FEDERATION PROJECT

Department of Planning, Industry and Environment
Scoping Report

Prepared for:

Hera Resources Pty Limited
'The Peak"
Burthong Road
Nymagee NSW 2831

SLR Ref: 660.30090-R01
Version No: -v0.6
July 2021

PREPARED BY

SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
Level 1, The Central Building, UoW Innovation Campus
North Wollongong NSW 2500 Australia

T: +61 2 4249 1000
E: wollongong@slrconsulting.com www.slrconsulting.com

BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hera Resources Pty Limited (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
660.30090-R01-v0.6	23 July 2021	Renae Gifford	Dan Thompson	
660.30090-R01-v0.5	15 July 2021	Renae Gifford	Dan Thompson	
660.30090-R01-v0.5	17 June 2021	Renae Gifford	Dan Thompson	

EXECUTIVE SUMMARY

Overview

The Federation Project (the Project) is a proposed underground metalliferous mine development located in central-western NSW, approximately 15km south of the Nymagee township and 10km south of Hera Resources Pty Limited's (Hera Resources') Hera Mine. The Project comprises underground mining activities and surface infrastructure at the Federation Site, amendments at Hera Mine to facilitate processing of ore from the Federation Site, and a Services Corridor connecting the Federation Site with Hera Mine.

High grade lead, zinc and gold mineralisation was discovered at the Federation deposit in April 2019. Subsequent surface drilling programs have delineated a substantial gold-lead-zinc-copper-silver mineral deposit. Hera Resources is evaluating the development of a satellite underground mine at the Federation Site that leverages established infrastructure at the Hera Mine to minimise environmental impacts and allow for the continuation of mining operations in the Nymagee area. Mining at Hera Mine is expected to cease by 2024. Mining of the Federation deposit will allow for a transition of mining operations from Hera Mine to Federation, as ore from the Federation deposit replaces ore from the Hera Mine.

Approvals Pathway

Hera Resources, a wholly owned subsidiary of Aurelia Metals Limited (Aurelia), is the proponent for the Project. Subject to Clause 8 of *State Environmental Planning Policy (State and Regional Development) 2011 (the SRD SEPP*), development identified within Schedule 1 of the SRD SEPP is identified as a State Significant Development (SSD). Schedule 1 (5) (3) of the SRD SEPP, identifies that mining with a capital investment value of *than $30 million is a SSD project.* As the Project will have a capital investment of more than $30 million, the Project is a SSD, with assessment and determination by the Department of Planning, Industry and Environment (DPIE) as delegate of the Planning Minister.

A SSD project is required to be informed by Secretaries Environmental Assessment Requirements (SEARs) issued by DPIE. This Scoping Report has been prepared to invite the issuing of SEARs. This scoping report has been prepared in accordance with the draft state significant project guideline *Preparing a Scoping Report* (DPIE 2019).

Existing & Pending Approvals

Hera Mine commenced operations in 2012 under the *Environmental Planning and Assessment Act 1979* (EP&A Act) Part 3A (now repealed) approval MP10_0191 permitting the extraction of waste rock and metalliferous ore using underground open stope mining methods and underground load and haul operations up to 31 December 2020. The Hera Mine approval has been modified six times. Modification 6 (MOD 6) was approved in June 2021 and extends the current approval for mining operations from 31 December 2022 to 31 December 2025, along with operational amendments.

Peak Gold Mines Pty Ltd, a wholly owned subsidiary of Aurelia, operates the Peak Gold Mines (PGM), which includes the New Cobar Complex located 3km to the south-east of Cobar and the Peak Complex located 10km south east of Cobar. The current approvals allow for the operations to continue indefinitely and process up to 800,000 tonnes per annum (tpa) of ore at the PGM processing plant.

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The Nymagee Mine is owned as a joint venture between Nymagee Resources Pty Ltd (95%), a subsidiary of Aurelia and Ausmindex Pty Ltd (5%). The mine is approximately 1 kilometre (km) west of the Nymagee township. No active mining is currently occurring at the Nymagee Mine and the site is non-operational, however it is approved to provide water to Hera Mine.

In February 2021, Hera Resources applied to DPIE-Resource Regulator (DPIE-RR) for the development of an exploration decline at Federation (referred to as the Exploration Decline Program) under Part 5 of the EP&A Act. The intent of the Exploration Decline Program is to define the mineral resources associated with the Federation deposit, provide further samples for testing and extract one or more bulk samples totaling no more than 20,000t.

Project Summary

The Project, as shown in **Figure 1** comprises:

- The establishment and operation of underground gold and metalliferous mining activities, with supporting surface infrastructure, mining approximately 6.95 million tonnes (Mt) of ore over a period of 12 to 14 years, referred to as the Federation Site.
- Amendments at the Hera Mine to facilitate mining and processing of Federation ore, including new process plant and disposal of tailings in the Hera Mine tailings storage facility (TSF)**.**
- Services Corridor between the Federation Site and Hera Mine, including powerline, water pipeline and access track.

Mining of ore from the Federation deposit is scheduled to commence in 2023 following approval of the Project, which coincides with the ramp down of mining at Hera Mine. The transition of mining from Hera Mine to the Federation deposit will allow for a near steady state in operational workforce numbers and mining equipment over the period of ramp down at Hera Mine and ramp up at the Federation Site. Due to the slightly higher expected annual production rate at Federation compared to Hera Mine (up to 750 [kilo tonnes per annum] ktpa compared to 505 ktpa), the Federation workforce numbers, and equipment requirements will be higher than for the Hera Mine.

Upon obtaining all necessary approvals, construction of the Project will commence. It is anticipated that construction activities will be undertaken over a period of six to twelve months.

Scoping and Key Issues

Scoping of key issues for the Project was determined through a combination of desktop review of relevant databases, previous site investigations, consultation with government departments, discussions and group meeting with technical specialists and review of existing operational data.

Based on this review, the proposed environmental assessments of the key environmental aspects have been informed by the DPIE scoping worksheet. Based on the scoping assessment the following key issues will be further assessed in the Environmental Impact Statement (EIS) that is required for a SSD project:

- Biodiversity
- Surface water

EXECUTIVE SUMMARY

- Groundwater
- Traffic and Transport
- Indigenous Heritage
- Soils and Land Capability
- Hazard and Risk
- Social
- Economic
- Noise and Vibration
- Air Quality and Greenhouse Gas
- Geochemistry
- Subsidence

Other considerations which will be incorporated into the EIS, but will not be a standalone assessment include

- Visual
- Non-Indigenous Heritage
- Climate Change.
- Flood / hydrology modelling.

The scoping assessment has been informed by stakeholder engagement, with consideration given to the existing environment and level of environmental risk.

Closing

The Project is a key focus for Aurelia, with the discontinuation of mining at Hera in the coming years. The Project will allow for a transition of a skilled and capable workforce, which will sustain the social and economic benefits of the current operations, particularly for the local area and wider region, as well as across NSW and Australia. The design of the Project has been carefully considered to reduce environmental impacts wherever possibly whilst maximising the extraction of the Federation deposit. Further refinement of the Project will continue through the development of the EIS.

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Glossary

Acronym	Term/Definition
AHIMS	Aboriginal Heritage Information Management System
ANZECC	Australian and New Zealand Environment Conservation Council
AS	Australian Standard
BC Act	*Biodiversity Conservation Act 2016*
CLM Act	*Crown Lands Management Act 2016*
CML	Consolidated Mine Lease
DAWE	Department of Agriculture, Water and Environment
DPIE	Department Planning Industry and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environmental Protection Licence
GDE	Groundwater Dependent Ecosystem
ha	Hectares
kl	Kilolitre
km	Kilometre
ktpa	Kilo tonnes per annum
LEP	Local Environment Plan
LSC	Land and Soil Capability
ML	Mine Lease
MNES	Matters of National Environmental Significance
MPL	Mining Purposes Lease
MOD	Modification
MOP	Mine Operations Plan
NAF	Non Acid Forming
NPWS	National Parks and Wildlife Service
PAF	Potential Acid Forming
PCTs	Plant Community Types
PGM	Peak Gold Mine
PHA	Preliminary Hazard Analysis
POEO Act	*Protection of Environment Operations Act 1997*

Acronym	Term/Definition
RARS	Return Air Risers
REF	Review of Environmental Factors
RBL	Rating Background Level
ROM	Run of Mine
SEARS	Secretary Environmental Assessment Requirements
SIA	Social Impact Assessment
SSD	State Significant Development
SSGV	Site Specific Guideline Values
TfNSW	Transport for New South Wales
TIA	Traffic Impact Assessment
tpa	Tonnes per Annum
TSF	Tailings Storage Facility
TSP	Total Suspended Particulates
WAD	Weak Acid Dissociable
WARR Act	*Waste Avoidance Resource Recovery Act* 2001

1 Introduction

1.1 Project Overview

The Federation Project (the Project) is a proposed underground metalliferous mine development located in central-western NSW, approximately 15km south of the Nymagee township and 10km south of Hera Resources Pty Limited's (Hera Resources') Hera Mine. Nymagee is a small, rural township with approximately 20 residences, located approximately 70km south east of Cobar. Refer to the Location Plan at **Figure 1**.

The Project comprises underground mining activities and surface infrastructure at the Federation Site, amendments at Hera Mine to facilitate processing of ore from the Federation Site, and a Services Corridor connecting the Federation Site with Hera Mine. The activities and infrastructure for which approval is being sought are described in **Section 3** of this Scoping Report, with the Federation Site, Services Corridor and Hera Mine Site Boundary shown in **Figure 2**.

High grade lead, zinc and gold mineralisation was discovered at the Federation deposit in April 2019. Subsequent surface drilling programs have delineated a substantial gold-lead-zinc-copper-silver mineral deposit. Hera Resources is evaluating the development of a satellite underground mine at the Federation Site that leverages established infrastructure at the Hera Mine to minimise environmental impacts and allow for the continuation of mining operations in the Nymagee area.

Mining at Hera Mine is expected to cease by 2024. Mining of the Federation deposit will allow for a transition of mining operations from Hera Mine to Federation, as ore from the Federation deposit replaces ore from the Hera Mine.

1.2 Proponent Details

Hera Resources is the proponent for the Project with the relevant details provided in **Table 1**. Hera Resources is a wholly owned subsidiary of Aurelia Metals Limited (Aurelia).

Table 1 Proponent Details

Requirement	Detail
Proponent	Hera Resources Pty Limited
Postal Address	GPO Box 7 Brisbane QLD 4001
ACN	138 992 999
Contact	Richard Oldham
Contact details	Email: richard.oldham@aureliametals.com.au Mobile: 0415 331 592

1.3 Document Purpose

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) form the statutory framework for the environmental impact assessment and planning approval of development in New South Wales (NSW). Both the EP&A Act and the EP&A Regulation are administered by the NSW Department of Planning, Industry and Environment (DPIE).

This scoping report has been prepared for the State Significant Development (SSD) component of the Project by SLR Consulting Pty Ltd on behalf of the proponent Hera Resources. The purpose of this Scoping Report is to request and inform the content of the Secretary's Environmental Assessment Requirements (SEARs) issued by DPIE as delegate to the Minster for Planning, for the SSD Environmental Impact Statement (EIS) for the Project. This scoping report has been prepared in accordance with the draft state significant project guideline *Preparing a Scoping Report* (DPIE 2019).

1.4 EPBC Act

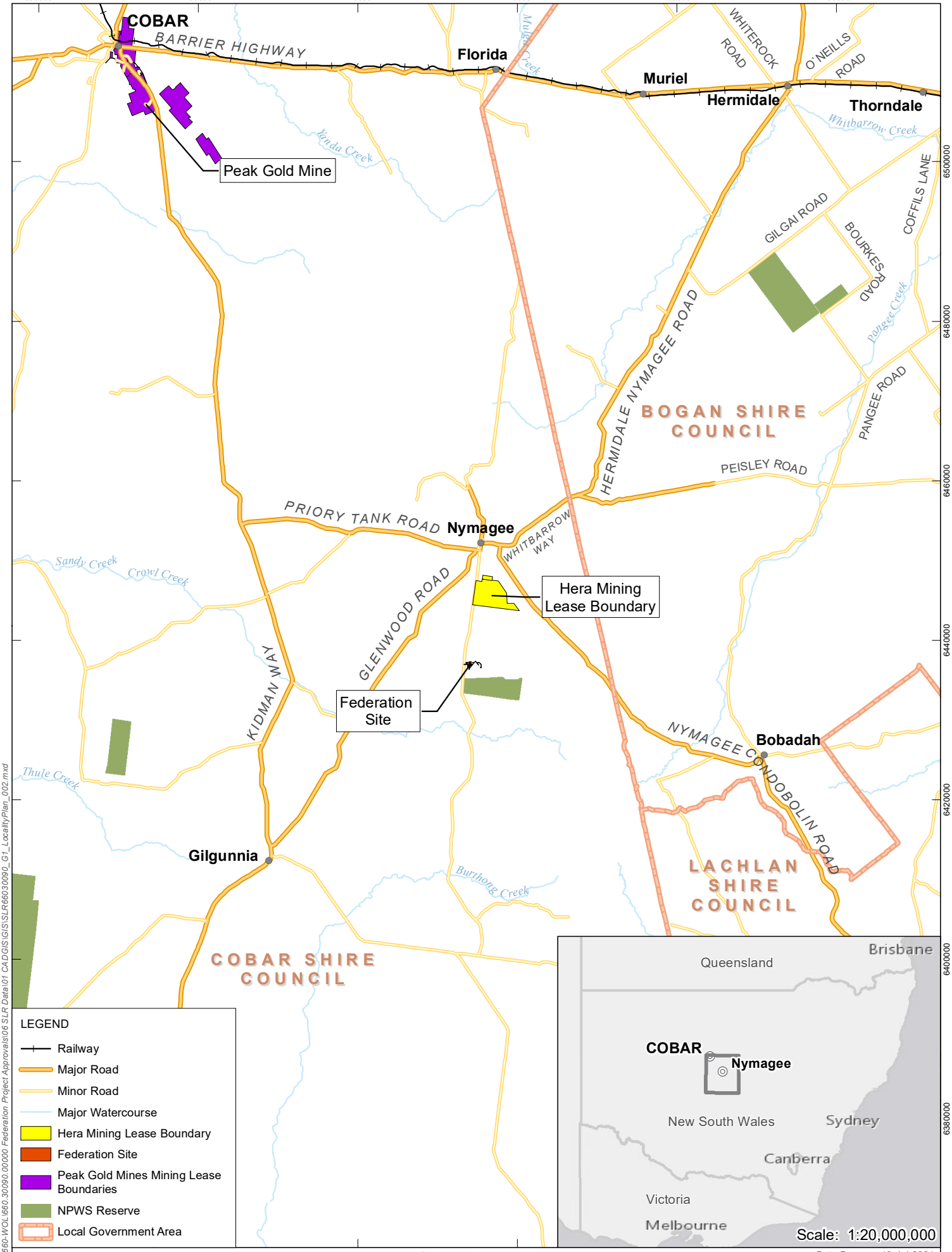
Assessment of environmental impacts to Matters of National Environmental Significance (MNES) and Commonwealth land are required under provision of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A Referral under the EPBC Act is required if an action is likely to have a significant impact on MNES or Commonwealth land.

Field surveys undertaken to date and a review protected matters search tool (PMST) (**Appendix A**) indicate that the Project is unlikely to have a significant impact on any MNES or Commonwealth land.

1.5 Structure of Report

This Scoping Report has been prepared in accordance with DPIE's *Scoping an Environmental Impact Statement – Draft Environmental Impact Assessment Guidance Series June 2017* (DPIE 2017). The report contains the following information:

- Chapter 1 – Introduction
- Chapter 2 – Existing Operations
- Chapter 3 – Project Description
- Chapter 4 – Statutory Considerations
- Chapter 5 – Strategic Context
- Chapter 6 – Scoping and Key Issues
- Chapter 7 – Stakeholder Engagement
- Chapter 8 – Conclusion



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Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 13-Jul-2021
Project Number: 660.30090.00000

Data Source: Basedata NSW SS, 2019, Geoscience Australia
Aerial imagery supplied by © Department of Customer Service 2020

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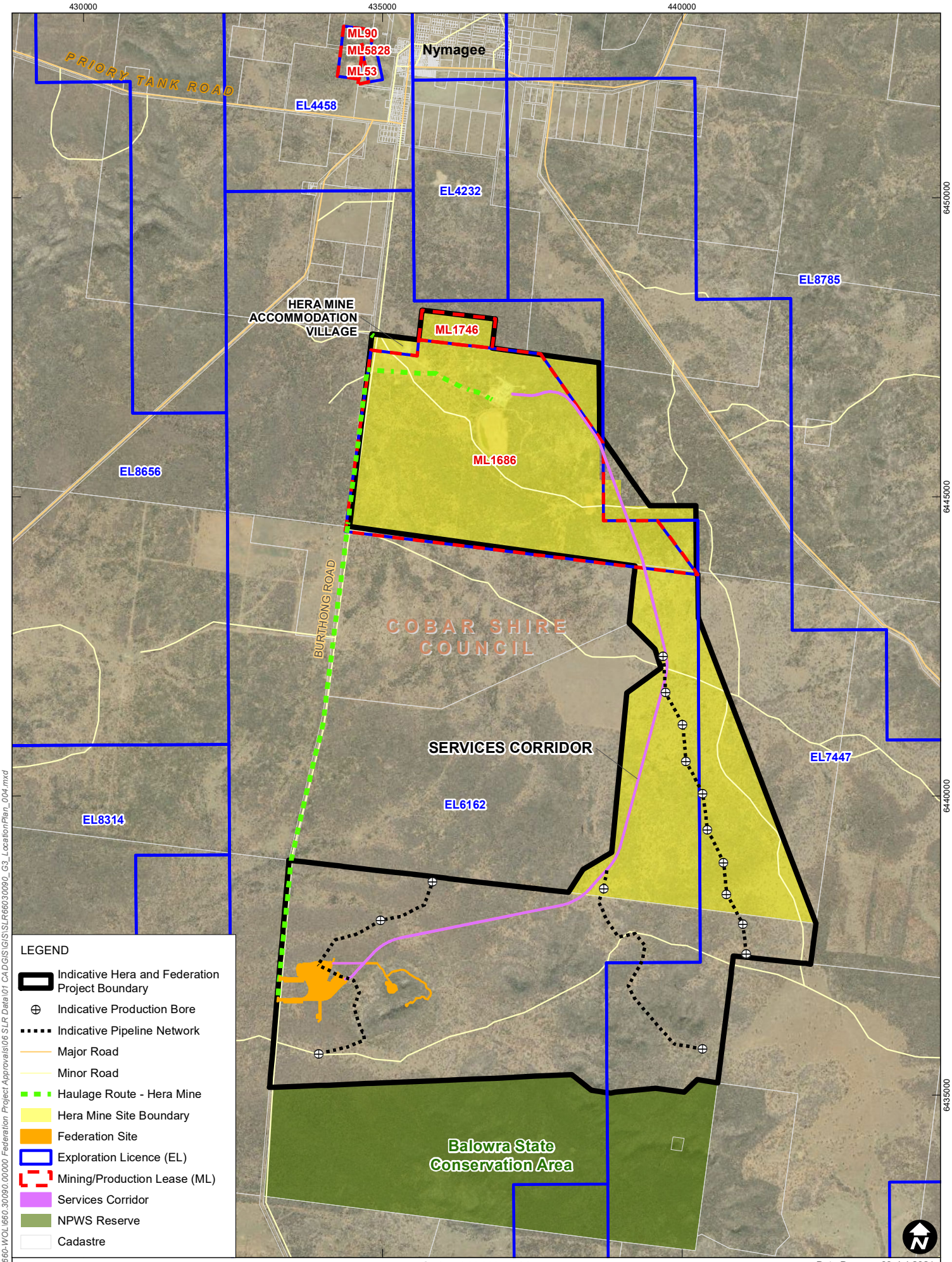
FEDERATION PROJECT LOCATION PLAN

FIGURE 1



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Data Source: Basedata NSW SS, 2019, Geoscience Australia
Aerial imagery supplied by © Department of Customer Service 2020

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FEDERATION PROJECT LOCATION PLAN

FIGURE 2

2 Existing Operations

2.1 Hera Mine Site

Hera Mine commenced operations in 2012 under the former EP&A Act Part 3A approval MP10_0191. Approved activities at the Hera Mine include:

- Extraction of waste rock and metalliferous ore using underground open stope mining methods and underground load and haul operations up to 31 December 2022.
- Backfilling of underground stope voids created during underground mining using potential acid-forming (PAF) waste rock to minimise sulphide oxidation.
- Use of surface infrastructure required for the underground mine, including a box cut, portal and decline, magazines, fuel store, ventilation rises and power and water store.
- Waste rock emplacement to a height of 15m above ground level.
- Use of a processing plant, including a run of mine (ROM) pad, crushing, grinding and screening operations, gravity separation and flotation circuits to process up to 505,000 tonnes per annum (tpa) of ore to produce gold and silver doré (unrefined bars) and a zinc/lead concentrate.
- Use of a tailings storage facility (TSF), including cyanide detoxification of tailings prior to discharge to the TSF. The TSF has an approved area of approximately 50ha and an approved western embankment elevation of 329m AHD. The existing western embankment elevation is 324.7m.
- Use of a water management system, including production bores, sediment basins, tanks, water management dam, water catchment dams and an associated water diversion system to enable separation and management of different water types, and the harvesting and supply of water for operational purposes.
- Transportation of up to 60,000 tpa of zinc/lead concentrate from the mine to Hermidale Rail Siding via public roads, including Hermidale Road.
- The construction and use of a mine accommodation village, including accommodation facilities, ablution facilities, a water treatment facility, communal facilities and a communal car park. The accommodation village is within the Project Approval boundary however it is not within mining lease (ML) 1686 or ML 1746, which cover Hera Mine's operations, and is approved under Cobar Shire Council development consent 2012/LD-00004 (2012).
- Receipt of water from dewatering of the decommissioned Nymagee Copper Mine for use in processing operations at the Hera Mine or evaporation within the water management dam. The pipeline is approved under Cobar Shire Council development consent 2019/LD-00027.

The Hera Mine approval has been modified six times. Most recently modification 6 (MOD 6) was issued by DPIE on the 18 June 2021. The modification included the following:

- Transportation of up to 100,000 tpa of ore from the Hera Mine to the Peak Mine by road, with backloading of a similar amount of waste rock from the Peak Mine to the Hera Mine.
- Placement of tailings underground for stope backfilling operations.
- Establishment and use of a surface extraction area and associated relocation of the existing magazine.

- Amendment of the current tailings discharge point weak acid dissociable (WAD) cyanide limit from 10mg/L to a new limit of 20mg/L (90th percentile) and 30mg/L (maximum).
- Extension of the current approval for mining operations from 31 December 2022 to 31 December 2025.
- Extension of the Hera Mine Site boundary to incorporate additional land.
- Extension of the existing water pipeline network.
- Importation and batch processing of a 20,000t bulk sample and importation of waste rock and water from the Federation Exploration Decline Program.

2.2 Peak Mine

Peak Gold Mines Pty Ltd, a wholly owned subsidiary of Aurelia, operates the Peak Gold Mine (PGM), which includes the New Cobar Complex located 3km to the south-east of Cobar and the Peak Complex located 10km south east of Cobar. PGM has been operational since mining commenced at the Peak deposit in 1991 and operates under development approvals issued by Cobar Shire Council (CSC). Mineral production commenced in 1992, producing gold, copper, lead, zinc and silver. The current approvals at Peak allow for the operations to continue indefinitely and process up to 800,000 tpa of ore at the Peak processing plant.

The Peak processing plant comprises a range of mills, flotation cell banks and other associated equipment. The plant has recently been upgraded to replace the flotation circuit and installation of segregated concentrates storage area. Tailings are managed within the Peak Complex and are placed at the Peak TSF.

2.3 Nymagee Mine

The Nymagee Mine is owned as a joint venture between Nymagee Resources Pty Ltd (95%), a subsidiary of Aurelia and Ausmindex Pty Ltd (5%). The mine is approximately 1 kilometre (km) west of the Nymagee township, 100 km south east of Cobar.

No active mining is currently occurring at the Nymagee Mine and the site is non-operational, however it is approved to provide water for Hera Mine located approximately 6 km to the south east (Nymagee Mine Annual Review 2020).

2.4 Existing Approvals

Provided in **Table 2** and **Table 3** are the current approvals and licences which are held by subsidiaries of Aurelia for Hera and Nymagee Resources. **Table 4** identifies current approvals and licences for PGM.

As part of the Federation Project it is intended to rescind / surrender Major Project Approval (PA) 10_0191 with activities at Hera Mine incorporated into the SSD approval.

Table 2 Existing Approvals and Licences (Hera)

Issuing Authority	Type	Date of Issue	Expiry	Comments
Department of Planning, Industry and Environment	Major Project Approval - (PA) 10_0191	31 July 2012	31 December 2022	Modified six times. MOD6 approved June 2021 to extend approval to 2025
Cobar Shire Council	Development Consent 2012/LD-00004	14 March 2012	No Expiry	Hera Accommodation Village
Cobar Shire Council	Development Consent 2021/LD-00010	13 July 2021	No Expiry	Hera Accommodation Village expansion
Environment Protection Authority	Environmental Protection Licence 20179	18 March 2013	No Expiry	
Natural Resources Access Regulator	Water Access Licence (WAL) 43173	6 March 2020	No Expiry	Permits extraction of up to 534ML per year
Mining, Exploration and Geoscience	Mining Lease 1686	16 May 2013	16 May 2034	For copper, gold, lead, silver and zinc
	Mining Lease 1746	7 December 2016	7 December 2037	For copper, gold, lead, silver and zinc
	Exploration Licence 6162	26 November 2003	26 November 2024	Held by Hera Resources Pty Ltd
	Exploration Licence 7447	2 February 2010	2 February 2020	Held by Defiance Resources Pty Ltd (a subsidiary of Aurelia)

Table 3 Existing Approvals and Licences (Nymagee Resources)

Issuing Authority	Type	Date of Issue	Expiry	Comment
Mining, Exploration and Geoscience	Mining Lease 53	5 November 1975	31 December 2026	Renewal application for a 21 year period was submitted to Mining, Exploration and Geoscience on 24 August 2020.
	Mining Lease 90	30 July 1975	31 December 2026	Renewal application for a 21 year period was submitted to Mining, Exploration and Geoscience on 24 August 2020.
	Mining Lease 5295	24 December 1951	31 December 2026	Renewal application for a 21 year period was submitted to Mining, Exploration and Geoscience on 24 August 2020.
	Mining Lease 5828	25 October 1962	31 December 2026	Renewal application for a 21 year period was submitted to Mining, Exploration and Geoscience on 24 August 2020.
	Private Lease Land 857	24 December 1951	31 December 2026	
	Exploration Licence 4458	26 November 1992	26 November 2018	Renewal sought
Natural Resources Access Regulator	Water Access Licence 43173	10 March 2020	No expiry	

Table 4 Existing Significant Approvals and Licences (PGM)

Issuing Authority	Type	Date of Issue	Expiry
Cobar Shire Council	The Peak Project – development application No. 27:89	1990	
	New Cobar South Open Cut - LDA 98/99:08	1999	
	New Cobar Open Cut - LDA 99/00:22	1999	
	New Cobar Underground – 2004/LDA 00003	2004	
Environment Protection Authority	Environmental Protection Licence 3596		No Expiry
Natural Resources Access Regulator	Water Access Licence 31045	24 April 2012	No expiry
Natural Resources Access Regulator	Water Access Licence 36334	25 June 2013	No expiry
Natural Resources Access Regulator	Works Approval 85WA753861	1 December 2019	No Expiry
Natural Resources Access Regulator	Works Approval 85WA752827	24 April 2012	No expiry
Natural Resources Access Regulator	Miscellaneous Works Approval 85MW095002	12 February 2020	No expiry
Natural Resources Access Regulator	Works Approval 80WA704315	25 June 2013	No expiry
Mining, Exploration and Geoscience	Consolidated Mine Lease (CML) 6	9/2/96	27/2/34
	Consolidated Mine Lease (CML) 7	28/6/95	16/9/33
	Consolidated Mine Lease (CML) 8	16/9/96	16/9/33
	Consolidated Mine Lease (CML) 9	26/9/95	26/9/27
	Mining Lease (ML) 1483	30/4/01	27/1/29
	Mining Purposes Lease (MPL)	29/9/36	29/9/22

2.5 Federation Exploration Decline Program

In February 2021, Hera Resources applied to DPIE-Resource Regulator (DPIE-RR) for the development of an exploration decline at Federation (referred to as the Exploration Decline Program) under Part 5 of the EP&A Act. The application was supported by a review of environmental factors (REF) assessing the potential impacts and describing measures to mitigate and manage impacts. The main objectives of the Exploration Decline Program are:

- Further define the mineral resources associated with the Federation Deposit, including permitting drilling of exploration drill holes from underground.
- Provide further samples for metallurgical, geotechnical and associated test work.
- Allow for extraction of one or more bulk samples (totaling no more than 20,000t).

Key components of the Exploration Decline Program include:

- Establishment of a Surface Infrastructure Area required to support the exploration decline.
- Development of a box cut, portal, exploration decline, two ventilation rises and one escapeway.
- Transportation to and storage of waste rock within the Surface Infrastructure Area. Waste rock from the box cut would be stored within the Surface Infrastructure Area for future use in rehabilitation. All other waste rock would be stored within the Surface Infrastructure Area and transferred to Hera Mine via Burthong Road, or returned underground via the decline.
- Establishment and use of an approximately 14.8km surface pipeline to transfer water from the exploration decline to Hera Mine. The pipeline would be installed on the surface, except where it crosses ephemeral watercourses where it would be buried. The pipeline would be installed within an approximately 3m wide cleared corridor, with the cleared corridor increasing to 7m wide 40m either side of any watercourse crossings.
- Exploration drilling from the exploration decline.
- Extraction of one or more bulk samples together totaling no more than 20,000t and transportation of that material to Hera Mine via Burthong Road.

