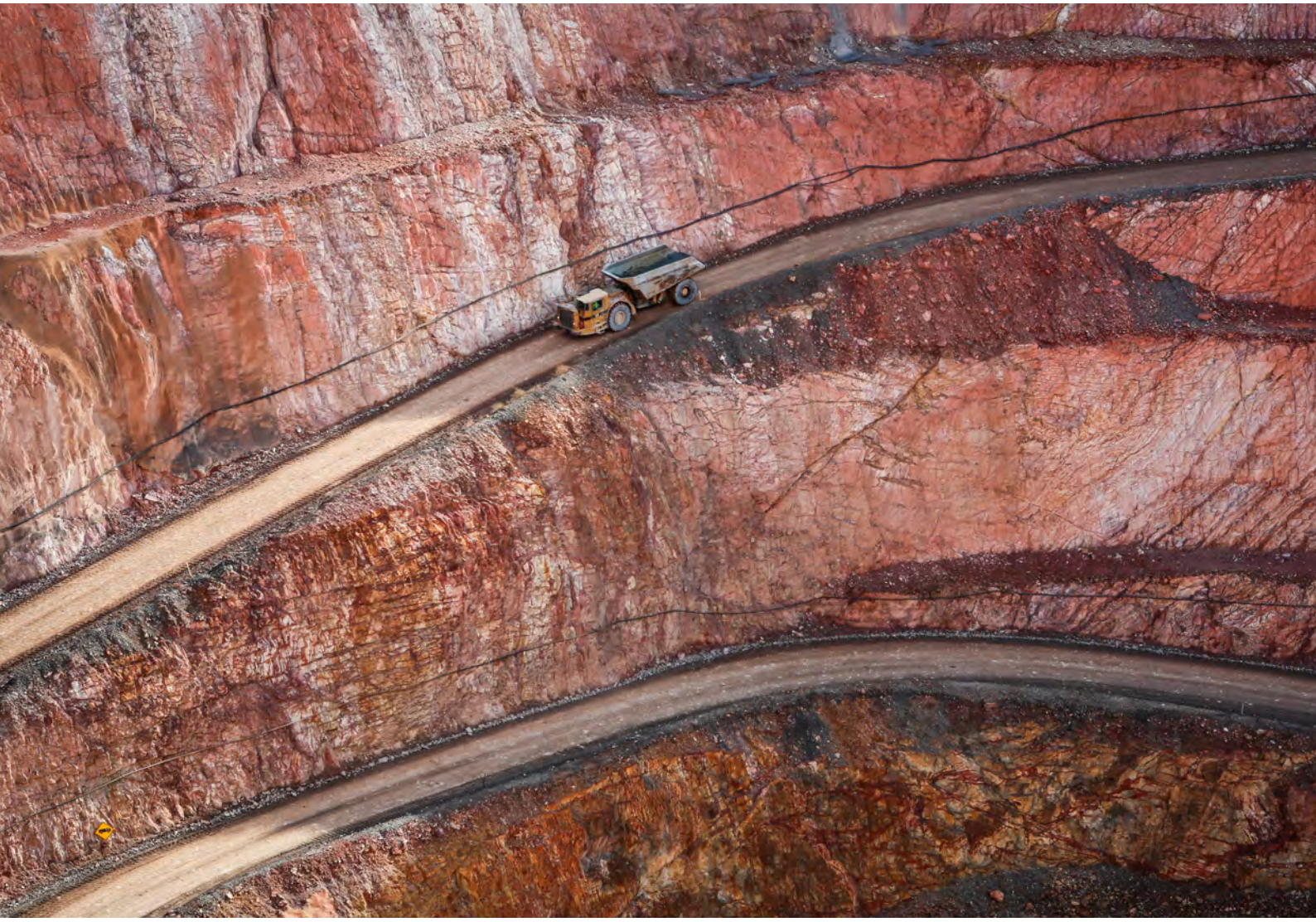
New Cobar Complex Project, State Significant Development (SSD10419)

Environmental Impact Assessment

Prepared for Peak Gold Mines
February 2021



EMM
creating opportunities

aurelia
METALS Ltd.

Declaration

For submission of an environmental impact statement (EIS) under Part 4 of the NSW Environmental Planning and Assessment Act 1979.

EIS prepared by

Robert Morris
BSc (Hons), MSc, GAICDs

Applicant

Aurelia Metals Limited
Level 17, 144 Edward Street
Brisbane, Qld 4000

Description of development

New Cobar Complex Project
Refer to Chapter 2 of this EIS for a description of the proposed development

Land to be developed

Refer to Figure 2.2 of the EIS for a map of the project area. The land to which to the development applies is listed in Chapter 2, section 2.2 and Chapter 3 of this EIS.

Declaration

I confirm that we have prepared this EIS in accordance with the Environmental Assessment Requirements issued for the New Cobar Complex Project and that the:

- EIS has been prepared in accordance with Schedule 2 of the EP&A Regulation 2000;
- EIS contains all available information that is relevant to the environmental assessment of the proposed development; and
- Information in the EIS is neither false or misleading.

Robert Morris
Associate Director
12 February 2021

New Cobar Complex Project State Significant Development (SSD10419)

Environmental Impact Assessment

Report Number

J190278 RP22

Client

Peak Gold Mines

Date

12 February 2021

Version

v4 Final

Prepared by

Ellie Evans
Senior Environmental Scientist
12 February 2021

Approved by

Rob Morris
Associate Director
12 February 2021

Executive Summary

ES1 Introduction

Peak Gold Mines Pty Ltd (PGM), a wholly owned and operated subsidiary of Aurelia Metals Limited (Aurelia), owns and operates the Peak Gold Mines operation south-east of Cobar, far western New South Wales (NSW) (Figure ES1).

The PGM operation comprises the New Cobar Complex located 3 kilometres (km) to the south-east of Cobar town centre and the Peak Complex located 10 km south-east of the town centre. Both complexes are located adjacent to Kidman Way, which connects Cobar to Hillston to the north and Griffith to the south (Figure ES2).

PGM has been operational since modern mining commenced at the Peak Complex in 1991 and all current mining operates under development approvals issued by Cobar Shire Council (CSC).

The New Cobar Complex Project State Significant Development (SSD) (the project) is an amalgamation of existing approved underground mining of the Chesney and Jubilee deposits and development of new underground workings of the Great Cobar and Gladstone deposits to create the New Cobar Complex Project.

PGM is also seeking to consolidate all existing development approvals applicable to the New Cobar Complex into a single modern consent issued by the Department of Planning, Industry and Environment (DPIE). Approval will be sought for project elements accessed from, and undertaken within, the existing New Cobar Complex located within consolidated mining lease (CML) 6, mining purposes lease (MPL) 854 and mining lease (ML) 1483 and ML 1805.

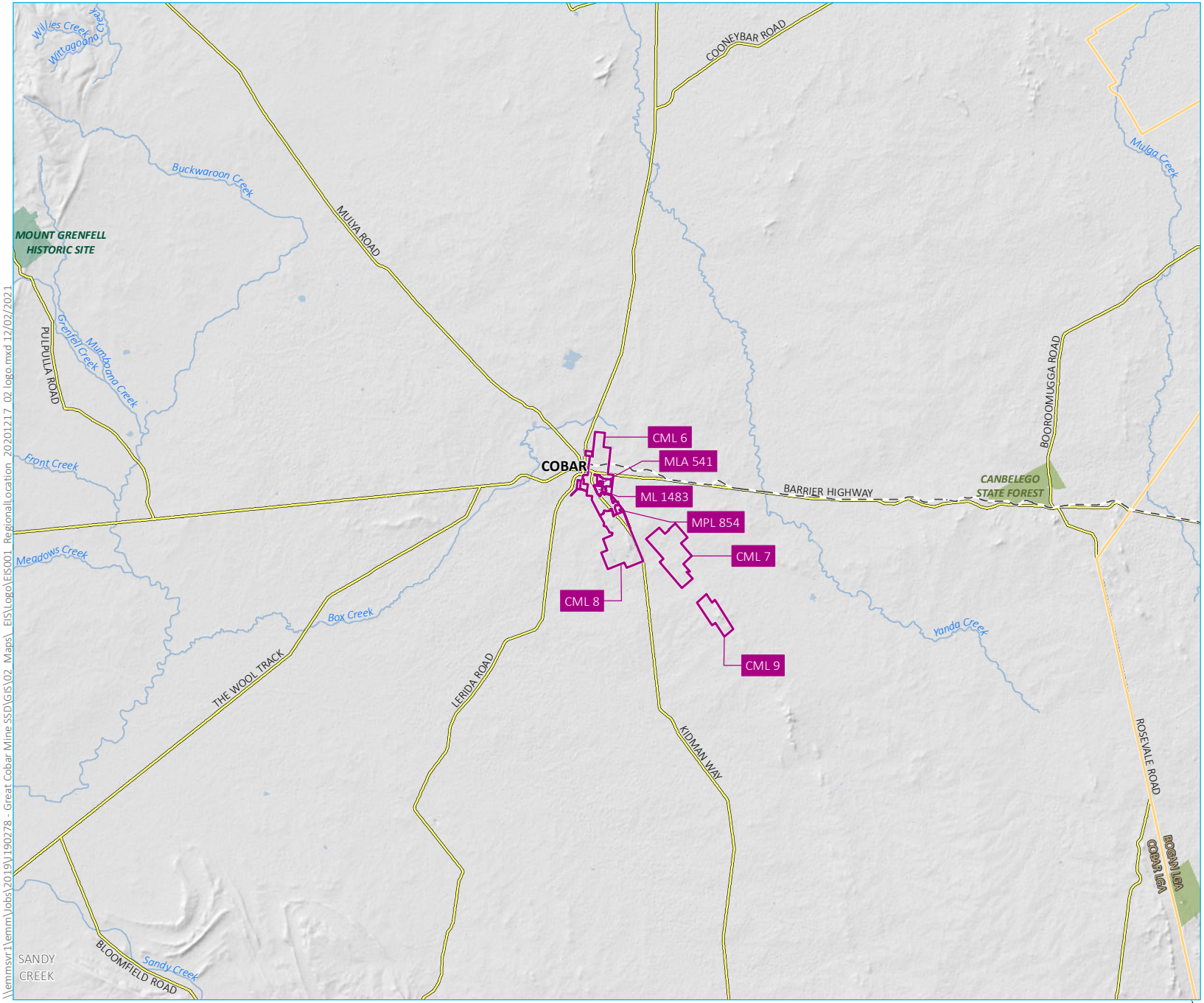
The Cobar area has a history of stable, large-scale, low-cost gold, silver, copper, lead and zinc production since mining began in the area in 1870. PGM has been operational since mining commenced at the Peak deposit in 1991 producing gold, copper, lead, zinc and silver. Mining at the New Cobar Complex commenced with the open cut mine in 2000, then transitioned to underground mining in 2004.

The current CSC development approvals at Peak Complex and New Cobar Complex allow for the operations to continue indefinitely and process up to 800,000 tonnes per annum (tpa) of ore. Ore processing, tailings storage and concentrate handling is undertaken at the Peak Complex with ore from the New Cobar Complex trucked by public road to processing facilities at the Peak Complex. Both the processing plant and the tailings storage facility (TSF) are located at the Peak Complex, and activities at those facilities are outside the scope of this project, although a parallel application has been submitted to CSC to increase the capacity of the TSF to facilitate this SSD Application.

PGM has identified the Gladstone and Great Cobar deposits as targets for further mining to extend the life of operations at the New Cobar Complex. The Great Cobar deposit was historically exploited by surface and shallow underground mining between 1870 and 1919, but no mining of the deposit has been undertaken since.

PGM has obtained approval for development of an exploration decline to facilitate exploration activities within the Great Cobar deposit. The objectives of the exploration activities are to:

- further define the mineral resource through underground drilling from an exploration decline; and
- taking of a bulk sample to provide further samples for metallurgical, geotechnical and associated test work.

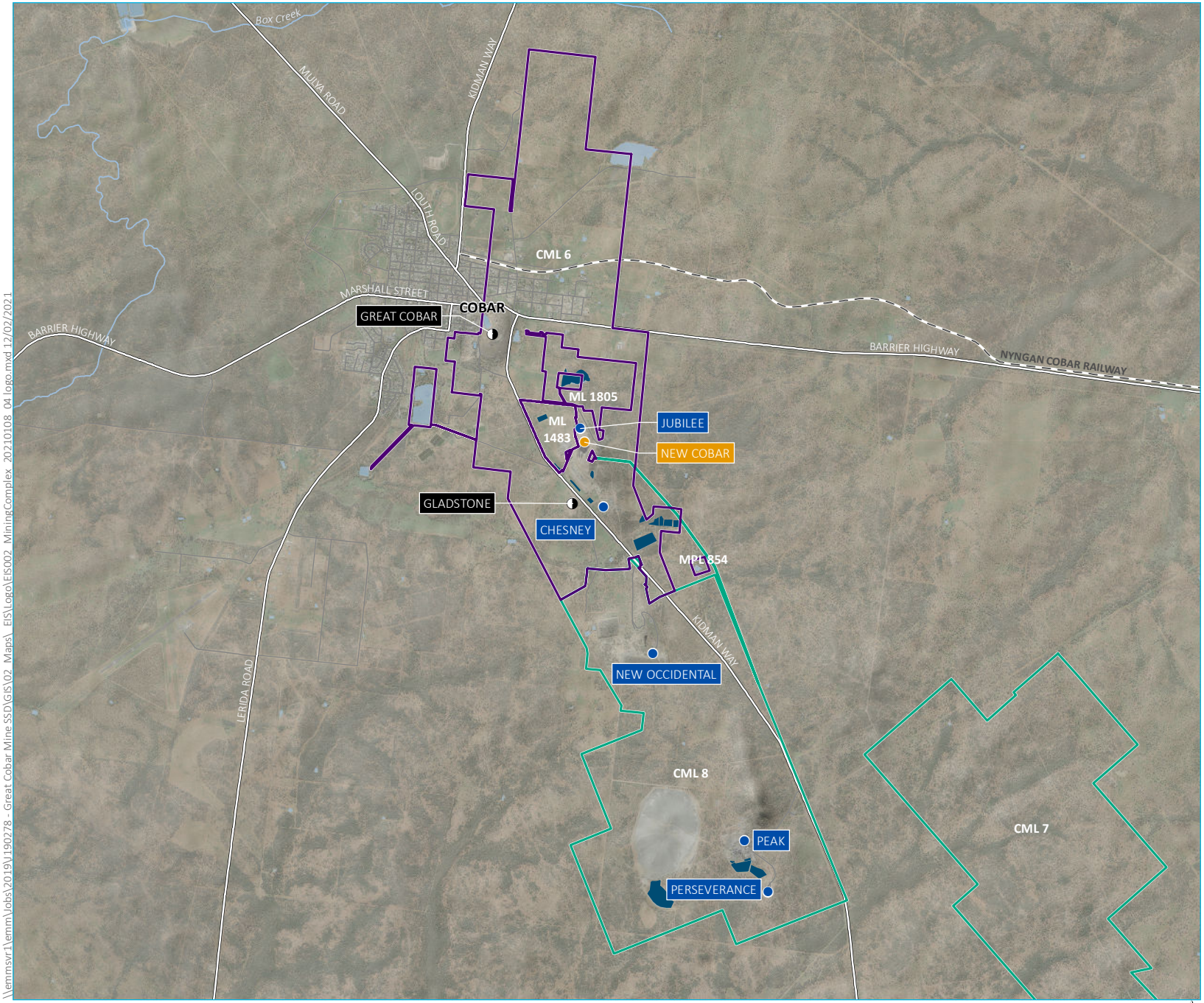


\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS001_RegionalLocation_20201217_02 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

Regional context

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure ES1



KEY

- Completed working
- Current working
- Future working
- Rail line
- Major road
- Minor road
- Named watercourse
- Waterbody
- Mine water management storage

Mining lease boundaries

- New Cobar Complex
- Peak Complex

\\emmsvr1\emm\Jobs\2019\190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS002_MiningComplex_20210108_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

0 1 2 km

GDA 1994 MGA Zone 55

N

Mining leases and complexes

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure ES2

aurelia METALS Ltd.

EMM creating opportunities

EMM Consulting (EMM) has been engaged by PGM to prepare and submit an EIS to support an SSD application for development consent under section 4.12 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It has been prepared to the form and content requirements set out in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), as well as clause 8(1) and clause 5 of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP).

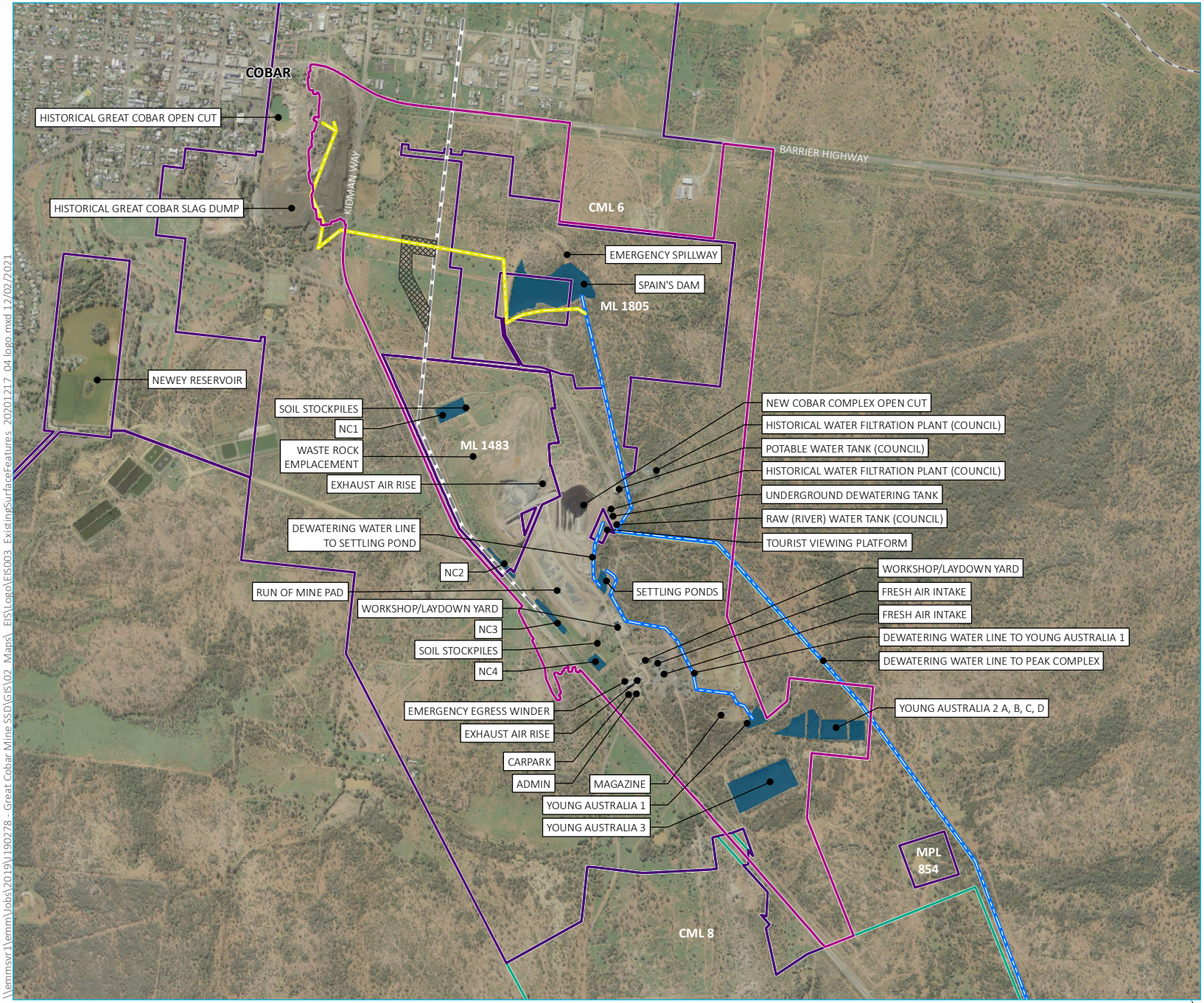
PGM requested SEARs from DPIE and additional agency requirements received for the SSD EIS in December 2019. These were received on 13 February 2020 and amended 29 October 2020.

