ULAN COAL

GLENCORE

2022 Annual Review

Ulan Coal Mine

Name of operation	Ulan Coal Mine
Name of operator	Ulan Coal Mines Pty Limited
Development consent / project approval #	PA 08_0184
Name of holder of development consent / project approval	Ulan Coal Mines Pty Limited
Mining lease #	CCL 741, MPL 315, ML 1341, ML1365, ML 1366, ML 1467, ML 1468, ML 1511, ML 1554, ML 1656, ML1754, ML1796, ML1798, ML1799, ML1813, EL 5573, EL 7542, EL 8687, EL9363 & EL9419.
Name of holder of mining lease	Ulan Coal Mines Pty Limited
Water licence #	WAL41492, WAL19047, WAL37192, WAL41817, WAL41906, WAL42900 & WAL34921 (only allocation Licences listed).
Name of holder of water licence	Ulan Coal Mines Pty Limited
Annual Review start date	01/01/2022
Annual Review end date	31/12/2022

I, Lucy Stuart, certify that this audit report is a true and accurate record of the compliance status of Ulan Coal Mines Pty Limited for the period of 01 January 2022 to the 31 December 2022 and that I am authorised to make this statement on behalf of Ulan Coal Mines Pty Limited.

Note.

a) *The Annual Review is an 'environmental audit' for the purposes of section 122B (2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person acknowledges that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or $22,000, or both).*

Name of authorised reporting officer	Lucy Stuart
Title of authorised reporting officer	Environment and Community Manager
Signature of authorised reporting officer	
Date	31 March 2023

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ELECTRONIC COPY

Electronic copy of the 2022 Annual Review submitted via the NSW Planning Portal to government stakeholders, attachments available electronically online via the website: *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/reporting-documents*

1. Statement of Compliance

Compliance Table 1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes / No*
PA 08_0184	Yes
ML's	Yes
EL's	Yes
EPL 394	No
Water Licences	Yes
EPBC Approvals (2009/5252) & (2015/7511)	Yes

Notes:* Refer to Table 3 (Non Compliances), Section 3 (Approvals) Section 11 (Incidence and Non-Compliances) for details

Compliance Table 2 Compliance Status Key

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: • potential for serious environmental consequences, but is unlikely to occur; or • potential for moderate environmental consequences, but is likely to occur
Low	Non-compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur; or • potential for low environmental consequences, but is likely to occur
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)
Compliant	Compliant	Criteria met

Compliance Table 3 Non- Compliances

Relevant Approval	Condition	Compliance Issue	Compliance Status	Comment	Section in AR
EPL394	M2.2	The HVAS described in EPL 394, EPA ID numbers 15 and 29 failed to collect valid samples due to a power outage by Essential Energy for approximately 1.5hrs on 3/02/2022		The failure was due to an unscheduled power outage by Essential Energy. There is a TEOM situated near by collecting data which can be used to confirm real time dust emissions	**Section 11**

2. Introduction

2.1 Report Scope

This 2022 Annual Review[1] (AR) was prepared to satisfy consent conditions and reporting obligations as specified by NSW Department of Planning and Environment (DPE). The Reporting Period for this AR is from 01 January 2022 to 31 December 2022, with the AR due by 31 March 2023[2]. A copy of this AR will be distributed to:

- DPE;
- DPE –Resources Regulator (RR);
- NSW Environment Protection Authority (EPA);
- DPE -Biodiversity, Conservation & Science Directorate (BSC);
- DPE – Division of Water (DPE-Water); and
- Mid-Western Regional Council (MWRC)

Upon approval, this document will be uploaded to the Ulan Coal Mine website for public viewing at *www.ulancoal.com.au* and issued to Ulan Coal Mine's Community Consultative Committee (Ulan Coal CCC).

2.2 Mining Operations and Location

Ulan Coal Mines Pty Limited (UCMPL) is owned by Glencore Coal Assets Australia Pty Limited. UCMPL was granted PA08_0184 under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 15 November 2010 for the *Ulan Coal – Continued Operations Project.*

The Ulan Underground Mine (UUG), the Ulan West Underground mine (UW), the Ulan Open Cut mine, coal processing and train loading facilities and land holdings, including the Bobadeen Irrigation Scheme (BIS), as a collective, are referred to as the Ulan Coal Complex (UCC) (**Figure 2-1**).

The UCC is located in New South Wales approximately 1.5 kilometres from Ulan Village, within the Mid-Western Regional Council (MWRC) Local Government Area (LGA). The project area is approximately 38 kilometres north-north-east of Mudgee and 19 kilometres north-east of Gulgong. The 13,000 hectare (ha) landholding, straddles the Great Dividing Range and is located at the headwaters of the Goulburn and Talbragar River Catchments. Underground and open cut mining and associated infrastructure are approved under PA08_0184 (as modified) (**Figure 2-2**) for:

- Mining operations on site until 30 August 2033;
- Longwall mining of the Ulan Underground Mine (UUG);
- Longwall mining of the Ulan West Underground Mine (UW);
- Open cut mining over a 239 ha area;

[1] The AR was prepared in accordance with the DPE *Annual Review Guideline October 2015* and the AR reporting requirements contained in Condition 3, Schedule 5 and Statement of Commitments in Appendix 9 of the PA08_0184.
[2] In accordance with Condition 3, Schedule 5 of Project Approval 08_0184 (PA08_0184).

- Coal Handling and Preparation Plant (CHPP) and rail loadout facilities with total coal production capacity of up to 20 million tonnes per annum (Mtpa) product coal; and
- Surface facilities and ancillary activities to support the above mentioned operations.

2.3 Mine Contacts

Table 2-1 outlines the contact details for site personnel responsible for mining, coal preparation, rehabilitation, environmental and community management at the end of the Reporting Period.

Table 2-1 – Ulan Coal Mine Contacts

Name	Position	Contact Details
Peter Ostermann	General Manager	Work: 02 6372 5300 Email: *peter.ostermann@glencore.com.au*
Sam Wiseman	Operations Manager – Ulan Surface Operations	Work: 02 6372 5400 Email: *sam.wiseman@glencore.com.au*
David Ribaux	Operations Manager – Ulan Underground Operations	Work: 02 6372 5300 Email: *david.ribaux@glencore.com.au*
Matthew Stone	Operations Manager – Ulan West Underground Operations	Work: 02 6370 9200 Email: *matthew.stone@glencore.com.au*
Lucy Stuart	Environment & Community Manager	Work: 02 6372 5368 Email: *lucy.stuart@glencore.com.au*

Figure 2-1 – Locality Plan

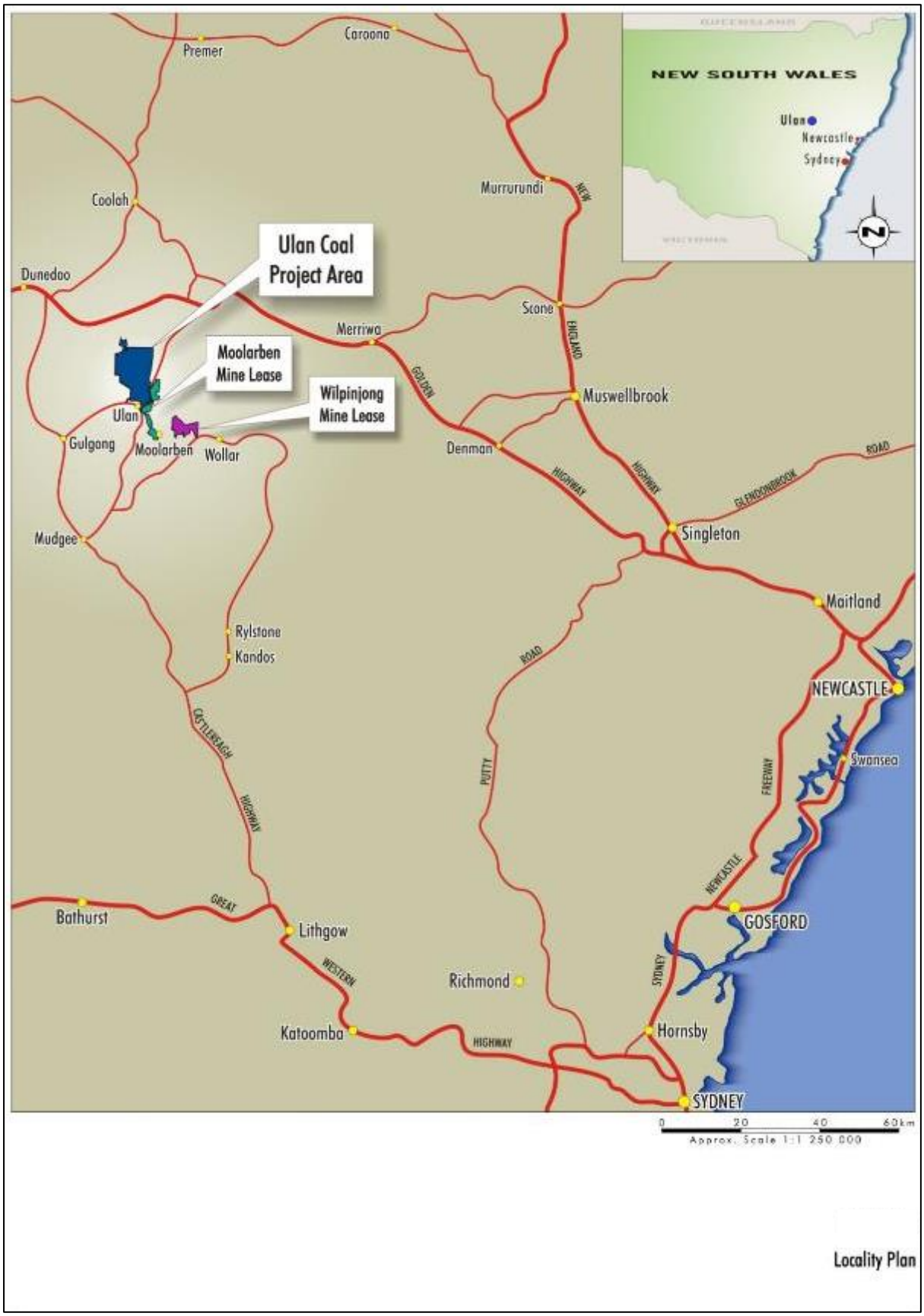
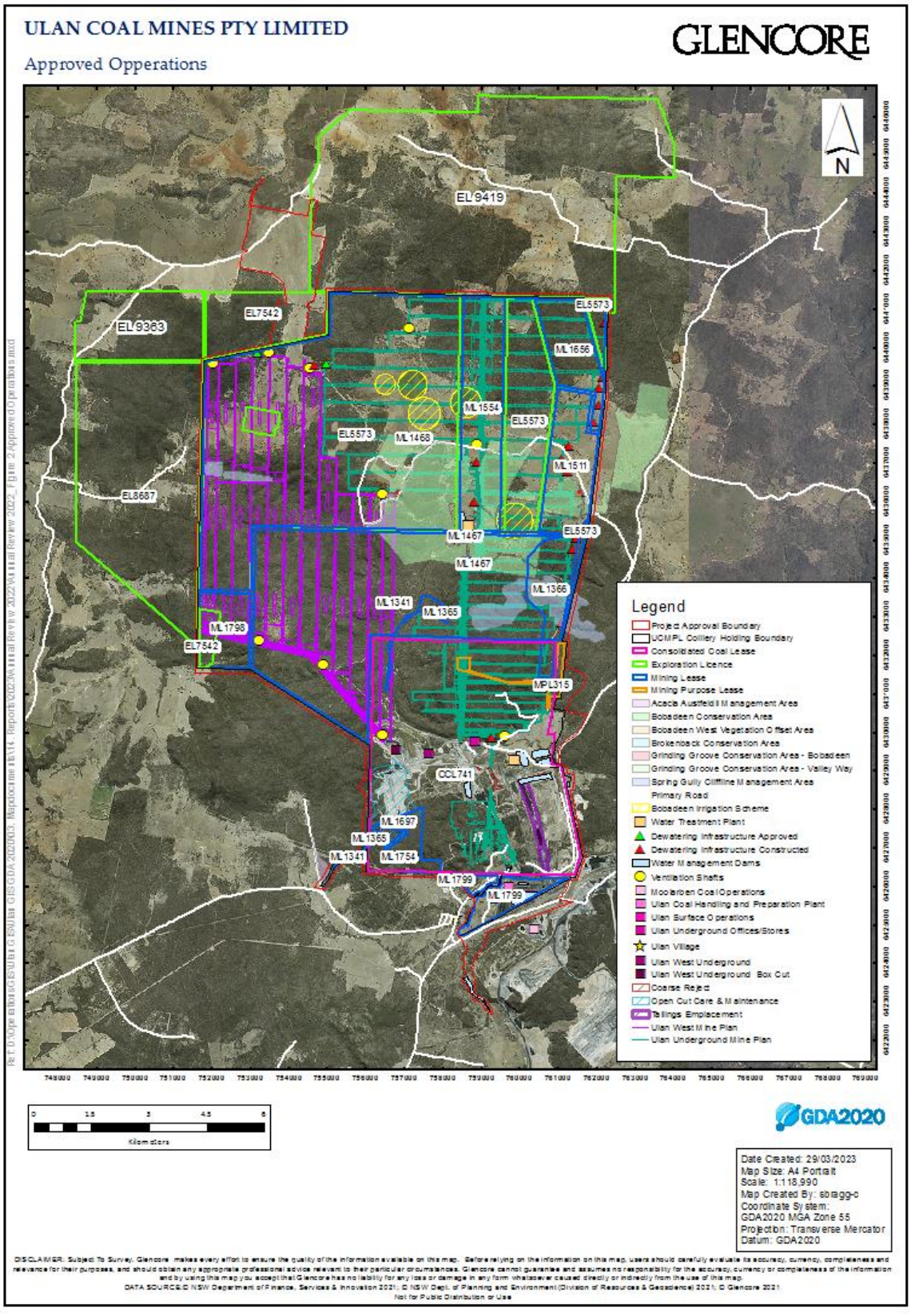


Figure 2-2 – Approved Ulan Complex Operations



3. Approvals

Table 3-1 presents the Project Approval PA08_0184 (as modified) granted under the EP&A Act, administered by DPE that UCMPL operates under.

Table 3-1 –Project Approval (as modified)

Project Approval	Description	Approval Date
PA 08_0184	Ulan Coal –Continued Operations Project.	15/11/2010
MOD 1	Longwall extraction of the North 1 mining area. Modify UUG & UW mine plans. Concrete Batching Plant.	07/12/2011
Court Orders	Land & Environment Court Judgement.	April 2012
MOD 2	Modify UW mine plan LW1-5. Remove restrictions on construction blasts. Minor amendments to European and natural heritage sites where blasting measures are applicable.	25/05/2012
MOD 3	Modify UW Mine Plan realignment of main headings further to the south.	14/02/2016
MOD 4	Modify UW & UUG Mine Plan - extend the approved longwalls UUG LW30 - LW33 and LW W7-8 and UW LW07 and LW08.	17/07/2019
MOD 5	Administrative modification to amend a misdescription of the Project Approval Figures.	07/08/2020
MOD 7	Permit use of the Bobadeen West Offset Area as a replacement for the privately owned portion of Brokenback Conservation Area.	23/03/2022

Table 3-2 presents the mining and exploration authorisations, granted under the *Mining Act 1992*, administered by DPE-RR, that have been issued to UCMPL.

Table 3-2 – Mining and Exploration Titles

Mining Lease (ML)	Date of Grant	Duration of Approval	Mine Area Applicability
Consolidation Coal Lease (CCL) 741	2/01/1990	15/05/2027	All operations
Mining Purpose Lease 315	3/08/1993	3/08/2035	No. 3 Underground (Surface Lease)
Mining Lease 1341	25/01/1994	25/01/2036	No. 3 Underground and Ulan West
Mining Lease 1365	9/03/1995	9/12/2032	No. 3 Underground (Surface Lease)
Mining Lease 1366	9/03/1995	9/12/2032	No. 3 Underground (Surface Lease)
Mining Lease 1467	17/04/2000	16/04/2042	No. 3 Underground (Surface Lease)
Mining Lease 1468	16/05/2000	16/05/2042	No. 3 Underground and Ulan West
Mining Lease 1511	24/04/2002	23/04/2023#	No. 3 Underground (Surface Lease)
Mining Lease 1554	1/09/2004	31/08/2025	No. 3 Underground (Surface Lease)
Mining Lease 1656	03/03/2011	03/03/2032	No. 3 Underground (Surface Lease)
Mining Lease 1697	22/05/2014	22/05/2035	Ulan Open Cut
Mining Lease 1798	19/02/2020	19/02/2041	Ulan West
Mining Lease 1799	26/02/2020	26/02/2041	Ulan Open Cut
Exploration Licence 5573	28/04/1999	28/04/2024	Ulan Underground
Exploration Licence 7542	6/05/2010	06/05/2026	Ulan West
Exploration Licence 8687	31/01/2018	31/1/2024	Ulan West
Exploration Licence 9363	24/02/2022	24/02/2028	Ulan West

Mining Lease (ML)	Date of Grant	Duration of Approval	Mine Area Applicability
Exploration Licence 9419	31/05/2022	31/05/2028	Ulan Underground
Mining Lease 1813	24/03/2021	24/03/2042	Ulan Open Cut

Notes: # Application for renewal submitted 7 April 2022- under assessment

Attachment I provides a table of compliance with specific ML reporting conditions. Water licences for monitoring bores and wells are listed in **Table 3-3**.

Table 3-3 - Groundwater Licences held under Part 5 of Water Management Act 1912

Licence No.	Description	Works Type	Extraction Limit (ML)	Expiry Date
20BL168100	Monitoring Bores	Monitoring Bore	NA	Perpetuity
20BL173736	Monitoring Bores	Monitoring Bores	NA	Perpetuity
20BL172841	Bobadeen Monitoring Network	Monitoring Bore	NA	Perpetuity
20BL172845	Goulburn River Diversion Monitoring Network	Monitoring Bore	NA	Perpetuity
20BL172846	Alluvium Monitoring Network	Monitoring Bore	NA	Perpetuity
20BL172847	Hydrocarbon Monitoring Network	Monitoring Bore	NA	Perpetuity
20BL172850	North Monitoring Network	Monitoring Bore	NA	Perpetuity
20BL172851	Intermittent Monitoring Network	Monitoring Bore	NA	Perpetuity
20WA216193	1977 Cope Road	Stock/Domestic Bore	NA	Perpetuity
80WA706045	2460 Blue Springs Road	Stock/Domestic Bore	NA	Perpetuity
80WA706112	2450 Blue Springs Road	Stock/Domestic Bore	NA	Perpetuity

Water licences for dewatering bores, dams, and wells are listed in **Table 3-4**.

Table 3-4 - Water Approvals held under Division 2 of the Water Management Act 2000

Licence No.	Description	Works Type	Extraction Limit* (Shares)	Water Source	Expiry Date
WAL41492 (20AL214787)	Aquifer (Extraction)	Water Allocation Licence	7060	Oxley Basin Coast Groundwater Source	Perpetuity
WAL37192 (20AL723743)	Aquifer (Extraction)	Water Allocation Licence	704	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
WAL41906 (80AL724736)	Aquifer (Extraction)	Water Allocation Licence	2215	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
WAL42900 (20AL220117)	Aquifer (Extraction)	Water Allocation Licence	4031	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
20FW213272	Goulburn River Flood Gates	Levy Licence	NA	NA	21/09/2027
WAL19047 20WA209953	Moolarben Creek Dam/Pump & Baseflow loss	Water Allocation Licence	600	Upper Goulburn River Water source	29/09/2023 WAL allocation Perpetuity
WAL41817	WAL allocation Perpetuity	Water Allocation Licence	50	Upper Talbragar River Water Source	Perpetuity

Licence No.	Description	Works Type	Extraction Limit* (Shares)	Water Source	Expiry Date
WAL 34921 (80AL716931)	Aquifer (Baseflow loss)	Water Allocation Licence	50	Talbragar Alluvial Groundwater Source	Perpetuity

Notes: *Annual extraction limits against licences provided in **Section 5.3** of this Report

Table 3-5 presents other approvals and licence issued to UCMPL that Ulan Coal Mine operates under.

Table 3-5 - Other Approvals and Licences

Licence/Approval	Licence/ Approval No.	Authority	Approval/Expires
Environment Protection Licence (EPL)	394	EPA	Anniversary Date 18 November
UW Extraction Plan approval LW1 to LW8	NA	DPE	Approval 20/07/2022
UUG Extraction Plan LW30 & W6-W8*	NA	DPE	Approval 01/02/2021
Radiation Management Licence	5061101	EPA	Expires 02/08/2023
Radiation User Licence	5023004	EPA	Perpetuity
Dangerous Goods Notification	NDG023149	WorkCover NSW	Expires Sept 2031
EPBC Approval	2009/5252	DAWE	Expires 1 March 2036
EPBC Approval (MOD 4 extension area)	2015/7511	DAWE	22 December 2015 to Perpetuity
Bobadeen Grinding Groove Conservation Agreement	NA	BCS	Final signed copy received 11 December 2019
Conservation Agreement for Brokenback Conservation Area- Area 1 (UCMPL owned land)	NA	BCS	Final signed copy received 11 December 2019
Conservation Agreement for Bobadeen Vegetation Offset Area (UCMPL owned land)	NA	BCS	Final signed copy received 11 December 2019
Conservation Agreement for Highett Road Offset Area (UCMPL owned land)	NA	BCS	Gazetted 6 December 2019
Conservation Reservation for Spring Gully Offset Area (Crown owned land)	NSW Government Gazettal No 165	DPE- Crown Land	Gazetted 6 December 2019

Notes: * Revised and resubmitted in February 2023 to include LW31 and LW32 and changes to First Workings for LW32 and LW33. Approval pending at the time of the 2022 Annual Review submission.

3.1.1 Surrender of Consents

Prior to PA08_0184, UCMPL formally operated under four major Development Consents, 18 modifications and 16 other minor development approvals. The final remaining Development Consent DA 113-12-98 was surrendered to DPIE on the 20/10/2017 within 3 months of the completion of LWW3, in accordance with Schedule 2 Condition 9 of PA08_0184. Resubmission was requested by DPE, this occurred 23/11/17. Finalisation is pending due to one remaining landowner providing their consent for the surrender of DA 113-12-98.

3.2 Changes to Approvals

3.2.1 EPL 394

There were no variations to EPL 394 during the Reporting Period. The last variation occurred in January 2020 and related to a correction of location descriptions of a monitoring point and a reference correction within the licence.

3.2.2 Extraction Plans

The Extraction Plan (EP) for Ulan Underground Longwalls LW30 and W6-W8[3] was revised during the Reporting Period to include LW31 and LW32 and changes to the First Workings for LW32 and LW33 (**Section 3.2.6**). The EP for Ulan Underground was resubmitted to DPE for approval on 28 Febraury 2023. During the Reporting Period the reivsed EP for Ulan West Longwalls LW1 to LW8, to include LW7 and LW8, was approved by the DPE on the 20 July 2022.

3.2.3 Ulan Modification 6

UCMPL progressed with the various specialists assessments for MOD 6 and undertook extensive consultation with all relevant stakeholders. MOD6 proposes:

- Extension of Ulan Underground Long Wall (LW) panels LWW9 to LWW11 to the west;
- Widening of Ulan Underground LWW11 by approximately 30 metres; and
- Extension of Ulan West LW9 to LW12 to the north.

UCMPL is also proposing some minor changes to surface infrastructure to support underground mining activities including provision of:

- 3 ventilation shafts and associated infrastructure corridors;
- 5 dewatering bores and associated infrastructure corridors;
- Alternate access track, connecting to previously approved access tracks; and
- Infrastructure corridor and power borehole to the south west of Ulan West.

UCMPL lodged MOD 6 to DPE and public exhibition commenced 18 November and ran through to 15 December 2022. UCMPL are in the process of preparing a Response to Submissions report in response to submissions made.

3.2.4 Ulan Modification 7

UCMPL had secured all approved offset areas, with the exception of the 10 hectare privately owned portion of Brokenback Conservation Area (BCA). UCMPL sought agreement from the landowner to secure the privately owned portion of BCA via a number of mechanisms. However, after lengthy negotiations, agreement was unable to be reached on conditions relating to on-going management of the offset area and commercial terms. On 8 June 2021 UCMPL submitted an application to modify PA 08_0184 to permit use of the alternative offset site. DPE approved MOD 7 on 23 March 2022. An

[3] PA08_0184 Schedule 3, Condition 26. The Extraction Plan was prepared in accordance with the new Guidelines for the Preparation of Extraction Plans (as issued by the DPE in October 2022).

application for a Biodiversity Stewardship Agreement was submitted to the Biodiversity Conservation Trust on 15 June 2022 and is under assessment.

3.2.5 Rehabilitation Management Plan (RMP)

In 2022 a Rehabilitation Management Plan (RMP) was developed by UCMPL to replace the former Mining Operations Plan (MOP) as required by Clause 9 of Schedule 8A to the *Mining Regulation 2016.*

The RMP was also prepared to address Schedule 3 Condition 57 of PA 08-0184 requirement to prepare a Rehabilitation Management Plan for UCMPL. The RMP covers both the requirement of the Project Approval whilst also being set out in the Resources Regulator format for the *Form and Way Document: Rehabilitation Management Plan – Large Mines.*

The Annual Rehabilitation Report and Forward Program (ARRFP) was also developed by UCMPL, in accordance with *Part 1 of the NSW Resources Regulator (NSW RR) Form and Way – Annual Rehabilitation Report and Forward Program for Large Mines (2021), Clause 9 and 13 of Schedule 8A of Mining Regulation 2016.* The ARRFP was uploaded to the NSW Resource Regulator portal on the 1 July 2022. To address the various rehabilitation reporting requirements for both the Annual Review and ARRFP, UCMPL have prepared Table 1-1 in **Attachment L** as a reference guide.

In November 2022, UCMPL applied to the NSW Resource Regulator to modify the reporting period and Annual Rehabilitation Report and Forward Plan submission dates to align with the Annual Review Reporting Period. This was approved on the 20th December 2022.

3.2.6 First Workings

Ulan Underground Longwalls 32 and 33 First Workings Request

On the 10 May 2022, UCMPL sought a minor amendment to the First Workings of the UUG mine plan in accordance with Condition 25, Schedule 3 of PA08_0184. The first workings amendment involved relocation of the installation roadway at the eastern end of LW32 and LW33 to the west by approximately 415m due to an increased risk of roof instability, higher ash product and a reduced working section within the eastern end of LW31 and LW32. Approval by the Secretary regarding this First Workings amendment was granted on the 18 May 2022.

3.2.7 Management Plans

After the submission of the AR 2021, MOD 7 approval (**Section 3.2.4**) and undertaking the 2022 Independent Environmental Audit (IEA) (**Section 10**), UCMPL revised and resubmitted for approval, in November 2022, a number of management plans as required by Condition 4, Schedule 5 of PA08_084. The management plans submitted include the:

- Air Quality & Greenhouse Gas Management Plan (AQMP) (Version 8.3),
- Biodiversity Management Plan (BMP) (Version 6.1),
- Environmental Management Strategy (EMS) (Version 14),
- Blast Management Plan (Version 8.3),

- Water Management Plan (Version 10.1) now consolidating the Groundwater Monitoring Program (GWMP), the Surface Water & Groundwater Response Plan (SWGWRP) and the Surface Water Monitoring Program (SWMP),
- Erosion and Sediment Control Plan (ESCP) (Version 12),
- Heritage Management Plan (HMP) (Version 8.5),
- Noise Management Plan (NMP) (Version 8.4) and the
- Waste Management Plan (WMP) (Version 12.5).

At the time of preparing the AR the above management plans were still under consideration for approval by the DPE.

4. Operations Summary

Total product coal for the Reporting Period was 10,788,212 tonnes. **Table 4-1** provides an overview of production for 2022 against the previous reporting year and a forecast for the 2023 Reporting Period.

Table 4-1– Production Summary

	Unit	Approved limit (specify source)	2021 Reporting Period	2022 Reporting Period	2023 Reporting Period (Forecast)
Waste Rock/Overburden	m^3	NA	0	0	0
ROM Coal - **Open Cut** - **Underground:** Ulan West Ulan Underground	Tonnes Tonnes Tonnes	4.1M NA NA	0 6,961,477 5,549,832	0 6,028,905 5,086,325	0 7,036,416 4,946,593
Coarse Rejects & Tailings	Tonnes	NA	388,152	500,313	462,760
Fine Tailings	Tonnes	NA	362,737	498,646	556,823
Product Coal*	Tonnes	20 M	11,531,650	10,788,212	10,962,238

Notes: M = 1 Million Tonnes * Railed

4.1 Other Operational Conditions

4.1.1 Ulan West Underground

During the Reporting Period, underground mining operations included development of roadways for LW7 and LW8 and the main headings consistent with first workings approvals. Extraction of LW6 was completed in June 2022. LW7 commenced in August 2022 and had retreated had retreated approximately 1320m at the end of 2022 (**Figure 4-1**). Ulan West produced 6.028 million tonnes of ROM coal during the Reporting Period (**Table 4-1**). Construction of Vent Fan 3 adjacent to LW8 and associated infrastructure commenced in 2021. Commissioning of Vent Fan 3 commenced in 2022.

4.1.2 Ulan Underground

During the Reporting Period, underground mining operations included development of roadways for LWW8, LW30 and LW31 in accordance with first workings approvals. Extraction of LWW7 was completed in June 2022. LW30 commenced in July 2022 and had retreated approximately 1460m at the end of 2022 (**Figure 4-1**). Ulan Underground produced 5.086 million tonnes of ROM coal during the Reporting Period (**Table 4-1**).

