



Briefing Paper

for the

Hera Mine Modification 5 PA 10_0191

Prepared by:



R.W. CORKERY & CO. PTY. LIMITED

August 2018

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Briefing Paper

for the

Hera Mine Modification 5 PA 10_0191

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August 2018



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CONTENTS

	Page
LIST OF ACRONYMS.....	V
1. INTRODUCTION.....	7
1.1 SCOPE.....	7
1.2 THE PROPONENT	7
1.3 BACKGROUND TO THE PROPOSED MODIFICATION	9
1.3.1 Approved Activities.....	9
1.3.2 Overview of the Proposed Modification	10
1.4 THE PROJECT SITE AND LAND ZONING.....	10
1.5 PLANNING ISSUES AND APPROVALS REQUIRED.....	10
1.5.1 Planning Issues.....	10
1.5.2 Approvals Required.....	13
2. DESCRIPTION OF PROPOSED MODIFICATION.....	13
2.1 INTRODUCTION	13
2.2 OBJECTIVES.....	14
2.3 PROPOSED INCREASED TRANSPORT OF CONCENTRATE.....	14
2.4 PROPOSED TAILINGS STORAGE FACILITY DECANT POND	14
2.5 EMPLOYMENT, CAPITAL COST AND ECONOMIC CONTRIBUTION.....	15
2.5.1 Employment	15
2.5.2 Economic Contributions	17
2.5.3 Capital Cost.....	17
2.6 REHABILITATION	17
2.6.1 Introduction	17
2.6.2 Final Landform and Land Uses.....	17
2.6.3 Rehabilitation Procedures.....	18
3. ENVIRONMENTAL SETTINGS, CONSTRAINTS AND PROPOSED ASSESSMENT	19
3.1 INTRODUCTION	19
3.2 ECOLOGY	19
3.2.1 Existing Environment	19
3.2.2 Potential Constraints and Proposed Assessment.....	19
3.3 SURFACE WATER.....	20
3.3.1 Existing Environment	20
3.3.2 Potential Constraints and Proposed Assessment.....	20
3.4 NOISE.....	20
3.4.1 Existing Environment	20
3.4.2 Potential Constraints and Proposed Assessment.....	20
3.5 AIR QUALITY AND GREENHOUSE GAS.....	21
3.5.1 Existing Environment	21
3.5.2 Potential Constraints and Proposed Assessment.....	21

CONTENTS

	Page
3.6 SOILS AND LAND CAPABILITY.....	21
3.6.1 Existing Environment.....	21
3.6.2 Potential Constraints and Proposed Assessment.....	21
3.7 VISUAL AMENITY	22
3.7.1 Existing Environment.....	22
3.7.2 Potential Constraints and Proposed Assessment.....	22
3.8 BUSHFIRE HAZARD	22
3.8.1 Existing Environment.....	22
3.8.2 Potential Constraints and Proposed Assessment.....	22
3.9 WASTE MANAGEMENT.....	22
3.10 SOCIO-ECONOMIC CLIMATE	23
3.10.1 Existing Environment.....	23
3.10.2 Potential Constraints and Proposed Assessment.....	23
4. REFERENCES.....	24

FIGURES

Figure 1	Locality Plan.....	8
Figure 2	Mine Site Layout	11
Figure 3	Vegetation Communities	16

LIST OF ACRONYMS

AHD	Australian Height Datum
DSA	Dam Safety Allowance
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
LEP	Local Environment Plan
ML	Mining Lease
MOD1	Modification 1
MOD2	Modification 2
Mt	million tonnes
PA	Project Approval
ROM	Run-of-Mine
RWC	R.W. Corkery & Co Pty Limited
SEEC	Strategic Environmental and Engineering Consulting Pty Ltd
tpa	tonnes per annum
WAL	Water Access Licences
WRE	Waste Rock Emplacement
YTC	YTC Resources Limited



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1. INTRODUCTION

1.1 SCOPE

Hera Resources Pty Limited (the Proponent) proposes to seek approval for a Proposed Modification of PA 10_0191 for the Hera Mine (the Mine), located approximately 100km southeast of Cobar in Western NSW (**Figure 1**).

This *Background Paper* has been prepared by R.W. Corkery & Co. Pty. Limited (RWC) on behalf of the Proponent to provide background information to the Proposed Modification to enable relevant government agencies to provide requirements for the *Statement of Environmental Effects*.

Detailed information regarding the approved Mine is presented in the following documents prepared to support the original application for Project Approval and subsequent applications for modifications of that approval.

