ULAN COAL MINES PTY LIMITED
2023 CLIFF LINE MONITORING REPORT

Document Control

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Revisions

Rev No	Date	Description	By	Checked
1.0	21 December 2023	Original Draft	Stephen Bragg	Amanda Sales
2.0	27 March 2024	Revised to include UCMPL review and comments	Stephen Bragg	Amanda Sales

Cover Photo: Cliff line above LW7 Ulan West

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1.0 Introduction

Ulan Coal Mines Pty Limited (UCMPL) engaged Pacific Environmental Pty Ltd (PE) to undertake pre-mining and post mining inspections of sandstone cliff lines[1] associated with LW7 above Ulan West identified for monitoring in the Ulan West Extraction Plan, to record subsidence related impacts including rockfalls and cracking in 2023.

The *2023 Cliff Line Monitoring Report* (this Report) presents the results from the post mining monitoring of cliff lines >10m in height, as required by each respective Extraction Plan[2], above the Ulan West Underground Mine (Ulan West) and the Ulan Underground Mine (Ulan Underground) during longwall extraction in 2023 (**Figure 1-1**).

This Report also provides a summary of the historical recorded rockfalls and perceptible impacts to cliff lines >10m in height, to track against the relevant subsidence performance indicator of ≤ 20% of predicted rockfalls.

The modelled sandstone cliff line formations above the approved Ulan West and Ulan Underground mine plan were identified in the *Ulan Coal – Continued Operations Environmental Assessment* 2009 (2009 EA). Mining subsidence is expected to cause rock falls up to 20% of the sandstone cliff formations located directly above the mining area and the intermediate chain pillar between extracted longwall panels. Perceptible cracking is expected on up to 50%-70% of the length directly over extracted longwall panels and up to a distance of 0.4 x overburden depth of cover outside the GOAF edge (2009 EA).

During 2023 LW30 at Ulan Underground had retreated to 0m zero chainage in July 2023, with LW31 commencing in October 2023. There are no cliff line features for monitoring above LW30 and LW31 as outlined in the Extraction Plan for Ulan Underground. The progression of LW7 as of the 31 December 2023 is displayed in **Figure 1-1**.

Post mining inspections of undermined cliff line features >10m in height and Aboriginal heritage sites, as identified for monitoring in the Ulan West Extraction Plan, (**Figure 1-2**) were undertaken by PE in 2023. The 2023 post monitoring of cliff lines potentially impacted by longwall mining follows on from previous monitoring undertaken by PE (**Figure 1-1**) including:

- LW1 in August 2015;
- LW2 and LW3 in February 2017;
- LW3 in October 2017;
- LW4 in January and February 2019;
- LW5 in February 2020;
- LW5 in May 2020;
- LW6 in November 2021;
- LW6 in May and June 2022;
- LW6 in January 2023; and
- LW7 in June and July 2023.

Inspections of cliff lines and Aboriginal heritage sites within the Brokenback Conservation Area (BCA) (**Figure 1-3**) were also completed by PE with a UCMPL representative in June 2023.

A cliff line is situated near the commencement end of LWW7 above Ulan Underground on private property, with a series of smaller cliff lines associated with LWW4 on UCMPL land. This Report presents a summary of the post mining results, as provided by UCMPL for this cliff lines above LWW4 and LWW7.

[1] Cliffs were defined as being greater than 10 meters in height (2009 EA) (**Figure 1-1**).

[2] Cliff lines as identified for monitoring in the: *Ulan West Extraction Plan for LW1 to LW8* and *The Ulan Underground Extraction Plan Longwalls LW30-LW32 & LWW6-LWW8*

Specific details for the cliff line monitoring are contained in the *Post Mining Condition Report for LWW7 Woodbury Property* required by the *Private Property Subsidence Management Plan (PPSMP)*. The PPSMP and other associated reports relating to private property ownership are not considered public documents.

1.1 Background

Ulan West

The requirement for cliff line monitoring to compare against predictions in the 2009 EA was in the initial Extraction Plan for Ulan West. Ulan West commenced secondary extraction of LW1 utilising longwall mining methods on the 19 May 2014, in accordance with the approved *Subsidence Management Plan (SMP)/Extraction Plan for LW1 and LW2*, as required by Condition 26, Schedule 3 of PA08_0184. UCMPL have subsequently revised the Extraction Plan for Ulan West on a further three occasions to include additional longwalls:

- LW3 and LW4 which was approved by the DPIE on 30 May 2016;
- LW5 and LW6 which was approved by the DPIE on 25 January 2019; and
- LW7 and LW8 which was approved by the DPE on 20 July 2022.

Before the commencement of the first longwall LW1, a pre-mining inspection of cliff lines above LW1 and LW2 and cliff lines within the Brokenback Conservation Area (BCA) was undertaken by Barnson Pty Limited (Barnson) in early May 2014.

The locations of cliff lines >10m in height required for monitoring and established monitoring locations, as of the 31 December 2023 are displayed in **Figure 1-1**.

Ulan Underground

Prior to the current Extraction Plan for Longwalls LW30-LW32 & LWW6-LWW8, Ulan Underground operated under various Subsidence Management Plan (SMP) approvals, the last approved SMP was for Longwalls LW27 – 29 and LWW4 & LWW5. The requirement for cliff line monitoring to compare against predictions in the 2009 EA commenced in the *SMP for Longwalls LW27 – 29 and LWW4 & LWW5*. The location of cliff lines associated with Ulan Underground required for monitoring by the former SMP and current Extraction Plan for Longwalls LW30-LW32 & LWW6-LWW8 are situated along the western side of the mine plan (**Figure 1-1**).

The pre and post mining inspections[3] of cliff lines above Ulan Underground, as required by the former SMP and current Extraction Plan, was completed by UCMPL with a summary of results, as provided by UCMPL, included in this Report.

1.2 Purpose

The purpose of this Report is to consolidate the results of the various post mining inspections, with respect of those limitations identified in **Section 2.5,** of undermined cliff lines above Ulan West and Ulan Underground, including:

- Cliff lines >10m in height associated with LW1, LW2, LW3, LW4, LW5, LW6 and LW7 at Ulan West;
- Cliff lines >10m in height associated with LWW4 and LWW7 at Ulan Underground;

[3] *Pre & Post Mining Inspection LWW4 Ulan Underground Mine (UCMPL, 2018)* and *Post Mining Condition Assessment Report for LWW7 Woodbury Property (UCMPL, 2022)*

- Quantify the approximate lengths of each subsidence induced rock fall and estimate the sum length of observed subsidence induced rock falls, regarding cliff lines associated with LW1 to LW7 and cliff lines associated with LWW4 and LWW7, against 2009 EA predictions;
- Note perceptible impacts[4] as a result of mine induced subsidence along cliff lines >10m in height;
- Recorded the condition of a number of Aboriginal rock shelters, as identified for monitoring by the relevant Extraction Plan[4] (**Figure 1-2**); and
- Record the condition of the cliff lines within the Brokenback Conservation Area and associated Aboriginal rock shelters for monitoring (**Figure 1-3**).

