanhoe Osborne Mine, prepared for Ivanhoe Australia Limited.

WRM (2023) Final Landform Flood Assessments Cloncurry Mining Project, prepared for Chinova Resources Cloncurry Mines Pty Ltd.

WRM (2025) Cloncurry Mines Project, Final Landform Water Management and Void Hydrology Assessment, prepared for Chinova Resources Cloncurry Mines.