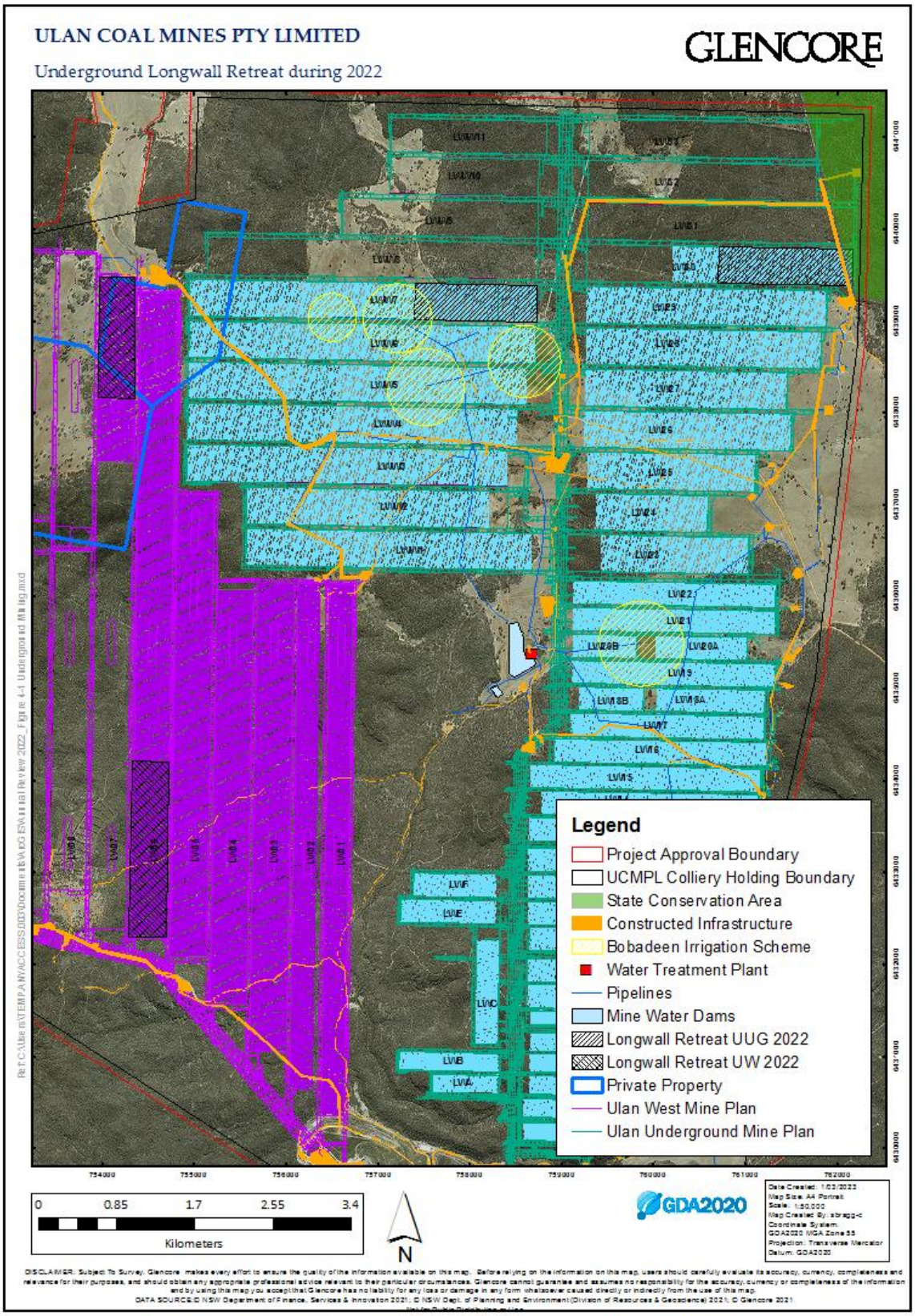
4.1.3 Open Cut

The Open Cut mining area has been in care and maintenance since 10 October 2016. No open cut mining activities occurred during the Reporting Period.

4.1.4 Bobadeen Basalt Quarry

The Bobadeen Basalt Quarry (the Quarry) produced no Basalt Road Base in 2022 for road works or infrastructure construction. Annual production limit for the Quarry is 100,000 tonnes (EPL394, A1.2).

Figure 4-1 Underground Longwall Retreat in 2022



4.1.5 Extension of East Pit Tailings Dam

The construction of the East Pit Tailings Dam (No.3) commenced in 2022 and is expected to be operational in 2023.

4.1.6 Coal Processing & Rail Movements

The Coal Handling Preparation Plant (CHPP) processed 4.315 Mt of UW ROM coal and 3.303 Mt of UUG ROM coal. The reject waste produced represents approximately 13% of the ROM coal processed by the CHPP; classified as either coarse reject (500,313 tonnes) and emplaced in the Barrier Pit or tailings (498,646 tonnes) emplaced in East Pit Tailings Dam Number 2. All product coal, approximately 10,734,678.71 tonnes, was transported via rail on the Sandy Hollow rail corridor to the Port of Newcastle during the Reporting Period (**Attachment N**) as required by Schedule 2, Condition 7 of PA08_0184 (**Table 4-2**). No product coal was transported on the Tallawang to Wallerawang rail corridor in the 2022 Reporting Period.

Table 4-2 - Coal Loaded and Train Movements in 2022

Month	Average and Maximum Trains Leaving Site per Day (Maximum allowed 10)		Total Movements for the Month	Coal Loaded for the Month (tonnes)
Year 2022	Average	Maximum		
January	4	6	130	1,217,428.08
February	3	6	90	823,608.79
March	4	7	132	1,240,809.54
April	3	5	95	889,265.64
May	4	6	113	1,063,870.60
June	4	6	114	1,069,298.97
July	2	5	58	526,502.13
August	3	5	92	844,682.53
September	3	5	80	740,268.39
October	2	4	70	652,558.89
November	3	5	80	745,483.91
December	3	5	99	920,901.24

4.1.7 Land Preparation

Land preparation activities, during the Reporting Period were carried out in accordance with the MOP and laterly the RMP. Land preparation ahead of mining operations involves the construction of appropriate erosion and sediment control structures, the clearing of vegetation and stripping and stockpiling of topsoil. This applies to major surface disturbance works[4] and is not limited to open cut mining operations. There was approximately 3.55ha of land disturbed associated with exploration activities, 1.08ha of land disturbed associated with the construction of a generator pad and a power supply bore hole.

[4] Ground Disturbance Permit (GDP) is signed off by Senior Environment personnel and the applicable Mine Surveyor.

5. Actions Required From Previous AR

The 2021 AR was submitted to the DPE on 31 March 2021 as required under Schedule 5, Condition 3 of PA08_0184.

The DPE's review of the 2021 AR considered it satisfied the reporting requirements of the approval and the DPE's Annual Review Guideline (October 2015) in a letter 11 July 2022.

As required by Schedule 5, Condition 10, of PA08_0184, a copy of the 2021 AR is provided at *www.ulancoal.com.au*

6. Environmental Performance

6.1 Meteorological Monitoring

The weather station (WS1), located adjacent to the USO administration office (**Attachment M**), continuously records meteorological data[5] using multiple sensors and a data-logging system on a 30 metre tall mast. Logged meteorological parameters are listed in **Table 6-1**. WS1 is linked directly to the Sentinex[6] repository database providing access to real time weather conditions and rainfall events.

Table 6-1 - EPL 394 Meteorological Monitoring Parameters

Parameter	Unit of Measure	Frequency	Averaging period	Sampling Method
Wind Direction	Degrees	Continuous	15 minute	AM-2 & AM-4
Wind Speed	Metres per second	Continuous	15 minute	AM-2 & AM-4
Sigma Theta	Degrees	Continuous	15 minute	AM-2 & AM-4
Rainfall	Millimetres	Continuous	15 minute	AM-4
Air Temperature	Degrees Celsius	Continuous	1 hour	AM-4
Relative Humidity	Percent	Continuous	1 hour	AM-4

Notes: wind speed at 10, 20 and 30 metres above ground, wind direction at 10, 20 and 30 metres above ground sigma-theta from sampled wind direction measurements, temperature at 2 metres and 10 metres above ground. WS1 was maintained and operated in accordance with 'Approved methods for the sampling and analysis of air pollutants in NSW' (EPA, 2006) which refers to *Australian Standard AS2923 - 1987* (Guide for measurement of horizontal wind for air quality applications).

The rainfall recorded at WS1 for the Reporting Period (**Table 6-2**) was 1090.3mm, 217.8mm more rainfall than 2021 (**Figure 6-1**) and 418.3mm above the long term average of 672mm for the region (2009 EA). The majority of rain received was during the last two quarters of 2022 approximately 61% of the annual amount. The wettest month was October with 198.7mm of rainfall recorded. The driest month was June with 13.4mm of rainfall recorded.

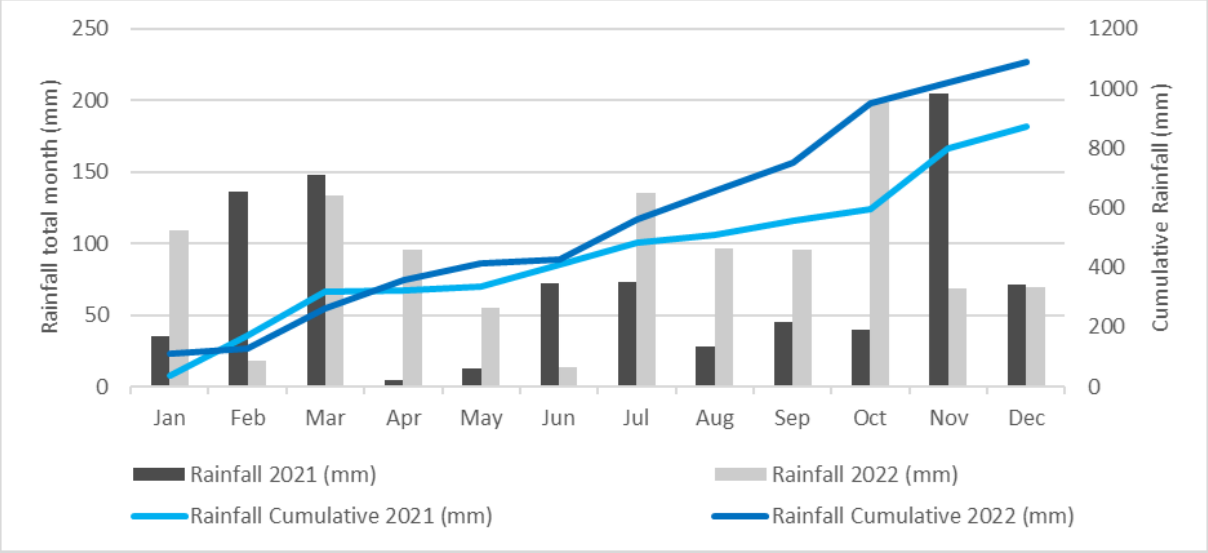


Figure 6-1 - Rainfall Comparison to Previous Reporting Period

[5] Condition 23, Schedule 3 of PA08_0184 and EPL394
[6] Sentinex is a web-based platform to communicate from monitoring locations

Monthly minimum and maximum 15-minute temperatures are recorded at WS1 (**Figure 6-2** and **Figure 6-3**). The highest temperature over a 15-minute period of 34.6°C was recorded on 17 January 2022 and the lowest temperature over a 15 minute period of -5.6°C was recorded on 19 July 2022.

The maximum temperatures were comparable to the previous Reporting Period, but generally lower than the seven year average with exception to March, April and May. The minimum temperatures were comparable to the previous Reporting Period, generally within the seven year average with exception to March and April (above the 7 year avearge) and May, November and December (below the 7 year average).

Table 6-2 - Summary of Meteorological Conditions

Date	Rainfall (mm)	Rainfall Cumulative (mm)	Temperature Min (°C)^	Temperature Max (°C)^	Prevailing Wind Directions
Jan-22	109.6	109.6	10.7	34.6	East
Feb-22	18.2	127.8	6.9	33.0	East
Mar-22	133.3	261.1	8.0	31.1	East
Apr-22	95.6	356.7	1.9	27.0	East
May-22	55.3	412	-2.3	25.4	South West
Jun-22	13.4	425.4	-5.4	18.5	South West
Jul-22	135.8	561.2	-5.6	18.3	South West
Aug-22	96.8	658	-4.1	22.0	West
Sep-22	95.3	753.3	-1.4	22.6	South West
Oct-22	198.7	952	1.6	24.9	North East
Nov-22	69	1021	2.6	31.6	West South West
Dec-22	69.3	1090.3	2.3	34.0	East

Notes: ^15 minute capture period for data used.

Prevailing winds were generally from the West during winter and from the East during summer, consistent with the historical data presented in the 2009 EA. A westerly wind pattern is more common during winter through to early spring, in contrast to an easterly wind pattern during summer and autumn. Monthly wind roses for 2022 are presented in **Attachment M**.

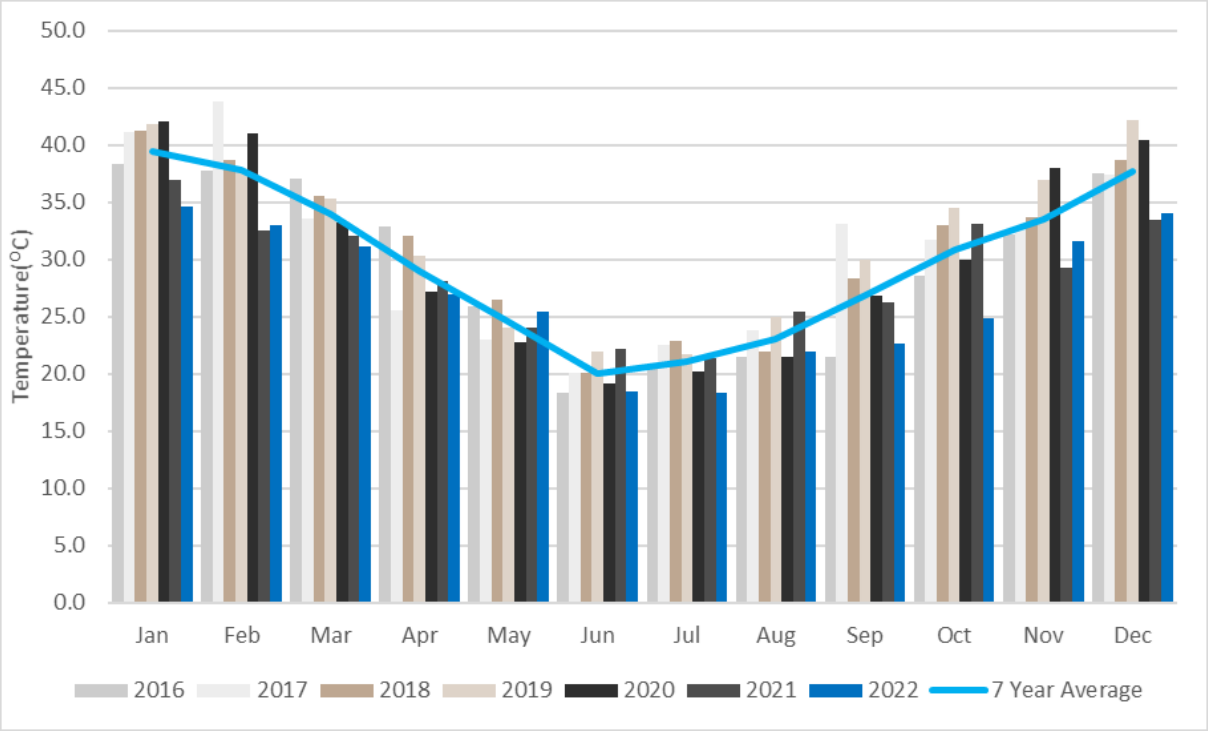


Figure 6-2 - Seven Year Maximum Temperature Trends

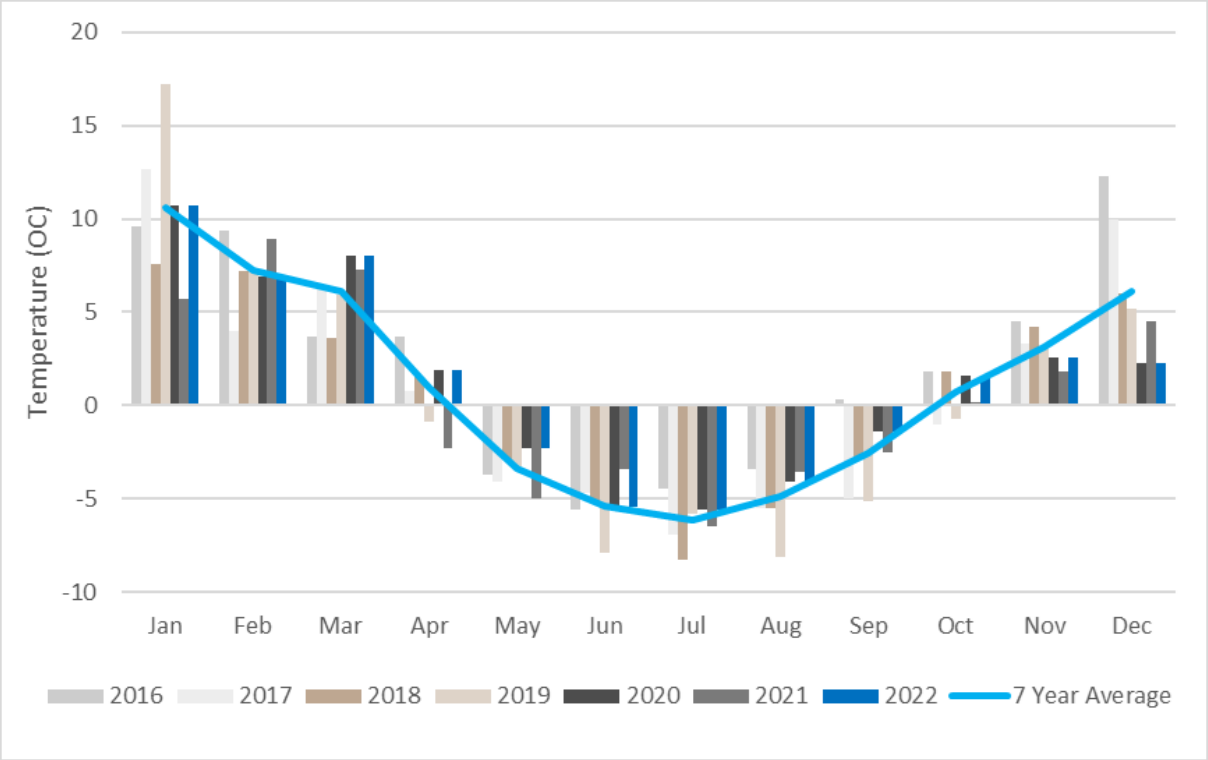


Figure 6-3 - Seven Year Minimum Temperature Trends

6.2 Operational Noise

The Noise Management Plan (NMP)[7] describes the attended noise monitoring, primarily used for determining compliance against the noise criteria, and unattended or real-time monitoring, which is used for proactive noise management.

The locations of the real time noise monitors (which may be relocated as required) and attended noise monitoring sites required by the NMP are provided in **Attachment H**.

Attended noise monitoring[8] results for June and December 2022 are summarised below in **Table 6-4**, with attended noise monitoring reports provided at **Attachment A**.

Table 6-3 - Attended Noise Monitoring LAeq Maximums (dB) 2011 – 2022

Location	NM2	NM3	NM4[1]	NM6	NM7	NM9
Noise Criteria	**35**	**n/a[2]**	**35**	**35**	**38**	**35[3]**
2011	48	50	52	42	-	
2012	IA	43	30	IA	29	
2013	29	50	<20	31	37	
2014	20	49	IA	26	<20	
2015	20	46	IA	27	IA	
2016	<23	53	IA	<25	<27	
2017	<25	47	<35	28	25	
2018	IA	45	IA	IA	26	
2019	IA	44	IA	<20	38	
2020	<20	47	IA	26	<25	
2021	<20	51	IA	<25	33	
2022	<25	48	-	IA	33	IA
General Trend (Stable, Increasing, Decreasing)	Stable	Stable	Stable	Stable	Stable	N/A

Notes: IA = Inaudible. N/A = Not Applicable. [1] Ulan Public School currently in recess, therefore no monitoring was required at this location in December 2022. [2]NM3 must be acquired on request noise criteria do not apply (n/a). [3] NM9 was added as a temporary noise monitoring site in 2022 to verify noise levels during construction and commissioning of MOD4 infrastructure and ongoing monitoring is not required.

[7] NMP (Version 8) as required by PA08_0184 Schedule 3, Condition 9

[8] Reference methods*: NSW Environment Protection Authority, Noise Policy for Industry, 2017. (NPfI,2017) and Australian Standards: AS 1055.1, AS 1055.2 and 1055.3 Acoustics - Description and measurement of environmental noise; AS 2659.1 - Guide to the use of sound measuring equipment; and AS 2659 - Sound level meters.*

Table 6-4 - Attended Noise Monitoring Summary LAeq (15-min) and Maximums (dB) for 2022

Noise Criteria/Predictions	Performance During the Reporting Period	Trends/Key Management Implications

Noise Criteria/Predictions

Ulan Monitoring ID/ EPL394 Licenced Monitoring Point	Property Number	DayLAeq,15minute	Evening [1] LAeq,15minute	Night [1] LAeq,15minute	Night[1] LA1,1minute[3]
NM2/ 38	60	35	35	35	45
NM3/ -	274	NA	NA	NA	NA
NM4[2]/26	Ulan School[4]	35	NA	NA	NA
NM6/ 38	1	35	35	35	45
NM7/ 24	254	38	38	37	45
NM9[5]	40	35	35	35	45

Notes: [1.] NA indicates criteria is not applicable at this location during this time. [2.] Criteria for Ulan Public School (internal) 'when in use'. [3] All LA_{max} results are interchangeable with LA1(1min) for assessment purposes. [4] Ulan Public School currently in recess. [5] Temporary site added in 2022 to confirm noise levels during construction and commissioning.

The updated noise assessments for Mod 3 and Mod 4, combined with the *Environmental Assessment (2009)* indicate that three private residences are predicted to exceed 35dBA LAeq (15 min) at some stage of the project and have higher criteria limits to allow for short term elevated noise as indicated in the above table. Other residences have since been acquired and are no longer subject to the specified noise criteria.

Monitoring Site	Property Number	Maximum Result LAeq 15min dB	Criterion Complies	Maximum Result LA1(1min) dB	Exceedance
July 2022					
NM2	60	<25	Yes	<25	Nil
NM3	274	39	Yes	40	Nil
NM4	Ulan School[1]	-	-	-	-
NM6	1	<25	Yes	NM	Nil
NM7	254	29	Yes	33	Nil
December 2022					
NM2	60	IA	Yes	IA	Nil
NM3	274	48	Yes	50	NA
NM4	Ulan School[1]	-	-	-	-
NM6	1	IA	Yes	IA	Nil
NM7	254	36	Yes	33	Nil
NM9	40	IA	Yes	IA	Nil

Notes: IA = Inaudible NA = noise criteria does not apply NM=Not Measurable. [1] Ulan Public School currently in recess, therefore no monitoring was required at this location in December 2022.

Attended noise monitoring occurred on two consecutive days, during June and December, in 2022 as follows:

- During the evening and night periods of 27/28 July 2022; and
- During the evening and night periods of 6/7 and day periods on the 8 December 2022.

Ulan Complex complied with project specific criteria at all monitoring locations during the July and December 2022 survey (**Attachment A**).

Ulan Public School was in recess and not in use for the entirety of 2022 Reporting Period, therefore monitoring was not undertaken at this location during this survey.

Criteria may not always be applicable due to meteorological conditions at the time of monitoring. Stability class data (atmospheric data for wind speed and direction) rendered criteria not applicable on occasion (**Attachment A**).

UCMPL have four noise agreements with Property ID 40, Property ID 110, Property ID 113 and Property ID 276 during construction works associated with MOD 4.

Noise monitoring completed in 2022 as required by noise agreements demonstrated no exceedance of noise criteria.

There were no noised related complaints in 2022.

Current attended noise monitoring results for Property ID 274 align with noise levels predicted for Year 12 of the project (Table 8-4 and Appendix 12) in the EA.

The trend for attended noise monitoring results over time is considered stable (**Table 6-3**).

6.3 Blasting

The Blast Management Plan (BMgtP)[9] describes the monitoring, blast criteria and mitigation measures regarding blasting activities at the Ulan Complex. No blasts were undertaken at the Ulan Complex in 2022. There have been no blasting activities undertaken by UCMPL since 2018. Therefore, no exceedances of overpressure and vibration criteria[10] (**Table 6-5**) occurred during the Reporting Period.

Table 6-5 – Blasting Criteria

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately owned land	115	5	5% of the total number of blasts over a period of 12 months
	120	10	0%

Notes: Blasting criteria for Aboriginal heritage sites in the BMgtP is 100 mm/s peak particle velocity

6.4 Air Quality

The Air Quality & Greenhouse Gas Management Plan (AQMP)[11] describes the monitoring, air criteria and mitigation measures to reduce the potential for air quality impacts at the Ulan Complex. Air quality monitoring is carried out using a combination of monitors consisting of two (2) high volume air samplers (HVAS), one Tapered Element Oscillating Microbalance (TEOM), and of one (1) meteorological station (WS1).

Air quality monitoring locations are shown in **Attachment H**. The requirement to monitoring deposition dust was removed by EPL394 in 2020 and subsequently removed in the revision of the AQMP (Version 8), approved on 1 October 2020.

The following summary table (**Table 6-6**) compares the 2022 HVAS and TEOM monitoring results with the air quality impact assessment criteria, predictions in the 2009 EA and monitored dust levels in previous Reporting Periods. Detailed results are provided **in Attachment B**.

[9] BMgtP (Version 8) as required by PA08_0184 Schedule 3, Condition 16
[10] PA 08_0184, Schedule 3, Condition 10 and 10A
[11] BMgtP (Version 8) as required by PA08_0184 Schedule 3, Condition 16

Table 6-6 – Air Quality Performance for 2022

<table>
<tr><th>Air Quality Criteria/Predictions</th><th>Performance During the Reporting Period</th><th>Trends/Key Management Implications</th></tr>
<tr>
<td>

Pollutant	Averaging Period	Criteria
Total suspended particulate (TSP) matter	Annual mean	[a] 90 µg/m³
Particulate matter < 10 µm (PM_{10})	Annual mean	[a] 30 µg/m³
Particulate matter < 10 µm (PM_{10})	24 hour maximum	[a] 50 µg/m³

Notes: *a Total Impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to other sources). b Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Secretary in consultation with EPA.*

EA Predicted Impact Year 12: Annual Average TSP 30-50 µg/m³

Pollutant	Averaging Period	[b] Criteria
Particulate matter < 10 µm (PM_{10})	Annual mean	[a] 30 µg/m³
Particulate matter < 10 µm (PM_{10})	24 hour maximum	[a] 50 µg/m³

Notes: *a Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to other sources); b Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Director-General in consultation with EPA*.

EA Predicted Impact Year 12: Annual Average PM_{10} 30-50 µg/m³
</td>
<td>

TSP	Flannery's (HV1)^ µg/m³	Merlene (HV3)^ µg/m³
Capture Rate	98.3%	98.3%
Annual Average	24.2	17.6
Maximum Result	52.2	40.4

TEOM PM_{10} Results	
Capture Rate	100%
Annual Average	9.6 µg/m³
Annual Average excluding extraordinary events*	9.6 µg/m³
Maximum (24hr)	21.1 µg/m³
Maximum (24hr) excluding extraordinary events*	21.1 µg/m³

Notes:* No extraordinary events in 2022

^ Capture rate for HV1 and HV3 was impacted by an electrical storm on the 3 February 2022 causing a power outage.
</td>
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The annual average TSP concentrations recorded at HV1 and HV3 were below the project specific criteria[12] of 90 µg/m³ in 2022 (**Figure 6-5**) and in line with predictions provided in the air quality assessment from the 2009 Environmental Assessment (**Attachment B**).

The TSP annual averages for HV1 and HV3 in 2022 were comparable during the previous 2021 monitoring period of 24.1 µg/m³ and 19.1 µg/m³ respectively.

For further information and monitoring results for TSP refer to **Attachment B**.

The annual average PM_{10} was 9.6 µg/m3, well below the annual average criteria of 30µg/m3.

TEOM monitoring data shows that the 24-hour average PM_{10} concentration did not exceeded the 24hr 50 µg/m³ impact assessment criteria during the Reporting Period.

The next maximum 24hr result PM_{10} concentration of 21.1 µg/m³ was on the 30 November 2022, well below the 24hr 50 µg/m³ impact assessment criteria.