1.3 Scope

The scope of the Report, includes inspection of;

- Cliff lines potentially impacted by LW7 Ulan West during 2023 (**Figure 1-1** and **Table 1**);
    - Sites included C2-7, C2-8, C2-9, C2-10, C2-11, C2-12 and C2-13;
    - Sites included C7-1, C7-2 and C7-3; and
    - Site C6-1 above LW8B.
- Aboriginal heritage sites potentially impacted by LW7 in 2023 (**Figure 1-2** and **Table 1**);
    - Ulan ID#487, Ulan ID#994, Ulan ID#995, Ulan ID#998 and Ulan ID#190.
- Cliff lines in the Brokenback Conservation Area (**Figure 1-3**) adjacent to LW7; and
- Aboriginal heritage sites associated with the Brokenback Conservation Area (**Figure 1-3**) adjacent to LW7.

[4] Heritage sites confirmed by UCMPL for monitoring against UCMPL's Heritage Management Plan (Version 8) (Appendix C), as sites were not clearly identifiable in the Extraction Plan.

Figure 1-1 UCMPL Clif Line Monitoring Program (end of December 2023)

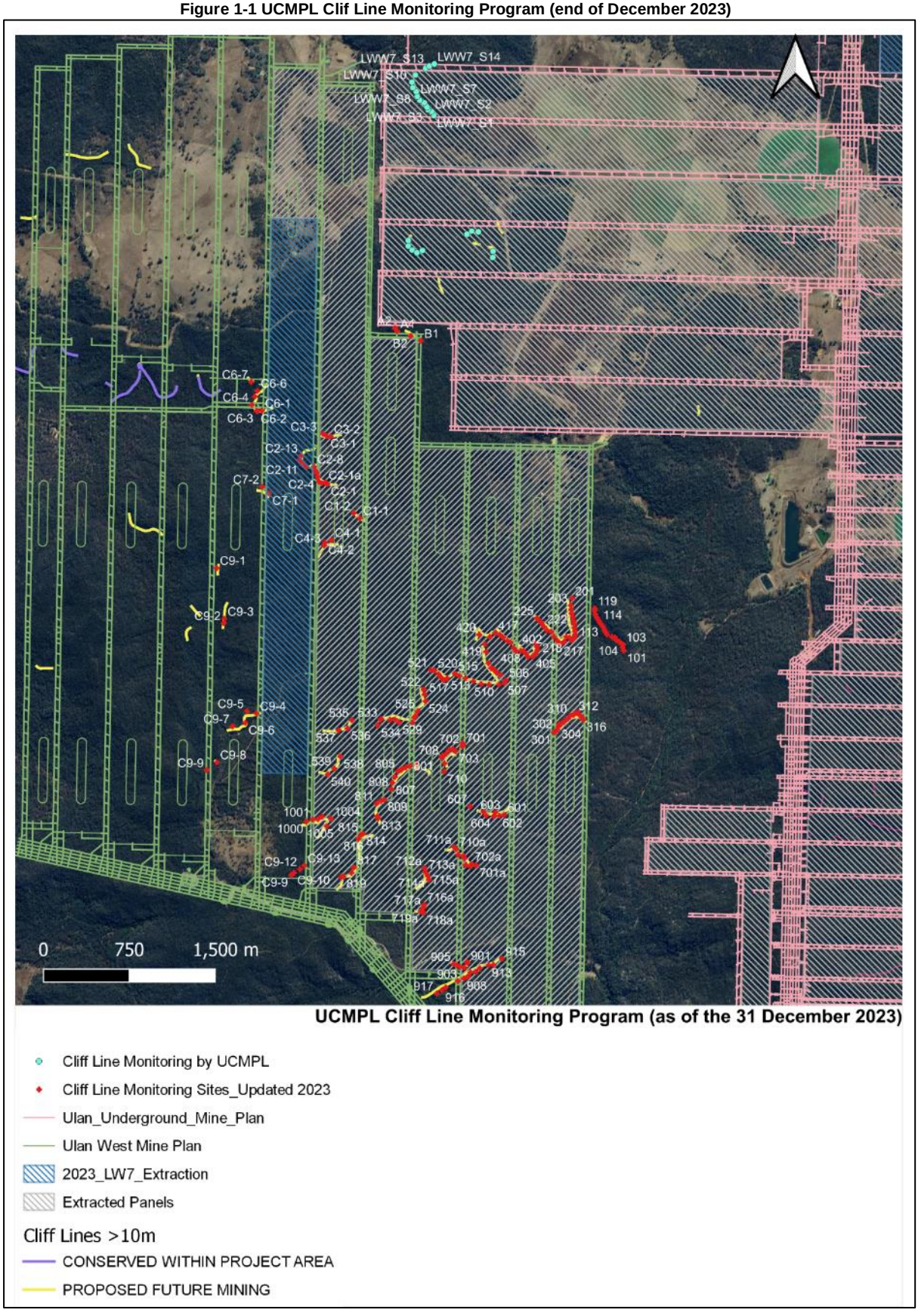


Figure 1-2 Monitoring of Cliff Lines and Aboriginal Heritage Sites for LW7 During 2023

