

Appendix S

Mine development visual impact assessment

McPhillamys Gold Project

Visual Impact Assessment

Prepared for LFB Resources



VPA Visual Planning & Assessment
11 Brock Street
CANNON HILL Q. 4170
07 3399 2439 | 0451 505 218
annette@vpavisual.com

Van Pelt + Allen

McPhillamys Gold Project

visual impact assessment

Project Director	John van Pelt
Project Manager:	Annette Allen
Author:	Annette Allen/ John van Pelt
Internal reviewer:	John van Pelt
Date:	19 August 2019
Reference:	1902_F_V2
Status:	Final

This report was prepared by:

VPA Visual Planning & Assessment

Phone: 0451 505 218

annette@vpavisual.com

© 2019 VPA

This document may only be used for the purposes for which it was commissioned and in accordance with the terms of engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

CONTENTS

List of Figures	v
List of Tables	vi
1. Introduction	1
1.1 Overview	1
1.2 Project overview	1
1.3 Assessment requirements	2
1.4 Project application area and study area	4
2. Assessment Methodology	7
2.1 Evaluation of the existing visual environment	7
2.2 Applicable policy and legislation	9
2.3 Analysis of the Project and its setting	9
2.4 Visual impact mitigation	14
3. Existing Environment	17
3.1 Introduction	17
3.2 Visual Study Area	17
3.3 Project area and surrounds	17
3.4 Visual character units	20
3.5 Summary	28
4. Visual Effect of the Project	32
4.1 Project area components	32
4.2 Project Components	39
4.3 Visual Effect Summary	51
5. Visibility and visual sensitivity	51
5.1 Introduction	51
5.2 Significant topographic features	51
5.3 Significant vegetation areas	53
5.4 Effect of foreground elements	53
5.5 Sensitive receptors	56
5.6 Visibility and visual sensitivity in the Northern View Sector	64
5.7 Visibility and visual sensitivity in the Eastern View Sector	64
5.8 Visibility and visual sensitivity in the Southern View Sector	65
5.9 Visibility and visual sensitivity in the Western View Sector	67
5.10 Summary	68
6. Visual Effect	73
6.1 General	73
6.2 View selection rationale	73
6.3 Photomontage Illustration of Visual Effect	73

6.4	Viewpoint visual effect summary	93
6.5	Lighting Effects	93
7.	Visual Impact.....	98
7.1	General	98
7.2	Visual impacts in the Northern View Sector	98
7.3	Visual impacts in the Eastern Sector	99
7.4	Visual impacts in the Southern Sector.....	100
7.5	Visual impacts in the Western Sector	102
7.6	Impact of Night Light.....	103
7.7	Cumulative impacts	103
7.8	Visual impact summary	104
8.	Dynamic Landscape Assessment of Impacts	107
8.1	Sensitive Receptors.....	108
8.2	Potential Dynamic Landscape Impacts	109
8.3	Ephemeral Environmental Effects	109
8.4	Visual Effects of Proposal Outside Seen Area	110
8.5	Knowledge Based Perception	112
8.6	Stakeholder Engagement	112
8.7	Dynamic Landscape Impact	113
9.	Mitigation	115
9.1	On-site treatments	115
9.2	Off-Site Treatments	117
10.	Conclusion	123
10.1	Issues	123
10.2	Key Project components.....	123
10.3	Open cut	124
10.4	Southern amenity bund and pit bund.....	124
10.5	Waste rock emplacement	125
10.6	Mining Fleet	126
10.7	ROM Pad, CIL processing facility, ancillary facilities, mine and water management infrastructure	126
10.8	Tailings storage facility	127
10.9	Site access road and new intersection with Mid Western Highway.....	128
10.10	Internal road network.....	128
11.	Glossary and acronyms	131
12.	References	133
13.	Appendices	134