For further information and monitoring results for TEOMs, refer to **Attachment B**.
</td>
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</table>

[12] Condition 19 of Project Approval PA 08_0184

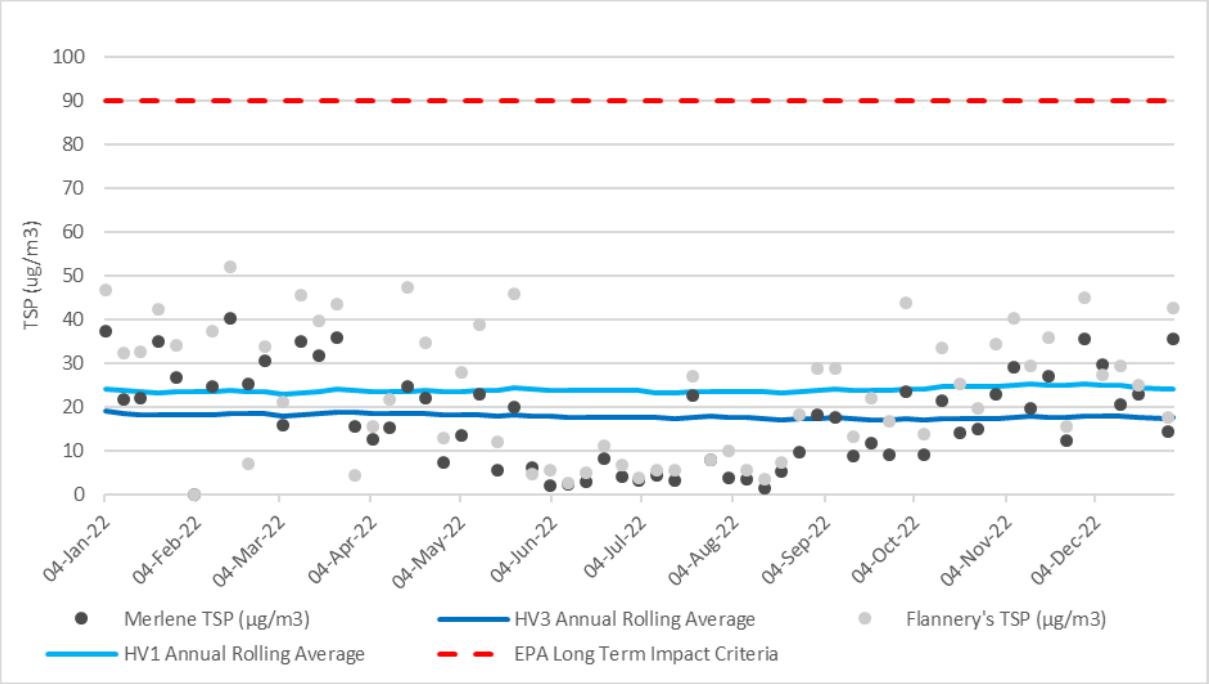


Figure 6-4 – TSP Monitoring Results During Reporting Period

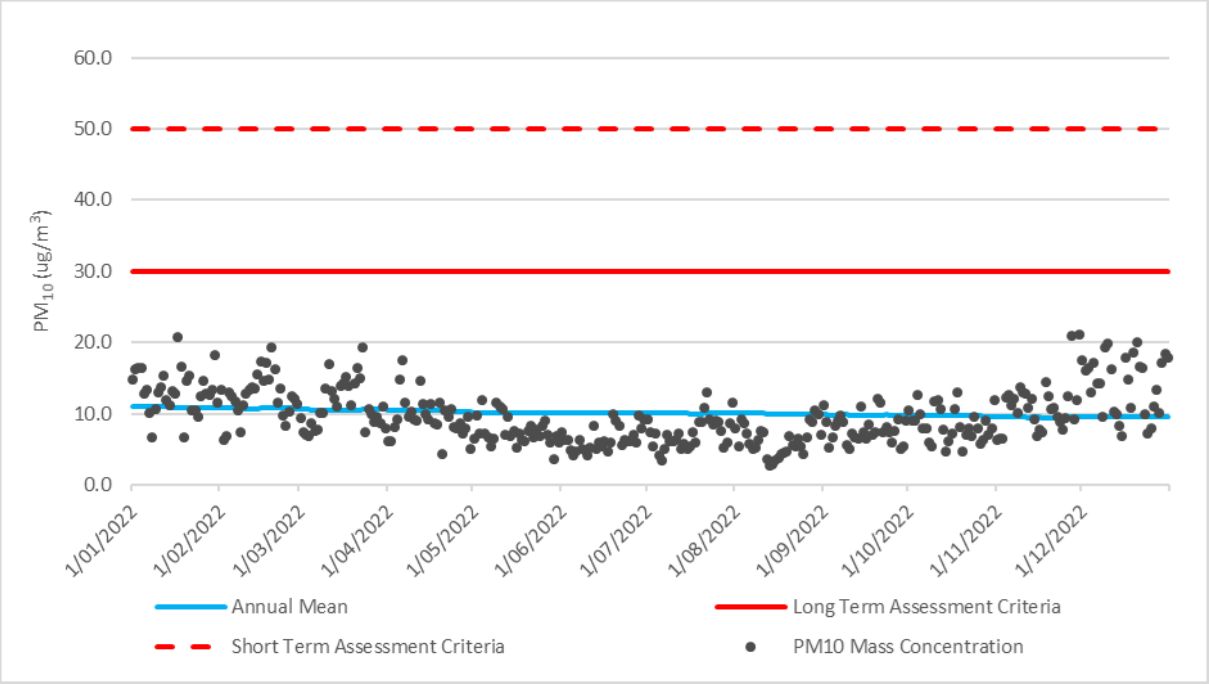


Figure 6-5 – TEOM PM_{10} Monitoring Results During the Reporting Period

6.5 Heritage

6.5.1 Aboriginal Heritage

The Heritage Management Plan (HMP) describes the management and mitigation of the Project impacts on Aboriginal, European and natural heritage. During the Reporting Period the HMP (Version 8.5) was revised and resubmitted for approval on 30 November 2022. The revision of the HMP included minor updates referencing MOD4, MOD5 and MOD7, revised figures, updates of Aboriginal heritage recorded in the Project Area and cross referencing PA08-0184 requirements for management plans and where they are addressed in the HMP.

Aboriginal heritage activities undertaken in accordance with the HMP in 2022 included but not limited to:

- Survey of the proposed subsidence effects monitoring F-Line as required by the Ulan West Extraction Plan for LW1-LW8 in February 2022;
- Gap Survey in April 2022 of an area of land approximately 140ha in the north-western portion of the Project Area previously unsurveyed;
- Cockabutta Creek rock shelters ground truthing in May 2022. Located a rock shelter with grinding groove site previously recorded by Haglaund in 1999;
- Surface salvage within exploration drill pad area and access track in February, April and November 2022;
- Grinding groove site visit in May 2022;
- Test and salvage excavations at Rock Shelters 171, 190 and 191; and
- Monitoring of Aboriginal rock shelter sites in accordance with the Extraction Plans (**Attachment J**).

Aboriginal Heritage Meetings were held in July and December 2022. Items discussed included:

- Overview of UCMPL activities;
- EL 9419 - North of Ulan Underground;
- Mining Leases;
- Alternate Offset Modification – MOD 7;
- MOD 6 Modification Report Presentation;
- Subsidence Reporting;
- Extraction Plans; and
- The upcoming 2023 program of heritage works.

6.5.2 Bobadeen and Valley Way Grinding Groove Conservation Areas

Inspections of the Bobadeen and Valley Way Grinding Groove Conservation Areas were undertaken in April 2022 and December 2022 (December inspection was completed with RAP's present). Site boundary fencing on the Northern side of the Bobadeen Grinding Grooves site has been impacted by localised flooding, however the site is still secure with repairs scheduled for 2023. Transient feral animal activity was observed in the Valley Way Grinding Groove Conservation Area without affecting the individual grinding groove sites. Routine feral animal control programs will continue across UCMPL in 2023.

6.5.3 European and Natural Heritage

Annual inspection of the Bobadeen Homestead was undertaken, includng maintenance of gardens and surrounds in accordance with the Bobadeen Homestead Management Plan[13] to reduce the risk of a bushfire further damaging the house and associated out buildings.

6.6 Biodiversity

Flora, terrestrial and aquatic fauna/stream health monitoring was completed consistent with the Biodiversity Management Plan (BMP) (Version 5.5), which includes the Offset Management Plan (OMP).

During the Reporting Period the BMP was revised (Version 6.1) and resubmitted for approval on 30 November 2022. The revision of the BMP included updates referencing MOD 7, revised figures and text to include updated alternate offset area (Bobadeen West BOA) and privately owned portions of the Brokenback Conservation Area, revised rehabilitation management domains, cross referencing PA08-0184 requirements for management plans and where they are addressed in the BMP

The annual flora and fauna monitoring reports prepared by Eco Logical Australia (ELA) for the Reporting Period are provided in **Attachment E** and summerised below. The locations of the 2022 flora and fauna monitoring sites are displayed in **Attachment H**.

6.6.1 Floristic Monitoring

Eco Logical Australia (ELA) were engaged by UCMPL to undertake floristic monitoring during autumn and spring 2022 at the Ulan Mine Complex (UMC). Monitoring was undertaken in accordance with the requirements of the BMP and the RMP. Performance indicators and completion criteria for the UMC are presented in the BMP and RMP.

Summary of RMP Completion Criteria

The 2022 floristic monitoring results included assessment against specific completion / success criteria in the RMP for the following domains[14]:

- Domain B – Rehabilitation Area (Woodland/Open Forest);
- Domain C – Goulburn River Diversion;

[13] PA08_0184, Schedule 3, Condition 47 (d) and ULN SD EXT 0094 April 2011, revised scope of works ULN SD EXT 0135 January 2014.
[14] The Domain nomenclature is not aligned between the RMP and the BMP and the documents have different purposes when it comes to the management of lands. For clarity Domains B to E in the BMP are identified as Domain A (Native Ecosystem) in the RMP.

- Domain D – Rehabilitation Area (Specific Endemic Vegetation Community).

An assessment against RMP completion criteria found that all rehabilitation polygons monitored during 2022 met the criteria relating to natural regeneration and tree stem density. All rehabilitation areas, except Polygon 13, met the completion criteria relating to native species composition. Polygon 13 did not meet the native species composition completion criteria as the tree species recorded are not characteristic of the target vegetation type as determined from reference sites and Plant Community Type species lists, as per the RMP; however, the native species recorded in Polygon 13 are typical of the surrounding woodland and forest vegetation communities of the Kerrabee Basin IBRA Subregion, in which Polygon 13 is located (ELA, 2023a).

Summary of BMP Completion Criteria

The 2022 floristic monitoring results included assessment against specific completion / success criteria in the BMP (**Section 6.7**) for the following domain:

- Domain F (Biodiversity Offset Areas):
    - Bobadeen Conservation Area;
    - Brokenback Conservation Area – 1;
    - Brokenback Conservation Area – 3;
    - Spring Gully Cliffline Management Area ;
    - Highett Road Conservation Area; and
    - Bobadeen West Offset Area (Alternate Offset Area)
- Domain G (Salinity Offset Area)

An assessment against the BMP completion criteria found that the completion criteria relating to tree stem density and natural regeneration were met for the Bobadeen Vegetation Offset Area (VOA) whilst criteria relative to native species and natural regeneration were met for the Salinity Offset Area (SOA). Neither the Bobadeen VOA nor the SOA are meeting completion criteria relating to weeds due to an outbreak of *Chrysanthemoides monilifera* subsp. *monilifera* (Boneseed). The Bobadeen VOA is not meeting the completion criteria relating to 'Box Gum Woodland' restoration due to ground layer being dominated by the perennial priority weed *Hypericum perforatum* (St. John's Wort) throughout areas within Management Zone (MZ) 3 (ELA, 2023a). An eradication program is being implemented during 2023 and will be monitored for success.

Summary of Floristic Based Subsidence Monitoring

The 2022 floristic monitoring also comprised of floristic based subsidence (FBS) monitoring undertaken above seven longwall panels during autumn and spring with the results assessed against the relevant subsidence performance measure and indicator from the BMP (**Attachment E**).

An assessment of the BMP performance indicator relating to FBS monitoring includes:

- Analysis of FBS data indicates a >10% (percentage points) decrease in canopy foliage cover of a site within the subsidence zone inconsistent with canopy foliage cover in the transition zone; and

- Analysis of FBS data indicates >10% (percentage points) decrease in canopy foliage cover in the selected vegetation community located above mining areas, not seen in non-mined reference sites.

For sites with three or more years of data (UG LWW5, UG LWW6, UW LW5 and UW LW6), trends between longwall and transition sites have been compared. Absolute change in PFC at all longwalls remains less than 10%. (ELA, 2023a).

Rehabilitation Report Card

An assessment of the Glencore Coal Assets Australia (GCAA) Rehabilitation Report Card (RRC) for Domain B and Domain D was undertaken by ELA in 2022. For the summary of the GAAA RCC refer to **Section 8.2**.

6.6.2 Fauna

ELA was engaged by UCMPL to undertake fauna monitoring in accordance with the requirements of the BMP. The 2022 Fauna Monitoring Report (**Attachment E**) details the results of general and targeted threatened bird monitoring, including post-subsidence monitoring of threatened bird habitat, feral pest monitoring, and nest box monitoring.

A total of 81 bird species were recorded during diurnal bird surveys, with species richness across monitoring sites ranging from a minimum of eight species to a maximum of 34 species, and abundance ranging from a minimum of 45 individuals to a maximum of 112 individuals. Mean species richness recorded across the four monitoring areas was highly consistent, indicating a diversity of suitable bird habitat is present across all parts of the UCMPL complex. Mean abundance was also consistent across monitoring domains, with only sites within the Open Cut Rehabilitation Areas recording noticeably higher mean bird abundance. Management Zone (MZ) 1 sites within remnant vegetation continue to record the highest mean species richness. MZ5 sites within the open cut rehabilitation recorded the second highest mean species richness and highest mean abundance, demonstrating the capacity of rehabilitation areas to provide habitat for a diverse range of bird species comparable to surrounding remnant vegetation (ELA, 2023b).

A total of four threatened bird species listed as vulnerable under the NSW Biodiversity Conservation Act 2016 (BC Act) were recorded during the diurnal bird monitoring surveys. This was slightly down compared to previous years with six species recorded in 2020 and 2014 and seven in 2015, 2016 and 2018. However, an additional eight threatened bird species were recorded opportunistically during the 2022 fauna monitoring program and as such, the Provision of Threatened Species Habitat Criteria for woodland birds was met for all previously recorded threatened bird species (ELA, 2023b).

Target threatened bird species *Anthochaera phrygia* (Regent Honeyeater), *Lathamus discolor* (Swift Parrot) and *Tyto novaehollandiae* (Masked Owl) were not recorded during 2022 monitoring surveys. The Swift Parrot has not been recorded within the UCMPL complex since 2007, whilst the Regent Honeyeater and Masked Owl are yet to be recorded. A range of bird species with similar foraging and behavioural characteristics were however, recorded, along with potential foraging (e.g. flowering key feed trees) and breeding habitat (e.g. large hollows) for the three target species. An assessment was undertaken at Floristic-based subsidence (FBS) monitoring sites located above undermined Ulan West Longwall 5 panels (greater than two years post-undermining) and which contain feed trees for Regent

Honeyeater and Swift Parrot. The assessment found that percent foliage cover of feed trees at monitoring sites had not declined by >10% and as such, the relevant subsidence performance measure for these two threatened bird species has been met. An assessment of potential breeding habitat for Masked Owl hollows (>20 cm diameter) was also completed at these undermined sites. The assessment found that the hollows remained intact post-undermining and as such, the relevant subsidence performance measure for Masked Owl has also been met (ELA, 2023b).

Feral pest remote camera monitoring recorded five feral animal species, of which four are listed as feral pest species in the Central Tablelands Regional Strategic Pest Management Plan 2018-2023 (Local Land Services 2018). All five feral species have been previously recorded within the UCMPL complex. Activity of *Sus scrofa* (Feral Pig) and *Dama dama* (Fallow Deer) increased in 2022, compared to both 2016 and 2019, when the same two remote camera transects were last monitored, however, Feral Pig activity had declined compared to 2020 and 2021. Feral Pig was also recorded during feral pest nocturnal surveys, with an additional pest species Sturnus vulgaris (Common Starling), also recorded opportunistically during 2022 diurnal bird surveys. UCMPL records indicate that a range of feral pest control works were undertaken throughout 2022, with further works focusing on high Feral Pig, Fallow Deer and *Vulpes vulpes* (Red Fox) activity recommended for 2023 (ELA, 2023b).

A total of 84 nest boxes were monitored, of which 88% remained fit for use and 49% demonstrating signs of use. Six individual nest boxes (7% of total nest boxes) contained fauna at the time of survey, which included two native and one feral (Common Starling) bird species and one native microbat species. Four nest boxes monitored during 2022 require replacement as they have fallen off their host tree and are no longer functional, whilst an additional six nest boxes require minor repairs. It is recommended that replacement nest boxes should be of the same type (e.g. Glider nest box) to suit the appropriate target fauna (ELA, 2023b).

The 2022 UCMPL annual fauna monitoring program collected a diverse range of data which provides additional understanding as to the nature and activity of fauna across the UCMPL complex and allows assessment of the relevant management objectives and completion criteria. All objectives and criteria are currently being met for all UCMPL monitoring domains and MZs. Given the successful implementation of the UCMPL fauna monitoring program in 2022 and the results detailed in this report, UCMPL is considered to be compliant with their relevant Project Approval conditions (ELA, 2023b).

6.6.3 Microbat Monitoring

ELA was engaged by UCMPL to undertake microbat monitoring in accordance with the requirements of the BMP and the Extraction Plans.

Microbat monitoring in 2022 was undertaken in accordance with the approved management plans. This annual report details the results of microbat monitoring of targeted cliffline monitoring sites comprised of eight control sites and 13 impact sites. Monitoring was conducted during November and December 2022 and January 2023. Cliffline monitoring was undertaken to target the presence and activity of threatened cave-roosting microbat species *Chalinolobus dwyeri* (Large-eared Pied Bat) and *Miniopterus orianae oceanensis* (Large Bent-winged Bat) (ELA 2023d).

The Large-eared Pied Bat was definitely or potentially recorded via acoustic call detection at all control sites, with the exception of BD9, whilst the Large Bent-winged Bat was definitely recorded at all sites.

The consistent recording of both target threatened cave-roosting species calls in relatively high quantities at these sites, confirms their suitability for use as control sites. A total of 27 Large-eared Pied Bats were captured in harp trapping across control sites, the second highest quantity ever recorded at these sites, following on from 30 individuals recorded in 2021. Both breeding adult females as well as juveniles were recorded amongst the trapped individuals at these sites which, combined with the relatively large quantity of individuals caught, provides a positive indication regarding the habitat the UCC provides for this threatened cave-roosting species (ELA 2023d).

Both the Large-eared Pied Bat and Large Bent-winged Bat were definitely or potentially recorded via acoustic call detection at 12 of 13 impact sites. Two impact sites, where the Large-eared Pied Bat had previously been captured, UGLWW3 and UGLWW4a, again underwent harp trapping in 2022, with the Large-eared Pied Bat captured at both sites. The continued presence of this species (including breeding adult females and juveniles) at these sites, more than five years since undermining, is a positive result with regards to the important habitat the UCC continues to provide for this species (ELA 2023d).

Total Large-eared Pied Bat call activity (control and impact sites combined) in 2022 was the highest recorded (69.6 calls per night) since the commencement of monitoring and double the next highest (34.8 calls per night in 2020). Total Large Bent-winged Bat call activity in 2022 was 9.0 calls per night, representing the fourth highest call activity recorded to date and continuing the trend of relatively high activity for this species since 2019 (ELA 2023d).

Subsidence performance indicators for the two target microbat species could not be fully assessed for 2022 due to insufficient pre-mining and post-mining data for previously undermined impact (mined area) sites. Despite this, an interim analysis of mean call activity pre and post-mining was undertaken utilising the available data recorded to date, in order to provide an indication as to progress relative to the relevant performance indicators (ELA 2023d).

For Large-eared Pied Bat, both control and impact sites recorded an increased call activity compared to 2021. As such, year-on-year decreasing activity levels were not recorded across all impact sites within the mined area with the inclusion of the 2022 monitoring period data. Within mined area impact sites undermined to date (UWLW2 - UWLW6 and UGLWW3 – UGLWW5), interim analysis of Large-eared Pied Bat mean call activity indicates a decline from 18.7 calls per night pre-mining to 9.4 calls per night postmining. This 50% decline is above the performance indicator of >10%, however, is largely the result of exceptional call activity across three neighbouring UWLW6 sites in 2020 and in line with declines recorded at non-mined control sites. Therefore, the reduction is not considered to definitively demonstrate a decline due to undermining, with further analysis to be completed in 2023 at the conclusion of the full two-year post-mining monitoring period for UWLW6 sites (ELA 2023d).

Large Bent-winged Bat call activity recorded a 23% decrease at impact sites monitored in 2022, compared to 2021 monitoring. This follows on from a 70% increase recorded in 2021, compared to 2020 and as such, decreasing activity levels have not been recorded across all impact sites within the mined area over two or more monitoring periods. Mean call activity within impact sites has fluctuated consistently since 2013. However, across recent monitoring years (2019 – 2022), overall call activity has increased relative to earlier years (2013 – 2018). Large Bent-winged Bat mean call activity within previously undermined impact sites was 4.1 calls per night pre-mining and 6.6 calls per night

postmining, representing a 61% increase. Based on available data to date, a >10% decline in activity of Large Bent-winged Bat has not been recorded (ELA 2023d).

Given the successful implementation of the monitoring program in 2022 and the results detailed in this report, UCMPL is considered to be compliant with their relevant project approval conditions (ELA, 2023d).

6.6.4 Aquatic Monitoring

ELA was engaged by UCMPL to undertake aquatic monitoring in accordance with the requirements of the BMP.

The 2022 monitoring program was undertaken following a three-month period (July to September 2022) which recorded more than double the mean rainfall, in what has been a prolonged wet period for the region dating back to early 2020. Additionally, two high daily rainfall events immediately preceded 2022 monitoring, during which 25.7 mm and 54.1 mm of rainfall was recorded. This abundant rainfall facilitated the macroinvertebrate and water quality sampling of 15 previously established monitoring sites, with only one site (AQ19) not accessible for monitoring (ELA 2023c).

Aquatic macroinvertebrate taxonomic richness in 2022 ranged from 6 to 18 taxa and was equal highest at upstream site AQ11 and downstream site AQ18. SIGNAL2 scores ranged from 3.2 to 5.0, with downstream site AQ6 recording the highest SIGNAL2 score. Eight of the 15 sites sampled had SIGNAL2 scores equal to or above 4.0, with three of these sites located downstream of the LDPs. The mean SIGNAL2 score across all sites was 4.0, the highest recorded since 2016 (4.4). Assessment of SIGNAL2 since the commencement of monitoring (2011 to 2022) demonstrates that downstream sites have a higher long-term mean SIGNAL2 score (4.0) compared to upstream sites (3.5). Overall however, SIGNAL2 scores continue to be reflective of moderate to severely disturbed systems. Across all years, macroinvertebrate results indicate that historical disturbances (e.g. clearing of riparian habitat) and regional land use practices, in conjunction with prevailing climatic conditions, remain the key factors influencing macroinvertebrate communities (ELA 2023c).

The 2022 Riparian Channel and Environmental (RCE) Inventory scores were largely consistent with previous years for each site. Five sites scored RCE inventories of Good, six sites scored Very Good whilst the remaining four sites scoring RCE inventories of Excellent. Sites AQ2 and AQ21 located in the Goulburn River Diversion have increased RCE scores since 2016 when remediation works commenced. The only notable differences in RCE scores recorded in 2022 and supported by photo comparisons of each site, relate to increased water levels and macrophyte cover. Overall, the RCE results indicate that the riparian environment is not subject to any ongoing adverse effects resulting from mining operations and are rather, reflective of historical disturbances and regional land use practices in the catchment (ELA 2023c).

Water quality was sampled with a total of six variables recorded for each site, along with the time and date of sampling. Both alkalinity and pH results remain consistent across both monitoring sites and years. Turbidity exceeded ANZECC and ARMCANZ (2000) guidelines at 10 of 15 sites, however, comparison with previous years data and UCMPL surface water monitoring site data indicate that these elevated levels are the temporary result of high rainfall. Electrical Conductivity (EC) was variable

across monitoring sites both upstream and downstream of LDPs, however, were still below the trigger values adopted for the UCC (UCMPL 2019) (ELA 2023c).

DO (% saturation) increased substantially across all sites during 2022, recording a mean DO saturation of 112.1%, the highest recorded since 2017. With respect to ANZECC and ARMCANZ (2000) guidelines, DO concentrations in 2022 were most in line with the minimum (90%) and maximum guidelines (110%) since the commencement of monitoring. Despite recording DO concentrations largely consistent with the ANZECC and ARMCANZ (2000) guidelines, there was no correlation evident between DO and climatic or riparian habitat factors, nor was there any correlation between DO and macroinvertebrate results for 2022 (ELA 2023c).

6.6.5 Pest and Weed Monitoring

Five feral animal species were recorded across both remote camera monitoring transects (Table 9), four of which are listed as priority pest species under Section 5 of the Central Tablelands Regional Strategic Pest Management Plan 2018-2023 (Local Land Services 2018). Feral Pig was the most abundantly recorded feral pest species at both transects, with a total of 34 camera detections, followed by Red Fox, with 22 camera detections. All feral pest species identified through 2022 monitoring have been previously recorded within the UCMPL complex. Feral Pig and Red Fox were also the most widespread species recorded, with Feral Pig detected at 12 of 20 remote cameras and red Fox detected at 6 of 20 remote cameras across both transects (ELA, 2023b).

During the Reporting Period, UCMPL carried out feral pig baiting on UCMPL controlled land in June 2022. Wild dog baiting in conjuction with Local Land Serives for aerial baiting was undertaken across UCMPL controlled lands in May 2022. Weed control in 2022 included spaying for Boneseed, Bitou Bush, Blue Heliotrope, Bathurst Burr, St John's Wort, Prickly Pear, Box- Thorn, Blackberry and Khaki Burr within UCMPL's offset areas and surrounds.

6.7 Conservtaion Area Monitoring

Conservation Area (CA) monitoring was completed by ELA during the 2022 Reporting Period. The locations of UCMPL's CA is provided in **Attachment H**. A summary against Domain F relevant BMP completion criteria is provided in **Table 6-7** and **Attachment E**.

Table 6-7 Domain F Summary Against Relevant BMP Completion Criteria

Phase	Domain Objective	Completion criteria	Completion criteria status
Growth Medium Development Phase	Facilitate the natural regeneration of Management Zone 2 areas	Monitor natural regeneration occurring within BOAs and update mapping with changes identified	Ongoing as of 2020 – refer to *UCMPL Annual Flora Monitoring Report 2020* (ELA 2021).
	Re-establish native woodlands / open forest within Management Zone 3 areas	Plantings established and self-sustaining (flowering, fruiting or second-generation juvenile) and sufficient stem density for Woodland >40 stems/ha, Open Forest >60 stems/ha	Achieved All areas monitored during 2022 recorded seedlings of canopy species, with most areas also recording fruits on mature individuals.
Ecosystem and Land Use Establishment Phase	Facilitate the natural regeneration of Management Zone 2 areas	Monitoring to indicate native species diversity approaching or consistent with MZ1 or other appropriate analogue sites. Stem density >40 stems/ha for woodland, >60 stems/ha for Open Forest vegetation community	Ongoing Average stem density across MZ2 open forest sites monitored during 2022 was >60 stems/ha. MZ2 grassy woodland sites were not monitored in 2022.
	Re-establish native woodlands / open forest within Management Zone 3 areas	Monitoring to indicate native species diversity approaching or consistent with MZ1 or other appropriate analogue sites. Stem density >40 stems/ha for woodland, >60 stems/ha for Open Forest vegetation community	Achieved Average stem density across MZ3 grassy woodland and open forest sites monitored during 2022 was >40 and >60 stems/ha respectively. One MZ3 grassy woodland site (BOB12) recorded 0 stems/ha; however, the area immediately surrounding this site has an approximate density of 250 stems/ha.
	Weeds and feral animal species do not present a risk to regeneration / revegetation	Ensure priority weeds (as per LLS Central Tablelands Strategic Weed Management Plan 2017-2022) do not exceed 10% of plant cover.	Not yet achieved Whilst priority weed species cover is generally low (<1% pfc); areas of the priority weed species *Hypericum perforatum* >10% pfc exist throughout Bobadeen VOA. Assessment against feral animals is provided in the *UCMPL Fauna Monitoring Report 2022* (ELA 2023).
		Records indicate that listed weeds are controlled in accordance with legislation.	Not yet achieved *Chrysanthemoides monilifera* subsp. *monilifera* is present throughout the Bobadeen VOA. In accordance with the *Biosecurity (Boneseed) Control Order 2007,* all individuals need to be removed from the land.
Ecosystem and Land Use Sustainability Phase	Facilitate the natural regeneration of Management Zone 2 areas	Monitoring to indicate native species diversity approaching or consistent with MZ1 or other appropriate analogue sites.	Ongoing Native species diversity at grassy woodland and dry sclerophyll forest MZ2 sites is approaching grassy woodland and dry sclerophyll forest MZ1 sites.
Re-establishment of Box Gum Grassy Woodland Critically Endangered Ecological Communities (CEEC)	Re-establishment of EEC	CEEC re-vegetation meets the DoE minimum requirements for classification as CEEC	Achieved (MZ2) – MZ2 areas conform to Box Gum Woodland.
			Ongoing (MZ3) – some parts of MZ3 do not conform to Box Gum Woodland due to absence of a predominately native understorey due to high cover of *Hypericum perforatum,* particularly near BOB12.

6.8 Energy and Greenhouse Gas (GHG)

UCMPL reports GHG in accordance with National Energy and Greenhouse Gases (NGER) legislation. Each financial year UCMPL is required to submit to the federal government the emissions from their NGERs registered facility. As UCMPL is not predicted to emit over 100kt of CO_2e- from Scope 1 emissions, i.e. the threshold required to be registered as a Safeguard facility, UCMPL has no baseline threshold. The following table (**Table 6-8**) contains the Scope 1 (direct emissions from the mining activities during the financial year), and Scope 2 emissions (electricity consumption by the mine during the financial year).

Table 6-8 - Summary Scope 1 and 2 emissions Statistics for FY21/22

	FY18/19	FY19/20	FY20/21	FY21/22	EA Prediction (Yr8-Yr11)[1] Annual Average (Calendar Year)
Scope 1 Total (tCO_2-e)	59,805	40,416	41,154	51,039	76,749[2,3]
Scope 2 Total (tCO_2-e)	133,908	147,216	151,559	155,941	171,517
Total Scope 1 and Scope 2 (tCO_2-e)	193,713	187,632	192,713	206,980	**248,266**

Notes: [1]EA Scope 1 and Scope 2 predictions based on forecast ROM Tonnes/Product Tonnes per annum. Year 8 to Year 11 forecast ROM Tonnes and Product Tonnes of 14,382,578 T and 12,527,720 T respectively. The Reporting Period ROM and Product Tonnes (**Table 4-1**) is considered within this forecast predictions. [2] Inclusive of upgraded Methane emissions factor of 28. [3]Scope 1 emissions below Safeguard Mechanism baseline.

6.8.1 Comparison Against Predictions

During the FY21/22 UCML's Scope 1 and Scope 2 emissions were below the EA prediction as provided in Table 6-8 and below its baseline emissions under the Safeguard Mechanism.

6.8.2 Steps Taken to Improve Energy Efficiency and Reduce GHG Emissions

Ulan Coal Mine is a part of the wider coal assets held by Glencore across Australia. Glencore Coal Assets Australia (GCAA) are themselves a part of the global Glencore mining portfolio. In line with the ambitions of the 1.5^{o}C scenarios set out by the IPCC, Glencore target a short-term reduction of 15% by 2026 and a medium-term 50% reduction of our total (Scope 1, 2 and 3) emissions by 2035 on 2019 levels. Post 2035, Glencore's ambition is to achieve, with a supportive policy environment, net zero total emissions by 2050.

Glencore incorporates energy costs and our carbon footprint into our annual planning process. Commodity departments, such as Glencore Coal Assets Australia, are required to provide energy and GHG emissions forecasts for each asset over the forward planning period and provide details of emissions reduction projects. In the case of Ulan Coal Mine this includes involvement with GCAA when considering available GHG abatement technology and mine planning to optimise efficiency (which usually translates into reduced fuel consumption).

6.9 Mine Subsidence

Underground mining activities at UW and UUG during the Reporting Period are outlined in **Section 4.1**. Subsidence monitoring at UW and UUG is undertaken in accordance with the relevant Extraction Plan for each underground operation (**Section 3.2.2**). The scope of the subsidence monitoring includes

subsidence effects monitoring and environmental, heritage, land management, built features and public safety monitoring programs, to evaluate the potential subsidence impacts and environmental consequences from the secondary extraction of longwalls.

6.9.1 Subsidence Effects Monitoring

UCMPL engage SCT Operations Pty Ltd (SCT) to undertake a review of the subsidence monitoring conducted for the 2022 review period, including a comparison of observed behaviour with subsidence forecasts (**Table 6-6**) and assessments of compliance with the subsidence performance measures (**Table 6-9**). **Table 6-9** compares the maximum forecast vales of primary subsidence parameters for conventional subsidence behaviour from LW6 and LW7 at UW and LWW7 and LW30 at UUG with the subsidence movements measured on the C, D and H Lines and the newly installed I Line at Ulan West for the 2022 Reporting Period.

