ASSESSMENT REPORT

ULAN COAL MINE
Proposed Modifications to Project Approval MP 08_0184

1 BACKGROUND

The Ulan Coal Mine (Ulan) is located 40 kilometres (km) north of Mudgee, and forms part of a large mining complex in the Western Coalfield of New South Wales, along with Moolarben and Wilpinjong Coal Mines (see **Figure 1**). Ulan is owned and operated by Ulan Coal Mines Limited (UCML), which is a joint venture between Xstrata Coal and Mitsubishi Development.

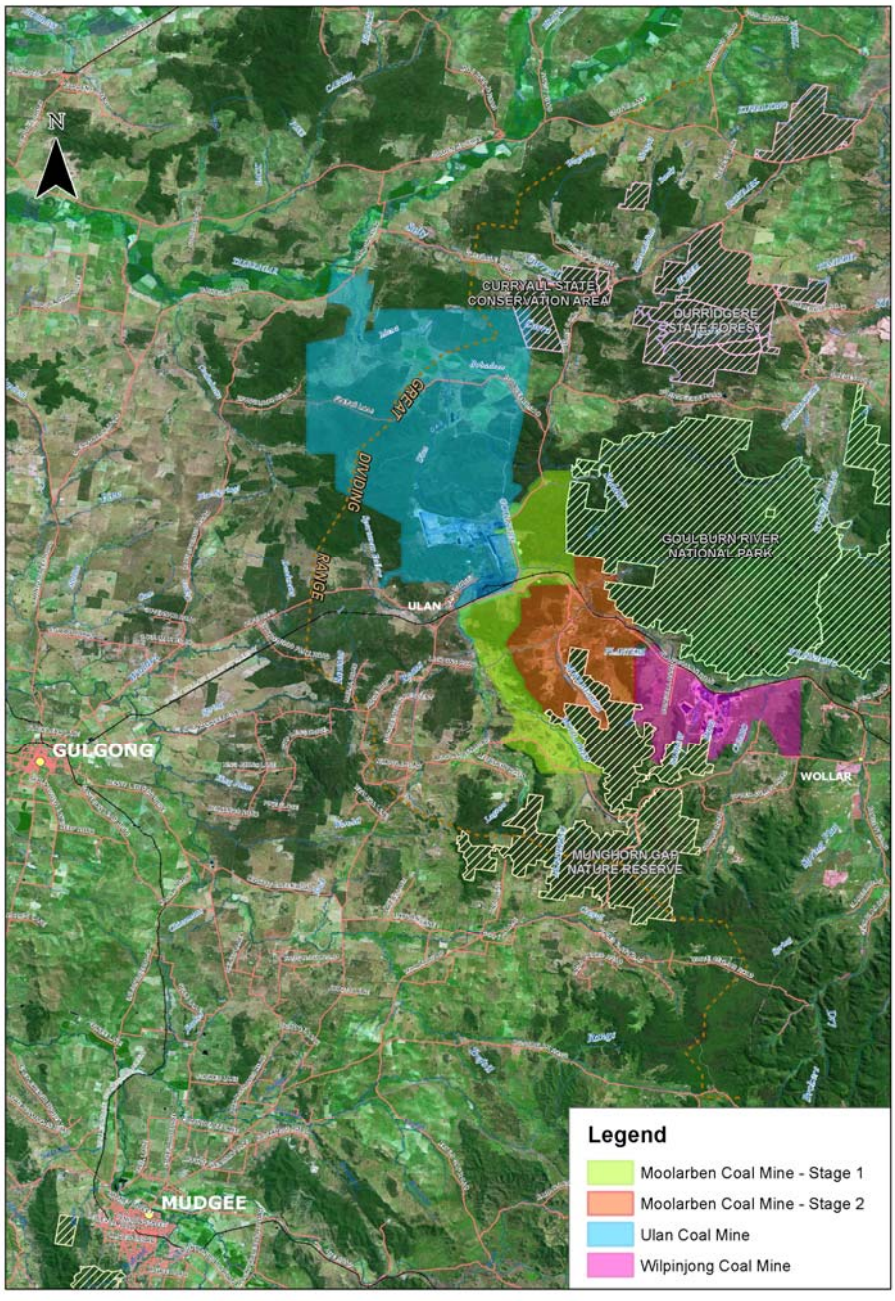

***Figure 1**: Regional Context*

There has been a long history of both open cut and underground mining at Ulan, dating back to the 1920s.

On 15 November 2010, the former Minister for Planning approved a major expansion of the mine (see **Figure 2**). This expansion allowed UCML to:

- extract a total coal resource of 240 million tonnes (Mt) over a period of 21 years at a rate of up to 24 Mt per annum (Mtpa) from two longwall mining operations and a small open cut: and
- upgrade the surface facilities of the mine.

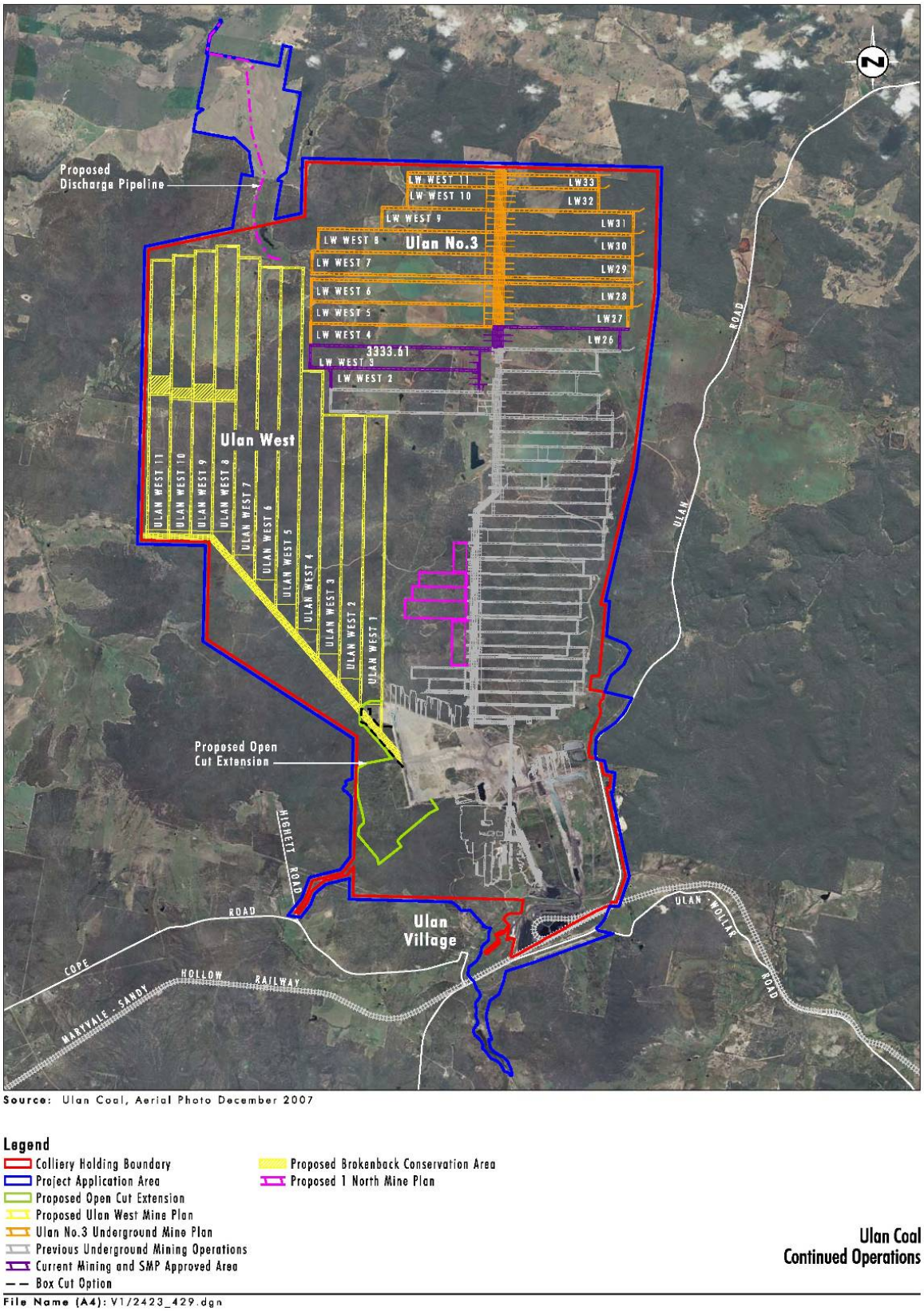

***Figure 2**: Approved Ulan Continued Operations Project - General Arrangement*

The Hunter Environment Lobby Inc. (HEL) subsequently appealed the merits of the Minister's decision in the Land and Environment Court (Court).

The case was heard between 6 and 24 June 2011, and on 24 November 2011 the Court determined that approval in principle should be granted to the project. However, there are a number of outstanding issues that require resolution before the Court would be able to deliver its final orders on the project. The Court has not yet fixed a hearing date for the resolution of those issues, and it is considered highly unlikely now that these final orders will be delivered before the Court closes on 16 December 2011.

2 PROPOSED MODIFICATION

On 22 April 2011, UCML requested a modification to the project approval for Ulan. The proposed modification is described in detail in the Environmental Assessment (EA) submitted in support of the application (see **Appendix A**), and illustrated in **Figures 3, 4, 5** and **6** below.

The modification has three components:

- **Develop North 1 Underground Mining Area**
  The project approval allows UCML to carry out first workings in the North 1 Underground Mining Area to form five small longwall panels with widths of between 250 and 350 metres (m), lengths of between 565 m and 1205 m and overburden depths of between 115 m and 195 m.

  UCML is now seeking approval to carry out second workings in this area. This would involve extracting up to 5 Mt of coal from the newly formed longwall panels over a period of approximately 15 months (see **Figures 3** and **4**).

