

# ENVIRONMENTAL ASSESSMENT REPORT

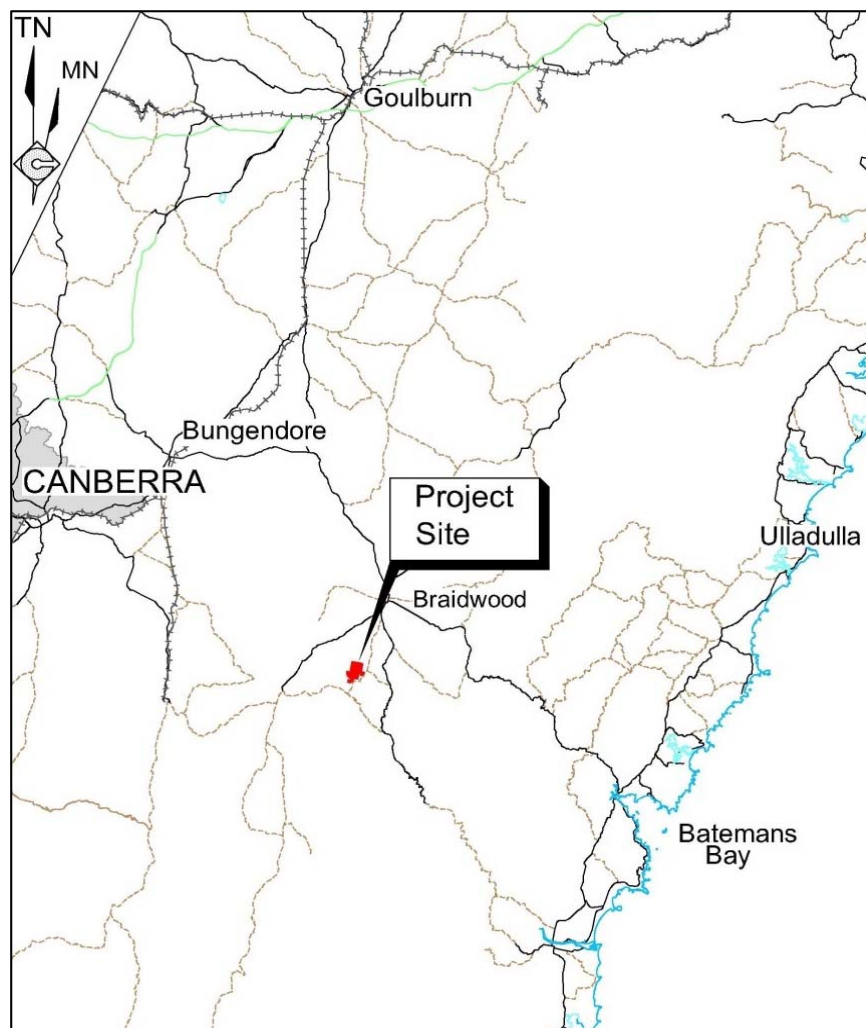
Section 75W of the *Environmental Planning & Assessment Act 1979*

## Dargues Reef Gold Mine Modification 3 (10\_0054 MOD 3)

### 1 BACKGROUND

The Dargues Reef Gold Mine is an approved underground gold mine located approximately 13 kilometres (km) south of Braidwood on the Southern Tablelands of NSW, within the Palerang local government area (see **Figure 1**).

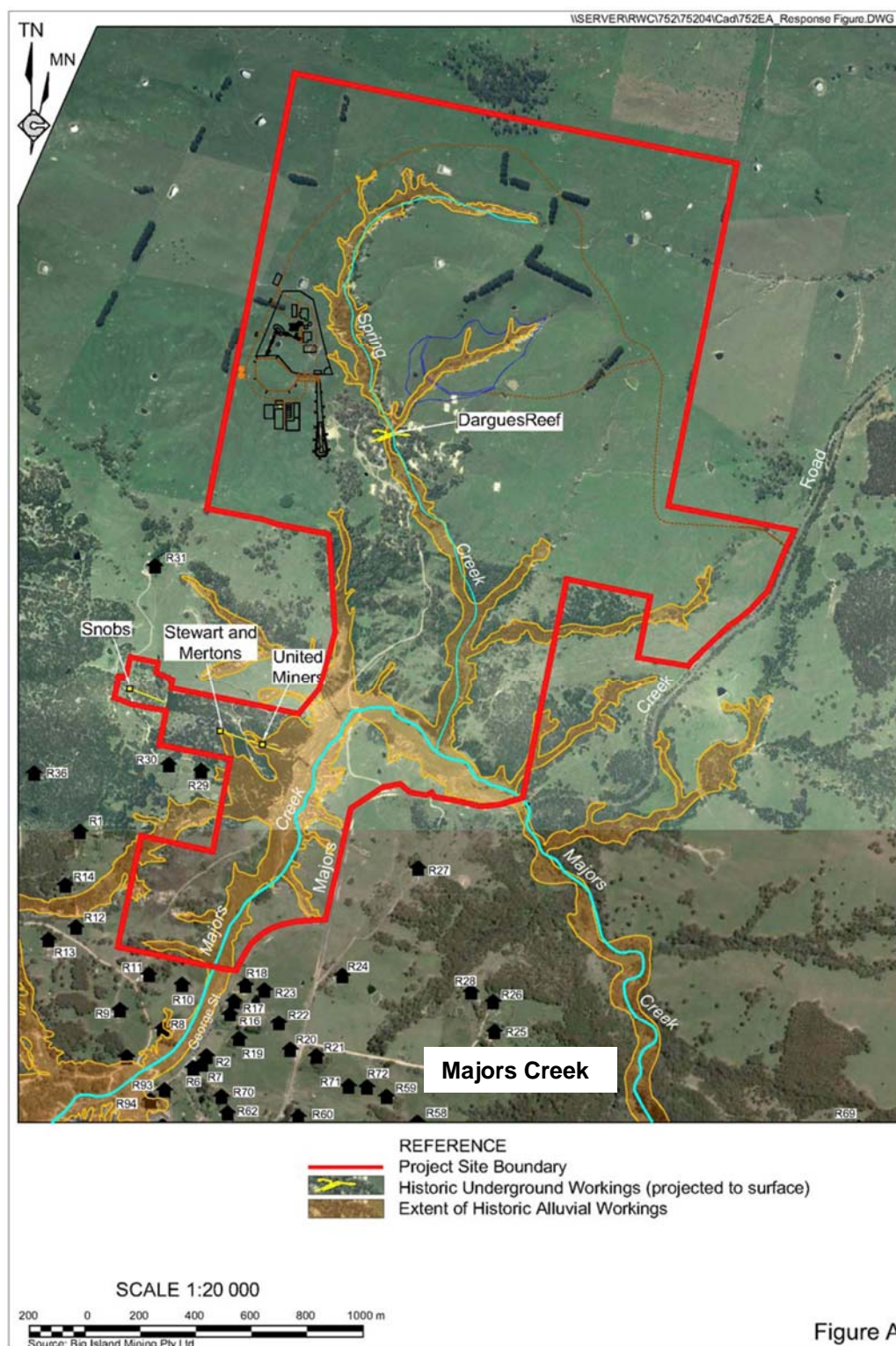
Big Island Mining Pty Ltd, a wholly owned subsidiary of Unity Mining Limited (Unity Mining), owns and operates the mine.



**Figure 1: Regional Location**

The mine is surrounded by agricultural, rural-residential and conservation land uses. The closest urban settlement is the village of Majors Creek, located immediately south of the mine (see **Figure 2**).

Drainage within the northern section of the mine site is dominated by Spring Creek, which is fed by a small spring in the headwaters of the creek. Spring Creek merges with Majors Creek in the southern section of the mine site (see **Figure 2**). The creek and its tributaries have been extensively disturbed by historic mining-related activities undertaken within the “Majors Creek Goldfield” area from 1851 to the late 1930s.



**Figure 2: Local Setting**

The mine was first approved in 2011 by the Planning Assessment Commission. However, the merits of the decision were subsequently appealed in the NSW Land and Environment Court. On 8 February 2012, the Court approved the mine by issuing consent orders and a revised project approval (MP 10\_0054).

The project approval has been modified twice (on 12 July 2012 and 24 October 2013) and allows:

- construction and operation of an underground gold mine;
- extraction and processing of up to 355,000 tonnes of gold ore per annum (to a maximum of 1.2 million tonnes (Mt) of ore over the life of the mine) until 31 August 2018;
- filling of underground mining voids using a combination of paste fill and waste rock;
- construction and operation of surface infrastructure, an office area and a water management system;
- construction of a processing plant to facilitate crushing, screening, grinding, gravity separation and floatation of ore;
- construction and use of a tailings storage facility; and
- transportation of the processed ore from the mine via road.

