ULAN
UNDERGROUND

GLENCORE

Appendix F: Public Safety Management Plan Longwalls 30 & LWW6-LWW8

Ulan Underground

Document Number:	ULNCX-111515275-3367
Status:	Approved
Version:	3.0
Effective:	29/01/2021
Review:	3 years
Owner:	Environment and Community Manager

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1 Introduction

1.1 Extraction Plan Application Area

Ulan Coal Mines Pty Limited (UCMPL) has Extraction Plan approval for longwall (LW) panels LW30 & LWW6, LWW7 and LWW8 (LWW6 - LWW8), herein referred to as the Application Area (**Figure 1**), for the Ulan Underground Mine (UUG).

1.2 Purpose and Scope

The purpose of this Public Safety Management Plan for Longwalls 30 & LWW6 - LWW8 (PSMP LW30 & LWW6-LWW8) is to outline the management strategies, controls and monitoring programs to be implemented for the management of public safety where there is potential for public safety issues that may result from mine-induced subsidence from secondary extraction within the Application Area.

This PSMP LW30 & LWW6-LWW8 (this Plan) has been amended to incorporate the approved MOD4[1] mine plan which extend[2] the longwall panel lengths of LW30, LWW7 and LWW8. Amendments to this Plan are identified by red text. A summary of the predicted changes to potential subsidence effects, subsidence impacts and environmental consequences, as a result of the revised mine plan layout at UUG is provided in **Section 3.0**. There are no significant changes to the monitoring or management measures previously proposed, as a result of the revised layout of LW30, LWW7 and LWW8.

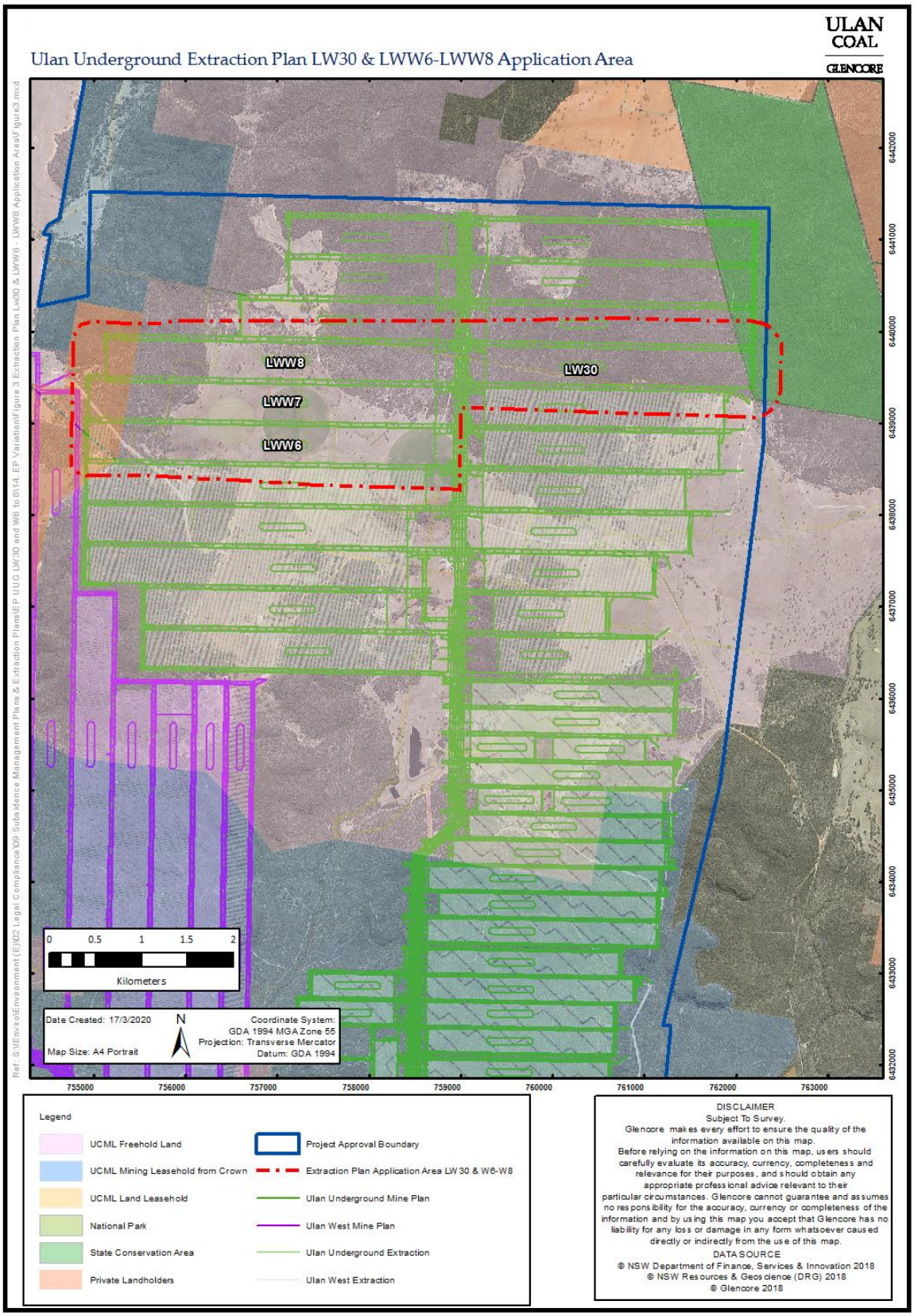
The scope of this Plan applies to the Application Area (**Figure 1**) in regards to potential public safety hazards.

The appointed team of suitably qualified and experienced experts which included representatives from Strata Control Technology (SCT) relevant to this plan, was endorsed by the Secretary of NSW Department of Planning, Industry and Environment (DPIE) on 27 June 2016 (Attachment 2 of the Extraction Plan).

[1] *Ulan Continued Operations Project - Modification 4 Longwall Optimisation Project Environmental Assessment (ELA, 2018)*

[2] As a result of MOD4, length of approximate extensions for LW30, LWW7 and LWW8 are 195m, 220m, 155m respectively.

Figure 1 Extraction Plan LW30 & LWW6-LWW8 Application Area



1.3 Description of the Application Area

The Application Area is a combination of undeveloped bushland, gently undulating open grazing and irrigation agricultural lands. The Application Area is split by the Great Dividing Range with land in the east in the Goulburn River Catchment and land in the west in the Talbragar River catchment. Bushland in the east is gently undulating while bushland in the west is a little steeper with sandstone outcrops and partially cleared valleys. Most of the land within the Application Area is owned by UCMPL with the exception of one private property in the west of the Application Area and a section of the Durridgeree State Conservation Area (DSCA) in the east (**Figure 1**). There are no privately owned dwellings within the Application Area. There are no privately owned dwellings within the Application Area.