Table 6-9 – Summary of Primary Subsidence Parameters Measured 2019-2022

Subsidence Monitoring Lines:	**D Line (UW)**		**C Line (UW)**		**H Line (UUG)**		**I Line (UW)**	
2022: LW6 & LW7 at UW and LWW7 and LW30 at UUG								
Subsidence (m)	1.33	**1.6**	1.37	**1.6-1.7**	1.35	**1.7**	1.47	**1.7**
Tilt (mm/m)	22	**40-55**	15	**40-55**	15	**50**	28	**45**
Tensile Strain (mm/m)	8	**15-20**	5	**15-20**	5	**15**	9	**20**
Compressive Strain (mm/m)	4	**20-25**	8	**20-25**	4	**20**	17	**25**
2021: LW6 at UW and LWW6 and LWW7 at UUG								
Subsidence (m)	1.29	**1.6**	^	**1.6-1.7**	1.30	**1.7**	NA	NA
Tilt (mm/m)	21	**40-55**	^	**40-55**	11	**50**	NA	NA
Tensile Strain (mm/m)	9	**15-20**	^	**15-20**	4	**15**	NA	NA
Compressive Strain (mm/m)	4	**20-25**	^	**20-25**	3	**20**	NA	NA
2020: LW5 and LW6 at UW and LWW5* at UUG								
Subsidence (m)	1.37	**1.6-1.7**	1.44	**1.6-1.7**	1.27	**1.6**	NA	NA
Tilt (mm/m)	20	**40-55**	19	**40-55**	20	**10-20**	NA	NA
Tensile Strain (mm/m)	6	**15-20**	6	**15-20**	4	**5-15**	NA	NA
Compressive Strain (mm/m)	5	**20-25**	5	**20-25**	8	**5-15**	NA	NA
2019: LW5 at UW and LWW4* at UUG								
Subsidence (m)	1.37	**1.6-1.7**	1.44	**1.6-1.7**	1.47	**1.6**	NA	NA
Tilt (mm/m)	20	**40-55**	19	**40-55**	20	**10-20**	NA	NA
Tensile Strain (mm/m)	9	**15-20**	6	**15-20**	6	**5-15**	NA	NA
Compressive Strain (mm/m)	3	**20-25**	3	**20-25**	7	**5-15**	NA	NA

Notes: *End of Panel Measure Values. ^C Line not undermined during 2021. New I Line installed in 2022 prior to LW7 at Ulan West as required by Extraction Plan. **Bold type** represents Forecast Values.

SCT's review indicates that subsidence behaviour observed is consistent with expectation. The magnitudes of primary subsidence effects are within expectations and less than the maxima forecast for the extraction plans covering the areas mined in 2022 (SCT, 2023). For further details refer to **Attachment J.**

SCT's review is based on analysis of the survey data from subsidence monitoring, inspections and reports by Ulan Coal Mine (UCM) personnel and other specialists. Also included are observations from surface inspections during a site visit conducted by SCT on 15 February 2023 over areas mined below

during 2022. The surface inspections were undertaken with UCM personnel and a private landowner (SCT, 2023).

6.9.2 Subsidence Monitoring

UCMPL completed environmental, heritage, land, built features and public safety monitoring during the Reporting Period as required by the Extraction Plans for UW and UUG, to evaluate the potential subsidence impacts and environmental consequences. A summary of subsidence monitoring undertaken by UCMPL in 2022 includes:

- Monthly inspections during longwall extraction at UW and UUG;
- Applicable cliff lines and heritage monitoring above LW6 and LW7 (**Section 6.9.2)**;
- Floristic based-subsidence (FBS) plots (**Section 6.6.1**)
- Targeted cliff line monitoring for microbats (**Section 6.6.3**);
- Property inspections on privately owned land with the landowners above LW7;
- Property inspections with NPWS above LW30;
- Ulan Creek monitoring (**Section 7.9);**
- Tributary monitoring above UW and UUG (**Section 7.10**);
- Groundwater and private bore monitoring (**Section 7.11**);
- Built feature monitoring (**Section 6.9.2**).

Table 6-9 summarises the subsidence performance measures outlined in Table 14 of PA08_0184 and assessment against the status of compliance expected for the 2022 Reporting Period.

Table 6-10 – PA08_0184 Subsidence Performance Measures

Subsidence Performance Measures		Compliance Yes/No	Assessment of Performance Measure
Water			
Ulan, Mona & Cockabutta Creeks	No greater environmental consequences than predicted in the EA	**Yes**	Main channels of creeks outside footprint of longwall mining in 2022 (assessed by other specialists) (SCT, 2023). Ulan Creek, Mona Creek and Cockabutta Creeks were not undermined during the Reporting Period by LW6, LW7 and LWW7 and LW30 (**Attachment J**).
Biodiversity			
Threatened species, populations, habitat or ecological communities	Negligible impact	**Yes**	The assessment found that percent foliage cover (PFC) of feed trees at monitoring sites had not declined by >10% and as such, the relevant subsidence performance measure for these two threatened bird species has been met (ELA, 2023a) (**Section 6.6.1** and **Attachment E**). The 2022 UCMPL annual fauna monitoring program collected a diverse range of data which provides additional understanding as to the nature and activity of fauna across the UCMPL complex and allows assessment of the relevant management objectives and completion criteria. All objectives and criteria are currently being met for all UCMPL monitoring domains and MZs (ELA, 2023b) (**Section 6.6.2** and **Attachment E**).
Land			

Subsidence Performance Measures		Compliance Yes/No	Assessment of Performance Measure
Cliffs in the Brokenback Conservation Area	Nil environmental consequences	**Yes**	Assessment by Pacific Environmental (PE 2023a) indicates compliance. Recent mining too remote from this area to cause impacts (SCT, 2023) (**Attachment J**).
Other cliffs	Minor environmental consequences	**Yes**	Approximately 6.5% of subsidence induced rockfalls occurring above cliff lines undermined by UW LW1-6 and UUG LWW4-LWW7, indicating the combined rock falls are lower than the 20% predicted in the 2009 EA (PE, 2023) (**Attachment J**). Assessment by Pacific Environmental and UCM (PE 2023a) indicates compliance (SCT, 2023) (**Attachment J**).
Heritage			
Aboriginal sites	Nil impact in the Brokenback Conservation Area, Grinding Groove Conservation Areas; and on Mona Creek Rock Shelter Sites	**Yes**	Aboriginal heritage sites within the Brokenback Conservation Area, Grinding Groove Conservation Areas and on Mona Creek Rock Shelter Sites were not undermined by LW6, LW7, LWW7 and LW30 during the Reporting Period. Inspection of the Mona Creek rocks shelters Ulan ID#180 to 187 in February 2022, confirmed that no impact has occurred. No impacts observed at Brokenback cliffs (PE 2023a). Recent mining too remote to cause impacts (SCT, 2023) (**Attachment J**).
Talbragar Fish Fossil Reserve	Negligible impact	**Yes**	Recent mining too remote to cause impacts (SCT, 2023) (**Attachment J**).
Other Heritage Sites	No greater impact than predicted in the EA	**Yes**	Aboriginal heritage sites required for monitoring by the Extraction Plan for UW LW6 included Ulan ID#1165, ID#1219, ID#1220, ID#1122, ID#1401, ID#1278, ID#1290, ID#1286 and ID #1259. At a number of sites observed rock falls and cracking was consistent with predictions (**Attachment J**). Compliance expected (other specialists to assess) Subsidence effects are less than forecast in EP (SCT, 2023) (**Attachment J**).
Built Features			
All built features	Safe, serviceable and repairable unless the owner agrees otherwise in writing	**Yes**	LW7 undermined a section of two private properties, with the management and monitoring of impacts completed as required by each applicable Private Property Subsidence Management Plan (PPSMP). Repairs of surface cracking on roads and grazing areas above LW7 on private property was undertaken during the Reporting Period as required by each PPSMP. Impacts to built features including the residential building and farm infrastructure are consistent with expectation and less than the maxima forecast. Subsidence movements from mining Longwall 7 did not significantly affect the structure of the house (SCT, 2023). Impacts managed via provisions of Built Features Management Plan (BFMP) and Private Property Subsidence Management Plans (PPSMP) (SCT, 2023) (**Attachment J**).
Public Safety			
Public Safety	No additional risk due to mining	**Yes**	There were no reportable safety incidents as a result from subsidence due to LW6, LW7, LWW7 and LW30.

Subsidence Performance Measures		Compliance Yes/No	Assessment of Performance Measure
			A majority of the land undermined is UCMPL controlled land with restricted access. Land access to private properties undermined during the Reporting Period is managed by the private landowner. Where applicable signage, fencing and locked gates are in place and maintained by UCMPL. Additional warning signage was placed above LW30 in 2022 prior to extraction in areas within the DSCA. Hazards managed via Public Safety Management Plan (PSMP) and (PPSMP) (SCT, 2022) (**Attachment J**).

6.9.3 GNSS Monitoring

During the 2022 Reporting Period, UCMPL installed three Global Navigation Satellite Systems (GNSS) units to monitor UW subsidence effects within the Brokenback Conservation Area (BCA). The GNSS units provide real time continuous three-dimensional (3D) ground movement data with trigger alarms as described in the Extraction Plan. No triggers alarms have been received during the Reporting Period.

Photo 1 GNSS Unit within the BCA (August 2022)

6.10 Waste Management

Disposal and tracking protocols for waste, processes for identifying and minimising waste generation, controls to mitigate waste impacts and responsibilities for waste management are described in the Waste Management Plan (WMP)[15]. A licensed waste contractor provides off-site waste disposal and recycling. A summary of waste performance is provided in **Table 6-11**[16].

Collectively across all three operations, approximately 65% of waste was recycled including oil filters, waste grease, scrap metal, timber, paper and cardboard, and empty drums. Waste contained onsite

[15] PA 08_0184 Schedule 3, Condition 54, and SoC 6.15.1 and EPL 394.
[16] PA 08_0184 Schedule 5, Condition 3.

for disposal in accordance with EPL 394. UCMPL are permitted to dispose of 400 tonnes of concrete per year as required by Condition L4.1. Waste statistics including recycling trends since 2019 are provided in **Table 6-12**.

Table 6-11 - Summary of Monthly Waste Statistics for 2022

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
USO	**Total Offsite Waste (T)**	16.5	15.6	21.2	21.5	26.3	19.1	22.0	30.3	23.1	10.7	21.2	19.0	**246.5**
	Recycled Waste (T)	5.4	6.1	6.9	9.8	5.2	6.9	10.3	7.6	3.0	2.8	3.6	10.6	**78.1**
	Recycling %	0.8	0.7	0.8	0.7	0.8	0.7	0.7	0.8	0.9	0.8	0.9	0.6	**75.9**
UUG	**Total Offsite Waste (T)**	15.2	43.4	36.9	32.6	23.8	60.7	34.6	29.8	21.8	42.3	54.7	28.3	**424.0**
	Recycled Waste (T)	63.6	53.7	57.9	73.2	40.5	35.2	36.5	51.1	52.7	34.1	36.5	204.1	**739.1**
	Recycling %	0.8	0.6	0.6	0.7	0.6	0.4	0.5	0.6	0.7	0.4	0.4	0.9	**63.5**
UWO	**Total Offsite Waste (T)**	45.5	35.7	52.5	24.5	32.6	26.8	35.6	44.7	39.8	29.2	41.9	21.0	**429.8**
	Recycled Waste (T)	12.2	26.9	47.4	21.6	42.4	52.8	26.6	35.5	57.7	23.0	76.6	129.4	**552.1**
	Recycling %	21.2	42.9	47.4	46.8	56.5	66.3	42.7	44.3	59.2	44.1	64.6	86.1	**56.2**

Table 6-12 - Summary of Annual Waste Statistics for 2019 - 2022

		2019 Totals	2020 Totals	2021 Totals	2022 Totals
USO	**Total Offsite Waste (T)**	319.5	448.9	95.3	246.5
	Recycled Waste (T)	253.75	24.26	457.31	78.1
	Recycling %	79.4	77.09	82.75	75.9
UUG	**Total Offsite Waste (T)**	972.3	970.02	391.75	424.0
	Recycled Waste (T)	583.2	651.89	619.32	739.1
	Recycling %	63	67.2	61.25	63.5
UWO	**Total Offsite Waste (T)**	98.6	1156.42	602.86	429.8
	Recycled Waste (T)	590.3	511.83	540.64	552.1
	Recycling %	44.1	44.26	47.28	56.2

7. Water Management

The Water Management Plan (WMP)[17] provides a framework for the management of water and outlines the interaction between the various policies, plans, programs and procedures. The WMP clarifies requirements for surface water and groundwater management during construction and operational phases. The WMP includes a number of sub plans and systems including:

- Site Water Balance;
- Erosion and Sediment Control Plan (ESCP);
- Surface Water Monitoring Program (SWMP);
- Groundwater Monitoring Program (GWMP);
- Surface Water and Groundwater Response Plan (SWGWRP);
- Goulburn River Diversion Remediation Plan (GRDRP); and
- Goulburn River Diversion Erosion & Sediment Control Plan.

During the Reporting Period, UCMPL revised the WMP and consolidated the SWMP, GWMP and SWGWRP into the one document. The revised WMP (Version 10.1) was resubmitted for approval on the 30 November 2022.

7.1 Overview of Mine Water Management System

The mine water management system includes mine dewatering systems, water storages, the Bobadeen Irrigation Scheme (BIS), water treatment facilities, sedimentation and retention basins, settling and tailings ponds, clean water diversion drains and dirty water catch drains, levee banks and earth bunding around stockpiles, hardstand areas and refuelling areas. The key objectives of the water management system include:

- preventing the contamination of clean water by mining and related activities;
- reducing the discharge of pollutants from the mine to the environment;
- minimising adverse effects on the Goulburn River and Ulan Creek;
- managing approved water discharges to meet EPL394 licence conditions;
- segregating mine impacted water from better quality water to minimise the volume of impacted water that requires recycling and treatment; and
- managing the inventory of water on-site in order to meet the requirements of the mining operation.

Open cut mine surface runoff and pit water is directed to the mine water management system to control and treat runoff from site.

7.2 Water Balance

The water balance[18] consists of micro water balances for discrete operational areas of the water circuit (detailed in **Attachment F**). The micro balances are summed to provide the overall water inputs and outputs (**Table 7-1**). Water sources are rainfall on dams and disturbed areas, groundwater inflows to

[17] PA08_0184 Schedule 3, condition 34, EA 2009, EPL394
[18] In accordance with Condition 34, Schedule 3 of the PA08_0184

underground mines and the potable water supply. Water is lost through product coal, the Bobadeen irrigation scheme, dust suppression, evaporation, supply to external parties and potable water use. Water in excess of operational needs is discharged from licenced discharge points.

Abstracted volumes from each operation comprised Ulan West (25%) and Ulan No. 3 (75%) during 2022. Daily extracted water ranged between 15.8 ML/day and 18.7 ML/day, with a combined average of 17.3 ML/day. The total volume extracted during 2022 was 6.3 Gigalitres (GL). The mine inflows are within approved groundwater license allocations.

UCMPL decommissioned the Millers WTF during 2022. Supplemental potable water is now supplied using the permeate from the NSWD WTF, to improve water efficiencies and further reduce the need for external suppliers of potable water. During 2023, potable water supply to USO is likely to be supplied by the NWSD.

Table 7-1 - Water Balance for 2022

Water Balance Period for 2022[1]		Volume (ML)
Inputs[2]	Precipitation & Runoff	5482
	Groundwater inputs	7437
	Third Party	14
	Total	12933
Outputs[3]	Licensed Discharge	8990
	Evaporation	787
	Entrainment	1664
	Losses	211
	Total	11652
Water Balance[4]	Inputs minus Outputs	1281
	Change in Storage	79

Notes: [1]1 January to 31 December. [2] Includes rainfall, seepage from groundwater, coal & spoil, groundwater & water from dewatering bores & runoff/drainage from tailings.[3] Includes water used in the CHPP, dust suppression, irrigation, licensed discharge, evaporation, moisture bound to coal, rejects and tailings, onsite potable water use & seepage to spoil. [4] Total inputs less total outputs.

7.3 Salt Balance

The GoldSIM water model estimates a Net Salt gain of 1,474 tonnes for the 2022 reporting year. Approximately 4,897 tonnes of salt have been discharged from the system during 2022.

Table 7-2 - Water Balance Calculation 2022 Water Year

Site	Salt tonnes (1 Jan 2022)	Salt tonnes (31 Dec 2022)	Net Salt balance 2022 Tonnes
Water Management System	11,921	13,395	1,474

7.4 Baseflow Offsets

Baseflow loss to the Goulburn River catchment was originally estimated by groundwater modelling at 0.05 ML/day, equivalent to 18.25 ML/ year[19]. The re-forecast peak baseflow losses for the Goulburn and Talbragar Rivers, using the updated and recalibrated 2021 groundwater model are 0.276 ML/day

[19] PA08_0184, Schedule 3, Condition 29

and 0.083 ML/day respectively. The increase from the 2018 estimate is due to having more surface drainage length interacting with groundwater through saturated shallow aquifers caused by nearby perching depicted in the model. A flow departure method was used to assess upstream and downstream flow data for the Goulburn River, from 15 August 2018 to 8 February 2020 and 1 April to 16 September 2019 (reported in the 2020 Ulan Coal Annual Review). The indicated average daily baseflow losses over 711 days is 0.156ML/day, although it is noted that more data is needed to provide effective assessment. It is noted that the average departure method does not subtract the baseflow losses due to mining that occurred prior to the current project approval, which is assumed for the groundwater model.

An average 24.66 ML/day of treated water was discharged to the Goulburn River in 2022. Flow at the downstream gauging station (SW02) ranged between 40.79 ML/day and 5213.17 ML/day[20]. There was increased rainfall for the Reporting Period. Approximately 1090.3mm was recorded by UCMPL in 2022, 262.8mm more rainfall than 2021 and 418.3mm above the long term average of 672mm for the region (2009 EA), therefore any streamflow losses would be less evident in such a period.

A review of baseflow losses was undertaken by Hydro Engineering & Consulting (HEC) during 2020 which concluded there was no clear evidence consistent loss of flow which could be attributed to the effects of mining. It was recommended to undertake periodic gauging at SW02 and adjust the ratings curve if required, continue to collect data and re-assess in the next 12 months.

Further to the recommendation provided by HEC, one gauging at SW02 was undertaken in late 2021, which did not provide adequate data to adjust the ratings curve. UCMPL will endeavour further gaugings when creek flows are available in 2023. Based on the limited to insignificant strata depressurisation, AGE concluded that there was no significant change to modelled baseflow losses in the Goulburn.

The groundwater model estimates baseflow losses in the Talbragar catchment at 0.083 ML/day or 80 ML/year. UCMPL has secured WALs to offset the Talbragar Baseflow losses as follows:

- WAL 41817 provides 50 units in the Upper Talbragar River Water Source[21] ; and
- WAL 34921 provides 30 units in the Talbragar Alluvium Water Source[29].

Water levels in Triassic and Permian units are monitored at key locations (PZ24, PZ29, TAL-1 and TAL-2) to inform ongoing assessment of baseflows to the Talbragar and Goulburn Rivers. Due to the limited strata depressurisation observed in the Triassic Sandstone in PZ24 and PZ29, which the Goulburn River flows over, it is reasonable to conclude that baseflow losses due to mining impacts would also be very limited to non-existent. The predicted 100 ML/yr Goulburn River baseflow loss for 2022 continued to be supported by the observations at PZ24 and PZ29. Based on the monitoring results at TAL-1 and TAL-2, there is also no apparent change with regard to the predicted 29.61 ML/yr baseflow loss for 2022 to the Talbragar River as the result of mining operations but continued observations are recommended (AGE 2023).

[20] Flow at SW02 augmented by licenced water discharge from both UCMPL and MCO.
[21] Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012

7.5 Water Extraction Licence Compliance

Water Balance indicates total groundwater extraction of 5713.85 ML (**Table 7-3**) for the 2022 Water Year (1 July 2021 to 30 June 2022), of which;

- 1142.82ML of groundwater was extracted from the Oxley Basin Coast Groundwater Sources[22] (WAL41492 provides 7060 units of allocation). This was withdrawn under work approval 20AL214787 including various dewatering locations (**Attachment H**) throughout the Ulan Complex, none of which are in alluvial sediments;
- 4457.70 ML of groundwater was extracted from the Sydney Basin of the Murray Darling Basin (MDB) Groundwater Source[23] (WAL37192 704 units, WAL41906 2215 units and WAL42900 4031 units of allocation respectively).
- A total of 129.70 ML of entitlement under water access licence WAL19047 was used during the Reporting Period, 93.74ML was used to offset baseflow losses[31] to the Upper Goulburn River Water Source and 35.95 ML was evaporated during the Reporting Period.
- Transfer of water to Moolarben Coal was not required during the 2022 Water Year.

Table 7-3 – Water Extraction & Assessment of Compliance

Water Licence	Water sharing plan, source and management zone (as applicable)	Entitlement (Unit Shares)	Shares in ML for 2022 Water Year	Passive take / outflows	Active pumping	TOTAL	Complies (Yes/No)
WAL41492 (20AL214787, Dewatering / Water Supply Groundwater Goulburn River Catchment of Hunter Catchment)	Oxley Basin Coast Groundwater Source, Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016	7060	7060ML	0	1142.82	1142.82	Yes
WAL37192	Sydney Basin Groundwater Source Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2011	704	880*	0	0	0	Yes
WAL41906	Sydney Basin Murray Darling Basin Groundwater Source	2215	2768*	0	0	0	Yes
WAL 42900	Sydney Basin Groundwater Source Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2011	4031	5038*	0	4457.70	4457.70	Yes
WAL19047** (20WA209953, Moolarben Creek Dam /	Upper Goulburn River Water Source Water Sharing Plan for the Hunter Unregulated &	400	400ML	138.82	0	129.70	Yes

[22] Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016
[23] Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2011

Water Licence	Water sharing plan, source and management zone (as applicable)	Entitlement (Unit Shares)	Shares in ML for 2022 Water Year	Passive take / outflows	Active pumping	TOTAL	Complies (Yes/No)
Pump / Water Supply)[24]	Alluvial Water Sources 2009.						
WAL 34921	Castlereagh Groundwater Source Water Sharing Plan for Talbragar Alluvial Groundwater Source 2000	30	30	0	1.96	1.96	Yes
WAL 41817	Macquarie Bogan Unregulated Rivers Water Sources Water Sharing Plan for Upper Talbragar River Water Source 2012	50	50	0	14.78	14.78	Yes

Notes: *As per changes to legislation, 1.25 ML is available per unit share of the access licence share. ** 97.34 ML offset baseflows to Goulburn River, 35.95 ML annual evaporation from Moolarben Dam.

7.6 Licenced Water Discharge

Water treatment and discharge facilities were operated in accordance with EPL 394 during the Reporting Period. Discharges were made from:

- The Bobadeen Irrigation Scheme (BIS)[25];
- The Bobadeen Water Treatment Facility (LDP6)[26]; and
- The North West Sediment Dam Water Treatment Facility (LDP19)[27].

Approximately 410ML of water with an average EC of 985µS/cm was applied to the BIS in 2022, with 21% of the modelled offset capacity used during 2022 and 74% of total offset capacity to date. Ecological performance of the offset is described in **Section 6.6.1** and groundwater monitoring results are provided in **Section 7.11.3**.

Discharge of blended product water from the Bobadeen Water Treatment Facility to Ulan Creek via LDP6 occurred on 363 days with an average daily discharge volume of 7,470 KL/day. Measured pH, EC and TSS concentrations were within EPL394 limits. The maximum discharge volume on any day was 14,158 KL on the 9/11/2022, below the EPL394 volume limit 15,000 KL/day (**Table 7-4** & **Attachment C**).

Discharge of blended product water from the Northwest Sediment Dam Water Treatment Facility to Ulan Creek near the Goulburn River (LDP19) occurred on 365 days with an average daily discharge volume of 17,198 KL/day and a maximum discharge on any day of 21,011 KL on 04/09/2022, below the EPL394 volume limit 30,000 KL/day. Measured pH, EC and TSS concentrations were within EPL 394

[24] Works approval 20WA209953 requires riparian flow of 7 L/second. 260.30 ML was released to Moolarben Creek in 2021.
[25] The BIS (operating since 2004) utilises five central irrigating pivots to irrigate approximately 242ha of pasture.
[26] The BWTF (commissioned 2006) uses microfiltration and reverse osmosis water treatment and discharges to EPL 394 LDP 6.
[27] The North West Sediment Dam WTF (initially commissioned April 2011) uses a reverse osmosis water treatment process and discharges to EPL394 LDP19. Commissioning of the expanded NWSDWTF occurred on the 28 October 2014.

limits. The maximum combined discharge of 29,496 KL, on 14/12/2022, was below the 30,000 KL/day limit. Monitoring summaries are provided in **Table 7-4** and **Attachment C**.

Table 7-4 - 2022 Calendar Year Discharge Volumes

Location	Licence Limit (ML/year)	Discharged Volume (ML/year)	2022 Discharge Compliance with Annual Discharge Limits
Effluent Storage Dam (LDP1)	31	0	No discharge
Millers Dam (LDP2)	219	0	No discharge
Rowans Dam (LDP3)	3,650	0	No discharge
Truckfill Dam (LDP4)	730	0	No discharge
Discharge to Ulan Creek (LDP 6)	5,475	2725.5	Yes
Discharge to Ulan Creek (LDP 19)	10,950	6277.2	Yes
Discharge to Ulan Creek (LDP3, LDP6, and LDP19)	10,950	9002.7	Yes
Discharge through irrigation scheme (BIS)	No applicable volume limit[28]	410	Yes

No discharges from LDP1 (Millers Dam), LDP2 (Effluent Dams) LDP3 (V-notch weir plate at the end of the discharge channel at Rowans Dam) or LDP4 (Truckfill Dam) occurred during the Reporting Period.

Monitoring was conducted at the Goulburn River Gauging Station Downstream (LMP18), the Goulburn River Gauging Station Upstream (LMP33) and Ulan West Box Cut clean water drain (LDP23) (**Section 7.8** and **Attachment C**).

7.7 Compensatory Water Supply

As required by Schedule 3 Condition 30 of Project Approval PA08_0184, UCMPL must provide a compensatory water supply to any owner of privately-owned land whose supply is adversely impacted as a result of UCMPL activities. In accordance with the Alternative Water Supply Agreement entered into for a landholder in 2019, a new groundwater bore was constructed to a greater depth in response to dry conditions and poor performance of their existing bore, which was potentially impacted by predicted groundwater drawdown.

An Alternative Water Supply Agreement is in place for another landholder regarding a spring fed dam undermined by Ulan West LWW5 and LWW6, a bore and other several dams including another spring fed dam undermined by LW7 in 2022. As predicted the bore undermined by LW7 went dry in 2022 with compensatory water supplied as requested and in accordance with the Alternative Water Supply Agreement.

To date, UCMPL have completed repairs in 2020 to the spring fed dam impacted by LWW5 and LWW6 and the above average rainfall events since 2020 has maintained water in this dam. UCMPL have commenced repairs to dams undermined by LW7 in 2022 and is currently in consultation with this landowner to provide long term water supply options to replace the undermined bore. Impacted dams by LW7 will be monitored throughout the next Reporting Period.

[28] Salinity offset requirement EPL394 E 1.1 b) The Salinity Offset Program must offset the residual salinity loads generated by the Bobadeen Irrigation Area over the life of the Bobadeen Irrigation Program, and its associated salinity load impacts, and when fully implemented, must achieve an offset ratio of 1:1.5.

7.8 Surface Water Monitoring Results

The Surface Water Monitoring Program (ULNCX-111515275-1642) (SWMP)[29] details surface water monitoring to measure and assess changes in stream health (including base flows) and channel stability that could be attributable to mining activities. The locations of surface water (SW) monitoring and Licenced Discharge Point (LDP) sites are shown in **Attachment H**. For details on parameters sampled, sampling method and sampling frequency of each monitoring site see **Attachment C**.

SW01 and SW02 are monitored for pH and EC (µS/cm) via a continuous monitor, monthly grab samples and rainfall events. The creeks in the vicinity of the operation are ephemeral. Surface water monitoring sites SW03 to SW11 are sampled monthly if flow is present and following any rainfall event greater than 30 mm in a 24hr period. Automatic sampling stations are installed at SW06, SW07, SW10 and SW11. Monthly grab sample and rainfall event results are summarised in **Table 7-7.**

Figure 7-1 displays the monthly and rainfall event sample results for ph, EC and TSS during the Reporting Period for SW01. **Figure 7-2** displays the long-term real time monitoring results for pH, EC and TSS from 2019 to 2022 for SW01.

Figure 7-3 displays the monthly and rainfall event sampling results for ph, EC and TSS during the Reporting Period for SW02. **Figure 7-4** displays the long-term real time monitoring results for pH, EC and TSS from 2019 to 2022 for SW02.

Monthly and rainfall event water samples are collected and sent to a NATA accredited laboratory for analysis of pH, EC (µS/cm), TSS (mg/L), TDS (mg/L) and Turbidity (NTU). **Figure 7-9** to **Figure 7-11** provide the average water quality results for SW03 to SW11 within the Reporting Period, compared with the historical averages from 2011-2022.

The 2022 average, maximum and minimum sampling result for each surface water sampling site are compared against the adopted trigger values (detailed in the SWMP) in

Table 7-5.

Table 7-5 - Adopted Trigger Values for Key Water Quality Parameters

[29] Condition 34, Schedule 3 of the PA08_0184. A component of the WMP (ULN SD PLN 0017).

Water Quality Variable	Goulburn River Upstream (SW01)	Goulburn River Downstream (SW02)[4]	Ulan Creek Upstream of LDP6 (SW03)[9]	Ulan Creek at Old Ulan (SW04)[10]	Ulan Creek at Pleuger Road (SW05)[11]	Talbragar River[3] (SW09)	Watercourses flowing to Goulburn River (SW06, SW07, SW08)	Watercourses flowing to Talbragar River[6] (SW10, SW11)	Clean Water Diversion/ System SW12, SW13 (EPL23), SW14, SW15
pH	6.5 – 8.0[1]	6.4 – 8.1[3]	6.5 – 7.9[9]	6.5 – 8.5[8]	6.5 – 8.5[8]	6.5 – 8.5[5]	6.5 – 8.0[6]	6.5 – 8.0[5]	6.5 – 8.0[6]
EC (µS/cm)	680[2]	854[2]	1126[9]	900[8]	900[8]	125 – 2200[5]	30 – 350[6]	30 – 350[5]	30 – 350[6]
TSS (mg/L)	111[2]	53[2]	64[9]	83[10]	50[7]	50[7]	50[7]	50[7]	50[7]

Notes: [1] ANZECC (2000) default trigger value range for lowland east flowing coastal rivers in NSW. [2] 80th percentile based on historical data for the Goulburn River. [3] Range within Historical data for Goulburn River Downstream. [4] SW02 is downstream of the Ulan Mine Complex and as such water quality at this location can be influenced by other developments in the catchment outside of UCMPL influence. [5] Interim trigger values based on ANZECC (2000) default trigger values for lowland rivers in NSW. Site-specific trigger values will be developed as monitoring data becomes available. [6] Interim trigger values based on ANZECC (2000) default trigger values for upland rivers in NSW. Site-specific trigger values will be developed as monitoring data becomes available. [7] Interim trigger values based on Volume 1 of Managing Urban Stormwater: Soils and Construction (Landcom, 2004). [8] Trigger level reflects upstream discharge limit approved under EPL394. [9] 80th percentile of SW03 baseline (31 samples taken between February 2012 and September 2017). [10] 80th percentile of SW04 baseline (24 samples taken between February 2012 and November 2017). [11] 80th percentile of SW05 baseline (30 samples between November 2010 and November 2017).