  Approval to extract coal from this area is important to ensure the continuity of mining at Ulan. UCML is currently experiencing difficulties in mining in the Ulan No. 3 area due to strata issues preventing mining in Longwall West No. 3. The long lead times required in preparing for mining prevents mining commencement in the Ulan West area until 2014. Extraction from the North 1 will therefore provide a substitute coal source in the interim period.

  Development of the North 1 underground area will not increase the annual coal production rates or the number of employees at the mine.

- **Modify the Approved Ulan No. 3 and Ulan West Mine Plans**
  UCML is seeking approval to extend three longwall panels (ie. Longwall West 4-6) in the Ulan No. 3 area into an area that was originally planned to be mined by a longwall panel in the Ulan West area (ie. Ulan West 5) (see **Figure 5**). This amendment improves the operational efficiency of the mine by allowing UCML to recover more coal resource earlier in the mining schedule.

  These modifications would reduce the overall mining footprint by about 1.4 hectares (ha).

- **Construct and Operate a Concrete Batching Plant (CBP)**
  UCML currently imports concrete to the site for use in its underground mining operations.

  UCML is now seeking approval to construct and operate a CBP on site (see **Figure 6**). The CBP will provide UCML a secure, reliable and direct supply of concrete to the underground mining operations. The CBP will have the capacity to produce up 80 m^3 of product every 12 hours. The cement required for batching will be stored in a 11 m high, 65 tonne silo.

  Operating hours will be restricted to 7am to 5pm Monday to Friday with 24-hour operations during emergency situations only. The construction works will require a 0.07 ha extension to an existing hardstand area.