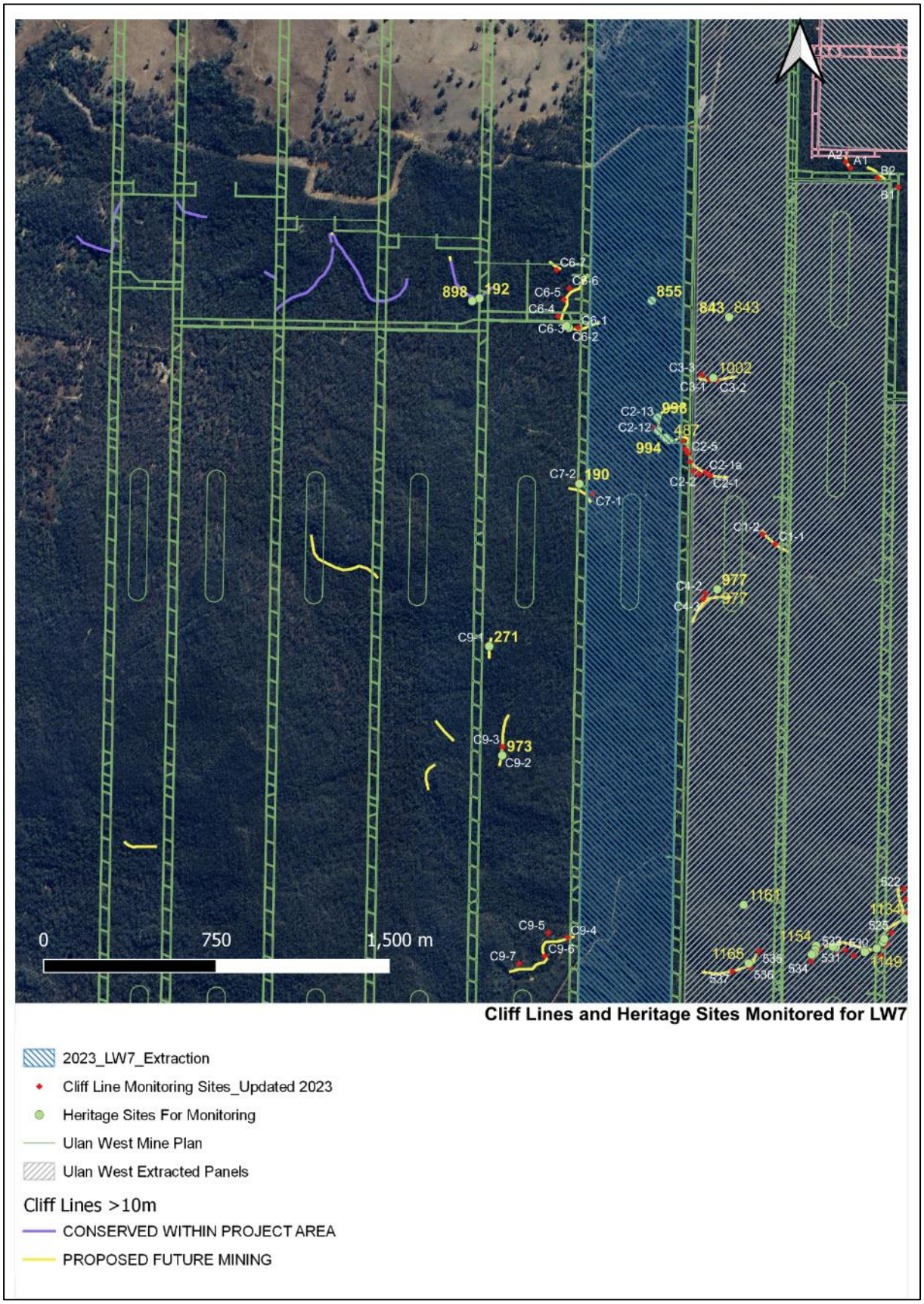


Figure 1-3 Monitoring of Cliff Lines and Aboriginal Heritage Sites within the BCA During 2023

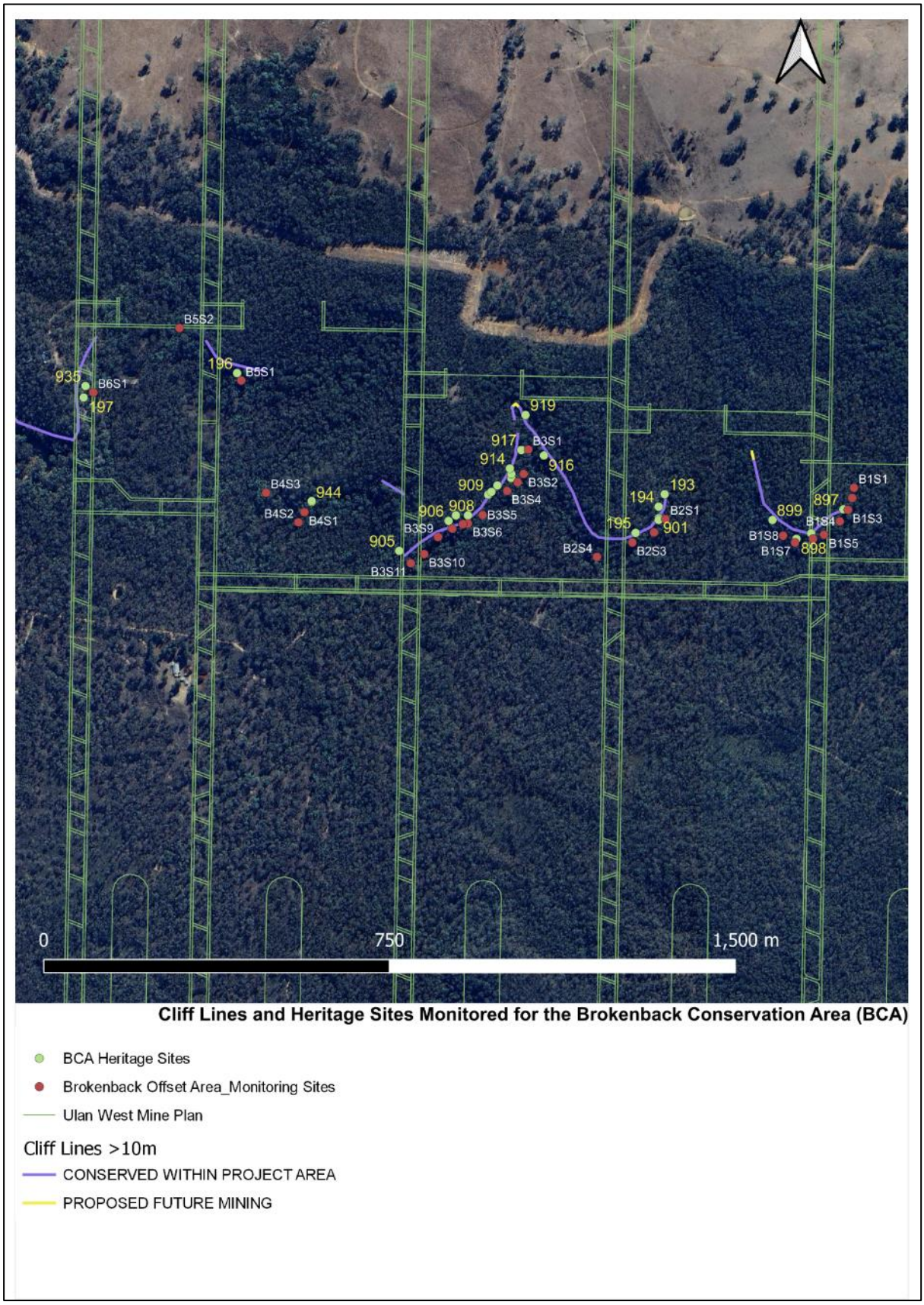
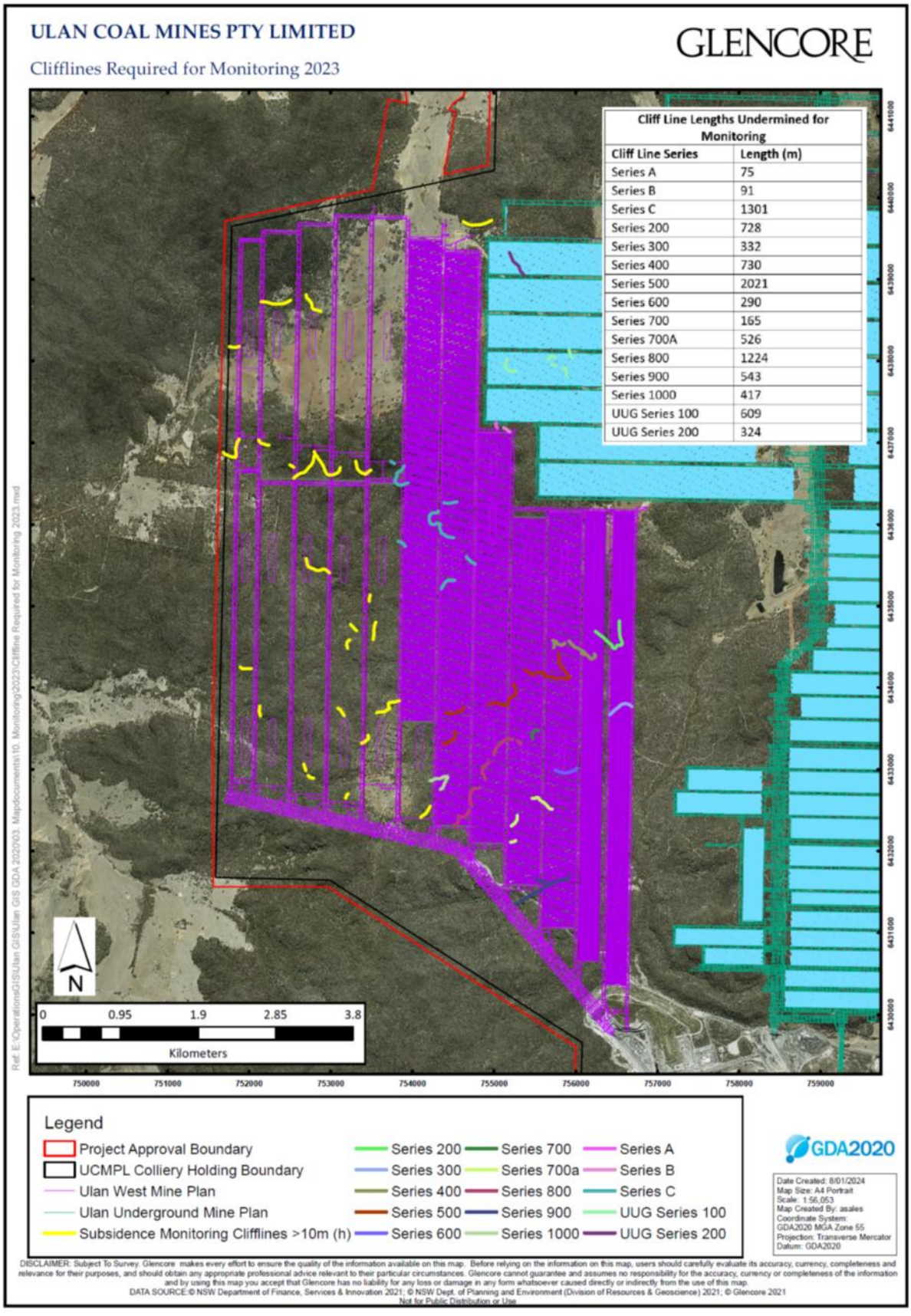


