



*Plan for*

# Ulan Coal Mines Pty Ltd Mining Operations Plan 2017 to 2024

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**Owner:** Environment and Community Manager

## Title Block

**Table 1-1 MOP Title Block**

<b>Ulan Coal Mines Pty Limited Integrated Mining Operations Plan</b>	
Name of Mine	Ulan Coal Mines Pty Limited
MOP Commencement Date	17 November 2017
MOP Completion Date	30 November 2024
Mining Authorisations (Lease/Licence No.)	CCL 741, MPL 315, ML 1341, ML1365, ML 1366, ML 1467, ML 1468, ML 1511, ML 1554, ML 1656, ML 1697, ML 1754, ML 1798, ML 1799, EL 5573, EL 7542, EL 8687
Name of Authorisation / Authorisation holder(s)	Ulan Coal Mines Pty Limited
Name of Mine Operator (if different)	
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Title	General Manager
Signature	
Date	14 May 2020
Version	Amendment B

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	Figure 1-3 – UCMPL Mining and Exploration Tenements	Plan 3A	Spatial Data
Section 1.4.4 – Water Licences	Table 1-4 – Groundwater Licences held under Part 5 of Water Management Act 1912	N/A	Environmental Team - Approvals
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Section 1.4.5 – Other Licences and Approvals	Table 1-6 – Other Approvals and Licences	N/A	Environmental Team - Approvals
Section 1.5 – Land Ownership and Land Use	Figure 1-4 – Property Boundaries	Plan 1C	Environmental Team - Approvals
Section 1.6.2 – Government Agencies	Table 1-7 – Government Agencies Consultations	N/A	Environmental Team
Section 1.6.3 – Community Groups	Table 1-8 – Community Groups Consultations	N/A	Environmental Team
Section 1.6.4 – Asset Owners	Table 1-9 – Asset Owner Consultations	N/A	Environmental Team - Approvals
Section 2.2 – Asset Register	Table 2-1 Asset Register Domains	N/A	Environmental Team and Mine Planning Team
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Section 5.2. – Domain Rehabilitation Objectives	Table 5-2 – Primary Rehabilitation Objectives by Secondary Domain	N/A	Environmental Team
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Section 7.2 – Proposed Rehabilitation Activities during the MOP Term	Table 7-1 – Disturbance and Rehabilitation Progression during the term of the MOP	Plan 3A	Environmental Team
Section 7.3 – Summary of Rehabilitation Areas during MOP Term	Table 7-2 – Summary of Progression of Rehabilitation by Domain during the term of the MOP	Plan 3A	Environmental Team
Section 9.1 – Threats to Rehabilitation	Table 9-1 – Threats to Ulan Coal Rehabilitation	N/A	Environmental Team
Section 9.2 – Trigger Action Response Plan	Table 9-2 – Threats to Ulan Coal Rehabilitation Trigger Action Response Plan	N/A	Environmental Team
Section 10.1 – Annual Review	Table 10-1 – External Reporting Requirements	N/A	Environmental Team - Approvals



# 1 Introduction

## 1.1 History of Operations

The Ulan Mine Complex is situated in the central west of New South Wales. It is located in the Mid-Western Regional Council (MWRC) Local Government Area (LGA) near the village of Ulan; approximately 38 kilometres north-northeast of Mudgee and 19 kilometres northeast of Gulgong (**Figure 1-1**). At the time of writing, Ulan Coal Mines Pty Limited (UCMPL) is wholly owned by Glencore Coal Assets Australia Pty Limited and managed by Glencore Coal Assets Australia (GCAA).

UCMPL owns or has long term leases over the majority of land within the project area that will be subject to mining activities and required for surface facilities. The area is primarily surrounded by rural landholdings, native bushland and primary industries including agriculture, state conservation areas, mining (including other coal mining operations) and extractive industries. The UCMPL landholdings are located within the headwaters of the Goulburn and Talbragar River catchment areas.

Project Approval (PA 08\_0184) was issued by NSW Planning, Infrastructure and Environment (DPI&E), on 15 November 2010 for continued operations. PA 08\_0184 authorised current and proposed mining of the Ulan Mine Complex for a period of 16 years, and production of up to 20 Mtpa (million tonnes per annum) of product coal. The approval provides for an open cut and Ulan West Underground and Ulan Underground (previously Ulan No. 3) mines to operate twenty-four hours a day, 7 days per week. Supporting operations include the Bobadeen Irrigation Scheme (BIS) and Bobadeen Basalt Quarry. The approval was modified as follows:

- Environmental Assessment: Ulan Coal Continued Operations North 1 Underground Mining Area, Minor Modification to Ulan Underground & Ulan West Mine Plans & Proposed Concrete Batching Plant (Umwelt, 2011) - (MOD1) approved 7 December 2011
- Land and Environment Court final orders issued on the 5 April 2012.
- Ulan West Mine Plan and Construction Blasting (Umwelt, 2012) – (MOD2) approved 29 May 2012
- Environmental Assessment: Ulan West Modification (southern extension) (Umwelt 2015) – (MOD3) approved 14 March 2016.
- Environmental Assessment: Ulan Continued Operations Project, Longwall Optimisation Project (Ecological, 2018) – (MOD4) approved 17 July 2019.

Mining operations within the UCMPL Colliery Holding have included open cut, highwall and underground mining within No. 1, 2 and 3 Ulan Underground and Ulan West Underground mining areas. The current and previously approved mining areas are illustrated in MOP Plan 3A.

UCMPL is one of the most established coal mining operations in the western coalfields. Coal deposits at Ulan were first worked in the 1920's. The No.1 underground mine began producing coal in 1942 while the No.2 underground mine was developed in 1957 to supply coal to domestic power stations. In the late 1970s Hogan & Gorman registered UCMPL and ownership transferred to White Industries and later part ownership on to Mitsubishi Operations and NSW State Super Board. An exploration program undertaken in 1976 in the Ulan area proved the existence of extensive coal reserves, and mining operations at UCMPL expanded substantially in the 1980s.

In May 1981 the Stage 1 major mine expansion was approved allowing for open-cut operations to commence, along with construction of the coal preparation plant, rail loading facilities and augmentation of No. 2 underground which was completed in 1982. Current approvals are outlined in more detail in **Section 1.4**.

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, which included land preparation activities in accordance with the

previously approved November 2011 MOP. 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<sup>1</sup>.

The mining operations are supported by significant existing and planned mining related surface infrastructure. These activities are covered in greater detail in **Section 2.3.3**.

## 1.1.2 History of MOPs

Details of previous MOPs submitted and approved for UCMPL are provided in **Table 1-1** below.

**Table 1-1 History of MOPs**

MOP	Status	Issue Date	Expiry Date
2017 – 2024	New MOP document amended to account for Grant of Mining Leases 1798 and 1799, UCMPL name change and conduct of Risk Assessments referred to in Section 3.1		
2017 – 2024	New MOP Document incorporates the July 2019 modification to PA 08_0184	29 November 2019	29 November 2024
2017 – 2024	New MOP Document incorporates the March 2016 modification to PA 08_0184	16 November 2017	30 November 2024
2012 – 2017 <sup>2</sup>	Revised in response to May 2012 approved modification to PA 08_0184	26 September 2012	1 December 2017
2011 – 2017	Original MOP post PA 08_0184 approval	2 December 2011	1 December 2017

<sup>1</sup> As notified to the NSW Department of Industry Resources and Energy on 5 September 2016.

<sup>2</sup> Amendment to this MOP approved by DRE on 22/11/2016 (Notification of approval of MOD3 PA 08\_0184 and resupplied Plan 4a), 13/04/2016, 3/06/2015, 18/05/2015, 7/08/2014, 1/05/2014, 27/05/2014, 19/03/2014, 9/08/2013, 7/05/2013, 6/05/2013

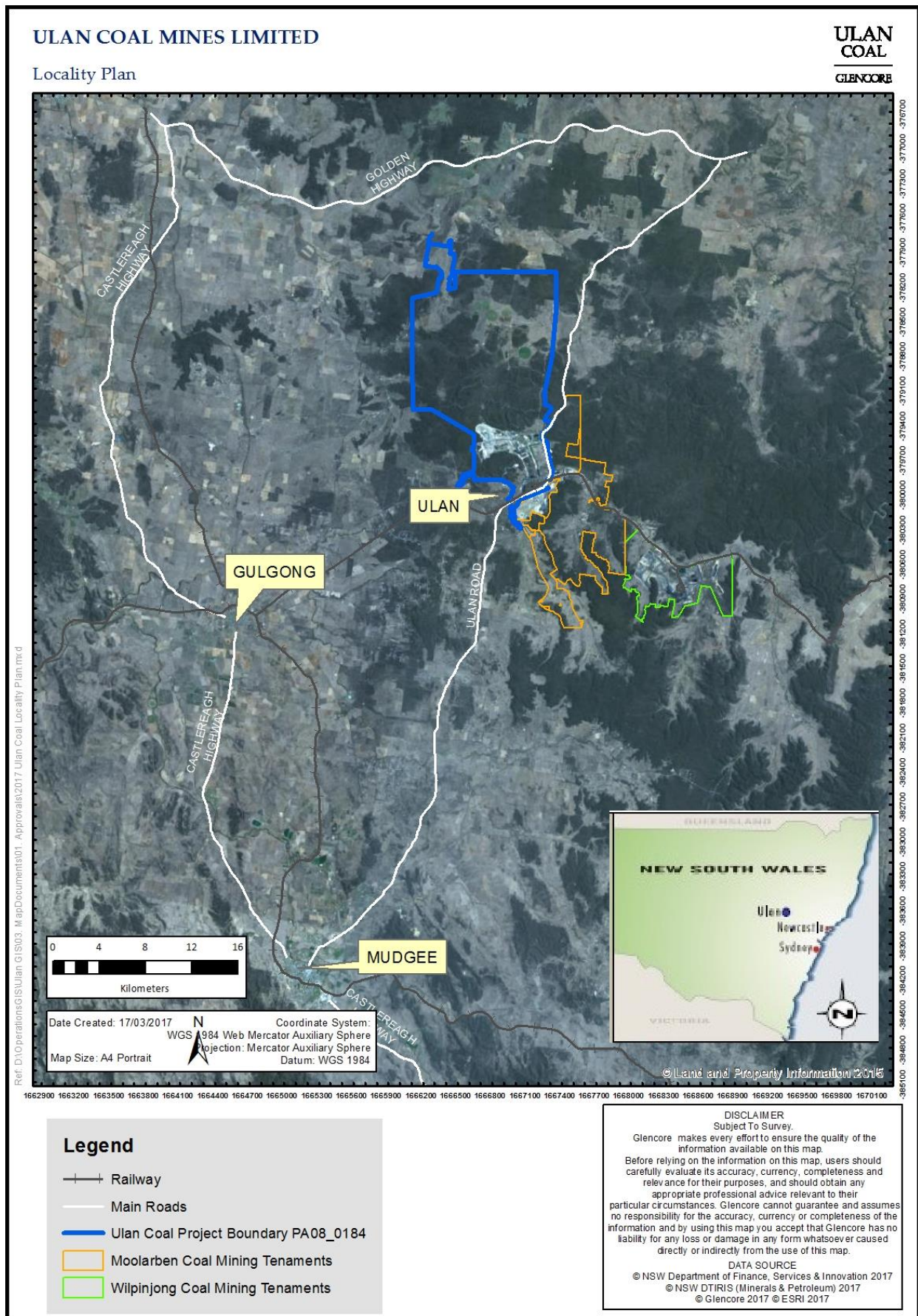
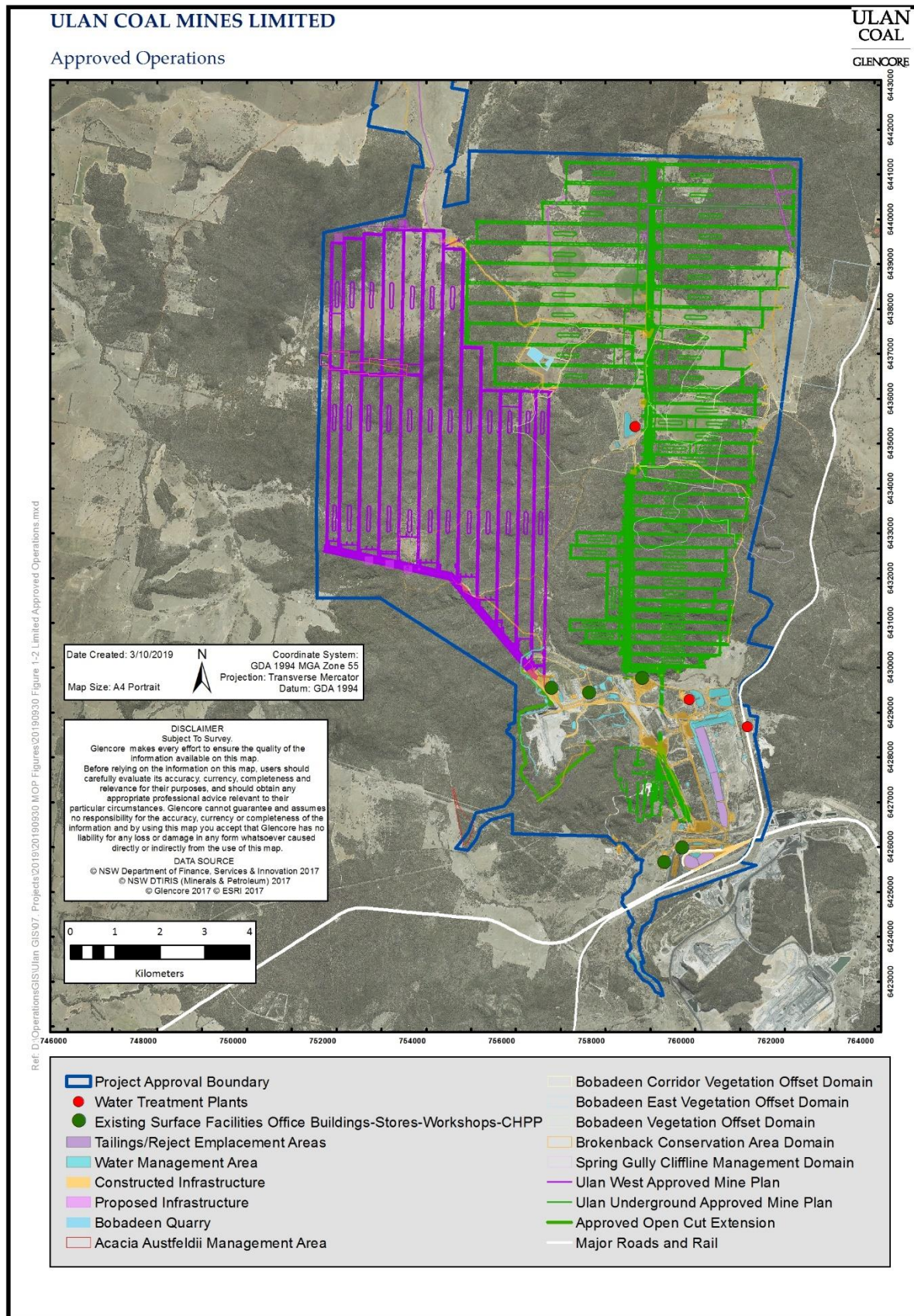


Figure 1-1 – Ulan Coal Mines Pty Limited Location



Figure 1-2 – Ulan Coal Mines Pty Limited Approved Operations



## 1.2 Purpose

This Mining Operations Plan (MOP) has been prepared generally in accordance with the requirements of NSW Department of Trade & Investment (now Department of Planning, Industry and Environment- Resource Regulator (DPI&E,RR) guidelines for the preparation of a MOP, entitled “ESG3: Mining Operations Plan (MOP) Guidelines” (September, 2013), herein referred to as the “MOP Guidelines” (DTI, 2013).

This document constitutes the Rehabilitation Management Plan required by PA08\_0184, at Schedule 3, Condition 57.

## 1.3 Objectives

The general objectives for the mining operations within the Ulan Mine Complex under this MOP are as follows:

- Maximise resource recovery efficiency within the MOP area;
- Undertake mining operations in a manner that maximises the future recovery of remaining coal resources within UCMPL’s mine lease holdings, whilst maintaining business viability;
- Undertake mining in a safe manner;
- Maintain continuity of coal production and employment;
- Ensure that all aspects of the operations are assessed;
- Ensure management procedures are adopted to minimise associated potential social and environmental impacts; and
- Undertake rehabilitation activities in accordance with this MOP, to meet UCMPL’s rehabilitation objectives and rehabilitate disturbance areas to the satisfaction of the Minister (see **Section 4.3**)

## 1.4 Current Consents, Authorisations and Licences

UCMPL is a Level 1 mine (State Significant Development), **Section 1.4.2** to **Section 1.4.5** provide background for this classification.

### 1.4.2 Development Consents and Project Approvals

The development consent<sup>3</sup> applicable to UCMPL is PA 08\_0184 MOD 4 approved by DPI&E on 17 July 2019 under Sections 4.2 (formerly Section 76(A)) and 4.16 (formerly Section 80) of the EP&A Act. PA 08\_0184 authorised Ulan Coal to carry out mining operations on site until August 2033<sup>4</sup>. **Table 1-2** summarises the modification history of PA 08\_0184 and key features of the project approved by each modification.

<sup>3</sup> The DA 113-12-98 is to be surrendered within 3 months of UUG LW W3 being completed or as otherwise agreed by the Director-General (PA 08\_0184, S2 c 9). LW W3 was completed on 22 July 2017.

<sup>4</sup> Note from PA 08\_0184: Under this approval, the Proponent is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Secretary or Secretary Industry. Consequently, this approval will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

**Table 1-2 – Development Consents and Project Approvals**

Approval	Modifications	Description	Approval Authority	Approval Date
PA 08_0184	PA 08_0184	Ulan Coal –Continued Operations Project	DPI&E	November 2010
	PA 08_0184 MOD1	Longwall extraction of the North 1 mining area Modify Ulan Underground & Ulan West mine plans Concrete Batching Plant	DPI&E	December 2011
	PA 08_0184 Court Orders	Land & Environment Court Judgement	DPI&E	April 2012
	PA 08_0184 MOD2	Modify Ulan West mine plan LW1-5 Remove restrictions on construction blasts Minor amendments to European and natural heritage sites where blasting measures are applicable.	DPI&E	May 2012
	PA 08_0184 MOD3	Modify Ulan West Mine Plan- realignment of main headings further to the south. Assessment of mine plan options for interaction area between Ulan Underground and Ulan West.	DPI&E	14 March 2016
	PA 08_0184 MOD4	Modify Ulan Underground mine plan to extend LW's 30 to 33 and W7 and W8 and widening of LW 33. Modify Ulan West mine plan to extend LW's 7 and 8. Installation of supporting surface infrastructure at Ulan Underground.	DPI&E	17 July 2019



## 1.4.3 Mining Exploration Authorisations

UCMPL covers several mining tenements which are listed in Table 1-3 below and displayed in **Figure 1-3**.

**Table 1-3 – Mining and Exploration Titles**

Instrument	Authority	Date of Grant	Duration of Approval	Mine Area Applicability
Consolidation Coal Lease (CCL) 741	DRG	2/01/1990	15/05/2027	All operations
Mining Purpose Lease 315	DRG	3/08/1993	3/08/2035	Ulan Underground (Surface Lease)
Mining Lease 1341	DRG	25/01/1994	25/01/2036	Ulan Underground
Mining Lease 1365	DRG	9/03/1995	9/12/2032	Ulan Underground (Surface Lease)
Mining Lease 1366	DRG	9/03/1995	9/12/2032	Ulan Underground (Surface Lease)
Mining Lease 1467	DRG	17/04/2000	16/04/2021	Ulan Underground (Surface Lease)
Mining Lease 1468	DRG	16/05/2000	15/05/2021	Ulan Underground
Mining Lease 1511	DRG	24/04/2002	23/04/2023	Ulan Underground (Surface Lease)
Mining Lease 1554	DRG	1/09/2004	31/08/2025	Ulan Underground (Surface Lease)
Mining Lease 1656	DRG	03/03/2011	03/03/2032	Ulan Underground (Surface Lease)
Mining Lease 1697	DRG	22/05/2014	22/05/2035	Ulan Open Cut
Mining Lease 1754	DRG	30/06/2017	30/06/2038	Ulan Open Cut
Mining Lease 1798	DRG	19/02/2020	19/02/2041	Ulan West
Mining Lease 1799	DRG	26/2/2020	26/2/2041	Ulan Surface Operations
Exploration Licence 5573	DRG	28/04/1999	28/04/2022	Ulan Underground
Exploration Licence 7542	DRG	6/05/2010	06/05/2020	Ulan West
Exploration Licence 8687	DRG	31/01/18	31/01/24	Ulan West
Mining Lease Application MLA 470	DRG	Application Submitted 13/02/2014	Application Pending	Ulan Open Cut

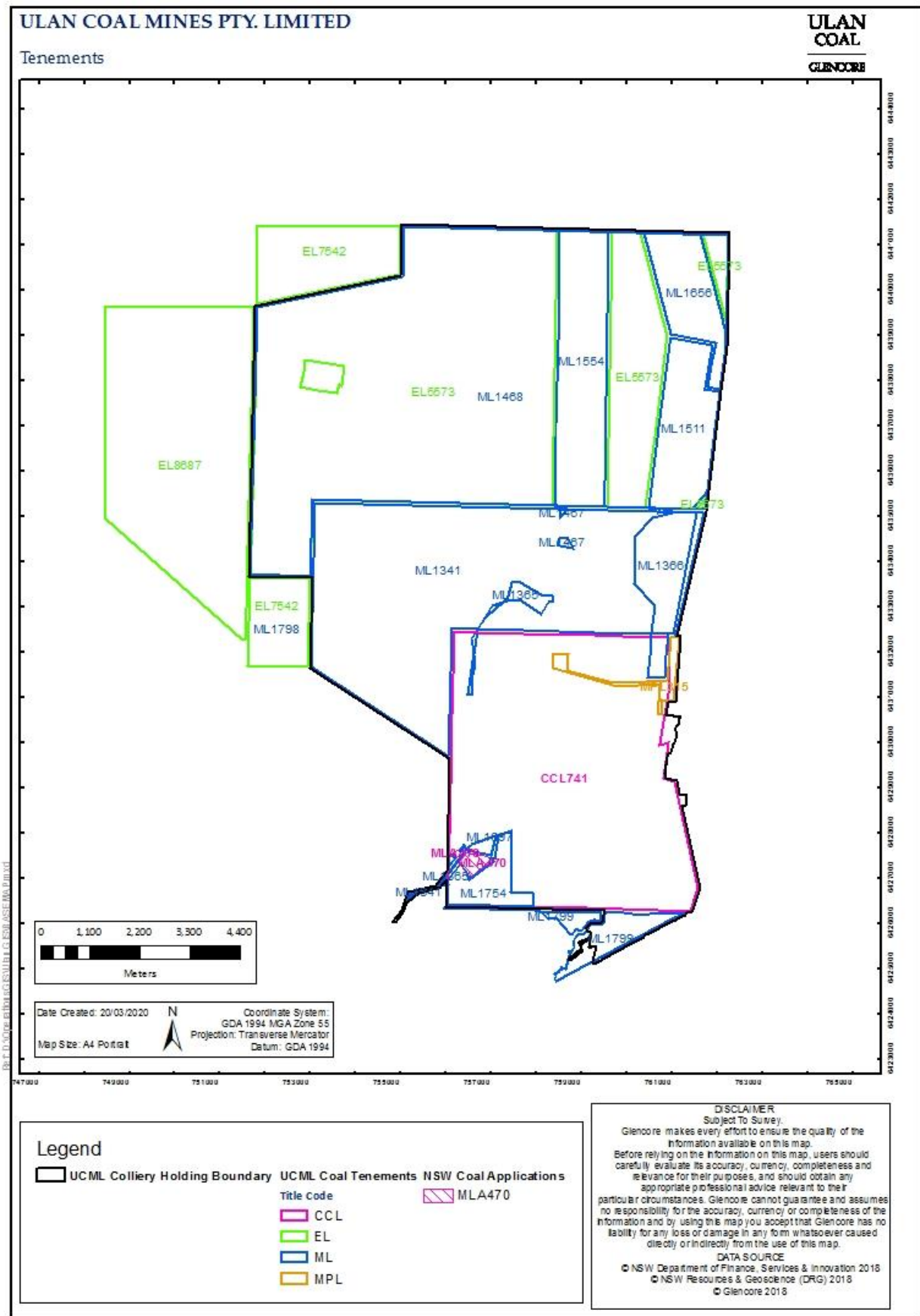


Figure 1-3 – UCML Mining and Exploration Tenements



## 1.4.4 Water Licences

Water licences held by UCMPL for the purposes of dewatering underground workings, monitoring bores and wells, dam management and stock/domestic water requirements are listed in **Table 1-4** and **Table 1-5**.

**Table 1-4 – Groundwater Licences held under Part 5 of Water Management Act 1912**

Licence No.	Description	Works Type	Extraction Limit (ML)	Expiry Date
80BL237200	Cavandah Flats	Stock/Domestic Bore	NA	Perpetuity
20BL168100	Monitoring Bores	Monitoring Bore	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
20BL168261	1977 Cope Rd	Stock/Domestic Bore	NA	Perpetuity

**Table 1-5 – Water Approvals held under Water Management Act 2000**

Licence No.	Description	Works Type	Extraction Limit (Shares)	Water Source	Expiry Date
WAL34921	Aquifer (General Security)	Water Allocation Licence	30	Talbragar Alluvial Groundwater Source	Perpetuity
WAL41817	Unregulated River (General Security)	Water Allocation Licence	50	Upper Talbragar River Water Source	Perpetuity
WAL42900	Aquifer (General Security)	Water Allocation Licence	4031	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
WAL41492 <sup>5</sup>	Existing Dewatering Bores <sup>6</sup>	Dewatering/ Water Supply	7060	Oxley Basin Coast Groundwater Source	27/10/2019
WAL37192	Aquifer (General Security)	Water Allocation Licence	704	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
WAL36667 <sup>7</sup>	Aquifer (General security)	Water Allocation Licence	0	Sydney Basin Murray Darling Basin Groundwater Source	Perpetuity
WAL19047 (20WA209953) <sup>8</sup>	Moolarben Creek Dam/Pump	Water Supply	600	Upper Goulburn River Water source	Perpetuity (29/06/2023)
20FW213272	Levy License – Goulburn River	Levy License	NA	NA	21/09/2027

## 1.4.5 Other Licences and Approvals

**Table 1-6 – Other Approvals and Licences**

Licence/Approval	Licence/ Approval No.	Authority	Approval/Expires
Environment Protection Licence (EPL)	394	EPA	Anniversary Date 18th November
Mining Operations Plan (MOP)	2017-2024 v3	DRG DPI&E	30/11/24
Ulan Underground SMP approval LW West 2 and West 3- Mining Completed on 22 July 2017	INT09/2211	DRG	Approval 21/01/2009 Expired 31/03/2018
Ulan Underground SMP/EP approval North 1 and LW27-29 & W4-5	OUT11/23905 SO4/01722	DRG DPI&E	Approval (North 1) 30/12/2018 Approval (LW27-29 and W4-W5) 31/05/2013 <sup>^</sup>
Radiation Licence	5061101	EPA	Expires 29/08/20
Dangerous Goods Notification	NDG023149	SafeWork NSW	Perpetuity
EPBC Approval	2009/5252	Federal DE&E	Expires Sept 2031
EPBC Approval (MOD 3 extension area)	2015/7511	Federal DE&E	Expires 1 March 2036

<sup>5</sup> 20BL173821 licence under the Water Act 1912 converted to 20AL214787 under Water Management Act 2000 on 1 July 2016.

<sup>6</sup> Existing bores covered under this licence: PB1C ,Main North Pump, East 6, East 12 - Bore 1 and 2, East 18, East 19 - Bore 1, 2 and 3, East 20 - Bore 1 and 2, Ritz, MG22 - Bore 1, 2 and 3, MG23 - Bore 1 and 2, 34CT, MG24, MG25, MG26 - Bore 1 and 2, MG27 - Bore 1 and 2, MG28 - Bore 1 and 2, MG 29, UWLW1 TG1- Bore 1 & 2.