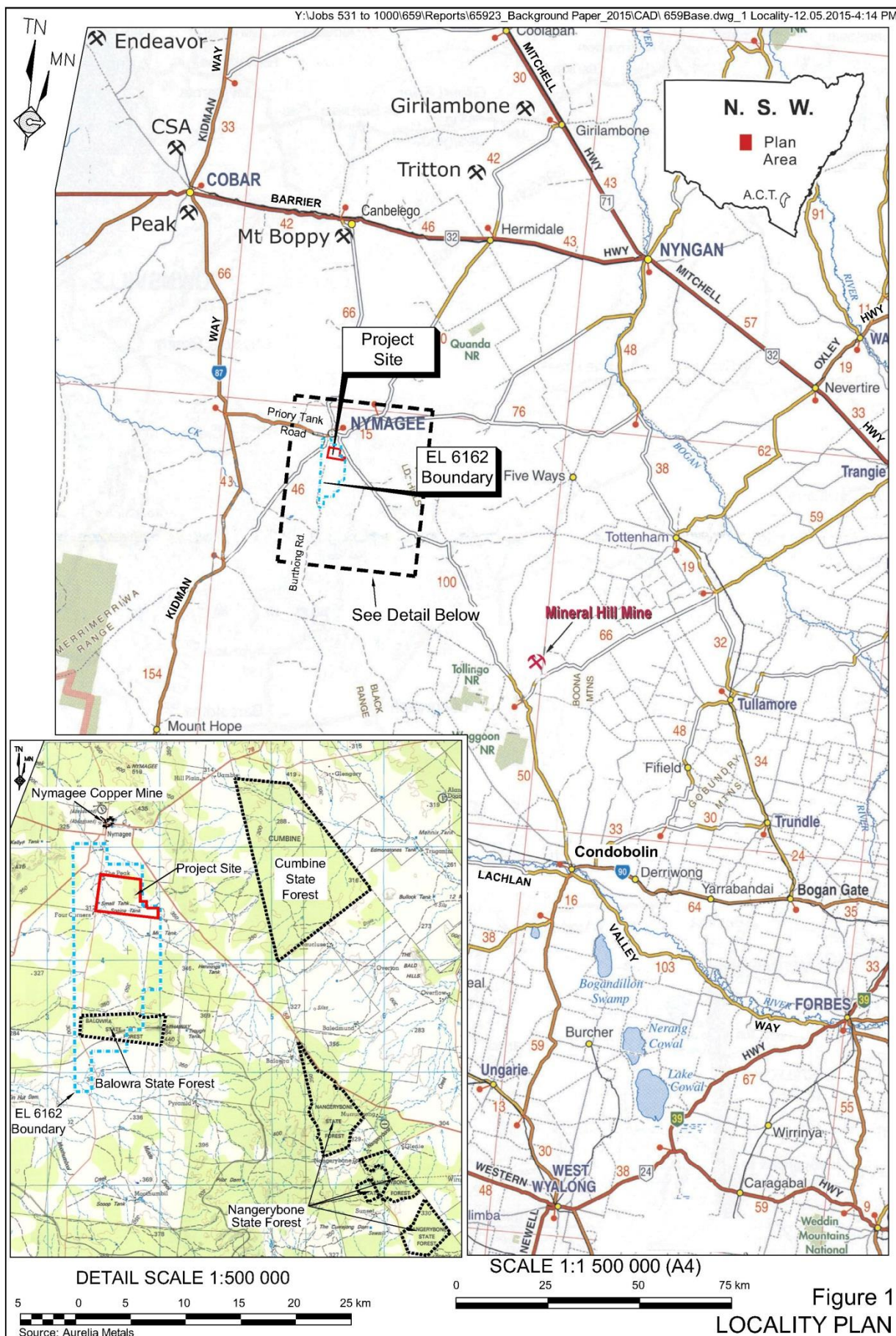
- *Hera Project, via Nymagee, Environmental Assessment* dated November 2011 (RWC, 2011a).
- *Hera Project, via Nymagee, Specialist Consultant Studies Compendium* dated November 2011 (RWC, 2011b).
- *Hera Mine Section 75W Modification 1* request dated May 2013 (YTC, 2013).
- *Hera Mine Section 75W Modification 2 Environmental Assessment* dated May 2014 (YTC, 2014).
- *Hera Mine Section 75W Modification 3 Environmental Assessment* dated August 2015 (RWC, 2015).
- *Hera Mine Section 75W Modification 4 Environmental Assessment* dated April 2016 (Hera Resources Pty Limited, 2016).

1.2 THE PROPONENT

The Proponent, Hera Resources Pty Limited is a wholly owned subsidiary of Aurelia Metals Limited (Aurelia). Aurelia is an Australian Securities Exchange listed exploration and mining company based in Orange, NSW. The company is managed by a highly experienced board with a combined industry experience of more than 170 years. The Board is supported by a small, technically-focused management team based in Orange and on-site. In addition to operating the Hera Mine, Aurelia has also recently purchased Peak Gold Mines Pty Ltd, the operator of the Peak Gold Mine. The Company is also active in the exploration for copper, gold and base metals on a number of tenements within NSW.

