

In accordance with Condition 4, Schedule 5 of PA08\_0184 this plan has been subject to updates and revisions submitted to the NSW Department of Planning, Industry and Environment (DPIE) (See Change Information Section 6.4). The Effective date of this document represents the latest acknow ledgement from DPIE that this plan has been prepared to the satisfaction of the Director-General.

# Surface Water and Groundwater Response Plan

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## Preparation of Water Management Plan (WMP) and associated Surface Water and Groundwater Response Plan (SWGWRP)

Project approval was granted for the Ulan Coal - Continued Operations Project by the Minister for Planning on 10 November 2010 (Project Approval (PA 08\_0184)). Condition 34(a) of Schedule 3 of the project approval requires that a WMP be prepared by suitably qualified and experienced persons whose appointment has been approved by the Director-General. This SWGWRP forms one component of the WMP (ULNCX-111515275-99).

In accordance with Condition 34 (b), Schedule 3 of the project approval, Ulan Coal Mines Pty Limited (UCMPL) received notification from the Director-General of the Department of Planning that the Department approved the appointment of Susan Shield, Technical Engineering Manager at Umwelt (Australia) Pty Limited, suitably qualified and experienced to prepare the WMP.

This SWGWRP was initially prepared and reviewed by Susan Shield of Umwelt (Australia) Pty Limited in consultation with UCMPL. This version of the SWGWRP has been reviewed and updated by UCLM as required by Schedule 5 Condition 4 of PA08\_0184 and the recent Modification 5 approval.

# **1** Commitment and Policy

## 1.1 Introduction

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**). Ulan Coal Mines Pty Limited (UCMPL) operates the mine as a joint venture, 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, forestry, 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, Industry and Environment (DPIE), on 15 November 2010 f or continued operations. PA08\_0184 authorises current and proposed mining of the Ulan Mine Complex for the next 21 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 and Ulan Underground mines to operate twenty-four hours a day, 7 days per week. Infrastructure and supporting operations include the Bobadeen Irrigation Scheme (BIS) and Bobadeen Basalt Quarry (**Figure 1.2**). 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) (MOD 3) Approved 14 March 2016; and

• Environmental Assessment: Ulan Continued Operations Project, Longwall Optimisation Project (Ecological, 2018) – (MOD 4), as modified by the Response to Submissions dated August 2018, approved 17 July 2019

• Revision of Ulan West Operational Mine Plan – Modification 5 approved 7th August 2020

To satisfy Condition 34, Schedule 3 of the Project Approval, UCMPL is required to prepare a SWGWRP. This Plan has been developed in accordance with the conditions of the Project Approval specified in **Table 1**. The table summarises the requirements of UCMPL's Project Approval and the section of the plan where the consent condition has been addressed.

The SWGWRP also ensures that UCMPL addresses the water monitoring requirements within the Statement of Commitments, as detailed in the *Ulan Coal - Continued Operations Environmental Assessment* (EA) (Umwelt, 2009).

In accordance with Condition 34 (a), Schedule 3 of the Project Approval this SWGWRP was initially prepared in consultation with EPA, DPI Water, and DRE and by Susan Shield of Umwelt (Australia) Pty Limited, whose appointment has been approved by the Director-General. This update of the SWGWRP has been undertaken internally in accordance with Schedule 5 Condition 4 of PA08\_0184

This SWGWRP has been prepared as a component of the *WMP (ULNCX-111515275-99)*, and should be read in conjunction with the WMP.

### 1.2 Purpose and Scope

The purpose of this SWGWRP is to outline the response and investigation procedures which are to be implemented in the event of any adverse impacts or potential impacts on the surrounding surface water and groundwater environment. This is achieved through a Trigger, Action, Response, Plan (TARP) process.

The triggers associated with each TARP are detailed in each respective monitoring program, that is, the *Surface Water Monitoring Program (SWMP) (ULNCX-111515275-1642)* and the *Groundwater Monitoring Program (GWMP) (ULNCX-111515275-1643)*.

The SWGWRP has also been developed to address the relevant conditions of the Project Approval and the relevant commitments made within the *Ulan Coal – Continued Operations Environmental Assessment* (EA) (Umwelt, 2009) which are outlined in **Section 2** 

The objectives of the SWGWRP are to:

- identify the events that may result in adverse impacts or potential impacts to the surrounding surf ace water and/or groundwater environments;
- outline the response protocols for responding to these adverse impacts, including any required changes to existing controls and management measures;
- address key risks identified in the Environment and Community Risk Register (Appendix B of ULNCX-111515275- 870) in accordance with Environmental Management Strategy ULNCX-111515275- 870 (EMS), and detail the necessary mitigation & management measures; and
- align operating philosophy with the GCAA HSEC framework.



#### Figure 1.1 Location of the Ulan Mine Complex



Figure 1.2 Ulan Coal Approved Operations

# 2 Planning

# 2.1 Project Approvals

The Project Approval was assessed under Part 3A of the EP&A Act 1979 and approval was gained from the Minister of Planning on 15 November 2010 (PA 08\_0184). Since that time, five modifications have been made to the approval, as well as changes resulting from a court judgement and associated Orders. Relevant conditions of PA08\_0184, and an indication of where they are addressed within this plan, are provided in **Table 2.1**.

		Project Approval Conditions	Section of this Document
40.	The mea	e Surface and Ground Water Response Plan must describe what asures and/or procedure would be implemented to:	Sections 217 and 224
	a)	respond to any exceedance of the surface water, stream health, and groundwater assessment criteria;	Sections 5.1.7 and 5.2.4
	b)	offset the loss of any base flow to the Goulburn and/or Talbragar Rivers and/or associated creeks caused by the project;	Section 3.1.5
	c)	compensate landow ners of privately ow ned land w hose w ater supply is adversely affected by the project; and	Section 3.2.1
	d)	mitigate and/or offset any adverse impacts on riparian vegetation	Section 3.2.3

#### Table 2.1 Project Approval (PA 08\_0184) Conditions

# 2.2 Extraction Plan and SMP Approvals

UCMPL have prepared the relevant Subsidence Management Plans (SMPs) and Extraction Plans (EPs) to satisfy conditions of PA 08\_0184, mining leases and SMP Approvals affecting existing and f uture mining areas. Specific surface water and groundwater monitoring relevant to the active extraction plans is described within each extraction plan. For further information regarding surface water monitoring and reporting requirements as they relate to the various SMP/EPs, refer to:

- Section 2.1 of the WMP;
- Appendix A of the Extraction Plan for Ulan West LW1 to 6;
- Appendix A of the Extraction Plan for Ulan Underground LW30, LWW6-LWW8; and
- Subsidence Monitoring Program for Ulan Underground LW27 to 29 and W4 and W5.