<sup>7</sup> An application to surrender WAL36667 was submitted to Water NSW on 4 July 2019.

<sup>8</sup> 20WA209953 which expires 29/06/2017 is nominated work for WAL19047.

Bobadeen Grinding Groove Conservation Agreement <sup>9</sup>	NA	NSW BCD	22 December 2015 to Perpetuity
Ulan West Extraction Plan LW1 to LW6	NA	DPI&E	Approval 01/02/19

Notes: <sup>9</sup>Variation to Extraction Plan Approval submitted 2/02/2017 approved by DPI&E 29/05/2017.

## 1.5 Land Ownership and Land Use

UCMPL is situated in a rural area, primarily surrounded by rural landholdings, native bushland and primary industries including agriculture, state conservation areas, mining and extractive industries. The area to the south and south-west is dominated by rural residential landholdings. The majority of the forested areas of the Ulan Coal Operations are Crown Lands. The project boundary intersects a section of State Conservation Area in the north-east corner of the operations.

The approved Moolarben Coal Mine (MCM) is located adjacent to the southern and eastern boundaries of the Project Area (**Figure 1-1**), and comprises underground and open cut mining operations. The Wilpinjong Coal Mine is an open cut operation, located approximately 7 kilometres to the south-east of the UCMPL Project Area (Figure 1-1). Other extractive industries in the region include rock and clay mining including the adjacent Kaolin clay and sandstone mine and council road base quarry. Other minerals mining activities in the MWRC LGA include mining for magnetite, limestone, dolomite and ironstone.

Agricultural grazing was the primary land use prior to Ulan Coal Operations. There are several private landholdings within the project area which are primarily used for low intensity agricultural grazing. Parts of the UCMPL owned lands are leased for the purpose of agricultural grazing including the Bobadeen Irrigation Scheme Areas.

Land capability of the project area is of low to moderate grazing lands with varying soil quality, depth/rockiness and erosion hazard. Better quality soils are on land associated with the Bobadeen Irrigation Scheme. Land capability is shown on MOP Plan 4A.

The current land ownership at UCMPL is shown in Figure 1-4 below and MOP Plan 1C. The majority of surface holdings at the site are owned by UCMPL with 3 private properties within the proposed mining area, as well as Crown Land owned by NSW State Government. A schedule of land ownership within the project boundary is provided in **Appendix C**.

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. Future land use will likely consist of grazing and conservation.

<sup>9</sup> The draft conservation agreement for the Valley Way Grinding Groove Conservation Area is awaiting approval by Crown Lands prior to submission for approval to DPI&E. Conservation agreements for Highetts Road, Bobadeen and Brokenback Conservation Area 1 are in the process of being registered at Land Registry Services. The remaining agreements are subject to the agreement of DPI&E - Crown Lands.

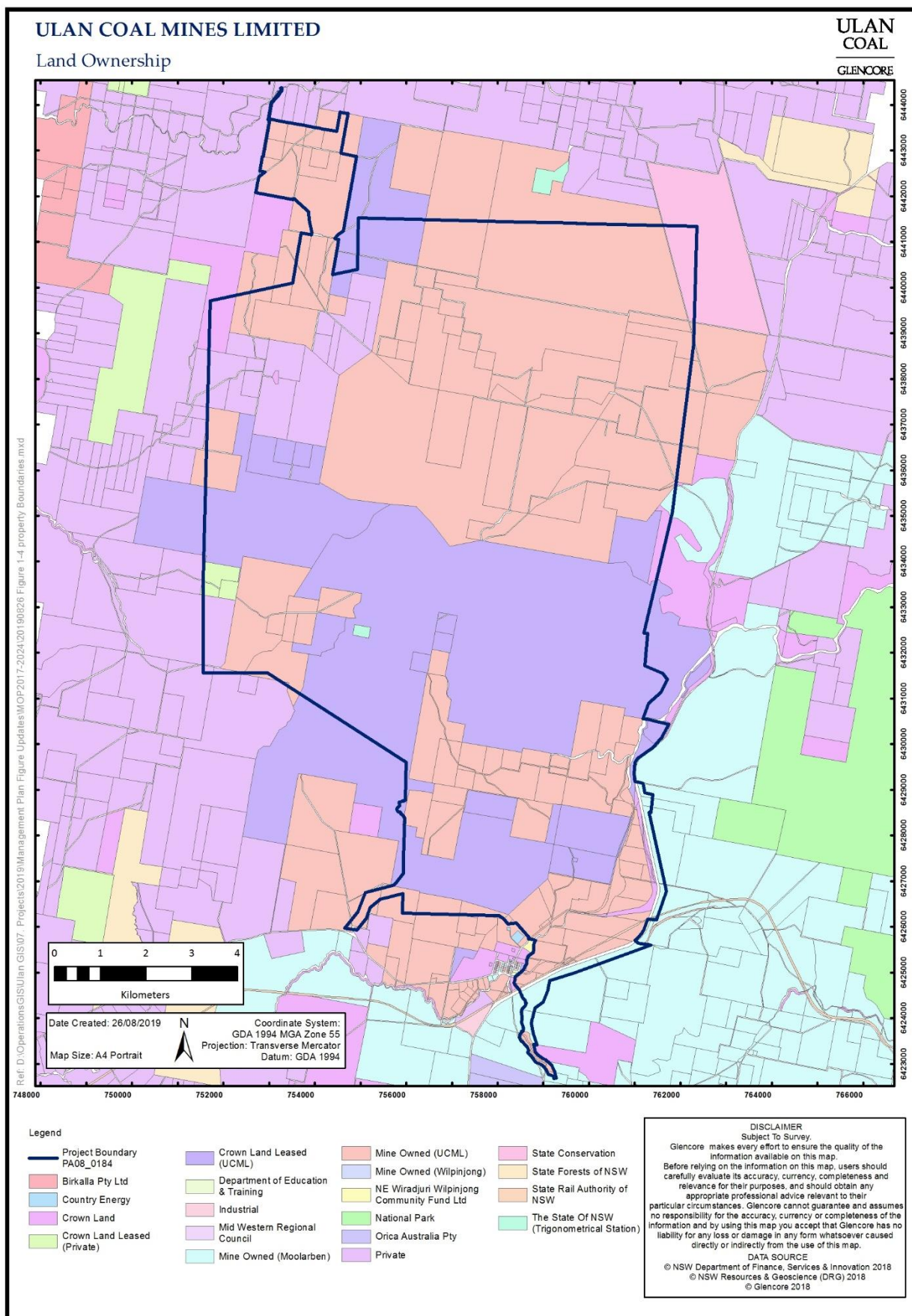


Figure 1-4 – Property Boundaries

## 1.6 Stakeholder Consultation

Stakeholder consultation was undertaken during the preparation of this and previous versions of the Ulan Coal MOP in accordance with the MOP Guidelines (DTI, 2013). Consultation, including that undertaken as part of MOD 4, is summarised in the following sections.

A copy of this MOP (which also forms the Ulan Coal Rehabilitation Management Plan) will be submitted in draft form to:

- NSW Department of Planning, Industry and Environment (DPI&E);
- NSW Department of Planning, Industry and Environment – Division of Resources and Geoscience (DRG);
- NSW Department of Planning, Industry and Environment- Biodiversity and Conservation Division (BCD, formerly Office of Environment and Heritage);
- NSW Department of Planning, Industry and Environment–Water (DPI&E - Water);
- Mid-Western Regional Council (MWRC); and
- Ulan Coal Mine Community Consultative Committee (the CCC).

Once approved this MOP will be available for public viewing at [www.ulancoal.com.au](http://www.ulancoal.com.au).

### 1.6.2 Government Agencies

**Table 1-7 – Government Agencies Consultations**

Stakeholder	Consultation undertaken
NSW Department of Planning, Industry and Environment	An initial meeting was held between the project team and DPI&E on 2 August 2017 to discuss the MOD4 proposal. Consultation with DPI&E continued throughout the MOD 4 assessment process. Representative attendance at 2017 Annual Review site visit on 31 March 2017 where an overview and site tour of the operations was provided.
NSW Department of Planning, Industry and Environment–Resources Regulator	Conceptual Mine Plan Meeting for MOD4 held 14 August 2017. DRG supported the proposed extensions associated with MOD4 as an efficient development of coal resources. Consultation undertaken regarding placement of open cut extension area into care and maintenance in late 2016. Preliminary teleconference prior to the commencement of MOP 2017-2024 preparation. Representative attendance at 2017 Annual Review site visit on 31 March 2017 where an overview and site tour of the operations was provided. Consultation regarding proposed revised guidelines for MOP preparation, where it was advised Ulan Coal to prepare MOP to existing guidelines.
NSW Biodiversity and Conservation Division (BCD, formerly OEH)	An initial meeting was held between the project team and BCD on 17 August 2017 and NPWS on 24 August 2017 to discuss the MOD4 proposal. Consultation regarding private landholder heritage concerns undertaken in late 2016 and 2017.
NSW Department of Planning, Industry and Environment–Water	An initial meeting was held between the project team and DPI&E- Water on 12 December 2017 to discuss the MOD4 proposal. The need for additional water license allocations was discussed on this and other occasions in 2017.
Mid-Western Regional Council	An initial meeting was held between the project team and MWRC on 7 September 2017 to discuss the MOD4 proposal.



Stakeholder	Consultation undertaken
	<p>An additional meeting was held to discuss the consistency of MOD4 with the Central West Regional Plan, where both parties agreed that the proposed MOD 4 is consistent with the Plan.</p> <p>Consultation with MWRC regarding private landholder heritage concerns was undertaken during 2017.</p>

## 1.6.3 Community Groups

**Table 1-8 – Community Groups Consultations**

Stakeholder	Consultation undertaken
Ulan Coal Mines Community Consultation Committee (CCC)	<p>Four meetings are held per year with CCC where an operations and environment and community updates are provided. Minutes of CCC meetings and copies of presentations are available on the Ulan Coal Website at <a href="http://www.ulancoal.com.au/en/publications/Pages/cc-minutes.aspx">http://www.ulancoal.com.au/en/publications/Pages/cc-minutes.aspx</a></p> <p>Consultation was undertaken with the CCC during the preparation of MOD4. Members of the Ulan Coal Complex CCC were provided with a briefing on MOD4 at the CCC meeting on 14 September 2017.</p> <p>Environmental Assessment findings were presented at the 22 March 2018 CCC meeting, including impacts to groundwater, surface water, ecology and the Duridgere SCA, heritage, construction noise, air quality, greenhouse gas and visual impacts, social and economic impacts.</p> <p>An update on the progress of MOD4 was presented at the 6 December 2018 CCC meeting, including Public submissions made and the Response to Submissions report, NPWS Landholder consent for Durudgere SCA being granted on 14 November 2018 and the progress of DPI&amp;E's assessment.</p> <p>An update on the progress of MOD4 was presented at the 21 March 2019 CCC meeting, including the Draft Notice of Modification being received from DPI&amp;E on 28 November 2018.</p> <p>An update on the progress of MOD4 was presented at the 27 June 2019 CCC meeting, including the MOD4 assessment report being issued by the DPI&amp;E on 15 May 2019, Independent Planning Commission (IPC) meetings with DPI&amp;E and UCMPL on 12 June 2019, IPC Public Meeting and site inspection on 19 June 2019.</p>
Ulan Coal Mines Aboriginal Heritage Groups	<p>Two meetings held per year with the Aboriginal Heritage Stakeholder Groups (the Groups) where an operations and environment and community update is provided.</p> <p>The Groups are also invited to attend any heritage survey or salvage for the operations in accordance with the Heritage Management Plan and provided with draft heritage reports for review prior to finalisation. Group representatives were invited to and involved in Heritage Surveys associated with MOD4.</p> <p>Consultation was undertaken with the Groups during the preparation of MOD4. Members of the Aboriginal Heritage</p>

Stakeholder	Consultation undertaken
	<p>Groups were provided with a briefing on MOD4 at the biannual meeting on 3 August 2017, where it was advised there is no intention to make amendments to any of the heritage conservation areas.</p> <p>An update on the progress of MOD4 was presented at the 9 November 2017 Aboriginal Heritage Groups meeting, including outcomes of the Cultural Heritage preliminary survey results, which indicated cultural heritage impacts for MOD4 are not significant.</p> <p>An update on the progress of MOD4 was presented at the 11 July 2019 Groups meeting, including DPI&amp;E 's assessment report provided to the IPC and details of how to review this, the IPC meetings with DP&amp;E and UCMPL on 12 June 2019 and IPC Public Meeting and site inspection on 19 June 2019.</p>

## 1.6.4 Asset Owners

**Table 1-9 – Asset Owner Consultations**

Stakeholder	Consultation undertaken
Essential Energy	<p>Consultation with Essential Energy in 2016 for the Ulan Underground Extraction Plan for LW30 and LWW6-8 resulted in renewal of the Essential Energy Management Plan for the management of the Single Earth Wire Return powerline which transverses the surface of the Ulan Underground Mine Plan over the main heading workings.</p> <p>UCMPL submit Subsidence Management Status Reports to Essential Energy (SMSR) as required by conditions of Subsidence Management Plan approvals. The SMSR's provide details of subsidence management actions undertaken.</p>
Private Landholders	<p>The Ulan Coal Community Newsletter issued in June 2018 contained a description of MOD4 and information on how members of the community could obtain more information.</p> <p>Further update on MOD4 was provided in the April 2019 edition of the Ulan Coal Community Newsletter.</p> <p>The Ulan Coal Complex Newsletter is sent to approximately 500 residences and businesses in the local area and is available via Ulan Coal Mines website via the following link <a href="http://www.ulancoal.com.au/en/publications/Pages/community-newsletters.aspx">http://www.ulancoal.com.au/en/publications/Pages/community-newsletters.aspx</a></p> <p>Specific meetings and discussions were held with a number of landholders located closest to proposed infrastructure associated with MOD4. Infrastructure requirements, findings of assessments and potential impacts to bores were discussed. Potential construction noise impacts, monitoring and mitigation measures were discussed at relevant properties where impacts may occur. Landholder concerns included monitoring of bores for loss of supply, provision of sufficient alternative water supply to compensate for loss of groundwater if required, potential impacts from subsidence on a dwelling, dust, noise, water, property rights and findings of heritage surveys. Following discussions, specific bores were included in UCMPL's private bore monitoring program and monitoring frequencies were adjusted where requested.</p> <p>The majority of landholders were satisfied with responses provided by UCMPL.</p>
Department of Planning Industry and Environment- Crown Lands	<p>A meeting was held between the project team and DPI&amp;E- Crown Lands on 12 December 2017 to discuss the MOD4 proposal.</p> <p>Consultation in relation to the MLA475 tenement application associated with MOD 3 has been ongoing since submission in May 2014. Most recently, UCMPL submitted a revised Statement of Corporate Compliance, Environmental Performance History and Financial Capability on 22 July 2019 following a request from the Department.</p> <p>Consultation commenced in 2016 and is ongoing for the renewal of a consolidated Crown Land Lease Agreement.</p>



## 2 Proposed Mining Activities

### 2.1 Project Description

PA 08\_0184 approves both underground and open cut mining to occur until 2033. With no more than 20 million tonnes of coal per annum to be extracted from all operations (Ulan Underground, Ulan West and Open Cut Operations) on site.

Operations at UCMPL during the MOP term will involve longwall retreat mining in the Ulan Coal Seam of the Ulan Underground and Ulan West Underground Mines. The current underground mine plans are shown in **Figure 1-2**. The proposed progression of mining during the MOP period is shown in MOP Plan 3A. The Bobadeen Basalt Quarry, also shown on **Figure 1-2**, will also operate during the MOP term with an approved extraction of up to 100,000 tonnes of basalt rock material per annum.

### 2.2 Asset Register

**Table 2-1** below lists the major assets in each Domain within the MOP area as well as the use of the asset, the footprint area and any other necessary details.

**Table 2-1 Asset Register Domains**

Major Assets (Inc. use, footprint area, height etc.)	Decommissioning / Rehabilitation Activities	Approvals Required	Area (ha)
<b>Domain 1 – Infrastructure Area</b>			
Ulan Surface Operations, Ulan Underground & Ulan West Underground buildings and carparks, haul roads, conveyors, rail loop, coal loadout, CHPP, dewatering stations, ventilation facilities, substations, pipelines, powerlines and communication infrastructure, including infrastructure associated with MOD 4.	Decommission, relocate or demolish built infrastructure, remove infrastructure and rehabilitate.	Demolition certificate  Phase 1 and, if required, Phase 2 Contamination Assessments  Radiation licence  Occupation Licence for activities within Durridgere SCA associated with MOD 4	598.48
<b>Domain 2 – Tailings / Reject Emplacement Area</b>			
Barrier Pit Reject Emplacement	Decommission, remove contaminated sediments, backfill and rehabilitate.	Section 101/HRA approval	5.76
East Pit Course Rejects		Section 101/HRA approval	6.48
East Pit Dam 1	Dewater, remove contaminated sediments/hazardous materials, backfill and rehabilitate.	Section 101/HRA approval	9.40
East Pit Dam 2		Section 101/HRA approval	10.56
Lagoon Tailings (inactive)	Decommission, remove contaminated sediments, reshape, fill, cap and rehabilitate.	HRA approval	14.03
<b>Domain 3 – Open Cut Extension Area (In Care and Maintenance)</b>			

Major Assets (Inc. use, footprint area, height etc.)	Decommissioning / Rehabilitation Activities	Approvals Required	Area (ha)
Open Cut Extension Area	Determine remedial plan for area of rehabilitation that was not successful and implement remedial plan.  Finalise landform design, regrade final void high walls and low walls, cap all exposed coal and rehabilitate.	Mine Closure Plan	76.32
<b>Domain 4 – Water Management Area</b>			
Clean water Management Areas (dams and drains)	Retain post closure for future agricultural purposes.	None	47.54
Dirty water Management Areas (dams and drains)	Decommission, remove contaminated sediments, backfill and rehabilitate.	None	83.39
<b>Domain 5 – Underground Mining Area</b>			
Ulan Underground and Ulan West Underground surface areas	Land area subsidence impacts will be progressively rehabilitated where required throughout the MOP period  Seal and rehabilitate any legacy and new exploration sites and piezometer sites no longer required.	Extraction Plan/s  Mine Closure Plan	5,251.21
<b>Domain 6 – Rehabilitation Area – Final landform</b>			
Specific Endemic Vegetation Communities	12ha shaped and seeded in late 2017		62.06
Goulburn River Diversion Remediation	Program works commenced in previous MOP period and were completed in 2019.  Prepare gap analysis against completion criteria for planting 2010- 2014.	Goulburn River Diversion Remediation Plan  Goulburn River Diversion Erosion and Sediment Control Plan	27.64
Woodland	2ha shaped and seeded in 2018.  Determine remedial plan for 2008 to 2009 monoculture plantings and implement remedial plan.  Determine remedial plan for East Pit southeast area and implement remedial plan.		380.43
Tree Screen	No works planned in current MOP period		27.20
<b>Domain 7 – Rehabilitation Area – Temporary landform (supply area for final void material rehabilitation subject to rework)</b>			
Temporary Landform areas identified near to Barrier Pit, Ulan Underground Box Cut, Dump 3 Ulan West Box Cut and East Pit.	3ha shaped and seeded in 2018  Develop final void design, use material as supply to fill final voids and create final landform as required, minimising rework of rehabilitation where possible.	Final Landform Design  Mine Closure Plan	139.05
<b>Domain 8 – Conservation or Biodiversity Offset Area</b>			

Major Assets (Inc. use, footprint area, height etc.)	Decommissioning / Rehabilitation Activities	Approvals Required	Area (ha)
Highett Road <i>Acacia ausfeldii</i> Management Area		Conservation Agreement  Biodiversity Management Plan	21
Bobadeen Vegetation Offset Area (Inc. Bobadeen Corridor)	Vegetation rehabilitation maintenance works	Conservation Agreement  Biodiversity Management Plan	1,116
Bobadeen East Vegetation Offset Area	Vegetation rehabilitation maintenance works	Conservation Agreement  Biodiversity Management Plan	243
Brokenback Conservation Area		Conservation Agreement  Biodiversity Management Plan	58
Spring Gully Cliff Line Management Area		Conservation Agreement  Biodiversity Management Plan	273
Valley Way Grinding Groove Conservation Area		Conservation Agreement  Heritage Management Plan (Conservation Management Plan Appendix)	0.8
Bobadeen Grinding Groove Conservation Area		Conservation Agreement  Heritage Management Plan (Conservation Management Plan Appendix)	3.4

## 2.3 Activities over MOP Term

### 2.3.1 Exploration Activities

UCMPL undertakes exploration and prospecting activities across the mine's tenement areas for the purposes of geotechnical, geological and hydro geological investigations. Exploration drilling within the project area in accordance with the following techniques was assessed as an ancillary activity in the grant of PA 08\_0184 as outlined in the Environment Assessment (Umwelt, 2009). The techniques used for exploration and prospecting include but are not limited to:

- Aerial Photograph Interpretation;
- Field assessments (soil, vegetation, etc);

- Core and non-core drilling allowing for lithological and geophysical logging:
  - Non-core drilling includes sill definition for potential risk of unidentified and identified intrusive bodies, magnetic anomaly drilling for further investigation of magnetic anomalies, and structural anomaly drilling for further investigation of floor anomalies;
  - Core drilling includes mine definition for detailed mine planning directly in advance of longwall panels, resource definition to quantify the resources in the area, geotechnical logging, defect logging, point loading testing, geotechnical sampling, slaking and dispersion testing, digital core photography, and coal sampling. Groundwater bores (piezometer and extraction) are also established with this technique.
- Gas evaluation;
- Geophysical investigations (verticality, gamma, calliper, resistivity, neutron, sonic and magnetic susceptibility tool, etc);
- Magnetic surveys;
- Seismic surveys; and
- Excavation and bulk samples.

During the MOP term exploration drilling is anticipated to occur within the following tenements:

- Mining Leases: ML 1468<sup>10</sup>, ML 1341 and ML 1798
- Exploration Lease: EL 7542
- Exploration Lease: EL 8687

While drilling is anticipated to occur in the previously mentioned tenements, UCMPL may conduct exploration drilling in any of the tenements listed in Table 1-3.

UCMPL manage the surface disturbance and rehabilitation of exploration works via the Glencore Work Authorisation and Ground Disturbance Permit (GDP) process to ensure works are conducted in accordance with approvals and legislation and in an environmentally responsible manner with consideration of the surrounding community. Exploration works are carried out in accordance with the requirements of the *Mining Act 1992*, the relevant mining authorisation/tenement conditions and the NSW Department of Trade and Investment Resources and Energy (now Department of Planning, Industry and Environment- Resource Regulator (DPI&ERR) Exploration Codes of Practice.

Borehole sealing works are carried out in accordance with the DTIRIS guideline *EDG01 Environmental Management Guideline for Industry Borehole Sealing Requirements on Land: Coal Exploration* (NSW Department of Trade and Investment Resources and Energy, 2012). Borehole sealing is undertaken unless the borehole will be converted to a monitoring bore, in which case specific approval for borehole to remain open will be requested.

To allow exploration drilling to occur UCMPL may be required to establish temporary access tracks, clear vegetation within drill pads and install above or in-ground sumps for collection of drill cuttings. A review of the potential environmental impacts from exploration activities will be completed prior to any works to ensure that the activities are located and designed, as far as practical, to have minimal environmental impact. Above ground sumps are used where possible and site access tracks and drill sites are relocated where possible to minimise vegetation clearing and movement or disturbance of any potential fauna habitat. Following the environmental assessment of the proposed disturbance

<sup>10</sup> EL5573 is a surface to 20m tenement which overlies ML1468, exploration drilling will occur through this tenement in order to investigate the sub-surface resource within tenement ML1468. An ESF4 form application for drilling in EL5573 is not required to be completed in this case.

footprint, these areas will be prepared using small earthmoving equipment to allow for the work to be undertaken safely and in a manner that minimises environmental impacts.

Exploration Drilling and Rehabilitation are also undertaken in accordance with the Glencore Protocol 11.09 Exploration and Drilling which contains a guideline for erosion and sediment control for access roads/tracks and drilling operations. Erosion and sediment control requirements are considered within the Review of Environmental Factors (REF) and the GDP.

## 2.3.2 Construction

Installation of infrastructure and infrastructure corridors above the underground operations will occur progressively over the mine life. Ventilation, dewatering and services borehole facilities for respective longwall panels will commence construction several years in advance of longwall mining. Infrastructure corridors which connect these facilities to services may contain overhead powerlines, surface water pipelines and access roads. The proposed infrastructure corridors approved in the Environmental Assessment and subsequent modifications are included in the Domain 1 Infrastructure Area within the MOP plan 3A. These corridors are conceptual and subject to final infrastructure design.

A bioremediation management area has been established to the north of the East Pit within the current Ulan Surface Operations disturbance area.

The Ulan Underground hydrocarbon management areas were upgraded at the start of the MOP period, to include controlled drainage concrete pads and storage/treatment infrastructure within existing infrastructure areas.

Commencement of construction of the East Pit tailings dam 3 may commence within the MOP period dependant on water management activities undertaken during the MOP period.

## 2.3.3 Mining Operations

### 2.3.3.1 Ulan Open Cut Operations

Mining in the Open Cut Extension Area was placed into Care and Maintenance for the foreseeable future on the 10<sup>th</sup> October 2016<sup>11</sup>. The existing void, spoil area and topsoil stripped area shown as Primary Domain Open Cut Extension Area (in care and maintenance) on MOP plan 3A. This area will not be rehabilitated to enable recommencement of operations if required. An extension of the diversion drain to the south of the open cut mine will be constructed to provide flood risk mitigation for the Ulan West Box Cut, once the MLA 470 is converted to a mining lease.

### 2.3.3.2 Ulan Underground

The Ulan Underground entry is via a drift portal entry adjacent to the Ulan Underground Offices. The Ulan Underground Mine Plan has main headings in the centre of the mine plan with approximately 400m wide longwall panels to the West and East. Development of roadways is completed using continuous miners with shuttle cars and conveyors to remove the coal. Ulan Underground will utilise standard longwall mining methods and target the economic portion of the Ulan Coal Seam. The longwall face is installed at the end of the panel furthest from the main headings and mining progresses toward the main headings to complete the longwall extraction. Panel extraction timing is outlined in MOP Plan 3A. The Ulan Underground is currently operating with an expected mine life up until approximately 2029.

<sup>11</sup> As notified to the NSW Department of Industry Resources and Energy on 5 September 2016.

### 2.3.3.3 Ulan West Operations

The Ulan West Mine entry is via entry portals directly into the Ulan seam via the Ulan West Box Cut. The Ulan West Mine Plan has main headings in the south of the mine plan with approximately 400m wide longwall panels to the North. Development of roadways is completed using continuous miners with shuttle cars and conveyors to remove the coal. Ulan West will utilise standard longwall mining methods and target the economic portion of the Ulan Coal Seam. The longwall face is installed at the northern end of the panel and mining progresses south toward the main headings to complete the longwall extraction. Panel extraction timing is outlined in MOP Plan 3A. The Ulan West underground mine is currently operating with an expected mine life up until approximately 2031.

### 2.3.3.4 Underground Mining Equipment

Primary extraction, known as 'development', utilises continuous miners and shuttle cars to develop the roadways which form the longwall panels. The development mining equipment typically includes, but not limited to:

- Continuous miners;
- Shuttle cars;
- Breaker feeders;
- Auxiliary fans;
- Graders;
- Underground personnel transporters; and
- Underground Load Haul Dumps.

Secondary extraction will utilise retreat longwall mining methods. The longwall extraction mining equipment typically includes, but not limited to:

- A shearer to cut coal from the face of the seam;
- A face conveyor to collect sheared coal and carry it to a coal sizer and stage loader;
- A panel conveyor to transfer the coal to a trunk conveyor in one of the main headings; and
- Hydraulic roof supports to support the roof in which personnel and equipment operate.

Each of the mining operations will include a number of surface to seam service access holes. These will be maintained during the life of the operation and completely backfilled and sealed at the completion of mining.