The application is currently pending and being assessed by DPIE-RR.

3 Project Description

3.1 Overview Federation Project

The Project, as shown in **Figure 2** comprises:

- The establishment and operation of underground gold and metalliferous mining activities, with supporting surface infrastructure, mining approximately 6.95 million tonnes (Mt) of ore over a period of 12 to 14 years, referred to as the Federation Site, as shown in **Figure 3.**
- Amendments at the Hera Mine to facilitate mining and processing of Federation ore, including new process plant and disposal of tailings in the Hera Mine tailings storage facility (TSF), as shown in **Figure 10**
- Services Corridor between the Federation Site and Hera Mine, including powerline, water pipeline and access track, as shown in **Figure 2** and **Figure 6.**

The following subsections provide an overview of the key aspects of the Project.

3.2 Transition of Mining from Hera Mine to Federation Site

Mining at Hera Mine is expected to cease by 2024. Mining of the Federation deposit will allow for a transition of mining operations from Hera Mine to Federation, as ore from the Federation deposit replaces ore from the Hera Mine.

Mining of ore from the Federation deposit is scheduled to commence in 2023 following approval of the Project, which coincides with the ramp down of mining at Hera Mine. The transition of mining from Hera Mine to the Federation deposit will allow for a near steady state in operational workforce numbers and mining equipment over the period of ramp down at Hera Mine and ramp up at the Federation Site. Due to the slightly higher expected annual production rate at Federation compared to Hera Mine (up to 750 [kilo tonnes per annum] ktpa compared to 505 ktpa), the Federation workforce numbers and equipment requirements will be higher than for the Hera Mine.

3.3 Construction

Upon obtaining all necessary approvals, construction of the Project will commence. It is anticipated that construction activities will be undertaken over a period of six to twelve months. Construction within the Services Corridor will involve the clearing of existing vegetation, associated earthworks, installation of the transmission line infrastructure, water pipeline establishment and construction of the services road. Construction activities at the Hera Mine site involve clearing and establishment of the solar farm and transmission line connecting to the existing line. No clearing will be required for the installation and commissioning of the new processing plant which is located within the existing approved disturbance area at Hera Mine. Construction activities at the Federation Site involve clearing and construction of the site access haul road, services road to the quarry and communications tower, and installation of additional infrastructure as detailed in **Section 3.4.**

3.4 Federation Site

Provided in **Section 3.4.1** to **Section 3.4.11** is an overview of key aspects of the mine design and operation proposed for the Federation Site.

3.4.1 Federation Deposit

The Federation deposit is located on the eastern margin of the Palaeozoic Cobar Basin. The Cobar Basin is the richest polymetallic basin within the Lachlan Orogen, hosting a significant number of precious and base metal deposits related to different tectonostratigraphic units from Late Silurian to the Early Devonian.

Minor exploration drilling was undertaken in 2013. A larger exploration program was undertaken in 2019 and 2020 to define the Federation Deposit. A summary of exploration drilling is provided in **Table 5**.

Table 5 Exploration Drilling

Company	Period	Drill Type	No. of Holes	Metres Drilled
YTC Resources Ltd	2013	RC Percussion	4	858
Aurelia Metals Ltd	2019-20	RC Percussion	55	15,992
		Diamond	76	38,016
Total			135	54,866

Based on the February 2021 ASX Federation Mineral Resource Estimate (MRE) stands at 3.5Mt supported by approximately 55,000 m of drilling (**Table 5**).

Specifically, Aurelia provided an updated MRE to the Australian Stock Exchange (ASX) on the 23 February 2021. The updated MRE reports that the Federation Deposit has an estimated combined Indicated and Inferred MRE comprises totalling 3.5Mt at 5.5% Pb, 9.8% Zn, 1.4g/t Au, 7g/t Ag and 0.3% Cu. The updated MRE confirmed an increased indicated reserve of 1.0 Mt.

There is an additional 3.5 Mt of unclassified material, bringing the total potential mineralisation to 7 Mt. Ongoing infill drilling is highlighting that the deposit hosts a number of very high-grade, short strike-length gold lenses, and strong upside potential remains for additional discoveries as drilling continues.

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6437500 6437000 6436500 6436000

COBAR SHIRE COUNCIL

INDICATIVE PIPELINE
DIESEL POWER AND TANKS
DEWATER POND (10ML)
WORKSHOP AND STORE
TOPSOIL STOCKPILE
POTABLE WATER TREATMENT
10L TANKS
STORMWATER RETENTION POND
BOX CUT
ACCESS ROAD
SEWERAGE EFFLUENT IRRIGATION
LAYDOWN
U/G VENTS
SEWERAGE TREATMENT
INTERNAL ACCESS ROAD
PAD 01
ROAD TO COMMUNICATION TOWER
BURTHONG ROAD
PAD 02
PAD 03
SUBSTATION
TOPSOIL STOCKPILE
ABLUTION OFFICE, CRIB, ADMIN
ROM PAD
U/G VENTS
NAF WASTE ROCK DUMP
MOBILE TAILINGS PASTE PLANT
UNDERGROUND GO-LINE
PAF WASTE ROCK DUMP
BATCH PLANT
HAUL ROAD
FUEL FARM
PAD SEDIMENT BASIN
PROPOSED EXTENT OF QUARRY LOCATION
INTERNAL ACCESS ROAD
TOPSOIL STOCKPILE
LINED LEACH POND
TOPSOIL STOCKPILE
TELECOMMUNICATION TOWER
PAD 04 MAGAZINE
INDICATIVE PIPELINE

LEGEND
- Disturbance Footprint
- Haul Road/Internal Access
- Indicative Pipeline Network
- PAD
- Services Corridor
- Approximate Location of Stoping Areas (Projected at Surface)

0 250 500 m

Scale: 1:7,500 at A4
Coordinate system: GDA 1994 MGA Zone 55

Date drawn: 06-Jul-2021
Project number: 660.30090.00000

Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020

SLR

FEDERATION SITE PLAN

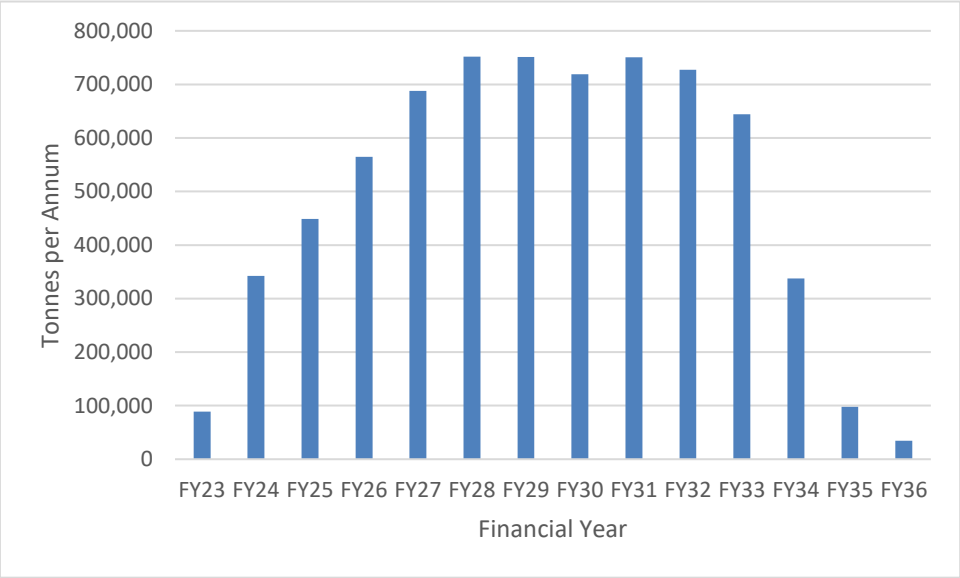
FIGURE 3

H:\Projects-SLR\660-SrvWOL\660-WOL\660.30090.00000 Federation Project Approvals\06 SLR Data\01 CADGIS\GIS\SLR66030090_G2_SitePlan_002.mxd

3.4.2 Federation Production

Total ore production from the Federation Site is approximately 6.95Mt over the life of the mine. Maximum annual production is planned at 750 ktpa, which will occur during years six to nine of mine operations. Ore production will ramp up over the initial years and ramp down over the final years of operations. The majority of ore produced will be sent to Hera Mine for processing. However up to 200 ktpa will be transported to PGM during operational years two to five, whilst the new processing plant at Hera Mine is being commissioned.

Figure 4 Annual Ore Production



3.4.3 Box Cut and Portal

Access to the underground mine will be via a portal developed through the base of a box cut located northwest of the proposed Federation stoping footprint (refer **Figure 3**). The location of the box cut was selected to avoid impacts to items of Aboriginal heritage and to achieve suitable ground conditions. The box cut is designed so that the portal exit faces south, so as to avoid direct sunlight when exiting the underground environment.

The approximate box cut dimensions are:

- 68,000m^3 excavation with 80% (54,400m^3) assumed to be drilled and blasted.
- 22m depth to base of box cut.
- 250m long and 60m wide
- 1:10 down ramp gradient in box cut.
- Upper slope 40°
- Lower slope 60°
- Portal face 70°
- Ground support will be required on lower wall consisting of:
  - 75mm shotcrete.

- Alternate rows of 6m long cable bolts and 2.4m long grouted rock bolts installed on a 2.5m x 2.5m pattern.

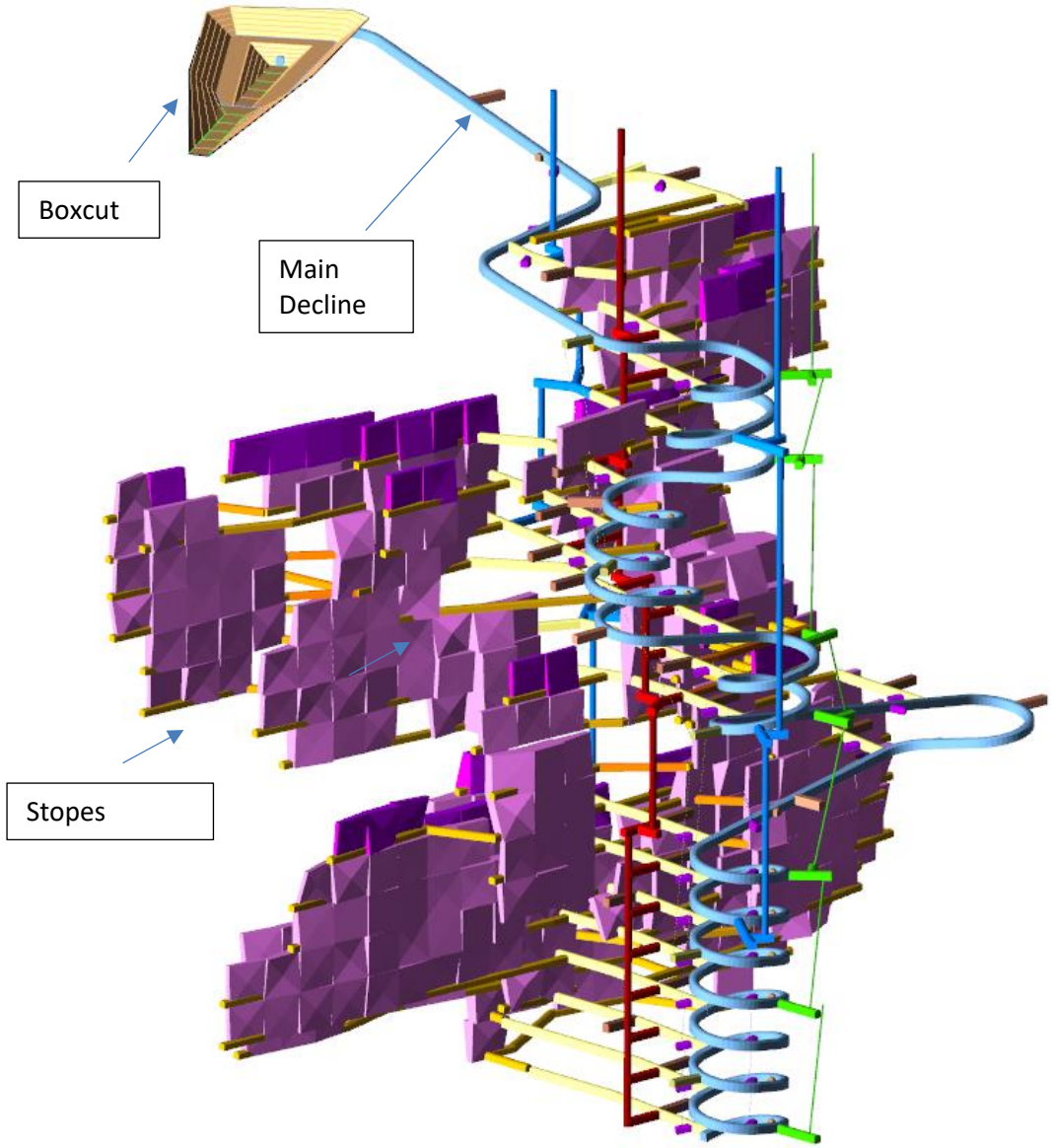
3.4.4 Main Decline

The main decline will be developed to gain access to all production levels (refer **Figure 5**). The decline is proposed to be developed over a period of 42 months to a depth of approximately 530m below surface. The decline commences with a 35m long straight and 1:10 downward gradient. This aligns with the gradient of the box cut ramp to allow for installation of steel sets.

The decline has been positioned where mineralisation is minimal. It is expected that the decline will cross areas of economically viable mineralisation, more regularly to the north of the deposit. This was a key reason for placing the decline predominantly on the southern side of the deposit. Placing the decline on the southern side of the deposit also provides proximity to the higher-grade portion of the deposit. The dimensions of the main decline are:

- Length 3,345m.
- Height 5.8m.
- Width 5.0m.
- 1:6.5 down gradient.
- 22.5m radius turns (centreline).

Figure 5 Federation Mine Design



3.4.5 Lateral Development

Lateral development, including level access and other waste development, is required to access the mine production areas. Level accesses are preferred to be gently inclined so that water drains towards the decline. Sumps are located in level accesses to capture water run-off from the production areas before it reaches the decline.

A stockpile is included in each level access to allow storage of material during remote bogging operations, and generally facilitate the transfer of material from boggers to trucks.

3.4.6 Vertical Development

Four shafts will be required, including two return air raises (RARs) at 4.5m and 4m diameter, one fresh air raise (FAR) at 3m diameter and one emergency egress (1.5m diameter). Vertical development will be completed by raise-boring.

3.4.7 Mining Method

The proposed mining method requires excavation via drilling to a depth of approximately 530m to access areas of economically viable mineral resource deposits. Once the mineral deposit is accessed, stopes or rooms will be excavated via drilling and blasting. The stopes are approximately 25m high from one stope floor to the next and located along approximately 100m vertical panels.

The stopes will be excavated from the deepest stope upwards. The loosened ore from the stopes is then brought to the surface via underground truck and placed on the Federation Site ROM ore stockpile near the boxcut. Ore will then be transported by surface trucks to the Hera Mine ROM stockpile at the process plant.

Stopes will be backfilled using rockfill or paste fill, which will use tailings from the processing plant at Hera Mine. Cemented rockfill may be placed in the stopes to maintain the structural integrity of the stopes.

3.4.8 Mining Equipment

The proposed underground mining fleet is presented in **Table 6**, which is considered typical for this scale of operation.

Table 6 Mining Fleet

Equipment Type	Use	Initial Fleet Size	Maximum Fleet Size
Twin boom jumbo	U/G drill rig	1	2
Production drill rig	U/G drill rig	-	2
50t trucks	Ore and concentrate transport	1	4
17t loaders	U/G ore loaders	1	4
Shotcrete sprayer	Application of shotcrete	1	1
Shotcrete agitator	Mixing of shotcrete	1	2
Explosives charging unit	U/G blasting	1	1

Equipment Type	Use	Initial Fleet Size	Maximum Fleet Size
Integrated toolcarrier (IT)	General	1	3
Service truck	Service vehicles	-	1
Grader	Surface grading	-	1
Water truck	Water suppression	-	1
Truck and Loader	General use	-	1

3.4.9 Mine Utilities

3.4.9.1 Power and Communications

The Federation Site will be powered via diesel generation for initial operations while construction of the power supply within the Services Corridor is undertaken. Once established, the Federation Site will be powered by a gas plant, which will be located at Hera Mine with power supplied via overhead powerline to Federation Site. The gas will be delivered to Hera Mine via road. The gas plant is proposed to be supplemented by a new solar facility at Hera Mine.

The current communications link to the Hera Mine is provided by Telstra from Cobar to Nymagee, via Mount Boppy. This communication link is at capacity and there has been no commitment from Telstra to increase this bandwidth. The proposed communications to Federation Site (and Hera Mine) includes a private point to point wireless link from Telstra's fibre line at PGM near Cobar to Nymagee, via Mount Boppy. This will involve the installation of communications equipment on radio towers. The Hera Mine to Federation Site link will require installation of an 8m communications tower at each site. A fibre link may also be installed along the Services Corridor.

At the Federation Site an allowance for an underground communications network has been included, providing high quality communications infrastructure which will allow:

- Remote and autonomous operation of mine equipment.
- Remote operation of ventilation infrastructure.
- Real time monitoring of mining mobile equipment.

3.4.9.2 Explosives

The explosives magazine is located approximately 900m to the south of the boxcut and more than 600m away from all proposed infrastructure. The magazine will have security fencing to control access.

3.4.9.3 Tailings Paste Fill Plant and Batch Plant

The preferred backfill method is cemented paste fill using tailings. The tailings paste plant will be located adjacent to the stoping footprint to allow gravity reticulation of tailings paste down dedicated boreholes and laterally through an underground paste distribution system. The paste plant would require capacity to produce 40m^3/hr (nominally 900m^3/day).

The shotcrete batch plant will be co-located with the tailings paste fill plant. This plant will provide an ongoing supply of shotcrete for ground support requirements underground and concrete for miscellaneous construction works.

3.4.10 Waste Rock Management

Two waste rock stockpiles will be located at the Federation Site to store waste rock generated from the development of the boxcut, decline and the lateral and vertical development. One stockpile will be for the storage of non-acid forming (NAF) materials and the other for potential acid forming (PAF) materials. PAF waste rock will be stored on surface with drainage to a lined leachate pond and used as backfill underground during or post mine life. NAF waste rock will be stored on surface for later use in rehabilitation, such as backfilling the box cut.

3.4.11 Water Management

3.4.11.1 Water Demand

The primary source of water demand for the Project will be the process plant at Hera Mine. Water will be required at the Federation Site to support the underground workings, for dust suppression, ablutions and vehicle washdowns.

3.4.11.2 Water Supply

Water will primarily be supplied from dewatering of the underground workings. As part of the mine development, a new borefield will be established for the supply of water from production bores. The indicative location of production bores and pipelines are provided in **Figure 2**. These locations may alter once further investigations are complete.

Alternative water sources will be investigated including pumping water from the former Nymagee mine, trucking of water sourced from local sources and reuse of treated effluent from the Hera Mine accommodation village.

There are existing water supply bores supplying water to Hera Mine, which will continue to operate. Hera Resources holds WAL 43171, which permits the extraction of 543ML of water annually. There is no planned increase to this limit as part of the Project.

3.4.11.3 Water Management Infrastructure

The Project will have an integrated water management system between the Federation Site and Hera Mine. A water pipeline within the Services Corridor and pumps at the Federation Site and Hera Mine will allow for transfer of water. Water management infrastructure to be constructed at the Federation Site includes:

- Mine water dam for dewatering the underground workings with approximate dimensions of 50m x 50m with a capacity of 10 ML.
- Leachate pond for collection of runoff from the PAF waste rock pad and ROM pad. Water from the leachate pond will be pumped to the mine water dam.
- Sediment retention dam designed to limit fugitive sediment emissions, which will collect runoff from disturbed areas that do not contain contaminants. The dam has been sized to collect a 1:100-year 72-hour rainfall event from a catchment of approximately 25 ha.
- Potentially other minor sediment dams, which would flow to the primary sediment dam.

- Drainage infrastructure to separate clean water, sediment water and potentially contaminated water.

The catchment areas, which store potentially contaminating materials such as the fuel, hydrocarbons or PAF waste rock will have their own contained catchments and have been limited in extent to minimise the generation of contaminated surface run-off.

3.4.11.4 Mine Dewatering

Based on data from Hera Mine groundwater inflow rates from mining the Federation deposit have been predicted at 300 to 500 m^3/day. A series of pumps will be installed to transfer water from the underground workings to the surface mine water dam via a decline water pipeline. The mine water dam has plan dimensions of approximately 50m x 50m and has the capacity to store approximately 10 million litres (ML). The capacity of this dam has been benchmarked against the process water dam located at Hera Mine.

Two 10,000L header tanks located on surface will supply water to the underground workings from above the portal. Water will be gravity fed through a polyethylene pipe suspended from the decline backs.

Raw water / fire fighting water will be stored in a 50kL tank.

3.4.11.5 Sediment Water

The sediment retention dam has been sized to collect a 1:100-year 72-hour rainfall event (nominally 151 millimetres [mm] rainfall depth) from a catchment of approximately 25 hectares (ha). The sediment retention dam has an indicative capacity of 28ML, subject to further engineering.

3.4.11.6 Lined Leachate Pond

A lined, leachate pond will be constructed to collect any contaminated runoff from the PAF waste rock dump and ROM pad. The water will be collected and pumped to the mine water dam. The general design of the leachate pond would be:

- sized to collect a 1:100-year 72-hour rainfall event, with a capacity of approximately 2.5ML
- lined with clay or other low permeability material which provides flow of $<1x10^{-9}$m/s through the lining.

3.4.11.7 Drainages

A series of site drainage structures will be developed to divert clean water away from site and direct water from disturbed areas into the sediment retention dam. Included in the drainage designs are earthworks and culverts to manage water underneath the proposed site roads.

3.4.11.8 Potable Water

Initially potable water will be required to be delivered to site via road, whilst the bore field is established. It is planned that once the bores have been developed and a treatment plant installed, bore water will be piped to site and treated. A packaged potable water treatment plant, suitable to provide water for drinking, change house and cribbing requirements for 50 people, will be located adjacent to the raw water/fire water tank. A 20kL potable water storage tank will be located adjacent to the potable water treatment plant.

3.4.11.9 Site Infrastructure

Onsite infrastructure at the Federation Site that will be established to support site operations is summarised in **Table 7**.

Table 7 Federation Site Infrastructure

Item	Description
Site roads, laydown and access control	The light vehicle access road between Burthong Road and the Federation Site will consist of a 750 metre (m) long, 8m wide unsealed gravel pavement. A boom gate will be constructed across the light vehicle access, approximately 450m from Burthong Road. A heavy vehicle haul road will be constructed between Burthong Rd and the Federation Site, which will allow for the separation of heavy vehicles and light vehicles. Internal access roads will also be constructed for heavy and light vehicle access to the various operational areas. Hardstand areas will be developed for laydown areas, the administration building, maintenance workshop, diesel storage, explosive magazine, temporary diesel power, permanent power infrastructure, batch plant and tailings paste plant. Security fencing will be constructed from the boom gates along the edge of the administration building, hardstand and store yard to deter unauthorised site entry. Security fencing will also be installed at the magazine.
Mobile equipment maintenance workshop and warehouse	A dedicated workshop and warehouse will be provided for maintenance of mining vehicles. The workshop and warehouse will have an area of approximately 800 square metres (m^2).
Hydrocarbon storage	A self-bunded diesel tank with 80,000 litre (L) capacity will be provided for refuelling of underground mining vehicles and the ore haulage fleet. No additional bunding of the tanks is required; the tanks will be a dual-lined system.
Washdown facilities	The heavy and light vehicle wash will be a drive-through facility for cleaning mine haul trucks, graders, dozers, other underground vehicles, road trucks, buses and light vehicles.
Administration building	The mining administration building will be located at the Federation Site. The administration building will have an area of approximately 400m^2. The building will accommodate 25-30 people.
Change house and laundry	The change house building(s) will be located at the Federation Site. The change house will be required for showers and changing facilities for all personnel working underground due to the presence of lead mineralisation. The change house and laundry will have an area of approximately 200m^2.
Sewerage	A packaged sewerage treatment plant suitable to treat effluent from approximately 50 people will be located adjacent to the potable water treatment plant. Sewerage will be irrigated to a dedicated vegetated area to the north west of the sewerage plant.
Soil Stockpiles	A number of soil stockpile locations are located around the Federation Site. Soil will be stored on site until it is required for use in rehabilitation.

3.5 Services Corridor

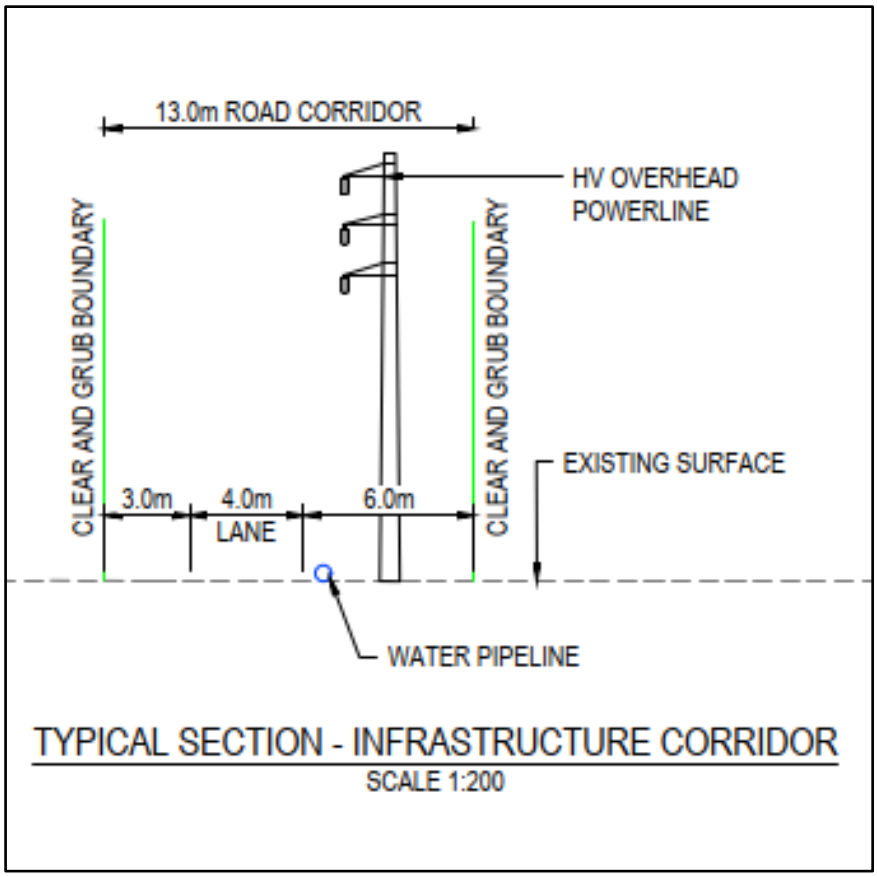
A Services Corridor is proposed to link Hera Mine with the Federation Site, as shown in **Figure 6**, inclusive of:

- Powerline.
- Water pipeline.
- Access track.

A conceptual cross section of the Services Corridor is provided in **Figure 6**. The nominated width of the corridor is 15m with an approximate length of 14.3km. Clearing of existing vegetation will be required to provide for the installation of the proposed services infrastructure. The access track will be used for maintenance and inspection requirements and will not be used for haulage.

Whilst the preferred method for transport of tailings from Hera Mine to the Federation Site is via road (see **Section 3.8**) there is potential that tailings will be pumped through a dedicated pipeline between the process plant at Hera Mine and the tailings paste plant at the Federation Site. A return water line would also potentially be installed to return water removed from the tailings to the process plant. If this were to occur, there would be an additional two pipelines within the Services Corridor, potentially increasing the width of disturbance by 5m.

Figure 6 Conceptual Services Corridor Cross-Section



3.6 Hera Mine Site

Hera Mine infrastructure is proposed to be modified to facilitate the Project (as shown in **Figure 10**), including:

- New processing plant.
-
- Solar farm and connecting power lines.
- Other minor infrastructure changes.

An expansion to the Hera Mine accommodation village is proposed. Cobar Shire Council approved a development application under Part 4 of the EP&A Act for the expansion to the Hera Mine accommodation village on 13/07/2021.

3.6.1 New Processing Plant

A new 750 ktpa process plant design is proposed to be commissioned at Hera Mine. The existing processing plant will continue to operate at Hera until the completion of the new plant. The new plant will be within the existing approved footprint of Hera Mine (refer **Figure 10**).

The new processing plant involves:

- Three stages of crushing followed by ball milling with hydrocyclone classification.
- Gravity separation to recover gold from the milling circuit recirculating load, followed by cyanide leaching of the gravity concentrate.
- Sequential flotation to produce separate copper, lead and zinc concentrates.
- Concentrate thickening and filtration.
- Tailings thickening and disposal by both underground backfill placement and surface storage.

A conceptual diagram of the new processing plant is provided in **Figure 11**. The primary difference between the proposed plant and the current plant, is that each concentrate (e.g. zinc concentrate) will be produced through dedicated processing circuits.