UCMPL owned and controlled land within the Application Area is used for mining related activities (e.g. underground mining and surface support infrastructure) and agricultural purposes (e.g. grazing and cropping) including the Bobadeen Irrigation Scheme (BIS). Privately owned land within the Application Area is used for cattle grazing. The DSCA is State-owned land controlled by the NSW National Parks and Wildlife Services (NPWS).

The mining authorisations applicable to UUG include ML1468, ML1341, ML1511, ML1554, ML1656, ML 1365, ML 1366, ML1467 and CCL741.

The depth of cover as measured from the top of seam varies from 165 meters to 335 meters. The depth of cover increases in northeast direction as the seam dips between 1 and 3 degrees along this orientation. Therefore the depth, in general terms, ranges from 165 meters to 270 meters for western panels (LWW6 to LWW8) and from 270 meters to 335 meters in the east (LW30).

Longwall mining at UUG targets the economic portion of the Ulan Coal Seam. The thickness of this section varies across the revised Application Area from approximately 2.5m to 3.3m with an average of 2.9m.

The main soil units found within the Application Area are the Turill and Goonoo soil landscapes. The Goonoo Landscape of Jurassic sandstone origin and the Turill landscape of Jurassic or Triassic origin are composed of earthy and siliceous sands that drain well, have low fertility, high erosivity and slight to strongly acidic topsoil.

Privately owned built features within the Application Area include an overhead essential energy power line, permanent mark state survey stations, a small shelter, two farm dams and farm fences. The Essential Energy owned 12.7kV single wire earth return (SWER) type minor power line passes through the Application Area over the main headings and will not be undermined within the Application Area. There are no private bores within the Application Area, however a number of private bores could be affected by ground water drawdown.

Approximately 2.8ha of the DSCA is located directly above the eastern portion of LW30. The revised Application Area that extends over the DSCA is predominately undeveloped bushland. There are no features of specific conservation values known to exist within the Application Area over DSCA. (**Figure 2**).

There are two cliff formations within the Application Area (**Figure 2**). The cliff line in the north-west corner of the Application Area across both UCMPL owned land and privately owned land and contains the Mona Creek Aboriginal rock shelter sites (Ulan ID#180 to 187) which are protected from subsidence impacts by an offset from mining. The cliff line over LWW7 is approximately 300m in length, is less than 20 meters high and has no recorded Aboriginal rock shelter sites. This cliff line extends from UCMPL owned land onto privately owned land.

1.4 Potential Public Safety Hazards

Subsidence impact to access tracks, vegetation and sandstone cliff formations located within the Application Area (**Figure 2**) could present the following potential safety hazards:

- Surface cracking (including steps, overrides and erosion holes[3]);
- Tree fall; and/or
- Rock fall from cliff formations.

A risk assessment for the Extraction Plan and Application Area LW30 & LWW6-W8 was completed on 7 July 2016. The risk assessment was facilitated by AXIS Consulting (**Technical Report 2** of the EP) and attended by relevant UCMPL personnel and subsidence specialists.

The primary objectives of the risk assessment were:

- To identify items to be addressed in the Extraction Plan (and related studies);
- Use the risk assessment as input into the preparation of the Extraction Plan;
- Develop parameters for inclusion in component management plans;
- Involve a cross section of UCMPL personnel, subject matter experts, decision makers and key stakeholders in the issue (hazard) identification process;
- Provide a risk rating for identified issues;
- Identify requirement for additional controls;
- Create implementation plan for additional investigations and/or controls; and
- Document the process and the results.

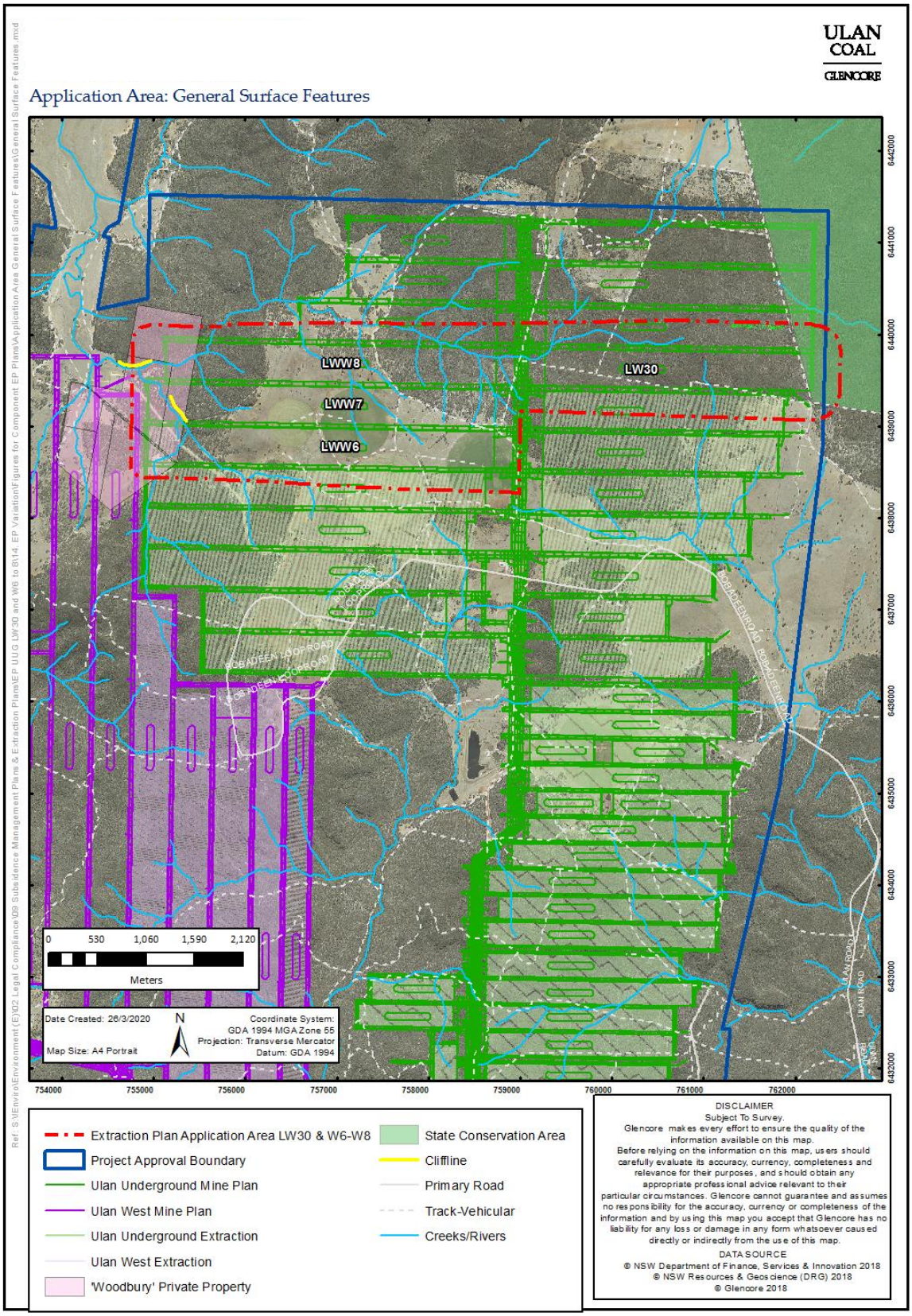
A summary of the key issues raised during the risk assessment are provided in Table 11 of the Extraction Plan. The following hazards were raised in relation to public safety;

- Unauthorised personnel enter UCMPL owned land. Rock or tree fall, or personnel are injured from ground cracks caused by mine subsidence.
- Authorised personnel enter private land. Rock or tree fall, or personnel are injured from ground cracks caused by mine subsidence.
- Authorised personnel enter DSCA. Tree fall or personnel are injured from ground cracks caused by mine subsidence.

