YANCOAL
兖煤澳大利亚有限公司
MOOLARBEN COAL

BRINE MANAGEMENT PLAN

Version	Effective Date *(Month/YYYY)*	Revision Detail *(Include the main areas reviewed, trigger / why the change)*	Author *(Name/s)*	Review Team *(Name/s)*
1	Nov 2019	Complete review to address Stage 1 of the Project	MCO, WRM Water & Environment, SLR Consulting	MCO, WRM Water & Environment, SLR Consulting
2	Oct 2020	Modified Sections 1-2, 4-6 to incorporate approval of Modification 15 (Stage 1)	MCO	MCO
3	Oct 2023	Annual review considerations, minor grammar, and formatting	MCO	MCO

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1.0 INTRODUCTION

The Moolarben Coal Complex (MCC) is an open cut and underground coal mining operation located approximately 40 kilometres north of Mudgee in the Western Coalfield of New South Wales (NSW) (**Figure 1**).

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Complex on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Yancoal Moolarben [YM] Pty Ltd and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited.

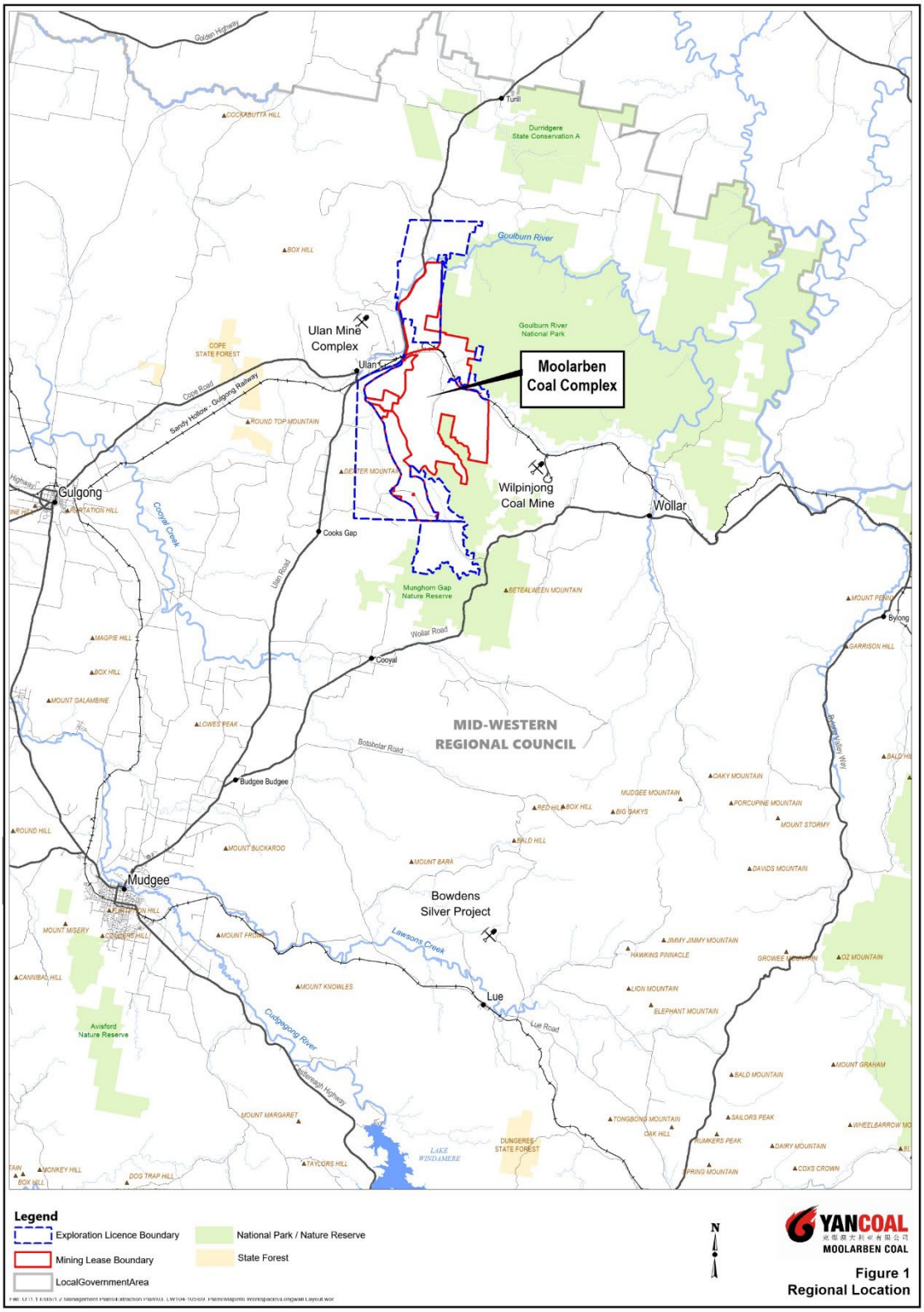
Mining operations at the MCC are currently approved until 31 December 2038 and would continue to be carried out in accordance with NSW Project Approval (05_0117) (Moolarben Coal Project Stage 1) as modified and NSW Project Approval (08_0135) (Moolarben Coal Project Stage 2) as modified.

Mining operations at the MCC are undertaken in accordance with the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) approvals EPBC 2007/3297, EPBC 2008/4444, EPBC 2013/6926 and EPBC 2017/7974.

The current mining operations at the MCC are conducted in accordance with the requirements of the conditions of Mining Lease (ML) 1605, ML 1606, ML 1628, ML 1691 and ML 1715 granted under the *Mining Act 1992*.

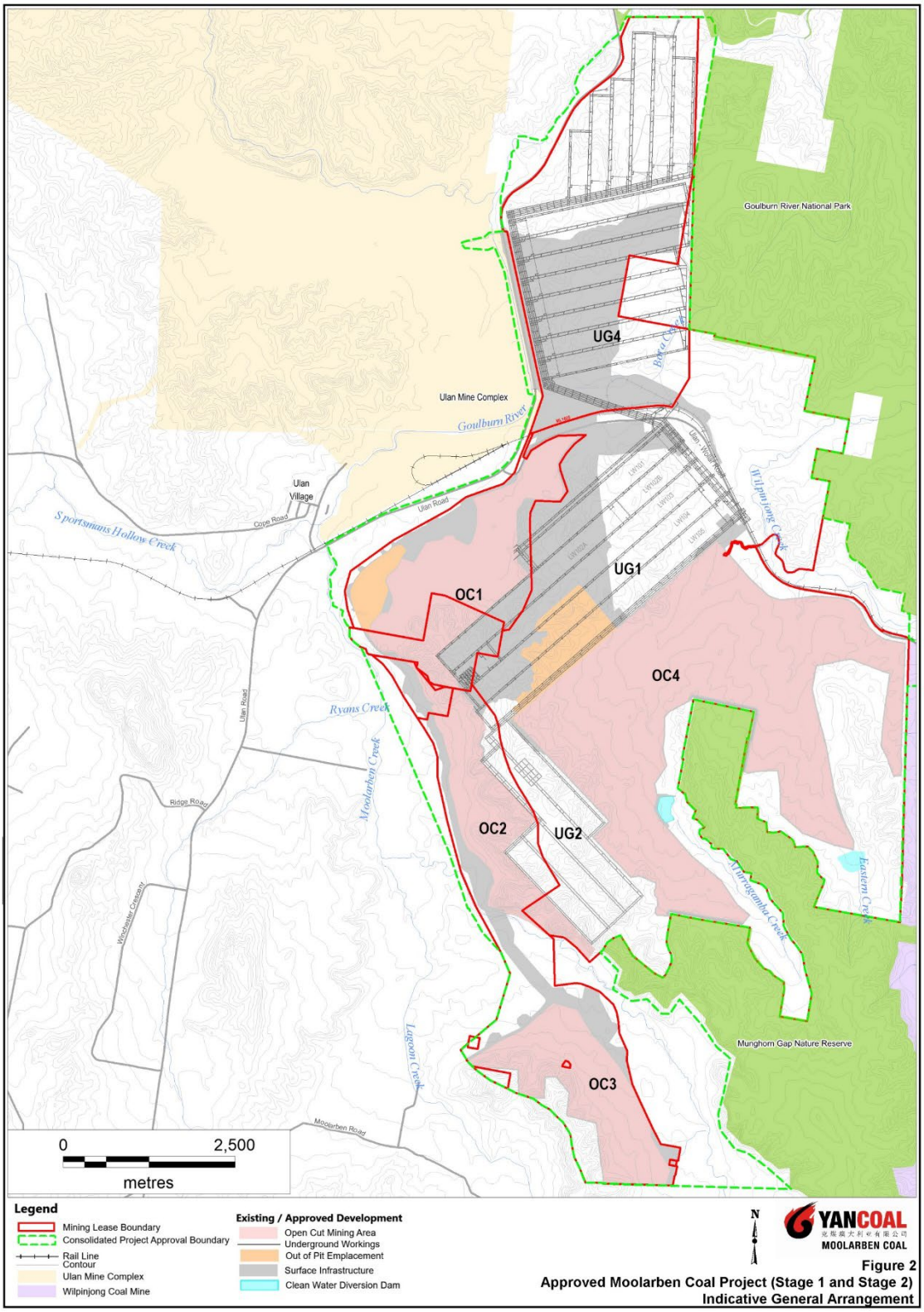
The general arrangement of the MCC, showing modifications, is provided in **Figure 2**.