# 2.3 Legislation and Guidelines

Surf ace water and groundwater management are undertaken with reference to the policies, principles, regulations and guidelines contained within:

- Protection of the Environment Operations Act 1997 (POEO Act) administered by the Environment Protection Authority (EPA);
- Water Management Act 2000, administered and regulated by the Department of Industry (Water) DOI- Water;
- Water Act 1912, administered by DOI Water;
- Environmental Planning and Assessment Act 1979 (EP&A Act), administered by DPE;
- ; and
- Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales (DEC, 2004).

### 2.3.1 Environment Protection Licence

In the event of a non-compliance with EPL 394 or a community complaint in relation to surface water or groundwater, UCMPL is required to report these in accordance with the relevant conditions of EPL 394 and/or s148 of the *Protection of the Environment Operations Act 1997*. These conditions and the section of this document in which they are addressed are provided in **Table 2.2**.

	EPL Condition	Section of Document
M5	Recording of pollution complaints	Section 4
R2	Notification of environmental harm	Section 4
R3	Written Report	Section 4

#### Table 2.2 EPL 394 Conditions

# 2.4 Consultation

The DPIE provided initial approval for the SWGRP in September 2011, documents were revised and resubmitted to DPIE and this revision includes changes based on comments provided in March 2015. The changes recommended involved changing structure of the SWGWRP, particularly the style and content of TARPs. The March 2015 revision was provided to Department of Primary Industries (DPI) Water and NSW Environment Protection Authority (EPA), NSW Industry - Division of Resources and Energy (DRE), now DPIE and Mid-Western Regional Council (MWRC).

The plan was updated and submitted to DPIE (now the NSW Department of Planning, Industry and Environment (DPI&E) in April 2019 and was approved in June 2019. This version of the SWGWRP was resubmitted to DPI&E in October 2019.

**Section 6.4** Change Information provides information on the revisions to this plan and dates where the version was approval by DPIE.

# 3 Implementation

Trigger Action Response Plans (TARPs) outline the responses required in the event that operations result in impacts to the surrounding surface water and/or groundwater environment outside of the level of impact predicted with the relevant Environmental Assessments and approved under PA08\_0184 and EPL 394.

The TARPS provide response protocols for the following types of impacts that may arise as a result of mining activities at the Ulan Mine Complex:

- surf ace water impacts (including: loss of hardrock basef lows, unauthorised discharges and failure of erosion and sediment control measures);
- groundwater impacts; and
- unforeseen impacts.

# 3.1 Surface Water Impacts

### 3.1.1 Water Quality

Section 3.2 of the SWMP (ULNSD PLN 0055) contains a number of ANZECC trigger levels for surface water quality at the Ulan Mine Complex. In the event that monitoring results demonstrate a trending of elevated results, the TARP as outlined in **Table 3.1, 3.2** and **3.3** will be implemented.

### 3.1.2 Stream Health and Stability

Sections 4.1.6 and 4.1.5 of the *SWMP (ULNCX-111515275-1642)* outline a program of stream health and stability monitoring for the streams and creeks within the predicted subsidence areas. The monitoring includes assessment of channel stability, riparian vegetation condition and macroinvertebrate populations. In the event that the monitoring assessment present results that suggest adverse mining impacts, the TARP as outlined in **Table 3.1** and **3.2** will be implemented.

### 3.1.3 EPL Exceedance

Section 4.1.3 of the SWMP (ULNCX- 111515275- 1642) outlines a monitoring program to satisfy EPL394 conditions associated with monitoring requirements and discharge and pollutant concentration limits for surface water discharges. In the event a non-compliance or criteria exceedance is recorded, the TARP as outlined in **Table 3.1** is to be implemented.

### 3.1.4 Environmental Incident: Unforeseen Hazard, Unplanned Event or Unauthorised Discharge Event

In the event that an environmental incident, such as an unforeseen hazard, unplanned event or unauthorised discharge occurs the TARP as outlined in **Table 3.3** is to be implemented. This TARP includes reference to material harm incidents and the requirement to initiate the Ulan Pollution Incident Response Management Plan (PIRMP) ULN SD PLN 0089 immediately.

### 3.1.5 Loss of Hardrock Baseflows

The groundwater monitoring plan described the approach in respect of offsetting predicted baseflow losses in accordance with PA08\_0184 Schedule 3 condition 29.

As detailed in the *GWMP* (*ULNCX- 111515275- 1643*), the predicted losses to the hardrock contribution to baseflows within Goulburn River and the Talbragar River and associated creeks will be monitored/validated using a combination of the water balance and the groundwater model. The basef low monitoring program is described in Section 4.1.6 of the *GWMP* (*ULNCX- 111515275- 1643*).

In the event that monitoring results identify variances from the losses to hardrock baseflows from the groundwater model predictions, the TARP as outlined in **Table 3.1** will be implemented.

Table 3.1 presents the criteria, monitoring and reporting measures for surface water monitoring within the Goulburn River System.