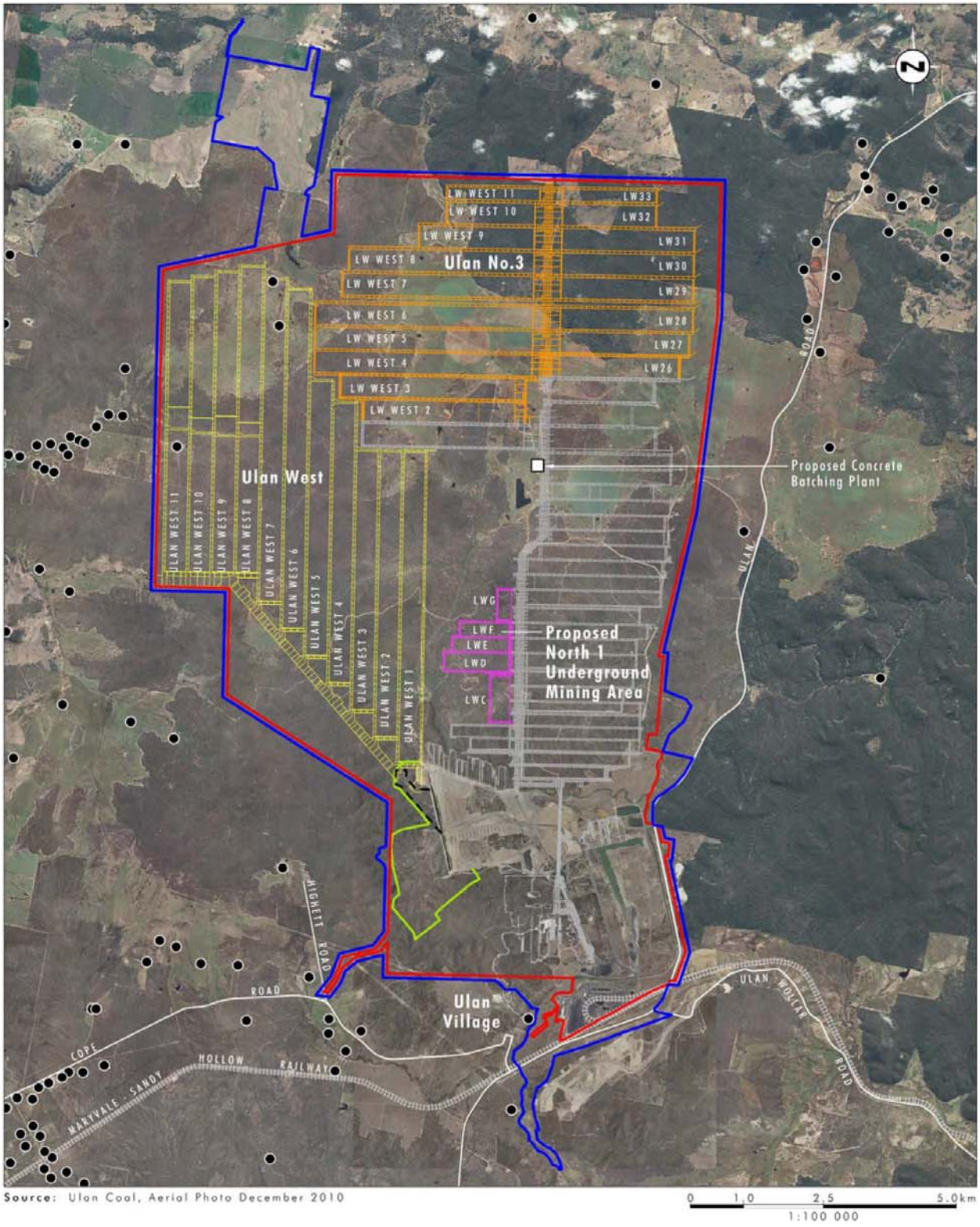

***Figure 3**: Proposed Modifications*

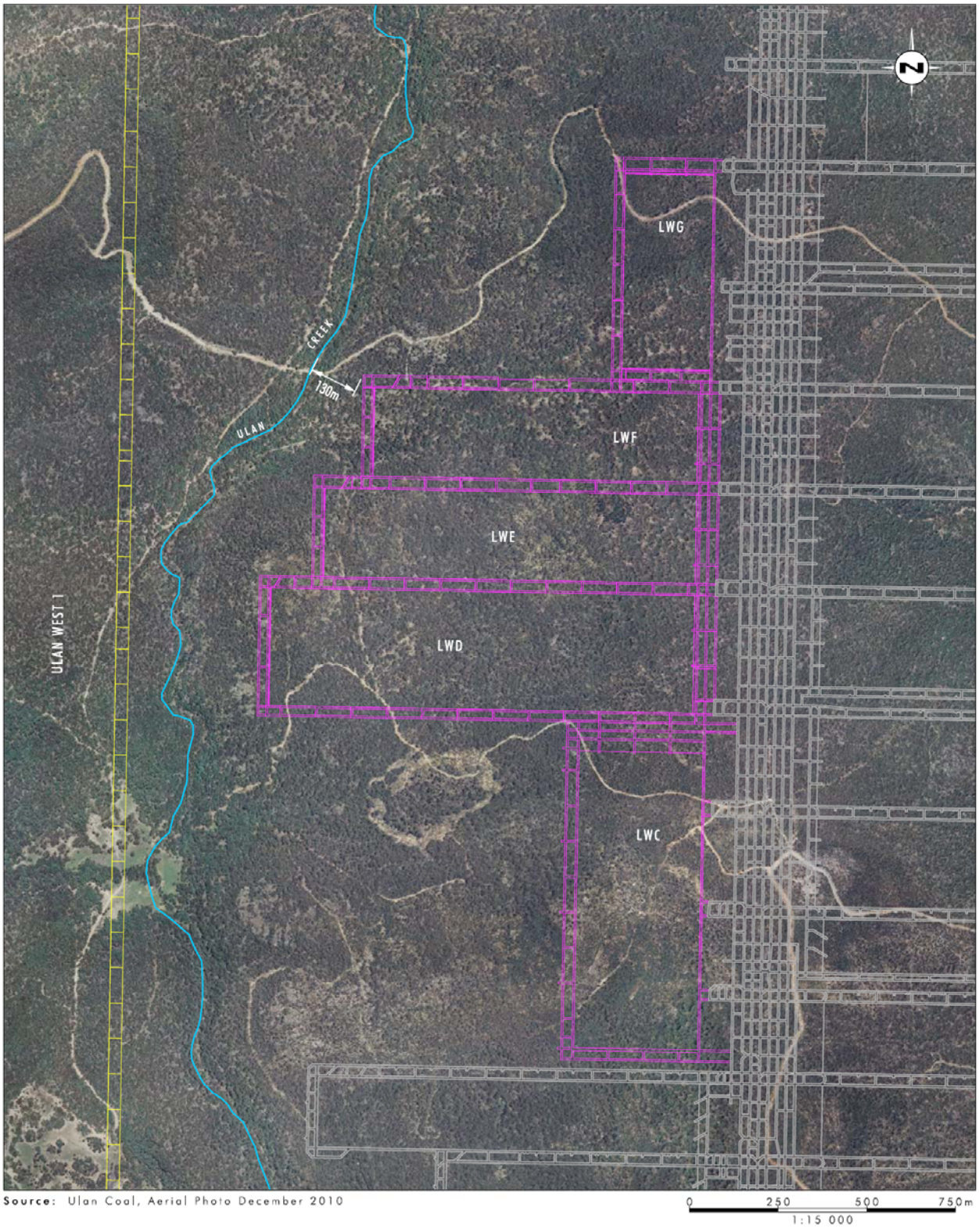

***Figure 4**: Proposed North 1 Underground Mining Area*

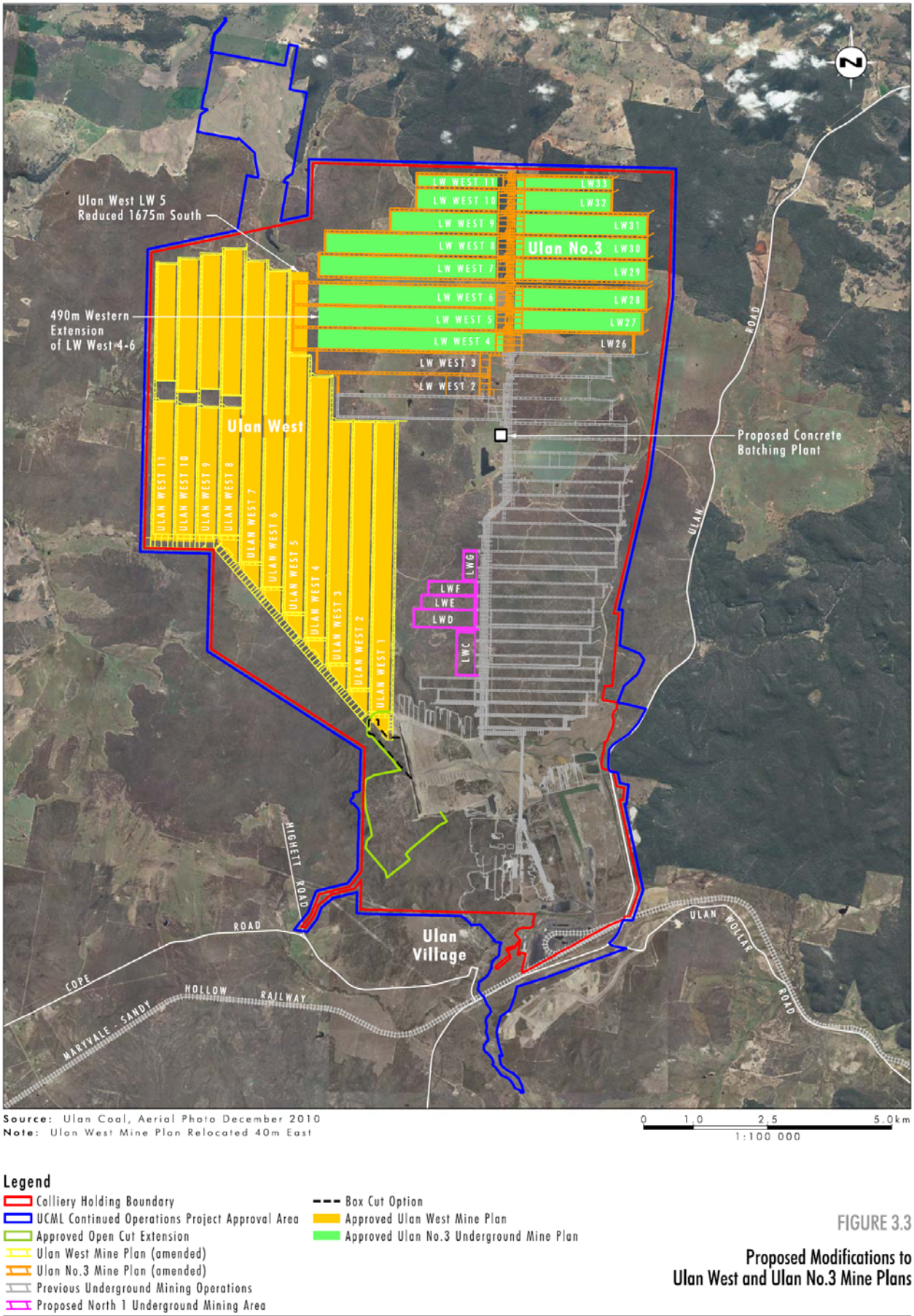

***Figure 5**: Proposed Modifications to Ulan West and Ulan No. 3 Mine Plans*

FIGURE 3.2

Proposed Concrete Batching Plant Site Layout

***Figure 6**: Proposed Layout of Concrete Batching Plant*

3 STATUTORY CONTEXT

3.1 Approval Authority

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A projects. Director-General's environmental assessment requirements were issued in respect of the Ulan Coal Mine project (i.e MP 08_0184) prior to 1 October 2011, and the project is therefore a transitional Part 3A project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister may approve or disapprove of the carrying out of the modified project under Section 75W of the Act.

However, under the Minister's delegation of 28 May 2011, the Director-General may determine the application on behalf of the Minister's as:

- there were less than 25 submissions in the nature of objections;
- UCML has made no reportable political donations; and
- Mid-Western Regional Council has not objected to the proposed modification.

3.2 Modification

The Department is satisfied that UCML's requested modification should be characterised as a modification to the original approval rather than a new project in its own right, as it involves relatively minor changes to the approved underground mining operations and associated surface infrastructure.

Consequently, the Department is satisfied that the modification may be determined under Section 75W.

3.3 Consultation

After receiving UCML's request and the associated EA of the proposed modification, the Department:

- made the EA publically available from 28th July 2011 to 18th August 2011:
  - on the Department's website;
  - at the Department's Information Centre;
- referred the EA to the Office of Environment and Heritage, NSW Office of Water, Department of Trade & Investment, Regional Infrastructure & Services and Mid-Western Regional Council for comment;
- notified key residences and stakeholders (including Colin & Julia Imrie, Hunter Environment Lobby Incorporation and the Wellington Valley Wiradjuri Aboriginal Corporation) about the exhibition period by letter; and
- advertised the exhibition in the Mudgee Weekly and Mudgee Guardian newspapers.

The Department received a total of 6 submissions on the proposed modification, including:

- 4 from public authorities; and
- 2 from the general public.

All submissions are included in full in **Appendix A**. A summary of the issues raised in submissions is provided below.

Government Agencies

All of the government authorities consulted either supported or else did not object to the proposed modification. A summary of the key issues raised by each authority is provided below.

The **Office of Environment & Heritage** (OEH) supports the proposed modification, but identified concerns relating to cumulative impacts on Aboriginal cultural heritage, subsidence impacts on cliff lines and the potential impacts on roosting habitats for threatened cave dependent bat species.

The **NSW Office of Water** (NOW) reiterated recommendations made during the Ulan Continued Operations Project in relation to groundwater entitlements, offsetting the loss of baseflows of the Talbragar River, Ulan Creek and Mona/Bobadeen Creeks and carrying out regional water supply and monitoring investigations.

The **Department of Trade & Investment, Regional Infrastructure & Services** (DTIRIS) supports the proposed modifications and notes that the Mining Operations Plan and mine security will need to be amended prior to the construction of the CBP.

The **Mid-Western Regional Council** (Council) raised no concerns in relation to the proposed modification.

General Public
Both submissions from the general public objected to the proposed modification.

The submission from the Manager of Mudgee Mini Mix & Concrete Pty Ltd indicated that the proposed modification would have an adverse impact on his business, as UCML would no longer need to purchase concrete from his operations.

The other submission was from a landowner to the west of the Ulan complex who raised issues in relation to impacts on threatened species, surface and groundwater resources, and expressed concerns about the public consultation process and assumptions made in the environmental assessment.

3.4 Response to Submissions
Ulan has provided a final response to the issues raised in these submissions (see **Appendix A**).

4 ASSESSMENT

The Department has assessed the application, EA, submissions, and the response to submissions (RTS) report. The following provides a summary of the key issues.

4.1 Subsidence
Development of the North 1 underground mining area and the minor amendments to the Ulan No. 3 and Ulan West mine plans would cause surface and sub-surface subsidence impacts, which has the potential to affect built and natural features.

SCT Operations Pty Ltd (SCT) was engaged by UCML to undertake a subsidence impact assessment (SIA) for the modifications (see Appendix 2a and 2b of the EA). The Department notes that the assessment methodology is consistent with the methodology used and accepted in the subsidence assessment (SCT, 2009) prepared for the Ulan Continued Operations Project. The Department and DTIRIS are therefore satisfied that the assessment methodology used for the modification provides a sound basis for the subsidence predictions.

The SIA reports that the amendments to Ulan No. 3 and Ulan West mine plans would result in minor localized changes to subsidence predictions made previously but that these changes will not significantly change the subsidence impacts in these areas.

The area predicted to be affected by subsidence due to mining in the North 1 area is shown in **Figure 7**. The SIA reports that the land surface overlying the proposed North 1 underground mine area would subside by a maximum of 1.6 m over the central part of each longwall panel. Maximum tilts of 40 millimetres/metre (mm/m) and maximum horizontal movement of 400 mm are predicted over most of the mining area. Fracturing of overburden is expected to occur at the surface, with surface cracks ranging from 50 mm to 100 mm wide (maximum 200 mm wide).

No residences, public infrastructure or utilities are located in the vicinity of the proposed modifications and none would therefore be impacted by subsidence.

SCT identified that approximately 1124 m of cliff lines (defined as being >10m in height) are located above the North 1 underground mine area. The majority of these are short lengths of cliff lines located around the periphery of the mining area (see **Figure 7**). The mine plan avoids more significant cliff lines to the south and west of the North 1 area. Distant views to these cliff lines from residences and motorists travelling on Ulan Road are shielded by existing vegetation.

Following analysis of the location of these cliffs in relation to the orientation and dimensions of the longwall panels in the North 1 mining area, SCT predicts that only about 225 m of these cliff lines may be subject to rock fall impact.

The proposed amendments to the Ulan No. 3 and Ulan West mine plans are predicted to result in a minor reduction (18 m) in the extent of cliff line undermined and subsequent rock fall impacts.

Rock fall has the potential to affect habitat of cave-dependent bat species and Aboriginal heritage sites, which is discussed in detail in Sections 4.3 and 4.4 below. Rock fall also has the potential to jeopardize public safety. However, as all of the land above the proposed North 1 underground mining area is leased by UCML and is not used for public recreation or other public land uses, the public safety risks associated with rock fall are considered to be extremely low and manageable.