All hazards were ranked as low with the implementation of the existing and proposed additional controls.

[3] A coincidence of mining induced cracking at the commencement of LWW5, a drainage line and recent heavy rainfall events, approximately 14 months after the area was mined led to flow into subsidence cracks and localised erosion of surface soils.

Figure 2 Cliff Lines & Access Roads within Application Area



1.5 Structure of the PSMP LW30 & LWW6-LWW8

Table 1 identifies where the requirements of Condition 2, Schedule 5 of PA 08_0184, are addressed in this Plan.

An overview of the main text sections of this Plan are:

Section 1 Provides an introduction to this Plan, including the purpose and scope and relationship to the EMS and the document structure.

Section 2 Describes the regulatory requirements, the safety objectives, provides a summary of relevant legislation and stakeholder consultation.

Section 3 Summarises the predicted subsidence impacts and environmental consequences resulting from the extraction of LW30 & LWW6-LWW8.

Section 4 Describes the management strategies to be implemented to for the management of public safety risks associated with the proposed secondary extraction workings within the Application Area.

Section 5 Provides a Contingency Plan to manage any unpredicted impacts and their consequences. Provides a Trigger Action Response Plan (TARP), which is a simple and transparent snapshot of the monitoring of environmental performance and where required the implementation of management and/or contingency measures.

Section 6 Provides a summary of the review and improvement process and reporting requirements.

Section 7 Outlines the roles and responsibilities for this Plan.

Section 8 Lists the documents referred to in **Sections 1 to 6** of this Plan.

Section 9 Provides a historical review reference of this Plan.

2 Regulatory Requirements

2.1 Project Approval

This Plan is a component of the Ulan Underground Extraction Plan Longwalls LW30 & LWW6-LWW8 (the Extraction Plan)[4] and has been prepared specifically to address Condition 26 of Schedule 3 which states:

> *26. The Proponent shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Director-General. Each Extraction Plan must:*
>
> *…*
>
> *Include to the satisfaction of DRE:*
>
> *…*
>
> - *A Public Safety Management Plan to ensure public safety in the mining area ; and*
> - *A program to collect sufficient baseline data for Future Extraction Plans[5].*

The structure of this Plan also follows the draft *Guidelines for the Preparation of Extraction Plans* (the Guidelines) provided by the DPIE. **Table 1** identifies where the requirements of PA 08_0184 and the Guidelines are addressed in this Plan.

Table 1 Project Approval Management Plan Requirements

EP Guidelines for Extraction Plan Management Plans	PA 08_0184 Requirements for Management Plans Condition 2, Schedule 5	This Plan	Section Description
Overview of landscape features, heritage sites and environmental values to be managed under the component plan; and *Description of landscape features, heritage sites and environmental values to be managed under the component plan and their significance.*	Condition 2(a) *detailed baseline data*	**Section 1.3** of this Plan	Provides a summary description of the Application Area.
	Condition 2(b) *a description of:* • *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	**Section 2** of this PSMP LW30 & W6-W8	Provides descriptions of project approval, subsidence performance measures and legislation applicable to this Plan .
Performance measures relevant to the landscape features, heritage sites and environmental values to be managed under the component plan	Condition 2(b) *a description of:* • *any relevant limits or performance measures/ criteria;*	**Section 2.2** of this Plan	Provides the subsidence performance measures for built features.
Performance indicators to establish compliance with these performance measures	• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures*	**Section 4.3** of this Plan	Outlines performance indicators to assess the subsidence performance measures for features.
	Condition 2(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria	**Section 4.1** this Plan	Describes the implementation of management measures.

[4] PA08_0184, Schedule 3, Condition 26(h).
[5] Ulan Coal's program to collect baseline data for Future Extraction Plans is provided in Attachment 3 of the Extraction Plan.

EP Guidelines for Extraction Plan Management Plans	PA 08_0184 Requirements for Management Plans Condition 2, Schedule 5	This Plan	Section Description
Currently predicted subsidence impacts and environmental consequences relevant to the features, sites and values to be managed.		**Section 3** of this Plan	Provides a summary of the approved subsidence impacts and revised impacts.
Measures planned to remediate these impacts and/or consequences		**Section 4.1** of this Plan	Provides a summary of the subsidence management safety.
Existing baseline monitoring network and baseline monitoring results. *Proposed monitoring of subsidence impacts and environmental consequences.*	*Condition 2(d) a program to monitor and report on the:* • *impacts and environmental performance of the project* • *effectiveness of any management measures (see c above)*	**Section 4.2** of this Plan	Describes the existing and proposed monitoring and evaluation program.
Proposed monitoring of the success of remediation measures following implementation		**Section 4.2** of this Plan	Provides a summary of the subsidence management measures.
Adaptive management proposed to avoid repetition of unpredicted subsidence impacts and/or environmental consequences *Contingency plans proposed to remediate unpredicted subsidence impacts and/or environmental consequences* *Trigger, Action, Response Plan*	*Condition 2(e) a contingency plan to manage any unpredicted impacts and their consequences*	**Section 5.1** of this Plan	Provides a Contingency Plan in the event performance measures are exceeded, higher than predicted subsidence or subsidence related incident has occurred. The Contingency Plan outlines Ulan Coal requirement to develop the appropriate course of actions, including corrective and preventative actions. Provides a TARP for to identify the appropriate response measures and responsibilities.
Responsibilities for implementation of the component plan		**Section 7** of this Plan	Responsibilities for implementation of the LMP LW30 & W6-W8 is listed.
	Condition 2(f) a program to investigate and implement ways to improve the environmental performance of the project over time	**Section 6.1** of this Plan	Describes the review mechanism for improvement.
	Condition 2(g) a protocol for managing and reporting any: • *incidents;* • *complaints;* • *non-compliances with statutory requirements; and* • *exceedances of the impact assessment criteria and/or performance criteria*	**Section 6.2** of this Plan	Describes the reporting and community response process.
	Condition 2(h) a protocol for periodic review of the plan	**Section 6.1** of this Plan	Describes the review process of the plan.

