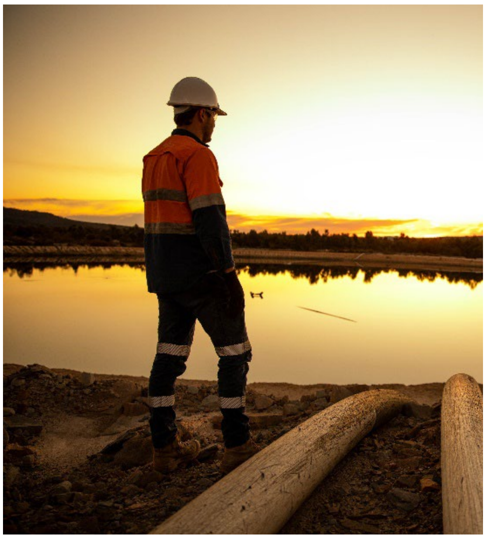

SITE WATER BALANCE

Document	Version	Effective Date	Status	Author
MCO_ENV_PLN_0036	5	29/11/2024	Approved	MCO

Version	**Effective Date** *(Month/YYYY)*	**Revision Detail** *(Include the main areas reviewed, trigger / why the change)*	**Author** *(Name/s)*	**Review Team** *(Name/s)*
1	Jul 2015	To address Stage 1 and Stage 2 of the Project	MCO	MCO, WRM Water & Environment
2	Mar 2018	General Review and Update	MCO	MCO, WRM Water & Environment
3	Apr 2020	To incorporate approved modifications to Stage 1 (MOD 14) and Stage 2 (MOD 3) of the Project	MCO	MCO, WRM Water & Environment
4	Oct 2020	To incorporate approval of Modification 15 (Stage 1)	MCO	MCO
5	Nov 2024	To incorporate approved modifications to Stage 1 (MOD 16) and Stage 2 (MOD 5) of the Project	MCO	MCO, WRM Water & Environment

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

The Moolarben Coal Complex (MCC) is located approximately 40 kilometres (km) north of Mudgee in the Western Coalfields 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 Pty Ltd and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited (Yancoal).

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 1605, Mining Lease 1606, Mining Lease 1628, Mining Lease 1691 and Mining Lease 1715 granted under the *Mining Act 1992*.

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

1.1 PURPOSE AND SCOPE

This Site Water Balance (SWB) has been prepared by MCO to satisfy the requirements under NSW Project Approval (05_0117) as modified and the NSW Project Approval (08_0135) as modified.

This SWB describes the movement of water across all areas within the assessment timeline (2024-2034) within the Project Boundaries (as defined in Appendix 2 of NSW Project Approval 05_0117 [as modified] and NSW Project Approval 08_0135 [as modified]).

1.2 SUITABLE QUALIFIED AND EXPERIENCED PERSONS

The Secretary of the Department of Planning and Environment approved David Newton (WRM Water & Environment), Peter Dundon (Dundon Consulting) and Dr Noel Merrick (Hydrosimulations) and Andrew Durick (Australian Groundwater and Environment) as suitably qualified and experienced experts for the preparation of the Water Management Plan (WAMP). The SWB was prepared in consultation with specialist consultants from WRM Water & Environment Pty Ltd.

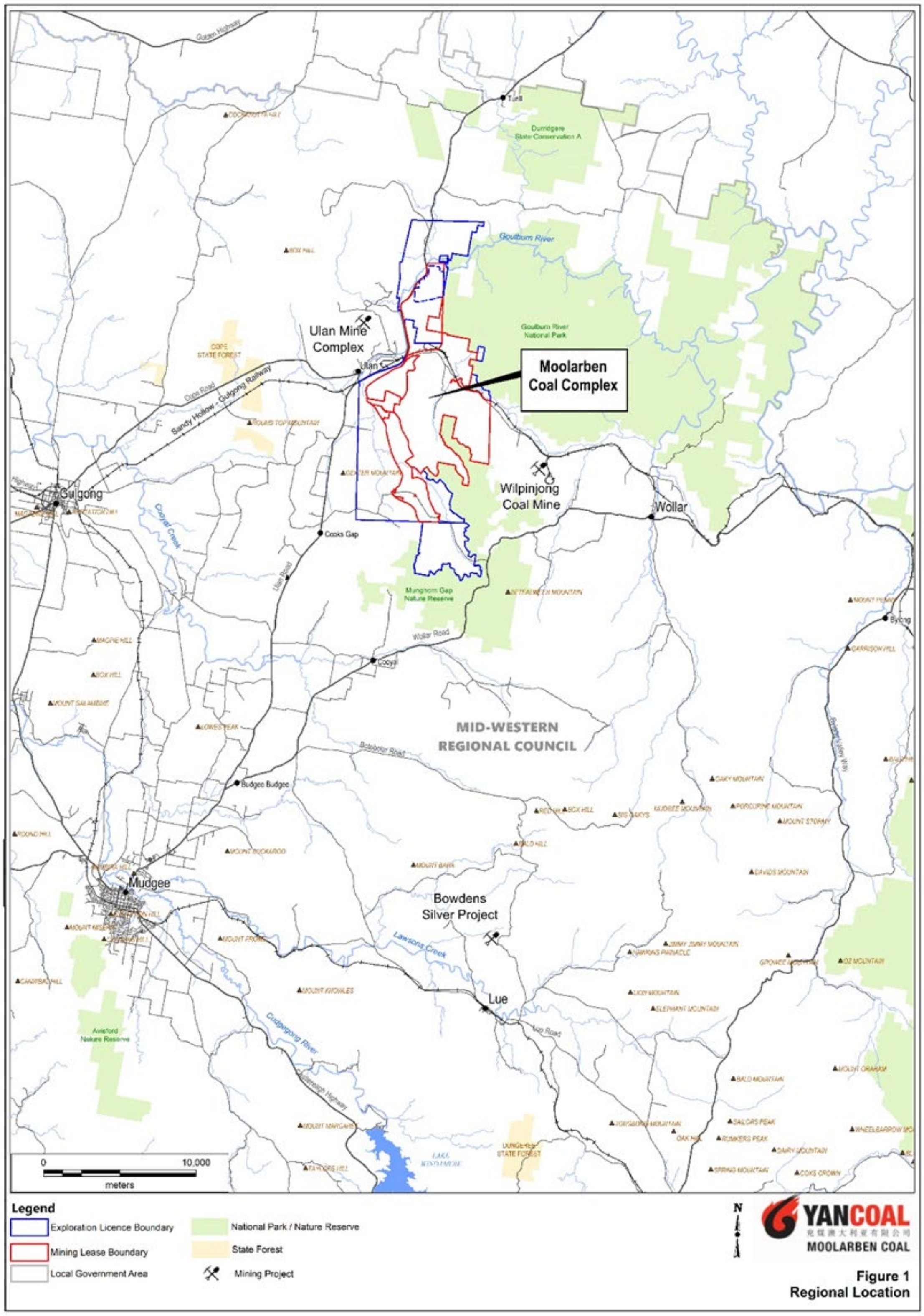

Figure 1: Regional locality plan

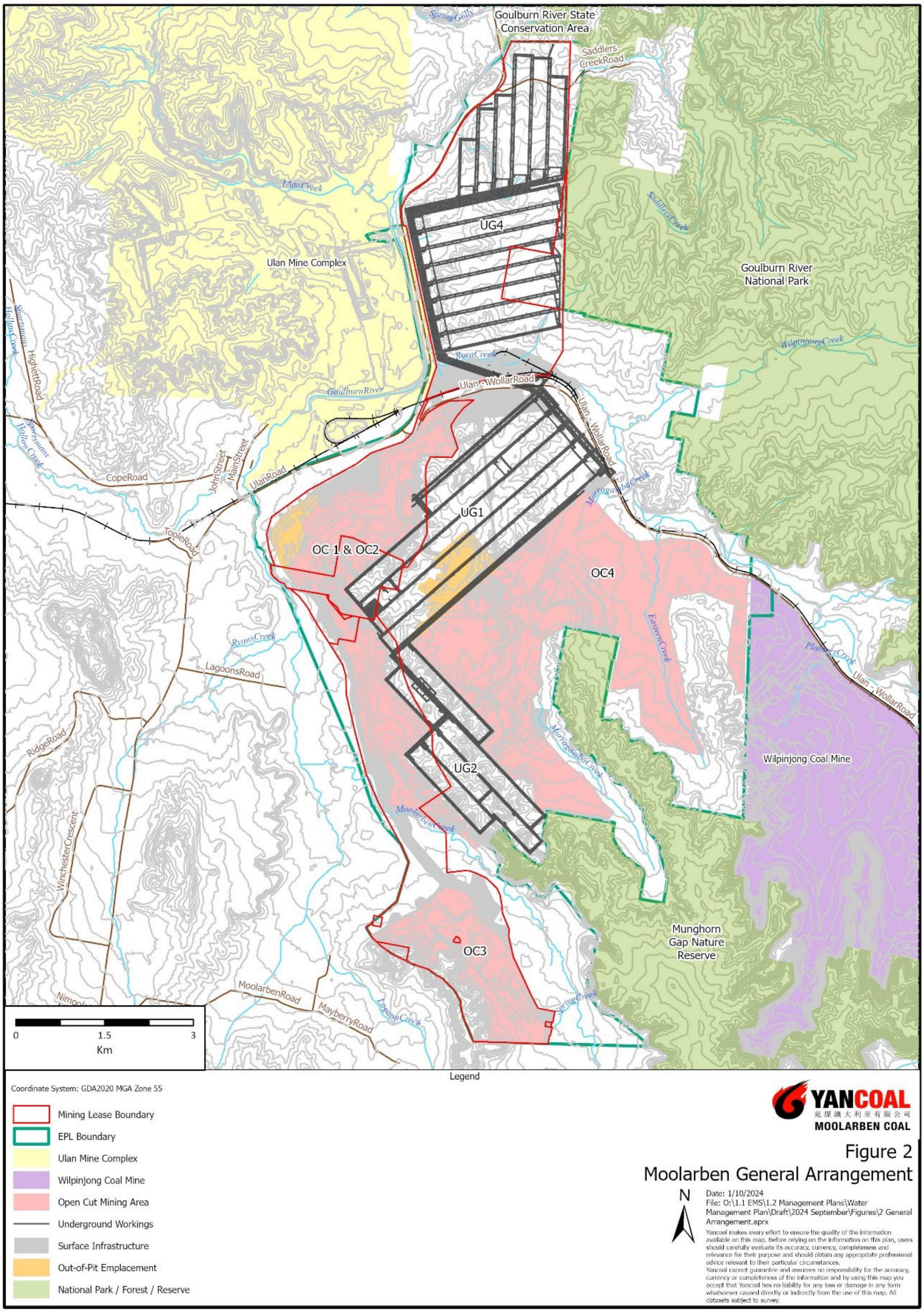

Figure 2: Moolarben Coal Complex – general arrangement

Document	Version	Effective Date	Status	Author
MCO_ENV_PLN_0036	5	29/11/2024	Approved	MCO

1.3 STRUCTURE OF THE SITE WATER BALANCE

The remainder of the SWB is structured as follows:

Section 2.0 Outlines the statutory requirements of the SWB

Section 3.0 Provides baseline data relevant to the SWB

Section 4.0 Describes the elements of the Moolarben Water Management System

Section 5.0 Describes the site water demands

Section 6.0 Describes the method of water disposal

Section 7.0 Outlines the various water sources

Section 8.0 Describes the Moolarben Water Balance Model

Section 9.0 Describes the review and reporting requirements relevant to the SWB

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 2017/7974 and EPBC 2008/4444);
- relevant licences and permits, including conditions attached to mining leases and Environment Protection Licence (EPL) 12932; and
- other relevant legislation.

2.1 EP&A ACT APPROVAL

This SWB has been prepared in accordance with Condition 33, Schedule 3 and Condition 29, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively). Attachment 1 indicates where each component of the relevant conditions has been addressed in the SWB. The SWB is a component of the Water Management Plan (WAMP).

Management Plan Requirements

Condition 3, Schedule 5 of Project Approval (05_0117) and Condition 3, Schedule 6 of Project Approval (08_0135) outline the management plan requirements that are applicable to the preparation of the SWB. Attachment 1 presents these requirements and indicates where they are addressed within this SWB.

2.2 OTHER LEGISLATION

MCO will operate the MCC in accordance with the NSW Project Approvals (05_0117 and 08_0135) and Commonwealth Approvals (2007/3297, 2013/6936, 2017/7974 and 2008/4444), as well as any other NSW Acts, Regulations and Guidelines that may be applicable to a Part 3A Project.

The requirements of EPL 12932 regarding water discharge and monitoring are considered in Sections 4.0, 4.6, 6.1 and 6.2. Additional detail regarding MCO's commitments under EPL 12932 can be found in the Surface Water Management Plan (SWMP).

A summary of the NSW Acts, Regulations and Guidelines that may be relevant to the MCO is provided in Section 2 of the WAMP.

3.0 AVAILABLE DATA

The SWB model has been developed using available monitoring data, including the following:

- Climate data; and
- Water Management System monitoring data.

The available monitoring data has been used to calibrate the SWB model and estimate key site parameters (e.g. site demands and losses).

A summary of the relevant site monitoring data is provided in the following sections.

3.1 CLIMATE DATA

MCO operates one permanent meteorological monitoring station located on a property on Ulan Road (WS03), 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 model calibration process (see **Section 8.4**). Site recorded meteorological information is provided in the Annual Review.

Long term daily rainfall data at the Ulan Water rainfall station from January 1889 to December 2023 (134 years) was obtained from the Patched Point Data service, which is an Australian climate database developed by the Queensland Government.

Morton's equation for Lake evaporation has been used to estimate evaporation losses from storages. **Table 3** shows the long-term monthly averages for Morton's evaporation and monthly Patched Point rainfall data.

Figure 3 shows the annual distribution of monthly rainfall and evaporation. Mean evaporation is similar to mean rainfall in the winter months, but substantially exceeds rainfall for the remainder of the year.

