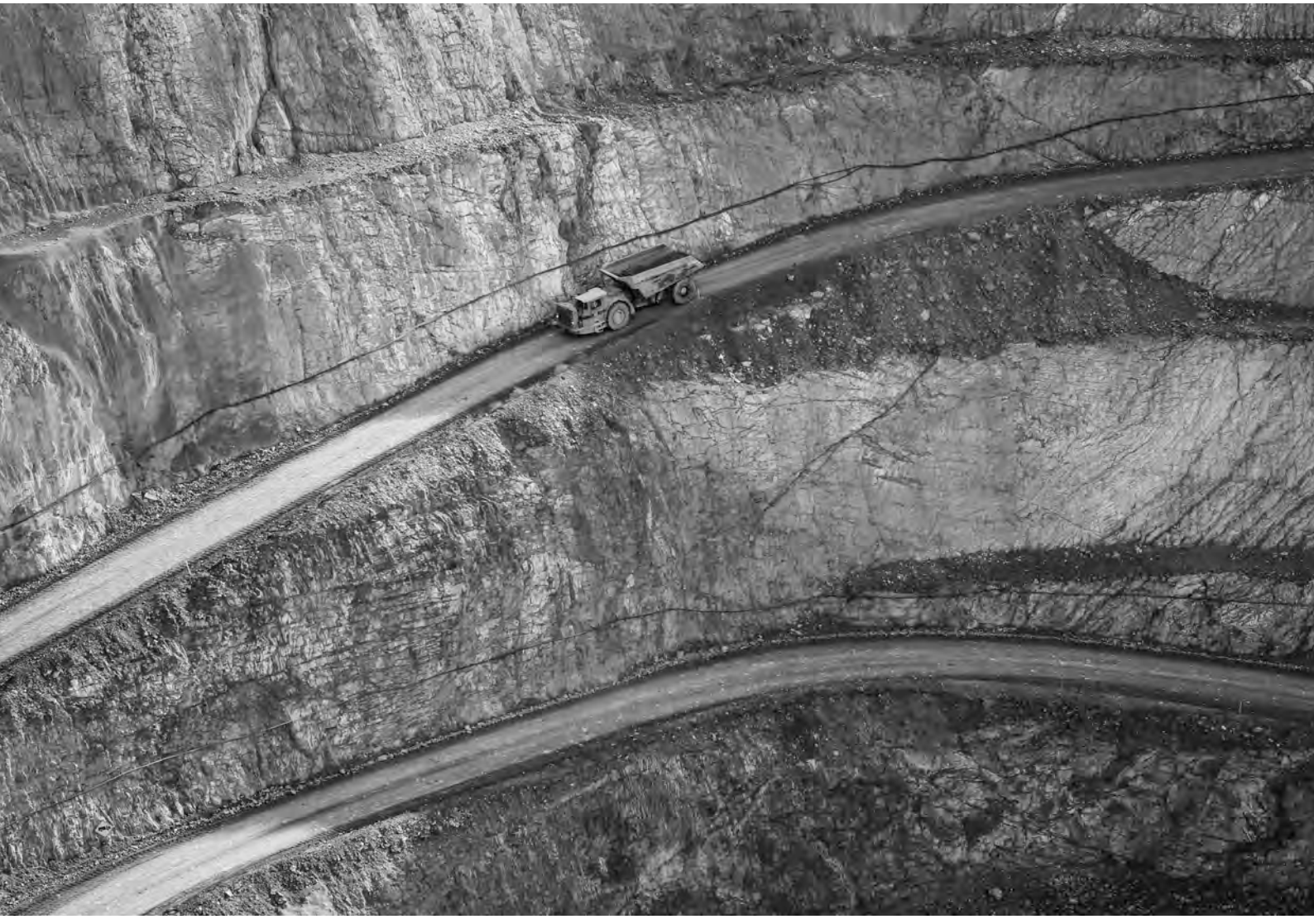

# Appendix O

Visual impact assessment



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# New Cobar Complex Project State Significant Development (SSD-10419)

Landscape and Visual Impact Assessment

Prepared for Peak Gold Mines Pty Ltd
December 2020

EMM Brisbane
Level 10, 87 Wickham Terrace
Spring Hill QLD 4000

T 07 3648 1200
E info@emmconsulting.com.au

www.emmconsulting.com.au

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## Landscape and Visual Impact Assessment

**Report Number**

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**Client**

Peak Gold Mines Pty Ltd

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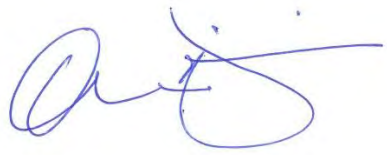


**Andrew Dickinson**
Associate, Environment
18 December 2020

**Approved by**

**Ellie Evans**
Senior Environmental Scientist
18 December 2020

# Executive Summary

## ES1 Introduction

A landscape and visual impact assessment (LVIA) was completed by EMM to assess the predicted impacts of the New Cobar Complex Project (the Project) on visual amenity. The LVIA was prepared in accordance with the requirements set out in the Secretary's Environmental Assessment Requirement (SEARs).

## ES2 Existing environment

The New Cobar Complex is located 3 kilometres (km) south-east of Cobar town centre, 550 km north-west of Sydney (Figure 1.1). It is situated within the Darling catchment of the Barwon-Darling and far western catchments of water management area and is part of the Murray-Darling Basin.

The project area is part of the Canbelego Downs subregion of the Cobar Peneplain Bioregion. It is characterised by undulating plateau with low ridges and stony rises, underlain by metasedimentary and sedimentary rocks, such as chert and slate. Topography on the older rocks around Cobar comprises residual hills, low rounded ridges, and stony slopes formed on softer, more weathered shales, phyllites and cherts, with only occasional elevated features standing on the plain.

Mining and mining related activities have played a significant role in shaping the post contact cultural landscape of the region, including within the project area. Much of the resultant mining relicts and landscape changes are viewed by locals as being significant in their own right and are promoted as tourist attractions.

The landscape features of the locality are determined by physical, biological and social elements[1]. In combination they create distinct, recognisable and consistent patterns of elements that make one landscape different from another and often, conveys a distinctive 'sense of place'.

This relative visual consistency or uniformity can be defined as Landscape Character Units (LCUs). LCUs do not imply a level of value or importance. The LCUs are experienced by viewing them from locations such as residences and public locations or traversing through the landscape, such as along roadways or rail lines.

LCUs present within the significant potential visibility (SPV) zone of the Project are:

1. Rural production – flat to undulating lands with low rises used for rural production, with or without native vegetation;
2. urban areas – flat to low undulating land containing residential and commercial activities containing Cobar;
3. open space recreation – flat to gently undulating land containing passive and active recreation opportunities;
4. open space vegetated – areas vegetated with native vegetation used for environmental management and recreation in a natural setting;
5. mining – areas of historical and current mining activity; and

[1] physical elements – include terrain, topography and waterways; biological elements include vegetation and vegetation cover; social elements include land use and cultural significance.

6. industrial - flat to low undulating land characterised by visually significant industrial elements.

## ES3 Visibility assessment

In the context of the SPV zone, the following elements have been identified as having moderate to high visibility:

- Proposed emergency egress winder – this is the tallest of the prosed elements. Outside of the project area, it is most prominent from public vantage points in the local setting (<1 km). Although some views from the sub-regional setting are possible, the low height and the apparent light mass of the structure (the background will be visible through structural elements), combined with its position in the landscape (lowest point) and surrounding vegetation mean that, the structure is either screened by foreground vegetation or backgrounded such that visibility is diminished. This structure is temporary in nature and will be removed at the end of the Project's lifespan (2035). Integration is high, and there is a moderate borrowing of elements; the visual effect is low.

- Waste rock emplacement – this is an existing, permanent modification to the landscape and is prominent in both the local and sub-regional settings where is appears as a flattened plateau. If integration and contrast are moderate the visual effect is moderate.

## ES4 Impact assessment

Visibility analysis has shown that the emergency egress winder is visible in both the local and sub-regional settings. However, owing to the size and mass of the structure and the backgrounding of vegetation, the apparent mass of the structure is softened by the vegetation which surrounds it. At distances beyond 2 km it will be largely indistinguishable. The mass, form and structure are in keeping with elements that are prominent in the (historic and contemporary) mining landscape. On account of a long history of mining, the presence of mining related infrastructure in close proximity to the town is not considered unusual and integrates with the cultural expectations of (a mining) landscape which has evolved as a consequence of over 150 years of near continuous mining. The visual effect will be negligible (not significant).

Visibility analysis has shown that the existing surface infrastructure area (SIA) has limited visibility from sensitive receptors on account of vegetation in the terrain and landform changes which were the result of historic (Great Cobar slag dump) and contemporary mining (New Cobar Complex waste rock emplacement (WRE)). There is negligible visual effect (not significant).

The WRE has been a feature of the landscape since open cut mining began in 2000. In line with current approvals the WRE will remain post mine. It is the subject of ongoing rehabilitation as outlined in the Mining Operations Plan (MOP). The WRE appears from much of the local and sub-regional setting as an elevated, flattened plateau rising above the surrounding plain. In its present form, because of the flattened plateau, the lower levels of vegetation establishment when compared with Fort Bourke Hill and the contrasting colour of the exposed rock material, the visual impact is moderate. With rehabilitation and revegetation, this would be reduced to slight / moderate (not significant).

## ES5 Impact mitigation

### ES5.1 New infrastructure

The proposed emergency egress winder and headframe will be removed at the end of the Project. As these will not have a significant visual effect, no mitigation treatments are proposed.

## ES5.2 Rehabilitation of post closure landform

The rehabilitation and landscape strategy (EMM 2020b) identified that the batters of the WRE will undergo further revegetation (in addition to what has already been done) with the planting mix analogous to White Cypress Pine-Poplar Box woodland on footslopes and peneplains mainly in the Cobar Peneplain Bioregion plant community type (Plant Community Type (PCT) 72). PCT 72 grows to about 14 metres (m) in height in natural conditions. It is expected that in this context the revegetation should achieve a similar height and structure. Upon maturity, this would break-up the skyline above the flattened WRE plateau and vegetation would soften the existing exposed / lightly vegetated batters which contrast in colour with the surrounding vegetation. Progressive replanting to the batter slopes of the WRE will occur during the life of mine.

The overriding objective of rehabilitation activities at the New Cobar Complex Project will be to return disturbed land to a condition that is safe, stable, and supports the proposed post-mining land use, which is primarily grazing on improved pasture. This is outlined in the rehabilitation and landscape strategy (EMM 2020b). The SIA is on land currently zoned for agriculture, and it is therefore anticipated that the rehabilitated land will be incorporated back into land suitable for grazing:

- remove all Project-related infrastructure not required by the final land use;
- restore a safe and stable landform;
- stabilise the WRE and other areas of removed surface infrastructure; and
- establish a landscape that permits the land use of livestock grazing on improved pasture.

## ES5.3 Lighting

Direct lighting has the potential to have point source impacts as lighting can become a focal point in night skies. This has the potential to become a nuisance given the darker backdrop associated with rural lands to the south of the mine.

Australian Standard 4282 (AS4282) *Control of Obtrusive Effects of Outdoor Lighting* sets out guidelines for control of the obtrusive effects of outdoor lighting and gives recommended limits for relevant lighting levels to contain these effects within tolerable levels.

As an underground mining operation, lighting is kept to the minimum required for safe operation. Lighting is directed inwards to the operational areas and the existing WRE. The New Cobar Complex is significantly shielded from Cobar by the WRE and Great Cobar slag dump to the north and north-west and Fort Bourke Hill to the north and north-east. Vegetation within the SIA also helps to screen the lighting.

Existing lighting associated with the surface infrastructure will remain throughout the life of the Project and will not change. Much of the present lighting visibility is associated with diffuse (non-direct) lighting visibility resulting in night glow, however this is minimal when viewed from Cobar town.

Kidman Way is a significant heavy vehicle haulage route with a significant daily and nightly heavy vehicle movement. Movement of PGM specific heavy ore vehicles is not proposed after dark and therefore throw from vehicle lighting will not be an issue. Light vehicle movements within the New Cobar Complex and between the Peak Complex and the New Cobar Complex will occur during night-time seven days a week. Within the New Cobar Complex the movement of vehicles is not visible to receivers in Cobar on account of the screening effects of terrain and vegetation. Additional night-time light vehicle usage of Kidman Way will not be significantly greater than existing movement patterns.

The emergency egress winder and winder house will have lighting installed; however this would only be illuminated when in use during emergency situations or when maintenance is required, and lighting will be activated by motion sensors.

A detailed assessment of potential light spill from the Project will be undertaken if complaints are received, investigated, and found to be of substance. Lighting protocols derived from the assessment may be implemented, if required.

## ES6 Conclusion

Cobar was established in the late 1800s as a mining town and mining still contributes significantly to the local economy and the community has always considered Cobar a mining town. The proposed newly constructed elements are in keeping with socio-cultural expectations for a mining landscape.

Overall, visual impacts associated with the Project are not significant. Effects of the proposed new surface elements will not be significant, and they will be removed from the landscape by 2035 at the cessation of the Project.

The present impact of the WRE is moderate, with a residual effect, post rehabilitation being slight/moderate with effective rehabilitation. This landscape feature which will remain post mining. The impacts of the SIA are slight/moderate.

Existing significant night-time lighting at the locality is from the town of Cobar. The lighting arrangement at the SIA of the New Cobar Complex will not change. Lighting cannot be directly seen from sensitive receptors in town on account of intervening landform and vegetation screening. Light glow is minimal, and lights are effectively focussed so as to avoid unnecessary light throw. Lighting will be required for safety purposes at the emergency egress winder house and head-frame, however this would only be illuminated during emergency situations occurring at night or for night-time maintenance. All lighting would operate by motion sensor.

The visual effects associated with the constructed mine industrial elements will be temporary. At the end of the Project's life (2035) all elements will be removed and the surface recontoured as necessary and the area returned to uses as outlined by the rehabilitation plan (EMM 2020b).

The New Cobar Complex Project open cut and WRE, the prominent features of views from Fort Bourke Hill, and which is an established tourist attraction (reinforcing Cobar's mining identity) will remain. The WRE will be further rehabilitated at cessation of mining to improve this feature's integration into the broader local landscape context.

# Table of Contents

## Appendices



## Tables

## Figures



## Plates

# 1 Introduction

## 1.1 Overview

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) (see 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 and Griffith to the south.

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 underground mining at New Cobar, 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) 0854 and mining leases (ML) ML 1483 and ML 1805 (see Figure 1.2).

### 1.1.1 Background

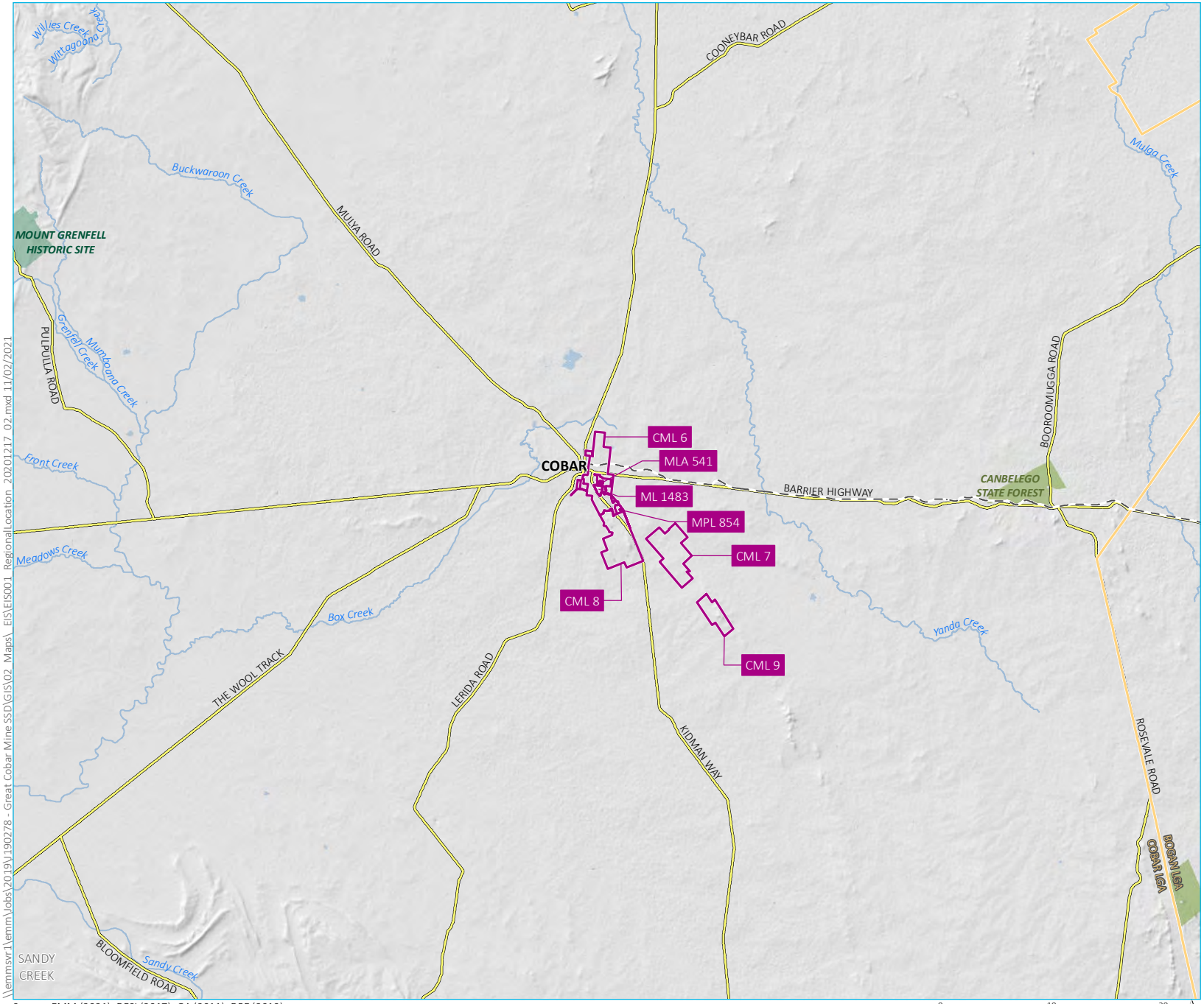
PGM has been operational since mining commenced at the Peak deposit in 1991 producing gold, copper, lead, zinc and silver. Mining at the New Cobar Complex commenced with the open cut in 2000, then transitioned to underground mining in 2004.

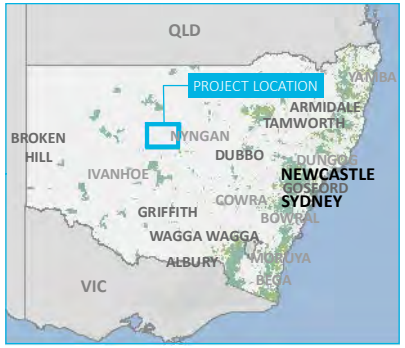
The current CSC development approvals at Peak Complex and New Cobar Complex allow for the operations to continue indefinitely and process up to 800,000 tonnes per annum (tpa) of ore. Ore processing, tailings storage and concentrate handling is undertaken at the Peak Complex with ore from the New Cobar 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.

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.

PGM has obtained conditional 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.