Table 7-6 provides a summary of investigations undertaken where results exceeded trigger values for three or more consecutive sampling events in 2022 as required by the SWGWRP Surface Water TARP. Results of monitoring for EPL 394 licence discharge points are reported in the EPL Annual Return. Further surface water results and assessments are provided in **Attachment C**.

SW12 and SW15 are located in the Clean Water System (CWS), a series of drains that captures runoff from rehabilitated land around the mine operations. The water is not subject to the influence of mining activities and flows into and remains in Peanut Dam. Water sampling of SW12 and SW15 occurred during 2022 with no sites triggering their applicable adopted values as displayed in **Table 7-5** (**Attachment C**).

SW13 (EPL23) and SW14 are located in the Clean Water Diversion Drain, a drain that captures the runoff from natural bush land around the mine operations. The water is not subject to the influence of mining activities and flows into a tributary of Ulan, then flows into Ulan Creek and into the Goulburn River. Water sampling of SW13 and SW14 occurred during 2022 with no sites triggering their applicable adopted values as displayed in **Table 7-5** (**Attachment C**).

Table 7-6 - Surface Water Monitoring Result TARP Activation

Site	Date of sample	Trigger	Action	Result
SW08	4 Consecutive readings (July - September)	Elevated TSS	Inspection of Site, review of field sheet comments and review of data.	At SW08, TSS results were greater than the interim 50mg/L criteria for TSS on four consecutive occasions in July through to August. All four elevated TSS results correlated with either high rainfall events or sustained rainfall events either on the day or immediately before the day of sampling. The maximum TSS result of 478µS/cm was recorded on 24 August 2022. The Ulan region continued to experience significant rainfall events after August with no further TSS exceedances recorded at SW08 (**Attachment C**). SW08 is located in the vicinity of remote surface infrastructure in bushland to the north east of the Project for the UUG mine. Activities in this area are very limited and restricted to approved areas only.
SW09	5 Consecutive readings (October-November)	Elevated TSS	Inspection of Site, review of field sheet comments and review of data.	At SW09, TSS results were greater than the interim 50mg/L criteria for TSS on five occasions in October and November. All five elevated TSS results correlated with either high rainfall events or sustained rainfall events either on the day or immediately before the day of sampling. The maximum TSS result of 1260µS/cm was recorded on 14 November 2022. The Ulan region continued to experience at least one significant rainfall event in December with no further TSS exceedances recorded at SW09. Outside of significant or sustain rainfall events the TSS concentration declines (**Attachment C**). SW09 is located to the north west of the Project and is influenced by flooding events in the river and agricultural activities and farmed paddocks immediately upstream of the sampling point.
SW11	4 Consecutive readings (July - September) 5 Consecutive readings (October – November)	Low pH	Inspection of Site, review of field sheet comments and review of data.	At SW11, pH values were below the interim pH6.5 on four occasions in July to September and on five occasions in October to November. The lowest pH of pH5.6 was recorded on the 4 July 2022. All results correlated with either high rainfall events or sustained rainfall events either on the day or immediately before the day of sampling. SW11 is located along the western edge of the Project in remote bushland. Historical data from this ephemeral creek has recorded low pH values. UCMPL still in process of collecting baseline data. No mining activities are in this area.

Table 7-7 - Concentration Limits for Licensed Discharge Points

Location	LDP	Discharge Limits								2022 Discharge Compliance with Discharge Limits
		Iron (mg/L)	Conductivity (µS/cm)		Oil & Grease (mg/L)	pH	Zinc mg/L	TSS mg/L	Volume kL/ day	
			50th Percentile	100th Percentile						
Effluent Storage Dam	1	-	-	810	-	6.5-8.5	-	-	85	No discharge
Millers Dam	2	5	-	900	10	6.5-8.5	5	50	600	No discharge
Rowans Dam to Ulan Creek	3	5	800	900	10	6.5-8.5	5	50	10,000	No discharge
Truckfill Dam	4	5	-	900	10	6.5-8.5	5	50	2000	No discharge
Bobadeen WTF	6	-	800	900	-	6.5-8.5	-	50	15,000	Compliant
Goulburn River Gauging Station Downstream	18	-	-	-	-	-	-	-	-	Compliant
North West Sediment Dam WTF	19	-	800	900	-	6.5-8.5	-	50	30,000	Compliant
Ulan West Box Cut clean water	23	-	-	-	-	-	-	-	-	Compliant
Goulburn River Gauging Station Upstream	33	-	-	-	-	-	-	-	-	Compliant
Ulan Creek Cumulative Discharge Limit^	3 & 6 & 9	-	-	-	-	-	-	-	30,000	Compliant

Note: ^ The combined daily discharge from LDP 3, 6 and 19 must not exceed 30,000 kL/day

Table 7-8 - 2022 Sampling Result Summary

SW Sites	pH			EC (µS/cm)			TSS (mg/L)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
SW01	6.4	7.6	7.1	57	**1,210**	347.0	6.0	**301**	80.2
SW02	7.0	8.1	7.5	153	**1,010**	507.0	1.0	**278**	58.6
SW03	7.1	8.2	7.7	103	1,160	553.7	1.0	**438**	34.0
SW04	7.2	8.5	8.1	170	799	556.1	2	**436**	83
SW05	7.1	7.9	7.5	155	819	517	1	**371**	41.85
SW06	6	7.7	7.1	42	334	149	11	**246**	72.1
SW07	7.1	7.7	7.4	94	540	178	9	**158**	31.3
SW08	5.8	8.5	7.2	107	276	169.3	1	**478^**	117.7
SW09	7	**8.8**	8.21	43	883	611.45	5	**1260^**	277.6
SW10	6.7	7.6	7.1	61	227	136.9	3	**135**	44.9
SW11	**5.5^**	6.8	6.2	83	153	121.2	4	**92**	17.5
SW12	6.7	7.4	7.1	73	231	144	2	36	18.4
SW13	**6.2**	7.2	6.7	77	156	125.7	3	**60**	17.2
SW14	**6**	7.1	6.7	86	145	122.5	3	**666**	73.8
SW15	6.6	**8.2**	7.0	81	198	110.9	10	40	21

Notes: **Bold** results were periodically outside the adopted trigger values. ^A trigger has occurred i.e. more than three consecutive results are outside of respective water quality criteria. Elevated TSS results generally associated with a rainfall events. Elevated EC results in the Goulburn River at SW01 and SW02 are associated with the emergency discharge from Moolarben Coal and considered out the area of influence of UCMPL. Historically lower pH values recorded at SW11 (**Attachment C**).

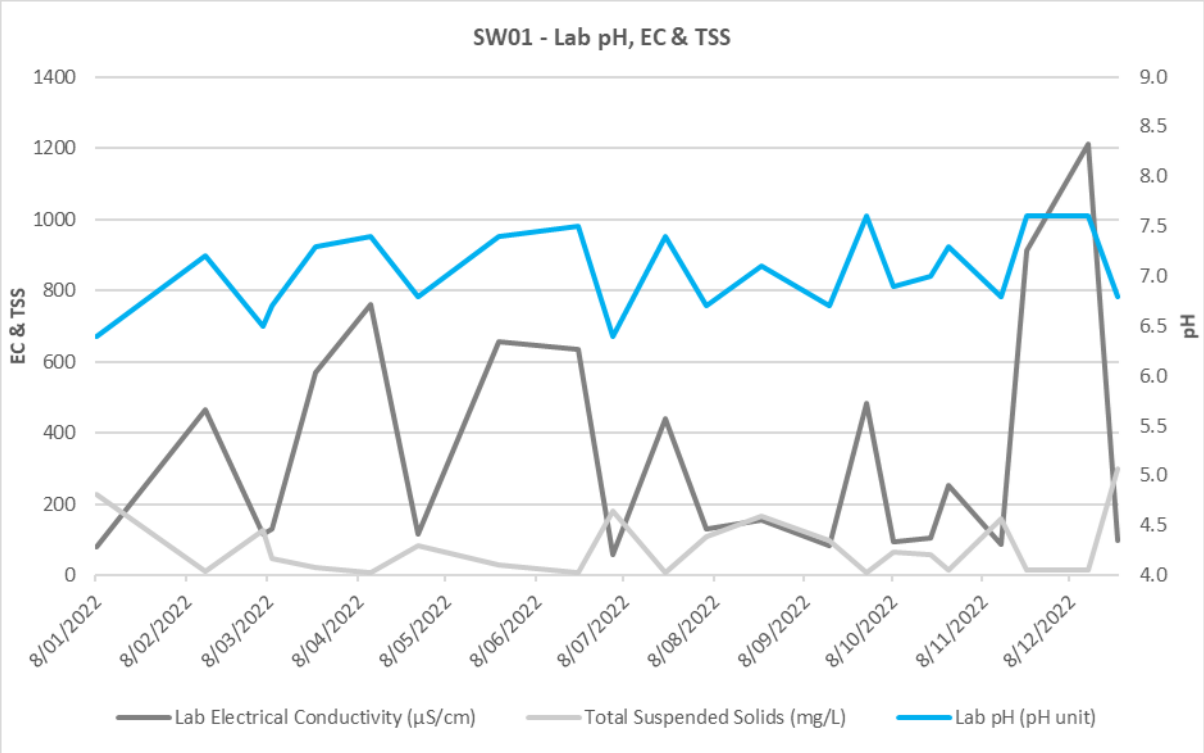


Figure 7-1 SW01 Upstream Goulburn River Water Quality Monitoring Results 2022

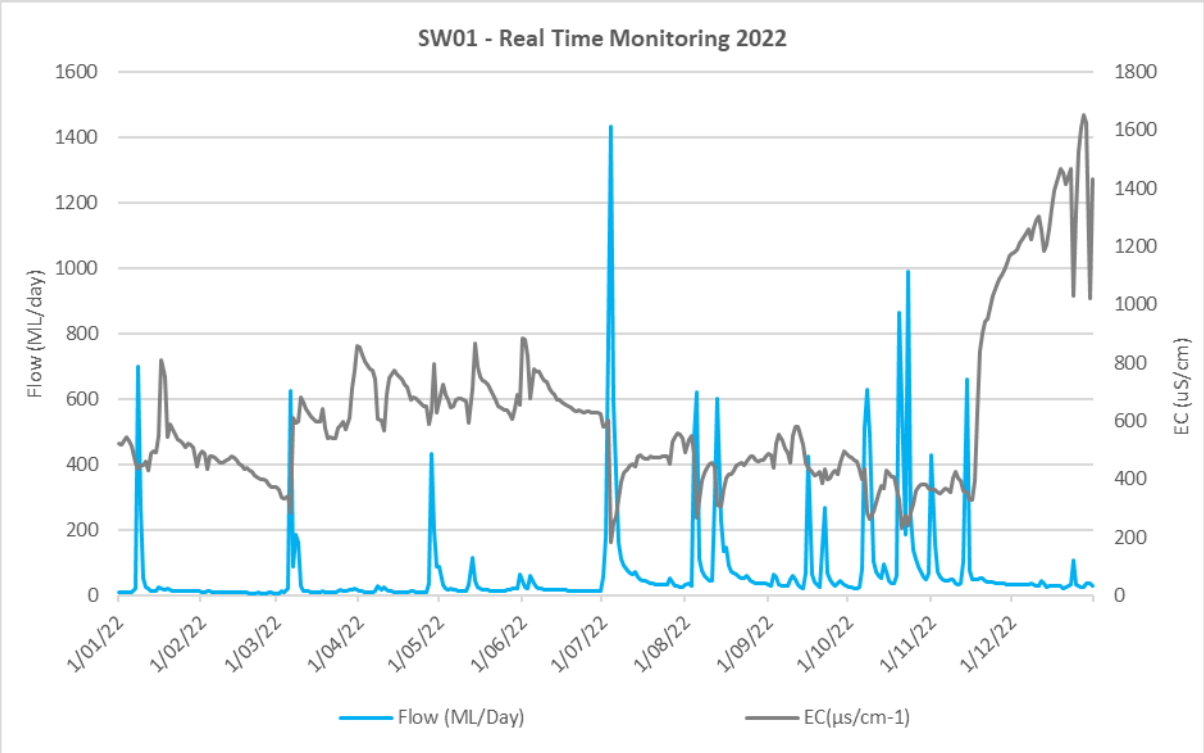


Figure 7-2 SW 01 Goulburn River Upstream Flow & EC 2022

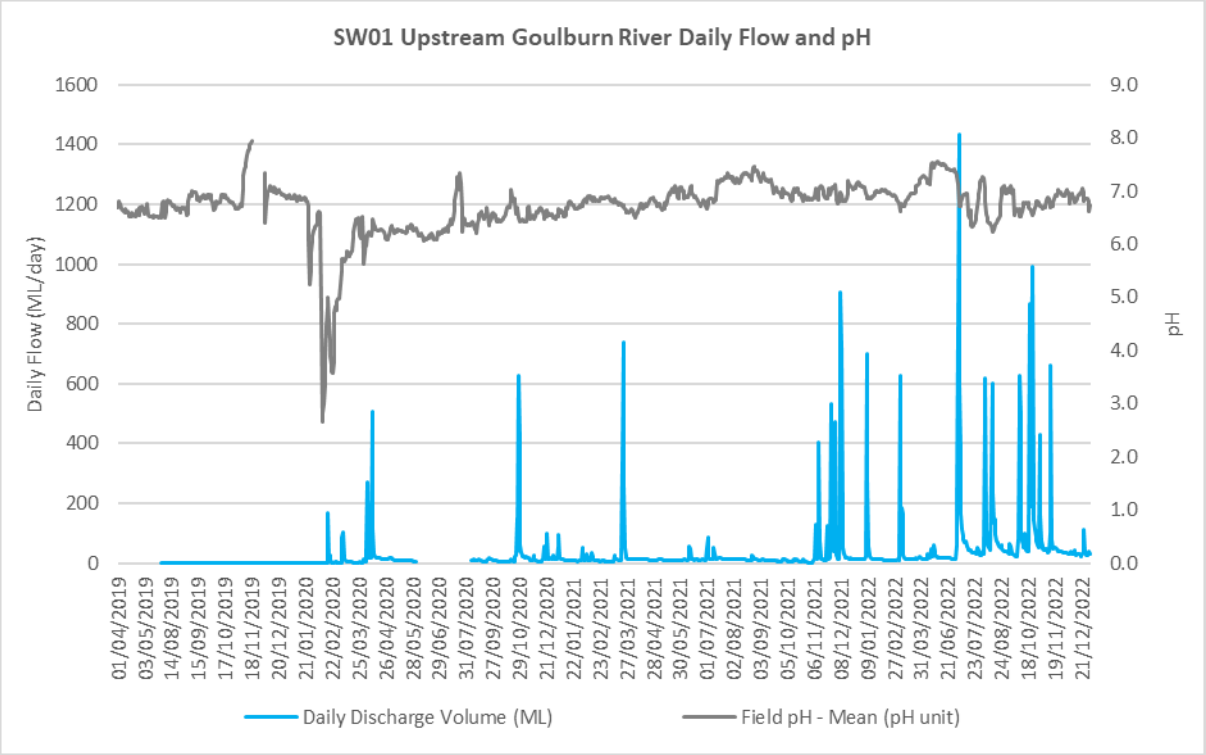


Figure 7-3 SW01 Upstream Goulburn River Historical Flow & pH (2019 - 2022)

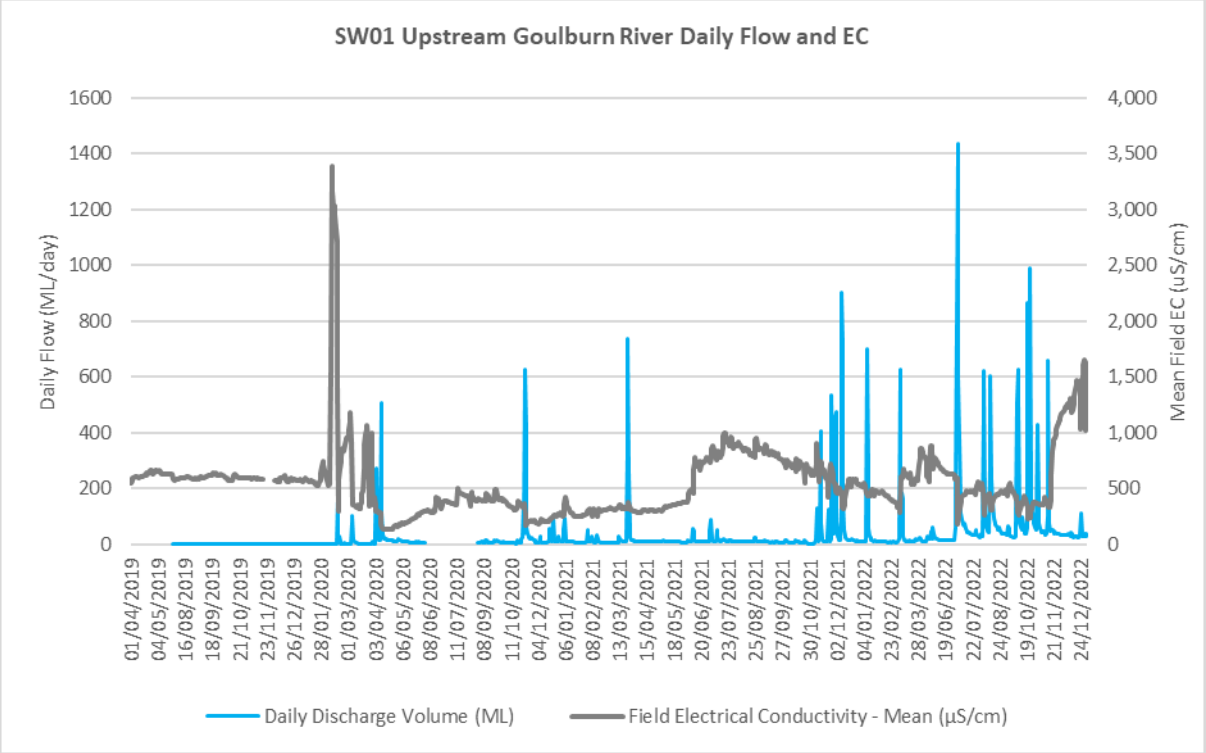


Figure 7-4 SW01 Upstream Goulburn River Historical Flow & EC (2019 - 2022)

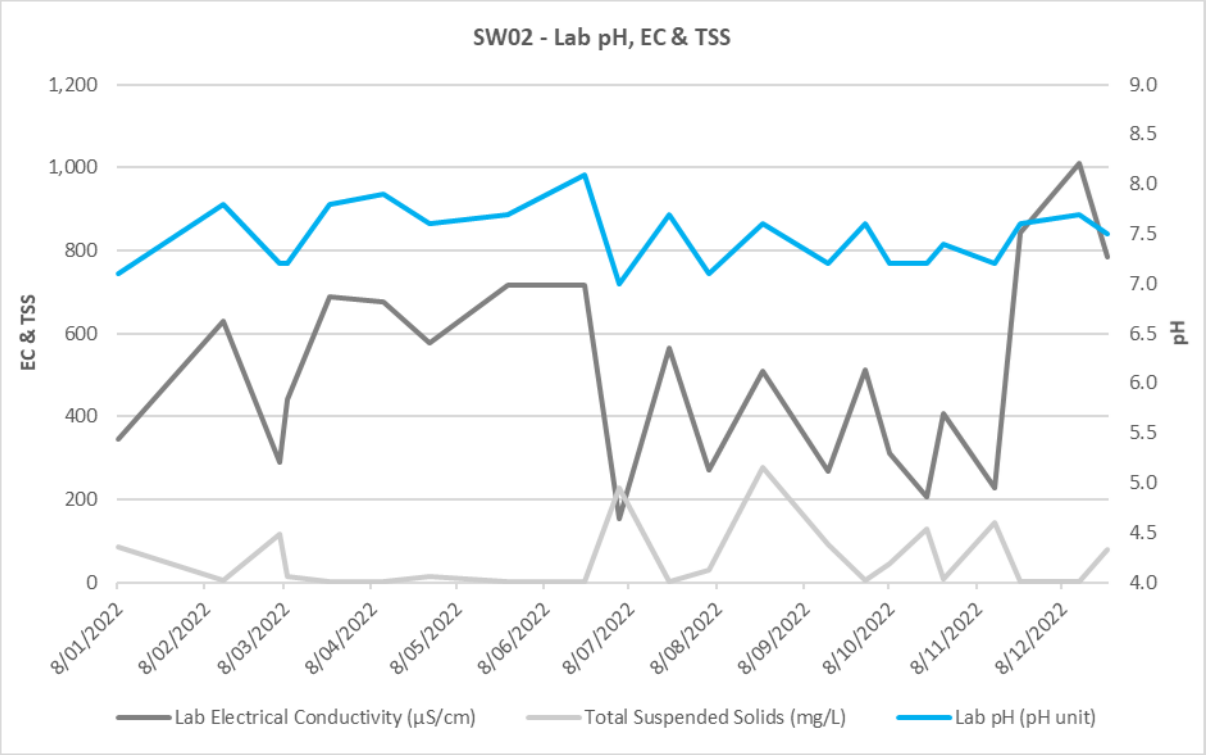


Figure 7-5 SW02 Goulburn River Downstream Water Quality Monitoring Results 2022

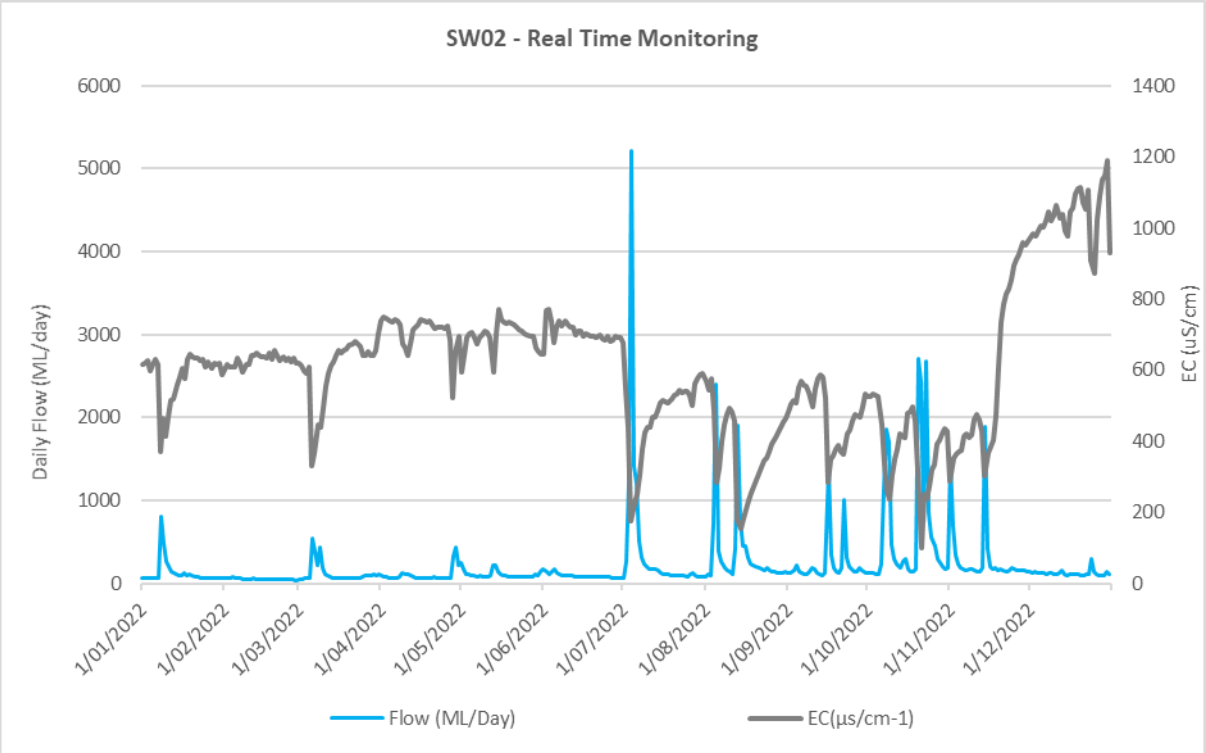


Figure 7-6 - SW02 Goulburn River Downstream Flow 2022

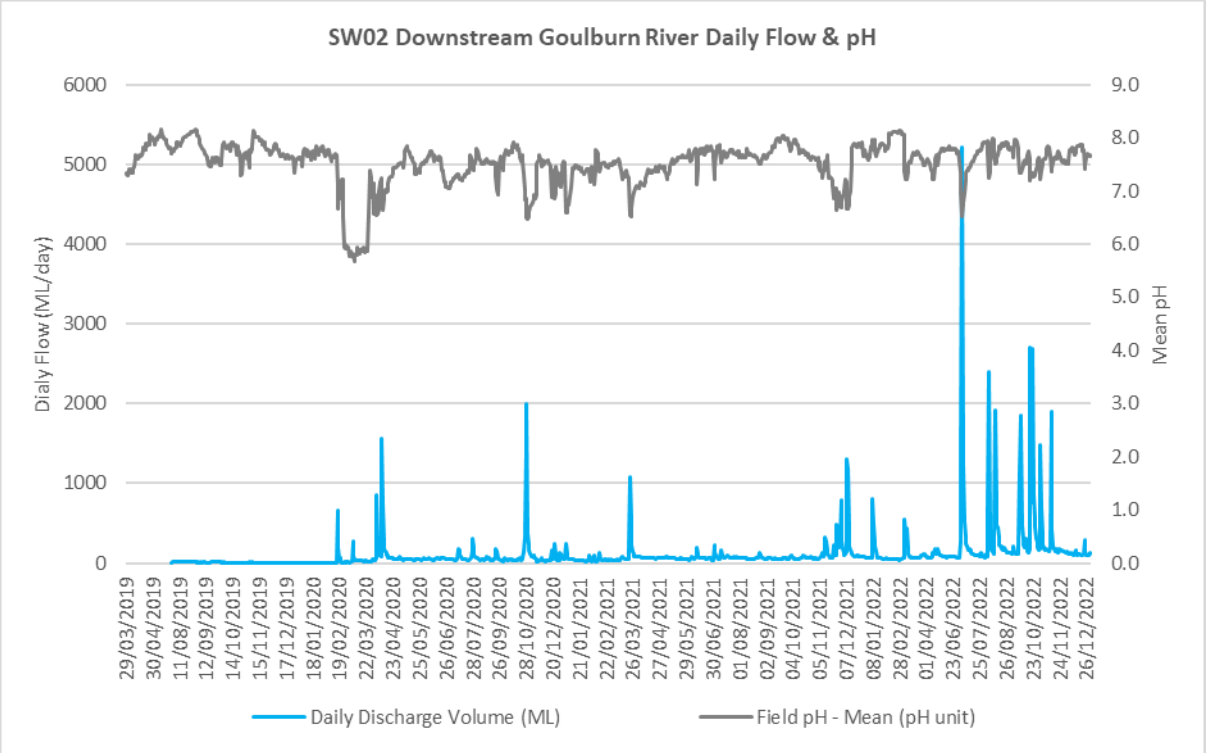


Figure 7-7 - SW02 Goulburn River Downstream Historical pH (2019 - 2022)

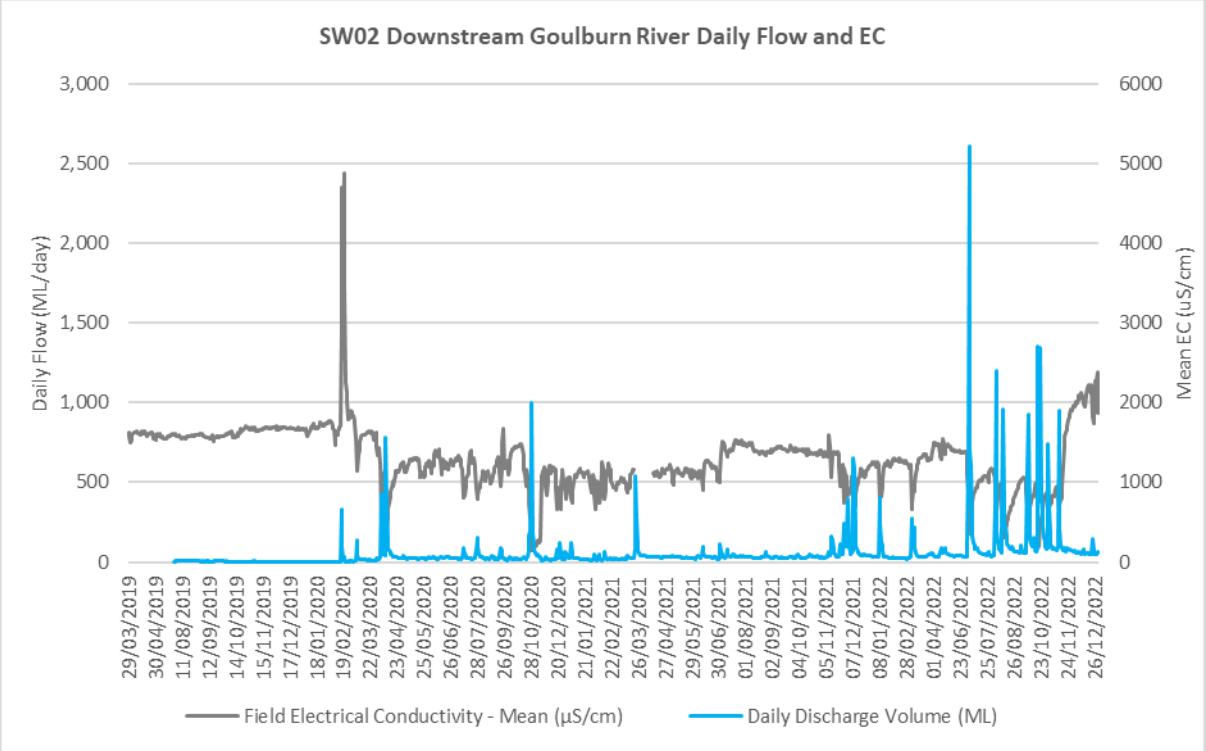


Figure 7-8 SW02 Goulburn River Downstream Historical EC (2019- 2022)