Table 1: Mean Monthly Rainfall and Evaporation –Patched Point Dataset (1889 – 2023)

Month	Mean Monthly Rainfall (mm)	Mean Monthly Morton's Lake Evap (mm)
January	71	197
February	63	157
March	57	137
April	42	89
May	43	55
June	50	37
July	49	44
August	46	68
September	48	101
October	57	142
November	63	168
December	65	196
TOTAL	**653**	**1,391**

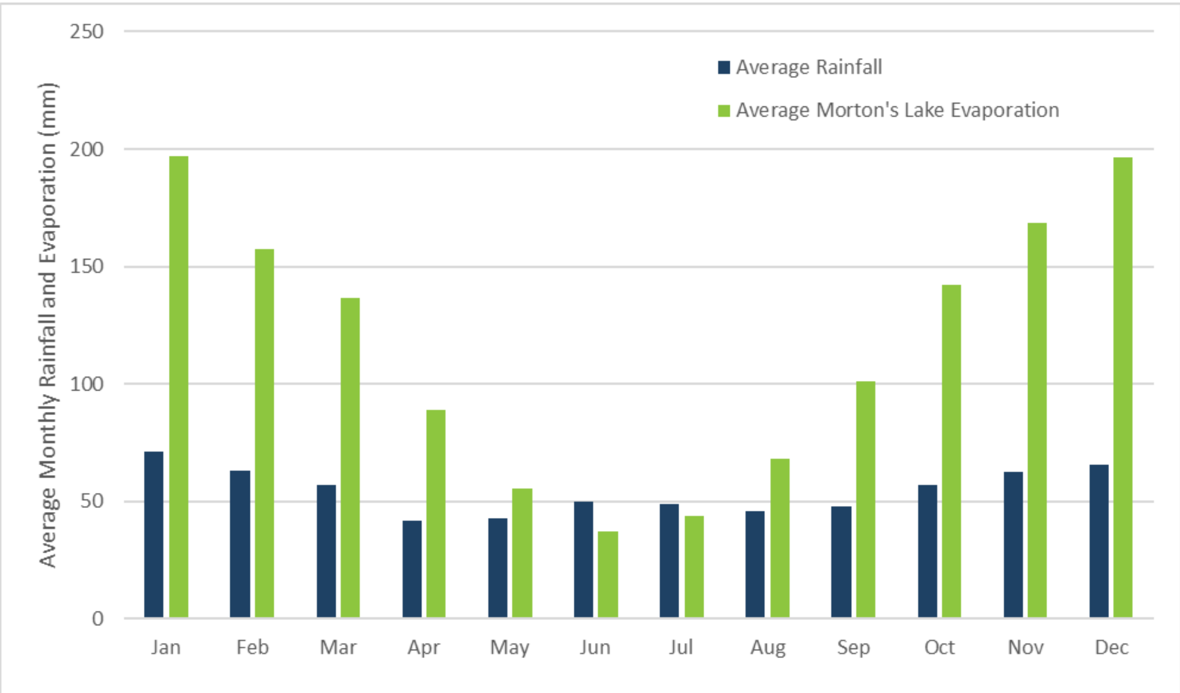

Figure 3: Distribution of Patched Point Data Service monthly rainfall and Morton's Lake evaporation

3.2 WATER MANAGEMENT SYSTEM MONITORING

MCO monitors the following relevant aspects of the site water management system:

- Storage water levels and volumes;
- Inflows from the following sources:
  - Pit inflows;
  - Mine water provided under agreement from the Ulan Mine Complex (i.e. Ulan Water Sharing Agreement [UWSA]);
  - Dewatering/production bores
  - Underground dewatering;
  - Potable water supply;
- Site water demands including dust suppression and water supply to underground;
- Coal Handling and Preparation Plan (CHPP) inflows and outflows including:
  - Feed tonnage and moisture contents;
  - Product tonnage and moisture contents;
  - Rejects/tailings moisture contents;
- Licensed discharges; and
- Flow monitoring at Wilpinjong Creek, Murragamba Creek, Eastern Creek and Goulburn River.

A summary of the relevant water management system monitoring information is provided in the Annual Review.

4.0 WATER MANAGEMENT SYSTEM

Water at the MCC is stored in surface dams, open cut pits, mining voids (when available) and sediment dams. The construction of emergency tailings dams, mine infrastructure dams, groundwater storages and treatment dams will comply with a permeability standard that is the equivalent of <$1x10^{-9}$ m/s. Brine storages will be constructed to a permeability standard that is the equivalent of <1×10^{-9} m/s over 1000mm (as required by Condition 32, Schedule 3 of Project Approval [05_0117]). A monitoring program will be conducted during construction of each of these facilities to confirm the permeability of these dams.

4.1 DAM STORAGES

The locations of the operational and proposed dams at the CHPP and in OC1 and OC2 are shown in Figure 4, Figure 5 and Figure 6 with detailed information provided in Table 2. This information is the dam capacity following any required upgrades. The dam locations for OC3 and OC4 will be determined and continually adapted as mining progresses, however indicative locations are shown in Figure 7 and Figure 8 with detailed information provided in **Table 3**.

Table 2: Water Storage Dam and Sediment Dam Requirements

Location of Dam	Name of Dam	Type of Dam	Capacity of Dam (ML)	Status
CHPP	WP01	Mine Water Dam	15.0	Existing
	WP02	Mine Water Dam	6.0	Existing
	WP07	Sediment Dam	0.5	Existing
	WP08	Sediment Dam	1.3	Existing
	WP09	Sediment Dam	0.7	Existing
	WP10	Mine Water Dam	2.3	Existing
	WP12	Mine Water Dam	3.4	Existing
	WP13	Sediment Dam	24.6	Existing
	WP14	Sediment Dam	6.4	Existing
	WP15	Mine Water Dam	90.7	Existing
	WP16	Mine Water Dam	130.4	Existing
	WP17	Mine Water Dam	8.6	Existing
	WP18	Mine Water Dam	27.8	Existing
	WP19	Mine Water Dam	170.0	Existing
	WP20	Brine Dam	23.0	Existing

Location of Dam	Name of Dam	Type of Dam	Capacity of Dam (ML)	Status
	WP21	Brine Dam	23.0	Existing
	WP22	Mine Water Dam	14.1	Existing
	ETD	Mine Water Dam	19.79	Existing
OC1**	101	Sediment Dam	5.0	Existing
	102	Sediment Dam	5.7	Existing
	103	Sediment Dam	4.0	Existing
	104	Sediment Dam	1.4	Existing
	105	Sediment Dam	2.4	Existing
	106	Sediment Dam and Licensed Discharge Point	93.8	Existing
	107	Mine Water Dam	97.1	Existing
	111	Mine Water Dam	234.4	Existing
	112	Mine Water Dam	49.4	Existing
OC2*	201	Mine Water Dam	20.4	Existing
	202	Sediment Dam and Licensed Discharge Point	12.6	Existing
	203	Sediment Dam	11.3	Existing
	206	Sediment Dam	14.0	Existing
	209	Mine Water Dam	535.1	Existing
	210	Sediment Dam	4.7	Existing
	211	Sediment Dam	12.0	Existing
	212	Sediment Dam	18.2	Existing
	213	Sediment Dam	150.0	Existing
OC3	301	Mine Water Dam	53	Existing
	302A	Mine Water Dam	477	Existing
	302B	Mine Water Dam	527	Existing
	303	Mine Water Dam	106	Existing
	304	Sediment Dam	19.55	Existing
	305	Sediment Dam	40.93	Existing
	306	Sediment Dam	11.8	Existing
	316A	Mine Water Dam	1000	Existing
	316B	Mine Water Dam	700	Proposed

Location of Dam	Name of Dam	Type of Dam	Capacity of Dam (ML)	Status
OC4***	401	Mine Water Dam	521	Existing
	403	Sediment Dam	27	Existing
	413	Sediment Dam	16.3	Existing
	414	Sediment Dam	90	Existing
	417	Sediment Dam	50	Existing
	426	Sediment Dam	3.0	Existing
	Murragamba Clean Water Dam	Clean Water Dam	500	Existing
UG	UG01	Mine Water Dam	58	Existing
	UG02	Sediment Dam	1.2	Existing
	UG03	Sediment Dam	1.5	Existing
	UG04	Sediment Dam	2.9	Existing

ML = megalitres

* A single mine water dam may be constructed as an alternative to multiple smaller dams.

** Underground mine and temporary sumps not shown.*** OC4 sediment dams will be progressively decommissioned and/or replaced with mine progression.

Table 3: Indicative Dam Storage Requirements for OC3 and OC4

Location of Dam	Name of Dam	Type of Dam	Capacity of Dam (ML)	Status
OC3	308	Mine Water Dam	147.0	Proposed (Will be developed progressively ahead of mining/disturbance of OC3 – refer indicative staging plans in Attachment 2)
	309	Mine Water Dam	26.0	
	310	Clean Water Dam	117	
	311	Mine Water Dam	161.0	
	313	Mine Water Dam	77.0	
	314	Mine Water Dam	113.0	
	317	Mine Water Dam	62.0	
	318	Mine Water Dam	700	
	321	Mine Water Dam	36.0	
	323	Mine Water Dam	19.0	
	324	Mine Water Dam	29.0	

Location of Dam	Name of Dam	Type of Dam	Capacity of Dam (ML)	Status
	325	Mine Water Dam	29.0	
OC4	423	Clean Water Dam	410	Proposed (Will be developed progressively ahead of mining/disturbance of OC4 – refer indicative staging plans in Attachment 2)
	424	Sediment Dam	200	
	425	Sediment Dam	104	
	Eastern Creek Dam	Clean Water Dam	250	

Sediment dams are sized and operated generally in accordance with the Landcom (2004) publication '*Managing Urban Stormwater: Soils and Construction – Volume 1 and Volume 2E Mines and Quarries*'. For the purposes of water balance modelling and preliminary sizing, sediment dams have been assumed to be Type F/D basins. Refer to Section 4.3.2 of the MCO_PLN_0037 Surface Water Management Plan for more detail.

Where practical, surface water infrastructure has been designed to facilitate the diversion of clean water (i.e. run-off from undisturbed or rehabilitated catchments) away from the active pit throughout the duration of mining. Diversion drains are to be designed to cater for a 100-year Average Recurrence Interval flood. Clean water diversion dams on Murragamba and Eastern Creeks will be adequately sized to divert runoff around OC4.