ES2 Project overview

All works associated with the project will be located underground or within an existing, operational mining complex (the New Cobar Complex) (Figure ES3). An exception being, the construction of a short (no more than 400 metre (m)) power line from an existing 22 kilovolt (kV) line servicing PGM, to a proposed compact substation located adjacent to the approved fresh air intake and proposed emergency egress winder (Figure ES4). PGM proposes to use the decline, infrastructure and intake and exhaust ventilation elements developed for the Great Cobar exploration decline (approved, but not yet constructed) to facilitate project development (Figure ES5).

The existing surface infrastructure and facilities at the New Cobar Complex currently support underground mining of the Chesney and Jubilee deposits, and will continue to be used for this project. Access to all underground workings in the complex is from a portal and decline at the base of the existing New Cobar open cut. SSD approval will be sought for the following project elements accessed from, and undertaken within, the existing New Cobar Complex:

- Underground mining of the New Cobar Complex including, but not limited to, the Jubilee and Chesney deposits (presently operating under an existing development approval issued by CSC).
- Underground mining of the New Cobar Complex including Great Cobar and Gladstone (not yet approved).
- Groundwater dewatering of the relevant historical and proposed underground workings via the historical Great Cobar Shaft (existing development approval issued by CSC).
- An increase of the number of ore haulage trucks between the New Cobar Complex and Peak Complex from 25 loaded trips per day (50 movements in and out) to 50 loaded trips (100 movements in and out) per day (daylight hours only) averaged over a calendar year. The increase of daily truck movements will provide flexibility to PGM if there are unforeseen production disruptions (eg bad weather).
- Crushing and screening of ore within the existing surface run of mine (ROM) pad at the New Cobar Complex (existing approval by CSC).
- Transportation of ore to the Peak Complex via Kidman Way for processing, using road registered heavy vehicles (HV) (existing approval by CSC).



KEY

- Project area
- Pipeline route
- Great Cobar dewatering pipeline
- Existing 22 kV powerline
- Rail line
- Proposed power line corridor
- Mine water management storage

Mining lease boundaries

- New Cobar Complex
- Peak Complex

\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS003_ExistingSurfaceFeatures_20201217_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

0 0.5 1 km

GDA 1994 MGA Zone 55

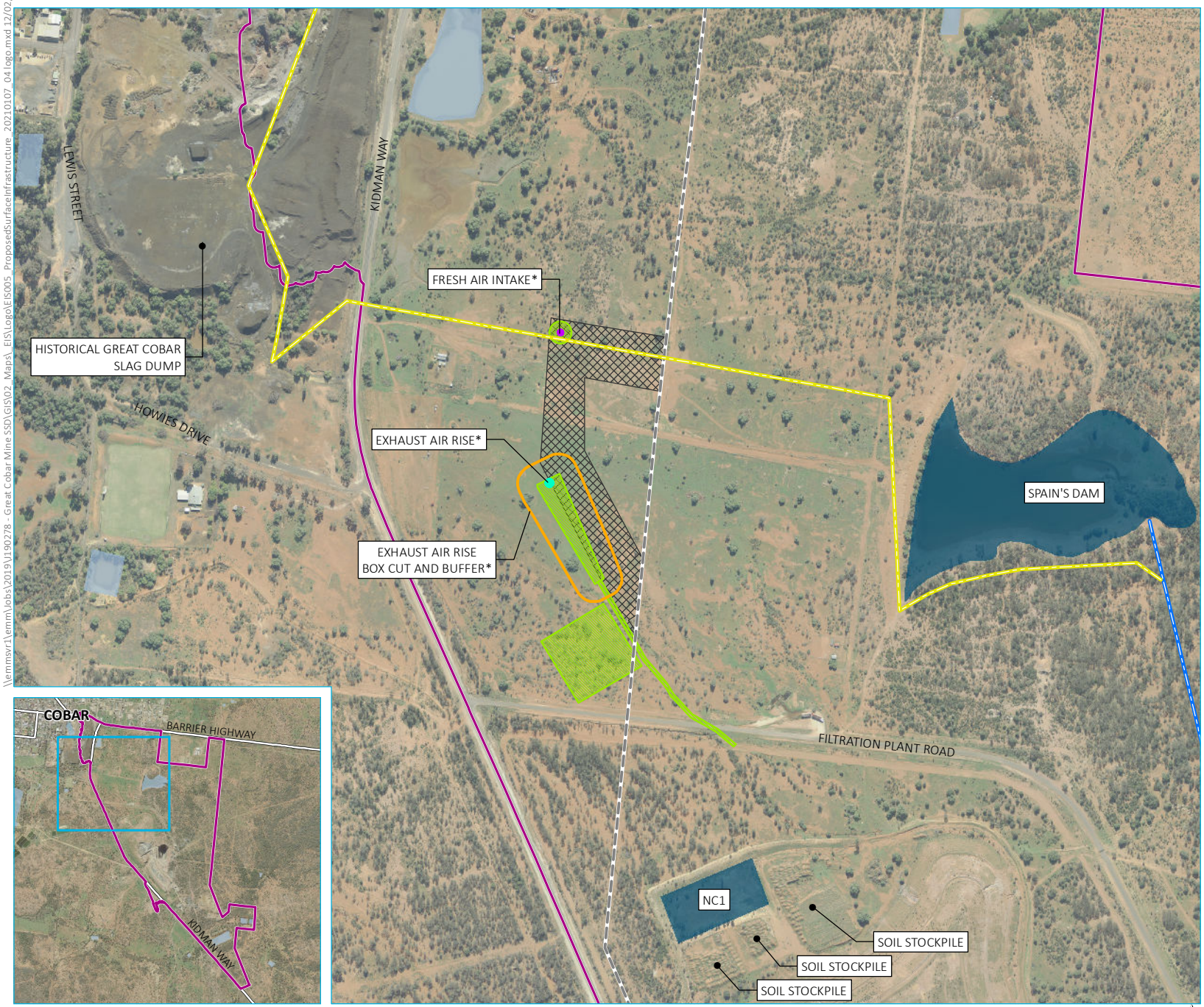
N

Existing surface features

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure ES3

aurelia METALS Ltd.

EMM creating opportunities

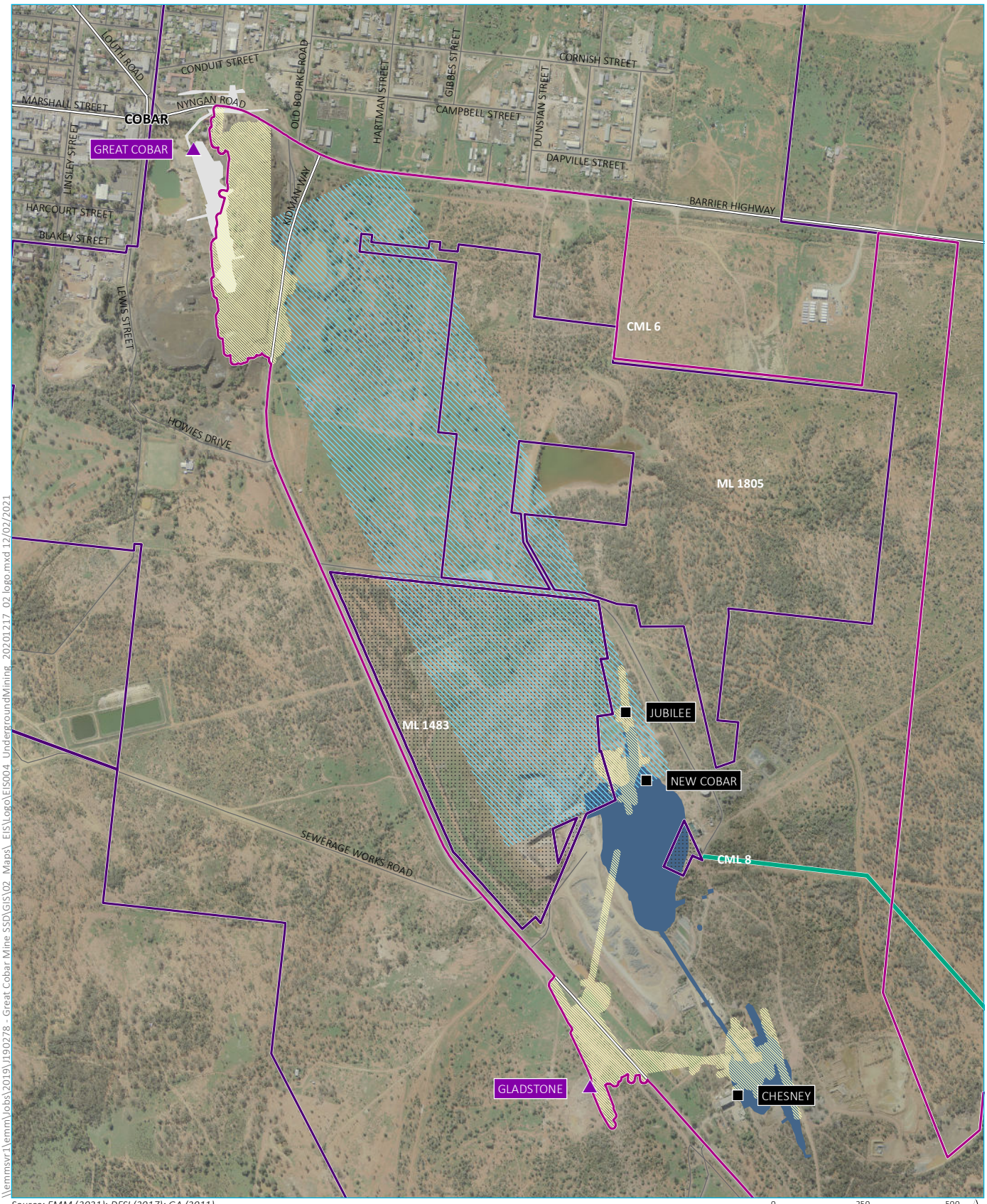


\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS005_ProposedSurfaceInfrastructure_20210107_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); DPE (2019); ELA (2018)

Proposed surface infrastructure

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure ES4



\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02 Maps\ EIS\LogoEIS004 UndergroundMining 20201217 02 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011)

0 250 500 m

GDA 1994 MGA Zone 55

N

KEY

- Project area
- Indicative proposed mine workings
- Indicative approved decline area
- Historical mine workings
- Existing mine workings
- Operating mine
- Prospect mine
- Major road
- Minor road

Mining lease boundaries

- New Cobar Complex
- Peak Complex
- ML 1483

Existing and proposed underground mining locations

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure ES5

aurelia METALS Ltd.

EMM creating opportunities

- Harvesting of waste rock and:
  - immediately deploying the material underground for use in stope backfilling operations (waste rock will remain underground and will not be transported to the surface as a preference); and
  - transportation of non-acid forming material to the surface for use across the complexes for construction/rehabilitation tasks (eg tailings dam lifts).
- Deposition of potentially acid forming waste rock brought to the surface and stored within the waste rock emplacements (WRE) where at end of mine life it would be capped, or progressively returned underground for disposal.
- Continuation of all other approved activities within the New Cobar Complex.

A cross sectional layout showing the relationship between all mineral deposits presently being mined and those proposed, is shown in Figure ES6.

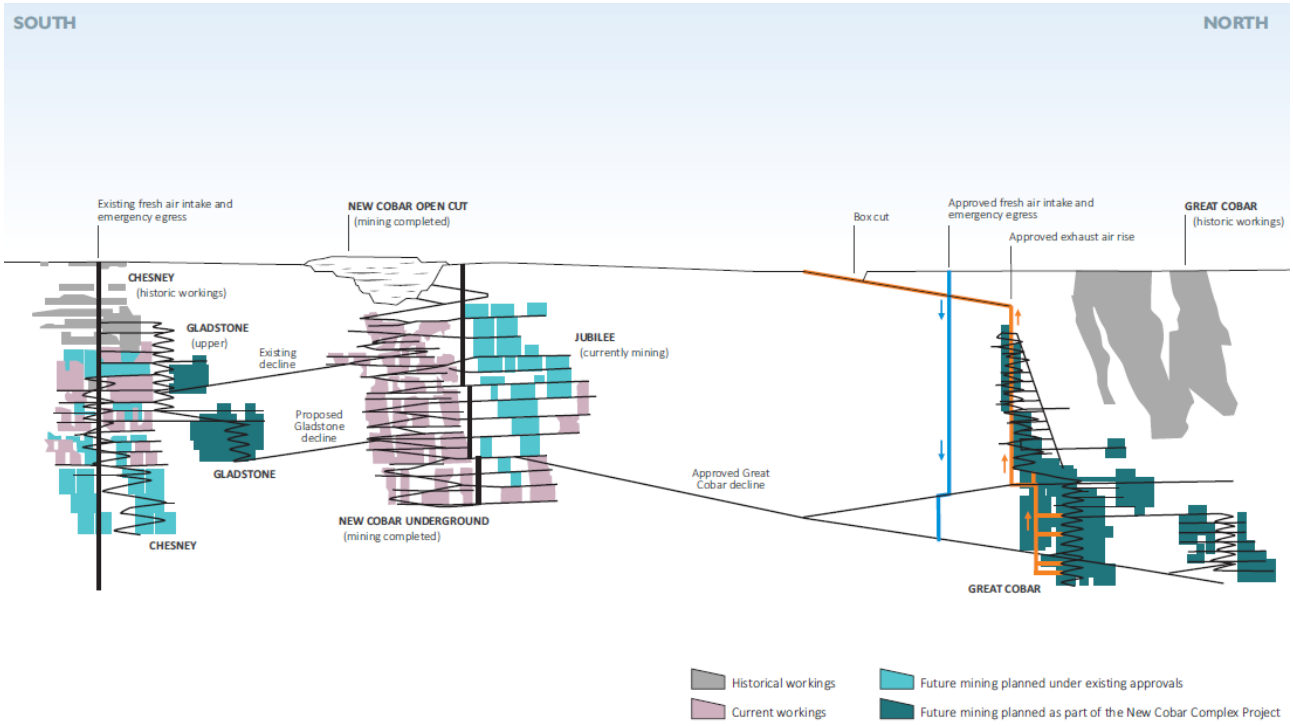


Figure ES6 New Cobar Complex long section

Processing will remain at the existing approved rate of up to 800,000 tpa, with production of ore from the Great Cobar and Gladstone deposits making up for the future decrease in production from other workings across PGM.

Additionally, there are remaining resources in the Jubilee and Chesney deposits that are mineral rich, but which are currently not economical to mine in isolation. Keeping the New Cobar Complex operational and gaining access to Great Cobar and Gladstone deposits will lead to increases in economies of scale and maximise opportunities to mine these resources, and extend the life of mine by 12 years from 2023 to 2035 (based on current market assumptions).

PGM is seeking to consolidate all existing development consents applicable to the New Cobar Complex including existing mining, proposed underground mining of the Great Cobar and Gladstone deposits and existing surface infrastructure within a single consent issued by DPIE. Once approved, all relevant CSC development consents for the New Cobar Complex will be surrendered. Other approvals related to the Peak Complex, will be unaffected.

ES3 Project setting

The project area is located south-east of the town of Cobar and has a diverse geological and geomorphological landscape. It is dominated by flat relief and residual soil profiles, and has been subjected to extensive disturbance in the past from previous historical mining, settlements and agriculture. Cobar is located within a semi-arid region of the Darling River catchment and experiences hot summers, mild winters, and generally low annual rainfall totals. While no major river systems are near Cobar, a drainage system of wide shallow valleys with a few ephemeral lakes has developed, despite limited rainfall and gradient.

Geologically, the area around Cobar comprises a series of polymetallic high-grade ore bodies dominated by gold, silver, copper, lead and zinc. Since the commencement of mining (1870), mining has produced more than 200,000 tonnes (t) of copper and 3,000,000 ounces (oz) of gold.

ES4 Impact assessment

Several comprehensive technical assessments have been undertaken to assess all potential environmental and social impacts associated with the project. The assessments have also identified suitable mitigation measures to avoid or mitigate those impacts.

The findings of the detailed technical assessments are summarised in the main body of this EIS and are provided in full in the appendices. The following sub-sections provide an overview of the main findings.

ES4.1 Air quality

The project will result in additional emissions from the Great Cobar exhaust air rise and increased road truck transportation of ore material from the New Cobar Complex to the Peak Complex. Emissions were quantified using publicly available emission estimation techniques and site-specific exhaust air rise monitoring data. The atmospheric dispersion of air pollutant emissions for each mine development scenario was simulated using the AERMOD model.

The results of the dispersion modelling indicate that impacts from existing operations do not result in exceedance of any applicable criteria at any privately owned residence assessment location. The project will marginally increase emissions; however, all predicted concentrations and deposition rates are below relevant impact assessment criteria at all privately owned residence assessment locations.

A GHG assessment was also undertaken for the project. The changes to emissions associated with the project do not significantly alter annual GHG emissions from existing operations.

Conservative emission concentrations were adopted in the emission calculations for the air quality impact assessment. Despite the high level of conservatism, the increased emissions from the project are not predicted to adversely impact the air quality environment in the populated areas of Cobar.

ES4.2 Human health risk assessment

A human health risk assessment was undertaken by SLR in accordance with recognised risk assessment frameworks, focussing on the emission of pollutants to the air (primarily pollutants related to dust) and exposure to the local community. Health impacts due to noise emissions were assessed based on the noise modelling completed for the project.

No existing information was identified for background soil/dust metal concentrations in residential areas of Cobar. Consequently, a comprehensive sampling program to determine background levels was undertaken. The data collected confirmed existing lead levels in soil and dust around Cobar are low with only one marginally elevated result relative to relevant criteria. This indicates lead exposure by the general population in Cobar is also likely to be low. The sampling program identified that existing concentrations of other metals/metalloids in Cobar are relatively low, with many samples returning concentrations less than the respective limits of reporting.

For health risks relating to dust and metals/metalloids, the modelling predicted negligible change to blood lead concentrations for both adults and children as a result of the project, with predictions well below the target action level. All estimates were consistent with the range of blood lead levels reported for Australian children in communities not affected by point sources of lead. The models used incorporated incidental oral exposure to lead in soil and dust, inhalation exposure to lead in air, as well as 'background' exposures such as from diet and water (including tank water which may contain lead deposited in dust).

Estimated exposure to other metals were all well below their respective health guidelines using conservative assessments. Therefore, the project is not expected to result in a significant impact to the health of the local community relating to noise and air quality emissions.