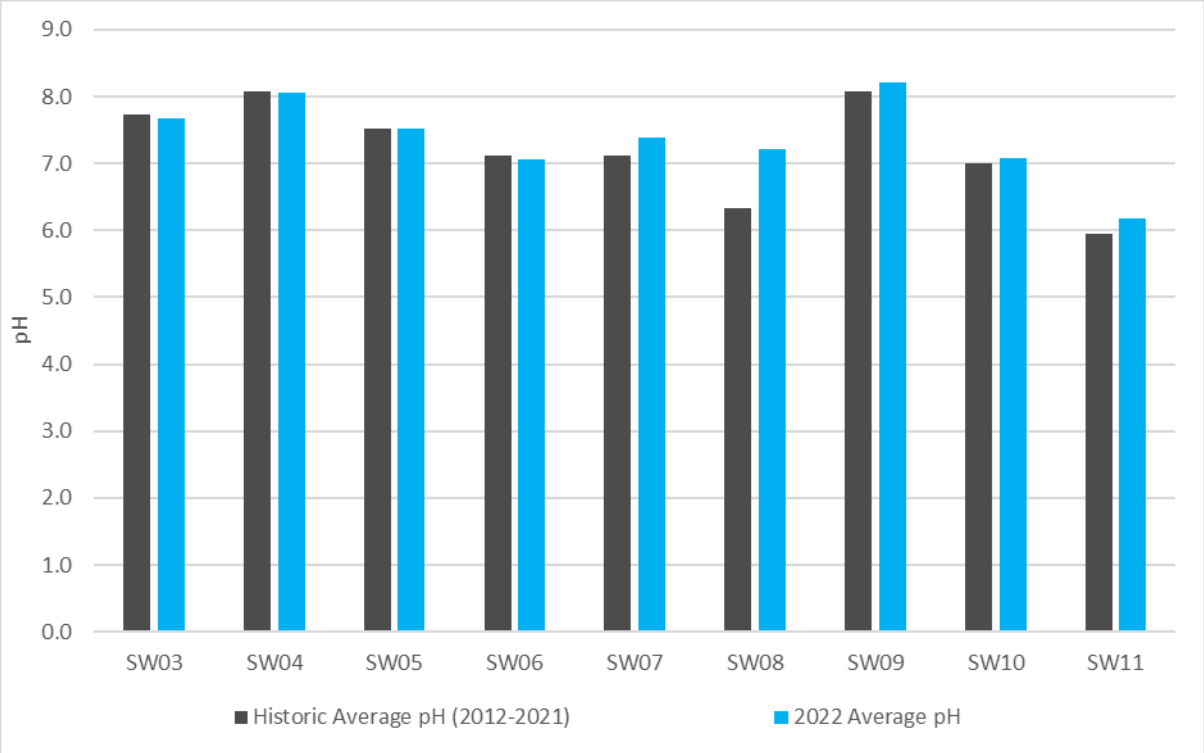


Figure 7-9 - Comparison 2022 to Historic Average pH Monitoring Results

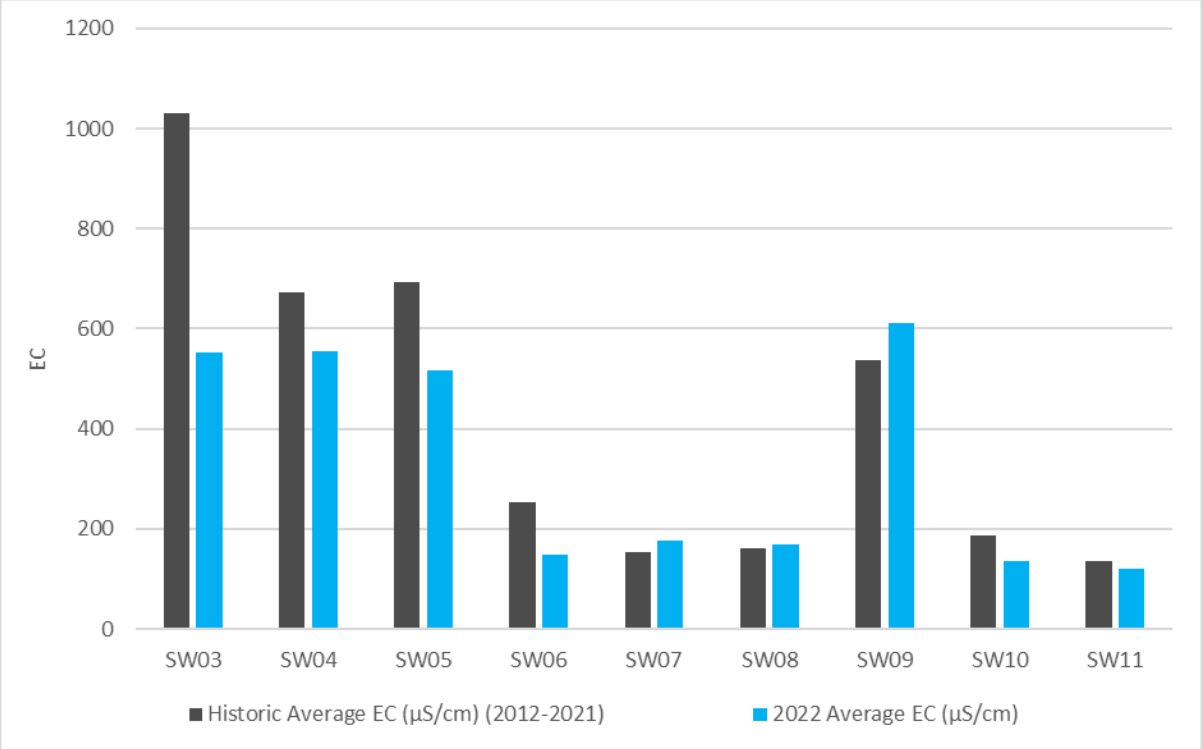


Figure 7-10 - Comparison 2022 to Historic Average EC Monitoring Results

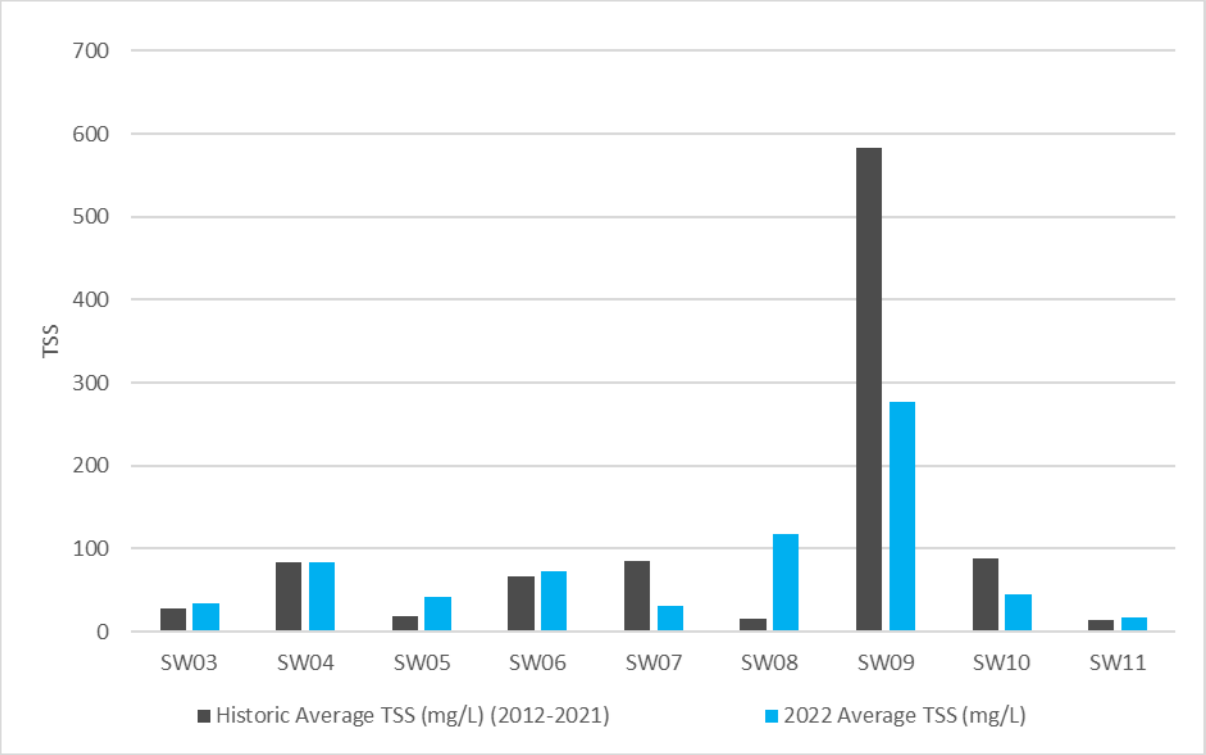


Figure 7-11 - Comparison 2022 to Historic Average TSS Monitoring Results

7.9 Channel Stability Monitoring

Channel stability monitoring of creeks scheduled to be undermined and predicted to be impacted by subsidence is required by the SWMP and Extraction Plans. Channel stability monitoring is to be completed before mining and annually for a period of 24 months post mining. Channel stability monitoring is also completed at regular intervals along the Goulburn River diversion to monitor the stability of the diversion profile as required by the SWMP.

Monitoring of Ulan Creek occurred in October 2022. Ulan Creek is outside the immediate zone of subsidence from the first longwall panel (i.e. LW1) of the Ulan West underground mine, approximately 80m from the goaf edge of LW1. Longwall mining of LW1 was completed by Ulan West 01 May 2015. As with previous monitoring of Ulan Creek since 2015, there were no obvious signs of subsidence related impacts from the Ulan West underground mine on Ulan Creek in 2022 (PE 2023).

The Ulan Creek channel stability monitoring program indicates a range of stability trends at Sites UC08 to UC37. Observed stability since 2015 at nearly all the sites fluctuates, with destabilisation predominately influenced by prolonged drought periods and significant rainfall events that eventuate into destructive high flows in the creek, as recorded on the 17 February 2020. The potential destabilising influence from LD6 is less obvious when compared to these natural high flow events, although the absence of established ground vegetation along the channel floor, possibly hindered by daily augmented creek flows from LDP6 is one factor to consider (PE 2023).

There is the likelihood of four rainfall/creek flow events of any significance within the monitoring period which is likely to have further exacerbated the existing erosion observed along the creek from sites UC08 to UC37. The 2022 channel stability monitoring observed similar morphological processes, as identified from previous monitoring, with numerous sites displaying a range of varying forms of

erosion and instabilities, although the rate of erosion appears to have slowed at some sites when compared to 2020 (PE 2023). For the complete report refer to **Attachment G**.

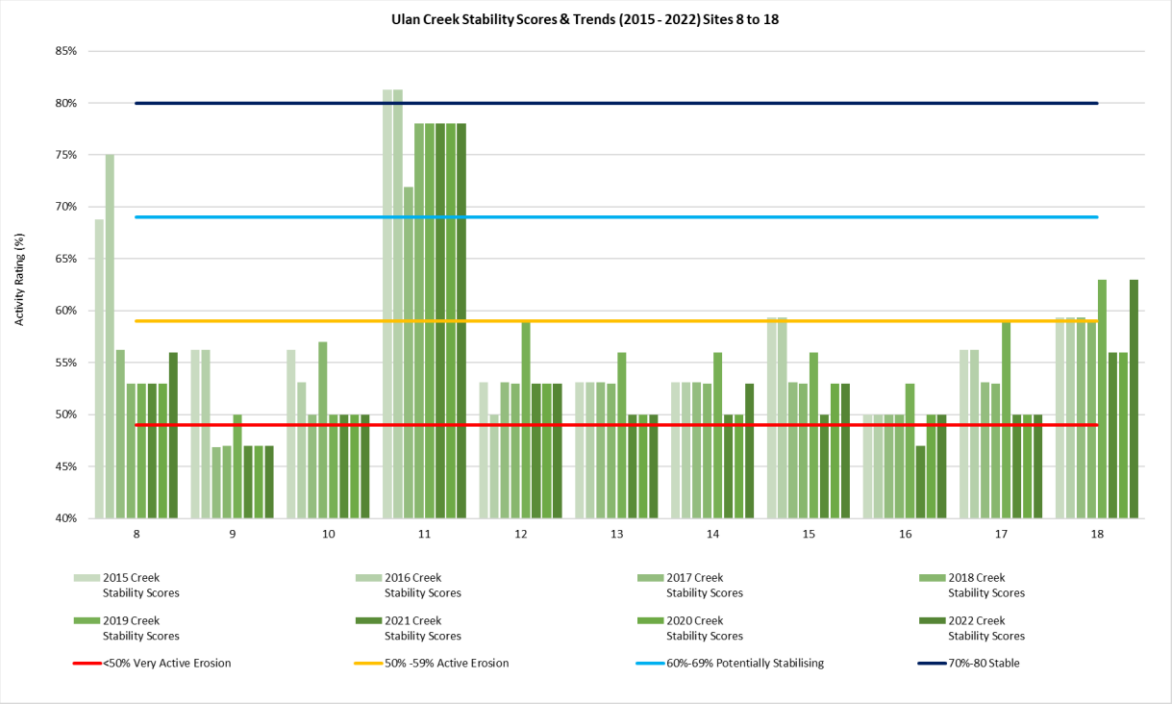


Figure 7-12 2015-2022 Ulan Creek Stability Monitoring Assessment Scores (Sites 8 to 18)

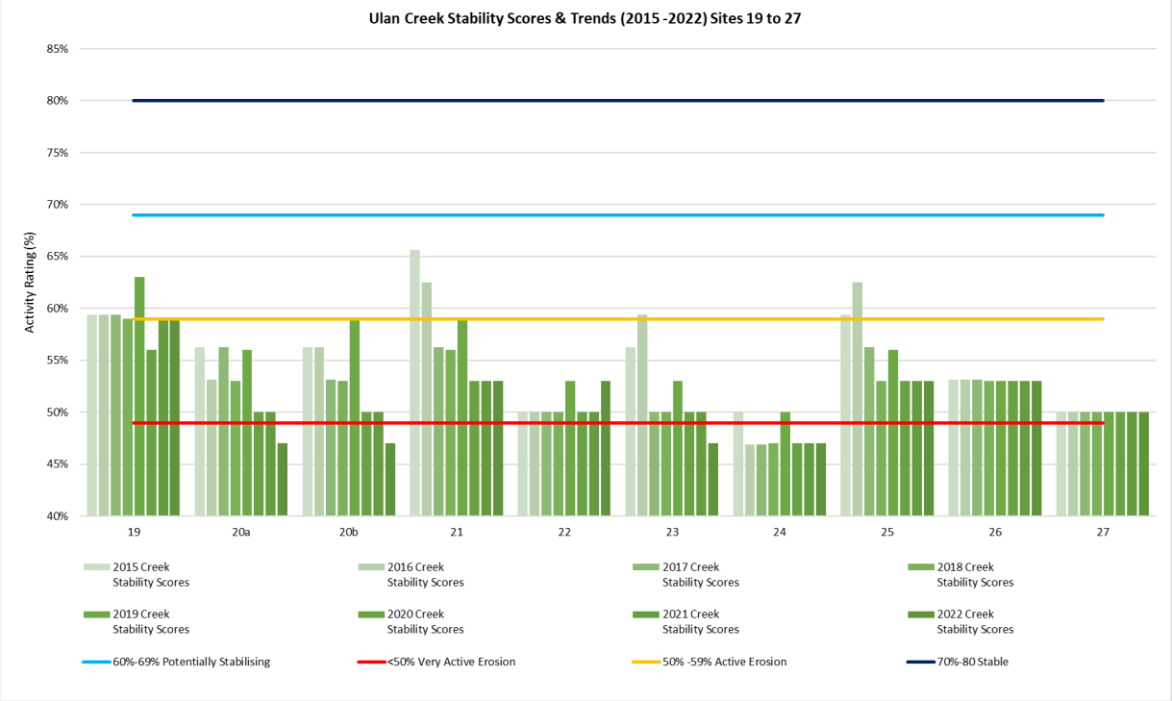


Figure 7-13 2015-2022 Ulan Creek Stability Monitoring Assessment Scores (Sites 19 to 27)

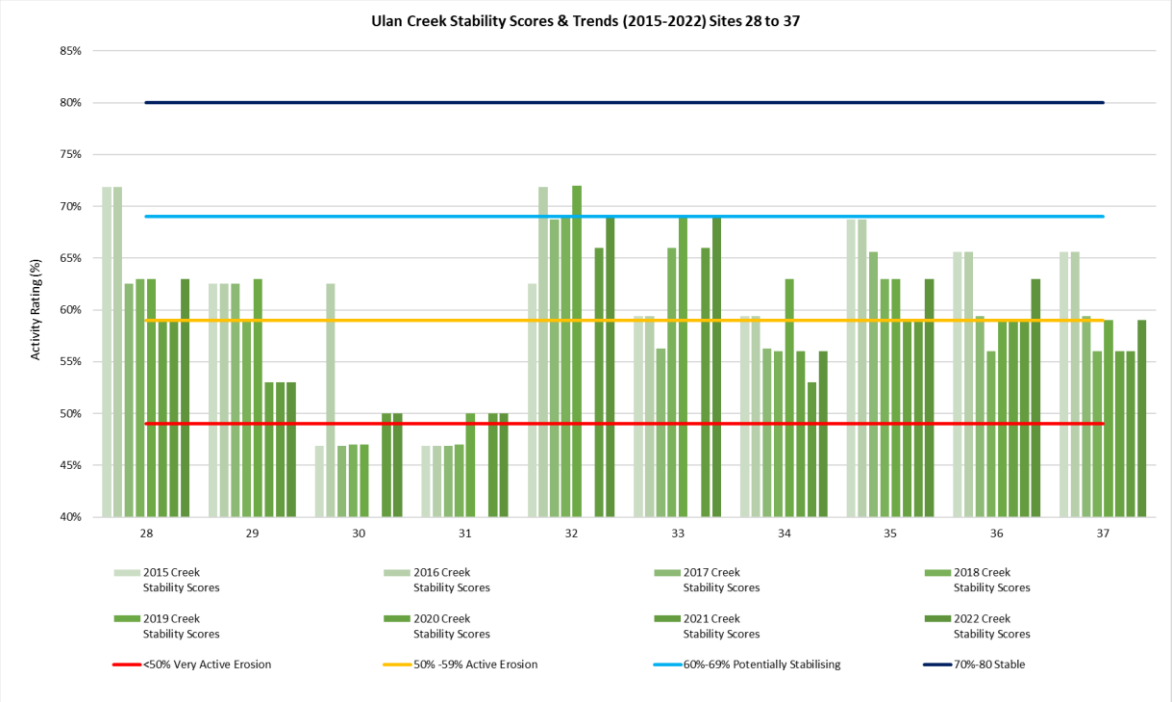


Figure 7-14 2015-2022 Ulan Creek Stability Monitoring Assessment Scores (Sites 28 to 37)

7.10 Tributary Monitoring – Ulan West

UCMPL completed the pre and post mining monitoring of selected ephemeral tributaries of Ulan Creek and a section of Brokenback Creek (BBC) above the Ulan West Underground Mine (Ulan West) for signs of predicted subsidence induced impacts including cracking, erosion, ponding and out of channel flows, as required by the Ulan West Extraction Plan for LW1 – LW8 (The Extraction Plan).

The post mining monitoring of ephemeral tributaries and a creek above Ulan West occurred on 12 October 2022 and 15 November 2022. The purpose of the post mining monitoring of ephemeral tributaries and creeks above the Ulan West mine is to identify the presence of surface cracking and erosion, surface ponding or out of channel flows and distinguish between natural erosion and erosion induced from mine subsidence, as required by the Extraction Plan for a monitoring period of two years post mining. The results of this monitoring will be interpreted by UCMPL's subsidence engineer to validate subsidence predictions made in the Extraction Plan and Project EA (PE 2023).

Identified impacts at number of sites to date have included cracking of bedrock material within the channel bed, surface cracking across the channel, ponding and erosion. In general, these observed impacts have not perceptibly changed during re-inspections over their respective two-year post mining monitoring period (PE 2023).

As observed in 2021, there was less visual evidence (e.g. flood debris/sediment accumulation) of significant flow events in 2022 from high intensity rainfall events, when compared to observations made in 2020. The coincidence of such significant flow events with post mining impacts in some places has demonstrated an exacerbation of existing erosion and changes of channel stability within the watercourse as predicted (PE 2023).

Water was observed flowing in 2022 along UCFL4 at post mining sites Site 3A, Site 5A Site 9, Site 11, Site 12, Site 13, Site 14, Site 15A, Site 15, Site 16 and Site 17. Water was observed flowing in 2022 along BBC at post mining sites Site 3, Site 4 and Site 5. No water was observed flowing within UCFL2 at post mining sites inspected in 2022 (PE 2023). For the complete report refer to **Attachment J**.

A summary of tributary monitoring above LWW7 at the UUG during the Reporting Period is also provided in the Annual Subsidence Report (**Attachment J**).

Impacts to surface water courses were consistent with expectation and less than the maxima forecast. No significant impacts were reported to or observed at drainage lines over areas mined by Longwalls 6 and 7 at UW and Longwalls W7 and 30 at UUG during 2022. UCM report no significant change to the minor cracking in the base of drainage lines of Mona Creek over western part of Longwall W7 at UUG previously observed in 2021 and no significant cracking in flow lines over the east of Longwall W7. No impacts were observed in the drainage line of Bobadeen Creek above Longwall 30 at UUG (SCT 2023).

7.11 Groundwater Monitoring Results

The Groundwater Monitoring Program (GWMP) (ULNCX-111515275-1643)[30] describes methods to monitor trends in groundwater levels, compare groundwater depressurisation inflows against modelled predictions and identify potential impacts to private licensed bores. Collected data is used to calibrate and update the groundwater model. Monitoring focusses on the alluvial and hard rock/coal measures aquifers in the region:

- Alluvial, Triassic, coal seam and interburden aquifers;
- Base flows to the Goulburn and Talbragar Rivers and associated creeks;
- Groundwater bores, springs and seeps on privately owned land; and
- 'The Drip', a groundwater dependant natural site, east of the operations.

7.11.1 Groundwater Sampling Procedure

Groundwater monitoring was undertaken in accordance with the following:

- the Groundwater Monitoring Program;
- *Approved Methods for the Sampling and Analysis of Water pollutants in NSW (Department of Environment and Conservation, 2004*);
- *Groundwater Monitoring Guidelines for Mine Sites within the Hunter Region (Department of Infrastructure, Planning and Natural Resources, 2003*);
- *AS/NZS 5667.1:1998 Water Quality – Sampling – Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples*; and
- *AS/NZS 5667.10:1998 Water Quality – Sampling – Guidance on Sampling of Waste Waters*.

7.11.2 Maintenance of Groundwater Monitoring Network

The groundwater monitoring network is reviewed annually with additional monitoring wells and Vibrating Wire Piezometers (VWP) installed (when required) as the mine advances to the North and

[30] Condition 34, Schedule 3 of PA08_0184, a component of the WMP (ULN SD PLN 0017)

West. Six additional monitoring bores were constructed during 2020 to provide groundwater monitoring points nearby Mona Creek.

7.11.3 Groundwater Monitoring Results

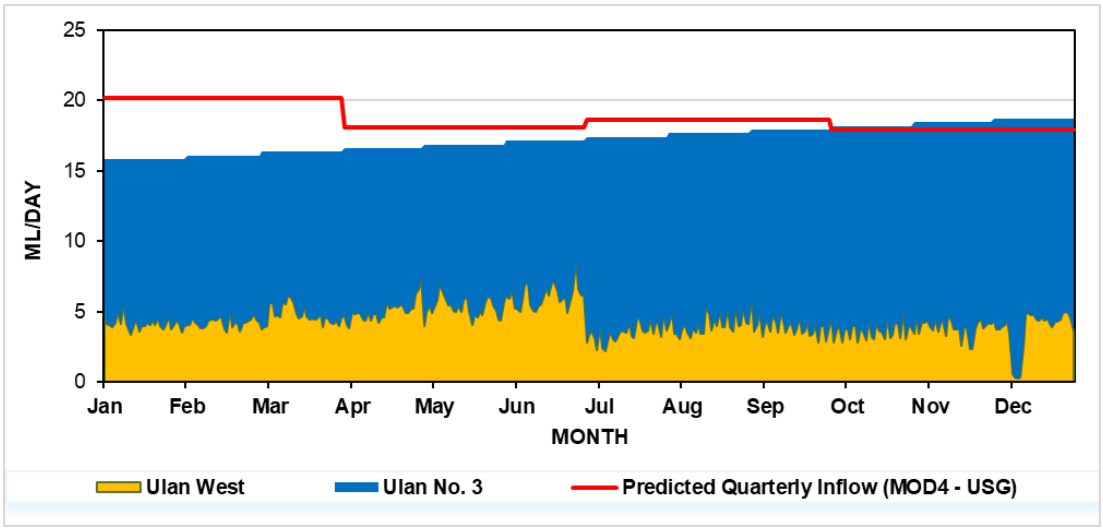
Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) were commissioned by UCMPL to prepare the annual groundwater review for the 2022 (**Attachment D**). A summary of the 2022 groundwater monitoring review by AGE is provided below.

7.11.3.1 Observed and Predicted Groundwater Inflows and Levels

Monthly 2022 abstraction for Ulan West and Ulan No.3 is shown in **Figure 7-15**. Abstracted volumes comprise of Ulan West (25%) and Ulan No. 3 (75%) during 2022. Daily extracted water ranged between 15.8 ML/day and 18.7 ML/day, with a combined average of 17.3 ML/day. The total volume extracted during 2022 was 6.3 GL. The mine inflows are within approved groundwater license allocations (AGE 2023).

The calibrated groundwater model use for this report was originally developed in 2018 as part of the Modification 4 Groundwater Impact Assessment by AGE (2018). The model was developed to predict future groundwater inflows to Ulan No. 3 and Ulan West. **Figure 7-15** shows the modelled inflow combined for the two mine areas and indicates that actual inflows are similar to modelled inflows for 2022. The likely reason for discrepancies is the difference between how the model simulates groundwater inflow volumes and how the actual mine dewatering system operates. The model has been developed to estimate the volume of groundwater required to be abstracted and the potential impacts that dewatering and mining may cause. It has not been developed as a mine water management tool. The model does not simulate advanced dewatering by bore abstraction, rather it simulates the desaturation of the longwall panels as they are mined. As discussed in Section 6.1, Ulan Coal Mine facilitates dewatering, using PMN bores. A model recalibration was undertaken as part of MOD 6, which is awaiting approval, and this will be used for subsequent reporting pending approval (AGE 2023).

Figure 7-15 - Comparison of Modelled and Calculated Groundwater Inflows to the Underground (AGE 2023)



7.11.3.2 North Monitoring Network

North Monitoring Network (NMN) is UCMPL's largest network of environmental monitoring bores and consists of 38 monitoring standpipes (SPs) from which groundwater level and quality data is collected at 18 locations, 1 data logger to collect water level data and 13 VWPs with multiple sensors from which groundwater pressure data is collected (**Attachment D**).

Groundwater monitoring was conducted in accordance with the GWMP during 2022. Monitoring bores intersecting Jurassic sediments recorded varied trends and most of the VWPs intersecting Jurassic sediment showed very little overall change in 2022, suggesting that any observed drawdown may be localised and not evidence of a widespread trend. No drawdown exceedances were identified in Jurassic bores (AGE 2023).

Some of the monitoring bores and VWPs intersecting Triassic units recorded slight groundwater level declines over 2022 and one of the Triassic bores (PZ08C) reported drawdown that exceeded the adopted groundwater level trigger. In some Triassic bores, such as in TAL-1, VWPs recorded a noticeable increase in the rate of decline toward the end of 2022. It is recommended that there be further investigation into the cause of the declines observed in these bores and VWPs, specifically in TAL-1, and in the context of regional groundwater trends. Groundwater within the Permian coal measures declined in the majority of monitoring bores over 2022, as predicted by the model and expected given mine operations, and several bores recorded annual drawdown in excess of annual model predictions while three bores (PZ06B, PZ09B, and PZ12B) exceeded the adopted groundwater trigger level. VMPs in the Permian coal measures recorded declines, as expected, but some, specifically TAL-2, recorded an increase in the rate of decline compared to previous years (AGE 2023).

Multiple VWPs recorded annual porewater pressure declines greater than predicted in the groundwater model for 2022. This was observed at EX03, EX09 (one sensor only), PZ29, TAL-1, and TAL-2. In total, 15 sensors exceeded modelled annual drawdown predictions with most occurring in PZ29 and TAL-1. These exceedances may be due to a divergence from the original mine plan, differences in modelled and/or extrapolated potentiometric surfaces and geological unit elevations, or because the model used for the predictions has not been updated to reflect current conditions (a model update has been proposed as MOD6 and is awaiting approval). Additionally, the observed groundwater level declines, where slight, may be due to natural conditions. Some sensors exceeded the overall adopted trigger levels by small amounts (< 2 m) and these do not warrant investigation at this time. The 22 m sensor in UW-1 exceeded the adopted trigger by approximately 6 m and may require an investigation (AGE 2023).

Numerous groundwater quality exceedances were observed within the NMN with a total of ten bores experienced pH or EC values outside of the adopted trigger values. Water quality exceedances for PZ08C, PZ04A, PZ06A, and PZ08C were reviewed in previous investigation reports in 2021 and 2022 and it was concluded that the exceedances were associated with the proximity to the mine footprint where localised impacts are expected. Exceedances found in 2022 that have not been previously investigated should be reviewed in the context of that report to investigate if similar conditions are the cause (AGE 2023).

The groundwater TARP trigger exceedances within the NMN will be investigated in 2023 (**Attachment D**). Investigations of groundwater triggers from 2021 competed in 2022 are alos included in **Attachment D**.

7.11.3.3 Bobadeen Monitoring Network

Land above Ulan No. 3 is irrigated with treated mine water as part of the Bobadeen Irrigation Scheme (BIS). The BIS has been operational since 2003 and includes five central pivots (P1 to P5 in Figure 6.1). The rate of water pumped to the pivots is monitored and recorded at station Farm 1 and Farm 2. Less mine water was intercepted in 2022 (410 ML) than in 2021 (654 ML). The majority of pumping in 2022 occurred in the first four months and last four months of the calendar year. As discussed in Section 7.2, even with the irrigation occurring, groundwater levels remained low in the majority of BMN monitoring bores with six of the nine bores recorded as dry at a point in 2022. This suggests high evaporation rates, soil moisture deficits, and/or less utilisation of the BIS (AGE 2023).