3.6.2 Production Rates

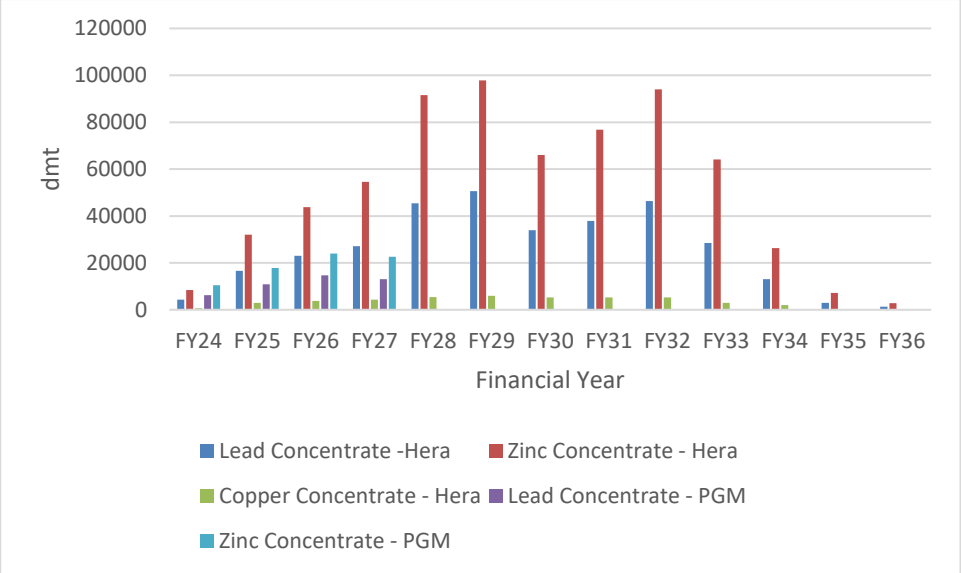
As stated in **Section 3.4.2**, ore production from the Federation Site will be approximately 6.95 Mt over the life of the mine with a maximum production rate of 750 ktpa. Total annual maximum copper, lead and zinc concentrate produced from processed ore is summarised in the **Table 8**.

Table 8 Hera Annual Maximum Concentrate Production

Concentrate	Total Dry Metric Tonne (dmt)
Copper	6,000
Lead	51,000
Zinc	98,000

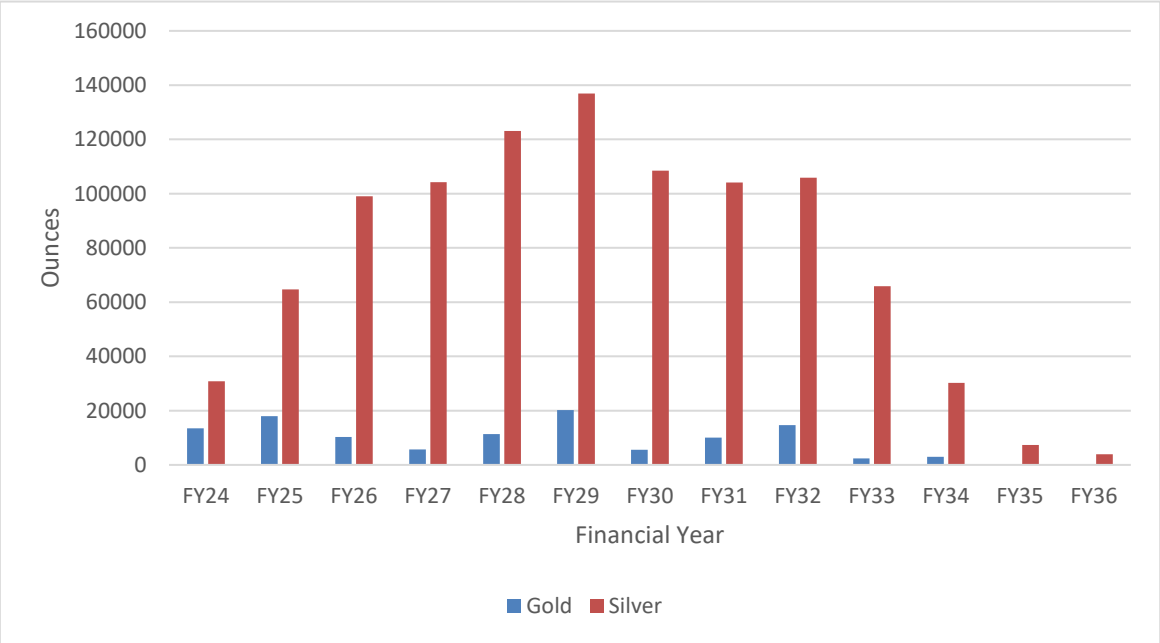
A volume 5,500 dmt of zinc/lead concentrate will also be produced as a result of ore processed at the existing Hera processing plant. A maximum annual production of 14,500 dmt of lead concentrate and 24,000 dmt zinc concentrate will also be produced at PGM in years 2 -5 of operations. **Figure 7** identifies the anticipated lead, zinc and copper concentrate production from Federation ore at the Hera Mine processing plant and PGM processing plant.

Figure 7 Annual Concentrate Production



A total of 115,000 ounces of gold dore and 1,000,000 ounces of silver dore will also be produced. **Figure 8** identifies the anticipated gold and silver production from Federation ore at Hera Mine (PGM is not proposed for production of gold and silver).

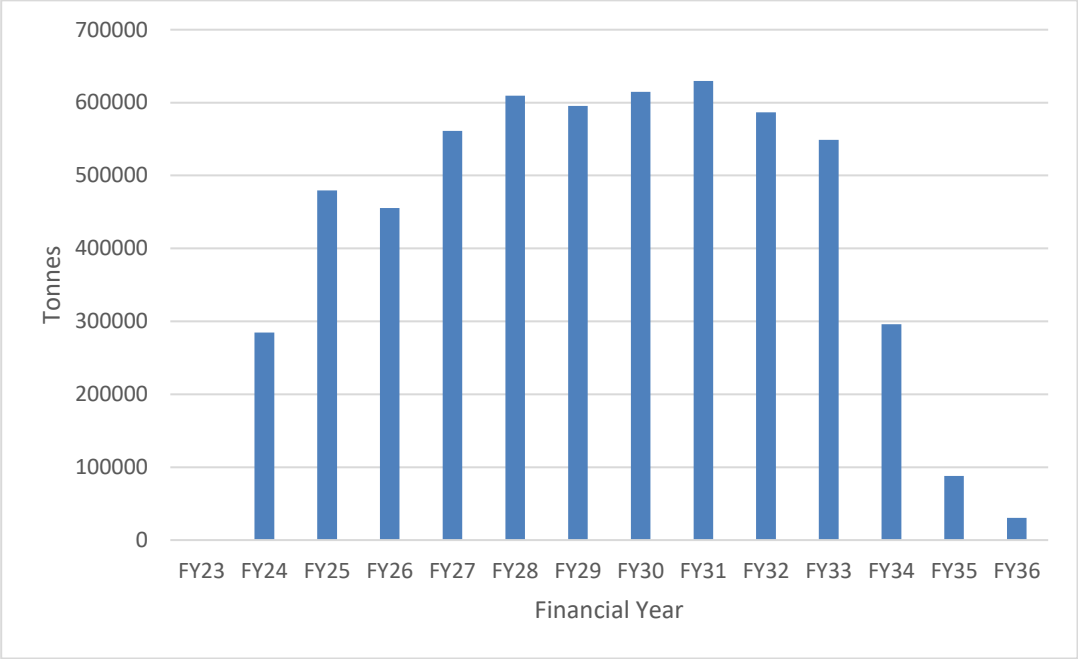
Figure 8 Gold and Silver Production – Hera Mine



3.6.3 Tailings Production

A total of 5.8 Mt of tailings will be generated from the processing of the ore from Federation. Of this approximately 5.2 Mt will be produced at Hera Mine, with the remaining 0.6Mt at PGM. Approximately 60% of total tailings produced will be returned to Federation to be used as backfill, with tailings for backfilling sourced from Hera Mine rather than PGM due to the proximity of Hera Mine.

Figure 9 Annual Tailings Production



3.6.4 Tailings Storge Facility

The existing Hera Mine TSF (refer **Figure 10**) will continue to be used to store tailings from the Hera processing plant which will process ore from the Federation Site. It is estimated over the life of the Project 5.2 Mt of tailings will be produced from Federation, of which 3.5 Mt will be returned to the Federation Site to be used as backfill. The remaining 1.7 Mt will be placed into the existing TSF.

The Hera Mine TSF has an approved area of approximately 50 ha and an approved western embankment elevation of 329m AHD, based on the environmental assessment prepared for Hera Mine's planning consent. The existing, constructed western embankment elevation is approximately 324.7m. At September 2020, the existing TSF had available capacity of 0.7Mt. Raising the embankment height through staged wall lifts to 329m (i.e. up to the currently approved TSF capacity) would increase the available capacity of the TSF by 2.4 Mt to 3.1Mt.

Hera Mine would generate approximately 1.2Mt of tailings over its remaining life after September 2020. Tailings from Federation ore would generate a further 1.7Mt, resulting in a total capacity requirement of 2.9Mt of tailings at the Hera TSF. This is less than the maximum approved capacity of 3.1Mt with wall raises to an elevation of 329mAHD. Therefore there is not expected to be a requirement for any TSF wall raises above the approved capacity. The Project assessment will include an assessment of capacity of the TSF based on the predicted tailings reporting to the TSF.

3.6.5 Solar Farm

A new solar farm will be commissioned at Hera Mine, which will be located 200m south of the existing heavy vehicle access road. The solar farm will be connected to the gas fired power plant on site via a new transmission line. The new plant will increase power production to meet the additional requirements of the Federation Site, as well as the anticipated increase in demand at the Hera Mine from increased processing plant capacity.

3.6.6 Minor Infrastructure Changes

Minor infrastructure changes within the current Hera Mine disturbance area are anticipated as part of the proposed modifications. These may include:

- Relocation of the gas power plant.
- Office, change house and / or crib room upgrades.
- Minor electrical modifications.
- Plumbing modifications.
- Parking.
- Internal roadways.
- Fencing and security.

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436000
437000
438000
6447000
6446000

EXISTING AND EXPANDED ACCOMODATION VILLAGE
PROPOSED OVERHEAD TRANSMISSION LINE
EXISTING OVERHEAD TRANSMISSION LINE
NEW PROCESS PLANT
QUARRY LOCATION (MOD 6)
EXISTING PROCESS PLANT
SERVICES CORRIDOR
BURTHONG ROAD
PROPOSED SOLAR FARM
APPROVED MINE SITE INFRASTRUCTURE
MAGAZINE RELOCATION (MOD 6)
TO FEDERATION MINE
TSF
WATER MANAGEMENT DAM

LEGEND
- Haulage Route - Hera Mine
- Hera Mine Infrastructure
- Hera Mine, Proposed New Process Plant
- Hera Mine Site Boundary
- Services Corridor
- Proposed Overhead Transmission Line
- Solar Farm

0 250 500 m

Scale: 1:10,000 at A4
Coordinate system: GDA 1994 MGA Zone 55

Date drawn: 06-Jul-2021
Project number: 660.30076

Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020

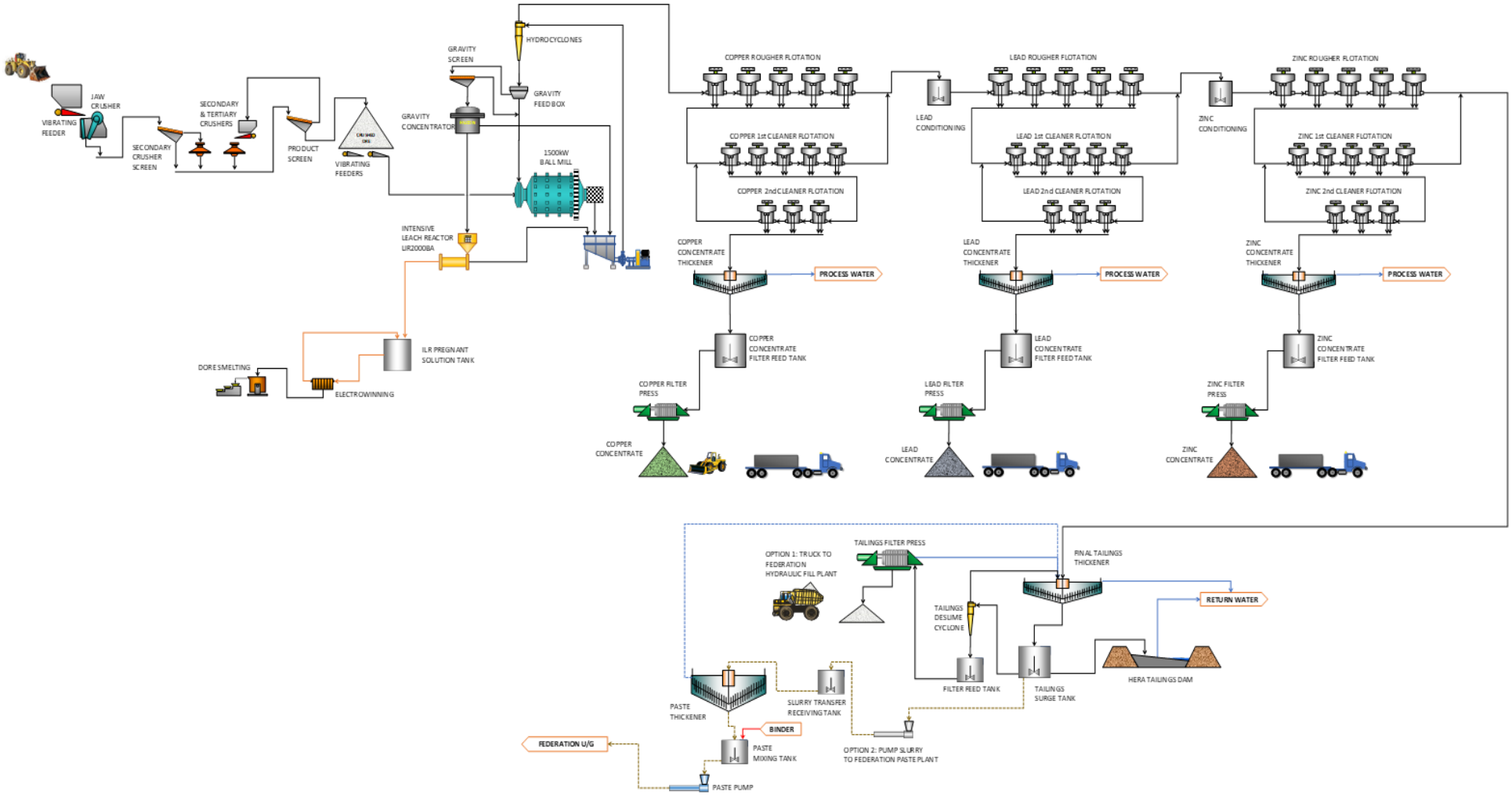
SLR

HERA MINE SITE

FIGURE 10

H:\Projects-SLR\660-SrvWOL\660-WOL\660.30090.00000 Federation Project Approvals\06 SLR Data\01 CADGIS\GIS\SLR66030090_G4_HeraProductionPlan_003.mxd

Figure 11 New Processing Plant



3.7 Peak Gold Mine

It is anticipated that up to 200 ktpa of ore is proposed to be transported and processed at PGM, with a maximum of 750 kt over the Federation deposit life. The current processing plant at PGM has approval to process 800 ktpa, providing sufficient capacity to process ore from the Federation Site. The existing TSF at PGM has capacity for the approximate 630 kt of tailings generated from Federation ore. An application to increase the capacity of the PGM TSF is currently with CSC. The increase will provide surplus capacity above what is currently proposed in PGM's life of mine plans. No changes to the approved PGM processing plant or TSF (following approval for the capacity increase from CSC) will be required as a result of processing ore from Federation.

3.8 Transport

Ore from the Federation Deposit, that will be processed at Hera Mine, is proposed to be transported approximately 15km along Burthong Rd. Ore proposed for processing at Peak Mine will be transported along Burthong Rd, Priory Tank Rd and Kidman Way (the same as the currently approved alternate concentrate haulage route). Ore will be transported in trucks with an approximate 50t payload.

Approximately 60 percent of the total tailings from Hera processing plant will be used for paste backfilling of the stope voids at the Federation Site. Tailings will be transported to the Federation Site via Burthong Road from Hera Mine, with the potential for use of the same truck fleet transporting ore to Hera Mine. Tailings from processing ore at Peak Mine will be deposited within the existing Peak Mine TSF, which has sufficient capacity.

Concentrate from Hera Mine will be trucked to the Hermidale rail siding for transport, as per the current concentrate transport methods and truck sizing. Concentrate from Peak Mine will be transported to Hermidale or Dubbo rail sidings, as per the current concentrate transport methods and truck sizing.

3.9 Rehabilitation and Decommissioning

Rehabilitation and decommissioning of the Project, including the Hera Mine site, would be undertaken on completion of extraction of the Federation deposit, with underground exploration continuing at Hera Mine during extraction from the Federation deposit. Backfilling of the stope voids will occur throughout operations.

Hera Mine currently operates in accordance with their Mine Operations Plan (MOP) as approved by DPIE-RR. The MOP identifies the primary domains for current operations, which includes infrastructure, TSF, water management, waste rock emplacement, stockpiled material and void. Secondary domains are then assigned, which detail the final rehabilitation of each domain. At Hera Mine the secondary domains include rehabilitation to woodland and grasslands, with some remaining areas of infrastructure, water management and void. A MOP will be prepared for the Federation Site and Services Corridor upon obtaining a Mining Lease.

A Rehabilitation Management Plan (RMP) will be prepared for the Project, which will provide a detailed description of the anticipated rehabilitation objectives, indicators and completion criteria for each of the rehabilitation domains within the mining lease(s). It is expected that an overarching objective of the RMP will be to return the land disturbed by mining to a post mining land use that is similar to the pre-mining land use. This includes a return of the land to limited grazing activities (e.g. sheep and goats).

The final landform at the Federation Site is likely to comprise the following:

- A backfilled and reshaped box cut with the existing topography largely re-established.

- A shaped surface infrastructure area with the existing topography largely re-established. All surface water storages would be removed to limit post-exploration use of the rehabilitated landform by feral goats and other pest fauna.
- Any remaining PAF waste rock at surface, that has not been used to backfill stopes, will be returned underground.
- Sealed ventilation rises capped in accordance with the relevant guidelines.
- A retained site access road and other infrastructure beneficial to a future landholder.

The final landform at Hera Mine will be consistent with that currently approved in the current MOP.

The likely rehabilitation objectives for the Project include the following:

- Remove all items of infrastructure.
- Stabilise all disturbed areas and minimise erosion and dust generation.
- Create a low maintenance, geotechnically stable and safe, non-polluting final landform consistent with the surrounding topography and suitable for the end land use of nature conservation and agriculture.
- Establish a soil profile capable of sustaining the specified end land use.
- Establish native vegetation with the species diversity commensurate with surrounding vegetation.
- Protect and enhance those sections of the Project areas with remaining vegetation

Following successful completion of each of the identified phases of rehabilitation, Hera Resources would continue to monitor and maintain the rehabilitated areas until such time as the DPIE-RR and the landholder have provided confirmation that rehabilitation has been successfully completed.

3.10 Employment and Accommodation

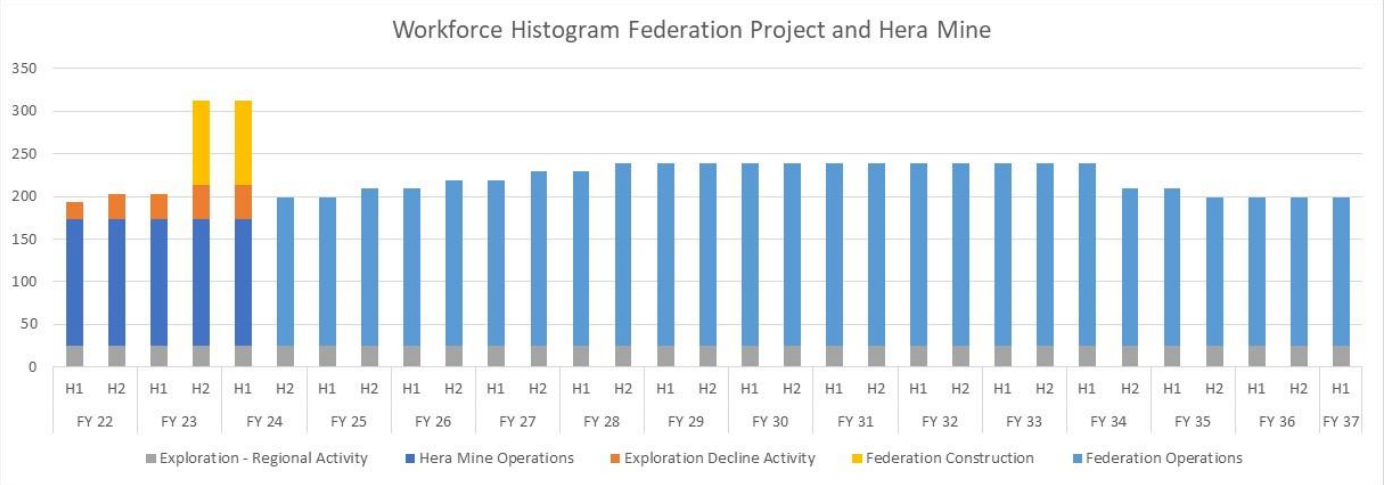
The predicted workforce for Hera Mine and the Project is provided in **Figure 12** which shows the workforce for the following:

- Hera Mine operations prior to the transition to the Project
- Regional exploration activity – largely within and surrounding the Project area, and ongoing throughout Project life
- Exploration Decline
- Project construction
- Project operations.

It is estimated that a workforce of approximately 100 people will be employed during construction, with a workforce of 200 - 250 for Project operations, depending on the mining and processing production rates. There is a workforce of approximately 150 people for the current Hera Mine operations. Other than the 12 month construction phase, the Project maintains a reasonably consistent workforce, with some increases in the transition from Hera Mine to the Project.

Workers will be housed in the accommodation village located at Hera Mine, inclusive of the expanded accommodation village approved by Cobar Shire Council on 13/07/2021.

Figure 12 Federation Project Workforce



4 Statutory Considerations

4.1 NSW Planning Framework

The EP&A Act and the EP&A Regulation form the statutory framework for planning approval and environmental assessment in NSW. The statutory trigger for development consent is included in section 4.2(1) of the EP&A Act which states that:

"an environmental planning instrument provides that specified development may not be carried out except with development consent, a person must not carry the development out on land to which the provision applies unless—

(a) such a consent has been obtained and is in force, and

(b) the development is carried out in accordance with the consent and the instrument".

Clause 7(1)a of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP*) provides that development consent is required for underground mining developments.

4.1.1 State Significant Development

Clause 8 of *State Environmental Planning Policy (State and Regional Development) 2011 (the SRD SEPP*) states:

(1) Development is declared to be State significant development for the purposes of the Act if:

a. The development on the land concerned, is, by the operation of a planning instrument, not permissible without development consent under Part 4 of the Act; and

b. The development is specified in Schedule 1 or 2.

In accordance with Schedule 1 (5) (3) of the SRD SEPP, a mine is declared State Significant Development if it is:

"Development for the purpose of mining that—

(a) is coal or mineral sands mining, or

(b) is in an environmentally sensitive area of State significance, or

(c) has a capital investment value of more than $30 million."

As the Project will have a capital investment of more than $30 million, the Project will be declared a SSD. It is intended to rescind / surrender the current Hera Mine approval (PA 10_0191) with operations at Hera Mine to be incorporated into the SSD.

4.2 Other NSW Legislation

Provided in **Table 9** is a consideration of other NSW legislation which may have relevance to the Project.

Table 9 Other NSW Legislation

Legislation	Requirement
Protection of Environment Operations Act 1997 (POEO Act)	Schedule 1 of the POEO Act lists the 'scheduled activities' which are required to be regulated by an environment protection licence (EPL). Under the POEO Act – Extractive Industries - "concrete works; crushing, grinding or separating; extractive industries; mineral processing; and mining for minerals" is a scheduled activity and therefore an EPL is required. Cl 4.42 (1) of the EP&A Act details that an approval of an environmental protection licence under chapter 3 of the *Protection of the Environment Operations Act 1997* cannot be refused if it is necessary for the carrying out of a SSD development consent and it is substantially consistent with the consent.
Biodiversity Conservation Act 2016 (BC Act)	Section 7.9 of the BC Act requires that a SSD application be accompanied by a biodiversity development assessment report (BDAR), unless the proposed development is not likely to have any significant impact of biodiversity values. A BDAR will be prepared for the SSD application for Federation.
Mining Act 1992	An application for one or more Mining Leases will be made under Clause 51 of the Mining Act. Development consent granted under the EP&A act must be in place before a Mining Lease can be granted.
Water Management Act 2000	Cl 4.41 of EP&A Act details that a water use approval under Section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000* are not required where a SSD approval is given. This includes a reference to any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements for a SSD.
Heritage Act 1977	There are no predicted impacts to items of heritage. No permits are required for SSD projects under 4.41 of the EP&A Act.
National Parks and Wildlife Act 1974	Impacts to items of Aboriginal Heritage are protected in the NPWS Act. Due diligence assessment will be followed for the EIS process. An Aboriginal heritage impact permit is not required for SSD projects under 4.41 of the EP&A Act.
Roads Act 1993	Upgrade of Burthong Road will require approval under section 138 of the Act.
Fisheries Management Act 1994	No impacts to threatened species or key fish habitat is predicted, therefore permits under the Act would not be required. No permits are required for SSD projects under 4.41 of the EP&A Act.
Pipelines Act 1967	Cl 66A of the Infrastructure SEPP exempts the development of a pipeline from requiring development consent subject to a licence being issued under the Pipelines Act 1967. Cl 4.42 (1) of the EP&A Act details that approval of a licence under the Pipelines Act 1967 cannot be refused if it is necessary for the carrying out of a SSD development consent and it is substantially consistent with the consent.
Rural Fires Act 1997	A bushfire safety authority under Section 100B of the Act would not be required as the Project will be determined as a SSD.

Legislation	Requirement
Mine Subsidence Compensation Act 1961	Mine subsidence is not predicted for the Federation Project.
Crown Lands Management Act 2016 (CLM Act)	The CLM Act provides for the administration and management of Crown land in NSW. Crown land may not be occupied, used, sold, leased, licenced, dedicated, reserved or otherwise dealt with unless authorised by the CLM Act.
Explosives Act 2003	A licence is required for the storage of explosives on site. This Act is administered by SafeWork NSW. The relevant licences are held for possession and storage of explosives at the nearby Hera Mine, with these expected to be extended to cover the Federation Site.

4.3 Commonwealth Legislation

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to protect matters deemed to be of national environmental significance (MNES). A search of the protected matters each tool was undertaken on 26th May 2021. The results of the search are provided in **Table 10**.

Table 10 Results of MNES Search

NES Matter	Comment
World heritage properties	There are no World heritage properties listed within 10km of the project area.
National heritage places	There are no National heritage properties listed within 10km of the project area.
Wetlands of national importance	No Ramsar wetlands are located within 10 km of the Project Area. The nearest Ramsar wetlands are in the Hunter River National Park located around 20 km to the southeast of the Project Area.
Great Barrier reef marine park	The Project is not located either within or adjacent to the Great Barrier Reef.
Commonwealth marine park	The Project is not located either within or adjacent to the Commonwealth marine park.
Listed threatened ecological communities	It is unlikely that the Project would result in a significant impact to federally listed threatened ecological communities.
Listed threatened species	It is unlikely that the Project would result in a significant impact to federally listed threatened species.
Listed migratory species	It is unlikely that the Project would result in a significant impact to federally listed migratory species.
Nuclear Action	The Project does not involve a nuclear action.
Water resources impacted on by a coal seam gas or large coal mining development	The Project does not involve coal seam gas or a large coal mining development.

There are unlikely to be significant impacts to MNES or Commonwealth land as a result of the Project.

4.3.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) recognises and protects the rights of Aboriginal and Torres Straight Island people. The NT Act sets out processes for native title groups to negotiate agreements with other parties in relation to the use of land and waters.

Aurelia have identified that Native Title has been extinguished on the subject lands of the Project.

5 Strategic Context

5.1 Project justification

5.1.1 Need for the Project

Mining at Hera Mine is currently planned to cease by 2024. The development of the Project will allow for the continuation of mining in the local and regional area, with continued use of existing and proposed infrastructure at the Hera Mine.

The Project would generate approximately 100 jobs during construction. Operational workforce numbers would be higher than the existing Hera Mine workforce numbers (approximately 150), with approximately 200 – 250 jobs during operations. The transition of mining from Hera Mine to the Federation site will allow for a near steady state ongoing operational workforce.

The Project will see the continued benefits provided to the local, regional and wider economy from the transition of mining from Hera Mine to the Federation Site. Direct economic benefits through maintaining household incomes will be realised. Flow on effects to local business will be realised through household expenditure as well as local / regional maintenance and contracting companies. The Project is also predicted to sustain and increase the current contributions provided through mining royalties to the NSW economy, with $63M of royalties predicted over the Project life.

5.1.2 Alternatives Considered

5.1.2.1 Do Nothing

If the Project was not to proceed, mining operations at Hera Mine would cease by 2024. The consequences of not proceeding with the Project include:

- Cessation of employment for the workforce at the Hera Mine.
- Negative economic and social flow on effects to the local communities, which would no longer benefit from mining activities in the local and regional areas.
- Revenue generated through the taxation system would be forgone.
- Royalties due to the NSW Government would not be generated.
- The high quality mineral resource identified in the Federation Deposit would remain unmined and not utilised for beneficial purposes.

5.1.3 Other alternatives

As part of the mine planning a number of alternatives have been considered which are summarised in **Table 11**.