ES4.3 Noise, vibration and blasting

The project will result in additional potential noise propagation from construction and operational activities associated with the Great Cobar exhaust air rise, increased road truck transportation of ore material from the New Cobar Complex to the Peak Complex and ongoing ground vibration from blasting. The findings of the noise and vibration impact assessment are as follows:

- Proposed future operational noise levels were assessed for the day, evening and night periods for worst-case meteorological conditions. The assessment found that noise levels during operation are predicted to satisfy the relevant criteria at all assessment locations. No material increase is predicted at all assessment locations when comparing modelled existing and predicted future site noise levels. Therefore, operational noise impacts from the project are unlikely to cause noise impacts at any sensitive receivers.

- The sleep disturbance assessment demonstrated that night-time maximum noise levels are predicted to satisfy the relevant screening criteria at all residential assessment locations. Accordingly, project activities are unlikely to cause sleep disturbance impacts at any sensitive receivers.

- Noise levels during the construction of the power line were assessed against the operational criteria for the day and night periods. Predictions satisfied the relevant criteria at all assessment locations. Accordingly, project activities associated with construction are unlikely to cause noise impacts at any sensitive receivers.

- The project will result in additional road traffic movements during proposed future operations. However, the overall increase in average road traffic noise at nearest residential facades is predicted to satisfy relevant criteria during both the day and night periods. Therefore, road traffic is unlikely to cause noise impacts at any sensitive receivers.

- A blasting assessment was completed for the project. Site specific relationships between the level of blast emissions and scaled distances were developed based on site specific monitoring data. The results demonstrate that the 95% 5 mm/s PPV ground vibration criteria will be achieved at the nearest

residential receivers if the MIC values are controlled appropriately. Recommendations in relation to the MIC values for the project based on distance to receiver are provided.

- Noise and vibration will continue to be monitored to ensure compliance with relevant guidelines, conditions and licences.

ES4.4 Subsidence

The project involves the development of new underground workings of Great Cobar and Gladstone deposits, within and close to existing mining operations. Accordingly, the geotechnical and subsidence characteristics of the project area are already well understood and associated risk managed through the existing management plan framework.

The geotechnical and subsidence assessment conducted by Beck Engineering found:

- Surface subsidence forecasts are less than 15 mm and are considered negligible.
- Negligible subsidence is expected for the proposed underground mining due to:
  - small footprint of future underground mining;
  - relatively strong rockmass conditions;
  - small (narrow) stopes with a small footprint;
  - low extraction ratio due to the narrow stopes and small amount of rock planned to be mined (compared to other larger stoping mines); and
  - use of backfill.
- Planned underground mining is not close to the New Cobar Complex open cut and there is no significant stress interaction and minimal subsidence in the vicinity of the open cut. Proposed underground mining does not result in instability in the open cut in the model forecasts.
- Minor to moderate levels of rockmass damage is forecast close to some stopes. This increases with depth. Forecast levels of damage would generally be associated with minor dilution and stope overbreak. This is normal in most stoping mines. Moderate level of rockmass damage with potential for increased levels of stope overbreak are forecast along the Great Chesney and Great Cobar faults which bounds the hangingwall of some future stopes.
- Damaging levels of seismicity are not anticipated at the New Cobar Complex and dynamic support is not anticipated to be required due to the rockmass properties, low extraction ratio and mining depth.
- There are stopes at New Cobar (Jubilee) and Gladstone which are close to or intersect the weathered/oxidised layers near surface. The rockmass in the oxidised layers is weaker and more susceptible to instability and chimneying. The stopes assessed by the geotechnical and subsidence assessment are conceptual only and were designed based on the Inferred Mineral Resource and may not be economic or become part of the Ore Reserve and executable mine design.
- Diminishing pillars are formed at Great Cobar and Gladstone mines due to the mining sequence. These diminishing pillars form as stopes are retreated to a central access. These stopes will likely have

elevated levels of stope overbreak and dilution compared to nearby stopes due to the stress concentration that occurs as the pillar diminishes. However, due to the rockmass conditions, depth and small number of stopes with this sequence, this is not considered to be a significant problem for the mine.

Mitigation measures will be implemented to reduce subsidence and deformation, and to increase stability. An observational approach with continuous evaluation of rockmass response to mining and iterative adjustment of the mine plan, if required, as mining continues, and as additional geotechnical information becomes available.

ES4.5 Groundwater

A numerical groundwater model was built using all available data to simulate historical and predicted groundwater effects associated with the expansion of the New Cobar Complex.

The project has the potential to impact on local and regional groundwater sources and nearby sensitive receivers. Potential impacts were assessed in accordance with the relevant guidelines and include:

- Drawdown of greater than 2 m is expected at a groundwater bore at the Cobar District Rugby Club, the only water supply works identified within 5 km of the New Cobar Complex. Under the aquifer interference policy, make good arrangements will be put in place in consultation with the bore owner.
- There are no designated high priority groundwater dependent ecosystems (GDEs) located within 5 km of the New Cobar Complex.
- The potential aquatic GDEs mapped by the BoM GDE Atlas near the project area are unlikely to be GDEs due to depth to groundwater (>15 m).
- Identified medium potential terrestrial GDEs are outside the area of expected drawdown of the project and therefore will not to be impacted by the project.
- The existing New Cobar Complex open cut will act as a regional groundwater terminal sink post mining, maintaining groundwater flow towards it. Any change in groundwater quality will be localised, therefore the beneficial use category of the aquifer will not change because of the project. The groundwater quality impacts of the project are consequently anticipated to be negligible.
- The residual impacts, following management measure implementation are generally low and will be managed by updates to the existing management plans to ensure any impacts are identified and managed accordingly.

Monitoring of the PGM groundwater network will continue, and the network has been expanded to target the identification of potential impacts from mining activities. Monitoring each component of the water management system underpins if, how, and when management responses are required. Triggers and thresholds will be reviewed and updated to provide context on if, how, and when management measures are required as part of management plans.

ES4.6 Surface water

A surface water assessment has been undertaken to assess the potential impacts of the project on surface water resources. Potential flood impacts and risk have also been addressed. Residual impacts (after the implementation of mitigation measures) associated with the project include:

- The New Cobar Complex will remain a zero-discharge site with the exception of Spain's Dam during extreme rain events.
- Overflows from Spain's Dam are predicted to occur on average once every 10 years. Overflows from Spain's Dam are expected to occur due to intense rainfall or prolonged wet periods when substantial rainfall and runoff would be experienced across the Cobar region. No significant impacts to streamflow regimes are expected.
- The water quality of Spain's Dam overflows may exceed water quality objectives for electrical conductivity, total dissolved solids, sulphate and some metals. Residual impacts to downstream water quality are considered minor and short-term. This is due to the low predicted frequency of overflows and rapid mixing that would occur with runoff from surrounding areas, including industrial areas of Cobar, prior to discharging downstream of the project area.
- Most of the New Cobar Complex is unaffected by flooding. No impacts to local flood characteristics are expected as a result of proposed surface infrastructure.
- Flood management controls are proposed to reduce or eliminate potential flood risk to life and equipment for areas of the New Cobar Complex that are subject to flooding.
- Some mixing of floodwaters and mine contact water may occur. However, the risk of water quality impacts to downstream watercourses is considered low as floodwaters that enter the site are detained within water management dams for more frequent flood events and rapid mixing of waters is expected in larger flood events.
- Water requirements for PGM will be met by dewatering of underground workings and reuse of water onsite (60% of requirement), and external sources (40% of requirement) comprising dewatering from the Great Cobar historic workings and drawing from an existing high security allocation from Burrendong Dam.
- Water supply security is of low risk to the project as water supply from the Great Cobar historic workings is predicted to meet external water supply requirements should high security water supply from Burrendong Dam be unavailable due to severe drought.

The assessed residual impacts are expected to be similar to those of the existing New Cobar Complex operations. Hence, any additional risk or potential impacts to the receiving environment as a result of the project are anticipated to be minor.

PGM will continue to monitor water usage, mine dewatering volumes, water transfers and surface water quality. Additionally, water level monitoring within Spain's Dam will be undertaken to further inform operational water management. Monitoring each component of the water management system will inform when management responses are required.

ES4.7 Biodiversity

In October 2020, DPIE determined the project is unlikely to have a significant impact on biodiversity values, and a biodiversity development assessment report (BDAR) is not required as part of the EIS. The Commonwealth also determined that the project is not a controlled action.

The project will have negligible impacts on biodiversity values as surface activities will be limited to areas of significant existing disturbance. Native vegetation will be avoided by micro-siting infrastructure within the

power line corridor. No subsidence is predicted, and groundwater drawdown will not impact GDEs, terrestrial plant communities or other native vegetation. As negligible impacts on biodiversity is anticipated, offsets are not required.

ES4.8 Aboriginal heritage

The findings of the Aboriginal cultural heritage assessment are summarised as follows:

- The assessment was carried out in accordance with relevant guidelines and responded to the requirements of the SEARs to assess likely heritage impacts of the project.

- Previous archaeological investigations of the region are extremely sparse. Where undertaken, these studies all suggest generally sporadic and/or ephemeral past use of the region, with a focus of occupation and visitation on springs, waterholes and other natural soaks. The project area generally does not conform to this archaeological model as it is generally lacking any formal drainage or permanent water sources that would allow long residence times or substantive vegetation to become established. Both desktop analysis and ground-truthing validated these findings, and further identified that significant level of disturbance had occurred within the project area.

- An archaeological field survey was undertaken by EMM archaeologists and representatives of the registered Aboriginal parties and native title applicant representatives. The field survey undertook a general overview of the project area, and a targeted investigation of the proposed surface activities for the project, including the power line corridor.

- The proposed underground activities will have negligible direct or indirect impacts to Aboriginal heritage. Similarly, the majority of surface impacts are proposed in areas of existing heavy disturbance associated with historical mining operations, agricultural and post-contact settlement. The focus of surface impacts for the assessment was a ~3.4 ha area within which the proposed power line easement will be located. This easement will be no greater than 0.8 ha, and actual surface disturbance will be significantly less.

- Construction of the power line has the potential to harm identified Aboriginal artefacts within the New Cobar Complex Background Scatter - a low density scatter of artefacts, extending beyond the boundaries of the easement, and the remains of an informal settlement (removed in the 1960s), known as Cornish Town. Management strategies proposed to further minimise any effects arising from construction of the powerline.

Overall, the proposed activity will result in negligible cumulative impact with the Aboriginal sites already being heavily affected by past activities. When including suggested management strategies, it is considered that the proposed activity would potentially have positive cumulative (intergenerational) impacts, allowing improved engagement of the Aboriginal community with the locale, as well as providing further information on poorly understood post-contact history.

ES4.9 Historical heritage

There are two listed heritage items within the project area including Towser's Huts located 200 m north of the New Cobar open cut. The huts are fenced off and protected and will not be impacted by existing or proposed surface infrastructure or mine related activities. Cobar Pastoral and Mining Technology Museum is situated on the main street of Cobar, overlooking the Great Cobar open cut. It is approximately 950 m to the north-west of the nearest existing or proposed surface infrastructure and is unlikely to be impacted by mine related activities.

The power line corridor is located in and adjacent to an area previously known as Cornish Town. This was one of several residential areas to the south of Cobar that was removed in the 1960s. Historical research identified the potential for archaeological sensitivity within the survey area as it is possible that there may be evidence relating to Cornish Town. If archaeological resources related to this phase of the region's historical development exist, they are likely to, at a minimum, reach the threshold of local significance.

As no known historical heritage items are present within areas of existing or proposed surface infrastructure, the area in which excavation for the power poles is required is limited and minimal. However, an unexpected finds protocol will be developed and implemented. On this basis, it is expected that the proposed works are unlikely to result in a significant impact to historical heritage values. Any potential impacts will be managed through relevant management plans.

ES4.10 Traffic and transport

The key findings of the traffic impact assessment are as follows:

- A comparison between the traffic data in 2013 and 2020 shows that there was a small reduction in the daily traffic volumes along Kidman Way, between Cobar and the recorded proportion of heavy vehicles in daily traffic is now significantly lower in 2020, due to a combination of COVID-19 related factors and lower ore transport truck movements when the traffic survey was undertaken in April 2020.
- The increased limit on daily ore transport movements will generate three additional heavy vehicle traffic movements during the current traffic peak hours.
- All the identified site access intersections currently operate with over 90% spare capacity. The increase in project related traffic will not change the existing intersection peak hour operating conditions, or the peak hour mid-block level of service for general traffic flow using the Kidman Way at all locations north of the Peak Complex access.
- A minor upgrade will be required at the Kidman Way/ New Cobar Complex heavy vehicle access intersection. The other intersections require no upgrade works.

Based on the above considerations, this assessment shows there will be minimal traffic impact due to the project.

ES4.11 Rehabilitation and closure

A rehabilitation and landscape management strategy recognises that if the project is approved, the existing mine operating plan (MOP), which covers both the New Cobar Complex and the Peak Complex, will be amended and submitted to the Resources Regulator for approval. The amended MOP will be generally consistent with the commitments relating to rehabilitation and closure outlined in the rehabilitation and landscape management strategy.

ES4.12 Visual amenity

Mining contributes significantly to the local economy and heritage of Cobar, and the community has always considered Cobar to primarily be, a mining town. Visible project elements will be in keeping with the existing landscape and associated socio-cultural expectations.

The visual impacts as a result of the project will not be significant. The proposed new surface elements have a slight to slight/moderate visual effect, will be removed from the landscape at the end of mining and will not be visibly significant. The WRE is an already approved and established landscape feature, and its visual

impact on the landscape will reduce over time as further rehabilitation takes place. This landscape feature will remain post mining with a visual effect of slight/moderate and is not visibly significant.

The lighting arrangement at the New Cobar Complex will not change. Lighting cannot be directly seen from the town due to building and vegetation screening and modifications to the landform arising from current and historic mining. Project related light glow is minimal, and lights are effectively directed so as to avoid unnecessary light impacts. Motion sensitive lighting will be required for safety purposes at the emergency egress winder house and headframe, however this would only be used during night-time emergency situations or maintenance.

The visual impacts associated with the constructed mine elements will be temporary and cease at the end of mining. At the end of mine life, all elements will be removed and the surface recontoured as necessary and the area returned to the uses outlined by the rehabilitation plan. The New Cobar Complex open cut and WRE, the prominent features of views from Fort Bourke Hill, which is an established tourist attraction will remain, reinforcing Cobar's mining identity. The WRE will undergo further rehabilitation and revegetation at the end of mining to improve its integration in the local landscape.

ES4.13 Hazard, risk and public safety

An assessment of potentially hazardous substances found that the project exceeds the SEPP 33 screening threshold for explosives for new development. However, the New Cobar Complex is an existing project and explosives are already stored on site (at quantities greater than the SEPP 33 screening threshold for new development), in compliance with requirements from SafeWork NSW and WorkCover NSW. The quantity of hazardous materials required on-site is not expected to increase as a result of the project, therefore the project is not considered to represent an offensive or hazardous development.

The project is not located in an area mapped as bushfire prone. Existing asset protection zones surround existing infrastructure, and new infrastructure that presents a bushfire risk will be located in areas already cleared of vegetation.

As a result of the project design and existing commitments and management measures, geochemical hazards are not expected to impact the environment or public safety.

Four hazard scenarios were assessed to determine risk to public safety or the environment, and no scenario was found to have the potential for moderate or greater offsite consequences.

The continuation of PGM's management and mitigation measures will manage the risks to the environment and public safety to acceptable and compliant levels.

ES4.14 Waste management

The project will not result in material changes to generation, handling and transport of waste and waste rock on site. The Waste Management Plan and WRMP will continue to be implemented to manage waste consistent with existing operations.

ES4.15 Social

The social impact assessment provides an assessment of potential social impacts (negatives) and benefits (positives) associated with the project. It identifies the relevant social issues, social impacts and benefits, and associated mitigation and enhancement measures applicable to the design, construction, and operation of the project. The key potential social impacts and benefits identified were:

- Way of life impacts: drawdown of bore water affecting use of the Cobar District Rugby Club grounds; noise and vibration from blasting causing amenity issues; and livelihood benefits from ongoing employment and mining operation.
- Community impacts: social cohesion, capital, and resilience benefits in the local community.
- Health and wellbeing impacts: stress due to noise and vibration from blasting.
- Fears and aspiration impacts: community cohesion issues related to mining workforce; and continuity of mining operation in Cobar.

Mitigation and management strategies proposed for each of the identified potential social impacts will minimise negative consequences and maximise social benefits for the local community. Performance indicators will be developed by PGM for each mitigation and enhancement measure in consultation with stakeholders and will be monitored throughout the project life span by PGM.

An adaptive approach will allow PGM to manage and respond to changing circumstances and new information over time through ongoing monitoring and periodic review of mitigation strategies; this will allow for modification if required and if appropriate. This adaptive approach will ensure that the management of social impacts will result in effectively reducing negative social impacts and maximising social benefits for the local community.

ES4.16 Economics

The economic assessment demonstrated that the project is expected to result in economic benefits to the region and the State. In particular the project will have the following benefits:

- Contribution to regional and state economic growth;
- Jobs and incomes from both direct and flow-on impacts – a total of $604M in wages and salaries is estimated to be paid to workers in NSW either directly engaged by the project or engaged through flow-on activity between 2020-21 and 2032-33 across all phases. These include:
  - a total of 159 full time equivalent (FTE) jobs construction phase and an additional 108 FTE jobs in the rest of NSW.
  - an average per year of 342 FTE jobs per annum in the catchment during operation, and an additional 112 FTE jobs per annum in the rest of NSW.
  - a total of 19 FTE jobs in the catchment during decommissioning/rehabilitation activities and one additional FTE job in the rest of NSW.
- A net present value of $281.4 M over the assessment period with total present value benefits of approximately $756.6 M compared to an aggregated present value costs of approximately $475.1 M.
- Additional revenue to the Australian Government of $183.0M through a range of taxes, compared to what would occur without the project.
- Additional revenue to the NSW Government of $59.8 M primarily through royalty payments.

Mitigation measures to minimise the potential for adverse economic effects focus on continued encouragement of local workforce and contractor labour hiring, continued support for local business by using

established supply networks and providing sufficient opportunities and information for local business to secure new supply contracts; and ongoing monitoring of accommodation for the non-local workforce during construction to minimise impacts on the local property market.

ES4.17 Cumulative impacts

The assessment of cumulative impacts has considered all relevant existing and proposed projects for which data was available. Potential cumulative impacts on environmental aspects were considered of low significance.

Due to the nature of projects included in the assessment it is anticipated that this process of assessing potential cumulative impacts will occur for all projects. That is, each of projects will be required to mitigate and manage potential cumulative impacts to acceptable levels.

ES5 Justification and conclusion

The project has been studied from many perspectives and its final design is considered the most sustainable response to economic, social, environmental and cultural values that exist in the area. It is considered that the predicted economic and social benefits will strongly outweigh, primarily minor and manageable adverse impacts in the region. The EIS demonstrates that the project has been designed such that impacts are either avoided, or appropriate mitigation measures identified so that the residual impacts are reduced. On balance, the project is justifiable.

The economic assessment for the project shows that, assuming a discount rate of 7%, the net present value of the project to the NSW economy is estimated at $281.4 million.

The project has strong economic justifications due to the net economic benefits and the economic stimulus it will provide locally, regionally and to NSW and Australia as a whole. Importantly, the project involves a mining operation that will, consistent with the objects of the Mining Act, extract a State-owned resource for the benefit of the State of NSW. Contributions to the regional economy will include direct economic activity (eg direct employment and wages), expenditure on inputs to production that can be sourced from the region such as repairs and maintenance etc., and expenditure of employee wages in the local and regional economy.