Aurelia was previously known as YTC Resources Limited until June 2014, when it changed its name to Aurelia Metals Limited.





1.3 BACKGROUND TO THE PROPOSED MODIFICATION

The Hera deposit is a high grade gold and base metal deposit. The Proponent currently operates the Mine within “The Peak” property (Lot 664, DP761702), using underground mining techniques and flotation and carbon-in-leach processing methodologies to produce a base metal concentrate and gold dorè (unrefined gold bar). The Mine is currently approved to operate until the end of 2022.

Modification 10_0191 MOD1 was approved in July 2013. This modification approved the extension of power lines from the surface ventilation fan infrastructure location to a new Mine Camp site (approved under a separate development consent granted by Cobar Shire Council).

Modification 10_0191 MOD2 was approved in November 2014. This modification amended the approved haulage route for the Mine to permit transportation via the Hermidale-Nymagee Road.

Modification 10_0191 MOD3 was approved in February 2016. This modification increased the approved annual production of the Mine to 505 000t, increased the total amount of ore approved to be processed to 3.2Mt, extended the approved life of the Mine to 31 December 2022, and approved expansion of the ROM Pad, construction of an additional waste rock emplacement and hardstand area, and extension of the carpark.

Modification 10_0191 MOD4 was approved in September 2016. This modification approved the extension of the Project Site to the north, the establishment of a Northern Access decline and mining area, and the establishment of a Northern Fresh Air intake rise.

1.3.1 Approved Activities

The layout of approved activities is presented in **Figure 2**. Approved activities under PA 10_0191 include the following.

- Mining and processing of up to 505 000 tonnes per annum (tpa) of metalliferous ore to produce approximately 50 000tpa of bulk lead-zinc concentrate and gold dorè.
- Processing of a maximum 3.2 million tonnes (Mt) of ore within the Project Site over the life of the Project.
- Placement of waste rock into an approved Waste Rock Emplacement (WRE) and tailings into an approved Tailings Storage Facility.
- Ancillary activities, including management of surface water, generation of electricity etc.

Construction and use of the Mine Camp have been approved under a Development Consent 2012/LD-00004 issued by Cobar Shire Council on 14 March 2012.

The Proponent holds the following leases, licences and other approvals for the Mine.

- Mining Lease (ML) 1686.
- ML1746



- Environment Protection Licence (EPL) 20179.
- Water Access Licences (WAL) 28773 and 30298.

1.3.2 Overview of the Proposed Modification

The Proposed Modification would include:

- increasing the rate of transportation of concentrate from Hera Mine to the Hermidale rail siding from 50 000t per calendar year to 60 000t per calendar year, requiring a modification of Condition 6(c) of Schedule 2 of PA 10_0191; and
- installation of an external Tailings Storage Facility decant pond; and
- receipt water from dewatering of the Nymagee Copper Mine for use in processing operations at the Hera Mine or evaporation within the proposed decant pond.

1.4 THE PROJECT SITE AND LAND ZONING

For the purposes of this document, the application area for the Proposed Modification is referred to as the ‘Project Site’. The Project Site is located across two properties.

- The Project Area at surface is located wholly within “The Peak” property (Lot 664, DP761702), which is held by the Proponent under Western Lands Lease No. WLL2455, granted under the *Western Lands Act 1901* and managed by the Crown Lands Division of the NSW Department of Primary Industries. The eastern section of WLL2455 is the subject of Travelling Stock Reserve TSR8792.
- A portion of the underground workings of the Mine is located beneath Lot 1730, DP763521, which is part of Western Lands Lease No. WLL3577 “The Woolshed Paddock”. WLL3577 is held by Jannene Bronwyn Dunne, and is also granted under the *Western Lands Act 1901* and managed by the Crown Lands Division of the NSW Department of Primary Industries.

The Project Site is classified Zone RU1 – Primary Production under the Cobar Local Environment Plan 2012 (Cobar LEP). Mining is permissible with consent within that zone.

1.5 PLANNING ISSUES AND APPROVALS REQUIRED

1.5.1 Planning Issues

The following Planning Instruments are relevant to the Proposed Modification. Each of the following will be addressed in detail in the *Statement of Environmental Effects* to be prepared to support the application.

- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.
- *Cobar Local Environment Plan 2012*.