Table 11 Project Alternatives Considered

Haul Road	A private haul road between the Federation Site and Hera Mine was considered for the Project, however the use of Burthong Road is the preferred proposed haul route. A private haul road was not preferred due to the impacts from vegetation clearing (potentially clearing an additional 30 ha). There is potential for Burthong Road to be upgraded (including sealing) which would improve the safety and condition of the road for other users. Burthong Road has two receptors along the haul route between the Federation Site and Hera Mine, approximately 280 m and 760m from the road. The EIS will assess potential impacts on these receptors from haulage trucks and propose measures to mitigate impacts (if required) to an acceptable level.
Backfill	Unconsolidated rock, cemented rock fill, cemented aggregate fill, cemented hydraulic fill were not preferred due to insufficient volume or high cost. The preferred option is to use tailings pastefill, which reduces the volume of tailings reporting to, and requiring management at, the TSF, whilst stabilising the underground workings.
Ore Destination	Options for the proposed split for ore processed at PGM and Hera Mine were considered. The proposed maximum tonnage of ore to be processed at PGM was selected to align with current approvals, whilst limiting additional traffic volumes.,.
Hera Processing Plant	The options were considered for the processing plant at Hera Mine included: • Construct new processing plant whilst continuing to operate existing plant during the period whilst a new processing plant was being constructed. • Modify the existing plant. The preferred option is to construct a new process plant that is better suited to maximising recoveries of ore from the Federation deposit. The existing process plant will be utilised whilst the new process plant is being constructed.
Tailings Disposal and Transport	Alternative options considered for tailings disposal were considered. Utilising 60% of tailings for stope backfill was preferred as it reduces the volume of tailings requiring storage in the Hera TSF and addressed the shortage of backfill material at Federation. Tailings is proposed to be transported from Hera processing plant to Federation by truck along Burthong Rd. This option was preferred to piping tailings to Federation due to the additional infrastructure costs and impact required for piping and storage of tailings. However, consideration has been given to the potential for a dedicated tailings pipeline and return water pipeline within the Services Corridor.
Water Supply	Water will be sourced from groundwater in the underground workings. New production bores are proposed (in addition to existing production bores) to supplement any shortfall in water supply from the underground workings. Alternative water supply options will also be considered, including utilisation of water at the non-operational Nymagee mine, trucking of water from local sources and reuse of treated effluent from the accommodation village.

Power Supply	Options considered for power supply to the Federation Site included: • Grid power connection • Piped off lease gas supply • Separate gas plants at Hera and Federation • Gas plant at Hera, gas trucked to Hera with powerline to Federation • Gas plant at Hera, gas trucked to Hera with powerline to Federation supplemented by solar The first two options were not preferred due to the complexity of off-lease infrastructure and the impacts from clearing vegetation. The third option was not preferred due to the additional infrastructure costs associated with two gas plants. The fifth option was preferred over the fourth option as the addition of a solar farm allows for a reduction in greenhouse gas emissions and alternative energy sources for increased reliability.

6 Scoping and Key Issues

6.1 Issue Identification

Scoping of key issues to the Project was determined through a combination of desktop review of relevant databases, previous site investigations, discussions and group meeting with technical specialists and review of existing operational data.

Based on this review, the proposed environmental assessments of the key environmental aspects have been developed and are outlined in the following sections.

The DPIE scoping worksheet was completed, which details the key environmental issues in terms of their scale and likely nature of impact. This is included as **Appendix B**.

6.2 Soils and Land Capability

6.2.1 Existing Environment

Previous assessment of soils and land capability in the vicinity of the Federation Site has been undertaken for the Exploration Decline Program REF.

Two soil units within the Federation Site have been categorised:

- Dermosol – This soil type is typically located within broad drainage lines and typically has a neutral to slightly alkaline pH and low salinity. Dermosols in the area have a Land and Soil Capability (LSC) of Class 4 or land with moderate land capability, with moderate to high limitations for high-impact land uses.
- Lithosol – This soil type typically supports mallee vegetation and occupies upslope sections of the Soil Study Area. The shallow soil (<5cm) typically has a neutral pH, with intermediate soils (5cm to 15cm) acidic and deeper soils (60cm to 100cm) alkaline. Lithosols have a LSC of Class 7 or very low capability land with severe limitations that restrict most land uses and generally cannot be overcome.

Soils within Hera Mine are associated with the Yackerboom Soil Landscape. Previous investigations at Hera Mine have confirmed the presence of quartz rich highly gravelly lithosols.

6.2.2 Key Environmental Risks

Preservation and management of soils, particularly with reference to soil and stripping depths is important. for the future rehabilitation of the disturbed areas post operations. The characteristics of the soils present and the corresponding land capability will be established to facilitate appropriate management.

Land management such a pest and weed management has been ongoing at Hera Mine and will continue throughout the Project life.

6.2.3 Assessment

A soil and land capability assessment will be developed for the EIS. Specifically, the assessment will consider:

- The likely impacts of the Project on the soils and land capability of the site and surrounds.
- The likely agricultural impacts of the Project, including biosecurity risks.

- The likely impact of the Project on landforms (topography), including the long-term geotechnical stability of any new landforms on site.
- An assessment of the compatibility of the Project with other land uses in the vicinity of the Project in accordance with the requirements of Clause 12 of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*, paying particular attention to the agricultural land use in the region.

6.3 Subsidence

6.3.1 Key Environmental Risks

Mine planning undertaken for the Federation Site has sought to have negligible subsidence. Subsidence, when present, can result in a number of potential impacts including:

- Damage to infrastructure and utilities such as roads, underground pipelines and transmission lines.
- Impacts to groundwater flow paths.
- Rock mass damage via changes to rock mass permeability and groundwater flow.
- Impact to items of biodiversity and heritage due to surface cracking.
- Aquatic ecological impacts if subsidence occurs to creek beds and floodplains.

6.3.2 Assessment

An assessment of geotechnical stability and potential for subsidence impacts will be undertaken for the EIS.

A 3D numerical model to simulate proposed underground mining will be produced which:

- Forecasts mine subsidence and surface deformation, including impacts to surface infrastructure and environmentally sensitive sites.
- Identifies stopes, if any, with chimneying potential, which may fail and impact the surface.
- Provides recommendations for ensuring stope stability.
- Simulates stress, strain and rockmass damage throughout the life of mine to assess mine stability.
- Provides general guidance on an appropriate stoping sequence and recommend changes if required.

6.4 Geochemistry

6.4.1 Key Environmental Risks

The management of PAF will be required for the Project as is currently required at Hera Mine. PAF will be stored separately from NAF so that any leachate may be captured and stored in a specifically designed lined leachate pond to mitigate any impacts to surface waters.

The generation of PAF also needs to be managed from a tailings perspective. As stated in **Section 3.6.4**, the approved Hera TSF design has sufficient capacity to accommodate tailings generated from Federation ore, as does the TSF at PGM. The TSFs at Hera Mine and PGM will continue to be managed as per current operations to minimise the impact of any PAF disposal. This includes diversion of surface waters, seepage collection, surface and groundwater monitoring.

6.4.2 Assessment

Geochemical testing will be undertaken to inform the EIS and identify any potential environmental hazards and risks associated with the mineral wastes (waste rock and tailings). Assessment of the waste rock will involve:

- Bench-scale testing of tailings material.
- Sample collection core drills obtained from within the boxcut.
- Laboratory analysis of obtained samples at a NATA accredited laboratory.
- Analysis and interpretation of laboratory results.

6.5 Surface Water

6.5.1 Existing Environment

The Project is located within the Barwong-Darling River system catchment which makes up approximately 13% of the Murray-Darling catchment. The Barwong-Darling River system generates only 2.8% of flows into the Murray-Darling Basin, with 99% of flow captured upstream. The region uses 3% of the total surface water diverted for irrigation. The Darling River is located approximately 220km to the northwest of the Project. Surface water drainage within the Project catchment is characterised by sheet wash with mapped drainage features limited to indistinct, discontinuous, ephemeral watercourses. The Project area is located near the head of the catchment separating the Darling Catchment from the Macquarie Catchment (refer **Figure 13**).

There are no identified, permanent watercourses or drainage lines running through the Project area. At the Hera Mine site there are a few ephemeral watercourses which traverse the site. There are a number of unnamed, ephemeral, indistinct, State mapped watercourses which intersect the Services Corridor (refer **Figure 13**). These watercourses generally flow to the northwest, west or southwest.

The Project is located within the area covered by the Water Sharing Plan for the *Intersecting Streams Unregulated and Alluvial Water Sources 2011*. There is no anticipated need to extract surface water as part of the Project, therefore requirements of this water sharing plan would not be triggered.

The Project is not located within a drinking water catchment, and the local community does not rely upon surface water flows from the Project Area for drinking water supply.

6.5.2 Key Environmental Risks

As described in **Section 3.4.11.3**, surface water management infrastructure will be established for the Project to minimise any potential impacts to the ephemeral drainage lines and watercourses present in the area.

Surface water management at the Hera Mine site is managed through the existing Water Management Plan.

PAF waste rock stored on site as part of the operational activities has the potential to generate an acidic to low pH leachate. PAF waste rock will be segregated on a PAF waste rock pad with runoff from this pad directed to a lined leachate pond.

All surface water flows from disturbed areas will be diverted to the sediment retention dam allowing for appropriate capacity to accommodate significant rainfall events and to avoid any discharge to natural drainage lines.

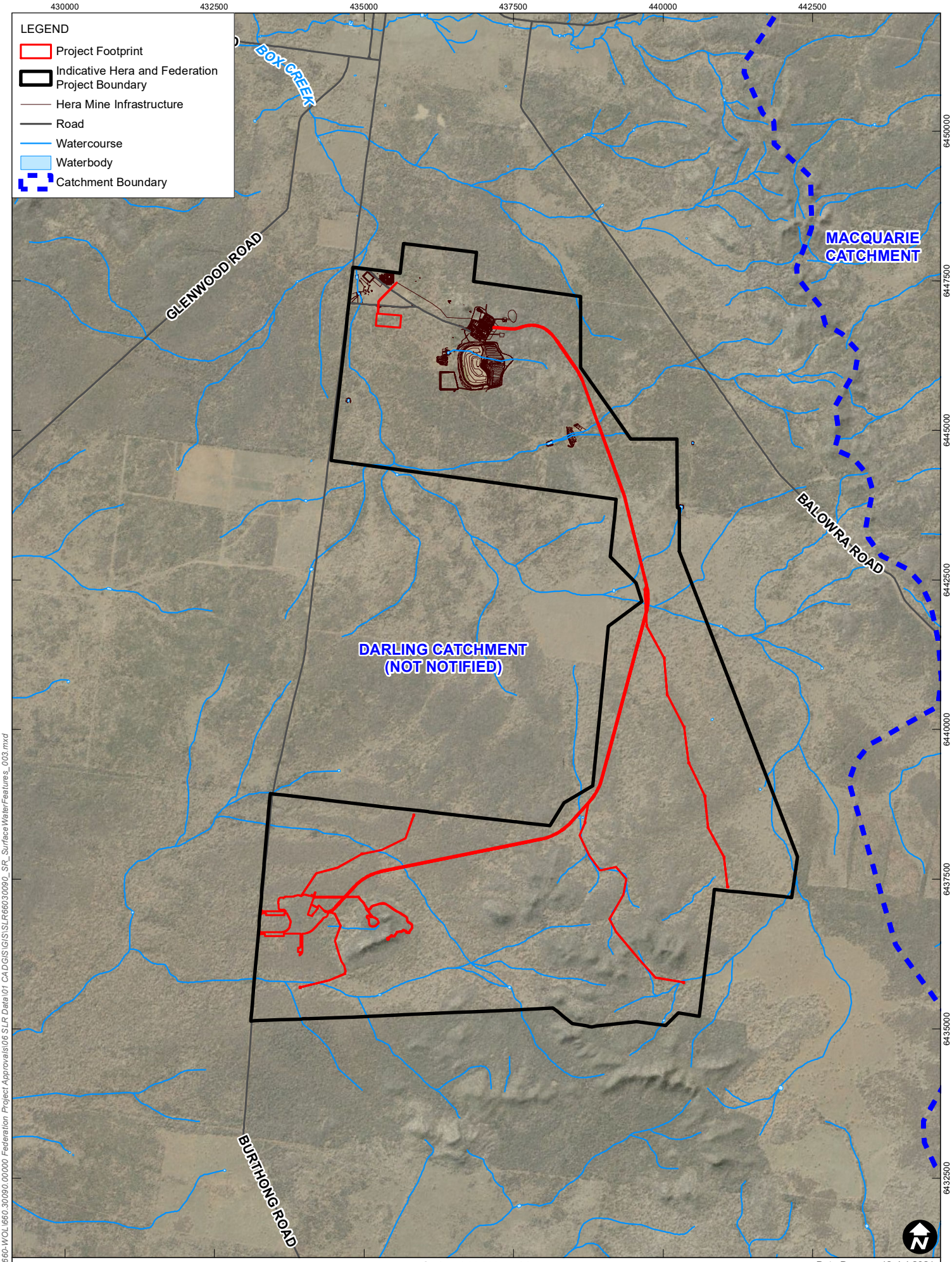
Surface water availability is generally low due to low rainfall and high evaporation rates characteristic of the Project area. A water balance integrating the Federation Site and Hera Mine will be developed to inform the availability and management of surface water and groundwater.

6.5.3 Assessment

A Surface Water Impact Assessment will be prepared which will include the following:

- Identification and mapping of all the existing surface water resources, including watercourses, floodplains, and catchment areas within the vicinity of the Project.
- Review and statistical analysis of available water quality data and reviewed against the trigger values, in accordance with *National Water Quality Management Strategy Guidelines*.
- Review of existing water monitoring data against relevant guideline values provided in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG 2018) and any limits specified by relevant EPLs.
- Assess the potential impacts on the water quality of receiving waters and identify potential mitigation measures for water quality impacts.
- Recommend any additional monitoring locations and/or parameters that may be considered appropriate for future monitoring to understand background conditions and water discharge impacts.
- Review the mine plan to manage dirty, clean and mine waters.
- Development of a site water balance which will include all aspects of the Project and be integrated with Hera Mine, including water demands and sources, water disposal methods, water supply infrastructure and storages, and security of water supply.
- Given the impacts to flooding are considered negligible a qualitative assessment of the potential flooding impacts of the Project will be undertaken based on a review of the local topography and proposed changes in the catchment areas.
- Provide an assessment of the potential impacts that the Project may have on downstream surface water resources and users. The impact assessment will be based on the outcomes of modelling and assessments described above. The impact assessment will describe potential impacts on the quantity and quality of surface water resources, particularly downstream waterways and water users.

The Surface Water Impact Assessment will also consider potential cumulative impacts on surface waters (e.g. catchments, flow regimes, surface water quality) from the Project and Hera Mine.



Scale: 1:80,000 at A4
Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 12-Jul-2021
Project Number: 660.30090.00000

Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020
Catchment Boundaries Office of Environment and Heritage (OEH) - Office of Water

SLR

Surface water features Federation Project

FIGURE 13

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6.6 Groundwater

6.6.1 Existing Environment

The aquifer in the Project area is similar in nature to that at Hera Mine, namely, the indurated Palaeozoic sediments that constitute a fractured rock aquifer where groundwater is stored and transmitted via fractures, joints and other discontinuities within the rock mass.

Preliminary groundwater investigations have been undertaken at the Federation Site, including the installation of seven monitoring bores which have been monitored since July 2020. The groundwater assessment will be informed by data collected from monitoring bores, during exploration drilling, and from observations from Hera Mine.

The current groundwater depth at the Federation Site is 70 to 90m below surface. Recharge to groundwater occurs through infiltrating rainfall and lateral throughflow from adjoining aquifers. Given the depth to water in the bedrock and annual rainfall volumes, the recharge rates are likely to be low. GHD (2021) state that based on the available data, groundwater flow direction within the Project Area is approximately east to west.

Based on information presented in GHD (2021), the groundwater quality within the Project Area may be summarised as follows.

- pH - very slightly acidic to very slightly basic (6.6 pH units to 7.6 pH units).
- Salinity - slightly brackish to saline (2,000µS/cm to 10,000µS/cm).
- Dissolved metal - generally low, with some elevated iron and manganese concentrations 5mg/L and 2mg/L respectively.

6.6.2 Key Environmental Risks

The boxcut and upper parts of the decline structure are located above the water table and, therefore, initial development inflows are expected to be negligible. As the decline continues below the regional water table, groundwater intersected by the construction of the decline would be pumped back to the surface.

The expected long-term inflow into the Federation underground workings is expected to be between 300 to 500m^3/day (3.5 to 5.8L/s). Initially, inflows may be higher than predicted as the pumping radius of influence expands towards a steady state.

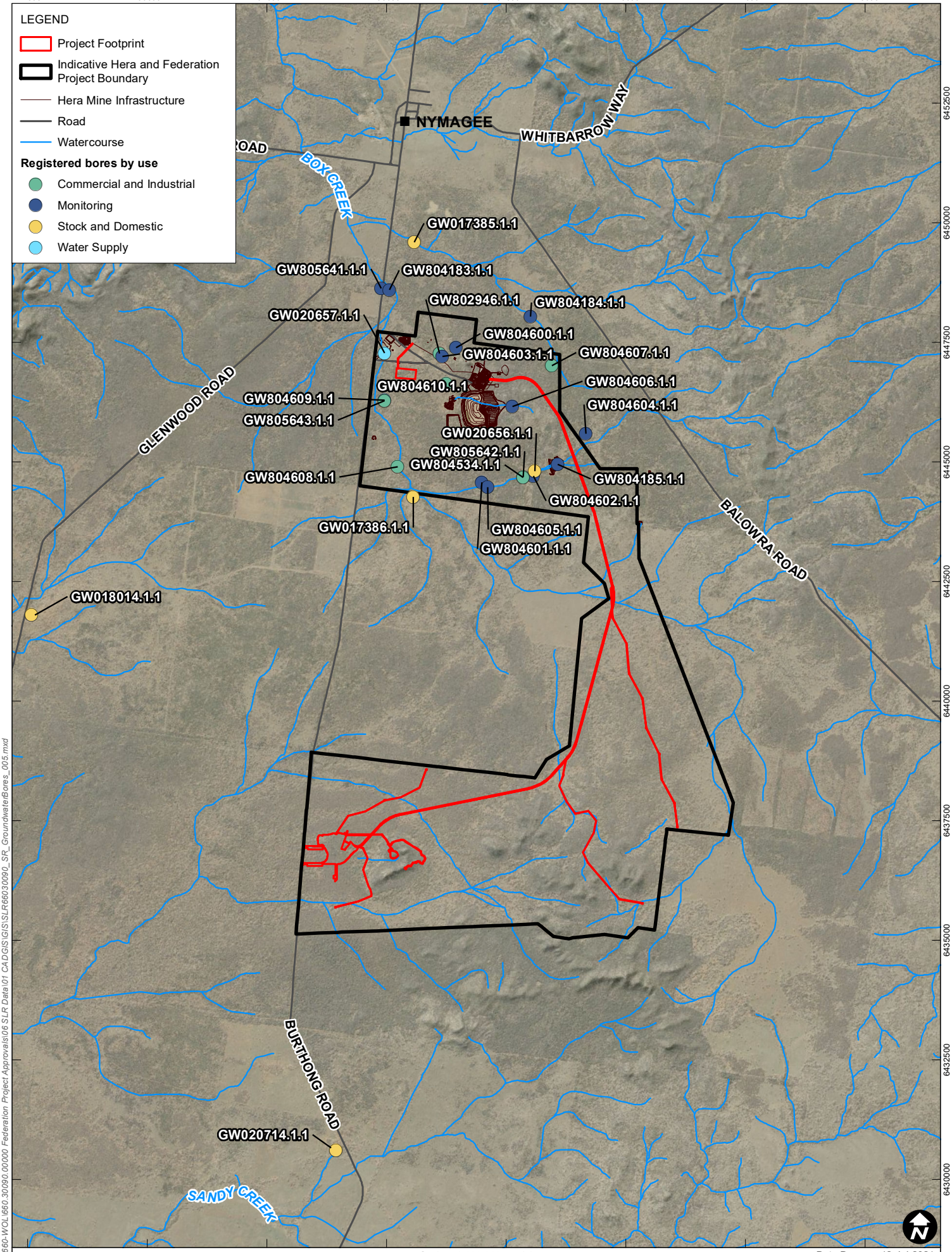
A search of registered groundwater bores was undertaken as part of the Exploration Decline Program REF. The search identified 34 bores within an approximate 20km radius of the Project area. Fifteen of the 34 registered bores are privately operated, with the closest private bore to the Federation Site being approximately 6km south. All other registered bores are production or monitoring bores associated with the Hera Mine. Groundwater bores in proximity to the Federation Project are provided in **Figure 14.**

The Groundwater Dependent Ecosystem Atlas identified a number of potential groundwater dependent vegetation communities surrounding the Project. However, these vegetative communities are unlikely to be groundwater dependent given the depth to groundwater, namely 70m to 90m below ground level (bgl) surrounding the Federation deposit, which is well below the rooting depth for terrestrial vegetation (RWC 2021).

Risks to groundwater at the Hera Mine site would be negligible.

6.6.3 Assessment

A Groundwater Impact Assessment will be prepared to inform the EIS in accordance with the issued SEARs. The groundwater impact assessment will involve the development of a 3D numerical hydrogeological model, which will be used to predict the future mine pit inflows during the operation of the proposed underground mine and potential impacts on groundwater levels in the aquifer. Two scenarios will be run which will be a no mining (null scenario) and mining scenario. The assessment will also consider cumulative impacts covering Hera Mine, and existing and proposed production bores at the Hera Mine. Assessment of potential impacts on identified groundwater receptors including assessment of impacts against the groundwater level and quality criteria in the *NSW Aquifer Interference Policy* will be undertaken as part of the groundwater impact assessment. The assessment will be subject to a peer review.


LEGEND
Project Footprint
Indicative Hera and Federation Project Boundary
Hera Mine Infrastructure
Road
Watercourse
Registered bores by use
Commercial and Industrial
Monitoring
Stock and Domestic
Water Supply
NYMAGEE
WHITBARROW WAY
BOX CREEK
GLENWOOD ROAD
BALOWRA ROAD
BURTHONG ROAD
SANDY CREEK
GW017385.1.1
GW805641.1.1
GW804183.1.1
GW802946.1.1
GW804184.1.1
GW020657.1.1
GW804600.1.1
GW804603.1.1
GW804607.1.1
GW804610.1.1
GW804606.1.1
GW804609.1.1
GW805643.1.1
GW804604.1.1
GW020656.1.1
GW805642.1.1
GW804534.1.1
GW804608.1.1
GW804185.1.1
GW804602.1.1
GW017386.1.1
GW804605.1.1
GW804601.1.1
GW018014.1.1
GW020714.1.1
427500
430000
432500
435000
437500
440000
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445000
6452500
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6447500
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6437500
6435000
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0
1
2
km
Scale: 1:100,000 at A4
Coordinate System: GDA 1994 MGA Zone 55
Date Drawn: 12-Jul-2021
Project Number: 660.30090.00000
Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020
Bore locations © WaterNSW
SLR
Registered groundwater bores
Federation Project
FIGURE 14
H:\Projects-SLR\660-SnyWOL\660.30090.00000 Federation Project Approvals\06 SLR Data\01 CAD\GIS\GIS\SLR660300090_SR_GroundwaterBores_005.mxd

6.7 Biodiversity

6.7.1 Existing Environment

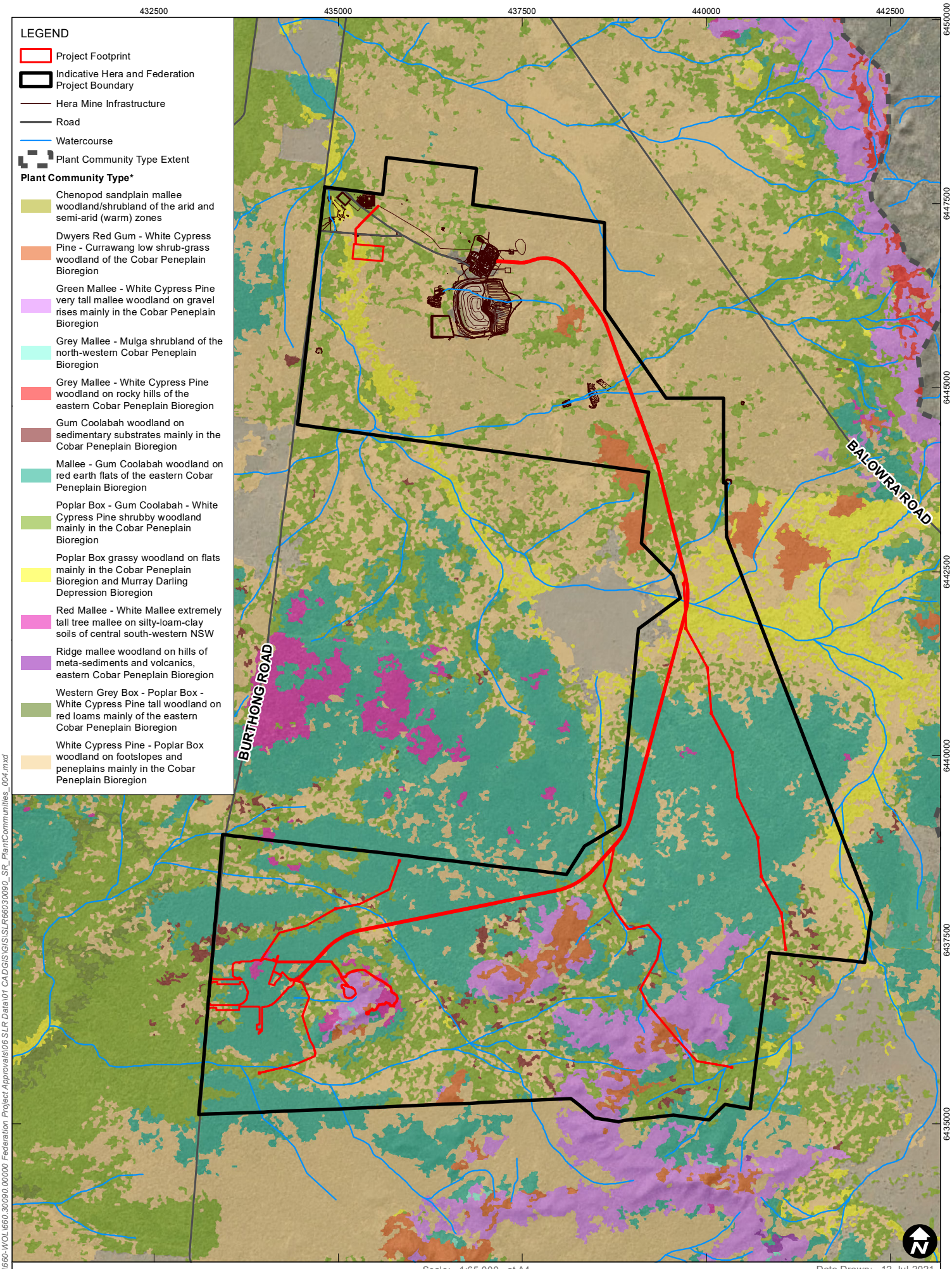
The majority of the Project, including the Hera Mine site, Services Corridor and Federation Site, has previously been subject to biodiversity surveys, most recently for the Hera Mine MOD 6 activities and the Exploration Decline Program REF. The Hera Mine site is also subject to annual biodiversity monitoring in accordance with the Hera Mine *Biodiversity Management Plan*.

Four Plant Community Types (PCTs) have been identified within the Project area (refer **Figure 15**):

- PCT174 - Mallee - Gum Coolabah woodland on red earth flats of the eastern Cobar Peneplain Bioregion.
- PCT104 - Gum Coolabah woodland on sedimentary substrates mainly in the Cobar Peneplain Bioregion.
- PCT103 - Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion.
- PCT184 - Dwyer's Red Gum – White Cypress Pine – Currawang low shrub-grass woodland of the Cobar Peneplain Bioregion.

One *Biodiversity Conservation Act 2016* listed Threatened Ecological Community (TEC), namely *Acacia Ioderi* Shrublands, is identified as being associated with PCT174. However, data obtained during field survey concluded that it does not correspond with the definition of that TEC (AREA (2021a)). Furthermore, there were no areas defined as Critical Habitat or Areas of Outstanding Biodiversity Value under *Biodiversity Conservation Act 2016* (BC Act) that have previously been identified within or in the vicinity of the Project Area.

AREA (2021a) identified 45 species listed under the BC Act or EPBC Act which are predicted to occur within proximity to the Project. These are provided in **Appendix C**. Previous targeted field surveys did not identify any of the candidate species to be present.



Scale: 1:65,000 at A4
Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 12-Jul-2021
Project Number: 660.30090.00000

Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020
*WesternSVM_v1_0_PCT_E_4492 - © State Government of NSW and Department of Planning, Industry and Environment 2019

H:\Projects-SLR\660-SnyWOL\660.30090.00000 Federation Project Approvals\06 SLR Data\01 CAD\GIS\GIS\SLR660300090_SR_PlantCommunities_004.mxd

SLR

Plant communities across Federation Project

FIGURE 15

6.7.2 Key Environmental Risks

Whilst the disturbance footprint of the Project has be kept to a minimum where possible, clearing of native vegetation will be required. The Services Corridor linking Hera Mine and the Federation Site is currently vegetated and will require clearing to allow for the construction and maintenance of the water pipeline, access track and electricity transmission line. Vegetation communities mapped along the Services Corridor include PCT 103, PCT 174 and some small areas of non-native vegetation.

Additional clearing will be required at the Federation Site post the development of the Exploration Decline Program. This includes an additional access haul road, as well as service roads to the quarry and communications tower. At the Hera Mine site some clearing of vegetation will be required to allow for the establishment of the solar farm.

As stated in **Section 6.7.1** no areas defined as Critical Habitat or Areas of Outstanding Biodiversity Value have been previously identified in the Federation Project Area. Nor have targeted surveys identified any listed species.

The proposal involves the establishment and operation of an underground mine which, once surface infrastructure is established, given the absence of subsidence predicted, would have minimal impacts to biodiversity.

6.7.3 Assessment

As previously stated, the Project Area has been subject to extensive field surveys as well as ongoing annual monitoring associated with current operations of Hera Mine site. The following will be undertaken for the EIS:

- Undertake a gap analysis based on the Project footprint and identify any areas which may not have been subject to recent survey.
- Complete survey of those areas identified.
- Preparation of a Biodiversity Development Assessment Report in accordance with BC Act.

6.8 Indigenous Heritage

6.8.1 Existing Environment

Field surveys have previously been undertaken across the Federation Site, large portions of the Services Corridor and at Hera Mine. Field surveys were undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.*

A search of relevant databases identified four registered sites, with one additional site in the process of being registered at the time of the search also noted. None of the identified sites were located in the vicinity of the proposed disturbance areas of the Federation Site or the Services Corridor.