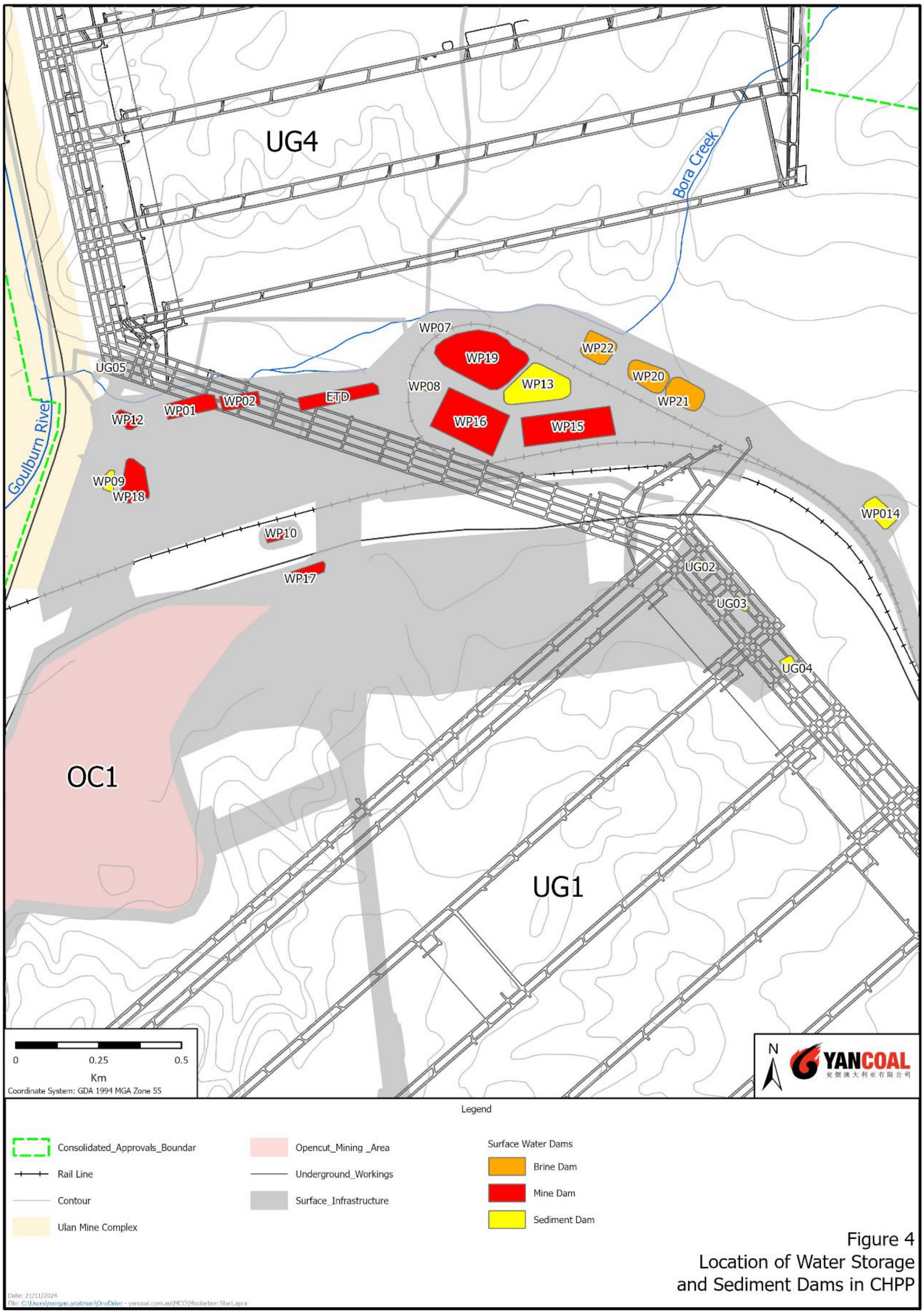

Figure 4: Location of water storage dams and sediment dams in CHPP area

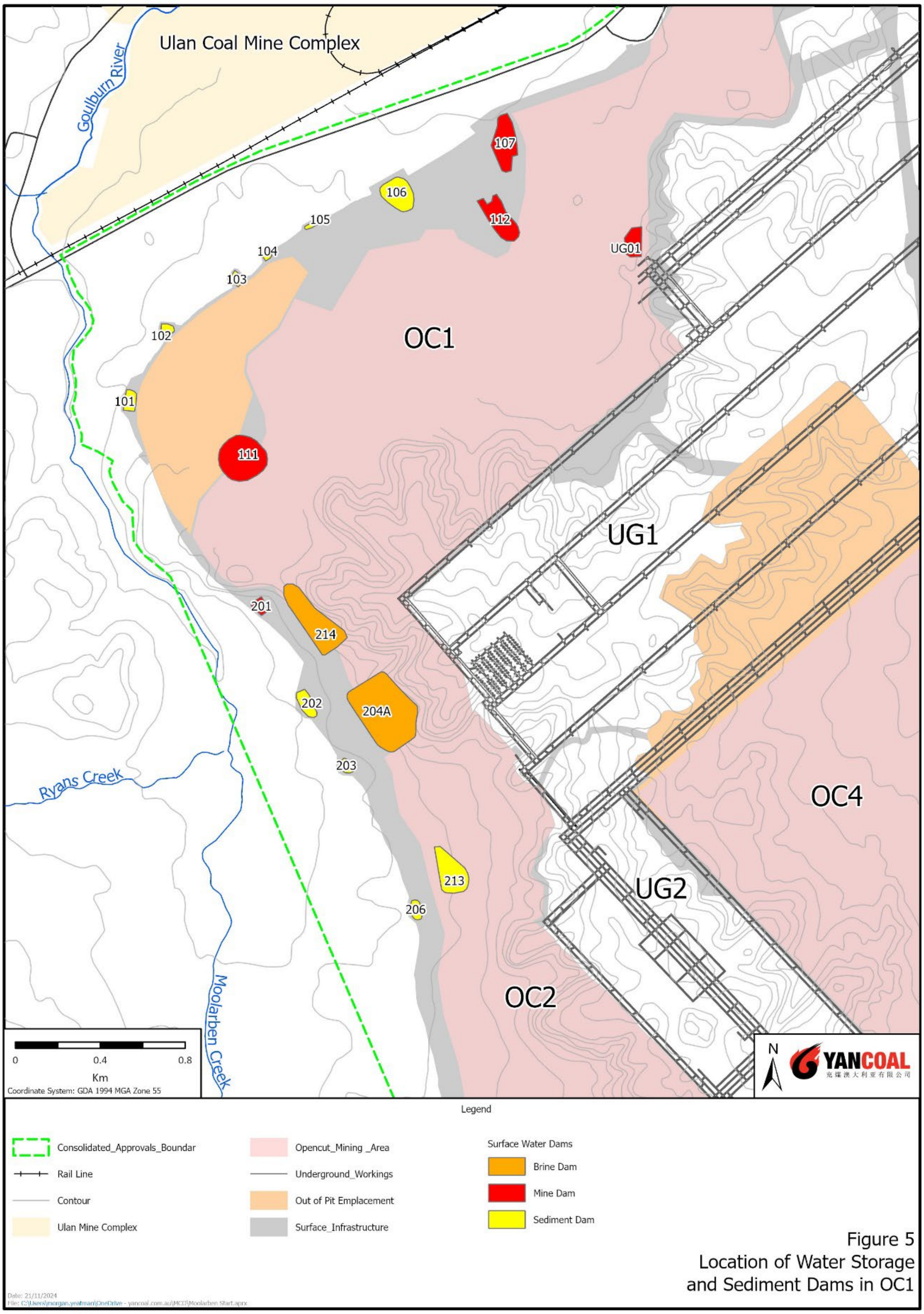

Figure 5: Location of water storage dams and sediment dams in OC1

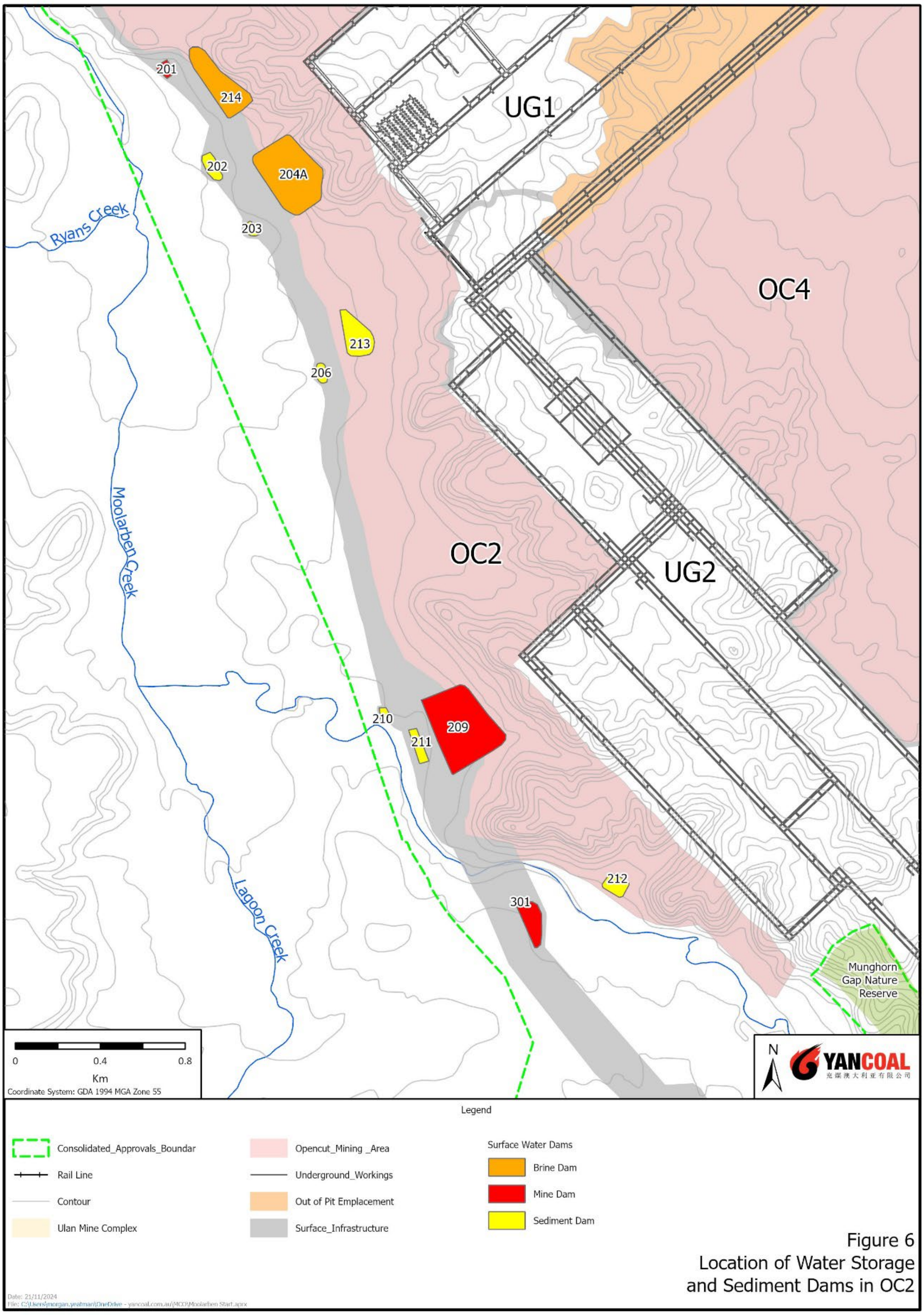

Figure 6: Location of water storage dams and sediment dams in OC2

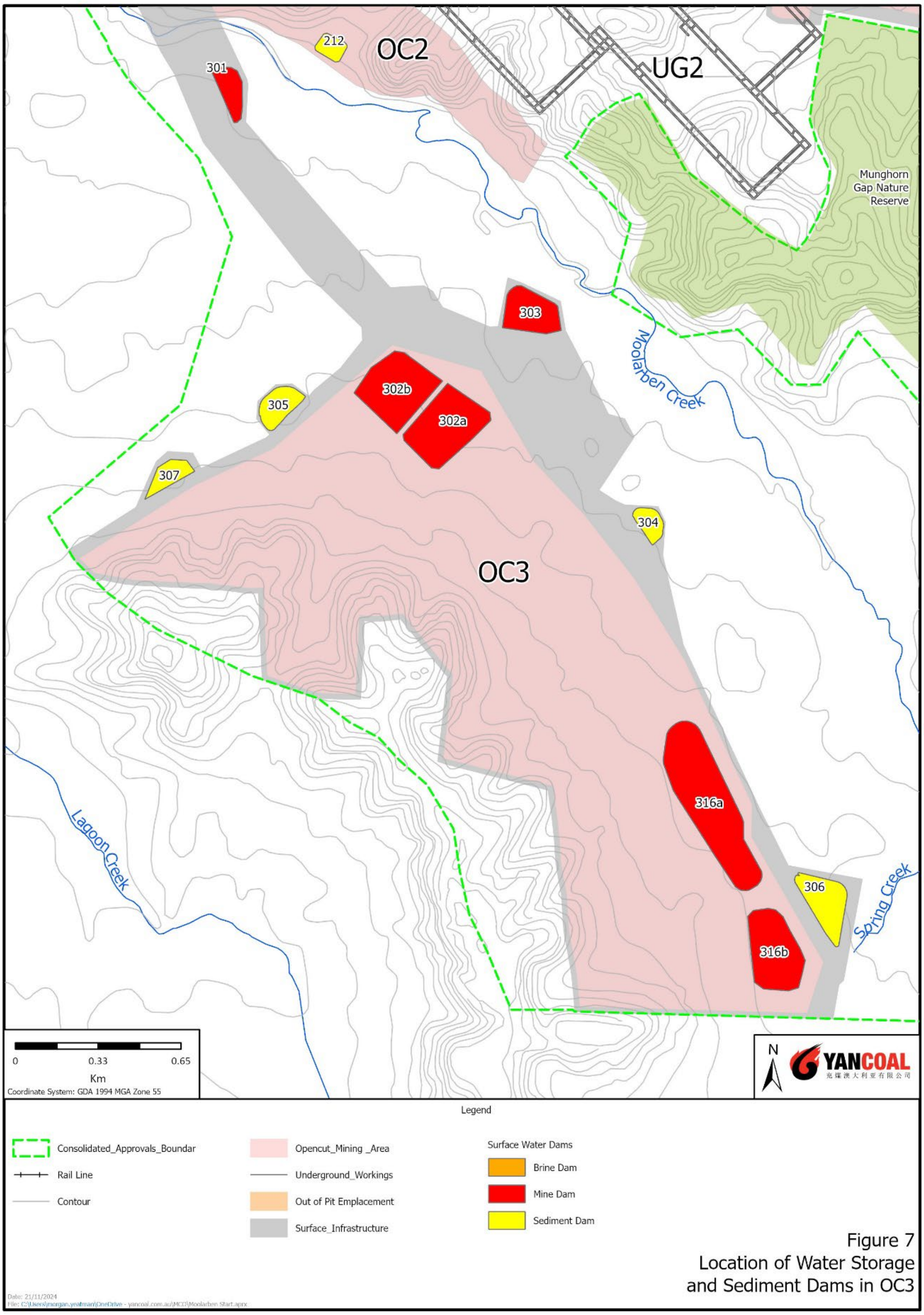

Figure 7: Location of water storage dams and sediment dams in OC3

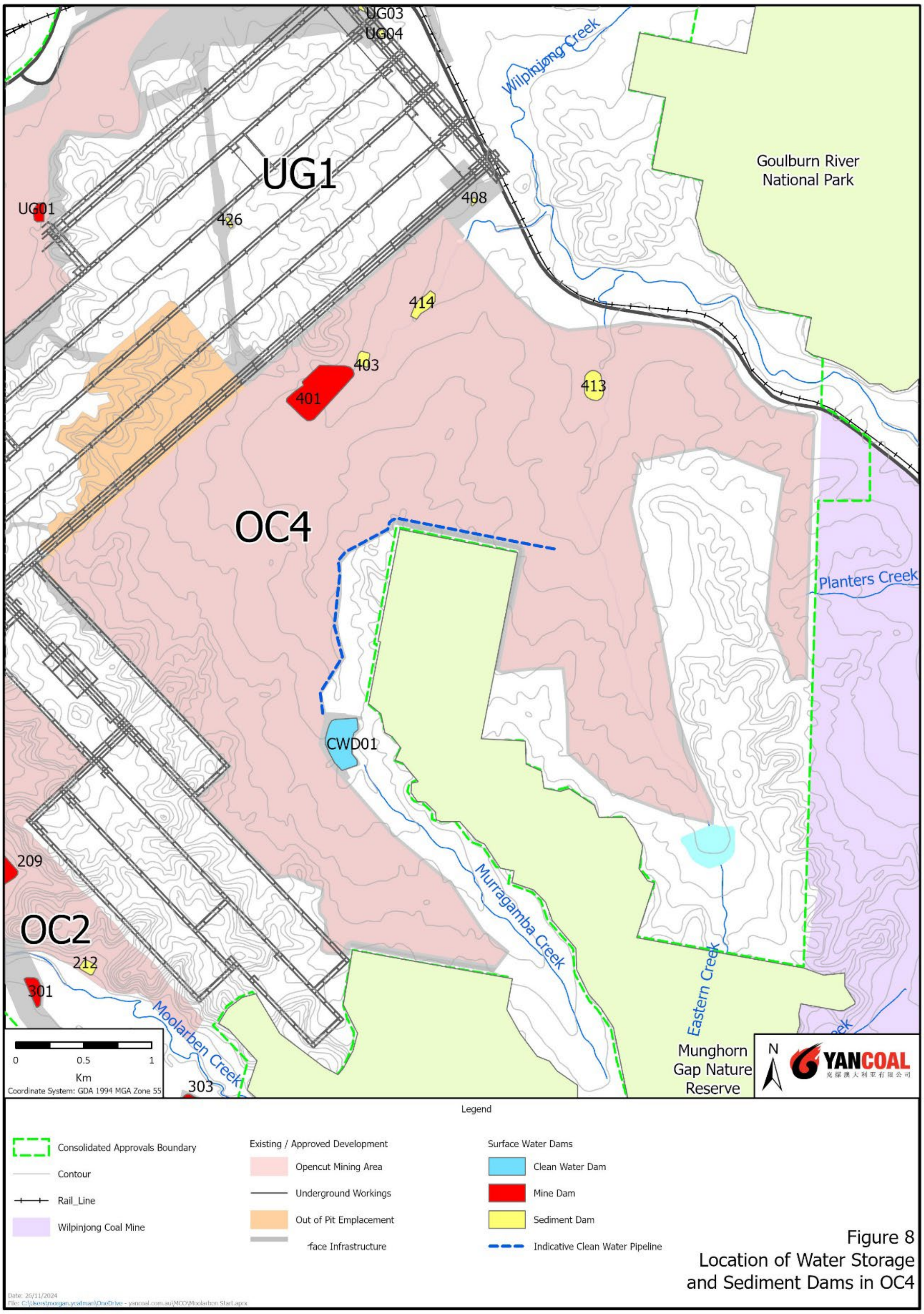

Figure 8: Location of water storage dams and sediment dams in OC4

4.2 RUNOFF FROM REHABILITATED AREAS

Rehabilitated areas will be shaped to the final landform and drainage structures installed in accordance with the Rehabilitation Management Plan (RMP). Run-off from rehabilitated areas will be diverted to sediment dams for treatment until the water quality of surface runoff is suitable for release from the site. Conceptual plans for final voids, drainage lines on rehabilitation and control of potential water pollution from rehabilitated areas are included in the RMP.

4.3 MINIMISATION OF WATER USE

MCO’s water management strategy includes preferential use of on-site derived mine water, thereby reducing the need to import raw water from external sources for operational purposes. This includes (inter alia):

- Use of a belt filter press to reclaim water from rejects materials for reuse during the coal washing process (Note; use of a belt filter press circumvents the need for disposal of tailings in dedicated tailings storage dams).
- Primarily washing run of mine (ROM) coal from open cut operations (i.e. underground ROM coal will primarily bypass the coal wash plant).
- Irrigation undertaken to minimise surplus water only.
- Use of surplus mine water from the adjacent Ulan Mine Complex as a primary supplementary water source (under the UWSA).
- Use of groundwater from advanced dewatering of underground mining areas as a primary supplementary water source.
- Diversion of clean water where practicable around the operation, e.g. development and operation of the Murragamba Clean Water Diversion system.

4.4 PIPELINES

Water obtained from the Ulan Mine Complex and dewatering/production bores is currently delivered via poly pipe to CHPP dams, located within the rail loop.