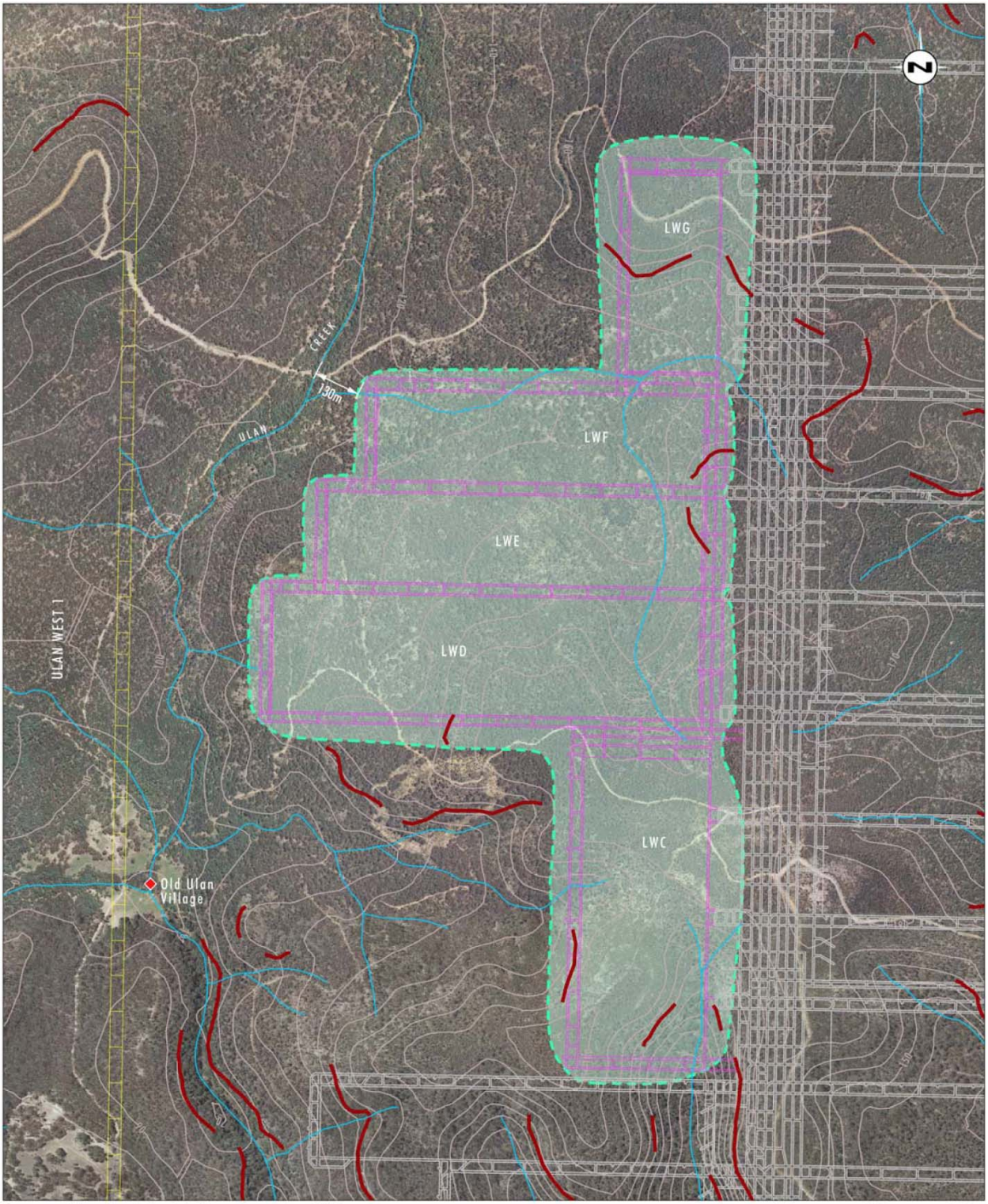

***Figure 7**: Predicted Subsidence Affectation Zone and Watercourses*

Overall, the SIA predicts that the proposed modification would result in no more than "minor environmental consequences" on cliff lines, which is consistent with the existing project approval performance measures (refer to Condition 24, Schedule 3).

The Department is satisfied that the cliff lines in the North 1 area are not significant landform features and notes that UCML is already conserving 12 km of more significant cliff lines in the Spring Gully Cliff Line Management Area and the Bobadeen Vegetation Offset Area (see **Figure 8**). Cliff lines are also a common feature in conservation areas in the vicinity of the site, including the Munghorn Gap Nature Reserve and the Goulburn River National Park.

The Department notes that UCML has prepared a draft Extraction Plan to include the North 1 mine area and the modified Ulan No. 3 and Ulan West mine area. The Department and DTIRIS are satisfied that the implementation of this plan will ensure that the performance measures are met and that the subsidence impacts associated with the modification are acceptable.

4.2 Water Resources

The proposed modification has the potential to impact on local and regional groundwater and surface water resources.

UCML engaged Mackie Environmental Research Pty Ltd (MER) to undertake a groundwater assessment and Umwelt to undertake a surface water assessment for the proposed modification. These reports are included at Appendix 3 and 4 of the EA, respectively.

Water Balance

The surface water assessment includes a revised water balance, which incorporates the water sources and losses associated with the proposed modification. The water balance indicates that the proposed modification would not result in changes to the water demand for the Ulan complex as the water demands for the CBP would be negligible and annual coal production would remain at currently approved rates.

However, the proposed modification will result in a small increase (ie. 1 ML/day) in water supply through groundwater inflows into the proposed North 1 underground mining area. This increase is predicted for the 15 months it would take to complete mining in the area. The peak water surplus for the entire Ulan complex was predicted to be approximately 19.8 ML/day (MER, 2009), so the additional proposed increase of 1ML/day was not considered to besignificant.

The EA indicates that the approved discharge strategy for the Ulan complex provides a maximum discharge capacity of 52 ML/day based on 100% utilisation of the water discharge facilities. Therefore it was concluded that the small increase in surplus water as a result of inflows into the proposed North 1 underground mining area could be readily managed, while still retaining significant flexibility and redundancy within the site water management system.

The Department and OEH accept this conclusion.

Underground Mining

The Ulan mine is located in the headwaters of both the Goulburn River system and the Talbragar River system. The proposed North 1 underground mine area is located within the Ulan Creek sub-catchment while the majority of the proposed amendments to the Ulan No. 3 and Ulan West mine plans occur within the Mona Creek sub-catchment (see **Figure 9**).

Both Ulan and Mona Creeks are ephemeral, with flows only occurring during storm events or after prolonged rainfall. In order to avoid subsidence impacts on Ulan Creek, the North 1 underground mining area was located approximately 130 m to the east of the creek. However, 3 first order and 2 second order tributaries of Ulan Creek lie within the North 1 mine area and 2 third order tributaries of Mona Creek lie within the amended Ulan No. 3 and Ulan West mine plan area (see **Figure 10**).

Subsidence impacts associated with the proposed North 1 mine area and amendments to the Ulan No. 3 and Ulan West mine plan have the potential to reduce the:

- groundwater supply to local users and baseflow to creeks;
- groundwater supply to significant local features such as "the Drip"; and
- quality and quantity of surface water flow in local creeks.