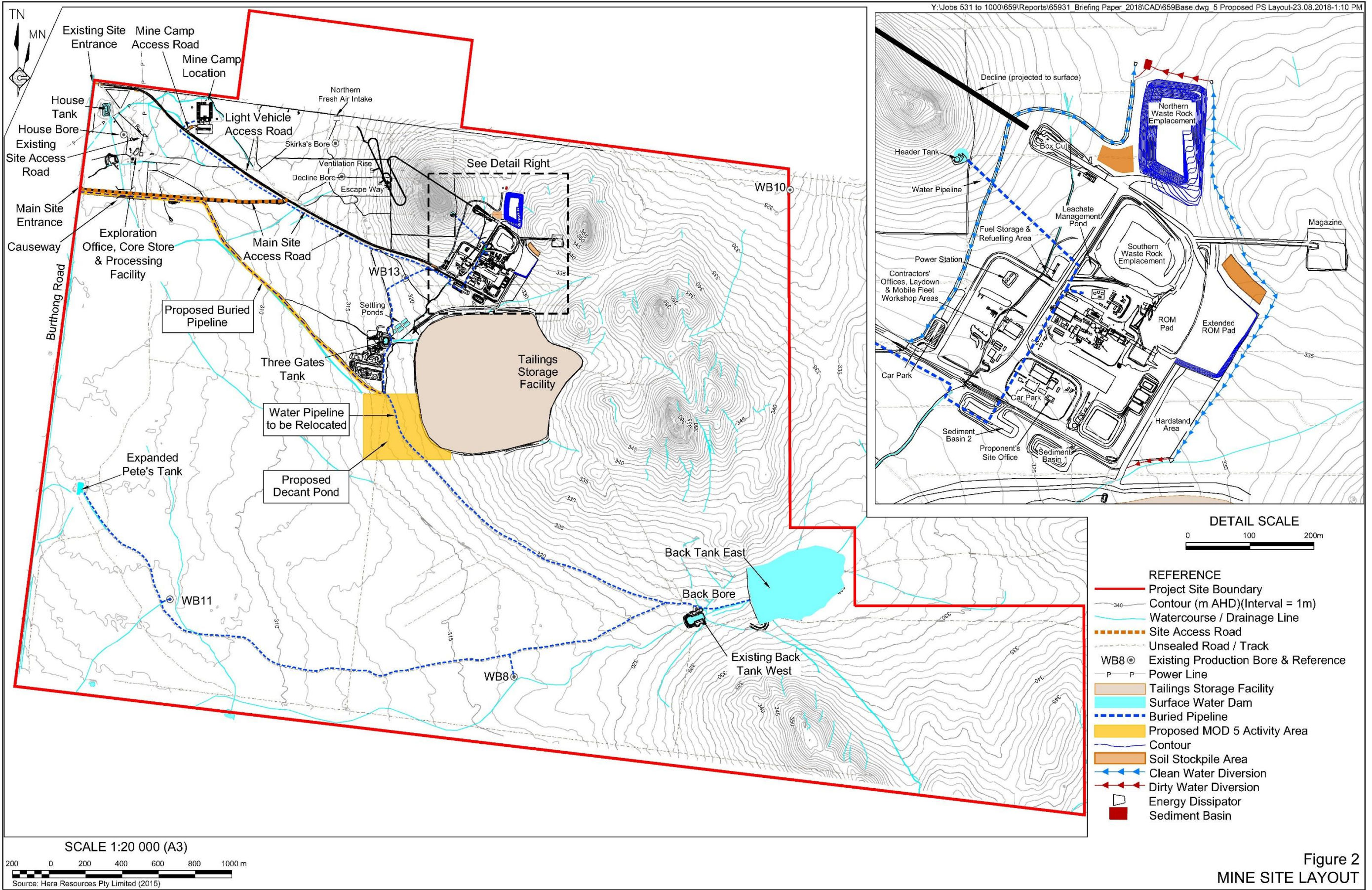


Figure 2
MINE SITE LAYOUT

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1.5.2 Approvals Required

In order to undertake the Proposed Modification, the Proponent requires a modification to PA 10_0191 under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979*, as the Proponent contends that the proposed development to which the consent as modified would relate is substantially the same development as the development for which the consent was originally granted.

The following modifications to PA 10_0191 would be required.

- Amendment of Condition 6(c), Schedule 2 to increase the amount of concentrate approved to be transported from the site in a calendar year from 50,000t to 60 000t.
- Removal of Condition 15 of Schedule 2 and Condition 35C of Schedule 3. These conditions are no longer relevant, as the unsealed sections of Nymagee-Hermidale Road they refer to have now been sealed.
- Amendment of Condition 37A of Schedule 3 consistent with the proposed amendment provided by the Department of Planning and Environment in February 2017.
- Replacement of Condition 7 of Schedule 5 with the following alternate form of words consistent with other recently granted mining-related development consents.

“The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of the incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.”

In addition, the following modifications to existing approvals would be required.

- The approved Biodiversity Offset Strategy would require modification to account for the additional area of disturbance.
- An additional licenced discharge point will be required for a proposed emergency spillway that would be installed on the Tailings Storage Facility with flows reporting to the proposed external decant pond.