Figure 1-4 Cliff Lines Required for Monitoring & Cliff Lines Undermined End December 2023



Source: UCMPL January 2024

2.0 Monitoring Methodology

2.1 Site Section

The sandstone cliff line formations above the approved Ulan West and Ulan Underground mine plan were identified in the 2009 EA[5]. The monitoring requirements for cliff lines are outlined each respective Extraction Plan.

The establishment of additional cliff line monitoring sites during the pre-mining inspections for comparative purposes, continued on from the pre-mining inspection and establishment of cliff monitoring sites above LW1 and LW2 by Barnson in May 2014.

The establishment of cliff line monitoring sites for condition monitoring and comparative purposes within the BCA also continued on from the initial pre-mining inspection by Barnson in May 2014. Additional monitoring sites were established within the BCA in 2020 (**Figure 1-3** & **Table 6**).

A number of heritage sites were also inspected during the pre and post mining cliff line inspection above LW7 as required by the Extraction Plan[6] (**Figure 1-2** & **Figure 1-3**) and identified in **Table 1**.

Site selection of cliff line monitoring sites for LWW4 and LWW7 were established by UCMPL in *Pre & Post Mining Inspection LWW4 Ulan Underground Mine (UCMPL, 2018)* and *Post Mining Condition Assessment Report for LWW7 Woodbury Property (UCMPL, 2022)* respectively.

2.2 Comparative Assessments

During the post-mining inspection of cliff lines, photographs were taken at monitoring sites established during pre-mining inspections (**Figure 1-1**).

The coordinates[7] of each cliff line monitoring site are presented in **Section 3**.

The pre-mining and post mining photographs are presented in **Appendix B** and recorded impacts in **Table 3**.

2.3 Rockfall Measurements

During the post-mining inspection of cliff lines above LW7, identifiable[8] signs of recent rockfalls along the cliff lines were measured with a handheld laser measure and/or 5m surveyors staff (**Section 3**). The working range of the laser measure is approximately 0.2 – 20m with a +/- accuracy of 3.0mm. Every attempt was made to identify recent rock falls at established monitoring sites and any rock falls identified between each monitoring site along the cliff line.

Evidence of recent rock fall events included signs for the appearance of unweathered rock across the face of the cliff, signs of unweathered rock material deposited at the base of a cliff face and/or on the floor of rock shelters (if deemed safe to approach). To assist if recent rock fall events had occurred post mining, a comparison of the pre-mining condition photographs was undertaken were applicable (**Appendix B**).

[5] *Ulan Coal – Continued Operations Environmental Assessment* 2009

[6] Heritage sites confirmed by UCMPL for monitoring against UCMPL's Heritage Management Plan (Version 8) (Appendix C), as sites were not clearly identifiable in the Extraction Plan.

[7] Coordinates System: GDA 1994 (MGA Zone 55)

[8] With respect of those limitations identified in **Section 2.5.**

2.4 Perceptible Change

A qualitative[9] assessment for signs of subsidence induced cracking included categorising impacts as either 'no perceptible' or 'perceptible' (**Section 3**) at each cliff line monitoring site and those encountered along the cliff line (**Section 2.2**). Evidence of perceptible impacts included signs of recent unweathered horizontal and/or vertical cracking along the face of the cliffs and/or within rock shelters. Where possible, analysis of potential subsidence induced cracking also involved comparing the pre-mining condition photographs (**Appendix B**).