Table 3.1 SWGWRP Surface Water TARP - Goulburn River System

Water Management System	Monitoring Type	Monitoring Site ID	Monitoring Location	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
Clean Waters	<ul> <li>Monthly Surface Waters</li> <li>Baseflow Monitoring</li> </ul>	• SW01 • SW02	• Goulbum River Upstream, • Goulbum River Downstream	<ul> <li>pH,</li> <li>EC (μS/cm),</li> <li>TSS (mg/L)</li> <li>TDS</li> <li>Turbidity,</li> <li>Flow</li> </ul>	<ul> <li>Continuous by data logger (pH, EC, Flow)</li> <li>Monthly grab sample for TSS.</li> <li>Rainfall (30mm) event sampling</li> </ul>	<b>SW01</b> pH: 6.5 - 8.0 EC: 680 TSS: 50 <b>SW02</b> pH 6.4 – 8.1 EC - 854 TSS - 50	No (ANZECC)	A. Three consecutive elevated monthly averagesfor pH, EC , TSS	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed. AND If continued elevated results are indicated by the investigation to be a mining source, then the EPA and DPIE are notified (this is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested.</li> </ul>
Clean Waters	<ul> <li>Monthly Surface Waters</li> <li>Baseflow Monitoring</li> </ul>	• •SW06 •SW07 •SW08	• Spring Gully • Bobadeen Creek • Curra Creek	<ul> <li>pH</li> <li>EC (µS/cm)</li> <li>TDS (mg/L)</li> <li>TSS (mg/L)</li> <li>Turbidity (NTU),</li> <li>Flow</li> </ul>	<ul> <li>Flow by data logger</li> <li>Monthly grab sample</li> <li>Rainfall (30mm) event sampling</li> </ul>	pH: 6.5 - 8.0 EC: 350 TSS: 50	No (ANZECC)	A. Three consecutive elevated monthly averagesfor pH, EC and TSS/NTU	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed. AND If continued elevated results are indicated by the investigation to be a mining source, then the EPA and DPIE are notified (this is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested</li> </ul>
Clean Waters	<ul> <li>Monthly Surface Waters</li> <li>Baseflow Monitoring</li> </ul>	• SW03 • SW04 • SW05	<ul> <li>Ulan Creek at Bobadeen Discharge</li> <li>Ulan Creek at Old Ulan</li> <li>Ulan Creek at Pleuger Road</li> </ul>	<ul> <li>pH</li> <li>EC (µS/cm)</li> <li>TDS (mg/L)</li> <li>TSS (mg/L)</li> <li>Turbidity (NTU),</li> <li>Flow</li> </ul>	<ul> <li>Flow by data logger</li> <li>Monthly grab sample</li> <li>Rainfall (30mm) event sampling</li> <li></li> </ul>	SW03 pH: 6.5 - 7.9 EC: 1126 TSS: 64 SW04 pH 6.5 - 8.5 EC - 900 TSS - 83.2 SW05 pH 6.5 - 8.5 EC - 900 TSS - 50	Νο	A. Three consecutive elevated monthly averagesfor pH, EC and TSS/NTU	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed. AND</li> <li>C. If continued elevated results are indicated by the investigation to be a mining source, then the EPA and DPIE are notified (this is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested</li> </ul>
Clean Waters	Rainfall Event Sampling	•SW12 •SW13 •SW14 •SW15	CWS (West Conveyor)     CWD Upstream     CWD Downstream     Peanut Dam	<ul> <li>pH</li> <li>EC (µS/cm)</li> <li>TDS (mg/L)</li> <li>TSS (mg/L)</li> <li>Turbidity (NTU),</li> <li>Flow by observation</li> </ul>	• Grab sample after 30mm rainfall event	pH: 6.5 - 8.0 EC: 350 TSS: 50	No (ANZECC)	A. Three consecutive elevated monthly averagesfor pH, EC and TSS/NTU	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed. AND</li> <li>C. If continued elevated results are indicated by the investigation to be a mining source, then the EPA and DPIE are notified (this is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested</li> </ul>

#### Surface Water and Groundwater Response Plan

Water Management System	Monitoring Type	Monitoring Site ID	Monitoring Location	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
Clean Waters	Discharge Monitoring	•LDP 6 •LDP19	<ul> <li>Discharge to Ulan Creek from Bobadeen WTF,</li> <li>Discharge to Ulan Creek from NWSD WTF</li> </ul>	<ul> <li>Discharge Volume (kL/day)</li> <li>pH</li> <li>EC (µS/cm)</li> <li>TSS (mg/L)</li> </ul>	<ul> <li>pH &amp; EC Continuously during discharge.</li> <li>Turbidity Probe.</li> <li>TSS Grab sample weekly during discharge*.</li> <li>Daily volume by flow meter and continuous logger.</li> </ul>	LDP6, pH - 6.5 - 8.0 EC - 900 TSS - 50 Flow - 15ML LDP19 pH - 6.5 - 8.0 EC - 900 TSS - 50 Flow - 30ML	Yes (EPL)	A. Single Exceedance of EPL Parameters	<ul> <li>A. Investigation completed by ECM</li> <li>AND</li> <li>EPA and DPIE are notified of the EPL Exceedance (not incident notification via PIRMP</li> <li>IF</li> <li>ECM investigation reveals actual or potential material harm to the environment, the ECM or OM will initiate the PIRMP immediately.</li> </ul>	A. A remedial action plan is developed and implemented to address the Investigation findings	<ul> <li>A. Follow up information is provided to the EPA and DPIE where requested.</li> <li>AND <ul> <li>A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> </ul> </li> <li>IF <ul> <li>Material Harm Incident - Internal and External Reporting requirements are completed in accordance with Section 4.2 of Ulan's PIRMP, and reporting obligations detailed in Condition R3 of EPL 394 and Condition 6 Schedule 5 of PA08_0184</li> </ul> </li> </ul>
Clean Waters	EPL Water Quality Monitoring	<ul> <li>LMP 18 (SW02)</li> <li>LMP33 (SW01)</li> </ul>	<ul> <li>Downstream Goulbum River Gauging Station</li> <li>Upstream Goulbum River Gauging Station</li> </ul>	• pH • EC (µS/cm) • pH	• Continuous	LMP18 pH - 6.4 - 8.1 EC - 854 TSS - 53 LMP33 pH - 6.5 - 8.8 EC - 680 TSS - 111	No (ANZECC)	<ul> <li>A. Three consecutive elevated monthly averagesfor pH, EC, TSS or Flow (flow trigger applies to downstream station only)</li> <li>B. Loss of continuous data during discharge</li> </ul>	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed. AND If continued elevated results are indicated by the investigation to be a mining source, then the EPA and DPIE are notified (this is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested</li> </ul>
Clean Waters	Channel Stability Monitoring	<ul> <li>Ulan Creek</li> <li>UW Subsidence Area (Flowlines2 and 4) (Sites will change depending on mining schedule)</li> </ul>	Ulan Creek and selected tributaries	<ul> <li>Observational Assessment:</li> <li>Drainage Line Characteristics</li> <li>Vegetation Characteristics</li> <li>Bank Characteristics</li> <li>Stability Rating</li> </ul>	<ul> <li>Annual Ulan Creek</li> <li>Annual Targeted Monitoring based on Mining Schedule</li> <li>Pre-mining and 24 monthspost- mining</li> </ul>	<ul> <li>Findings indicate mining induced impacts)</li> </ul>	Yes (SMP/EP/PA /EPL)	A. Following the receipt of Creek Stability report indicating impacts attributed to subsidence or other related mining impact.	A. An investigation is initiated with Ulan's Subsidence or other (relevant) Consultantsto determine if impactsare within (SMP / EP/PA) predictions.	<ul> <li>A. If WITHIN predicted and approved impact, a remedial action plan is developed and implemented to address the report findings</li> <li>B. If OUTSIDE of predicted and approved impact AND Material harm has NOT been threatened or caused, DPIE and EPA will be notified. <ul> <li>IF</li> <li>impacts are related to subsidence, Agencies will be notified in accordance with (Condition 16 of Ulan West SMP/EP and Ulan No3 Approval, )**</li> </ul> </li> <li>C. IF material harm hasbeen threatened or caused, the ECM or OM will trigger the PIRMP immediately.</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested.</li> <li>AND Other stakeholders in accordance with (Condition 11 of Ulan West SMP/EP and Ulan No3 Approval)**</li> <li>C. Internal and External Reporting requirements are completed in accordance with Section 4.2 of Ulan's PIRMP, and reporting obligations detailed in Condition R3 of EPL 394 and Condition 6 Schedule 5 of PA08_0184</li> </ul>

