ATC WILLIAMS PTY LTD
Brisbane
t +61 7 3352 7222
16-20 Edmondstone Street,
Newmarket, QLD, 4051
brisbane@atcwilliams.com.au
atcwilliams.com.au
ABN 64 005 931 288

Our Ref: 121167-15L001-rev0

7 February 2025

Senior Environmental Consultant
Umwelt (Australia) Pty Limited
via Email

ATTENTION: ARAN NAISMITH

Dear Aran,

ULAN WEST CONTINUED OPERATIONS MODIFICATION – EPBC ACT ASSESSMENT OF SIGNIFICANCE RELATED TO SURFACE WATER

1 PROPOSED MODIFICATION

Ulan Coal Mines Pty Ltd (UCMPL) is owned by Glencore Coal Assets Australia Pty Limited (Glencore). The Ulan Coal Complex (UCC) comprises a former open cut mine (currently in care and maintenance), two active underground mines referred to as the Ulan Underground (UUG - previously known as Ulan No.3) and Ulan West Underground (UWUG), a coal handling and preparation plant (CHPP), rail loading facilities, run-of-mine (ROM) and product coal stockpiles and various support infrastructure and facilities. The UCC is located approximately 38 kilometres (km) north north-east of Mudgee and 19 km north-east of Gulgong in New South Wales.

UCMPL seeks to modify Project Approval (PA) 08_0184 to enable extraction of an additional approximately 43 million tonnes (Mt) of product coal (in addition to the 16 Mt of product coal currently under assessment as part of Modification 6). The proposed action comprises:

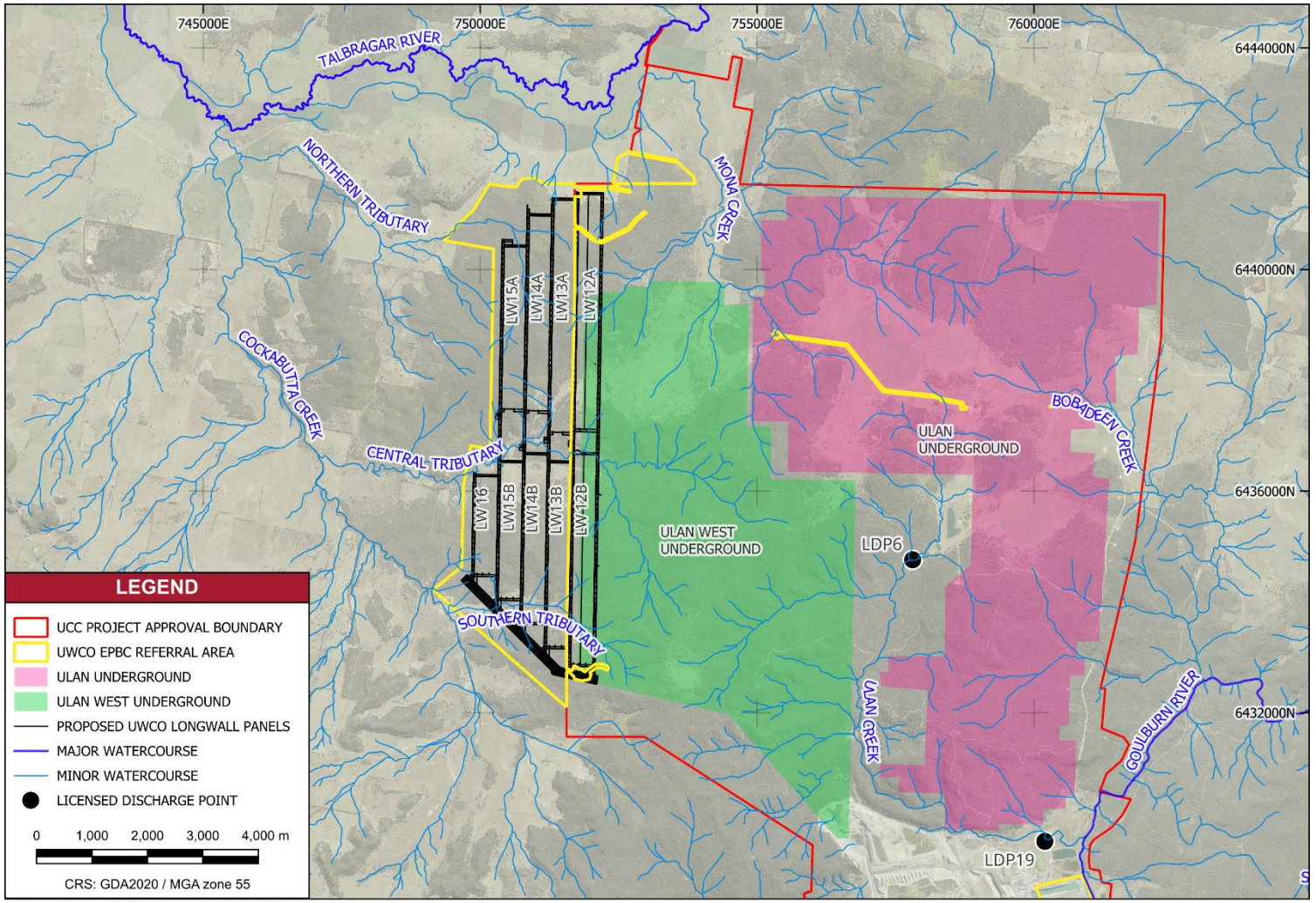
- widening of the approved Ulan West longwall (LW) 12 from approximately 220 m to 400 m; and
- an additional four longwall panels (three of which are separated by a step around that considers surface features) consisting of LW13A, LW13B, LW14A, LW14B, LW15A, LW15B and LW16.