No other modification to approvals, licences or permits held by the Proponent for the Mine will be required.

2. DESCRIPTION OF PROPOSED MODIFICATION

2.1 INTRODUCTION

This subsection provides an overview of the Proposed Modification in sufficient detail to enable the reader to understand the type and scale of the activities proposed. A more detailed description will be included in the *Statement of Environmental Effects* to be prepared to accompany the application to modify PA 10_0191.

2.2 OBJECTIVES

The Proponent's objectives in developing the Mine as a whole are identified in Section 2.1 of RWC (2011a). The Proponent's objectives for the Proposed Modification of PA 10_0191 are to:

- facilitate performance improvements in concentrate production in the Process Plant by increasing the ability to haul concentrate;
- ensure optimal efficiency of the current Tailings Storage Facility disturbance footprint by creating additional solution storage facilities and thus increasing the potential tailings storage; and
- enable access to the reserves at the Nymagee Copper Mine by providing facilities to dewatering the mine and to potentially provide a beneficial use for the produced water.

2.3 PROPOSED INCREASED TRANSPORT OF CONCENTRATE

Condition 6(c) of Schedule 2 states

"The Proponent shall not: ...

(c) transport more than 50,000 tonnes of concentrate from the site in a calendar year".

Due to increased efficiencies onsite, this limit will become restrictive on current operations within the next two years. Therefore, the Proponent is seeking to adjust this condition to allow for transport of up to 60 000t per calendar year.

The Proponent is not seeking to adjust the following conditions.

- Condition 7 of Schedule 2 – transportation of concentrate would continue to be between 7am to 10pm, 7 days per week.
- A modification of Condition 37A of Schedule 3 is sought to ensure consistency with the Secretary's previous advice approving eight heavy vehicle movements (entering and leaving the site) per day, averaged over a calendar month.
- *"The Proponent shall restrict the transport of concentrate to the Hermidale rail siding via the Nymagee-Hermidale Road during daylight hours and limit vehicle movements (entering and leaving the site) to 8 per day, averaged over a calendar month, unless otherwise agreed by the Secretary".* The approved and alternate (wet weather) transport route would also remain unchanged.

2.4 PROPOSED TAILINGS STORAGE FACILITY DECANT POND

Additional storage capacity for contaminate water required at the Hera Mine for the following reasons.

- The Proponent intends to begin de-watering its Nymagee Mine which contains approximately 265ML ± 30ML of water. This water would be pumped to the Hera Mine Site under separate approval and stored within the proposed decant pond. That water would primarily be used for processing-related purposes and

would displace water that would otherwise be extracted from the existing bore field. However, based on current water demands, the volume of water required to be pumped to the Hera Mine Site would exceed the volume required for processing operations and the majority would be permitted to be evaporated from the decant pond.

- Additional storage capacity is required to accommodate the Dam Safety Allowance (DSA) requirement that the Tailings Storage Facility must be able to contain a 1 in 10 000 year, 72 hour Average Recurrence Interval storm event, which would result in approximately 118,000m³ of water to overflow into the proposed decant pond.
- The Hera Mine has previously produced high volumes of water. Therefore, the Proponent requires emergency storage should excessive water be produced again in the future without the requirement to store that water within the Tailings Storage Facility.

As a result, the Proponent proposes to construct an external decant and evaporation pond of sufficient size to accommodate dewatering and evaporation of the Nymagee Mine while maintaining the storage capacity required of the DSA and providing emergency storage for the Hera Mine. The final size of the pond will be specified in the *Statement of Environmental Effects*. The proposed pond would be situated adjacent to the current Tailings Storage Facility to reduce disturbance (**Figure 3**). An emergency spillway would also be installed on the Tailings Storage Facility with flows reporting to the pond;

The external decant pond may be used to store water from:

- the Process Plant;
- the underground decline; and/or
- other contaminated sources including dewatering of the Nymagee Copper Mine.