The pipeline has a capacity of approximately 63 litres per second (L/s) (5.4 million litres per day [ML/day]) when one pump is in use and approximately 100 L/s (8.6 ML/day) when two pumps are in use. MCO has an agreement with Ulan Coal Mine Limited (UCML) for the supply of up to 1,000ML/year of surplus mine water from its operations.

4.5 POTABLE WATER

Potable water for all facilities is imported from external sources when not available on-site.

4.6 WATER TREATMENT FACILITY

A water treatment facility has been constructed to allow surplus water stored on-site to meet the water quality concentration limits of EPL 12932 and provide water for on-site use.

The water treatment process involves pre-treatment followed by a secondary treatment of water via reverse osmosis (RO).

Additional water storages have been constructed part of the water treatment facilities to hold feed water, blend water and treated water, and to store by-products of the treatment process (Figure 4).

Water will be blended and transferred from the water treatment facility to the Goulburn River Diversion via a pipeline. The pipeline will run through culverts under Ulan Road adjacent to the existing water supply pipeline between the MCC and Ulan Mine Complex to the discharge point on the Goulburn River Diversion.

4.7 HISTORICAL PERFORMANCE OF WATER MANAGEMENT SYSTEM

Since commencing construction in 2008/2009, MCO has supplemented its available on-site water supply with groundwater drawn from production bores on site and from surplus mine water imported from the Ulan Mine Complex. This information is shown in Table 4 and Table 5.

Table 4: Imported water volumes (from borefield) since 2015:

Year	Water Volume (ML)
2015	0
2016	4
2017	50
2018	5.8
2019	0
2020	0
2021	0
2022	0
2023	0

Table 5: Imported water volumes (via the UWSA) since 2015:

Year	Water Volume (ML)
2015	116
2016	210
2017	7
2018	423
2019	178
2020	337
2021	0
2022	0
2023	0

MCO has the ability to discharge surplus water (of an appropriate quality) (see Section 6.2) from a number of licensed discharge points (not including licensed sediment dam rainfall-induced overflow releases) under EPL 12932.

Table 6: EPL licensed discharge volumes since 2015:

Year	Water Volume (ML)
2015	0
2016	0
2017	0
2018	0
2019	0
2020	1,426
2021	3,097
2022	4,584
2023	3,438

5.0 WATER DEMANDS

5.1 OVERVIEW

Water demands on-site include the following:

- Water used in the CHPP, including water retained in coal products and rejects and water for dust suppression (including stockpiles);
- Haul road dust suppression;
- Underground water demands; and
- Miscellaneous water usage such as potable water, irrigation, vehicle wash down, and Main Infrastructure Area (MIA) water usage.
- Water sources and the hierarchy of water use are described in **Section 7.0**.

5.2 CHPP

Water consumption at the MCC is predominately by the CHPP. Water lost from the coal handling and preparation process is either entrained within product coal or rejects material. Water usage has been estimated to range between 73 and 80 ML per million tonnes (Mt) of ROM coal washed at the CHPP based on the recorded CHPP water usage. At maximum production, the MCC will mine up to 16 million tonnes per annum (Mtpa) of ROM coal. Applying the CHPP water use rate yields a net water requirement for the CHPP of up to about 1,300 ML/year at maximum production (**Section 8.2**).

5.3 HAUL ROAD DUST SUPPRESSION

The total surface area of haul roads has been estimated from the mine plans and an assessment made of the potential water usage for dust suppression. This has been based on an assessment of the amount of water which is lost from these surface areas as a result of evaporation and infiltration. From this assessment and previous recorded water usage at MCO, the total water demand for dust suppression across the MCC is approximately 3.9 ML/day (1,420 ML/year) at maximum production and haul road footprint.

5.4 MISCELLANEOUS WATER USAGE

The miscellaneous water demand is an estimate of unmetered site demands such as vehicle wash-down, irrigation and MIA water usage. The total miscellaneous water demand is estimated to be 156 ML/year.

5.5 UNDERGROUND WATER DEMANDS

Based on underground consumption estimates, the underground water demand requires a supply of approximately 17 L/s of suitable quality water to the underground workings. On this basis, the total underground water demand is estimated to be approximately 525 ML/year.

Suspended solids load will be removed from the underground water supply by means of in line filters fitted with a back-flush cleaning. Back-flush water and associated sediment will by contained within the water management system.

5.6 SUMMARY

The resultant water demand distribution for the MCC is listed in Table 7**.** The total volume of water required for mining equates to a ROM factor of 211 ML per Mt.

Table 7: Forecast Water Demand at the Moolarben Coal Complex

Area of Use	Usage Rate (unit)	Net Usage Rate (million litres/unit)	Quantity	Maximum Water Usage (ML/year)
CHPP (16 Mt open cut)	Mt	80	16 Mt	1,283
Haul road dust suppression	day	3.9	1 year	1,419
Underground use	year	263	1 year	525
Miscellaneous usage	year	150	1 year	156
Total	-	-	-	**3,383**

The water demand in Table 7 is based on an average rainfall year assuming maximum production. Where additional water may be required in "dry" years it may be necessary to increase the amount of water imported from the Ulan Mine Complex under the UWSA. MCO has an agreement with UCML for the supply of 1,000 ML/year of surplus mine water from its operations. The UWSA has provision to increase the supply by agreement. Additional water to meet site demand or water quality requirements will also be available from the water treatment facility and advanced dewatering of the Underground 4 mine. All water extraction will be undertaken in accordance with relevant agreements and/or licence conditions.

5.7 OTHER WATER LOSSES

Evaporation estimates for open water bodies (including dams) were based on evaporation data for the area obtained from the Patched Point Data service. Surface areas for the dams has been determined based on as-constructed drawings and topographical data (for existing storages) and conceptual design plans (for proposed dams).

Water losses associated with potential seepage from water dams is assumed to be negligible in terms of the overall site water balance and has therefore not been modelled. This assumption is supported by the fact that the construction of emergency tailings dams, mine infrastructure dams, groundwater storages and treatment dams will comply with a permeability standard that is the equivalent of $<1x10^{-9}$ m/s (**Section 4.0**).

6.0 WATER DISPOSAL

6.1 WASTEWATER EFFLUENT DISPOSAL

Wastewater from offices, workshop and bath houses is collected and treated in on-site effluent treatment systems located near the Open cut offices, CHPP Offices, Underground MIA and Administration Offices. Effluent disposal is undertaken in accordance with EPL 12932. Any additional effluent sites installed for expanded operations will be appropriately licensed.

6.2 LICENSED DISCHARGES

MCO has the ability to discharge water into the Goulburn River Diversion and Moolarben Creek from three licensed discharge points (Goulburn River Diversion discharge point, Dam 106 and Dam 202) in accordance with EPL 12932.

EPL 12932 and Project Approval (05_0117) permit a maximum discharge of 10 ML/day from the Goulburn River Diversion discharge point for the majority of the MCC life, 20 ML/day during mining operations in UG4, and the release of a combined volume greater than 15 ML/day during prolonged wet periods with the approval of the EPA.

MCO is also permitted to allow stormwater discharge from additional locations in accordance with EPL 12932.

All discharges will be undertaken in accordance with the conditions in EPL 12932 and Condition 31, Schedule 3 of Project Approval (05_0117) and Condition 27, Schedule 3 of Project Approval (08_0135).

Further information on licensed discharges is detailed in Section 7.3 of the SWMP.

6.3 OTHER DISPOSAL

MCO and Wilpinjong Coal Mine will continue to liaise regarding opportunities for physical water sharing between the operations. Where reasonable and feasible, water will be shared between the sites.

MCO and Energy Corporation of NSW’s (EnergyCo) will contemplate potential water sharing during the construction of the approved electricity transmission lines for the Central West Orana (CWO) renewable Energy Zone (REZ) Transmission Project in accordance with the Stage 1 (05_0117) and Stage 2 (08_0135) Project Approvals.

7.0 WATER SOURCES

Sources of water supply to the MCC are summarised in decreasing order of priority:

- Groundwater inflows to open cut and underground mining operations;
- Runoff captured from the footprint of the mining disturbance area by the water management system;
- Groundwater extracted from advanced UG dewatering;
- Mine water imported from the Ulan Mine Complex under agreement with UCML; and
- Groundwater extracted from production bores.

Operational water supply is reviewed monthly, collating all groundwater extractions, in-pit rainfall accumulation and runoff, as well as imported water to inform on-site water management. Water will be sourced based on the supply hierarchy with consideration given to water quality requirements.

MCO will manage the available water sources and, if necessary, adjust the scale of operations to match the available water supply (in accordance with Condition 29, Schedule 3 of Project Approval [05_0117]). Where practical, preference will be given to water captured on-site and sourced from surplus supplies at adjoining mines.

7.1 GROUNDWATER INFLOWS

Open cut and underground mining within the MCC may intercept saline groundwater aquifers. To maintain safe mining operations all of the groundwater that accumulates within mining pits will need to be pumped to surface storages, and will be re-used in mining operations. Table 8 summarises the predicted groundwater inflows. The predictions in Table 8 include an allowance for face evaporation losses.

Table 8: Predicted Groundwater Inflows

Site Water Balance Model Stage	Year	Total Groundwater Inflows (ML/year)
1	2024	3826
1	2025	4071
2	2026	3025
2	2027	3466
3	2028	3580
4	2029	2190
4	2030	1905
4	2031	1274

5	2032	1200
5	2033	1064

7.2 RUNOFF AND DIRECT RAINFALL

As described in Section 4 of the SWMP, as far as practically possible, clean water runoff from up catchment areas is diverted around active mining and other disturbance areas. Diversion design will consider catchment extent, required disturbance and safety. Water that accumulates within mining pits will be pumped to surface storages for re-use in the mining operations and CHPP. Table 9 summarises the predicted runoff and direct rainfall for the MCC for dry, median and wet climatic conditions, averaged over the water balance modelling period.

Table 9: Predicted Runoff and Direct Rainfall

Open Cut Mining Area	Average Annual Surface Water Inflows (Dry Climatic Conditions) (ML/year)	Average Annual Surface Water Inflows (Median Climatic Conditions) (ML/year)	Average Annual Surface Water Inflows (Wet Climatic Conditions) (ML/year)
OC1 (Void from Stage 3)	45	80	129
OC2 (Backfilled and rehabilitated)	N/A	N/A	N/A
OC3	21	39	71
OC4	224	413	677

7.3 WATER SHARING

Where practical, MCO seeks to share surplus mine water from other mines. MCO has an agreement with UCML for the supply of 1,000 ML/year of surplus mine water from its operations. The volume of water sourced externally under the UWSA (or from dewatering/production bores) will be managed to the available on-site storage capacity. Transferred water can be saline and is therefore treated as mine water.

7.4 PUMPING FROM LICENSED GROUNDWATER SOURCES

Supplementary water supply during dry years may be sourced from licensed dewatering/production bores from advanced dewatering of the UG4 mine (**Figure 9**). The borefield water supply system may comprise of pumps, pipelines, storage dams and tanks to extract and store groundwater. Groundwater will be drawn from these bores on an as need basis.

Each production bore will be equipped with a meter to measure the volume of water extracted. These meters will be maintained in good working order and calibrated in accordance with the *NSW Non-urban Water Metering Policy* (NSW Department of Planning, Industry and Environment, 2020). All water extracted from these bores will be monitored with the volumes reported in the Annual Review.

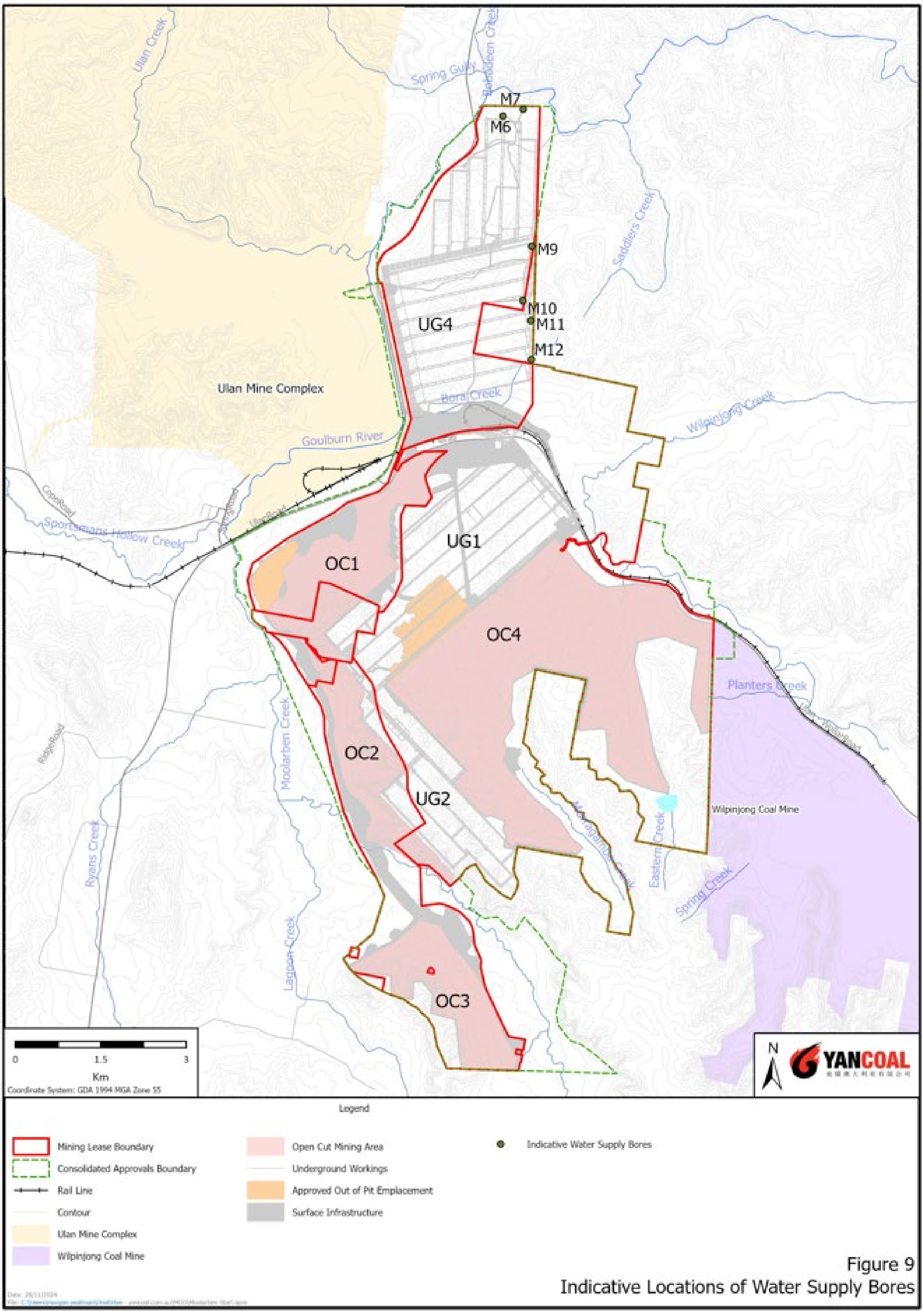

Figure 9: Indicative locations of water supply bores

8.0 WATER BALANCE MODEL CONFIGURATION AND ASSUMPTIONS

8.1 OVERVIEW

A water balance model of MCC has been developed, using the GoldSIM modelling software package. The model was developed by WRM (2017) as part of the *Moolarben Coal Complex Open Cut Optimisation Modification Site Water Balance and Surface Water Assessment* and refined as part of this SWB. The GoldSIM model is used by suitably qualified and experienced consultants to provide advice on the water balance impacts of future site development. A summary of the existing and proposed system operating rules and assumptions are provided in Attachment 3. The GoldSIM model is reviewed in accordance with the provisions described in Section 4.0 of this report.