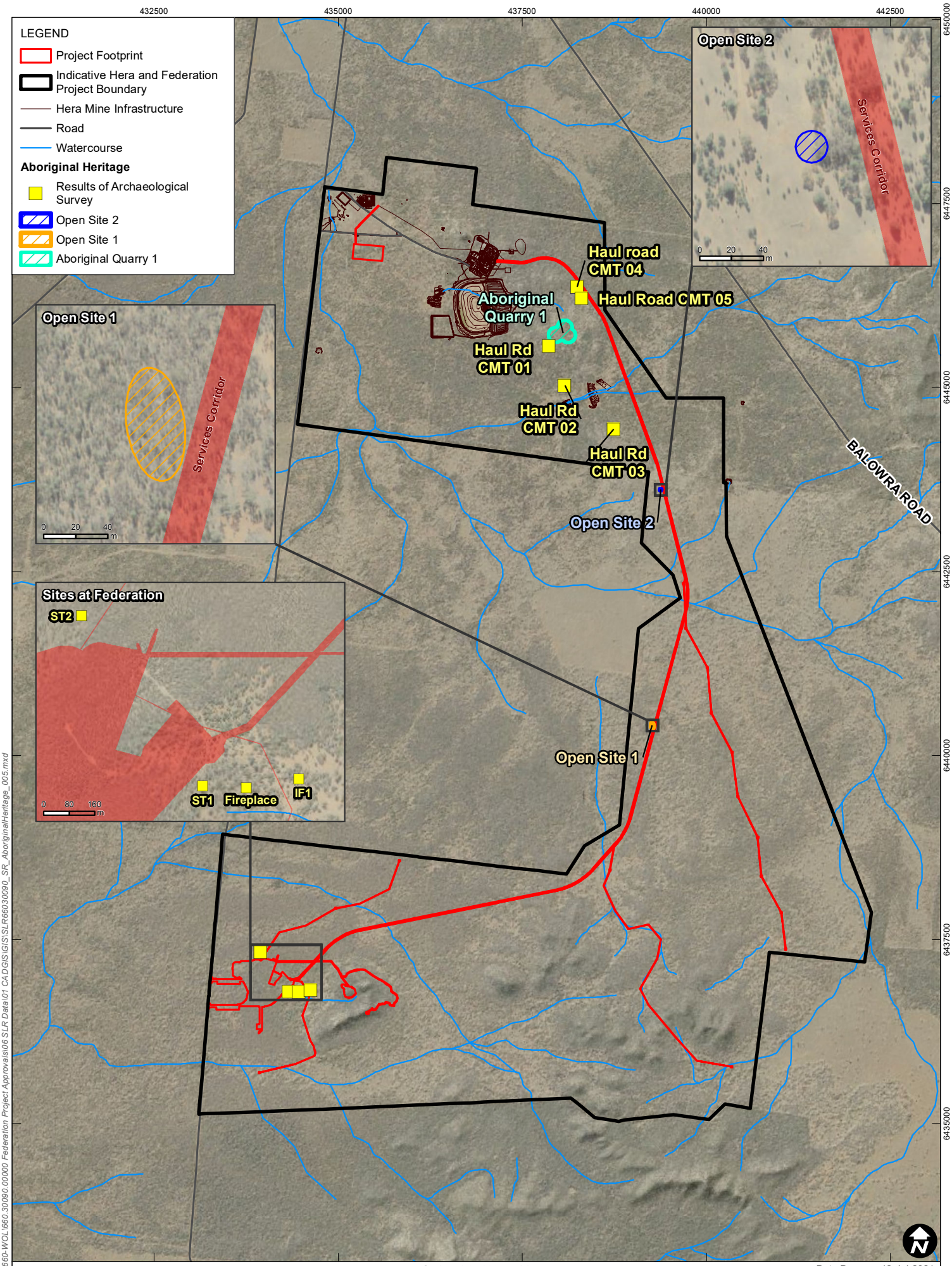
Table 12 present the results of the field surveys. In summary, 12 sites of Aboriginal heritage significance have been identified, 5 of which occur within 60m of the proposed area of disturbance (refer to **Figure 16**).

Additional heritage surveys will be conducted in any remining areas of the Project disturbance area that have not been subject to previous surveys.

Table 12 Identified Aboriginal Heritage Sites

Site	Description
PIPE OS1	This open site contains an outcrop of high-quality quartz with evidence of mining and a quartzite complete flake. The flake measures 55 mm long, 40 mm wide and 4 mm thick and contains 2 negative scars the on distal side with evidence of retouch along the edge. The site measures approximately 60m by 30m and is located near, but not within the Services Corridor.
PIPE OS2	This site contains an outcrop of quartz and a quartzite core. The core measure 50 mm long, 40mm wide and 20mm thick
PIPE CMT4	This site is located 20 m south of a drainage line. The tree is a dead Gum Coolabah that has been historically ringbarked and measures 170cm in circumference. The scar is 110cm long, 10cm wide and 2cm deep. The scar has 15cm of regrowth.
Federation Deposit Scar Tree 1	A north-facing scar on a Bimble box tree. The tree is approximately 25m high. There are two scars on this tree, one is from lighting strike and the other is cultural in origin. There is a large epicormic growth at the base of the scar which, along with significant regrowth and weathering, suggests that the scar is relatively old. The scar is 291cm long, 45cm wide and 15cm deep. Regrowth is approximately 10cm.
Federation Deposit Scar Tree 2	A scar on a c.200-year old Bimble box tree in an open woodland context. The tree is approximately 25m high. The has been significant regrowth and the scar is nearly closed over. The scar is 96cm long, 7cm wide and 20cm deep. Regrowth is approximately 20cm.
PIPE CMT1	This site is located within a flat grassy woodland. The scar is located on a dead Bimble Box on the southern side of the tree. The tree is approximately 10m high with a circumference of 1.9m. The scar measures 79cm long, 13cm wide, 10cm deep, with 19cm of regrowth. The scar is approximately 30cm above the ground.
PIPE CMT2	This site is located within a flat grassy woodland and is approximately 5m east of a drainage line. The scar is located on the south west side of a dead Bimble Box tree that is approximately 10m high and with a circumference of 1.7m. The scar measures 1.1m long, 23cm wide, 10cm deep and with a regrowth of 30cm.
PIPE CMT3	This site is located within a flat grassy woodland. The scar is located on the southern side of a dead Bimble Box that is approximately 22 m high. The dry face is extremely weathered and mostly missing. The scar measures 1.1m long, 17cm wide, and 15cm deep with 10cm of regrowth. The tree a
PIPE CMT5	This site is a possible marker tree. The tree is a living Gum Coolabah that is approximately 3.7m in circumference. It contains one large scar on the south side and two smaller scars on the west and northern sides. The south scar is 210cm long, 26-10cm wide, 23cm deep and has 30cm of regrowth. The scar is located 20cm from the ground. The west scar is 90cm long, 19cm wide, 30 cm deep and has 10cm of regrowth. The scar is 150cm from the ground. The north scar is 70cm long, 12cm wide, 30cm deep and has approximately 10cm of regrowth. The scar is approximately 150cm from the ground. The tree is also approximately 500m north east of PIPE Q1.
Federation Deposit Isolated Find 1	This isolated is an anvil fragment made from quartzose sandstone. The anvil has been broken but the other piece(s) were not found. It exhibits pecking where the split has occurred.

Site	Description
Federation Deposit H1	This site is a probable hearth or fireplace. It consists of an area of hardened, baked soil with a baked clayey ball nearby. The Traditional Owners had recently participated in targeted ground oven training sessions and provided guidance on its positive identification.
PIPE Aboriginal Quarry (Q) 1	This site comprises four outcroppings of high-quality quartz within a 500m2 area. A scatter of quartz fragments was observed around each outcropping with the largest scatter containing many worked flakes. AREA (2021b) state that this site is known to the Ngiyampaa People and has ties to the Sandy Creek Aboriginal trading route.



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Data Source: Basedata NSW SS, 2019
Aerial imagery supplied by © Department of Customer Service 2020
Heritage data supplied by AREA Environmental Consultants & Communication

SLR

Aboriginal heritage sites

FIGURE 16

6.8.2 Key Environmental Risks

Based on surveys of the majority of the Project disturbance area, it is likely that the Project can avoid impacts to items of Aboriginal heritage. Documentation of known sites and on-site markers will be installed to avoid inadvertent disturbance during site construction.

6.8.3 Assessment

An Aboriginal Heritage Impact Assessment will be prepared for the Project in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.* This will involve:

- Identification of any areas of the Project footprint which have not been previously surveyed.
- Undertaking additional surveys in consultation with the Registered Aboriginal Parties.
- Identification of items of Aboriginal heritage, and avoidance to the greatest extent possible.
- Provide management recommendations for identified sites identified as well as documentation of mitigation measures for discovery of unknown heritage items.

6.9 Non-Indigenous Heritage

The following databases were searched on 21 May 2021 to identify heritage-listed items within or in close proximity to the Project Area:

- National Heritage List.
- NSW State Heritage Inventory.
- Cobar Local Environmental Plan (LEP) 2012.

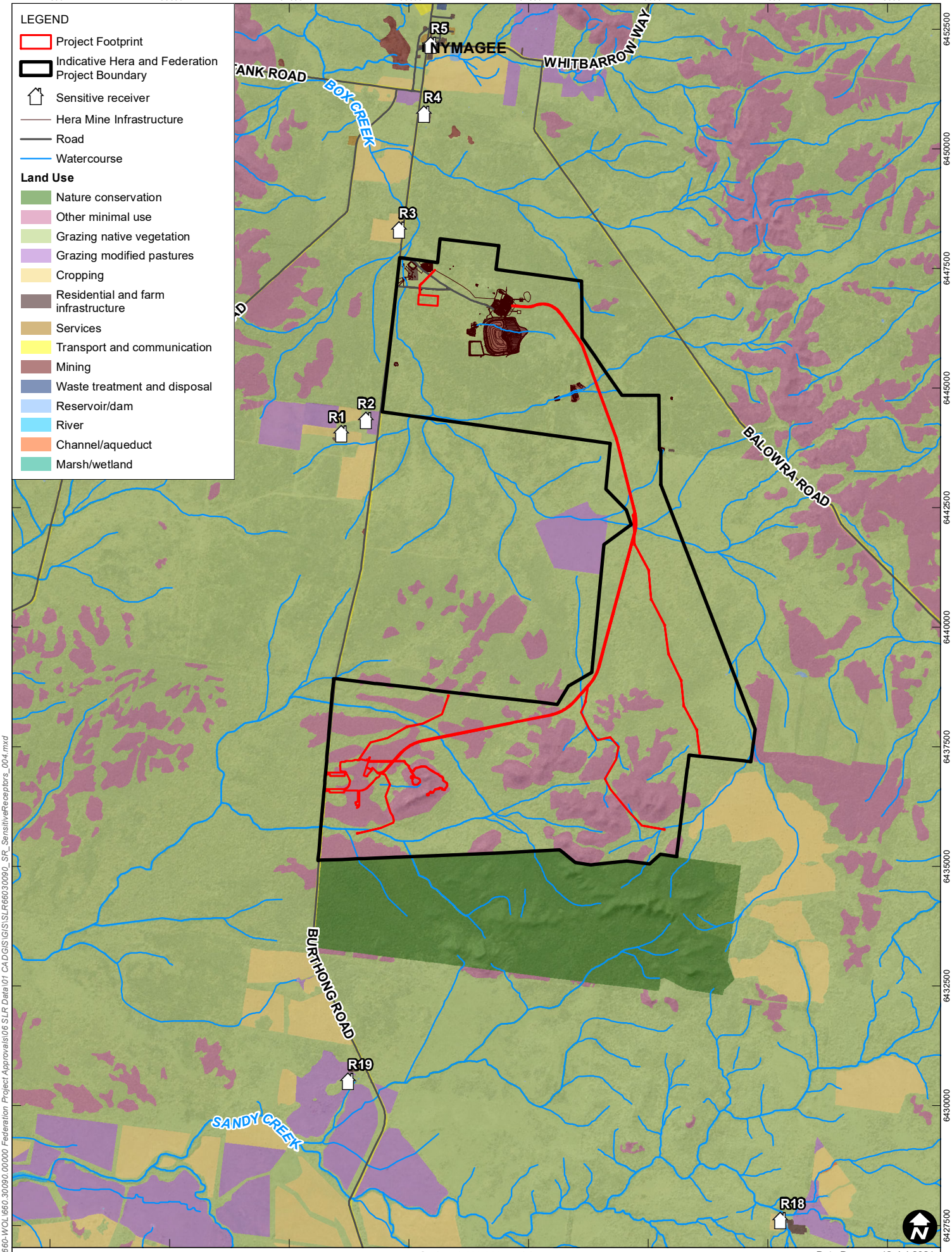
Based on surveys undertaken for the Exploration Decline Program REF Area, there are no items of historic, cultural or natural heritage were identified within or in close proximity to the Federation Site.

6.10 Noise

6.10.1 Existing Environment

The Project is located in rural area with generally low anthropogenic noise sources, other than Hera Mine. The nearest sensitive receivers to the Hera Mine infrastructure areas are located approximately 2.5km to the north west on the western side of Burthong Road and 3km the south west on the western side of Burthong Road. The closest residence to the Federation Site is located approximately 6km to the south. There are 2 residences located along Burthong Rd with one approximately 280 m from the road and the other approximately 760 m from the road. Refer to **Figure 17** for location of sensitive receivers.

Regular noise monitoring is currently undertaken for the Hera Mine site. The measured levels confirm that the background acoustic environment is very quiet as would be anticipated in the Project area.



Scale: 1:100,000 at A4
Coordinate System: GDA 1994 MGA Zone 55

Date Drawn: 12-Jul-2021
Project Number: 660.30090.00000

Data Source: Basedata NSW SS, 2019
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Land Use © State Government of NSW and Department of Planning, Industry and Environment 2020

Sensitive receivers

FIGURE 17

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6.10.2 Key Environmental Risks

Construction and operational activities, including transport and limited blasting of the box cut, have the potential to result in adverse impacts to the acoustic amenity.

6.10.3 Assessment

A Noise and Vibration Impact Assessment (NVIA) will be prepared for the EIS. The NVIA will assess potential noise and vibration impacts from Project construction and operational activities including transport and cumulative impacts with Hera Mine. The NVIA will be prepared in accordance with the following documents:

- *Department of Environment, Climate Change Interim Construction Noise Guideline* (ICNG) 2009.
- NSW Environment Protection Authority (EPA), *Noise Policy for Industry* (NPI), 2017.
- *Department of Environment, Climate Change and Water NSW (DECCW), Road Noise Policy* (RNP), 2011.
- NSW EPA, *Rail Infrastructure Noise Guideline* (RING), 2013.
- NSW Government, *Voluntary Land Acquisition and Mitigation Policy* (VLAMP), 2018.
- Australian Standard AS 1055:2018 (AS 1055) – *Description and Measurement of Environmental Noise*.
- Australian Standard AS2187.2-2006 (AS2187.2) – *Explosives—Storage and Use Part 2: Use of Explosives*.
- Australian and New Zealand Environment Conservation Council (ANZECC) – *Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration*.

Specifically, the NVIA prepared for the Project will include:

- Determination of existing acoustic environment through a review of existing monitoring which is undertaken for the Hera Mine site operations.
- Review of available meteorological data.
- Compilation of a plant and equipment (including respective sound power levels) for both construction and operation phases.
- Development of a 3D numerical model to quantify potential operational noise impacts. The NVIA will also consider the potential impacts to sleep disturbance and impacts to vacant land (VLAMP 2018).
- The EPA's ICNG will be adopted for assessing potential emissions during the construction phase of the Project.
- Blast overpressure and vibration emissions will be completed for up to two proposed worst-case blast scenarios, including portal development.
- An assessment of offsite traffic movements will be completed for the Project. The assessment will quantify existing and future traffic movements for the Project and compare the assessed noise results against the RNP criteria.
- An assessment of operational rail movements associated with the Project will be completed in accordance with the RING.

6.11 Air Quality and Green House Gas

6.11.1 Existing Environment

Background air quality in the Project area has been assessed fusing existing air quality data from the surrounding region, including from the Tamworth, Bathurst, Albury, and Wagga Wagga North air quality monitoring stations operated by the NSW DPIE. It should be noted that these four stations, although located in rural areas of NSW, are located in more densely populated areas than those surrounding the Project area.

Table 13 Background Air Quality

Air Quality Parameter	Averaging Period	Cumulative Assessment Criteria	Adopted Background Concentration
PM_{10}	Annual	25 $\mu g/m^3$	19.9 $\mu g/m^3$
	24 hour	50 $\mu g/m^3$	Daily Varying
$PM_{2.5}$	Annual	8 $\mu g/m^3$	7.5 $\mu g/m^3$
	24 hour	25 $\mu g/m^3$	Daily Varying
Total Suspended Particles (TSP)	Annual	90 $\mu g/m^3$	90 $\mu g/m^3$
Dust Deposition	Annual	4 g/m^2/month	2 g/m^2/month

6.11.2 Key Environmental Risks

The key risks relating to air quality and greenhouse gas from the Project include:

- Impacts relating to dust impacts including TSP, PM_{10} and $PM_{2.5}$ associated with construction and operational site activities.
- Consideration of the cumulative impact of all emissions associated with the Project and Hera Mine including ventilation rises at Project, process plant emissions, dust generating activities, vehicle and fuel emissions and fugitive emissions.
- Contribution to scope 1 and scope 2 greenhouse gas emissions through operations including truck transportation and fuels use.

6.11.3 Assessment

An Air Quality and Greenhouse Gas Assessment (AQGHG) Impact Assessment will be prepared for the Project. This will include:

- Establishing the existing baseline environment for the Project.
- Preparation of emissions inventories for TSP, PM_{10} and $PM_{2.5}$.
- Conduct dispersion modelling for TSP, PM_{10} and $PM_{2.5}$.
- Provide recommendations regarding any additional design and/or operational safeguards/mitigation measures as a result of the model output.
- Compare predicted concentrations with the relevant ground level concentration criteria.

- Provide relevant inputs in the HHRA.

The AQ&GHG Impact Assessment will be prepared in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. The assessment will have regard to the *NSW Government's Voluntary Land Acquisition and Mitigation Policy*. The assessment will also consider the pending *National Environment Protection (NEPM) Ambient Air Quality (AAQ) standards*.

6.12 Visual

6.12.1 Existing Environment

The Federation Site is currently vegetated with no infrastructure located on site and there are no sources of permanent lighting. Changes to the visual amenity associated with amendments at the Hera Mine will be negligible as new infrastructure will result in negligible changes compared to existing infrastructure.

6.12.2 Assessment

Utlising GIS visual software a view shed analysis will be developed which will detail the current landform. This will be utilised to determine the visual impact of the Federation Site on visual receptors, including viewpoints from public areas. Due to the isolated location of the Project and intervening vegetation visual impacts are not anticipated. However, should impacts be identified these would be managed through appropriate mitigation measures.

6.13 Traffic and Transport

6.13.1 Existing Environment

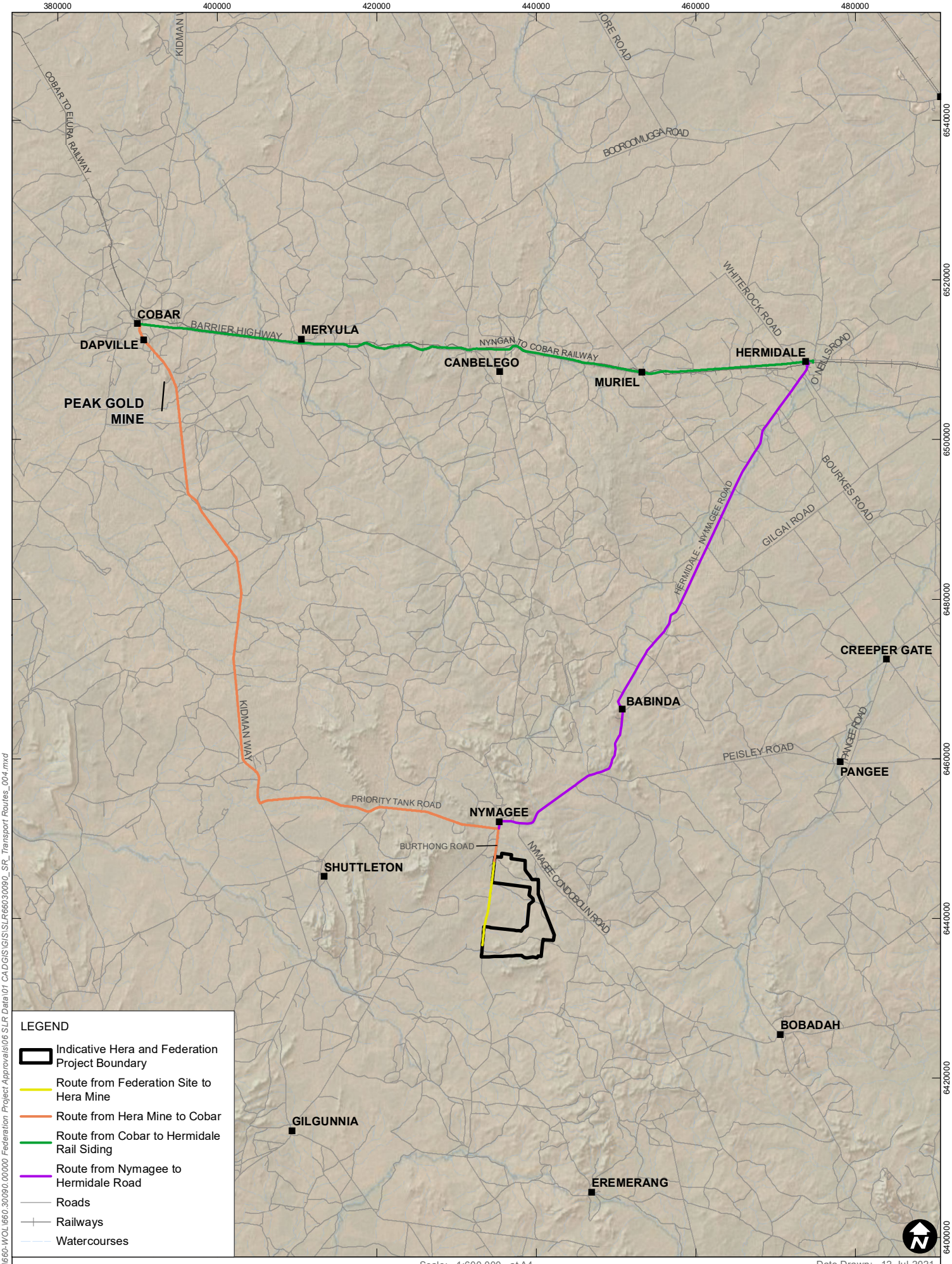
The Project will utilise Burthong Road as the main haul route between the Federation Site and Hera Mine. Burthong Road is a local road that provides a connection between Nymagee in the north and Tallebung Road at Eremerang in the south. Burthong Road is sealed for approximately 6km south of Nymagee (and 2.2km south of the intersection with the Hera Mine Main Site Access Road) and unsealed over the remaining 48km. The sealed portion of Burthong Road is approximately 7m wide and allows for a single travel lane in each direction. The road has a posted speed limit of 100km/h.

The intersections between Burthong Road and the Hera Mine Main Site Access Road is a stop-sign priority-controlled T-intersections (devoid of line marking), with Burthong Road being the priority road. Sight distances along Burthong Road from the Hera Mine Main Site Access road are satisfactory and allow for clear sight lines to oncoming vehicles along Burthong Road. The Hera Mine Main Site Access Road intersection was constructed to accommodate road trains.

Haulage of ore to PGM will follow Burthong Rd, Priory Tank Road and Kidman Way. Priory Tank Road is a local road. Kidman Way is a State controlled road. Both Priory Tank Road and Kidman Way are sealed and maintained by TfNSW Transportation of ore or waste rock is proposed to be undertaken by B-double trucks. The route is currently approved as the alternate route for concentrate haulage from the Hera Mine during road closures or other issues associated with the primary route.

Concentrate from the Hera Mine process plant will be transported to the Hermidale Siding via the primary route Nymagee-Hermidale Road. The Nymagee – Hermidale Road is a regional road with a width of approximately 7m and is maintained by Bogan Shire Council. Approximately 1km of the Barrier Highway is utilised to access Hermidale siding which is a State road and therefore maintained by Transport for NSW (TfNSW).

Transport routes relevant to the Federation Project are provided in **Figure 18**.



Scale: 1:600,000 at A4
Coordinate System: GDA 1994 MGA Zone 55

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Project Number: 660.30090.00000

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SLR

Transport Routes

FIGURE 18

6.13.2 Key Environmental Risks

Provided in **Table 14** is a summary of average daily truck one way trip for various routes associated with the Project. Ore and concentrate are proposed to be hauled in B-double trucks of 36.5m in length (or 50 tonne payload).

Table 14 Average Daily Truck Movements

Load and Route	Average Daily Max - One-way Laden (unless otherwise noted)
Ore – Federation Site to PGM	10.96
Ore – Federation Site to Hera Mine	41.21
Tailings – Hera to Federation	20.71
Total two-way truck movements Burthong Road – Hera / Federation	123.60 (61.8 one way)
Concentrate Hera to Hermidale	8.46
Concentrate Peak to Hermidale	2.10

In addition, the local and State road network will be utilised by workers travelling to and from the accommodation village on shift roster and for deliveries of equipment and supplies (e.g. fuel and gas).

Use of Burthong Road as the haul route between Hera Mine and the Federation Site will also require an upgrade of the road, which is currently unsealed for approximately 8 km, as well establishment of intersections with the Federation Site access and heavy vehicle haul road.

6.13.3 Assessment

A Traffic Impact Assessment (TIA) will be prepared in accordance with TfNSW guidelines to determine the potential impacts to the road network from the Project. Specifically, the TIA will include:

- Obtain and review relevant background material relating to the Project, including construction and operational workforce numbers, likely places of residence, roster/shift arrangements, delivery and visitor schedules, access arrangements, transport routes and the appropriate time horizons for the future conditions assessment.
- Establish the existing environment baseline conditions including liaising with Cobar and Bogan Shire Councils to obtain any available traffic volume and composition data.
- Obtain the most recently available historic crash data from TfNSW recorded over a five year period on roads of relevance to the Project and review with regard to the safety of the road system.
- Identify other planned or approved developments in the region which would be expected to impact on road transport conditions on those roads of relevance to the Project.
- Assess the baseline traffic conditions with regard to the capacity, efficiency and safety of the road network. This would include assessment of midblock levels of service at surveyed locations against Austroads guidelines, and of surveyed intersection operating conditions using current SIDRA INTERSECTION modelling software if relevant.
- Identify appropriate mitigation measures to effectively manage the road transport impact of the Project.

6.14 Hazard and Risk

6.14.1 Key Environmental Risks

Potential hazards associated with the Project from a public human health perspective may include:

- Air emissions including particulates, metals and other contaminants of concerns (e.g VOCs and PAHs).
- Noise and vibration emissions from activities.

Other risks which need to be considered for the Project include:

- Hazard and risks associated with the storage of fuels, dangerous goods and chemicals.
- Storage of explosives in the magazine area.
- Transport related risks.

6.14.2 Assessment

A Human Health Risk Assessment (HHRA) will be prepared for the Project in accordance with the relevant National protocols / guidelines including:

- *enHealth Environmental Health Risk Assessment, Guidelines for Assessing Human Health Risks from Environmental Hazards* (enHealth 2012).
- *Health Impact Assessment Guidelines, Commonwealth Department of Health and Aged Care* (enHealth 2017).

The HHRA will utilise inputs from the NVIA and the AQGHG Impact Assessment and will include:

- Data review, evaluation and issue identification (problem identification).
- Toxicity/hazard assessment.
- Exposure assessment.
- Risk characterisation.

The HHRA focuses on risks to human health external to the workforce who are subject to the *Work Health and Safety Act 2011* and *Work Health and Safety (Mines and Petroleum Sites) 2013*.

A Preliminary Hazard Analysis (PHA) in accordance with *State Environmental Planning Policy 33 - Hazardous and Offensive Development* (SEPP 33) will also be prepared for the EIS. It is anticipated given the nature of the operations and scale a preliminary PHA will be required.

6.15 Social

6.15.1 Existing Environment

A Social Impact Assessment Scoping Report was prepared by Element and is included as **Appendix D**. In accordance with the *Draft Social Impact Assessment Guideline (DPIE 2020)* the report was prepared to:

- Establish a social baseline for the Project.

- Identify Project activities that could have social impacts and group them against the categories presented in the Guideline.
- Provide a summary of potential social impacts that require additional assessment (scoping worksheet).
- Establish appropriate methodologies to investigate and assess Project related social impacts.
- Provide a brief overview of potential management measures and ongoing monitoring.

To scope the Project the following engagement and research methods were implemented:

- Inception meeting and social locality workshop with Hera Resources staff.
- Semi-structured interviews (n=5) with Nymagee residents and Project stakeholders in Cobar.
- Community information session held in Nymagee in March 2021.
- Community values survey distributed to registered Aboriginal parties and native title claimants, community information session attendees, and Hera Mine Community Consultation Committee.
- Literature review focussing on nearby projects with potential for cumulative impacts.

A Project webpage was created on the Aurelia website to introduce the Project and share Project information. A link to the community values survey was made available on the website.

6.15.1.1 Regional Context

Cobar Shire is situated in the centre of NSW encompassing an area of around 45,600 square km, about 700km north-west of Sydney and 650km north of Canberra. With a population of approximately 5,000 residents, the shires' economy is built around mining (copper, lead, silver, zinc and gold), and pastoral/ agricultural industries.