2.5 Limitations

During the 2023 post-mining inspection of cliff lines above LW7 and the BCA, several limitations were encountered, including:

- The working range of the laser measure was often at the edge of its working limits for the following reasons:
    - Maintaining a safe working distance away from potentially unstable cliff faces, as a precautionary measure to avoid possible rock falls. Subsequently measurements in these cases could only be approximations;
    - Some rock falls were observed high in the cliff face, therefore measurements could only be approximations;
    - Heritage sites within precarious locations could not be inspected at a close range for potential subsidence impacts as it was deemed to high risk to enter these post mining sites; and
    - Vegetation at the base of cliff faces also presented other challenges to measure rock falls accurately and take clear photographs.
- For the same safety reasons previously stated above, the estimation of perceptible impacts should only be considered as a qualitative assessment;
- Although considerable effort was taken to locate heritage sites and replicate photos from each established monitoring site, due to changes in vegetation growth, fallen tree limbs, and other site constraints including missing survey pegs and poor satellite coverage for the GPS at times, this was not always possible;
- The post monitoring of the cliff lines is a 'snap shot' of the current condition of the cliff lines. Further rock falls may occur over time due to climatic conditions[10] for example;
- Time constraints and large area to inspect across a challenging terrain; and
- Locating the exact pre-mining inspection site was dependent upon the accuracy of handled GPS device and site survey peg; however several fallen tree limbs often obscured or damaged some of the pegs.

In consideration of the limitations, every effort was made during the post mining inspections to manage the constraints identified. Appropriate management actions included consultation with SCT Operations regarding the methodology and additional time in the field to measure difficult rock falls, identify established monitoring points by using the pre-mining photographs in conjunction with GPS coordinates and survey pegs.

[9] After previous discussions with SCT Operations for the post mining inspections of LW2 and LW3 in February 2017, a qualitative assessment as opposed to attempting to quantify the perceptible impacts (as reported by PE for LW1) was undertaken. To accurately quantify the degree of cracking across the entire length of each cliff line would involve further detailed assessments, however due to safety limitations as in **Section 2.5**, an alternate methodology would need to be considered to achieve this outcome.

[10] It was noted at several sites where rocks appeared to be dislodged from the face of the cliff but had not yet fallen.

3.0 Results

Table 1 outlines the post mining monitoring results along the cliff lines and heritage sites required for monitoring above LW7 in 2023 (**Figure 1-2**).

The post mining inspection estimated length of rockfalls in meters (m) and if perceptible cracking was observed in the vicinity of each monitoring site. Rock falls not occurring at an established site were recorded against the nearest established cliff line monitoring site.

3.1 Post Mining Inspections July 2023

Table 1 Post Mining Cliff Line & Heritage Sites Inspected in 2023

LW	Eastings	Northings	Cliff Line Reference	Rock Fall Length (m)	Notes
LW7	754328	6435959	C2-7	0.0	No perceptible cracking. No rock falls.
LW7	754314	6435997	C2-8	0.0	Minor perceptible cracking. Small rock dislodgement.
LW7	754246	6435989	C2-9#	≈5.7	Perceptible cracking. Rock fall ≈5.7m.
LW7	754229	6436005	C2-10#	≈11.3	Perceptible cracking. Rock fall ≈11.3m.
LW7	754200	6436034	C2-11#	≈1.3	Perceptible cracking. Minor rock fall ≈1.3m.
LW7	754190	6436055	C2-12	≈11.0	Perceptible cracking. Rock fall not continuous. Rock fall ≈6.8m and another rock fall ≈4.2m.
LW7	754201	6436093	C2-13#	≈1.5	Perceptible cracking. Minor rock fall ≈1.5m.
LW8B	753859	6436488	C6-1	≈2.5	Minor perceptible cracking. Rock fall ≈2.5m
LW7	753922	6435766	C7-1	0.0	Minor perceptible cracking. Small rock dislodgement.
LW7	753864	6435822	C7-2	0.0	No perceptible cracking. No rock falls.
LW7	753864	6435822	C7-3#	0.0	No perceptible cracking. No rock falls.
TOTAL				**≈33.3m**	
Notes: ≈ Approximation based on limitations # Aboriginal Heritage Sites					

3.2 Brokenback Conservation Area Inspection

Table 2 Cliff Lines with the Brokenback Conservation Area

Eastings	Northings	Cliff Line Reference	Rock Fall Length (m)	Notes
753524	6436715	B1S1	0	No obvious signs of subsidence related impacts such as perceptible cracking or rock falls noted within the Brokenback Conservation Area as of June 2023.
753520	6436693	B1S2	0	
753511	6436667	B1S3	0	
753493	6436642	B1S4	0	
753459	6436613	B1S5	0	
753435	6436604	B1S6	0	
753396	6436596	B1S7	0	
753370	6436611	B1S8*	0	
753115	6436647	B2S1^	0	
753090	6436618	B2S2^	0	
753043	6436596	B2S3^	0	
752966	6436565	B2S4^	0	
752817	6436798	B3S1^	0	
752807	6436745	B3S2^	0	
752794	6436727	B3S3^	0	
752771	6436708	B3S4^	0	
752718	6436656	B3S5^	0	
752686	6436637	B3S6^	0	
752675	6436636	B3S7^	0	
752652	6436626	B3S8^	0	
752621	6436608	B3S9^	0	
752591	6436571	B3S10^	0	
752562	6436551	B3S11^	0	
752331	6436662	B4S1^	0	
752318	6436640	B4S2^	0	
752248	6436704	B4S3^	0	
752194	6436948	B5S1^	0	
752060	6437062	B5S2^	0	
751873	6436922	B6S1^	0	

Notes: * Not inspected in 2020 ^Added to inspections in 2020

3.3 Summary of Cliff Line Impacts (2023)

Table 3 provides a summary of measured rockfalls to date over LW1, LW2, LW3, LW4, LW5, LW6, LW7 and LWW4 and LWW7.