The project is proposed as a positive economic opportunity based on the ongoing extraction and sale of gold, silver and base metals from an existing, viable mining operation. The EIS has been prepared to allow key stakeholders to make an informed decision as to whether this project should be approved. Should the project go ahead, it will achieve the following objectives:

- Maintain continuity of operations at the New Cobar Complex through development of ore bodies that are economic and safe to mine by proven underground methods.
- Further extraction of gold, silver and base metals. Presently, these are not accessible by current underground operations.
- Continued production at the processing plant at the Peak Complex beyond 2023 through to 2035.
- Provision of ongoing stability, secure employment for PGM's workforce and economic stimulation for local, regional and State communities.
- Delivering net production benefits to the region, NSW and Australia, including additional contributions to local, regional and NSW household income.

PGM will continue to invest in and support local communities. These shared value schemes and community programs will increase levels of community wellbeing, cohesion and social capital, particularly for vulnerable community groups.

In conclusion, it is considered that the project is consistent with the relevant objectives of the EP&A Act, including the precautionary principle and the principles of ecologically sustainable development.

Table of Contents

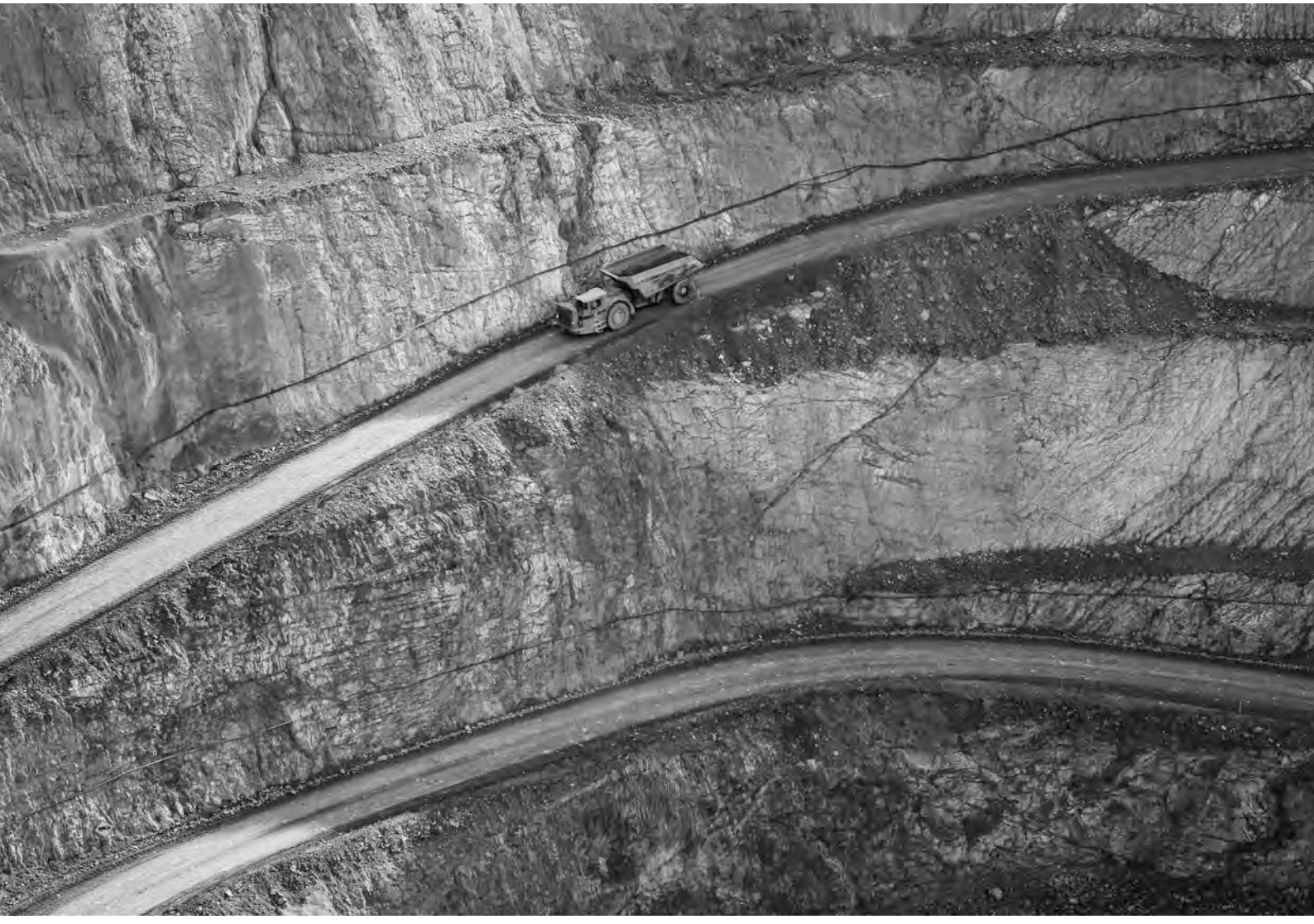
Appendices

Tables

Figures

Plates

Part A The Project



EMM
creating opportunities

aurelia
METALS Ltd.

1 Introduction

1.1 Background

Peak Gold Mines Pty Ltd (PGM), a wholly owned and operated subsidiary of Aurelia Metals Limited (Aurelia), owns and operates the Peak Gold Mines operation south-east of Cobar, far western New South Wales (NSW) (Figure 1.1).

The PGM operation comprises the New Cobar Complex located 3 kilometres (km) to the south-east of Cobar town centre and the Peak Complex located 10 km south-east of the town centre. Both complexes are located adjacent to Kidman Way, which connects Cobar to Hillston to the north and Griffith to the south.

Geologically, the area around Cobar comprises a series of polymetallic high-grade ore bodies dominated by gold, silver, copper, lead and zinc, with a long history of stable, large-scale, low-cost production that has produced more than 200,000 tonnes (t) of copper and 3,000,000 ounces (oz) of gold since mining began in the area in 1870.

PGM has been operational since modern mining commenced at the Peak Complex in 1991 and all current mining operates under development approvals issued by Cobar Shire Council (CSC).

1.1.1 Existing and proposed development

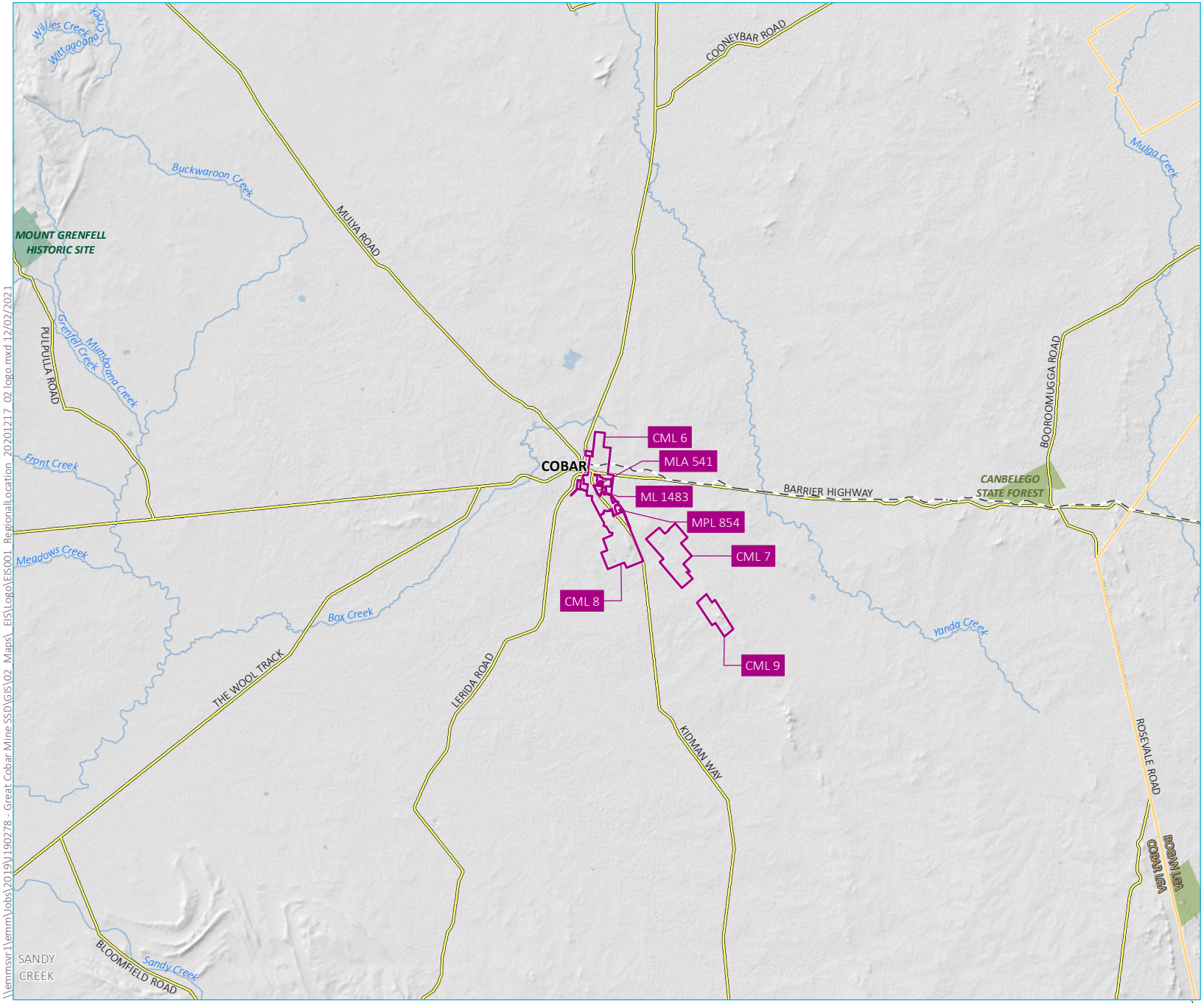
The New Cobar Complex Project State Significant Development (SSD) (the project) is an amalgamation of existing approved underground mining of the Chesney and Jubilee deposits and development of new underground workings of the Great Cobar and Gladstone deposits to create the New Cobar Complex Project (Figure 1.2).

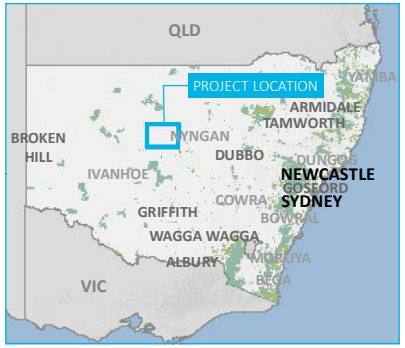
PGM is also seeking to consolidate all existing development approvals applicable to the New Cobar Complex, into a single modern consent issued by the Department of Planning, Industry and Environment (DPIE). Approval is being sought for project elements accessed from, and undertaken within, the existing New Cobar Complex located within consolidated mining lease (CML) 6, mining purposes lease (MPL) 854 and mining leases (ML) 1483 and ML 1805.

PGM has been operational since mining commenced at the Peak deposit in 1991 producing gold, copper, lead, zinc and silver. Mining at the New Cobar Complex commenced with the open cut mine in 2000, then transitioned to underground mining in 2004.

The current CSC development approvals at Peak Complex and New Cobar Complex allow for the operations to continue indefinitely and process up to 800,000 tonnes per annum (tpa) of ore. Ore processing, tailings storage and concentrate handling is undertaken at the Peak Complex with ore from the New Cobar Complex trucked by public road to processing facilities at the Peak Complex. Both the processing plant and the tailings storage facility (TSF) are located at the Peak Complex, and activities at those facilities are outside the scope of this project, although a parallel application has been submitted to CSC to increase the capacity of the TSF to facilitate this SSD Application.

PGM has identified the Gladstone and Great Cobar deposits as targets for further mining to extend the life of operations at the New Cobar Complex. The Great Cobar deposit was historically exploited by surface and shallow underground mining between 1870 and 1919, but no mining of that deposit has been undertaken since that time.





KEY

- Mining lease boundary
- Rail line
- Major road
- Named watercourse
- Waterbody
- Local government area
- NPWS reserve
- State forest

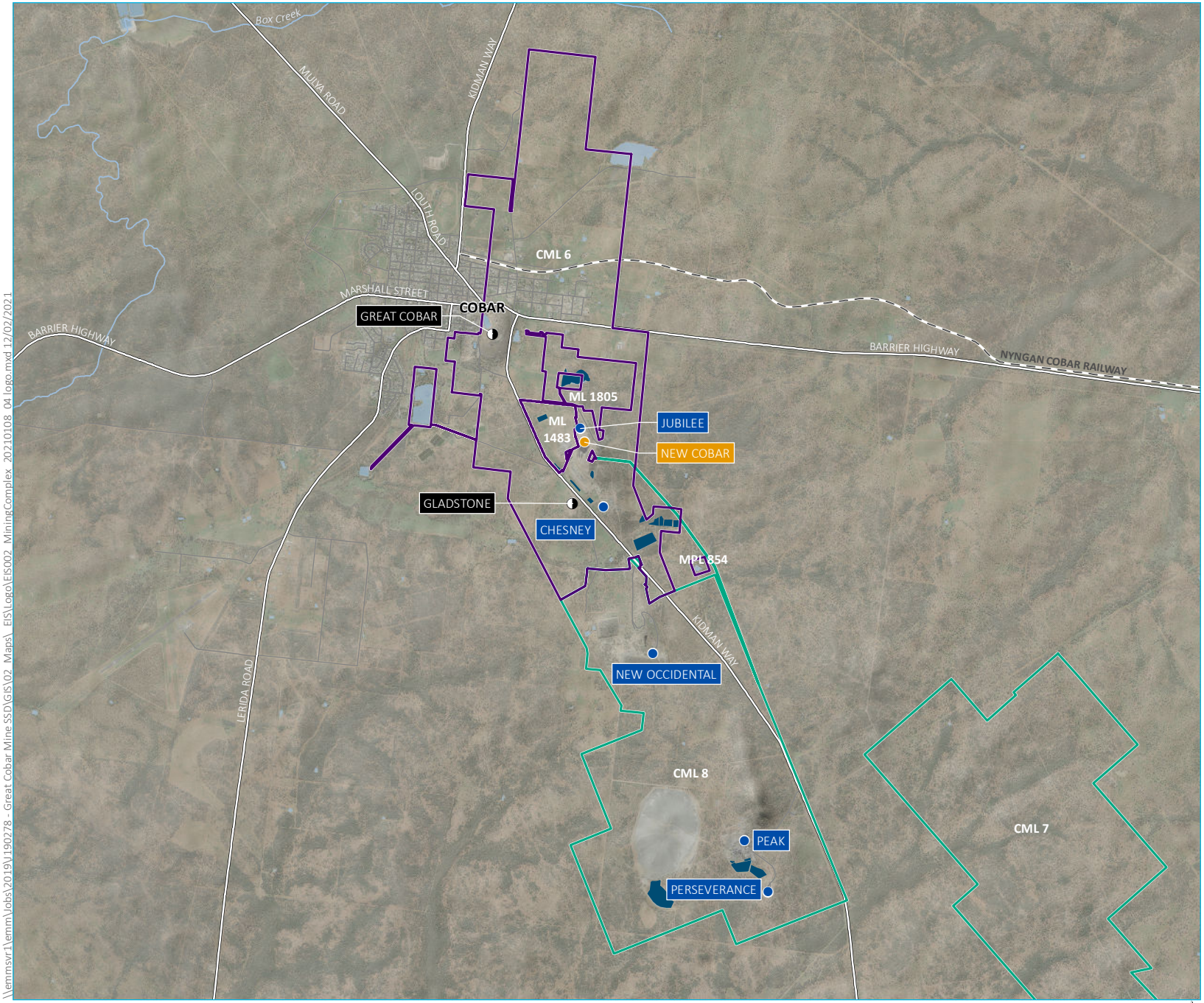
Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS001_RegionalLocation_20201217_02 logo.mxd 12/02/2021

Regional location of the Peak Gold Mine

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 1.1

aurelia METALS Ltd.
EMM creating opportunities



\\emmsvr1\emm\jobs\2019\190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS002_MiningComplex_20210108_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

Mining leases and complexes

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 1.2

PGM has obtained approval for development of an exploration decline to facilitate exploration activities within the Great Cobar deposit. The objectives of the exploration activities are to:

- further define the mineral resource through underground drilling from an exploration decline; and
- taking of a bulk sample to provide further samples for metallurgical, geotechnical and associated test work.

1.2 Project overview

All works associated with the project will be located underground or on the surface within an existing, operational mining complex (the New Cobar Complex). The exception is a short (no more than 400 metre (m)) power line from an existing 22 kilovolt (kV) line servicing PGM to a compact substation located adjacent to the fresh air intake and emergency egress winder.

PGM proposes to use the decline, infrastructure and intake and exhaust ventilation elements developed for the Great Cobar exploration decline (approved, but not yet constructed) to facilitate project development. Ventilation fans are not required during the development of exploration activities, however as they will be necessary during mining operations, construction of a new power line and compact substation, to be located adjacent to the fresh air intake is required. The power line will continue to the exhaust air rise where a ventilation fan will be installed at a depth of approximately 100 m or greater below ground level (mbgl). An emergency egress winder headframe and winder house will be installed at the fresh air intake for the purpose of mine rescue in the event of an incident below ground preventing evacuation by conventional means. No additional new surface infrastructure is proposed.

The existing surface infrastructure and facilities at the New Cobar Complex currently support underground mining of the Chesney and Jubilee deposits, and will continue to be used for this project. Access to all underground workings in the complex is from a portal and decline at the base of the existing New Cobar open cut. SSD approval will be sought for the following project elements accessed from, and undertaken within, the existing New Cobar Complex:

- Underground mining of the New Cobar Complex including, but not limited to, the, Jubilee and Chesney deposits (presently operating under an existing development approval issued by CSC).
- Underground mining of the New Cobar Complex including Great Cobar and Gladstone (not yet approved).
- Groundwater dewatering of the relevant historical and proposed underground workings via the historical Great Cobar Shaft (existing development approval issued by CSC).
- An increase of the number of ore haulage trucks between the New Cobar Complex and Peak Complex from 25 loaded trips per day (50 movements in and out) to 50 loaded trips (100 movements in and out) per day (daylight hours only) averaged over a calendar year. The increase of daily truck movements will provide flexibility to PGM if there are unforeseen production disruptions (eg bad weather).
- Crushing and screening of ore within the existing surface run of mine (ROM) pad at the New Cobar Complex (existing approval by CSC).

- Transportation of ore to the Peak Complex via Kidman Way for processing, using road registered heavy vehicles (HV) (existing approval by CSC).
- Harvesting of waste rock and:
  - immediately deploying the material underground for use in stope backfilling operations (waste rock will remain underground and will not be transported to the surface as a preference); and
  - transportation of non-acid forming material to the surface for use across the complexes for construction/rehabilitation tasks (eg tailings dam lifts).
- Deposition of potentially acid forming waste rock brought to the surface and stored within the waste rock emplacements (WRE) where at end of mine life it would be capped, or progressively returned underground for disposal.
- Continuation of all other approved activities within the New Cobar Complex (see section 2.6.2).