7.11.3.4 Mona Creek Monitoring Bores

The Mona Creek monitoring bores are a group of six monitoring bores that were installed nearby to Mona Creek in the northern extent of the Ulan site boundary. More details are available in AGE (2020). The bores are distributed across three locations that consist of two nested monitoring bores, with one bore installed into unconsolidated sediments and the other into Triassic-aged sandstone at each installation site.

Monitoring bore MCMB01B, installed into sandstone, remained dry throughout 2021 and 2022. Groundwater elevation in MCMB03A (unconsolidated sediments) gradually declined over 2021 and was dry in Q1 2022 but had measurable water in Q2 through Q4 2022. MCMB01A recorded fluctuating groundwater levels over 2022 with the highest level in Q3. MCMB04A and MCMB04B recorded rising water levels through 2022 with a nearly 3 m rise between Q1 and Q4. Trigger levels are yet to be derived for the Mona Creek monitoring bores. If these monitoring sites are added to the NMN within the next update of the GWMP, groundwater level triggers will need to be derived by statistical analysis and/or by evaluation against the latest groundwater model results (AGE 2023).

7.11.3.5 Private Bore Monitoring

Monitoring of the private bores is conducted annually, dependent on granting of access by private landholders and access constraints. During the 2022 monitoring period, 19 private bores within the current GWMP were measured for groundwater levels. Adopted groundwater level triggers were exceeded in only one private bores in 2022 (PB18). Groundwater quality exceedances were also evaluated in the Private Bore Monitoring network. Stage 2 pH exceedances were identified in only one bore in the network (PB05). There were no private bores that exceeded triggers for EC. The Stage 2 pH exceedances require investigation in line with Ulan's TARP documentation. No private bores exceeded Stage 1 triggers (three consecutive measurements greater than 95% exceedance baseline data) in 2022 (AGE 2023).

The groundwater TARP trigger exceedances within private bores will be investigated in 2023. Investigations of groundwater triggers from 2021 competed in 2022 are included in **Attachment D**.

No community complaints related to private bores were received in 2022.

7.11.3.6 The Drip Monitoring Program

VWP PZ29 monitors groundwater pressures nearby to The Drip. The porewater pressure trends have been stable for over five years, are consistent with natural variation, and indicate that there is no mining related drawdown in the Triassic sediments (AGE 2023).

Water quality at The Drip continues to exhibit a major ion composition comparable to some Triassic bore samples, but noticeably independent of the full range. This suggests the influence of an alternative water source mixing with Triassic sediments to recharge The Drip. Given that The Drip seep has a local recharge source compared to the regional Triassic aquifer, and no mining related depressurisation has been recorded in the Triassic nearby The Drip (as measured at PZ29), Ulan Coal Mine does not appear to be impacting groundwater flow at The Drip (AGE 2023).

7.11.3.7 Pleuger Monitoring Network

The PMN comprises nine active dewatering bores (E20, MG23, MG26, MG27, MG28, MG29, UW TG1, LW A+B and UW TG6) and six decommissioned dewatering bores (East 7, 9, 10, 15, 18 and MG21).

Monthly groundwater level elevations at six decommissioned dewatering bores within the PMN (East 7, East 9, East 10, East 15, East 18, and MG21). The groundwater hydrograph presented shows most groundwater levels were relatively stable over the long term but East 7, East 9, and MG21 show a slight increase in the last one to two years (AGE 2023).

Figure 7-16 - Interpolated Groundwater Contours - Jurassic Sediments

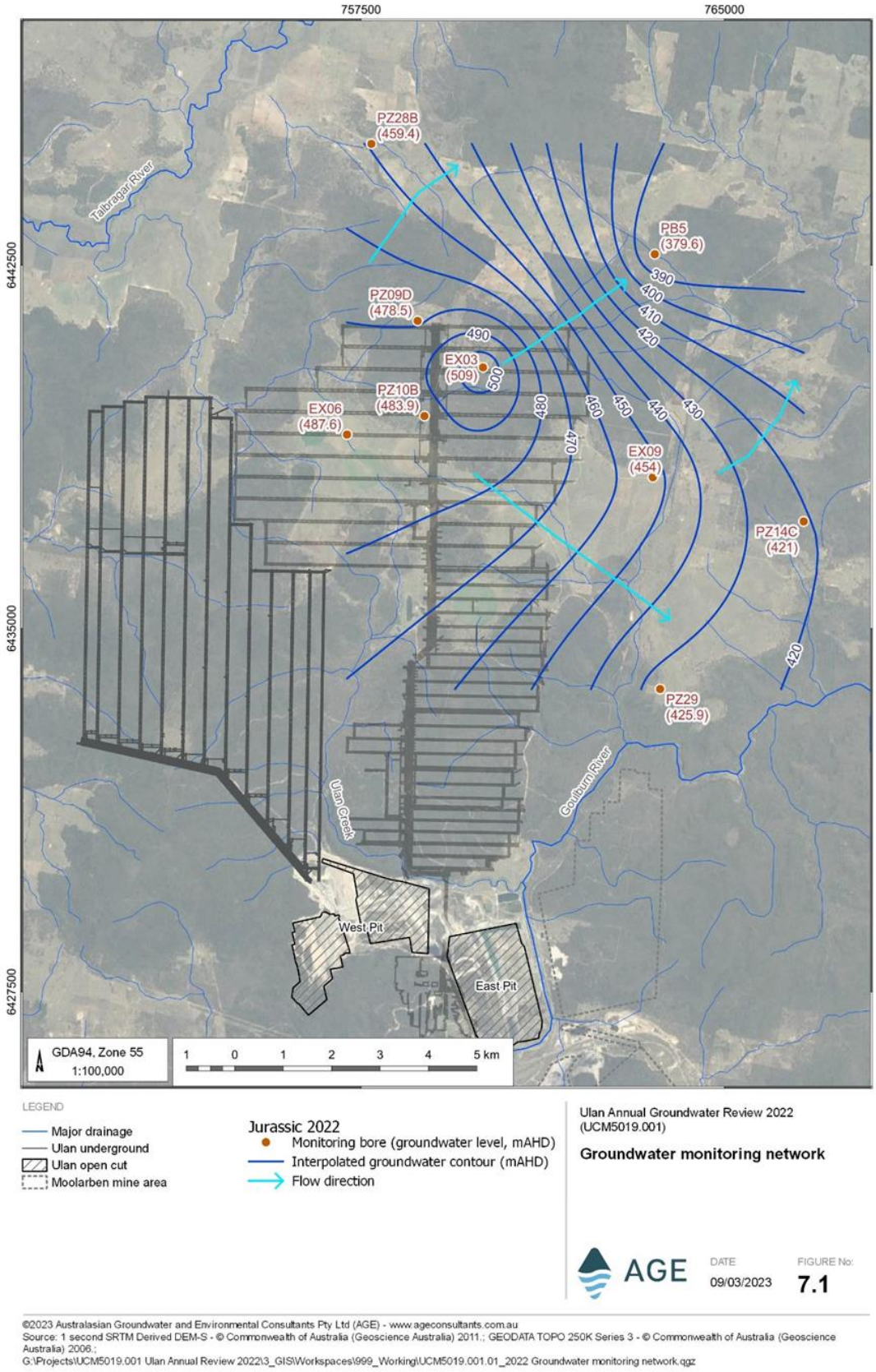


Figure 7-17 - Interpolated Groundwater Contours - Triassic Sediments

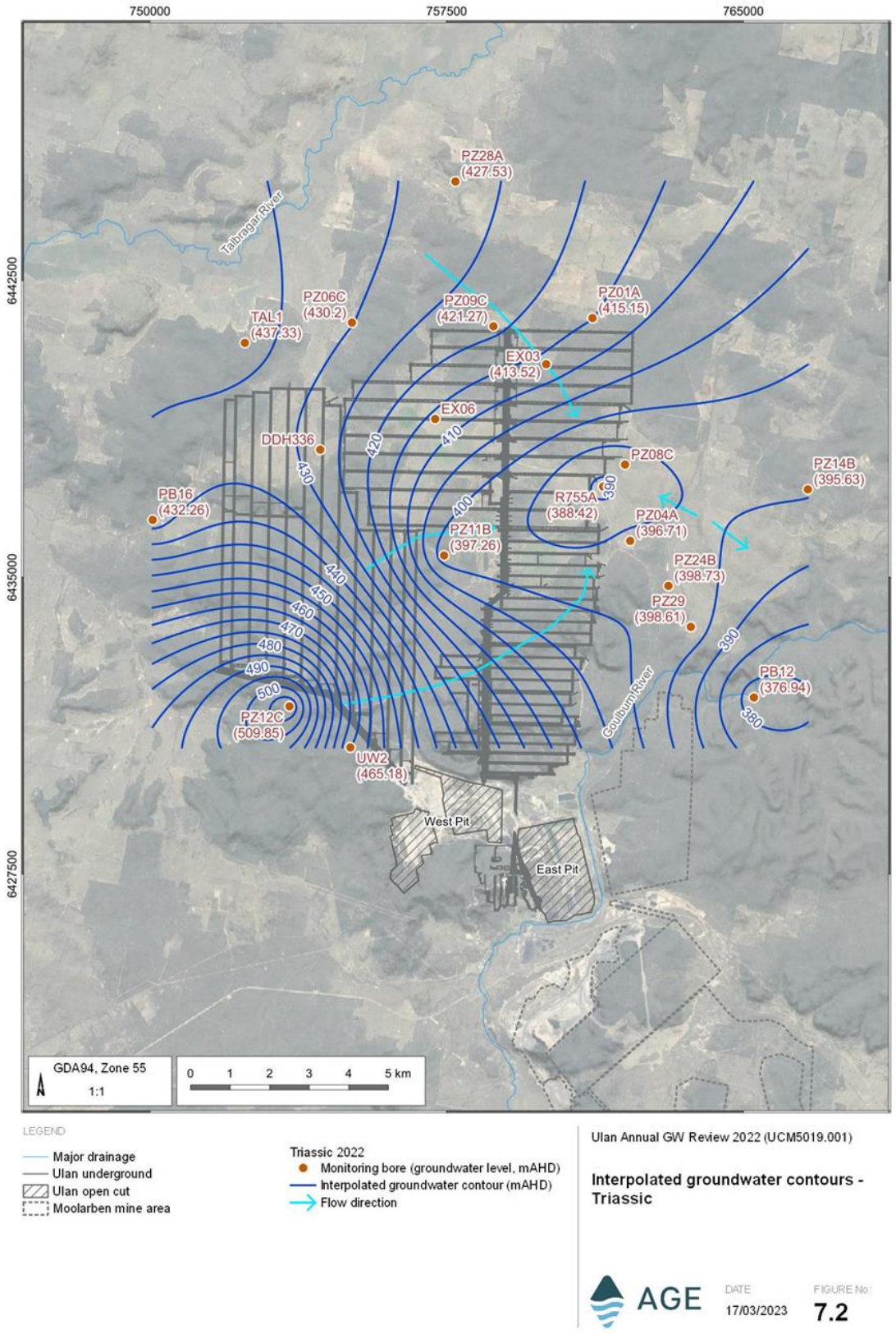
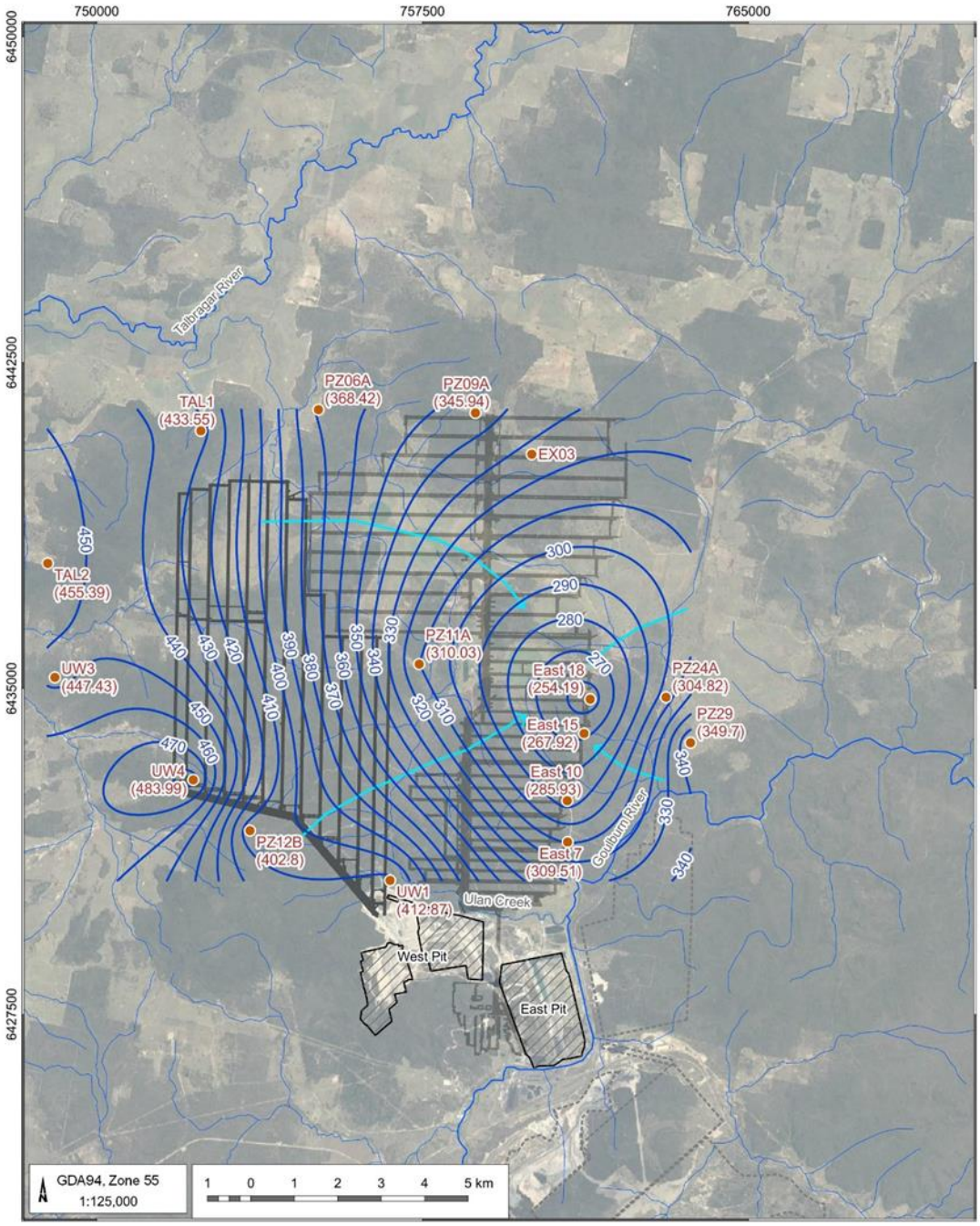


Figure 7-18 - Interpolated Groundwater Contours – Permian Sediments



8. Rehabilitation

8.1 Status of Mining & Rehabilitation

8.1.1 Open Cut Operations

Open cut operations had previously been undertaken until exhaustion of approved reserves and completion of the mining contract in 2008. Open Cut operations recommenced in January 2012 in the Open Cut Extension Area. Mining in the Open Cut Extension Area continued as required to supplement the Underground ROM production for rail until 10 October 2016 when the Open Cut was placed into Care and Maintenance for the foreseeable future.

Table 8-1 presents a summary of the current rehabilitation and disturbance areas associated with the Open Cut. The Open Cut remained in care and maintenance in 2022 and no further areas are currently available for rehabilitation. During the Reporting Period, rehabilitation activities primarily included weed maintenance and monitoring within existing rehabilitated areas (**Section 8.2**).

Figure 8-1 displays the extent of mining and rehabilitation activities for the Open Cut in 2022.

Table 8-1 – Open Cut Rehabilitation and Disturbance Summary

	2021 (ha)	2022 (ha)	2023 Forecast (ha)
A. Total mine Footprint	1321.6	1327.5	1327.5
B. Total Active disturbance	723.3	726.3	726.3
C. Land being prepared for rehabilitation	2	0	0
D. Land under active rehabilitation	553	553	553
E. Completed rehabilitation[31]	0	0	0

8.1.1.1 Objectives and Final Land Use

The primary objective of rehabilitation and revegetation of the post-mining disturbance areas, in particular the open cut disturbance area, will be to create a stable final landform, being self-sustaining native vegetation communities characteristic of the pre-mining composition, with a post mining land and soil capability Class 6 landscape. The RMP defines the following Final Land Use Domains:

- Domain A: Native Ecosystem
  - Applicable to Mining Domain 1 (Infrastructure), Mining Domain 2 (Tailings Storage Area), Mining Domain 3 (Water Management Area), Domain 4 (Overburden Emplacement Area) and Domain 5 (Active Mining Areas).
- Domain D: Rehabilitation Biodiversity Offset Area
- Domain F: Water Management Areas
- Domain G: Water Storage (excluding final void)
- Domain I: Infrastructure
- Domain K: Other – Subsidence Management Area

[31] 50ha completed in 2020 (refer to **Section 8.5**)

Within Domain A: Native Ecosystem, UCMPL will rehabilitate and revegetate the open cut to self-sustaining native vegetation communities, as proposed in the 2009 EA including (**Figure 8-1**):

- Grey Box Woodland and Ironbark Open Forest Complex on Sandstone communities which are characteristic of the pre-mining composition within the Open Cut Extension Area; and
- A mix of Woodland and Open Woodland within previous areas rehabilitated or disturbed areas of the open cut prior to the approval of PA08_0184.

The proposed vegetation communities within the post-mining landscape will be specific endemic (e.g. Ironbark Open Forest Complex and Grey Box Woodland or Woodland areas (non-specific). They will have 'characteristics' of these communities, but at this point in time will not be used for any offsetting requirements. Hence, they are not classified under Endangered Ecological Community (EEC) and Critically Endangered Ecological Community (CEEC) completion criteria.

8.1.2 Underground Operations

Longwall mining activities during the Reporting Period for UW and UUG are provided in **Section 4.1.1** and **Section 4.1.2** respectively.

For the Underground Operations, disturbance of the surface above longwall mining activities can result from either the construction of various approved infrastructure including roads, vent fans, dewatering sites, powerlines, pipeline substations to support the Underground Operations and/or subsidence related impacts.

However not all subsidence related impacts require rehabilitation. The decision to remediate subsidence impacts takes into consideration accessibility, potential risks to the public, employee and contractor safety and the environment.

If assessments determine subsidence cracking does not present a safety risk or risk to the environment, the crack will be left to self-remediate to prevent further clearing/disturbance works associated with the remediation.

If assessments determine subsidence cracking requires remediation, an appropriate method will be selected to minimise the potential disturbance to the surrounding environment as required by the relevant Extraction Plan.

During the Reporting Period UCMPL completed several rehabilitation projects to repair subsidence cracking on UCMPL owned land and on privately owned land (**Figure 8-2**).

Figure 8-2 displays the extent of mining and rehabilitation activities for the Underground Operations in 2022.

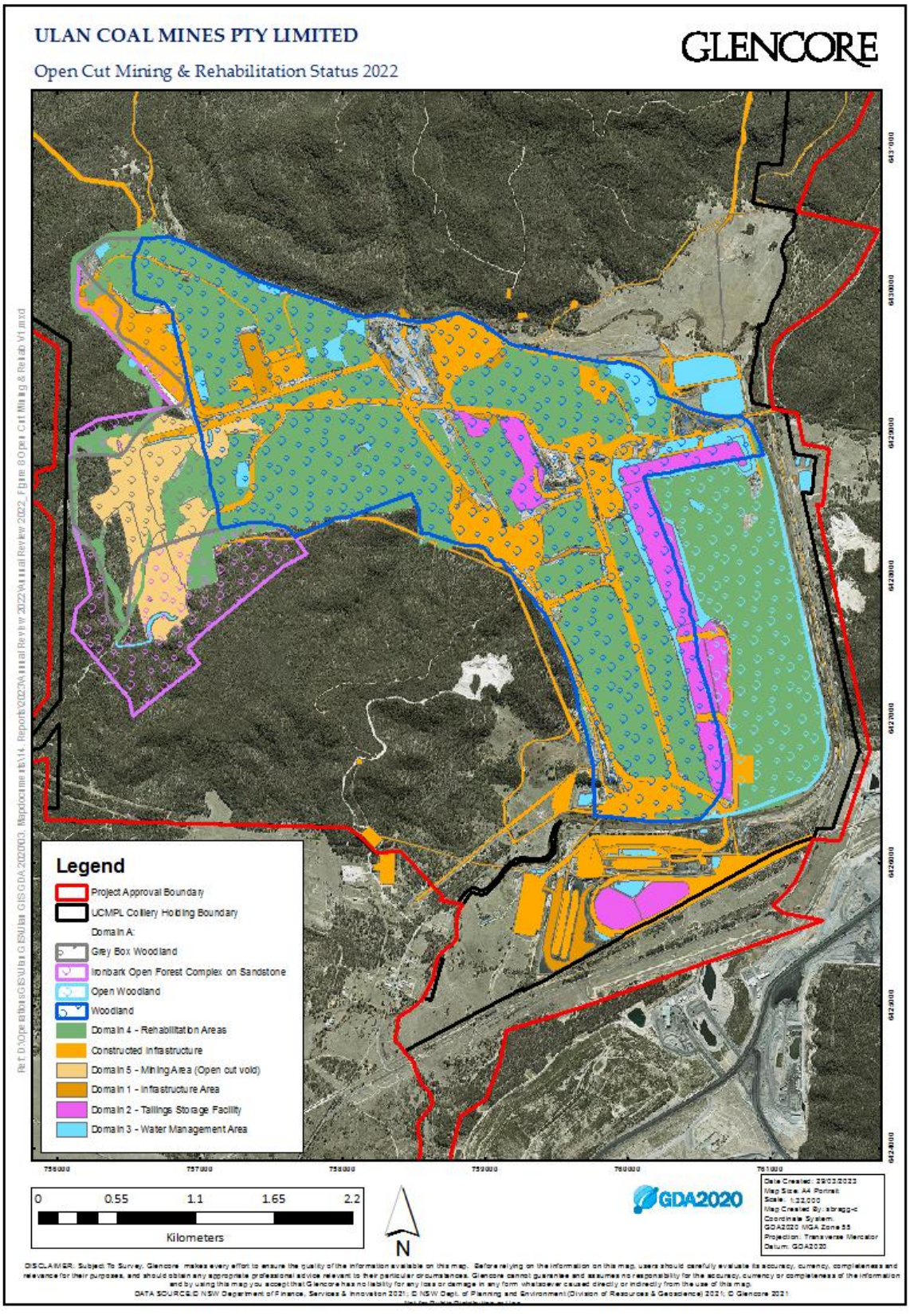


Figure 8-1 Final Land Use & Open Cut Rehabilitation and Disturbance Status in 2022

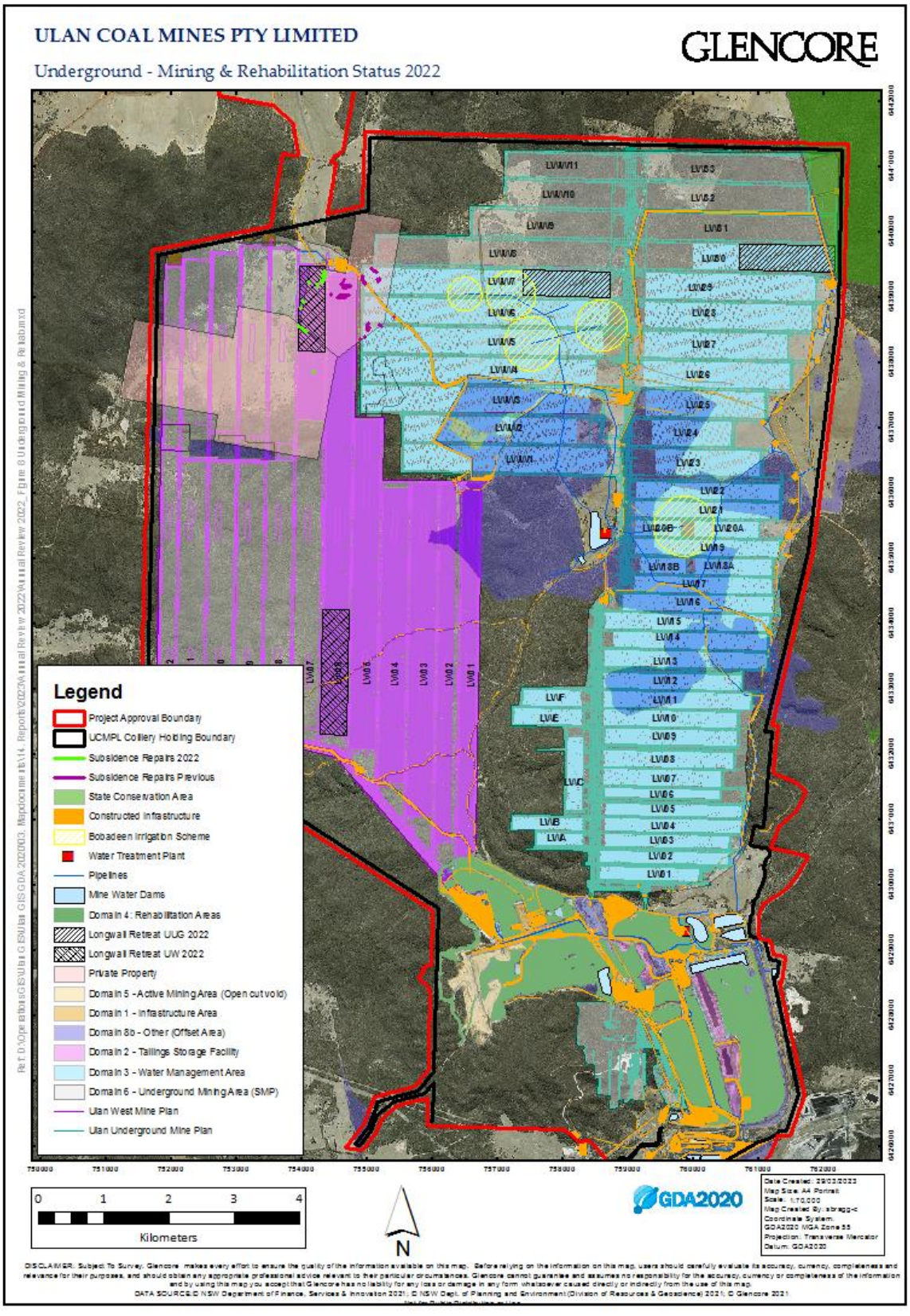


Figure 8-2 Status of Underground Rehabilitation and Disturbance in 2022

8.2 Rehabilitation Monitoring

Open Cut Rehabilitation Areas 1 to 18 (**Figure 8-3**) were created to facilitate tracking of rehabilitation performance as per GCAA Report Card. The areas were formed by grouping rehabilitation areas with a similar age, connectivity structure and species composition. GCCA aims to standardise monitoring and completion criteria based on Resource Regulator feedback, using the RRC monitoring and assessment process.

Three (3) of the six (6) rehabilitation polygons that were monitored in 2022 attained an overall Performance Category of 'Maintenance', whilst the other three (3) have been categorised as 'Monitor'. The RRC results from spring 2022 monitoring are shown in **Figure 8-3** and **Figure 8-4**.

Structure: Polygon 8 scored 'Acceptable' for structure due to relatively high native species richness across all growth forms which is relatively comparable to reference sites. Polygon 13 scored a 'Maintenance' for structure, as native species richness was relatively low compared to reference sites.

Function: Polygon 12 Polygon 13 and Polygon 15 scored 'Monitor' for the function attribute because of good projected foliage cover (pfc) of native species across growth form groups, relative to reference sites. Polygon 8, Polygon 17 and Polygon 19 scored 'Maintenance' due to lower native species pfc across growth form groups relative to reference sites.

Native species composition: Four (4) out of the six (6) polygons recorded 'Monitor' for native species composition, with Polygon 13 the only area to record a 'Maintenance' score for native species composition and Polygon 8 the only area to record 'Acceptable'. Average native species richness and native species pfc for Polygon 13 were below the optimal range set by the RRC (19 species and 60% pfc respectively).

Tree stem density:

Three (3) out of the six (6) polygons scored 'Monitor' for tree stem density. The three (3) that scored 'Maintenance' for tree stem density, Polygons 7, 8, and 19, recorded greater stem density than the optimal range set by the RRC (1,075 and 1,119, and 1,342 stems / ha respectively). As discussed in the UCMPL Floristic Monitoring – Annual Report 2020 (ELA 2021), the calculator does not account for rehabilitation being in different successional phases for developing eucalypt forests. The optimal ranges for stem density nominated for the LTM phase (300 to 800 stems / ha) may not be achievable or appropriate in the early stages of LTM (<10 years). Monitoring data indicates that dry sclerophyll forest four (4) years post severe disturbance (i.e., the 2017 high intensity bush fire) in the Durridgere State Conservation Area, located approximately 25 km north of the rehabilitation, had a recorded stem density of 1,000 stems / ha during spring 2020 (DPIE 2021).

Reproduction: Four (4) out of the six (6) polygons scored 'Monitor' for reproduction. Evidence of reproduction was recorded throughout monitoring sites located within the two (2) polygons that scored 'Monitor' (Polygon 8 and Polygon 13).

Slope, erosion, bare ground and weeds: Every polygon scored either 'Monitor' or 'Acceptable' for slope, erosion, bare ground, and weed attributes.

The results of the 2022 annual inspection and long-term rehabilitation monitoring rehabilitation area performance is classified into one of the following categories;

- **Rework**- Does not meet completion criteria. Extensive rework required that would not typically form part of a rehabilitation maintenance program (e.g. slopes do not comply with approval requirements, bare areas >0.1ha, large erosion gullies).
- **Maintenance**- Does not meet completion criteria. Routine rehabilitation maintenance works required (e.g. weed control, infill seeding/plantings, repair of minor erosion, fertiliser application).
- **Monitor**- Trajecting towards completion criteria but does not meet all criteria. No intervention required but continue to monitor (e.g. ecologically young areas, variable soil results).
- **Acceptable**- Meets completion criteria and ready for sign off by stakeholders. Continue to manage and monitor to maintain status until sign off is sought.