Table 3 Sum of Measured Cliff Line Rock Falls Measured in 2023

Cliff Line Subsidence Impacts – Rock Falls	Results (m)
Measured Rock Falls	
Total length of rock falls measured above LW1 (Cliff Line 200 and 300 Series)[11]	≈51.8
Total length of rock falls recorded above LW2 (Cliff Line 200 and 400 Series)[12]	≈31.3
Total length of rock falls recorded above LW3 (Cliff Line 400 and 500 Series)[12]	≈93.2
Total length of rock falls recorded above LW3 (Cliff Line 600, 700a and 900 Series)[13]	≈123.9
Total length of rock falls recorded above LW4 (Cliff Line 500, 700, 700a, 800 and 900 Series)[14]	≈87.3
Total length of rock falls recorded above LW5 (Cliff Line 500 Series and A to C Series)[15]	≈32.5
Total length of rock falls recorded above LW5 (Cliff Line 800 Series)[16]	≈122.8
Total length of rock falls recorded above LW6 (Cliff Line C1, C2, C3 & C4 Series)[17]	≈10.3
Total length of rock falls recorded above LW6 (Cliff Line 500, 800 and 1000 Series)[18]	≈43.8
Total length of rock falls recorded above LW7 (Cliff Line C2 Series)[19]	≈33.3
Total length of rock falls recorded above LW7 (Cliff Line C7 Series)[19]	0.0
Total length of rock falls recorded above LWW4[20]	≈8.0
Total length of rock falls recorded above LWW7[21]	≈32.0
Observed Rock Falls (to date) Total	**≈670.2**
Length of Cliff Lines Above The Mining Area of LW1 to LW7[22]	≈8443
Length of Cliff Lines Above The Mining Area of LWW4 to LWW7[23]	≈933
Total Cliff Lines Undermined (to date) Total	**≈9376**
Percentage of Rock Falls Along Cliff Lines Above the Mining Area of LW1 to LW7 & LWW4 to LWW7 (as of the 31 Dec 2023)	**≈7.1%**

Notes: ≈ Approximation based on limitations (**Section 2.5**).

During the preparation of the *2023 Cliff Line Monitoring Report*, a discrepancy was noted relating to the reported percentage of observed rockfalls to date. The *2022 Cliff Line Monitoring Report* calculated a ≈6.5% of observed rockfalls to date. This percentage value should have been reported as ≈7.15%. This has been rectified and the 2023 reported value is inclusive of this revision.

[11] Rock fall estimates regarding LW1 from previous monitoring completed in August 2015
[12] Rock fall estimates regarding LW2 from previous monitoring completed in February 2017
[13] Rock fall estimates regarding LW3 from previous monitoring completed in October 2017
[14] Rock fall estimates regarding LW4 monitoring completed in January/February 2019
[15] Rock fall estimates regarding LW5 monitoring completed in February 2020 at chainage 1475m
[16] Rock fall estimates regarding LW5 monitoring completed in May 2020
[17] Rock fall estimates regarding LW6 monitoring completed in November 2021
[18] Rock fall estimates regarding LW6 monitoring completed in May, June 2022
[19] Rock fall estimates regarding LW7 monitoring completed in July 2023
[20] Rock fall estimates regarding LWW4 monitoring completed by UCMPL in October 2018
[21] Rock fall estimates regarding LWW7 monitoring completed in November 2021 by UCMPL
[22] Cliff line lengths above the Ulan West mining area of LW1 to LW7 provided by UCMPL (**Figure 4**)
[23] Cliff line lengths above the Ulan Underground mining area of LWW4 to LWW7 provided by UCMPL (**Figure 4**)

4.0 Conclusion

The purpose of the *2023 Cliff Line Monitoring Report* was to record the combined lengths of subsidence induced rockfalls and record any observed signs of subsidence induced cracking (i.e. perceptible cracking or no perceptible cracking) along cliff lines <10m in height, impacted by longwall mining activities in 2023.

During the post mining inspections in 2023, impacts to known heritage rock shelter sites associated with the cliff lines, as identified by the Extraction Plan for Ulan West were also recorded (**Table 1**).

The combined rockfalls observed as a result of longwall mining at Ulan West for LW1 to LW7 is now ≈670.2m. The combined length of cliff lines impacted as of 2023 for LW1 to LW7 by Ulan West is ≈8443m.

There were no cliff lines undermined by Ulan Underground in 2023. The combined rockfalls totalling approximately 40m recorded above LWW4 to LWW7 at Ulan Underground was previously recorded in 2021. The combined length of cliff lines impacted at Ulan Underground remains at ≈933m.

Approximately 7.1% (**Table 3**) of subsidence induced rockfalls has occurred to cliff lines undermined by LW1 to LW7 and LWW4 to LWW7, indicating these combined rock falls as a result of subsidence occurring at Ulan West and Ulan Underground are within the 20% predicted in the 2009 EA.

Impacts to Aboriginal heritage sites required for monitoring included cracking and rockfalls as identified in **Table 1** and **Appendix B**. As mentioned, these observations were limited to visual observations outside of the rock shelters to maintain safe working protocols.

As with historical observations of post mined cliff lines and rock features at Ulan West, there is the potential for further rock falls or instabilities to occur above both underground operations post inspection.

There were no perceptible changes i.e., no obvious evidence of subsidence related impacts observed, within the Brokenback Conservation Area noted during the inspection in June 2023 (**Appendix A**).

5.0 References

- *Umwelt (2009) Ulan Coal - Continued Operations Environment Assessment.*
- *UCML (2013) The Ulan West - Subsidence Management Plan/Extraction Plan for LW1 and LW2.*
- *UCML (2019) The Ulan West - Subsidence Management Plan/Extraction Plan for LW1 to LW6.*
- *SCT Operations Pty Ltd (2013) – Revised Subsidence Impacts for Ulan West LW1 and LW2.*
- *Barnson Pty Ltd (May 2014) Ulan Coal Mine – Brokenback Cliff Line Monitoring.*
- *Barnson Pty Ltd (February 2014) Ulan Coal Mine –Cliff Line Monitoring.*
- *SCT Operations Pty Ltd (2015) – Ulan West Mine - Longwalls 3 and 4 Update of Subsidence Assessment for Longwalls 1 - 4 Extraction Plan.*
- *Pacific Environmental Pty Ltd (2015) – Ulan West Cliff Line Monitoring Report for LW1*
- *Pacific Environmental Pty Ltd (2017) – Ulan West Cliff Line Monitoring Report for LW2 and LW3.*
- *Pacific Environmental Pty Ltd (2018) – Ulan West Cliff Line Monitoring Report for LW3.*
- *Pacific Environmental Pty Ltd (2019) – Ulan West Cliff Line Monitoring Report for LW4.*
- *Pacific Environmental Pty Ltd (2020) – Ulan West Cliff Line Monitoring Report for LW5.*
- *Pacific Environmental Pty Ltd (2021) – 2020 Ulan West Cliff Line Monitoring Report*
- *Pacific Environmental Pty Ltd (2022) – 2021 Cliff Line Monitoring Report*
- *Pacific Environmental Pty Ltd (2023) – 2022 Cliff Line Monitoring Report*

APPENDIX A
PRE & POST MINING CLIFF LINE PHOTOGRAPHS (BCA)

APPENDIX B
PRE & POST MINING CLIFF LINE PHOTOGRAPHS (LW7)