2.2 Subsidence Performance Measures

This Plan outlines the management strategies, controls and monitoring programs to be implemented for the management of public safety regarding potential environmental impacts from the proposed secondary extraction workings within the Application Area as described in the Extraction Plan. UCMPL must ensure that there is no exceedance of the subsidence impact performance measures[6] for public safety as provided in **Table 2**.

Table 2 Public Safety Performance Measures

Public Safety	Subsidence Performance Measures
Public Safety	No additional risk due to mining

2.3 Relevant Legislation

2.3.1 Mining Act 1992

The NSW Mining Act 1992 (Mining Act) places controls on methods of exploration and mining, the disposal of mining waste, land rehabilitation, and environmental management activities. The extraction of coal using the mining methods described in the Extraction Plan occurs within the subsurface Mining Lease (ML) ML1468, granted approval under the Mining Act on the 18 May 2000.

The surface mining leases within the Application Area are ML1554 and ML1656, granted on 1 September 2004 and 3 March 2011 respectively.

Table 3 provides the conditions of mining leases within the Application Area relating to public safety.

Table 3 Public Safety Mining Lease Conditions

Mining Lease	Public Safety Condition
ML1468	No conditions specifically relating to public safety.
ML1656 **Condition 11**	Operations must be carried out in a manner that ensures the safety of persons or stock in the vicinity of the operations. All drill holes shafts and excavations must be appropriately protected, to the satisfaction of the Director-General, to ensure that access to them by persons and stock is restricted. Abandoned shafts and excavations opened up or used by the lease holder must be notified in writing to the Department and filled in or otherwise rendered safe to a standard acceptable to the Director-General.
ML1554 **Condition 12**	Operations must be carried out in a manner that ensures the safety of persons or stock in the vicinity of the operations. All drill holes shafts and excavations must be appropriately protected, to the satisfaction of the Director-General, to ensure that access to them by persons and stock is restricted. Abandoned shafts and excavations opened up or used by the lease holder must be filled in or otherwise rendered safe to a standard acceptable to the Director-General.

2.3.2 Environmental Planning and Assessment Act 1979

Project Approval 08_0184 (PA08_0184) under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) was granted on 15 November 2010. As required by PA08_0184 UCMPL are required to prepare an Extraction Plan, to the satisfaction of the Secretary of DPIE. A component of the Extraction Plan is the preparation of a Built Features Management Plan in accordance with Condition 26, Schedule 3 of PA08_0184.

[6] PA08_0184, Schedule 3, Condition 24, Table 14.

2.3.3 Work Health and Safety Act 2011 and Work Health and Safety Regulation 2011

The *Work Health and Safety Act 2011* (WHS Act) and the *Work Health and Safety Regulation 2011* (NSW), came into force on the 01 January 2012. The WHS Act, is the primary piece of legislation dealing with the health and safety of workers in NSW.

2.3.4 The Work Health and Safety (Mines) Act 2013 & Work Health and Safety (Mines) Regulation 2014

The *Work Health and Safety (Mines) Act 2013* and *Work Health and Safety (Mines) Regulation 2014* apply to all mining workplaces in NSW. These laws support the WHS Act and WHS Regulation and provide additional provisions for work health and safety issues unique to mines.

Notification of high risk activities, as required by WHS Regulation, will be submitted to the DRG separately to this Extraction Plan, prior to the commencement of secondary extraction.

2.4 Consultation

Consultation was undertaken during the Project EA[7]. Consultation specific to the Extraction Plan was undertaken with government agencies, asset owners, Ulan Coal's Community Consultative Committee (CCC) and registered Aboriginal stakeholders. Further information regarding consultation is provided in Section 2.1 of the Extraction Plan.

[7] Ulan Coal - Continued Operations Environmental Assessment (Umwelt 2009).

3 Predicted Subsidence Impacts and Environmental Consequences

The approved subsidence impacts and environmental consequences relating to public safety are described in the Project Environmental Assessment (EA) and subsequent modifications.

The revised subsidence impact assessment[8] was completed by SCT Operations Pty Ltd (SCT) specifically for the Application Area (**Technical Report 1**). The SCT assessment concluded that no significant changes in subsidence impacts are expected from those described in the Project EA.

Section 3.1 provides a brief summary of approved subsidence impacts from the Project EA and subsequent modifications on general surface and cliff line features.

Section 3.2 provides a summary from the revised subsidence assessment by SCT in August 2016, describing surface impacts within the Application Area.

Section 3.3 provides a summary of the revised subsidence impacts as they relate to MOD4 from *the Ulan Continued Operations Project - Modification 4 Longwall Optimisation Project Environmental Assessment 2018 (ELA, 2018)* and *Subsidence Assessment for Amendment to LW30 and LWW6 - LWW8 Extraction Plan (SCT, 2019).*

3.1 Approved Subsidence Impacts and Environmental Consequences

The following summary of subsidence impacts for the general surface and cliff formations as they relate to public safety were described in the Project EA, which stated:

> *Surface cracks are expected to be generally isolated and increase in size inversely to overburden thickness ranging from 40mm wide where the overburden is 250m thick, 100mm wide where the overburden is 150m thick, and up to 250mm wide where the overburden is 80m thick.*
>
> *There are numerous sandstone cliff formations located within the project area. Based on previous experience of mining under similar sandstone cliffs at Ulan, mining subsidence is expected to cause rock falls on 10-20% of the sandstone cliff formations located directly above the mining area. In general, cliff formations that are high, overhanging, re-entrant and laterally extensive are likely to experience perceptible changes the most.*
>
> *There are several unsealed access roads and numerous four wheel drive tracks located within the project area. Subsidence movements are not expected to cause impacts that are significantly out of character with the general nature of the access roads and tracks. Some minor repair work may be required to smooth out irregularities and close up tension cracks. Signage to warn of the potential for mine subsidence movements in active mining area is recommended as a precautionary measure.*

The following summary of revised subsidence impacts were described in the Environmental Assessment Modification (MOD1) of Ulan Coal - Continued Operations (Umwelt 2011), which stated:

> *The proposed amendments to UUG and Ulan West have been assess by Strata Control Technology. The proposed amendment do no significantly change the subsidence impacts as previously made as part of the Ulan Coal - Continued Operations Environmental Assessment (Umwelt, 2009), with minimal changes to previously assessed impacts. Predicted mine plan modification will meet the existing performance requirements of Project Approval 08_0184 Condition 24.*

[8] PA08_0184, Schedule 3, Condition 26(e).