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)

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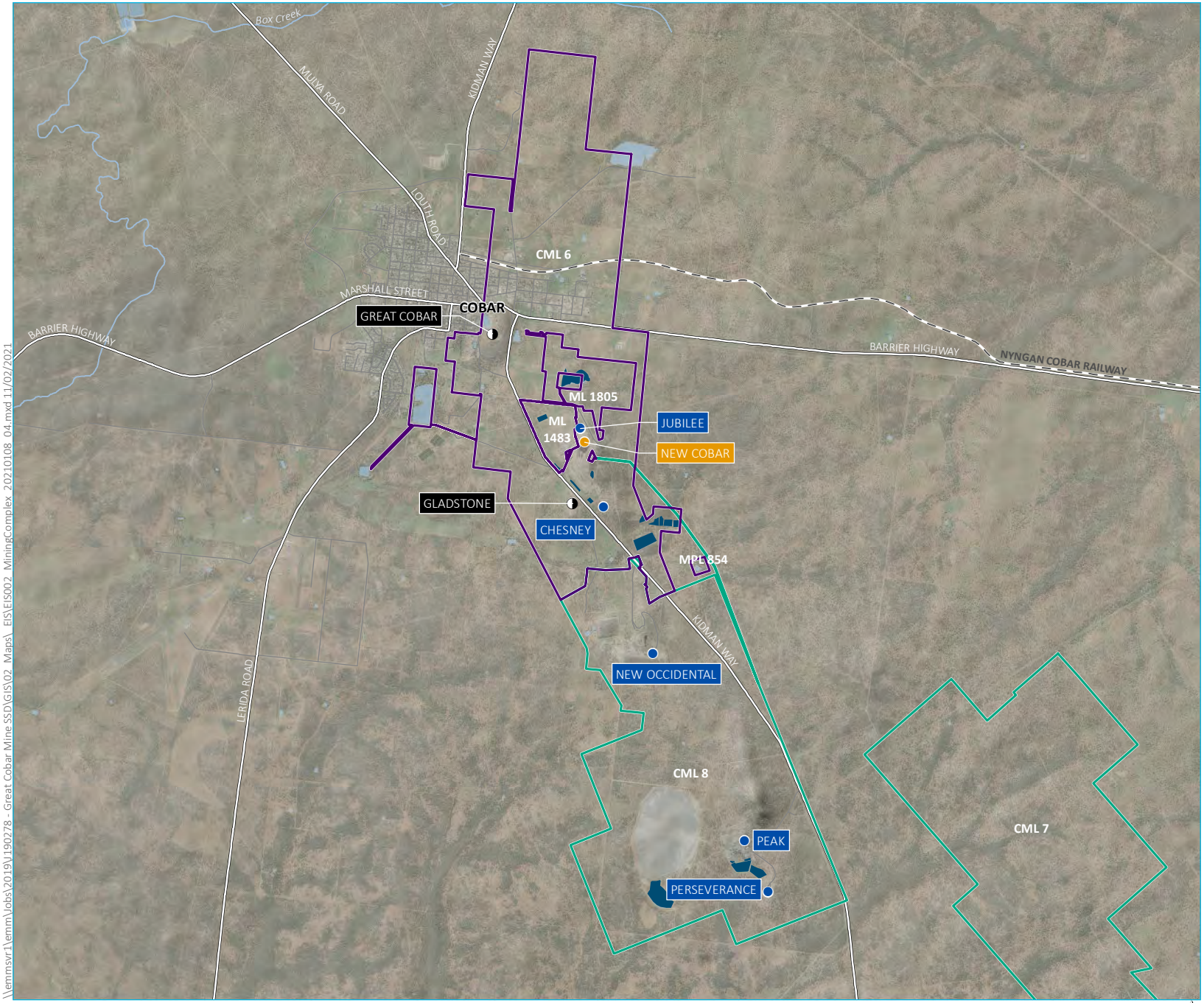
# Regional location of the Peak Gold Mine

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 1.1

EMM creating opportunities

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

Mining leases and mining complexes

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 1.2

EMM
creating opportunities

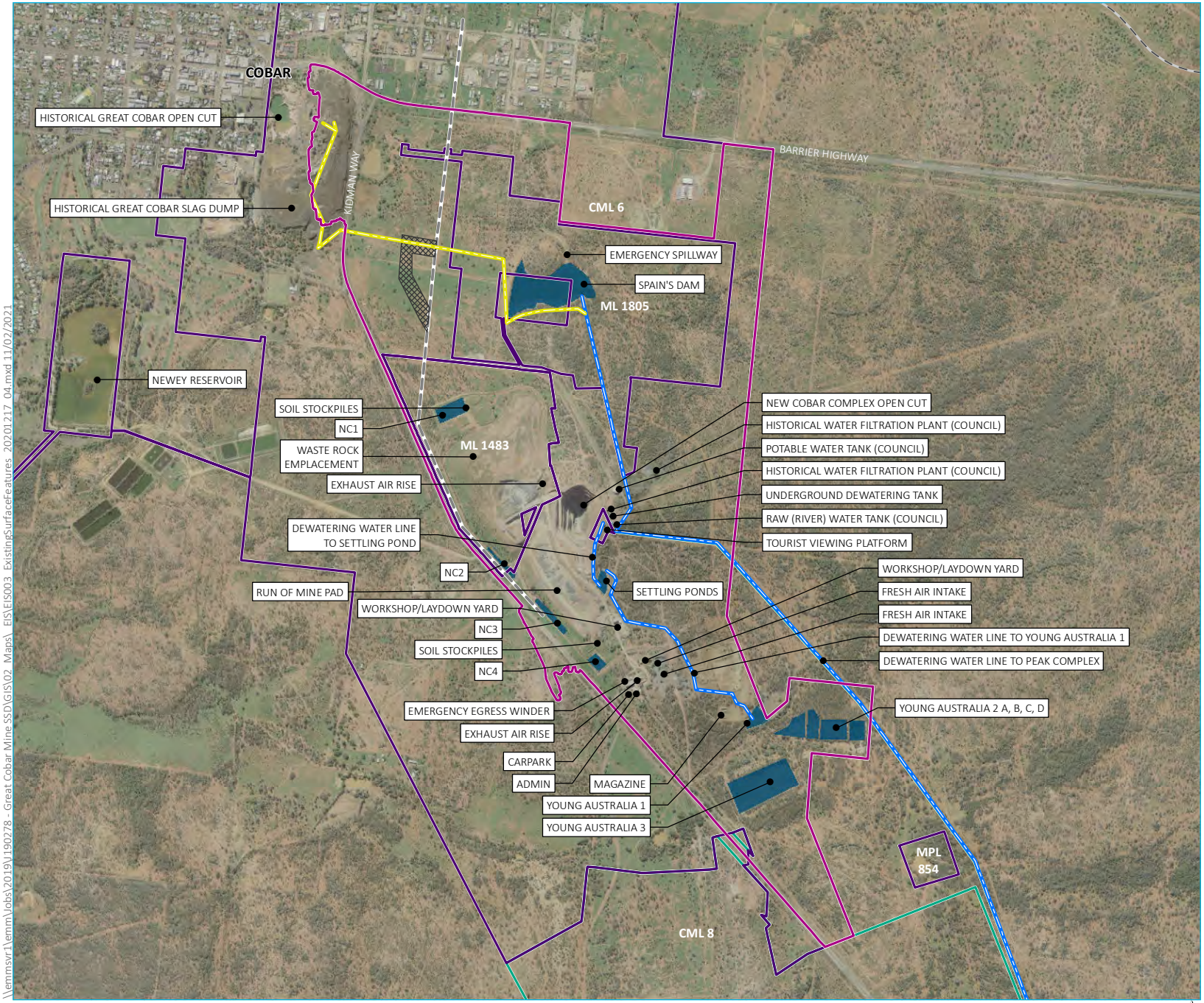
### 1.1.2 Project overview

All surface works associated with the Project will be located underground or in the existing, operational mining New Cobar Complex (Figure 1.3) except for a short (no more than 400 metres (m)) power line from an existing 22 kilovolt (kV) line servicing PGM to a compact substation within the fresh air intake footprint (Figure 1.4).

PGM proposes to use the decline, infrastructure and intake and exhaust air rise elements developed for the Great Cobar exploration decline (approved, but not yet constructed) to facilitate Project development. Surface ventilation fans are not required during the development of exploration activities, however as they will be necessary during operation of mining, 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 (bgl). 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 New Cobar, 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 New Cobar Complex 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, New Cobar, Jubilee and Chesney (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 historic and proposed underground workings via the historic Great Cobar Shaft (existing development approval issued by CSC).
- 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 New Cobar Complex ROM pad (existing approval by CSC).
- Transportation of ore to the Peak Complex via Kidman Way for processing, using road registered heavy vehicles (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 and storage within the existing waste rock emplacement (WRE) prior to 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 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.




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

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

0 0.5 1 km

GDA 1994 MGA Zone 55

N

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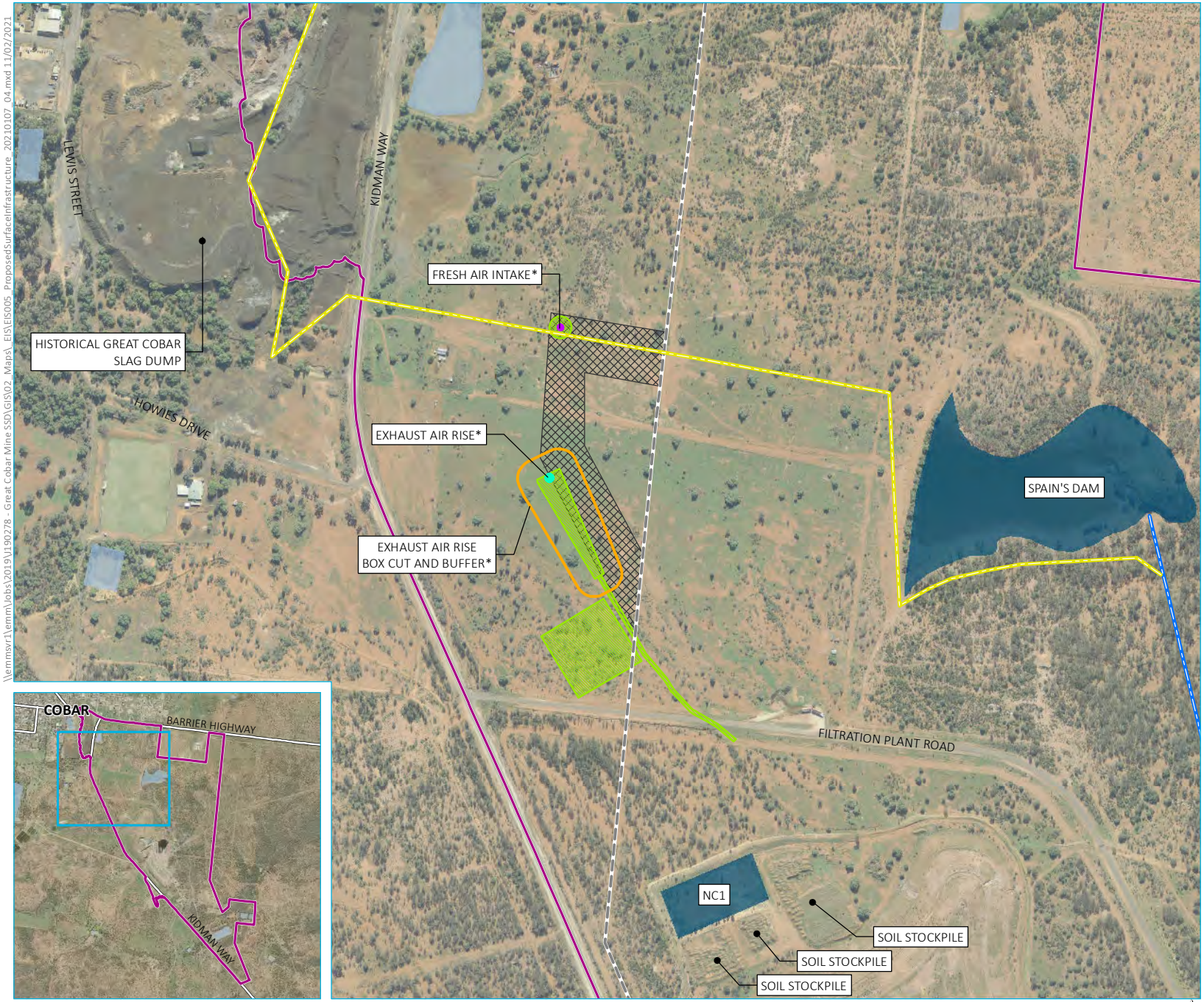
# Existing surface features

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 1.3

EMM creating opportunities







KEY

- Project area
- Major road
- Existing indicative pipeline route
- Existing Great Cobar dewatering pipeline
- Existing 22 kV powerline
- Exhaust air rise*
- Exhaust air rise buffer*
- Fresh air intake*
- Proposed power line corridor
- Waterbody
- Mine water management storage
- Approved area of disturbance*

*Approved under existing REF approvals, but not yet constructed.

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

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# Proposed surface infrastructure

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 1.4

EMM creating opportunities

Processing will remain at the Peak Complex 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 New Cobar, 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 Purpose of this report

EMM Consulting (EMM) has been engaged by PGM to prepare and submit an environmental impact statement (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 requested Secretary's Environmental Assessment Requirements (SEARs) from DPIE for the SSD EIS in December 2019; these were received in February 2020 and were re-issued in October 2020 following the receipt of a Biodiversity Development Assessment Report (BDAR) waiver. The SEARs included a requirement to assess potential Visual impact and lighting risks associated with the construction and operation of the Project. This landscape and visual impact assessment (LVIA) has been prepared to address the relevant SEARs, provide information to be used in the EIS and support the SSD application for the Project. The LVIA related matters and EMM responses are tabulated below (Table 1.1).

**Table 1.1 LVIA related SEARs and EMM responses**

| Agency Requirements | Location in report |
|---|---|
| DPIE | |
| • Visual – including an assessment of: | |
| – the likely visual impacts of the development on private landowners in the vicinity of the development and key vantage points in the public domain, paying particular attention to the creation of any temporary or permanent modification to the landscape; | Refer to Sections 6 and 8. |
| – the lighting impacts of the development. | Refer to Sections 8.5 and 8.2.2. |

# 2 Project summary

Specific details of the Project are presented in Table 2.1 in the context of existing PGM approvals. For a full, detailed project description, please see Chapter 2 of the New Cobar Complex Project EIS.

**Table 2.1 Detailed overview of the Project**

| Development component | Approved New Cobar Complex operations | New Cobar Complex Project SSD |
|---|---|---|
| Tenement | Development approved to occur within the Development Application areas, including CML 6, CML 8, ML 1483, ML 1805 and MPL 854.<br>Mining of the following deposits using underground mining methods, with each deposit accessed via the New Cobar Complex open cut:<br>• New Cobar deposit;<br>• Chesney deposit; and<br>• Jubilee deposit.<br>Minerals processing occurs at the Peak Complex within CML 8 and also includes CML 7 and CML 9. | No change to mine lease area.<br>Mining of the following deposits using underground mining methods, with each deposit accessed via the New Cobar Complex open cut:<br>• New Cobar deposit;<br>• Chesney deposit;<br>• Jubilee deposit;<br>• Gladstone deposit; and<br>• Great Cobar deposit.<br>Processing of materials from the New Cobar Complex will continue at the Peak Complex within CML8 under existing approvals and is therefore outside the scope for this Project. |
| Approvals | ***Cobar Shire Council Development Consent***<br>• New Cobar South Open Cut - LDA 98/99:08<br>• New Cobar Open Cut - LDA 99/00:22<br>• New Cobar Underground – 2004/LDA 00003<br>PGM has received approval from CSC and the Resources Regulator (reference number MAAG0006783, approved in May 2020) to construct an exploration decline, ventilation shafts and associated infrastructure to facilitate exploration activities within the Great Cobar deposit. This is detailed in the Mine Operations Plan (MOP) for 2019-2022.<br>***Other Authorisations and Licences***<br>• EPL -3596 (EPA)<br>• Licence to Manufacture Explosives (New Cobar) - XMNKF200002 (SafeWork NSW)<br>• Dangerous Goods Notification - New Cobar: 35/035154 (SafeWork NSW).<br>• Water Supply Works Approval reference 85WA753861 (National Resources Access Regulator) | 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.<br>Once approved, relevant CSC development consents for the New Cobar Complex will be surrendered.<br>The Project will used infrastructure that has been approved but not yet constructed as a result of the exploration decline and associated infrastructure.<br>Other approvals related to the Peak Complex, will be unaffected. |
| Mining method | Underground stope mining operations commence above a centrally positioned crown pillar and stopes will be extracted from the bottom-up. Bench stopes are backfilled progressively using waste from development and rock from the WRE. Upon completion of each stopping level, voids are backfilled. In some instances, mining against rock fill is required. In these instances, a | Expansion of underground stope mining operations will access new deposits at Great Cobar and Gladstone, as well as continued mining of New Cobar, Chesney and Jubilee deposits. The mining method will not change.<br>There is no recorded history of significant subsidence or geotechnical failure associated with the current, modern mining operations at the Peak and New Cobar complexes. |

## Table 2.1 Detailed overview of the Project

| Development component | Approved New Cobar Complex operations | New Cobar Complex Project SSD |
|---|---|---|
| | rock and cement slurry will be placed in the stope to provide additional stability.<br>PGM undertake detailed geotechnical assessments of all stopes during the detailed stope design stage prior to mining.<br>Proposed backfill method will be to fill stope voids with waste rock, with cemented aggregate fill (CAF) used where necessary. | |
| 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).<br>Delays will be used to adjust sequencing and prevent any interaction or vibration enhancement from adjacent blastholes.<br>The approximate number of blasts will be three per 24-hour period, 20 per 7-day period.<br>Explosives are stored in the existing magazine at New Cobar Complex. | No change to blasting method. |
| Life of mine | Presently, the council approvals have no end date. Current mine plans envisage mining at New Cobar Complex to continue until 2023 under current market assumptions. | The Project will extend the life of mine by 12 years to 2035 under current market assumptions. |
| Production | Approved for the mining and processing of 800,000 tpa of ore to produce lead, zinc, copper, gold and silver from both the Peak and New Cobar complexes. Processing occurs at the Peak Complex. | The Project will produce ore within the mining and processing limit of 800,000 tpa for the Peak and New Cobar complexes. Ore will be transported to the existing processing plant at the Peak Complex. The ore will be processed at the Peak Complex processing plant, and tailings will be disposed of at the TSF at the Peak Complex under existing approvals.<br>• Processing of ore will only take place at the Peak Complex, therefore is outside the scope of this Project. |
| Mining extent | The New Cobar Complex comprises a surface disturbance area of approximately 425 hectares (ha).<br>The New Cobar open cut extends to a depth of approximately 100 m below ground level (mbgl).<br>Development of underground working at Chesney, Jubilee and New Cobar deposits extends from a portal at the base of the New Cobar open cut. | Development of New Cobar Complex Project will be in stages.<br>The Great Cobar and Gladstone deposits will be accessed via a decline extending from the existing New Cobar Complex underground workings. The proposed underground working depths are approximately 150–800 mbgl for Great Cobar and 350-500 mbgl for Gladstone.<br>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. |
| Tailings storage | All ore is processed at the Peak Complex, with tailings placed within the TSF. | No change. |

## Table 2.1 Detailed overview of the Project

| Development component | Approved New Cobar Complex operations | New Cobar Complex Project SSD |
|---|---|---|
| Ore transportation | Ore is transported from the New Cobar Complex along 5 km of public road (Kidman Way) in road registered trucks at the rate of 25 trucks (50 truck movements) per day, seven days a week. | Ore will continue to be transported from the New Cobar Complex but at a maximum rate of 100 truck movements per day (in and out of project area) (daylight hours only), 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. |
| Waste rock management | Waste rock generated from underground workings is used preferentially as backfill in previously mined underground stopes.<br>Some waste rock material may be brought to the surface and stored within the existing WRE at the New Cobar Complex until it is required for use in construction or rehabilitation across the Peak and New Cobar complexes. | No change |
| Soil management | Application of soil resources management strategies/objectives in accordance with the existing Mining Operation Plan 2019-2022 (MOP 2019-2022) (PGM 2019) and Water Management Plan (PGM 2020)). | No change. |
| Mine ventilation | There are two existing exhaust air rises at the New Cobar Complex – one at the Jubilee workings and one at the Chesney workings. Fresh air is drawn down the portal at the base of the New Cobar Complex open cut.<br>The infrastructure developed as part of the Great Cobar exploration decline will include an exhaust air rise and a fresh air intake. | No new ventilation shafts will be required; the ventilation shafts installed as part of the exploration decline will be required for ongoing mining operations and will remain in place. New ventilation fans will be required to maintain a safe volume of air flow in the underground workings. |
| Surface infrastructure | All existing New Cobar Complex surface infrastructure operates under existing CSC approvals. | 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 connect to a pad-mounted compact substation to supply power for an emergency egress winder at the fresh air intake shaft and a ventilation fan to be installed at the exhaust air rise.<br>No additional surface infrastructure will be required. |
| Water supply sources and infrastructure | The water requirements for the Peak Complex and the New Cobar Complex (combined) are approximately 580 ML/year. The source of this water is typically, comprised of approximately 212 ML/year from dewatering underground workings at the New Cobar Complex and approximately 368 ML/year of town water from Burrendong Dam.<br>Following approval 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 | No change |

## Table 2.1 Detailed overview of the Project

| Development component | Approved New Cobar Complex operations | New Cobar Complex Project SSD |
|---|---|---|
| | used. This is as part of a move for PGM's operations to be more self-reliant and sustainable in times of drought. The water from the Great Cobar shaft will be used to make up any shortfall in Project 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. | |
| Project water management infrastructure | A 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). Dewatering water that is used in the New Cobar Complex underground workings is pumped to the New Cobar Complex settling pond for re-use. 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. Dewatering water excess to site requirements is pumped to Spain's Dam or Young Australia Dams for evaporation or storage for future reuse. | No change |
| Power supply | Electricity to the project area is via a 22 kilovolt (kV) electricity transmission line (ETL) to the Peak Complex substation. | No change to power supply, but an additional power line spur will be required for the ventilation fan to be installed in the exhaust air rise and the emergency egress winder. |
| Hours of operation | Underground and above ground activities, 24-hour operations, seven days a week. | No change |
| Employment | The 2019/2020 workforce at PGM (including both the Peak and New Cobar complexes) totalled 404 full time equivalents (FTE). | 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. PGM will continue to maintain operational control across the complexes. |

## Table 2.1 Detailed overview of the Project

| Development component | Approved New Cobar Complex operations | New Cobar Complex Project SSD |
|---|---|---|
| Mining fleet | The existing/approved indicative mobile equipment fleet used for underground ore extraction, transport and waste rock handling includes:<br>• articulated dump trucks;<br>• cabletec;<br>• compactors;<br>• dozers;<br>• drill rigs.<br>• excavators;<br>• graders;<br>• haul trucks (50t);<br>• jumbos;<br>• LHD Loading dump trucks;<br>• loaders;<br>• rollers;<br>• scrapers;<br>• service truck;<br>• underground development drill;<br>• underground diamond drill rigs;<br>• waste rock dump trucks; and<br>• water trucks. | No change |
| Rehabilitation and mine closure | Current rehabilitation requirements as per MOP | Mine closure concepts and management measures will continue to be developed via the MOP 2019-2022, which outlines specific soil handling, rehabilitation and post mining landform objectives, in consultation with relevant regulatory authorities. The MOP will be updated and extended as required. |

# 3 Assessment methodology

## 3.1 Assessment guidelines

There are no Australian Federal, NSW State Government or Local Government Authority planning policies, guidelines or standards applicable to this assessment. This LVIA was therefore assessed in accordance with Australian best practice in reference to standards included within the UK document *Guidelines for Landscape and Visual Impact Assessment* (GLVIA) Third Edition (2013) prepared by the Landscape Institute and Institute of Environmental Management and Assessment (IEMA), and *Guidance Note for Landscape and Visual Assessment* (AILA 2018). The LVIA was also prepared with regard to Standards Australia (AS4282) *Control of Obtrusive Effects of Outdoor Lighting* and photomontages developed in consideration of aspects of the Land and Environment Court's 2013 direction on the use of photomontages. The GLVIA (Landscape Institute 2013) and AS4282 were also utilised in the preparation of the LVIA. Viewpoint analysis was further guided by Landscape Institute technical guidance notes (Landscape Institute 2018; 2019).