Water Management System	Monitoring Type	Monitoring Site ID	Monitoring Location	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger		Action		Responses		Plan
Clean Waters	Stream Health Monitoring	<ul> <li>AQ2</li> <li>AQ5</li> <li>AQ6</li> <li>AQ7</li> <li>AQ8</li> <li>AQ11</li> <li>AQ13</li> <li>AQ18</li> <li>AQ19</li> <li>AQ20</li> <li>AQ21</li> </ul>	<ul> <li>Goulbum River,</li> <li>Ulan Creek,</li> <li>Bobadeen Creek</li> <li>Cockabutta Creek</li> <li>Mona Creek</li> </ul>	RARC     AusRivAS     SIGNAL     Salinity Index	• Annual	<ul> <li>Findings indicate mining induced impactsor Data is outside of natural variability as per specialist advice.</li> </ul>	No	A. Following the receipt of Stream Health report indicating impacts attributed to subsidence or other related mining impact.	Α.	An investigation is initiated with Ulan's Subsidence and other (relevant) Consultants to determine if impacts are within (SMP / EP/PA) predictions.	А. В.	If WITHIN predicted and approved impact, a remedial action plan is developed and implemented to address the report findings If OUTSIDE of predicted and approved impact AND Material harm has NOT been threatened or caused, DPIE and EPA will be notified. IF impacts are related to subsidence, Agencies will be notified in accordance with (Condition 16 of Ulan West SMP/EP and Ulan No3 Approval, )** IF material harm has been threatened or caused, the ECM or OM will trigger the PIRMP immediately.	A. B. C.	A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report and Subsidence Status/ End of Panel and Annual Reports (where applicable). Follow up information is provided to the EPA and DPIE where requested. AND Other stakeholders in accordance with (Condition 11 of Ulan West SMP/EP and Ulan No3 Approval)** Internal and External Reporting requirements are completed in accordance with Section 4.2 of Ulan's PIRMP, and reporting obligations detailed in Condition R3 of EPL 394 and Condition 6 Schedule 5 of PA08_0184

#### Surface Water and Groundwater Response Plan

Table 3.2 presents the criteria, monitoring and reporting measures for surface water monitoring within the Talbragar River System.

#### Table 3.2 SWGWRP Surface Water TARP - Talbragar River System

Water Management System	Monitoring Type	Monitoring Site ID	Monitoring Location	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
Clean Waters	Monthly Surface Waters     Baseflow Monitoring	• SW09 • SW10 • SW11	<ul> <li>Talbragar River</li> <li>Cockabutta Creek</li> <li>Mona Creek</li> </ul>	•pH, •EC (µS/cm), •TSS (mg/L) •TDS •Turbidity, •Flow	Monthly grab sample     Flow by data logger     Rainfall event (30mm) sampling	<b>SW10, SW11</b> pH - 6.5 - 8.0 EC - 350 TSS - 50 <b>SW09</b> pH - 6.5 - 8.5 EC - 2200 TSS - 50	No (ANZECC)	A. Three consecutive elevated monthly averagesfor pH, EC, TSS or Flow	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings</li> <li>B. The remedial action plan is re- assessed.</li> <li>AND If continued elevated results and indicated by the investigation the be a mining source, then the EPA and DPIE are notified (th is not considered incident notification under PA08_0184 Schedule 5, condition 6 or PIRMP)</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plansis provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested PA08_0184</li> <li>s</li> </ul>
Clean Waters	• Stream Health Monitoring	• AQ15 • AQ16 • AQ17	Talbragar River, Cockabutta Creek, Mona Creek	•RARC •AusRivAS •SIGNAL •Salinity Index	• Annual	• Findingsindicate mining induced impacts or Data is outside of natural variability asper specialist advice.	No	Following the receipt of Stream Health report indicating impacts attributed to subsidence or other related mining impact.	A. An investigation is initiated with Ulan's Subsidence and other (relevant) Consultantsto determine if impacts are within (SMP / EP/PA) predictions.	<ul> <li>A. If WITHIN predicted and approved impact, a remedial action planis developed and implemented to address the report findings</li> <li>B. If OUTSIDE of predicted and approved impact AND Material harm has NOT been threatene or caused, DPIE and EPA will be notified.</li> <li>IF impacts are related to subsidence, Agencies will be notified in accordance with (Condition 16 of Ulan West SMP/EP and Ulan No3 Approval)**</li> <li>C. IF material harm has been threatened or caused, the ECM or OM will trigger the PIRMP immediately.</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plansis provided within the Annual Environmental Report.</li> <li>B. Follow up information is provided to the EPA and DPIE where requested.</li> <li>AND Other stakeholders in accordance with (Condition 11 of Ulan West SMP/EP and Ulan No3 Approval)**</li> <li>C. Internal and External Reporting requirements are completed in accordance with Section 4.2 of Ulan's PIRMP, and reporting obligations detailed in Condition 6 Schedule 5 of PA08_0184</li> </ul>

# 3.1.7 SWGWRP – Trigger Action Response Plan (Events)

Table 3.3 presents the criteria, monitoring and reporting measures for events: Environmental Incident: Unforeseen Hazard, Unplanned Event or Unauthorised Discharge

#### Table 3.3 SWGWRP Surface Waters and Groundwater TARP – Events

Water Management System	Event	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
Clean Waters	<ul> <li>Env ironmental Incident: Unforeseen Hazard, Unplanned Event or Unauthorised Discharge event is defined as:         <ul> <li>Loss of mine water or sediment laden waters from an onsite water containment structure, including water management dam, sediment dam, catch drains, pipelines and pumping stations released into creeks and drainage lines; the event threatens or causes material harm and the discharge may or may not flow offsite</li> </ul> </li> </ul>	Material Harm Incident As defined by Section 147 of the POEO Act, a material harm incident hasoccurred if the incident: • involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or • results in actual or potential loss (in aggregate, exceeding \$10,000.00	Yes (EPL/ PA)	• Incident occurs	<ul> <li>A. Management of an incident is in accordance with UCMPL Incident Response and the PIRMP Site Supervisors review and escalate notifications to departments, managers and the senior management team as required (determined by incident risk).</li> <li>IF</li> <li>The incident is determined to be 'an incident or set of circumstances, during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution to land, water or air, has occurred, is occurring or is likely to occur' a member of the ECM (or delegate) will be notified.</li> <li>B. IF the ECM or OM determines the incident to threaten or cause material harm, the PIRMP will be initiated.</li> </ul>	<ul> <li>A. Incident is investigated and reported internally; corrective actions are applied where appropriate. The E&amp;C Team is involved in incident investigation and mitigation processes.</li> <li>B. The ECM and OM will trigger the Incident Management process until the incident closed AND         <ul> <li>The ECM may Initiate a monitoring program, for up to five daysfollowing the discharge event, which is to include: monitoring of the discharge water (where possible) for pH, EC, TDS and TSS (additional / full suites as appropriate); monitoring upstream and downstream of the discharge point for the above parameters; photograph monitoring of the discharge point for the discharge point for the discharge point following cessation of the discharge (if a volume exceedance occurs), and; a stream health survey downstream of the discharge point following cessation of the discharge point following cessation of the discharge point following cessation of the discharge if a volume exceedance occurs), and; a stream health survey downstream of the discharge point following cessation of the discharge point following cessation of the discharge if a volume exceedance occurs), and; a stream health survey downstream of the discharge point following cessation of the discharge point following cessation of the discharge if a volume exceedance occurs), and; a stream health survey downstream of the discharge point following cessation of the discharge point following</li></ul></li></ul>	<ul> <li>A. A summary of environmental incidents are provided within the Annual Environmental Report.</li> <li>B. Internal and External Reporting requirements are completed in accordance with Section 4.2 of Ulan's PIRMP, and reporting obligations detailed in Condition R3 of EPL 394 and Condition 6 Schedule 5 of PA08_0184 AND The ECM will update the EMS (as required) in accordance with PA08_0184 Schedule 5 Condition 4</li> </ul>