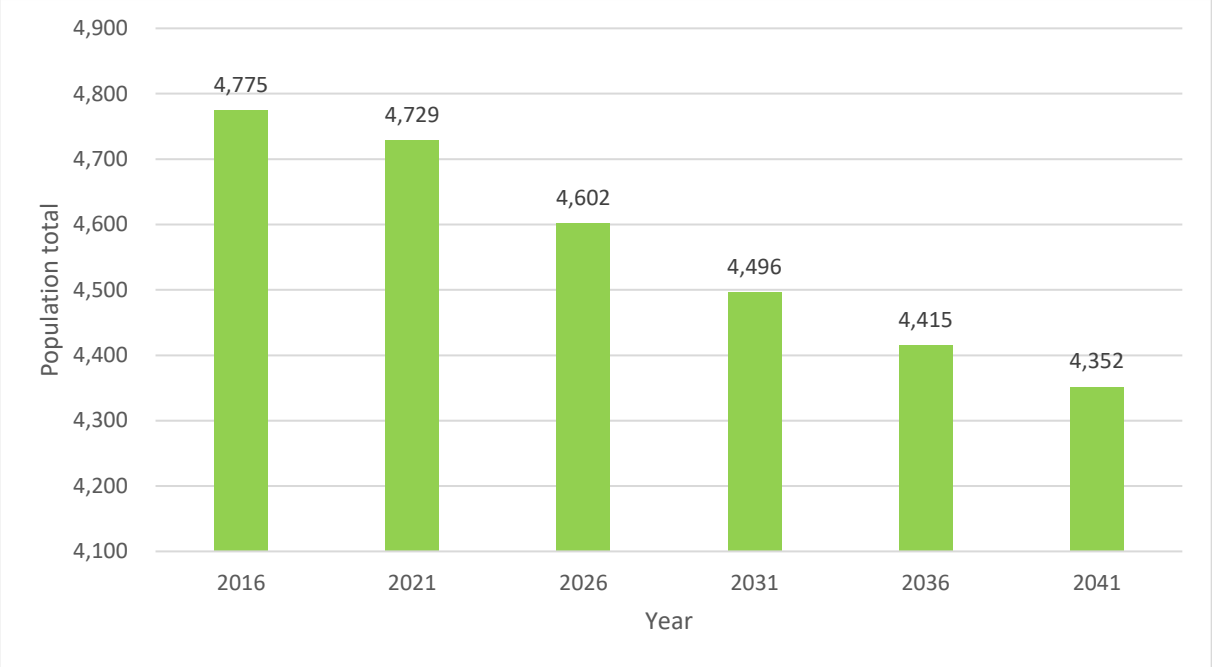
According to the Australian Bureau of Statistics (ABS), Cobar's population has been reasonably steady for the past ten years. However, anecdotal evidence derived from consultation with local residents suggests that the population of Cobar is in decline and school student numbers are similarly reducing annually in recent years.

Over a third of the workforce is employed in the mining and manufacturing industries, 10% are employed in agriculture and retail is the next largest employer in the shire (8%). Due to mining, the median weekly income reported by the ABS is higher than the national average.

6.15.1.2 Local Context

The Project is approximately 15km south of Nymagee, a small township with approximately 20 residents. Population projection data illustrates the trend for the Cobar LGA. **Figure 19** shows that the LGA population is expected to decrease from 2016 – 2041. To extrapolate for Nymagee, the population of this area is likely to remain constant or decrease in line with the data for Cobar.

Figure 19 Cobar LGA Population Prediction



Mining and agriculture are the two sectors within which male Nymagee residents predominantly find employment (ABS, 2016). The female population predominantly find employment within the agriculture, forestry and fishing sector, with a small percentage working in the accommodation and food services sector (ABS, 2016).

Through consultation conducted for the scoping study, it was determined that some residents of Nymagee are employed as contractors to the existing Hera Mine. In addition, around 15% of people working at the Hera mine are Cobar residents.

The average median weekly household income of the suburb of Nymagee is $1,224.00 (ABS, 2016), and this data is broken down further in **Table 15**.

Table 15 Total Household Income

Weekly household income ($)	Total households
1-149	3
800 - 999	4
1,000 – 1,249	4
1,500 – 1,749	3
2,000 – 2,499	5
2,500 – 2,999	3

Weekly household income ($)	Total households
Partial income stated (Comprises households where at least one, but not all, member(s) aged 15 years and over did not state an income and/or was temporarily absent on Census Night).	6
All incomes not stated (Comprises households where no members present stated an income.)	3

6.15.2 Preliminary Social Impact

The SIA process assesses a project from the perspective of people - intending for a development to be more socially sustainable when this assessment is applied. The SIA identifies, predicts, evaluates and develops responses to social impacts as part of an integrated assessment that also considers environmental, economic, social and cultural impacts.

For the purpose of this assessment, the social impact categories outlined in the Draft Social Impact Assessment Guideline (DPIE, 2020) have been adapted to help identify the potential social impacts. These categories are outlined in **Table 16**.

Table 16 Social Impact Categories

Categories	Definition
Way of life	How people live, how they get around, how they work, how they play, and how they interact each day
Community	Community composition, cohesion, character, how the community functions, and people's sense of place
Accessibility	How people access and use infrastructure, services and facilities, whether provided by a public, private or not-for-profit organisation
Culture	Aboriginal and non-Aboriginal, including shared beliefs, customs, values and stories, and connections to Country, land, waterways, places and buildings
Health and wellbeing	Physical and mental health especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, and changes to public health overall
Surroundings	Ecosystem services such as shade, pollution control, and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity

Categories	Definition
Livelihoods	People's capacity to sustain themselves through employment or business, whether they experience personal breach or disadvantage, and the distributive equity of impacts and benefits
Decision-making systems	Whether people experience procedural fairness, can make informed decisions, can meaningfully influence decisions, and can access complaint, remedy and grievance mechanisms.

The impacts considered relevant to the Project and which will be considered for further investigation in the SIA are:

- Way of life:
  - How people play
- Community:
  - Cohesion (positive impacts)
- Accessibility:
  - How people access and use infrastructure
  - Services and facilities
- Culture:
  - Shared beliefs, customs, values and stories (positive impacts)
  - Connection to country, land and waterways, places and buildings
  - Employment of Aboriginal people
- Health and wellbeing:
  - Physical and mental health, both positive and negative impacts
- Surroundings:
  - Public safety and security
- Livelihood:
  - Distributive equity of impacts and benefits
- Decision-making systems:
  - Access to complaint, remedy, and grievance mechanisms.

A preliminary social impact assessment was prepared which will inform the need for further assessment and consideration of social impacts for the EIS, which is detailed in Section 4 of the SIA included as **Appendix D**.

6.15.3 Assessment

Based on the results of the preliminary social impact scoping, the methodologies proposed to assess the impact of the identified social matters is in **Table 17**. A second community information session will also be held during Phase 2 of the SIA. It will be an additional method to enable further exploration and assessment of potential social impacts.

Table 17 Social Impact Methodology

Social matters		Aspect outline	Assessment methodology
Way of life	How people play	With FIFO and DIDO staff not living in Nymagee, the community will not experience a way of life benefit that Project employees might otherwise contribute; however, it was recognised that Nymagee cannot support a mining workforce	Interview/workshop with Hera Resources about rostering and FIFO / DIDO policy
Accessibility	How people access and use infrastructure	Telecommunications (e.g. mobile phone and internet) are poor in the area at present and increased demand from Project workers could potentially exacerbate the issue	Literature review of mobile coverage issues in regional NSW and/or consultation with telecommunication service provider
	Services and facilities	The community's water supply (currently boreholes) may not be sustainable. The concern relates to both water availability and contamination, and how it may be impacted by the Project's requirement for this resource	Review of technical study commissioned for the EIS (e.g. hydrogeology study)
Culture	Connection to country, land and waterways, places and buildings	• The Cobar LALC suggested that there are potentially scar trees and important cultural areas near the Project • Potential disconnection to country if the Cobar LALC cannot assess bore site area to check for artefacts before drilling	• Review of technical study commissioned for the EIS (e.g. cultural heritage study) • Dialogue between Hera Resources and relevant LALCs, registered Aboriginal parties, native title claimants, or individuals
	Aboriginal employment	Employment of aboriginal people at the mine	
Health and wellbeing	Physical and mental health	• The community is concerned about dust generated by the TSF, ROM operations and the movement of heavy vehicles on unsealed roads (i.e. Burthong Road) which could be used by Project vehicles. Dust has previously impacted rainwater harvested from rooftops, creating a health concern and also mental stress that could be exacerbated by the Project	• Review of technical study commissioned for the EIS • Follow-up interviews and dialogue between Hera Resources and property owners

Social matters		Aspect outline	Assessment methodology
Surroundings	Public safety and security	Speeding heavy vehicles have been experienced on the local roads, which could impact the safety of other motorists or pedestrians. This impact could increase with additional heavy vehicle movements	• Review of technical study commissioned for the EIS (e.g. traffic impact assessment)
	Noise and vibration	Impacts from blasting operations at Hera Mine has been experienced and noted in existing community consultation documentation	• Review of technical study commissioned for the EIS (e.g. noise and vibration study)
Livelihood	Distributive equity of impacts and benefits	Any short-term increase in workers (i.e. during the construction phase), and the extension of the period of operations (i.e. the operational workforce numbers shift from mining at Hera Mine to mining at the Federation Site) has the potential for a disproportionate burden to be placed on medical (or other) services in Cobar.	• Semi-structured interviews with service providers • Descriptive statistical analysis of service provision data • Online survey of Hera Mine workforce to determine service usage
Decision-making systems	Access to complaint, remedy and grievance mechanism	Additional direct engagement with Hera Resources representatives is desired by the community	Workshop with Hera Resources staff

6.16 Economics

6.16.1 Key Environmental Risks

Hera Mine is one of the main industries in proximity to the township of Nymagee. The Hera Mine is approved for operations until December 2025, after which it is planned for mine closure, unless the Project proceeds. This discontinuation of mining would have a negative impact on the township of Nymagee as well as the wider local communities of Cobar Shire.

The Project would provide positive economic outcomes through the continuation of an operational workforce with higher workforce numbers, and continued support of local businesses.

6.16.2 Assessment

The economic impact assessment will be prepared to inform the EIS. In accordance with the *Guidelines for the economic assessment of mining and coal seam gas proposals (DPE 2015)* the economic impact assessment will include:

- Cost Benefit Analysis (CBA):
  - Establishment of a "base-case" therefore absence of the Project.
  - Project definition.
  - Determine the economic costs and benefits of the Project.
  - Modelling of risks and uncertainty, unquantified impacts and distribution of cots and benefits through spreadsheet model.
- Local Effects Analysis (LEA):
  - Regional economic inputs and outputs model.
  - Summary of the structure of the regional economy.
  - Obtaining relevant data.
  - Analysis of construction and regional economic Impacts.
  - Consideration of regional impacts at the cessation of the Project.

7 Stakeholder Engagement

7.1 Community

Engagement with the local community has been initiated for the Project and builds upon the established relationship Hera Resources and Aurelia have with the local community. Engagement activities undertaken during the scoping phase are detailed in **Section 6.15.1**.

In addition, Hera Resources has ongoing engagement with landholders directly impacted by the Project and with the community through activities associated with Hera Mine.

7.2 Agency Engagement

As part of the scoping assessment for the Project, Hera Resources have undertaken a pro-active approach when engaging with relevant agencies. A number of meetings have been held during the scoping phase. This has provided the opportunity to introduce the Project and facilitate a discussion of key issues which will require further consideration and assessment as part of the EIS. A summary of agencies consulted is provided in the table below.

Table 18 Agency Consultation

Agency	Location	Date of Meeting	Key Issues
DPIE	MS Teams	7th May 2021	Confirmation of planning pathway Discussion of consultation requirements
Crown Lands	MS Teams	13th May 2021	Site is located with the western lands lease Discussion regarding land ownership and activities outside of a mining lease If any offsets on Crown Land proposed departments involvement required Consider all tenure
TfNSW	MS Teams	13th May 2021	Movements of concentrate approximately doubling. Any upgrade of intersections would be a Council matter 80% of workers are DIDO TfNSW will assist Councils with advice if requested
Environment Protection Agency (EPA)	MS Teams	20th May 2021	Confirmation of EPL boundary Waste management Consideration of tailings and cyanide management

Agency	Location	Date of Meeting	Key Issues
Cobar Shire Council	On site	11th May 2021	Broadly supportive Consider overlaps with Council activities and regular communication
Heritage NSW	MS Teams	18th May 2021	EIS to be clear about impacts (or lack thereof) to heritage Ensure that RAP comments have been addressed Continue implementation of ACHMP
Biodiversity Conservation Science Directorate	MS Teams	17th May 2021	Credits are not required all up front for staged developments Always undertake a precautionary approach Upgrade to roads needs to be included – no clearing proposed
Mining Exploration and Geoscience	MS Teams	12th May 2021	Discussion on the CDPD process MEG will provide a letter to DPIE confirming process has been undertaken Site visit and presentation required Resource and Economic assessment required ~2mths prior to EIS submission
CDPD Meeting: Mining, Exploration and Geoscience. Representatives from: • Assessment Coordination • Economics • Royalties • Geoscience • Resource Assessments • Strategy and Planning • Industry Development • Land Use • Exploration Assessment • Resource Assessments (Titles)	On site and MS Teams	1st June 2021	Presentation of Project and details about the Federation deposit and future mine plan. Presentation followed by site visit for those who attended in person.
DPIE Water	Email		Contacted via email however replied stating under resourced and will await request for SEARs.

8 Conclusion

This Scoping Report has been produced to accompany a request for SEARS for the Project and to provide an overview of all components of the Project.

The Project comprises underground mining activities and surface infrastructure at the Federation Site, amendments at Hera Mine to facilitate processing of ore from the Federation Site, and a Services Corridor connecting the Federation Site with Hera Mine. The Project will enable the continuation of mining in the local area, with mining transitioning from Hera Mine to the Federation Site.

The Federation Site will comprise an underground satellite mine, which will have an operational period of between 12 – 14 years with approximately 6.95Mt of ore extracted over that time. Approximately 100 people will be employed during the 6 to 12 months construction period. The operational workforce numbers will increase as mining transitions from Hera Mine to the Federation Site, and production ramps up at the Federation Site, with approximately 200 – 250 personnel employed during operations. Personnel will largely be accommodated at the expanded mine accommodation village at Hera Mine.

Processing ore via a new processing plant and management of tailings will continue at Hera Mine. Sixty percent of the tailings will be transferred back to Federation Mine to be used for backfill of underground stopes. Burthong Road will be used for haulage of ore and tailings between the Federation Site and Hera Mine. Some ore is planned to be processed at PGM during the initial years of mining whilst the new processing plant is commissioned. A new solar farm will be established at Hera Mine and will supplement the existing gas fired plant. Water and electricity will be delivered to the Federation Site via a Service Corridor connecting the two sites.

This Scoping Report provides an overview of current operations at Hera Mine and the proposed Project activities and infrastructure. Consultation undertaken during the scoping phase has informed the assessment and confirmation of the planning pathway. Based on the scoping assessment the following key issues will be further assessed in the EIS:

- Biodiversity
- Surface water
- Groundwater
- Traffic and Transport
- Indigenous Heritage
- Soils and Land Capability
- Hazard and Risk
- Social
- Economic
- Noise and Vibration
- Air Quality and GHG
- Geochemistry

- Subsidence

Other considerations which will be incorporated into the EIS, but will not be a standalone assessment include

- Visual
- Non-Indigenous Heritage
- Climate Change
- Flooding

The Project is a key focus for Aurelia, with the discontinuation of mining at Hera in the coming years. The Project will allow for a transition of a skilled and capable workforce, which will sustain the social and economic benefits of the current operations, particularly in the local and regional area, but also in NSW and Australia. The design of the Project has been carefully considered to reduce environmental impacts wherever possibly whilst maximising the extraction of the Federation deposit. Further refinement of the Project will continue through the development of the EIS.

References

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Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Environmental Health Risk Assessment, Guidelines for Assessing Human Health Risks from Environmental Hazards (enHealth 2012).

Guidelines for the economic assessment of mining and coal seam gas proposals DPIE 2015

Health Impact Assessment Guidelines, Commonwealth Department of Health and Aged Care (enHealth 2017).

Hera Mine Mine Operations Plan 2019 – 2022.

New Cobar Complex Underground Project Scoping Report, EMM 2019

NSW Department of Planning, Infrastructure and Environment's (DPIE's) *Scoping an Environmental Impact Statement – Draft Environmental Impact Assessment Guidance Series June 2017*

NSW Department of Planning, Infrastructure and Environment's (DPIE's) *Social Impact assessment guideline for State significant mining petroleum production and extractive industries development* June 2017.

NSW Department of Planning, Infrastructure and Environment's (DPIE's) *Community and Stakeholder Engagement – Draft Environmental Impact Assessment Guidance Series* June 2017.

Review of Environmental Factors, Federation Exploration Decline Program. R.W Corkery February 2021

APPENDIX A

Protected Matters Search Tool Report

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

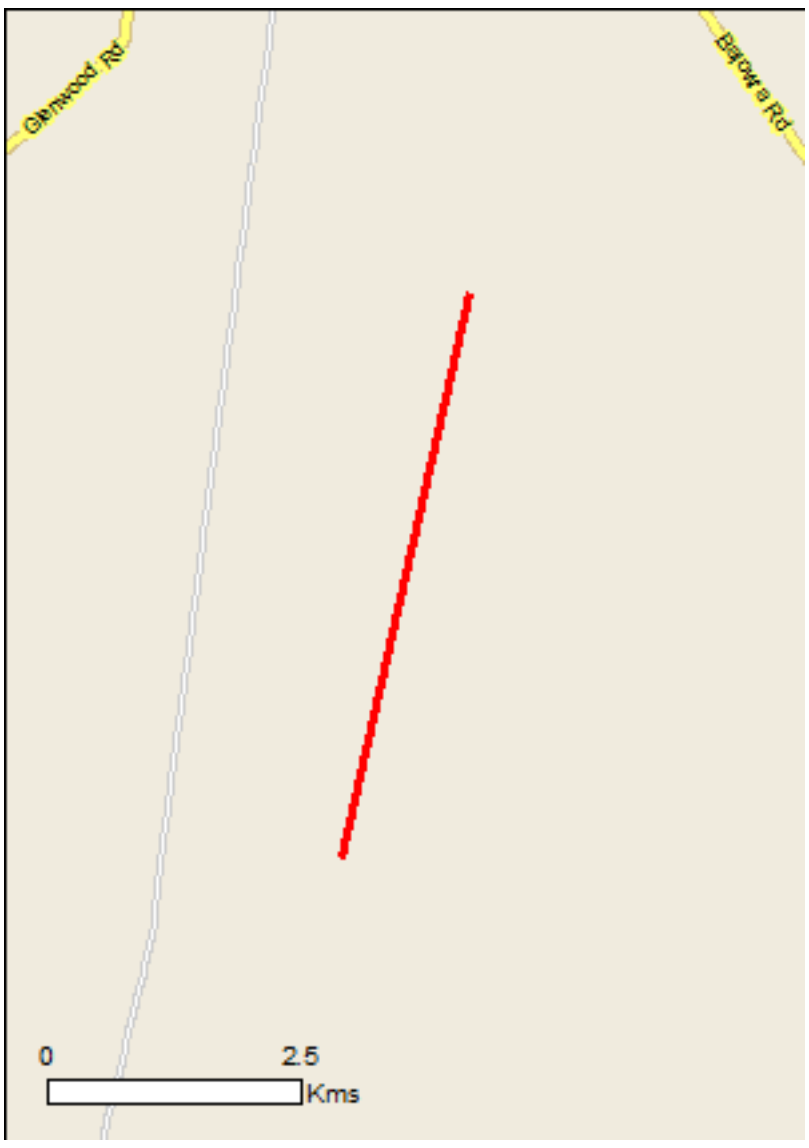
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 26/05/21 14:03:16

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



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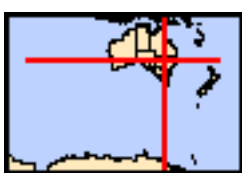

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	11
Listed Migratory Species:	7

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	12
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	10
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	500 - 600km upstream
Riverland	500 - 600km upstream
The coorong, and lakes alexandrina and albert wetland	700 - 800km upstream

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Mammals		
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Plants		
Austrostipa metatoris		
[66704]	Vulnerable	Species or species habitat may occur within area
Lepidium monoplocoides		
Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cylindropuntia spp. Prickly Pears [85131]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.114806 146.328454,-32.157396 146.316953,-32.157396 146.316953

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

APPENDIX B

DPIE Scoping Tool

Environmental Impact Statement (EIS) scoping worksheet for:	*Federation Project* hh							Date:	June 20201				
What matters might be impacted?			**What activities might cause an impact?**	**What are the characteristics of the impact?**						**How will the impact be managed?**	**What are the community and other stakeholder views?**	**What level of assessment and engagement is required in the EIS preparation phase?**	
Social and environmental matters **I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements** ***Click on the matter for a description, or the link above for full glossary***			**Without any mitigation, is the proposal likely to impact on the matter?** ***(Select from list)***	**If there is a 'likely' impact:** **1. list the activities expected to cause the impact; and** **2. if applicable, list the receptor being impacted and its status.** *E.g. construction noise will be heard at nearby school* **If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location?** ***(Manual entry)***	**Is the impact, without mitigation, expected to cause a material effect with regard to its...** ***(Answer 'Y', 'N' or '?')*** ***Click on characteristic for description, or the link above for further detail***				**Does the impact need assessment in the EIS?** ***(Auto fills)***	**Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)?** ***(Select from list)***	**What safeguards and management measures are expected to be required to address the impact?** ***(Select from list)***	**Are there community or other stakeholder concerns regarding the impact or activity?** ***(Based on engagement with community and other stakeholders)*** ***(Select from list)***	**Expected level of assessment and/or engagement required** ***(Auto fills)***	**Relevant section in Scoping Report** ***(Manual entry)***
					extent?	***duration?***	***severity?***	***sensitivity?***						
What does the proposal mean for people?	AMENITY	acoustic	Likely	Construction and operational activities have the potential to generate noise. Limited blasting at surface.	Y	Y	Y	Y	Yes	Yes	Standard	Yes	Other Issue + CIA + Focussed Engagement	
		visual	Unlikely	Site lighting impact from Federation Site and clearing of vegetation have potential for visual impacts. Receptors greater than 6km away								No	Scoping Report	
		odour	n/a											
		microclimate	n/a										No assessment necessary - Worksheet only	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	ACCESS	access to property	Unlikely	The Project will not alter access to properties. Access agreements will be entered into with the two landholders on whose land Project activities will occur.								No	Scoping Report	
		utilities	Unlikely	The Project is unlikely to impact on access to public utilities. Project will generate its own power through gas and solar; treat bore water for potable supply; not rely on public water supplies; and rely on its own telecommunications, alleviating pressure on existing infrastructure.								Yes	Scoping Report + Explain avoidance	
		road and rail network	Unlikely	The Project is unlikely to impact on access to public roads and rail. New Federation Site intersections required with Burthong Rd. The rail network will continue to be used for transport of bulk concentrate, as currently occurs for Hera Mine.								No	Scoping Report	
		offsite parking	n/a											
		other - please specify	n/a										No assessment necessary - Worksheet only	
	BUILT ENVIRONMENT	public domain	Unlikely	The closest public domain area is located within the township of Nymagee. Impacts unlikely.								No	Scoping Report	
		public infrastructure	Likely	Approximately 90% of ore will be transported along Burthong road to Hera Mine (circa 40 trucks per day), and approximately 10% along Burthong Rd, Priory Tank Rd and Kidman Way to PGM (circa 11 trucks per day). Concentrate will be delivered via Hermidale-Nymagee road (circa 9 trucks / day). Potential for impacts to road infrastructure and road users.	Y	Y	Y	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		other built assets	n/a										No assessment necessary - Worksheet only	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	HERITAGE	natural	Unlikely	No items of natural heritage have been identified in proximity to the Federation site.								No	Scoping Report	
		cultural	Unlikely	No items of non-indigenous cultural heritage are known in proximity to the Federation site								No	Scoping Report	
		Aboriginal cultural	Likely	Surveys conducted in approximately 85% of proposed Project disturbance area to date. No items of Aboriginal cultural heritage have been identified through these field surveys in the proposed disturbance area. Aboriginal cultural heritage sites have been identified in locations near the proposed disturbance area. Additional surveys in remining disturbance areas to be completed.	N	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		built	Unlikely	No items of built heritage in proximity to Project activities.								No	Scoping Report	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	COMMUNITY	health	Unlikely	Potential impacts to health are unlikely given the remote location of the Project. Potential impacts from emissions to air will be assessed as part of air quality impact assessment.								Yes	Scoping Report + Explain avoidance	
		safety	Likely	Increase of trucks and light vehicles on the local road network has the potential to impact on the safety of road users.	N	Y	N	Y	Yes	No	Standard	Yes	Other Issue + Focussed Engagement	
		services and facilities	Likely	The closest town of Nymagee does not have capacity to service workforce needs. Potential impacts on services and facilities in regional towns (e.g. Cobar) to be assessed.	Y	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		cohesion, capital and resilience	Likely	The communities of Nymagee and Cobar have a strong connection to the mining industry, both through historical and current operations. The continuation of mining through the Project has the potential to have an impact, both negative and positive, on community cohesion and resilience	Y	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		housing	Likely	The closest town of Nymagee does not have capacity to service workforce needs. Workers will be accommodated at the Hera Mine Village. Potential changes in workforce demographics will be assessed.	Y	Y	N	N	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		other - please specify	n/a										No assessment necessary - Worksheet only	
		natural resource use	Unlikely	Ore which will be extracted for the Project will be processed to produce metals and metal concentrates, however it is unlikely to have an impact on economic uses of other natural resources.								No	Scoping Report	

Environmental Impact Statement (EIS) scoping worksheet for:	*Federation Project* hh								Date:	June 20201		
What matters might be impacted?			**What activities might cause an impact?**	**What are the characteristics of the impact?**						**How will the impact be managed?**	**What are the community and other stakeholder views?**	**What level of assessment and engagement is required in the EIS preparation phase?**	
Social and environmental matters **I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements** ***Click on the matter for a description, or the link above for full glossary***			**Without any mitigation, is the proposal likely to impact on the matter?** ***(Select from list)***	**If there is a 'likely' impact:** **1. list the activities expected to cause the impact; and** **2. if applicable, list the receptor being impacted and its status.** *E.g. construction noise will be heard at nearby school* **If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location?** ***(Manual entry)***	**Is the impact, without mitigation, expected to cause a material effect with regard to its...** ***(Answer 'Y', 'N' or '?')*** ***Click on characteristic for description, or the link above for further detail***				**Does the impact need assessment in the EIS?** ***(Auto fills)***	**Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)?** ***(Select from list)***	**What safeguards and management measures are expected to be required to address the impact?** ***(Select from list)***	**Are there community or other stakeholder concerns regarding the impact or activity?** ***(Based on engagement with community and other stakeholders)*** ***(Select from list)***	**Expected level of assessment and/or engagement required** ***(Auto fills)***	**Relevant section in Scoping Report** ***(Manual entry)***
					extent?	***duration?***	***severity?***	***sensitivity?***					
	ECONOMIC	livelihood	Likely	The Federation Project will result in the transition of a workforce of from Hera Mine to the Project, with approximately 200 - 250 workers for Project providing important positive benefits to livelihoods,	N	y	N	y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		opportunity cost	Unlikely	The land and timber on which Project activities will occur has very low value for agricultural production or timber use.								No	Scoping Report	
		other - please specify	n/a										No assessment necessary - Worksheet only	
What does the proposal mean for the natural environment?	AIR	particulate matter	Likely	The Project will result in dust and particulate matter being generated. Particulate matter will also be emitted from vent risers during operations.	Y	Y	N	Y	Yes	Yes	Project Specific	Yes	Key Issue + CIA + Focussed Engagement	
		gases	Likely	Operation of machinery and plant will generate gaseous emissions. However, these will be localised.	N	Y	N	N	No			No	Scoping Report	
		atmospheric emissions	Likely	Operation of machinery and plant, including onsite power generation (gas powered generators), will generate atmospheric emissions.	N	Y	N	N	No	Yes	Standard	No	Other Issue + CIA	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	BIODIVERSITY	native vegetation	Likely	Native vegetation will be cleared for Project infrastructure. Residual impacts will require biodiversity offsets. Post mining rehabilitation will aim to restore land to a condition similar to its pre-mining land use.	Y	N	N	y	Yes	Yes	Project Specific	No	Key Issue + CIA	
		native fauna	Likely	Removal of native vegetation has the potential to have a negative impact on native fauna. Post mining rehabilitation will aim to restore land to a condition similar to its pre-mining land use, which provides habitat for native fauna.	y	N	N	Y	Yes	Yes	Project Specific	No	Key Issue + CIA	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	LAND	stability and/or structure	Unlikely	Underground mine design, including backfilling of mined stopes, has been developed to minimise the potential for surface subsidence.								No	Scoping Report	
		soil chemistry	Likely	Soils will be stripped and stockpiled prior to infrastructure development, for later use in rehabilitation. Soil management will be important to retaining soil health. Geochemical analysis of waste rock and tailings will inform management to prevent contamination of land and water. Tailings storage facilities already exist at Hera Mine and PGM.	Y	Y	Y	N	Yes	No	Standard	No	Other Issue	
		capability	Likely	Rehabilitation will aim to return the land to a similar capability as existed pre-mining. Potential remains for changes to the long term land capability	Y	Y	Y	N	Yes	No	Project Specific	No	Key Issue	
		topography	Unlikely	Rehabilitation of the site will not result in significant changes to topography. Underground mining will not impact topography.									Scoping Report	
		other - please specify	n/a										No assessment necessary - Worksheet only	
	WATER	water quality	Likely	Impacts to surface and groundwater may potentially occur. Controls will be implemented to prevent release of contaminated water to surface waters. Groundwater has poor quality and will be used for mine demands (primarily in the process plant). Process plant water and tailings water will be re-used in the process plant.	y	y	Y	Y	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	
		water availability	Likely	Groundwater levels will be drawdown due to inflows into the underground workings and from pumping of production bores. No groundwater dependent ecosystems due to depth of groundwater. Nearest landholder bores more than 6km away.	y	y	N	N	Yes	No	Project Specific	Yes	Key Issue + Focussed Engagement	
		hydrological flows	Unlikely	No creeks or watercourses will be impacted, other than crossings of minor drainages by Services Corridor. Project activities do not occur within the flood zone of watercourses. Minimal change in topography, with clean water diversions returning water to catchments. Impacts on hydrological flows unlikely.								No	Scoping Report	
		other - please specify	n/a										No assessment necessary - Worksheet only	
How does the proposal face?	RISKS	coastal hazards	Unlikely	The Project is not near coastal lands								No	Scoping Report	
		flood waters	Unlikely	The Project is not located near flood prone land								No	Scoping Report	
		bushfire	Unlikely	The Project is not located in areas prone to bushfires in accordance with the RFS bushfire online mapping tool								No	Scoping Report	
		undermining	Unlikely	Underground mining activities unlikely to have surface impacts								No	Scoping Report	