## 3.2 Assessment overview

Visual impact assessments compare an existing view or landscape to that which will eventuate as a project develops and matures. It is an interactive process involving modifications to the locations, design, size and colour of project components, so as to reduce the potential impact of visual change.

The methodology for this LVIA, involved review of information, consultation, fieldwork observations and photography, geographic information systems (GIS) processing and analysis, and subjective professional judgement. The assessment involved the following seven stages:

- **stage 1: view type and context** – the existing landscape is described noting its character and complexity;
- **stage 2: visibility assessment** – this is the baseline visibility assessment identifying the zone of visual influence of the Project and is established using GIS analysis to determine locations where views[2] of the Project will be theoretically possible;
- **stage 3: view-point and photo montage selection** – key public and private viewpoints[3] of the project area are selected;
- **stage 4: magnitude of change** – the magnitude of visual change as a result of the Project is assessed and the need for Project modifications or other mitigation measures evaluated;
- **stage 5: visual sensitivity** – the capacity of the landscape to absorb change without a loss of quality is determined;
- **stage 6: evaluation of significance** – the significance of visual change in the landscape is determined as a function of the magnitude of visual change and the sensitivity of a receptor[4]; and

[2] Views in the context are considered to be any sight, prospect or field of vision as seen from a place, and may be wide or narrow, partial or full, pleasant or unattractive, distinctive or nondescript, and may include background, mid ground and/or foreground elements or features.

[3] Viewpoints are the specific location of a view, typically used for assessment purposes

[4] Receptors are a place, route, viewer, viewer audience or interest group which may experience an effect and require assessment; the people who will be affected by changes in views or visual amenity

- **stage 7: mitigation** – if the visual change is considered to be significant, visual aspects of the Project can be modified and mitigated, and residual visual impacts are determined. This can occur during the design phase.

Details of each of the above stages are outlined below.

## 3.3 Stages in the assessment method

### 3.3.1 Stage 1 - View and type of context

The purpose of this stage is to characterise the existing landscape features, the value or importance of the landscape and the way in which the landscape is experienced. The landscape character is determined by the number, size, type and contrast of elements present. Other factors that are important are the consistency of these elements and whether they have developed progressively over time and become well integrated into the landscape. In addition, the presence of change and whether the landscape is or will experience large scale development such as residential growth on the urban fringe, industry or mining needs to be considered.

Context is a primary factor in the visual sensitivity of the view. Generally, sites with varied landscapes have a greater ability to absorb change and therefore a lower sensitivity, whereas sites within a uniform or highly ordered landscape have higher sensitivity.

### 3.3.2 Stage 2 - Visibility baseline assessment

Baseline studies for visual effects should be established the area in which the development may be visible, depending on who will see the development, the viewpoints that will be affected and the nature of the views at those points. Topographic, vegetation and fieldwork data are used by GIS to determine the significant potential visibility zone (SPV zone).

### 3.3.3 Stage 3 - Viewpoint selection

Viewpoints are selected to provide a representative sample of the likely impacts on the different users of the areas surrounding the Project and their visual exposure to various project elements. These can be areas that are available to public access such as main roadways and other unsealed rural roads, as well as private viewpoints from residential properties are selected for detailed assessment. These properties are identified through GIS mapping, fieldwork and desktop analysis.

### 3.3.4 Stage 4 - Magnitude of change

The magnitude of change on the visual landscape is one factor in determining the significance of visual impacts of the Project (see Table 3.1). In accordance with the GLVIA, this visual assessment considered the following criteria in determining the magnitude of change on a receptor:

- whether the impact is temporary or permanent – impacts that are for a limited duration are considered less significant;
- scale of change – the loss or addition of features in the view and changes in the proportion of the view affected by the proposal;
- degree of contrast – level of integration of new features with existing or remaining landscape elements, having regard to form, scale, height, colour, and texture;

- distance of the viewer from the altered elements in the landscape – proximity to an impacted landscape will increase the significance for private residences. In the case of motorists, midground changes can be greater than foreground elements as they can result in longer viewing times;
- viewing direction – whether the change is to the primary view from the location;
- extent of view affected – impacts that are visible over a greater portion of a view are more significant than those where only a part of the view is impacted. Intervening topography and vegetation will also affect the magnitude of change; and
- length of viewing time – views from a residence are constant, whereas some views from roadways as experienced by motorists may be brief dependent upon speed and viewing direction.

**Table 3.1 Visual effects matrix**

| Contrast | Integration | | | |
|---|---|---|---|---|
| | Lacking visual integration with setting | Some visual integration with setting | Integration with setting is high | Additional mitigating considerations |
| Do not borrow from features in the visual setting | High | High/Moderate | Moderate | Extent to which a specific Project element occupies the immediate surrounding view landscape from a viewpoint – the magnitude of change |
| Some features of the setting have been borrowed | High/Moderate | Moderate | Low | |
| Extensive borrowing of elements | Moderate | Low | Negligible | |

### 3.3.5 Stage 5 - Visual sensitivity

Visual sensitivity is a measure of the landscape's ability to absorb development without a significant change in its character. It is a function of the view type and context. The major factor influencing visual sensitivity is the level of contrast between the proposed project elements and the rural landscape setting in which they will sit.

Visual sensitivity is rated on a scale of high to low (see Table 3.2 below). The physical characteristics of the landscape, including existing development features, are integral components in determining the visual sensitivity.

In accordance with the GLVIA, the visual sensitivity of a receptor was assessed based on the following criteria:

- importance of the view – changes to views from private residences or main tourist roads are considered more sensitive than from secondary roads;
- length of view – transient nature of a view by motorists from roads is considered less sensitive compared to a long-term view from a private residence;
- receptor viewer expectation – communities where development results in changes in the landscape setting or valued views; and
- location and context of the viewpoint – natural and modified elements that make up the visual landscape and contribute to the composition, and hence sensitivity of a view.

**Table 3.2 Visual sensitivity determination**

| Landscape receptor and / or land use | Visual sensitivity levels | | |
|---|---|---|---|
| | Primary sensitivity zone (local setting) | Secondary sensitivity zone (sub-regional setting) | Tertiary sensitivity zone (regional setting) |
| | *Visible project elements less than 1 km from receptor* | *Visible project elements 1 - 5 km from receptor* | *Visible project elements >5 km from receptor* |
| Camping grounds, scenic outlooks, and walking trails in wilderness areas and conservation reserves | High | Moderate | Low |
| Commonwealth and State heritage | High | Moderate | Low |
| Rural residential | High | Moderate | Low |
| Local heritage | Moderate | Low | Low |
| Public vantage points (Fort Burke Hill) | Moderate | Low | Low |
| Highways, main roads, tourist routes | Moderate | Low | Low |
| Urban areas | Moderate | Low | Low |
| Recreation areas | Moderate | Low | Low |
| Sub regional roads | Moderate | Low | Low |
| Local roads | Low | Low | Low |
| Rural lands | Low | Low | Low |
| Industrial and mining | Low | Low | Low |

### 3.3.6 Stage 6 - Evaluation of significance

The evaluation of significance assesses the significance of a change in the landscape based on the magnitude of that change and the sensitivity of the landscape. Typically, a noticeable change in the landscape in an unmodified rural or natural setting would be considered significant, whereas a change in an already heavily modified landscape could be considered slight or moderate.

The overall visual impact of a new development is a subjective, quantitative assessment from predetermined criteria assessing the interaction between:

- visual effect – the effect individual project elements have in relation to the level of contrast, mass and scale and integration with existing elements of the immediately surrounding landscape and the magnitude of that change (Table 3.1); and
- visual sensitivity - how significant the change may be to people in the different land uses surrounding the development (Table 3.2).

The primary assessment tools for determining the significance of impact are site inspections, and photography of views from selected viewpoints. These are used to assess visibility in the landscape, to determine the level of change

to assess visual impacts taking into consideration the nature of the landscape, topography, the distance between the viewpoint and the project elements, as well as the type of view experienced.

Table 3.3 illustrates how change in the landscape is assessed, and significance rated against the sensitivity of a receptor. Visual settings are based on distance as follows:

- Regional setting – greater than 5 km from the project;
- Sub-regional setting – 1 to 5 km from the project; and
- Local setting – up to 1 km from the project.

**Table 3.3 Evaluation of significance matrix (visual impact)**

| Visual effect | Visual sensitivity | | |
|---|---|---|---|
| | **High** | **Moderate** | **Low** |
| High | **Substantial** | **Moderate/Substantial** | **Moderate** |
| Moderate | **Moderate/Substantial** | **Moderate** | **Slight/Moderate** |
| Low | **Moderate** | **Slight/Moderate** | **Slight** |
| Negligible | **Slight** | **Slight** | **Negligible** |

| Key | | Significant | | Not significant |
|---|---|---|---|---|

### 3.3.7 Stage 7 - Mitigation

The final step in the assessment process is to determine measures that can be incorporated into the design of the Project to eliminate (where possible), or reduce the visual impact of the proposed activity.

Mitigation measures can be in several forms including:

- Project design that avoids the requirement for that infrastructure;
- relocation of infrastructure;
- installation of infrastructure that is in keeping with the background theme of the area (eg mining infrastructure in a community that has a strong history and sense of being a mining community);
- design of infrastructure to reduce the contrast with the surrounding environment;
- use of landscape integration practices, visual buffers and screening by planting vegetation; and
- designing infrastructure to screen surface operations and lighting.

Both Project design and relocation of infrastructure have been utilised in early stages of the Project and therefore are not further considered for this assessment.

# 4 Visibility analysis for the project

Visibility of the Project infrastructure within the landscape (ie the total visual catchment) was determined through field assessment, evaluation of aerial photography and GIS mapping and computer analysis, leading to the determination of the primary visual catchment.

A preliminary visual analysis was undertaken using GIS analysis of a number of data sets, specifically, the Project digital elevation model (DEM), the digital surface model (DSM)[5] and the surface elements 3D model to develop maps showing theoretical visibility.

The DEM shows only land from which the visible elements of the Project may theoretically be visible. It assesses the zone of interest in a 'bare-earth' state and excludes above-ground features. The DEM does not take into account the screening effect of vegetation and aspects of the built environment (eg sheds) and therefore shows a greater extent of viewshed identified than would actually exist (ie is considered 'worst-case'). While the DEM is a terrain analysis that recognises the physical surface landform only, the DSM takes into account other surface components above the 'bare-ground' that may affect visibility, for example vegetation, buildings and surface infrastructure.

Superimposed into the model are the heights and location of key Project infrastructure, and visibility within the landscape calculated along lines radiating outwards from the elements to potential viewpoints. Observer height was assessed at 1.6 m above natural ground.

The DEM model was run as a 'first-cut' to identify zones of potential visibility where terrain did not constrain views. In this regard, it can be considered a worst-case scenario. The DSM analysis was then undertaken to further refine potential visibility so that a more realistic understanding of visibility could be determined. In the model-space, features within the landscape identified by the DSM are considered totally opaque; that is, all views will be blocked. To this end, a number of iterations of the DSM model were run to remove the known effects of power lines.

Although the DSM could be considered to be a reasonable approximation of visibility, in reality actual visibility is difficult to model for large areas. Furthermore temporal, seasonal and climatic considerations all play a part in the accuracy of the model. In this instance, LiDAR (point cloud data) of the project area and surrounds was obtained in January 2020 and was flown to support baseline assessments for the EIS. This LiDAR data can therefore be considered to be a 'snap-shot' or moment-in-time assessment of visibility.

[5] The digital surface model was developed from LiDAR data collected in 24/01/2020

# 5 Existing Environment

## 5.1 Landscape overview

The New Cobar Complex is located 3 km south-east of Cobar town centre, 550 km north-west of Sydney (Figure 1.1). It is situated within the Darling catchment of the Barwon-Darling and far western catchments of water management area and is part of the Murray-Darling Basin.

The project area is part of the Canbelego Downs subregion of the Cobar Peneplain Bioregion. It is characterised by undulating plateau with low ridges and stony rises, underlain by metasedimentary and sedimentary rocks, such as chert and slate. Topography on the older rocks around Cobar comprises residual hills, low rounded ridges, and stony slopes formed on softer, more weathered shales, phyllites and cherts, with only occasional features standing the plain (NPWS 2003).

## 5.2 Regional development and land use character

The Cobar peneplain was promoted as productive sheep and cattle grazing country following initial explorations in the early 19$^{th}$ century. Squatting and establishment of pastoral activities was well underway by the 1830s and 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, mining of the region become established. Cobar, and a number of other small dormitory towns which have since been removed or abandoned, established around the early mine workings.

The project area is surrounded by areas that have been highly modified through agricultural, residential, and commercial land uses. These areas contain modified vegetation or non-vegetated areas, and include:

- historically cleared agricultural land comprising livestock grazing;
- rural-residential properties containing managed land within the curtilage of buildings;
- the town of Cobar, containing managed land for infrastructure, residential, commercial and recreational use; and
- existing commercial mining operations resulting in past land clearing for pits, stockpiles, tailings, dams and hardstand areas.

The regional character is one extensively dominated by agricultural production, mainly low intensity grazing on modified and unmodified woodlands. Mining activity is also prominent within the landscape, with signs of past and present mining.

### 5.2.1 Land use

Land use surrounding the project area includes:

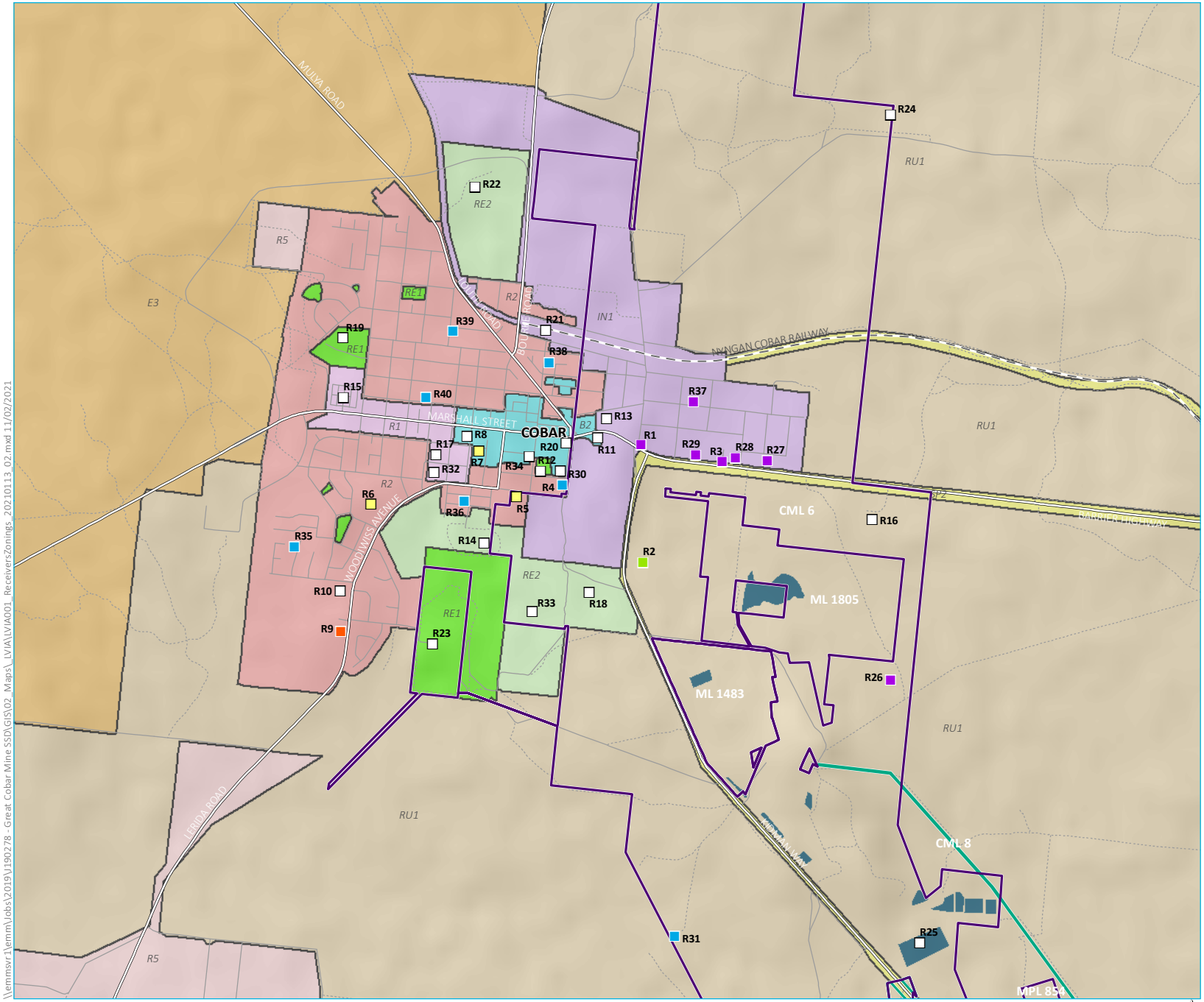
- transport infrastructure – Kidman Way, Barrier Highway and the Nyngan-Cobar railway;
- other PGM owned mines – Peak Complex;
- derelict mines – shafts and tailings;

- industrial, including the industrial precinct located immediately to the north of the project area and the CSC owned sewage treatment plant to the west;
- commercial, including the Cobar central business district;
- low density residential, primarily to the north and west of the project area;
- tourism, including the Great Cobar Heritage Centre and Cobar Miners Heritage Park at the northern end of the project area, and Fort Bourke lookout overlooking the New Cobar Complex open cut;
- recreation – Ailisa Fitzsimmons Oval (rugby club), Ward Oval, Cobar Gold Course and Drummond Park Youth and Squash Centre, Newey Reservoir, Old Reservoir; and
- low intensity grazing.

### 5.2.2 Settlements, zoning and sensitive receivers

The Project is located in the Cobar Shire Local Government Area in the far western region of NSW. The nearest settlement to the Project is the town of Cobar, the administrative centre of Cobar local government area. Zoning as determined by CSC is set out in the Cobar Local Environmental Plan (LEP) 2012 (Figure 5.1). Regionally, much of the land is zoned RU1 – Primary Production. Sub-regionally and locally, land to the west and north is zoned for urban uses including industrial, commercial, residential (general, low and large lot) and recreation (public and private). An area of environmental management is situated to the north-west of Cobar. In contrast, land to the east and south of the project area is zoned RU1 – Primary Production.

The area surrounding the project area includes a number of privately-owned residential properties with the closest located approximately 900 m to the south-west of the New Cobar Complex and more than 4 km to the north-west of the Peak Complex. The majority of the sensitive receptors are located in or near the township of Cobar. Details are provided in Table 5.1 and their locations are shown in Figure 5.1. No further potentially affected residential receivers have been identified further south of the New Cobar Complex or the Peak Complex.