Figure 1: Regional Location



Document	Version	Effective Date	Status	Author
MCO_ENV_PLN_0053	3	Oct 2023	Approved	MCO

Figure 2: Approved Moolarben Coal Project (Stage 1 and 2) General Arrangement



1.1 SCOPE AND PURPOSE

This Brine Management Plan (Brine MP) has been prepared by MCO to satisfy the requirements of NSW Project Approval (05_0117) (as modified) and the NSW Project Approval (08_0135) (as modified).

This Brine MP describes the management of Brine produced from the water treatment facility at the MCC in accordance with the above listed Project Approvals.

This Brine MP was prepared in consultation with specialist consultants from WRM Water & Environment [WRM] and SLR Consulting [SLR].

The Secretary of the NSW Department of Planning and Environment (DP&E) (now Department of Planning and Environment (DPE)) approved Dr David Newton (WRM) and Dr Noel Merrick and Claire Stephenson (SLR) as suitably qualified and experienced persons (experts) for the preparation of the Brine MP.

1.2 STRUCTURE OF THE BRINE MANAGEMENT PLAN

The remainder of the Brine MP is structured as follows:

Section 2.0 Outlines the Statutory Requirements of the Brine MP

Section 3.0 Outlines the Environmental Setting and Baseline Data used for the Brine MP

Section 4.0 Outlines the Brine Management Measures, Strategy, and Modelling Predictions

Section 5.0 Outlines the Brine Monitoring Program

Section 6.0 Outlines the Response to Potential Environmental Exceedances

Section 7.0 Describes the Review and Improvement of Environmental Performance and the Reporting Systems

Section 8.0 Outlines the References used in the Brine MP

2.0 STATUTORY AND PROJECT APPROVAL REQUIREMENTS

MCO's statutory obligations are contained in:

- the conditions of the NSW Project Approval (05_0117) (as modified) and NSW Project Approval (08_0135) (as modified);
- the conditions of the Commonwealth Approvals (EPBC 2007/3297, EPBC 2013/6926, EPBC 2008/4444 and EPBC 2017/7974);
- relevant licences and permits, including conditions attached to mining leases and Environment Protection Licence 12932; and
- other relevant legislation.

2.1 EP&A ACT APPROVAL

2.1.1 Brine Management Plan

This Brine MP has been prepared in accordance with Condition 33A, Schedule 3 of NSW Project Approval (05_0117) (as modified). **Appendix A** presents these requirements and indicates where they are addressed within this Brine MP.

2.1.2 Other Management Plan Requirements

Condition 3, Schedule 5 of NSW Project Approval (05_0117) outlines general management plan requirements that are applicable to the preparation of the Brine MP. **Appendix A** presents these requirements and indicate where they are addressed within this Brine MP.

2.1.3 Water Management Performance Measures

Condition 32, Schedule 3 of NSW Project Approval (05_0117) outlines the water management performance measures that are applicable to water treatment facilities. **Appendix A** presents the performance measures relevant to brine management storages and mine water storages and indicates where they are addressed within this Brine MP.

2.2 LICENCES, PERMITS AND LEASES

MCO will operate the Moolarben Coal Complex (MCC) in accordance with the NSW Project Approvals (05_0117 and 08_0135) and Commonwealth Approvals (2007/3297, 2013/6926, 2017/7974 and 2008/4444), as well as any other NSW Acts, Regulations and Guidelines that may be applicable to a Part 3A Project.

3.0 ENVIRONMENTAL SETTING AND BASELINE DATA

3.1 WATER MANAGEMENT SYSTEM

The MCC is located within the Upper Goulburn catchment, with a number of tributary creeks and drainage lines running through or adjacent to the mine site. Water management at the MCC is conducted in accordance with the water management system described in the Surface Water Management Plan (SWMP).

3.2 GROUNDWATER SETTING

The main hydrogeological units within and surrounding the MCC include:

- Quaternary alluvium associated with the present day drainage system.
- Tertiary alluvium in palaeochannel that are not related to the present day drainage system, and are believed to be generally poorly connected hydraulically with the surface drainages.
- Triassic sandstones of the Narrabeen Group.
- Permian coal measures, which includes the Ulan Seam near the base of the unit.
- Permian Marrangaroo Conglomerate.
- Basement units that include Carboniferous volcanics and granite.

A description of the groundwater setting of the MCC is provided in the Groundwater Management Plan (GWMP).

3.3 CLIMATE DATA

MCO operates one permanent meteorological monitoring station located on a property on Ulan Road, which is linked into the real-time monitoring system. Other weather stations may be used to supplement weather data as required. This data was used as part of the calibration of the modelling described in Section 4.3.6. A summary of the site recorded meteorological information is provided in the Monthly Environmental Monitoring Reports and the Annual Review. Further information on Climate Data is available in the Site Water Balance (SWB).

4.0 BRINE MANAGEMENT

4.1 BRINE DEFINITION

Brine is defined by the Independent Expert Scientific Committee (IESC) as "*the highly saline water generated as a residual component of the reverse osmosis product*" (IESC, 2018). Brine from the MCC will be generated by the reverse osmosis component of the water treatment facility.

The salinity of 'brine' is defined as being greater than 55,000µS/cm[1] (Qld Energy Resources Department of Heritage and Environmental Protection, 2012) (Mayer et.al, 2005).

Brine from the water treatment facility at the MCC is expected to have salinity in the order of 20 000µS/cm. Mine water at the MCC typically has salinity of 1500µS/cm however this ranges up to approximately 6000µS/cm. Accordingly, where brine is mixed with mine water, provided there is sufficient dilution, the resultant mixture would typically remain 'mine water'.