List of Figures

Figure 1.1	Project application area – regional setting	5
Figure 1.2	McPhillamys Project area general layout	6
Figure 2.1	Visual assessment methodology	8
Figure 2.2	Area of Primary View Zone at various distances from the development	12
Figure 2.3	Landscape Characteristics	16
Figure 3.1	Visual study area and visual catchment units	19
Figure 3.2	Blayney township VCU	22
Figure 3.3	Kings Plains VCU	23
Figure 3.4	Undulating hills VCU	24
Figure 3.5	Cultural landscapes and windbreaks within the VCU	25
Figure 3.6	Open woodland VCU	26
Figure 3.7	Creek lines VCU	29
Figure 3.8	Plantation forest VCU	30
Figure 3.9	Resource extraction and recovery uses VCU	31
Figure 4.1	Mine Development Stage Plan – Year 1	33
Figure 4.2	Mine Development Stage Plan – Year 2	34
Figure 4.3	Mine Development Stage Plan – Year 4	35
Figure 4.4	Mine Development Stage Plan – Year 8	36
Figure 4.5	Mine Development Stage Plan – Year 10	37
Figure 4.6	Conceptual Final landform (post final rehabilitation and decommissioning)	38
Figure 5.1	View sectors and sensitive receptors	52
Figure 5.2	Significant topographic features	54
Figure 5.3	Screening effects of significant vegetation	54
Figure 5.4	Foreground elements screen views	55
Figure 5.5	Blayney township sensitive receptor	57
Figure 5.6	Kings Plains sensitive receptor	58
Figure 5.7	Rural residences – sensitive receptors	59
Figure 5.8	Tourist and recreation areas	60
Figure 5.9	Roads sensitive receptors	62
Figure 5.10	Rural areas	63
Figure 5.11	Northern View Sector	69
Figure 5.12	Eastern View Sector	70
Figure 5.13	Southern View Sector	71
Figure 5.14	Western View Sector	72
Figure 6.1	Photomontage view locations	75
Figure 6.2	Photomontage VP1 Guyong Road – Existing view to Year 4	76
Figure 6.3	Photomontage VP1 Guyong Road – Year 8 to final landform	77

List of Figures continued.....

Figure 6.4	Photomontage VP2 - Mid Western Highway – west – Existing to Year 4	79
Figure 6.5	Photomontage VP2 - Mid Western Highway – west – Year 8 to final landform	80
Figure 6.6	Photomontage VP3 - Kings Plains Residence - Existing view to Year 4	83
Figure 6.7	Photomontage VP3 - Kings Plains Residence - Year 8 to final landform	84
Figure 6.8	Photomontage VP4 - Kings Plains Residence – Existing view to Year 4	89
Figure 6.9	Photomontage VP4 - Kings Plains Residence - Year 8 to final landform	90
Figure 6.10	Photomontage VP5 - Mid Western Highway – east – Existing view to Year 4	91
Figure 6.11	Photomontage VP5 - Mid Western Highway – east – Year 4 to final landform	92
Figure 6.12	Light Pollution Map – Bathurst - Blayney Region	97
Figure 8.1	Dynamic impacts - other seen resource extraction on journey from Bathurst to Orange	114
Figure 9.1	Rehabilitation and on-site and off-site mitigation	121
Figure 9.2	Residential view categories for mitigation treatment	122

List of Tables

Table 1.1	Visual impact assessment related EARs	3
Table 1.2	Relevant Local Government requirements	3
Table 2.1	Visual effect levels	10
Table 2.2	Visual sensitivity	12
Table 2.3	Visual Impact	13
Table 4.1	Project Component visual effect summary	50
Table 6.1	Visual effects summary	93
Table 7.1	Visual impact summary	105
Table 8.1	Dynamic Landscape Assessment of Impacts	107
Table 10.1	Mine Stage Visual Effect	129

1. INTRODUCTION

1.1 Overview

LFB Resources NL, is seeking development consent for the construction and operation of the McPhillamys Gold Project (the project), a greenfield open cut gold mine and water supply pipeline in the Central West of New South Wales (NSW). The project application area is illustrated at a regional scale in Figure 1.1.

The project for which development consent is sought comprises two key components; the mine site where the ore will be extracted, processed and gold produced for distribution to the market (the mine development), and an associated water pipeline which will enable the supply of water from near Lithgow to the mine site (the pipeline development).

The mine development is approximately 8 km north-east of Blayney, within the Blayney and Cabonne local government areas. This report assesses the potential visual impacts associated with the mine development component of the McPhillamys Gold Project. References to ‘the Project’ throughout this report are therefore referring to the mine development only. The potential visual impacts associated with the pipeline development component are addressed in the main report of the Environmental Impact Statement (EIS) (Volume 1, EMM 2019a).