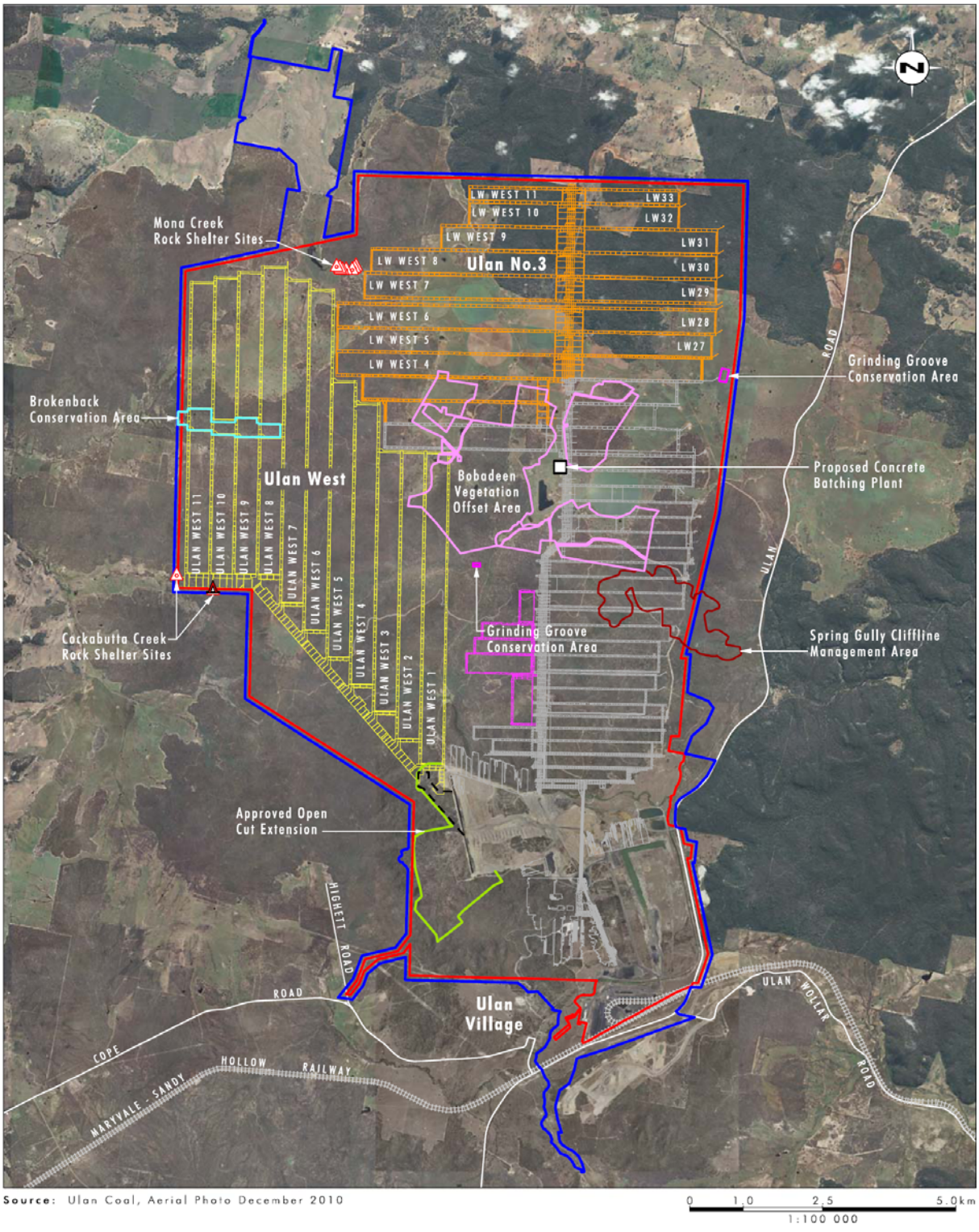

***Figure 8**: Offset and Management Areas*

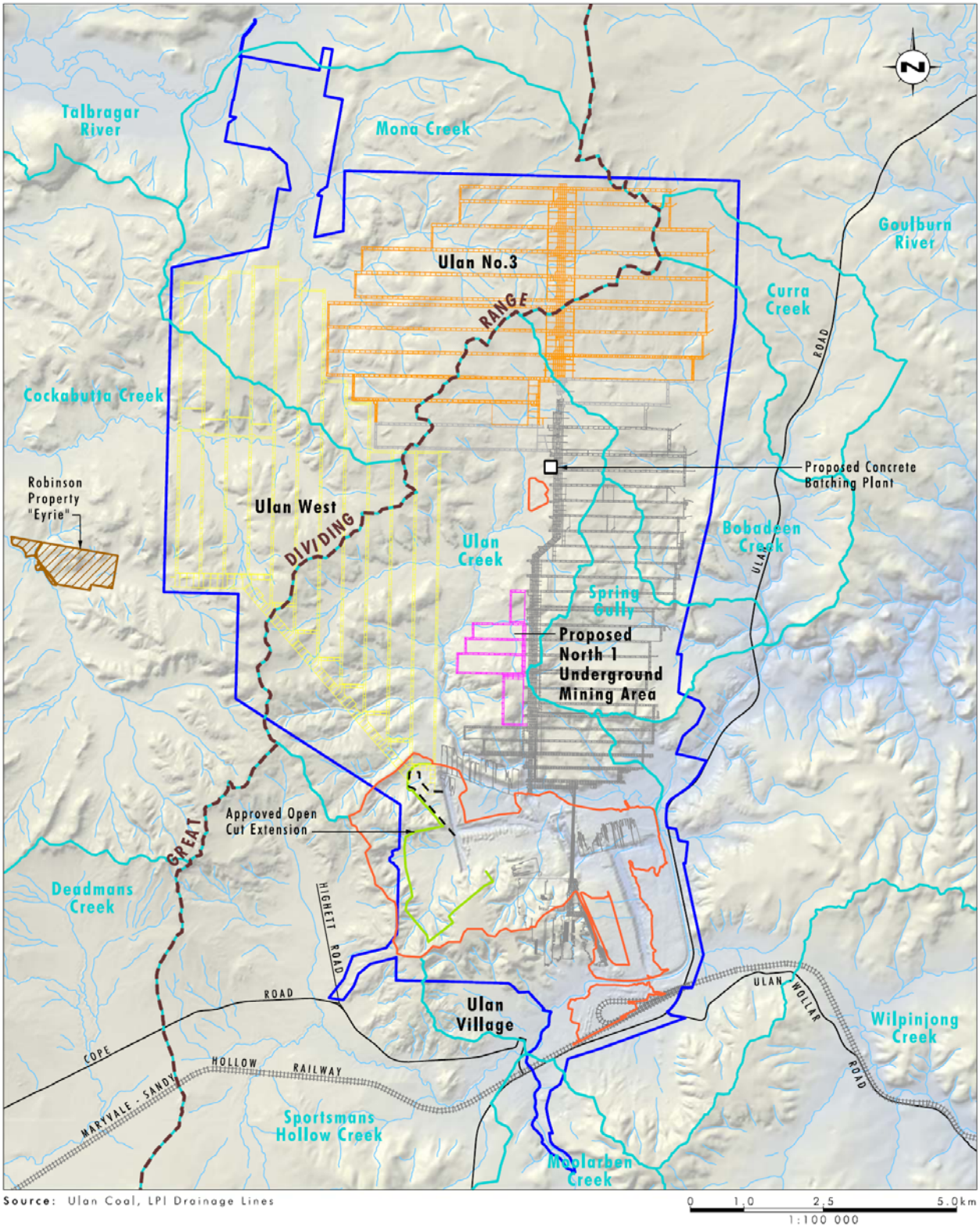

***Figure 9**: Existing Catchment Boundaries and location of the "Eyrie" Property*

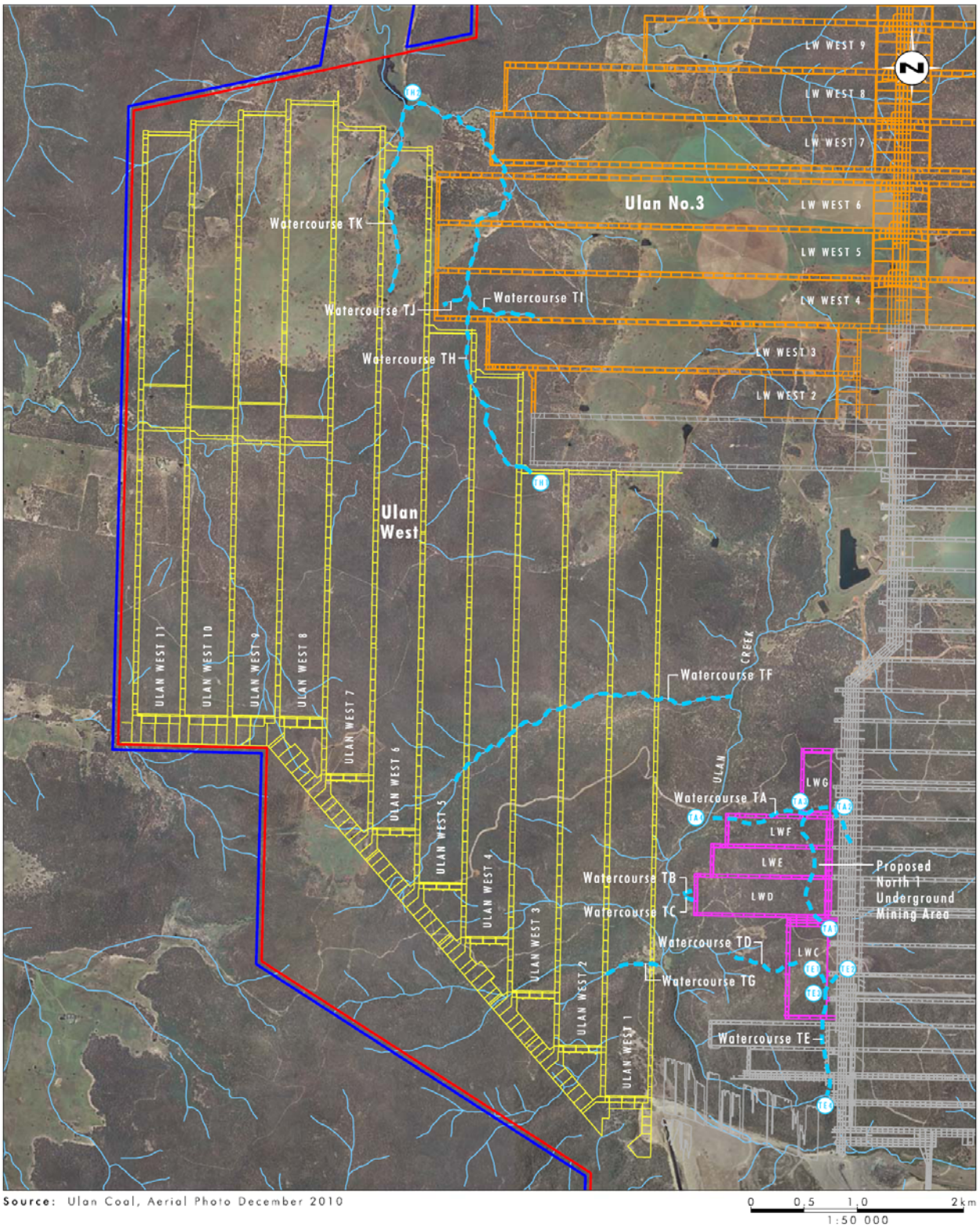

***Figure 10**: Tributaries in modification areas*

MER indicates that the groundwater system in the vicinity of the North 1 area has already been partly depressurised throught historic longwall extraction in adjacent areas (see **Figure 2**) and that the area would be surrounded by full strata depressurisation as mining progresses in approved Ulan No. 3 and Ulan West areas. The impact of the proposed North 1 underground mining area on the long-term UCML complex-wide depressurisation footprint is therefore predicted to be negligible.

Amendments to the geometry of the Ulan No. 3 and Ulan West mine panels are also not predicted to result in any additional impacts on the groundwater system beyond those predicted in the approved project, primarily since the area to be mined is reduced by about 1.4 ha.

The proposed modification is therefore not predicted to result in a change to the predicted impacts on groundwater levels in regional bores or baseflows to local creek systems.

The groundwater model also confirms that no impacts are likely to "the Drip", a significant local feature located approximately 5.5 kilometres to the east of the mine, as a result of future extraction from the North 1 underground or mining area or the proposed minor modifications to the Ulan No. 3 and Ulan West mine plans.

Umwelt undertook a detailed water-course stability assessment in order to assess the potential impact of the modification on surface water flows to the tributaries of Ulan and Mona Creeks. The assessment analysed potential changes to velocities, tractive stress and stream power associated with predicted changes in watercourse grades associated with subsidence. Umwelt concluded that the proposal would have negligible changes to existing water-course stability and therefore the water quality within and downstream of the proposed underground mining areas.

Umwelt also notes that the tributaries proposed to be undermined are typically sandy and that the potential for cracking to connect through the sandy soil layers to surface is negligible. If cracking does occur, the mobile nature of the soils would potentially result in self-healing and reduce the hydraulic conductivity of the surface strata. If this is not found to be the case, UCML has committed to regular checking and resealing of in-channel cracks if necessary.