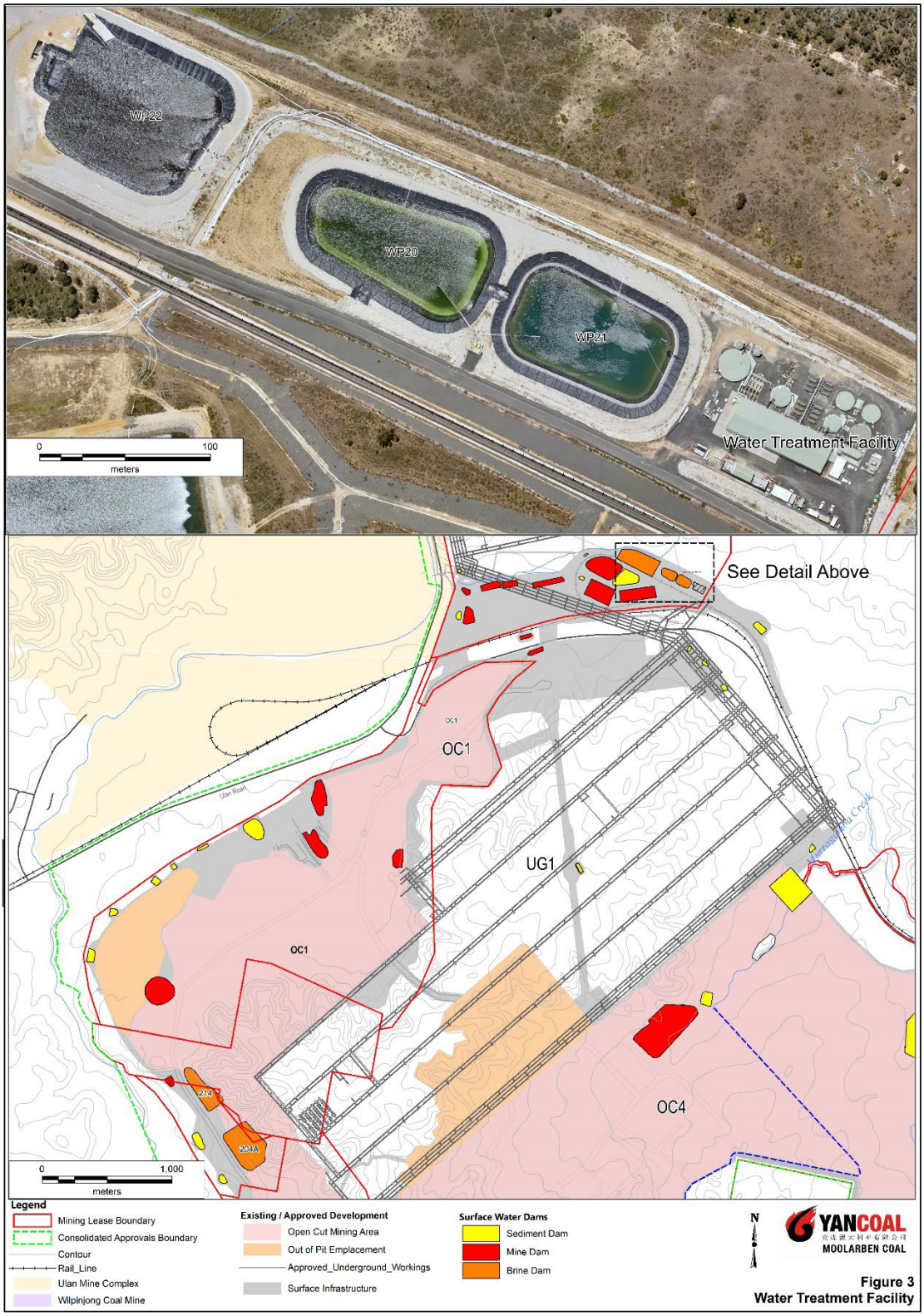
4.2 WATER TREATMENT FACILITY

Water treatment facilities constructed at MCO allow surplus water stored on site to be treated to meet the water quality concentration limits, and provide water for on-site use. MCO's approved discharge limits are described in Project Approval (05_0117) and Environmental Protection License 12932.

The water treatment facility consists of various infrastructure including feed dams, pre-treatment, a reverse osmosis (RO) plant and brine dams. Brine produced at the water treatment facility will be initially held in two dedicated brine dams (WP20 and WP21) before being pumped to dust suppression, dam 204 or 214 (**Figure 3**).

[1] Approximate EC ranges derived from TDS ranges, with conversion Factor of 1.5625 applied.
Source: National Land and Water Resources Audit (Murray Darling Basin Commission (2005)).

Figure 3: Water Treatment Facility



4.3 BRINE MANAGEMENT STRATEGY

4.3.1 Overview

The objective of the brine management strategy is to ensure all brine generated is contained on-site in the mine water catchment area or UG4 void space. An overview of the priority of brine management options is shown in **Figure 4**.

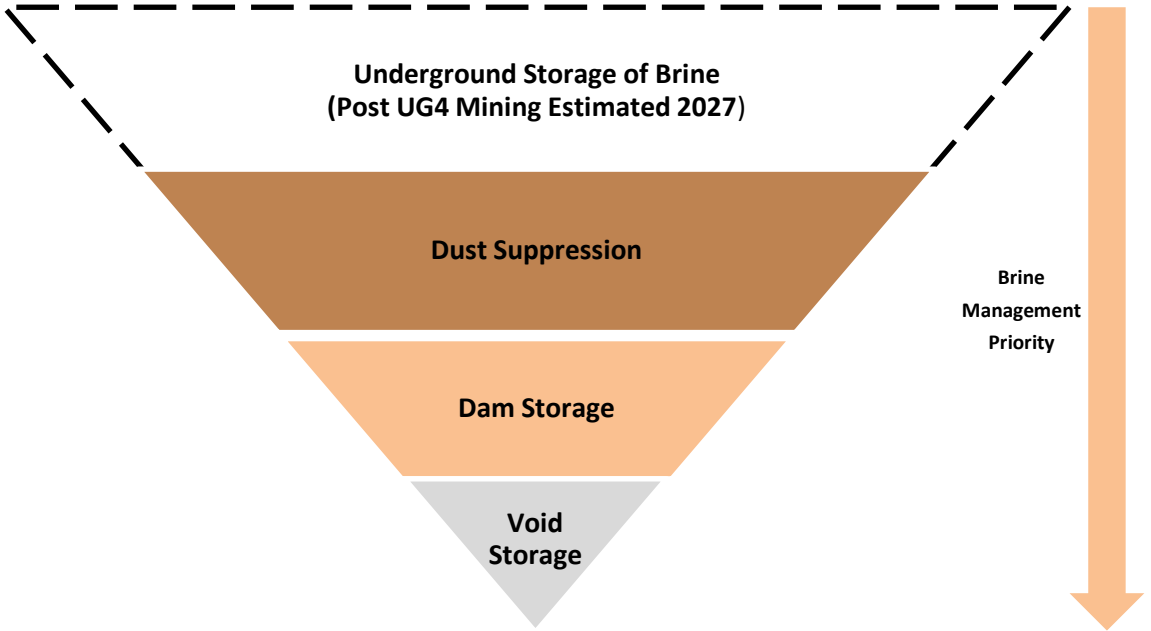


Figure 4: Brine Management Hierarchy

Once storage is available in the UG4 void, it is expected that all brine will be transferred to the UG4 void for permanent storage. Until underground storage is available, brine will be stored in dams (204 or 214) and prioritised for use as dust suppression within mine water management catchment areas. Additional brine storages are, or will be, made available in the event that the capacity of dams 204/214 is insufficient (or water treatment operations would be reduced). If required (e.g. under very wet conditions) brine will be temporarily stored in open cut voids