### 2.3.3.5 Coal Processing and Handling

ROM coal from UUG is conveyed to the surface via a conveyor network and discharged to the ROM Hub Stockpile area, where the coal is reclaimed and surface conveyed to the Underground ROM Stockpile area.

From the Underground ROM Stockpile area the coal is reclaimed, crushed and transferred by surface conveyors directly to the product stockpile area. Underground coal requiring washing can be transferred by truck from the Underground ROM Stockpile area to the Coal Handling Preparation Extraction Plant (CHPP), where the coal enters the Open Cut conveyor system for processing in the CHPP.

Product coal is reclaimed and transferred by surface conveyors from the product stockpile area to the Rail Load Out Bin and loaded into rail coal wagons and transported to the Port of Newcastle by rail.

### 2.3.3.6 Bobadeen Quarry

The Bobadeen Basalt Quarry commenced production in 2017 to provide rock revetment material for the Goulburn River Diversion Remediation Project as well as supply rock aggregate and ballast for onsite road maintenance and concreting. The Quarry is being operated during daytime hours only and blasting occurs infrequently. The location of the Bobadeen Quarry is shown on MOP plan 3A.



During the start of operations within the Bobadeen Quarry the surface topsoil was stripped and stockpiled for rehabilitation. The overburden was used to create drainage bunds and safety berms with the excess overburden stockpiled for final landform shaping with a safe working area established for loading and sizing operations.

The quarry depth will be approximately 5 to 10m. Blasting of approximately 20,000 m<sup>3</sup> of basalt has occurred. Once blasted, the basalt is processed via a sizing screen and sorted into three products, oversize greater than 80 mm which was used in the completed Goulburn River Diversion, 40 to 80 mm for road ballast and less than 40mm for road base material.

Basalt required at the Ulan Surface Operations is loaded onto road registered trucks for transport to site via the Ulan Road.

The following parameters have been applied in the development of the Quarry Plan:

- Extraction depth to approximately 10 metres;
- Allowance of 20% waste; and
- No benches with batters at 45°

## 2.3.4 Rock / Overburden Emplacement

There will be no rock/overburden emplacement within the MOP period due to Open Cut Extension in care and maintenance.

## 2.3.5 Processing Coarse Rejects and Tailings

The coarse reject and tailings emplacement areas form Domain 2 as shown on MOP plan 3B.

During this MOP period, coarse rejects/tailings will be emplaced in the following areas:

- The Barrier Pit; and
- The East Pit Central Ramp Tailings Dam No.2 and the yet to be constructed Tailings Dam No. 3.

Coarse rejects are conveyed from the Coal Handling and Preparation Plant (CHPP) to the CHPP Reject Bin, via a conveyor. Off highway dump trucks are then loaded by a gravity based dumping process where the coarse rejects are released from an opening in the base of the reject bin into the tray of the dump trucks. The rejects are then transported to the emplacement area.

The rejects in the Barrier Pit are dumped out in approximately 3 meter layers and spread and compacted by a bulldozer, and subsequently traversed by fully loaded dump trucks to maximise compaction.

Spontaneous combustion is detected by visual monitoring for, heat, smell and smoke. In the event that spontaneous combustion is observed the methods for treatment may include:

- Separate the material by digging the affected area out, spreading it, track rolling the material and compacting. Monitor the area and cover it with inert material; or
- Cover it in-situ with inert material, shape the surface so it drains and then track roll the surface and batters.

Spontaneous combustion will be managed in accordance with the USO SD PLN 0015 Spontaneous Combustion Management Plan.

The East Pit Tailings Dam is located in the southern section of the East Pit void adjacent to the East Pit raw water storage reservoir. Tailings are coal fines that are produced as a by-product from the washing of coal in the CHPP. Tailings are pumped as a slurry to the East Pit Tailings Dam where it is deposited into the tailings dam. The process of secondary flocculation may be utilised to enable the tailings to shed water which gives a beaching effect and speeds up drying time of the tailings.

Operation and construction of the East Pit Tailings Dams will be managed in accordance with the Section 100 approvals and High Risk Activity notifications. The material used for the construction of the embankment wall consists of a combination of coarse rejects and select overburden material.

Spontaneous combustion is not considered a risk in the operation phase of the East Pit Tailings Dam. The risks of spontaneous combustion will be addressed during the decommissioning and capping of the tailings facility. Spontaneous combustion will be managed in accordance with the Spontaneous Combustion Management Plan USO SD PLN 0015.

The drainage system installed on the upstream face of the dam is designed to allow filtered water to pass through the face drains and decant under the embankment wall via fibre drains. A minimum of 2 metres freeboard shall be maintained on the East Pit Tailings Dam. The RL of the top of the dam is 408m. The following drainage improvements have been included in the Dam No.1 Stage 3 and Dam No.2 design:

- Additional finger drains to improve the drainage capability;
- Reinstate the eastern groin drain linked to the eastern most finger drain;
- Reduced thickness of the coarse reject covering layer from four to one metre to enhance the drainage capacity of the system; and
- A longitudinal foundation drain to collect the seepage and transport it to the downstream toe of the Stage 3 embankment.

It is anticipated that the combined storage volume of the three East Pit Tailings Dams will be sufficient to store tailings for the remainder of the life of the mine. The benefits of this strategy include:

- The decant system and tailings delivery system do not have to be relocated during the life of the mine;
- The large storage area in the ponds is advantageous, since evaporation exceeds rainfall in the area, and the excess evaporation reduces the volume of water to be recycled;
- The large area also results in a slower rise in tailings level, which promotes consolidation and produces a denser tailings deposit that can be rehabilitated quicker when it is full;
- The construction of the dams can be staged to defer costs; and
- Operational and administrative costs are reduced.

Capping of East Pit Tailings Dam 1 could potentially occur late during the MOP period if the tailings dam conditions are appropriate. Capping material would most likely be taken from the adjacent rehabilitation area to the west of the tailings dam within Domain 7 (Rehabilitation Area- Temporary Landform) as shown on MOP Plan 3B.

## 2.3.6 Waste Management

The Ulan Coal Waste Management Plan (ULNCX- 111515275- 98) has been prepared in accordance with Schedule 3, Condition 54 of PA 08\_0184 to address the waste management requirements of the Ulan Coal Operations. The Waste Management Plan applies to operations and projects within the Project Boundary and within land owned or under the control of Ulan Coal.

Details of the waste disposal and material handling of various types of waste expected to be generated during the MOP Period are outlined in the following sections (**Sections 2.3.6.2 to 2.3.6.6**).

### 2.3.6.2 Domestic and Office Waste

Domestic waste includes food scraps, aluminium cans, glass bottles, plastic and paper containers and putrescibles waste. Domestic waste will be generated by employees and contractors while onsite. Domestic waste will be recycled where practical or otherwise disposed of offsite by a licensed contractor.

The main type of office waste is waste paper, comprising general office paper, photocopy paper, office stationary and paper from other sources. Other office waste includes cardboard/packaging, and



toner/printer cartridges from printers, photocopiers and facsimile machines. The quantity of waste generated will be minimal and the majority of this waste stream will be recycled.

### 2.3.6.3 Ablution Waste

Ablution waste includes waste from toilets, bathhouses, kitchen sinks and basins. All sewage wastewater will be managed on site using existing treatment facilities. These include the Ulan Underground facilities, Ulan West underground surface facilities and Ulan Surface Operations facilities. Where required, waste treatment facilities will be pumped out and transported to an offsite sewerage treatment plant by a licensed waste contractor.

### 2.3.6.4 Operational Waste

Workshop and maintenance activities associated with the operation of the complex will generate wastes such as rags, gloves, general packaging material, empty drums, material off cuts, machinery parts, oils and oily water, lubricants, paints and waste tyres. These wastes will be segregated and recycled where possible or otherwise disposed of to a licensed facility by a licensed contractor. The management of hydrocarbon waste, including waste oil and oily water will be managed in accordance with Hydrocarbon and Hydrocarbon and *Hazardous Chemicals Management (ULNCX-111515275-1977)*.

General operational waste may include a variety of waste materials including unused or out of date chemicals, scrap steel, timber, plastics, rubber, hoses, drill bits and steels and vent tubes. These materials are all reused or recycled where possible. In the instance waste tyres cannot be recycled i.e. large tyres, these will be buried onsite in accordance with EPL 394. Waste concrete is also permitted to be buried onsite in accordance with EPL 394.

### 2.3.6.5 Contaminated Soil

Contaminated soil will be sampled by an accredited laboratory and classified in accordance with the Waste Classification Guidelines. Depending on the waste classification contaminated soil will either removed from site to an appropriately licensed facility via a licensed waste contractor and/or taken to the onsite bioremediation facility for remediation.

### 2.3.6.6 Water Treatment Facility Waste

The water treatment facilities at the Ulan Mine Complex include reverse osmosis (RO) plants. RO plants produce a waste water concentrate that must be disposed of, or managed by Ulan Coal. Current wastewater volumes are in the order of 6 per cent of the total water discharged from the water treatment facilities (i.e. the combined blend of treated RO water and mine water), and has a typical water quality in the order of 6000  $\mu\text{S}/\text{cm}$  to 6,500  $\mu\text{S}/\text{cm}$  and a pH of 7.5.

Based on the predicted water balance (refer to Section 3 of the *Water Management Plan (ULNCX-111515275-99)* and current mine water qualities and RO plant efficiencies, the volume of wastewater generated in the water treatment facilities will range between approximately 50 ML per year and approximately 360 ML per year.

The water management approach is to first, minimise the interception of storm water and introduction of new water into the operations where possible. The priority for water that is intercepted or extracted is re-use in mining and production processes, including for dust suppression, wherever possible. The Bobadeen Irrigation re-use scheme was introduced in 2003. Water is treated in the treatment facilities if needed to minimise water storage risks. The reject water from water treatment is blended with untreated water for re-use in processes where possible. The remaining water is returned to the East Pit. The water balance model is used to forecast and assist prioritisation of water management methods.

The North West Sediment Dam RO pre-filtration system also produces a sludge waste which is transported to the Barrier Pit for disposal in accordance with approval from the EPA.

## 2.3.7 Decommissioning and Demolition Activities

All onsite demolition works will be conducted in accordance with the Australian Standard AS 2601-2001 (or subsequent version) as per Schedule 3, Condition 12 of PA 08\_0184.

Ventilation, dewatering and services borehole facilities and infrastructure corridors above the underground operations will be progressively decommissioned over the mine life once no longer required for operations.

## 2.3.8 Temporary Stabilisation

Domain 7 areas within MOP plan 3A are identified as Rehabilitation Areas of temporary landform as the material in these areas is likely to be required to be reworked to fill final voids and achieve the final landform design. 3 ha of woodland within Domain 7 located adjacent to the Ulan West ROM conveyor was rehabilitated in 2018.

## 2.3.9 Progressive Rehabilitation and Completion

12 ha of rehabilitation was completed in late 2017 in the Open Cut Extension Area, and 5ha of rehabilitation completed in 2018. No further areas are available for rehabilitation within the Ulan Surface Operations or Open Cut Extension Area within the MOP period.

Remediation of subsidence impacts to land will be undertaken progressively during the MOP period shortly following the settling of subsidence within the impact area.

Ventilation, dewatering and services borehole facilities and infrastructure corridors above the underground operations will be progressively rehabilitated over the mine life once decommissioned.

## 2.3.10 Material Production Schedule during MOP Term

The material production and waste schedule for the Ulan Mine Complex surface and underground operations during the MOP period are outlined in **Table 2-2**, **Table 2-3**, **Table 2-4** and **Table 2-5** below.

**Table 2-2 – Provisional Production and Waste Schedule for Ulan Underground**

Material Production Schedule during the MOP Term									
Material	Unit	Dec 2017	Year 1 (2018)	Year 2 (2019)	Year 3 (2020)	Year 4 (2021)	Year 5 (2022)	Year 6 (2023)	Year 7 (2024)
ROM Coal	Mt	489	4,959	5,451	5,501	5,533	4,722	5,651	5,628
Reject material <sup>12</sup>	Mt	32	64	230	253	23	267	73	49
Product	Mt	457	4,895	5,221	5,248	5,510	4,455	5,578	5,579

**Table 2-3 – Provisional Production and Waste Schedule for Ulan West**

Material Production Schedule during the MOP Term									
Material	Unit	Dec	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7

<sup>12</sup> Includes course rejects, tailings and any other wastes resulting from beneficiation

		2017	(2018)	(2019)	(2020)	(2021)	(2022)	(2023)	(2024)
ROM Coal	Mt	792	6,995	8,048	7,651	7,645	8,331	7,715	7,929
Reject material <sup>13</sup>	Mt	32	36	87	329	48	82	314	240
Product	Mt	760	6,959	7,947	7,322	7,597	8,249	7,401	7,689

<sup>13</sup> Includes course rejects, tailings and any other wastes resulting from beneficiation

**Table 2-4 – Provisional Production and Waste Schedule for Ulan Open Cut**

Material Production Schedule during the MOP Term									
Material	Unit	Dec 2017	Year 1 (2018)	Year 2 (2019)	Year 3 (2020)	Year 4 (2021)	Year 5 (2022)	Year 6 (2023)	Year 7 (2024)
Stripped topsoil	m <sup>3</sup>	0	0	0	0	0	0	0	0
Rock / Overburden	m <sup>3</sup>	0	0	0	0	0	0	0	0
ROM Coal	Mt	0	0	0	0	0	0	0	0
Reject material <sup>14</sup>	Mt	0	0	0	0	0	0	0	0
Product	Mt	0	0	0	0	0	0	0	0

**Table 2-5 – Provisional Production and Waste Schedule for Bobadeen Basalt Quarry**

Material Production Schedule during the MOP Term									
Material	Unit	Dec 2017	Year 1 (2018)	Year 2 (2019)	Year 3 (2020)	Year 4 (2021)	Year 5 (2022)	Year 6 (2023)	Year 7 (2024)
Product	Mt	0.005	0.02	0.02	0.02	0.02	0.02	0.02	0.02

<sup>14</sup> Includes course rejects, tailings and any other wastes resulting from beneficiation

## 3 Environmental Issues Management

### 3.1 Environmental Risk Assessment

An Environment and Community Risk Register is maintained as part of the Ulan Coal *Environmental Management Strategy* (ULNCX- 111515275- 870). The risk register is updated annually via a risk assessment review. Environment and Community risks relevant to the various site operations are also assessed through the site Broad Brush Risk Assessments conducted annually at the Ulan Surface Operations, Ulan Underground and Ulan West Operations.

A specific risk assessment was conducted on the 23<sup>rd</sup> June 2017 for the preparation of this MOP 2017-2024 in order to assess the primary risks to the rehabilitation plan and the success of existing rehabilitation at the site. The risk assessment was undertaken in accordance with standard risk assessment practices outlined in AS/NZS ISO 31000:2018 Risk Management - Principles & Guidelines using the Glencore risk assessment template and risk ranking system. The rehabilitation risk assessment is available in **Appendix E**.

UCMPL also conduct specific risk assessments to address other potential risks to the environment as they are identified. In response to an inspection of the Ulan Coal Mine Tailings Storage Facility by Resource Regulator inspectorate inspectors on 10 March 2020, UCMPL committed to undertaking a risk assessment to address items of concern identified during the inspection (the letter dated 10 March 2020 is provided in Appendix F). Specifically, the risk assessment will be aimed at addressing the current operations of the Tailings Storage Facilities, decommissioning / closure requirements and all concerns raised during the inspection as outlined in a letter received from the Department, dated 22 April 2020. The risk assessment will include inactive Tailings Storage Facilities, including those that have been capped and rehabilitated. The risk assessment will be attended and input provided by suitably qualified experts and will be facilitated by an independent tailings expert in accordance with the framework provided in AS/NZS ISO31000:2018. A report will be provided to the Department summarising the outcomes of the risk assessment by 30 October 2020.

### 3.2 Environmental Risk Management

Mining operations are managed in accordance with the approved environmental management plans (EMPs) developed, consulted and approved in accordance with the requirements of PA 08\_0184. These plans are central to the implementation of the MOP. The approved EMPs most relevant to this MOP can be found in **Section 13.1**.

All risks identified within the Environment and Community Risk Register are managed via the approved EMPs and any actions arising from the risk review are captured in the Ulan Coal compliance management database (CMO).

Risks identified within the Rehabilitation Risk Assessment (**Appendix E**) not specifically managed by an approved EMP are discussed within **Section 3.2.2** of this MOP. Actions which arose from the rehabilitation risk assessment were entered to CMO for tracking to completion.

#### 3.2.2 Specific Risks Relating to Rehabilitation

##### 3.2.2.1 Geology and Geochemistry

Ulan Coal Mine is at the western limit of the geological formation known as the Sydney Basin and at the southern end of the Gunndah Sub-basin. The resource coal targeted for extraction is from the Illawarra Coal Measures, which are of Permian age and overlain by sedimentary formations of varying thickness and types including sandstones, shales and alluvium. Ten coal seams (nine in the

west) occur within the coal measures at UCMPL; eight occur above (seven in the west) and one below the Ulan coal seam (refer to **Figure 3-1**). These seams range in thickness from approximately 0.4 to 10 metres (with the Ulan coal seam being thickest).

The geological and geochemical context of the mine does not pose a risk to rehabilitation during the MOP term. Geological cross-sections of the underground mining areas for the MOP term are shown in MOP Plan 5.

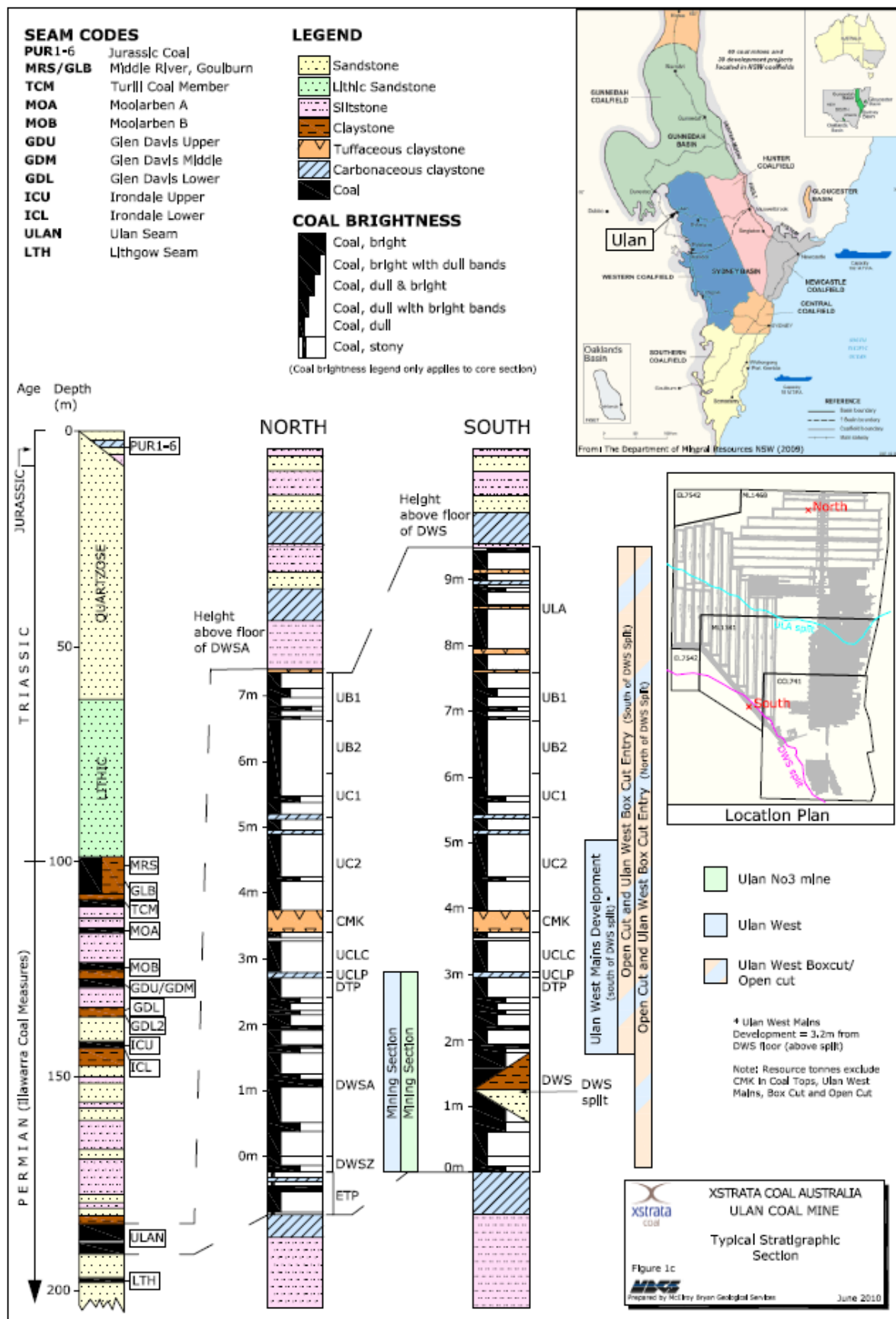


Figure 3-1 – Stratigraphic Column of the Ulan Area Geology



### 3.2.2.2 Material Prone to Spontaneous Combustion

The potential for spontaneous combustion is relatively low as the main risks include an increase in stockpile volumes and rehabilitation works within the Ulan Surface Operations site. Should spontaneous combustion occur within these areas during rehabilitation it would delay the rehabilitation works and potentially spoil top soil.

Rehabilitation may also be destroyed should spontaneous combustion occur as a result of the control measures where either;

- Combustible material is required to dig material out, spread, water, track roll and finally cover with inert material, or
- By covering the combustible material in-situ with inert material, reshaping the surface to allow for the area to drain and track roll over the surface and batters.

Both of these control measures would damage any rehabilitation works and rework would be required. Finally, worst case scenario, should the newly rehabilitated area ignite, the seeds and any vegetation beginning to grow would be burnt off. Thus the need to rehabilitate the area once more.

### 3.2.2.3 Mine Subsidence

Surface cracking and compression humps have been observed in shallow areas which is consistent with the expectation and the high values of strain and tilt predicted. There is potential for steps within the sandstone strata to develop where there is Triassic Sandstone, particularly where the overburden depth is in the range of 110-140 m and the terrain is relatively flat. Land impacts are generally minor in nature and remediation is undertaken using small earth moving equipment.

No changes in subsidence impacts to sandstone cliff formations are expected from those predicted in the EA. Prediction for cliff lines rock fall on up to 20 per cent of the length of cliff line and perceptible cracking on up to 70 per cent of the cliff line.

There is potential for minor cracking and ponding to occur in creek and drainage lines located directly over the longwall panels. Creek stability monitoring is undertaken in creek lines which are undermined and visual erosion and ponding monitoring undertaken in tributary watercourses. Impacts are anticipated to be minor in nature and remediation is anticipated to be undertaken using small earth moving equipment where required.

More than 20 years of monitoring of previous underground mining at Ulan has confirmed that ecological impacts associated with subsidence are negligible. The assessment generally concluded that the Project will not result in a significant impact on threatened species, endangered populations or TECs or their habitats within the project area, however there is potential for impact on cave-roosting bat species. A range of mitigation and offsetting measures will be implemented to reduce potential impact to cave-roosting bat species. The Brokenback and Spring Gully Cliff line Conservation Offset Areas have been established, in consultation with DP&E and the Federal Department of Environment and Energy.

Specific subsidence predictions, controls and monitoring are outlined in the relevant Underground Extraction Plan<sup>15</sup>.

### 3.2.2.4 Soil Type(s) and Suitability

The main soil units found within the Ulan Mine Complex are the Ulan and Lees Pinch soil landscapes. These units exhibit moderate to high erosivity and low fertility. The Ulan soil landscape is moderate to high erosivity, contains low fertility, slightly acidic and is imperfectly drained. Whilst the Lees Pinch

<sup>15</sup> Extraction Plans are approved by the DPI&E. Previously a Subsidence Management Plan Approval from the Department of Resources and Energy was also required.



soil landscape is highly susceptible to erosion, contains low fertility, is moderate to strongly acidic and is well drained.

The Lees Pinch soils consist of shallow sandy soils, extensive rock outcrops, boulder debris slopes and sandstone cliffs. The lower slopes consist of grey or yellow earths, yellow podzolic soils and shallow acidic loams. Whilst Ulan soils on the lower slopes and drainage lines consist of yellow podzolic soils, salt scalds consisting of yellow solodic soils/solonetz, foot slopes consisting of yellow and brown earths and the low rises consisting of minor areas of earthy sands.

Prior to clearing activities or the re-handling of topsoil stored on site, representative samples are taken to characterise the nature of the soil material (e.g. sodicity, acid-generating potential, etc.) to determine the potential limitations to rehabilitation and sustainable plant growth. These results will be used to determine specific ameliorant requirements.

As outlined in the *Land Clearing and Topsoil Stripping Procedure (ULNCX-111515275-2953)* where there are opportunities to salvage topsoil material for rehabilitation purposes, the following measures will be adopted to protect its quality and enhance rehabilitation outcomes:

- Extreme care to be taken when stripping topsoil to avoid topsoil loss. Remove all topsoil in area without contaminating with other materials. Regular inspections will be conducted by the project supervisor to verify topsoil stripping is completed as directed;
- After vegetation stripping, topsoil is pushed into windrows by dozers for truck and loader removal to reshaped areas for direct application to rehabilitation areas; or if none are available the topsoil is stockpiled (double handling of topsoil should be avoided where possible);
- Where possible, topsoil will be stripped when moist to help maintain soil structure and to reduce dust generation. Where practical, measures will be undertaken to maximise the viability of the soil seed bank for direct-return onto areas (where available) ready to be rehabilitated;
- Long-term topsoil stockpiles will be used from time to time during mining and locations will be chosen which will not be subject to interaction/contamination with overburden material. Topsoil stockpiles are to be located away from mining areas, traffic areas and watercourses;
- Level or gently sloping areas will be selected as stockpile sites to minimise erosion and potential topsoil loss;
- Appropriate sediment controls will be installed at the base of stockpiles to prevent topsoil loss;
- Stockpiles must be less than three (3) metres high and will be set out in windrows to maximise surface exposure and biological activity;
- Stockpiles will be maintained with a combination of fertiliser and seed until they are required for use in the rehabilitation program. Stockpiles to be kept longer than three months will be sown with a suitable cover crop to minimise soil erosion and invasion of weed species;
- Weed growth on stockpiles/windrows will be monitored and subsequently controlled if necessary. Prior to re-spreading, weed growth will be scalped from the top of the stockpiles to minimise the transport of weeds into rehabilitated areas;
- Stockpiles will be surveyed and appropriately sign-posted to identify the area and eliminate the potential for unauthorised use or disturbance;
- Open Cut; excavator to windrow topsoil 10 m from GDP line on ridge lines and 2m in all other areas;
- Be careful to avoid contamination of topsoil with rocks and overburden (particularly when removing from hills), if no trace of topsoil is left post stripping, excessive dilution has probably occurred;
- An excavator should be used to pull topsoil in one dozer length (10 m) from any clearing boundary present;

- Stockpile topsoil on a 20 m offset from the strip limit. Don't stack material excessively high (lower the better to reduce wind losses) and "cap off" the stockpile when finished;
- When transferring topsoil for dressing rehabilitation areas consider;
  - Size of area where topsoil is to be spread;
  - Number of truck loads required into the area; and
  - Tipping profile for dozer push, to minimize dozer push.

Ulan does not have a sufficient topsoil resource for the completion of all rehabilitation requirements in the final landform design. Trials have commenced in the previous MOP period within the Goulburn River Diversion Remediation Project Area and East Pit Rehabilitation Area using imported Organic Growth Medium (OGM) rather than topsoil and to supplement topsoil where presence is limited. The rehabilitation results within these areas will be monitored.

Further soil investigation during the MOP period is required to identify areas of suitable capping material for the East Pit Tailings Dams.