Area Managers are responsible for the operation and maintenance of water infrastructures (e.g. pumping requirements) in consultation with the Environment and Community Advisors.

The general water management system schematics for MCO are shown in Figure 10, Figure 11 and Figure 12.

8.2 WATER MANAGEMENT SYSTEM STAGING

The refined water balance model was configured to represent the changing characteristics of the water management system over the modelled period. This included changes in contributing catchment areas draining to the various mine site storages, as well as varying groundwater inflows, coal production rates and site water demand.

Five stages of mine development were modelled to reflect variations over time. These modelling stages are summarised in Table 10. Although the catchment areas will continuously change as mining progresses, the adopted approach of modelling discrete stages will provide a reasonable representation of conditions over the 10 year period.

Staged mine plans for each Representative Mine Phase over the modelled period are included in **Attachment 2.**

Table 10: Moolarben Coal Complex Model stages

Representative Mine stage	Applied Range of Mine Life	Stage Duration
1	2024-2026	2 years
2	2026-2028	2 years
3	2028-2029	1 year
4	2029-2032	3 years
5	2032-2034	2 years

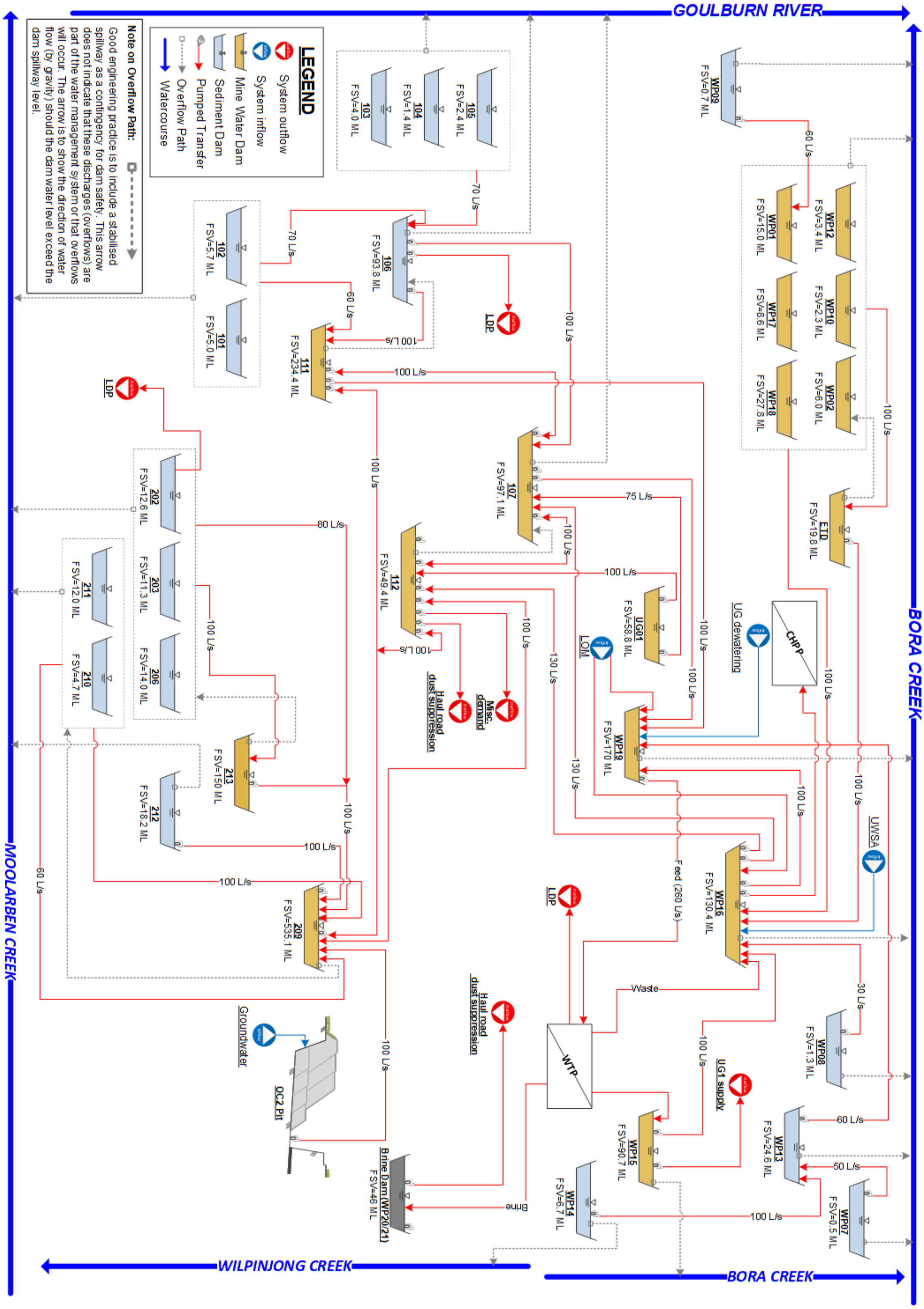

Figure 10: Water management schematic – CHPP/OC1/OC2

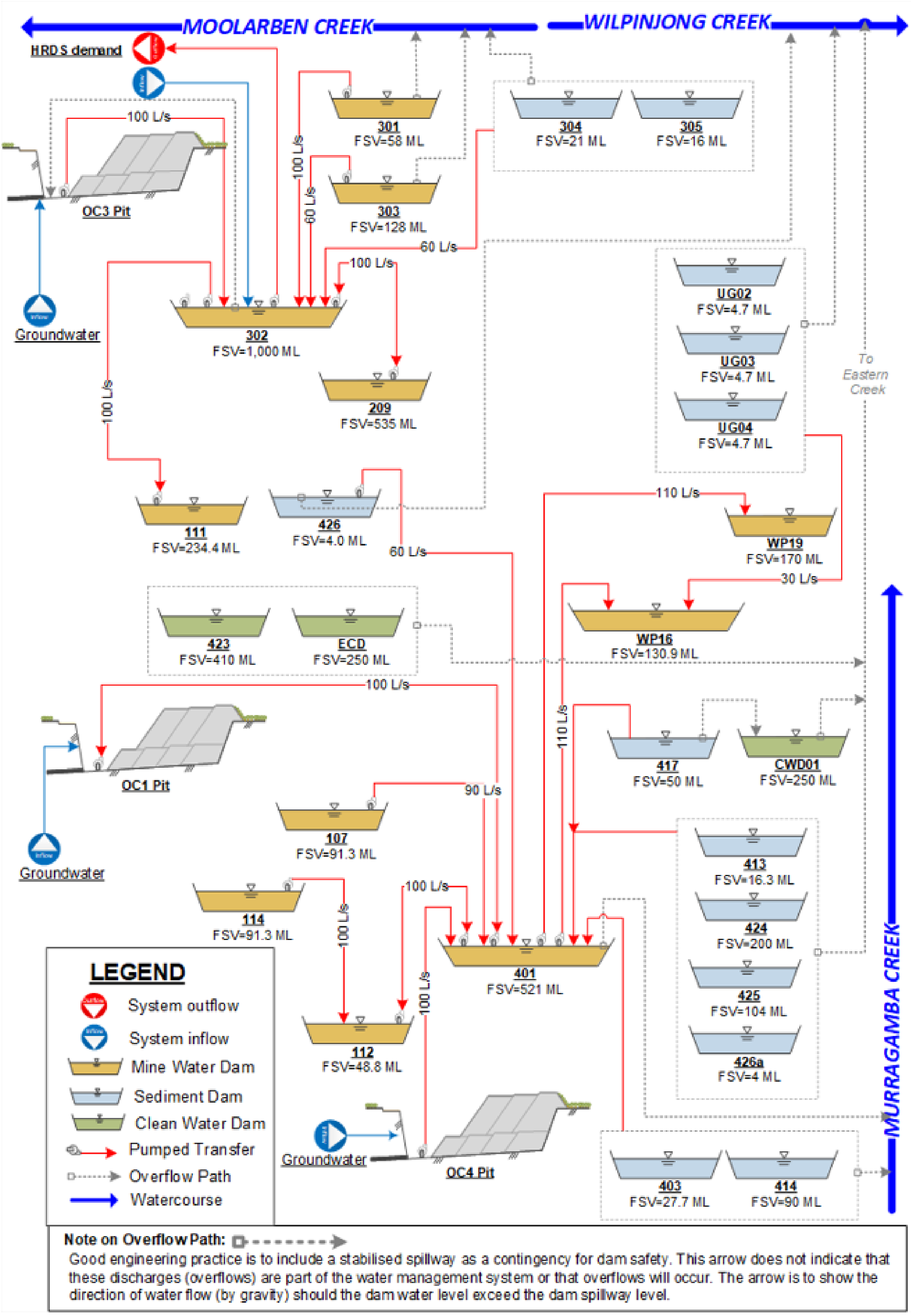

Figure 11: Water management schematic – OC3/OC4

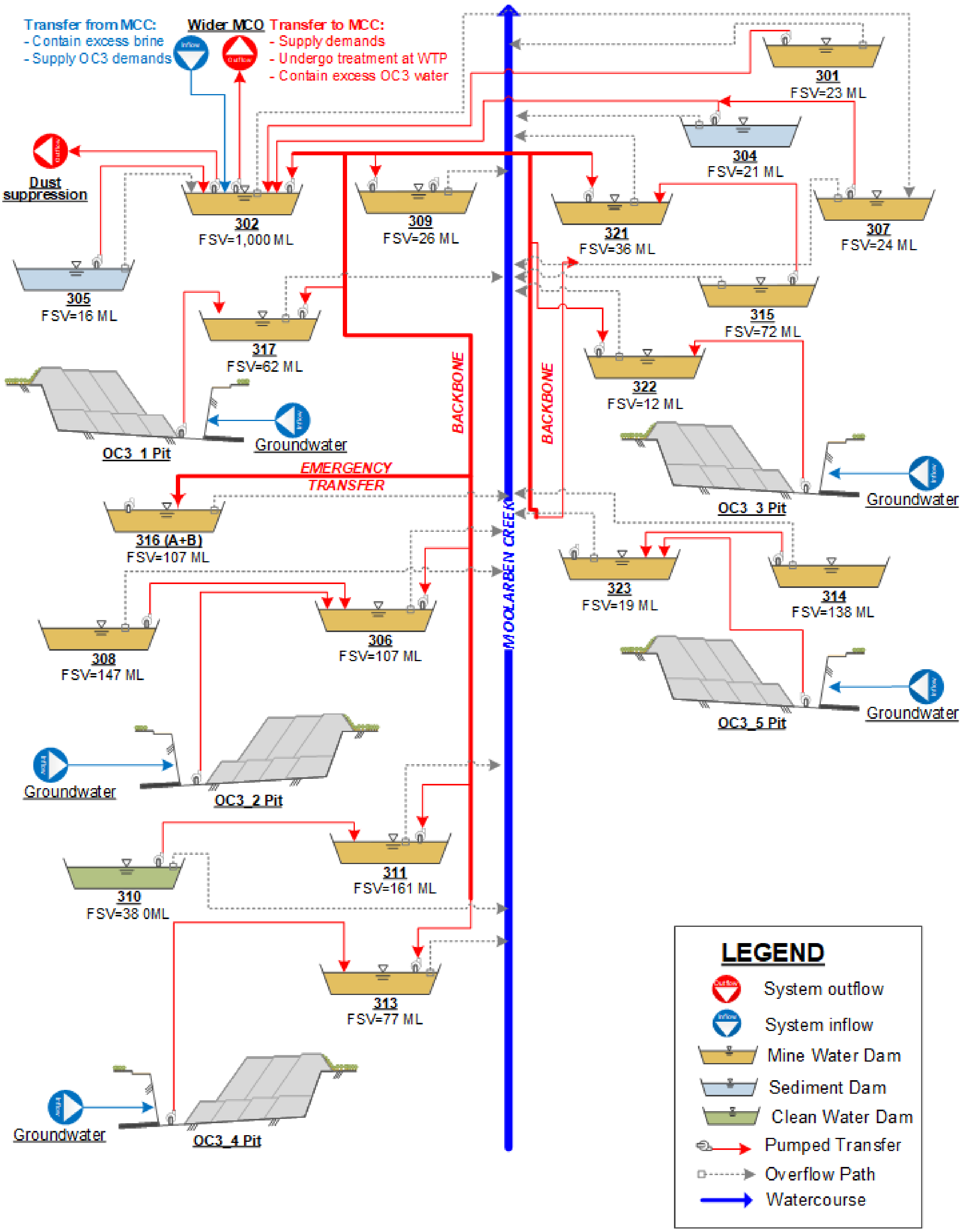

Figure 12: Water management schematic – OC3

8.3 WATER MANAGEMENT SYSTEM OPERATING ASSUMPTIONS

Detailed water management system operating assumptions are documented in **Attachment 3.**

8.4 SIMULATION OF CATCHMENT RUNOFF

Catchment runoff inflows to the mine water management system are modelled using the Australian Water Balance Model (AWBM) rainfall-runoff model. Catchments across the site are characterised into the following land use types:

- natural;
- hardstand;
- open cut mining area (active pit);
- overburden emplacement area (spoil); and
- rehabilitated overburden emplacement area.

The AWBM model for natural/undisturbed catchments (i.e. not disturbed by mining) has been calibrated against available stream flow data at the following four locations:

- Moolarben Creek at Moolarben Dam;
- Moolarben Creek at Ulan Road (gauge no. MOOL001);
- Bora Creek at Ulan Road (gauge no. MOOL002); and
- Wilpinjong Creek at Red Hill (gauge no. MOOL003).

The calibrated AWBM parameters for the four locations differed significantly. The most suitable parameter set was determined by undertaking a calibration of the GoldSIM model against modelled and observed combined site inventory over a six month period. The results of the GoldSIM model calibration showed that the Bora Creek catchment model parameters produced the best match between modelled and observed combined site inventory.

Whilst it is recognised that a small proportion (less than 20%) of the Bora Creek catchment was disturbed during the calibration period, it is considered representative of a natural catchment for modelling purposes. Hence, the Bora Creek catchment model parameters were adopted for natural/undisturbed catchments (shown in **Table 11**).

Figure 13 and **Figure 14** show predicted and recorded daily runoff and flow duration curves for Bora Creek at Ulan Road. **Figure 15** compares modelled and observed combined site inventory using the adopted AWBM parameters for August 2021 to July 2022. The model was calibrated to observed site inventory using site rainfall data. The model calibration results show the adopted AWBM parameters are appropriate.