An indicative schematic of the brine management system is provided in **Figure 5.**

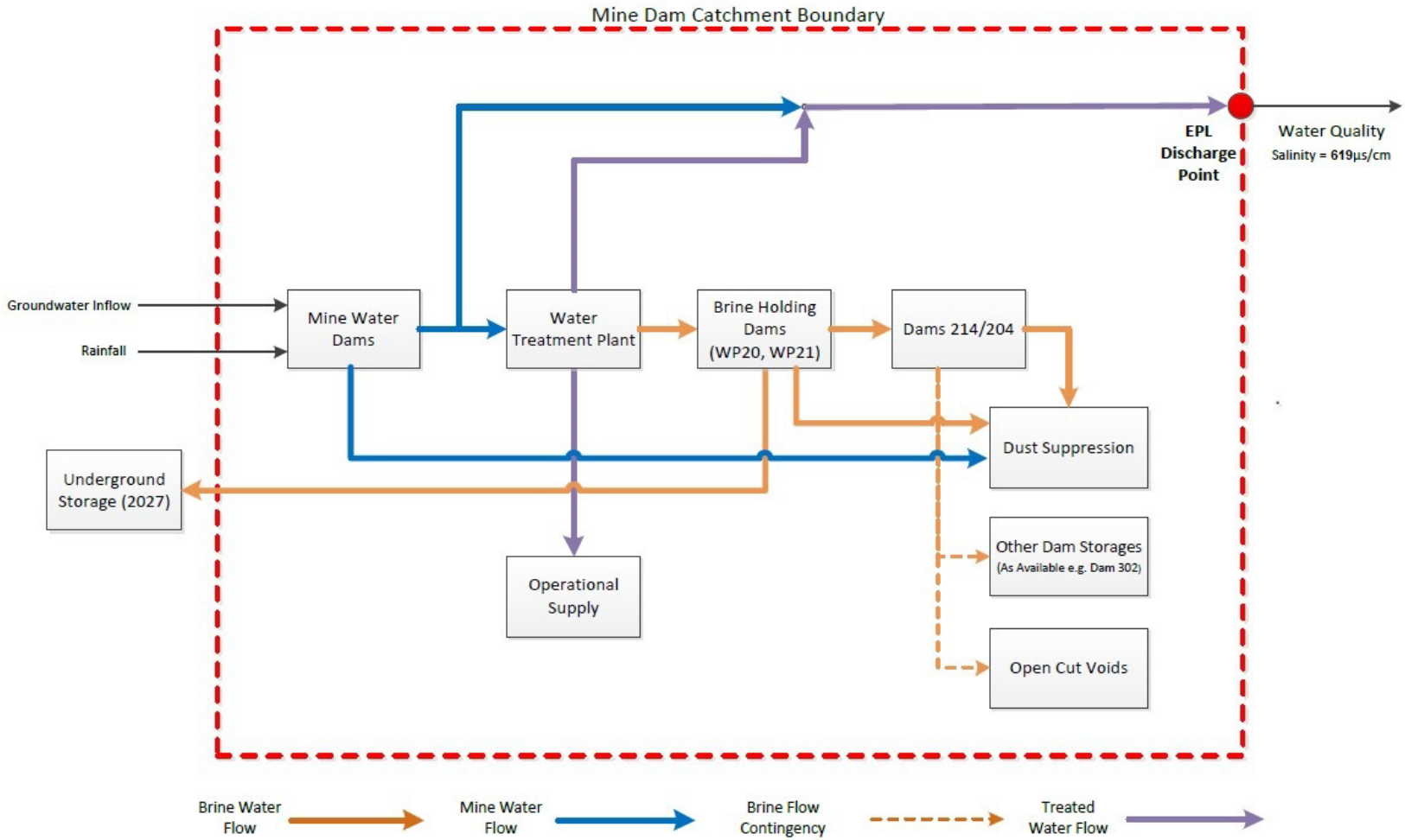


Figure 5: Brine Management Indicative Schematic

4.3.2 UG4 Final Void

UG4 mines down dip, with the lowest elevation of the coal seam located at the northern end of UG4. As such, brine storage cannot occur until mining operations have progressed to create storage capacity underground. Once UG4 mining has progressed, significant void space will be available to store brine. It is expected that any inventory of brine stored in surface facilities will also be transferred underground once the UG4 void is available.

4.3.3 Brine Storage Dams

Brine in excess of dust suppression demand will be stored in brine storage dams. Priority brine dam storage capacity is summarised in **Table 1**.

Table 1: Priority Brine Dam Storage Capacity

Brine Dam	Storage Capacity (ML)	Effective
214/204*	250 (each)	2019
WP20	22	2019
WP21	23	2019

* Only one of dam 214/204 is required for brine storage under the majority of climate scenarios. The other dam is available as a mine water dam.

In the event where the dams in **Table 1** have reached capacity, brine will be pumped to mine dams with available storage as a contingency measure. Examples of mine water dams that may be available for additional brine storage are shown in **Table 2.**

Table 2: Examples of Contingency Dam Storage Capacity

Mine Dam	Storage Capacity (ML)	Effective
214/204	250 (each)	2019
302	250	2023

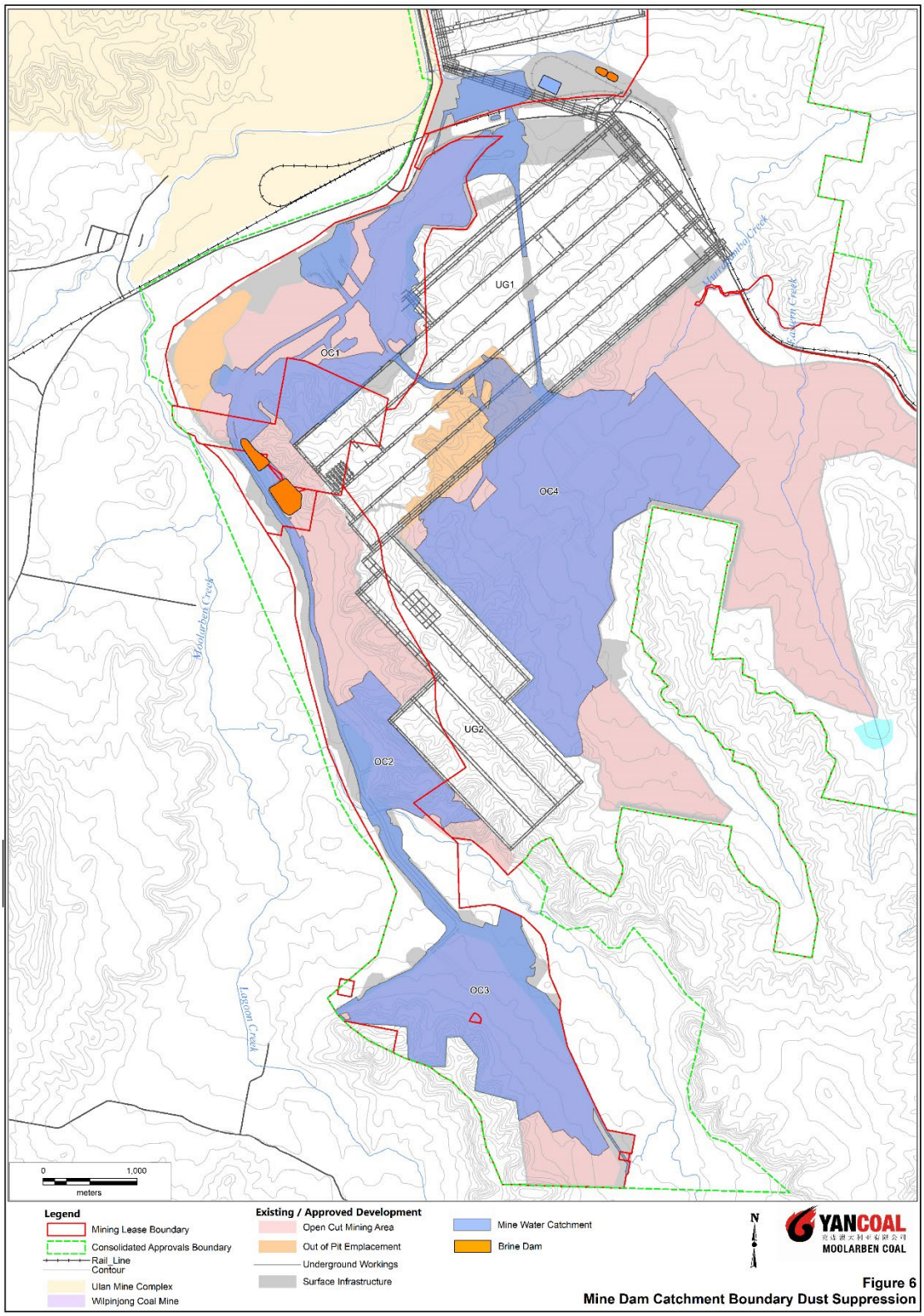
New dams constructed to store only brine will comply with the permeability requirements outlined in **Appendix A (Table A-3)**.