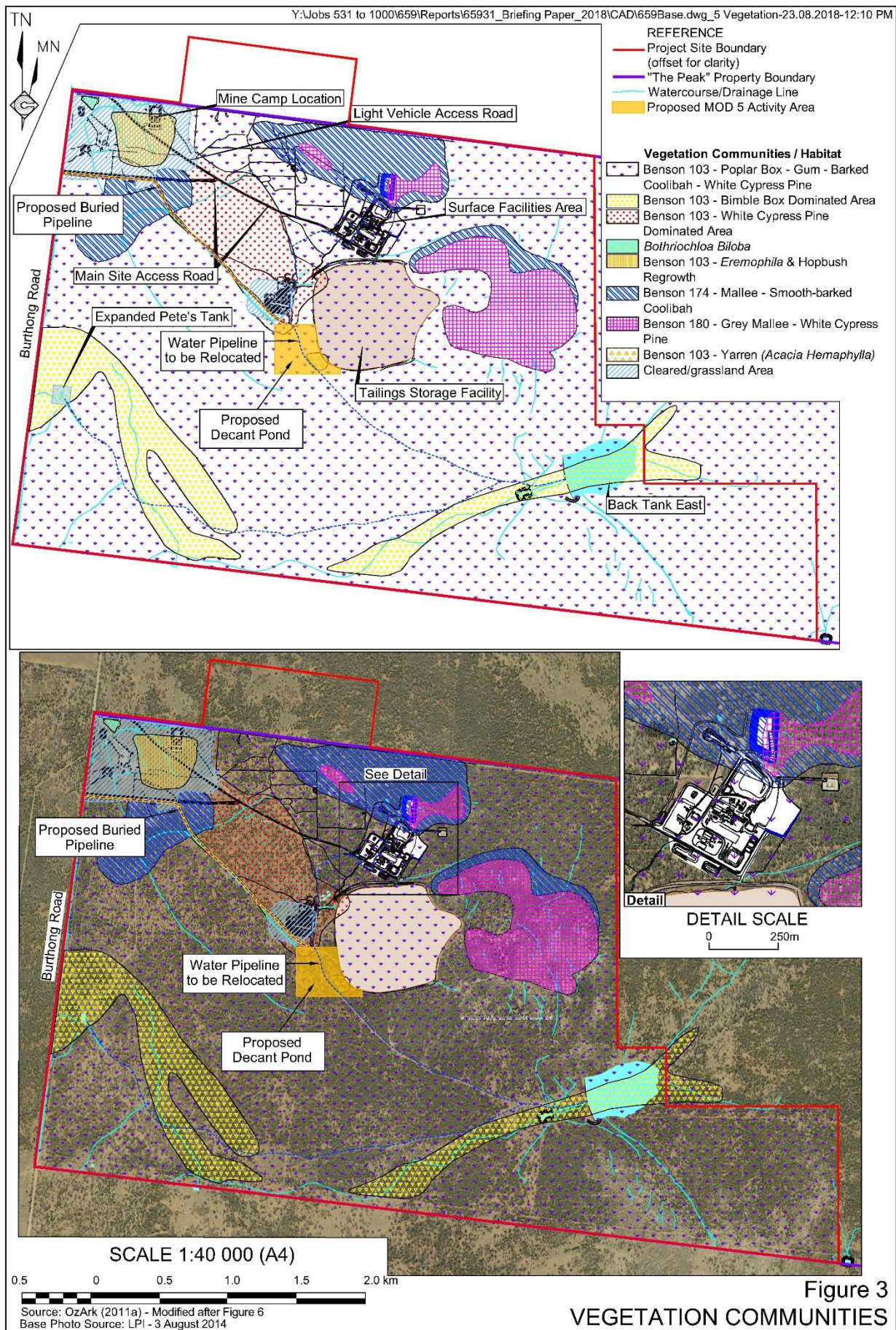
The Proponent would also construct a pipeline from Burthong Road to the proposed Decant Pond to facilitate transfer of water from the Nymagee Copper Mine. An existing pipeline between Nymagee Copper Mine and Hera Mine is in place and operational and would be utilised for pumping operations.

2.5 EMPLOYMENT, CAPITAL COST AND ECONOMIC CONTRIBUTION

2.5.1 Employment

The Mine currently employs approximately:

- 59 full-time employees of the Proponent;
- 60 full-time contract personnel undertaking underground mining, concentrate haulage, plant maintenance and support; and
- varying numbers of short-term contract personnel engaged to assist with specific projects.



In addition, a range of non-site based personnel service the Mine, including transport operators, local and regional engineering and maintenance firms and other suppliers.

The Proposed Modification would result in additional direct employment for approximately 12 months for the design and construction of the decant pond. It would also allow for the developing of reserves not currently located within the Project Site boundary, thereby extending the period over which the Proponent is able to operate the Mine and provide that employment.

The Proposed Modification would also permit storage of additional tailings within the Tailings Storage Facility, thereby permitting a future application to increase the maximum volume of material that may be extracted from the Mine.

2.5.2 Economic Contributions

The Proposed Modification would be unlikely to materially change the economic contributions made by the Hera Mine, with the exception of the additional contributions that would arise during the construction period. However, the Proposed Modification would facilitate the more efficient operation of the Tailings Storage Facility and the future potential development of the Nymagee Copper Mine.

2.5.3 Capital Cost

The anticipated capital cost of the Proposed Modification is summarised in **Table 4**.

Table 1
Anticipated Capital Cost

Component	Anticipated Cost
Conceptual Design Study and preliminary Geotechnical Assessment	\$30 000
Design and Construction Report	\$100 000
Construction and earthworks	\$1.5 million
Total	\$1.63 million

2.6 REHABILITATION

2.6.1 Introduction

This subsection provides an outline of the planned long term uses of the rehabilitated landform and proposed rehabilitation procedures as they apply to the additional areas of proposed disturbance.

