

MINING, EXPLORATION & GEOSCIENCE ADVICE RESPONSE

Mr Jack Turner
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Dear Jack

Project: Hera Gold Mine MOD 6
Stage: Advice on Modification and provide a Resource and Economic Assessment
Development Application: MP_0191-MOD-6

I refer to your correspondence dated 25 November 2020 inviting Regional NSW – Mining, Exploration & Geoscience (MEG) to provide comments on the Hera Gold Mine MOD 6 (the Project) submitted by Hera Resources Pty Limited (the Proponent).

The relevant units internal to MEG have been consulted in generating this advice. The Department of Planning, Industry and Environment – Energy, Resources & Compliance Division and the Proponent should be aware that matters concerning subsidence, subsidence management, mine operator, safety, rehabilitation and environmental impacts of final landform design are not assessed by MEG and advice should be sought from the Resources Regulator.

Advice overview

MEG considers that the Proposal will likely:

- extend the life of mine by three years from 2022 to 2025, enabling an additional 1.5 years of production.
- provide an appropriate return to the NSW Government including;
 - \$4.4 million royalties (current dollars)
 - \$146 billion total revenue (current dollars)
- support employment for 160 operational jobs until the end of 2022/23.
- be an efficient use of resources.

In a typical year at full production, the NSW Government would expect to receive about \$2.9m in royalties from the Project.

Project capital investment is about \$7m.

Without the Project the existing Hera mine would cease operations in 2022.

Resource and Economic Assessment

The Hera underground mine is located approximately 100km southeast of Cobar in western New South Wales and approximately 4km south of the village of Nymagee. The Hera Gold Mine MOD 6 project is a proposed underground extension with an expected operating life of three years.

The Proponent, Hera Resources Pty Limited, is a wholly owned subsidiary of Aurelia Metals Limited (Aurelia). Aurelia is an Australian Securities Exchange listed exploration and mining company.

The Hera Gold Project resource is a polymetallic deposit that occurs as ore lenses associated with en-echelon shear zones hosted within altered sediments. The ore is contained within quartz stockworks, breccias and skarns.

The Modification references the importation and batch processing of a 20 000t bulk sample and importation of waste rock and mine water from the Federation Exploration Project. Federation is an advanced exploration project located 10km south of Hera.

Federation is a similar style deposit to Hera. Federation will require additional drilling to increase confidence in the resource and aid future studies.

In view of the constraints outlined in the Proponent's EIS and based on the information currently available, MEG considers that the Hera Gold Project is consistent with the objects of the *Mining Act 1992*. In addition, in relation to clause 15 of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*, the Proposal represents an efficient development and utilisation of minerals resources which will foster significant social and economic benefits.

The proposed mine design and site layout have evolved during the study stages of the Proposal but should achieve satisfactory resource extraction. The proposed mine site infrastructure is not expected to significantly sterilise any resources. MEG is satisfied that, should the operational outcomes be achieved, the proposed mine design and mining method submissions adequately recover resources and will provide an appropriate return to the state.

The resource utilisation, recovery and economic benefits assessment undertaken by MEG is addressed in Attachment A.

The requirement for a mining authorisation and royalty liability

Gold, Copper, Lead, Silver and Zinc are prescribed minerals under the *Mining Act 1992*. The Proponent is required to hold appropriate mining title(s) allowing for mineral extraction, such as a mining lease, from MEG to undertake mining. The grant of a mining lease gives the holder the rights to prospect and mine for specified minerals, carryout primary treatment operations and carry out any ancillary mining activities.

MEG notes that the Proposal, as it currently stands, is located within the existing operations area of Mining Lease 1686 and Mining Lease 1746 (Act 1992). Based on current information, the proponent holds the appropriate titles for mining operations under the *Mining Act 1992*. Proposed mining operations are allowable within existing surface exceptions and/or depth restrictions.

The holder of a mining lease for minerals is also liable to pay royalty for both publicly and privately-owned minerals (refer to section 282-285 of the Act).