The following summary of revised subsidence related impacts as a result of modifying the Ulan West Mine Plan were described in the Environmental Assessment Modification (MOD2) of Ulan Coal - Continued Operations (Umwelt 2012), which stated:

> *In consideration of the revised Ulan West mine plan SCT has reassessed the location of the area bounded by the 26.5 degree angle of draw and the 20 millimetre subsidence contour, with minimal changes to the impacts assessed in 2009. SCT and Umwelt have predicted that the mine plan modifications will continue to be compliant with performance measures of Project Approval 08_0184 Condition 24.*

The following summary of revised subsidence related impacts as a result of modifying the Ulan Continued Operation Mine Plan within the Interaction Zone were described in the Environmental Assessment Modification (MOD3) of Ulan Coal - Continued Operations (Umwelt 2012), which stated:

> *The environmental impacts within the Interaction Zone were assessed as part of the UCCO Project EA and subsequently approved within PA 08_0184. The potential environmental impacts associated with the proposed modification within the Interaction Zone are consistent with the approved operations.*

3.2 Revised Subsidence Impacts

A summary of the revised subsidence assessment relevant to this Plan and the Application Area by SCT (**Technical Report 1**) is provided below. The revised subsidence assessment by SCT concluded:

> *No significant changes in subsidence impacts for Longwalls 30 & W6-W8 are expected from those described in the EA (notwithstanding that the maximum predicted subsidence has increased slightly in the revised EP).*
>
> *The impacts of mining subsidence on the tracks are expected to be essentially similar to impacts previously observed over Ulan No 3 Mine, there is some potential for cracks and steps to form.*
>
> *Tension cracks occur in areas of tensile strain. Cracks are expected to develop over the longwall panels and remain in the vicinity of panel edges and along the tops of topographic highs once mining is complete. Tension cracks are expected to be most perceptible at the start of each panel and at the top of steep slopes and cliffs that are directly mined under. Tension cracks typically align with natural joint directions in the rock mass and may form en echelon type cracks along goaf edges. Transient tension cracks may also occur at regular intervals above the centre of the panel typically just behind the longwall face. Over recent panels on the eastern side of the main headings, perceptible cracking has been limited to only a few small areas.*
>
> *The magnitude of tensile strain at which surface cracking is detectable is sensitive to the nature of the surface terrain. Cracks are typically evident on hard surfaces such as roads and bare rock outcrops at strains of greater than 2-5 mm/m and in bushland environments at strains of greater than about 5-10 mm/m. Cracks are typically less than about 20 mm wide in flat or gently undulating terrain but may be larger, generally less than 100 mm wide but possibly up to 200 mm wide, in shallower areas.*
>
> *Permanent compression humps and fracturing may become apparent at topographic lows such as drainage channels, particularly where stream channels flow directly on bedrock.*
>
> *There is considered to be no additional risk to public safety from the proposed mining in the Durridgere State Conservation Area and no potential for perceptible impacts.*
>
> *The main residential building (Property ID 254 "Woodbury") and associated outbuildings are positioned approximately 700 m to the west of the EP area. The power and telecommunications services to the dwelling run along the western boundary of this property. In these locations neither the structures nor the services are likely to be perceptibly impacted by the proposed mining.*

Subsidence induced Rock fall could occur on up to 20% of the length of sandstone formations, perceptible cracking is expected along up to 50-70% of the length of steep slope sandstone formations within the footprint of extracted longwall panels, no environmental consequence predicted.

The southern sandstone formation is an outcrop located adjacent to a tributary of Mona Creek over the southwest corner of Longwall LWW7. Impacts consistent with the probabilities generally outlined in the UCCO Project EA predictions including minor rock falls are considered likely along this feature as a result of the proposed mining.

Any minor impacts to or potential personal safety issues around sandstone cliff formations or archaeological rock shelters sites and surface and ground water are considered to be manageable using the same approaches that have been adopted successfully by UMCL previously.

3.3 Revised Subsidence Impacts (MOD4)

A summary of the revised subsidence assessment relevant to this Plan and the Application Area by SCT (**Technical Report 1a**) is provided below. The revised subsidence assessment by SCT concluded [extract]:

Although the proposed extensions to LWW7 and LWW8 would result in a greater mining and subsidence footprint on Woodbury, the impacts are not expected to be significantly different to those presented in SCT (2016) and consistent with those described in SCT (2018a) for MOD4.

In general, the impacts to UCMPL owned property and farm or mining related infrastructure within the revised Extraction Plan Application Area are expected to be the same as those presented in SCT (2016).

Subsidence effects at the edge of the DSCA are expected to increase with vertical subsidence up from around 0.1m to approximately 1.0m as a result of the proposed extension to LW30.

Subsidence impacts to features in and within the vicinity of the revised Extraction Plan Application Area are expected to be consistent with those presented in SCT (2018a) for MOD4.

Impacts are expected to be largely imperceptible given the large overburden depth and manageable under existing subsidence management plans. Minor impacts in the form of cracking on hard surfaces, including the access road, are considered possible but easily manageable.

4 Management and Monitoring Measures

4.1 Subsidence Management Measures

4.1.1 UCMPL Owned Land

The subsidence management measures to be employed by UCMPL regarding public safety, with respect to potential subsidence impacts on UCMPL owned land within the Application Area, include:

- All personnel, including employees, contractors and visitors entering the mine site must comply with the induction requirements as detailed within the EMS[9] and the safety requirements prescribed under this system, i.e. site inductions, site familiarisations etc.
- Contractors working within the mining area must obtain a Work Authorisation Form completed by an appointed UCMPL representative.
- Completes regular inspections over the surface being longwall mined to monitor for signs of cracking and other subsidence induced impacts. These inspections are documented and photos taken where appropriate, the appropriate action to repair subsidence impacts requiring remediation will be entered into CMO[10], in accordance with the EMS. Temporary barricades and warning signage will be installed immediately upon observing subsidence impacts requiring repair until remediation works have been undertaken.
- All UCMPL employees and contractors are required to complete a Potential Hazard/Improvement/Near Miss Report.
- Prior to mining signs warning of potential subsidence hazards will be erected in the vicinity of cliff formations and along potentially affected access tracks, to advise persons entering the area that they are entering an active underground mining area and inform of the potential hazards.
- Security gates and cameras are installed on the two main corporate roads into the Ulan Coal Mine Complex.
- Alternative access to the mine and UCMPL controlled land is controlled by way of locked gates and signage.
- Boundary gates and fences are inspected regularly and repaired where necessary to prevent access by the general public.
- UCMPL employs security contractors to complete security patrols of the mining lease and UCMPL controlled lands.
- Signs have been erected on the gates and fences owned by UCMPL warning the public of prohibited entry and that underground mining is occurring in the area.
- UCMPL undertakes community consultation committee (CCC) meeting, the minutes of the CCC meetings are provided on Ulan Coal's website www.ulancoal.com.au
- Details of UCMPL current and past mining operations to inform the community are provided in the Annual Review, which is provided on UCMPL website www.ulancoal.com.au

4.1.2 Durridgere State Conservation Area

The subsidence management measures to be employed by UCMPL regarding public safety, with respect to potential subsidence impacts within the DSCA, include:

[9] ULNCX-111515275-870
[10] CMO is Ulan Coal's onsite computer tracking systems for incidents, inspections, hazards etc.