The project has an estimated capital investment value of \$42 million and would generate approximately 100 jobs during site establishment and 80 jobs during operations.

The original project proposed that ore would be transported from the mine for processing off-site, subject to the selection of a suitable facility and securing the necessary approvals for using this facility.

Construction at the mine commenced in February 2013. To date, Unity Mining has constructed the mine access road, temporary site facilities, the box cut, sediment dams and part of the waste rock emplacement.

During this initial construction period, Unity Mining was prosecuted in the NSW Land and Environmental Court for water pollution breaches due to the release of sediment downstream of the mine. These pollution incidents generated significant concern in the community about the environmental performance of the mine.

In December 2013, the mine site was placed on “care and maintenance” under the Mining Lease pending the completion of further optimisation studies and finalisation of processing options.

## 2 OPTIMISATION AND PROCESSING OPTIONS

The optimisation studies identified an opportunity to extract an additional 0.4 million tonnes<sup>1</sup> of ore from the mine using a slightly modified mining schedule. The mine is currently approved to use underground sublevel open stope mining methods to extract ore. The originally proposed mine schedule involved mining progressively from the upper levels of the deposit to the lower levels, with some ore material left in situ to support the open stopes prior to backfilling with paste fill and waste rock.

The optimisation studies identified that more efficient and complete extraction of the ore could occur if the mining schedule was modified to develop deeper levels of the deposit earlier in the mine life (but no deeper than the approved maximum depth of approximately 500 metres [m] below ground surface), with sublevel open stope mining progressing from the lower levels of the mine to the upper levels. The completed stopes would then be backfilled with paste fill or waste rock (consistent with the approved activities) prior to the stope above being mined.

In regard to off-site processing, Unity Mining reached agreement with Westtime Pty Ltd (Westtime) to process the ore from the site at the London Victoria Mine processing plant in Parkes in 2011. In May 2012, Westtime lodged a modification application with Parkes Shire Council to allow its facilities to be used for processing of ore from the Dargues Reef mine. The modification was approved by Council in August 2012.

---

<sup>1</sup> Calculated based on the 2013 JORC reserve estimate of 1.6 Mt compared to the approved extraction limit of 1.2 Mt.

However, in November 2012, the approval granted by Parkes Shire Council was the subject of an administrative appeal in the NSW Land and Environment Court. This appeal was dismissed by the Court in May 2015. However, as a result of the uncertainty, the agreement between Unity Mining and Westlme was terminated in 2013.

This in turn led to the consideration of an on-site processing option (requiring use of cyanide) that formed the basis of the initial modification application.

However, as discussed below, the on-site processing option is no longer part of the proposed modification. This means that the viability of the mining operation remains dependent on the identification of an alternative off-site processing option (as is currently the case under the project approval).

In this regard, on 2 December 2015, Unity Mining announced that it has signed a binding Heads of Agreement with Westlme for the option to process concentrate from the mine at Westlme's processing facility located in Parkes, in accordance with the approval granted by Parkes Shire Council in 2012.

As has always been the case, the off-site processing activities do not form part of the approved project.

### 3 PROPOSED MODIFICATION

In July 2015, Unity Mining submitted an application to modify its project approval (10\_0054 MOD 3).

The modification application initially proposed a number of activities including:

- the processing of ore on site (which would require the use of cyanide); and
- construction of an enlarged tailings storage facility.

In response to strong community concerns and objections from the NSW Environment Protection Authority (EPA) following the exhibition of the application, Unity Mining withdrew these components of the modification application.

As a result of these changes, Unity Mining is now seeking the following modifications to its project approval (see **Figure 3**):

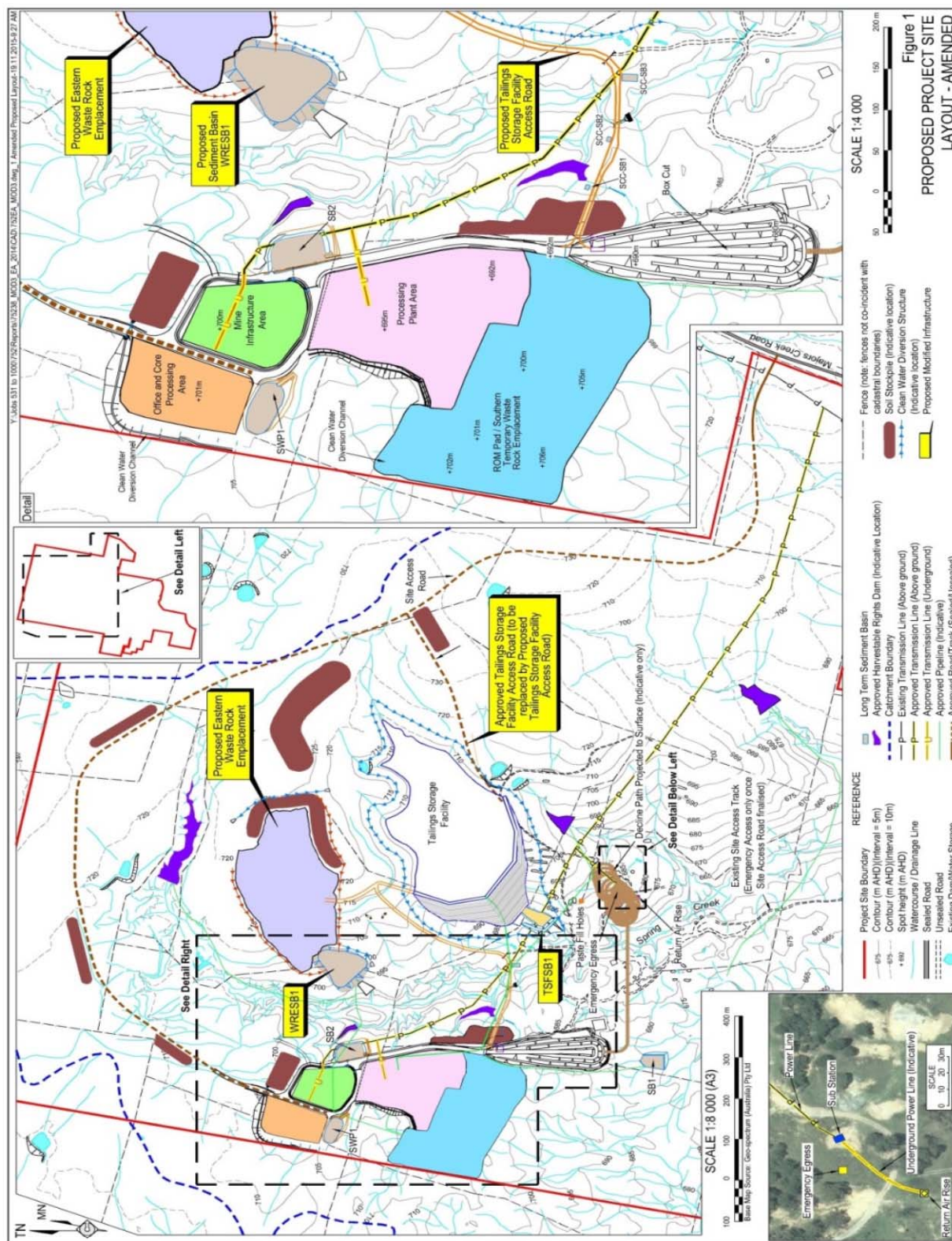
- a 7 year extension to the time that mining operations are allowed to occur on the site (i.e. from 31 August 2018 to 30 June 2025);
- increasing the approved maximum amount of ore extracted from 1.2 Mt to 1.6 Mt over the life of the mine as a result of a more efficient sequence of mining;
- construction and operation of an Eastern Waste Rock Emplacement Area due to the increase in the volume of ore extracted over the life of the mine; and
- construction and operation of an access road to permit direct access between the box cut, tailings storage facility and Western Waste Rock Emplacement Area, including a crossing over Spring Creek.

The primary justification for the proposed modification is to increase ore recovery and improve the operational efficiency of the mining operations at the site, as the intensity of mining would remain the same with an annual production rate of 355,000 tonnes of ore a year.

As noted above, Unity Mining's commencement of the project has been delayed due to issues with securing a suitable off-site processing option. Accordingly, Unity Mining is seeking an extension of the mine life to fully realise the benefits of the approved project, albeit with an extension to the total "operational" life of the mine of around 1 to 2 years to allow the additional ore to be extracted.

The modification is described in detail in the environmental assessment (EA) submitted in support of the application (see **Appendix C**) and as modified by Unity Mining's Response to Submissions (see **Appendix E**) and summarised in **Table 1** below.