KEY

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

Mining lease boundaries

- New Cobar Complex
- Peak Complex

Sensitive receiver

- Hospital
- Mine-owned residence
- Privately-owned residence
- Industrial
- School
- Other

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); DFSI (2017); DPE (2017); DPE (2019); GA (2011); PGM (2019)

0 0.5 1 km

GDA 1994 MGA Zone 55

N

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# Zoning and sensitive receivers

Peak Gold Mines
New Cobar Complex Underground Project
Landscape and visual impact assessment
Figure 5.1

EMM creating opportunities

## Table 5.1 Sensitive receptor locations

| Sensitive location identification number | Type | Description | Easting | Northing |
|---|---|---|---|---|
| R1 | Industrial (residence) | 82 Old Bourke Road | 390352 | 6514550 |
| R2 | Mine-owned residence | Cornish Town House (PGM Owned) | 390363 | 6513810 |
| R3 | Industrial (residence) | 13 Nyngan Road | 390861 | 6514443 |
| R4 | Privately-owned residence | 2-4 Harcourt Street | 389856 | 6514298 |
| R5 | School | Cobar Public School | 389571 | 6514224 |
| R6 | School | Cobar High School | 388655 | 6514176 |
| R7 | School | St Johns Primary School | 389332 | 6514512 |
| R8 | Child Care Centre | Kubby Child Care | 389258 | 6514603 |
| R9 | Hospital | Cobar Hospital | 388463 | 6513378 |
| R10 | Nursing Home | Lilliane Brady Nursing Home | 388460 | 6513631 |
| R11 | Cultural centre | Great Cobar Heritage Centre | 390079 | 6514596 |
| R12 | Active recreation | Drummond Park | 389722 | 6514385 |
| R13 | Passive recreation | Cobar Miners Heritage Park | 390135 | 6514712 |
| R14 | Active recreation | Ward Oval | 389366 | 6513933 |
| R15 | Caravan Park | Cobar Caravan Park | 388481 | 6514847 |
| R16 | Mine camp | TJ Hospitality Group Accommodation | 391805 | 6514080 |
| R17 | Active recreation | Cobar Swimming Pool | 389063 | 6514487 |
| R18 | Active recreation | Cobar Rugby Club (ground) | 390025 | 6513624 |
| R19 | Active recreation | Cobar Rugby League Club (ground) | 388479 | 6515223 |
| R20 | Commercial | Cobar Memorial Services Club | 389880 | 6514562 |
| R21 | Commercial | Cobar Railway Station | 389752 | 6515270 |
| R22 | Commercial | Cobar Race Track | 389308 | 6516170 |
| R23 | Passive recreation | Newey Reserve | 389042 | 6513297 |
| R24 | Passive recreation | Old Reservoir | 391920 | 6516624 |
| R25 | Passive recreation | Young Australia Reservoir | 392104 | 6511417 |
| R26 | Industrial | Cobar water treatment plant | 391920 | 6513070 |
| R27 | Industrial (residence) | 10 Dapville Street | 391145 | 6514450 |
| R28 | Industrial (residence) | 12 Dunstan Street | 390945 | 6514467 |
| R29 | Industrial (residence) | 27 Nyngan Street | 390695 | 6514486 |
| R30 | Child Care Centre | Ngali Child Care Centre, Harcourt Street | 389846 | 6514386 |
| R31 | Privately-owned residence | Kidman Way – Dellavale | 390563 | 6511460 |
| R32 | Commercial | Cobar Bowling and Golf Club | 389051 | 6514377 |
| R33 | Active recreation | Cobar Golf Course | 389666 | 6513501 |

**Table 5.1 Sensitive receptor locations**

| Sensitive location identification number | Type | Description | Easting | Northing |
|---|---|---|---|---|
| R34 | Child Care Centre | Far West Family Day Care | 389649 | 6514476 |
| R35 | Privately-owned residence | 15 James Place | 388174 | 6513910 |
| R36 | Privately-owned residence | 3 Maidens Ave | 389242 | 6514198 |
| R37 | Industrial (residence) | 39 Cornish Street | 390680 | 6514822 |
| R38 | Privately-owned residence | 10 Linsley Street | 389773 | 6515067 |
| R39 | Privately-owned residence | 24 Leah Street | 389170 | 6515264 |
| R40 | Privately-owned residence | 49 Becker Street | 389000 | 6514850 |
| R41 | Privately-owned residence | 5 Conduit Street | 390083 | 6154772 |

### 5.2.3 Tenure

Land tenure is presented in Figure 5.2. The majority of the urban footprint of Cobar (sub-regional setting) is privately held in freehold title, as is much of the project area (local setting). A significant portion of the land within the regional setting to the east, north and west of Cobar is leasehold or Crown land.

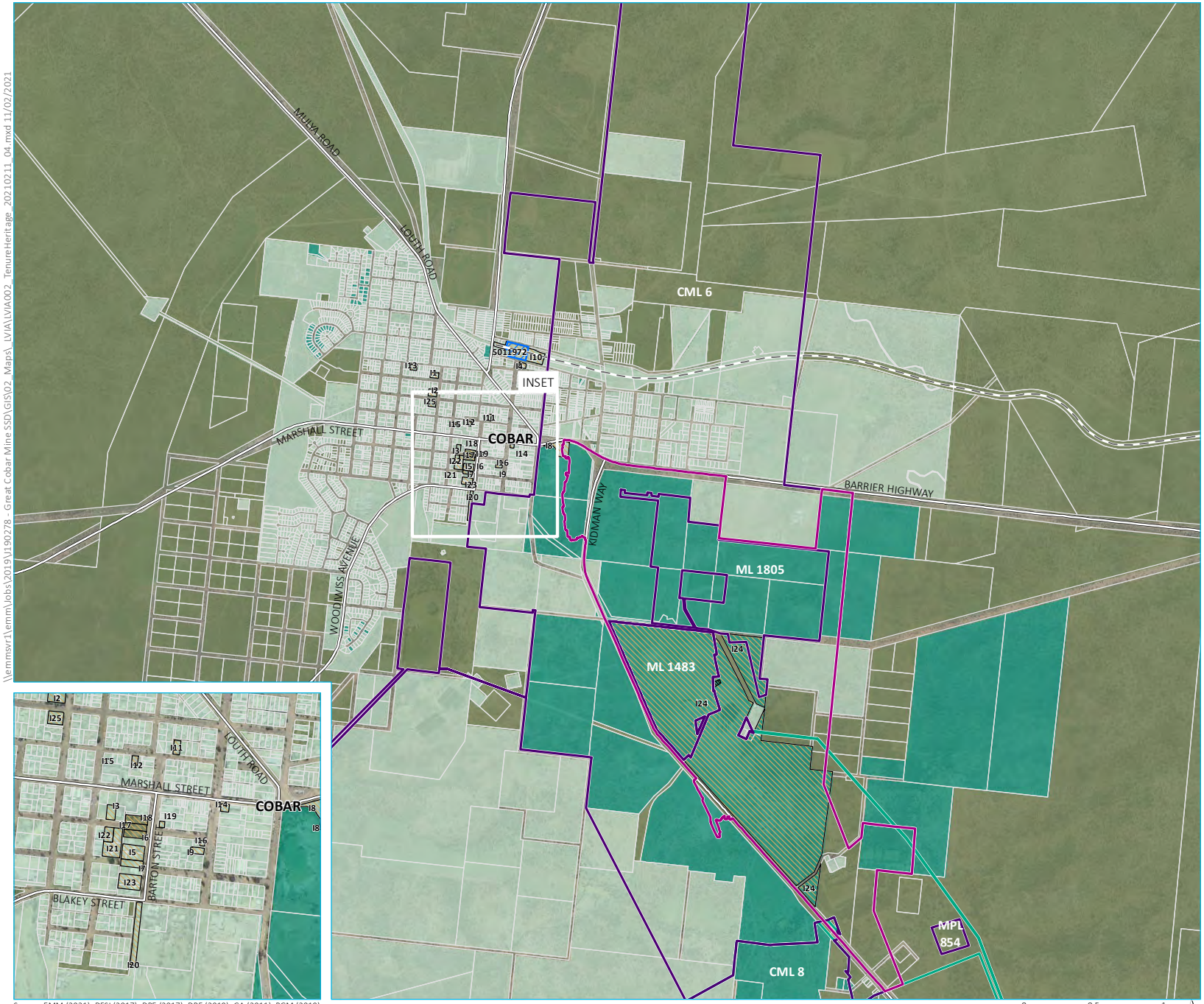
### 5.2.4 Transport routes

Cobar lies at the junction of a number of significant highways including Kidman Way which extends from Griffith in the south, to Bourke in the north, and the Barrier Highway linking Broken Hill and South Australia to Nyngan (east). These are major freight transport routes but also cater for tourist traffic. The project area (local setting) encompasses parts of the Kidman Way and the Barrier Highway. Other major roads include Mulya Road extending north east of Cobar, and Lerida Road which runs to the south-west.

A number of local roads are located within the local setting. These include:

- filtration Plant Road, which is used to access Fort Bourke Hill Lookout (a significant tourist feature overlooking the New Cobar Complex open cut) and the CSC owned filtration plant (immediately east of Fort Bourke Hill lookout);
- Howie Drive (the eastern end of Lewis Street) which is used to access the Cobar District Rugby Club; and
- Sewerage Works Road which is used to access the Cobar Sewage Treatment Facility.

All these roads intersect with Kidman Way within or adjacent to the project area.




KEY

- Project area
- Rail line
- Major road
- Cadastral boundary

Land ownership

- Private
- Government
- Peak Gold Mines

Heritage items

- Item - general
- State Heritage Act
- Indicative location of Towser's Huts

Mining lease boundaries

- New Cobar Complex
- Peak Complex

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

0 0.5 1 km

GDA 1994 MGA Zone 55

N

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# Tenure and heritage

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 5.2

EMM
creating opportunities

### 5.2.5 Industry and mining

The Cobar region has a long and rich mining history. These included the Great Cobar copper mine between 1870-1919, the New Occidental and Chesney gold mines between 1930-1951, base metal mining at CSA and Elura (now Endeavor) mines, and a resurgence of various mineral mining between 1985 and the present day. PGM's operations at commenced at the Peak Complex in 1991 and at the New Cobar Complex in 2000. PGM is the closest mining operation to town (between 3 and 10 km to the south-east). CSA's operation is approximately 10 km to the north-west.

General industrial activities within Cobar occur to the immediate north of the project area. These include mining and civil related earthmoving subcontractors, fabrication and vehicle servicing, storage depots, transport depots, plant and equipment hire and sales, storage and servicing, electrical servicing and scrap metal merchants.

### 5.2.6 Public open space and recreation

Within the regional setting there are a number of natural area reserves which are utilised for public recreation. They include Canbelego State Forest some 30 km to the east and a number of small, isolated reserves (eg Mount Nurri). Within the sub-regional setting there is a large tract of vegetated land on the north eastern outskirts of Cobar town, and the Newey Reservoir and the Old Reservoir which are identified tourist destinations, both used for passive and active recreation (walking, swimming, fishing etc).

Within the local setting, public and private recreational open space is found to the south of the town and includes the Cobar golf course, the show grounds and Ward Oval, and the Cobar District Rugby Club (Ailsa Fitzsimmons Memorial Oval). Fort Bourke Hill Lookout is an identified tourist attraction overlooking the New Cobar Complex Open cut and taking in views of Cobar town and beyond to the south-western, western and north-western regional landscape.

### 5.2.7 Night lighting

Significant sources of night lighting within the locality are associated with the urban setting. The main sources of lighting are street lighting, safety lighting associated with the industrial areas of Cobar, residential and commercial lighting and traffic, especially heavy vehicle traffic on the Barrier Highway and Kidman Way. Beyond the town, lighting sources are associated with rural residential properties, and to the south of the town in proximity to the project area, utilities (water treatment, water storage on Fort Bourke Hill and sewage treatment).

## 5.3 Cultural character

Cobar is well known for its mining history which extends from Aboriginal people mining pigments of ochre, kaolin and blue and green copper minerals at 'Kubbur', an Aboriginal water hole and quarry, through to early exploration and prospecting and the contemporary establishment of mines in the district.

### 5.3.1 Aboriginal heritage

The project area falls within the Aboriginal language group boundary of the Wongaibon people. The local Ngiyampaa group 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.

### 5.3.2 Non-Aboriginal heritage

Exploration of the area west of the Blue Mountains began after 1817. By 1830, squatters had begun to occupy large areas of the west. The Cobar Peneplain was promoted as productive sheep and cattle grazing country. Pastoralists ringbarked trees and cleared woodlands in order to create more grazing land. Prior to European settlement, forests in the bioregion were open woodlands with a grassy understory.

Mining commenced in Cobar in 1870, the Cobar Copper Mining Company was formed, and the lease of the Cobar Copper Mine was transferred to the company. In 1876, the South Cobar Mining Company and the Cobar Copper Mining Company merged to form the Great Cobar Copper Mine and by the 1880s, the Great Cobar Copper Mine had 14 smelters and a 64 m chimney stack, although little above ground evidence remains. High grade ore was transported to Bourke and then by steamer down the river to the Port Adelaide Smelting Works. The Great Cobar Mine closed in 1919 on cessation of War Office contracts. Associated mines including the Chesney mine were also closed.

Mining and mining related activities have played a significant role in shaping the cultural landscape of the region, including within the project area. Much of the resultant mining relicts and landscape changes are viewed by locals as being significant in their own right and are promoted as tourist attractions. The relics of the Great Cobar Mine and associated buildings and infrastructure lie at the eastern end of Cobar town and the former mine administration office building now houses the Great Cobar Heritage Centre.

The Cobar Heritage Centre (the former administrative building of the Great Cobar Mine), the Great Cobar slag dump associated with the former smelter, the Great Cobar open cut and the New Cobar Complex open cut are all considered tourist attractions and part of the cultural fabric of the town.

### 5.3.3 Heritage listings

There are two locally listed heritage sites (Great Cobar Heritage Centre and Towser's Huts) within the project area, and a further 19 items within 1 km. There are no other heritage listed sites in the project area, but there is one item listed on the Commonwealth Heritage List (The Cobar Post Office) and one on the State Heritage Register within 1 km of the project area. Full details of heritage listings are included in the Statement of Heritage Interest prepared for the Project by EMM Consulting (EMM 2020a).

#### i Great Cobar Heritage Centre

Built in 1910 as administration offices for the Great Cobar Copper Mine, the two-storey brick building reflects late Victorian and Federation architectural style. The building is situated on Nyngan Road (commonly known as the Barrier Highway) the main street of Cobar, overlooking the town. The building is listed on the Cobar LEP (2012) as the Cobar Pastoral and Mining Technology Museum 1910 (I8).

After the Great Cobar Mine closed down its operations in 1920, the building has had a number of uses. In the 1950s it became known as 'Bannister's Flats', rented out by Elizabeth 'Bessie' Bannister as accommodation for workers during construction of the Cornish Scottish Australian (CSA) Mine and has been used as a museum since 1968.

#### ii Towser's Huts

Towser's Huts (Cobar LEP I24) are a group of dry-stone walled buildings on the northern slope of Fort Bourke Hill off Kidman Way, to the north of the New Cobar open cut and within the project area. The site was originally a mining tenement (Portion 265) that was leased by Italian immigrant Antonio Tozzi from 1890s-1916 (SHI 1350078). The area adjacent to his lease was occupied by the Fort Bourke Mine of Cobar Gold Mines Ltd.

The huts consist of between one and six rooms, some of which have half-round chimneys. The smallest structure with rounded walls housed two pit-type toilets. Building material comprises stone sourced from the site. The huts are now roofless, and the walls stand between 0.5 m and 1.5 m high. Other features of the site are a well, drain and silt-tank.

## 5.4 Natural environment

### 5.4.1 Terrain, topography and slope

The natural ground surface at New Cobar Complex Project is predominantly flat, with some small hills (eg Fort Bourke Hill). The regional topography consists of a generally flat to undulating plateau that is broken by several ridgelines and scattered peaks. The mine is situated to the west of a 2 km north-northwest trending ridgeline that rises approximately 50 m above the surrounding countryside. The existing New Cobar Complex open cut lies immediately west of Fort Bourke Hill, the highest point along the ridgeline. Elevations locally range from the local high point at approximately 300 m Australian Height Datum (AHD) at Fort Burke Hill, to 235 m AHD at Cobar's recreational open space to the south of the town. Topography is shown in Figure 5.3.

### 5.4.2 Surface water

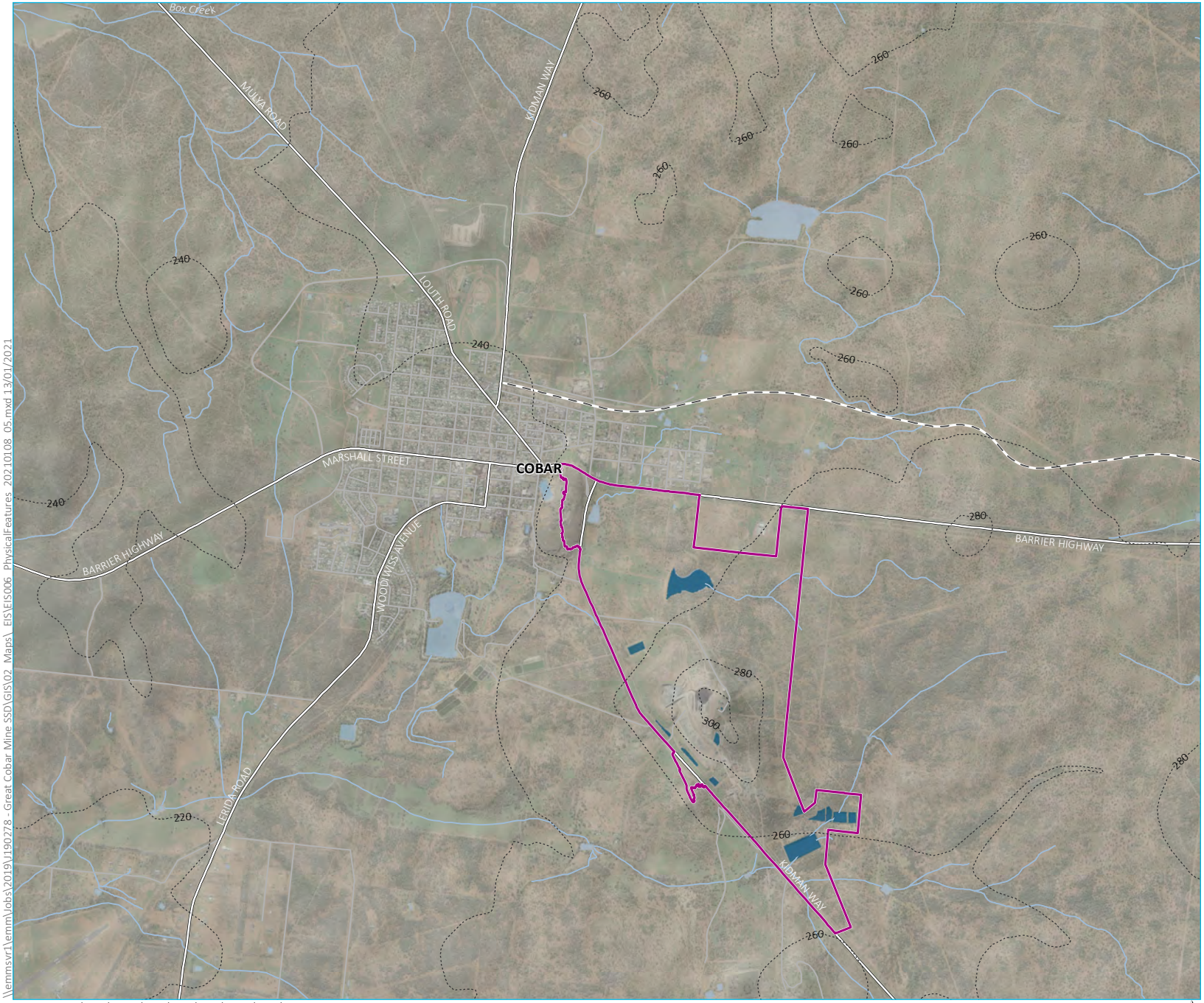
There are no permanent watercourses in the project area, and mapped drainage features are limited to two unnamed water courses that flow to the north and south of the existing New Cobar Complex surface infrastructure, and only flow during periods of heavy rain (RW Corkery & Co. 2020).

Historically constructed water features such as the Old Reservoir and the Newey Reservoir (to the north and south of Cobar respectively) are present close to the town.

### 5.4.3 Vegetation patterning

Regionally Vegetation remains largely intact on a regional scale outside of urban settlements industrial land use and low intensity grazing. Plant community type (PCT) mapping is presented as Figure 5.4. The sub-regional and local settings are dominated by significantly modified and disturbed landscapes associated with urban settlement pattern, historic mining and agricultural production (grazing).

While the vegetation in the region has been mapped by the NSW Government, this is done at a high level and often does not represent ground-truthed conditions. Much of the project area is mapped as comprising native vegetation, however ecological analysis has determined that much of this vegetation is cleared or non-native (RW Corkery & Co. 2000).