Biodiversity offset assessment

MEG requests that the Proponent consider potential resource sterilisation should any future biodiversity offset areas be considered. The Proponent must consult with MEG and any holders of existing mining or exploration authorities that could be potentially affected by the proposed creation of any such biodiversity offsets, prior to creation occurring. This will ensure that access to prospective land for mineral exploration or potential for the sterilisation of mineral and extractive resources is appropriately considered.

Summary of review

MEG considers that, should the project be approved, efficient and optimised resource outcomes can be achieved.

MEG requests that it be provided an opportunity to review the draft conditions of approval before any granting of development consent.

For further enquiries and advice concerning this matter, please contact Scott Anson, Manager Assessment Coordination Unit, Resource Assessments on 02 4063 6972 or scott.anson@planning.nsw.gov.au.

Yours sincerely



Sima Williamson
A/Executive Director Resource Operations
Regional NSW – Mining, Exploration & Geoscience
17 December 2020



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Hera Mine – Modification 6

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More information

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Executive summary

Mining, Exploration and Geoscience (MEG) assessed the Hera Mine – Modification 6 Project (the Project or Proposal). MEG considers that the Project will likely:

- extend the life of mine by three years from 2022 to 2025, enabling an additional 1.5 years of production.
- provide an appropriate return to the NSW Government including;
 - \$4.4 million royalties (current dollars)
 - \$146 billion total revenue (current dollars)
- support employment for 160 operational jobs until the end of 2022/23.
- be an efficient use of resources.

In a typical year at full production, the NSW Government would expect to receive about \$2.9m in royalties from the Project.

Project capital investment is about \$7m.

Without the Project the existing Hera mine would cease operations in 2022.

The project

The Hera Mine is located approximately 100km southeast of Cobar in western New South Wales and approximately 4km south of the village of Nymagee.

Hera is an operating underground gold, silver, lead and zinc mine that will continue to utilise current mining methods to extract resources. The approved processing rate of 505,000tpa and associated transport of 60,000tpa of concentrate will also not change as part of this modification. Waste rock management and processing of high-grade ore have potential to impact resource recovery and utilisation.

The Proponent, Hera Resources Pty Limited, is a wholly owned subsidiary of Aurelia Metals Limited (Aurelia). Aurelia is an Australian Securities Exchange listed exploration and mining company.

Introduction

State significant development is regulated under the *Environmental Planning and Assessment Act 1979*, which requires a proponent to apply to the Department of Planning, Industry and Environment for development consent, supported by an Environmental Impact Assessment/Modification Report (EIS/MRT).

This Resource & Economic Assessment (REA) conducted for the Hera Mine – Modification 6 Project by MEG assessed:

- the social and economic benefits to NSW including royalties, capital investment, revenues and jobs.
- the resource/reserve estimates stated in the proponent's EIS/MRT.
- if the Proposal is an efficient development of the resource, that resource recovery is optimised and waste minimised.
- if the Proposal will provide an appropriate return to NSW.

The objects of the *Mining Act 1992* are to encourage and facilitate the discovery and efficient development of mineral resources in NSW.

Of particular relevance to this REA are Section 3A Objects:

- to recognise and foster the significant social and economic benefits to NSW that result from the efficient development of mineral resources.
- to ensure an appropriate return to the State from mineral resources.

The relevant section of the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 is Part 3, Clause 15: Resource Recovery requires that resource recovery is efficient, optimised and minimises waste.

Project overview

The Proposed Modification seeks consent for the following.

- Transportation of up to 100 000tpa from the Hera Mine approximately 94km by road to the Peak Mine (Figure 1), with backloading of a similar amount of waste rock from the Peak Mine to the Hera Mine.
- Disposal 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 20 mg/L (90th percentile) and 30 mg/L (maximum).
- Extension of the current approval for mining operations at the Hera Mine from 31 December 2022 to 31 December 2025.
- Extension of the Hera Mine Site (Mine Site) boundary to incorporate additional land.
- Importation and batch processing of a 20 000t bulk ore sample and importation of waste rock and mine water from the Federation Exploration Project.