Performance indicators and completion/relinquishment criteria for the rehabilitation areas of the Ulan Complex are outlined in the RMP. Performance indicators are used to track the progress of rehabilitation areas and highlight any areas where further remediation/improvement works may be required to progress rehabilitation areas to meet completion/relinquishment criteria (**Table 8-4**).

A summary of assessment against the RMP completion / success for 2022 is provided in **Table 8-2**.

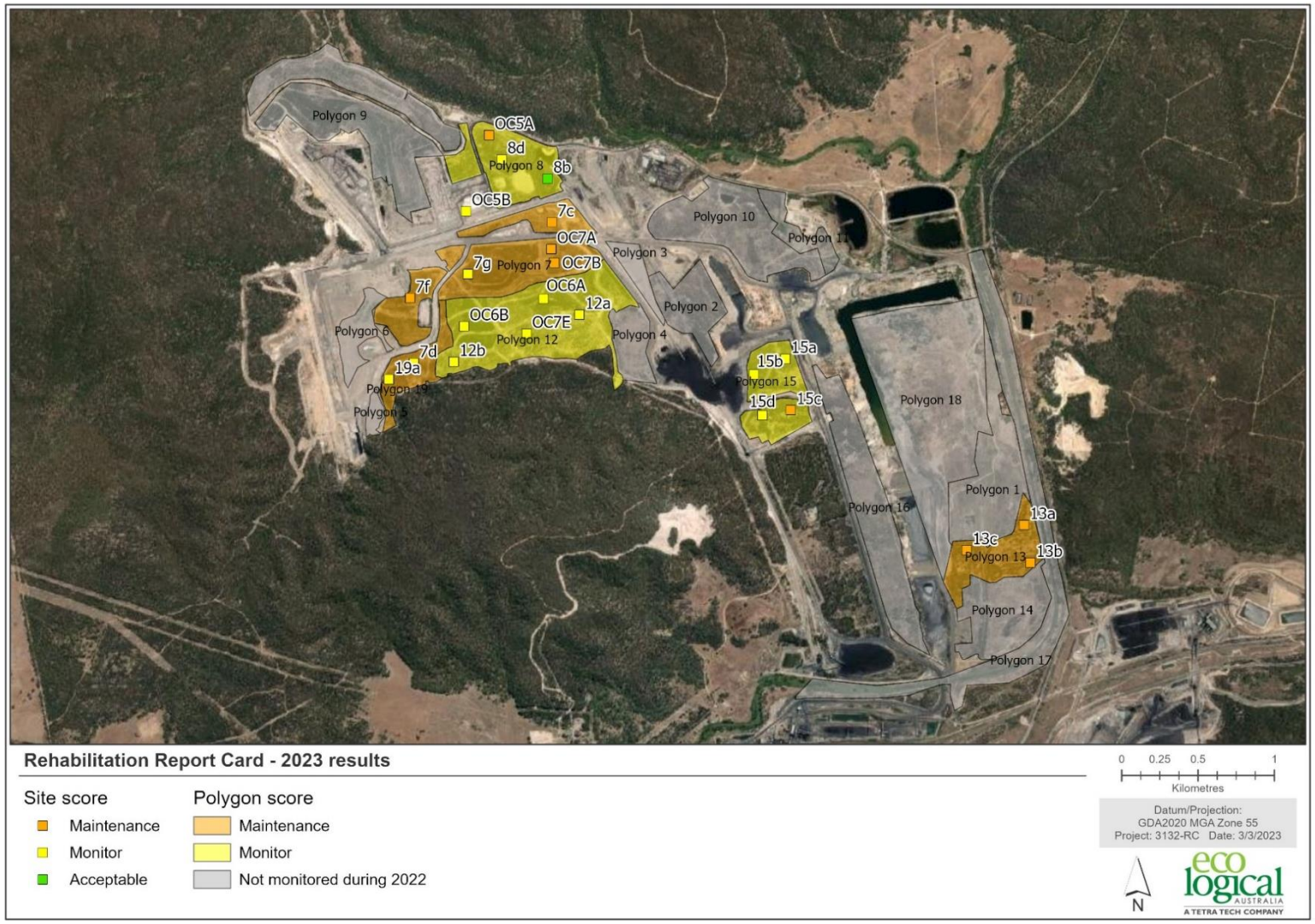


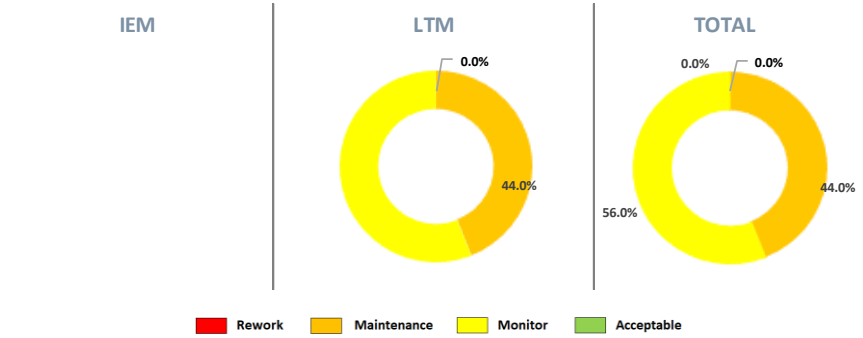
Figure 8-3 Open Cut Rehabilitation Monitoring Locations 2022

2023 Rehabilitation Report Card

Ulan Surface Operations

COAL ASSETS AUSTRALIA
GLENCORE

Overall Performance Summary:



	IEM		LTM		Total	
	ha	%	ha	%	ha	%
Area monitored	0	0.0%	184	100.0%	184	100.0%
Rework	0	0.0%	0	0.0%	0	0.0%
Maintenance	0	0.0%	81	44.0%	81	44.0%
Monitor	0	0.0%	103	56.0%	103	56.0%
Acceptable	0	0.0%	0	0.0%	0	0.0%

Detailed Performance Summary:

Block Name	Area (ha)	Monitor Type	Slope	Erosion	Bare	Weed	Tree Stem	Nat Comp	Structure	Function	Canopy	Repro	Past Comp	Biomass	Perf. Categ
Polygon 12 - Powerline rd rehab	57	Targeted_LTM	Acceptable	Monitor	N/A	Monitor	Monitor	Monitor	Monitor	Monitor	N/A	Acceptable	N/A	N/A	Monitor
Polygon 13 - East pit east spotted gum / sugar gum plantings	19	Targeted_LTM	Acceptable	Acceptable	N/A	Acceptable	Monitor	Maintenance	Maintenance	Monitor	N/A	Acceptable	N/A	N/A	Maintenance
Polygon 15 - East pit north rehab	21	Targeted_LTM	Acceptable	Monitor	N/A	Monitor	Monitor	Monitor	Monitor	Monitor	N/A	Acceptable	N/A	N/A	Monitor
Polygon 19 - Dragline SE	24	Targeted_LTM	Acceptable	Monitor	N/A	Monitor	Maintenance	Monitor	Monitor	Maintenance	N/A	Acceptable	N/A	N/A	Maintenance
Polygon 7 - North of Polygon 12 rehab	38	Targeted_LTM	Acceptable	Monitor	N/A	Monitor	Maintenance	Monitor	Monitor	Maintenance	N/A	Acceptable	N/A	N/A	Maintenance
Polygon 8 - Peanut dam rehab	25	Targeted_LTM	Acceptable	Acceptable	N/A	Acceptable	Maintenance	Acceptable	Acceptable	Maintenance	N/A	Acceptable	N/A	N/A	Monitor

Figure 8-4 – Open Cut Rehabilitation Report Card Results

Figure 8-5 Rehabilitation Inspection – Polygons 7, 8, 12 and 19

Figure 8-6 Rehabilitation Inspection – Polygons 13 and 15

Table 8-2 Domain A Summary of Assessment Against RMP Completion Criteria

Rehabilitation objectives	Completion criteria	Performance indices	Completion criteria status
Vegetation Composition as per criteria	Rehabilitation areas contain flora species assemblage's characteristic of each Growth Form for the target native vegetation communities.	Native plant species richness assessed for each Growth Form	**Achieved (Polygon 7, Polygon 8, Polygon 12, and Polygon 15**) Native species richness is >50% for characteristic species for each growth form in Polygon 7, Polygon 8, Polygon 12, and Polygon 15.
			Achieved (Polygon 13) Polygon 13 only recorded two canopy species, both of which are non-characteristic for the target vegetation community. These species are characteristic of the Kerrabee IBRA subregion and were included in the original seed mix (ELA 2023b). However, historically a native woodland community has been the aim of Polygon 13 (ELA 2023b). Monitoring data shows that Polygon 13 contains species from all the growth forms present in the remnant woodland of each occasion and that the relative richness across the growth forms was similar. This means the overall composition of the community is similar. The native species recorded in Polygon 13 are typical of the surrounding woodland and forest vegetation communities of the Kerrabee Basin IBRA Subregion, in which Polygon 13 is located. The 2021 monitoring data shows that 97% of the native species recorded throughout Polygon 13 are endemic to the Kerrabee IBRA Subregion (ELA 2023b). Additional planting, or removal of 'non-characteristic' species is not recommended as Polygon 13 rehabilitation is established and is over 15 years old.
Tree density as per completion criteria.	Indicative final minimum total tree/shrub densities for seeded areas to be 400 stems/ha.	Tree and shrub densities monitored for establishment and survival	**Achieved** All areas monitored during 2022 recorded a stem density greater than 400 stems / ha.
The rehabilitation is self-sustainable	Evidence of flowering and seeds or second-generation juveniles for trees and shrubs or likely to be, based on comparable older rehabilitation sites.	Trees and shrubs are monitored for evidence of second-generation juveniles and evidence of flowers and seeds	**Achieved** All areas monitored during 2022 recorded seedlings of canopy species, with most areas also recording fruits on mature individuals.

8.3 Infrastructure Decommissioned

There was no major infrastructure or buildings decommissioned or removed in 2022.

8.4 Other Rehabilitation and Land Management Activities

8.4.1 Rehabilitation Maintenance Activities

Addressing open cut rehabilitation maintenance and repair of areas identified **Figure 8-5** and **Figure 8-6** is ongoing.

Inspection and maintenance of subsidence repairs were completed as required (**Figure 8-2**).

8.4.2 Exploration Program

There was 3.55ha of disturbance within the MLs during the reporting period associated with 11 exploration sites. All sites were rehabilitated in accordance with the RMP and Ground Disturbance Permit procedure.

8.5 Relinquished Rehabilitation Areas

There were no rehabilitation areas in the Open Cut relinquished during the Reporting Period.

In 2020, a 50ha native woodland area, rehabilitated from the mid-1980s through to 1997, has sufficient land stability, soil composition and richness of flora and fauna to meet completion criteria for a self-sustaining landform (**Figure 8-7**). Monitoring results within the area recorded 55 flora species, 45 of which are from the surrounding area, and 130 fauna spices including 12 threatened spices. As such a rehabilitation completion form was submitted to the Resources Regulator and approved in June 2020.

UCMPL is currently investigated the potential certification of three rehabilitation polygons, totalling an area of 103.2 Ha. Flora, fauna and soil investigations have all commenced for potential rehabilitation certification areas (**Figure 8-7**). The areas of certification include:

- Polygon 8 (26.4 Ha) has been rehabilitated with more contemporary methods and locally relevant species. The vegetation is described as dense *Eucalyptus sp*. (4-8 m in height) > 100 stems per ha.
- Polygon 12 (57.1 Ha) has been rehabilitated with more contemporary methods and locally relevant species. The vegetation is described as a mixture of Dense Eucalyptus sp. (4-8 m in height) > 100 stems per ha and dense *Acacia linearfolia* (+/- sparse Eucalyptus stands).
- Polygon 13 (19.7 Ha) is an area of historic rehabilitation in the East Pit Open Cut. It was rehabilitated using a range of forestry species similar to areas already certified. The vegetation is described as non-local native species advanced rehabilitation. It is similar to East Pit A2.

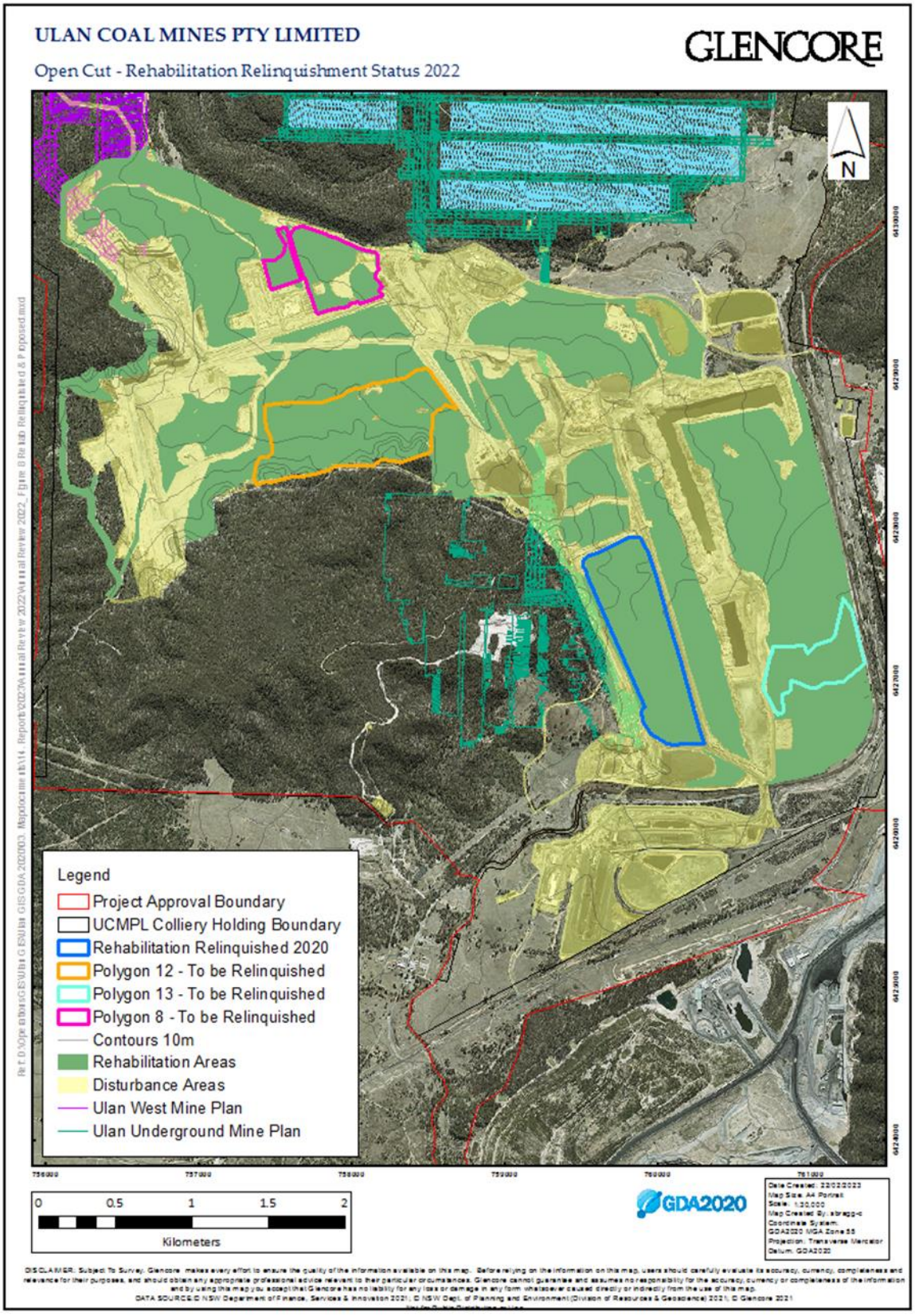


Figure 8-7 Open Cut Rehabilitation Relinquishment Areas

8.6 Variations In Activities

During the Reporting Period, UCMPL submitted an RMP (**Section 3.2.5**) and a Forward Program with a three-year mining and rehabilitation forecast (i.e. 1 July 2022 to 30 June 2024) as required by *Schedule 8A of the Mining Regulation 2016.* UCMPL operated in accordance with both the RMP and the Forward Program during the Reporting Period. A revised Forward Program based on the calendar year will be submitted to the NSW Resource Regulator at the end of March 2023.

8.7 Rehabilitation Trials and Research

UCMPL's Forward Program provides a three-year mining and rehabilitation forecast as required by Schedule 8A of the Mining Regulation 2016. As outlined in the Forward Program, there are no proposed rehabilitation trials in the Open Cut during the next Reporting Period.

8.8 Rehabilitation Actions Proposed

UCMPL's Forward Program provides a three-year mining and rehabilitation forecast as required by *Schedule 8A of the Mining Regulation 2016.* As outlined in the Forward Program, there are no proposed areas for rehabilitation in the Open Cut during the next Reporting Period.

Rehabilitation maintenance activities in the Open Cut will be associated with landforms under ecosystem and land use development phase in the next Reporting Period, and will be guided by the outcomes of UCMPL's annual rehabilitation monitoring program. Rehabilitation maintenance activities in the Open Cut during the next Reposting Period may include, but not be limited to:

- Weeds and pest animal control;
- Managing bushfire risks;
- Minor earthworks to remediate any significant erosion features, including contour banks and diversion channels;
- Infill planting and/or seeding to meet vegetation community requirements; and
- Maintaining erosion and sediment controls.

Continued monitoring and remediation of subsidence impacts for the Underground Operations will be undertaken in accordance with the relevant Extraction Plan during the next Reporting Period.

9. Community

9.1 Ulan Coal CCC Meetings

Four meetings of the Ulan Coal Community Consultative Committee (CCC) were held on the 24 March, 30 June, 29 September and 6 December 2022. Operational progress and activities, community complaints, monitoring results and environmental performance were presented at each meeting. The 2022 meetings also presented and discussed activities and interactions with other mines both proposed and existing in the region, the Independent Environmental Audit (IEA), management plan updates, the exploration program, proposed modifications to the Project Approval, results of the Annual Review, additional community consultation and the community investment program.

For the complete 2022 CCC presentations refer to the Ulan Coal website *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/community-documents*

9.2 Exploration Consultation

The exploration program for EL8687 and EL7542 in 2022 was announced in advertisement placed in Mudgee Guardian Mining Notice Classifieds 14 January 2022 and 21 January 2022 advising intention to drill in Bungaba area, providing contact details for further information (**Attachment K**).

Letters were sent on 21 January 2022 to all residents within 2km of EL8687 (those within potential audible range of drilling activities) regarding re-commencement of drilling operations for the 2022 exploration program.

Throughout the 2022 reporting period prior to drilling operations occurring within EL8687 adjacent landholders/residents were notified via phone, letter or email of the schedule for drilling. Notification letters and exploration newsletter updates were delivered to landholders within 5km of the operations, indigenous stakeholder groups, Mudgee Local Aboriginal Land Council, Ulan Coal CCC Members, Bungaba Progress Association, Mid-Western Regional Council and the NSW government local Member of Parliament. Two community information sessions were held for residents, landholders and other interested stakeholders (**Section 9.5**).

9.3 Community Newsletters

During the Reporting Period, UCMPL published five community newsletters in March, June, August, October and December 2022. Information provided in the newsletters included operational and exploration updates, project approval modification updates, community investment program, fire safety awareness, the 24hr community hotline details and contact details for the operations community representatives.

For the complete 2022 newsletters refer to the Ulan Coal website *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/community-documents*

9.4 Community Sponsorship

GCAA invests in Health, Arts and Culture, Education and Enterprise, Environment and the Community, including, as an example, education grants to NSW Government Schools. Examples of UCMPL's Community Investment Program in 2022 included:

- Education Foundation (Max Potential Program)
- Gulgong Show Society (2022 Gulgong Show)
- Mudgee Show Society (2022 Mudgee Show)
- Mudgee Riding for the Disabled (Mudgee RDA shed fit out)
- Kanandah Retirement (Alpha Car Beds)
- Wenonah Lodge (Refurbishment of common area)
- Mudgee Museum
- Gulgong Public School (Breakfast Club)
- Gulgong High School (Catering equipment)
- Lue Public School (Ride on lawn mower and playground)
- Mudgee Rugby Union
- Mudgee Lions Club (Mudgee Lions Family Fun Day)
- Mudgee Preschool Social Club (Mudgee Preschool Family Cookbook)
- Wings 4 Kidz (Mudgee Running Festival Coal Miners Cup)
- Mudgee PCYC (Sweeper mop)
- Mudgee Health District (Youth mental health)
- Pacific National Charity Golf Day (Fundraiser for the Westpac Rescue Helicopter)
- Gulgong Men's Shed (Woodworking equipment)
- Mudgee SES (Supply of sandbags)
- Bungaba Progress Association (Installation of an AED at the Bungaba Community Hall)
- Watershed Landcare (Can Assist Mudgee and Can Assist Lithgow)

Figure 9-1 – Community Activities (New Ride On Lawn Mower for Lue Public School)

Figure 9-2 – Community Activities (Relocated and Upgraded Playground Lue Public School)

Figure 9-3 – Community Activities (Mudgee RDA Shed Fit Out)

9.5 Community Complaints

Of the five (5) complaints received during the 2022 Reporting Period, one complaint was in relation to water quality, one complaint was in relation to air quality, one compliant was in relation to traffic movements and two complaints relating to the Bungaba exploration program including an unlocked gate and variation in compensation between landholders. Community complaints from 2011 are presented in **Figure 9-4**.

Historical and the 2022 community complaint summary register with actions undertaken, is available from the Ulan Coal Website *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/community-documents*

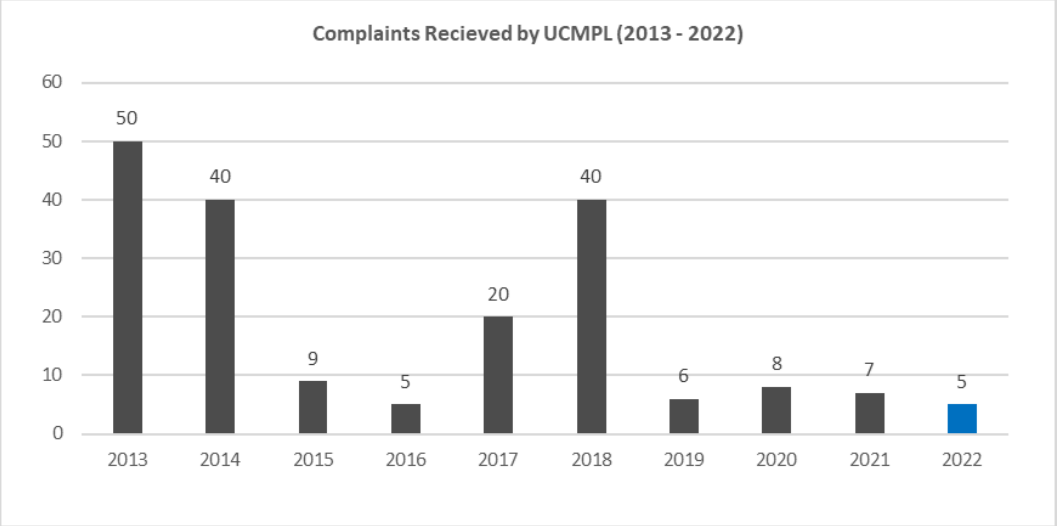


Figure 9-4 – Community Complaints (2013-2022)

9.6 Bungaba Community Consultation Program

UCMPL held two community information sessions in April and December 2022 to provide the community with both operational and exploration activities, with a focus regarding the Bungaba Project Area and current and proposed exploration activities associated with EL8687 and EL9363.

For the 2022 Bungaba Community Newsletters and the Ulan Coal Community Newsletter refer to the Ulan Coal website *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/community-documents*

9.7 Ulan Road Noise Mitigation Strategy

In 2020, all fifteen properties within the zone for noise mitigation measures have had their respective noise mitigation measures completed. The last remaining properties to finalise noise agreements and complete their noise mitigation measures occurred in April and July 2020. One property has declined noise mitigation works and two properties are outside the zone for noise mitigation measures.

In 2021, UCMPL were informed one property owner within the zone for noise mitigation measures that not all the agreed noise mitigation measures had been completed. UCMPL in consultation with the other neighbouring mines will follow up this matter with the property owner to ensure all agreed noise mitigation measures are implemented.

All associated works regarding the road capital upgrades for Ulan Road and Cope Road in line with the Strategy and managed by MWRC have been 100% completed, with the maintenance period now triggered in accordance with the Strategy.

9.8 Ulan Road Traffic Management

Employees, including contractors, are trained and reminded (through site inductions, environmental management systems training, training day presentations and toolbox talks) of each person's responsibility to maintain legal and considerate behaviour during passage to and from the mine site. Key messages communicated include considerate and legal behaviour, minimising road use where possible, litter avoidance and reporting unsafe behaviour.

9.9 Community Complaints Hotline/Email

UCMPL operates both a 24-Hour Community Hotline Ph: **1800 647 630** or email: *ulancommunity@glencore.com.au*

10. Independent Compliance Audit

An Independent Environmental Audit (IEA), as required by Schedule 5 Condition 8 of PA08-0184, is conducted every three years by a suitably quality, experience and independent team, who has been endorsed by the Secretary. The previous IEA was conducted in 2019.

RPS Australia East Pty Ltd (RPS) were engaged by UCMPL to conduct the 2022 IEA of the Ulan Coal Complex which, included Ulan Underground mine, the Ulan West Underground mine, the Open Cut mine and land holdings and the Bobadeen Irrigation Scheme (BIS).

The IEA was conducted in accordance with the above mentioned requirements, the site visit and verification component of the IEA was undertaken from 20 April to 22 April 2022, and the IEA report was received on 31 May 2022.

A status summary of the 2022 IEA outcomes and any recommendations is provided in Table 1-1 in **Attachment O.**

A copy of previous IEA reports and responses to IEA recommendations can be found on the Ulan Coal website at *https://www.glencore.com.au/operations-and-projects/coal/current-operations/ulan-coal/reporting-documents*

11. Incidents & Non-compliances

UCMPL must notify the EPA, DPE and other relevant agencies immediately on becoming aware of a notifiable incident[32].

11.1 Reportable Incidents

There were no reportable incidents during the 2022 Reporting Period.

11.2 Non-Compliances

There was a one non-compliance, as identified in **Compliance Table 2** for the 2022 Reporting Period. A summary of non-compliances, the nature and cause of the non-compliances and actions to address the non-compliances is provided in **Table 11-1** below.

Table 11-1 – Details of Non Compliances

Relevant Approval	Date	Details of Non-Compliance Issue	Cause of Non-Compliance	Actions to Address Non-Compliance
M2.2 EPL394	3/2/2022	The HVAS described in EPL 394, EPA ID numbers 15 and 29 failed to collect valid samples due to a power outage by Essential Energy for approximately 1.5hrs on 3/02/2022	The samples were invalid as the monitoring equipment failed to record data for the full 24 hour period due to an Essential Energy power outage that lasted for over an hour.	The failure was due to an unscheduled power outage by Essential Energy. There is a TEOM situated near by collecting data which can be used to confirm real time dust emissions

[32] PA 08_0184 Schedule 5, Condition 6 and Protection of the Environment Operations Act 1997, Section 153 - Pollution Incident Response Management Plan (PIRMP, ULNCX-111515275-2432, tested on 18/05/21 and subsequently updated on 22/8/2021).

12. Activities Planned for 2023

Operational activities planned for 2023

- The Ulan Underground will continue to develop roadways for LWW8 andLW31in 2022 as well as advancing the Main Headings. Longwall mining will continue in LW30 until late June when, following a Longwall relocation, mining will commence and continue in LW31 for the remainder of 2023.
- Ulan West Operations will continue to develop roadways for LW8in 2023. Longwall mining of LW7 will continue for the remainder of 2023. The Ulan West Operations will continue with the commission of new ventilation infrastructure (shaft) above Mains roadways adjacent to LW9B which will support Life of Mine ventilation requirements.
- The Ulan Open Cut is not expected to operate in 2023.
- Handling and processing of coal from the ROM stockpiles to the train load out.
- Blasting and extraction of rock material from the Bobadeen Basalt Quarry, if required for operational projects.
- Exploration at both Ulan West and Ulan Underground will continue with approximately 18 and 9 holes respectively to be drilled in 2023.

Exploration for Ulan West Expansion will continue with approximately 56 holes to **Groundwater Monitoring Program**

- Response to recommendations from the 2022 Groundwater monitoring report.

Rehabilitation/Remediation/Offset Areas/Goulburn River

- Management actions as for identified issued within the rehabilitation/remediation and offset areas.
- Progress the rehabilitation relinquishment (**Section 8.2.9**) and identify other areas that meet completion criteria.
- Commence implementation of GCAA report card recommendations including East Pit rehabilitation remediation/maintenance works.

The following heritage works are planned for 2023:

- Exploration sites (as required).
- Rock shelters testing /salvage 284 and 1580.

Management Plan/Extraction Plan revisions planned for 2023 include:

- Revision of the relevant Ulan Coal Management Plans following the submission of this Annual Review; including the incorporation of the implemented recommendations from the following reports:
    - Annual Groundwater Report.
    - Ulan Creek Stability Report.
    - Ulan West Annual Subsidence Report.
    - Annual Biodiversity Reports.
    - Biodiversity Management Plan.

Approval Modifications

- Proposed Modification 6 to extend Ulan Underground LWW9 to LWW11 and widen LWW11 and extend Ulan West LW9 to LW12. The Modification will include minor changes to surface infrastructure. There are no proposed changes to extraction limits, the mining method, coal processing or transportation.

Community

- Consultation for the 2023 Exploration Program within EL8687, EL7542, EL9363 and EL9419 via newspaper ad, community newsletters, exploration newsletters, emails, letter drops, telephone calls and face to face meetings.
- Negotiate private property access agreements with landholders for exploration within ML1468, EL8687, EL7542, EL9363 and EL9419.
- Provide support to the local community through Community Investment Program via sponsorship support, community projects and in-kind donations.

13. References

Environmental Noise Monitoring – December 2022, EMM (January 2023)

Environmental Noise Monitoring – July 2022, EMM (August 2022)

UCMPL Aquatic Monitoring Report 2022, Eco Logical Australia (March 2023c)

UCMPL Fauna Monitoring Report 2022, Eco Logical Australia (March 2023b)

Floristic Monitoring - Annual Report 2022, Eco Logical Australia (March 2023a)

UCMPL Microbat Monitoring Report 2022,, Eco Logical Australia (March 2023d)

2022 Annual Review of Subsidence Monitoring at Ulan West and Ulan Underground Mines, SCT Operations Pty Ltd (March 2023)

2022 Monitoring of Creeks and Tributaries, Pacific Environmental Pty Ltd (March 2023)

2022 Ulan Creek Stability Monitoring Report, Pacific Environmental Pty Ltd (March 2023)

2022 Cliff Line Monitoring Report, Pacific Environmental Pty Ltd (March 2023)

GLENCORE