This approach is consistent with that approved for the existing Ulan project and is considered acceptable for the proposed modification.

The Department is satisfied that the groundwater and surface water impacts associated with the proposed North 1 mine area and modified Ulan No. 3 and Ulan West areas would be minor and could be adequately managed through the implementation of the existing Surface Water and Groundwater Monitoring Plans (refer to Conditions 38 and 40, respectively).

Concrete Batching Plant

The proposed CBP will result in minor disturbance (ie. 0.07ha) to the clean water catchment within the north-eastern portion of the Ulan Creek catchment (see **Figure 9**).

The surface water assessment detailed erosion and sediment control measures that would be implemented during the construction and operation of the CBP. These include a series of clean water diversions around the disturbance area and the construction of a secondary sedimentation dam.

The Department is satisfied that the implementation of these and other standard erosion and sediment control measures would be adequate to ensure the modifications have a minimal impact on surface water quality. UCML is required to update the existing Erosion and Sedimentation Control Plan (refer to Condition 37) to include additional control measures specific to the CBP area.

Revised Groundwater Model

The groundwater assessment involved recalibrating and re-running of the groundwater model developed for the Ulan Continued Operations Project (MER, 2009) to include not only the proposed North 1 mining area and the minor amendments to the approved mine plan, but also recent Ulan groundwater monitoring data.

MER notes that the addition of the data has resulted in minor observable changes to some of the figures reported in the groundwater assessment for the proposed modification compared with those reported in MER 2009. These variations are a product of the input of updated groundwater monitoring data. They have not occurred as a result of input of the proposed modifications).

The recalibrated groundwater model results in three key changes to the predicted groundwater impacts associated with the Ulan mine.

Firstly, the depressurisation footprint has been slightly changed (see **Figure 11**). This has resulted in an additional 6 bores which would be within the 2 metres drawdown contour, and the removal of 3 bores that were originally located within the 10 to 20 metre head loss contour. Therefore, while additional bores are predicted to be impacted by water draw down, the number of bores predicted to be significantly impacted or experience complete loss of yield is reduced.

The existing project approval requires that UCML provide compensatory water supplies to any landowner whose water entitlements are adversely affected by the project (refer to Condition 30). The Department notes that this would include the additional bores predicted to be impacted. Further, the Department notes that UCML is required to review and update the existing approved Groundwater Monitoring Program to include baseline information and on-going monitoring of the additional bores.

Secondly, the recalibrated model predicts that the baseflow losses to the Goulburn River and Talbragar River catchments would be slightly lower than previously forecast (ie. in the order of 0.05ML/day for the Goulburn River and 0.13ML/day for the Talbragar River catchments).

Thirdly, the model indicates changes to the predicted timing and magnitude of groundwater inflows into the mining domains. The overall maximum water surplus associated with the Ulan project is now predicted to be 6990 ML per year (ie. 19.1 ML per day), which is 210 ML per year (ie. 0.7 ML per day) lower than previous predictions.

The Department notes that most of the revised predictions result in a minor reduction in the groundwater impacts associated with the underground mining operations at Ulan and is satisfied that the impacts on additional bores can be managed appropriately through the existing conditions of approval.

"Eyrie" Property

A public submission received by a local landowner raised concerns that mining operations at Ulan would impact on the water resources within his property. The property is known as "Eyrie" and is located within the upper reaches of the Cockabutta Creek catchment, approximately 1 km to the west of the UCML's site boundary and 5.5 km west of the proposed North 1 underground mining area (**Figure 9**).

Cookabutta Creek is an ephemeral creek system that flows to the west through the western section of the Ulan complex and into the Talbragar River. UCML indicates that approximately 1250 hectares (ie. 12%) of the Cockabutta Creek catchment area lies within the predicted subsidence affectation area for the proposed Ulan West underground mining operation.

In its response to submissions, UCML indicated that the proposed modification would not directly impact on the water resources within the Eyrie property since they are located 5.5 km to the west of the proposed North 1 mining area.

Similarly, UCML indicates that no direct surface water impacts due to subsidence in the approved Ulan West mine area are predicted to occur on the Eyrie property because subsidence impacts are predicted to be contained within the mine lease area and the Eyrie property boundary is located approximately 1 km to the west of this area.

Further, detailed hydrology analysis and modelling undertaken as part of the EA for the Continued Operations Project predicted that subsidence impacts in the Cookabutta Creek catchment area would not result in significant ponding or drainage realignment or changes to stream velocities. The EA therefore concludes that there would not be any significant erosion affects in the subsidence area and therefore downstream water quality in Cookabutta Creek would be maintained.

UCML concludes that there is not expected to be any impact on availability or quality of surface water flow at the Eyrie property downstream of the mining area.

However, UCML accepted that complex-wide groundwater depressurisation as a result of future approved underground mining at Ulan has the potential to impact the groundwater regime in the vicinity of the property. Specifically, the shallow perched groundwater system in the vicinity of the property may be affected by surface movements in the strata, which could redirect groundwater flows and impact on a spring on the property.

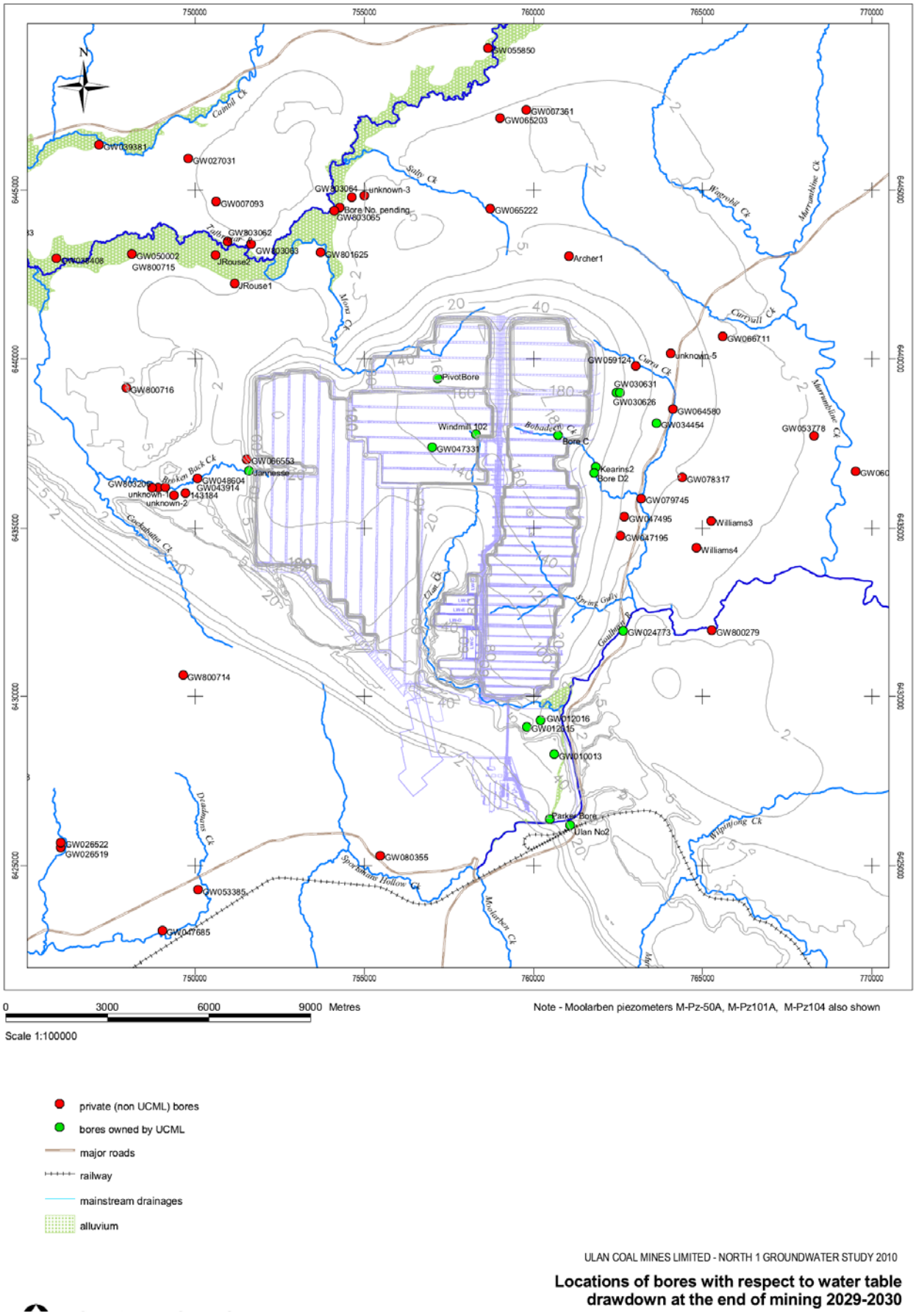

***Figure 11**: Location of bores with respect to groundwater table drawdown at the end of mining 2029-2030*

As discussed above, UCML currently operates under an approved Groundwater Monitoring Program, which specifically requires:

- baseline data of groundwater levels, yield and quality in the region, and particularly any groundwater bores, springs and seeps (including spring and seep fed dams) that may be affected by mining operations; and
- a program to monitor and/or validate the impacts of the project on any groundwater bores, springs and seeps on privately owned land.

The Department acknowledges that the spring on the Eyrie property was not previously identified as part of the Ulan Continued Operations Project EA and is therefore not included in the existing monitoring program detailed in the Groundwater Monitoring Plan. However, UCML is required to review and update the Groundwater Monitoring Plan within 3 months of approval of this modification. UCML would be required to include baseline data and an on-going monitoring program for the spring on the Eyrie property in the revised plan.

Furthermore, the Department notes that the implementation of the Surface and Groundwater Response Plan (refer to Condition 40) would ensure that any impacts on the spring on the Eyrie property are appropriately offset and/or compensated.