In addition, the Proponent proposes to relinquish approval to construct the approximately 3.5ha Northern Waste Rock Emplacement.

The application to modify the development consent is made under Section 4.55(2) of the Environmental Planning & Assessment Act 1979 (EP&A Act). This Modification Report has been prepared to support that application and is generally consistent with the draft document Preparing a Modification Report published by the NSW Department of Planning, Industry and Environment and dated June 2019. This document addresses matters listed in correspondence from the Department of Planning, Industry and Environment, as well as correspondence from relevant government agencies.

Size and quality of the resource

Hera is a polymetallic deposit that occurs as ore lenses associated with en-echelon shear zones hosted within altered sediments. The ore is contained within quartz stockworks, breccias and skarns.

Mineral Resources (Table 1 and Table 2) and Ore Reserves have been prepared in accordance with the 2012 Edition of the Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code 2012).

The total Mineral Resource at Hera is 1.4Mt grading at 1.6 g/t Au, 3.1% Pb, 4.8% Zn and 40 g/t Ag. Ore Reserves (Proved and Probable) have been derived from Measured and Indicated resources and total 1.2Mt grading at 1.4 g/t Au, 3.0% Pb, 4.7% Zn and 38 g/t Ag. Modification 6 (MOD6) proposes to extend the life of mine from 2022 to 2025, which the current ore reserves plus additional exploration success would justify.

Federation is an advanced exploration project located 10km south of Hera with a Maiden Mineral Resource of 2.6Mt grading at 0.8 g/t Au, 7.7% Pb, 13.5% Zn and 9 g/t Ag announced in June 2020. Categorized mostly as Inferred (Table 2), Federation will require additional drilling to increase confidence in the resource and aid future studies. Federation is a similar style deposit to Hera.

Table 1 – Hera Mineral Resource and Ore Reserve estimates as of June 2020

Category	Tonnes (Mt)	Au (g/t)	Pb (%)	Zn (%)	Ag (g/t)
Measured	0.869	1.6	3.3	5.0	33
Indicated	0.464	1.8	2.8	4.6	49
Inferred	0.068	1.5	2.1	4.2	54
Total Resource	1.401	1.6	3.1	4.8	40

Table 2 – Federation Mineral Resources estimates as of June 2020

Category	Tonnes (Mt)	Au (g/t)	Pb (%)	Zn (%)	Ag (g/t)
Indicated	0.09	2.2	6.3	12.1	9
Inferred	2.489	0.8	7.7	13.5	9
Total	2.579	0.8	7.7	13.5	9

Resource recovery

Hera is an operating underground mine that will continue to utilise current mining methods to extract resources. The approved processing rate of 505,000tpa and associated transport of 60,000tpa of concentrate will also not change as part of this modification. Waste rock management and processing of high-grade ore have potential to impact resource recovery and utilisation. These have been addressed with MOD6.

Waste rock material sourced directly from underground or the surface waste rock emplacement is currently used to backfill stopes. This is critical to the ongoing safe and efficient extraction of resources. The proponent anticipates there will be a shortfall of this material in the near future and proposes the importation of up to 100,000tpa of waste rock from Peak, and 425,000t of waste rock from Federation. Waste rock imported from Peak will utilise the same trucks that transport ore from Hera to Peak for processing.

The Hera plant is optimised to process ore that is less than 9% Pb-Zn. High-grade material identified for future extraction can be blended with lower grade material, however the proponent anticipates too much high-grade ore will be available to allow the plant to run at optimal capacity. The Peak Mine (97km north) has a plant capable of processing higher grade ore and the proponent proposes to transport high-grade ore from Hera to Peak allowing optimal efficiency of the Hera plant.

Bulk ore sample from Federation

The processing of a 20,000t bulk sample at Hera will greatly enhance the metallurgical understanding of the Federation deposit. It is anticipated this sample will be extracted from the fresh rock zone (limit of resources) that occurs from approximately 80m depth below surface. The proponent also wishes to import waste rock and mine water from Federation to Hera.