**Table 1:** Overview of the proposed modification

| <b>Component</b>              | <b>Summary Description</b>   |
|-------------------------------|--|
| <i>Mining method</i>          | <p>Unity Mining is proposing to modify the approved underground mining method to access deeper levels of the deposit earlier in the mine life, with sublevel open stope mining progressing from the lower levels of the mine to the upper levels.</p> <p>The originally approved mining method extracted ore progressively, moving from the upper levels of the deposit to the lower levels, with some ore material left in situ to support the open stopes prior to backfilling with paste fill and waste rock. The modified mining method facilitates the extraction of additional ore originally identified to be left in situ.</p>   |
| <i>Ore extraction</i>         | <p>Unity Mining is proposing to increase the maximum amount of ore extracted over the life of the mine from the 1.2 Mt to 1.6 Mt (i.e. an additional 400,000 tonnes).</p> <p>The approved annual production rate would not change (i.e. 355,000 tonnes of ore a year).</p>   |
| <i>Mine life</i>              | <p>Unity Mining is proposing to extend the approved life of the mine by approximately 7 years, from 31 August 2018 to 30 June 2025.</p>  |
| <i>Waste rock emplacement</i> | <p>The change in mine scheduling would generate more waste rock earlier in the mine life thereby requiring a new waste rock emplacement area.</p> <p>Unity Mining is proposing to construct and operate an additional Eastern Waste Rock Emplacement Area (see <b>Figure 3</b>). The emplacement area would be constructed as a valley-fill emplacement to the east of Spring Creek. The emplacement area would have a design capacity of 350,000 cubic metres (m<sup>3</sup>) (or 630 000 tonnes) to a maximum elevation of 721 m AHD. The emplacement area would be constructed in three lifts (each between 3 and 4 m high) to a height of approximately 12 m above ground level and with a footprint of 6 hectares.</p>  |
| <i>Spring Creek crossing</i>  | <p>Unity Mining is proposing to construct an access road to permit direct access from the box cut and processing plant to the Eastern Waste Rock Emplacement Area and approved tailings storage facility (see <b>Figure 3</b>). The access road would incorporate a heavy vehicle crossing over Spring Creek.</p> <p>The approved access to the eastern side of Spring Creek is approximately 2.8 km via the site access road and Tailings Storage Facility access road. The approved transportation route requires unloading and temporary storage of waste rock from the underground haul trucks at the Western Waste Rock Emplacement Area for reloading into surface trucks for transportation (as the underground haul trucks are not suitable for long haulage distances at the surface).</p> <p>The proposed access road would provide a more efficient, direct route and would minimise light and heavy vehicle interactions on the site access road.</p> <p>The proposed access road would be approximately 700 m in length and 4 m in width (suitable for one way traffic) with an unsealed, all weather road surface suitable for use by heavy vehicles. Surface water controls would be implemented in accordance with a detailed Sediment Control Plan including a 3 m culvert.</p> <p>The location of the crossing is a former dam wall which would be conditioned and compacted to achieve a suitable surface for operation of heavy vehicles. The proposed crossing would be protected on the upstream side using a gabion basket wall, whilst the downstream face would be protected using a stone pitch with a slope of 1:1.5 (V:H).</p> |
| <i>Project boundary</i>       | <p>Unity Mining is proposing to amend the approved project boundary to incorporate the newly acquired "Slings" property to the east of the site. This property is proposed to be used for biodiversity offsets and ongoing agricultural activities. No mining disturbance or activities are proposed on the property, which would remain outside of the existing Mining Lease.</p>   |

## 4 STATUTORY CONTEXT

The mine was originally approved under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Although Part 3A was repealed on 1 October 2011, the project remains a 'transitional Part 3A project' under Schedule 6A of the EP&A Act. Under the current savings provisions, the approval is to be modified under the former Section 75W of the EP&A Act.

The Minister for Planning is the approval authority for the modification application. However, under the Minister's delegation of 14 September 2011, the Planning Assessment Commission will determine the application. This is because the Department received more than 25 public submissions objecting to the application and both Palerang Council and Eurobodalla Shire Council objected to the modification.

The modification request does not seek approval for a new and fundamentally different project, but for an incremental extension to an existing project of the same character and in the same location. In particular, the modification would not involve any changes to the following key components of the approved project:

- mining tenements (i.e. ML 1675);
- underground mining footprint;
- annual production rate;
- tailings storage facility;
- processing infrastructure;
- water and power supply;
- peak annual employment; and
- hours of operation.

Based on its assessment (see Section 5 below), the Department also considers that the proposed changes would not significantly increase the environmental impacts of the project beyond what is already approved.

Consequently, the Department is satisfied that the proposed changes can be characterised as a modification to the current project approval and that the proposed modification can be considered within the scope of Section 75W of the EP&A Act.

## 5 CONSULTATION

The Department exhibited the modification application and accompanying EA from 15 July 2015 until 26 August 2015, and consulted with key government agencies.

During the exhibition period, the Department received 417 submissions, including 8 from government agencies, 14 from special interest groups and 395 from the general public (see summary in **Table 2** below).

Of the 395 community submissions, 330 objected to the proposed modification. In regard to the geographic representation of these objections, the Department notes that almost all residents who made a submission located within 5 km of the mine objected to the proposal (i.e. 44 out of 45 residents objected), and the majority of residents who made a submission living between 5 and 50 km from the mine (predominantly downstream) objected to the proposal (i.e. 174 out of 188 residents objected).

A summary of the issues raised in the submissions and in response to the amended application (as documented in Unity Mining's RTS) is provided below.

**Table 2: Summary of submissions**

| <b>Submitter</b>  | <b>Number</b> | <b>Object/Support</b>         |
|---|---------------|-------------------------------|
| <b>Agency:</b>  | <b>8</b>      |                               |
| • Environment Protection Authority  | 1             | Comment subject to conditions |
| • Eurobodalla Shire Council   | 2             | Object                        |
| • Palerang Council  |               |                               |
| • Office of Environment and Heritage  |               |                               |
| • Department of Primary Industries including the Agriculture, Water, Fisheries and Marine Parks divisions |               |                               |
| • Division of Resources and Energy within the Department of Industry                                      | 5             | Comment                       |
| • Water NSW   |               |                               |
| • Dam Safety Committee  |               |                               |
| <b>Special Interest groups:</b>   | <b>14</b>     |                               |
| • ACT Conservation Council  |               |                               |
| • Araluen Valley Agricultural Producers & Protectors of the Ecosystem Coalition                           |               |                               |
| • Braidwood Greens  |               |                               |
| • Coastwatcher's Association  |               |                               |
| • Eurobodalla Greens  |               |                               |
| • Majors Creek Catchment Guardians  |               |                               |
| • National Coast Marine Group   | 13            | Object                        |
| • Nibago Pty Ltd  |               |                               |
| • Southcoast Health and Sustainability Alliance   |               |                               |
| • Town Plan   |               |                               |
| • Tuross Community Garden   |               |                               |
| • Tuross Lakes Preservation Group   |               |                               |
| • Wisbey Pty Ltd  |               |                               |
| • Minerals Council of Australia   | 1             | Support                       |
| <b>Community</b>  | <b>395</b>    |                               |
| Approx. distance from Dargues Reef Mine:  |               |                               |
| <5 km   | 44            | Object                        |
|   | 1             | Support                       |
| 5 to 50 km  | 174           | Object                        |
|   | 11            | Support                       |
|   | 3             | Comment                       |
| >50 km  | 112           | Object                        |
|   | 49            | Support                       |
|   | 1             | Comment                       |
| <b>Total Submissions</b>  | <b>417</b>    |                               |

Following the exhibition of the EA, representatives from the Department visited the site and attended the Dargues Reef Community Consultative Committee (CCC) to get a better understanding of the key concerns associated with the proposed modification.

Unity Mining has also undertaken extensive consultation with the local community and government agencies during the assessment process. It has provided regular updates to the CCC and held numerous information sessions, public meetings and site visits that were open for members of the community to attend.

Unity Mining provided a detailed response to the issues raised in submissions (RTS) (see **Appendix E**), and the Department has considered this response in its assessment of the merits of the proposed modification.



Due to the changes to the proposed modification that were made by Unity Mining in its RTS, the Department re-exhibited the amended application from 4 December to 18 December 2015, with submissions accepted until 4 January 2016.

During the re-exhibition, the Department received an additional 17 submissions from the community and special interest groups, of which 16 were objections and 1 provided comments. Of these, only 5 objections were from community members that had not previously commented on the proposed modification. The key government agencies also provided advice in response to the re-exhibition of the amended application.

#### **4.1 Agency Advice**

A number of key government agencies provided advice to the Department on particular aspects of the proposed modification and recommended changes to the existing conditions. The local councils also provided submissions on the proposed modification. The comments and recommendations provided are summarised below, and considered in more detail in Section 5 of this report.

The **Environment Protection Authority (EPA)** did not support the original modification application principally on grounds relating to the proposed cyanide use and the enlarged tailings storage facility.