Annual review of water quality data trends and soil characterisation is undertaken to understand if any evidence of Acid Rock Drainage processes or sources are present. The parameters that could act as indicators are:

- Acidity (pH);
- Electrical Conductivity (EC);
- Total Dissolved Solids (TDS);
- Total Metals including Aluminium (Al), Iron (Fe), Manganese (Mn), Selenium (Se), Chromium (Cr), Arsenic (As), Lead (Pb), Copper (Cu), Zinc (Zn) and Mercury (Hg);
- Sulphate (SO<sub>4</sub>) and Chlorine (Cl); and
- Ions including Sodium (Na), Potassium (K), Calcium (Ca) and Magnesium (Mg).

### 3.2.2.5 Erosion and sediment control

The mining operations and related activities that have the potential to generate sediment and impact on the surrounding catchment areas if not appropriately managed are:

- the installation of services and infrastructure;
- changes to drainage lines and/or catchment
- the management and rehabilitation of tailings and coarse reject emplacement areas;
- coal stockpiles and coal handling equipment including mobile equipment, coal crushing equipment and conveyors;
- runoff from the construction and maintenance of haul roads;
- runoff from the construction and maintenance of internal access roads;
- vehicle and equipment movements;
- rehabilitation or preparation of disturbed areas including subsidence remediation works;
- disturbed areas not yet rehabilitated; and
- disturbed areas created by natural processes or by previous agricultural land uses.

This *Erosion and Sediment Control Plan (ESCP)* (ULNCX- 111515275- 224) provides control measures appropriate for these activities in order to prevent adverse impacts on surrounding catchment areas. Standard ESC techniques will be utilised in accordance with the requirements of Managing Urban

Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volumes 2A, 2C, 2D and 2E (DECC, 2008) (the Blue Book).

Soil sampling is conducted during the planning phase of construction or rehabilitation projects and recommendations for management are sought from a qualified soil scientist in order to design an appropriate Erosion and Sediment Control Plan. Disturbance activities must undergo a GDP approval prior to works, this involves the assessment of adequacy of the erosion sediment control plan by the Ulan Environment and Community Department. The GDP permit allows limited approval for the installation/construction of the erosion and sediment controls in accordance with the approved plan to be verified by appropriate personnel prior to final sign off for clearing and/or construction works to occur. Conditions of the GDP approval stipulate monitoring and maintenance requirements for the erosion and sediment controls in accordance with the ESCP and site procedure.

The final landform on completion of the Ulan West Box Cut and Open Cut Extension will include a drainage pattern which is capable of conveying runoff from the newly created catchments, whilst minimising the risk of erosion and sedimentation. Drainage characteristics for the site have been developed in accordance with the Draft Guidelines for the Design of Stable Drainage Lines on Rehabilitated Mine Sites in the Hunter Coalfields (DLWC, 2002). The proposed drainage system provides for the combination of a connected surface drainage network and distributed storage/infiltration. The system integrates surface storage during periods of high rainfall runoff and manages deep infiltration to levels which can be safely tolerated and at the same time reduce the size of the surface drainage system. Parts of this landform were established during the previous MOP period with drainage from most rehabilitation areas now conveyed via established drainage channels and sediment basins to a tributary of Ulan Creek.

### 3.2.2.6 Flora and Fauna

The management of flora and fauna at UCMPL is undertaken in accordance with the *Biodiversity Management Plan (BMP)* (ULNCX- 111515275- 225). The BMP outlines the management and mitigation measures for flora and fauna including endangered and vulnerable species recorded within the project area. Several biodiversity offset areas have been established and improvement works within the vegetation offset areas are undertaken in accordance with the Offset Management Program (OMP) (Appendix B of the BMP).

A *Pre Clearing Survey and Tree Felling Procedure* (ULNCX-111515275-1635) is implemented for all clearing activities onsite to minimise the impact of clearing on native species (both threatened and non-threatened), as well as habitat features. The aim of the procedure is to identify significant ecological features within areas to be cleared, with the aim to make all reasonable and feasible attempts to minimise the impact of clearing.

Where feasible, the salvage and relocation of hollow logs, fallen timber and boulders will be undertaken to augment habitat complexity within any areas to be rehabilitated or deemed (through monitoring results) to have low occurrences of such habitat resources. The purpose of this will be to increase habitat complexity in these areas, to make them more habitable for native species, particularly threatened fauna species. Details of this can be found in the *Salvage and Reinstatement of Habitat Features Procedure* (ULNCX-111515275-1639).

Pest and weed control campaigns are undertaken each year as required to manage pest and weed species identified in the BMP. Recommendations for pest and weed control from annual floristic and fauna monitoring reports are implemented by the site.

### 3.2.2.7 Other Risks to Rehabilitation Success

Other risks to rehabilitation as identified through the 2016 Rehabilitation Risk Assessment are;

#### **Bushfire**

Potential for bushfires due to lightning storms, hot works incorrectly undertaken and cigarette butts. If a fire were to breakout on site or enter onto Ulan Coal lands there is potential to cause damage/harm to infrastructure, flora and fauna, rehabilitation and biodiversity offset areas.

The *Bushfire Management Plan (ULNCX-111515275-2049)* outlines burning safeguards, operational guidelines for mechanical/manual hazard reduction, asset protection and fire management zones. Risk controls include site regulations such as no smoking and hot works permits for hot works outside of workshop areas.

### Drought

Prolonged periods without rainfall can delay rehabilitation plan implementation. A lack of rainfall prior to or following planting can causes delayed growth or mortality to flora. Drought conditions can also impact fauna species diversity and abundance.

Flora species planted within site rehabilitation areas are endemic to area, their drought tolerance is consistent with remnant/endemic vegetation within the project area.

## 4 Post Mining Land Use

### 4.1 Regulatory Requirements

Project Approval PA 08\_0184 contains rehabilitation objectives for UCMPL to achieve as well as commitments from the Project EA (Umwelt 2009) as stipulated in the Statement of Commitments. The mining tenement authorisations held by UCMPL also contain general conditions for the management of rehabilitation. **Table 4-1** outlines all the rehabilitation requirements for the Ulan Complex from PA 08\_0184 and Mining Tenements held by UCMPL.

**Table 4-1 – Regulatory Requirements for Rehabilitation of the Ulan Complex**

Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
PA 08_0184 Schedule 02 Condition 001	Obligation to Minimise Harm to the Environment  The Proponent must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation or rehabilitation of the project.	Section 1.3
PA 08_0184 Schedule 02 Condition 005	Limits on Approval  The Proponent may carry out mining operations on the site until 30 August 2033.  Note: Under this approval, the Proponent is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Secretary or Secretary Industry. Consequently, this approval will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.	Section 1.4.2
PA 08_0184 Schedule 03 Condition 055	The Proponent must rehabilitate the site to the satisfaction of DRE. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (and depicted conceptually in the figures in Appendix 5), and comply with the objectives in Table 16.	Section 4.3

Mining Approval/Tenement	Rehabilitation requirements		Section of MOP where Addressed										
	<table><tr><td>Watercourses to be undermined</td><td>Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining</td></tr><tr><td>Cliffs</td><td>No additional risk to public safety compared to prior to mining</td></tr><tr><td>Other land affected by the project</td><td>Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of:<ul style="list-style-type: none"><li>local native plant species; and</li><li>a landform consistent with the surrounding environment</li></ul></td></tr><tr><td>Built features affected by subsidence</td><td>Repair to pre-mining condition or equivalent unless the owner agrees otherwise</td></tr><tr><td>Community</td><td>Minimise the adverse socio-economic effects associated with mine closure</td></tr></table>	Watercourses to be undermined	Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining	Cliffs	No additional risk to public safety compared to prior to mining	Other land affected by the project	Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of: <ul style="list-style-type: none"><li>local native plant species; and</li><li>a landform consistent with the surrounding environment</li></ul>	Built features affected by subsidence	Repair to pre-mining condition or equivalent unless the owner agrees otherwise	Community	Minimise the adverse socio-economic effects associated with mine closure		
Watercourses to be undermined	Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining												
Cliffs	No additional risk to public safety compared to prior to mining												
Other land affected by the project	Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of: <ul style="list-style-type: none"><li>local native plant species; and</li><li>a landform consistent with the surrounding environment</li></ul>												
Built features affected by subsidence	Repair to pre-mining condition or equivalent unless the owner agrees otherwise												
Community	Minimise the adverse socio-economic effects associated with mine closure												
PA 08_0184 Schedule 03 Condition 056	The Proponent must carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance.		Section 4.3										
PA 08_0184 Schedule 03 Condition 057	<p>Rehabilitation Management Plan</p> <p>The Proponent must prepare and implement a Rehabilitation Management Plan for the project to the satisfaction of Secretary Industry. This plan must:</p> <p>(a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC;</p> <p>(b) be prepared in accordance with any relevant DRE guideline;</p> <p>(c) describe how the rehabilitation of the site would be integrated with the implementation of the offset strategy;</p> <p>(d) build, to the maximum extent practicable, on the other management plans required under this approval; and</p> <p>(e) document the scientific knowledge gained during the rehabilitation, and make it publicly available; and</p> <p>(d) be submitted to DRE for approval within 3 months of the date of final Orders being made by the land and Environment Court in proceedings No.10998 of 2010.</p>		<p>Section 1.2</p> <p>Section 1.6</p> <p>Section 1.2</p> <p>Section 5, 6 and 7</p> <p>Section 13.1</p> <p>Section 8.2</p> <p>Section 1.1.2</p>										
PA 08_0184 Schedule 05 Condition 003	<p>Annual Review</p> <p>By the end of March 2012, and annually thereafter, the Proponent must review the environmental performance of the project to the satisfaction of the Secretary. This review must:</p> <p>(a) describe the development (including any rehabilitation) that was carried out in the past year, and the development that is proposed to be carried out over the next year;</p> <p>(b) include a comprehensive review of the monitoring results and complaints records of the project over the past year, which includes a comparison of these results against the</p> <ul style="list-style-type: none"><li>the relevant statutory requirements, limits or performance measures/criteria;</li><li>the monitoring results of previous years; and</li><li>the relevant predictions in the EA;</li></ul> <p>(c) identify any non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance;</p> <p>(d) identify any trends in the monitoring data over the life of the project;</p> <p>(e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and</p> <p>(f) describe what measures will be implemented over the next year to improve the environmental performance of the project."</p>		Section 10.1										
PA 08_0184 Statement of Commitments 6.6.4	Ecology		Section 5.1-5.2										

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Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
	<ul style="list-style-type: none"> <li>○ any other approvals relevant to the development including the conditions of this mining lease.</li> <li>(c) The MOP must be prepared in accordance with the ESG3: Mining Operations Plan (MOP) Guidelines September 2013 published on the Department's website at <a href="http://www.resources.nsw.gov.au/environment">www.resources.nsw.gov.au/environment</a></li> <li>(d) The lease holder may apply to the Minister to amend an approved MOP at any time.</li> <li>(e) It is not a breach of this condition if: <ul style="list-style-type: none"> <li>• the operations which, but for this condition 3(e) would be a breach of condition 3(a), were necessary to comply with a lawful order or direction given under the <i>Environmental Planning and Assessment Act 1979</i>, the <i>Protection of the Environment Operations Act 1997</i>, the <i>Mine Health and Safety Act 2004 / Coal Mine Health and Safety Act 2002</i> and <i>Mine Health and Safety Regulation 2007 / Coal Mine Health and Safety Regulation 2006</i> or the <i>Work Health and Safety Act 2011</i>; and</li> <li>• the Minister had been notified in writing of the terms of the order or direction prior to the operations constituting the breach being carried out.</li> </ul> </li> <li>(f) The lease holder must prepare a Rehabilitation Report to the satisfaction of the Minister. The report must: <ul style="list-style-type: none"> <li>• provide a detailed review of the progress of rehabilitation against the performance measures and criteria established in the approved MOP;</li> <li>• be submitted annually on the grant anniversary date (or at such other times as agreed by the Minister); and</li> <li>• be prepared in accordance with any relevant annual reporting guidelines published on the Departments's website at <a href="http://www.resources.nsw.gov.au/environment">www.resources.nsw.gov.au/environment</a>.</li> </ul> </li> </ul> <p>Note: The Rehabilitation Report replaces the Annual Environmental Management Report</p>	<p>Section 1.2</p> <p>N/A</p> <p>N/A</p> <p>Section 10.1</p>
<p>ML1467, 1468, ML1511, ML1554 (2.1-2.4 only) Condition 2</p>	<p>MINING, REHABILITATION, ENVIRONMENTAL MANAGEMENT PROCESS (MREMP) MINING OPERATIONS PLAN (MOP)</p> <p>2.1 Mining operations, including mining purposes, must be conducted in accordance with a Mining Operations Plan (the Plan) satisfactory to the Director-General. The Plan together with environmental conditions of development consent and other approvals will form the basis for:</p> <p>a) ongoing mining operations and environmental management; and</p> <p>b) ongoing monitoring of the project.</p> <p>1.2 The Plan must be prepared in accordance with the Director-General's guidelines current at the time of lodgement.</p> <p>2.3 Plan must be lodged with the Director-General:</p> <p>a) prior to the commencement of operations;</p> <p>b) subsequently as appropriate prior to the expiry of any current Plan; and</p> <p>c) in accordance with any direction issued by the Director-General.</p> <p>2.4 The Plan must present a schedule of proposed mine development for a period of up to seven (7) years and contain diagrams and documentation which identify:</p> <p>a) area(s) proposed to be disturbed under the Plan;</p> <p>b) mining and rehabilitation method(s) to be used and their sequence;</p> <p>c) areas to be used for disposal of tailings/waste;</p> <p>d) existing and proposed surface infrastructure;</p> <p>e) progressive rehabilitation schedules;</p>	<p>This MOP and MOP Plans</p>



Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
	<p>f) areas of particular environmental sensitivity;</p> <p>g) water management systems (including erosion and sediment controls);</p> <p>h) proposed resource recovery; and</p> <p>i) where the mine will cease extraction during the term of the Plan, a closure plan including final rehabilitation objectives/methods and post mining land use/vegetation</p> <p>2.5 The Plan when lodged will be reviewed by the Department of Mineral Resources.</p> <p>2.6 The Director-General may within two (2) months of the lodgement of a Plan, require modification and relodgement.</p> <p>2.7 If a requirement in accordance with clause (6) is not issued within two months of the lodgement of a Plan, lease holder may proceed with implementation of the Plan submitted subject to the Judgement of the required security deposit within the specified time.</p> <p>2.8 During the life of the Mining Operations Plan, proposed modifications to the Plan must be lodged with the Director-General and will be subject to the review process outlined in (5) - (7) above.</p>	
CCL741 Condition 2	<p>Environmental Harm</p> <p>The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation or rehabilitation of the development.</p>	Section 1.3
ML1656 Condition 2	<p>Environmental Harm</p> <p>a) The lease holder must implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation or rehabilitation of any activities under this lease.</p> <p>b) For the purposes of this condition:</p> <p>i) environment means components of the earth, including:</p> <p>A) land, air and water, and</p> <p>B) any layer of the atmosphere, and</p> <p>C) any organic or inorganic matter and any living organism, and</p> <p>D) human-made or modified structures and areas,</p> <p>and includes interacting natural ecosystems that include components referred to in paragraphs (A)-(C).</p> <p>ii) harm to the environment includes any direct or indirect alteration of the environment that has the effect of degrading the environment and, without limiting the generality of the above, includes any act or omission that results in pollution, contributes to the extinction or degradation of any threatened species, populations or ecological communities and their habitats and causes impacts to places, objects and features of significance to Aboriginal people.</p>	Section 1.3
ML1468, ML1511 Condition 3	<p>ANNUAL ENVIRONMENTAL MANAGEMENT REPORT (AEMR)</p> <p>The AEMR must be prepared in accordance with the Director-General's guidelines current at the time of reporting and contain a review and forecast of performance for the proceeding and ensuing twelve months in terms of :-</p> <p>a) the accepted Mining Operations Plan</p> <p>b) development consent requirements and conditions</p> <p>c) Environmental Protection Authority and Department of Land and Water Conservations licences and approvals</p> <p>d) any other statutory environmental requirements</p> <p>e) details of any variations to environmental approvals applicable to the lease area and</p>	Section 10.1

Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
	f) where relevant, progress towards final rehabilitation objectives.	
ML1467 Condition 3	<p>Annual Environmental Management Report (AEMR)</p> <p>Within 12 months of the commencement of mining operations and thereafter annually or, at such other times as may be allowed by the Director-General, the lease holder must lodge an Annual Environmental Management Report (AEMR) with the Director-General.</p> <p>The AEMR must be prepared in accordance with the Director-General's guidelines current at the time of reporting and contain a review and forecast of performance for the preceding and ensuing twelve months in terms of;</p> <ul style="list-style-type: none"> <li>the accepted Mining Operations Plan</li> <li>development consent requirements and conditions</li> <li>Environmental Protection Authority and Department of Land and Water Conservation licenses and approvals</li> <li>any other statutory environmental requirements</li> <li>details of any variations to environmental approvals applicable to the lease area; and</li> <li>where relevant, progress towards final rehabilitation objectives</li> </ul> <p>After considering an AEMR the Director-General may, by notice in writing, direct the lease holder to undertake operations, remedial actions or supplementary studies in the manner and within the period specified in the notice to ensure that operations on the lease area are conducted in accordance with sound mining and environmental practice</p> <p>The lease holder shall, as and when directed by the Minister, co-operated with the Director-General to conduct and facilitate review of the AEMR involving other government agencies.</p>	Section 10.1
ML1656 Condition 4	<p>Environment Management Report</p> <p>a) The lease holder must lodge Environmental Management Reports (EMR) with the Director-General annually or at dates otherwise directed by the Director-General.</p> <p>b) The EMR must:</p> <p>i) report against compliance with the MOP;</p> <p>ii) report on progress in respect of rehabilitation completion criteria;</p> <p>iii) report on the extent of compliance with regulatory requirements; and</p> <p>iv) have regard to any relevant guidelines adopted by the Director-General.</p>	Section 10.1
CCL741 Condition 5	The EMR must: report against compliance with the MOP; report on progress in respect of rehabilitation completion criteria; report on the extent of compliance with regulatory requirements; and have regard to any relevant guidelines adopted by the Director-General.	Section 10.1
ML1656, Condition 7	<p>Rehabilitation</p> <p>Any disturbance as a result of activities under this lease must be rehabilitated to the satisfaction of the Director-General.</p>	Section 1.2
CCL741 Condition 7	<p>Rehabilitation</p> <p>Disturbed land must be rehabilitated to a sustainable/agreed end land use to the satisfaction of the Director-General.</p>	Section 1.2
CCL 741 Condition 7	Disturbed land must be rehabilitated to a sustainable/agreed end land use to the satisfaction of the Director-General.	Section 1.2
ML1697, ML1366, ML1341, MPL315, ML1365, ML1754, ML 1798, ML 1799 - Condition 9	<p>Cooperation Agreement</p> <p>The lease holder must make every reasonable attempt, and be able to demonstrate its attempts, to enter into a cooperation agreement with the holder(s) of any overlapping title(s). The cooperation agreement should address but not be limited to issues such as:</p> <ul style="list-style-type: none"> <li>access arrangements</li> </ul>	Section 1.6

Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
ML1656- Condition 24	<ul style="list-style-type: none"> <li>operational interaction procedures</li> <li>dispute resolution</li> <li>information exchange</li> <li>well location</li> <li>timing of drilling</li> <li>potential resource extraction conflicts; and</li> <li>rehabilitation issues.</li> </ul>	
ML1554 Condition 13	<p>Rehabilitation</p> <p>a) Land disturbed must be rehabilitated to a stable and permanent form suitable for a subsequent land use acceptable to the Director-General and in accordance with the Mining Operations Plan so that:</p> <p>b) The lease holder must pay to the designated authority in control of the road (generally the local Council or the Roads and Traffic Authority) the cost incurred in fixing any damage to roads caused by operations carried out under the lease, less any amount paid or payable from the Mine Subsidence Compensation Fund."</p>	Section 4
ML1656 Condition 14	<p>Roads and Tracks</p> <p>a) The lease holder must pay to the relevant roads authority in control of the road or track the reasonable costs incurred by the roads authority in making good any damage to roads or tracks caused by operations carried out under this lease less any amount paid or payable from the Mine Subsidence Compensation Fund.</p> <p>b) During wet weather the use of any road or track must be restricted so as to prevent damage to the road or track.</p> <p>c) Existing access tracks should be used for all operations where reasonably practicable. New access tracks must be kept to a minimum and be positioned in order to minimise damage to the land, watercourses or vegetation.</p> <p>d) Temporary access tracks must be rehabilitated and revegetated to the satisfaction of the Director.-General as soon as reasonably practicable after they are no longer required under this lease.</p>	Section 4.3
ML1467, ML1511 Condition 18	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>The lease holder shall not interfere in any way with any fences on or adjacent to the subject area unless with the prior written approval of the owner thereof or the Minister and subject to such conditions as the Minister may stipulate.</p>	Section 4.3
ML1467, ML1511, ML1468 Condition 19	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>The lease holder shall observe any instruction given or which may be given by the Minister with a view to minimising or preventing public inconvenience or damage to public or private property.</p>	Section 4.3
ML1467, ML1511, ML1468 Condition 20	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>If required to do so by the Minister and within such time as may be stipulated by the Minister the lease holder shall carry out to the satisfaction of the Minister surveys of structures, buildings and pipelines on adjacent landholdings to determine the effect of operations on any such structures, buildings and pipelines.</p>	Section 4.3
ML1467, ML1511 Condition 21	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister any lands within the subject area which may have been disturbed by the lease holder.</p>	Section 4.3

Mining Approval/Tenement	Rehabilitation requirements	Section of MOP where Addressed
MLL1511, ML1467 Condition 22	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>Upon completion of operations on the surface of the subject area or upon the expiry or sooner determination of this authority or any renewal thereof, the lease holder shall remove from such surface such buildings, machinery, plant, equipment, constructions and works as may be directed by the Minister and such surface shall be rehabilitated and left in a clean, tidy and safe condition to the satisfaction of the Minister.</p>	Section 4.3
ML1467, ML1511 Condition 23	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by mining or prospecting operations whether such operations were or were not carried out by the lease holder.</p>	Section 4.3
ML1467, ML1511 Condition 24	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>The lease holder shall take all precautions against causing outbreak of fire on the subject area.</p>	Section 6
ML1467, ML1511 Condition 25	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>The lease holder shall provide and maintain to the satisfaction of the Minister efficient means to prevent contamination, pollution, degradation, erosion or siltation of any river, stream, creek, tributary, lake, dam, reservoir, watercourse, groundwater or catchment area or any undue interference to fish or their environment and shall observe any instruction given or which may be given by the Minister with a view to preventing or minimising the contamination, pollution, degradation, erosion or siltation of any river, stream, creek, tributary, lake, dam, reservoir, watercourse, groundwater or catchment area or any undue interference to fish or their environment.</p>	Section 4.3
ML1468 Condition 25	<p>MANAGEMENT AND REHABILITATION OF LANDS (GENERAL)</p> <p>The lease holder shall provide and maintain, to the satisfaction of the Minister, efficient means to prevent degradation of any river and groundwater system in the catchment area.</p>	Section 4.3
ML1468 Condition 50	<p>PROSPECTING (GENERAL)</p> <p>a) Where the lease holder desires to commence prospecting operations in the subject area the lease holder shall notify the Director General in writing and shall comply with such additional conditions as the Minister may impose including any condition requiring the lodgement of an additional bond of other form of security or rehabilitation of the area affected by such operations.</p> <p>b) Where the lease holder notifies the Director General pursuant to sub paragraph (a) of this condition the lease holder shall furnish with that notification details of the type of prospecting methods that would be adopted and the extent and location of the area that would be affected by them.</p>	Section 2.3.1
ML1511, ML1468 Condition 32	<p>ROADS</p> <p>In the event of operations being conducted on the surface of any road, track or fire trail traversing the subject area or in the event of such operations causing damage to or interference with any such road, track or fire trail the lease holder, at his own expense, shall if directed to do so by the Minister provide to the satisfaction of the Minister an alternate road, track or fire trail in a position as required by the Minister and shall allow free and uninterrupted access along such alternate road, track or fire trail and, if required to do so by the Minister, the lease holder shall upon completion of operations rehabilitate the surface of the original road, track or fire trail to a condition satisfactory to the Minister.</p>	Section 4.3

## 4.2 Post Mining Land Use Goal

The post mining land use goal for the UCMPL Complex contains agricultural land and reforested areas.

Excluding previously mined areas, land within the project area contains five land capability classes, these being Class IV, V, VI, VII and VIII. There are large areas of Class VII land in the proposed Ulan West area, which are lands unsuitable for agricultural and pastoral production. These areas are generally located within the Ulan West mine plan. Following underground mining, the land capability within the subsidence affectation zone will remain unchanged.

The Project has the potential to impact on land capability through ground disturbance associated with open cut mining and through construction of mining infrastructure. The proposed open cut extension area is located within primarily Class V land which consists of less productive grazing lands. The main surface infrastructure will be located in previously disturbed open cut areas and will therefore not impact on land capability. The remaining surface infrastructure is located within agricultural and forested areas but will only result in the disturbance of small areas which are unlikely to have a significant impact on overall land capability.

The proposed final land use for the post-mining open cut disturbance area aims to emulate the pre-mining environment and will enhance local and regional ecological linkages across the project area and with nearby areas. The conceptual final landform design is shown in MOP Plan 4A and 4B.

## 4.3 Rehabilitation Objective

The primary objective of rehabilitation and revegetation of post-mining disturbance areas will be to create a stable final landform with an acceptable post-mining land use capability, being self-sustaining native vegetation characteristic of the pre-mining composition. Ulan Coal shall seek to carry out progressive site rehabilitation as soon as reasonably practicable following disturbance. Rehabilitation objectives for the Primary Domains along with performance indicators and completion criteria are provided in **Appendix B**. Rehabilitation objectives for the Secondary Domains (post mining land use) are specified in **Section 5.2**.

Condition 55, Schedule 3 of PA 08\_0184 requires UCMPL to:

*“.....rehabilitate the site to the satisfaction of Executive Director, Mineral Resources. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA (and depicted conceptually in the figures in Appendix 5 of PA 08\_0184), and comply with the objectives in Table 16...”*

The rehabilitation objectives for the Ulan Complex are shown in **Table 4-2**.

**Table 4-2 Ulan Complex Rehabilitation Objectives (Table 16 of PA 08\_0184)**

Feature	Objective
Mine site (as a whole)	Safe, stable & non-polluting
Surface infrastructure	To be decommissioned and removed, unless the Director-General agrees otherwise
Watercourses to be undermined	Hydraulically and geomorphologic ally stable, with riparian vegetation that is the same or better than prior to mining
Cliffs	No additional risk to public safety compared to prior to mining
Other land affected by the project	Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of: - local native plant species; and - a landform consistent with the surrounding environment

Built features affected by subsidence	Repair to pre-mining condition or equivalent unless the owner agrees otherwise
Community	Minimise the adverse socio-economic effects associated with mine closure

## 5 Rehabilitation Planning and Management

### 5.1 Domain Selection

UCMPL have prepared a Conceptual Mine Closure Plan (CMCP). The preparation and update of the Ulan CMCP (ULNCX-111515275-1970) is in accordance with the Glencore Coal Assets Australia (GCAA) Protocol 11.17 Mine Closure Planning (GCAA-625378177-13713).

The Primary domains (Operational Domains) are defined on the basis of land management within the mine site, with unique operational and functional purpose and therefore similar geophysical characteristics during mining.

The Secondary domains (Post Mining Land Use Domains) are defined as land management units characterised by a similar post mining land use objective (i.e. following mining).