The proposed action is also seeking surface infrastructure to support underground mining activities, including provision of the following additional infrastructure items:

- upcast ventilation shafts, fans and associated infrastructure corridors;
- powerlines and associated power infrastructure including substation(s);
- dewatering infrastructure;
- roads and access tracks;
- tailings storage facility within the existing surface infrastructure area; and
- other associated infrastructure required to service the approved and proposed underground mining operations.

To manage water inventory, the proposed action would be managed in accordance with the existing practices at the UCC. The proposed action is herein referred to as the Ulan West Continued Operations (UWCO) Modification and is depicted in **MAP 1**. The UWCO Modification will extend the life of the approved UCC operation by approximately six years, allowing mining to continue until December 2041 (assuming approval of MOD6).

MAP 1: EXISTING APPROVED OPERATIONS AND UWCO MODIFICATION



2 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a matter of national environmental significance (MNES) includes water resources that relate to coal seam gas and large coal mining development. The EPBC Act defines a significant impact on a water resource as follows:

> *"An action is likely to have a 'significant impact on a water resource' if it may lead to a change in either the water's:*
>
> - *hydrology (how it moves and its quality in relation to land).*
> - *overall quality.*
> - *the change needs to be enough to reduce, or risk reducing, the current or future use of the water resource.*
>
> *Whether an action is likely to have a significant impact depends upon the:*
>
> - *sensitivity, value and quality of the environment that's affected.*
> - *intensity, duration, magnitude and geographic extent of the effects.*
>
> *The impact may result from one development action relating to coal seam gas or a large coal mine, or the combined impact of several actions."*

In accordance with the EPBC Act, a preliminary assessment has been undertaken to assess the likelihood of a significant impact occurring associated with the UWCO Modification.

3 EXISTING ENVIRONMENT

3.1 Description of Land Use and Soils

The existing UCC and the proposed UWCO Modification is situated in a rural area, primarily surrounded by rural landholdings, native bushland and primary industries including agriculture, forestry, mining and other extractive industries. Grazing is widespread throughout the surrounding area while the area to the south and south-west is dominated by rural residential landholdings. The Wilpinjong Coal Mine lies to the south-east and the Moolarben Coal Mine lies to the south of the UCC.

In higher elevation areas, the UCC and the proposed UWCO Modification area is overlain by hilly, native bushland while the lower elevation areas are associated with rural landholdings. The proposed UWCO Modification contains 19 private landholdings, of which 12 contain occupied private dwellings, and several parcels of Crown Land (Umwelt, 2024).