2.6.2 Final Landform and Land Uses

To reduce the potential disturbance, the external decant pond is proposed to be constructed adjacent to the current Tailings Storage Facility disturbance footprint (pending the results of the Design Concept Study and preliminary geotechnical assessment). This would minimise further

disturbance as much as possible. As a result, the proposed rehabilitation, final landform and decommissioning activities would be broadly as described in the *Hera Mine Mining Operations Plan* (RWC, 2017). RWC (2017) was approved as the Rehabilitation Management Plan by the Executive Director Mineral Resources on 29 January 2018.

Specifically, water within the proposed Decant Pond would be allowed to evaporate, the pond would be reprofiled to form a free draining landform, previously stockpiled subsoil and topsoil would be respread and the landform would be revegetated.

Final land use would be as described in RWC (2017), namely a combination of agriculture and native vegetation conservation.

2.6.3 Rehabilitation Procedures

The rehabilitation procedures are presented in RWC (2017) and would be implemented within the proposed additional area of disturbance.

3. ENVIRONMENTAL SETTINGS, CONSTRAINTS AND PROPOSED ASSESSMENT

3.1 INTRODUCTION

The environmental setting of the Project Site is presented in Section 4 of RWC (2011a) and, for the sake of brevity, is not repeated here.

The following environmental aspects were previously assessed in RWC (2011b) and would not be impacted by the Proposed Modification. These constraints are not discussed further in this document.

- Groundwater - excavation of the proposed Decant Pond would not intersect the water table.
- Aboriginal heritage - no sites or objects of Aboriginal heritage significance were identified during surveys undertaken within the Project Site during preparation of RWC (2011b).
- Cultural heritage - no sites or objects of cultural heritage significance were identified during surveys undertaken within the Project Site during preparation of RWC (2011b).

3.2 ECOLOGY

3.2.1 Existing Environment

OzArk Environmental & Heritage Management Pty Ltd (OzArk) undertook an ecological assessment of the Project Site during preparation of RWC (2011b). That assessment indicates that the following vegetation communities would be disturbed by the Proposed Modification (**Figure 3**).

- Benson 103 – Yarren (*Acacia Hemaphylla*)
- Benson 103 – Poplar Box – Gum – Barked Coolibah – White Cypress Pine

3.2.2 Potential Constraints and Proposed Assessment

OzArk will undertake a review of offset requirements as part of the ecological assessment, in consultation with Office of Environment and Heritage, and appropriate management and mitigation measures will be presented in the *Statement of Environmental Effect*

3.3 SURFACE WATER

3.3.1 Existing Environment

A surface water assessment was conducted by Strategic Environmental and Engineering Consulting Pty Ltd (SEEC) in September 2011, as presented in Part 1 of RWC (2011b). The assessment identified that there was a low probability that the Mine would negatively impact surface water with the implementation of best-practice water management techniques to manage erosion, sediment and chemical pollutants. These techniques are described in the Mine's *Erosion and Sediment Control Plan* (ESCP), which was updated by SEEC to support the application for MOD3. Potential Constraints and Proposed Assessment

3.3.2 Potential Constraints and Proposed Assessment

The Proposed Modification would result in increased area of disturbance requiring management of erosion and sedimentation during construction. The Proponent would apply the principles and techniques contained in the ESCP to ensure that surface water impacts are appropriately mitigated during construction of the proposed decant pond.

3.4 NOISE

3.4.1 Existing Environment

A noise and vibration assessment was conducted by Spectrum Acoustics Pty Ltd (Spectrum) in September 2011 (Part 4 of RWC, 2011b). The assessment identified that the Mine would be able to operate within applicable noise and vibration criteria with noise mitigation measures.

A *Noise Management Plan* was prepared in 2012, as presented in *Environmental Management Plan Noise Management* (YTC, 2012a). The *Statement of Environmental Effects* will include a description of the current environmental performance of the Mine.

3.4.2 Potential Constraints and Proposed Assessment

The construction of the proposed Decant Pond would temporarily introduce additional noise sources within the Mine. While the Proponent anticipates that these would result in a negligible increase in noise emissions, to reduce any potential impacts on the surrounding community, works will be restricted to day light hours.

The proposed Decant Pond would not result in additional noise emissions during operation.

As the proposed increase in the amount of concentrate to be transported from the Mine would be achieved without increasing the approved maximum number of vehicle movements per day or the approved hours of transportation, and without changes to the approved transport route, the Proposed Modification would not result in transport-related noise impacts above currently approved levels.