4.3 Flora and Fauna

The construction of the CBP would result in direct clearing of 0.07 ha of land and subsidence impacts associated with the underground mining in the North 1 and modified Ulan No. 3 and Ulan West mining areas has the potential to result in disturbance of habitat for threatened fauna species.

UCML engaged Umwelt to undertake a flora and fauna assessment for the modifications (see Appendix 5 of the EA). The assessment included database searches, literature reviews and extensive field surveys, which were undertaken as part of the Ulan Continued Operations Project and the current modification.

The assessment indicates that the proposed North 1 underground mining area is dominated by two vegetation communities, namely Ironbark Open Forest Complex and Scribbly Gum Woodland. The majority of the vegetation in the area proposed for the CBP has been cleared for historic mining purposes with the remaining vegetation consisting of disturbed unimproved pasture.

In terms of flora, the assessment indicates that no threatened flora species or endangered ecological communities (EEC) as defined under the *Threatened Species Conservation Act 1995* (TSC Act) or critically endangered ecological communities (CEEC) as defined under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded within any of the modification areas. Similarly, no Groundwater Dependent Ecosystems (GDEs) are present.

A small area (ie. 0.07 ha) of highly disturbed unimproved pasture will be cleared to construct the CBP and an associated sedimentation dam. Given the high degree of existing disturbance and lack of habitat values within this community, the assessment concluded that its removal would not result in significant biodiversity impacts. The Department agrees with this conclusion.

In terms of fauna, a total of 86 vertebrate species were recorded during fauna surveys of the modification areas. These included 70 bird species, 3 reptiles, 2 amphibians and 11 mammals. Of these species 3 are listed as threatened under the TSC Act, including the glossy black-cockatoo (*Calyptorhynchus lathami*), powerful owl (*Ninox strenua*) and the eastern bentwing-bat (*Miniopterus schreibersii oceanensis*). An additional 5 threatened cave dependent bat species were assessed as potentially occurring within the modification areas.

Based on a review of monitoring data from previous and existing mining operations at Ulan, the assessment indicates that there would be negligible impact to the vegetation over the underground mining areas. The EA states that the proposed modifications are therefore unlikely to adversely impact the habitat of the glossy black-cockatoo or the powerful owl.

The fauna assessment indicated that the rock fall associated with cliff line disturbance within the North 1 underground mine area could affect the potential habitat of cave-dependent bat species. However, a survey undertaken by specialist consultants Fly by Night Bat Surveys Pty Ltd along the entire length of the cliff lines in the North 1 underground mining area did not identify any roosts/breeding sites for bats. It is therefore considered highly unlikely that rock fall within the North 1 area would adversely impact on bat species.

In order to address residual concerns raised by OEH, UCML committed to repeating these surveys during warmer summer months.

The Department is satisfied that impacts on bat species as a result of the modifications are unlikely and notes that, as discussed in Section 4.1, UCML is already conserving significant cliff lines in existing conservation and management areas.

The Department notes that the existing project approval requires UCML to prepare and implement a Biodiversity Management Plan (refer to Condition 44) for the project by December 2011. This plan would be required to include monitoring and management measures for bat species across the complex.

Further, the Department notes that the existing project approval includes subsidence performance measures that require UCML to ensure that the project has a negligible impact on habitat within the project area. Consequently, if adverse impacts are identified, then UCML would be required to implement suitable contingency measures to ensure such impacts are avoided in the future.

The Department is satisfied that compliance with the existing conditions of approval would ensure that the biodiversity impacts associated with the modification are acceptable and that the project as a whole would continue to provide a net biodiversity benefit to the area in the medium and long term.

4.4 Aboriginal Cultural Heritage

The proposed modifications have the potential to result in both direct and indirect impacts to Aboriginal cultural heritage.

UCML engaged South East Archaeology (SEA) to undertake separate heritage assessments for the proposed North 1 mine area (refer to Appendix 6 of the EA) and the amended Ulan No. 3 and Ulan West mine area (refer to **Appendix B** of this report). Both assessments drew on information contained in the original assessment undertaken for the Ulan Continued Operations Project EA (Kuskie 2009).

The Department and OEH are satisfied with the level of assessment undertaken in relation to Aboriginal heritage, including the scope and extent of consultation with the Aboriginal stakeholders.

No Aboriginal sites were identified within the CBP investigation area, and none are expected to be present given the heavily disturbed nature of this site.

A total of 50 Aboriginal cultural heritage sites were identified during the surveys of the North 1 mine area (see **Figure 12**), including:

- 11 rock shelters with artefacts, art and/or grinding grooves;
- 7 isolated artefact, finds or scatters; and
- 32 rock shelters with Potential Archaeological Deposits (PADs).

A total of 11 of these sites have been predicted to have a greater than 10% probability of being subject to indirect impacts in the form of underground mining induced subsidence.

In addition, the assessment undertaken to determine the changes in the potential Aboriginal heritage impacts in the modified Ulan No. 3 and Ulan West areas indicates that 12 sites now have a greater than 10% probability of perceptible impacts from subsidence, compared to the mine plan assessed in the Ulan Mine Continued Operations EA. The probability of perceptible impacts on a further 2 sites has been reduced to below the 10% threshold.

All of the 23 sites potentially impacted by subsidence-induced impacts associated with the proposed modification are rockshelters with artefacts, grinding grooves and/or PADs. The vast majority of the sites (ie. 18 sites) have been assessed as being of low significance, however 1 of the sites was assessed as being of low to moderate significance, 2 of moderate significance, 1 of moderate-high significance and 1 of high significance (in a local context).

UCML committed to implementing a range of management strategies for the 5 individual sites with low-moderate or higher significance that are predicted to be susceptible to subsidence impacts (ie. sites 104, 105, 1420, 484 and 485). These measures include temporary removal of portable rocks hosting grinding grooves, surface collection and test excavation with potential salvage of rock shelter sites.

OEH accepted these measures, however recommended that UCML be required to implement all of the mitigation and management measures recommended by SEA. These include a survey of an additional 5 hectares of land above the North 1 underground mining area that could not be surveyed during the current investigation due to access constraints. The Department agrees that this survey should be completed prior to mining occurring under the area, and that the Heritage Management Plan (refer to Condition 47) should be updated to include appropriate management measures for mining impacts on Aboriginal cultural heritage.

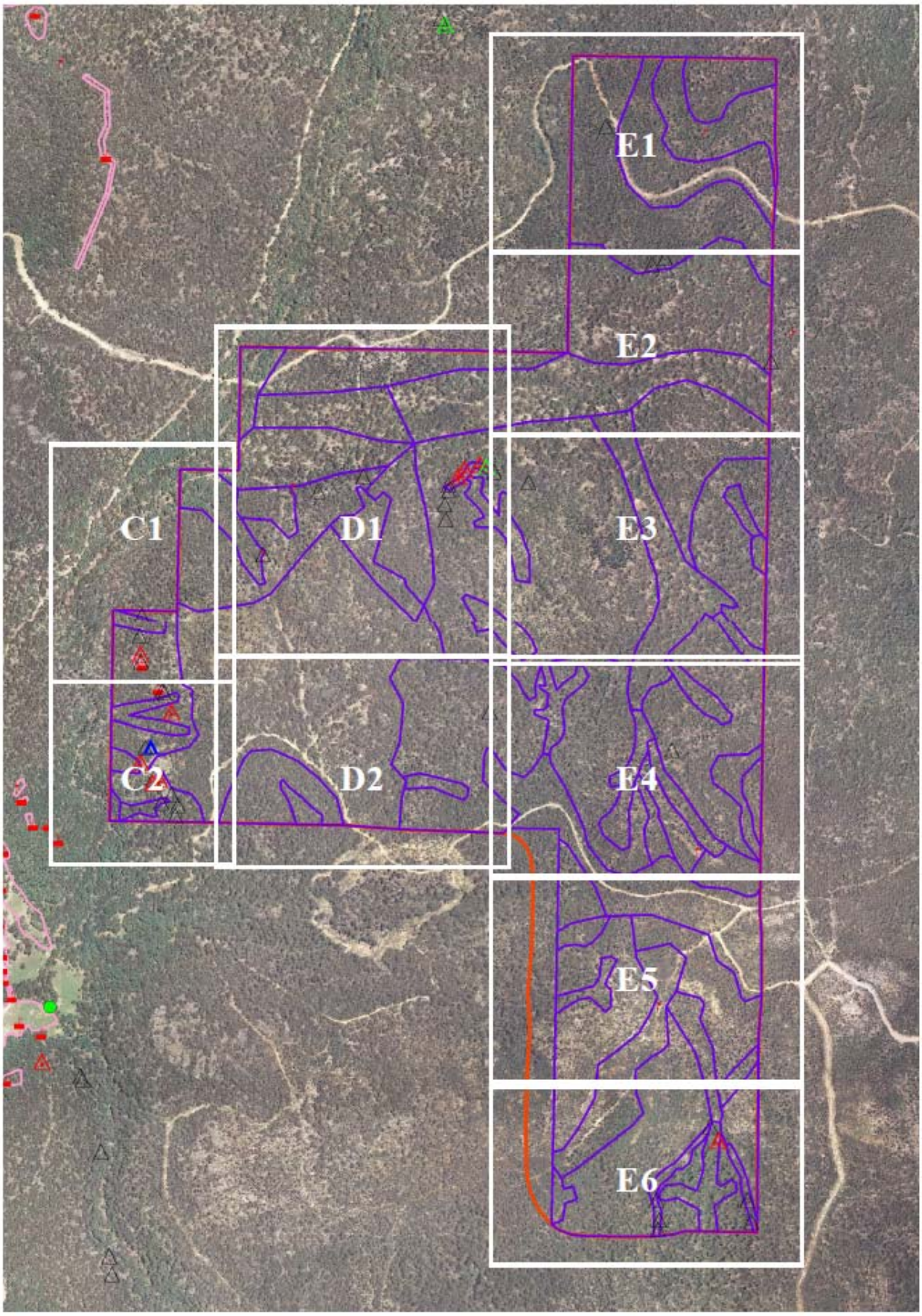

***Figure 12**: Aboriginal Heritage Sites in the vicinity of the proposed North 1 Mine Area*

The Department is satisfied that all other mitigation and management measures recommended by SEA are included in the existing Heritage Management Plan for the Ulan project. UCML would be required to update this plan to include the additional mitigation and monitoring measures applicable to the modifications.