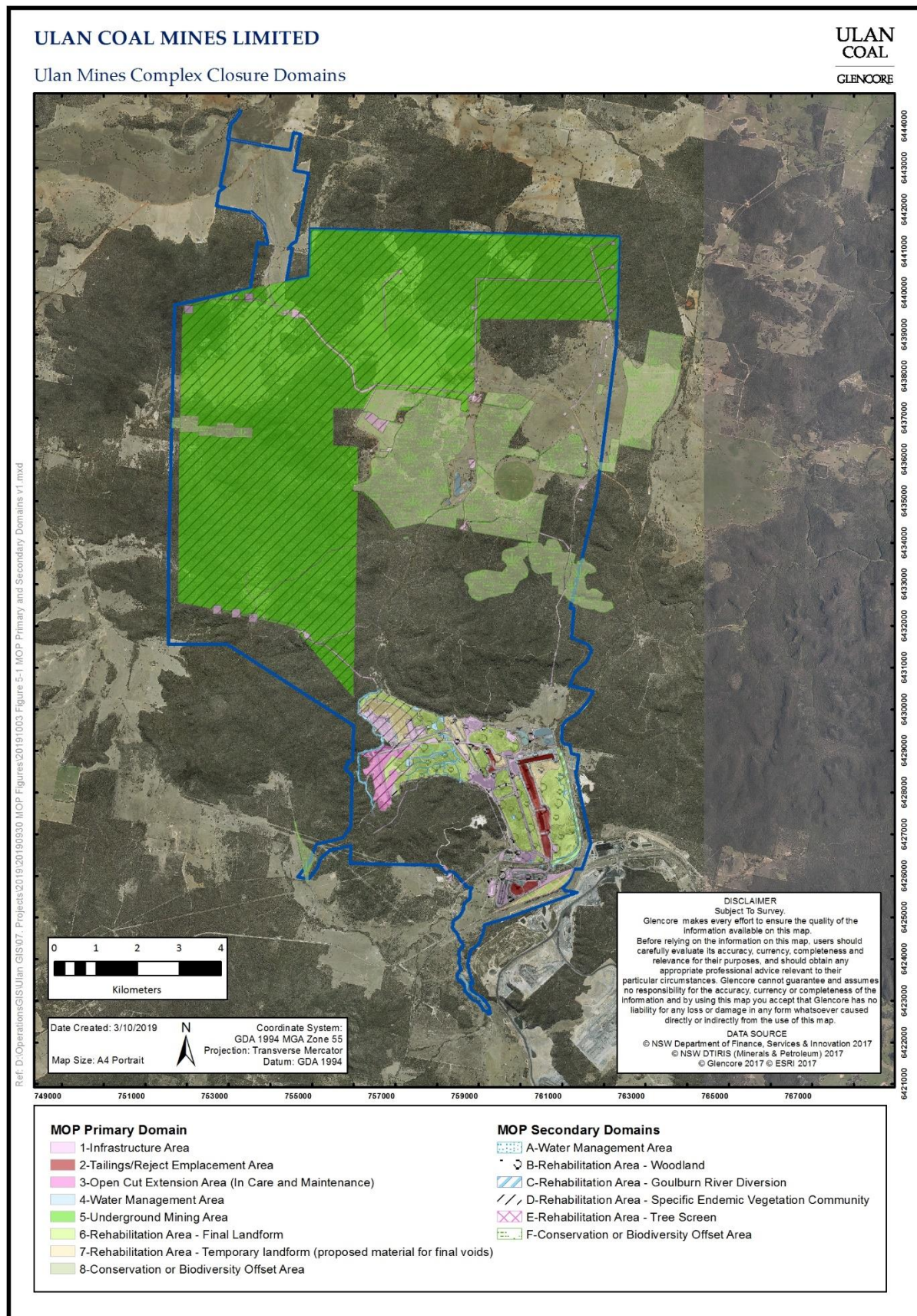
**Table 5-1** outlines the Mine Closure Domains and provides a brief description of each domain. **Figure 5-1** displays each Mine Closure Domain as they relate to **Table 5-1**.

**Table 5-1 – Ulan Mines Complex Closure Domains**

Code	Primary Domains (Operational)	Hectares	Code	Secondary Domains (Post Mining Land Use)
1	Infrastructure Area	553	A	Water Management Area
2	Tailings/Reject Emplacement Area (this area now includes TD3)	97	B	Rehabilitation Area – Woodland
3	Open Cut Extension Area (In Care and Maintenance)	76	C	Rehabilitation Area – Goulburn River Diversion
4	Water Management Area	114	D	Rehabilitation Area – Specific Endemic Vegetation Community
5	Underground Mining Area	5,251	E	Rehabilitation Area – Tree Screen
6	Rehabilitation Area – Final landform	577	F	Conservation or Biodiversity Offset Area
	Rehabilitation Remediation (See Figure 5-3)	62		
7	Rehabilitation Area – Temporary landform (proposed material for final voids)	111		
	East pit	35.8		
	Northwest Barrier pit	6.7		
	Northwest Barrier pit (UU Box Cut)	20.5		

	Ulan West Box Cut	48		
8	Conservation or Biodiversity Offset Area	1,738		





**Figure 5-1 Ulan Mines Complex Closure Domains**

## 5.2 Domain Rehabilitation Objectives

The Secondary Domains define the Post Mining Land Use, the Primary Rehabilitation Objectives of the Secondary Domains are provided in **Table 5-2**.

**Table 5-2 Primary Rehabilitation Objectives by Secondary Domain**

Code	Secondary Domains (Post Mining Land Use)	Primary Objectives
A	Water Management Area	Water quality non-polluting and appropriate for end land use
B	Rehabilitation Area –Woodland	Rehabilitation area floristics and structure is representative of a native woodland Native fauna habitat present within rehabilitation area
C	Rehabilitation Area – Goulburn River Diversion	Landform functional and performing as designed Microbial characterisation of growth medium Dispersive and acidic soils adequately controlled Improve Ecological Function <sup>16</sup>
D	Rehabilitation Area – Specific Endemic Vegetation Community	Rehabilitation area floristics and structure is comparable to analogue native vegetation community Native fauna habitat present within rehabilitation area
E	Rehabilitation Area – Tree Screen	Visual Vegetation Screening along Ulan Road
F	Conservation or Biodiversity Offset Area	Habitat suitable for threatened and endemic species available with offset areas Re-establishment of 69 ha of Endangered Ecological Communities (EEC) Secure offset areas in perpetuity on land title

## 5.3 Rehabilitation Phases

**Table 5-3** outlines the general rehabilitation phases, a general description of the phases as they apply to the Ulan Complex and general maintenance and monitoring required during each phase. Responsibilities for maintenance and monitoring activities are identified in **Section 12.2** of this MOP.

**Table 5-3 Rehabilitation Phases**

Phase No.	Rehabilitation Phases	Description of Phase	Planning Instrument/s for Phase Completion
1	Decommissioning	Infrastructure removed, contamination remediated and services decommissioned	Conceptual Mine Closure Plan
2	Landform Establishment	Conduct materials classification. Establish slope and drainage and aspect.	Conceptual Mine Closure Plan Final Landform Design

<sup>16</sup> Objectives as described in the approved Goulburn River Diversion Remediation Plan (ULNCX-111515275-1641)

3	Growth Medium Development	Identify physical, chemical and biological characteristics of soil and determine amelioration and spreading requirements. Species selection and seeding timing and methods.	Ulan Complex Annual Rehabilitation Plan
4	Ecosystem and Land Use Establishment	Monitoring landform for erosion. Monitoring rehabilitation growth for vegetation density, ecosystem composition and a range of structural habitat.	Biodiversity Management Plan (pest control, weed control, habitat argumentation, bushfire management, rehabilitation monitoring methodology and schedule)
5	Ecosystem and Land Use Sustainability	Ecosystem composition, ecosystem structure, reproduction and fauna/habitat presence.	Biodiversity Management Plan (pest control, weed control, habitat argumentation, bushfire management, rehabilitation monitoring methodology and schedule)
6	Relinquished Lands	Achievement of completion criteria in other phases where they apply.	Not Applicable.

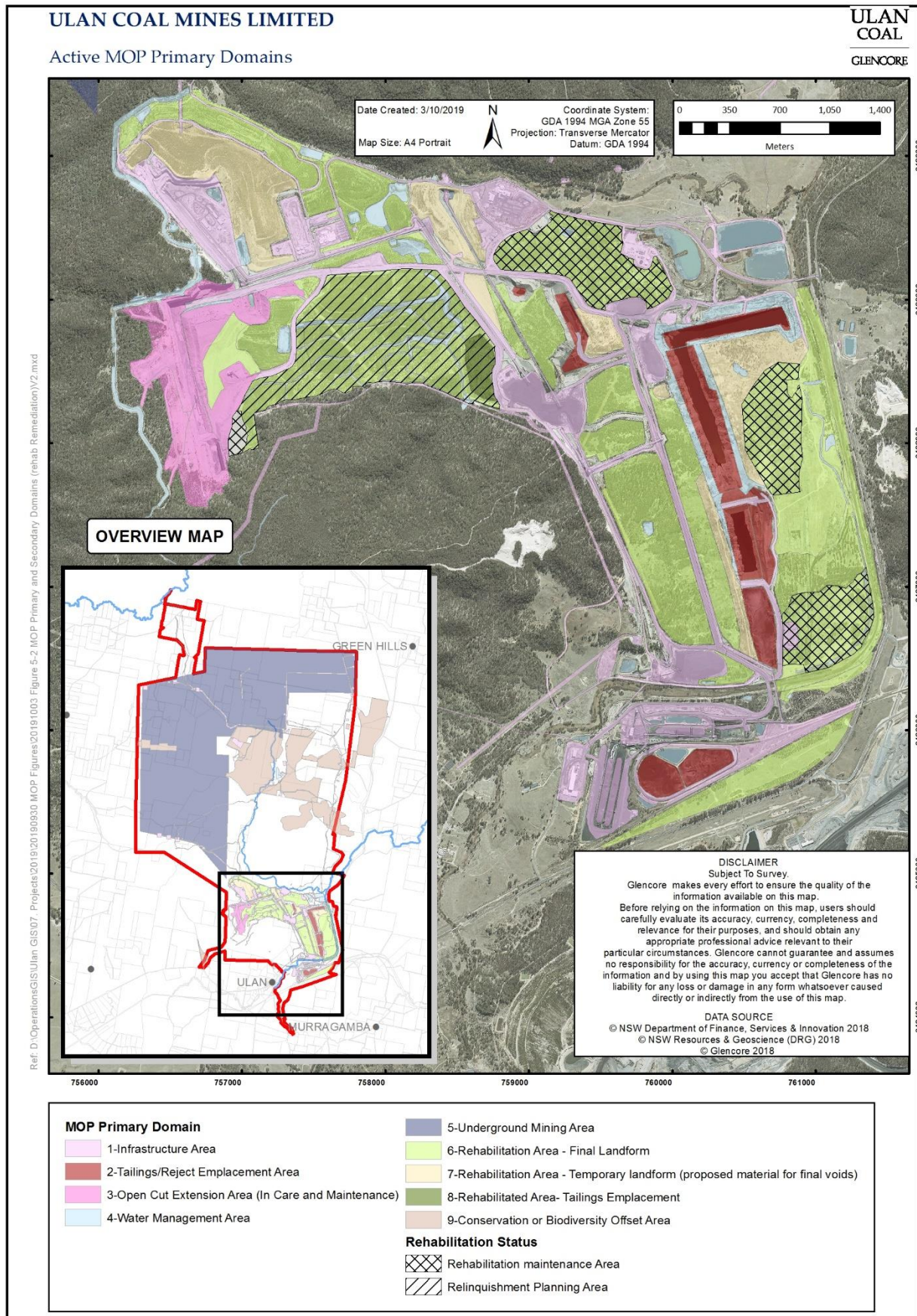
The following Primary Domains will be active for the duration of the MOP period:

- Domain 1: Infrastructure Area
- Domain 2: Tailings/Reject Emplacement Areas
- Domain 3: Open Cut Extension Area (In Care and Maintenance)
- Domain 4: Water Management Area
- Domain 5: Underground Mining Area
- Domain 6 Rehabilitation Area – Final landform

Rehabilitation Areas once established are allocated a Rehabilitation Monitoring Domain to enable tracking of the progression of rehabilitation areas through the rehabilitation phases. The rehabilitation monitoring domains for the MOP period are shown in **Figure 5-2**. The rehabilitation monitoring domains have been developed based on the primary MOP domains 6 (Rehabilitation Area- Final Landform), 7 (Rehabilitation Area- Temporary Landform) and 8 (Conservation and Biodiversity Offset Areas), splitting these domains by secondary domain and then splitting secondary domains B and C further based on the age of the existing/planned rehabilitation (areas 1 to 10). Domain 6 will see maintenance activities undertaken in accordance with monitoring results and recommendations. A 62 ha area of poorly established rehabilitation will also be remediated during the MOP period in domain 6 (see **Figure 5-3**). **Table 5-3** identifies the rehabilitation phase which each rehabilitation area is expected to be in for each year of the MOP period. Due to the close proximity of rehabilitation areas to existing operational areas no lands are expected to be relinquished during the MOP period.

The Biodiversity Offset Areas are expected to remain in Phases 3 and 4 for the duration of the MOP period due to specific completion criteria. Temporary Rehabilitation Areas will not progress past Phase 2 as they are likely to be subject to re-disturbance for the creation of the final landform post closure. All other areas are expected to be in Phase 5 by the end of the MOP period.





**Figure 5-2 Active MOP Primary Domains**

**Table 5-4 Rehabilitation Phases across Rehabilitation Monitoring Domains for MOP Period**

Rehabilitation Phase for each Year of MOP	Yr 1					Yr 2					Yr 3					Yr 4					Yr 5					Yr 6					Yr 7				
Rehabilitation Monitoring Domains	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Biodiversity Vegetation Offset Areas																																			
Goulburn River Diversion																																			
Tree Screen																																			
Temporary Rehabilitation Areas																																			
1 - East Pit Rehab																																			
2 - Central East Pit Rehab																																			
3 - West East Pit Rehab																																			
4 - North West Barrier Pit																																			
5 - Peanut Dam Rehab																																			
6 - CWS Stage 1 Rehab																																			
7 - USO 2013/14 Rehab																																			
8 - Ulan West Box Cut 2014 Rehab																																			
9 - Open Cut Extension 2013/14 Rehab																																			
10 - Open Cut Extension 2017 Rehab																																			
11 - East Pit Rehab remediation																																			

## 6 Performance Indicators, and Completion/Relinquishment Criteria

**Appendix B** contains a set of completion criteria for the Ulan Mine Complex. The rehabilitation criteria for each rehabilitation Phase are provided for each Secondary Closure Domain (Post Mining Land Use). The primary aim of the completion criteria is to ensure appropriate rehabilitation is undertaken to achieve the required rehabilitation outcomes in the required timeframes.

These preliminary criteria are relevant to the various components of the impact mitigation strategies, and detail the goals which must be achieved prior to these strategies being deemed a success.

These criteria will be refined in consultation with relevant agencies throughout the MOP period. It is expected that attainment of all of the final completion criteria will signify the achievement of the overall goal of returning disturbed land to pre-mining capability as a minimum. This includes the establishment of native ecosystems representative of the pre-mining environment.

Ulan Coal will continue to implement and improve the rehabilitation management and monitoring program defined in the Biodiversity Management Plan during the MOP period. Criteria may be refined during the MOP period based on inputs from the rehabilitation monitoring including any relevant research projects or rehabilitation trial outcomes.



## 7 Rehabilitation Implementation

### 7.1 Status at MOP Commencement

In order for rehabilitation planning to address the complexity of different land uses and rehabilitation objectives, the site is divided into Primary Domains based on current and life of mine operational land use and secondary domains based on post mining land use. **Sections 7.1.1 to 7.1.8** identify the status of rehabilitation within the Primary Domains at the commencement of the MOP period.

#### 7.1.1 Domain 1 – Infrastructure Area

The Ulan Coal Complex will continue to operate two underground mining operations (Ulan West and Ulan Underground) during the MOP period, this domain contains infrastructure to support the underground mining operations. The defined infrastructure area also contains the conceptual proposed infrastructure corridors (from the EA and subsequent approved modifications) for the underground operations for the life of mine.

Infrastructure within this domain at the commencement of the MOP period includes the following mining related surface infrastructure; office buildings, bathhouses, car parking, workshops, stores, CHPP, product coal stockpiles, ROM coal stockpiles, rail loop line, rail load out facilities, overland conveyors, coal sizing station, non- operational powerhouse building, powerlines, pipelines, haul roads, access roads, the Bobadeen Irrigation Scheme (Centre-pivot irrigators), the Bobadeen Basalt Quarry, substations, services boreholes, dewatering stations (for water extraction from the underground) and ventilation facilities (for ventilation of the underground workings).

#### 7.1.2 Domain 2 – Tailings/Reject Emplacement Area

As outlined in the UCMPL Life of Mine Coal Reject Management Strategy, coarse rejects and tailings will be used to fill available void space for the remaining life of the Ulan Mine Complex.

The existing tailings emplacement methodology involves pumping of tailings into the East Pit Central Ramp Tailings Dam (TD) No.2, construct TD No. 3 north of TD No.2, which will then be utilised once TD No.2 is full.

It is anticipated that the combined storage volume will be sufficient to store tailings for the remainder of the life of the mine. The previous East Pit Tailings Dam No.1 and two tailings storage dams within the Ulan Train Loop are inactive at the commencement of the MOP period.

During this MOP period, coarse rejects will be emplaced in the Barrier Pit and used for the construction of the East Pit Central Ramp Tailings Dam No.3. Depending on the varying washing schedule, co-disposal of tailings and coarse rejects may be required.

The existing and proposed tailings and/or reject emplacement areas form Domain 2, this is an active domain as reject and tailings will be produced throughout the MOP period from the washing of a portion of underground ROM produced. Based on monitoring and design there is a potential that the East Pit Tailings Dam No.1 may be rehabilitated toward the end of the MOP period.

Previously rehabilitated areas of tailings/reject emplacement at the commencement of the MOP period form part of Domain 6.

### 7.1.3 Domain 3 – Open Cut Extension Area

Domain 3 covers an area of approximately 76 ha which contains the Open Cut Extension Area; in care and maintenance since 10 October 2016<sup>17</sup>. Approximately 36 ha of this area is inactive spoil stockpile, 10 ha is open cut void (coal extracted) and 30 ha is top soil tripped land within the future mining area.

Previously rehabilitated areas of the Open Cut Extension Area at the commencement of the MOP period form part of Domain 6.

### 7.1.4 Domain 4 – Water Management Area

Domain 4 covers an area of approximately 114 ha across both clean and dirty water management areas of the site. This domain at the commencement of the MOP period includes mine water storage dams, in pit water storage areas (East Pit), sediment dams, drainage channels and clean water diversion drains. This domain is expected to remain active during the MOP period.

### 7.1.5 Domain 5 – Underground Mining Area

Domain 5 covers a surface area of approximately 5,255 ha above the Ulan Underground and Ulan West Mines (excluding infrastructure areas within Domain 1). The area consists of mostly natural bushland with some previously cleared areas over the Ulan Underground Mine utilised for grazing and pivot irrigation as part of the Bobadeen Irrigation Project.

Exploration Drilling has previously been undertaken within this Domain, rehabilitation works completed included the sealing and surface rehabilitation of exploration sites.

Remediation of small areas of land surface subsidence impacts (surface cracking and land ripples) have previously been undertaken within this domain on the surface above recently (12 months prior to commencement of the MOP period) extracted longwall panels. Historical underground mining areas are excluded from this Domain as any land remediation was completed within previous MOP periods (reported via the Annual Review and submission of the Subsidence Management Plan/Extraction Plan required reports).

### 7.1.6 Domain 6 – Rehabilitation Area – Final Landform

Domain 6 covers an area of approximately 639 ha, encompassing all current open cut rehabilitation areas consistent with the final landform design. Ulan Coal commenced rehabilitation activities within this area in 1991 (following previous open cut mining operations), with progressive rehabilitation occurring to 2017 (within the Open Cut Extension Area) following mining. 62 ha of poorly established rehabilitation has been identified and will be remediated during the MOP period.

Domain 6 includes an area of approximately 27 ha accommodating a visual tree screen to reduce the visual impact of the Ulan Surface Operations from the Ulan Road. Significant earth works and replanting of trees were completed in 2010.

Remediation activities occurred progressively along a 3.6 km section of the Goulburn River Diversion during the previous MOP period and all remediation activities associated with the Goulburn River Diversion were completed in 2018. These works included reducing the steepness of the batter, installing bank contours and drainage structures, reinforcement of batter toe, revegetation of bank slopes, improved overland drainage above slopes and increased geomorphologic diversity within the channel. Works were conducted in accordance with the approved *Goulburn River Diversion Remediation Plan (ULNCX-111515275-1641)*.

<sup>17</sup> Suspension of Open Cut Mining Operations within the Open Cut Extension as notified to DRE on 5 September 2016.

## 7.1.7 Domain 7 – Rehabilitation Area – Temporary Landform

Domain 7 covers an area of approximately 111 ha. The four areas that make up this domain contain material for capping tailings dams, reject emplacement areas and final landform shaping of the pit voids;

- East Pit (37.8ha); these areas immediately surrounding the East Pit are proposed for capping material for tailings dams and the final void. The majority of this area was shaped, contoured, topsoiled and seeded in 2002, area is stable and partially vegetated;
- Ulan West Box Cut (48ha); Dumps 3 and 4 immediately surrounding the Box Cut are for final void shaping. This area was shaped, topsoiled and seeded in 2014, revegetation is stable and effective. Water runoff from this area reports to the clean water system;
- Northwest Barrier pit (6.7ha); material retained for capping of the barrier pit course reject implement area, this material is stable and contained within disturbed areas; and
- Northwest Barrier Pit (Ulan Underground Box Cut 20.5ha); material stockpiled for backfilling area has been shaped, contoured and stable with some natural regeneration occurring.

It is not deemed practicable to complete further rehabilitation to these areas as they are stable, with good drainage and vegetated to varying standards. All the material is in close proximity to where it will be utilised for final landform shaping.

## 7.1.8 Domain 8 – Conservation or Biodiversity Offset Area

Domain 8 covers approximately 1,715 ha which consists of four conservation offset areas and three biodiversity offset areas;

- Brokenback Conservation Area (58 ha),
- Spring Gully Conservation Area (273 ha),
- Bobadeen Grinding Groove Conservation Area (3.4 ha),
- Valley Way Grinding Groove Conservation Area (0.8 ha),
- Bobadeen Vegetation Offset Area (1,116 ha including Bobadeen Corridor Offset Area),
- Bobadeen East Vegetation Offset Area (243 ha) and
- Highett Road *Acacia Ausfeldii* Management Area (21 ha).

Remediation activities were undertaken within the Bobadeen and Bobadeen East Vegetation Offset Areas during the previous MOP period. Remediation activities to restore previous farmland areas to Endangered Ecological Communities (EEC) were undertaken in accordance with the Offset Management Program (Appendix B of the BMP).

## 7.2 Proposed Rehabilitation Activities during the MOP Term

Rehabilitation activities previously completed within the MOP period include:

- 12 ha of Grey Box Woodland/Ironbark Open Forest Rehabilitation was completed within the Open Cut Extension Area on previously shaped spoil in late 2017;
- 3 ha of temporary woodland rehabilitation adjacent to the Ulan West ROM conveyor was completed within Domain 7 in 2018; and
- Completion of the Goulburn River Remediation project.

Proposed remaining rehabilitation activities to occur within the MOP period include:

- 62 hectares of rehabilitation remediation within Domain 6 East Pit area (see **Figure 5-2**);
- Submission of EES2 for East Pit west;
- Gap analysis for 2010 to 2014 rehabilitation;
- Preparation of remedial plans for East Pit south and 2008/2009 rehabilitation and implementation of remedial plans.

Additional rehabilitation activities which may take place late during the MOP period include rehabilitation of the following:

- Rehabilitation of the East Pit Tailings Dam 1 within Domain 2;
- Rehabilitation of Ulan Underground Ventilation Shaft No.1, Maingate 22 and 23 dewatering facilities within Domain 1;
- Rehabilitation of Ulan West Shaft 1, Maingate 1 end of block ventilation facility, Tailgate 1 dewatering facility and LW6 end of block ventilation facility within Domain 1; and
- Underground Services boreholes no longer used within Domain 1.

The timing of these rehabilitation activities are not confirmed and therefore they are not included in Table 7-1 below.

**Table 7-1 Disturbance and Rehabilitation Progression during the term of the MOP**

Year	Total Disturbance Area (ha)*	Total Rehabilitation Area (ha) (per MOP Year)**	Cumulative Rehabilitation Area	Comments/Explanation (provide list of key changes)
At start of MOP (1 Dec 2017)	1263	12	584	
1 (31 Dec 2018)	1285	3	599	New disturbance for Ulan West Infrastructure Corridor and Services Pad for dewatering and ventilation of LW6, approximately 22 ha. Minor development areas 4ha
2 (31 Dec 2019)	1289	0	599	Minor development areas 4ha
3 (31 Dec 2020)	1306.5	0	599	Ulan West South West infrastructure corridor 9.5ha. Minor development areas 4ha
4 (31 Dec 2021)	1310.5	0	599	New disturbance for Ulan Underground Infrastructure Corridor and Services Pad for dewatering of LW30, approximately 4 ha. Minor development areas 4ha
5 (31 Dec 2022)	1320.5	0	599	New disturbance for Ulan West Infrastructure Corridor and Services Pad for ventilation of LW8b, approximately 6 ha. Minor development areas 4ha
6 (31 Dec 2023)	1335.5	0	599	New disturbance for Ulan Underground Infrastructure Corridor and Services Pad for dewatering of LW31, approximately 4 ha. Minor development areas 4ha  New disturbance for Ulan West Infrastructure Corridor and Services Pad for dewatering and ventilation of LW9a, approximately 7 ha.
At End of MOP (31 Dec 2024)	1343.5	0	599	New disturbance for Ulan West Infrastructure Corridor and Services Pad for ventilation of LW9b, approximately 4 ha. Minor development areas 4ha

\* Total disturbance area includes areas of land which are within the following phases: Active and Decommissioning. Temporary rehabilitation is to be considered as an active mining area for the purposes of this table.

\*\* Total Rehabilitation Area includes areas of land which are within the following phases: Landform Establishment and Growth Medium Development, Ecosystem and Land Use Establishment, and Ecosystem and Land Use Sustainability.

## 7.2.1 Domain 1 – Infrastructure Area

Infrastructure areas to the north and west of the project area required to support underground mining will continue to be constructed during the MOP period generally in accordance with conceptual approved<sup>18</sup> infrastructure corridors included in Domain 1. A total of approximately 44.62 ha is expected to be disturbed for the installation of infrastructure within the MOP period, the approximate areas of disturbance by MOP year and project are provided in **Table 7-1**.

Additional rehabilitation activities which may take place late during the MOP period within Domain 1 include rehabilitation of the following:

<sup>18</sup> As approved by the Project Approval PA 08\_0184 and subsequent modifications.

- Rehabilitation of Ulan Underground Ventilation Shaft No.1, Maingate 22 and 23 dewatering facilities;
- Rehabilitation of Ulan West Shaft 1, Maingate 1 end of block ventilation facility, Tailgate 1 dewatering facility and LW6 end of block ventilation facility; and
- Underground Services boreholes no longer used.

## 7.2.2 Domain 2 – Tailings/Reject Emplacement Area

Tailings No.3 dam may be constructed if required during the MOP period within the existing disturbed area of the East Pit.

The capping and rehabilitation of the East Pit Tailings Dam No.1 may occur late within the MOP Period.

## 7.2.3 Domain 3 – Open Cut Extension Area

No further disturbance or rehabilitation will be undertaken within this domain during the MOP period<sup>19</sup>.

## 7.2.4 Domain 4 – Water Management Area

An area of approximately 0.4 ha will be disturbed for the eastern extension to the Ulan Open Cut Clean Water Diversion Drain which will reduce the inflow of clean water into the Ulan Open Cut Extension Area (pending approval of Mining Lease Application 470). The disturbance will be temporary in nature as the area will be turfed to facilitate a rapid achievement of acceptable water quality within the drain. Once water quality monitoring results are acceptable the area will be linked into the existing Open Cut Clean Water Diversion Drain.

No rehabilitation works will be conducted in this Domain during the MOP period.

## 7.2.5 Domain 5 – Underground Mining Area

Exploration Drilling will continue to be undertaken within this Domain, rehabilitation works involving the sealing and surface rehabilitation of exploration sites will be undertaken following drilling. Exploration rehabilitation will be undertaken in accordance with the relevant DRE guidelines and Glencore protocols and procedures.

Remediation of small areas of land surface subsidence impacts (generally surface cracking and land ripples) will be undertaken as required within this domain. A Subsidence Remediation Management Plan is developed and implemented for the Ulan West and Ulan Underground Extraction Plan Areas.