Processing will remain at the existing approved rate of up to 800,000 tpa, with production of ore from the Great Cobar and Gladstone deposits making up for the future decrease in production from other workings across PGM.

Additionally, there are remaining resources in the Jubilee and Chesney deposits that are mineral rich, but which are currently not economical to mine in isolation. Keeping the New Cobar Complex operational and gaining access to Great Cobar and Gladstone deposits will lead to increases in economies of scale and maximise opportunities to mine these resources, and keep PGM operational until 2035.

1.2.1 Project design

The development of the project is subject to a range of constraints that will influence PGM's capacity to develop the project successfully, and the extent to which stakeholders (the local community and regulators) support its development. These constraints include:

- Physical: the fixed location of the orebody, site-specific geological, topographic, climatic and other factors.
- Environmental: the existing environmental values, including groundwater, surface water, soils, biodiversity and other factors.
- Social: the characteristics, values, lifestyle, expectations and concerns of community stakeholders.
- Cultural heritage: the Aboriginal and non-indigenous cultural heritage values, expectations and concerns of traditional owners and local community.
- Economic – the commercial viability of the project and the values, expectations and concerns of Aurelia's shareholders and State Government as a stakeholder.

The conceptual design considered in this Environmental Impact Statement (EIS) and supporting assessment represents the current optimisation of the project, taking into consideration all physical, environmental, social, cultural heritage and economic considerations.

1.2.2 Assessment of alternatives

The New Cobar Complex is an existing mining operation with an established disturbance footprint and substantial existing surface infrastructure. All existing surface infrastructure will be utilised to support the project. As such, key alternatives considered by PGM included:

- the use of conventional open-cut versus underground mining methods; and
- the use of stoping versus other underground mining methods.

The consideration of alternatives concluded that mining the Great Cobar and Gladstone deposits at depth using conventional open-cut methods was not feasible due to physical, environmental, social, heritage and economic constraints. Stoping was chosen as the preferred mining method due to its previous and ongoing successful use at the Peak and New Cobar complexes.

Alternatives of surface infrastructure were also assessed. One example of this relates to the relocation of the approved (but not yet constructed) ventilation rises associated with the exploration decline and this proposal. Originally PGM was intending to place the ventilation rises approximately 500 m closer to town. However, following consultation with the local community which revealed perceived air quality risks, PGM relocated the vent rises to their current location, increasing the distances between the rises and the township.

1.2.3 Project objectives

The project design seeks to meet the following objectives:

- to extract a further 148,000 oz of gold, 3,970,000 oz of silver, and over 210,000 t of base metals not accessible by current underground operations (estimate using current market assumptions);
- to maintain continuity of mining and extend ore production at the site beyond 2023;
- to optimise the recovery of gold, copper, zinc, lead and silver in CML 6;
- to safely mine an economically extractable resource;
- to provide further stability and secure employment for its workers and to generate economic activity and wealth for the local, regional and state communities; and
- to effectively manage impacts on surrounding residents and the local environment during construction and operations and achieving, at a minimum, compliance with relevant statutory requirements.

1.3 Approvals approach

EMM Consulting (EMM) has been engaged by PGM to prepare and submit an EIS to support an SSD application for development consent under section 4.12 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It has been prepared to the form and content requirements set out in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), as well as clause 8(1) and clause 5 of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP).

The Peak Complex, which is not part of this SSD application will continue to operate under local government (CSC) approvals, as there is no proposed change to this arrangement. PGM has sought development approval from CSC for additional storage capacity in the TSF at the Peak Complex, with an application submitted in July 2020.

As a result of the anticipated project configuration and scheduling, and the requirements of NSW Government law, the full execution of the project will require various separate consents under different legislation. This document supports the application for one of those consents. The full array of consents required for the project is outlined below and discussed in further detail in Chapter 4: Statutory context.

1.3.1 Purpose of this report

The primary objective of this EIS is to inform government authorities and other stakeholders about the project and the measures that will be implemented to minimise, mitigate, manage and monitor potential impacts, together with a description of the remaining social, economic and environmental impacts. It addresses the specific requirements provided in DPIE Secretary's Environmental Assessment Requirements (SEARs) issued on 13 February 2020, as outlined below.

1.3.2 Secretary's Environmental Assessment Requirements

PGM requested SEARs from DPIE and additional agency requirements received for the SSD EIS in December 2019. These were received on 13 February 2020 and amended 29 October 2020.

The SEARs, and where they have been addressed in this EIS are provided in Table A.1 (Appendix A).

1.3.3 EIS structure

The EIS is structured as follows:

- **Part A – The project** introduces the applicant, the existing mine operations, the origins of the project and concludes with a detailed description of the project and the surrounding environment. Part A also provides an outline of feasible alternatives that were considered for the project.
- **Part B – Statutory context and engagement** outlines the statutory context relevant to the project (Chapter 4) and describes the stakeholder engagement completed, discusses the issues raised throughout this engagement, and how the issues have been addressed in the EIS (Chapter 5).
- **Part C – Impact assessment:** Chapters 6 to 22 assess the potential environmental and social impacts of the project and the proposed management and mitigation measures to address these impacts. Chapter 23 provides a summary of the management, mitigation and monitoring measures.
- **Part D – Justification and conclusion** provides a detailed project justification and conclusion.
- **Part E – References, abbreviations and glossary** details a list of all materials referenced in this EIS and defines the acronyms and terms used throughout.

1.4 The applicant

PGM, a wholly owned subsidiary of Aurelia, is the operator of the New Cobar Complex and the applicant for the project. PGM's office is located at the Peak Complex on Hillston Road, Cobar, NSW 2835. PGM's company

details, including Australian Company Number (ACN) and Australian Business Number (ABN) are detailed below:

- ACN: 001 533 777
- ABN: 63 001 533 777

Aurelia operates three wholly-owned gold and base metal operations – Peak Mine, Dargues Gold Mine and Hera Mine – and three major processing plants possessing a combined capacity of approximately 1.7 Mtpa.

Further details about PGM and Aurelia's projects, leadership team, corporate governance sustainability and investor information is available from the company's website: https://www.aureliametals.com/.

1.5 Study team

This EIS has been prepared by EMM on behalf of PGM to support the SSD application for development consent under Section 4.12 of the EP&A Act for the project. Technical environmental assessments to inform this EIS have been completed by EMM and other external sub-consultants, including:

- Beck Engineering Pty Ltd (Beck Engineering) – subsidence impact assessment;
- SLR Consulting Australia Pty Ltd (SLR) – human health risk assessment; and
- AEC Group Pty Ltd (AEC) – economic impact assessment.

2 Existing and proposed operations

2.1 Overview

The project involves the development of new underground workings to mine the Great Cobar and Gladstone deposits. This will be an extension of the existing operation as the mining of the Jubilee and Chesney deposits (currently mined under an existing CSC approval) will ramp down as the mining of the Great Cobar and Gladstone deposits ramp up. Existing surface infrastructure within the complex is suitable and adequate to facilitate mining these deposits (Figure 2.1).

Key aspects of the project include:

- Development of underground mining operations to access and mine the Great Cobar and Gladstone deposits using underground stope mining methods.
- Extension of the life of mine by 12 years from 2023 to 2035 (based on current market assumptions).
- Continued use of the underground mining fleet and associated workforce.
- Increase of the number of ore haulage trucks between the New Cobar Complex and Peak Complex from 25 loaded trips per day (50 movements in and out) to 50 loaded trips (100 movements in and out) per day (daylight hours only) averaged over a calendar year. The increase of daily truck movements will provide flexibility to PGM if there are unforeseen production disruptions (eg bad weather, haulage of waste rock for construction activities or similar (TSF lifts)).
- Continued use of the existing power supply, and construction of a new power line spur between an existing 22 kV power line and underground ventilation shafts to be developed under existing approvals for the Great Cobar exploration decline.
- Continued use of the existing water supply.
- No additional surface disturbance outside of surface disturbance areas permitted under the current approval, with the exception of the power line spur.

PGM is seeking to consolidate all existing development consents applicable to the New Cobar Complex including existing mining, proposed underground mining of the Great Cobar and Gladstone deposits and existing surface infrastructure within a single consent issued by DPIE. Once approved, all relevant CSC development consents for the New Cobar Complex will be surrendered. Other approvals related to the Peak Complex, will be unaffected.

Although minerals processing and tailings storage functions will remain at the Peak Complex, approvals for TSF lifts are necessary for the containment of additional tailings produced during the extended mine life of the project. A Statement of Environmental Effect (SoEE) seeking development approval from CSC for additional storage capacity in the TSF to support this SSD application was submitted in July 2020. PGM is working with CSC to secure this approval.

2.2 Project area

The project area (shown on Figure 2.1) is defined as the area south of the Barrier Highway and east of Kidman Way, with a 10 m buffer around proposed underground workings. This includes all areas of existing and proposed mining disturbance associated with the project.

Project development will be limited to the project area at the New Cobar Complex, and will take place within CML 6, ML 1483, ML 1805 and MPL 854. Processing of materials from the New Cobar Complex will continue at the Peak Complex within CML 8 under existing CSC approvals and is therefore outside the scope of this project.

2.3 Existing approvals

2.3.1 Mining approvals

PGM has the following development consents from CSC for mining of the New Cobar, Chesney and Jubilee deposits using underground stoping methods:

- New Cobar South Open Cut - LDA 98/99:08;
- New Cobar Open Cut - LDA 99/00:22; and
- New Cobar Underground – 2004/LDA 00003.

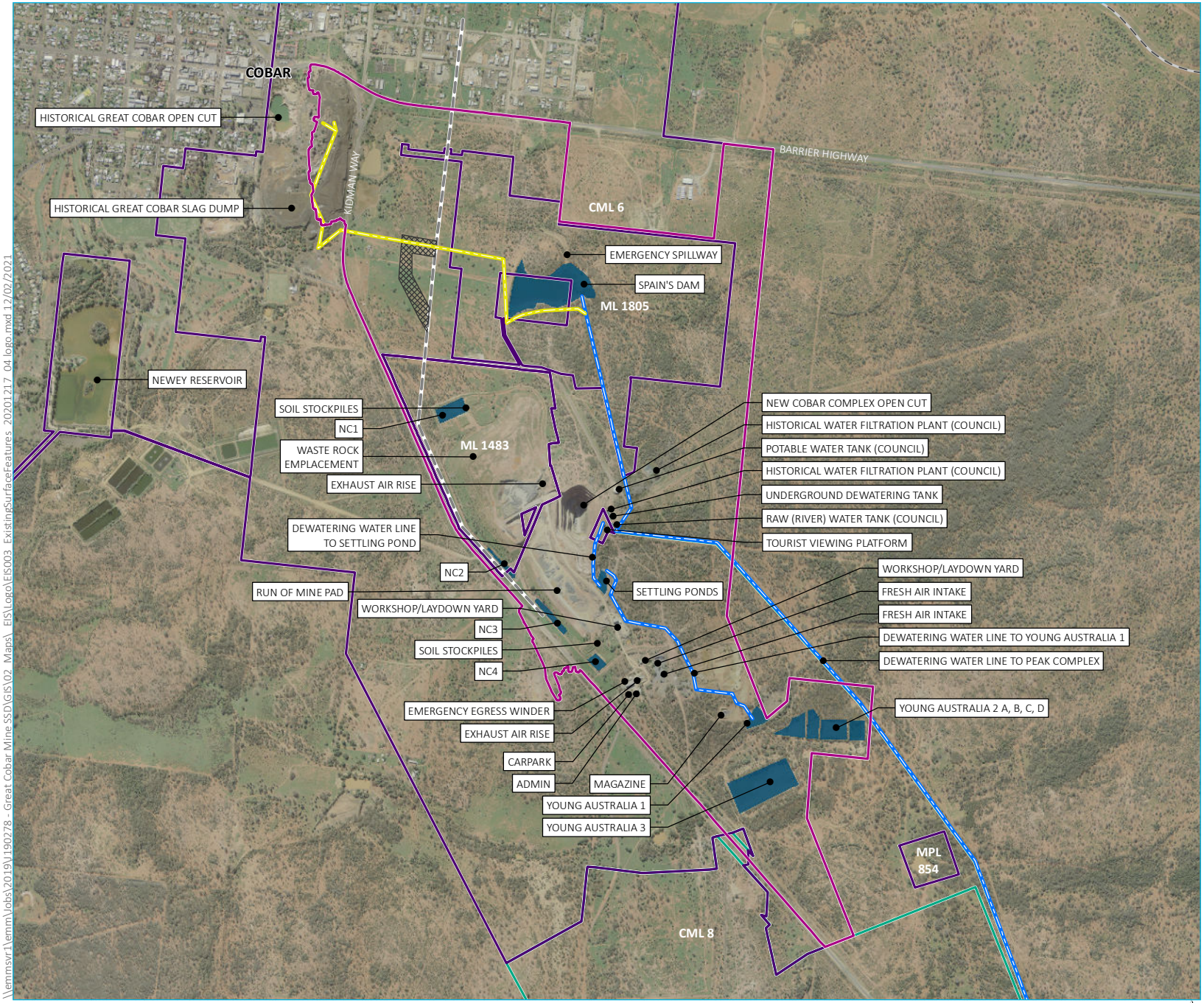
Existing access to the New Cobar and Jubilee underground workings is from a portal and decline at the base of the New Cobar Complex open cut. Access to the Chesney workings is from a 700 m decline off the New Cobar decline at a depth of approximately 300 metres below ground level (mbgl) (Figure 2.2 and 2.3).

The New Cobar mine was operated as an open cut between 2000 and 2004, and the open cut approvals are retained for access to the New Cobar Complex underground workings.

The current approvals for the Peak Complex and New Cobar Complex allow for the operations to continue indefinitely and process up to 800,000 tpa of ore at the Peak processing facility; tailings are placed at the TSF, both located at the Peak Complex.

2.3.2 Exploration approvals

PGM has received approval from CSC, the Resources Regulator, and Natural Resources Access Regulator (NRAR) to construct an exploration decline, ventilation shafts and associated infrastructure to facilitate exploration activities within the Great Cobar deposit. PGM proposes to use the decline and ventilation shafts developed for the Great Cobar exploration decline to facilitate this project. Construction is likely to commence in financial year 2023.



KEY

- Project area
- Pipeline route
- Great Cobar dewatering pipeline
- Existing 22 kV powerline
- Rail line
- Proposed power line corridor
- Mine water management storage

Mining lease boundaries

- New Cobar Complex
- Peak Complex

\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS003_ExistingSurfaceFeatures_20201217_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

0 0.5 1 km

GDA 1994 MGA Zone 55

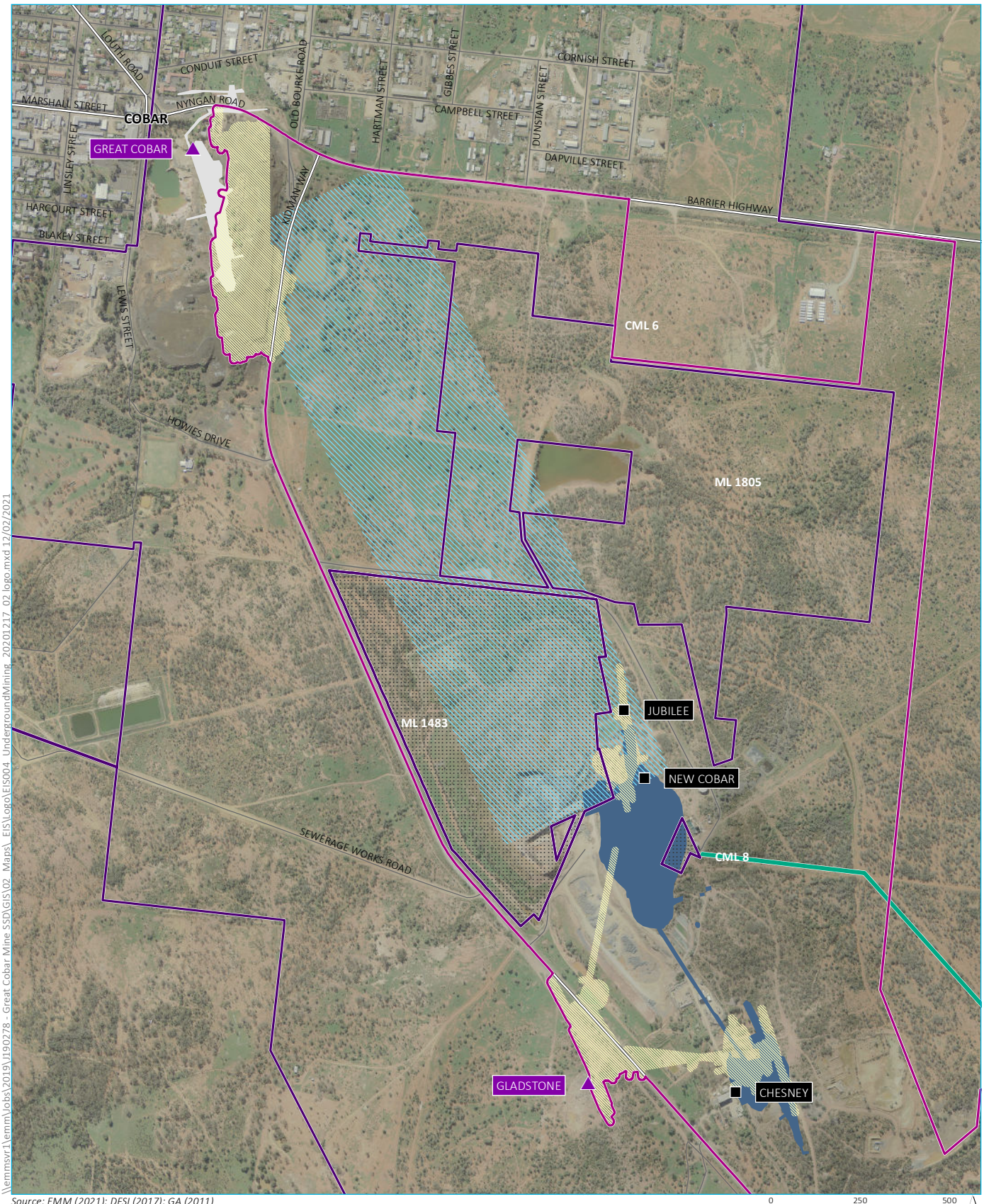
N

Existing surface features

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 2.1

aurelia METALS Ltd.