Following review of the RTS, the EPA retained residual concerns relating to:

- the effectiveness of the water management system, including relevant design criteria for sediment basins and the process water dam;
- the need for a whole of site water balance;
- erosion and sediment control design standards and off-site discharges, particularly uncontrolled discharges and effects on downstream water quality;
- adequacy of the groundwater assessment; and
- composition of the waste rock emplacement.

The EPA also raised concerns in regard to approved aspects of the mine, such as the design and capacity of the tailings storage facility, control of seepage from the tailings storage facility, and the design criteria of the process water dam (see Section 5 for further discussion).

Following further consultation, the EPA is satisfied that the recommended conditions are appropriate and that its residual concerns can be addressed via conditions to be imposed under the project approval and the Environment Protection Licence (EPL) for the project (see Section 5 for further discussion).

**Eurobodalla Shire Council (ESC)** objected to the proposed modification, due to residual concerns about the approved tailings facility. ESC's original submission included an expert report prepared by Dr. Peter Beck of GHD Pty Ltd, which was jointly funded by ESC and Palerang Council. Dr. Beck's assessment raised a number of concerns about the proposed modification, mostly associated with the now withdrawn components of the application.

ESC also raised concerns about approved aspects of the mine (namely the approved tailings storage facility), historic compliance matters and the impacts of future mine creep.

In its submission on the RTS (which included a supplementary report prepared by Dr. Beck), ESC acknowledged that whilst its principal concern in relation to the use of cyanide had now been addressed, it retained residual concerns relating to the location and capacity of the approved tailings storage facility, including the consequences of failure or overtopping of the facility. The submission included further review by Dr. Beck, who noted that the impacts associated with the proposed modification were now relatively benign. However, Dr Beck questioned the capacity of the approved tailings storage facility due to the increased ore production over the life of the mine. This matter has been considered further in Section 5.1.

The Department notes that many of the matters raised by Dr Beck in regard to the tailings storage facility were the subject of extensive investigation and expert evidence in the Land and Environment Court proceedings.

**Palerang Shire Council (PSC)** objected to the proposed modification as originally proposed. In its submission, PSC strongly objected to the proposed on-site processing using cyanide and referred to the Dr. Beck report (as noted above). PSC also raised concerns about the approved tailings storage facility, which has been considered in Section 5.1.

PSC did not comment on the RTS, but jointly funded Dr. Beck's review of the RTS that was included with ESC's submission.

The **Office of Environment and Heritage (OEH)** advised that it had no residual concerns regarding the biodiversity impacts of the proposed modification. Unity Mining provided the results of the flora and fauna monitoring surveys that had been conducted at the site since autumn 2014 as requested. OEH had advised in its original submissions that it considered the offset package for the proposed modification to be adequate.

OEH recommended that the Aboriginal Heritage Management Plan (AHMP) should be updated in consultation with OEH and that it should include a salvage strategy for the impacted Aboriginal sites. The Department agrees and has updated the recommended conditions accordingly.

The **Department of Primary Industries – Agriculture (DPI Agriculture)** requested further information regarding the proposed use of the agricultural land within the 'Slings' property, which is proposed to be incorporated in the project site boundary. Additional information was provided as part of the response to submissions by Unity Mining, and DPI Agriculture had no further comments.

The **Department of Primary Industries – Water (DPI Water)** provided a number of recommendations relating to groundwater monitoring and modelling, water licensing, erosion and sediment control and the Spring Creek crossing design. DPI Water also sought further clarification regarding the approved tailings storage facility, similar to the comments raised by the EPA (see Section 5.1 for further discussion).

The **Department of Primary Industries – Fisheries (DPI Fisheries)** raised concerns about the erosion and sediment controls (including design criteria) for the proposed modification. DPI Fisheries also recommended auditing of erosion and sediments controls, and detailed design and review of the Spring Creek crossing in accordance with applicable guidelines. The Department has considered the potential surface water impacts of the proposed modification, including erosion and sediment control, in Section 5.2.

The **Department of Primary Industries – Marine Parks (DPI Marine Parks)** advised that it has no residual concerns with the proposed modification.

The **Division of Resources and Energy (DRE)** did not object to the proposed modification. However, it requested clarification regarding the rehabilitation of the box cut and material balance of the proposed Eastern Waste Rock Emplacement Area. This information was subsequently provided by Unity Mining, and the Department considers that the existing conditions of approval adequately address DRE's concerns in this regard, including a requirement for the Rehabilitation Management Plan to be updated in consultation with DRE following any modification to the project approval.

The **Dam Safety Committee of NSW (DSC)** did not object to the proposed modification. The DSC noted that the approved tailings storage facility is a 'prescribed dam' under the *Dams Safety Act 1978*, and hence will be required to meet a range of strict requirements to ensure it does not pose an unacceptable risk to downstream residents or adversely affect the environment.

**Water NSW** (as the regulator of water supply in the Sydney Catchment Area) advised it had no residual concerns with the proposed modification.

## 4.2 Special Interest Groups and Community Submissions

The majority of the initial objections were concerned about the use of cyanide for processing gold on the site and the potential risks to downstream users and the environment, particularly if the tailings storage facility were to fail. The objections also raised numerous concerns about the approved tailings storage facility, including the adequacy of the design, design parameters applied, suitability of the location of the facility, adequacy of the liner, seepage, and overtopping or failure of the facility.

These submissions had a strong focus on the proposal to use cyanide (which was subsequently withdrawn from the application) and the approved components of the mine, namely the tailings storage facility. They reiterated several concerns that were raised and considered in detail in the original merit assessment process for the project.

The Department notes that these issues were thoroughly assessed and considered in the Land and Environment Court proceedings for the project, specifically in relation to the capacity of the tailings storage facility, failure risks, and permeability of the tailings storage facility (liner, walls, floor and capping).

The Department notes that the modification application is not proposing to change any aspects of the approved tailings storage facility. Notwithstanding, given the residual level of community concern in relation to this aspect of the operations, the Department has included this aspect in its consideration of issues (see Section 5.1). The Department has also attached a summary of the requirements for tailings dams published by the Dams Safety Committee (see **Appendix F**).

The Department has summarised the issues raised in submissions in **Table 3**, and has considered these issues further in Section 5. Full copies of all submissions are included in **Appendix D**.

**Table 3: Summary of submissions and residual issues**

| Issue  |
|--|
| <ul style="list-style-type: none"> <li>• <b>Approved Tailings Storage Facility:</b> <ul style="list-style-type: none"> <li>- accuracy of the design inputs, including meteorological data</li> <li>- design not in accordance with best practice guidelines</li> <li>- tailings composition and consequences of overtopping or catastrophic failure</li> <li>- potential seepage impacts, including adequacy of tailings liner and accuracy of predicted seepage rates</li> <li>- site suitability and likely stability of the tailings storage facility</li> <li>- rehabilitation and long-term management</li> </ul> </li> </ul> |
| <ul style="list-style-type: none"> <li>• <b>Rehabilitation:</b> <ul style="list-style-type: none"> <li>- rehabilitation and post-closure management of the mine, particularly in relation to the approved tailings storage facility</li> </ul> </li> </ul>   |
| <ul style="list-style-type: none"> <li>• <b>Water:</b> <ul style="list-style-type: none"> <li>- surface and groundwater impacts, including potential impacts on drinking water supply, overall water quality impacts and adequacy of sediment and erosion controls</li> </ul> </li> </ul>  |
| <ul style="list-style-type: none"> <li>• <b>Noise:</b> <ul style="list-style-type: none"> <li>- increased noise impacts due to construction of eastern waste rock emplacement</li> </ul> </li> </ul>   |
| <ul style="list-style-type: none"> <li>• <b>Biodiversity:</b> <ul style="list-style-type: none"> <li>- vegetation clearing</li> <li>- impacts to downstream aquatic ecology due to surface water quality impacts</li> </ul> </li> </ul>  |
| <ul style="list-style-type: none"> <li>• <b>Socio-Economic Assessment:</b> <ul style="list-style-type: none"> <li>- economic viability of the mine and social impacts of the modification</li> <li>- tourism impacts</li> </ul> </li> </ul>  |
| <ul style="list-style-type: none"> <li>• <b>Environmental Compliance:</b> <ul style="list-style-type: none"> <li>- poor environmental performance and compliance of the mine</li> </ul> </li> </ul>  |
| <ul style="list-style-type: none"> <li>• <b>Traffic:</b> <ul style="list-style-type: none"> <li>- off-site transport of ore for longer mine life.</li> </ul> </li> </ul>   |

## 6 ASSESSMENT

In assessing the merits of the proposed modification, the Department has considered the:

- existing conditions of approval;
- previous EAs for the project, including previous modifications;
- EA for the proposed modification;
- submissions and Unity mining's response to submissions, including the amended modification application;
- applicable government policies and guidelines; and
- the requirements of the EP&A Act.