The soil types occurring within the boundaries of the UCC generally have low fertility and exhibit moderate to high erosivity (Umwelt, 2024). The soils vary in nature and thickness with the thicker, more fertile and alluvial deposits occurring in the low lying areas, predominantly associated with watercourses. Sandstone rock formations occur widely in the UCC area, including boulders, shelters, overhangs and open surfaces.

The proposed UWCO Modification area is dominated by Munghorn Plateau soils comprising low undulating hills on sandstone plateaux with rock outcrops. Siliceous sands and shallow soils are present on crests and upper slopes with yellow earths and podzolic soils present on lower slopes and in drainage lines (Umwelt, 2024).

3.2 Hydrology

The existing UCC and the proposed UWCO Modification are located at the headwaters of both the Goulburn River and the Talbragar River with the catchments for these river systems separated by the Great Dividing Range. The Goulburn River drains east to meet the Hunter River at Denman and the Talbragar River system drains west to meet the Macquarie River near Dubbo, which in

turn flows to the Barwon River and on to the Darling River. The tributaries within the UCC and proposed UWCO Modification boundary drain to the Goulburn River and Talbragar River and are naturally ephemeral by nature.

Controlled release from the UCC occurs to Ulan Creek via two licensed discharge points (LDP6 and LDP19, refer **MAP 1**) on a virtually continuous basis, meaning that flow in Ulan Creek and the Goulburn River downstream is effectively perennial.

The proposed UWCO Modification is located wholly within the Talbragar River catchment. The Talbragar River forms part of the Murray-Darling Basin and has a catchment area of approximately 482,000 hectares (ha). Water entitlements from the Talbragar River catchment are primarily unregulated river with 2,227 share components for financial year 2024/2025 (WaterNSW Water Register[1]).

The referral area is located predominantly within the Cockabutta Creek catchment, a fourth order stream and tributary of the Talbragar River, with a catchment area of approximately 13,650 ha. The Cockabutta Creek catchment equates to approximately 3 % of the Talbragar River catchment. The proposed UWCO Modification comprises approximately 1,743 ha which makes up less than 0.4 % of the Talbragar River catchment[2]. The Talbragar River and Cockabutta Creek catchments are shown in **MAP 2**.