Model parameters for pit, hardstand and stockpile catchments were adopted based on previous experience with GoldSIM modelling on these types of catchments. Model parameters for spoil catchments were adopted from a previous study of runoff from disturbed mine catchments in the Hunter Valley region (ACARP, 2001). Natural/undisturbed catchment AWBM parameters were adopted for rehabilitated spoil catchments. Model parameters for the various catchment types are summarised in **Table 11**.

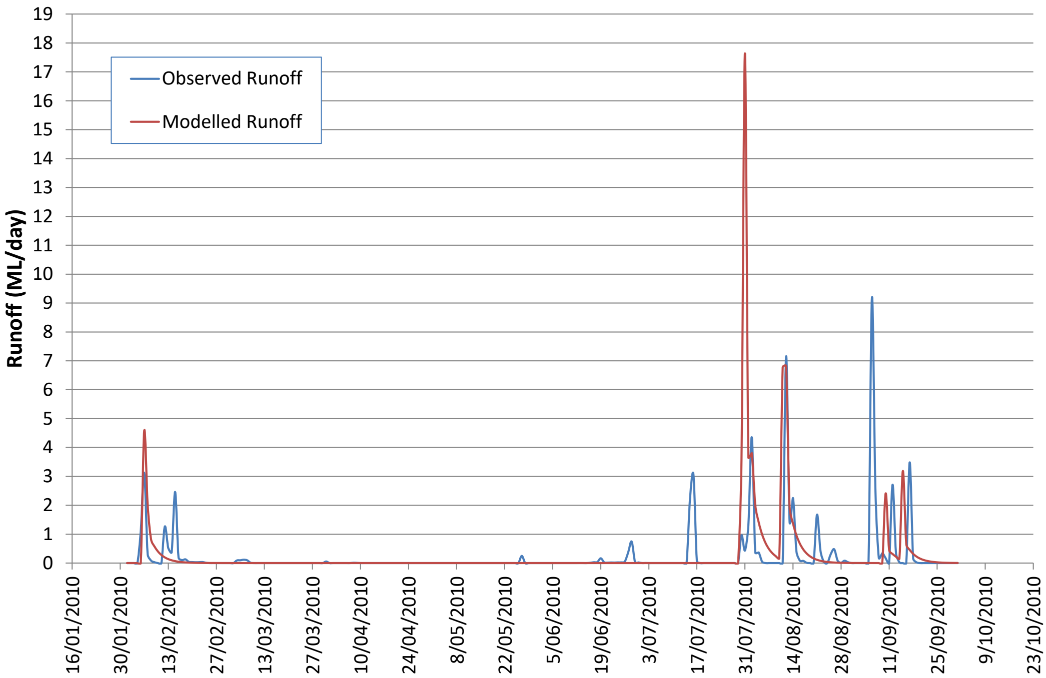

Figure 13: Comparison of Modelled and Observed Daily Runoff, Bora Creek at Ulan Road

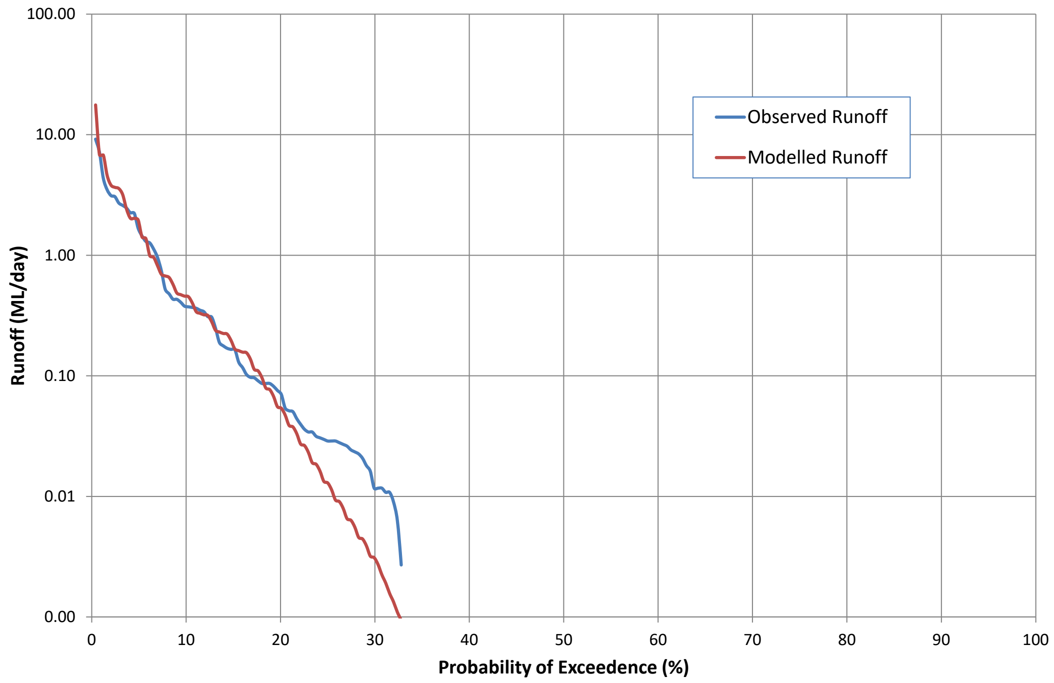

Figure 14: Comparison of Modelled and Observed Flow Duration Curves, Bora Creek at Ulan Road

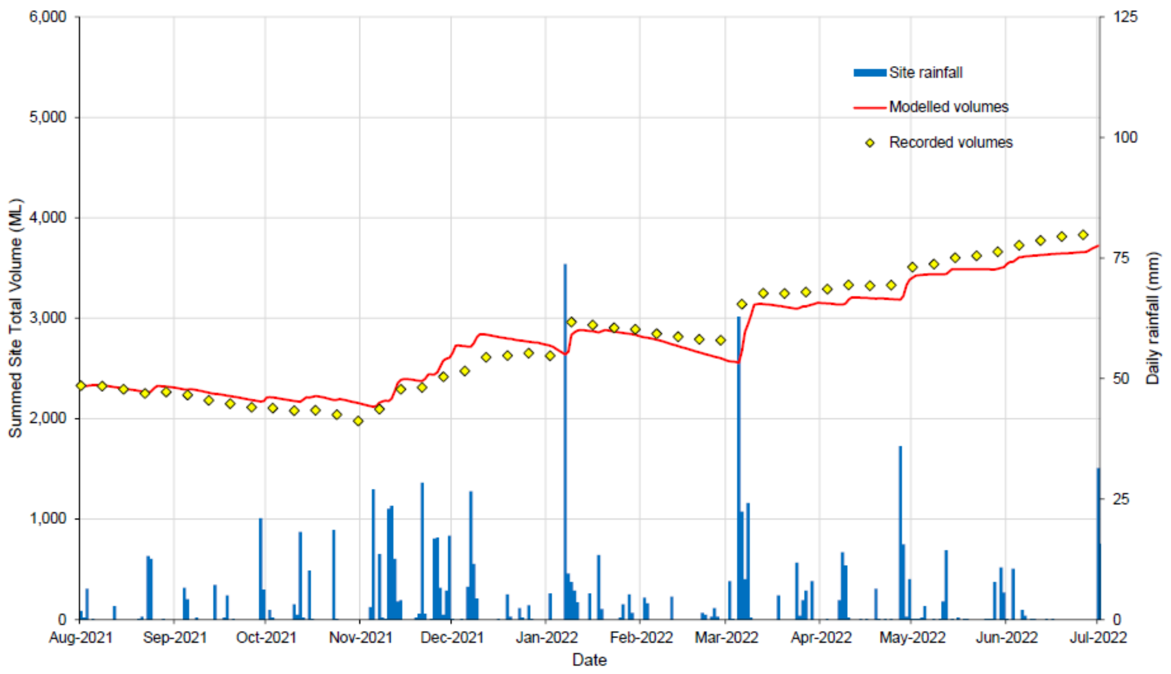

Figure 15: Comparison of Modelled and Observed Combined Site Inventory, 2021/2022

Table 11: Adopted AWBM Parameters

Parameter	Natural/ Undisturbed	Roads/Industrial/ Hardstand	Mining Pit	Unrehabilitated Spoil	Rehabilitated Spoil	Cleared
A1	0.2	0.3	0.3	0.3	0.2	0.3
A2	0.2	0.2	0.2	0.2	0.2	0.2
A3	0.6	0.5	0.5	0.5	0.6	0.5
C1	90	2	3	10	90	4
C2	170	30	12	100	160	25
C3	200	200	70	350	250	220
BFI	0.55	0	0	0.2	0.6	0
Kb	0.7	0	0	0.7	0.7	0
Ks	0	0	0	0	0	0

8.5 OVERALL WATER BALANCE

Water balance results for all modelled realisations are presented in Table 12, averaged over the 5 stages of mine life. The results for this single realisation show inflows, outflows and overall water balance for each of the mine stages for a representative climate sequence. It should be recognised that the following items are subject to climatic variability:

- rainfall runoff;
- evaporation;
- mine water imported from UCML;
- external water requirements; and
- licensed site releases (including licensed sediment dam spills).

The results presented in Table 12 are an average of all realisations, and will include wet and dry periods distributed throughout the mine life. Rainfall yield for each phase is affected by the variation in climatic conditions within the adopted climate sequence.

Water management contingencies include the storage of additional water on-site, reducing the water sourced externally during extended wet periods and sourcing additional water from neighbouring mines or ground water during dry periods. Additional contingencies and response measures are discussed in Section 6.0 and Section 7.0 of the SWMP.

Table 12: Average Annual Water Balance

Average Annual Water Balance	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Water Inputs (ML/a)					
Total Direct Rainfall	337	273	277	269	243
Total Runoff	1,285	1,290	1,205	1,245	1,153
Total GW Inflows	3,934	3,395	3,523	2,171	1,184
Total Ulan Inflows	0	10	15	381	1,097
Gross Water Input	**5,556**	**4,969**	**5,020**	**4,066**	**3,677**
Water Outputs (ML/a)					
Evaporation from all storages	721	544	555	533	486
Dam Overflows (offsite)					
Mine Water Dam	0	0	0	0	0
Sediment Dam Overflow	17	7	11	14	23
Clean Water Dam Release	73	32	32	44	44
Total Overflow	90	39	43	58	67
CHPP demand	1257	1279	1279	1279	1279
Controlled release (RO plant release)	2508	1511	1159	650	267
HRDS demand	1269	1178	1197	1254	1425
UG Demand	548	548	548	183	0
Misc. water demand	50	49	50	50	50
Total	**6442**	**5148**	**4830**	**4006**	**3574**
Water Balance (ML/a)					
Change in Site Water Inventory	-886	-180	189	59	103

* The volume of water sourced externally under the UWSA (or from dewatering/production bores) will be managed to the available on-site storage capacity.

† EPL 12932 permits up to 20ML/day of controlled water release from licensed discharge points. While water sourced externally will be managed to the available on-site storage capacity, the ability for MCO to discharge under licence provides a contingency for managing surplus water (of a suitable quality) in the event storage capacity becomes constrained as a result of intensive or prolonged rainfall conditions.

9.0 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

9.1 ANNUAL REVIEW

Annual Review reporting and revision protocols are described in Section 4 of the WAMP.

10.0 REFERENCES

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11.0 DEFINITIONS

CHPP	Coal Handling and Preparation Plant
EA	Environmental Assessment
EP&A Act	*Environmental Planning and Assessment Act 1979*, the primary legislation for the regulation of land use, planning and development within NSW
EPL	Environment Protection Licence
Incident	A set of circumstances that causes or threatens to cause material harm to the environment and/or breaches or exceeds the limits or performance measures/criteria in the Part 3A Approval
MCO	Moolarben Coal Operations Pty Limited
MIA	Main Infrastructure Area
ML	Megalitre
MOP	Mining Operations Plan
Mt	Million tonnes
OC	Open Cut
POEO Act	NSW *Protection of the Environment Operations Act 1997*, principal piece of legislation governing environmental protection in NSW
ROM	Run of Mine coal
UCML	Ulan Coal Mines Limited
UWSA	Ulan Water Sharing Agreement
UG	Underground
WAMP	Water Management Plan (in relation to the Moolarben Coal Project - this Plan)

Attachment 1: Project Approval (05_0117) and (08_0135) Reconciliation

Table A-113: Site Water Balance Requirements in Project Approvals (05_0117 and 08_0135)

NSW Project Approval Condition	SWB Section
Water Management Plan	
33 (b) and 29 e) in addition to the standard requirements for management plans (see condition 3 of Schedule 6), this plan must include a:	
(i) Site Water Balance that:	
• includes details of:	
- sources and security of water supply, including contingency planning for future reporting periods;	Section 7
- water use and management on site, including details of water sharing between neighbouring mining operations;	Sections 4 to 7
- reporting procedures, including the preparation of a site water balance for each calendar year;	Section 9
• describes the measures that would be implemented to:	
- minimise clean water use on site;	Section 4
- maximise water sharing with the other mines in the region;	Section 7.3
...	