The following is a summary of the findings of this assessment.

### 5.1 *Approved Tailings Storage Facility*

A substantial number of submissions (including a detailed submission from Dr Peter Beck on behalf of ESC and Palerang Council) and advice from key government agencies (including the EPA and DPI Water) raised concerns relating to the design of the approved tailings storage facility.

#### Meteorological data

One of the primary concerns was that the rainfall and evaporation data used in the design of the tailings storage facility was not representative of the area and therefore under-estimated the rainfall received at the site. Specifically, the issue was that the approved tailings storage facility design uses climatic data sourced from the Braidwood weather station (located approximately 12 km north-northeast of the mine site) and not the Majors Creek weather station (located approximately 2 km south-southwest of the mine site).

A comparison of the rainfall datasets for the Majors Creek weather station indicated a higher average rainfall than the Braidwood weather station. Concerns were therefore raised about the design adequacy of the tailings storage facility and that there was a heightened risk of failure or overtopping. Many community submissions were concerned about the impacts of such a failure on downstream water quality and drinking water supply.

Unity Mining's RTS included a comparative analysis of the two datasets undertaken by Knight Piesold. The analysis noted that the average and 1 in 100 year climatic data derived from the Braidwood weather station data was used to model the water balance of the tailings storage facility, but the storm data used in the calculations of the facility embankment crest levels and design freeboards is calculated using actual co-ordinates of the site and the Bureau of Meteorology's storm calculations methodology.

Importantly, a design check of the facility embankment levels was undertaken which demonstrated that using the Majors Creek weather station data rather than the Braidwood weather station data does not affect the embankment level or spillway design concepts.

To provide further clarity on the issue, Unity Mining has committed to ensuring that the final design of the tailings storage facility would use the latest rainfall averages from both the Majors Creek and Braidwood weather stations. The design would then be adjusted (if necessary) to meeting the requirements of the DSC, based on whichever dataset provided the worst case rainfall scenario. Unity Mining would also be required to undertake further consultation with the DSC about the design of the facility before construction commences, and the DSC has powers to require further changes over time in response to surveillance and monitoring.

The Department agrees with the proposed safeguards and has recommended a new condition of approval to formalise this commitment. The Department has also recommended strengthening the conditions relating to the design guideline requirements for the tailings storage facility (described further below).

With these measures in place, the Department is satisfied that this issue can be appropriately managed, noting that Unity Mining would be required to meet the standard requirements as applied to all tailings storage facilities in NSW regulated by the DSC.

### Design standards and permeability

Several submissions questioned whether the tailings dam design met relevant contemporary guidelines, with many submissions concerned that the proposed design was inadequate and did not consider the requirements of the DSC or the Australian National Committee on Large Dams. Many submissions asserted that inadequate design and location of the facility could potentially lead to catastrophic failure.

The Department notes that the tailings storage facility is an approved component of the project and no changes to the facility are proposed under the modification. The Department notes that the existing conditions of approval require the tailings storage facility to be designed to meet the requirements of the *Environmental Guidelines – Management of Tailings Storage Facilities* (VIC DPI, 2004). The Department notes that these guidelines are relevant to the permeability of the tailings storage facility (rather than its capacity).

To further clarify the applicability of the relevant guidelines, the Department has recommended the following amendments to the conditions of approval requiring Unity Mining to ensure that:

- the permeability of the tailings storage facility is designed to meet the requirements of the *Environmental Guidelines – Management of Tailings Storage Facilities* (VIC DPI, 2004); and
- the tailings storage facility design conforms to the requirements of the following additional guidelines:
  - *Dams Safety Committee of New South Wales – DSC3A – Consequence Categories for Dams*; and
  - *Dams Safety Committee of New South Wales – DSC3F – Tailings Dams*.

The Department notes the existing conditions of approval require the tailings storage facility seepage collection pond and mine water settlement dam to be suitably lined with a permeability standard of  $< 1 \times 10^{-9}$  m/s.

The EPA recommended an additional requirement that the seepage barrier design should be supported by a 1,000 mm compacted clay liner, or an equivalent alternative permeability design. The Department agrees this provides greater clarity about how the required permeability standards should be achieved, and has recommended a modified condition of approval that reflects this requirement.

### Storage capacity

Some submissions, including that of Dr. Beck, questioned the tailings balance and design capacity of the tailings storage facility given the additional tailings that would be produced as a result of the additional ore.

Unity Mining has clarified that it is not seeking approval for additional tailings to be placed in the tailings storage facility. Rather, the additional tailings produced as a result of the processing of additional ore would be stored underground (and equivalent waste rock alternatively stored in the Eastern Waste Rock Emplacement) to maintain the same balance of tailings as per the approved project (i.e. storage of up to approximately 800,000 tonnes of tailings in the tailings storage facility, which has a design capacity of approximately 900,000 tonnes).

As noted in Section 1, filling of underground mining voids using a combination of paste fill and waste rock is approved under the existing project approval. Hence storing more tailings underground would not change the approved environmental impacts of the project or design requirements for the tailings storage facility. However, it would result in additional waste rock needing to be stored above-ground, hence the requirement for the additional (eastern) waste rock emplacement area.

Finally, in regards to storage capacity, the Department notes that Unity Mining would be required to maintain sufficient freeboard in the tailings storage facility at all times through careful mine design and planning in accordance with the guidelines specified in the modified conditions, which incorporate a range of detailed surveillance, monitoring and reporting requirements.



## 5.2 Surface Water

Potential surface water impacts and water management issues associated with the modification include:

- discharges during rain events from disturbed areas during construction and operational activity, causing increased sediment load and turbidity in waterways;
- demonstrated ability to store and manage water on the site (i.e. a comprehensive site water balance); and
- potential for contaminant discharge, including acid seepage, from the Eastern Waste Rock Emplacement Area.

Potential impacts from sediment discharges from the mine were a key concern raised in submissions, particularly by downstream landholders, the EPA and DPI Fisheries. As noted in Section 1, these concerns were largely due to the sediment release incidents that occurred during construction in 2013.

### Discharges from sediment basins and site water balance

Unity proposes to install a number of new sediment basins to capture run-off from construction and operation of the Eastern Waste Rock Emplacement and construction of the Spring Creek crossing and Eastern Waste Rock Emplacement access road. Additionally, there are existing sediment dams constructed for the mine infrastructure area and sediment dams required for the approved tailings storage facility, that have not yet been constructed.

A key concern raised by the EPA, DPI Fisheries and other submitters is the sizing and management of sediment basins to minimise sediment discharges to receiving waters and to ensure that water quality objectives are maintained or enhanced. In particular, the EPA advised that *“the EA should be considering the environmental values including water quality objectives of the receiving environment to determine the sizing of sediment basins and discharge performance criteria.”*

The sediment basin design proposed by Unity Mining is based on the document *“Managing Urban Stormwater: Soils and Construction”* (MUS), incorporating Volume 2E developed specifically for management of sediment from mines and quarries. As stated in this document, *“the purpose of the publication is to provide guidelines, principles and recommended minimum design standards for erosion and sediment control at mines and quarries.”*

The capacity and management of the sediment basins is based on capturing a specified volume of rainfall run-off. Once this volume is exceeded, “uncontrolled” discharges will occur to receiving waters. Unity Mining has designed its sediment dam capacity as guided by MUS, with a different design proposed for short term construction activity and longer term control of sediment run-off from the Eastern Waste Rock Emplacement during operations. This approach is consistent with the minimum design standard set in the MUS.

The EPA does not support the proposed sediment dam sizing and advised that significantly larger sediment dams would be required. The key reasons for proposing a higher standard than the minimum specified in MUS include the sensitivity of the downstream receiving environment, lack of detailed assessment on the frequency and volume of sediment discharges to receiving waters, and consequent impact on water quality objectives.

The Department agrees that the sensitivity of the receiving environment should be taken into account when designing sediment dams, and has developed conditions in consultation with the EPA to address this issue.

In particular, the Department has recommended that the Water Management Plan be revised and approved prior to constructing the Eastern Waste Rock Emplacement, tailings dam, waste rock haulage roads or the Spring Creek heavy vehicle crossing, including:

- an updated and comprehensive water balance be undertaken, including discharges and transfers from sediment basins; and
- a review of sediment dam sizing and management be undertaken, consistent with any discharge requirements of the EPA specified in its EPL, and an assessment of discharges against water quality objectives for the receiving waters.

The recommended conditions also require that all surface water discharges from the site comply with Section 120 (pollution of waters) of the *Protection of the Environment Operations Act 1997*, or with discharge limits (both volume and quality) set for the project in any EPL. Accordingly, the Department has recommended that the current limit for total suspended solids of 50 mg/L specified in the conditions be removed to provide an appropriate level of flexibility for regulators to vary these limits over time.