Environmental Impact Statement (EIS) scoping worksheet for:			*Federation Project* hh							Date:	June 20201	
What matters might be impacted?			**What activities might cause an impact?**	**What are the characteristics of the impact?**						**How will the impact be managed?**	**What are the community and other stakeholder views?**	**What level of assessment and engagement is required in the EIS preparation phase?**	
Social and environmental matters **I.e. natural or human assets or values aggregated at the level most appropriate for informing management and assessment requirements** ***Click on the matter for a description, or the link above for full glossary***			**Without any mitigation, is the proposal likely to impact on the matter?** ***(Select from list)***	**If there is a 'likely' impact:** **1. list the activities expected to cause the impact; and** **2. if applicable, list the receptor being impacted and its status.** *E.g. construction noise will be heard at nearby school* **If 'unlikely', briefly explain why. Has the impact been actively avoided through project design or site location?** ***(Manual entry)***	**Is the impact, without mitigation, expected to cause a material effect with regard to its...** ***(Answer 'Y', 'N' or '?')*** ***Click on characteristic for description, or the link above for further detail***				**Does the impact need assessment in the EIS?** ***(Auto fills)***	**Is the impact, without mitigation, expected to have a material cumulative effect with other impacts (including from other projects)?** ***(Select from list)***	**What safeguards and management measures are expected to be required to address the impact?** ***(Select from list)***	**Are there community or other stakeholder concerns regarding the impact or activity?** ***(Based on engagement with community and other stakeholders)*** ***(Select from list)***	**Expected level of assessment and/or engagement required** ***(Auto fills)***	**Relevant section in Scoping Report** ***(Manual entry)***
					extent?	**duration?**	**severity?**	**sensitivity?**					
What risks d		steep slopes	Unlikely	Box cut final land use may result in steep slopes if not backfilled. Potential quarry area may have steep slopes, depending on volumes extracted and rehabilitation methods.								No	Scoping Report	
		other - please specify	n/a										No assessment necessary - Worksheet only	

APPENDIX C

Threatened Species Listing

Species		BC Listing	EPBC Listing
Common name	Scientific Name		
Kultarr	*Antechinomys laniger*	Endangered	Not Listed
Dusky Woodswallow	*Artamus cyanopterus*	Vulnerable	Not Listed
Glossy Black Cockatoo	*Calyptorhynchus lathami*	Endangered	Not Listed
Pied Honeyeater	*Certhionyx variegatus*	Vulnerable	Not Listed
Little Pied Bat	*Chalinolobus picatus*	Vulnerable	Not Listed
Speckled Warbler	*Chthonicola sagittata*	Vulnerable	Not Listed
Chestnut Quail-thrush	*Cinclosoma castanotum*	Vulnerable	Not Listed
Spotted Harrier	*Circus assimillis*	Vulnerable	Not Listed
Varied Sittella	*Daphoenositta chrysoptera*	Vulnerable	Not Listed
Marble-faced Delma	*Delma australis*	Endangered	Not Listed
Grey Falcon	*Falco hypoleucos*	Endangered	Not Listed
Painted Honeyeater	*Granitella picta*	Vulnerable	Vulnerable
Black-breasted Buzzard	*Hamirostra melanosternon*	Vulnerable	Not Listed
Little Eagle (Foraging)	*Hieraaetus morphnoides*	Vulnerable	Not Listed
Little Eagle (Breeding)	*Hieraaetus morphnoides*	Vulnerable	Not Listed
Shy Heathwren	Hylacola cautus	Vulnerable	Not Listed
Malleefowl	*Leipoa ocellata*	Endangered	Vulnerable
Major Mitchells Cockatoo	*Lophochroa leadbeateri*	Vulnerable	Not Listed
Square-tailed Kite (Foraging)	*Lophoictinia isura*	Vulnerable	Not Listed
Square-tailed Kite (Breeding)	*Lophoictinia isura*	Vulnerable	Not Listed
Hooded Robin (south-eastern form)	*Melanodryas cucullata*	Vulnerable	Not Listed
Black chinned Honeyeater (eastern subspecies)	*Melithreptus gularis gularis*	Vulnerable	Not Listed
Turquoise Parrot	*Neophema pulchella*	Vulnerable	Not Listed
Southern Ningaui	*Ninganui yvonneae*	Vulnerable	Not Listed
Barking Owl (Foraging)	*Ninox connivens*	Vulnerable	Not Listed
Barking Owl (Breeding)	*Ninox connivens*	Vulnerable	Not Listed
Corbens Long-eared bat	*Nyctophilus corbeni*	Vulnerable	Vulnerable
Gilberts Whistler	*Pachycephala inornata*	Vulnerable	Not Listed
Koala (foraging)	*Phascolartos cinereus*	Vulnerable	Vulnerable
Koala (Breeding)	*Phascolartos cinereus*	Vulnerable	Vulnerable

Species		BC Listing	EPBC Listing
Common name	Scientific Name		
Superb Parrot	*Polytelis swainsonii*	Vulnerable	Vulnerable
Grey Crowned Babbler (eastern sub-species)	*Pomatostomus temporalis temporalis*	Vulnerable	Not Listed
Yellow Bellied Sheathtail-bat	*Saccolaimus flaviventris*	Vulnerable	Not Listed
Diamond Firetail	*Stagonopleura guttata*	Vulnerable	Not Listed
Western Blue-tongued Lizard	*Tiliqua occipitalis*	Vulnerable	Not Listed
Inland Forest Bat	*Vespadelus baverstocki*	Vulnerable	Not Listed
Masked Owl (foraging)	*Tyto novaehollandiae*	Vulnerable	Not Listed
Masked Owl (breeding)	*Tyto novaehollandiae*	Vulnerable	Not Listed
Eastern bent-winged Bat (Foraging)	*Miniopterus schreibersii oceanensis*	Vulnerable	Not Listed
Curley-bark Wattle	*Acacia curranii*	Vulnerable	Vulnerable
Australian bustard	*Ardeotis australia*	Vulnerable	Vulnerable
A spear-grass	*Austrostipa wakoolica*	Endangered	Not Listed
Bush-stone curlew	*Burhinus grallarius*	Endangered	Endangered
Glossy Black Cockatoo (breeding)	*Calyphtorhynchus lathami*	Endangered	Not Listed
Glossy Black Cockatoo, Riverina population	*Calyptorhynchus lathami*	Endangered population	Not Listed
Pine Donkey Orchid	*Diuris tricolor*	Vulnerable	Not Listed
Holly-leaf Grevillia	*Grevillea ilicifolia subsp. ilicifolia*	Critically Endangered	Not Listed
Black- breasted Buzzard	*Hamirostra melansternon*	Vulnerable	Not Listed
Large-leafed Monotaxis	*Monotaxis macrophylla*	Endangered	Not Listed
Greenhood Orchid	*Pterostylis cobarensis*	Vulnerable	Not Listed

APPENDIX D

Social Impact Assessment Scoping Report

Hera Resources Federation Project | Social Impact Assessment

SCOPING REPORT

Prepared for Hera Resources Pty Ltd | 7 June 2021

element.

Hera Resources Federation Project

SOCIAL IMPACT ASSESSMENT | SCOPING REPORT

Prepared for Hera Resources Pty Ltd
7 June 2021

PR152

	Prepared by	Reviewed by
Name	Mark Ryan	Jamie Seaton
Company	Element Environment	Element Environment
Position	Senior Environmental Consultant	SIA and Community Engagement Lead
Project Role	Lead Author	Technical Reviewer
Signature		
Date	7 June 2021	7 June 2021

DOCUMENT CONTROL

Revision	Date	Description	Prepared by	Reviewed by
0	30 April 2021	For Hera Resources Pty Ltd review	Element Environment	Hera Resources Pty Ltd
1	22 May 2021	For Hera Resources Pty Ltd review	Element Environment	Hera Resources Pty Ltd
2	27 May 2021	For Hera Resources Pty Ltd review	Element Environment	Hera Resources Pty Ltd
3	7 June 2021	For Hera Resources Pty Ltd review	Element Environment	Hera Resources Pty Ltd

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CHAPTER 1

INTRODUCTION

1 INTRODUCTION AND PROJECT OVERVIEW

1.1 Project background

Hera Resources Pty Limited (Hera Resources) operates the Hera Mine in the Cobar Basin of Far Western New South Wales (NSW), and proposes to develop the Federation deposit, approximately 15 kilometres (km) south of Nymagee. Hera Resources is the proponent for a State Significant Development (SSD) application under Part 4, Division 4.7 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act), to obtain approval for the Project.

Pending approval, the Federation Project (the Project) would involve:

- Underground mining of the Federation deposit which is a gold-lead-zinc-copper-silver deposit
- Mining of ore for a period of approximately 10 – 12 years, commencing in 2022 / 2023.
- Mining using stopping methods with backfill of mined stopes
- Box cut at surface and underground decline to access the ore
- Surface infrastructure near the deposit, including offices, waste rock storage pads, water management infrastructure, batch plant, ventilation fans and roads
- Linear infrastructure connecting the Federation Site with Hera Mine, such as powerline and water pipeline
- Transport of the majority of ore to Hera Mine on a public road
- Treatment of ore at Hera Mine within the existing, and a proposed new, process plant
- Tailings disposal at Hera Mine TSF and transport of a portion of the tailings to the Project for backfilling of underground mining stopes
- Transport of concentrate from the Hera Mine process plant to Hermidale, from where it will be railed to customers
- Transport of a minority of the ore to Peak Mine (also operated by Aurelia) near Cobar for treatment at the existing process plant, with concentrate distributed using existing supply chains
- Following completion of operations, decommissioning of infrastructure and rehabilitation of disturbed areas
- A workforce of approximately 200 people for operations, maintenance and ongoing exploration
- A workforce of approximately 100 people during the construction period of approximately 12 months.

1.2 Purpose of report

In accordance with the the Draft Social Impact Assessment Guideline (the Guideline) (NSW Department of Planning, Industry and Environment, 2020), the purpose of this report is to:

- Establish a social baseline for the Project;
- Identify Project activities that could have social impacts and group them against the categories presented in the Guideline;
- Provide a summary of potential social impacts that require additional assessment (scoping worksheet);
- Establish appropriate methodologies to investigate and assess Project related social impacts; and
- Provide a brief overview of potential management measures and ongoing monitoring.

1.3 Scoping phase engagement and methodology

To scope the Project the following engagement and research methods were implemented:

- Inception meeting and social locality workshop with Hera Resources staff;
- Semi-structured interviews (n=5) with Nymagee residents and Project stakeholders in Cobar;
- Community information session held in Nymagee in March 2021;
- Community values survey distributed to registered Aboriginal parties and native title claimants, community information session attendees, and Hera Mine Community Consultation Committee; and
- Literature review focussing on nearby projects with potential for cumulative impacts.

A Federation Project webpage was created on the Aurelia website to introduce the Project and share Project information. A link to the community values survey was made available on the website.

CHAPTER 2

LEGISLATIVE AND SOCIAL POLICY CONTEXT

2 LEGISLATIVE AND SOCIAL POLICY CONTEXT

2.1 Legislation

The EP&A Act sets the legislative context for this study. The objects of the EP&A Act are to:

- Promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the state's natural and other resources;
- Facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;
- Promote the orderly and economic use and development of land;
- Promote the delivery and maintenance of affordable housing;
- Protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;
- Promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);
- Promote good design and amenity of the built environment;
- Promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants;
- Promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the state; and
- Provide increased opportunity for community participation in environmental planning and assessment.

The Secretary's Environmental Assessment Requirements (SEARs, and therefore the Guideline) will be required as part of the SSD process, are issued under the provisions of the EP&A Act, and therefore set legislative requirements adopted for this study.

2.2 NSW Premier's priorities

In June 2019, NSW Premier Gladys Berejiklian unveiled 14 Premier's Priorities which represent the NSW Government's commitment to making a significant difference to enhance the quality of life of the people of NSW (https://www.nsw.gov.au/premiers-priorities). The priorities have been set with the purpose of delivering on the government's key policy priorities:

- A strong economy;
- Highest quality education;
- Well-connected communities with quality local environments;
- Putting customer at the centre of everything we do; and
- Breaking the cycle of disadvantage.

The Project provides outcomes consistent with the Premier's Strategy by driving and supporting economic growth in far western NSW. It has potential to provide a stimulus to the local, regional and NSW economy. The Project also represents an opportunity to increase the connectivity and reduce disadvantage in the Nymagee community.

2.3 Far West Regional Plan (2036)

The Far West Regional Plan was released in August 2017 and is the NSW Government's 20-year blueprint for the future of Western NSW. The aim is to create a diverse economy that is underpinned by infrastructure and supports the natural environment and resilient communities

(NSW Department of Planning, Far West Regional Plan (2036), August 2017). The plan aims to achieve this vision by achieving the following three goals:

- A diverse economy with efficient transport and infrastructure networks;
- Exceptional semi-arid rangelands traversed by the Barwon-Darling River; and
- Strong and connected communities.

Direction 3 is the key objective from the plan that relates to the Project and is described in Section 2.3.1.

2.3.1 Sustainable management of mineral resources (Direction 3)

The region has the potential to benefit from the economic and employment flow-on effects of the mining industry during the various phases (exploration and construction, extraction / operations and rehabilitation / decommissioning) of the mining lifecycle.

The Far West Regional Plan has identified that because the region relies heavily on drive-in, drive-out workers, changes in resident populations and different demands for retail, health, education and emergency services have been encountered. To diversify the local economies, interim land use opportunities will be promoted to enable the productive use of the land without sterilising the potential of the underlying resource. These economies will be more resilient, especially in areas where mineral extraction is declining.

In response to the changing economies, regional-scale modelling tools have been developed by the Western NSW Mining and Resource Development Taskforce. These tools will allow the NSW Government to investigate how Western NSW communities can capitalise on the economic benefits of the mining sector, by ensuring that communities transitioning out of mining are not disadvantaged while those experiencing expansion in this industry benefit from new mining growth.

From an infrastructure perspective, existing and new mining operations require water and energy to support them. Securing funding for future water security projects will therefore be critical for the future of the mining industry.

2.4 Cobar Shire 2030 Community Strategic Plan

The Community Strategic Plan (CSP) (Cobar Shire Council, 2013) identifies the long-term aspirations for the community and is part of Cobar Shire Council's (CSC) Strategic Planning Framework, which also includes their Community Engagement Strategy, Delivery Program, Annual Operational Plan, and Resource Strategy. The CSP is a long-term strategy spanning 13 years (2017-2030), identifying the outcomes and long-term strategic responses needed to achieve the agreed directions and meet the community's values. It is built on the social justice principles of equity, access, participation, and rights. It is informed by the NSW State Plan 2021, the RDA Orana Plan, and community consultation.

The CSP addresses significant community issues, challenges and outcomes by adopting the five strategies outlined below.

1. Community strategies:

- Supporting our families and young people to keep them in the region and providing a good quality of life
- Providing adequate health care options within the community
- Quality childcare and educational opportunities.

2. Economic strategies:

- Enhancing and growing two main industries including mining and agriculture
- Diversifying the business base from mining into other industries such as tourism, health, alternative power generation and expanded rural industries.

3. Governance strategies:

- Strong and participative Council.

4. Infrastructure strategies:

- Access to water, reliable electricity supply, telecommunications networks and transport networks.

5. Environmental strategies:

- Risks, threats and possible opportunities associated with carbon policy
- Value public land and optimising its use
- Expanding mining industry.

The Project would potentially alleviate the key issues and challenges of the community through contributing towards the community, economic and environmental strategies.

The community was extensively engaged by CSC during the development of the CSP and it therefore forms an important input to the SIA.

2.5 Economic Action Plan 2017

CSC's Economic Action Plan (Cobar Shire Council, 2016) recognises that while a large proportion of Australia's population resides in its capital cities, the bulk of the economic activity occurs in the regions. The action plan explains that several Australian studies have recognised the importance of regions and LGA in their contribution to the Australian economy.

The key elements to a prosperous community are local leadership, a positive and supportive investment environment, effective utilisation of infrastructure and institutional involvement in the processes of economic development.

CSC is committed to managing the Shire to ensure that actions undertaken to increase diversity in the economy also lead to improvements in living standards for residents.

The purpose of the action plan is to provide a clear path towards sustainable economic development in Cobar by cultivating Cobar, its businesses and its community to achieve economic endurance.

The Project would support the economic development goals by driving economic growth in the region through the involvement of a workforce of approximately 200 people for operations, maintenance and ongoing exploration; and a workforce of approximately 100 people during the construction period of approximately 12 months.

2.6 Local Strategic Planning Statement

CSC in conjunction with the DPIE has prepared a Local Strategic Planning Statement (LSPS) (Cobar Shire Council, 2020), which sets out the 20-year vision for land use in the local area, the special character and values that are to be preserved, and how change will be managed into the future.

The LSPS has been prepared in accordance with clause 3.9 of the EP&A Act. The LSPS brings together and builds on the planning work outlined in the CSC Local Environment Plan and CSP. The LSPS also gives effect to the Far West Regional Plan, implementing the directions and

actions at a local level. The LSPS planning priorities and actions provide the rationale for decisions about land use to achieve the community's broader land use vision.

The vision for Cobar Shire is to be an attractive, healthy and caring environment to live, work and play, achieved in partnership with the community through initiative, foresight and leadership.

Key infrastructure focuses for CSC include:

- The Cobar Shire will capitalise on the natural resource and infrastructure investment to be the mining hub for the Far West, with many specialist contracting companies setting up prominent bases. As the mining hub, Cobar Shire will be an established mining community that encourages community cohesion through provision of accommodation within the town centre and support fora local workforce; and
- The exploration of mining and how it is approved in the future will be a key focus for CSC. CSC will focus on industry and infrastructure development that will utilise or establish local workforces. The approach to development will be agile and quick to respond to opportunities for development.

The Project would support CSC and the community in achieving their vision in terms of fostering development of the Far West mining hub.

CHAPTER 3

EXISTING SOCIAL BASELINE

3 EXISTING SOCIAL BASELINE

3.1 Regional context

Cobar Shire is situated in the centre of NSW encompassing an area of around 45,600 square km, about 700km north-west of Sydney and 650km north of Canberra. Cobar is located on the crossroads of three major roads:

- The Kidman Way linking Melbourne to Brisbane;
- The Barrier Highway linking Sydney to Adelaide via Broken Hill; and
- The Wool Track linking the Sunraysia area to South East Queensland.

Cobar Shire accommodates approximately 5,000 residents, the majority of whom live in Cobar. Other villages in the Shire are Euabalong and Euabalong West, Murrin Bridge, Mount Hope and Nymagee. Murrin Bridge, located on the banks of the Lachlan River, is an Aboriginal community owned and operated by the Murrin Bridge Local Aboriginal Land Council (LALC).

The Shire's economy is built around mining (copper, lead, silver, zinc and gold), and pastoral/ agricultural industries. These sectors are strongly supported by a range of attractions and activities (e.g. the Great Cobar Heritage Centre, Fort Bourke Hill Lookout, and the Cobar Heritage Walk), that makes it a significant tourist destination and liveable region.

The local Aboriginal history is an important part of Cobar, or 'Kubbur', as the area was referred to by the Ngiyampaa people who inhabited the area prior to European settlement. The main language groups are Ngiyampaa in the centre, Ngemba in the north east, Wiradjuri in the south, and Paakantkji in the north west.

According to the Australian Bureau of Statistics (ABS), Cobar's population has been reasonably steady for the past ten years. However, anecdotal evidence derived from consultation with local residents suggests that the population of Cobar is in decline (population projections in Figure 3.2 support this view) and school student numbers are similarly reducing annually in recent years. At the 2016 census, there were more males (51.5%) than females (48.5%) with a median age of 36 years.

Over a third of the workforce is employed in the mining and manufacturing industries, 10% are employed in agriculture and retail is the next largest employer in the Shire (8%). Due to mining, the median weekly income reported by the ABS is higher than the national average. However, financial hardship and income disparity were raised as issues by some Nymagee residents.

3.2 Local context

3.2.1 Geographic context and surrounding land use

The Project is approximately 15km south of Nymagee, a small town located at the intersection of Milford Street and Hartwood Street. The township was founded in 1879. Copper was discovered in1876 and it was first mined in 1880. The mine was closed in 1917.

Nymagee contains a:

- Police Station (staffed part-time);
- Catholic Church;
- Anglican Church;
- Park;
- Cricket ground and tennis courts;
- Public School;
- Hotel;
- War Memorial and Community Hall;
- Country Women's Association rooms;
- Rural Fire Service station; and
- Cemetery.

Nymagee airport is located approximately 1km to the north-west, and the racecourse is located on Rosevale Road on the northern outskirts of the town. The non-operation Nymagee mine is located on the south-western outskirts of the town, enclosed by perimeter fencing. The area is dominated by agricultural land uses and native semi-arid woodland. Important points of interest are in Table 3.1.

Table 3.1 Points of interest near the Federation Site

Name	Distance from Project area
Four Corners Homestead	8km north of the Federation Site and 8km south of Nymagee
The Peak Homestead	10km north of the Federation Site and 4km south of Nymagee
Piney Homestead	6km south of the Federation Site

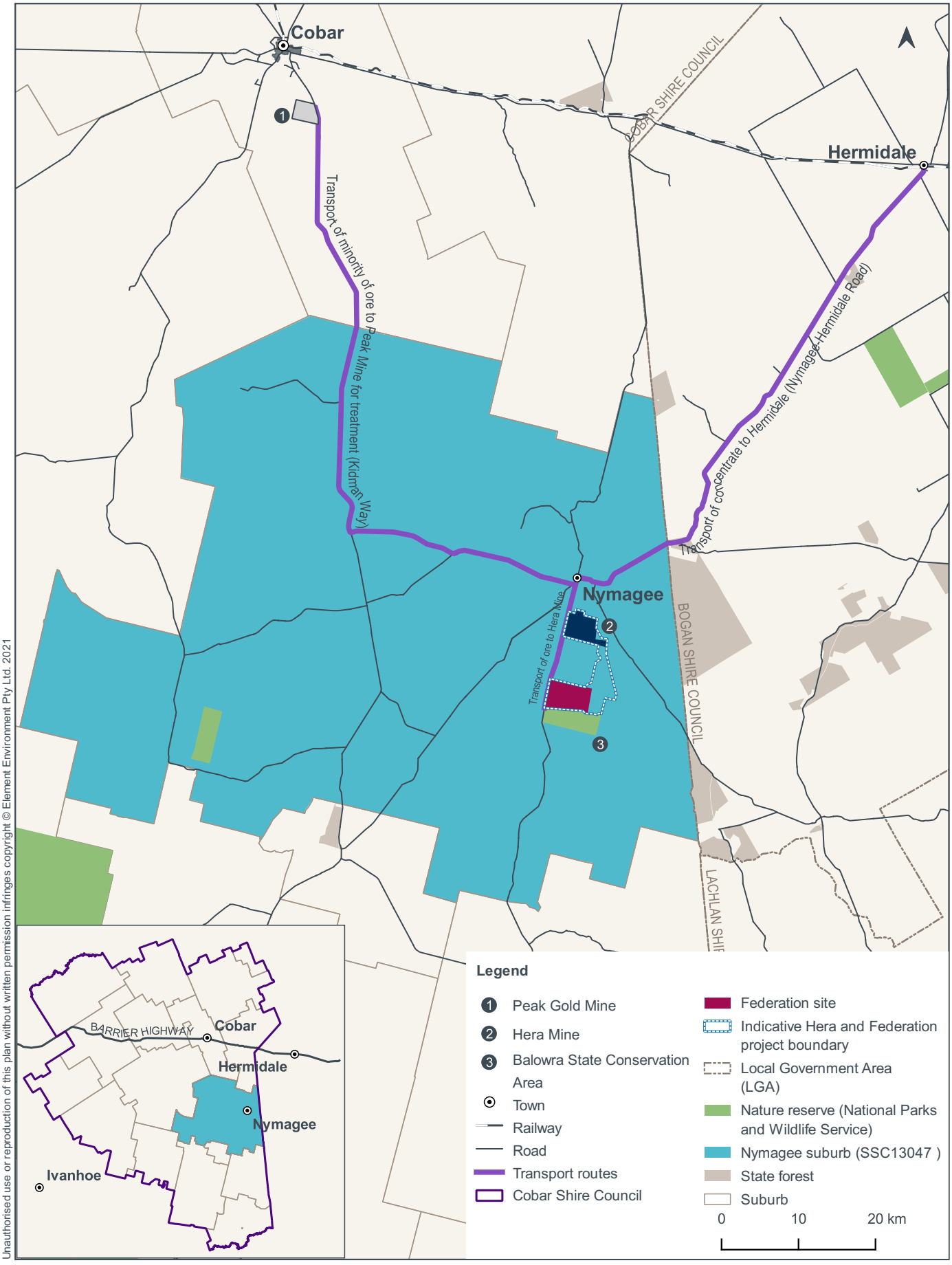
The Project falls within the Cobar Peneplain Bioregion (Office of Environment and Heritage: NSW National Parks and Wildlife Service, May 2014) and is charactered by native vegetation that is subject to grazing and contains a number of non-perennial watercourses and tributaries. The Federation Site is located at an elevation of approximately 320m above mean sea level (AMSL). Topography rises gradually in an easterly direction and contains a prominent peak (380m AMSL) immediately east of the Federation Site.

The property on which the Federation Site is located abuts Burthong Road to the west and shares its southern boundary with the Balowra State Conservation Area.

The social locality for the Project (Figure 3.1) has been selected by considering the above features of Nymagee and nearby points of interest. It has also recognised the Project haulage routes and external processing operations at Cobar and supply of concentrate to Hermidale.

Figure 3.1
Social locality

Hera Resources Federation Project
SOCIAL IMPACT ASSESSMENT - SCOPING REPORT



3.2.2 Community profile

Community snapshot

Nymagee suburb (refer Figure 3.1) has a small population of approximately 100 people (ABS, 2016), of which 54% were male and 46% were female. The median age is 48 years and the number of people per household was 2.3.

Population projections

Nymagee township is small with approximately 20 residents. Population projection data (NSW Department of Planning, Industry and Environment, 2021) illustrates the trend for the Cobar LGA. Figure 3.2 shows that the LGA population is expected to decrease from 2016 – 2041. To extrapolate for Nymagee, the population of this area is likely to remain constant or decrease in line with the data for Cobar.

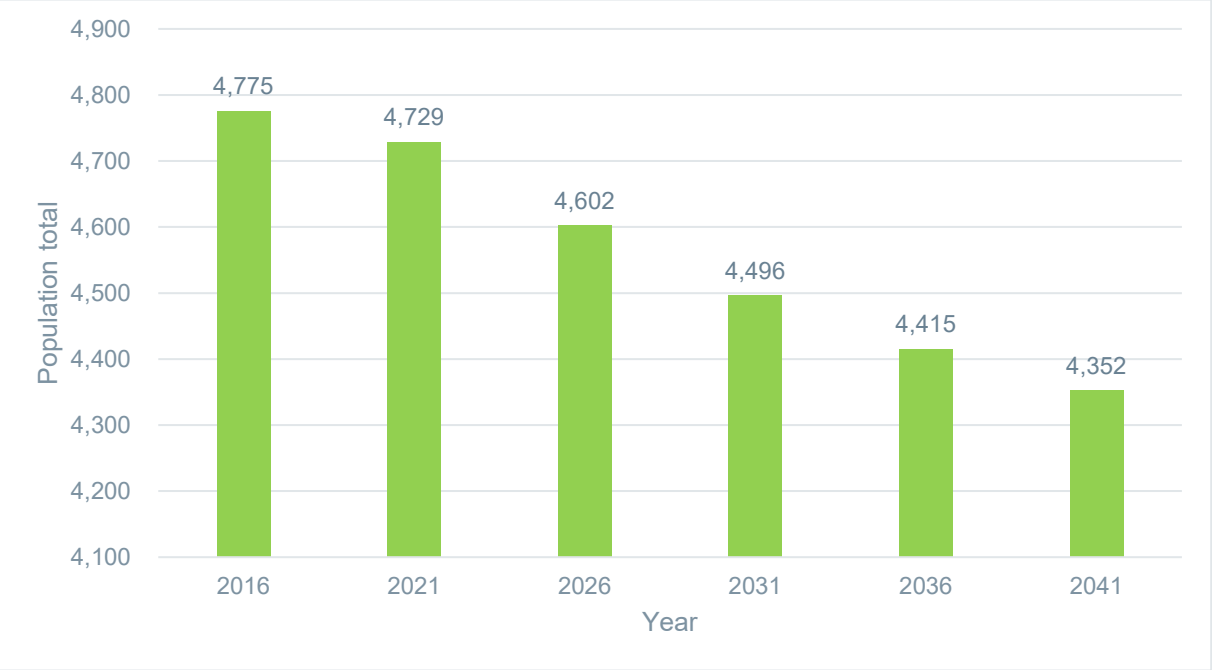


Figure 3.2 Population projections for Cobar LGA

Indigenous populations

The Ngiyampaa people traditionally occupy the area towards the centre of the Cobar Peneplain Bioregion, to the south-west of Cobar. Ngiyampaa people also group themselves according to their home country so that the Pilaarrkiyalu (Belah Tree People), Nhiilyikiyalu (Nelia Tree People) and Karulkiyalu (Stone Country People) all occupy different areas of the Ngiyampaa language group within and around the bioregion (NSW Department of Planning, Industry and Environment, 2021).