- Complete regular inspections over the surface being mined to monitor for signs of cracking and other subsidence induced impacts. These inspections are documented and photos taken where appropriate, the appropriate action to repair subsidence impacts requiring remediation will be entered into CMO[11], in accordance with the EMS. Temporary barricades and warning signage will be installed immediately upon observing subsidence impacts requiring repair until remediation works have been undertaken.
- UCMPL is committed to regularly communicating with the Mudgee Branch of the NSW National Parks and Wildlife Service (NPWS) to advise them of the location of the longwall in relation to the land they own/manage and notification of any subsidence impacts observed during inspections.
- Prior to mining signs warning of potential subsidence hazards will be erected along potentially affected access tracks, to advise persons entering the area that they are entering an active underground mining area and inform of the potential hazards.

4.1.3 Private Property

The subsidence management measures to be employed by UCMPL regarding public safety, with respect to potential subsidence impacts on privately owned land within the Application Area, include:

- UCMPL have developed a Private Property SMP (PPSMP), in consultation with the Private Landholder. Surface inspections of private land will be undertaken pre and post mining, and upon landholder request during mining as per the PPSMP. These inspections are documented and photos taken where appropriate, the appropriate action to repair subsidence impacts requiring remediation will be entered into CMO[12], in accordance with the EMS. Temporary barricades and warning signage may be installed upon observing subsidence impacts requiring repair until remediation works have been undertaken.
- UCMPL is committed to regularly communicating with the Private Landholder to advise them of the location of the longwall in relation to the land they own/manage and notification of any subsidence impacts observed during inspections.
- Prior to mining signs warning of potential subsidence hazards may be erected on entry gates to the Private Property if agreeable to the Private Landholder. Subject to Private Landholder agreement, barricades and/or fences and/or warning signage will be installed to minimise potential for persons to approach clifflines.
- UCMPL to notify the landholder upon commencement and 3 months post mining of the undermining of the cliff line over LWW7. The landholder will ensure persons authorised to enter the property during the undermining of the cliff line over LWW7 are aware of the likely risk of rock fall and do not access this area.

4.2 Subsidence Monitoring

UCMPL completes regular inspections over the surface being longwall mined to monitor for signs of cracking and other subsidence induced impacts. These inspections will be documented and photos taken where appropriate, with all actions entered into CMO.

Where subsidence impacts are observed that pose or could pose a risk to public safety, the UCMPL person responsible for the area will be notified immediately. Following the identification of subsidence impacts that pose a risk to public safety, the area/s in question will be demarcated with barrier tape and/or road barriers, to prevent access to the affected site. Temporary signs will also be placed to advise of the subsidence impacted area.

Appropriate remediation measures will be undertaken on surface features, including internal access roads, as soon as practicable in accordance with Section 4.1 of the Rehabilitation Management Plan

[11] CMO is Ulan Coal's onsite computer tracking systems for incidents, inspections, hazards etc.
[12] CMO is Ulan Coal's onsite computer tracking systems for incidents, inspections, hazards etc.

(RMS) LW30 & LWW6-LWW8. The success of the remediation repairs will be assessed to ensure there is no residual public safety risk.

The public safety inspection requirements for the Application Area are outlined in **Section 4.2.1** and **Section 4.2.2**, these requirements will be covered by the visual inspection component of the subsidence effects monitoring program and the consolidated subsidence monitoring program outlined in Section 3.7.1 of the Extraction Plan.

4.2.1 Pre-Mining Inspections

Prior to the commencement of secondary workings within the Application Area, UCMPL will undertake the pre-mining inspection requirements detailed in **Table 4**. Pre-mining inspections should also ensure that the appropriate signage has been, or is, installed prior to undermining areas which present a risk to the safety of the public or UCMPL personnel.

Table 4 Pre-Mining Inspections

Area	Inspection Requirement
Fences, gates and signs – UCMPL Owned Land	An inspection of applicable boundary fences and gates to establish the type of fence, its condition and consideration of any security issues will be undertaken and a register established. Where required the fences will be fixed. Inspections will note security provisions maintained in order to prevent public access to the extraction area.
Roads and Tracks – UCMPL Owned Land	An inspection of internal roads within the Application Area to identify the pre mining condition and potential for subsidence induced hazards.
General Surface – UCMPL Owned Land	UCMPL will undertake an inspection of the surface within the Application Area to identify the general condition and consider the potential for subsidence induced hazards.
General Surface and Feature Condition Assessment – Private Property	A condition assessment of private property features within the Application Area will be undertaken prior to mining, this will also include a general inspection of lands, cliff formations and access tracks to assess the pre mining condition and the potential for subsidence induced hazards.
Access Tracks – Durridgere State Conservation Area	An inspection of the access track located within the Durridgere State Conservation Area inside the Application Area to identify the pre mining condition and the potential for subsidence induced hazards.

4.2.2 During Mining and Post-Mining Inspections

UCMPL will undertake monthly inspections during longwall mining within the Application Area in accordance with the requirements in **Table 5**. A post mining inspection along the entire longwall panel will be completed within three months for reporting purposes.

Table 5 During and Post Mining Inspections

Area	Inspection Requirement	Inspection Timings
Fences, gates and signs – UCMPL Owned Land	The inspections will note any signs of security breaches and check existing provisions maintained in order to prevent public access to the extraction area including external fences, warning signs, gates and security updates.	Inspections will occur monthly during extraction. A post mining inspection will be completed within 3 months of the completion of mining for reporting purposes.
Roads and Tracks – UCMPL Owned Land	Sections of the following internal access tracks are located with the Application Area, including Irrigation Road, Apple Road and Power Line Road. An inspection of internal access tracks within the Application Area will identify the condition to assess risks to public safety. If cracking is causing a potential risk to public safety or risk to mine personnel, the area will be cordoned off and signage placed to alert of the hazard. The inspection will identify areas where cracking and other subsidence impacts have occurred.	Inspections will occur monthly during extraction. A post mining inspection will be completed within 3 months of the completion of mining for reporting purposes. Where impacts are identified additional inspections may be undertake or after heavy rainfall events
General Surface – UCMPL Owned Land	The inspection will identify areas where cracking has occurred and then recommend appropriate remediation works, where necessary. If cracking is causing a potential risk to public safety, the area will be cordoned off and signage placed to alert of the hazard.	Inspections will occur monthly during extraction. A post mining inspection will be completed within 3 months of the completion of mining for reporting purposes. Where impacts are identified additional inspections may be undertake or after heavy rainfall events
General Surface and Feature Conditional Assessment – Private Property	During mining the landholder will contact Ulan Coal to arrange an inspection by UCMPL personnel if subsidence impacts of concern to the landholder are observed. A condition assessment of private property features within the Application Area will be undertaken post mining, this will also include a general inspection of lands, cliff formations and access tracks to assess the remediation works required, the remediation will be undertaken in accordance with the agreed PPSMP.	Inspections will occur monthly during extraction. A post mining inspection will be completed within 3 months of the completion of mining for reporting purposes. Where impacts are identified (or after heavy rainfall events) additional inspections may be undertaken. It should be noted that this will be negotiated and agreed with the property owner and maybe subject to change.
Access Tracks – Durridgere State Conservation Area	Inspections of access tracks located within the Durridgere State Conservation Area inside the Application Area to identify the condition during and post mining and assess any requirement for remediation works.	Inspections will occur monthly during extraction. A post mining inspection will be completed within 3 months of the completion of mining for reporting purposes. Where impacts are identified (or after heavy rainfall events) additional inspections may be undertaken.