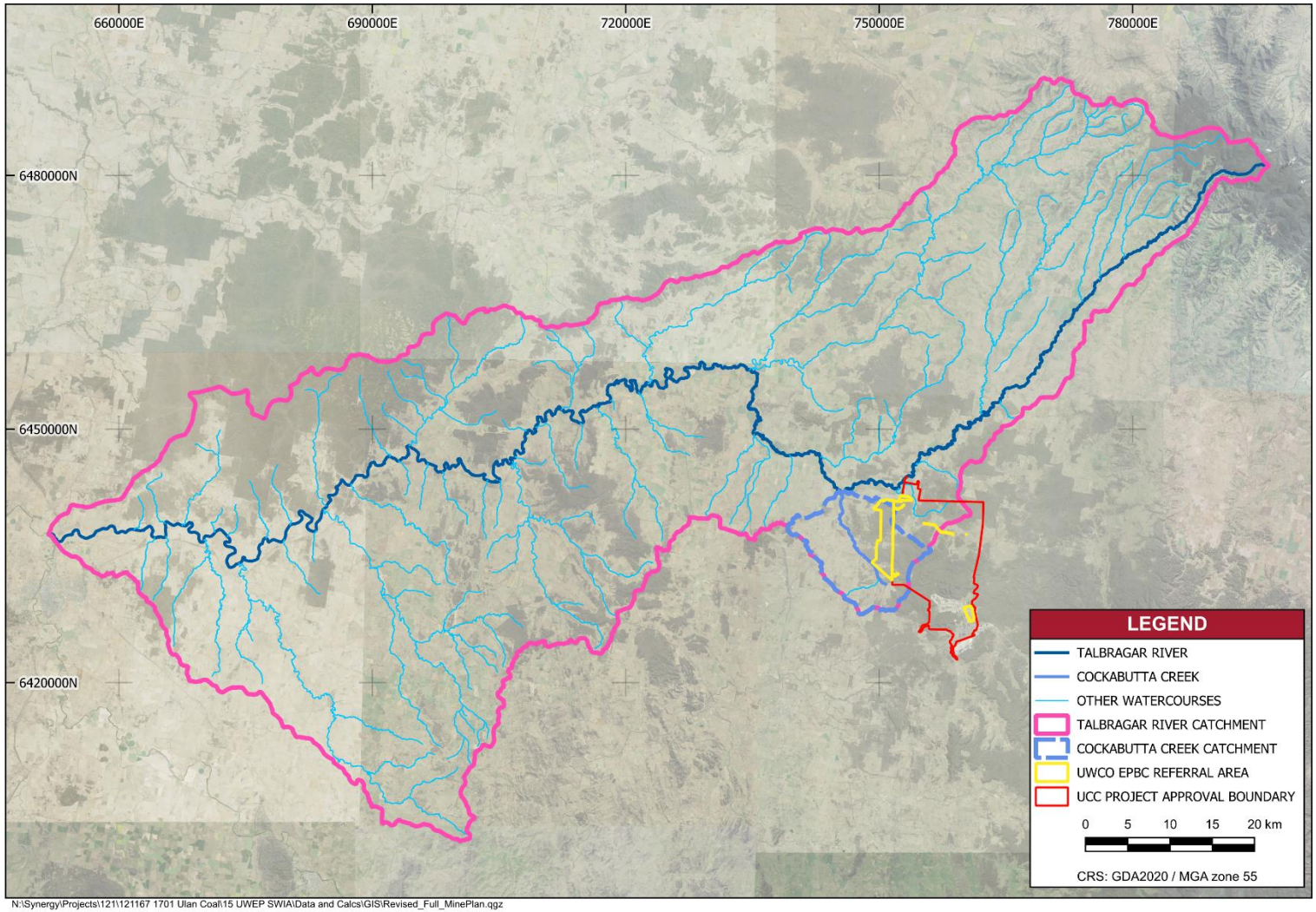
Three unnamed tributaries (one fourth order and two third order) of Cockabutta Creek overlie the proposed UWCO Modification longwall panels (refer **MAP 3**) and are the primary water resources to potentially be impacted. These tributaries have been informally named the Northern Tributary, Central Tributary and Southern Tributary for reference purposes.

A geomorphological study was undertaken in 2022 to establish the baseline condition for geomorphic characteristics of the watercourses within the referral area. The study concludes that the watercourses in the catchments associated with the proposed UWCO Modification were found to be in moderate to good geomorphic condition, with a dense cover of vegetation in the riparian zones (Fluvial System, 2022).