4.3.4 Dust Suppression

Until underground storage is available, brine stored in dams WP20, WP21, 204 or 214 will be mixed with mine water and used to meet mine dust suppression demands (e.g. haul road dust suppression). The average daily demand for dust suppression is estimated to be approximately 3 ML/day, however, daily demand fluctuates according to rainfall and seasonal demand.

Water carts and other dust suppression mechanisms that use brine will be restricted to catchment areas reporting to mine water dams excluding areas of topsoil and rehabilitation. The current indicative extent of the mine water dam catchment area is shown in **Figure 6**. Mine water catchments will vary with mine progression.

Figure 6: Dust Suppression Mine Water Catchment Area



4.3.5 Open Cut Voids

As a final contingency, brine will be transferred to an open cut void. It is expected this contingency will only be required in extreme weather events (e.g. 1% probability). MCO will notify the EPA prior to the transfer of brine to open cut voids.

4.3.6 Brine Balance Modelling Predictions

MCO has sought specialist advice from WRM to demonstrate the management system is capable of containing brine until underground storage is available. Water treatment was modelled as follows:

1. Brine from the Water Treatment Plant is used for mine dust suppression.
2. Remaining brine is stored in dam 204/214 (250ML).
3. When dam 204/214 is full, brine reports to “Contingency Storage”.

The site water balance for the MCC has been updated to include brine management, and in consideration of approved discharge limits (i.e. volume and quality limits which affects brine production). The brine management system simulated in the modelling is consistent with the schematic provided in **Figure 5**. The key results of the modelling are shown in **Figure 7**, which indicates that under all climatic conditions up to the 10% wet scenario the combination of brine storage in dam 204/214 and dust suppression is sufficient to store the volume of brine predicted to be generated.

During wetter scenarios, excess brine will be transferred to available mine water storages (e.g. mine water dam 302) or an open cut void.

Post-2027, all brine can be permanently stored in the UG4 void.

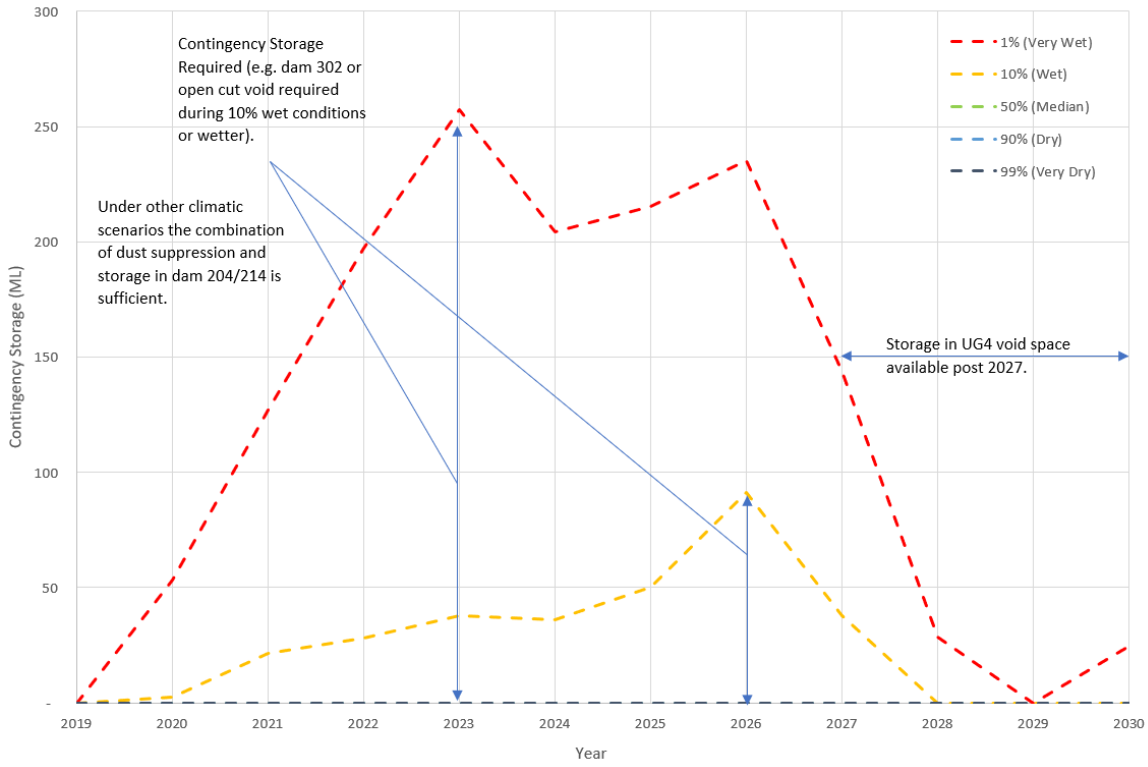


Figure 7: Brine Modelling Predications and Strategy

4.3.7 Minimisation of Brine Quantity Over Time

MCO will implement the following strategies to minimise brine generation:

- maximise the re-use of mine water to meet operational demands to reduce the quantity of water treated and released (with associated reduction in brine generated by the treatment process);
- optimise the salinity of treated water released to meet the approved discharge salinity limit of 619µS/cm (i.e. a reduction in salinity below the approved limit will have a proportional increase in brine generation); and
- continue to investigate options to share excess mine water with other mining operations.

5.0 BRINE MONITORING

The existing surface water and groundwater quality monitoring programs are described in the SWMP and GWMP respectively. These programs allow MCO to identify trends in water quality and confirm environmental performance measures are being achieved. The sections below describe elements of the SWMP and GWMP monitoring programs relevant to the Brine MP.

5.1 SURFACE WATER MONITORING

Stream health and water quality monitoring sites are shown on Figure 8, along with indicative mine water catchment areas (where dust suppression using brine would be limited to). The SWMP monitoring program and associated trigger action response plan is well designed to identify any adverse trends in downstream water quality as a result of on-site brine management.