The EPA has reviewed the Department's recommended conditions and considers that together with the EPL, these instruments provide an appropriate framework for regulating any potential surface water impacts at the mine.

#### Auditing of sediment and erosion controls

DPI Fisheries also recommended regular periodic independent audits of the erosion and sediment controls with reporting to the EPA and DPI Fisheries.

The Department notes that the existing conditions of approval require independent environmental audits by a team of experts whose appointment has been endorsed by the Secretary, one year after operations commence and every three years thereafter. The Department also notes that Unity Mining would be required to submit an annual return to the EPA in accordance with its EPL.

Nonetheless, given the sensitivity of the receiving environment and previous incidents on the site, the Department agrees that more frequent audits are appropriate in this case, and has recommended an additional audit be undertaken within 3 months of construction re-commencing on the site, and then every two years thereafter, unless otherwise directed by the Department.

The condition has also been amended to require that a copy of these audits be provided to the EPA and DPI Fisheries, and that the audit team include a suitably qualified and experienced independent expert in surface water management who has been approved by the Department.

To further complement this independent audit process, the Department has also recommended that during construction activities, the revised Water Management Plan include an independent audit program undertaken by an appropriately experienced and qualified expert approved by the Department, with reporting of the audit outcomes to the Department, EPA and DPI.

DPI Fisheries further recommended that the detailed design of the proposed culvert for the Spring Creek crossing is reviewed by DPI Fisheries prior to construction. The Department supports this approach and has recommended that the Water Management Plan (including the detailed design of the proposed culvert) be prepared in consultation with DPI Fisheries.

#### Waste rock composition

The EPA raised concerns about the composition of waste rock to be placed in the Eastern Waste Rock Emplacement, particularly if the waste rock would potentially lead to acidic run-off.

The Department notes that the Land and Environment Court proceedings for the original project approval, following review of available information and experts affidavits, determined that waste rock from the mine is unlikely to be acid forming. The modification is therefore consistent with the approved operations in this respect.

The Department also notes that the existing conditions of approval require Unity Mining to implement a program to monitor potential acid rock drainage and seepage/leachate from the waste rock material and to develop a surface and ground water response plan where monitoring exceeds triggers. The approved Water Management Plan currently includes monitoring, triggers and response plan for acid rock drainage.

As discussed above, it is recommended that this plan be revised prior to recommencing construction activity at the site. This revision will need to include monitoring and management of the Eastern Waste Rock Emplacement.

Overall, the Department considers that the modification would not significantly increase the risk of acid run-off from the mine, relative to the approved operations, and that the existing conditions adequately cover this issue.

### Conclusion

In summary, the Department is of the view that considers that the water quality of the receiving environment can be appropriately mitigated and managed subject to amendments to the existing mine Water Management Plan and the recommended conditions of approval.

In addition to the changes described above, the Department recommends that the Water Management Plan also include:

- detailed design of the Spring Creek heavy vehicle crossing;
- consultation to be undertaken with the EPA and DPI Fisheries (in addition to the existing requirement to consult with DPI Water);
- measures to be implemented to minimise potable water use on site; and
- a requirement to use the latest local rainfall data in a revised site water balance for the mine.

### **5.3 Groundwater**

The modification activities have the potential to impact groundwater due to increased groundwater interception and water management requirements associated with the increased ore extraction and the extended mine life.

#### Groundwater quantity

The EA included a groundwater assessment by AGE, which drew on a previous groundwater assessment and groundwater modelling that included the proposed extension of mine life.

The groundwater model found that groundwater inflows to the underground mine would increase progressively up to 12 litres per second (L/s) as the decline reached its maximum depth associated with the proposed modification. This is an increase in maximum groundwater inflows of 2 L/s compared to the approved operations.

This equates to an increase of around 63 mega litres (ML) of water a year, and Unity Mining has committed to ensuring that all appropriate water licences are obtained from DPI Water under the *Water Act 1912* or the South Coast Groundwater Water Sharing Plan once this commences.

The groundwater assessment predicted that the zone of groundwater drawdown would slightly decrease when compared to the currently approved operations and as a result, the mine would no longer impact on any privately-owned bores. The drawdown decrease is due to:

- the groundwater model being based on a larger data set than previous models;
- re-calibration of the groundwater model with rainfall data and groundwater level response monitoring data collected since the original model was prepared; and
- adoption of slightly different hydraulic properties as a result of the recalibration.

The loss of baseflow in Majors Creek would increase progressively from zero to approximately 2.5 L/s at the end of mining operations (an increase on the predicted 2.1 L/s baseflow loss from approved operations). Unity Mining noted in the EA that the groundwater model included ore extraction from other workings than currently proposed and therefore is considered to be conservative. The rate of groundwater recovery post mining would be within 10 to 20 years post mining, slightly longer than the approved operations.

#### Groundwater quality

A number of submissions raised concerns about potential seepage from the tailings storage facility, including whether the proposed liner would be adequate to manage seepage.

As discussed in Section 5.1, the tailings storage facility is an approved component of the project that is not proposed to be modified. Further, the design would be required to be considered against contemporary guideline requirements in relation to permeability standards, including a requirement for an appropriate liner. In addition, the Department notes that the permeability of the underlying geology is very low. This would further reduce the risk of any migration of contaminants off-site.

Notwithstanding, the Department notes that Unity Mining has proposed to establish 6 additional shallow groundwater monitoring bores down-gradient of the tailings storage facility to monitor seepage, a proposal which is supported by DPI Water.

The Department has modified the conditions of approval to require the Groundwater Monitoring Program to be updated to include the details of these bores.

DPI Water further recommended that the groundwater model is revised as part of a revision to the Water Management Plan prior to commencement of operations, including all available measured groundwater and surface water data, in consultation with DPI Water.

The Department supports this recommendation, and notes that Unity Mining would be required to revise the Water Management Plan (including the groundwater model) as part of the recommended conditions.

The Department notes the project approval already contains a number of existing contingency measures to manage any potential groundwater impacts, including requirements for:

- a Tailings Storage Facility Seepage Collection Pond that is required to be suitably lined;
- a groundwater monitoring program that includes groundwater monitoring bores, groundwater quality triggers and response protocols; and
- a program for the ongoing verification of the groundwater model, which specifies that the groundwater model is reviewed within 12 months of intersecting groundwater within the mining operations and every two years after that.

With the implementation of the recommended conditions, the Department considers that the risk to groundwater resources in the vicinity of the mine is low and any residual impacts can be suitably managed.

#### **5.4 Rehabilitation and Final Landform**

Unity Mining has revised its final landform to account for the modification (see **Figure 4**). The revised final landform is generally consistent with the originally approved final landform. The approved final landform includes:

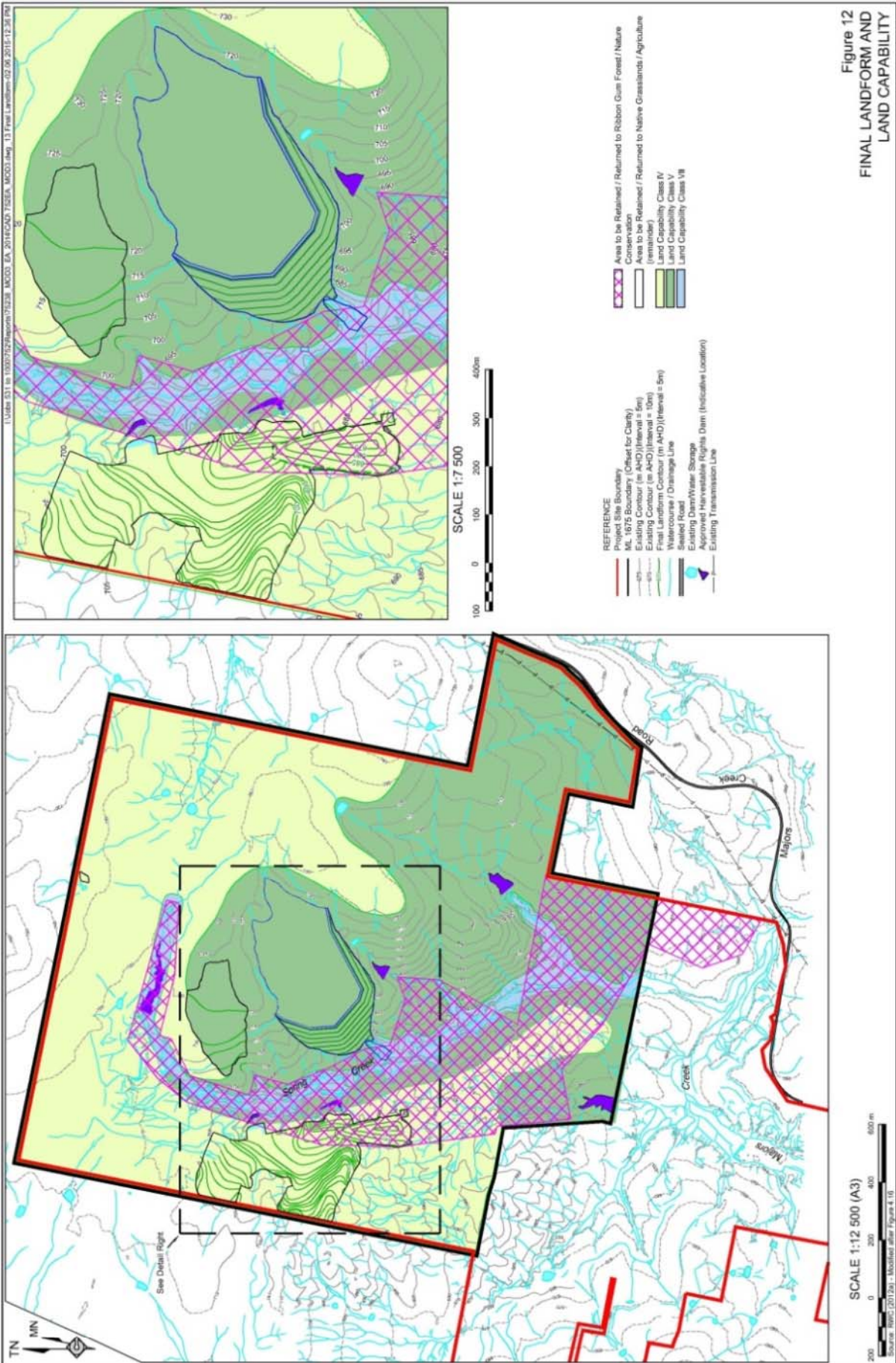
- backfilling and rehabilitating the box cut to original surface contours;
- shaping and capping the tailings storage facility to create a free draining landform with appropriate surface water management structures and embankment slopes of approximately 1:3 (V:H) or less; and
- removing all surface infrastructure and shaping, capping and re-vegetating disturbed areas.

The final landform also includes a large area to the west of the Spring Creek vegetation corridor that is required to be rehabilitated to EEC quality vegetation (indicated as a pink hashed area in **Figure 4**).

The final land use for the proposed modification would also be generally consistent with the approved land capability (i.e. Class IV and V land capability) to support grazing activities.

The final landform as modified would include rehabilitation of the Eastern Waste Rock Emplacement to form an appropriately shaped, covered and vegetated landform with slopes of less than 1:5 (V:H) with a final land use of managed agricultural operations.

The Spring Creek crossing is proposed to remain following completion of the mine to facilitate future agricultural activities, subject to the agreed decommissioning requirements at the time of Mining Lease relinquishment.





The EA indicated that once mining is completed, waste rock within the Eastern Waste Rock Emplacement Area would be used for rehabilitation purposes to backfill the box cut or assist in capping the approved tailings storage facility.

DRE queried the material mass balance of the Eastern Waste Rock Emplacement and the likelihood of the box cut being completely backfilled and rehabilitated to original surface contours.

In response to these concerns, Unity Mining reviewed the waste rock balance for the modification, and confirmed that the design of Eastern Waste Rock Emplacement was sufficient to accommodate all necessary waste rock, particularly as there was no longer a need to utilise significant volumes of waste rock to enlarge the tailings facility.

Overall, the Department considers that the proposed rehabilitation strategy is consistent with the existing conditions of approval, noting that the existing conditions require Unity Mining to rehabilitate the box cut to a landform that is consistent with the pre-mining landform.

The Department also notes that the conditions require Unity Mining to prepare a Rehabilitation Management Plan for the mine, in consultation with DRE, EPA and DPI Water. Unity Mining would also be required to lodge a substantial rehabilitation bond with DRE for the cost of rehabilitating the site under its Mining Lease issued under the *Mining Act 1992*. This bond is adjusted over time to reflect the extent of disturbance on the site.

## 5.5 Other Issues

The Department's assessment of other potential impacts is outlined in **Table 4** below.

**Table 4: Consideration of other issues**

| <b>Issue</b>       | <b>Consideration and Assessment</b>  | <b>Recommendation</b>            |
|--------------------|--|----------------------------------|
| <i>Air Quality</i> | <ul style="list-style-type: none"> <li>Existing conditions of approval require Unity Mining to:               <ul style="list-style-type: none"> <li>- comply with contemporary air quality criteria;</li> <li>- implement best practice air quality management on site; and</li> <li>- implement an Air Quality &amp; Greenhouse Gas Management Plan.</li> </ul> </li> <li>The construction of the Eastern Waste Rock Emplacement Area may result in a minor increase in dust emissions from the site, although other aspects of the modification would reduce dust emissions, including the proposed access road that would reduce haulage distances from the box cut to the tailings storage facility.</li> <li>The assessment concluded that overall there would be a minor increase in the total suspended particulate emissions from the site of up to 6.7%.</li> <li>However, the assessment also found that the project would continue to comfortably comply with all relevant air quality criteria at all residences surrounding the site.</li> </ul> | Comply with existing conditions. |
| <i>Noise</i>       | <ul style="list-style-type: none"> <li>Existing conditions of approval require Unity Mining to:               <ul style="list-style-type: none"> <li>- comply with relevant operational and traffic noise criteria;</li> <li>- comply with specified operating hours;</li> <li>- undertake additional noise mitigation measures where monitoring indicates an exceedance of the noise limits; and</li> <li>- implement a Noise Management Plan including noise monitoring program.</li> </ul> </li> <li>Day time noise levels associated with construction activities would increase at 4 privately-owned residences located south of the mine by between 1 and 2 dBA (i.e. properties 32, 33, 107 and 108).</li> <li>However, worst case noise levels generated by the project would remain 1 to 2 dBA below the applicable noise criteria of 35 dBA at all residences.</li> </ul>  | Comply with existing conditions. |

|                              |  |  |
|------------------------------|--|--|
| <i>Biodiversity</i>          | <ul style="list-style-type: none"> <li>Existing conditions of approval require Unity Mining to:               <ul style="list-style-type: none"> <li>implement a Biodiversity Management Plan;</li> <li>implement a biodiversity offset strategy;</li> <li>arrange for long-term security of the biodiversity offset area; and</li> <li>lodge a conservation bond.</li> </ul> </li> <li>Approximately 12.7 hectares (ha) of native vegetation (none of any conservation significance) would be disturbed, including 0.2 ha of Regenerating Wattles (Community 4) and 12.5 ha of Native-dominated pastures (Community 7).</li> <li>One threatened flora species, 9 threatened fauna species, 2 migratory species and 1 vegetation community as listed under the <i>Threatened Species Conservation Act 1995</i> (TSC Act) or <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) occur or could potentially occur within the site.</li> <li>The proposed modification is unlikely to significantly impact any threatened species due to the small area of disturbance of potential habitat (i.e. 0.2 ha of Regenerating Wattles).</li> <li>To compensate for the additional 12.7 ha of native vegetation clearing, the approved on-site Biodiversity Offset Area would be increased to include an additional 30 ha of native-dominated pasture.</li> <li>OEH considered that the offset package for the proposed modification was adequate.</li> <li>Unity Mining would be required to update its existing Biodiversity Management Plan in consultation with OEH to reflect the proposed modification.</li> </ul> | Update biodiversity offset condition to account for increased offset area.   |
| <i>Visual</i>                | <ul style="list-style-type: none"> <li>The only change to the project with the potential to increase visual impacts is the Eastern Waste Rock Emplacement.</li> <li>However, due to its location below surrounding ridgelines and within a small valley, it would be largely shielded from nearby residents, including from the nearby village of Majors Creek.</li> <li>Some elevated areas of land to the south and west of the site that have, depending on the density of obscuring vegetation, existing views of land within the project area may have views of the waste emplacement. However given the relative distance of the closest non-associated resident to the Eastern Waste Rock Emplacement (~2 km) and the existing visual setting (ie. it would be located within the existing approved project area), the EA visual assessment predicted that the additional visual impacts associated with the proposed modification would be negligible, if indeed, they can be viewed at all.</li> <li>Consequently, the Department considers there would be no material increase in visual impacts as a result of the proposed modification.</li> </ul>  | Comply with existing conditions.   |
| <i>Traffic and Transport</i> | <ul style="list-style-type: none"> <li>Existing conditions of approval require Unity Mining to:               <ul style="list-style-type: none"> <li>monitor transport movements;</li> <li>comply with transport operating hours;</li> <li>comply with transport operating conditions, including ensuring a bus is operated from Braidwood to offer mine workers transport to/from the site; and</li> <li>implement a Traffic Management Plan.</li> </ul> </li> <li>No changes to the traffic and transport arrangements for the mine are proposed.</li> </ul>   | Comply with existing conditions.   |
| <i>Aboriginal Heritage</i>   | <ul style="list-style-type: none"> <li>Existing conditions of approval require Unity Mining to prepare and implement an Aboriginal Heritage Management Plan in consultation with OEH and the registered Aboriginal parties (RAPs).</li> <li>In 2014, an updated search of the Aboriginal Heritage Information Management System was undertaken over the</li> </ul>   | <ul style="list-style-type: none"> <li>Comply with existing conditions.</li> <li>Update Aboriginal Heritage Management Plan</li> </ul> |