EMM creating opportunities



\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02 Maps\ EIS\LogoEIS004 UndergroundMining 20201217 02 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011)

0 250 500 m

GDA 1994 MGA Zone 55

N

KEY

- Project area
- Indicative proposed mine workings
- Indicative approved decline area
- Historical mine workings
- Existing mine workings
- Operating mine
- Prospect mine
- Major road
- Minor road

Mining lease boundaries

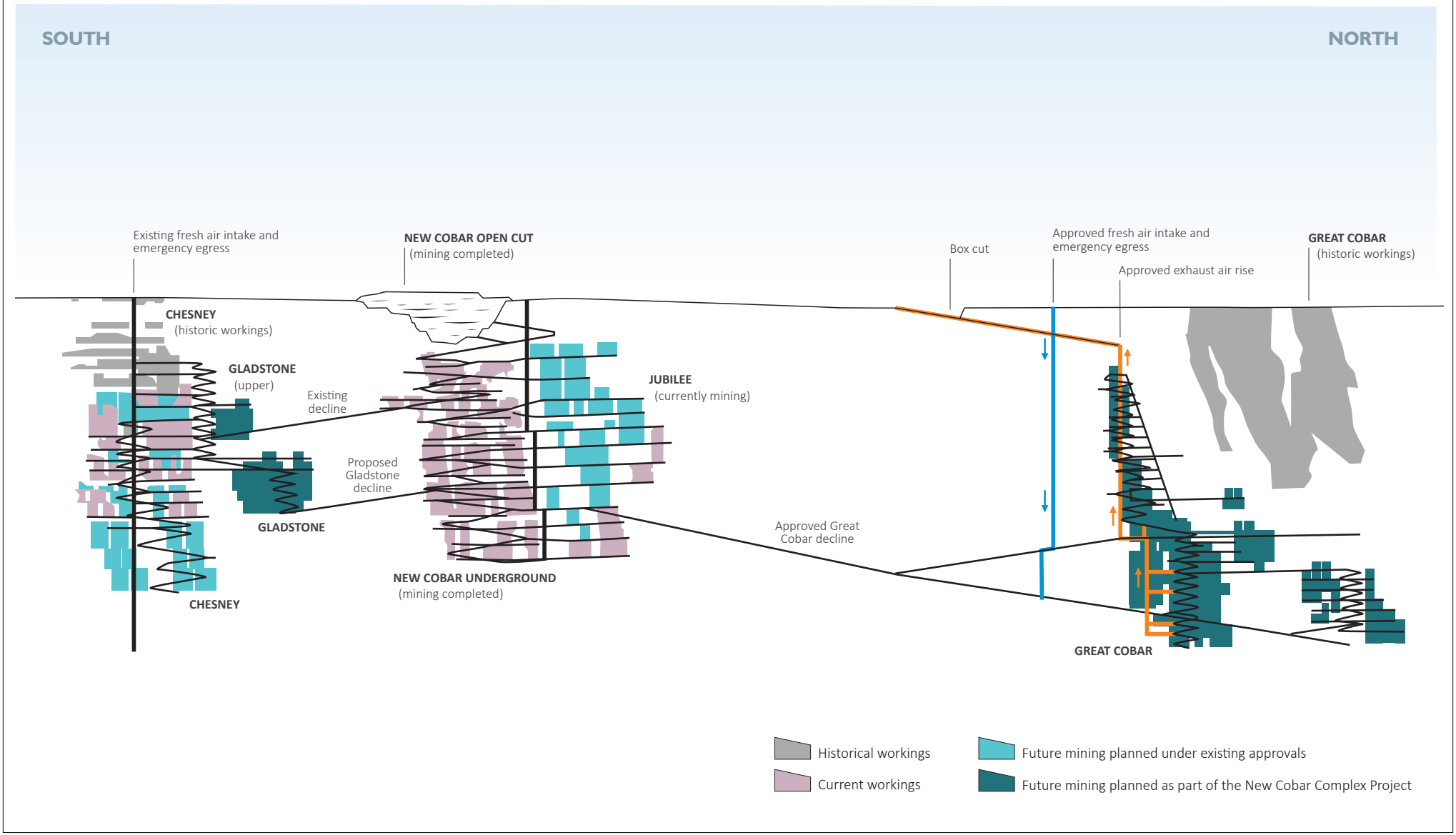
- New Cobar Complex
- Peak Complex
- ML 1483

Existing and proposed undergound mining locations

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 2.2

aurelia METALS Ltd.

EMM creating opportunities



aurelia METALS Ltd.

New Cobar Complex long-section
Peak Gold Mines
Environmental impact assessment
Figure 2.3

The exploration decline will extend approximately 1.6 km in a north-westerly direction from the existing Jubilee workings. The exploration decline will split at approximately 700 mbgl to a decline and an incline to establish two drilling horizons. Two ventilation shafts of approximately 5 m diameter each will be developed, one fresh air intake and one exhaust air rise. These will provide fresh air to deeper sections of the exploration decline and working area. During construction of the exploration decline, small fans will be installed underground, and fresh air will be drawn down from the Jubilee workings until the ventilation shafts are completed. Once construction of the ventilation shafts is completed, fresh air will be drawn down the fresh air intake by underground fans, with exhaust air flowing up the exhaust ventilation rise. No ventilation fans will be installed at the surface during exploration activities.

The exploration approvals include approval to clear vegetation in the area of the ventilation shafts, including 1.92 hectare (ha) for the exhaust air rise and 0.07 ha for the fresh air intake. This area of disturbance is approved following submission of a review of environmental factors (REF) as part of the Mine Operations Plan (MOP) for 2019-2022, with the amended version approved by the Resources Regulator in May 2020 (reference number MAAG0006783).

2.3.3 Other approvals

Other relevant existing authorisations and licences for the New Cobar Complex include:

- Environment Protection Licence (EPL) - 3596 (Environment Protection Authority (EPA));
- Licence to Manufacture Explosives (New Cobar) - XMNKF200002 (SafeWork NSW); and
- Dangerous Goods Notification - New Cobar: 35/035154 (SafeWork NSW).

In July 2019, to make up for potential shortfalls in water supply from Burrendong Dam, PGM submitted an application and supporting Statement of Environmental Effects (SoEE) to CSC to dewater the historical Great Cobar shaft for mine use, and for an aboveground water supply pipeline extending from Great Cobar to Spain's Dam. CSC granted approval on 9 October 2018 (ref: 2019/LD-00024), and NRAR issued a Water Supply Works Approval (ref: 85WA753861) on 1 December 2019. The approved dewatering works are detailed in the MOP for 2019-2022.

2.4 Mine geology

The deposits mined from the New Cobar Complex and Peak Complex are located within the Great Cobar Slate (GCS), on a major north to north-west striking, steeply dipping shear zone (the Great Chesney Fault). The GCS is the upper stratigraphic member of the Devonian Nurri Group meta-sediments deposited between 420 and 395 million years ago.

2.5 Life of mine

Underground mining at the New Cobar Complex currently has approval to mine indefinitely, however commercially viable mining of the New Cobar, Chesney and Jubilee deposits is expected to end in approximately 2023. This project will extend the life of mine by 12 years to 2035 under current market assumptions.

2.6 Mining extent

2.6.1 Mine entry and access

As described in Section 2.3 and presented in Figure 2.2, all existing and proposed mine workings will be accessed by a portal and decline at the base of the New Cobar Complex open cut. The Great Cobar deposit will be accessed by the approved exploration decline off the existing Jubilee workings at approximately 500 mbgl, and the Gladstone deposit will be accessed by a decline off the existing New Cobar underground workings at approximately 350 mbgl.

The proposed underground working depths are approximately 150–800 mbgl for Great Cobar and 350–500 mbgl for Gladstone.

The project will also incorporate continued mining of the Jubilee and Chesney deposits.

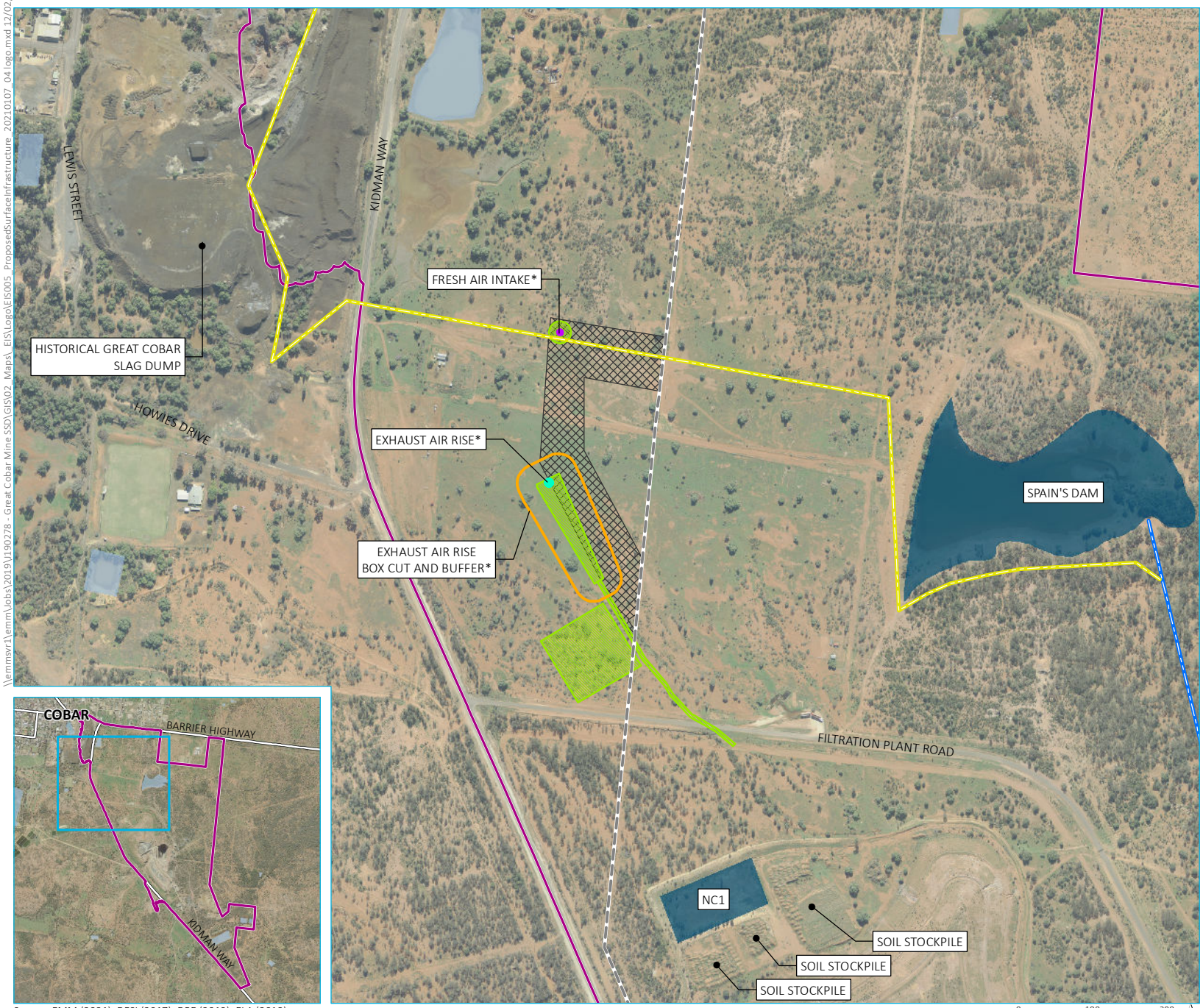
2.6.2 Existing infrastructure and surface disturbance

The existing surface infrastructure and facilities at the New Cobar Complex support ongoing underground mining of the Chesney and Jubilee deposits.

CML 6 has an area of approximately 1,350 ha, and the existing New Cobar Complex has a surface disturbance area of approximately 155 ha. The project area for the New Cobar Complex Project is approximately 426 ha; however, the majority of the project will be located underground.

Existing surface facilities at the New Cobar Complex include:

- administration and car parking;
- workshop and laydown yard;
- magazine;
- ROM pad;
- waste rock emplacement (WRE);
- soil stockpiles;
- New Cobar (NC) Dams 1, 2, 3, 4 (runoff from disturbed areas and WRE);
- settling ponds (for mine dewatering and runoff from disturbed areas);
- an existing headframe, shaft and emergency egress;
- two fresh air intakes;
- two exhaust air rises; and
- dewatering/site runoff water storage/evaporation ponds (Spain's Dam and the Young Australia dams (1, 2A, 2B, 2C, 2D and 3)) and mine dewatering lines.



\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS005_ProposedSurfaceInfrastructure_20210107_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); DPE (2019); ELA (2018)

Proposed surface infrastructure

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 2.4

2.6.3 Proposed surface disturbance

The project will require the construction of a short (no more than 400 m long) power line spur between an existing 22 kV line and ventilation shaft (approved, but not yet constructed as part of the Great Cobar exploration decline approvals). This power line will be constructed to supply power for a ventilation fan to be installed at the exhaust air rise, and an emergency egress winder at the fresh air intake shaft (Figure 2.4).

The proposed power line spur will require a 20 m wide easement and will connect to a pad-mounted compact transformer located within the cleared and fenced areas of disturbance for the fresh air intake and emergency egress winder.

The power line spur will be located within a corridor in an area of previously disturbed land (from clearance, cultivation and other development), with sparse native vegetation. The exact alignment of the power line corridor will be subject to detailed design after the EIS stage and micro-sited to use already cleared areas and avoid the removal of native vegetation and heritage items. The new power line easement will have a maximum disturbance area of 0.8 ha.

No other additional surface infrastructure will be required.

2.7 Mining method

The project will use underground stope mining operations to access new deposits at Great Cobar and Gladstone, as well as continued mining of the Chesney and Jubilee deposits.

Current mining methods will continue to be used for the project. Underground mining operations commence above a centrally positioned crown pillar and stopes are extracted from the base upwards. Bench stopes are backfilled progressively using waste rock from development of mine workings and rock from the waste rock emplacement. Upon completion of each stoping level, voids are backfilled. In some instances, mining against rock fill is required; in these situations, a mixture of rock and cement slurry (cemented aggregate fill (CAF)) is placed in the stope to provide additional stability. Production blast holes are fired in slots located at the extremities of each stope. Stopes have blast holes drilled parallel to the stope-hanging wall.

There is no recorded history of significant subsidence or geotechnical failure issues associated with the current, modern mining operations at the Peak and New Cobar complexes. PGM undertake detailed geotechnical assessments of all stopes during the detailed stope design stage prior to mining.

2.8 Blasting

Blasting will be used for the development of the underground workings and is proposed to occur under independent firing conditions (in the preliminary phases). Delays will be used to adjust sequencing and prevent any interaction or vibration enhancement from adjacent blastholes. The approximate number of blasts will be three per 24-hour period, 20 per 7-day period.

Condition 4 of the development consent (2004/LDA 00003) and Condition L4 of the EPL (3596) provide blasting emission limits the site must meet. Potential impacts from ground vibration at off-site receivers is currently managed by PGM through the implementation of the following mitigation measures:

- reducing the maximum instantaneous charge (MIC);
- optimising blasting underground through the use of electronic detonators; and

- using a ground vibration prediction model throughout the planning process and altering the blast design where required.

PGM undertakes blast ground vibration monitoring at six monitoring locations, consisting of four near field on-site locations and two offsite locations. Recorded ground vibrations at monitoring locations for over 2,000 blasts in the past five years have complied with blasting limits, showing a compliant history and good performance of ground vibration from blasts at the New Cobar underground deposit.

Explosives will continue to be stored in the existing magazine at New Cobar Complex in compliance with requirements from SafeWork NSW and WorkCover NSW.

2.9 Ore production, transport and processing

The project will produce ore within the mining and processing limit of 800,000 tpa for the Peak and New Cobar complexes, and continue to use the current methods for ore production and processing.

Following blasting, ore will be transported by underground haul trucks to the surface RoM pad, where if necessary, oversized material will be broken up by a rock breaker or alternatively crushed and graded. Ore will then be transported from the New Cobar Complex along 6 km of public road (Kidman Way) in road registered trucks at maximum rate of 100 truck movements per day (in and out of site) (daylight hours), seven days a week averaged over a calendar year. This is an increase in truck movements from a current maximum rate of 50 truck movements per day. The increase of daily truck movements will provide flexibility to PGM if there are unforeseen production disruptions such as poor weather or machinery breakdowns.

Preliminary indications are that lead, zinc, gold, silver and copper will be produced from the Great Cobar and Gladstone deposits. Ore tonnes and metal tonnes / ounces presented here are based on resource models that PGM has for each area and are indicative only.

Ore production from the New Cobar Complex for the period July 2019 to 2035 is expected to be (based on current market assumptions):

- total – 6,016,134 t:
    - Jubilee – 638,246 t; (already approved);
    - Chesney – 572,811 t (already approved);
    - Great Cobar – 4,022,040 t; and
    - Gladstone – 783,037 t.

Mineral production from the New Cobar Complex for the period July 2019 to 2035 is expected to be (based on current market assumptions):

- gold – 148,000 oz;
- silver – 3,970,000 oz;
- copper – 127,350 t;
- zinc – 55,800 t; and

- lead – 30,064 t.

2.9.1 Processing

The ore will be processed at the Peak Complex under existing approvals, and therefore is outside the scope of this project. The processing plant at the Peak Complex comprises a range of mills, flotation columns, flotation cell banks and other associated equipment. Grinding of the ore is undertaken using a primary SAG mill and a secondary ball mill. Free gold is then collected from the grinding circuit by jigs while ground ore is treated in a three-stage flotation process to produce copper, lead and zinc concentrates.

2.10 Waste rock management

Waste rock generated from underground workings is used preferentially as backfill in previously mined underground stopes and will continue to do so as part of the project.

Some non-acid forming (NAF) and potentially acid forming (PAF) rock may be brought to the surface for use in construction or rehabilitation across the Peak and New Cobar complexes. PAF will only be used in construction projects were any runoff will be contained in contaminated areas (eg used as capping material on the upstream walls of TSF construction lifts at the Peak Complex). Any PAF or NAF brought to the surface may be stored within the existing WRE at the New Cobar Complex until used elsewhere. As all of the New Cobar Complex deposits are in highly mineralised shear zones the ore and waste rock produced as a result of the project is assumed to be mostly PAF. The development of the already approved exploration decline will likely generate mostly NAF material as it is largely outside of these mineralised zones.

The WRE covers an area of approximately 24 ha and has a volume of approximately 2.5 million cubic metres (M m^3). The WRE was constructed as part of the New Cobar Open Cut project in the early 2000s, in three stages from the south extending to the north with the southern and western sections constructed from NAF waste rock from the upper benches of the open cut. The WRE continues to be used today and is used to store excess waste rock from underground workings at the New Cobar and Peak complexes. The material stored in the WRE is a mixture of NAF and PAF.

Material from the WRE, including NAF and PAF, will be used at the Peak Complex for embankment lifts and capping of the TSF. The total volume of waste rock required for these activities is expected to be approximately 1 M m^3 leaving approximately 1.5 M m^3 of waste rock material remaining. Some of this will likely be returned underground for use as backfill pending operational requirements.

2.11 Tailings management

Operation of minerals processing and tailings storage functions will remain at the Peak Complex within the existing TSF footprint. Discussions with DPIE during scoping meetings in August 2019 revealed that although DPIE was generally in agreement with SSD approach for the project, with operations at Peak Complex remaining under CSC approval, it (DPIE) considered that in order to demonstrate project viability, PGM should initiate and obtain separate development approvals for all necessary TSF lifts to contain tailings generated during the project mine life. An SoEE seeking development approval from CSC for additional storage capacity in the TSF to support this SSD application was submitted in July 2020. PGM is working with CSC to secure this approval.

2.12 Water management

2.12.1 Existing water use

The water requirements for the Peak Complex and the New Cobar Complex (combined) are approximately 580 megalitres per year (ML/year). The source of this water typically comprises approximately 212 ML/year from dewatering underground workings at the New Cobar Complex and approximately 368 ML/year of town water from Burrendong Dam (Macquarie and Cudgegong Regulated Rivers Water Source Water Sharing Plan).

Following approval of the SoEE for the dewatering of the Great Cobar shaft in 2019, up to 400 ML/year can be extracted to replace the town water currently being used. This is as part of a strategy for PGM's operations to be more independent and sustainable in times of drought. The water from the Great Cobar shaft will be used to make up any shortfall in site demand that cannot be made up by dewatering of underground workings. It will also reduce PGM's reliance on the town water supply during times of drought such as experienced in 2019, leaving additional supplies for town demands.