KEY

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

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

0 1 2 km

GDA 1994 MGA Zone 55

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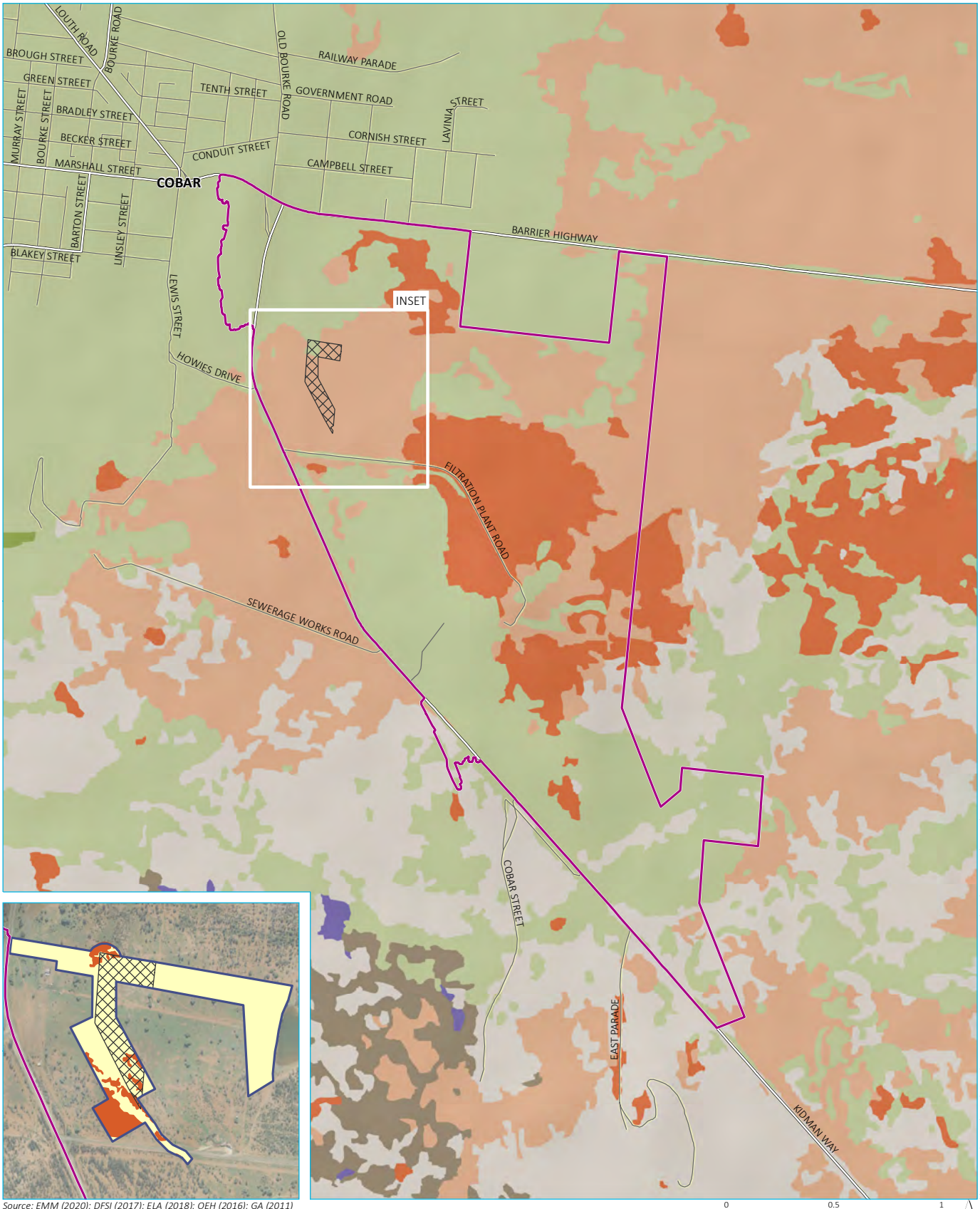
Topography and physical features

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 5.3

EMM
creating opportunities




*Source: EMM (2020); DFSI (2017); ELA (2018); OEH (2016); GA (2011)*

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## KEY

- Project area
- Area previously surveyed by EcoLogical Australia in 2018 (indicative)
- Proposed power line corridor
- Major road
- Minor road

Plant community type

- Not native vegetation/cleared
- PCT 72 | White Cypress Pine - Poplar Box woodland on footslopes and peneplains mainly in the Cobar Peneplain Bioregion
- PCT 77 | Yarran shrubland of the NSW central to northern slopes and plains
- PCT 103 | Poplar Box - Gum Coolabah - White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion
- PCT 105 | Poplar Box grassy woodland on flats mainly in the Cobar Peneplain Bioregion and Murray Darling Depression 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
- PCT 229 | Derived mixed shrubland on loamy-clay soils in the Cobar Peneplain Bioregion

## PCT mapping

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 5.4

EMM
creating opportunities

## 5.5 Visual catchment

Visibility analysis mapping is presented as Figure 5.5. Mapping shows the total visual catchment analysis, based on the visual model extent of both existing and approved (but not yet constructed) mine elements (left image), and proposed new surface infrastructure associated with the SSD (right image). Mapping shows the theoretical visibility in the absence of any surface screening of views by vegetation, buildings and other structures (DEM layer), and potential visibility based upon surface elements (surface screening of views by vegetation and buildings) (DSM layer). For this reason, greatest potential visibility relates to the DSM.

### 5.5.1 Significant potential visibility zone

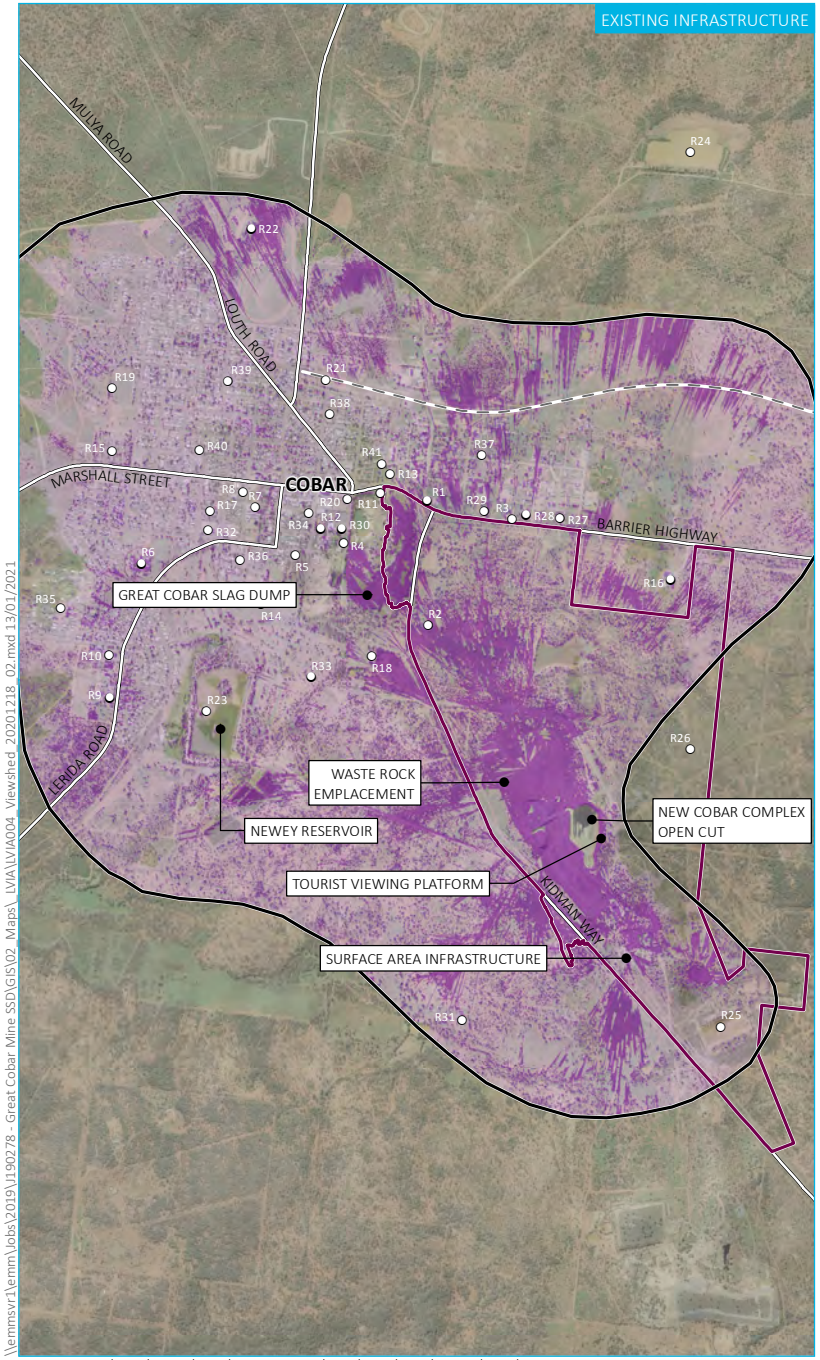
The total visual catchment does not take into consideration the mitigating effects of distance of a receptor from a visual element. In contrast the SPV zone consists of the most significant parts of the total visual catchment from which the various project elements may be seen.

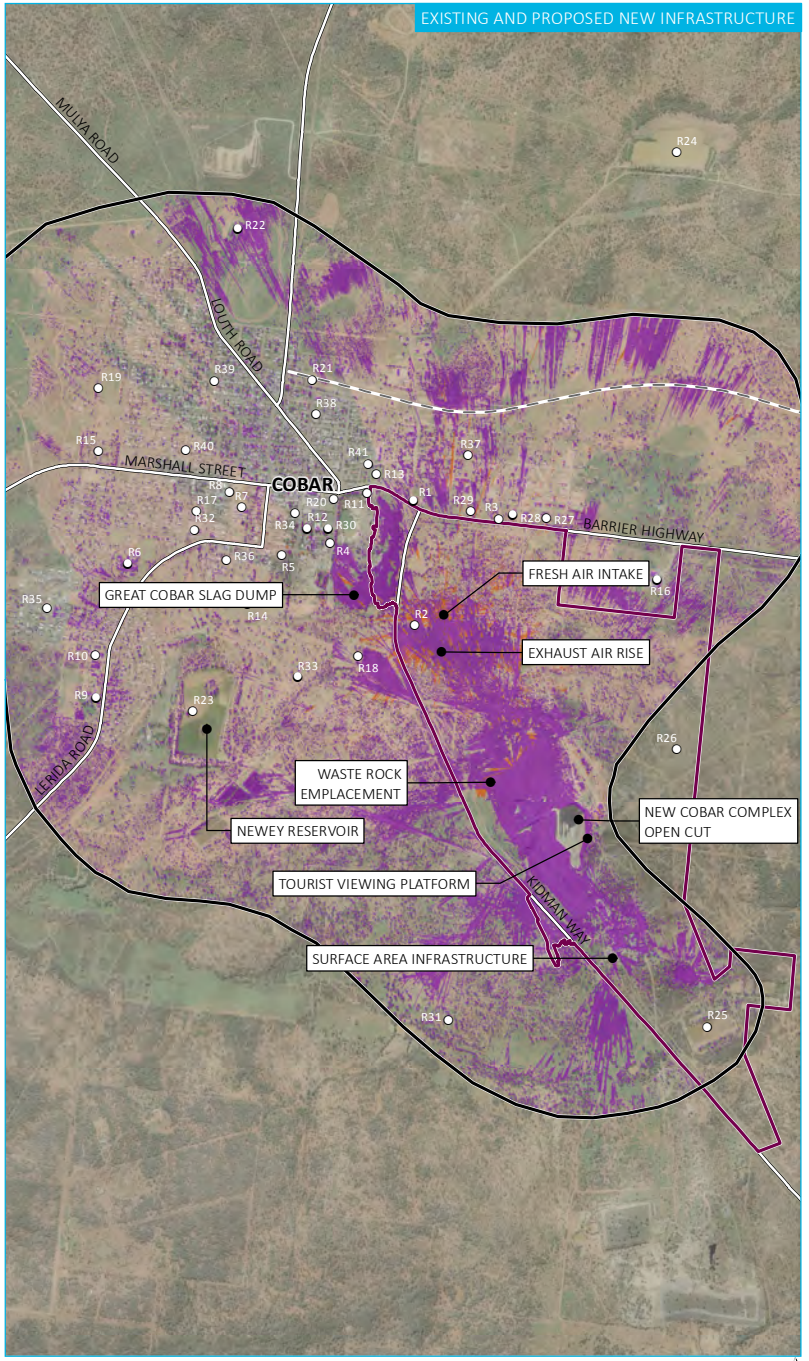
The SPV zone is the area containing the most critical and significant locations with views to the Project - not all locations within the SPV zone may have views of project elements, and not all views of project elements are within this zone. The SPV zone takes into account terrain, vegetation, distance and nature (scale and massing of structure) and spatial arrangement of the Project's elements.

The zone is illustrated on Figure 5.5. It is largely contained by low rises and vegetation cover.

The visibility baseline of the SPV has been assessed using LiDAR data from June 2020. This takes into account all existing built forms (including the WRE) in the project area. Modelling of the approved fresh air intake and the exhaust air rise (see Figure 1.3) was also undertaken however, this has been discussed herein as 'existing' as it will be constructed before any approved development for the project. Visual modelling of new (proposed) surface elements at the fresh air intake was performed to determine visibility of those elements and to assess cumulative effects.

New surface infrastructure associated with the project will be located on flat land adjacent to the site of the former Cornish Town between Kidman Way and Spain's Dam. This is the site of a historical non gazetted (informal) settlement which was removed by CSC in the early 1960s. Vegetation in this terrain is limited, though there is a sparse scattering of native trees and shrubs with a predominantly weedy understorey which screens or filters near views. Visibility is greatest in the local setting, less than 1 km from the proposed surface infrastructure. The longest and most interrupted views of the new infrastructure are from mine owned land and public roads (Kidman Way and Filtration Plant Road). Views from Cobar are screened to a great extent by the historic slag dump, and views of the infrastructure to the south east by the existing WRE. Views of the infrastructure are possible from parts of Cobar; however, these are within the industrial areas and occur within the sub-regional setting (1-5km).




KEY

- Project area
- Significant potential view zone
- Sensitive receiver
- Rail line
- Major road

Existing infrastructure

- Visible project infrastructure - accounting for shielding features in the landscape
- Visible project infrastructure - bare earth surface

Proposed new infrastructure (only)

- Visible proposed project infrastructure - accounting for shielding features in the landscape
- Visible proposed project infrastructure - bare earth surface

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

0 1 2 km

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# Visibility analysis

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 5.5

EMM creating opportunities

## 5.6 Landscape character

The landscape features of the locality are determined by physical, biological and social elements[6]. In combination they create distinct, recognisable and consistent patterns of elements that make one landscape different from another and often, conveys a distinctive 'sense of place'.

This relative visual consistency or uniformity can be defined as Landscape Character Units (LCUs). LCUs do not imply a level of value or importance. The LCUs are experienced by viewing them from locations such as residences and public locations or traversing through the landscape, such as along roads.

LCUs present within the SPV zone of the Project are spatially represented in Figure 5.6. They are:

1. rural production – flat to undulating lands with low rises used for rural production, with or without native vegetation;

2. urban areas – flat to low undulating land containing residential and commercial activities containing Cobar;

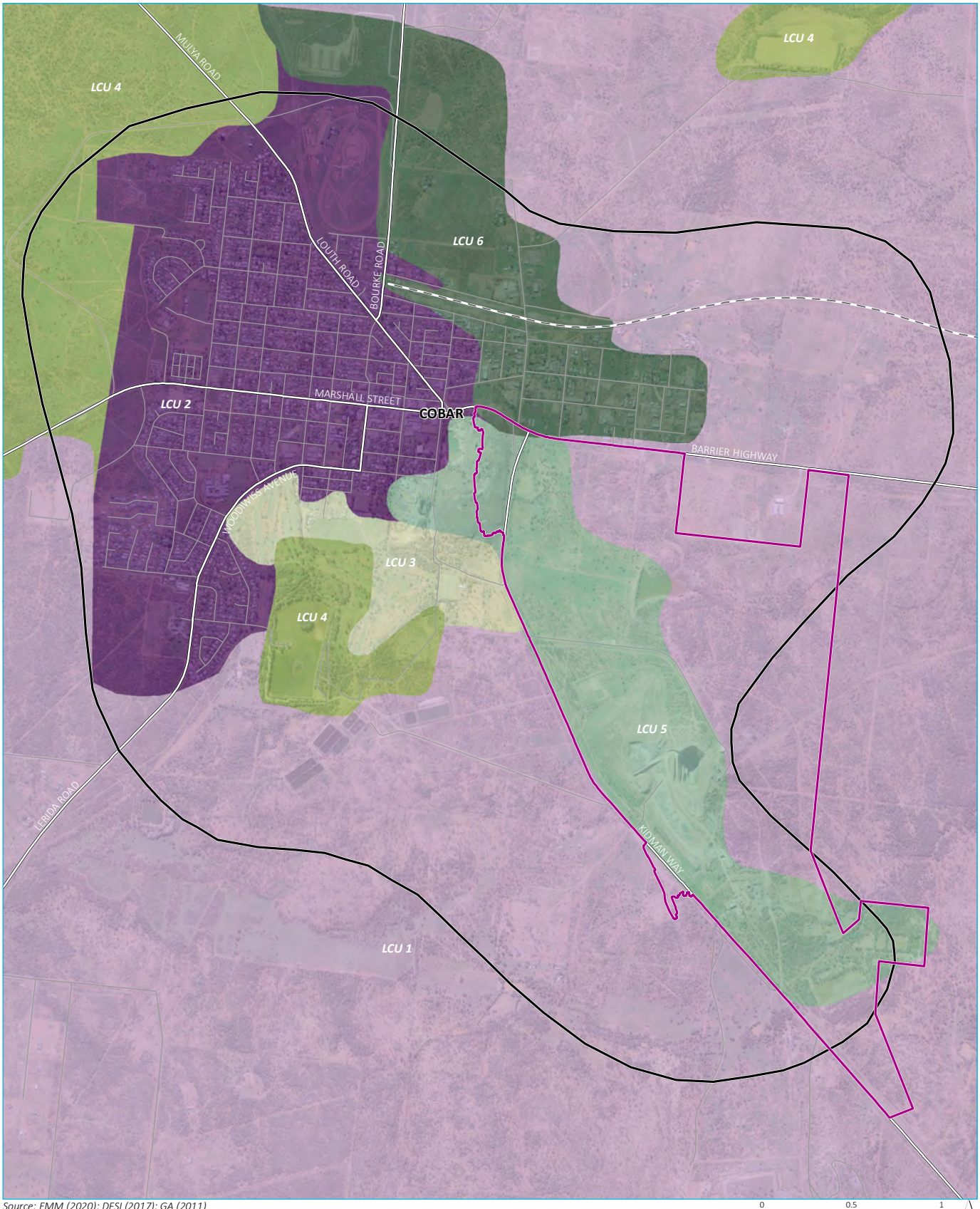
3. open space recreation – flat to gently undulating land containing passive and active recreation opportunities;

4. open space vegetated – areas vegetated with native vegetation used for environmental management and recreation in a natural setting;

5. mining – areas of historical and current mining activity; and

6. industrial - flat to low undulating land characterised by visually significant industrial elements.

[6] physical elements – include terrain, topography and waterways; biological elements include vegetation and vegetation cover; social elements include land use and cultural significance.




Source: EMM (2020); DFSI (2017); GA (2011)

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GDA 1994 MGA Zone 55

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KEY

- Project area
- Rail line
- Major road
- Minor road
- Significant potential view zone

Landscape character unit

- LCU 1 | Rural land grazing
- LCU 2 | Urban area
- LCU 3 | Open space recreation
- LCU 4 | Open space vegetated
- LCU 5 | Mining
- LCU 6 | Industrial



Landscape character units

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 5.6

EMM creating opportunities

### 5.6.1 Rural production

The rural production LCU (Plate 5.1) occurs on with gradients which are flat to gently rising (1-6 degrees (º)). There are some steeper gradients (~17.5°) associated with low hills. The rural production LCU generally corresponds with the RU1 zoning of the Cobar LEP (2012). With distance from Cobar (sub-regional setting and especially the regional setting) the extent of vegetation disturbance diminishes and cleared land is replaced by a mosaic of cleared and vegetated patches, and finally, native woodlands and tall shrublands. Topographically, elevation ranges from 235 m AHD in the vicinity of broad flattened overland flow paths to the south of Cobar to 260 m AHD. Localised low hills extend above 260 m AHD. This LCU is predominantly the most extensive LCU and contrasts significantly with the mining, urban and industrial LCUs.

Kidman Way (running north – south), and the Barrier Highway and the Cobar Railway Line (running east -west) form strong linear elements. Views within this LCU are sometimes framed by the line of low hills to the east of the New Cobar Complex.

**Plate 5.1 Rural production**

### 5.6.2 Urban areas

The urban area LCU (see Plate 5.2 and Plate 5.3) contains the built urban form of the town of Cobar and includes its commercial centre (main street – Marshall Street (Barrier Highway)), administrative buildings, general, low density and large lot residential dwellings, schools, hospitals and aged care facilities. Cobar is the administrative centre of Cobar local government area and a significant service centre for far west of NSW. The town retains much of its colonial 19th-century architecture and character. The urban area LCU is adjoined to the east by the industrial LCU and the south by the open space and recreation LCU.


**Plate 5.2 Commercial precinct**

**Plate 5.3 Residential precinct**

### 5.6.3 Open space recreation

The open space recreation LCU flat occupies flat (<2.5°) less elevated land, 230 m – 235 m AHD. It occurs on broad flat land to the south of Cobar and occasionally receives stormwater flows from the eastern parts of Cobar including the industrial and urban LCUs. Land uses within the LCU include playing fields, showgrounds and a golf course. Vegetation occurs as copses or linear strips adjoining the open playing fields. This vegetation is contiguous with native vegetation associate with the vegetated open space LCU to the south. Plate 5.4 and Plate 5.5 show this LCU.

Plate 5.4 Open space recreation LCU

Plate 5.5 Open space recreation LCU

### 5.6.4 Open space vegetated

This LCU (Plate 5.6 - Plate 5.8) adjoins to the south of the open space recreation LCU. Whereas the open space recreation LCU caters for active sporting activities, the vegetated open space LCU reserves for passive recreation. It consisted of naturally vegetated public recreational land which surrounds the Newey Reservoir and the Cobar Sewage Treatment Plant. The Newey Reservoir contains areas for quiet contemplation, picnicking, bird watching and bushwalking. Views outwards from the reserve are generally screened, except where cleared land adjoins, and then they are mostly filtered static views. The open space vegetated LCU occupies flat (<2.5°) less elevated land, 230 m – 235 m AHD. It occurs on a broad flattened overland flow paths to the south of Cobar and receives overland flows which flow into the Newey Reservoir.