APPENDIX C
CONSOLIDATED ROCK FALL MONITORING FOR ULAN WEST (2023)

TABLE C-1: CONSOLIDATED ROCK FALL MONITORING LW1 TO LW6

Longwall (LW)	Eastings	Northings	Cliff Line Reference	≈ Rock Fall Length (m)	Perceptible Cracking (Y/N)
NA	757022.045	6434390.114	101	0	N
NA	757012.856	6434416.472	102	0	N
NA	757015.528	6434441.754	103	0	N
NA	756998.581	6434450.71	104	0	N
NA	756981.497	6434467.173	105	0	N
NA	756955.657	6434482.624	106	0	N
NA	756943.512	6434504.018	107	0	N
NA	756918.61	6434509.491	108	0	N
NA	756874.846	6434530.458	109	0	N
NA	756864.049	6434549.839	110	0	N
NA	756853.417	6434571.44	111	0	N
NA	756840.65	6434596.708	112	0	N
NA	756826.413	6434616.552	113	0	N
NA	756812.021	6434635.989	114	0	N
NA	756799.595	6434656.595	115	0	N
NA	756787.58	6434677.966	116	0	N
NA	756775.343	6434705.082	117	0	N
NA	756766.562	6434737.423	118	0	N
NA	756768.102	6434757.892	119	0	N
LW1	756570.076	6434845.987	201	0	N
LW1			202	0	N
LW1	756560.48	6434785.412	203	3.836	Y
LW1	756562.365	6434746.988	204	0	N
LW1	756566.078	6434713.458	205	12.856	Y
LW1	756578.123	6434680.969	206	14.279	Y
LW1	756583.443	6434646.867	207	0	N
LW1	756590.845	6434620.686	208	0	Y
LW1	756591.902	6434587.405	209	7.625	N
LW1	756596.25	6434559.468	210	1.6	Y
LW1	756597.293	6434528.314	211	3.163	Y
LW1	756588.597	6434501.15	212	6.063	Y
LW1	756567.277	6434480.734	213	0	N
LW1	756550.216	6434501.949	214	0	Y
LW1	756520.055	6434508.869	215	0	Y
LW1	756501.544	6434467.021	216	0	N
LW1	756469.431	6434448.148	217	0	N
LW1	756441.19	6434474.896	218	0	N
Chain Pillar	756412.399	6434512.105	219	0	N
LW2	756388	6434554	220	2	Y
LW2	756350	6434566	221	2.33	Y
LW2	756324	6434598	222	0	Y
LW2	756302	6434629	223	0	N
LW2	756282	6434653	224	0.45	Y
LW2	756262	6434671	225	0	N
W1	756413.403	6433672.811	301	0	N
LW1	756425.78	6433684.134	302	0	N
LW1	756440.35	6433696.067	303	0	N

Longwall (LW)	Eastings	Northings	Cliff Line Reference	≈ Rock Fall Length (m)	Perceptible Cracking (Y/N)
LW1	756450.742	6433723.172	304	0	N
LW1	756458.153	6433745.487	305	0	Y
LW1	756480.122	6433752.161	306	0	Y
LW1	756499.221	6433763.93	307	0	Y
LW1	756515.384	6433779.693	308	0.5	Y
LW1	756535.21	6433795.295	309	0	Y
LW1	756553.284	6433817.52	310	1.292	Y
LW1	756581.653	6433826.515	311	0.599	Y
LW1	756598.786	6433842.29	312	0	Y
LW1	756581.653	6433826.515	311	0.599	Y
LW1	756625.064	6433846.016	313	0	N
LW1	756636.83	6433824.11	314	0	Y
LW1	756657.119	6433803.301	315	0	Y
LW1	756668.878	6433785.234	316	0	N
LW2	756257	6434448	401	0	Y
LW2	756265	6434424	402	3.30	Y
LW2	756267	6434394	403	3.58	Y
LW2	756251	6434361	404	9.90	Y
LW2	756226	6434337	405	1.52	Y
LW2	756184	6434333	406	6.05	Y
LW2	756167	6434362	407	1.45	Y
LW2	756145	6434384	408	0.75	Y
LW2	756123	6434388	409	0	Y
LW2	756082	6434383	410	0	Y
LW2	756059	6434411	411	0	N
Chain Pillar	756058		412	0	N
LW3	756032	6434461	413	0.91	Y
LW3	756005	6434475	414	0	Y
LW3	755968	6434502	415	2	Y
LW3	755939	6434526	416	5	Y
LW3	755898	6434543	417	0	Y
LW3	755853	6434508	418	0	N
LW3	755809	6434446	419	0	Y
LW3	755759	6434529	420	0	Y
LW3	755818	6434379	500	0	Y
LW3	755839	6434279	501	5.23	Y
LW3	755863	6434234	502	12.58	Y
LW3	755882	6434228	503	5	Y
LW3	755906	6434202	504	6	Y
LW3	755943	6434177	505	21.76	Y
LW3	755992	6434130	506	10	Y
LW3	755980	6434105	507	0	Y
LW3	755932	6434092	508	0	Y
LW3	755888	6434084	509	0	Y
LW3	755844	6434092	510	0	Y
LW3	755777	6434097	511	0	Y
LW3	755707	6434121	512	24.7	Y
LW4	755639	6434148	513	0.5	Y
LW4	755583	6434168	514	0	N

Longwall (LW)	Eastings	Northings	Cliff Line Reference	≈ Rock Fall Length (m)	Perceptible Cracking (Y/N)
LW4	755545	6434188	515	5.2	Y
LW4	755478	6434148	516	8.5	Y
LW4	755451	6434129	517	5.5	Y
LW4	755423	6434155	518	0	N
LW4	755403	6434182	519	2.0	Y
LW4	755368	6434215	520	0	N
LW4	755336	6434220	521	0	N
LW4	755274	6434050	522	0.9	Y
LW4	755282	6434006	523	0	N
LW4	755290	6433946	524	21.0	Y
LW4	755222	6433860	525	0.9	Y
LW4	755202	6433817	526	0	Y
LW3	755978	6432952	601	0	Y
LW3	755935	6432944	602	7.5	Y
LW3	755900	6432975	603	TBA	TBA
LW3	755886	6432941	604	7.6	Y
LW3	755820	6432945	605	18.7	Y
LW3	755796	6432980	606	21.5	Y
LW3	755681	6433026	607	7.4	Y
LW4	755614	6433579	700	NA	NA
LW4	755620	6433562	701	NA	NA
LW4	755612	6433552	702	NA	NA
LW4	755553	6433510	703	0	N
LW4	755528	6433530	704	6.8	Y
LW4	755498	6433521	705	2.1	Y
LW4	755469	6433486	706	2.4	Y
LW4	755440	6433471	707	13.6	Y
LW4	755432	6433455	708		Y
LW4	755455	6433402	709	5.3	Y
LW4	755453	6433331	710	0.5	Y
LW3	755733	6432509	701a	2.8	Y
LW3	755694	6432523	702a	13.7	Y
LW3	755679	6432503	703a	0	Y
LW3	755639	6432513	704a	0	Y
LW3	755629	6432573	705a	0	Y
LW3	755622	6432594	706a	0	Y
LW4	755629	6432573	707a	0.6	N
LW4	755622	6432594	708a	0	N
LW4	755576	6432604	709a	1.0	Y
LW4	755557	6432652	710a	3.5	Y
LW4	755540	6432671	711a	0.7	Y
LW4	755280	6432486	712a	1.5	Y
LW4	755289	6432452	713a	0.6	Y
LW4	755307	6432421	714a	0.6	Y
LW4	755320	6432385	715a	0.6	Y
LW4	755277	6432166	716a	0	Y
LW4	755273	6432142	717a	1	Y
LW4	755271	6432096	718a	1	Y
LW4	755248	6432110	719a	1	Y