Dewatering water is reused in the New Cobar Complex underground workings, for dust suppression of roads and stockpiles within the New Cobar Complex and piped to the Peak Complex for use in the Peak process water system. Dewatering water that is used in the New Cobar Complex underground workings is pumped to the New Cobar Complex settling pond for re-use. Dewatering water excess to site requirements is pumped to Spain's Dam or Young Australia Dams for evaporation or storage for future reuse.

2.12.2 Dewatering of mine workings

Groundwater from the New Cobar Complex underground workings is currently managed by pumping from development headings to various underground pump stations. The water is then pumped to the New Cobar Complex settling ponds at the surface, where the sediment is removed. The water from these settling ponds is preferentially pumped back underground for reuse, or to the Peak Complex for use in the processing circuit. While it is PGM's preference to use water from dewatered mine workings for processing, this may not always be possible due to poor water quality and additional treatment requirements.

Groundwater ingress to the New Cobar Complex underground workings varies with depth and is recorded to range from 14 Litres per second (L/s) for shallow (<100 m) workings to less than 2 L/s for deep (>200 m) workings. Variation in inflow volumes reflects the changing aquifer conditions, where groundwater inflows are determined by the density of fractures in the rock intercepted during mine progression.

As the exploration decline is developed, groundwater inflows will require dewatering in order to maintain progress. This water will be managed as per the current dewatering at the New Cobar Complex. The maximum dewatering rate is expected to be 15 L/s, but a dewatering rate of 6 L/s is more likely. This water will be managed through reuse (underground or process circuit or evaporation (Spain's Dam or Young Australia dams) as required and depending on site requirements.

The approved dewatering of mine workings currently results in local groundwater drawdown, and approved dewatering of the exploration decline and Great Cobar shaft may result in the dewatering of the historical Great Cobar open cut (owned by PGM).

2.12.3 Site water management

An existing water management system is in place at the New Cobar Complex and is operated and managed in accordance with PGM's current water management plan (WMP). The water management system is designed to use and manage water from numerous sources and of varying quality and aims to minimise offsite discharges and maximise the reuse of water onsite. The existing water management system will be used to manage water resources for the proposed project.

i Water classification

Site water is classified based on its source, quality and end use, as summarised in Table 2.1.

Table 2.1 Water type classification

Water type	Description
Clean water	Stormwater runoff from catchments that are undisturbed by mining or other mining related activities.
Dirty water	Stormwater runoff from catchments disturbed by mining activities such as soil stockpiles, rehabilitated areas that are yet to be stabilised and roads. Dirty water may contain elevated concentrations of suspended solids and sediments.
Mine contact water	Stormwater runoff that comes in contact with mine processing areas (such as the ROM pad and overburden stockpile) or water that is dewatered from the underground workings. Mine contact water may have elevated concentrations of metals, hydrocarbons, and/or other chemicals.
Potable water	Water that is suitable for human consumption and sourced from CSC (as part of the high security supply from Burrendong Dam) following treatment at the Fort Burke Hill filtration plant.
Process water	Water that is used by or produced by mining activities including water used in the underground workings, at the surface for dust suppression, and water transferred to Peak Complex ore processing.
Raw water	Water that is sourced from CSC (as part of the high security supply from Burrendong Dam) prior to any treatment.
Recycled water	Process water that is reused within the water management system, generally following the settlement of suspended solids and sediment.
Stormwater	Surface water runoff that is generated from rainfall and any substance transported with it, including suspended solids, sediments, and contaminants.
Wastewater	Water generated from onsite amenities such as toilets and showers. Wastewater contains human waste and associated pathogens.

Where practicable, clean stormwater from upstream catchments is diverted around disturbed areas to reduce the load on the onsite water management system. This is not always possible due to topography and other limitations. This water is diverted around the site through the use of diversion bunds and drains to Spain's Dam, a water storage facility located 1 km to the north of the New Cobar Complex open cut.

ii Water storage

The water management system includes several dams and tanks that capture and store water of the types described in Table 2.1. The quality of water stored in each storage is a function of the contributing catchment surface runoff quality, overflows from upstream storages, and whether the storage receives mine dewatering water. The water management storages are described in Table 2.2.

Table 2.2 New Cobar Complex water storages

Storage ID	Description	Water quality	Storage volume[1]
New Cobar open cut	Mine void associated with the New Cobar Complex open cut. Groundwater inflows to the existing subsurface excavations are dewatered to New Cobar Complex settling pond and reused in mining / processing operations or onto Spain's Dam or Young Australia 1 to maintain underground access. Rainfall/runoff that falls directly over the open cut collects in a sump prior to being immediately pumped to New Cobar Complex settling pond or Young Australia 1 to maintain underground access. Water from the New Cobar Complex open cut is reused underground or piped to Peak Complex for us in the processing circuit.	Mine contact	-
New Cobar settling pond	Receives water from New Cobar Complex underground mine or open cut dewatering for settling prior to being transferred to Fort Bourke Tank.	Mine contact	2.5 ML
Fort Bourke Tank	Stores water from New Cobar Complex underground mine or raw water from Burrendong Dam prior to re-use underground, pumping to Peak Complex for use in the processing circuit or discharge to Spain's Dam when the rate of mine dewatering exceeds process water demand.	Mine contact	2.5 ML
Spain's Dam	Receives water from Fort Bourke Tank when the rate of mine dewatering exceeds process water demand. Licenced discharge point (EPL point 7).	Mine contact	90.2 ML
NC1-4	Captures mine contact water from adjoining catchment, WRE and ROM Pad.	Mine contact	48.4 ML
Young Australia 1	Storage dam that receives runoff from mining areas (historical and current), and mine dewatering water pumped directly from New Cobar Complex underground mine. Young Australia 1 acts as a settling pond prior to the water flowing to Young Australia 2 and 3. Licenced discharge point (EPL point 6).	Mine contact	3.7 ML
Young Australia 2 (A, B, C, D)	Series of storage dams that receive runoff from the adjoining dirty water catchment and overflow from Young Australia 1.	Mine contact	33.9 ML
Young Australia 3	Storage dam that receives runoff from adjoining dirty water catchment and overflow from Young Australia 2.	Mine contact	123.8 ML

Notes: 1. The storage volume presented relates to the maximum volume available prior to the storage overflowing to a downstream storage or offsite. The volume of each water management dam has been estimated using LiDAR data obtained by PGM in January 2020.

iii Wastewater management

Wastewater is produced above and below ground at the New Cobar Complex, and is managed as follows:

- Sewage from the New Cobar Complex offices is treated at an onsite sewerage treatment plant comprising three 2 kilolitre (kL) tanks that are serviced monthly and pumped out on average once a year to remove solids.
- Sewage from the New Cobar Complex light vehicle (LV) workshop has a conventional septic tank which holds 3 kL. This tank is serviced monthly and pumped out twice a year to remove solids.

- Sewage produced underground is stored in two 1 kL tanks which are emptied and serviced every two weeks. Waste from the underground sewerage system is transferred to Peak Complex's sewerage treatment plant for disposal.

2.13 Workforce

The 2019/2020 workforce at PGM totalled 404 full time equivalents (FTE). This includes PGM staff and on-site contractor personnel. This number will ramp up to 414 FTE in 2026/27 before ramping down to the end of mine life. The number represents an increase in 10 FTE at peak production during additional mining at Great Cobar and Gladstone.

Annual labour estimates for New Cobar Complex, being mining and underground maintenance staff range from 57 FTE in 2020/21 to a peak of 272 FTE in 2026/27. These however are not new employees; during the same period, as mining at the Peak Complex ramps down, staff will relocate to New Cobar Complex as their primary location of employment activity. Such numbers can be accommodated within the existing facilities at New Cobar Complex without the need for further development as the facilities were constructed for a much larger workforce which operated during the Open Cut mining at the complex during 2000-2004. This also includes the continued support of employment of administrative staff, maintenance staff and processing plant staff at the Peak Complex.

PGM will maintain operational control across the complexes, and the workforce may fluctuate between the New Cobar Complex and the Peak Complex based on operational decisions and market forces.

3 Site and surrounding area

3.1 Overview

This section describes the local and regional characteristics of the environment surrounding the New Cobar Complex area, including topography, climate, local watercourses, and groundwater.

3.2 Project location and character

The project area has a diverse geological and geomorphological landscape; however, it is some distance from any major water sources. It is dominated by flat relief and residual soil profiles and has been subjected to extensive disturbance in the past from previous historical mining, mining settlements and agriculture.

3.3 Biophysical factors

The project area is located within the Cobar Peneplain bioregion. Topographically, the Cobar Peneplain bioregion is characterised as a low undulating plain, distinguished from its surrounds which are relatively flatter floodplain landscapes of the Murray-Darling river systems. While no major river systems are near Cobar, a drainage system of wide shallow valleys with a few lakes has developed, despite limited rainfall and gradient. The project area is part of the Canbelego Downs subregion characterised by an undulating plateau with low ridges and stony rises, underlain metasedimentary and sedimentary rocks, such as chert and slate.

The project area comprises land previously disturbed by clearance, cultivation and development, as well as historical and current mining. Much of the project area is mapped by high level State vegetation mapping as hosting plant community types (PCTs) including PCT 103 (Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion), PCT 108 (Gum Coolabah - Mulga open woodland on gravel ridges of the Cobar Peneplain Bioregion), PCT 125 (Mulga - Ironwood shrubland on loams and clays mainly of the Cobar Peneplain Bioregion) and PCT 72 (White Cypress Pine - Poplar Box woodland on footslopes and peneplains mainly in the Cobar Peneplain Bioregion). This high-level mapping was ground truthed on some parts of the site, and comprises mainly cleared or non-native vegetation, or limited areas of PCT 125 (Eco Logical 2020).

3.4 Topography

The regional topography consists of a generally flat to undulating plateau that is broken by several ridgelines and scattered peaks. The mine is situated along a 2 km north-northwest trending ridgeline that rises approximately 50 m above the surrounding countryside. The existing New Cobar open cut lies immediately west of Fort Burke Hill, the highest point along the ridgeline. Surface elevations at the mine range from approximately 295 m Australian Height Datum (AHD) at Fort Bourke Hill to 240 m AHD at the Young Australia dams to the south-east.

The topography of the landscape is characterised by rolling downs and flat plains punctuated by stony ridges and ranges, with more elevated areas associated with major rivers such as the Darling River in the West and the Bogan River in the north (NPWS 2003). Topography of the older rocks around Cobar is more subdued as residual hills, low rounded ridges, and stony slopes formed on softer, more weathered shales, phyllites and cherts, with only occasional features such as Mt Boppy standing as much as 100 m above the plain.

3.5 Geology and soils

The Cobar deposits mined from the New Cobar Complex and Peak Complex are located along the eastern margin of the Early Devonian Cobar Basin, which is within the central belt of the Lachlan Orogen. The primary lithologies consist of metamorphosed Ordovician sedimentary basement rock with granite intrusions, overlain by the Late Silurian to Early Devonian Cobar Basin sediments. These in turn are overlain by Late Devonian post-orogenic cover and minor remnants of Mesozoic sediments. Weathering during the Cenozoic has formed deep regolith, which has been locally intruded by minor leucitite lava flows. This is overlain by both Quaternary colluvial and alluvial gravels, sands, silts and clays. The latter primarily along the major water courses in the region. They also reflect increasing mobilised sediments from Tertiary deposits southwest of the peneplain through wind-blown processes (Figure 3.1).

The New Cobar Complex deposits are located within the GCS, on a major north to north-west striking, steeply dipping shear zone. The GCS is the upper stratigraphic member of the Devonian Nurri Group meta-sediments, and is associated with a major, north-north-west striking, steeply dipping shear zone (the Great Chesney Fault). Proposed mining operations will target deposits within the same stratigraphy as all existing PGM operations at both Peak Complex and New Cobar Complex.

There is limited information on the soil profiles within the project area. The Canbelego Downs bioregion summarises the soils as shallow red loams or stony loams on crests merging to red earths on slopes, plains and through the valley floors, with minor sand deposits along streams, yellow texture contrast soils in swamps (NPWS 2003). The Australian soil classification identifies the area as dominated by rudosols and tenosols, which are poorly developed soils that have little modification from parent materials. Typically, these soil types have a shallow topsoil (A1 horizon) which will show limited change from the underlying soil profile apart from a darkening in colour.

3.6 Climate and weather

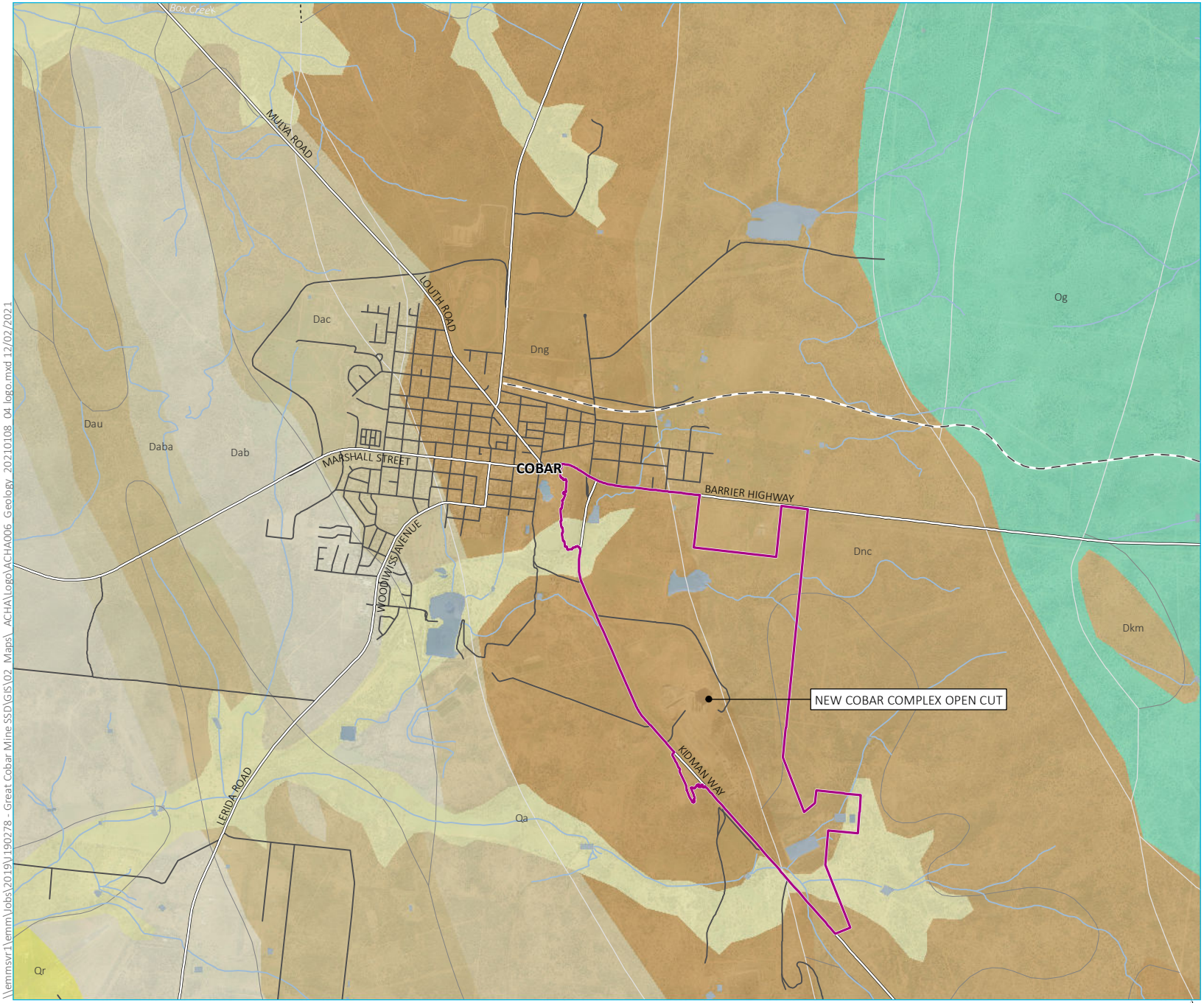
Cobar is located within a semi-arid region of the Darling River catchment and experiences hot summers, mild winters, and generally low annual rainfall.

There are three Bureau of Meteorology (BoM) operated rainfall gauges within 10 km of the project area that provide representative records for the New Cobar Complex over the previous 140 years. PGM also maintains a meteorological monitoring station within the project area as part of the air quality monitoring network. This commenced monitoring in early 2019 and will be used to measure local meteorological data in the future.

Average rainfall ranges from 332 to 389 millimetres per year (mm/year), with lowest annual rainfall ranging from 102 to 134 mm/year and highest annual rainfall ranging from 583 to 800 mm/year. Median monthly rainfall is typically similar throughout the year. Median monthly pan evaporation rates range from approximately 75 mm/month in winter to over 340 mm/month in summer. This means that there is a significant net loss of surface water to evaporation.

The dry climate of the Cobar region is characterised by hot summers and relatively mild winters. The mean maximum temperature ranges from approximately 35.8°Celcius (C) in January to 16.4°C in July, with a mean minimum temperature of 3.1°C.

Winds are predominantly from the south to southwest and northeast quadrants, with average wind speeds of 3.5 metres per second (m/s). Calm conditions occur approximately 10% of the time.



KEY

- Project area
- Rail line
- Major road
- Minor road
- Watercourse/drainage line
- Waterbody

Geological boundaries - lines

- Fault
- Fault, concealed
- Geological boundary

Quaternary

- Quaternary Alluvial (Qa)
- Quaternary Colluvial (Qr)

Devonian

- Biddabirra Formation (Dab)
- Alley Sandstone Member (Daba)
- CSA Siltstone (Dac)
- Upper Amphitheatre Group (Dau)
- Meryula Formation (Dkm)
- Chesney Formation (Dnc)
- Great Cobar Slate (Dng)

Ordovician

- Girilambone Group (Og)

\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_ACHA\Logo\ACHA006_Geology_20210108_04 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

0 1 2 km

GDA 1994 MGA Zone 55

N

Geology

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 3.1

aurelia METALS Ltd.

EMM creating opportunities

3.7 Surface water

The New Cobar Complex is located within the Yanda Mulga Sandy Creeks Catchment. Surface water drainage within the complex is largely dominated by sheet wash with mapped drainage features limited to unnamed watercourses that flow to the north and south of the existing New Cobar Complex surface infrastructure (Figure 3.2). These watercourses are ephemeral with flows only evident during periods of heavy rainfall.

The watercourse to the north receives runoff from a natural catchment along with discharge from the mine water management system and is impounded by Spain's Dam prior to discharging to a waterbody known as 'the Salty'. The Salty captures runoff from the industrial area of the Cobar township. This storage is not related to the New Cobar Complex or this project. Downstream of the New Cobar Complex, the watercourse traverses Kidman Way prior to flowing south-west around the existing Great Cobar slag dump and into a reservoir at 'Newey Reservoir'.

The watercourse to the south receives runoff from a natural catchment that is diverted around the mine via a series of diversion banks and drainage channels. The watercourse re-joins its original flow path downstream of the Young Australia 3 water management dam prior to traversing Kidman Way. The two watercourses join approximately 3 km downstream of and to the south-west of the New Cobar Complex.