3.5 AIR QUALITY AND GREENHOUSE GAS

3.5.1 Existing Environment

An air quality and greenhouse gas assessment was conducted by Environ Australia Pty Ltd (Environ) in September 2011 (Part 6 of RWC, 2011b). The assessment identified that an adverse, dust-related cumulative impact upon the environment surrounding the Mine was unlikely, and that the greenhouse gas emissions associated with the Mine would be negligible.

An *Air Quality and Greenhouse Gas Environmental Management Plan* was prepared in 2012 (YTC, 2012b). The Company implemented a real-time meteorological monitoring program in accordance with the recommendations of OEH's *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC, 2007)*. The *Statement of Environmental Effects* will include a description of the current environmental performance of the Project.

3.5.2 Potential Constraints and Proposed Assessment

Construction of the proposed Decant Pond would result in additional emissions of particulate matter. However, given the existing performance of the Mine, the management measures that would be implemented and the distance from the Mine to the closest receiver, air quality impacts are expected to be negligible.

The proposed Decant Pond would not result in additional particulate emissions during operation.

In light of this and current air quality performance of the Mine, a qualitative assessment of air quality impacts will be included in the *Statement of Environmental Effects*.

3.6 SOILS AND LAND CAPABILITY

3.6.1 Existing Environment

A soil and land capability assessment was conducted by SEEC in September 2011 (Part 8 of RWC, 2011b). The assessment identified that soils within the Project Site consisted of Lithosols and Red Earths, which would be suitable for stockpiling for revegetation purposes if recommended soil stripping, handling, stockpiling and rehabilitation procedures were followed.

3.6.2 Potential Constraints and Proposed Assessment

As the proposed disturbance would be conducted according to already approved soil stripping and stockpiling procedures, the impact of the Proposed Modification on soils and land capability is considered to be negligible.

3.7 VISUAL AMENITY

3.7.1 Existing Environment

A visual amenity assessment was undertaken by RWC in September 2011 (Section 4.11 of RWC, 2011a). The assessment determined that, given the relative isolation of the Mine Site and the proposed visual amenity controls, the Mine would not impact significantly on the visual amenity surrounding the Mine Site.

3.7.2 Potential Constraints and Proposed Assessment

The Proposed Modification would not be visible from publicly accessible vantage points due to the intervening topography.

Due to the relatively small size and low profile of the proposed decant pond in relation to the adjacent Tailings Storage Facility, the impact of the Proposed Modification on visual amenity is considered to be negligible.

3.8 BUSHFIRE HAZARD

3.8.1 Existing Environment

The bush fire attack category of the Mine was determined by RWC (2011a) to be Level 3 (Extreme) based on the fire danger index, the vegetation and fuel load within the Mine and the topography of the Mine. It was determined that given the management and mitigation measures described in Section 4.12.3 of RWC (2011a), the Mine was unlikely to increase the fire hazard rating of the surrounding areas.

3.8.2 Potential Constraints and Proposed Assessment

The Proposed Modification would not increase the risk of bushfire within the Project Site and the proposed decant pond would not be adversely impacted in the event of a bushfire entering the Project Site.

3.9 WASTE MANAGEMENT

The Proposed Modification is expected to facilitate appropriate management of the Tailings Storage Facility DSA, provide an area to evaporate water excess to the Mine requirements and provide emergency storage should water inflows exceed water demands.

As a result, the Proponent contents that the Proposed Modification would result in improved waste management and reuse.

3.10 SOCIO-ECONOMIC CLIMATE

3.10.1 Existing Environment

Since commencement of the Mine, a range of employment and other opportunities for residents of Nymagee have been developed, generating economic activity that would not otherwise have existed. Furthermore, the Mine supports the local community and economy wherever possible by employing local residents and contractors. However, a range of impacts on the community have also occurred, principally related to increase traffic levels and noise. The Proponent has, to the extent practicable, consulted with individual residents and the community as a whole to ensure that it is able to identify and address issues as they arise.

3.10.2 Potential Constraints and Proposed Assessment

The Proposed Modification would result in a temporary increase in employment levels and economic contributions by the Proponent relating to the construction of the decant pond. Long term employment and economic benefits may also be observed associated with the Proposed Modification as the proposed increase in concentrate haulage volume will allow the Proponent to continue to pursue efficiencies in the Process Plant and potentially further increase the production rate.

Construction works associated with the external decant pond are likely to be secured by a local contractor. As such, a large portion of the associated economic benefits would be retained within the area immediately surrounding the Mine, including within Nymagee and the wider Cobar Local Government Area, providing economic stimulus to the local economy. The Mine also provides an opportunity for training and development of local and other personnel.

In addition, the Proponent ensures that it regularly consults with the local community to ensure that any issues of concern are addressed as soon as practicable.

As a result, the socio-economic impact of the Proposed Modification is overwhelmingly positive.

4. REFERENCES

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