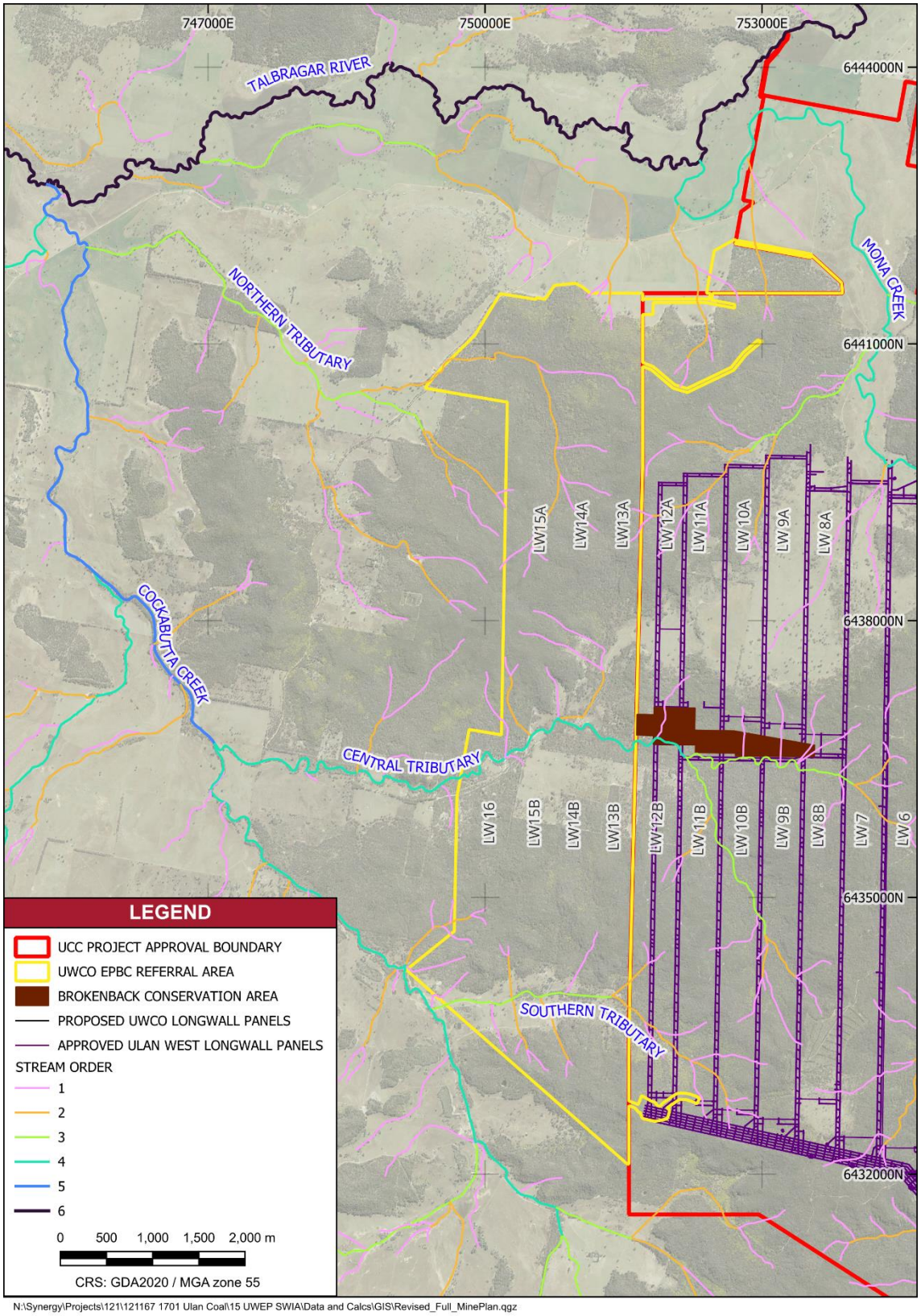
Brokenback Conservation Area (BCA) is located across five longwall panels, Ulan West LW8 to LW12 (refer **MAP 3**), comprising approximately 58 ha. The proposed UWCO Modification longwall layout was optimised with consideration to the BCA (Umwelt, 2024). As such it is considered that the UWCO Modification is unlikely to result in impacts to the BCA.

[1] Refer https://waterregister.waternsw.com.au, accessed November 2024.
[2] Based on the UWCO Boundary depicted in **MAP 1** and the Talbragar River catchment shown in **MAP 2**.

MAP 2: CATCHMENT AREAS



MAP 3: STREAM ORDER FOR UWCO MODIFICATION



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4 SURFACE WATER COMPLIANCE

Water management at the UCC is undertaken in accordance with the site Water Management Plan (UCMPL, 2024). Licences and permits apply to water management at the UCC, including:

- the Environment Protection Licence (EPL) 394 issued under Section 55 of the *Protection of the Environment Operations Act 1997* by the NSW Environment Protection Authority (EPA).
- the Water Access Licences (WALs) issued under the *Water Management Act 2000*.

UCMPL currently holds a number of licences under the Water Management Act for the extraction of water and a number of licences under the *Water Act 1912* for monitoring purposes.

Entitlements for surface water and alluvial groundwater sources at the UCC are governed by the rules of the following Water Sharing Plans:

- The Goulburn River catchment:
  - Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009.
- The Talbragar River catchment:
  - Water Sharing Plan for the Macquarie Bogan Unregulated and Alluvial Water Sources 2012.
  - Water Sharing Plan for the Macquarie-Castlereagh Groundwater Sources Order 2020.