## 7.2.6 Domain 6 – Rehabilitation Area – Final Landform

The remediation of the Goulburn River Diversion was completed in 2018 in accordance with the approved Goulburn River Remediation Plan.

No further rehabilitation works are anticipated to be required within the Tree Screen Area during the MOP period.

62 hectares of rehabilitation remediation within Domain 6 East Pit area (see figure 5-3).

Remediation/improvement activities required to be implemented within existing open cut rehabilitation areas will be outlined annually within the Annual Review.

<sup>19</sup> Based on changes to market or business conditions Ulan Coal may decide to recommence operations within the Open Cut Extension Area, in which case Ulan Coal would submit notification of recommencement and a revised MOP to DRE.



## 7.2.7 Domain 7 – Rehabilitation Area – Temporary Landform

No rehabilitation works are planned in this Domain during the MOP period.

Final rehabilitation works will not be undertaken in this area until infrastructure is no longer required or tailings/reject emplacement areas are full and deemed safe to rehabilitate.

The volume of spoil required for capping the East Pit is estimated at 6,500,000 m<sup>3</sup>, this will be sourced from 35.8 ha of the temporary rehab stockpiles and infrastructure areas adjacent to the East Pit.

## 7.2.8 Domain 8 – Conservation or Biodiversity Offset Area

Remediation activities to restore previously farmland areas to Endangered Ecological Communities (EEC) will continue to be undertaken in accordance with the Offset Management Program (Appendix B of the Biodiversity Management Plan) during the MOP period.

## 7.3 Summary of Rehabilitation Areas during MOP Term

**Table 7-2** provides a summary of the anticipated progression of rehabilitation and site disturbance by Primary and Secondary Domain during the MOP period.

**Table 7-2 Summary of Progression of Rehabilitation by Domain during the term of the MOP**

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area at start of MOP (ha)	Area at end of MOP (ha)
Infrastructure (1)	Rehabilitation Area – Woodland (B)	1B	Active	616	616
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>616</b>	<b>616</b>
	Rehabilitation Area – Specific Endemic Vegetation Community (D)	1D	Active	217	260
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>217</b>	<b>260</b>
Tailings / Reject Emplacement (2)	Rehabilitation Area – Woodland (B)	2B	Active	97	97
			Decommissioning	0	0
			Landform Est.	0	0

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area at start of MOP (ha)	Area at end of MOP (ha)
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>97</b>	<b>97</b>
Open Cut Extension Area (In Care and Maintenance) (3)	Rehabilitation Area – Specific Endemic Vegetation Community (D)	3D	Active	76	76
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>76</b>	<b>76</b>
Water Management Area (4)	Water Management Area (A)	4A	Active	0	0
			Decommissioning		
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development ( <i>clean water system</i> )	47.5	47.9
			<b>Total</b>	<b>47.5</b>	<b>47.9</b>
	Rehabilitation Area – Woodland (B)	4B	Active ( <i>dirty water system</i> )	83	83
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>83.39</b>	<b>83.39</b>
	Rehabilitation Area – Specific Endemic Vegetation Community (D)	4D	Active ( <i>dirty water system</i> )	14	14
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area at start of MOP (ha)	Area at end of MOP (ha)
			Ecosystem Development	0	0
			<b>Total</b>	<b>14</b>	<b>14</b>
Underground Mining Area (5)	Rehabilitation Area – Specific Endemic Vegetation Community (D)	5D	Active	5,251	5,251
			Decommissioning	0	0
			Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>5,251</b>	<b>5,251</b>
Rehabilitation Area – Final Landform (6)	Rehabilitation Area – Woodland (B)	6B	Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est	411	0
			Ecosystem Development	0	411
			<b>Total</b>	<b>411</b>	<b>411</b>
	Rehabilitation Area – Goulburn River Diversion (C)	6C	Landform Est.	23	0
			Growth Medium Development	5	
			Ecosystem Est.	0	0
			Ecosystem Development	0	28
			<b>Total</b>	<b>28</b>	<b>28</b>
	Rehabilitation Area – Specific Endemic Vegetation Community (D)	6D	Landform Est.	0	0
			Growth Medium Development	0	0
			Ecosystem Est	49	0
			Ecosystem Development	0	62
			<b>Total</b>	<b>49</b>	<b>62</b>
	Rehabilitation Area – Tree Screen (E)	6E	Ecosystem Development	27	27
			<b>Total</b>	<b>27</b>	<b>27</b>
Rehabilitation Area – Temporary landform (7)	Rehabilitation Area – Woodland (B)	7B	Landform Est.	63	63
			Growth Medium Development	0	0
			Ecosystem Est.	0	0
			Ecosystem Development	0	0
			<b>Total</b>	<b>63</b>	<b>63</b>

Primary Domain	Secondary Domain	Code (with map legend)	Rehabilitation Phase	Area at start of MOP (ha)	Area at end of MOP (ha)
			<b>Total</b>	<b>63</b>	<b>63</b>
	Rehabilitation Area – Specific Endemic Vegetation Community (D)	7D	Landform Est.	48	48
			Growth Medium Development	0	0
			Ecosystem Est.		
			Ecosystem Development	0	0
			<b>Total</b>	<b>0</b>	<b>0</b>
Conservation or Biodiversity Offset Area (8)	Conservation or Biodiversity Offset Area (F)	8F	Ecosystem Est./Ecosystem Development (Vegetation Offset Areas)	1,715	1,715
			<b>Total</b>	<b>1,715</b>	<b>1,715</b>

## 8 Rehabilitation Monitoring and Research

### 8.1 Rehabilitation Monitoring

In accordance with the GCAA Standard *11.16 Completion Criteria and Rehabilitation Monitoring* (GCAA-625378177-10336), Ulan Coal have developed a rehabilitation monitoring program. The program assesses progress toward completion criteria (Section 6) and the need for any intervention.

The objectives of the program are to:

- Assess the long term stability and functioning of rehabilitation areas;
- Assess rehabilitation performance against the closure criteria; and
- Facilitate continuous improvement in rehabilitation practices.

The monitoring of revegetation will focus on the most appropriate indicators and methods that:

- provide a good indication of the status of the environmental value that the Project aims to protect;
- are relatively simple to measure and are reproducible; and
- are cost effective.

Monitoring requirements (including sites and methodologies) for rehabilitation areas are detailed in the *Biodiversity Management Plan* (ULNCX- 111515275- 225). Floristic and Fauna site biodiversity monitoring schedules are available within Appendix F and G of the BMP.

The Goulburn River Remediation monitoring program (including sites and methodologies) is contained within the *Goulburn River Diversion Remediation Plan* (ULNCX-111515275-1641).

Aspects of the rehabilitation monitoring program are discussed in the sections below.

#### 8.1.2 Rehabilitation Records

Ulan Coal records the details of each rehabilitation campaign so that they are available for later interpretation to inform the continual improvement process and (where required) revise rehabilitation methodologies.

Rehabilitation methodology records are documented for each rehabilitation area including:

- landform design;
- drainage design;
- substrate characterisation;
- site preparation techniques (e.g. topsoil and source, time of sowing, soil ameliorants used, etc.);
- revegetation methodologies (e.g. rate and type of fertiliser, cover crop and rate, species composition, seed viability);
- weather conditions;
- photographic records; and
- initial follow-up care and maintenance works.

#### 8.1.3 Rehabilitation Area Walkover Inspections

The rehabilitation monitoring program includes internal annual inspections for all rehabilitation areas.

The purpose of the inspections are to provide a “rapid” style assessment (via a walkover) of all rehabilitation areas at Ulan Coal and identify rehabilitation failures or maintenance issues that, if left unchecked, could hinder rehabilitation success.

The scope of the rehabilitation area inspections include, but is not limited to:

- Evidence of erosion (rill, gully and tunnel erosion);
- Stability and functioning of erosion and sediment control and water management structures;
- Visual assessment of vegetation cover, species diversity, vegetation health and growth rates;
- Evidence of use of rehabilitation areas by target native fauna species; and
- Presence of weeds and pests.

Reasonable and feasible management actions are identified for less than adequate establishment. Where necessary, rehabilitation procedures will be amended accordingly.

## 8.1.4 Annual Ecological Monitoring Program

Suitably qualified and experienced ecologists undertake flora and fauna monitoring annually for all rehabilitation areas, offset areas, subsidence areas and remnant vegetation areas.

The ecological monitoring program includes monitoring of rehabilitation monitoring plots and control sites (analogue sites). The monitoring program is refined based on recommendations within the annual ecological reports and may also be refined as mine closure criteria is refined based on the outcomes of rehabilitation monitoring to date.

## 8.2 Research and Rehabilitation Trials and Use of Analogue Sites

UCMPL will conduct rehabilitation trials and partake in research projects during the MOP period as appropriate for the management of the site rehabilitation. Results from all rehabilitation and/or scientific trials undertaken onsite will be reported in the Annual Review.

The following rehabilitation trials were undertaken in the previous MOP period, and their learnings have been incorporated into the current site rehabilitation plan and methodologies:

- The use of OGM as a replacement for topsoil trial undertaken in 2017 within the Goulburn River Diversion and East Pit Rehabilitation Area;
- Establishment of two trial plots of relocated *Acacia Ausfeldii* from the cleared Open Cut Extension Area to quantify the success of different establishment techniques<sup>20</sup>;
- The addition of *Acacia Ausfeldii* seed to the seed mix used within the Open Cut Extension Area;
- Trial relocation of *Scant Pomaderiss* found within the Open Cut Extension Area;
- Direct seeding trials were undertaken within the Biodiversity Vegetation Offset Area planting areas to determine the success of this revegetation method with comparison to tube stock and hand seeding methodologies; and
- Brush matting with Eucalypt and Acacia species trialled as a method for facilitating natural regeneration within the Biodiversity Vegetation Offset Areas.

UCMPL is a key contributor to the following ACARP Projects to be undertaken within the MOP period:

Closure Criteria for River Diversions: An Alternative to Reference Sites C25031: The use of reference sites for establishing closure criteria in areas disturbed by mining activities (such as river diversions) is accepted by regulators across Australia. Sites are considered rehabilitated when their condition approximates that of a natural co-occurring reference site. However, this approach often creates

<sup>20</sup> Both trial plots proved successful as demonstrated by monitoring reported in the 2016 Annual Review. PA 08\_0184 Statement of Commitment 6.6.8 does not apply. The Highett Rd *Acacia Ausfeldii* Management Area offset will be secured in perpetuity as per PA 08\_0184 Schedule 3 Condition 43.



unrealistic targets for miners seeking to close rehabilitated lands. In this project researchers will evaluate a new, more achievable approach to the closure of mine sites by comparing rehabilitated sites to the natural variability of the local environment, rather than specific reference sites. The outcome of this new approach to closure criteria will allow miners to create realistic and definable targets for relinquishing rehabilitation land, potentially simplifying closure and project approvals.

Towards Closure of Saline Pit Lakes: Understanding Biophysical Processes for Condition Assessment and Remediation: In Australia many community members and regulators expect that final voids from open cut coal mines will be backfilled. A lack of backfill materials combined with prohibitive costs suggests that pit lakes will be a part of the rehabilitation landscape. However, the impacts of pit lakes are not well understood. This project will assess the biophysical processes of saline pit lakes and identify remediation options. Researchers are developing a framework for sampling circumneutral, low metal concentration and saline pit lakes in preparation for remediation and closure.

## 9 Intervention and Adaptive Management

### 9.1 Threats to Rehabilitation

A specific risk assessment was conducted on the 23<sup>rd</sup> June 2017 for the preparation of this MOP 2017-2024 in order to assess the primary risks to the rehabilitation plan and the success of existing rehabilitation at the site. Operational issues with the potential to impact rehabilitation are discussed in **Section 3.2**.

Key threats to rehabilitation, and threat reduction actions that will be implemented and/or developed at Ulan Coal during the MOP term, and the relevant MOP section, are summarised in **Table 9-1**.

**Table 9-1 Threats to Ulan Coal Rehabilitation**

Aspect	Mitigation Measures in MOP Term	Section in this MOP
Landform stability and erosion of overburden emplacements	Spoil characterisation and amelioration of substrate in rehabilitation areas	Section 3.2.2.4
Topsoil Resource (quantity and quality)	Undertake the soil balance review Investigate soil substitute options	Section 3.2.2.4 Section 3.2.2.4
Shortage of appropriate tailings capping material for rehabilitation	Categorise the suitability of material identified for tailings capping of east pit tailings dam 1. Find alternatives if not suitable.	Section 3.2.2.4
Spontaneous Combustion	Implementation of Spontaneous Combustion Management Plan and material classification prior to rehabilitation	Section 3.2.2.2
Revegetation failure due to drought	Amelioration of spoils and soils to improve infiltration and water holding capacity Selection of drought tolerant species Appropriate timing of seeding campaigns	Section 3.2.2.7
Revegetation failure due to bushfire	Maintenance of bushfire mitigation controls	Section 3.2.2.7

## 9.2 Trigger Action Response Plan

The following TARP for rehabilitation has been developed to identify required management actions in the event of impacts to rehabilitation, or where rehabilitation outcomes are not achieved in an acceptable timeframe. Where necessary, rehabilitation procedures will be amended accordingly with the aim of continually improving rehabilitation standards. Ulan Coal will notify the DPI&E, RR and other relevant stakeholders of any incident resulting in major impacts to rehabilitation.

The responses specified within the TARP have been based upon the rehabilitation completion criteria provided in **Appendix C** and the current rehabilitation monitoring program. Monitoring of the TARP will be undertaken as outlined in the rehabilitation monitoring program (refer to **Section 8.1**). The rehabilitation monitoring program will trigger response actions, as specified in the TARP to ensure that threats to rehabilitation do not become unmanageable.

The TARP is provided as **Table 9-2** below, and will be reviewed and may be revised as conditions at Ulan Coal change or new threats to rehabilitation are identified.

**Table 9-2 Threats to Ulan Coal Rehabilitation Trigger Action Response Plan**

Aspect/ Category	Key Element	Element Number	Trigger Response	Condition Green	Condition Amber	Condition Red
Landform stability	Slope gradient	1	Trigger	Rehabilitated overburden areas have slopes that are generally <10°.	Rehabilitated overburden areas have slopes >10° but <14°.	Rehabilitated overburden areas have slopes >15°.
			Response	No response required. Continue monitoring program.	Undertake regrading and revegetation of the area, if it is not designed to be >10° <14°.	Undertake a review of the landform design, including survey if required. Undertake regrading and revegetation of the area, if required.
		2	Trigger	Lowalls have slopes that are generally <10°.	Lowalls have slopes >10° but <18°.	Lowalls have slopes >18°.
			Response	No response required. Continue monitoring program.	Undertake regrading and revegetation of the area, if it is not designed to be >10° <18°.	Undertake a review of the landform design, including survey if required. Undertake regrading and revegetation of the area, if required.
	Erosion control	3	Trigger	No gully or tunnel erosion. No rilling present.	Minor gully or tunnel erosion present and/or rilling <200 mm deep.	Significant gully or tunnel erosion present and/or rilling >200 mm deep.
			Response	No response required. Continue monitoring program.	A suitably trained person to inspect the site. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate.	Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.
	Drainage Condition	4	Trigger	Drainage condition is in accordance with the design criteria established within this document.	Landforms exhibiting minor drainage issues but does <u>not</u> threaten to cause rehabilitation failure.	Landforms exhibiting significant drainage issues, threatening or causing rehabilitation failure.
			Response	No response required. Continue monitoring program.	A suitably trained person to inspect the site. Investigate opportunities to address issues. Remediate as appropriate.	Undertake a review of the drainage design and provide recommendations to appropriately remediate the area. Remediate as soon as practicable.

Aspect/ Category	Key Element	Element Number	Trigger Response	Condition Green	Condition Amber	Condition Red
Water Quality	Monitoring parameters	5	Trigger	Surface water quality of runoff from rehabilitation areas is within baseline range of data recorded from analogue sites.	Water quality exceeds baseline range of data recorded from analogue sites but does <u>not</u> indicate a long-term rehabilitation issue.	Water quality exceeds baseline range of data recorded from analogue sites, indicating a long term rehabilitation liability.
			Response	No response required. Continue monitoring program.	Review and investigation of water quality monitoring and management where appropriate. Implement relevant remedial measures where required.	Reporting as per PIRMP and all statutory reporting requirements. Implement relevant responses and undertake immediate review to determine source of issues and implement remediation measures identified as soon as practicable.
Spontaneous Combustion	Evidence of Spontaneous Combustion	6	Trigger	No evidence of spontaneous combustion in rehabilitation areas.	Isolated incidence of heating in rehabilitation areas.	Widespread or repeated incidences of ignition in rehabilitation areas.
			Response	No response required. Continue monitoring program.	Investigate sources of potential ignition. Excavate material with propensity for spon com in proximity to rehabilitated surface. Review overburden / coarse reject emplacement practices.	Consult with regulators to develop remediation plan to mitigate spon com such as increased capping. Review Spon Com Management Plan and material emplacement practices.
Topsoil Availability	Topsoil quantity	8	Trigger	Sufficient topsoil identified for rehabilitation over the MOP term and for the Life of the Mine.	Topsoil balance indicates a deficiency in topsoil available for rehabilitation over the Life of the Mine.	Deficiency significant enough to delay rehab progression the MOP term
			Response	No response required.	Investigate options and alternatives (e.g. OGM) to be able to meet future topsoil requirements.	Source and budget for purchasing topsoil for use in rehabilitation. Investigate use of alternatives such as OGM.
Biodiversity (Woodland and Specific Endemic Vegetation)	Density	9	Trigger	Rehabilitation area achieving the Vegetation Density Criteria for Phase 4 of rehabilitation.	Five years following revegetation the rehabilitation area has not achieved the Vegetation Density Criteria for Phase 4 of rehabilitation.	Eight years following revegetation the rehabilitation area has not achieved the Vegetation Density Criteria for Phase 4 of rehabilitation.

Aspect/ Category	Key Element	Element Number	Trigger Response	Condition Green	Condition Amber	Condition Red
Community Rehabilitation Areas)			Response	No response required. Continue monitoring program.	Review procedures where required to increase vegetation cover.	A suitably trained person to inspect the site. Investigate use of appropriate management options to remediate. Remediate as appropriate.
	Weed presence	11	Trigger	Weed presence does not pose a risk to the establishment of the rehabilitation area	Weed species or density may pose a risk to the successful establishment of the rehabilitation area	Weed species or density identified as posing a threat to the successful establishment of the rehabilitation area
			Response	No response required. Continue monitoring program.	Engage weed management contractor to remove introduced species from the site.	Engage weed management contractor to remove introduced species from the site as soon as practicable. Investigate management measures to assist native plant establishment including use of ameliorants and implement as appropriate.
	Pest Fauna presence	12	Trigger	Pest animal presence does not pose a risk to the establishment of the rehabilitation area	Pest animal presence may pose a risk to the successful establishment of the rehabilitation area	Pest animal presence identified as posing a threat to the successful establishment of the rehabilitation area
			Response	No response required. Continue monitoring program.	Engage pest management contractor to remove reduce the presence and/or impact of the species on site.	Engage pest management specialist and consult with relevant regulator with regard to management options. Implement revised management program to reduce the presence and/or impact of species onsite.
	Species composition	13	Trigger	Rehabilitation area achieving the Ecosystem Composition Criteria for Phase 4 of rehabilitation.	Five years following revegetation the rehabilitation area has not achieved the Ecosystem Composition Criteria for Phase 4 of rehabilitation.	Eight years following revegetation the rehabilitation area has not achieved the Ecosystem Composition Criteria for Phase 4 of rehabilitation.
			Response	No response required. Continue monitoring program.	Review native seed mix and amend accordingly. Consider remedial actions such as tubestock planting or re-seeding to achieve required species composition.	An inspection of the site will be undertaken by a suitably trained person. Investigate remedial options to achieve required species composition.

Aspect/ Category	Key Element	Element Number	Trigger Response	Condition Green	Condition Amber	Condition Red
	Native Fauna	15	Trigger	Monitoring confirms a variety of native fauna species are recorded utilising rehabilitation areas or suitable habitat is available.	Monitoring indicates a lack of variety in native fauna species utilising the rehabilitation area and/or a lack of suitable habitat is available.	Monitoring indicates a lack of presence of key/common native fauna species utilising the rehabilitation area and a lack of suitable habitat is available.
			Response	No response required. Continue monitoring program.	Investigate potential factors limiting the presence of fauna (proximity to operational areas, lack of habitat corridor linkages, immaturity of rehabilitation, inappropriate vegetation type or structure for species)	Engage ecologist to recommend specific habitat argumentation works.
Bushfire	Fuel Load	16	Trigger	Fuel loads are assessed and managed as required (including maintaining fire-breaks) and there is firefighting access across rehabilitation areas and water resources available for fighting fires.	Monitoring indicates fuel loads have not been managed and fire breaks have not been maintained. In the event of a fire, this would result in firefighters not being able to access the site or water resources.	A fire on site damages rehabilitated areas.
			Response	No response required. Continue monitoring program.	Reduce fuel loads and ensure access tracks are cleared. Inspect water sources are and ensure sufficient water is available.	Review and update (if required) the Bushfire Management Plan to ensure monitoring and maintenance is completed for fuel loads, access tracks, and water bodies.
Tailings	Inadequate capping	17	Trigger	The capped tailings landform is constructed in accordance with the approved capping design and is free-draining and no ponding is present.	Inspections indicate some temporary ponding on the tailings landform, however settlement is within the range considered in the detailed capping design.	Landform is exhibiting permanent or significant ponding issues.
			Response	No response required. Continue monitoring program.	A suitably trained person to inspect the site. Investigate opportunities to improve landform drainage. Remediate as appropriate.	Undertake a review of the capping and drainage design and provide recommendations to appropriately remediate the area. Remediate as soon as practicable.



Aspect/ Category	Key Element	Element Number	Trigger Response	Condition Green	Condition Amber	Condition Red
Groundwater	Void water balance	18	Trigger	Water balance and groundwater monitoring indicate void water balance is correct	Groundwater monitoring indicates that inflows into the void may be higher than the water balance assumptions which in combination with high surface runoff could result in the voids filling higher than predicted.	Groundwater inflows are significantly higher than predicted in the water balance and in combination with high surface runoff could result in overtopping of the voids.
			Response	No response required. Continue monitoring program.	Undertake additional groundwater monitoring and review water balance	Engage a qualified groundwater specialists and engineers and consider amending the final void design.

## 9.3 Current Remediation Projects

The following remedial project was completed in 2018 as part of the work program proposed in the MOP term:

- The approved Goulburn River Diversion Remediation (as referenced in this MOP).

The following remedial project is already in progress and is part of the work program proposed in the MOP term:

- Remediation of the East Pit area where vegetation re-establishment was not successful will occur in the MOP term. Works on this started in 2017 and will continue throughout the MOP period. Remediation works involve intense weed control deep ripping, soil amelioration, scarifying, tree planting and seeding.

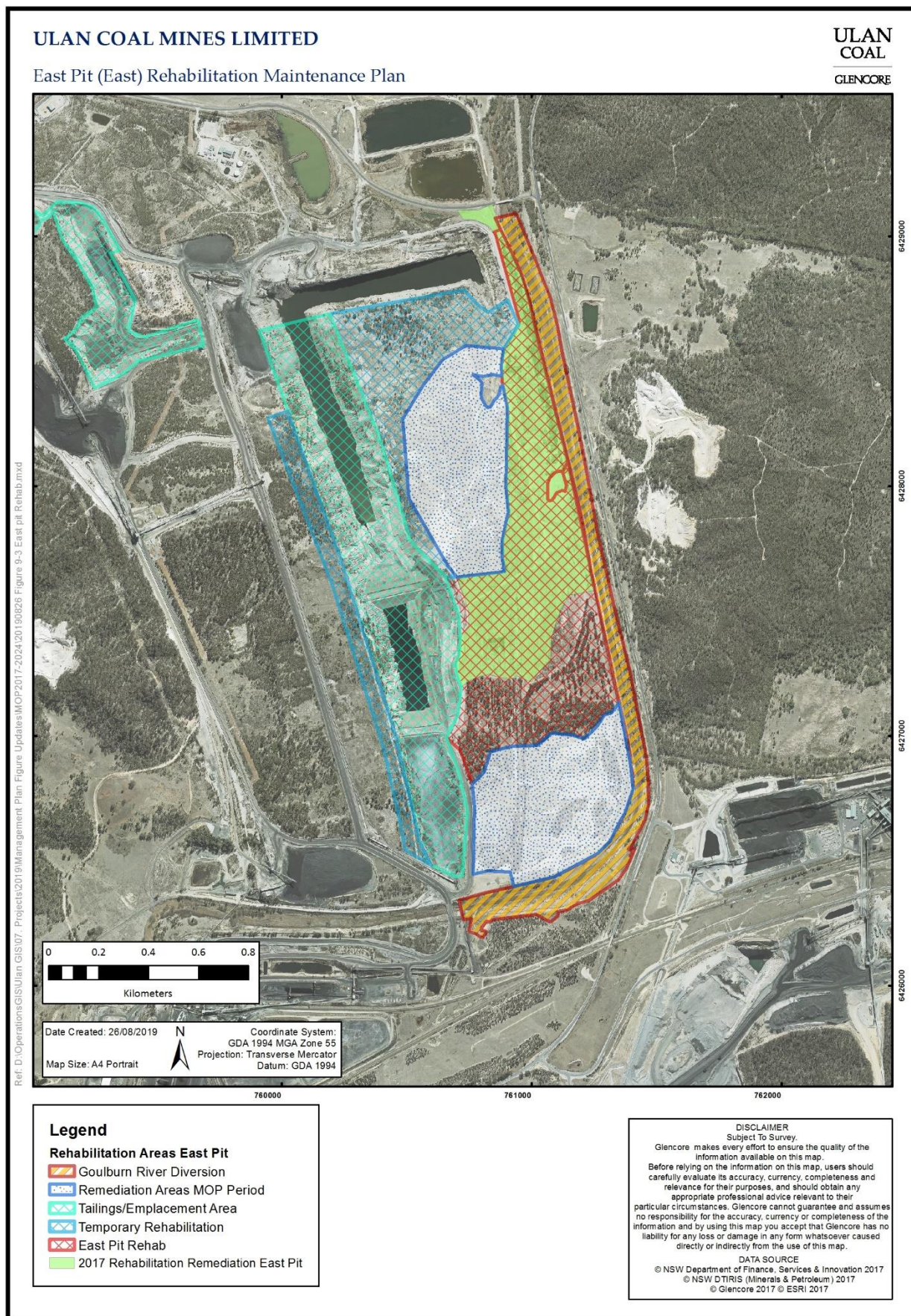


Figure 9-3 Ulan Mines Complex Monitoring Domains



# 10 Reporting Framework

## 10.1 Annual Review

The Annual Review, which is submitted to relevant government agencies (**Table 10-1**) and made publically available on the Ulan Coal website ([www.ulancoal.com.au](http://www.ulancoal.com.au)) by the 31<sup>st</sup> March each year, reports on the following information relating to rehabilitation:

- An overview of rehabilitation undertaken each year;
- Results of annual rehabilitation inspections;
- Results of any trials and/or research projects undertaken;
- Progress against the projected rehabilitation in the approved MOP;
- Outcomes of the annual ecological monitoring including performance assessment against completion criteria and the Trigger Action Response Plan (full reports will be appended which include monitoring methodology details);
- Results of any non-compliances or reportable incidents;
- Document any management action/s required to be undertaken; and
- Any proposed/required revisions to Environmental Management Plans or this MOP.

**Table 10-1 External Reporting Requirements**

External Report	Frequency	Recipients	Regulatory Requirements
Annual Review	Annually	DPI&E DPI&E Resource Regulator EPA DPI&E- Biodiversity and Conservation Division (BCD, formerly OEH) DPI&E –Water CCC MWRC Ulan Coal Website	PA 08_0184

## 10.2 Access to Information

Regular reporting on the environmental performance of the project is available at [www.ulancoal.com.au](http://www.ulancoal.com.au).<sup>21</sup> The following information is available on the Ulan Coal website:

- the documents referred to in Condition 2, Schedule 2 of PA 08\_0184;
- current statutory approvals for the project;
- approved strategies, plans and programs required under the conditions of PA 08\_0184;
- the monitoring results of the project, reported in accordance with the specifications in any conditions of PA 08\_0184, or any approved plans and programs;
- a complaints register, updated on a monthly basis;
- minutes of CCC meetings;
- the annual reviews of the project; and
- any independent environmental audit of the project, and UCMPL's response to the recommendations in any audit.