5.2 GROUNDWATER MONITORING

Prior to UG4 void becoming available for brine storage, brine management will only occur within mine water catchments. Groundwater flow within these catchments will be towards the open cut voids, which limits the potential for groundwater to migrate away from the open cuts. The existing groundwater monitoring program in the GWMP (and associated trigger action response plan) will be used, in combination with the surface water quality and stream health monitoring programs (Section 5.1), to identify any adverse trends to groundwater quality resulting from brine management within mine water catchments.

Figure 9 shows groundwater monitoring in the vicinity of UG4. Prior to the UG4 void becoming available for brine storage, data collected from standpipes in the vicinity of UG4 (Figure 9) will continue to be used to establish baseline groundwater quality in the surrounding strata. Following the commencement of brine storage in the UG4 void, standpipes (PZ101 and PZ105) will be used to identify any adverse trends in groundwater quality. Vibrating wire piezometers PZ128 and PZ129 will be used to monitor the recovery of groundwater levels surrounding the UG4 void.

5.3 BRINE DAM MONITORING

Brine Water storages will be monitored in accordance with the SWMP including water levels inspected weekly and recorded monthly. Brine water dam structures will be visually inspected weekly by the area supervisor, and annually by a delegate of the OC Technical Services Manager to assess structural integrity and detect potential loss of seepage or leachate.

Figure 8: Surface Water Monitoring Program

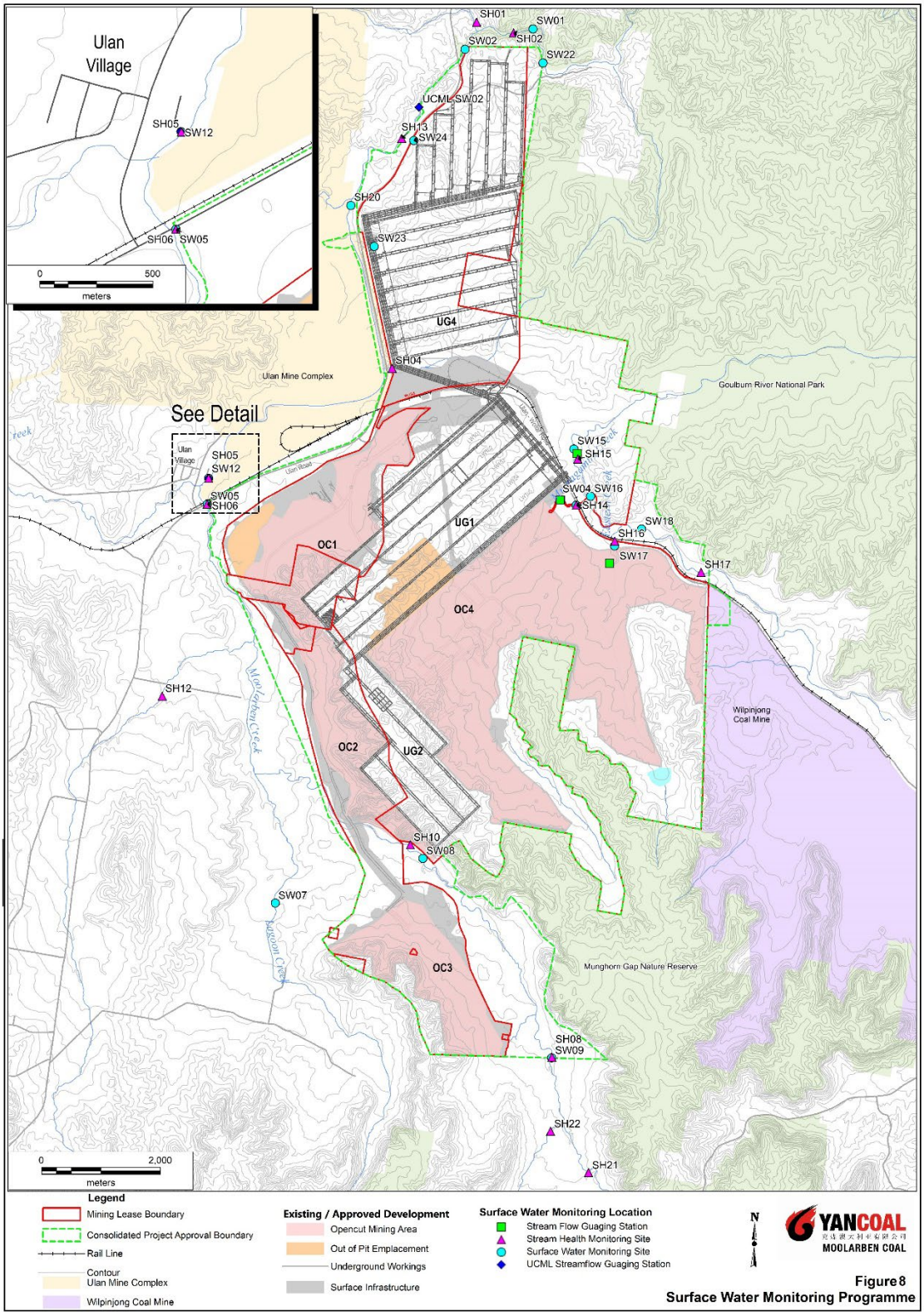
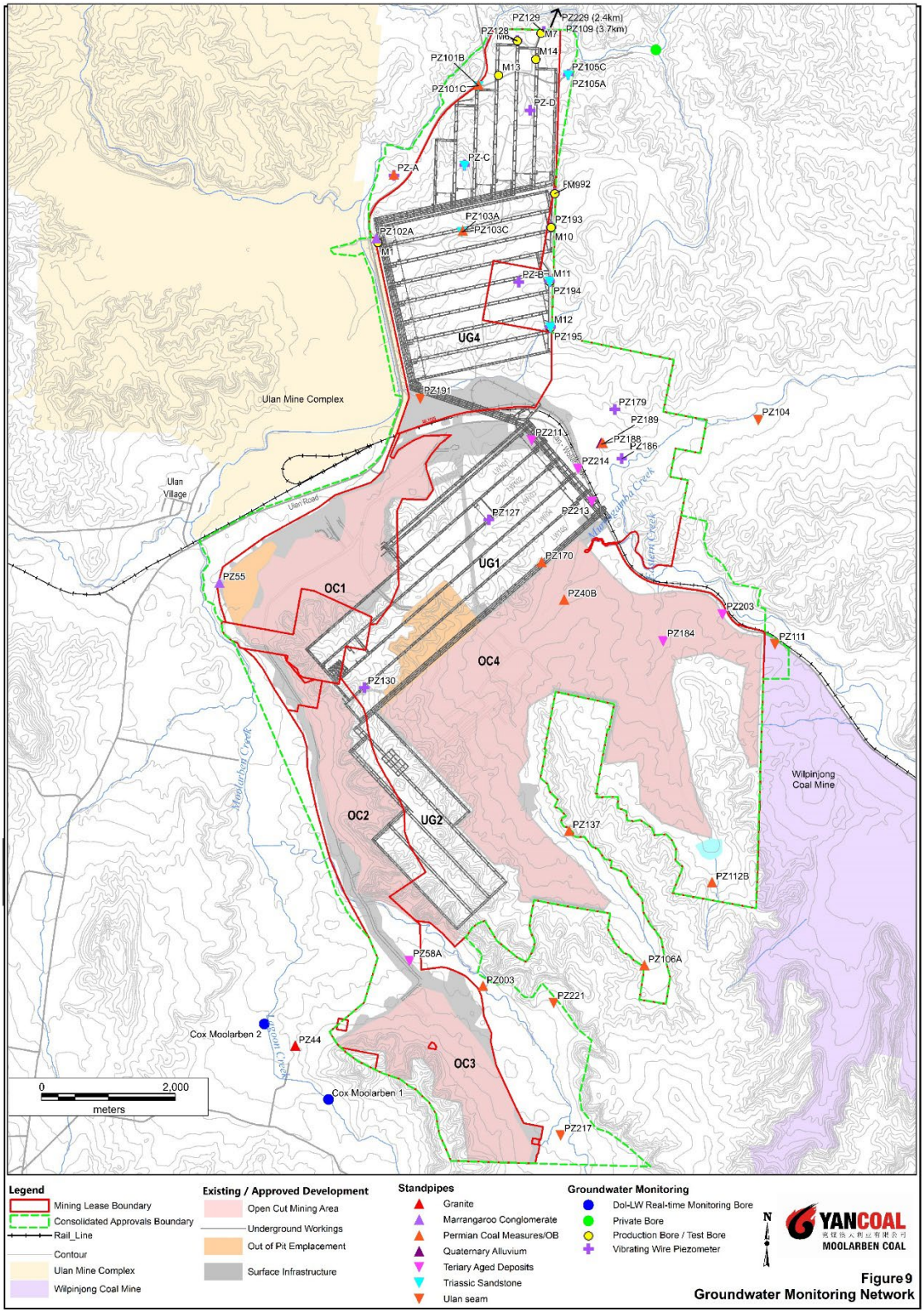