Longwall (LW)	Eastings	Northings	Cliff Line Reference	≈ Rock Fall Length (m)	Perceptible Cracking (Y/N)
LW3	755651	6431666	900	20	Y
LW3	755659	6431656	901	0	Y
LW3	755628	6431617	902	0	Y
Chain Pillar	755591	6431623	903	0	Y
Chain Pillar	755565	6431636	904	0	Y
LW4	755536	6431649	905	0	N
LW3	755467	6431444	906	0	N
Chain Pillar	755572	6431500	907	0	N
LW3	755624	6431523	908	3	Y
LW3	755660	6431538	909	5	Y
LW3	755683	6431575	910	7	Y
LW3	755729	6431580	911	2	Y
LW3	755764	6431611	912	3	Y
LW3	755842	6431637	913	3	Y
LW3	755883	6431640	914	1	Y
LW3	755958	6431694	915	0.6	Y
NA	755433	6431419	916	0	N
NA	755387	6431390	917	0	N
LW5	755146	6433757	527	0	Y
LW5	755129	6433754	528	8.5	Y
LW5	755058	6433761	529	1.2	Y
LW5	755020	6433784	530	4.8	Y
LW5	754980	6433782	531	5.7	Y
LW5	754904	6433792	532	3	Y
LW5	754897	6433785	533	9	Y
LW5	754872	6433736	534	0	Y
LW5	755044	6437186	A1	0	N
LW5	755026	6437190	A2	0	N
LW5	755251	6437098	B1	0	N
LW5	755160	6437139	B2	0	N
LW5	754716	6435549	C1	0	Y
LW4	755293	6433362	800A	0	Y
LW4	755232	6433394	800B	0	N
LW4	755336	6433350	800C	0	Y
LW4	755215	6433396	800	0	Y
Chain Pillar	755156	6433379	801	0	N
LW5	755118	6433368	802	0.3	Y
LW5	755085	6433355	803	0	Y
LW5	755076	6433346	804	0.2	Y
LW5	755049	6433337	805	1.1 & 1.8	Y
LW5	755022	6433285	806	13.7	Y
LW5	755000	6433234	80	13.8	Y
LW5	754991	6433177	808	0	Y
LW5	754929	6433086	809	12.8 & 7.2	Y
LW5	754901	6433074	810	4.4	Y
LW5	754863	6433052	811	41 & 0.8	Y
LW5	754870	6432940	812	15.2	Y
LW5	754875	6432922	813	9.5	Y
Chain Pillar	754744	6432788	814	0	N

Longwall (LW)	Eastings	Northings	Cliff Line Reference	≈ Rock Fall Length (m)	Perceptible Cracking (Y/N)
Chain Pillar	754725	6432779	815	0	N
Chain Pillar	754703	6432742	816	1	N
LW6	754716	6435549	C1-1	≈1.0	Y
LW6	754662	6435591	C1-2	≈0.9	Y
LW6	754432	6435846	C2-1	≈4.2	Y
LW6	754384	6435851	C2-2	0.0	N
LW6	754359	6435866	C2-3	0.0	Y
Chain Pillar	754346	6435905	C2-4	0.0	N
Chain Pillar	754337	6435941	C2-5	0.0	N
Chain Pillar	754326	6435959	C2-6	0.0	Y
LW6	754429	6436264	C3-1	0.0	N
LW6	754460	6436260	C3-2	0.0	N
LW6	754513	6436509	C3-4	≈4.2	Y
LW6	754506	6436529	C3-5	0.0	N
LW6	754468	6435356	C4-1	0.0	Y
LW6	754411	6435334	C4-2	0.0	Y
LW6	754403	6435309	C4-3	0.0	N
LW6	754646	6433780	535	0.8	Y
LW6	754608	6433709	536	6.8	Y
LW6	754530	6433691	537	0.0	N
LW6	754546	6433463	538	3.0	Y
LW6	754493	6433357	539	7.5	Y
LW6	754436	6433306	540	2.5	Y
LW6	754248	6432895	1000	0.0	N
LW6	754304	6432911	1001	4.5	Y
LW6	754350	6432916	1002	0.0	Y
LW6	754385	6432939	1003	0.0	N
LW6	754465	6432919	1004	2.5	Y
LW6	754427	6432853	1005	1.5	Y
LW6	754420	6432846	ID#1401	3.1	Y
LW6	754390	6432812	ID#1278	3.6	Y
LW6	754664	6432492	817	0.0	N
LW6	754642	6432447	818	1	Y
LW6	754571	6432415	819	6.5	Y
LW6	754551	6432406	820	0.5	Y
LW7	754328	6435959	C2-7	0.0	N
LW7	754314	6435997	C2-8	0.0	Y
LW7	754246	6435989	C2-9	≈5.7	Y
LW7	754229	6436005	C2-10	≈11.3	Y
LW7	754200	6436034	C2-11	≈1.3	Y
LW7	754190	6436055	C2-12	≈11.0	Y
LW7	754201	6436093	C2-13	≈1.5	Y
LW7	753922	6435766	C7-1	0.0	Y
LW7	753864	6435822	C7-2	0.0	N
LW7	753864	6435822	C7-3	0.0	N
LW8B	753859	6436488	C6-1	≈2.5	Y

Notes: ≈ Approximation based on limitations

Shaded Cells are considered outside the immediate impacts from Ulan West however their post mining condition was recorded for historical purposes.

Shaded Cells: Although sites were established during pre-monitoring, their location is outside the cliff lines for monitoring (i.e. <10m in height) as identified in the Extraction Plan and confirmed by UCMPL.

TBA: Site 603 above LW3 was unable to be inspected during the post mining inspection due to safety concerns and would require alternate inspection methods to record the condition of the site.