|                                  |  |  |
|----------------------------------|--|--|
|                                  | <p>modified project site (i.e. including the "Slings" property) with no new Aboriginal sites identified.</p> <ul style="list-style-type: none"> <li>• However, two additional sites would need to be salvaged prior to the construction of the tailings storage facility (GT OS1) and the access road and Spring Creek crossing (GT OS2).</li> <li>• These sites were identified during the original archaeological surveys of the project area. Both sites contain a low number of artefacts (3 and 2 respectively) with low archaeological significance.</li> <li>• Consultation with the RAPs was undertaken in 2012, and the RAPs did not express any objections to the proposed impacts to these sites, with the majority expressing a preference for the objects to be collected and reburied within the project site in a location that would not be impacted.</li> <li>• All sites are proposed to be managed under the existing Aboriginal Heritage Management Plan, which would be updated in consultation with OEH and the Aboriginal community following any approval of the modification application.</li> <li>• OEH has recommended that the updated management plan include the proposed salvage strategy for GT OS1 and GT OS2.</li> </ul> | to include a salvage strategy for GT OS1 and GT OS2 in consultation with OEH and the RAPs. |
| <i>Non-Aboriginal Heritage</i>   | <ul style="list-style-type: none"> <li>• The Non-Aboriginal Heritage Impact Assessment (ASR, 2010) prepared as part of the original EA did not identify any structures, relics or items of heritage significance.</li> <li>• The Department is therefore satisfied that the modification would not adversely impact any items of non-Aboriginal heritage significance.</li> </ul>  | No conditions required.  |
| <i>Soils and Land Capability</i> | <ul style="list-style-type: none"> <li>• The modification would result in 6 ha of additional land disturbance due to the construction of the Eastern Waste Rock Emplacement.</li> <li>• Unity Mining has committed to implementing the existing soil mitigation and management strategies for this additional disturbance. These include: <ul style="list-style-type: none"> <li>○ soil stripping to nominated depths and only stripping soils when moderately moist to preserve soil structure;</li> <li>○ separate stockpiling of subsoil and topsoil;</li> <li>○ topsoil stockpiles less than 2 m high; and</li> <li>○ rapid establishment of vegetative cover on soil stockpiles and rehabilitated areas.</li> </ul> </li> </ul>   | Comply with existing conditions.   |
| <i>Agriculture and Tourism</i>   | <ul style="list-style-type: none"> <li>• Concerns raised in submissions relating to potential agricultural impacts were attributed to the following: <ul style="list-style-type: none"> <li>○ concerns regarding potential water pollution downstream and effects on agriculture; and</li> <li>○ concerns regarding actual damage or reputational damage to the agricultural industry including those marketing produce as organic.</li> </ul> </li> <li>• The Department notes that as discussed in Section 5.1, the modification is not anticipated to result in any adverse impacts to downstream water quality that could impact on tourism or agricultural operations.</li> <li>• The mine is an approved operation and no changes are proposed that would result in changes impacts to tourism operations in the area.</li> <li>• The Department also notes that the final land use would be consistent with the current land use, namely agriculture (principally grazing).</li> </ul>  | No conditions required.  |
| <i>Bushfire</i>                  | <ul style="list-style-type: none"> <li>• The existing conditions of approval require Unity Mining to manage bushfire risks and implement a Bushfire Management Plan.</li> <li>• The modification would not result in additional infrastructure being constructed or operated in vegetated areas.</li> </ul>  | Comply with existing conditions.   |

## 7 RECOMMENDED CONDITIONS

If the Planning Assessment Commission determines to approve the modification, the Department has drafted a Notice of Modification (see **Appendix A**) and consolidated approval (see **Appendix B**) that it considers would provide a suitable framework for managing the environmental impacts of the project.

The modified conditions would allow Unity Mining to extract additional resource over an additional 7 years, construct and operate the Eastern Waste Rock Emplacement, and construct and operate a dedicated site access road from the box cut to the tailings storage facility and waste rock emplacement area. The conditions also facilitate the amendment of the approved project boundary to incorporate the recently acquired “Slings” property.

The Department notes that the current project approval already includes the requirements that were imposed by the NSW Land and Environment Court as part of the original project approval to manage the environmental impacts of the project. These include requirements relating to:

- production limits and strict operating conditions;
- environmental performance conditions and impact assessment criteria limits relating to noise, blasting, air quality, soil and water, biodiversity, heritage, transport, visual, waste, bushfire management and rehabilitation;
- environmental management plans including requirements to prepare and implement a Noise Management Plan, Blast Management Plan, Air Quality and Greenhouse Gas Management Plan, Water Management Plan, Biodiversity Management Plan, Aboriginal Heritage Management Plan, Traffic Management Plan, Waste Management Plan, Bushfire Management Plan and Rehabilitation Management Plan, in consultation with the relevant government agencies;
- notification procedures for surrounding landholders; and
- environmental management, reporting and auditing requirements, including annual reporting requirements (Annual Review), operation of a CCC, incident reporting, public reporting of environmental information and independent environmental auditing.

The changes to the conditions recommended by the Department are focused on updating and strengthening the existing approval conditions. In this regard, the Department has recommended new and/or amended conditions requiring Unity Mining to:

- ensure the tailings storage facility design conforms to the applicable contemporary guidelines and uses the latest rainfall data from both the Majors Creek and Braidwood weather stations as required to meet the requirements of the DSC;
- update the site water balance using the latest rainfall data and to include details of the applicable design criteria for all water storage infrastructure to meet the requirements of the EPA;
- establish additional groundwater monitoring bores down-gradient of the tailings storage facility to monitor seepage;
- update the Water Management Plan (including Erosion and Sediment Control Plan, site water balance and groundwater model) to reflect the changes in the site water management rules and include the Spring Creek heavy vehicle crossing design, to meet EPA and DPI requirements; and
- substantially increase the frequency of independent audits to ensure ongoing compliance with the project approval.

The Department notes that the EPA has advised the Department that it is satisfied with the recommended conditions.

## 8 CONCLUSION

The Department has assessed the modification application in accordance with the relevant requirements of the EP&A Act.

The assessment found that the modification would result in some additional water, heritage and biodiversity impacts. However, the Department considers that these additional impacts could be appropriately managed through implementation of the recommended conditions.

The recommended conditions require Unity Mining to comply with a range of strict environmental management, monitoring and reporting conditions, including the preparation of a detailed Water Management Plan in consultation with the EPA, and designing the tailings storage facility in accordance with the DSC requirements for a "prescribed dam" under the *Dams Safety Act 1978*.

The conditions also include obligations for public reporting of environmental monitoring results, regular independent environmental audits, and responding to any complaints from the local community.

As is the case for all mining projects in NSW, the Department and EPA would continue to have a compliance role in monitoring the ongoing environmental performance of the mine and enforcing the conditions of approval.

Should the modification be approved, it would allow Unity Mining to proceed with the next phase of development and realise the economic benefits of the project. These benefits include the creation of up to 100 jobs during construction and 80 jobs during operations, and more than \$40 million in capital investment.

## 9 RECOMMENDATION

It is **RECOMMENDED** that the Planning Assessment Commission, as delegate of the Minister:

- **considers** the findings and recommendations of this report;
- **determines** the application under Section 75W; and
- **signs** the attached Notice of Modification to the project approval (see **Appendix A**), if the Commission determines to approve the modification.



22/6/16

Steve O'Donoghue  
Team Leader  
Resource Assessments



22/6/16.

Mike Young  
Director  
Resource Assessments



## **APPENDIX A: NOTICE OF MODIFICATION**

## **APPENDIX B: PROJECT APPROVAL AS PROPOSED TO BE MODIFIED**

## **APPENDIX C: ENVIRONMENTAL ASSESSMENT**

See Department's website

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=7162](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7162)

## **APPENDIX D: SUBMISSIONS**

See Department's website

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=7162](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7162)

## **APPENDIX E: RESPONSE TO SUBMISSIONS**

See Department's website

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=7162](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7162)



## **APPENDIX F: DAMS SAFETY COMMITTEE – TAILINGS DAMS**