The OEH raised concerns about cumulative Aboriginal cultural heritage impacts associated with the Ulan project as a whole and questioned the appropriateness of the Brokenback Conservation Area as an offset for the total potential impact. In its response, UCML reiterated SEA's conclusion that, following the implementation of the mitigation measures, the impacts of the proposed modifications on Aboriginal heritage would be very low within a regional context and low to very low within a local context. This conclusion was based on the assumption that conservation areas in the vicinity of the project, including the Munghorn Gap Nature Reserve and the Goulburn River National Park, are likely to contain similar and representative heritage evidence to that identified within the project area.

The Department notes that, as well as requirements for conservation of significant rock shelter sites within the Brokenback Conservation Area, the existing Ulan approval requires UCML to avoid highly significant sites adjacent to Mona and Cockabutta Creeks and conserve significant groove sites within two Grinding Groove Conservation Areas (refer to **Figure 8**). Further, significant Aboriginal rock art sites are likely to be present in the Spring Gully Cliff Line Management Area.

The Department is satisfied that the existing avoidance and conservation requirements provide long-term protection of a representative sample of Aboriginal heritage sites identified as significant from a cultural heritage perspective and that no amendments to the existing conditions in relation to Aboriginal heritage are required.

4.4 Greenhouse Gases

The proposed modifications would generate direct and in-direct greenhouse gas (GHG) emissions. A GHG and energy assessment was undertaken as part of the EA for the Ulan Continued Operation Project (Umwelt, 2009). This assessment was used to predict the emissions associated with the proposed modifications.

The EA states that the small increase in total coal resource to be extracted as a result of the development of the North 1 underground mine area (ie. 5 Mt) would result in a small proportional increase in the total GHG emissions generated by the project. The modification would result in total GHG emissions of 13,784,455 CO2-e, which represents 2% of the total GHG emissions predicted to be generated over the life of mining at Ulan.

The EA indicates that the amendments to the Ulan No. 3 and Ulan West mine plans would not change the rate or volume of coal resource extracted, and therefore not impact on overall GHG emissions generated associated with these mining operations.

The EA predicts that the operation of the CBP would result in negligible changes to the on-site GHG contributions, however notes that the operation of the plant would have a number of positive sustainability benefits including:

- reduction in site traffic movements which would result in a slight net GHG emission reduction; and
- the transferring of the GHG emissions from Scope 3 (indirect emissions) to Scope 1 (direct emissions) meaning that the reporting and monitoring outcomes will be accounted for by UCML's involvement in the National Greenhouse and Energy Reporting System and all reasonable and feasible GHG management mechanisms will be applied.

The Department accepts that the changes in GHG emissions predicted to be generated by the proposed modification are very small.

The Department believes that UCML should be required to implement all reasonable and feasible measures to minimise the generation of GHG (refer to Condition 18), and update the Air Quality & Greenhouse Gas Management Plan (refer to Condition 22) to accommodate the proposed modifications. However, the Department notes that these obligations will essentially be made redundant once the Clean *Energy Act 2011* takes effect on 1 July 2012 , and UCML is required to pay a carbon tax on its Scope 1 GHG emissions.

4.5 Other Issues

Other residual issues associated with the proposed modification are examined in **Table 1** below.

***Table 1**: Assessment of other Potential Issues*

Issue/Impact	Impacts / Consideration	Conclusion / Recommendation
Non-Aboriginal Heritage	A European Heritage Assessment was undertaken across the Ulan complex as part of the EA for the Ulan Continued Operation Project (Umwelt, 2009). This assessment was used to determine the potential impact of the proposed modifications on European heritage items. No heritage items are located near either the proposed CBP or the North 1 underground mining area. The proposed reconfiguration of the Ulan West mine plan will result in mining closer to the Old Ulan Village, however the SIA confirms that this would not result in subsidence related impact on this item. Similarly, the SIA indicates that subsidence related impacts in the amended Ulan West mine area would not change the predicted impacts on the Talbragar Fish Fossil Reserve.	The Department is satisfied that the proposed modification would not result in changes to impacts on any European or natural heritage items and that the subsidence performance measures in relation to heritage items can be complied with.
Noise	The only above-ground noise generating activity associated with the proposed modifications is the construction and operation of the CBP. A noise assessment for the proposed modification was undertaken by PAE Holmes (refer to appendix 8 of the EA). The assessment indicates that the noise levels at the nearest residence (located 4 kilometers away) from the CBP will be low and well below the criteria prescribed in the existing project approval.	The Department is satisfied that the proposed modification would not change the existing noise levels generated by the project and that the existing noise criteria can be complied with.
Air	The only potential cause of reduced air quality associated with the proposed modifications is dust from the construction and operation of the CBP. An air quality assessment for the proposed modification was undertaken by PAE Holmes (refer to Appendix 7 of the EA). The assessment indicates that operational dust levels from the CBP would constitute a very small portion (ie. between 0.5-1%) of the total particulate emissions created by UCML over the life of the mine and that these dust levels would be unperceivable at the nearest privately owned residence from the CBP (4 km away).	The Department is satisfied that the proposed modification would not change the existing dust levels generated by the project and that the existing air quality criteria can be complied with.
Visual	The only visually dominant feature of the modifications is the 11 metre high silo required as part of the CBP. The EA indicates that the silo would be constructed adjacent to existing infrastructure of a similar scale and extent (ie the Bobadeen water treatment facility and the firewater storage tanks). Furthermore, the extensive UCML buffer lands around the proposed CBP site and the surrounding topography would minimise any visual impacts associated with the silo.	The Department is satisfied that the visual impacts associated with the CBP silo are insignificant.
Transport	A small number of additional vehicles (ie. 5 staff vehicles for a one month period) would be required during the construction of the CBP. The EA indicates that the short duration and small number of the construction vehicle increases would not be beyond the capacity of the existing road network or result in impact to other road users. Operation of the proposed modification would not require an increase in the total on-site staff numbers, and hence traffic movements, currently approved. The operation of the CBP would result in a reduction in the number of concrete trucks being transported to the site by around 35 per week. The EA concluded that the operation of the modification would therefore result in an overall decrease in the number of vehicles travelling on the local road network.	The Department is satisfied that the modifications would not result in adverse impact on the local road network or road users.
Socio-economic	The EA indicates that the North 1 underground area would ensure continuity of mining operations and continued employment for up to 930 employees. The CBP would provide a secure, reliable and direct supply of concrete to the mine, while the minor amendments to the approved mine plan for Ulan No. 3 and Ulan West would improve operational efficiency associated with these operations. A submission objecting to construction of CBP was received by a local business, which currently supplies the UCML with concrete (ie. Mudgee Mini Mix & Concrete Pty Ltd). The Department is satisfied that this submission is made on commercial grounds and that any negotiations regarding the purchase or lease of this business is a matter for UCML and the business owner.	The Department is satisfied that the modifications would provide security of the UCML workforce and improve operational efficiency.

5 RECOMMENDED CONDITIONS

The Department has drafted recommended conditions for the modification. This has included updated references to agency names and number of project layout plans in the appendices. In addition, the Department has taken the opportunity to update the notes to several conditions in-line with contemporary approvals.

UCML has reviewed and accepted the Department's proposed conditions.

6 CONCLUSION

The Department has assessed the modification application, EA, submissions on the modification and UCML's RTS report in accordance with the relevant requirements of the EP&A Act, including the objects of the Act and the principles of ecologically sustainable development.

The Department is satisfied that the development of the North 1 underground mining area, CBP and minor amendments to Ulan No. 3 and Ulan West mine plans, can be undertaken with minimal impact on the environment and community, and allow UCML to continue to operate during periods when underground mining conditions would have otherwise resulted in a discontinuity to mining. The construction of the CBP in an area subject to previous infrastructure development allows for a reliable and secure supply of concrete for UCML's underground operations.

Consequently, the Department is satisfied that the proposed modification is in the public interest and should be approved, subject to conditions.

Although the Department reached this conclusion some time ago, it has held off submitting this assessment report to the Minister's delegate for determination while the merit appeal was still on foot. However, although the Court has determined that approval should in principle be granted to the project, it is unlikely to make final orders on the matter before the Court closes on 16 December 2011.

UCML has made representations to the Department saying the determination of the modification is now urgent, and should be determined as soon as possible to ensure the continuity of mining operations and avoid job losses at the mine.

The Department has investigated and confirmed UCML's claims. It has also considered the nature of the proposed modifications, and is satisfied that the determination of the modification application as recommended would not have a material impact on the conditions that are yet to be finalised in the Court proceedings. Consequently, the Department is satisfied that if the modification application is approved, the revised conditions could be put to the Court when it reconsiders the matter, and incorporated into the Court's final orders for the project.

7 RECOMMENDATION

It is RECOMMENDED that the Director General, as a delegate to the Minister for Planning and Infrastructure:

- **consider** the findings and recommendations of this report;
- **determine** that the proposed modification is within the scope of section 75W of the EP&A Act;
- **approve** the application to modify the project approval, subject to conditions, under section 75W of the EP&A Act; and
- **sign** the attached notice of modification.

DKitto 5/12/11

David Kitto
Director

Richard Pearson
Deputy Director-General

SHaddad

Sam Haddad
Director-General
7/12/2011

APPENDIX A

ENVIRONMENTAL ASSESSMENT, PUBLIC AND AGENCY SUBMISSIONS, and RESPONSE TO SUBMISSIONS

See attached CD ROM.

APPENDIX B

ADDITIONAL ABORIGINAL HERITAGE ADVICE

See attached CD ROM.