Table 3.4 presents the criteria, monitoring and reporting measures for events: Base Flow Loss for Surface Water Sites and The Drip.

#### Table 3.4 SWGWRP Surface Waters and Groundwater TARP – Events

Water Management System	Event	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Response
Clean Waters	• Base Flow Loss for Surface Water Sites and The Drip	Other than predicted Lossin Base Flow Goulbum River and Talbragar River Systems (accounting for seasonally variability)	Yes (PA)	<ul> <li>A. Annual assessment of groundwater monitoring data indicates baseflow loss may exceed EA predictions.</li> <li>OR</li> <li>A single Complaint received from private-landholder regarding base flow loss</li> <li>B. Annual assessment of baseflow data (trend analysis) displays 3 consecutive years of baseflow loss above EA predictions.</li> <li>OR</li> <li>Reported or Observed Instantaneous baseflow loss that is uncharacteristic of baseline conditions.</li> <li>OR</li> <li>Mining Impacts cause change in base flow and adversely affects private landholders</li> <li>OR</li> <li>Complaint received from more than one private-landholder regarding base-flow loss</li> </ul>	<ul> <li>A. Investigation completed by reviewing monitoring data, historical averages and operational activities.</li> <li>B. Investigation completed by ECM, reviewing monitoring data, historical averages and operational activities.</li> <li>AND</li> <li>ECM assesses impact to private landholders</li> </ul>	<ul> <li>A. A remedial action developed and im address the Investi</li> <li>B. The remedial acti consecutive) isre AND the EPA and notification of the elevated criteria ( notification via PII</li> <li>ANE</li> <li>ECM develops en consultation strate private landholde consultation with</li> </ul>

ses		Plan
n plan is mplemented to stigation findings ition plan (3 re-assessed ad DPIE are e continued (not incident PIRMP) ND angagement and itegy for affected lers, in h EPA and DPIE	А.	A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report. Follow up information is provided to the EPA and DPIE where requested PA08_0184

# 3.2 Groundwater Impacts

### 3.2.1 Privately Owned Bores

Depressurisation and drawdown of the groundwater table as a result of mining activities has the potential to cause some loss of yield (MER, 2009) to 13 privately owned bores as defined by the predicted drawdown contours (refer to **Table 3.5** and **Figure 3.1**). The TARP as outlined in **Table 3.5** will be implemented, to support provision of water to affected landholders and identify if additional private bores are impacted by depressurisation.

Private Bore (PB) 8 is located within a subsidence impact area such that it may fail when mining occurs. PB8 is located over Ulan West Longwall panel LW7 (refer to **Table 3.5** and **Figure 3.1)** and is scheduled to be mined in 2021. A second private bore, PB2 has recently been acquired through the land acquisition process. The potential impacts of subsidence on PB8 will be managed via Private Property Management Plans which are required to be developed in advance of the intended extraction and in consultation with the owners.



Figure 3.1 Private Bores

### 3.2.2 Variations from Groundwater Model Predictions

As detailed in the GWMP (ULNCX-111515275-1643), groundwater monitoring results will be compared to groundwater model predictions and the site derived trigger values on an annual basis to compare actual groundwater levels with predictions in the EA. In the event that monitoring reports suggest divergence from the predicted trends (i.e. from numerical groundwater modelling predictions and the site derived triggers), the TARP as outlined in **Table 3.6** will be implemented.



#### Figure 3.2 North Monitoring Network

### 3.2.3 Groundwater Dependant Ecosystems

There have been no groundwater-dependent Ecosy stems (GDEs) recorded within the boundary of the Ulan Mine Complex. Specialist groundwater studies undertaken by Mackie Environmental Research (MER) (2009) (page 29 of the Groundwater Assessment, Appendix 6 of EA) have determined:

Number: ULNCX-111515275-1644 Owner: Environment and Community Manager Status: Draft Version: 9.3 Effective: 06/06/2019 Review: 3 Years ".....there are no GDEs within the project area that are likely to be impacted by the loss of formation groundwater."

A program f or monitoring riparian vegetation is outlined in the *Biodiversity Management Plan (ULNCX-111515275-225)* and Section 3.2.2.2 of the *SWMP (ULNCX-111515275-1642)*. Monitoring results will be compared against historical data to identify any potential deterioration or improvement in the condition of riparian vegetation ecosystems. In the event deterioration is identified the processes outlined in **Table 3.1 – Stream Health** will be implemented.

# 3.2.4 SWGWRP – Trigger Action Response Plan Groundwater

Tables 3.5 and 3.6 presents the criteria, monitoring and reporting measures for groundwater.