Other significant areas of vegetated open space within the sub-regional setting include:

- the Old Reservoir which is the former town water supply (3 km to the north west of the project area). It occurs on flat to gently rising natural land (1-7°), with elevations of 250-255 m AHD and is a CSC reserve and recognised recreation area for walking and environmental enjoyment; and

- environmental management zoned land (Plate 5.8) to the west of Morelli Park (4 km to the north west of the project area). This consists of approximately 500 ha of It occurs on flat to gently rising natural land (1-6°), with elevations of 235-255 m AHD.


**Plate 5.6** **Open space recreation LCU – Newey Reservoir** *(Source: Google street view)*


**Plate 5.7** **Open space recreation LCU – Old Reservoir** *(Source: Google street view)*


**Plate 5.8** **Open space recreation LCU – Environmental management land** *(Source: Google street view)*

### 5.6.5 Mining

The mining LCU contains historic, past and contemporary mining activities. The mining LCU contains mine elements which have altered the landscape and includes historical and current mining areas. It occurs on flat to gently rising natural land (1-6°), however steeper gradients (~17.5°) do occur in isolated areas with land disturbance and earthworks for stockpiles (waste rock emplacement), bunds, roads, tracks, and pits associated with mining. Mining areas have varying degrees of woody vegetation cover which screens / filters some views. The state heritage listed property Towser's Huts occurs in the LCU nearby to Fort Bourke Hill.

The defining visual character of this LCU are the distinctive, large scale modified landforms and built industrial forms. Plate 5.9-Plate 5.11 are representative of the LCU.

**Plate 5.9 Historic Great Cobar slag dump**


**Plate 5.10** **New Cobar Complex mine industrial area** *(Source: Google street view)*

**Plate 5.11** **New Cobar Complex open cut showing the portal to underground workings (base of the pit)**

### 5.6.6 Industrial

The industrial LCU occurs on flat (<2.5°) land between 240 and 245 m AHD. The industrial area is predominantly situated to the north of Barrier Highway and the east of Old Bourke Road / Kidman Way (Plate 5.12). Large metal clad sheds ~5 m high with a varying floor area, and fenced chain wire compounds with stored equipment / material yards are a key defining feature of the LCU. Although the industrial LCU adds visual diversity to the landscape, the elements are not well screened, and the area is visually prominent when approaching Cobar from the east.

**Plate 5.12 Industrial LCU**

# 6 Visual elements of the project

## 6.1 Preliminary

This Section describes the various elements of the Project that may be visible in the primary visual catchment. The Project is anticipated to have an operational phase of 12 years and a rehabilitation phase of around two years.

## 6.2 Physical elements

### 6.2.1 Mine surface infrastructure area - proposed

The layout of existing and proposed elements within the project area are outlined in Figure 1.3. Additional surface infrastructure required to service the New Cobar Complex Project will be constructed to the north of Filtration Plant Road on disturbed land owned by PGM, which was the site of Cornish Town, an informal residential area which was removed by CSC in the early 1960s. Elements that will be constructed for the Project which will become new visual elements within the landscape are:

- emergency egress winder frame and winder house at the fresh air inlet established by the approved Great Cobar exploration decline. Approximate dimensions for each are;
    - Egress winder – 14 m high steel 'A' framed winder with a 7 m x 12 m footprint; and
    - Winder house – 3 m high, aluminium sheet clad shed with a footprint of 7 m x 7 m;
- pad-mounted locked steel cabinet transformer and sub-station at the fresh air inlet. Dimensions are approximately – 2 m high with a footprint of 2 m x 3 m;
- power line running from an existing 22 kV power line westward along the clearing of an existing above ground water pipeline to the transformant / substation at the fresh air inlet. Posts will be spaced nominally 40 m apart and be 12 m height; and
- reduced voltage power line running from the substation southwards to power the underground ventilation fan at the exhaust air rise. Posts will be spaced nominally 40 m apart and be 12 m height.

On account of existing surface disturbance at this location, no native woody vegetation will be removed for the power line. Therefore, there will be minimal visual effects arising as a result of vegetation removal. The vent fan will be installed below ground and will not have a visual effect.

### 6.2.2 Mine surface infrastructure area - approved

In 2020 PGM received approval to construct an exploration decline from existing underground working at the New Cobar Complex to the Great Cobar deposit. Approval was also granted for the construction of ventilation shafts (fresh air intake and exhaust air rise). These features have not been constructed to date.

The surface disturbance footprint is 0.07 ha for the fresh air intake and 0.47 ha for the exhaust air rise. Presently both features are undergoing detailed design and the surface apertures of both will be micro-sited within the approved disturbance areas. Currently, PGM has approval to construct a south-east facing box cut at the exhaust air rise. Both structures will be surrounded by a security fence. All ventilation shafts will be made safe as per industry standards (eg concrete collars and grates will be constructed over the intake and exhaust openings).

### 6.2.3 Mine surface infrastructure area – existing

The administrative, mine industrial and environmental management areas at the New Cobar Complex (surface infrastructure area (SIA)) have been well established since mining commenced at the New Cobar Complex open cut in 2000. Consequently, they are well established elements within the visual landscape.

The surface arrangement of aboveground infrastructure is shown in Figure 1.3 and includes:

- WRE, ~25 ha in area, primarily storing waste rock from the (now ceased) New Cobar Complex open cut and the current operations underground at the New Cobar Complex. It is currently used to store approximately 2.5M $m^3$ of waste rock. The approved as constructed WRE landform is a traditional bench and batter design and much of the WRE has been rehabilitated and revegetated. The present extent of rock held at the WRE will decrease as a result of waste rock reuse at the Peak Complex for construction projects (eg future TSF lifts) and reuse at New Cobar Complex underground and surface (eg backfill). It is estimated that approximately 1.5M $m^3$ will be remaining at the WRE at end of mining. The existing form of the constructed and rehabilitated (eastern, northern and western batters) will be retained;
- ROM pad (5 ha approx.) where ore from underground mining is stockpiled prior to transportation to the Peak Complex for processing;
- workshops and laydown yards;
- explosives magazine;
- water management infrastructure;
- dust suppression and firefighting systems;
- services including compressed air, power and water;
- offices, car parking, ablutions facilities, storage for spare parts;
- internal access roads;
- ventilation shafts;
- emergency egress winders; and
- other minor buildings, plant and equipment associated with, or ancillary to, the ore handling operation.

The main Project office area includes:

- administration offices, bathhouse and carpark;
- control rooms;
- workshop facilities;
- warehouse/store and laydown area;
- fuel and lubrication storage and refuelling facilities;
- washdown facilities;
- security fencing;
- internal access roads;
- sewage treatment facility;

- water supply, storage and management infrastructure;
- electricity supply and communications infrastructure;
- air compressor and back-up generators;
- firefighting systems;
- emergency response facilities;
- minor plant, equipment and facilities required to service the mine; and
- environmental management and monitoring equipment.

## 6.3 Post mining

Details of post-mining activities including rehabilitation and land use are identified in the Rehabilitation and Landscape Management Strategy (EMM 2020b). The effects of the Project infrastructure will be experienced until 2035 when mining will cease. Decommissioning will also result in the removal of all surface infrastructure, the landform to be graded and recontoured and soil stripped from mine areas during construction and stored in the project area for the life of the Project before reused during closure activities.

The project area is divided into a series of primary closure domains as described in the approved MOP, with each domain having similar bio-physical characteristics.

### 6.3.1 Revegetation

In accordance with commitments made in the MOP, PGM have been progressively rehabilitating and revegetating the batter faces of the WRE. As the WRE will remain in its current configuration post-mining, this process will continue.

## 6.4 Surface infrastructure

### 6.4.1 Proposed

#### i Physical character

The area of the proposed new surface infrastructure occurs adjacent to an area formerly occupied by Cornish Town cleared in the 1960s. The area around the town was heavily disturbed during its lifetime with much of the woody vegetation removed for firwood to fuel the nearby Great Cobar Mine copper smelter and to support underground workings. Vegetation was again disturbed by the removal of the town. Contemporary vegetation includes weedy tree species, some native species regrowth and a sparse occasionally weedy understorey. The proposed infrastructure will be installed in addition to the box cut, exhaust air rise and fresh air intake developed as part of the establishment of the exploration decline. These elements will take on a mining landscape character.

#### ii Visual effect

The proposed new elements, especially the emergency egress winder, which is the tallest element, will be visible from the public domains in the local and sub-regional settings; Kidman Way, Filtration Plant Road, Fort Bourke Hill, the Barrier Highway and local streets of the Cobar urban and industrial area. Therefore, in relation to the mining and rural landscape character, historic mining relicts, exiting mining operations, rural sheds and outbuildings and the industrial building on the fringes of Cobar (which the project area adjoins), the contrast is low (there is extensive

borrowing of elements), and visual integration is high. As there is negligible/low visual effect overall, the magnitude of change is low.

The new elements will be viewed against the existing WRE and SIA and in the context of the historical workings, infrastructure relicts and the slag dump of the former Great Cobar Mine.

# 7 Visual analysis

## 7.1 Overview

This Section evaluates visibility of the Project to external viewing locations within the landscape.

Visual sensitivity is determined by the visibility of one or more mine elements within the SPV zone. Sensitivity is a function of visibility, land use and landscape character (defined by the LCUs) from where mine elements will be viewed, and the distance of viewing opportunities from the mine elements.

Section 6.2 identifies the parts of the SPV zone from which the Project may be seen (visibility). Section 6.3 identifies the visual sensitivity of receptors as a function of their distance from visible structures. Section 6.4 characterises the types of viewing opportunities in relation to land use and ownership (sensitive receptors).

## 7.2 Visibility within the SPV

### 7.2.1 Visibility of mine elements in the landscape

In the context of the SPV zone, the following elements have been identified as having moderate to high visibility:

- proposed emergency egress winder – this is the tallest of the prosed elements. Outside of the project area, it is most prominent from public vantage points in the local setting (<1 km). Although some views from the sub-regional setting are possible, the low height and light mass of the structure (the background will be visible through gaps in the structure), combined with its position in the landscape (lowest point) and surrounding vegetation mean that, the structure is either screened by foreground vegetation or backgrounded such that visibility is diminished. Treatments (eg paint colour to match the historic character of PGM), will further dictate the degree to which effect is mitigated and the structure integrates. This structure is temporary in nature and will be removed at the end of mining (2035). Integration is high, and there is a moderate borrowing of elements; the visual effect is low;

- WRE – this is an existing, permanent modification to the landscape and is prominent in both the local and sub-regional settings where is appears as a flattened plateau. Integration and contrast are moderate; the visual effect is moderate; and

- the mine SIA – this includes the administration, workshop and mine industrial areas. It has visibility mainly in the local setting, by vehicles using Kidman Way (passing adjacent to the entries to the complex) and from Fort Bourke Hill lookout. The buildings are temporary in nature and will be removed at the end of mine life and the area recontoured to MOP specifications. Integration is high, and there is a moderate borrowing of elements; the visual effect is low.

### 7.2.2 Receptors

The range of sensitive receptor types (as outlined in the sensitivity determinations of Table 3.2) is identified and discussed below, firstly in relation to visibility and then, if visible, the sensitivity of the view. Sensitive receptors include publicly accessible sites / lands; national parks, state forests and environmental reserves, roads, public vantage points and scenic outlooks, heritage sites, recreation reserves, and private lands; urban, rural residential and rural lands. Tourism oriented facilities and areas are also sensitive receptors and sites may be in private or public ownership.

Visibility of proposed and existing project elements are identified in Figure 5.6.

### i National Parks, State Forests and reserves

There are no National Parks, State Forests or conservation reserves in proximity to the project area (SPV zone).

### ii Commonwealth and state heritage

One Commonwealth and one State listed heritage item are located within the local setting of the project area. These are the Cobar Railway Station and Yard (State listing 01114) and the Cobar Post Office (Commonwealth Heritage List 106178). Both however, are greater than 1 km from proposed surface disturbance associated with the emergency egress winder to be constructed at the fresh air intake.

#### a Proposed

GIS visibility analysis shows that views of the emergency egress winder will not be possible from heritage locations.

#### b Existing

GIS visibility analysis shows that views of the WRE / SIA are not possible from heritage locations on account of the screening effect of the historic slag dump.

### iii Rural residential

One privately owned rural residential property is located within 1 km pf the project area and within the secondary sensitivity zone being 2.4 km (approx.) of the egress winder.

#### a Proposed

GIS visibility analysis shows that views of the emergency egress winder will not be possible from rural residential properties.

#### b Existing

GIS visibility analysis shows that glimpsed filtered views (between intervening vegetation) of the WRE are possible from the access drive and yards (R31 Dellavale residence) but not from the residential dwelling on account of the screening effect of vegetation.

### iv Local heritage

There are 21 Local heritage places (Table 5.2) listed within the SPV Zone. Two are within local setting (Towser's Huts and the Great Cobar Heritage Centre) and 19 are within the sub-regional setting. There is no public access to Towser's Huts.

#### a Proposed

The proposed emergency egress winder frame is not visible from either Towser's Huts or the Cobar Pastoral and Mining Technology Museum 1910 owing to topographic constraints. There may be some visibility of the winder frame from other heritage items, however owing to their presence within the secondary sensitivity zone, visual sensitivity is low.

#### b Existing

The WRE is the most prominent mine related feature within the New Cobar Complex. It is visible from various parts of Cobar, and some of the local heritage places. However, owing to their presence within the secondary sensitivity zone, visual sensitivity is low.

The administration buildings and the mine industrial buildings of the SIA have varying degrees of visibility from the upper levels however visitors to the surrounds and the ground floor of the building will not have visibility. The WRE would be viewed from the building in the context of a foreground image dominated by artifacts and landscape shaped by historic mining.

Owing to distance, local heritage places are within the sub-regional setting and any visibility and as they are in the secondary sensitivity zone, visual sensitivity is low.

### v Public vantage points and scenic lookouts

Fort Bourke Hill is a significant tourist attraction for Cobar. It is situated at 300 m AHD on a local topographic high point overlooking the New Cobar Complex open cut, which is the stated primary attraction. The viewshed from look-out also affords views over much of Cobar town and the Cobar peneplain country to the north-west, we and south-west. Public vantage points would normally have a high visual sensitivity as changes to the view could result of a significant effect, however, given that the outlook takes in extensive views of the active mine, any mine related development within the mining area or adjacent to it would result in a low visual sensitivity. Members of the public who visit Fort Bourke Hill will likely do so in order to view the existing open cut and mining operations.

#### a Proposed

Although the lookout is within the local setting, the areas of surface disturbance are within the secondary sensitivity zone (~1.5 km). Potential views of the emergency egress winder are afforded however owing to the elevation of the viewing platform, the wider would be difficult to discern at this distance owing to the backgrounding of vegetation.

#### b Existing

The locality affords views to the majority of surface infrastructure of the New Cobar Complex and affords a unique elevated vantage point to view the operations of a functioning metalliferous mine. The New Cobar Complex open cut, WRE and surface infrastructure areas are highly visible being <1 km from the viewpoint.

### vi Urban areas

The urban parts of Cobar include residential, commercial, services, aged care, hospitals, schools and parks within the built fabric of the town.

#### a Proposed

Although parts of the town are within the local setting of the project area, the majority of the town is within the secondary sensitivity zone of the emergency egress winder. Potential views of the winder are limited within the primary sensitivity zone (<1 km) and the secondary sensitivity zone (>1 km -5 km) owing to the screening effect of vegetation and other topographic features (eg Great Cobar slag dump).

#### b Existing

The WRE is the most prominent mine related feature within the New Cobar Complex. It is visible from various parts of Cobar. However, owing to their presence within the secondary sensitivity zone, visual sensitivity is low.

The administration buildings and the mine industrial buildings of the SIA have varying degrees of visibility from urban areas. Owing to distance, local heritage places are within the sub-regional setting and any visibility and as they are in the secondary sensitivity zone, visual sensitivity is low.

### vii Recreation area

Recreation areas within the local setting (<1 km) of the project area include Ailsa Fitzsimmons Memorial Oval (rugby club), Ward Oval, Cobar Golf Course, Newey Reserve and Drummond Park Youth and Squash Centre. Reserves in the sub-regional setting (>1 km-5km) include the Newey Reservoir, the Old Reservoir and a number of Council parks.

#### a Proposed

With respect to the proposed surface infrastructure (winder frame, winder house and power line) reserves within 1 km of the infrastructure include parts of the golf course, the rugby club and Ward Oval. GIS visibility analysis shows that views of the emergency egress winder will not be possible on account of screening by the Great Cobar slag dump (Ward Oval) and vegetation. GIS analysis shows the views from reserves in the sub-regional setting will not be possible on account of the screening effects of vegetation and other landform features (slag dump).

#### b Existing

The WRE is the most prominent mine related feature within the New Cobar Complex. It is visible from various parts of Cobar and some of the recreation areas. As the WRE is >1 km-5 km (secondary sensitivity zone) visual sensitivity is low.

The administration buildings and the mine industrial buildings of the SIA have varying degrees of visibility. However, owing to distance (~2.5 km), recreation areas are within the sub-regional setting and any visibility and as they are in the secondary sensitivity zone, visual sensitivity is low.

### viii Roads

A number of highways (Kidman Way and Barrier Highway) and local roads (eg Filtration Plant Road, Sewerage Road and Howie Drive) are present within the local setting of the project area.

#### a Proposed

All roads identified above have potential views of the proposed winder frame, winder house and power line. Although not a designated tourist route the Barrier Highway are used by tourist traffic. The route from Barrier Highway, south along Kidman Way and east along Filtration Plant Road, is a designated tourist route to Fort Bourke Hill lookout). These have a moderate visual sensitivity. Filtered glimpses of the winder frame rising above the low vegetation would be possible from Kidman Way and Filtration Plant Road. Glimpsed views from local roads would have a low sensitivity.

#### b Existing

The WRE being the most prominent mine related feature within the New Cobar Complex is visible within the local setting and the sub-regional setting. It is a prominent visible feature from the Barrier Highway, Kidman Way and Filtration Plant Road.

Owing to the screening effects of vegetation and surface features, the administration buildings and the mine industrial buildings of the SIA would afford glimpsed, filtered views to motorists using Kidman Way as they travel alongside the buildings.

### ix Industrial

The industrial parts of Cobar lie within 1 km to the north of the project area.

#### a Proposed

Much of the industrial area is within 1 km of the proposed surface infrastructure (winder frame, winder house and power line). Glimpses views of the winder frame are possible however generally the frame where visible is backgrounded by vegetation owing to the slightly elevated viewing position relative to the wider landform. Visual sensitivity for the primary sensitivity zone is low.

#### b Existing

The WRE, approximately 1.7 km from the industrial area is prominently visible from within industrial areas where it is viewed rising above the surrounding landform and vegetation. Visual sensitivity for the secondary sensitivity zone (>1km-5 km) is low.

Owing to the screening effects of vegetation and surface features (WRE), the administration buildings and the mine industrial buildings of the SIA are not visible.

#### x Rural land and grazing

Rural land constitutes the greatest land use by area within surrounding the project area.

#### a Proposed

Rural land is located within 1 km of the proposed surface infrastructure (winder frame, winder house and power line). Glimpsed views of the winder frame are possible however generally the frame is screened vegetation in all but elevated localities. Visual sensitivity for the primary, secondary and tertiary sensitivity zones are all low.

#### b Existing

Rural land is located within 1 km of the WRE. Glimpsed views of the WRE are possible however generally the frame is screened vegetation in all but elevated localities. Visual sensitivity for the primary, secondary and tertiary sensitivity zones are all low.

Rural land is located within 1 km of the administration buildings and the mine industrial buildings of the SIA. Glimpsed views of the SIA are possible however generally the frame is screened vegetation in all but elevated localities. Visual sensitivity for the primary, secondary and tertiary sensitivity zones are all low.

### 7.2.3 Summary

Within the SPV zone, a moderate visual sensitivity is assigned to the following receptors:

- urban areas of Cobar town within 1 km of the egress winder frame;
- Fort Bourke Hill Lookout with views over the New Cobar Complex WRE and SIA;
- the Kidman Way, Filtration Plant Road tourist route with views of the egress winder frame, the WRE and the SIA.

All other receptors / land uses within the various view zones have low sensitivity.

## 7.3 Visual effect

The analysis of visual effects has been conducted by selecting several representative viewing locations (viewpoints) principally in the primary visual sensitivity zone. Viewpoints were selected:

- on the basis of being publicly accessible; and

- and to select appropriate photomontage point to address the SEARs.

The viewpoints and their specific characteristics are described in Table 7.1 and represented in Figure 7.1.

A subset of these viewpoints, considered to be the key viewpoints within the SPV zone, have been further assessed through the development of photomontages and cross-section analysis to represent the changes to the landform arising from the Project (these key viewpoints are shown in bold in Table 7.1). Photographic exposure details for each viewpoint are presented as Appendix A.