MEG raises no issues with the bulk sampling of Federation and subsequent processing at Hera, however the associated removal of up to 425,000t of waste rock over a two year period for construction of an exploration decline within the Federation REF area (EL6162) would require additional separate approvals not considered under this modification. The importation of waste rock from Federation to Hera should not occur until approvals for Federation are in place.

This modification seeks to reduce the two waste rock emplacements (currently approved in MOD5) to one waste rock emplacement. The reduction in waste rock material requiring storage is directly related to material being required for stope backfill underground.

Economic benefits of the resource

Over the life of the Project, MEG has estimated that the value of the metals produced would be of the order of \$146 million in current dollars, with the net present value of this revenue stream at around \$122 million at a discount rate of seven per cent.

On the basis of current operations at the Hera mine it is expected that refined gold from the Project would be processed onsite into dore bars (a semi pure alloy of gold and silver) which would then be transported to the Perth mint for further refining into higher quality gold. The silver, lead and zinc concentrates produced onsite would be transported to either Port Kembla or the Port of Newcastle for further refining in smelters in East Asia. If approved the additional export income from the Project would contribute to the around \$6 billion of metallic and processed metals exported from NSW in 2019/2020.

The Project is seeking an approval to extend the current life of mine of the operating Hera mine from the current approved date of 31 December 2022 to 31 December 2025. The extension would allow mining to continue to at least the end of 2022/23, therefore enabling an additional 1.5 years of production. It is also possible that other satellite prospects close to Hera (such as the Federation Prospect – not part of this Modification) could then be mined and produce ore for the Hera processing plant. Therefore, this Modification can also be seen as a “bridging” project for the Hera operation as a whole.

The Project would not in itself provide any additional employment for the Hera mine. However, if approved the Project would provide another 1.5 years for the existing around 160 jobs at the Hera mine out to at least the end of 2022/23. Beyond 2022/23 employment would most likely be provided by satellite projects in the region, thereby allowing existing jobs to continue into the future. Without the Project the existing Hera mine would close at the end of calendar year 2022.

Capital expenditure for the Project is around \$7 million.

Royalty calculation

The Project is an extension to an existing mine that produces gold, silver, lead and zinc. A royalty rate of four percent applies to the value of all metals produced. For these metals deductions are allowed on the price received and include: onsite treatment expenses, realisation expenses, onsite administration and depreciation. The net value after these deductions is called the ex-mine value; the four percent royalty rate is applied to the ex-mine value amount.

One of the most important assumptions in the calculation of future royalty is the estimate of future metals prices over the life of a project. In general MEG agrees with the metals price assumptions provided by the Proponent. Some downwards price adjustments have been made based on the Division's view of metal prices going forward.


Another important aspect of future royalty calculation for a proposed metal project is the estimation of future annual production of each of the metals to be produced from the Project. After a rigorous analysis of the geological information provided by the Proponent, MEG is of the opinion that if the Project is approved, the metals output in each of the project years as provided by Aurelia could be achieved.

Using the above parameters, MEG has calculated that the State would receive around \$4.4 million in current dollars, and around \$3.7 million in NPV terms (at a real discount rate of 7 percent) in royalty from the Project. In a typical year at full production the NSW Government would receive around \$2.9 million in royalties from the Project.

Departmental Assessment

Assessed by	Unit	Branch
Assessing Officer: Karen Montgomery Minerals Geoscientist	Mineral Geoscience Assessment & Advice (GAA)	Geological Survey of NSW
Assessing Officer: Bryan Whitlock Senior Resources Analyst	Resource Economics	Resources Policy, Planning & Programs
Assessing Officer: Scott Anson Manager Assessment Coordination	Assessment Coordination Unit – Resource Assessments	Resource Operations

Approvals

Approved by	Signature	Date
Approving Officer: Dr Phillip Blevin A/Director Strategic Geoscience Assessment & Advice	Approved in CM9	14/12/2020
Approving Officer: Dr Minh Ho A/Director Resources Planning & Programs	Approved in CM9	15/12/2020
Endorsing Officer: Sima Williamson A/Executive Director Resource Operations		17/12/2020