Figure 9: Groundwater Monitoring Program



6.0 TRIGGER ACTION RESPONSE PLANS

Trigger action response plans for surface water quality, stream health, and groundwater quality have been developed and are documented in the SWMP and GWMP. These plans detail how MCO will respond to any trigger level exceedance events (including exceedances which may be a result of brine storage underground or within the mine water catchment area).

Trigger values for surface water quality, stream health and groundwater quality from the SWMP and GWMP are shown in **Table 3** – **Table 5**, while trigger action response plans are provided in **Table 6** through **Table 8**. For clarity, the SWMP and GWMP triggers may be updated and will take precedence.

Table 3: Surface Water Quality Trigger Values

Monitoring Site	Waterway	pH		EC (µs/cm)		Turbidity (NTU)	
		20th/80th %ile Trigger Values	ANZECC Guideline	80th %ile Trigger Value	ANZECC Guideline	80th %ile Trigger Value	ANZECC Guideline
SW01	Goulburn River	6.5 – 8.5	6.5 – 8.0	900*	350	11	25
SW05	Moolarben Creek	6.5 – 7.7**	6.5 – 8.0	1,000**	350	34	25
SW16	Wilpinjong Creek	6.5 – 7.4	6.5 – 8.0	714	350	ND	25

** EC trigger levels reflect approved discharge limits at the Ulan Mine Complex (Ulan's discharge points are located upstream of SW01)*

*** Based on a combination of field and lab data (time period: Feb 2003 – Aug 2016)*

Note: The shaded cells indicate the adopted water quality trigger level

ND = No data (i.e. less than 24 monitoring points)

Table 4: Stream Health Investigation Trigger Values

Site ID	Location of Site	Aquatic Macro Invertebrate Diversity Score	Pollution Tolerance Site SIGNAL scores
		Trigger Level	Trigger Level
SH02	Goulburn River reference site – located downstream of Bobadeen Creek confluence	16.9	3.8
SH06	Moolarben Creek monitoring site – located at bottom of Moolarben Creek, under road bridge	15.1	3.2
SH17	Wilpinjong Creek monitoring site – located downstream of OC4 and downstream of confluences with Murragamba Creek and Eastern Creek	8.4	3.1

Table 5: Groundwater Quality Salinity and pH Trigger Values

Bore	Depth (m)	Lithology screened	Salinity Triggers			Beneficial Use Category Change Threshold (µS/cm)	pH Trigger Level (5th to 95th percentile)*
			Historical lab EC (5th to 95th percentile) (µS/cm)*	EC Trigger Level (µS/cm)	Beneficial Use Category Based on Lab EC 95th Percentile		
PZ044	23	Ulan Granite	2728-3000 (2910)	3000	Irrigation	7800	5.7 – 7.2 (6.4)
PZ055	15	Indurated Conglomerate	1321 - 2756 (2380)[a]	2756	Irrigation	7800	5.1 – 6.3 (5.5)[a]
PZ058a	12	Tertiary Aged Sediment	9405-14765 (11100)[d]	14765	Saline	22000	2.8 – 4.7 (3.7)[d]
PZ101C	30	Lower Triassic	610-810 (655)	810	Marginal Potable	2350	6.1 – 7.7 (6.7)
PZ101B	60	Permian OB	736-928 (761)	928	Marginal Potable	2350	6.2 – 7.7 (7.0)
PZ103C	30	Lower Triassic	310-448 (350)[b]	448	Potable	800	5.2 – 6.8 (5.6)[c]
PZ105C	28	Lower Triassic	198-319 (265)	319	Potable	800	5.3 – 7.4 (6.1)
PZ109	254	Permian OB	660-1145 (1040)	1145	Marginal Potable	2350	6.3 – 8.4 (7.3)[e]
PZ188	18.5	Tertiary paleochannel	198-394 (245)	394	Potable	800	4.7 – 6.9 (5.5)

* NB. Historical values in brackets are median values.
[a] Statistics and revised trigger level at PZ55 are based on post mining data from 2010 to 2018.
[b] Revised trigger level at PZ103C is based on the 90th percentile of historical lab EC data.
[C] Revised trigger levels at PZ103C are based on the 10th and 90th percentile of historical field pH data.
[d] PZ058a triggers to be developed following collection of 12 quality monitoring rounds
[e] Revised trigger levels at PZ109 are based on the 5th and 90th percentile of historical field pH data.

Table 6: Surface Water Quality Trigger Action Response Plan

Performance Criteria	Trigger	Action – Trigger Exceedance	Response
No significant adverse mining-related effects to downstream water quality (when compared to baseline and/or ANZECC limits).	Two consecutive monthly surface water quality monitoring results exceed (or below in event of a trigger of the lower pH limit) investigation triggers at trigger monitoring location (**Table 3**). It is noted trigger levels are based on baseline data (e.g. 80th %ile) and as such baseline levels naturally exceed the triggers for a portion of the time.	1. Check and validate data. 2. Notify ECM or delegate. 3. Undertake investigation to confirm if investigation trigger exceedance is mining-related: a. If necessary, engage a suitably qualified person. b. Review water quality relative to upstream quality, if water quality upstream of operations is greater than trigger location, cease investigation. c. Confirm if discharge has occurred in the previous 2 months prior to trigger. d. Consider other relevant recent conditions, including climate, flow, water releases, land-use activities. e. Consider other relevant monitoring data, e.g. for releases and stream health. f. If investigation confirms trigger exceedance is not mining-related, record data and cease investigation. 4. If trigger exceedance is mining related, confirm if mining-related activities have caused, or have the potential to cause, material environmental harm (i.e. exceedance of performance criteria). a. If so, notify DPE and other relevant agencies immediately.	Where mining-related activities have resulted in trigger exceedances, implement contingency and remedial measures based on investigation. Measures may include: • Temporarily cease discharges if contributing to trigger exceedances. • Review and if necessary, revise Monitoring Program. • Review and repair/replace water management infrastructure if required. • Review and revise if necessary SWMP and re-submit to DPE.