4.3 Assessment of Subsidence Performance Measures

Subsidence impact performance measures listed in Table 14 of the Project Approval[13] relevant to public safety are provided in **Table 6**. A range of performance indicators have been developed to inform UCMPL if the performance measures are likely to be exceeded during the secondary extraction within the Application Area.

Table 7 provides a summary of the analysis of the monitoring data that will be undertaken to evaluate the potential impacts using the performance indicators against the performance measures.

Table 6 Public Safety Performance Measures and Performance Indicators

Public Safety	Subsidence Performance Measures	Performance Indicators
Public Safety	No additional risk due to mining	This performance indicator will be triggered if: • UCMPL have recorded a public safety incident as a result of subsidence induced impacts within the Application Area.

[13] PA08_0184, Schedule 3, Condition 24.

Table 7 Monitoring of Environmental Consequences against Performance Indicators and Measures

Performance Measure	Monitoring of Environmental Consequence			Data Analysis to Assess against Performance Indicator(s)	Performance Indicator(s)	Assessment of Performance Indicator(s)	Assessment of Performance Measure	Relevant Management and Contingency Measure
	Site	Parameter	Frequency					
No additional risk due to mining	Application Area	Monitoring to identify any breaches in site security measures and/or check preventive measures are in place.	Pre mining, monthly during mining and post mining as per **Tables 4 and 5** of this Plan.	Analysis of UCMPL Incident Reporting and Site Security Reports.	UCMPL do not expect public safety risks to occur as a result of longwall mining within the Application Area, due to the implementation of the subsidence management measures as described in **Section 4.1.**	This performance indicator will be triggered if: • UCMPL has recorded a public safety incident within the Application Area. If an investigation or report indicates the performance indicators have been triggered, an assessment will be made against the performance measure.	The performance measure will have considered to be exceeded if monitoring for public safety indicates an additional public safety risk due to mining within the Application Area.	If the assessment of performance indicators determine an exceedance of the performance measures is due to subsidence related impacts as a result of mining within the Application Area, the Contingency Plan would include: • Notify relevant government agencies; • Conduct investigations; • Additional site security monitoring - consider increasing frequency or additional sites; and • Review site security procedures

5 Contingency Plan

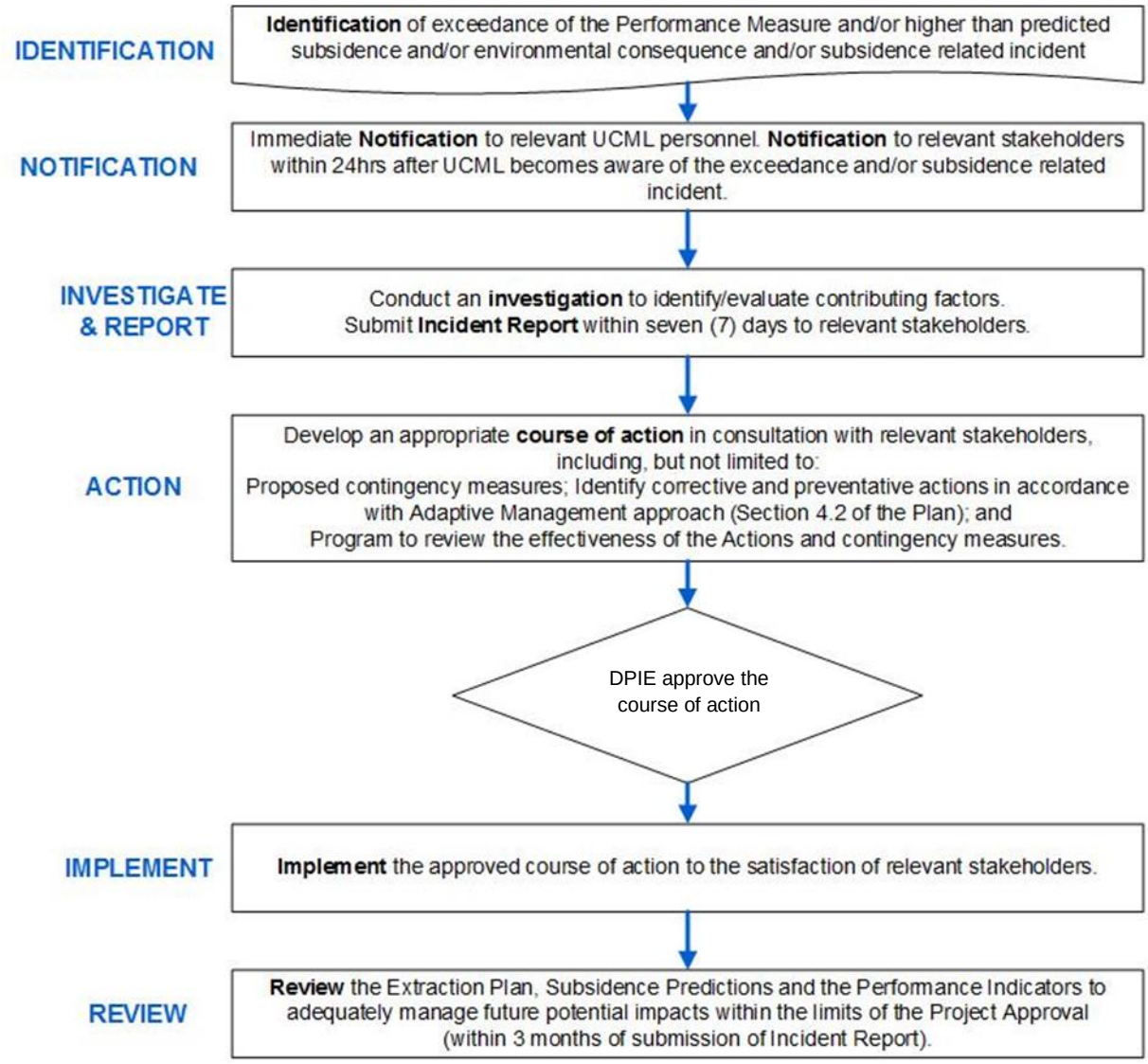
5.1 Adaptive Management

In the event the subsidence performance measures for public safety as summarised in **Table 7** are considered to have been exceeded or are likely to be exceeded, response and management will be undertaken in accordance with protocols for incident reporting as identified in Section 4.3 of the Extraction Plan (**Section 6.2**).