Table A-2: Management Plan Requirements Project Approval (08_0135)

NSW Project Approval Condition	SWB 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;	Section 3
(b) a description of:	
• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	Section 2 and Attachment 1
• *any relevant limits or performance measures/criteria;*	WAMP
• *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;*	WAMP
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	WAMP
(d) a program to monitor and report on the:	WAMP
• *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;	WAMP

NSW Project Approval Condition	SWB Section
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 9
(g) a protocol for managing and reporting any: • *incidents;* • *complaints;* • *non-compliances with statutory requirements; and* • *exceedances of the impact assessment criteria and/or performance criteria; and*	WAMP
(h) a protocol for periodic review of the plan.	Section 9

Attachment 2: Water Management System – Indicative Stage Plans

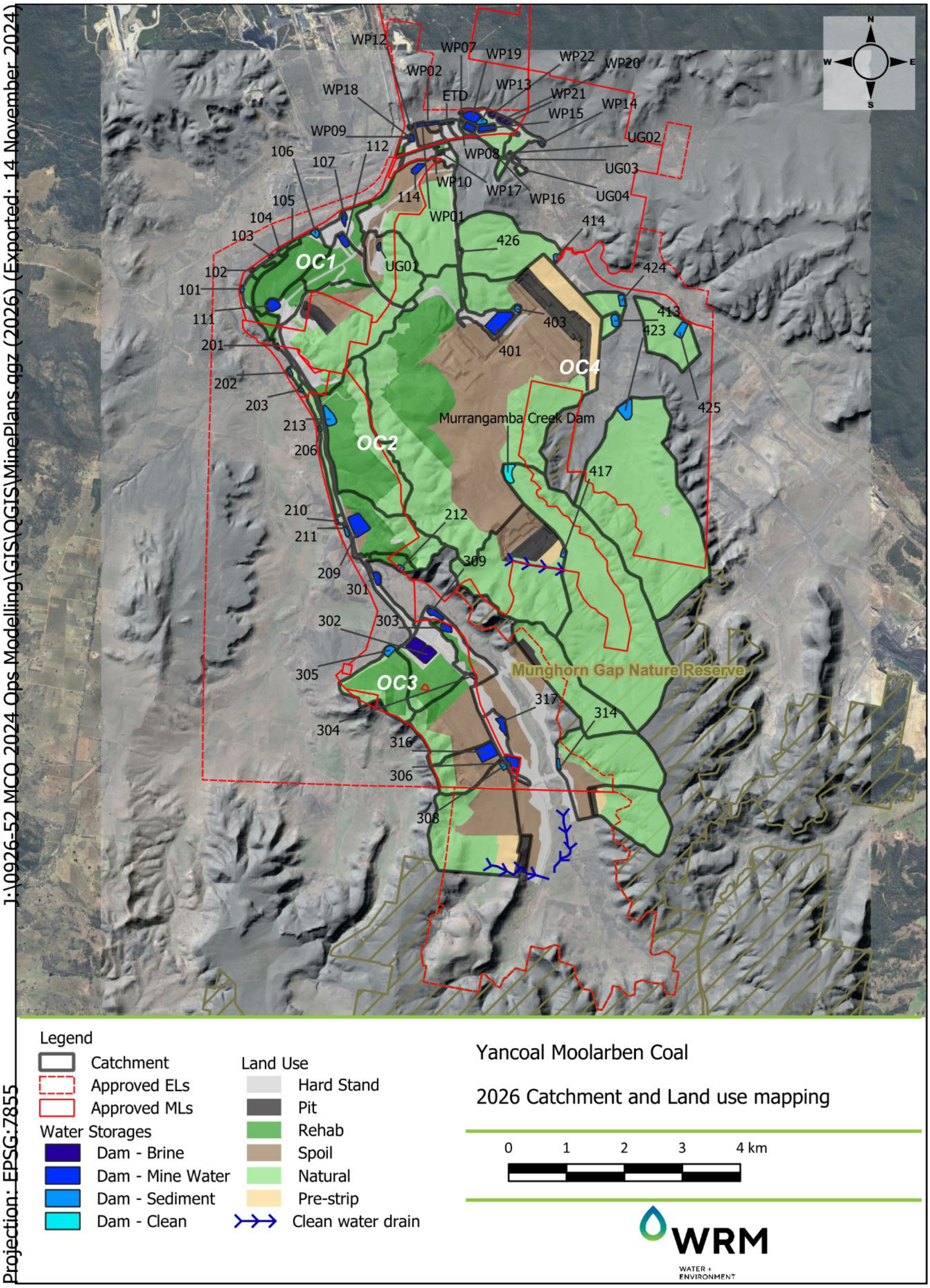

Figure 16 – MCO Stage 1 mine plan

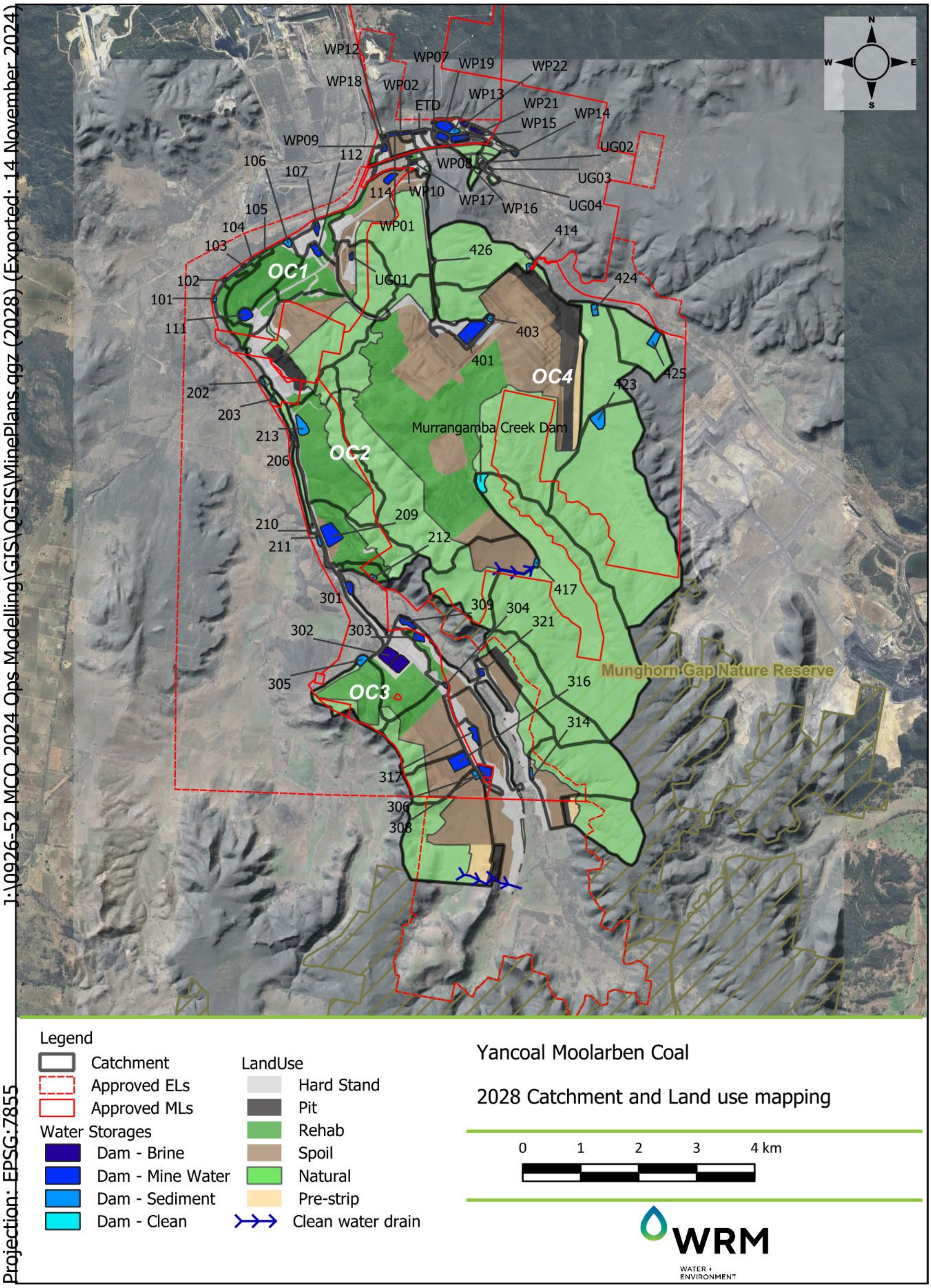

Figure 17 – MCO Stage 2 mine plan

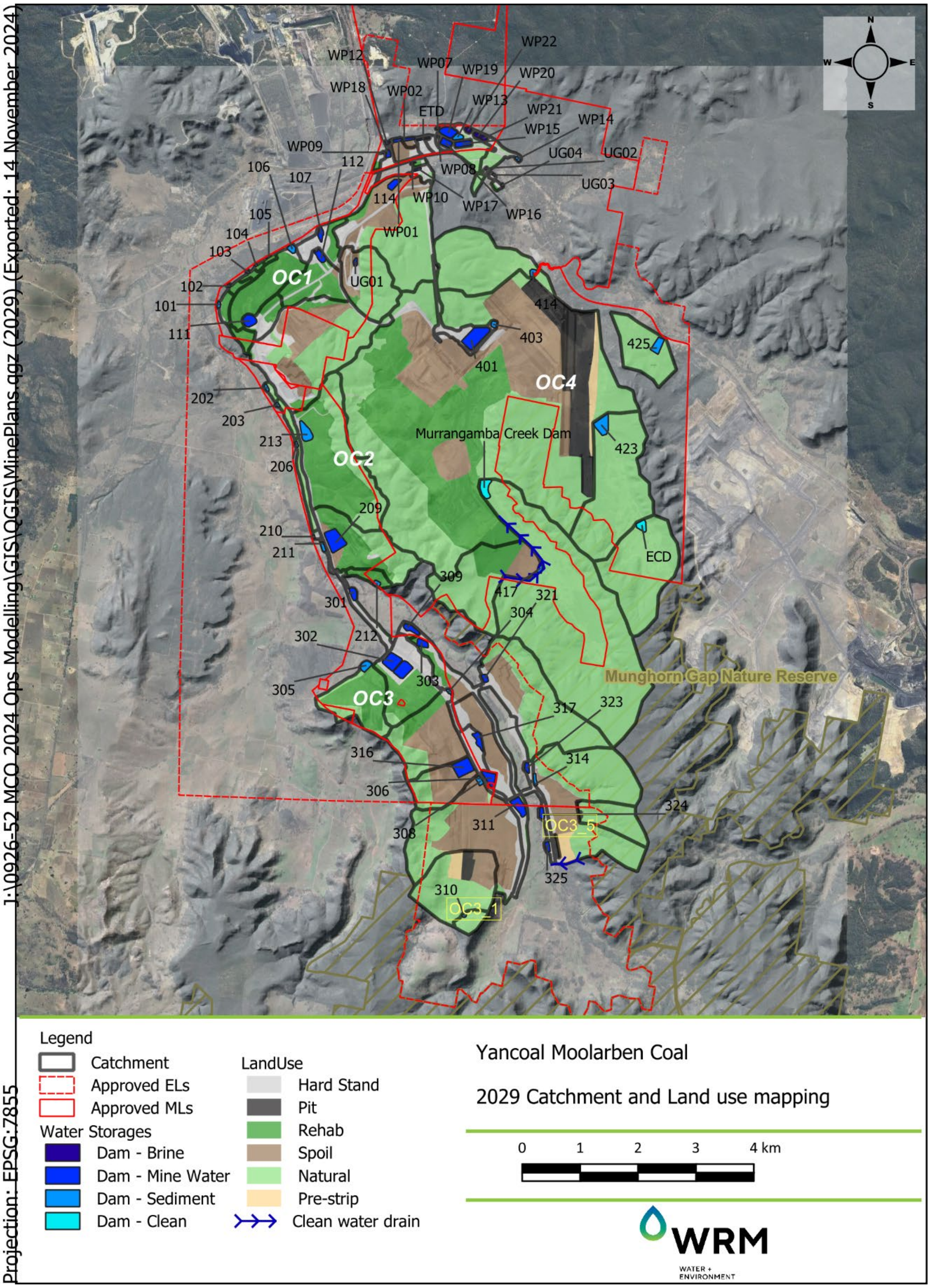

Figure 18 – MCO Stage 3 catchment -landuse plan

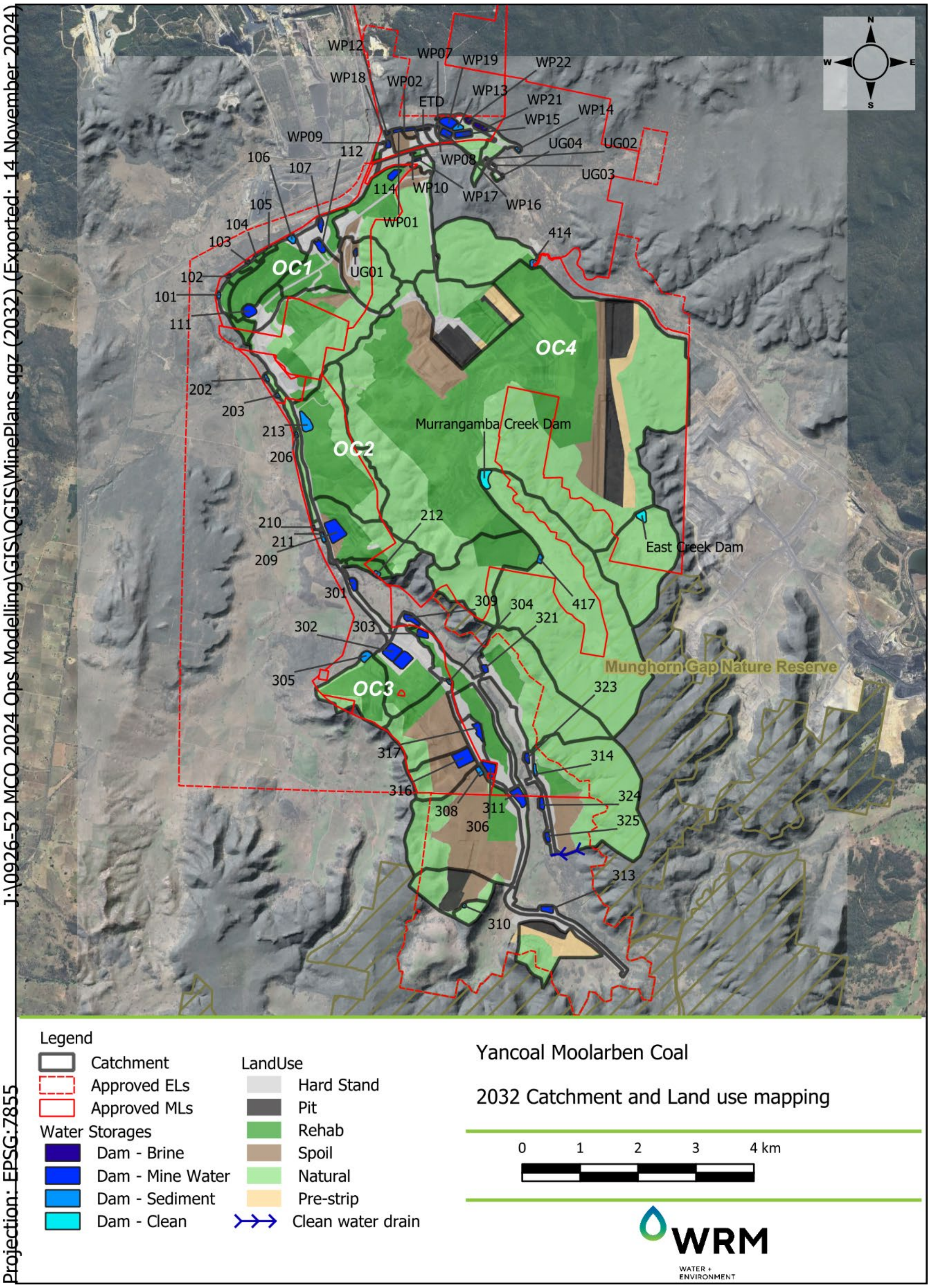

Figure 19 – MCO Stage 4 catchment-landuse plan

Document	Version	Effective Date	Status	Author
MCO_ENV_PLN_0036	5	29/11/2024	Approved	MCO