Water Management System	Monitoring Type	Monitoring Site ID	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)		Trigger	Action	Responses		Plan
Groundwater	Private Bores Located outside of Predicted Groundwater Drawdown Contours	<ul> <li>PB1</li> <li>PB3</li> <li>PB4</li> <li>PB31</li> <li>PB6</li> <li>PB7</li> <li>PB10</li> <li>PB12</li> <li>PB15</li> <li>PB16</li> <li>PB17</li> <li>PB18</li> <li>PB19</li> <li>PB20</li> <li>PB22</li> <li>PB23</li> <li>PB24</li> <li>PB25</li> <li>PB26</li> <li>PB27</li> <li>PB28</li> <li>PB29</li> <li>PB34</li> <li>PB35</li> <li>PB36</li> <li>PB37</li> </ul>	<ul> <li>pH,</li> <li>EC (μS/cm</li> <li>Depth</li> </ul>	<ul> <li>Annual</li> <li>Upon Request</li> </ul>	<ul> <li>pH and EC based on baseline data</li> <li>Departure from EA predicted trends and site derived Trigger Values</li> </ul>	No	А. В.	Stage 1 – Three consecutive measurements of > 95% baseline data or Stage 2 - ±15% divergence from baseline data collected during previous sampling events Greater depressurisation than that predicted by numerical groundwater modelling and site derived Trigger Values. Complaint received from private landholder	<ul> <li>A. Investigation completed by reviewing a number of the following</li> <li>additional monitoring of the bore (selected trace metals/elements, in particular bromide and iodine; nitrate, nitrite and ammonia; and isotopes - oxygen and deuterium - to enable the determination of source areas and mixing patterns)</li> <li>Review operation of bore pump, bore recovery times; and baseline data</li> <li>Conduct water quality trend analysis with adjacent bores</li> <li>Review groundwater model predictions, confirm model assumptions are correct/ reflect what is occurring in the mine;</li> <li>Review recent monitoring results for adjacent bores;</li> <li>Review operations and investigate for links to operational activities;</li> <li>Investigate any external influence which may be affecting the results including climatic data;</li> <li>Determine if an incident has potentially occurred; and</li> <li>E &amp; C technician to document complaint in workbook and provide to E&amp;C team. All conversations with private landholdersto be documented.</li> <li>Investigation completed by ECM</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings. This may include;</li> <li>Increase monitoring frequency for the bore;</li> <li>Provide an alternative water supply for existing usage, if UCMPL operations are found to be the cause of depressurisation;</li> <li>Lower/replace borehole pump;</li> <li>Replace entire bore if required; and</li> <li>Existing remedial action plan is re- assessed and the EPA and DPIE are notified if groundwater bores in this group are found to have depressurisation or drawdown effects.</li> </ul>	А. В.	A summary of monitoring results, investigations and remedial action plansis provided within the Annual Environmental Report. An investigation report is provided to the EPA and DPIE within 7 days following notification.
Groundwater	Private Bores Located within Predicted Groundwater Drawdown Contours (in excess of 2m)	PB05, PB8, PB9, PB10, PB11, PB14, PB17, PB21, PB30, PB31, PB32, PB33 and PB26.	<ul> <li>pH,</li> <li>EC (µS/cm</li> <li>Depth</li> </ul>	• Annual Upon Request	<ul> <li>pH and EC based on baseline data</li> <li>Departure from EA predicted trends and site derived Trigger Values</li> </ul>	No	А. В.	Three consecutive measurements of > 95% baseline data or Stage 2 ±10% divergence from baseline data collected during previous sampling events. Greater depressurisation than that predicted by numerical groundwater modelling and site derived Trigger Values. Complaint received from private landholder	<ul> <li>A. Investigation completed by reviewing a number of the following</li> <li>additional monitoring of the bore (selected trace metals/elements, in particular bromide and iodine; nitrate, nitrite and ammonia; and isotopes - oxygen and deuterium - to enable the determination of source areas and mixing patterns)</li> <li>Review operation of bore pump, bore recovery times; and baseline data</li> <li>Conduct water quality trend analysis with adjacent bores</li> <li>Review groundwater model predictions, confirm model assumptions are correct/ reflect what is occurring in the mine;</li> <li>Review recent monitoring results for adjacent bores;</li> <li>Review operations and investigate for links to operational activities;</li> <li>Investigate any external influence which may be affecting the results including climatic data;</li> <li>Determine if an incident has potentially occurred; and</li> <li>Equivalent water supply to be provided to the owner (at least on an interim basis) within 24 hoursof the loss being identified.</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings. This may include;</li> <li>Increase monitoring frequency for the bore;</li> <li>Provide an alternative water supply for existing usage;</li> <li>Lower/replace borehole pump;</li> <li>Replace entire bore if required; and</li> <li>B. Ensure compensatory water supply measures if required provide an alternative long-term supply of water that is equivalent to the loss attributed to the project.</li> <li>C. Existing remedial action plan is re- assessed and the EPA and DPIE are notified if there is variance from EA predictions variance.</li> </ul>	А. В.	A summary of monitoring results, investigations and remedial action plansis provided within the Annual Environmental Report. Follow up information is provided to the EPA and DPIE where requested PA08_0184 Ensure the compensatory water supply measures provide an alternative long-term supply of water that is equivalent to the loss attributed to the project. Equivalent water supply must be provided (at least on an interim basis) within 24

Table 3.5 SWGWRP Groundwater TARP – Privately Owned Bores

Water Management System	Monitoring Type	Monitoring Site ID	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
								<ul> <li>C. E&amp;C Technician to document complaint in workbook and provide to E&amp;C team. All conversations with private landholders to be documented</li> <li>Investigation completed by ECM</li> </ul>		hours of the loss being identified.

#### Table 3.6 SWGWRP Groundwater TARP – Groundwater Monitoring Wells

Water Management System	Monitoring Location	Parameters	Frequency	Criteria	Compliance Criteria (Exceedance)	Trigger	Action	Responses	Plan
Groundwater	Groundwater Monitoring North Monitoring Network (refer to \$4.1.3 GWMP for IDs)	<ul> <li>Depth</li> <li>pH,</li> <li>EC (µS/cm</li> <li>Depth</li> <li>Annually: <ul> <li>metals,</li> <li>TDS</li> <li>Reactive silica</li> <li>Ammonia</li> <li>Nitrate</li> <li>Nitrite</li> <li>Major anions&amp; cations</li> </ul> </li> </ul>	Quarterly and Annual	Model Predictions and Site derived Trigger Values Baseline (Chemical Analysis for EC and pH)	Depth - Yes (PA08_0184 Impact Predictions and Assessment Comparison) Chemical – No Baseline Data	<ul> <li>A. Greater depressurisation in monitoring bore than predicted by numerical groundwater modelling or exceedance of Trigger Value.</li> <li>B. Divergence from baseline data (Stage 1 – Three consecutive measurements of &gt; 95% baseline data or Stage 2 - One exceedance of Historical Maximum).</li> </ul>	<ul> <li>A. Investigation completed by reviewing the following</li> <li>additional monitoring of the bore (selected trace metals/elements, in particular bromide and iodine; nitrate, nitrite and ammonia; and isotopes - oxygen and deuterium - to enable the determination of source areas and mixing patterns)</li> <li>Conduct water quality trend analysis with adjacent bores</li> <li>Review groundwater model predictions, confirm model assumptions are correct/ reflect what is occurring in the mine;</li> <li>Review recent monitoring results (NMN) for adjacent bores;</li> <li>Review operations and investigate for links to operational activities;</li> <li>Investigate any external influence which may be affecting the results including climatic data;</li> <li>Determine if an incident has potentially occurred; and</li> <li>Investigation completed by ECM and Corrective Action Plan developed and implemented (asper above)</li> </ul>	<ul> <li>A. A remedial action plan is developed and implemented to address the Investigation findings. This may include;</li> <li>Increase monitoring frequency;</li> <li>Confirm any affect this could have on private bores, baseflow losses and or groundwater extraction rates; and</li> <li>B. Existing remedial action planis re- assessed and the EPA and DPIE are notified if impacts are greater than predicted in the EA.</li> </ul>	<ul> <li>A. A summary of monitoring results, investigations and remedial action plans is provided within the Annual Environmental Report.</li> <li>B. An investigation report is provided to the EPA and DPIE within 7 days following notification.</li> </ul>

#### Surface Water and Groundwater Response Plan

# 4 Reporting and Review

# 4.1 Reporting

For details of water reporting requirements refer to Section 4.5 of the WMP (Table 4.1).