No permanent watercourses exist within the New Cobar Complex and surrounding landscape. All watercourses in the project area have ephemeral flow regimes.

3.8 Groundwater

Regional groundwater generally flows away from the Cobar region towards the Lachlan River to the south and Darling River to the north. Groundwater flow patterns near the New Cobar Complex have been altered by historical and current day underground mining.

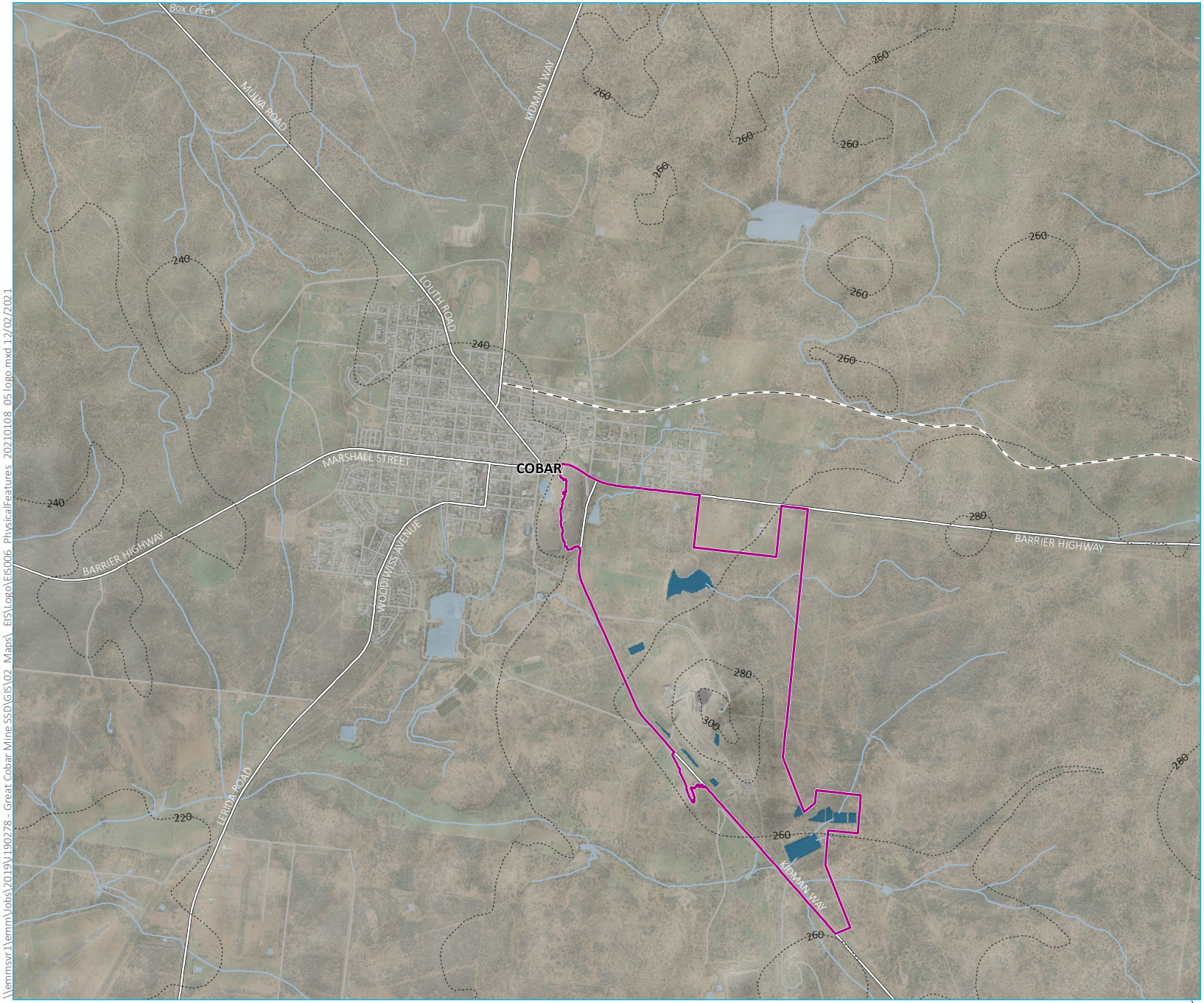
Connectivity between the groundwater and surface water environment occurs through two mechanisms:

- Surface water recharge to groundwater systems is expected to occur primarily via rainfall infiltration with an estimated average rainfall recharge of 0.5 mm/year (or 0.15% of annual average rainfall).
- Discharge of groundwater primarily occurs via underground mine dewatering. Groundwater inflow into the underground workings is pumped to the surface where it is managed within the existing New Cobar Complex water management system (see Section 2.12).

There is limited groundwater discharge to the surface in the area, primarily due to the relatively flat terrain and the natural depth to groundwater, which is typically greater than 15 mbgl. This depth to groundwater also reduces the likelihood of groundwater dependent ecosystems (GDEs) being present.

3.9 Land use

The project area is zoned RU1 Primary Production by the Cobar Local Environmental Plan 2012 (Cobar LEP), as shown in Figure 3.3. The RU1 zoning makes development for the purpose of mining permissible with development consent in the RU1 Primary Production zoning. Further discussion of the permissibility of the development is included in Section 4.2.2iii.



KEY

- Project area
- Contour (20 m)
- Rail line
- Major road
- Minor road
- Watercourse/drainage line
- Waterbody
- Mine water management storage

\\emmsvr1\emm\jobs\2019\190278 - Great Cobar Mine SSD\GIS\02 Maps\ EIS\Logo\EIS006 PhysicalFeatures 20210108 05 logo.mxd 12/02/2021

Source: EMM (2021); DFSI (2017); GA (2011); DPE (2019)

0 1 2 km

GDA 1994 MGA Zone 55

N

Topography and physical features

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 3.2

aurelia METALS Ltd.

EMM creating opportunities

Land use within the project area, other than approved existing mining, is predominantly low intensity grazing and historical mining. Other minor land uses in the project area include a mine owned residence with one tenant (tenancy will not be renewed when the existing tenant leaves), a plant nursery, infrastructure (roads, municipal water supply, telecommunications) and tourism (Fort Bourke Hill lookout overlooking the New Cobar Complex open cut).

The remains of current and historical land use (mining activities) are extensive throughout the project area, including the remains of stockpiles, dams, settling ponds, open cuts, and a range of surrounding ancillary activities. These also include the remains of Cornish Town, a non-gazetted informal mining town located immediately to the west of Spain's Dam, which was one of the original mining towns established in the 1870s. Cornish Town was removed by CSC in the 1960s and only traces of the original town remain.

Potential impacts on these existing and approved land uses have been assessed in this EIS, demonstrating that the project will not have a significant impact on, or be incompatible with, existing, approved, or preferred land uses in and around the project area.

3.10 Cultural factors

3.10.1 Aboriginal history

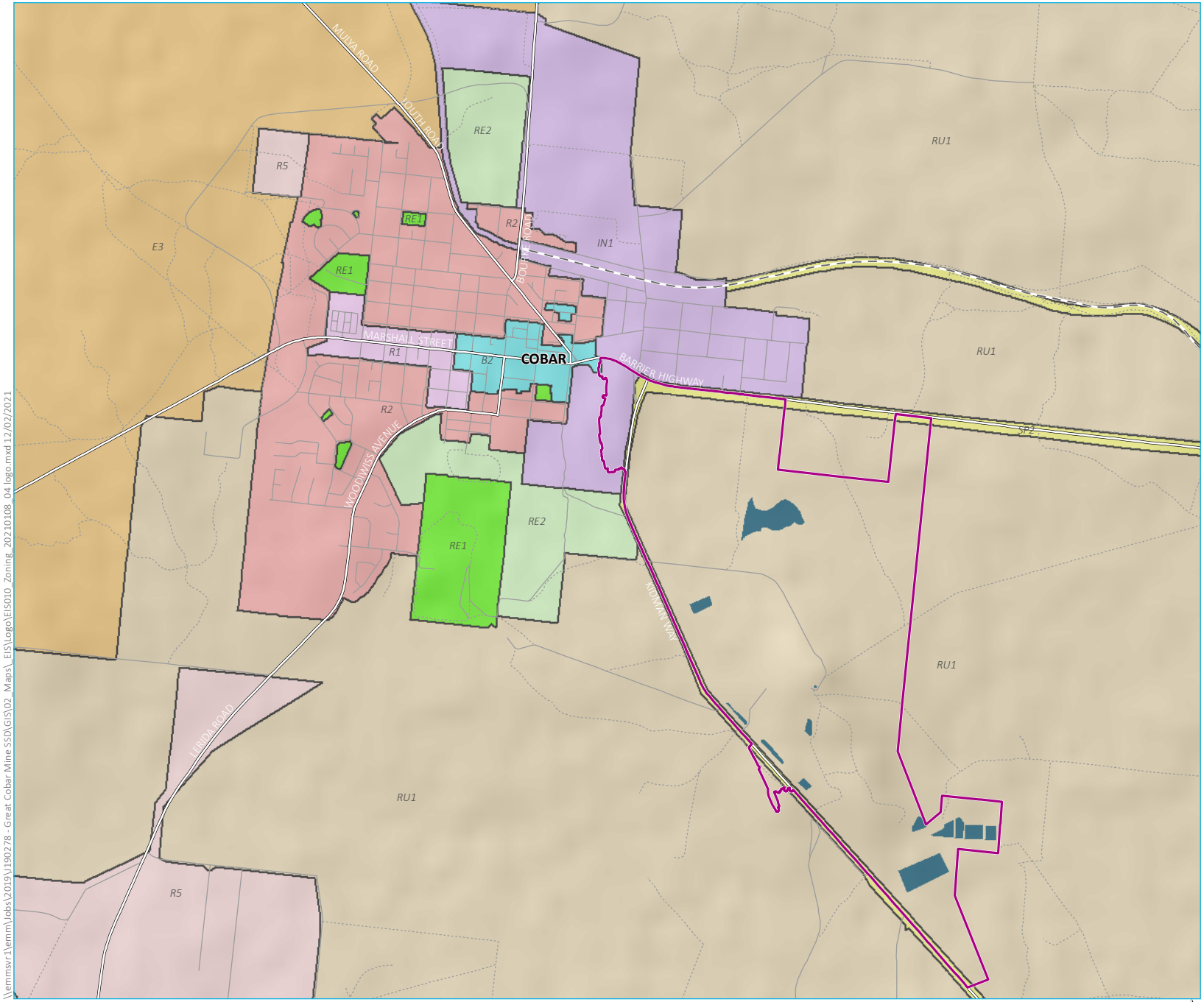
The project area falls within the Aboriginal language group boundary of the Wongaibon people. The local Ngiyampaa tribe are dryland people who traditionally inhabited the Central West area of NSW bordered by the Lachlan, Darling-Barwon and Bogan Rivers. Mount Grenfell Historic Site, an important meeting place with ceremonial significance is located 55 km north-west of Cobar. Rock art at the site contains ochre and white kaolin paintings of human and animal figures, and hand stencils (NPWS 2020).

There are limited ethno-historical accounts directly relevant to the Cobar area, likely due to a lack of permanent watercourses which constrained the use and occupation of the Cobar region.

3.10.2 European occupation

The Cobar Peneplain was promoted as productive sheep and cattle grazing country following initial explorations in the early 19th Century by explorers such as Sturt, Mitchell and Oxley. Squatting and establishment of these pastoral activities was well underway by the 1830s. By 1886, much of the project area was encompassed within these pastoral leases. Following discovery of copper at Kubbur waterhole in Cobar – purportedly as a result of information obtained from Aboriginal people – in the late 1860s, mining of the region became established. These included the Great Cobar copper mine between 1870-1921, the New Occidental and Chesney gold mines between 1930-1951, base metal mining at Cornish Scottish Australian (CSA) and Elura (now Endeavor) mines, and a resurgence of various mineral mining between 1985 and present day. These activities have resulted in significant landscape modification across the region, including the project area.

The project area includes extensive evidence of current and historical mining activities, including the remains of former towns, stockpiles, dams, settling ponds, mining cuts, and a range of surrounding ancillary activities. This includes Cornish Town (or Cornishtown) located to the west of Spain's Dam. This was one of the original mining towns established in the 1870s and encompassed a portion of the 2,500 people working in the Cobar area. Cornish Town was removed by CSC in the 1960s and only traces of the original town remain.



KEY

- Project area
- Rail line
- Major road
- Minor road
- Vehicular track
- Mine water management storage

Land use zone

- B2 | Local centre
- E3 | Environmental management
- IN1 | General industrial
- R1 | General residential
- R2 | Low density residential
- R5 | Large lot residential
- RE1 | Public recreation
- RE2 | Private recreation
- RU1 | Primary production
- SP2 | Infrastructure

Source: EMM (2021); PGM (2020); DFSI (2017); DPE (2017); DPE (2019); GA (2011)

0 0.5 1 km

GDA 1994 MGA Zone 55

N

\\emmsvr1\emm\Jobs\2019\J190278 - Great Cobar Mine SSD\GIS\02_Maps_EIS\Logo\EIS010_Zoning_20210108_04 logo.mxd 12/02/2021

Cobar Shire LEP zoning

Peak Gold Mines
New Cobar Complex Project
Environmental impact assessment
Figure 3.3

aurelia METALS Ltd.

EMM creating opportunities

3.10.3 Historical mining

The Cobar field has seen four major stages of mining activity:

- 1870–1921: copper and later gold mining dominated by the Great Cobar mine;
- 1930–1952: gold mining focussed on the New Occidental and Chesney gold mines;
- 1961–1985: major base-metal mining following discoveries at CSA and Elura mines; and
- 1985 to present: renaissance in gold and continued base-metal mining, with new discoveries following systematic exploration (McQueen 2016).

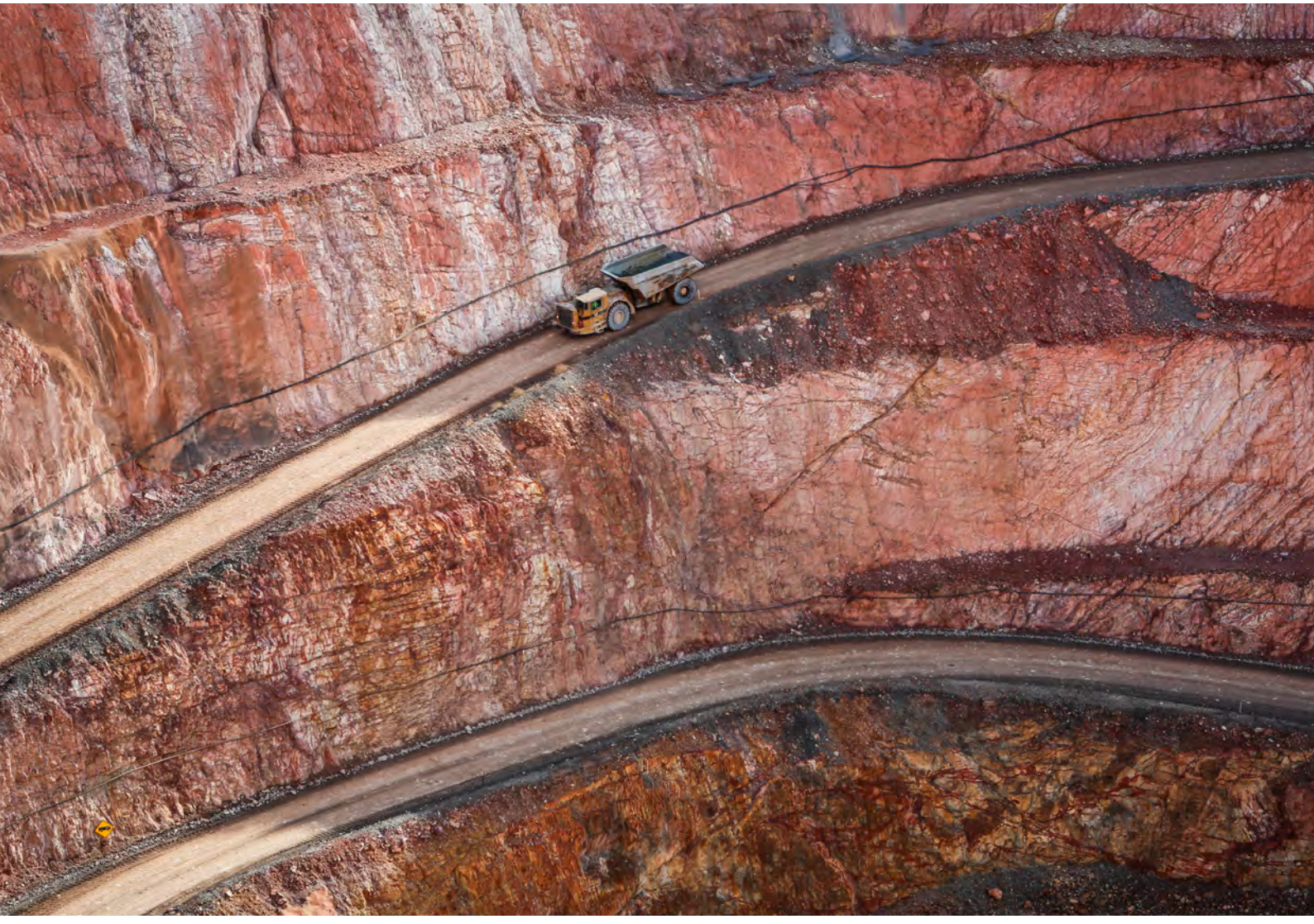
In the early days, the mining method was "hammer and tap" which involved chiselling out the hard sulphide ores to make the holes for explosives. In the early 1900s, the introduction of pneumatic drills for machine mining was introduced and from the 1960s, mining became more highly mechanised with the advent of mobile drilling, loading, and hauling machines.

Problems such as low copper prices, shortage of firewood and high transport costs caused operations to cease in 1889. The railway line finally reached Cobar in 1892, which enabled a group of entrepreneurs to lease the mine and take advantage of the new railway connection to bring coke to Cobar from the coal deposits near Singleton to operate the new water jacket blast furnaces. These furnaces greatly increased copper production. However, after World War One, demand for copper fell and the mine closed in 1919 on cessation of War Office contracts. Associated mines including Chesney mine were also closed (McQueen 2016).

High-grade gold-silver ore was found at The Peak, a prominent hill 10 km south of Cobar in 1895, which led to the development of a number of mines including the Conqueror-Brown, Blue Lode, Big Lode and Cobar Peak. Ore was also sent to the Great Cobar copper mine for gold recovery by smelting. Small scale activity declined when deeper primary ores were reached in 1906. The demise of local copper mining and smelting in 1919 further reduced activity.

The Conqueror and Brown lodes at The Peak were subsequently mined from around 1922 until 1940, and then again (along with the Blue Lode area) intermittently from 1942 to 1953 for a modest output of gold and silver. Over the next three decades there was a general lack of interest in gold exploration due to the fixed gold price and relatively high costs. This changed in 1980 after the price spiked following demonetarisation of gold in 1971.

In 1985 a 570 m deep exploration shaft with cross cuts was commenced at the Peak deposit (Peak Complex) to facilitate underground drilling and to extract a bulk sample for metallurgical testing. Results from a feasibility study were positive and full production commenced in October 1992. From 1998, the operation has also mined the Perseverance orebodies discovered at depth to the south, as well as redevelopments of the historical New Cobar, New Occidental and Chesney mines.



EMM
creating opportunities

www.emmconsulting.com.au