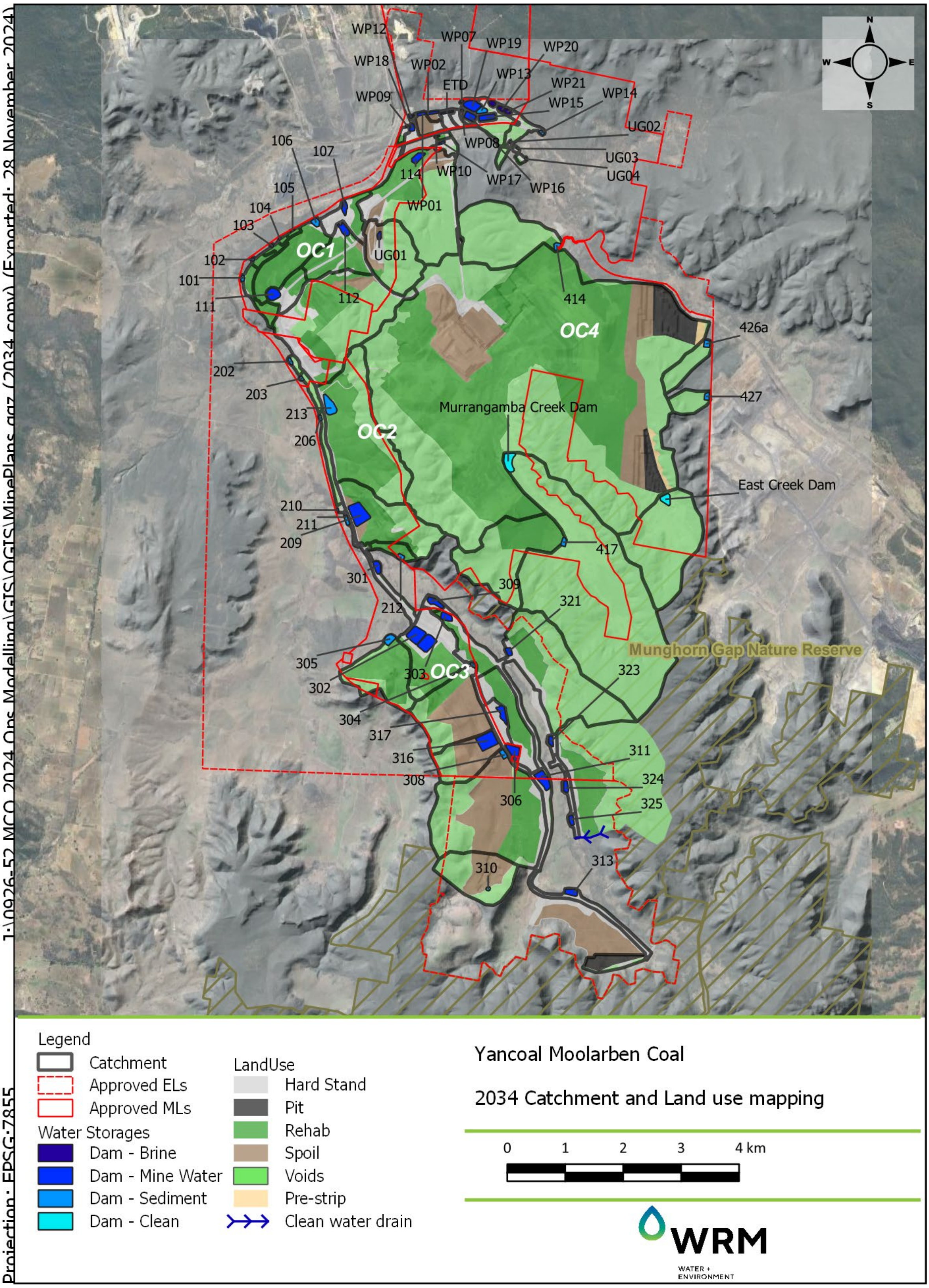

Figure 20 – MCO Stage 5 catchment-landuse plan

Attachment 3: Water Management System Operating Rules

The modelled water management system assumptions are summarised in the table below. Actual water management practices on-site may change as mining progresses. The overflows described in the table below represent stabilised spillways designed as a contingency for dam safety and do not indicate that these discharges or overflows are part of normal water management system operating practice.

Table A-3: Water Management System Operating Assumptions

Item	Node Name	Operating Rules
1	**Water Supply**	
1.1	Ulan Water Sharing Agreement	• Supplies water to WP16 from the "East Pit" of Ulan Mine Complex as part of the UWSA as required
		• Supplies to WP15 as required
2	**Water Demands**	
2.1	CHPP	• Supplied from WP16
2.2	Dust suppression	• Supplied from 111, 112, 204, 209, 401
2.2	MIA usage	• Supplied from 112.
3	**Open–Cut Operations**	
3.1	Open Cut 1	• Receives groundwater inflows at varying rates dependent on mine stage
	(OC1 void)	• Receives stormwater runoff from disturbed and undisturbed areas
		• Continuous dewatering to 107, 111
3.2	Open Cut 2	• Receives groundwater inflows at varying rates dependent on mine stage
	(OC2 void)	• Receives stormwater runoff from disturbed and undisturbed areas
		• Continuous dewatering to 204 and 209
3.3	Open Cut 3	• Receives groundwater inflows at varying rates dependent on mine stage
	(OC3 Pit)	• Receives stormwater runoff from disturbed and undisturbed areas
		• Continuous dewatering to 302
3,4	Open Cut 4	• Receives groundwater inflows at varying rates dependent on mine stage
	(OC4 Pit)	• Receives stormwater runoff from disturbed and undisturbed areas
		• Continuous dewatering to 401
4	**Underground Operations**	
4.1	Underground 1	• Receives groundwater inflows at varying rates dependent on mine stage
	(UG1)	• Receives water from WP15, WTP & open cut pits
		• Continuous dewatering to WP16, WP19, OC1 Pit
4.2	Underground 2	• Receives groundwater inflows at varying rates dependent on mine stage
	(UG2)	• Receives water from WP15, WTP & open cut pits
		• Continuous dewatering to WP16, WP19
4.3	Underground 4	• Receives groundwater inflows at varying rates dependent on mine stage
	(UG4)	• Receives water from WP15, WTP & open cut pits

		• Continuous dewatering to WP16, WP19
5	**Water Storages - CHPP**	
5.1	WP01	• Receives catchment inflows from product stockpile, WP18
		• Supplies to ETD, WP16
		• Overflows to WP12
		• Dam level is maintained at or below 10%
5.2	WP02	• Receives catchment inflows from product stockpile pad, overflows from clarified water sump
		• Supplies to WP16
		• Overflows to WP01
		• Dam level is maintained at or below 10%
5.3	WP07	• Receives catchment inflows from disturbed areas
		• Pump transfers to WP13
		• Overflows to Bora Creek
5.4	WP08	• Receives catchment inflows from disturbed areas
		• Pump transfers to WP13, WP15, WP16
		• Overflows to Bora Creek
5.5	WP09	• Receives catchment inflows from Admin area and car park
		• Pump transfers to WP01
		• Overflows to Bora Creek
5.6	WP10	• Receives catchment inflows from ROM area and Rejects bin
		• Overflows to WP01
5.7	WP12	• Receives catchment inflows from disturbed areas and overflows from WP01
		• Pump transfers to WP01
		• Overflows to Bora Creek
5.8	WP13	• Receives catchment inflows from disturbed and undisturbed areas
		• Receives pumped transfers from WP07, WP08, WP14
		• Pump transfers to WP15
		• Overflows to Bora Creek
5.9	WP14	• Receives catchment inflows from disturbed areas
		• Pump transfers to WP13
		• Overflows to Wilpinjong Creek
5.10	WP15	• Pump transfers to WP16 & UG Supply
		• Receives pump transfers from UG4, WP08, WP13, WTP
		• Overflows to Bora Creek
5.11	WP16	• Supplies to the CHPP
		• Pump transfers to 107, 112, & WP19
		• Dam level is maintained between 60% and 80%

		• Receives pump transfers from Ulan Mine, ETD, WP01, WP02, WP08, WP15, WP18, 107, 112 and UG1
		• Overflows to Bora Creek
5.12	WP17	• Receives catchment inflows from ROM area and Reject bin area
		• Pump transfers to WP01, WP10
		• Overflows to WP10
5.13	WP18	• Receives catchment inflows from disturbed areas and overflows from WP10
		• Pump transfers to WP01, WP16
		• Overflows to WP01
5.14	ETD	• Receives overflows from clarified water tank and clarified water sump and WP01, WP02.
		• Dam level is maintained between 20% and 60%
		• Pump transfers to WP16
		• Overflows to WP02
5.15	WP19	• Pump transfers to WTP
		• Receives pump transfers from WP16, 112, UG1, 401
		• Overflows to Bora Creek
5.16	WP20 & 21	• Receives pump transfers from WTP
		• Pump transfers to 214, 204 and water fill points.
		• Overflows to WP13
5.17	WP22	• Pump transfers to 214, 204 and water fill points.
		• Overflows to WP13
6	**Water Storages – OC1**	
6.1	101	• Receives catchment inflows from rehabilitated areas
		• Pumped transfers to 107, 111
		• Overflows to Moolarben Creek
6.2	102	• Receives catchment inflows from rehabilitated areas
		• Pump transfer to 106
		• Overflows to Moolarben Creek
6.3	103	• Receives catchment inflows from rehabilitated areas
		• Pump transfer to 106
		• Overflows to Goulburn River
6.4	104	• Receives catchment inflows from rehabilitated areas
		• Pump transfer to 106
		• Overflows to Goulburn River
6.5	105	• Receives catchment inflows from rehabilitated areas
		• Pump transfers to 106
		• Overflows to Goulburn River

6.6	106	• Receives catchment inflows from rehabilitated areas • Receives pump transfers from 102, 103, 104, 105 • Pumped transfer to 107, 111, 112 • Licensed discharge point, discharges to Goulburn River • Overflows to Goulburn River
6.7	107	• Receives catchment inflows from disturbed areas and rehab area and 112 • Pump transfers to 111, 112, WP16, 401 • Receives pumped transfers from OC1 Pit, WP16, 101, 108, 111, 112, 401, UG01, UG04 • Overflows to Goulburn River
6.9	111	• Primary mine water storage dam for OC1 • Pumped transfer to 107, 112, 204, 209 • Receives pump transfers from OC1 Pit, 101 106, 107, 112, 201, 20, 209, 213 • Overflows to 106
6.10	112	• Receives catchment inflows from disturbed areas, wash down bay • Receives pumped transfer from 106, 107, 111, UG01, WP16, OC1 Pit • Pumped transfer for OC1 water cart fill point, fire water miscellaneous demand, 111, 204, 209, 401, WP16 • Overflows to 107
6.11	OC1	• Receives catchment inflows from ROM & rejects area & other disturbed areas • Pumped transfers to 107, 112, 401, WP16
7	**Water Storages – OC2**	
7.1	201	• Receives catchment inflows from disturbed areas • Pump transfers to 111, 204, 209 • Overflows to Moolarben Creek
7.2	202	• Receives catchment inflows from the out-of-pit-dump & rehabilitated areas • Pump transfers to 213, 111 • Receives pumped transfer from 203 • Overflows to Moolarben Creek • Licenced discharge point
7.3	203	• Receives catchment inflows from the out-of-pit dump & rehabilitated areas • Pumped transfers to 213 • Overflows to 202
7.4	204	• Receives catchment inflows from undisturbed and disturbed areas • Pump transfers to 111, 209, 214 & OC2 water cart fill point • Receives pump transfers from OC2 Pit, 111, 201, 209, 213 • Overflows to 214
7.5	206	• Receives catchment inflows from the out-of-pit dump & rehabilitated areas

		• Pump transfers to 203, 213 • Receives pumped transfers from 210 • Overflows to 203
7.6	209	• Receives catchment inflows from disturbed areas • Receives pumped transfers from OC2 Pit, 111, 112 201, 204, 213, 301 • Pump transfers to 111, 112, 204, 301 • Overflows to OC2 Pit
7.7	210	• Receives catchment inflows from the out-of-pit dump & rehabilitated areas • Pumped transfers to 206 • Overflows to 211
7.8	211	• Receives catchment inflows from the out-of-pit dump • Pumped transfers to 213 • Overflows to Moolarben Creek
7.9	212	• Receives catchment inflows from disturbed areas • Pumped transfers to 209, 213. • Overflows to Moolarben Creek
7.10	213	• Receives catchment inflows from the out-of-pit dump & rehabilitated areas • Receives pumped transfers from 202, 206, 211 212, • Pump transfers to 106, 111, 204, 209 • Overflows to OC2 Void
7.11	214	• Receives water from WTP, 209, 204 • Pumped transfer to Water cart fill point
8	**Water Storages – OC3**	
8.1	301	• Receives catchment inflows from disturbed areas & haul road • Pumped transfer to 302, 209 • Overflows to Moolarben Creek
8.2	302 A, 302 B	• Receives catchment inflows from disturbed areas, & haul road • Pumped transfer to 111, 209, OC3 water cart fill point • Receives pump transfers from OC3 Pit, 301, 303 & 304 to 307 • Overflows to Open Cut 3 pit
8.3	303	• Receives catchment inflows from disturbed areas, OC3 MIA, & haul road • Pumped transfer to 209, 302 • Receives pump transfers from 304 to 306 • Overflows to Moolarben Creek
8.4	304	• Pumps water to 302 and 306 • Receives overflow from 305 • Overflows to Moolarben Creek
8.5	305	• Pumps water to 302 and 306

		• Overflows to 304
8.6	306	• Pumps water to 111 and 209
		• Recieves overflow from OC3, 301, 303, 305, 304, 209 and 308
		• Overflows to Moolarben Creek
8.7	308	• Pumps water to 306
		• Overflows to Moolarben Creek
8.8	309	• Pumps water to 302 and 316
		• Overflows to Moolarben Creek
8.9	310	• Pumps water to 311 and Moolarben Creek
		• Overflows to Moolarben Creek
8.10	311	• Pumps water to 302 and 316
		• Recieves overflow from 310
		• Overflows to Moolarben Creek
8.11	313	• Pumps water to 302 and 316
		• Overflows to Moolarben Creek
8.12	314	• Pumps water to 323
		• Overflows to Moolarben Creek
8.13	316 A & 316 B	• Receives catchment inflows from 309, 321, 323, 311, 324, 325 and 313
		• Pump transfers to 302
		• Overflows to Moolarben Creek
8.14	317	• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
8.15	318	• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
8.16	321	• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
8.17	323	• Receives catchment inflows from 314
		• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
8.18	324	• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
8.19	325	• Pump transfers to 302, 316
		• Overflows to Moolarben Creek
9	**Water Storages – OC4**	
9.1	401	• Primary mine water storage dam for OC4
		• Receives catchment inflows from disturbed areas, OC4 MIA & conveyor trace

		• Pumped transfer to 107, WP16, OC4 water cart fill point, Fire water – OC4 ROM
		• Receives pump transfers from OC1 North Pit, OC4 Pit, and OC4 Sediment Dams
		• Overflows to Murragamba Creek
9.2	403	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Murragamba Creek
9.3	413	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Murragamba Creek
9.4	414	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Murragamba Creek
9.5	417	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Eastern Creek
9.6	423	• Pump transfers to Eastern Creek
		• Overflows to Eastern Creek
9.7	424	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Eastern Creek
9.8	425	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Eastern Creek
9.9	426a	• Receives catchment inflows from disturbed areas
		• Pump transfers to 401
		• Overflows to Wilpinjong Creek
10	**Treatment Plant**	
10.1	Water Treatment Plant	• Receives water from WP19
		• Pumped transfers to WP20, WP21, WP15, UG, CHPP, LDP
10.2	LPD01 Release point	• Released to Goulburn River at max rate of 10 ML/day (685 µs/cm) and increased to 15ML/day when operating in UG4