Licensed discharge to the Goulburn River occurs via Ulan Creek at LDP6 and LDP19 (refer **MAP 1**) in accordance with the EPL 394. Prior to discharge, the water quality is compared to the discharge limits as detailed in EPL 394. A maximum discharge volume of 15 megalitres/day (ML/d) applies for LDP6 and 30 ML/d for LDP19, with an overall maximum of 30 ML/d. If water quality is within the specified limits, it is then discharged with volumes and pump times recorded. During discharge, water quality is monitored:

- continuously for pH and electrical conductivity at the discharge location (whilst discharging); and
- continuously during discharge, both upstream and downstream of the confluence of Ulan Creek with the Goulburn River.

5 POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED MODIFICATION

5.1 Subsidence

The preliminary subsidence assessment undertaken in late 2023 by Strata Control Technology Operations Pty Ltd (SCT) indicates that primary subsidence parameters are generally within the range of those previously predicted and approved for the UCC. A summary of the preliminary predictions for the primary subsidence parameters for the UWCO Modification are provided in **TABLE 1**.

TABLE 1: PRELIMINARY SUBSIDENCE PREDICTIONS

Parameter	Value
Maximum Subsidence (m)	2.1
Maximum Tilt (mm/m)	135
Maximum Strain (mm/m)	55

SCT (2023) states that:

- the proposed UWCO Modification mine plan was delineated to protect the majority of natural and built features within the BCA.
- the fourth order section of the Central Tributary is protected from subsidence effects (i.e. the portion of the tributary located within the BCA).
- subsidence effects are expected to be similar to those previously observed over areas at UWUG (refer **MAP 1**).

5.2 Groundwater

An assessment of potential groundwater impacts, based on model predictions undertaken by Australasian Groundwater and Environmental Consultants Pty Ltd (AGE), are detailed in the EPBC Referral Groundwater report (AGE, 2025).

The maximum (peak) indirect take (e.g., baseflow reduction due to drawdown) associated with the Talbragar River and Goulburn River was estimated by AGE (2025), delineated by the following model scenarios:

- **Approved/Proposed Mine**; simulates the mine plan approved under Modification 4 and currently proposed under Modification 6 (noting that Modification 6 is still under consideration). This model also includes the Moolarben mine.
- **Approved/Proposed Mine + UWCO Modification**; simulates Approved/Proposed Mine (as stated above) with the proposed UWCO Modification.

The predicted peak indirect take for the Talbragar River and Goulburn River detailed in the EPBC Referral Groundwater report (AGE, 2024) is summarised in **TABLE 2**.

TABLE 2: PREDICTED PEAK INDIRECT TAKE FOR THE TALBRAGAR RIVER AND GOULBURN RIVER

Water Sharing Plan and Water Sources	During Mining Peak (ML/year)		Post Mining Peak (ML/year)	
	Approved/ Proposed Mine	Approved/ Proposed Mine + UWCO Modification	Approved/ Proposed Mine	Approved/ Proposed Mine + UWCO Modification
Talbragar River and Alluvium				
Macquarie Bogan Unregulated Rivers Water Sources 2012 – Upper Talbragar River Water Source.	34.97 (2033/34)	54.58 (2039/40)	89.09 (2111/21)	99.41 (2111/21)
Macquarie – Castlereagh Groundwater Sources Order 2020 – Talbragar Alluvial Groundwater Source.	2.21 (2033/34)	2.82 (2039/40)	4.82 (2076/81)	6.28 (2076/81)
Goulburn River				
Hunter River unregulated and alluvial water sources 2009 – Upper Goulburn River water source.	71.84 (2033/34)	75.15 (2039/40)	71.71 (2034/35)	74.91 (2040/41)

Comparison of the modelled scenarios indicates that the addition of the proposed UWCO Modification would result in an increase in indirect take from both the Talbragar and Goulburn River water sources. AGE (2025) states that the indirect take from the Talbragar River and alluvium will occur over a large area and impacts on baseflows or changes to the persistence of pools are unlikely to be measurable or observable.