Section 4.3 of the Extraction Plan describes the process for handling and investigating non-conformances, including allocation of responsibility, external and internal reporting requirements, and initiating and completing corrective and preventative actions.

Figure 3 displays the Contingency Plan to be implemented in the event the public safety performance measures are exceeded, higher than predicted subsidence or environmental consequence has occurred or in the event of a subsidence related incident.

Figure 3 Contingency Plan



5.2 Trigger Action Response Plan

Trigger action response plans (TARPs) have been developed by Ulan Coal to identify appropriate response measures for exceedances of the subsidence performance measures for public safety. **Table 8** displays how the various predicted subsidence impacts, monitoring components, performance measures and responsibilities are structured to achieve compliance with the relevant statutory requirements and the framework for management and contingency actions.

Table 8 Public Safety Management Plan Trigger Action Response Plan

	Normal State *Predicted impacts*	Level 1 Response *Management Measures*	Level 2 Response *Contingency Phase*
Trigger	• No incidents have been recorded in relation to public safety.	Results from security monitoring indicate a possible: • Public safety incident within the Application Area.	Results from security monitoring confirm: • A public safety incident has occurred with the Application Area.
Action	• Continue monitoring in accordance with this Plan	• Review site security in the area of potential breach and implementation of actions to address any site security deficiencies.	• Implementation of management and contingency measures responses as identified in the Contingency Plan and reporting requirements as described in **Section 5.1**. • Review this Plan
Frequency	• Continue monitoring in accordance with this Plan	• Continue monitoring in accordance with this Plan	• Review monitoring methodology and frequency for this Plan in accordance with Contingency Plan.
Responsibility	• Environment and Community Manager	• Environment and Community Manager • UUG Technical Services Manager	• Environment and Community Manager • UUG Technical Services Manager • UUG Operations Manager

6 Review and Improvement

6.1 Review

Ongoing monitoring and review on the performance and implementation of this Plan will be undertaken in accordance with Section 4.6 of the Extraction Plan. Any changes made to this Plan will be made in consultation with DPIE. A copy of the revised management plan will be supplied to the Secretary of the DPIE for approval.

6.2 Reporting Requirements

External reporting requirements, including incident and annual reporting, for this Plan will be in accordance with Section 4.3 of the Extraction Plan.

In the event of an incident, UCMPL will notify the government agencies as identified in Section 4.3 of the Plan within 24 hours after becoming aware of the incident (**Figure 3**). Within seven days of the date of the incident, a detailed report of the incident will be provided and include, but not limited to, the following details:

- The date, time and nature of the exceedance/incident;
- The process to identify and investigate the likely cause of the exceedance/incident;
- Description of the response action undertaken to date; and
- Description of the proposed measures to address the exceedance/incident.

6.3 Community Complaints

Community complaints are managed in accordance with Section 4.4 of the Extraction Plan, including receipt of complaints, investigation, implementation of appropriate remedial action, and feedback to the complainant, communication to site management or personnel and notification to government agencies where necessary.

7 Roles and Responsibilities

The key responsibilities of UCMPL personnel in relation to this Plan are summarised in **Table 9**. Please note that responsibilities may be delegated as required.

Table 9 Key Responsibilities

Responsibility	Accountabilities
Operations Manager (Ulan Underground)	• Authorise the Extraction Plan and approve appropriate resources for the implementation of this Plan; and • Authorise internal and external reporting requirements of this Plan.
Technical Services Manager (Ulan Underground)	• Ensure monitoring and required under the Subsidence Effects Monitoring Program and this Extraction Plan are carried out within specified timeframes, are adequately checked and processed and are prepared to the required standard; • Ensure appropriate controls are in place to manage subsidence impacts upon surface operational infrastructure; and
Environment and Community Manager	• Review this Plan in accordance with **Section 6** and other legal requirements and operation standards; • Ensure the effective implementation of strategies designed to reduce impacts from the operation; • Ensure any potential or actual issue is reported in accordance with the Extraction Plan and other legal requirements and corporate standards; • Review and prepare internal and external reports as identified in the reporting framework; • Approve subsequent revisions of this Plan; • Instigate response in the event the performance indicators, TARP and/or Contingency Plan are triggered; and • Allocate resources for monitoring and review of subsidence monitoring survey results.
Environment and Community Coordinator	• Implement monitoring programs as required by this Plan and conduct analysis of results against performance indicators as described in this Plan; • Prepare this Plan and subsequent revisions for approval by the Environment and Community Manager; • Assist in the preparation of reports as identified in reporting framework; and • Assess any triggers as described in performance indicators and provide advice to implementation of TARPS and the Contingency Extraction Plan.
Environment and Community Officer	• Assist the Environment and Community Coordinator in the implementation of monitoring programs and analysis of results against performance indicators as described in this Plan; • Assist in the preparation of reports as identified in reporting framework; and • Assist the Environment and Community Coordinator in the assessment of triggers as described in performance indicators and provide advice to implementation of TARPS and the Contingency Plan.
All employees and contractors	• Comply with all requirements of this Plan; • Undertake all works in accordance with this Extraction Plan and all other Ulan Coal Mine Complex systems; • Report all potential environmental incidents to their supervisor immediately; and • Seek Ground Disturbance Permits (GDP) approval from the Environment and Community Manager prior to any surface disturbance activities.

8 Document Information

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

8.1 Definitions

Definitions as provided in Section 5.1 of the Extraction Plan.

8.2 Accountabilities

Accountabilities are described in Section 7 of this Plan.

8.3 Reference

References as provided in Section 5.2 of the Extraction Plan.

8.4 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 10** below.

Table 10 Change Information

Version	Date	Review Team (consultation)	Change Summary
0.1	October 2016	Tara Stokes	Document Development
1.0	May 2019	Lucy Stuart and Robyn Stoney.	Update to final.
2.0	April 2020	Stephen Bragg, Lucy Stuart	This EP was amended regarding extension of longwall panels to align with the approved MOD 4
3.0	December 2020	Robyn Stoney, Lucy Stuart, Stephen Bragg	This EP was resubmitted on the 21/12/2020 to address the requirements from the DPIE Water feeback