<sup>21</sup> PA 08\_0184, Schedule 5, Condition 10

# 11 Plans

UCMPL is classified as a Level 1 Mine, and accordingly the following maps have been prepared below:

- **Plans 1A, 1B-a, 1B-b and 1C** show the location and pre-MOP 2017-2024 natural and built environment of UCMPL;
- **Plan 2** shows the mine domains and mining features at commencement of the MOP term;
- **Plan 3A** shows the annual sequence of underground mining over the MOP term. **Plan 3B** shows the annual sequence of rehabilitation activities over the MOP term;
- **Plan 4A** shows the proposed post mining land use and post mining landform, **Plan 4B** shows the post mining landform for the surface operations disturbance area; and
- **Plan 5** shows geological cross sections of the underground mining areas for the MOP term.

These Plans are contained in **Appendix A**.



## 12 Review and Implementation of the MOP

### 12.1 Review of the MOP

Period reviews of this MOP are conducted to assess the effectiveness of the procedures against the purposes of the MOP. The MOP may be reviewed, and if necessary revised, following the submission of an:

- Annual Review;
- Incident report;
- Audit;
- Updated or additional Management Plans prepared; or
- Any modification to the conditions of the Development Consent.

This MOP may also be reviewed due to:

- Deficiencies being identified;
- Recommendations resulting from the monitoring and review program;
- Changing environmental requirements due to (for example) changed legislation or regulatory requirements;
- Where a risk assessment identifies the requirement to alter the MOP; and
- Change in the activities or operations.

Any major amendments to the MOP that affect its application will be undertaken in consultation with the appropriate regulatory authorities and stakeholders and in accordance with the latest MOP guidelines.

### 12.2 Implementation / Accountabilities

Section 6 of the UCMPL *Environmental Management Strategy* (EMS) (ULNCX-111515275-870) details the Sustainable Development (SD) roles and accountabilities for all employees, contractors and suppliers. Specific roles and accountabilities for employees and contractors in relation to this MOP are outlined below.

Role	Accountabilities for this document
Operations Manager	<ul style="list-style-type: none"> <li>• Approve appropriate resources for the effective implementation of this plan.</li> <li>• Ensure mining, construction and rehabilitation activities are undertaken in accordance with this plan.</li> <li>• Ensure any potential or actual rehabilitation issue is reported in accordance with legal requirements and the corporate standard.</li> <li>• Authorise internal and external reporting requirements of this plan.</li> <li>• Approve subsequent revisions of this plan.</li> </ul>
Environment and Community Manager	<ul style="list-style-type: none"> <li>• Provide that sufficient resources are allocated for the implementation of the environmental controls identified in this plan (and relevant management plans and procedures).</li> <li>• Ensure appropriate resources are budgeted for to enable appropriate progressive rehabilitation to occur.</li> <li>• Ensure that the results of monitoring are evaluated and reported to senior management and to relevant personnel for consideration as part of ongoing mine planning.</li> <li>• Ensure any potential or actual rehabilitation issue is reported in accordance with legal requirements and the corporate standard.</li> <li>• Ensure all internal and external reporting requirements are met, including incident reporting in accordance with the EMS.</li> <li>• Ensure all reporting complies with internal and external monitoring standards, protocols and regulations.</li> <li>• Proactively engage government and community as required.</li> <li>• Coordinate the ongoing review of this plan.</li> <li>• Review and approve external reports e.g. Annual Review, prior to final approval by the Operations Manager.</li> <li>• Ensure effective management of all community complaints.</li> <li>• Organise the required reviews of this plan.</li> <li>• Organise the annual security deposit review.</li> <li>• Ensure rehabilitation objectives are met.</li> </ul>

Role	Accountabilities for this document
Environment and Community Coordinator	<ul style="list-style-type: none"> <li>• Manage and maintain the rehabilitation monitoring and maintenance program in accordance with this plan.</li> <li>• Implement the rehabilitation monitoring and maintenance program.</li> <li>• Ensure that all monitoring records are effectively maintained on site in accordance with the EMS.</li> <li>• Coordinate the collation and evaluation of monitoring data.</li> <li>• Update monitoring data on the Ulan Coal Website.</li> <li>• Regularly report environmental performance to ECM.</li> <li>• Prepare internal and external reports for review by ECM.</li> <li>• Conduct periodic environmental inspections in accordance with the EMS.</li> <li>• Ensure any potential or actual rehabilitation issue, including incidents and non-conformances is reported to the ECM.</li> <li>• Coordinate incident investigation processes including associated reporting requirements, in accordance with the EMS.</li> <li>• Coordinate the implementation of corrective actions and evaluate their effectiveness.</li> <li>• Participate in the ongoing review of this plan.</li> <li>• Contact point for Community Complaints in accordance with the Complaints Procedure.</li> <li>• Provide copies of updated management plans to CCC members and upload to the UC MPL website.</li> <li>• Proactively engage government and community as required</li> </ul>
Rehabilitation Superintendent	<ul style="list-style-type: none"> <li>• Conduct rehabilitation works in accordance with this plan.</li> <li>• Provide a summary of rehabilitation works conducted for inclusion in the Annual Review.</li> <li>• Conduct annual rehabilitation walkover inspections.</li> <li>• Develop and implement rehabilitation remediation plans where required in consultation with the ECM and ECC.</li> </ul>
Mine Surveyor	<ul style="list-style-type: none"> <li>• Ensure MOP Plans are accurate and kept up to date</li> <li>• Ensure mining, construction and rehabilitation activities are undertaken in accordance with this plan.</li> </ul>
Mine Geologist	<ul style="list-style-type: none"> <li>• Provide accurate and up to date information for the preparation and review of the MOP.</li> </ul>
Technical Services Manager	<ul style="list-style-type: none"> <li>• Provide accurate and up to date information for the preparation and review of the MOP.</li> <li>• Ensure mining, construction and rehabilitation activities are undertaken in accordance with this plan.</li> </ul>

# 13 Document Information

## 13.1 Environmental Management Plans

A list of approved Environmental Management Plans is provided in **Table 13-1**, copies of the listed management plans can be found at [www.ulancoal.com.au](http://www.ulancoal.com.au)

**Table 13-1 – Environmental Management Plans**

Document ID	Plan
ULNCX- 111515275- 1785	Aboriginal Conservation Management Plan
ULNCX- 111515275- 1653	Air Quality and Greenhouse Gas Management Plan
ULNCX- 111515275- 225	Biodiversity Management Plan (including Bushfire Management Plan and Offset Management Program)
ULNCX-111515275-1953	Blast Management Plan
ULNCX-111515275-1786	Bobadeen Homestead Conservation Management Plan
ULNCX-111515275-870	Environmental Management Strategy
ULNCX- 111515275- 224	Erosion and Sediment Control Plan
ULNCX-111515275-1641	Goulburn River Diversion Remediation Plan
ULNCX- 111515275- 1643	Groundwater Monitoring Program
ULNCX- 111515275- 95	Heritage Management Plan
ULNCX- 111515275- 232	Noise Management Plan
ULNCX-111515275-1787	Old Ulan Conservation Management Plan
ULNCX-111515275-2432	Pollution Incident Response Management Plan
ULNCX- 111515275- 1644	Surface Water and Groundwater Response Plan
ULNCX- 111515275- 1642	Surface Water Monitoring Program
ULNCX- 111515275- 98	Waste Management Plan
ULNCX-111515275-99	Water Management Plan

## 13.2 Related Documents

Internal documents related to this MOP are listed in **Table 13-2** below.

**Table 13-2 – Internal Related Documents**

Reference	Title
ULNCX-111515275-1977	Hydrocarbon and Hazardous Chemicals Management
ULNCX-111515275-2953	Land Clearing and Topsoil Stripping Procedure
ULNCX-111515275-1635	Pre-clearing Survey and Tree Felling Procedure
ULNCX-111515275-1639	Salvage and Reinstatement of Habitat Features Other than Tree Hollows
ULNCX-111515275-1937	Waste Management Procedure
ULNCX-111515275-3372	Bobadeen Quarry Environmental Management Plan
ULNCX-111515275-1970	Conceptual Mine Closure Plan
ULNCX-111515275-1646	Moolarben Dam Operations and Maintenance Plan
ULNCX-111515275-857	Moolarben Dam Safety Emergency Plan

ULNCX-111515275-218	Site Security Management Plan
ULNCX-111515275-1804 (Ulan Underground) and ULNCX-111515275-2787 (Ulan West Underground)	Subsidence Monitoring Program
ULNOC-1105874907-2690	Spontaneous Combustion Principle Hazard Management Plan
ULNOC-1105874907-3159	Reject Emplacement Management Plan
Appendix B of EMS (ULNCX-111515275-870)	Ulan Complex Environment and Community Risk Assessment
GCAA-625378177-10237	Exploration and Drilling
GCAA-625378177-10241	Rehabilitation Management
GCAA-625378177-10336	Completion Criteria and Rehabilitation Monitoring
GCAA-625378177-10337	Annual Rehabilitation and Land Management Procedure
GCAA-625378177-13713	GCAA Exploration and Rehabilitation Procedure
GCAA-625378177-10325	11.17 Mine Closure Planning
GCAA-625378177-10336	11.16 Completion Criteria and Rehabilitation Monitoring

## 13.3 Reference Information

- DTIRIS (2013), ESG3 - Mining Operations Plan (MOP) Guidelines.
- DTIRIS (2012a), EDG01 - Borehole Sealing Requirements on Land: Coal Exploration.
- DTRIS (2012b), MDG 6001 – Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams.
- Environmental Protection Authority (EPA) (1998), Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land.
- EPA (2017), NSW Noise Policy for Industry.
- OEH, 2005. Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation
- DLWC, 2002. Draft Guidelines for the Design of Stable Drainage Lines on Rehabilitated Mine Sites in the Hunter Coalfields
- Australia ICOMOS, 1999. The Burra Charter: Charter for Places of Cultural Significance.
- Murphy and Lawrie, 1998. Dubbo 1:250,000 Soil Landscapes Map Sheet
- Landcom, 2004. Managing Urban Stormwater: Soils and Construction (the Blue Book) Volume 1
- Landcom, 2008. Managing Urban Stormwater: Soils and Construction (the Blue Book) Volume 2E Mines and Quarries.
- GSSE, 2007. Conceptual Mine Closure Plan and Rehabilitation Liability Assessment, Ulan Coal Mine, October 2007.
- Umwelt (Australia) Pty Ltd, 2009. Ulan Coal – Continued Operations Environmental Assessment. Prepared for Ulan Coal Mines Pty Limited.
- Umwelt (Australia) Pty Ltd, 2011. North 1 s75W Modification Environmental Assessment. Prepared for Ulan Coal Mines Pty Limited.
- MER, 2010. Ulan Coal Mines Pty Limited – Continued Operations North 1 Modifications – groundwater Assessment. June 2011. Mackie Environmental Research.
- DP&I Heritage Branch, 1996. NSW Heritage Manual



- URS, 2009. Goulburn River Diversion Long Term Stability Strategy. Prepared for Ulan Coal Mines Pty. Ltd. 24 April 2009. Job No. 42626217.
- DPI-MR MDG1014: Guide to Reviewing a Risk Assessment of Mine Equipment and Operations
- DECC, 2004. Threatened Species Survey and Assessment: Guidelines for Developments and Activities (Working Draft), New South Wales Department of Environment and Conservation, Hurstville, NSW.
- Eco Logical, 2018. Ulan Continued Operations Project- Modification 4 Longwall Optimisation Project Environmental Assessment. Prepared for Ulan Coal Mines Pty Limited.

## 13.4 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the document history is provided in *Table 13-3* below.

**Table 13-3 – Change information**

Version	Date	Review team (consultation)	Change Summary
1.0	August 2017	Tara Stokes Robyn Stoney Jessica Southgate (ELA)	New MOP 2017-2024 draft document
2.0	October 2017	Robyn Stoney Steve Hawkins	Reviewed in accordance with letter request for further information from DPI&E
3.0	November 2018	Tara Stokes	Updated plan references
4.0	August 2019	Brad Tanswell Robyn Stoney	Updated following approval of Modification 4 on 17 July 2019
5.0	March 2020	Brad Tanswell Robyn Stoney	Update following Grant of Mining Leases 1798 and 1799 and to reflect name change

## 13.5 Definitions and Acronyms

Acronym	Definition
<b>BMP</b>	Biodiversity Management Plan
<b>CCC</b>	Community Consultative Committee
<b>CHPP</b>	Coal Handling and Preparation Plant
<b>Community</b>	Anyone who is interested in or affected by environmental issues associated with the proposed mining project.
<b>Completion/Relinquishment criteria</b>	Are objective target levels or values that can be measured to quantitatively demonstrate the progress and ultimate success of a biophysical process. These are the standards that are to be met by successful rehabilitation. They will generally be in the form of a numerical value that can be verified by measurement of the indicators selected for the rehabilitation objectives. They may include an element based on time.
<b>DA</b>	Development Approval
<b>Director General</b>	Director General of the Department, or delegate.
<b>Domain</b>	A land management unit usually with similar geophysical characteristics.
<b>DPI&amp;E</b>	NSW Department of Planning, Industry and Environment
<b>DPI&amp;E- Resource Regulator</b>	NSW Department of Planning, Industry and Environment- Resource Regulator (DPI&ERR)
<b>DPI&amp;E- Resources and Geoscience</b>	NSW Department of Planning, Industry and Environment- Division of Resources and Geoscience
<b>DPI&amp;E- Crown Lands</b>	NSW Department of Planning, Industry and Environment- Crown Lands
<b>DPI&amp;E- Water</b>	NSW Department of Planning, Industry and Environment- Water
<b>DSC</b>	Dam Safety Committee.

<b>DRE</b>	NSW Trade & Investment - Division of Resources & Energy (now Department of Planning, Industry and Environment- Resource Regulator (DPI&E,RR))
<b>EP&amp;A Act</b>	Environmental Planning and Assessment Act 1979
<b>Level 1 Mine</b>	All new coal mines, mineral sand mines, other large mines and any mines in environmentally sensitive areas of State Significance are classified as State significant development. The Minister for Planning is the consent authority for State significant developments under Part 4 of the EP&A Act.
<b>Plan</b>	A representation of the whole or a part of an area.
<b>Mining Act</b>	Mining Act 1992.
<b>Mitigation Measures</b>	Subsidence management measures which aim to reduce subsidence impacts, usually implemented prior to or during mining.
<b>NoW</b>	NSW Trade and Investment, Regional Infrastructure and Services – NSW Office of Water.
<b>BCD</b>	NSW Department of Planning, Industry and Environment- Biodiversity and Conservation Division (formerly Office of Environment and Heritage).
<b>Overburden</b>	Material overlying coal or a mineral deposit.
<b>Performance indicator</b>	An attribute of the biophysical environment (e.g. pH, slope, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. They can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion/relinquishment criterion, i.e. defined end point. The indicator may be aligned to an established protocol and used to evaluate changes in a system.
<b>Phase</b>	A logical step in the process of achieving the post mining land use goal. Phases are successive and generally require demonstrated completion of an earlier phase before the next stage can be commenced. Phases of mining include active mining, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use sustainability and relinquished lands.
<b>Post Mining Land Use Goal</b>	The post mining land use goal is a description of the intended final landform and preferred land use composition following mining. It is effectively a statement describing the overall goal of the rehabilitation and mine closure process.
<b>Progress</b>	A description of where mining and rehabilitation are in relation to meeting completion criteria for closure. This may be described in terms of domains, phases, performance indicators and completion/relinquishment criteria.
<b>Rehabilitation</b>	Defined by the <i>Mining Act 1992</i> as the treatment or management of disturbed land or water for the purpose of establishing a safe and stable environment. For the purposes of this Mining Operations Plan, rehabilitation includes the following phases: Landform Establishment, Growth Medium Development, Ecosystem and Land Use Establishment, Ecosystem and Land Use Sustainability and Relinquished Lands.
<b>Rehabilitation Objectives</b>	Objectives clearly describe the rehabilitation outcomes required to achieve the post mining land use. These may include environmental, social and economic outcomes. They may be described in terms of future land use, biodiversity values, conservation values, health and safety outcomes, aesthetics or social outcomes or combinations of these. Objectives must be specific, produce measurable data, and demonstrate that proposed outcomes are achievable and realistic within a given timeframe.
<b>Relinquished lands</b>	Disturbed areas within the mining lease that have satisfied the mine rehabilitation and closure requirements of Government, i.e. the following parameters have been met: the area is self-sustaining, has been signed off by all parties, the lease (or a portion of a greater lease) is relinquished, and the security bond (or a portion of the bond) has been returned.
<b>Remediation Measures</b>	Subsidence management measures which aim to repair any adverse effects of subsidence, usually implemented after mining.
<b>REMP</b>	Rehabilitation Environmental Management Plan.
<b>Risk</b>	The chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
<b>Risk Management Process</b>	The systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, evaluating, treating, monitoring and communicating risk (AS/NZS ISO 31000:2009).
<b>Tailings</b>	A combination of the fine grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water <sup>22</sup> .
<b>Temporary Stabilisation</b>	The short term stabilisation and vegetation of an area that is intended to be utilised in the future as an active mine area. It is to be measured as an active mine area for reporting purposes.
<b>TARP</b>	Trigger Action Response Plan.
<b>The Department</b>	NSW Trade and Investment, Regional Infrastructure and Services – Division of Resources and Energy (now Department of Planning, Industry and Environment- Resource Regulator (DPI&ERR)).

<sup>22</sup> Commonwealth of Australia (DITR), 2007. *Tailings Management*.



## Appendix A - MOP Plans

Georeferenced PDFs of the following MOP Plans are provided as Appendix A:

- **Plans 1A, 1B-a, 1B-b and 1C** show the location and pre-MOP 2017-2024 natural and built environment of UCMPL;
- **Plan 2** shows the mine domains and mining features at commencement of the MOP term;
- **Plan 3A** shows the annual sequence of underground mining over the MOP term. **Plan 3B** shows the annual sequence of rehabilitation activities over the MOP term;
- **Plan 4A** shows the proposed post mining land use and post mining landform, **Plan 4B** shows the post mining landform for the surface operations disturbance area; and
- **Plan 5** shows geological cross sections of the underground mining areas for the MOP term.

Note: Two sets of A3 and A1 Plans provided upon submission of this MOP.

Appendix B - Completion/Success Criteria

All Secondary Domains A to F (excluding Vegetation Offset Areas within Domain F full criteria for this Domain provided below)

The section has been categorised into criteria which is applicable to all secondary domains and secondary specific criteria. If no specific criteria exists for a secondary domain then this has been noted in the relevant rehabilitation phase with a statement ‘No specific criteria’.

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
Public safety	Site security	A public safety risk assessment has been completed with all identified actions implemented and closed out.	Site Security Management Plan Public safety management plan E&C Risk Assessment	No	N/A	Not Completed
Infrastructure	Removal of Infrastructure	All surface mining infrastructure that is not required as part of the post-mining land use has been demolished, disposed of onsite or removed in accordance material contamination classification. Infrastructure that is to remain will be specified in each domain.	PA 08_0184 AS2601-2001: The Demolition of Structures or its latest version This MOP	No	N/A	Not Completed
All hazardous and/or contaminated materials will be removed or remediated in-situ such that the land is suitable for the intended post-mining land use	Hazardous and contaminated materials	Hazardous and contaminated materials are identified and either treated onsite and disposed of appropriately or removed from site as per phase 3 assessment recommendations; in accordance with contaminated lands legislation.	Contaminated Land Management Act 1997 Phase 3 Contamination Assessment	No	N/A	Not Completed
Risk of acid rock drainage is minimised	Acid forming potential	Acid forming material identified and appropriately contained via implementation of appropriate management actions.	Geochemical Assessment Phase 3 Contamination Assessment	No	N/A	Not Completed
Landform Establishment Phase						
Final landforms are safe, stable, non-polluting and free-draining.	Slopes	Rehabilitated slopes are generally less than 10 degrees, no slopes greater than 18 degrees unless otherwise approved by the appropriate regulator. Slope angle is compatible with the proposed final land use.	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	No	#1 and #2	Commenced
	Landform stability	Landforms are assessed to be stable and drain to local watercourses	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598) Final Landform report	No	#4	Commenced
	Erosion	Monitoring verifies there are no gully or erosion features, or rills >20mm deep that are active, that pose a risk to the final land use	Annual Rehabilitation Walkover Biodiversity Management Plan (BMP) Rehabilitation Monitoring Program	No	#3	Commenced
	Spontaneous Combustion	No spontaneous combustion present	Annual Rehabilitation Walkover	No	#6	Commenced
Landform suitable for final land use and compatible with surrounding landscape	Final landform shaped and rehabilitated	Final landform design has surface contours blended to surrounding landscape and absence of slumping	Final landform Design Final Landform report	No	N/A	Commenced
Growth Medium Development Phase						
Land Capability	Land Capability Classification	Rural Land Capability Classification is compatible with the physical characteristics present within each Secondary Domain	This MOP	No	N/A	Commenced
Soil fertility and soil structure suitable for rehabilitation	Topsoil Depth	Topsoil or a suitable alternative has been spread uniformly at the specified depth appropriate to the final land use	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	No	N/A	Commenced
	Amelioration	Ameliorants (such as gypsum, organics and fertilisers) are spread at the recommended rate per hectare as recommended by soil analysis appropriate to the final land use	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	No	N/A	Commenced
Ecosystem and Land Use Establishment Phase						
Management measures will be implemented to minimise bushfire risks in rehabilitation areas	Bushfire risk management	Bushfire management measures (e.g. access tracks, fire breaks) are in place to protect establishing rehabilitation areas	Biodiversity Management Plan Bushfire Management Plan	No	#16	Commenced

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Erosion does not present a safety hazard or compromise the post mining land capability	Erosion	Visual monitoring indicates that there is no erosion present that compromises land capability or the intended final land use	Biodiversity Management Plan	No	#3	Commenced
Restore Ecosystem Function, including maintaining or establishing self-sustaining eco-systems comprised of: -local native plant species; and - a landform consistent with the surrounding environment	Criteria available within Sub-Domains below					
Ecosystem and Land Use Sustainability Phase						
Restore Ecosystem Function, including maintaining or establishing self-sustaining eco-systems comprised of: -local native plant species; and - a landform consistent with the surrounding environment	Criteria available within Sub-Domains below					
Weeds and pest animal species do not present a risk to rehabilitation	Weed presence	Weed presence does not pose a risk to the establishment of the rehabilitation area	Biodiversity Management Plan	No	#11	Commenced
		Records indicate that noxious weeds are controlled in accordance with legislation	Noxious Weeds Act 1993 and Regulations	No	N/A	Commenced
	Pest animal density	Pest animal presence does not pose a risk to the establishment of the rehabilitation area	Biodiversity Management Plan	No	#12	Commenced
Adequate access and water resources for firefighting are retained in the final landform for relinquishment	Bushfire risk management	Adequate access and infrastructure are retained (e.g. access tracks, water storages) in large (>100ha) contiguous rehabilitation areas for relinquishment	Biodiversity Management Plan	No	#16	Commenced
Fauna habitat available	Presence of a range of fauna habitats	A range of fauna habitat is available within all Secondary Domains.	Biodiversity Management Plan	No	#15	Commenced
	Further criteria available within Sub-Domains below					
Land Relinquishment						



Domain A – Water Management Area

Domain Objective	Performance Indicator	Completion Criteria	Justification/Sources	Completed (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
Water Management Domain Non-polluting water structures	Dam Sediments	Mine water dams and sediment dams are decontaminated prior to rehabilitation or conversion to clean water dams in the final landform	Water Management Plan EPL 394	Yes	N/A	
Water Management Domain All infrastructure removed, unless otherwise agreed with relevant stakeholders	Pumping Infrastructure	Pumps and associated infrastructure is decommissioned and removed from site	PA 08_0184	Yes	N/A	
Landform Establishment Phase						
Water Management Domain Surface water management structures will be designed and constructed in accordance with the Blue Book to minimise erosion and enhance stability	Final landform drainage	Final landform drainage structures including drains, banks, drop structures and dams, constructed generally in accordance with Blue Book requirements; as supported by site record form	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	Yes	#4	
Growth Medium Development Phase						
No specific criteria						
Ecosystem and Land Use Establishment Phase						
No specific criteria						
Ecosystem and Land Use Sustainability Phase						
Water quality non-polluting and appropriate for end land use	Water quality at monitoring locations where water from rehabilitated lands enters a creek or river	Water quality within baseline range of data recorded from analogue sites and does not present a threat to downstream water quality	EPL 394 Surface Water Monitoring Program (ULNCX- 111515275- 1642)	No	#5	Commenced
Land Relinquishment						
No specific criteria						

Domain B – Rehabilitation Area - Woodland

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Completed (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
Infrastructure Domain All built infrastructure including fixed plant and services will be decommissioned or demolished and removed from site (unless otherwise agreed with regulators and stakeholders)	Groundwater monitoring bores and ground water supply bores sealed	Groundwater bores that are no longer required are decommissioned (piezometers and standpipes removed) and sealed	EDG01 – Borehole Sealing Requirements on Land	No	N/A	Not completed
	Sealing of mine openings	All underground entries have been sealed as per DPI standards	Ulan Coal Mine Tenements DPI Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams	No	N/A	Not complete
	Site services	Site electricity and telecommunication services, that are not required, have been disconnected and removed	PA 08_0184	No	N/A	Not commenced
	Demolition of infrastructure	Records verify that all demolition work has been carried out in accordance with AS2601-2001: The Demolition of Structures or its latest version. Demolition certificates provided for infrastructure	AS2604 – 2001: The Demolition of Structures This MOP	No	N/A	Not commenced
	Foundations and pavements	Concrete footings, foundation pads and pavements have been disposed- records maintained in accordance with EPL 394	EPL 394 PA 08_0184	No	N/A	Not commenced
	Infrastructure to remain on site to service final land use	Infrastructure which is safe and relevant to the proposed land use as agreed with regulators and stakeholders	PA 08_0184	N/A	N/A	Not commenced
Infrastructure Domain All hazardous and/or contaminated materials will be removed or remediated in- situ such that the land is suitable for the intended post mining land use.	Disposal of Carbonaceous Material	Carbonaceous material has been disposed such that it does not impact on final landform, rehabilitation establishment or the visual amenity of the site	This MOP	No	N/A	Not commenced
	Hydrocarbons	Records verify that hydrocarbons have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form.	Waste Management Plan	No	N/A	Not commenced
	Chemicals and explosives	Records verify that chemicals and explosives have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form.	Waste Management Plan	No	N/A	Not commenced
Tailings/Reject Emplacement Domain Tailings emplacement areas will be capped and rehabilitated in accordance with an approved capping design	Capping Design	A detailed tailings capping design as per approval conditions are developed and approved for the reject and tailings emplacements prior to decommissioning	Coal Mine Health and Safety Act 2002 Section 101	No	#17	Commenced
Water Management Domain Non-polluting water structures	Dam Sediments	Mine water dams and sediment dams are decontaminated prior to rehabilitation or conversion to clean water dams in the final landform	Water Management Plan EPL 394	No	N/A	Not commenced
Water Management Domain All infrastructure removed, unless otherwise agreed with relevant stakeholders	Pumping Infrastructure	Pumps and associated infrastructure is decommissioned and removed from site	PA 08_0184	No	N/A	Not commenced
Landform Establishment Phase						
Tailings/Reject Emplacement Domain Rehabilitated tailings emplacements will be capped and shaped to produce free draining landforms.	Capping	Tailings will be capped with inert material including select inert overburden, subsoils and topsoil, as per approval	Capping Design	No	#17	Commenced
	Water Infiltration	Tailings emplacement areas will be shaped to be free draining to minimize water infiltration	Capping Design	No	#4	Commenced
Water Management Domain Surface water management structures will be designed and constructed in accordance with the Blue Book to minimise erosion and enhance stability	Final landform drainage	Final landform drainage structures including drains, banks, drop structures and dams, constructed generally in accordance with Blue Book requirements; as supported by site record form	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	No	#4	Not commenced
Growth Medium Development Phase						
No specific criteria						
Ecosystem and Land Use Establishment Phase						