The following will be reported in the Annual Review:

- Non-compliances with EPL 394 and Project Approval;
- Exceedances of surface water and groundwater trigger levels;
- Identified impacts on stream health and/or channel stability, including losses to base flow;
- Impact on water supply to privately owned land;
- Community complaints; and
- Any actions taken in response to these impacts (where applicable and the effectiveness of the actions in preventing a re-occurrence of the impact.

# 4.2 Community Complaints

Community complaints received by UCMPL are managed in accordance with ULNCX-111515275-3376 Complaints Procedure which requires recording complaints, complaint investigation and follow up actions. A 24 hour, 7 day a week community and employee information telephone line 1800 647 630 and email address ulancommunity@glencore.com.au are available to receive comments and complaints from the community.

# 4.3 **Review and Improvement**

The Environment and Community Manager (or delegate) will review this monitoring program in accordance with the PA 08\_0184 Schedule 5 condition 4 which states:

On an annual basis and after submission of the Annual Review report, UCMPL shall review, and if necessary revise, the strategies, plans, and programs required under Project Approval 08\_0184 to the satisfaction of the Director-General within 3 months of:

- a) the submission of an annual review under ...;
- b) the submission of an incident report under ...;
- c) the submission of an audit report under ...; and
- d) any modification to the conditions of this approval, (unless the conditions require otherwise).

Changes in environmental requirements, technology and operational procedures may be included in the review. Changes are recorded in the revision history (section 11.2) Updated versions of the approved monitoring program are publicly available on UCMPL's website at <u>www.ulancoal.com.au</u>

### 5

# Accountabilities

Role	Accountabilities for this document
Operations Manager	• Approve appropriate resources for the effective implementation of the Surf ace Water and Groundwater Response Plan.
	• Ensure the effective implementation of strategies designed to reduce surf ace and groundwater impacts from the operation.
	• Ensure any potential or actual surface or groundwater response issue is reported in accordance with legal requirements and the corporate standard.
	• Authorise internal and external reporting requirements of the Surface Water and Groundwater Response Plan.
	• Approve subsequent revisions of the Surface Water and Groundwater Response Plan.

Role	Accountabilities for this document
Environment and Community Manager	• Provide that sufficient resources are allocated for the implementation of the Surface Water and Groundwater Response Plan.
	• Ensure appropriate resources are budgeted for to enable UCML to respond appropriately to TARPs.
	• Ensure that surface and groundwater considerations are undertaken in the installation of all new infrastructure to be installed at the operation, where applicable.
	• Ensure that surface and ground water management TARPs are implemented in accordance with the Surface Water and Groundwater Response Plan.
	• 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.
	• Ensure any potential or actual surface or groundwater monitoring issue is reported in accordance with legal requirements and the corporate standard.
	• Provide visible and proactive leadership in relation to the surface and groundwater management.
	• Ensure all internal and external reporting requirements are met, including incident reporting in accordance with EMS.
	• Ensure all reporting complies with internal and external monitoring standards, protocols and regulations.
	Proactively engage government and community as required.
	• Coordinate the ongoing review of the Surface Water and Groundwater Response Plan.
	• Review and approve external reports e.g. Annual Review Report, prior to final approval by the Operations Manager.

Role	Accountabilities for this document
Environment & Community	Manage and maintain the surface water and groundwater monitoring programs.
	• Ensure monitoring equipment is operated in accordance with relevant industry standards and protocols.
	• Ensure any potential or actual water management issue, including incidents and non conformances is reported to the ECM.
	Coordinate incident investigation processes including associated reporting requirements, in accordance with the EMS.
	• Coordinate the implementation of corrective actions and evaluate their effectiveness.
	• Participate in the ongoing review of the Surface Water and Groundwater Response Plan.
Environment & Community Officer	• Provide copies of updated management plans to CCC members and upload to the UCML website.
	• Ensure that all monitoring records are effectively maintained on site in accordance with the EMS.
	• Prepare internal and external reports for review by ECM.
Project Manager	• Ensure any potential or actual water management issues, including environmental incidents, are reported to the ECM.
Surf ace Projects Coordinator	• Ensure any potential or actual water management issues, including environmental incidents, are reported to the ECM.
All Supervisors	• Ensure any potential or actual water management issues, including environmental incidents, are reported to the ECM.
All Employees & Contractors	• Ensure any potential or actual water management issues, including environmental incidents, are reported to the Project Manager, Supervisor or Task Coordinator.
	• Seek approval from the Project Manager, Supervisor or Task Coordinator prior to making changes to the water management system.

# **6 Document Information**

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

# 6.1 Related Documents

Related documents, listed in **Table 6.1** below, are internal documents directly related to or referenced f rom this document.

#### Table 6.1 Internal documents

Number	Title		
ULNCX- 111515275- 870	Environmental Management Strategy (EMS)		
ULNCX- 111515275- 224	Erosion and Sediment Control Plan (ESCP)		
ULNCX- 111515275- 1642	Surface Water Monitoring Program (SWMP)		
ULNCX- 111515275- 1643	Groundwater Monitoring Program (GWMP)		
ULNCX-111515275-1641	Goulburn River Diversion Remediation Plan (GRDRP)		
ULNCX-111515275-2811	Ulan West Underground Mine Extraction Plan Longwalls 1 to 4		
ULNCX-111515275-1804	Subsidence Monitoring Program (Ulan Underground LW27-29 and W4-5)		

This SWGWRP was developed in accordance with the relevant CAA policies and standards outlined in the EMS.