Performance Criteria	Trigger	Action – Trigger Exceedance	Response
		b. If not, notify DPE and other relevant agencies as soon as practicable. 5. Notify DPE and other relevant agencies if performance measures are exceeded as soon as practicable. 6. Complete Preliminary investigation report and provide to DPE and relevant agencies within 7 days of identifying the incident.	

ECM = Environment & Community Manager, DPE = Department of Planning, and Environment, EPA = Environment Protection Authority

Table 7: Stream Health Trigger Action Response Plan

Performance Criteria	Trigger	Action	Response
No significant adverse mining-related effects to downstream stream health (when compared to baseline and/or ANZECC limits).	Two consecutive Stream Health monitoring results below investigation trigger at trigger monitoring location (**Table 4**). It is noted trigger levels are based on baseline data (e.g. 80th %ile) and as such baseline levels naturally exceed the triggers for a portion of the time.	1. Check and validate data. 2. Notify ECM or delegate. 3. Aquatic ecologist to undertake investigation to confirm if investigation trigger exceedance is mining-related: a. Review stream health data relative to upstream stream health. b. Confirm if discharge has occurred in the previous 2 months prior to trigger. c. Consider other relevant recent conditions, including climate, flow, water releases, land-use activities. d. Consider other relevant monitoring data, e.g. surface water quality and releases. e. If the aquatic ecologist confirms trigger exceedance is not mining-related, record data and cease investigation. 4. If trigger exceedance is mining related, confirm if mining-related activities have caused, or have the potential to cause, material environmental harm (i.e. exceedance of performance criteria). a. If so, notify DPE and other relevant agencies immediately. b. If not, notify DPE and other relevant agencies as soon as practicable. 5. Notify DPE and other relevant agencies if performance measures are exceeded as soon as practicable. 6. Complete Preliminary investigation report and provide to DPE and relevant agencies within 7 days of identifying the incident.	Where mining related impacts are greater than approved, develop contingency and remedial measures based on investigation. Measures may include: • Suspend discharges if contributing to trigger exceedances. • Review and if necessary, revise Monitoring Program. • Review and repair/replace water management infrastructure if required. • Review and revise if necessary SWMP and re-submit to DPE.

ECM = Environment & Community Manager, DPE = Department of Planning and Environment, EPA = Environment Protection Authority

Table 8: Groundwater Trigger Action Response Plan

Performance Criteria	Trigger	Action	Response
Groundwater Quality			
No greater than minimal impact for water users or high priority GDEs (as defined in the AIP for less productive groundwater) due to mining-related activities (i.e no change in beneficial use category).	Two consecutive groundwater quality monitoring results exceed (or below in the event of a lower pH trigger limit) investigation triggers at monitoring location. It is noted trigger levels are based on baseline data (e.g. 95th %ile) and as such baseline levels naturally exceed the triggers for a portion of the time.	1. Check and validate data. 2. Notify ECM or delegate. 3. Undertake investigation to confirm if investigation trigger exceedance is mining-related: a. If necessary, engage a suitably qualified person. b. Consider relevant recent conditions, including climate and land-use activities. c. Consider relevant monitoring data, e.g. other monitoring bores. d. If investigation confirms trigger exceedance is not mining-related, record data and cease investigation. 4. If trigger exceedance is mining-related, confirm if mining-related activities have caused, or have the potential to cause, material environmental harm (i.e. exceedance of performance criteria). a. If so, notify DPE and other relevant agencies immediately. b. If not, notify DPE and other relevant agencies as soon as practicable. 5. Notify DPE and other relevant agencies if performance measures are exceeded as soon as practicable. 6. Complete Preliminary investigation report and provide to DPE and relevant agencies within 7 days of identifying the incident.	Where mining-related impacts have resulted in trigger exceedances, implement contingency and remedial measures based on investigation. Measures may include: • Review and if necessary, revise Monitoring Program. • Review and revise if necessary GWMP and re-submit to DPE. • Investigate reasonable and feasible remedial measures. • Review and repair/replace water management infrastructure if required.

ECM = Environment & Community Manager, DPE = Department of Planning, Environment, EPA = Environment Protection Authority

7.0 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

Annual Review reporting requirements are described in Section 4.1 of the Water Management Plan (WAMP).

In accordance with Condition 5, Schedule 5 and Condition 5, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively), the Brine MP will be reviewed, and if necessary revised to the satisfaction of the Secretary, within 3 months of the submission of:

(a) an Annual Review in accordance with Condition 4, Schedule 5 and Condition 4, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively);

(b) an incident report in accordance with Condition 7, Schedule 5 and Condition 7, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively);

(c) an audit in accordance with Condition 9, Schedule 5 and Condition 9, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively);

(d) any modification to the conditions of the Project Approvals.

The annual review will be made publicly available on the Moolarben Coal website, in accordance with Condition 11, Schedule 5 and Condition 11, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively).

Reporting, of incidents, complaints, non-compliances and performance criteria exceedances are described in Section 5.0 of the WAMP.

8.0 REFERENCES

ANZECC (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council/Agriculture and Resource Management Council of Australia and New Zealand.

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APPENDIX A – RELEVANT PROJECT APPROVAL CONDITIONS (05_0117)

Table A-1: Brine MP Requirements in NSW Project Approval (05_0117)

NSW Project Approval Condition	Brine MP Section
Brine Management Plan	
33A. Prior to operating the Water Treatment Facility, the Proponent shall prepare a Brine Management Plan for the project, in consultation with the EPA, and to the satisfaction of the Secretary. This plan must:	
a) be prepared by suitably qualified and experienced persons whose appointment has been approved by the secretary;	1.2
b) detail the methods that would be used to manage the brine, the proposed brine storage locations and the volumes of brine that would be managed at each location;	4.0
c) detail the measures that would be implemented to avoid and/or minimise impacts from the storage of brine at the surface, and the transfer and disposal of brine in underground workings;	4.3, 6.0, 7.0
d) include a program to investigate options to decrease the quantity of brine over time; and	4.3.7
e) include a program to monitor the potential impacts of brine storage, transfer and disposal in underground workings.	5.0
Following approval, the Proponent must implement the Brine Management Plan for the project	
Note: Water Treatment Facility operations commence following commissioning.	

Table A-2: Management Plan Requirements

NSW Project Approval Condition	Brine MP Section
3. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	3.0
(b) a description of:	
• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	2.0
• *any relevant limits or performance measures/criteria;*	2.0
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;*	6.0
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	6.0
(d) a program to monitor and report on the:	6.0
• *impacts and environmental performance of the project;*	
• *effectiveness of any management measures (see c above);*	
(e) a contingency plan to manage any unpredicted impacts and their consequences;	4.0, 6.0
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	7.0
(g) a protocol for managing and reporting any:	7.0
• *incidents;*	
• *complaints;*	
• *non-compliances with statutory requirements; and*	
• *exceedances of the impact assessment criteria and/or performance criteria; and*	
(h) a protocol for periodic review of the plan.	7.0

Table A-3: Water Management Performance Measures (Condition 32) in Project Approval (05_0117) Relevant to Brine Management

Feature	Performance Measure	Brine MP Section
Storages constructed for the Water Treatment Facility	• *Brine and feedwater storages designed to store a 100 year ARI 72 hour storm event.* • *Brine storages are suitably lined to comply with a permeability standard of < 1 x 10^{-9} m/s over 1000mm or equivalent standard.*	4.3.3
Mine Water Dam Storages	• *Mine water storage infrastructure is designed to store a 50 year ARI 72 hours storm event.* • *On-site storages (including tailings dams, mine infrastructure dams, groundwater storage and treatment dams) are suitably lined to comply with a permeability standard of < 1 x 10^{-9} m/s.*	4.3.3