It is understood that sufficient licences are currently held by UCMPL to cover the additional take associated with the Goulburn River water source, however, additional licences may be required for the Talbragar River water source.

6 POTENTIAL IMPACTS TO SURFACE WATER

6.1 Streamflow Loss and Catchment Yield

Loss of streamflow to tributaries of Cockabutta Creek may occur as a result of subsidence and connective cracking associated with the proposed UWCO Modification, specifically:

- Formation of ponds in subsided areas of flat topography or in streams overlying the proposed UWCO Modification longwall panels. Any ponds which capture rainfall runoff would increase losses to evaporation and reduce streamflow reporting downstream.
- Connective cracking may occur leading to diversion of streamflow (including baseflow) into the underground operations, particularly from ponded areas.

As described in **Section 3.2**, the tributaries within the proposed UWCO Modification are ephemeral by nature and therefore potential streamflow losses are expected to occur during and subsequent to rainfall events only.

Evaporative loss from ponds within subsided areas would need to be estimated and assessed against UCMPL's harvestable rights. If harvestable rights were exceeded, WALs would be purchased to offset the loss. Subsidence induced ponded areas could be remediated by localised earthworks to reinstate the overall stream gradient or topography (following the completion of subsidence effects). UCMPL would review the water take associated with operations on an annual basis to ensure that sufficient WALs are available to account for both direct and indirect take associated with operations.

Areas of potential ponding and connective cracking within streams would be identified ahead of mining by subsidence specialists. Monitoring of potential at-risk areas would be undertaken during active subsidence. Near-surface remediation works should be undertaken as soon as practicable following completion of subsidence effects. Such works may involve surface compaction or grouting.

Based on the preliminary assessment of potential impacts, streamflow impacts are expected to be similar to those associated with existing approved operations for the UCC.

6.2 Flooding and Channel Stability Effects

Peak flood levels in the Northern and Southern Tributary areas are likely to rise in some areas within the proposed UWCO Modification area. Peak flow velocities may also increase in localised areas as a result of subsidence-induced steepening and this could potentially increase the risk of erosion. The erosion resistance of such areas would be assessed ahead of mining and mitigation measures planned such as rip-rap or enhanced vegetation to remediate these impacts. It is anticipated that flooding impacts associated with the proposed UWCO Modification would be localised, however, a flood study will be completed to confirm impacts including to privately owned properties. Make-good agreements would be negotiated with relevant affected landholders.

6.3 Downstream Water Quality Effects

Subsidence has the potential to increase turbidity/suspended solids downstream (at least temporarily) until stream stabilisation techniques are implemented. Similarly, mobilisation of contaminants associated with stream bed movement/cracking could occur. Surface water monitoring at and in the vicinity of the proposed UWCO Modification is undertaken in accordance with the site Water Management Plan (UCMPL, 2024). Should additional monitoring locations be required, these would be recommended and commenced as early as practically possible prior to mining.

Based on the preliminary assessment of potential impacts, water quality impacts are expected to be similar to those associated with existing approved operations for the UCC.

6.4 Release to the Goulburn River Catchment

AGE (2025) states that underground mine inflow measured at UCC in recent years is in line with the volumes predicted by the numerical modelling for the UWCO Modification. As such, the controlled discharge volumes to the Goulburn River via Ulan Creek associated with the proposed UWCO Modification are expected to be similar to those previously predicted and measured. Licensed discharge would continue to comply with the relevant approvals including the discharge criteria specified under EPL 394. As such, impacts to flow and water quality are not expected to be significant.

6.5 Potential Cumulative Impacts

In the context of surface water resources potentially impacted by the UWCO Modification there has been significant past development in the immediate and downstream catchment areas which, if considered from the time of European settlement, include widespread agricultural development and urbanisation. The effects of past development are inevitably incorporated into the baseline data and descriptions of surface water resources developed for the UCC which are based on contemporary monitoring.