### Table 7.1 SPV zone viewpoints analysed

| Viewshed | LCU** | Reason for assessment |
|---|---|---|
| Viewpoint 1 | 6 | • This viewpoint takes in the northern batter of the New Cobar Complex WRE located to the south of Filtration Plant Road. This is representative of views the mining area (local setting <1 km), for motorists travelling to and from Fort Bourke Hill. It is the closest point motorists could safely stop to view the WRE. Views are static when stopped, however most motorists would experience this transient view at the posted speed of 80 km per hour (km/hr).<br>• It is representative of Filtration Plant Road as identified by Figure 7.1 and Section 7.3 viii. b.<br>• Moderate visual effect, moderate visual sensitivity<br>• See Plate 7.1.<br>• Co-ordinates – (easting, northing): 390862, 6513292 |
| **Viewpoint 2*** | 1/6 | • This viewpoint takes in the locality of the exhaust air rise and fresh air intake and the proposed emergency egress winder frame, winder house and power line located to the north of Filtration Plant Road. This is representative of views the rural lands setting (part of the New Cobar Complex Project mine lease area (local setting <1 km), for motorists travelling to and from Fort Bourke Hill. It is the closest point motorists could safely stop to view the WRE. Views are static when stopped, however most motorists would experience this transient view at the posted speed of 80 km/hr.<br>• It is representative of Filtration Plant Road as identified by Figure 7.1 and Section 7.3 viii. a.<br>• Moderate visual effect, moderate visual sensitivity<br>• See Plate 7.2.<br>• Co-ordinates – (easting, northing): 390817, 6513331 |
| Viewpoint 3 | 4,5,6 | • View east from intersection of Holman Avenue and Kidman Way to the location of the exhaust air rise. The air rise infrastructure would not be visible; however, the power poles would be partially visible rising above the surrounding vegetation. Holman Avenue is used to access the Cobar Rugby Club and Kidman way at this point is used to access Fort Bourke Hill, and is used for local mine traffic, rural traffic, utilities traffic (filtration plant and sewage treatment plant) and long-distance trucks travelling north/south. Views are static when stopped at the intersection, however most motorists would experience this transient view at the posted speed of 100 km/hr whilst travelling along Kidman Way.<br>• It is representative of Kidman Way as identified by Figure 7.1 and Section 7.3 viii. b, and recreation reserves Section 6.3.1 vii.<br>• Moderate visual effect, moderate visual sensitivity (recreation areas and Kidman Way)<br>• See Plate 7.3.<br>• Co-ordinates – (easting, northing): 390242, 6513649 |

## Table 7.1 SPV zone viewpoints analysed

| Viewshed | LCU** | Reason for assessment |
|---|---|---|
| **Viewpoint 4*** | 1/6 | • This viewpoint takes in the locality of the proposed emergency egress winder frame, winder house and power line, situated to the east of Kidman Way. The viewpoint is situated at the junction of the access drive to the house owned by PGM but leased as private residence. This lease will be terminated once the exploration shaft (and rises) entered development. This is representative of views the rural lands setting (part of the New Cobar Complex mine lease area local setting <1 km).<br>Kidman way at this point is used to access Fort Bourke Hill, to access the Rugby Club, Council infrastructure (filtration plant and sewage treatment plant), for local mine traffic, local traffic associated with rural properties and long-distance trucks travelling north/south. Views are static when stopped, however most motorists would experience this transient view at the posted speed of 100 km/hr.<br>• It is representative of Kidman Way and Rural / Mining lands as identified by Figure 7.1 and Section 7.3.2 viii. a. and 7.3.2 x. a.<br>• Moderate visual effect, moderate visual sensitivity<br>• See Plate 7.4.<br>• Co-ordinates – (easting, northing): 390261, 6513855 |
| Viewpoint 5 | 6 | • This viewpoint is from the lookout at Fort Bourke Hill (elevation 300 m AHD). It overlooks the New Cobar Complex open cut and the dominant features of the local setting (<1 km) are the open cut and the WRE. Mid-ground views of Cobar (sub-regional setting >1km – 5km) are possible with the vantage point affording extensive views of the patterning of development. Distant views to horizon from the north through the west to the south are possible. It is possible to see the locality of the emergency egress winder, however owing to distance (~1.5 km), scale of the structure, height and backgrounding by vegetation and the urban fabric of the town, it would not be a prominent or distinctive part of the view.<br>• It identified by Figure 7.1 and is representative of Section 7.3 v. a and b.<br>• Moderate visual effect, visual sensitivity adjusted to low on account of proximity of the proposed development in relation to existing mining operation which foregrounds the view (the open cut void is the nominated tourist attraction).<br>• See Plate 7.5.<br>Co-ordinates – (easting, northing): 391398, 6512527 |
| Viewpoint 6 | 3/7 | • This viewpoint is representative of view towards WRE from vacant land on the northern edge of Cobar town (residential and industrial land). Views take in the sub-regional setting showing views towards the existing WRE (~2.2 km) and the emergency egress frame (~1.3 km). The sparsely WRE appears against the skyline as a flattened plateau to the right (west) of Fort Bourke Hill, and its form is not in keeping with elevated landforms of the locality (there are no plateaux). Woody vegetation on the upper slopes of the WRE is sparse to absent and this does little to screen or visually break up flattened form. Views of the egress winder frame or the power line are not possible owing to vegetation screening the proposed infrastructure.<br>• It identified by Figure 7.1 and is representative of Section 7.2.1 ix. and vi.<br>• Moderate visual effect, low visual sensitivity.<br>• See Plate 7.6.<br>• Co-ordinates – (easting, northing): 390587, 6515155 |

## Table 7.1 SPV zone viewpoints analysed

| Viewshed | LCU** | Reason for assessment |
|---|---|---|
| **Viewpoint 7*** | • | • This viewpoint takes in the north western batter of the New Cobar Complex WRE located at the intersection of Filtration Plant Road and Kidman Way. This is representative of views the mining area (local setting <1 km), for motorists travelling to and from Fort Bourke Hill and along Kidman Way. Owing to the vegetation along lot lines which screens view, the views are filtered. Views are static when stopped, however most motorists would experience this as a transient view at the posted speed of 100 km/hr.<br>• It is representative of Filtration Plant Road and Kidman Way as identified by Figure 7.1 and Section 7.3 viii. b.<br>• Low visual effect, moderate to low visual sensitivity<br>• See Plate 7.7.<br>• Co-ordinates – (easting, northing): 390398, 6513370 |

Notes:
* Viewpoints subjected to further photomontage analysis are emboldened.
**LCUs:

1. Rural land grazing – flat to undulating lands with low rises used for rural production, with or without native vegetation
2. Urban areas – flat to low undulating land containing residential and commercial activities containing Cobar
3. Open space recreation – flat to gently undulating land containing passive and active recreation opportunities
4. Open space vegetated – areas vegetated with native vegetation used for environmental management and recreation in a natural setting
5. Mining – areas of historical and current mining activity
6. Industrial - flat to low undulating land characterised by visually significant industrial elements


*Source: EMM (2020); DFSI (2017); GA (2011)*

0 0.5 1 km

GDA 1994 MGA Zone 55

N

KEY

- Project area
- Viewpoint
- Rail line
- Major road
- Minor road
- Waterbody

DRAFT

Viewpoint locations

Peak Gold Mines
New Cobar Complex Project
Landscape and visual impact assessment
Figure 6.1

EMM
creating opportunities

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**Plate 7.1 Viewpoint 1**

*Waste rock emplacement from Filtration Plant Road, view south (120º horizontal field of view).*


**Plate 7.2 Viewpoint 2**

*View north showing the locality of exhaust air rise and fresh air intake, and proposed surface infrastructure - winder frame, winder house and power line from Filtration Plant Road (120º horizontal field of view). The structures visible to the right of screen is the Murdi Paaki Regional Enterprise Corporation plant nursery located on PGM land.*


**Plate 7.3 Viewpoint 3**

*View south-east towards WRE (right of frame) and exhaust air rise from intersection of Holman Avenue and Kidman Way Road (120° horizontal field of view).*


**Plate 7.4 Viewpoint 4**

*View east from Kidman Way toward location of fresh air intake, winder frame, winder house and power line with PGM residential property midground, foregrounded by trees (120° horizontal field of view).*


**Plate 7.5 Viewpoint 5**

*View north-west from Fort Bourke Hill Lookout with New Cobar Complex open cut (foreground), waste rock emplacement (midground, centre of image) and the town of Cobar far-ground right of image (to the right of the second post from the left) Road (120$^{o}$ horizontal field of view).*


**Plate 7.6 Viewpoint 6**

*View south towards the WRE (centre of image, skyline), and emergency egress winder frame from the northern urban edge of Cobar with industrial land midground centre of image and residential properties midground, right of image (120$^{o}$ horizontal field of view).*


**Plate 7.7 Viewpoint 7**

*View of the WRE from the intersection of Filtration Plant Road (left) and Kidman Way (right), view south (73º horizontal field of view).*

## 7.4 Photomontages

The visual effect of the Project has been represented by a number of photomontages prepared for three of the seven viewpoints described in Plate 7.1 and are representative of the visual effects, ie what can be seen in the existing landscape setting and the proposed visual character of the of the project elements at post construction, year 5 and end of mine timeframes

Photographic technical details of each of the photographs, in accordance with the Land and Environment Court's direction on the use of photomontages (Appendix A).

### 7.4.1 Viewpoint 2

This viewpoint takes in the locality of the exhaust air rise and fresh air intake and the proposed emergency egress winder frame, winder house and power line located to the north of Filtration Plant Road. This is representative of views the rural lands setting (part of the New Cobar Complex Project mine lease area (local setting <1 km), for motorists travelling to and from Fort Bourke Hill. It is the closest point motorists could safely stop to view the WRE. Views are static when stopped, however most motorists would experience this transient view at the posted speed of 80 km/hr.

The lower structures (winder house, power line and fresh air intake are screened by foreground vegetation), with the winder frame rising slightly above the surround vegetation but being backgrounded vegetation on slightly elevated landform between the fresh air inlet and Cobar town. Plate 7.8 - Plate 7.9 show images of these elements in difference scenarios.

### 7.4.2 Viewpoint 4

This viewpoint takes in the locality of the proposed emergency egress winder frame, winder house and power line, situated to the east of Kidman Way. The viewpoint is situated at the junction of the access drive to the house owned by PGM. This is representative of views the rural lands setting (part of the New Cobar Complex Project mine lease area local setting <1 km).

Kidman Way at this point is used to access Fort Bourke Hill, to access the Rugby Club, CSC infrastructure (filtration plant and sewage treatment plant), for local mine traffic, local traffic associated with rural properties and long-distance trucks travelling north/south. Views are static when stopped, however most motorists would experience this transient view at the posted speed of 100 km/hr.

The lower structures (winder house, power line and fresh air inlet) are screened by foreground vegetation, with the winder frame rising above the vegetation line and extending into the skyline. Plate 7.10 and Plate 7.11 show images of these elements in difference scenarios.

### 7.4.3 Viewpoint 6

This viewpoint is representative of view towards WRE from vacant land on the northern edge of Cobar town (residential and industrial land). Views take in the sub-regional setting showing views towards the existing WRE (~2.2 km) and the emergency egress frame (~1.3 km). The sparsely WRE appears against the skyline as a flattened plateau to the right (west) of Fort Bourke Hill, and its form is not in keeping with elevated landforms of the locality (there are no plateaux). Woody vegetation on the upper slopes of the WRE is sparse to absent and this does little to screen or visually break up flattened landform.

The rehabilitation and landscape strategy (EMM 2020b) identified that the existing western batter (facing Kidman Way) is already well established (especially lower slopes) and the northern and eastern batters of the WRE will undergo further revegetation with the planting mix analogous to White Cypress Pine-Poplar Box woodland on

footslopes and peneplains mainly in the Cobar Peneplain Bioregion PCT (PCT72). PCT72 grows to about 14 m in height in natural conditions. It is expected that in this context the revegetation should achieve a similar height and structure.  Upon maturity, this would break-up the skyline above the flattened WRE plateau and vegetation would soften the existing exposed / lightly vegetated batters which contrast in colour with the surrounding vegetation.

Views of the egress winder frame or the power line are not possible owing to vegetation screening the proposed infrastructure. Plate 7.12 - Plate 7.15 show images of these elements in difference scenarios.


**Plate 7.8** **Photomontage for Viewpoint 2 – existing *(60° horizontal field of view)***


**Plate 7.9** **Photomontage for Viewpoint 2 – year 1 *(60° horizontal field of view)***


**Plate 7.10** **Photomontage for Viewpoint 4 – existing *(60° horizontal field of view)***

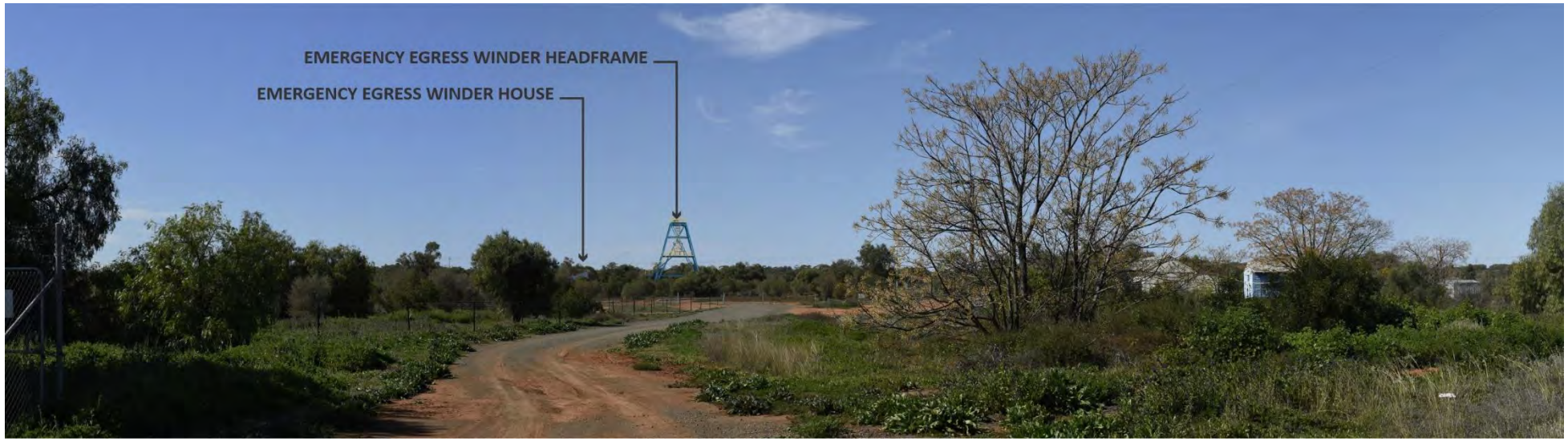


**Plate 7.11** **Photomontage for Viewpoint 4 – year 1 *(60° horizontal field of view)***


**Plate 7.12** **Photomontage for Viewpoint 6 – existing *(30° horizontal field of view)***


**Plate 7.13** **Photomontage for Viewpoint 6 – year 1 *(30° horizontal field of view)***

**Plate 7.14** **Photomontage for Viewpoint 6 – year 5** ***(30° horizontal field of view)***

**Plate 7.15** **Photomontage for Viewpoint 6 – end of mine*(30° horizontal field of view)***

# 8 Mitigation

## 8.1 Summary

The mitigation measures have been developed based on the findings of the visual analysis. Impact assessment of residual effects is presented as Section 9 (Table 9.1). Mitigation measures proposed to lessen residual impacts are identified in Table 9.1. Proposed mitigation measures are outlined in this Section and are discussed in terms of design elements and onsite treatments and post mining landform.

## 8.2 Design elements

There may be opportunities within the project's post-approval and detailed design phase to incorporate some or all of the following:

- selection of colour tone and material finishes of structures and infrastructure that is sympathetic to the background vegetation or landscape; and
- forms should be sympathetic to existing farm shed character forms and treatments (timber, tin, pitched roof lines and eaves to buildings) where practicable.

## 8.3 Rehabilitation of the WRE

The rehabilitation and landscape strategy (EMM 2020b) identified that the batters of the WRE will undergo further revegetation along the northern and eastern batter slopes with the planting mix analogous to White Cypress Pine-Poplar Box woodland on footslopes and peneplains mainly in the Cobar Peneplain Bioregion PCT (PCT 72). PCT72 grows to about 14 m in height in natural conditions. It is expected that in this context the revegetation should achieve a similar height and structure. Upon maturity, this would break-up the skyline above the flattened WRE plateau and vegetation would soften the existing exposed / lightly vegetated batters which contrast in colour with the surrounding vegetation. Progressive replanting to the batter slopes of the WRE will occur during the life of mine.

## 8.4 Rehabilitation of post closure landform

The overriding objective of rehabilitation activities at the mine will be to return disturbed land to a condition that is safe, stable, and supports the proposed post-mining land use, which is primarily grazing on improved pasture. This is outlined in the rehabilitation and landscape strategy (EMM 2020b). The SIA is on land currently zoned for agriculture, and it is therefore anticipated that the rehabilitated land will be incorporated back into land suitable for grazing:

- remove all project-related infrastructure not required by the final land use;
- restore a safe and stable landform;
- stabilise the WRE and other areas of removed surface infrastructure; and
- establish a landscape that permits the land use of livestock grazing on improved pasture.

## 8.5 Lighting

Direct lighting has the potential to point source impacts as lighting can become a focal point in darker night skies. This has the potential to become a nuisance given the darker backdrop associated with rural lands to the south of the mine.

Australian Standard 4282 (AS4282) *Control of Obtrusive Effects of Outdoor Lighting* sets out guidelines for control of the obtrusive effects of outdoor lighting and gives recommended limits for relevant lighting levels to contain these effects within tolerable levels.

As an underground mining operation, lighting is kept to the minimum required for safe operation. Lighting is directed inwards to the operational areas and the existing WRE, vegetation within the SIA and environmental bunds screen the lighting.

Existing lighting associated with the surface infrastructure will remain throughout the life of the Project and will not change. Much of the present lighting visibility is associated with diffuse (non-direct) lighting visibility resulting in night glow, however this is minimal when viewed from Cobar town.

Kidman Way is a significant heavy vehicle haulage route with a significant daily and nightly heavy vehicle movement. Movement of PGM specific heavy ore vehicles is not proposed after dark and therefore throw from vehicle lighting will not be an issue. Haulage of concentrate does not occur at night. Light vehicle movements within the New Cobar Complex and between the Peak Complex and the New Cobar Complex will occur during night-time seven days a week. Within the New Cobar Complex the movement of vehicles is not visible to receivers in Cobar on account of the screening effects of terrain and vegetation. Additional night-time light vehicle useage of Kidman Way will not be significantly greater than existing movement patterns. The emergency egress winder and winder house will have lighting installed; however this would only be illuminated when in use during emergency situations or when maintenance is required and lighting will be activated by motion sensors.

A detailed assessment of potential light spill from the Project will be undertaken if complaints are received, investigated, and found to be of substance. Lighting protocols derived from the assessment may include following principles:

- establish operational protocols for setting up of mobile lighting plant such that lighting is directed away from external private receptors (this may include altering the alignment of internal roads);
- establish design and operational protocols such that lighting sources will be hooded and directed (directional treatments) below the horizontal to minimise potential light spill;
- design light systems that minimise light spill;
- screening of lighting where possible for viewers external to the project;
- avoiding lighting of light-coloured surfaces which have greater reflectivity;
- installation of and timed and zonal illumination methods whereby a structure or area is only illuminated when activity is occurring in that area;
- additional landscape treatments in the form of planting to screen views; and
- follow up with neighbours to ensure that any lighting impacts will be mitigated as far as is reasonably practical to do so, keeping in mind safety issues for the workforce.

# 9 Visual impact assessment

## 9.1 Visual impacts

### 9.1.1 Significant potential view zone

The existing and proposed surface infrastructure and other mine disturbance areas occurs in an area of broad landscape spatial arrangement, characterised by large tracts of pastural grassland to the south and south-east of the town of Cobar. To the west, south and east are large tracts of native forest and plantation. To the north and north-west, the spatial arrangement is finer with the urban areas of Cobar occurring within 1-5 km of the nearest proposed infrastructure. The landscape character of this area is identified by the six identified landscape character units (Section 5.6).

The area of the proposed new surface infrastructure occurs the lowest and flattest part of the landscape. Therefore, views of this infrastructure potentially occur throughout the SPV zone.

Visibility analysis has shown that the emergency egress winder is visible in both the local and sub-regional settings. However, owing to the size and mass of the structure and the backgrounding of vegetation, the apparent mass of the structure is softened by the vegetation which surrounds it. At distances beyond 2 km it will be largely indistinguishable. The mass, form and structure are in keeping with elements that are prominent in the (historic and contemporary) mining landscape. On account of a long history of mining, the presence of mining related infrastructure in close proximity to the town is not considered unusual and integrates with the cultural expectations of (a mining) landscape which has evolved as a consequence of over 100 years of near continuous mining endeavours.

Visibility analysis has shown that the existing SIA has limited visibility from sensitive receptors on account of vegetation in the terrain and landform changes which were the result of historic (Great Cobar slag dump) and contemporary mining (New Cobar Complex WRE) practices. The WRE has been a feature of the landscape since open cut mining began in 2000. In line with current approvals this rock emplacement will remain post mine. It is the subject of ongoing rehabilitation as outlined in the MOP. The WRE appears from much of the local and sub-regional setting as an elevated, flattened plateau rising above the surrounding plain. Table 9.1 provides a tabulated analysis of visual impacts arising for the project.