# 6.2 **Definitions**

#### Table 6.2 Definitions

Term	Definition
Alluvium	Sediment deposited by a flow ing stream, e.g. clay, silt, sand etc.
BIS	Bobadeen Irrigation Scheme
Borehole	A hole formed by boring or auguring
DPIE	Department of Planning, Industry and Environment
DPI	Department of Primary Industries
DRE	Division of Energy and Resources
EA	Environmental Assessment
EMS	Environmental Management Strategy
EP	Extraction Plan
EP&A Act	Environmental Planning and Assessment Act 1997
EPA	Environmental Protection Authority
EPL	Environment Protection Licence 394
(G)CAA	(Glencore) Coal Assets Australia
GDEs	Groundwater Dependant Ecosystems
Groundw ater	Sub-surface water which is within the saturated zone of supply wells and springs. The upper surface of this saturated zone is called the water table.
GWMP	Groundwater Monitoring Program
LGA	Local Government Area
MER	Mackie Environmental Research
MWRC	Mid Western Regional Council
NOW	NSW Office of Water
PA	Project Approval
Piezometer	A small diameter bore lined with a slotted tube used for determining the standing water level of groundwaters.
POEO Act	Protection of the Environment Operations Act 1977
SMP	Subsidence Management Plan
SWGWRP	Surface Water and Groundwater Response Plan
SWMP	Surface Water Monitoring Program
TARP	Trigger Action Response Plan
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UCMPL	Ulan Coal Mines Pty Limited
WMP	Water Management Plan

# 6.3 **Reference Information**

#### Table 6.3 Reference Information

Reference	Title					
Legislation	Protection of the Environment Operations Act 1997					
	Water Management Act 2000					
	Water Act 1912					
	Environmental Planning and Assessment Act 1979					
Australian	AS/NZS 5667.1:1998. Water Quality – Sampling – Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples.					
Standards	AS/NZS 5667.10:1998 Water Quality - Sampling - Guidance on Sampling of Waste Waters.					
	Environmental Management Strategy (ULNCX- 111515275- 870)					
	Water Management Plan (ULNCX-111515275-99)					
	Surface Water Monitoring Program (ULNCX- 111515275- 1642)					
	Groundwater Monitoring Program (ULNCX- 111515275- 1643)					
	Erosion and Sediment Control Plan (ULNCX- 111515275- 224)					
	Goulburn River Diversion Remediation Plan (ULNCX-111515275-1641)					
	Biodiversity Management Plan (ULNCX- 111515275- 225)					
	Complaints Procedure (ULNCX-111515275-3376)					
	ANZECC/ARMCANZ, 2000. National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality.					
	Department of Environment and Conservation (DEC), 2004. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW.					
	Eco Logical (2018) Environmental Assessment Modification to Ulan Continued Operations, Longwall Optimisation Project (January 2018)					
External	Mackie Environmental Research (MER), 2009. Ulan Coal – Continued Operations Groundwater Assessment. Prepared for Ulan Coal Mines Pty Limited.					
	Umwelt (Australia) Pty Ltd, 2009. Ulan Coal – Continued Operations Environmental Assessment. Prepared for Ulan Coal Mines Pty Limited.					
	Umwelt (2011) Ulan Coal Continued Operations North 1 Underground Mining Area, Minor Modification to Ulan No.3 & Ulan West Mine Plans & Proposed Concrete Batching Plant					
	Umw elt (May 2012) Environmental Assessment Modification to Ulan Coal Continued Operations, Ulan West Mine Plan (Approved Panels $1 - 4$ ) and Construction Blasting					

# 6.4 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in *Table 6.4* below.

		-	
Version	Date	Review team (consultation)	Change Summary
1	31 March 2011	Jamie Lees, Cheryl Henriques Susan Shield (Umwelt)	New management plan to address requirements of PA 08_0184.
2	1 April 2011	Cheryl Henriques	Fixed formatting - no change to content
3	19 July 2011	Susan Shield (Umwelt), Cheryl Henriques, Jamie Lees	Update to plan following DPIE comments
4	21 July 2011	Cheryl Henriques	Fixed formatting - no change to content
5	21 July 2011	Cheryl Henriques	Fixed formatting - no change to content
5.1	15 June 2012	Robyn Stoney, lan Flood, Susan Shield (Umw elt), Rachel Murray	Annual Review & updated based on MOD 1 & EPL 394 variation
5.2	10 June 2013	Tara Stokes, Robyn Stoney	AER 2012 Management Plan Review : Mine plans were revised as per DPIE advice of versioning issue. SMP conditions for LW27-29, W4 & W5 included.
5.3	10 September 2013	Robyn Stoney	Audit review : Include trigger levels be established for groundw ater quality; Review of the TARP process – response to variations; Biennial review and comparison w ith model predictions for groundw ater
6	24 June 2014	Susan Shield, Ian Flood, Robyn Stoney and Stephen Bragg	Update Figures and Tables and table of contents;      Formatting;      Align document to Glencore requirements;      Address DPIE comments; and      Remove SMP/EP conditions to reference in WMP.
6.1	30 June 2015	Steve Shoesmith and Robyn Stoney	Align document to Glencore HSEC;     Address DPIE comments
6.2	14 May 2016	Angela van der Kroft	Commenced review in response of Approval of Modification 3
6.3	31 May 2016	Tom Frankham	<ul> <li>Review in response of Approval of Modification 3.</li> <li>Inclusion of commitments made to DPI Water in response to Extraction Plan LW1 -4 concerning triggers for groundw ater monitoring.</li> </ul>
7.0	5 December 2016	Tara Stokes	Publish Version 6.3 approved by DPIE 2/12/2016
7.1	30 June 2017	Robyn Stoney	Updated figures 1.1 and 1.2. Updated trigger values per 2016 Annual Review, added definition of incident from PA0- 8_0184. Corrected TARP references to flow triggers where flow assessment is qualitative. Adjusted wording in respect of baseflow losses, which is assessed using draw dow ns measured against predictions in the groundwater model. Modified TARP for response to observed water levels in private bores and or monitoring well departing from modelled predictions. Removed text from

#### Table 6.4 Change information

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			Appendix A as considered it unnecessary.
7.11	06 July 2017	Kristy Bennetts	Table 3.5 updated to reflect private landholder complaint documentation process Administrative Update Updated Section 3.2.4 SWGWRP (Groundw aters) TARP – Privately Ow ned Bores – to reflect current ow nership
7.13	Feb 19	Lucy Stuart	Update document with changes in UCLM document control, review and update of tables for consistency with other approved plans.
8.0	April 2019	Lucy Stuart, Robbie Mills	Addressed feedback from DPIE, plan approved 6/06/2019.
9.0	June 2019	Tara Stokes	Admin change only footer missing
9.1	October 2019	Lucy Stuart	Changes based on Annual Review recommendations and Mod 4 Approval.
9.2	August 2020	Jake Haw kins	Updated Ulan Coal Mines Pty Limited (UCML) to Ulan Coal Mines Pty Limited (UCMPL), and Department of Planning and Environment (DP&E) to Department of Planning, Industry and Environment (DPIE) as advised by the EPA (5 August 2020).
9.3	September 2020	Jake Haw kins	MOD 5 administrative changes, inclusion of MOD5 approval and updated operations plan layout.