Flow and water quality in the downstream Goulburn River are also influenced by sediment dam discharges from the Moolarben Coal Mine and licensed discharge from the Wilpinjong Coal Mine. The Wilpinjong Coal Mine licensed discharge location is located on Wilpinjong Creek, which travels approximately 19 km to the confluence with the Goulburn River which is 31.5 km downstream of the Ulan Creek/Goulburn River confluence.

These mines operate in a regulated water system with licensing of water take undertaken in accordance with the Water Management Act 2000 and discharge of water undertaken in accordance with the relevant Development Consent and the EPL for each site. With the implementation of the various controls under these regulatory systems, the cumulative impacts on downstream water users associated with the proposed UWCO Modification are expected to be negligible.

6.6 Summary of Potential Impacts and Mitigation Measures

A summary of potential risks associated with the UWCO Modification and mitigation measures is given in **TABLE 3**.

TABLE 3: SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Mitigation Measure
Reduced catchment yield to Talbragar River caused by subsidence-induced ponding and evaporation	• Undertake earthworks post subsidence to reduce risk of ponding, if required
Surface water loss via subsidence-induced connective cracking	• Identify susceptible areas ahead of mining; • Monitor at-risk areas frequently during mining; and • Implement near-surface remediation as soon as practicable following subsidence, if required.
Increase in flood extents caused by subsidence	• Develop remediation measures with potentially affected landholders, if required.
Erosion/scour due to localised creek bed steepening caused by subsidence – localised erosion and downstream water quality impacts	• Undertake baseline monitoring to assess pre-mining water quality against which to assess impacts; • Implement scour protection (e.g. rip-rap), if required.

7 ASSESSMENT OF SIGNIFICANT IMPACTS

As described in **Section 2**, the EPBC Act states that an action is likely to have a significant impact if it may lead to a change in either the water's hydrology, overall quality or current and future use of the resource (DCCEEW, 2022).

The potential subsidence related impacts associated with the proposed UWCO Modification are expected to be localised in extent and comprise less than 0.3 % of the Talbragar River catchment.

Potential impacts associated with licenced discharge to the Goulburn River catchment would continue to be managed in accordance with EPL 394.

UCMPL would continue to review and allocate licences as required to cover the predicted indirect take associated with the proposed UWCO Modification.

With continued management in accordance with the relevant regulatory systems coupled with the implementation of mitigation measures outlined in **Section 6.5**, potential impacts due to the UWCO Modification are expected to be negligible. As such, it is considered that the proposed UWCO Modification is unlikely to result in significant impacts to the hydrology, overall quality or current and future use of the Talbragar River and Goulburn River resource.

Yours sincerely,

MAKAELA MCGRATH
Senior Scientist

ATC Williams Pty Ltd

DAYJIL BUHLE
Senior Associate Engineer

ATC Williams Pty Ltd

REFERENCES

[1] Australasian Groundwater and Environmental Consultant Pty Ltd (AGE) (2025). *Ulan West Continued Operations Modification – EPBC Referral Groundwater Impacts Report.* Prepared on behalf of Ulan Coal Mines Limited, January.

[2] Fluvial Systems (2022). *Ulan West Extension (Bungaba) Project, Catchment and Flowline Assessment*. Prepared on behalf of Ulan Coal Mines Limited, Glencore Coal Assets Australia Pty Ltd, October.

[3] Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2022). *Significant Impact Guidelines 1.3: Coal seam gas and large coal mining developments—impacts on water resources*, Department of Climate Change, Energy, the Environment and Water, Canberra. CC BY 4.0

[4] Ulan Coal Mines Pty Ltd (UCMPL) (2024). *Water Management Plan*. Ulan Coal Mines Limited Plan ULNCX-111515275-99, V11, 17 June.

[5] Umwelt (Australia) Pty Ltd (2024). Ulan West Continued Operations Project. Prepared on behalf of Ulan Coal Mines Pty Ltd, September.

[6] SCT (2023). *Preliminary Forecast of Subsidence Effects for Ulan West Continued Operation Project – Longwalls 12-16*. Prepared on behalf of Ulan Coal Mines Limited, Glencore Coal Assets Australia Pty Ltd, September.