According to the 2016 Census data, the Aboriginal and Torres Strait Islander population of the Nymagee (suburb) is small at 16 people (ABS, 2016).

Place of birth

91 of Nymagee suburb residents' parents were born in Australia, with 9 community members not providing this detail and only 3 acknowledging that their mothers had been born in England (ABS, 2016).

Multi-culturalism

During the peak copper mining period in Nymagee over 100 years ago, the town supported a population of approximately 2200, half of which were Chinese. However, when the mine closed in 1917, the majority of these residents moved out (Wikipedia, 2021).

With reference to the 2016 census, the community's ancestry could generally be divided into Australian, English, Irish and Scottish heritage. The community does contain French, German and Welsh heritage, but in smaller numbers (ABS, 2016).

Employment

Mining and agriculture are the two sectors within which male Nymagee residents predominantly find employment (ABS, 2016). The female population predominantly find employment within the agriculture, forestry and fishing sector, with a small percentage working in the accommodation and food services sector (ABS, 2016).

Through consultation conducted for this scoping study, it was determined that some residents of Nymagee are employed as contractors to the existing Hera Mine. In addition, around 15% of Hera Resources employees working at the Hera mine are Cobar residents.

Status of industry

The main industries in the Cobar Shire are mining, agriculture retail and tourism (Council, 2021). Mining and tourism have experienced strong growth recently, contributing to the low unemployment rate. Approximately 30% of the population is employed in the mining industry, 10% in agriculture and 8% in retail trade.

Income

The average median weekly household income in Nymagee is $1,224.00 (ABS, 2016), and this data is broken down further in Table 3.2.

Table 3.2 Total household weekly income

Weekly household income ($)	Total households
1-149	3
800 - 999	4
1,000 – 1,249	4
1,500 – 1,749	3
2,000 – 2,499	5
2,500 – 2,999	3
Partial income stated (Comprises households where at least one, but not all, member(s) aged 15 years and over did not state an income and/or was temporarily absent on Census Night).	6
All incomes not stated (Comprises households where no members present stated an income.)	3

Education

All male and female respondents in the 2016 Census went to school (ABS, 2016). The highest year of school completed by respondents is in Table 3.3

Table 3.3 Highest year of school completed by sex

Year of school completed	Men	Women
Year 12 or equivalent	15	14
Year 11 or equivalent	3	0
Year 10 or equivalent	17	10
Year 9 or equivalent	7	4
Year 8 or below	3	N/A
Did not go to school	N/A	N/A
Highest year if school not stated	3	3

Non-school qualifications (educational attainments other than those of pre-primary, primary or secondary education) in Nymagee are in Table 3.4.

Table 3.4 Non-school field of study

Field of study	Total
Engineering and related technologies	3
Agriculture, environmental and related studies	3
Health	7
Education	3
Field of study not stated	9

Socio-economic index

Socio Economic Indexes for Areas (SEIFA) is a suite of indexes that have been created by the ABS from social and economic Census information (ABS, 2016). Each index ranks geographic areas across Australia in terms of their relative socio-economic advantage and disadvantage.

The Index of Relative Socioeconomic Disadvantage (IRSD) is a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within the Cobar Shire. This index includes only measures of relative disadvantage; a low SEIFA score indicates relatively greater disadvantage in general. For example, an area could have a low score if there are (among other things) many households with low income, many people with no qualifications, or many people in low skill occupations. Conversely, a high SEIFA score indicates a relative lack of disadvantage in general.

The SEIFA score for Nymagee in 2016 was 922 (Table 3.5), which ranks in the first quintile and can be described as a disadvantaged area when considering access to material and social resources, and the ability to participate in society.

Table 3.5 The Index of Relative Socioeconomic Disadvantage (IRSD)

IRSD	Nymagee
Score	922
Quintile	1
Percentile	19

The most disadvantaged communities tend to be in regional or rural areas, which correlates with the location of Nymagee in far Western NSW. However, this score doesn't necessarily mean that all people living in rural areas are disadvantaged, only that their lifestyle and living arrangements are different to those living in a city.

CHAPTER 4

PRELIMINARY SOCIAL IMPACT ASSESSMENT

4 PRELIMINARY SOCIAL IMPACT ASSESSMENT

SSD projects can impact people in many ways, both positive and negative. The SIA process assesses a project from the perspective of people - intending for a development to be more socially sustainable when this assessment is applied. The SIA identifies, predicts, evaluates and develops responses to social impacts as part of an integrated assessment that also considers environmental, economic, social and cultural impacts.

The aim of this section is to provide a preliminary assessment of the Project's potential social issues that require additional assessment, including the consideration of the likely duration, extent, sensitivity and severity of potential social impacts. It has been informed by:

- Interviews conducted with the local community and stakeholders as part of the Environmental Impact Statement (EIS) scoping phase;
- An analysis of the 2012-2020 Hera Mine complaints register (26 registered) to understand the existing operating environment;
- Outcomes of the various Hera Mine community information sessions and meetings and issues of importance conveyed by the community; and
- Research and analysis of the area surrounding the Project.

For the purpose of this assessment, the social impact categories outlined in the Draft Social Impact Assessment Guideline (DPIE, 2020) have been adapted to help identify the potential social impacts. These categories are outlined in ***Table 4.1***.

Table 4.1 Social Impact Categories

Categories	Definition
Way of life	How people live, how they get around, how they work, how they play, and how they interact each day
Community	Community composition, cohesion, character, how the community functions, and people's sense of place
Accessibility	How people access and use infrastructure, services and facilities, whether provided by a public, private or not-for-profit organisation
Culture	Aboriginal and non-Aboriginal, including shared beliefs, customs, values and stories, and connections to Country, land, waterways, places and buildings
Health and wellbeing	Physical and mental health especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, and changes to public health overall
Surroundings	Ecosystem services such as shade, pollution control, and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity
Livelihoods	People's capacity to sustain themselves through employment or business, whether they experience personal breach or disadvantage, and the distributive equity of impacts and benefits
Decision-making systems	Whether people experience procedural fairness, can make informed decisions, can meaningfully influence decisions, and can access complaint, remedy and grievance mechanisms.

As part of determining the social impacts that need to be considered in Phase 2 of the SIA, the DPIE scoping tool was populated to inform the SIA methodology (Appendix A). As listed in the scoping tool, the impacts considered relevant to the Project and worthy of further investigation in the SIA are:

- Way of life
  - How people play
- Community

- Cohesion (positive impacts)

- Accessibility
  - How people access and use infrastructure
  - Services and facilities
- Culture
  - Shared beliefs, customs, values and stories (positive impacts)
  - Connection to country, land and waterways, places and buildings
  - Employment of Aboriginal people
- Health and wellbeing
  - Physical and mental health, both positive and negative impacts
- Surroundings
  - Public safety and security
- Livelihood
  - Distributive equity of impacts and benefits
- Decision-making systems
  - Access to complaint, remedy, and grievance mechanisms.

The above social impact matters will be assessed in Phase 2 according to the social impact categories outlined in Draft Social Impact Assessment Guideline (DPIE, 2020).

4.1 Positive social impacts

It is important to adequately assess the Project's potential positive social impacts to gain an understanding of its net impact. The positive impacts identified by research participants are not listed in the scoping tool, but are presented in Table 4.2.

In the absence of the Project, mining at Hera Mine would cease in the short to medium term (followed by a period of decommissioning and rehabilitation), effectively bringing to a close the current mining operations in the Nymagee area (the main focus of scoping). The Project allows for mining operations to continue in the Nymagee area for a period of approximately 12 – 14 years, thereby extending the benefits of ongoing economic activity in the local area and region. Potential additional positive impacts that the Project might yield for peripheral towns such as Hermidale and Cobar will be more closely explored in Phase 2.

Table 4.2 – Potential positive social impacts

Social and environmental matters		Aspect outline
Community	Community cohesion	Hera Mine contributes financially to the town by maintaining or resealing roads (e.g. Whitbarrow Way), public facilities such as the tennis courts and providing breakfast at the accommodation village on ANZAC day. Hera Resources contributes $20K-$50K per annum on average to community projects such as yarning circles, the miners memorial, and gifts for the local Christmas party. Hera Resources has in the past provided in-kind support to the local Country Women's Association and flower show.

Social and environmental matters		Aspect outline
		If the Project does not proceed, there would be less financial and in-kind support available to the community.
Livelihood	Peoples capacity to sustain themselves (business and employment)	Hera Mine staff provide custom to the pub, which provides economic benefit to the proprietor and community cohesion given the venue acts as a drawcard for visitors and a host of cultural events. This pub also has 12 rooms that accommodates staff when the mine is short of accommodation. If the Project is to proceed, the hotel expects to garner more business by way of sales at the pub, poker machines and accommodation. Local residents also expect to benefit from the Project by gaining direct employment there or providing contracting services to the proposed mine Some Nymagee residents suggest that the supply of raw water from on-farm dam water storages to the Project would generate positive social impact. It would allow farmers to generate an income stream (not available currently) by selling this resource. Residents commented that such an income stream could offset revenue losses that might occur from other factors (e.g. environmental or commercial constraints in relation to family farming operations).
Health and well-being	Physical and mental health	Some Nymagee residents suggested the Project would create a positive social impact physical and mental health in the area. The Project would create a larger population in the area and subsequently, a higher volume of vehicles operating on the local road network which is comparatively remote compared to elsewhere in the Cobar LGA. People stranded on private roads (through vehicle breakdown for example) would be more likely to be recognised and obtain assistance if the Project proceeds, by virtue of the larger volume of 'passers-by' being in the area. Similarly, a degree of comfort and mental health benefits would arise knowledge that because of the Project, 'more people are around'.
Cultural	Employment of Aboriginal people	If the Project were to proceed, it would create an opportunity to realise positive social impacts in relation to a potential LALC/Hera Resources partnership. This opportunity would not exist without the Project. The LALC indicated its interest in forming a partnership with Hera Resources, and supporting development of a Reconciliation Action Plan.

4.2 Vulnerable communities

Elderly residents (in particular two residents well-known to Hera Resources staff) have been identified as a vulnerable community by interview participants. Depending on the value they place on the identified potential negative impacts in Phase 2 of the SIA, the individuals may be more susceptible to them. It is likely that the distributive equity of services and benefits such as healthcare (Section 4.7.2) will be important to this group.

4.3 Negative social impacts

The potential negative impacts predicted to arise from the Project are described below according to the categories in Table 4.1. Additional potential negative impacts that the Project might yield for peripheral towns such as Hermidale and Cobar will be more closely explored in Phase 2.

4.3.1 How people play (Way of life)

The community readily acknowledges that Hera Resources and the Hera Mine has provided substantial benefits to Nymagee, but there is concern that the town is not experiencing the full suite of benefits of the operation. The concern is with the move towards fly in fly out (FIFO) and drive in drive out (DIDO) employment rosters, and mine employees who temporarily stay at the mine accommodation village to work and return home, without contributing fully to community (e.g. sporting and cultural events).

4.3.2 How people access and use infrastructure (Accessibility)

The community has raised concerns that the telecommunication network in the area near the Federation site is poor. With an influx of additional mine workers to service the Project, there is potential that the speed of mobile phone and internet coverage could decrease. This potential impact will be further considered in conjunction with the relevant service providers.

Peak demand on the network would occur during the short-term construction window of approximately 12 months when construction and operational workforces would overlap.

The accessibility issue is raised as a precaution and would be subject to support/verification by appropriate research participants or literature review in Phase 2 of the SIA.

4.3.3 Services and facilities (Accessibility)

The supply of water in Nymagee is an ongoing concern and currently accessed by drilling into underground aquifers or water storages and pumping it to the surface. This pumped water is known to be salty and has been referred to as contaminated by interviewees. In response to the drought conditions, in conjunction with the existing Hera Mine's reliance on groundwater and water cartage for continued operations, the community has raised concerns about continued access to this resource if the Project is built.

Hydrogeological assessments of the Project will be prepared for the EIS. Without access to results of that assessment, it is difficult to determine the likelihood or magnitude of the potential social impact derived from the proposed groundwater usage. Acknowledging that difficulty and applying a precautionary approach, this issue will be explored further during Phase 2 of the SIA.

4.3.4 Connection to country, land and waterways, places and buildings (Culture)

The Cobar LALC was consulted during Phase 1 of the SIA scoping phase and it suggested that the Project is located in a landscape which may contain scar trees which are sacred to the Aboriginal community. The *Review of Environmental Factors for the Federation Exploration Decline Program* (RW Corkery and Co, 2021) identifies scar trees near the Federation site and confirms they are located outside the disturbance area. LALC is eager visit and examine the Federation site.

The Project would require vegetation clearing for the proposed mining operations and subsequently, there is the potential that culturally significant features could be impacted. The LALC representative also noted that there is the potential for a disconnect between the Aboriginal community and land if Aboriginal heritage inspections of new water bore sites, to determine the presence of artefacts, are not commissioned.

Cultural heritage surveys and other investigations relevant to the potential impact of the Project on Aboriginal cultural heritage will be undertaken during the EIS preparation. The related potential social impacts will be explored in Phase 2 of the SIA.

4.3.5 Employment of Aboriginal people (Culture)

Further issues important to the Aboriginal community relate to the perception that there are insufficient numbers of Aboriginal people employed at the mine. With the focus on FIFO and DIDO work forces, the potential exclusion of this cultural group could adversely impact community cohesion. Phase 2 of the SIA will explore this issue and draw on any available Aboriginal employment data.

4.3.6 Physical and mental health (Health and well-being)

The community have expressed some concern about dust generated by the Hera Mine tailings dam, Run of Mine (ROM) operations and the movement of heavy vehicles on unsealed roads (i.e. Burthong Road) which could be used by Project vehicles. Dust has the potential to create a health concern (e.g. deposition of dust on rooftops used to harvest rainwater) and also mental stress that could be exacerbated by the Project.

An air-quality assessment will be part of the EIS for the Project. The Phase 2 SIA will incorporate the results of this specialist study, and potentially follow-up interviews.

4.3.7 Public safety and security (Surroundings)

Potential traffic-related impacts associated with the Project were identified by some community members during consultation activities, including the community information session and interviews. The specific impacts predicted by the community to arise are:

- Increased traffic volumes on public roads, resulting in safety concerns for motorists and pedestrians, especially during peak periods
- Potential for heavy vehicles speeding in Nymagee. Hera Resources has received complaints about this matter in the past. These incidents may repeat or be exacerbated if the Project proceeds and additional heavy vehicles use the local road network.

This issue will be explored further in Phase 2 of the SIA, especially in relation to properties and motorists within Nymagee township, and along the following ore transport routes:

- Kidman Way;
- Priory Tank Road
- Nymagee-Hermidale Road; and
- Burthong Road.

4.3.8 Noise and vibration (Surroundings)

Noise and vibration sources exist at Hera Mine (e.g. operation of the process plant Hera Mine). Additional sources of noise for the Project include Federation Site construction and operations and the movement of heavy vehicles along the road network.

While these potential impacts were not specifically mentioned by members of the community they have been included as a precautionary measure.

According to RW Corkery (2021), there are no residents within 6 km of the Federation Site. Two residences located in close proximity to haulage routes or Hera Mine would be the likely receivers and main focus of Phase 2 SIA considerations.

4.3.9 Distributive equity of impacts and benefits (Livelihood)

Access to services is limited in Nymagee. Residents must travel approximately 100km to Cobar for a wide range of services including retail, finance, medical and government. In terms of medical services, the Cobar LALC and Cobar Shire Council expressed their view that these services:

- Are not available in Nymagee and;
- In Cobar do not have excess patient capacity.

There is a possibility that this scenario applies to other services that influence the social well-being of the population.

If the Project proceeds and the proposed workforce of approximately 200 people for operations, maintenance and ongoing exploration is realised, there is potential for a disproportionate burden to be placed on medical (or other) services in Cobar by the Project workforce. As described in Section 4.1, the Project would allow for a continuation of a mining operational workforce, with mining ceasing at Hera Mine in the short to medium term. As described in Section 4.3.2 there would be a short term increase in the number of workers to the Nymagee area during the construction phase. With a transfer of similar operational workforce numbers from Hera Mine to the Project, it is expected that any negative distributive equity social impact would be short-term. This is on the assumption that the current residential pattern for Hera Mine staff would be replicated by the Project (refer to Section 3.2.2 for commentary on residential location of Hera Mine's workforce).

The New Cobar Complex (EMM, 2019) and the Cobar Biohub (AECOM, 2018) are two other major projects proposed in Cobar which would require separate workforces. Depending on the timing of the projects, staff roster requirements, and workforce recruitment, there is potential for a negative cumulative impact in relation to this matter. This would be explored further in Stage 2 of the SIA.

4.3.10 Access to complaint, remedy and grievance mechanisms (Decision-making systems)

Direct engagement with Hera Resources representatives is desired by the community outside of formal engagements such as community meetings. Research participants and community information session attendees suggested that the accessibility of Hera Resources staff and their capacity to respond to issues or information requests could be improved.

In addition, there is a perception in the Nymagee community that decisions about Hera Mine are being made without a local influence.

Although Hera Resources does have an existing consultation and complaints procedure, the effect of the Project on the community's access to complaint, remedy and grievance mechanisms would be further explored in Phase 2 of the SIA.

CHAPTER 5
SIA METHODOLOGY

5 SOCIAL IMPACT METHODOLOGY, MONITORING AND MANAGEMENT

5.1 Social impact methodology

Based on the results of the scoping exercise (Appendix A), the methodologies proposed to assess the impact of the identified social matters is in Table 5.1. Note that although not listed in Table 5.1, a second community information session will also be held during Phase 2 of the SIA. It will be an additional method to enable further exploration and assessment of potential social impacts.

Table 5.1 Social impact methodology

Social matters		Aspect outline	Assessment methodology
Way of life	How people play	With FIFO and DIDO staff not living in Nymagee, the community will not experience a way of life benefit that Project employees might otherwise contribute; however it was recognised that Nymagee cannot support a mining workforce	Interview/workshop with Hera Resources about rostering and FIFO / DIDO policy
Accessibility	How people access and use infrastructure	Telecommunications (e.g. mobile phone and internet) are poor in the area at present and increased demand from Project workers could potentially exacerbate the issue	Literature review of mobile coverage issues in regional NSW and/or consultation with telecommunication service provider
	Services and facilities	The community's water supply (currently boreholes) may not be sustainable. The concern relates to both water availability and contamination, and how it may be impacted by the Project's requirement for this resource	Review of technical study commissioned for the EIS (e.g. hydrogeology study)
Culture	Connection to country, land and waterways, places and buildings	▪ The Cobar LALC suggested that there are potentially scar trees and important cultural areas near the Project ▪ Potential disconnection to country if the Cobar LALC cannot assess bore site area to check for artefacts before drilling	▪ Review of technical study commissioned for the EIS (e.g. cultural heritage study) ▪ Dialogue between Hera Resources and relevant LALCs, registered Aboriginal parties, native title claimants, or individuals
	Aboriginal employment	Employment of aboriginal people at the mine	
Health and wellbeing	Physical and mental health	▪ The community is concerned about dust generated by the tailings dam, Run of Mine (ROM) operations and the movement of heavy vehicles on unsealed roads (i.e. Burthong Road) which could be used by Project vehicles. Dust has the potential to create a health concern (e.g. deposition of dust on rooftops used to harvest rainwater) and also mental stress that could be exacerbated by the Project.	▪ Review of technical study commissioned for the EIS ▪ Follow-up interviews and dialogue between Hera Resources and property owners
Surroundings	Public safety and security	Speeding heavy vehicles have been experienced on the local roads, which could impact the safety of other motorists or pedestrians. This impact could	▪ Review of technical study commissioned for the EIS (e.g.

Social matters		Aspect outline	Assessment methodology
		increase with additional heavy vehicle movements	traffic impact assessment)
	Noise and vibration	Impacts from blasting operations at Hera Mine has been experienced and noted in existing community consultation documentation	▪ Review of technical study commissioned for the EIS (e.g. noise and vibration study)
Livelihood	Distributive equity of impacts and benefits	Any short-term increase in workers (i.e. during the construction phase), and the extension of the period of operations (i.e. the operational workforce numbers shift from mining at Hera Mine to mining at the Federation Site) has the potential for a disproportionate burden to be placed on medical (or other) services in Cobar.	▪ Semi-structured interviews with service providers ▪ Descriptive statistical analysis of service provision data ▪ Online survey of Hera Mine workforce to determine service usage
Decision-making systems	Access to complaint, remedy and grievance mechanism	Additional direct engagement with Hera Resources representatives is desired by the community	Workshop with Hera Resources staff

5.2 Potential Project refinements and approaches

In response to stakeholder feedback during Phase 1 of the SIA, some Project refinements have been discussed with Hera Resources. For each item of feedback, Table 5.2 lists the potential refinements that have been discussed. No refinement commitments have been made by Hera Resources during the scoping phase, however these potential refinements will be addressed in Phase 2 of the SIA.

Table 5.2 Potential Project refinements

Stakeholder feedback	Potential refinement
Cobar LALC suggested that there are potentially scar trees and important cultural areas near the Project	Site tour and partnership with the Cobar LALC Further engagement with LALC, native title holders and registered Aboriginal parties, or native title claimants
Dust impacts derived from Project traffic	Potential sealing a local road associated with haulage (e.g. an unsealed section of Burthong Road)
Landholder has indicated a preference for separation from project	Services corridor alignment has been defined to avoid some private properties
The need to improve communication protocols for both Hera Mine and Project staff	Project Communications and Engagement Strategy

5.3 Management and mitigation

A range of management plans will be developed or updated as part of the Project operations and they will assist with the management of some of the negative Project impacts identified. The management plans may include, but not limited to, the:

- Environmental management strategy;
- Air-quality management plan; and
- Safety management plan.

It is also proposed that a community engagement plan for the Project be developed and reviewed on an annual basis. This plan would outline a clear approach to how the community and stakeholders will be engaged by Hera Resources through the operational life of the Project and will aim to strengthen community relationships in close proximity to the operations and the greater Cobar area.

It is also recommended that Hera Resources continue to provide local and regional spend through support for local groups and organisations.

Further consideration of management measures will be occur in Phase 2 of the SIA in consultation with Hera Resources, and described in the SIA report.

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APPENDIX A

DPIE SCOPING TOOL

Social impact assessment (SIA) scoping worksheet for:			Hera Resources Federation Project				Date:	30/03/2021		
Scoping results from EIS Worksheet						**Is there a social impact?**		**What information will be required to assess the social imapct?**		
Social and environmental matters *Click on a matter below for brief description, or refer to full glossary*			**Outline of impact** *(Auto fill from EIS worksheet)*	**Is a material effect on the matter expected?** *(Auto fill from EIS worksheet)*	**Is there community or other stakeholder concerns regarding the impact or activity?** *(Auto fill from EIS worksheet)*	**With regard to the matter expected to be impacted, will there be a social impact?** *Select this cell for brief description, or click link above for further detail*		**Are impacts on the matter expected to require a non-SIA specialist study?** *(Auto fill from EIS worksheet, then manually enter non-SIA report type)*	**Will the non-SIA specialist study address the social impact?** *Click on link above for further detail on potential classifications* *(Select from list)*	**Level of assessment for the social impact in the SIA** *Click on link above for further detail on potential classifications* *(Auto fills)*
						Yes/No *(Select from list)*	**If yes, outline the social impact** *(Manual entry, if not already covered in column D)* **If no, outline why** *(Manual entry)*			
	Way of life	How people live				No				
		How people get around				No				
		How people work				No				
		How people play	Potential for social impacts derived from FIFO and DIDO rosters	Yes	Yes	Yes	The concern is with the move towards fly in fly out (FIFO) and drive in drive out (DIDO) employment rosters, and mine employees who temporarily stay at the mine accommodation village to work and return home, without contributing fully to community (e.g. sporting and cultural events).	No		Detailed
		How people interact each day				No				
		other - please specify				No				
	Community	Community composition				No				
		Cohesion								
		Character				No				
		How the community functions				No				
		Sense of place				No				
		other - please specify				No				
	Accessibility	How people access and use infrastructure	The potential for deteoration to telecommunications in the Nymagee area.	Yes	Yes	Yes	With an influx of additional mine workers to service the Project, there is potential that the speed of mobile phone and internet coverage could decrease.	Yes, engineering	Yes - in part	Desktop integration
		Services and facillities	The supply of water in Nymagee	Yes	Yes	Yes	The supply of water in Nymagee is an ongoing concern and currently accessed by drilling into underground aquifers or water storages and pumping it to the surface. In response to the drought conditions, in conjunction with the existing Hera Mine's reliance on groundwater and water cartage for continued operations, the community has raised concerns about continued access to this resource if the Project is built.	roundwater or engineering	Yes - fully	Desktop integration
		Provision of services (public or private)								

	Culture	Aboriginal and non-aboriginal								
		Shared beliefs, customs, values and stories								
		Connection to country, land and waterways, places and buildings	The potential for cultural heritage impacts	Yes	Yes	Yes	The Project would require vegetation clearing for the proposed mining operations and subsequently, there is the potential that culturally significant features could be impacted. The LALC representative also noted that there is the potential for a disconnect between the Aboriginal community and land if Aboriginal heritage inspections of new water bore sites, to determine the presence of artefacts, are not commissioned.	boriginal Cultural Heritage R	Yes - fully	Desktop integration
		other - please specify	Employment of Aboriginal people at the mine	Yes	Yes	Yes	Further issues important to the Aboriginal community relate to the perception that there are insufficient numbers of Aboriginal people employed at the mine. With the focus on FIFO and DIDO work forces, the potential exclusion of this cultural group could adversely impact community cohesion.	No	No	Detailed
	Health and wellbeing	Physical and mental health	Potential air-quality impacts to residences	Yes	Yes	No	The community is concerned about dust generated by the tailings dam, Run of Mine (ROM) operations and the movement of heavy vehicles on unsealed roads (i.e. Burthong Road + MR419) which could be used by Federation Mine vehicles. Dust has the potential to create a health concern and also mental stress that could be exacerbated by the Project.	Air quality imapct assessm	Yes - fully	Desktop integration
		Psychological stress from financial or other pressures				No				
		Changes to public health				No				
		other - please specify				No				
	Surroundings	Ecosystem services such as shade				No				
		Pollution control				No				
		erosion control				No				
		Public safety and security	Potential road safety impacts	Yes	Yes	Yes	Speeding heavy vehicles have been experienced on the local roads, which could impact the safety of other motorists or pedestrians. This imapct could increase with additional heavy vehicle movements	Yes	Yes - fully	Desktop integration
		Access to and use of the natural and built environemnt								
		Aesthetic value and amenity				No				
		other - please specify	The potential for noise and vibration impacts from the Project	Yes	Yes	Yes	Vibration from blasting operations has been experienced and noted in existing community consultation documentation	se and vibration imapct asse	Yes - fully	Desktop integration
	Livlihood									
		Experience of personal breach or disadvantage				No				
		Distributive equity of impacts and benefits	Potential impact on service providers in Cobar	Yes	Yes	Yes	Any short-term increase in workers (i.e. during the construction phase), and the extension of the period of operations (i.e. the operational workforce numbers shift from mining at Hera Mine to mining at the Federation Site) has the potential for a disproportionate burden to be placed on medical (or other) services in Cobar	No	No	Detailed
		other - please specify								
	Decision-making systems	Procedural fairness								
		informed decision-making is experienced				No				
		Meaningfully influence decisions				No				
		Access to complaint, remedy and grievance mechanism	Potential impact on ability of the community to communicate with Project staff	Yes	Yes	Yes	Additional direct engagement with Hera Resources representatives is desired by the community	No		Detailed
		other - please specify				No				

SYDNEY NEWCASTLE CENTRAL COAST MACKAY

elementenvironment.com.au


SULLAIR
SULLAIR
MAN

ASIA PACIFIC OFFICES

BRISBANE
Level 2, 15 Astor Terrace
Spring Hill QLD 4000
Australia
T: +61 7 3858 4800
F: +61 7 3858 4801

CANBERRA
GPO 410
Canberra ACT 2600
Australia
T: +61 2 6287 0800
F: +61 2 9427 8200

DARWIN
Unit 5, 21 Parap Road
Parap NT 0820
Australia
T: +61 8 8998 0100
F: +61 8 9370 0101

GOLD COAST
Level 2, 194 Varsity Parade
Varsity Lakes QLD 4227
Australia
M: +61 438 763 516

MACKAY
21 River Street
Mackay QLD 4740
Australia
T: +61 7 3181 3300

MELBOURNE
Level 11, 176 Wellington Parade
East Melbourne VIC 3002
Australia
T: +61 3 9249 9400
F: +61 3 9249 9499

NEWCASTLE
10 Kings Road
New Lambton NSW 2305
Australia
T: +61 2 4037 3200
F: +61 2 4037 3201

PERTH
Ground Floor, 503 Murray Street
Perth WA 6000
Australia
T: +61 8 9422 5900
F: +61 8 9422 5901

SYDNEY
Tenancy 202 Submarine School
Sub Base Platypus
120 High Street
North Sydney NSW 2060
Australia
T: +61 2 9427 8100
F: +61 2 9427 8200

TOWNSVILLE
12 Cannan Street
South Townsville QLD 4810
Australia
T: +61 7 4722 8000
F: +61 7 4722 8001

WOLLONGONG
Level 1, The Central Building
UoW Innovation Campus
North Wollongong NSW 2500
Australia
T: +61 404 939 922

AUCKLAND
68 Beach Road
Auckland 1010
New Zealand
T: 0800 757 695

NELSON
6/A Cambridge Street
Richmond, Nelson 7020
New Zealand
T: +64 274 898 628