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| **LCU 1 – Rural land grazing** | | | | | | | |
| Rural residential | WRE | Moderate | Moderate | Moderate | <1 km (local). Glimpsed static views through trees. Element rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| | SIA | Low | Moderate | Slight / Moderate | *Visibility analysis shows views of the SIA from rural residential properties is not possible* | n/a | n/a |
| | Emergency egress winder | Low | Low | Slight | *Visibility analysis shows views of the emergency egress winder from rural residential properties is not possible* | n/a | n/a |
| Highways and Main roads, tourist routes | WRE | Moderate | Moderate | Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| | | Moderate | Low | Slight / Moderate | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| | SIA | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the SIA rising above the skyline.<br>No change. | None proposed | Slight / Moderate |
| | | Low | Low | Slight | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the SIA rising above the skyline.<br>No change. | None proposed | Slight |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| | Emergency egress winder | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line (Kidman Way) or partially screened and backgrounded by vegetation owing to viewing distance from the structure (Filtration Plant Road).<br>Low magnitude change. | None proposed | Slight / Moderate |
| | | Low | Low | Slight | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of the emergency egress winder with vegetation backgrounding the structure.<br>Low magnitude change | None proposed | Slight |
| Local roads | WRE | Moderate | Low | Slight | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| | Emergency egress winder | Low | Low | Slight | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>Low magnitude change. | None proposed | Slight |
| Rural lands | WRE | Moderate | Low | Slight / Moderate | <1 km (local). Glimpsed static views through trees. WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |
| | SIA | Low | Low | Slight | <1 km (local). Glimpsed static views through trees. SIA backgrounded by terrain and vegetation.<br>No change. | None proposed | slight |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| | Emergency egress winder | Low | Low | Slight | <1 km (local). Glimpsed static views through trees. Element backgrounded by terrain and vegetation.<br>Low magnitude change. | None proposed | Slight |
| **LCU 2 – Urban areas** | | | | | | | |
| Commonwealth and State heritage | *No views of project elements from Commonwealth / state heritage* | n/a | | | 1-5 km (sub-regional setting). | | |
| Local heritage | *No views of project elements from local heritage* | n/a | | | <1 km (local setting) | | |
| Highways and Main roads | Emergency egress winder | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>Low magnitude change. | None proposed | Slight / Moderate |
| | WRE | Moderate | Low | Moderate | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |
| Local roads | Emergency egress winder | Low | Low | Slight | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>Low magnitude change. | None proposed | Slight |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| | WRE | Moderate | Low | Slight / Moderate | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | None proposed | Slight / Moderate |
| **LCU 3 – Open space recreation** | | | | | | | |
| Recreation areas | *No views of project elements from open space recreation* | n/a | n/a | n/a | 1-5 km | n/a | n/a |
| Local roads | Emergency egress winder | Low | Low | Slight | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>No change. | None proposed | Slight |
| | WRE | Moderate | Moderate | Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| **LCU 4 – Open space vegetated** | | | | | | | |
| Recreation areas | *No views of project elements from open space vegetated* | n/a | n/a | n/a | 1-5 km | n/a | n/a |
| Local roads | *No views of project elements from open space vegetated* | n/a | n/a | n/a | 1-5 km | n/a | n/a |
| **LCU 5 – Mining** | | | | | | | |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| Local heritage (Towser's huts) | WRE | Moderate | Moderate | Moderate | <1 km (local). Static long views of the WRE from the locality of Towser's huts.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| Highways and Main roads | Emergency egress winder | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>Low magnitude change. | None proposed | Slight / Moderate |
| | WRE | Moderate | Moderate | Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>Low magnitude change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight / Moderate |
| | | Moderate | Low | Slight | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |
| | SIA | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the SIA backgrounded by terrain and vegetation.<br>No change. | None proposed | Slight / Moderate |
| Industrial and mining | Emergency egress winder | Low | Low | Slight | <1 km (local setting), 1-5 km (sub-regional setting). Glimpsed static views through trees. Element backgrounded by terrain and vegetation.<br>Low magnitude change. | None proposed | Slight |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| | WRE | Moderate | Low | Slight / Moderate | <1 km (local setting), 1-5 km (sub-regional setting). Glimpsed static views through trees. WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |
| | SIA | Low | Low | Slight | <1 km (local setting), 1-5 km (sub-regional setting). Glimpsed static views through trees. Element backgrounded by terrain and vegetation.<br>No change. | None proposed | Slight |
| **LCU 6 – Industrial** | | | | | | | |
| Highways and Main roads | Emergency egress winder | Low | Moderate | Slight / Moderate | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>Low magnitude change. | None proposed | Slight / Moderate |
| | WRE | Moderate | Low | Slight / Moderate | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |
| Local roads | Emergency egress winder | Low | Low | Slight | <1 km (local). Transient and glimpsed views through trees of parts of the WRE rising above the tree line.<br>No change. | None proposed | Slight |
| | WRE | Moderate | Low | Slight / Moderate | 1-5 km (sub-regional setting). Transient and glimpsed views through trees of parts of the WRE rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |

## Table 9.1 Overall visual impact

| Land use /receptor within zone | Project elements | *Visual effect* | *Visual sensitivity* | *Overall Effect* | Visibility setting, view type, magnitude of change | Mitigation measures | Residual Overall Effect |
|---|---|---|---|---|---|---|---|
| Industrial and mining | Emergency egress winder | Low | Low | Slight | <1 km (local setting). Glimpsed static views through trees. WRE rising above the skyline.<br>Low magnitude change. | None proposed | Slight |
| | WRE | Moderate | Low | Slight / Moderate | 1-5 km (sub-regional setting. Glimpsed static views through trees. WRE viewed rising above the skyline.<br>No change. | Ongoing rehabilitation and revegetation | Measures to increase integration will reduce visual effect to low and visual impact to Slight |

1. Rural land grazing – flat to undulating lands with low rises used for rural production, with or without native vegetation
2. Urban areas – flat to low undulating land containing residential and commercial activities containing Cobar
3. Open space recreation – flat to gently undulating land containing passive and active recreation opportunities
4. Open space vegetated – areas vegetated with native vegetation used for environmental management and recreation in a natural setting
5. Mining – areas of historical and current mining activity
6. Industrial - flat to low undulating land characterised by visually significant industrial elements

### 9.1.2 Lighting

The effects of night light will be influenced by the location and relative heights of onsite operations, the relative level at which the viewing location is situated and the presence of any possible onsite barriers to lighting and offsite topographic and landform effects which may screen views and / or vegetation.

There are two types of lighting effects:

- direct light effects: through from surface lighting and mobile plant which is experienced if there is a direct line of sight between the source and the viewing location; and
- diffuse light effect: the night-glow or 'light-cloud' (light pollution) being atmospheric conditions (light reflected by low cloud, fog or dust) / light reflected off light-coloured surfaces.

Both are more prevalent impacts in darker environments – ie those environments without much lighting. Sensitivity is affected by number and proximity of the residence. Night glows can create strong focal points. However, the extent of night glow is minimal from the SIA.

## 9.2 Cumulative impact

Mine elements could create a focal point especially where long un-interrupted views will be possible, and elements extend above the horizon. However, there will be few localities where this occurs as these elements occur in the lowest part of the landscape and there is effective vegetation screening and bunding. With effective ongoing revegetation of the WRE the flattened plateau landform created with be better integrated through softening the skyline (breaking up the significance of the exiting liner edge of the WRE) with vegetation and better colour integration into the surrounding, vegetated terrain associated with Fort Bourke Hill.

With respect to land use planning there are no other large-scale mining developments with elements nearby that will have a cumulative visual impact. Therefore, there will be negligible cumulative impact.

Existing night-time lighting sources include rural residential properties, farm machinery, vehicles on roads, vehicles travelling north-south along the Kidman Way and east – west on the Barrier Highway and the urban area of Cobar town. From the sub-regional and regional settings, the direct lighting and night glow from Cobar would be far more prominent than lighting at the existing SIA or new surface infrastructure as the night glow from the town would create a strong focal point.

Existing sources of night lighting at the mine are part of the existing visual landscape and they would be increased as a result of mining. Although some lighting is proposed at the emergency egress winder and winder house, this would only be operable in an emergency event. Therefore, cumulative impacts as a result of project-related night-time lighting will likely be minimal.

# 10 Conclusions

Cobar was established in the late 1800s as a mining town, mining still contributes significantly to the local economy and the community has always considered Cobar a mining town. The proposed newly constructed elements are in keeping with socio-cultural expectations for a mining landscape.

Overall, visual impacts associated with the mine are not significant. Effects of the proposed new surface elements (Table 9.1) will be negligible. The impact of the existing WRE is moderate, with a residual effect, post rehabilitation being slight / moderate with effective rehabilitation. This landscape feature which will remain post mining. The impacts of the SIA are slight / moderate.

Existing significant night-time lighting at the locality is from the town of Cobar. The lighting arrangement at the SIA of the New Cobar Complex will not change. Lighting cannot be directly seen from sensitive receptors in town on account of intervening landform and vegetation screening lights. Light glow is minimal, and lights are effectively focussed so as to avoid unnecessary light throw. Lighting will be required for safety purposes at the emergency egress winder house and head-frame, however this would only be illuminated during emergency situations occurring at night or for night time maintenance. All lighting would operate by motion sensor.

The visual effects associated with the constructed mine industrial element will be temporary. At the end of mine life (2035) all elements will be removed and the surface recontoured as necessary and the area returned to uses as outlined by the rehabilitation plan (EMM 2020b).

The New Cobar Complex open cut, the prominent feature of views from Fort Bourke Hill, and which is an established tourist attraction reinforcing Cobar's mining identity, and the WRE will remain. The WRE will be rehabilitated to improve this features integration into the broader local landscape context.

# References

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# Abbreviations

| Term | Description |
|---|---|
| Aurelia | Aurelia Metals Limited |
| AHD | Australian Height Datum |
| AS | Australian Standard |
| CML | Consolidated Mining Lease |
| CSA | Cornish Scottish Australian |
| CSC | Cobar Shire Council |
| DEM | Digital Elevation Model |
| DPIE | Department of Planning, Industry and Environment |
| DSM | Digital Surface Model |
| EMM | EMM Consulting Pty Limited |
| ETL | Electricity Transmission Line |
| FTE | Full Time Equivalents |
| GIS | Geographic Information Systems |
| GLVIA | Guidelines for Landscape and Visual Impact Assessment |
| ha | Hectares |
| IEMA | Institute of Environmental Management and Assessment |
| km | kilometres |
| kV | Kilovolt |
| LCU | Landscape Character Unites |
| LEP | Local Environmental Plans |
| LiDAR | Light Detection and Ranging |
| LVIA | Landscape and Visual Assessment |
| m | Metres |
| mAHD | metres Australian Height Datum |
| mbgl | metres below ground level |
| ML | Mining Lease |
| MOP | Mining Operation Plan |
| MPL | Mining Purpose Lease |
| NSW | New South Wales |
| PCT | Plant Community Type |
| PGM | Peak Gold Mines Pty Ltd |
| SEARs | Secretary's Environmental Assessment Requirements |
| SIA | Surface Infrastructure Area |
| SPV | Significant Potential Visibility |

| | |
|---|---|
| SSD | State Significant Development |
| tpa | Tonnes per annum |
| TSF | Tailings storage facility |
| WMP | Water Management Plan |
| WRE | Waste Rock Emplacement |

# Glossary of terms

| Term | Description |
|---|---|
| Aesthetics | Refers to the sensory and perceptual experience. Aesthetic qualities can encompass tangible senses (visual and non-visual) and more intangible qualities such as feelings. Aesthetic appeal is often associated with the reinforcement of cultural or social values and identity. |
| Amenity | The pleasantness of a place as conveyed by desirable attributes including views, noise and odour. |
| Character (visual) | A distinct, recognisable and consistent pattern of elements in the landscape which makes one landscape different from another, and often conveys a distinctive sense of place. This term does not imply a level of value or importance. |
| Development control plan (DCP) | Development control plans contain specific controls to guide certain types of development and achieve particular development outcomes within certain areas. A DCP is a supplementary development guideline that supports Council's primary planning instruments *viz*. Local Environmental Plans (LEPs). |
| Digital elevation model (DEM) | A digital elevation model is a three-dimensional computer-generated representation of a terrain's surface. |
| Digital surface model (DSM) | The DSM is derived from Airborne Light Detection and Ranging (LiDAR). The system collects point data on a grid basis giving varying elevation values representative of surface features; buildings, tree canopies, power lines and other infrastructure. The output of a LiDAR collection is a point cloud filled with varying elevation values. |
| Effect (visual) | The landscape or visual outcome of a proposed change. It may be the combined result of sensitivity together with the magnitude of the change. |
| Field of view | The total open, observable area a person can see from a viewing location (viewpoint); in the case of (digital) photography it is a solid angle through which a detector is sensitive to electromagnetic radiation. |
| Impact | The characterisation of effects. Context should be considered in defining impacts and their significance. |
| Landscape | Landscape is an all-encompassing term that refers to areas of the earth's surface at various scales. It includes those landscapes that are: urban, peri-urban, rural, and natural; combining bio-physical elements with the cultural overlay of human use and values. |
| Local Environmental Plans (LEPs) | Local Environmental Plans guide planning decisions for local government areas. They do this through zoning and development controls, which provide a framework for the way land can be used. |
| LiDAR | Airborne Light Detection and Ranging (LiDAR). Using light, LiDAR measures reflected light that bounces off the ground and back to the sensor to obtain elevation of the Earth's surface. |
| Magnitude of change | The extent of change that will be experienced by receptors. Change may be adverse or beneficial. Factors to be considered include:<br>• Proportion of the view / landscape affected;<br>• Extent of the area over which the change occurs;<br>• Size and scale of the change;<br>• Rate and duration of change;<br>• The temporality or permanence of the change; and<br>• Degree of contrast and compatibility. |
| Surface Infrastructure Area (SIA) | The mining infrastructure area containing all elements of the mining operations which include the ROM, and product stockpiling functions, administration, workshop, WRE egress winders, ventilation, administration building and bathhouse. |
| Mitigation | Measures to reduce and manage identified potential adverse impacts. |
| Photomontage | A visual representation of a proposal from a particular receptor viewpoint, on a photographic base. |
| Project area | The mining lease CML 6, which applies to the New Cobar Complex, covers an area of approximately 1,350 ha, and incorporates all areas and components of the New Cobar Complex. However, the Project |

| | |
|---|---|
| | area for the SSD approval sought (SSD10419) has a surface extent of approximately 427 ha (including surface areas above underground workings), and the existing surface disturbance area is approximately 160 ha. The majority of the Project will be located underground, with the exception being the easement for the new power line, which will have a maximum footprint of 0.8 ha (400 m long, 20 m wide corridor). See Figure 1.3. |
| Receptor | A place, route, viewer audience or interest group which may experience an effect and require assessment; the people who will be affected by changes in views or visual amenity. |
| ROM | Run of mine. |
| SHR | State Heritage Register. |
| Scenic amenity | A measure of the relative contribution of each place to the collective appreciation of the landscape. |
| Significant Potential View Zone (SPV Zone) | Includes the most significant parts of the total visual catchment from which the above ground elements of the Project could potentially be seen. These are areas visually connected to the proposal and determined by desk-top and field assessment to confirm extent and visibility. Not all parts of the landscape within the zone may have views of project elements. Determination of this zone is based on a test of reasonableness which is proportional to the scale and nature of the proposed development; it does not encompass or enclose all potential viewpoints within the catchment, rather those which are most significant. It does not mean that views outside of this zone are not possible, rather it is the area containing the most critical locations with views to the Project, which is the focus of this LVIA. |
| Sensitivity | Capacity of a landscape or view to accommodate change without losing valued attributes. Includes the value placed on a landscape or view by the community through planning scheme protection, and the type and number of receivers. |
| Spatial organisation | The arrangement of elements, people and places; in this sense, built elements and land use patterning on landscape. Urban development is considered to have a fine spatial patterning. In contrast agricultural landscapes have a broader arrangement of spatial organisation. |
| Project area | The project area is defined by Figure 1.3. |
| Values | Any aspect of landscape or views that people consider to be important. Landscape and visual values may be reflected in local, state or federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed. |
| View | Any sight, prospect or field of vision as seen from a place, and may be wide or narrow, partial or full, pleasant or unattractive, distinctive or nondescript, and may include background, mid ground and/or foreground elements or features. |
| Viewpoint | The specific location of a view, typically used for assessment purposes. |
| Viewshed | Areas visible from a particular location. |
| Visual amenity | The attractiveness of a scene or view. |
| Visual catchment | Areas visible from a combination of locations within a defined setting (may be modelled or field-validated). |

Appendix A

# Photographic exposure details

Annexure A - Photograph and exposure details

| Plate Number | Viewpoint (VP) | Type | Date | Time | Easting | Northing | Datum | Height of camera lens above ground (m) | Nearst key feature | Distance (km) | Camera | Focal Length (mm) | F-stop | Exposure | ISO | Max apperture | Metering | HFoV | Contrast | Saturation | Sharpness | White balance | Visualisation type | Number of images | Projection | Software |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.1 | Viewpoint 1 | Photo viewpoint | 4/08/2020 | 12:46pm | 390862 | 6513331 | GDA94 MGA Zone 56 | 1.6 | WRE | 2.5 | Nikon D810 | 50 | f/10 | 1/400 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 7 | Spherical | Autopano pro 4.42 |
| 7.2 | Viewpoint 2 | Photo viewpoint | 4/08/2020 | 12:38pm | 390817 | 6513331 | GDA94 MGA Zone 56 | 1.6 | Exhaust air rise | 3.2 | Nikon D810 | 50 | f/10 | 1/400 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 10 | Spherical | Autopano pro 4.42 |
| 7.3 | Viewpoint 3 | Photo viewpoint | 4/08/2020 | 1:23pm | 390242 | 6513649 | GDA94 MGA Zone 56 | 1.6 | Exhaust air rise | 0.5 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 13 | Spherical | Autopano pro 4.42 |
| 7.4 | Viewpoint 4 | Photo viewpoint | 4/08/2020 | 1:33pm | 390261 | 6513855 | GDA94 MGA Zone 56 | 1.6 | Emergency egress winder | 0.8 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 11 | Spherical | Autopano pro 4.42 |
| 7.5 | Viewpoint 5 | Photo viewpoint | 4/08/2020 | 1:10pm | 391398 | 6512527 | GDA94 MGA Zone 56 | 1.6 | New Cobar open cut | 1.3 | Nikon D810 | 50 | f/9 | 1/320 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 7 | Spherical | Autopano pro 4.42 |
| 7.6 | Viewpoint 6 | Photo viewpoint | 4/08/2020 | 1:45pm | 390587 | 6515155 | GDA94 MGA Zone 56 | 1.6 | WRE, egress winder | 0.4 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 120 | normal | normal | normal | auto | Panorama | 9 | Spherical | Autopano pro 4.42 |
| 7.7 | Viewpoint 7 | Photo viewpoint | 4/08/2020 | 12:58pm | 390398 | 6513370 | GDA94 MGA Zone 56 | 1.6 | WRE | 1.3 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 73 | normal | normal | normal | auto | Panorama | 5 | Spherical | Autopano pro 4.42 |
| 7.8 | Viewpoint 2 | Photomontage | 4/08/2020 | 12:38pm | 390817 | 6513331 | GDA94 MGA Zone 56 | 1.6 | Exhaust air rise | 3.2 | Nikon D810 | 50 | f/10 | 1/400 sec | 200 | 1 | pattern | 60 | normal | normal | normal | auto | Panorama | 10 | Spherical | Autopano pro 4.42 |
| 7.9 | Viewpoint 2 | Photomontage | 4/08/2020 | 12:38pm | 390817 | 6513331 | GDA94 MGA Zone 56 | 1.6 | Exhaust air rise | 3.2 | Nikon D810 | 50 | f/10 | 1/400 sec | 200 | 1 | pattern | 60 | normal | normal | normal | auto | Panorama | 10 | Spherical | Autopano pro 4.42 |
| 7.10' | Viewpoint 4 | Photomontage | 4/08/2020 | 1:23pm | 390261 | 6513855 | GDA94 MGA Zone 56 | 1.6 | Emergency egress winder | 0.5 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 60 | normal | normal | normal | auto | Panorama | 11 | Spherical | Autopano pro 4.42 |
| 7.11 | Viewpoint 4 | Photomontage | 4/08/2020 | 1:23pm | 390261 | 6513855 | GDA94 MGA Zone 56 | 1.6 | Emergency egress winder | 0.5 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 60 | normal | normal | normal | auto | Panorama | 11 | Spherical | Autopano pro 4.42 |
| 7.12 | Viewpoint 6 | Photomontage | 4/08/2020 | 1:45pm | 390587 | 6515155 | GDA94 MGA Zone 56 | 1.6 | WRE, egress winder | 0.4 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 30 | normal | normal | normal | auto | Panorama | 9 | Spherical | Autopano pro 4.42 |
| 7.13 | Viewpoint 6 | Photomontage | 4/08/2020 | 1:45pm | 390587 | 6515155 | GDA94 MGA Zone 56 | 1.6 | WRE, egress winder | 0.4 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 30 | normal | normal | normal | auto | Panorama | 9 | Spherical | Autopano pro 4.42 |
| 7.14 | Viewpoint 6 | Photomontage | 4/08/2020 | 1:45pm | 390587 | 6515155 | GDA94 MGA Zone 56 | 1.6 | WRE, egress winder | 0.4 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 30 | normal | normal | normal | auto | Panorama | 9 | Spherical | Autopano pro 4.42 |
| 7.15 | Viewpoint 6 | Photomontage | 4/08/2020 | 1:45pm | 390587 | 6515155 | GDA94 MGA Zone 56 | 1.6 | WRE, egress winder | 0.4 | Nikon D810 | 50 | f/11 | 1/500 sec | 200 | 1 | pattern | 30 | normal | normal | normal | auto | Panorama | 9 | Spherical | Autopano pro 4.42 |