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Completed (Yes/No)	Link to TARP	Progress at start of MOP
Rehabilitation area floristics and structure is representative of a native woodland Native fauna habitat present within rehabilitation area	Vegetation density	The density of shrubs and trees is within the range gauged at analogue Woodland sites	Biodiversity Management Plan	No	#9	Commenced
	Ecosystem composition	Revegetation areas contain a range of flora species (trees/shrubs) consistent with the seed mix planted	Biodiversity Management Plan	No	#13	Commenced
	Habitat	Monitoring confirms rehabilitated areas provide a range of vegetation structural habitats (e.g. eucalypts, shrubs, ground cover, developing litter layer, etc.) to encourage use by native fauna species	Biodiversity Management Plan	No	#15	Commenced
Ecosystem and Land Use Sustainability Phase						
Rehabilitation area floristics and structure is representative of a native woodland Native fauna habitat present within rehabilitation area	Ecosystem composition	Revegetation areas contain flora species assemblages characteristic of the surrounding native species	Biodiversity Management Plan	No	N/A	Commenced
	Ecosystem Structure	Native rehabilitation areas provide a range of structural features (e.g. trees, shrubs, ground cover, developing litter layer etc.)	Biodiversity Management Plan	No	N/A	Commenced
	Reproduction	Rehabilitation monitoring verifies second generation tree seedlings are present or likely to be, based on comparable older rehabilitation sites.	Biodiversity Management Plan	No	N/A	Commenced
	Native Fauna	Monitoring confirms a variety of native fauna species are recorded utilising rehabilitation areas or suitable habitat is available	Biodiversity Management Plan	No	#15	Commenced
Land Relinquishment						
No specific criteria						

Domain C – Rehabilitation Area – Goulburn River Diversion

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
No specific criteria						
Landform Establishment Phase						
Landform Reflective of design criteria Channel Stability	Final Landform	Landform of disturbed areas is generally compatible with the final design criteria for the GRD 1:2.7 (V:H)	Goulburn River Diversion Remediation Plan	Yes	N/A	Commenced (complete in 2018)
	Water Management	Surface Water controls in place and adequate to divert flow along correct drainage paths	Goulburn River Diversion Remediation Plan	Yes	#4	Commenced (complete in 2018)
	Groundcover	70% or greater groundcover cover (including turf)	Goulburn River Diversion Remediation Plan	Yes	N/A	Commenced (complete in 2018)
	Dispersive sub soils	Rock revetment in place where dispersive subsoils are present on River banks	Goulburn River Diversion Remediation Plan	Yes	N/A	Commenced (complete in 2018)
	Flood Resilience	Rock Armour complies with Australian Standards to be resilient to modelled channel flows	AS41332.1.1 Dry Density (2.1 t/m3) AS41334.2.1 Aggregate Crushing Strength ((25mPa) AS 1141,22 Wet/Dry strength Variation	Yes	N/A	Commenced (complete in 2018)
Growth Medium Development Phase						
Landform functional and performing as designed Microbial characterisation of growth medium Dispersive and acidic soils adequately controlled	Landscape Function	LFA Stability index score trending towards analogue benchmark sites	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
		LFA Infiltration index score that is trending towards analogue	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
		LFA Nutrient Recycling index score that is trending towards analogue benchmark sites	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
		Resilience of populations of bacteria, actinomycetes and fungi. Measured by the stability of numbers from wet to dry conditions and trending towards analogue sites	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
	Soil Properties	pH is within ranges of the analogue benchmark sites, typically pH 5.6 to 7.3	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
		Dispersion is within typical ranges of the analogue benchmark sites using Slaking Test and Emerson Aggregate Test.	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
Ecosystem and Land Use Establishment Phase						
Improve Ecological Function	Species composition	Vegetation contains a diversity of shrubs and juvenile trees species that is endemic to the local community	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
	Vegetation Composition	Native grasses/shrubs emerging on remediated batters.	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
Ecosystem and Land Use Sustainability Phase						
Improve Ecological Function	Vegetation Density	Vegetation contains a density of species trending to that of the local remnant vegetation	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
	Groundcover	70% or greater perennial plant groundcover cover	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
	Habitat	5 or more hollow logs per Ha in remediated areas (river batters exempt)	Goulburn River Diversion Remediation Plan	No	N/A	Commenced
Land Relinquishment						
No specific criteria						

Domain D – Rehabilitation Area – Specific Endemic Vegetation Community

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Completed (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
Infrastructure Domain All built infrastructure including fixed plant and services will be decommissioned or demolished and removed from site (unless otherwise agreed with regulators and stakeholders)	Groundwater monitoring bores and ground water supply bores sealed	Groundwater bores that are no longer required are decommissioned (piezometers and standpipes removed) and sealed	EDG01 – Borehole Sealing Requirements on Land	No	N/A	Not completed
	Sealing of mine openings	All underground entries have been sealed as per DPI standards	Ulan Coal Mine Tenements DPI Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams	No	N/A	Not complete
	Site services	Site electricity and telecommunication services, that are not required, have been disconnected and removed	PA 08_0184	No	N/A	Not commenced
	Demolition of infrastructure	Records verify that all demolition work has been carried out in accordance with AS2601-2001: The Demolition of Structures or its latest version. Demolition certificates provided for infrastructure	AS2604 – 2001: The Demolition of Structures This MOP	No	N/A	Not commenced
	Foundations and pavements	Concrete footings, foundation pads and pavements have been disposed- records maintained in accordance with EPL 394	EPL 394 PA 08_0184	No	N/A	Not commenced
	Infrastructure to remain on site to service final land use	Infrastructure which is safe and relevant to the proposed land use as agreed with regulators and stakeholders	PA 08_0184		N/A	
Infrastructure Domain All hazardous and/or contaminated materials will be removed or remediated in- situ such that the land is suitable for the intended post mining land use.	Disposal of Carbonaceous Material	Carbonaceous material has been disposed such that it does not impact on final landform, rehabilitation establishment or the visual amenity of the site	This MOP	No	N/A	Not commenced
	Hydrocarbons	Records verify that hydrocarbons have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form.	Waste Management Plan	No	N/A	Not commenced
	Chemicals and explosives	Records verify that chemicals and explosives have been transported from site to an appropriately licensed disposal facility, as per EPA waste tracking record form.	Waste Management Plan	No	N/A	Not commenced
Water Management Domain Non-polluting water structures	Dam Sediments	Mine water dams and sediment dams are decontaminated prior to rehabilitation or conversion to clean water dams in the final landform	Water Management Plan EPL 394	No	N/A	Not commenced
Water Management Domain All infrastructure removed, unless otherwise agreed with relevant stakeholders	Pumping Infrastructure	Pumps and associated infrastructure is decommissioned and removed from site	PA 08_0184	No	N/A	Not commenced
Landform Establishment Phase						
Water Management Domain Surface water management structures will be designed and constructed in accordance with the Blue Book to minimise erosion and enhance stability	Final landform drainage	Final landform drainage structures including drains, banks, drop structures and dams, constructed generally in accordance with Blue Book requirements; as supported by site record form	Rehabilitation Establishment and Methodology Record Form (GCAA-625378177-10598)	No	#4	Not commenced
Underground Mining Area Domain Landform generally blends in with surrounding landscape and is stable.	Surface cracking/ rockfall	Repaired in accordance with agreed methodology	Ulan West and Ulan Underground SMPs and Extraction Plans	No	N/A	Commenced
	Drainage	Drainage lines remain free draining, no areas of significant ponding present	Ulan West and Ulan Underground SMPs and Extraction Plans	No	N/A	Commenced
Growth Medium Development Phase						
No specific criteria						
Ecosystem and Land Use Establishment Phase						
Rehabilitation area floristics and structure is comparable to analogue native vegetation community Native fauna habitat present within rehabilitation area	Vegetation density	The density of shrubs and trees is comparable to that of the analogue sites	Biodiversity Management Plan	No	#9	Commenced
	Ecosystem composition	Revegetation areas contain a range of flora species (trees/shrubs) consistent with the seed mix planted	Biodiversity Management Plan	No	#13	Commenced
	Habitat	Monitoring confirms rehabilitated areas provide a range of vegetation structural habitats (e.g. eucalypts, shrubs, ground cover, developing litter layer, etc.) to encourage use by native fauna species	Biodiversity Management Plan	No	#15	Commenced
Ecosystem and Land Use Establishment Phase						

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Completed (Yes/No)	Link to TARP	Progress at start of MOP
Rehabilitation area floristics and structure is comparable to analogue native vegetation community Native fauna habitat present within rehabilitation area	Ecosystem composition	Revegetation areas contain flora species assemblages characteristic of the surrounding native species	Biodiversity Management Plan	No	N/A	Commenced
	Ecosystem Structure	Native rehabilitation areas provide a range of structural features (e.g. trees, shrubs, ground cover, developing litter layer etc.)	Biodiversity Management Plan	No	N/A	Commenced
	Reproduction	Rehabilitation monitoring verifies second generation tree seedlings are present or likely to be, based on comparable older rehabilitation sites.	Biodiversity Management Plan	No	N/A	Commenced
	Native Fauna	Monitoring confirms a variety of native fauna species are recorded utilising rehabilitation areas or suitable habitat is available	Biodiversity Management Plan	No	#15	Commenced
Land Relinquishment						
No specific criteria						



Domain E – Rehabilitation Area – Tree Screen

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Decommissioning						
No specific criteria						
Landform Establishment Phase						
No specific criteria						
Growth Medium Development Phase						
No specific criteria						
Ecosystem and Land Use Establishment Phase						
No specific criteria						
Ecosystem and Land Use Sustainability Phase						
4E – Tree Screen Rehabilitation Area Pasture/Woodland Visual Vegetation Screening	Visual Tree Screening	Tree Vegetation adequate for visual screening from Ulan Road of decommissioned surface operations area.	Environmental Management System PA 08_0184	No	N/A	Commenced
Land Relinquishment						
No specific criteria						

**Domain F –Biodiversity Vegetation Offset Areas** (stand-alone criteria- all domain criteria do not apply, includes Bobadeen Vegetation Offset and Bobadeen East Vegetation Offset Areas. All domain criteria apply to Conservation Offset Areas Brokenback, Spring Gully and *Acacia Ausfeldii* Management Area)

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
<b>Decommissioning</b>						
Remove operational wastes from Offset Areas	Waste Removal	Operational wastes within offset areas have been identified and removed	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
<b>Landform Establishment Phase</b>						
Protection of regeneration from livestock impacts	Livestock Exclusion Management Controls	Boundary Fencing in place for Offset Areas adjoining farmland	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
		Signage installed on gates and boundary fences of offset areas	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
Remediate existing erosion	Erosion remediation	Identify existing areas of erosion with Offset Areas and implement action plan for remediation	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
Provide suitable habitat for threatened and endemic species	Habitat Augmentation	Complete review of existing habitat resources available with Biodiversity Offset Areas and assess adequacy of existing resources and where augmentation may be required	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
Re-establish native woodlands within Management Zone 3 areas.	Revegetation	Implement regeneration activities identified for Year 1 to Year 7 (Offset Management Program Appendix B of Biodiversity Monitoring Program)	Biodiversity Management Plan Offset Management Program	Yes	N/A	Complete
<b>Growth Medium Development Phase</b>						
Facilitate the natural regeneration of Management Zone 2 areas.	Natural Regeneration	Monitor natural regeneration occurring within BOAs and update mapping with changes identified	Biodiversity Management Plan Offset Management Program	No	N/A	Commenced
Re-establish native woodlands within Management Zone 3 areas	Revegetation	Plantings established and self-sustaining with a 50% success rate of establishment of tube stock plantings	Biodiversity Management Plan Offset Management Program	No	N/A	Commenced
<b>Ecosystem and Land Use Establishment Phase</b>						
Facilitate the natural regeneration of Management Zone 2 areas	Natural Regeneration	Monitoring to indicate upward trend in species diversity and density towards analogue sites within the targeted vegetation community	Biodiversity Management Plan Offset Management Program	No	N/A	Commenced
Re-establish native woodlands within Management Zone 3 areas	Revegetation	Monitoring to indicate upward trend in species diversity and density towards analogue sites within the targeted vegetation community	Biodiversity Management Plan Offset Management Program	No	N/A	Commenced
Weeds and feral animal species do not present a risk to rehabilitation	Weed presence	Weed presence does not pose a risk to the establishment of rehabilitation areas	Biodiversity Management Plan Offset Management Program	No	#11	Commenced
		Records indicate that noxious weeds are controlled in accordance with legislation	Noxious Weeds Act 1993 and Regulations	No	#11	Commenced
	Pest animal density	Pest animal presence does not pose a risk to the establishment of rehabilitation areas	Biodiversity Management Plan	No	#12	Commenced
Management measures will be implemented to minimise bushfire risks in offset areas	Bushfire risk management	Bushfire management measures (e.g. access tracks, fire breaks) are in place to protect establishing rehabilitation areas	Biodiversity Management Plan Offset Management Program Bushfire Management Plan	No	#16	Commenced
Erosion does not present a safety hazard or compromise the post mining land capability	Erosion and Sediment Control	Visual monitoring indicates that there is no erosion present that compromises land capability or the intended final land use	Biodiversity Management Plan Offset Management Program	No	#3	Commenced
Fauna habitat available	Presence of a range of fauna habitats	A range of fauna habitat is available	Biodiversity Management Plan Offset Management Program	No	#15	Commenced
<b>Ecosystem and Land Use Sustainability Phase</b>						
Facilitate the natural regeneration of Management Zone 2 areas	Natural Regeneration	Monitoring to indicate species diversity and density are representative of analogue sites within the targeted vegetation community	Biodiversity Management Plan Offset Management Program	No	N/A	Not yet commenced
Re-establish native woodlands within Management Zone 3 areas	Revegetation	Monitoring to indicate species diversity and density are representative of analogue sites within the targeted vegetation community	Biodiversity Management Plan Offset Management Program	No	N/A	Not yet commenced
Control Weeds	Weed Presence	Weed species type and density consistent with analogue sites	Biodiversity Management Plan Offset Management Program	No	#11	Not yet commenced
Control Pests	Fauna Pests	Stable or down-ward trend in population size	Biodiversity Management Plan	No	#12	Not yet commenced

Domain Objective	Performance Indicator	Completion Criteria	Justification/Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
			Offset Management Program			
Management measures will be implemented to minimise bushfire risks in rehabilitation areas	Fuel Loads	Fuel loads are assessed and managed	Biodiversity Management Plan Offset Management Program Bushfire Management Plan	No	#16	Not yet commenced
	Access	Firefighting access is maintained across rehabilitation areas and to water storages	Biodiversity Management Plan Offset Management Program Bushfire Management Plan	No	#16	Not yet commenced
Habitat is provided for identified threatened species	Habitat	A range of habitat features relevant to the identified threatened species is available throughout offset areas	Biodiversity Management Plan Offset Management Program	No	N/A	
Land Relinquishment						
Re-establishment of 69 ha of Endangered Ecological Communities (EEC)	Re-establishment of EEC	69 ha of EEC re-vegetation meets the DoE minimum requirements for classification as EEC	PA 08_0184 EPBC Approval 2009/5252 Biodiversity Management Plan Offset Management Program	No	N/A	Commenced
Security in Perpetuity	Conservation Agreements	All conservation agreements are secured in perpetuity and registered on the land title	PA 08_0184 EPBC Approval 2009/5252 Biodiversity Management Plan Offset Management Program	No	N/A	Commenced

## Appendix C - Land Ownership

Lot Number	DP	Ownership
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land
	0	Crown Land Leased (Private)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	Crown Land Leased (UCMPL)
	0	State Rail Authority of NSW
	0	State Rail Authority of NSW
3	132117	Mine Owned (UCMPL)
4	132117	Mine Owned (UCMPL)
19	132631	Mine Owned (UCMPL)
57	155597	Crown Land
1	182395	Mine Owned (UCMPL)
2	182395	Mine Owned (UCMPL)
3	182395	Mine Owned (UCMPL)
4	182395	Mine Owned (UCMPL)
1	206588	Mine Owned (UCMPL)
2	206588	Mine Owned (UCMPL)
5	206588	Mine Owned (UCMPL)
6	206588	Mine Owned (UCMPL)
7	206588	Mine Owned (UCMPL)
8	206588	Mine Owned (UCMPL)
B	408792	Mine Owned (UCMPL)
C	408792	Mine Owned (UCMPL)
2	431690	State Rail Authority of NSW
1	431692	State Rail Authority of NSW
1	432146	State Rail Authority of NSW
2	432146	Mine Owned (UCMPL)
1	518563	Mine Owned (UCMPL)
2	518563	Mine Owned (UCMPL)
43	736630	Crown Land
44	736630	Mine Owned (UCMPL)
45	736630	Mine Owned (Moolarben)
46	736630	Mine Owned (UCMPL)
47	736630	Mine Owned (UCMPL)
48	736630	Mine Owned (UCMPL)

Lot Number	DP	Ownership
1	534014	Crown Land
2	534014	Private
3	534014	Private
2	537477	Mine Owned (UCMPL)
1	552740	Mine Owned (UCMPL)
1	572488	Mine Owned (UCMPL)
2	572488	Country Energy
101	595015	Mine Owned (UCMPL)
151	595016	Mine Owned (UCMPL)
4	615702	Mine Owned (UCMPL)
8	626648	Mine Owned (Moolarben)
31	631102	Country Energy
32	631102	Mine Owned (UCMPL)
32	633148	Mine Owned (Moolarben)
31	655483	NE Wiradjuri Wilpinjong Community Fund Ltd
1	661026	Mine Owned (UCMPL)
1	701346	Mine Owned (UCMPL)
3	701346	Mine Owned (UCMPL)
4	701346	Mine Owned (UCMPL)
83	704077	Crown Land Leased (UCMPL)
84	704077	Mine Owned (Moolarben)
85	704094	Mine Owned (UCMPL)
292	719007	Crown Land
1	720331	Mine Owned (UCMPL)
1	720332	Mine Owned (UCMPL)
1	720333	Mine Owned (UCMPL)
1	720334	Mine Owned (UCMPL)
2	720334	Crown Land Leased (UCMPL)
3	720334	Crown Land Leased (UCMPL)
4	720334	Mine Owned (UCMPL)
1	720335	Mine Owned (UCMPL)
55	722794	Crown Land Leased (UCMPL)
1	722880	Mine Owned (UCMPL)
2	722880	Mine Owned (UCMPL)
3	722880	Mine Owned (UCMPL)
4	722880	Mine Owned (UCMPL)
1	722881	Mine Owned (Moolarben)
1	722882	Mine Owned (UCMPL)
2	722882	Mine Owned (UCMPL)
41	750735	Crown Land Leased (UCMPL)
42	750735	Crown Land Leased (UCMPL)
43	750735	Crown Land Leased (UCMPL)
44	750735	Private
45	750735	Mine Owned (UCMPL)
46	750735	Mine Owned (UCMPL)

Lot Number	DP	Ownership
49	736630	Mine Owned (UCMPL)
50	736630	Mine Owned (UCMPL)
51	736630	Mine Owned (UCMPL)
52	736630	Mine Owned (UCMPL)
53	736630	Mine Owned (UCMPL)
54	736630	Mine Owned (UCMPL)
2	750735	Crown Land Leased (UCMPL)
3	750735	Mine Owned (UCMPL)
4	750735	Mine Owned (UCMPL)
5	750735	Crown Land Leased (UCMPL)
6	750735	Mine Owned (UCMPL)
7	750735	Mine Owned (UCMPL)
8	750735	Mine Owned (UCMPL)
9	750735	Mine Owned (UCMPL)
10	750735	Mine Owned (UCMPL)
11	750735	Mine Owned (UCMPL)
12	750735	Mine Owned (UCMPL)
13	750735	Mine Owned (UCMPL)
15	750735	Mine Owned (UCMPL)
16	750735	Mine Owned (UCMPL)
17	750735	Mine Owned (UCMPL)
18	750735	Mine Owned (UCMPL)
19	750735	Mine Owned (UCMPL)
20	750735	Mine Owned (UCMPL)
22	750735	Private
23	750735	Private
24	750735	Private
27	750735	Private
28	750735	Private
29	750735	Private
30	750735	Mine Owned (UCMPL)
31	750735	Mine Owned (UCMPL)
32	750735	Private
33	750735	Private
34	750735	Private
35	750735	Mine Owned (UCMPL)
36	750735	Mine Owned (UCMPL)
37	750735	Mine Owned (UCMPL)
38	750735	Private
39	750735	Mine Owned (UCMPL)
13	750773	Crown Land Leased (UCMPL)
14	750773	Crown Land Leased (UCMPL)
15	750773	Crown Land Leased (UCMPL)
16	750773	Crown Land Leased (UCMPL)
17	750773	Mine Owned (UCMPL)
18	750773	Mine Owned (UCMPL)
20	750773	Mine Owned (UCMPL)
25	750773	Private
27	750773	Mine Owned (UCMPL)
28	750773	Mine Owned (UCMPL)

Lot Number	DP	Ownership
47	750735	Mine Owned (UCMPL)
48	750735	Crown Land Leased (UCMPL)
49	750735	Crown Land Leased (Private)
50	750735	Mine Owned (UCMPL)
51	750735	Mine Owned (UCMPL)
52	750735	Mine Owned (UCMPL)
53	750735	Mine Owned (UCMPL)
54	750735	Mine Owned (UCMPL)
55	750735	Mine Owned (UCMPL)
56	750735	Mine Owned (UCMPL)
177	750735	Private
178	750735	Mine Owned (UCMPL)
179	750735	Mine Owned (UCMPL)
180	750735	Mine Owned (UCMPL)
211	750735	Mine Owned (UCMPL)
212	750735	Mine Owned (UCMPL)
213	750735	Mine Owned (UCMPL)
2	750736	Mine Owned (UCMPL)
45	750736	Mine Owned (UCMPL)
46	750736	Mine Owned (UCMPL)
54	750736	Mine Owned (UCMPL)
60	750736	Mine Owned (UCMPL)
61	750736	Mine Owned (UCMPL)
1	750742	Private
62	750742	Private
72	750742	Private
19	750746	Private
57	750746	Private
164	750748	State Conservation Area
55	750759	Private
56	750759	Private
57	750759	Private
58	750759	Private
71	750759	Private
1	750773	Mine Owned (UCMPL)
2	750773	Mine Owned (UCMPL)
3	750773	Mine Owned (UCMPL)
5	750773	Mine Owned (UCMPL)
9	750773	Mine Owned (UCMPL)
11	750773	Mine Owned (UCMPL)
253	755442	Mine Owned (Moolarben)
1*	759017	Department of Education & Training
1^	759017	Mine Owned (UCMPL)
2*	759017	Department of Education & Training
2^	759017	Mine Owned (UCMPL)
3	759017	Mine Owned (Moolarben)
4	759017	Private
5	759017	Mine Owned (UCMPL)
6	759017	Mine Owned (Moolarben)
7	759017	Mid Western Regional Council

Lot Number	DP	Ownership
30	750773	Private
32	750773	Crown Land
52	750773	Crown Land Leased (UCMPL)
54	750773	Mine Owned (UCMPL)
56	750773	Mine Owned (UCMPL)
58	750773	Mine Owned (UCMPL)
59	750773	Mine Owned (UCMPL)
63	750773	Mine Owned (UCMPL)
64	750773	Mine Owned (UCMPL)
65	750773	Mine Owned (UCMPL)
66	750773	Mine Owned (UCMPL)
68	750773	Mine Owned (UCMPL)
70	750773	Mine Owned (UCMPL)
71	750773	Mine Owned (UCMPL)
72	750773	Crown Land Leased (UCMPL)
73	750773	Mine Owned (UCMPL)
74	750773	Mine Owned (UCMPL)
75	750773	Mine Owned (UCMPL)
76	750773	Crown Land Leased (UCMPL)
78	750773	Mine Owned (UCMPL)
79	750773	Mine Owned (UCMPL)
5	755439	Mine Owned (UCMPL)
13	755439	Mine Owned (UCMPL)
20	755439	Mine Owned (Moolarben)
27	755439	Mine Owned (UCMPL)
30	755439	Mine Owned (Moolarben)
33	755439	Crown Land Leased (UCMPL)
8	755442	Mine Owned (UCMPL)
14	755442	Mine Owned (UCMPL)
92	755442	Mine Owned (Moolarben)

[illegible]

^ Lot Section 1, \* Lot Section 2



## Appendix D - Project Approval PA 08\_0184

PDF of Project Approval PA 08\_0184 supplied as Appendix D.

## Appendix E - Rehabilitation Risk Assessment

PDF of the Rehabilitation Risk Assessment conducted on the 23<sup>rd</sup> June 2017 for the preparation of this MOP 2017-2024 is provided as Appendix E.



## Appendix F - Correspondence



Planning &  
Environment  
Resources & Geoscience



Charlie Allan  
General manager  
ULAN COAL MINES LTD  
PMB 3006  
Mudgee NSW 2850

Our ref: OUT17/46052

16 November 2017

Dear Charlie

**CCL 741 (Act 1973), MPL 315 (Act 1973), ML 1341 (Act 1992), ML1365 (Act 1992),  
ML 1366 (Act 1992), ML 1467 (Act 1992), ML 1468 (Act 1992), ML 1511 (Act 1992),  
ML 1554 (Act 1992), ML 1656 (Act 1992), ML 1697 (Act 1992), ML 1754 (Act 1992) -  
ULAN COAL MINES LTD - APPROVAL OF MINING OPERATIONS PLAN**

### NOTICE OF APPROVAL

Pursuant to conditions of mining authorisation numbers, the Mining Operations Plan (MOP) that was submitted to the Department of Planning and Environment – Division of Resources and Geoscience (the Department) on the 03/11/2017 (Department Reference: INW17/66715) is approved for the period from the date of this approval until 30/11/2024.

This MOP approved by the Department is limited to:

- the rehabilitation objectives and completion criteria; and,
- the schedule of rehabilitation activities proposed for the MOP period.

It is the responsibility of the Authorisation Holder to ensure that all mining and mining related operations described in this MOP are as approved within the relevant Project Approval or Development Consent and all necessary approvals, consents or permits required under the relevant NSW or Commonwealth regulations have been obtained prior to carrying out the operations.

It is the responsibility of the Authorisation Holder to fulfil their obligations and commitments to the rehabilitation outcomes and performance standards as approved by the relevant consent authority to ensure the rehabilitation outcomes identified are achieved.

### ASSESSED DEPOSIT

Approval of this MOP has triggered a review of the assessment of the security deposit required to secure funding for the fulfilment of rehabilitation obligations under the above **authorisations**.

Department of Planning and Environment  
516 High Street Maitland NSW 2320 | PO Box 344 Hunter Region MC 2310 | [planning.nsw.gov.au](http://planning.nsw.gov.au)

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Notice of the change in the security deposit condition related to this MOP approval will be provided separately.

## DEFINITIONS

In this letter, words have the meaning given to those terms in the *Mining Act 1992*, unless otherwise specified below.

**Department** means the NSW Department of Planning and Environment.

**Authorisation Holder** means the holder of the relevant authorisation(s).

**Mining Operations Plan** means the project, mining and mining related operations described in the "REVISED - CCL741, MPL315, ML1341, ML1365~ ML1468), ML1511, ML1554, ML1656, ML1697, ML1754 - Mining Operations Plan (MOP)" prepared by Ulan Coal Mines Ltd and dated 19 September 2017.

If you have any questions about this Notice, please contact Stephen Clipperton directly on 02 6360 5359.

Yours sincerely,



Stephen Clipperton  
**A/Manager and Principal Inspector Environment**  
Division of Resources and Geoscience  
NSW Department of Planning and Environment

Signed under delegation from the Minister for Resources, and the Secretary of the NSW Department of Planning and Environment