LFB Resources NL is a 100% owned subsidiary of Regis Resources Limited (referred to from now on as Regis). The mine development project boundary (referred to from now on as the project area) is illustrated in Figure 1.2. The mine development is approximately 8 km north-east of Blayney, within the Blayney and Cabonne local government areas (LGAs).

This visual impact assessment report forms part of the EIS. It documents the assessment methods, results and the initiatives built into the Project design to avoid and minimise visual impacts, and the additional mitigation and management measures proposed to address residual impacts which cannot be avoided.

1.2 Project overview

A full project description is provided in Chapter 2 of the EIS (EMM 2019). The key components of the project are as follows:

- Development and operation of an open cut gold mine, comprising approximately one to two years of construction, approximately 10 years of mining and processing and a closure period (including the final rehabilitation phase) of approximately three to four years, noting there may be some overlap of these phases. The total project life for which approval is sought is 15 years.
- Development and operation of a single circular open cut mine with a diameter of approximately 1,050 metres (m) and a final depth of approximately 460 m, developed by conventional open cut mining methods encompassing drill, blast, load and haul operations. Up to 8.5 Million tonnes per annum (Mtpa) of ore will be extracted during the project life.
- Construction and use of a conventional carbon-in-leach processing facility with an approximate processing rate of 7 Mtpa to produce approximately 200,000 ounces, and up to 250,000 ounces, per annum of product gold. The processing facility will comprise a run-of-mine (ROM) pad and crushing, grinding, gravity, leaching, gold recovery, tailings thickening, cyanide destruction and tailings management circuits. Product gold will be taken off-site to customers via road transport.

- Placement of waste rock into a waste rock emplacement which will include encapsulation of material with the potential to produce a low pH leachate. A portion of the waste rock emplacement will be constructed and rehabilitated early in the project to act as an amenity bund.
- Construction and use of an engineered tailings storage facility (TSF) to store tailings material.
- Construction and operation of associated mine infrastructure including:
 - administration buildings and bathhouse;
 - workshop and stores facilities, including associated plant parking, laydown and hardstand areas, vehicle washdown facilities, and fuel and lubricant storage;
 - internal road network;
 - explosives magazine and ammonium nitrate emulsion storage facilities;
 - topsoil, subsoil and capping stockpiles;
 - ancillary facilities, including fences, access roads, car parking areas and communications infrastructure and on-site laboratory.
- Establishment and use of a site access road and intersection with the Mid Western Highway.
- Construction and operation of water management infrastructure, including water storages, clean water and process water diversions and sediment control infrastructure.
- A peak construction workforce of approximately 710 full-time equivalent (FTE) workers. During operations, an average workforce of around 260 FTE employees will be required, peaking at approximately 320 FTEs in around years four and five of the project.
- Construction and operation of a water supply pipeline approximately 90 km long from Centennial's Angus Place and SCSO; and EA's MPPS operations near Lithgow to the Project area. The pipeline development will include approximately 4 pumping station facilities, a pressure reducing system and communication system. Approximately 13 ML/day (up to a maximum of 16 ML/day) will be transferred for mining and processing operations.
- Environmental management and monitoring equipment.

Progressive rehabilitation throughout the mine life. At the end of mining, mine infrastructure will be decommissioned, and disturbed areas will be rehabilitated to integrate with natural landforms as far as practicable consistent with relevant land use strategies of the relevant local government areas (LGAs).

1.3 Assessment requirements

This visual impact assessment has been prepared following the appropriate guidelines, policies and industry requirements, and following consultation with stakeholders including community members and relevant government agencies.

Guidelines and policies referenced are as follows:

- Landscape Institute and Institute of Environmental Management & Assessment (2013) - Guidelines for Landscape and Visual Impact Assessment 3rd Edition

- AILA Queensland Regional Landscape Group (2017) - Landscape and Visual Assessment – AILA Guidance Note for Queensland (2017)
- Australian Standards (AS 4282 – 1997): Control of the Obtrusive effects of Outdoor Lighting
- This assessment has been prepared in accordance with requirements of the NSW Department of Planning, Industry and Environment (DPIE). These were set out in DPIE's Environmental Assessment Requirements (EARs) for the Project, issued on 24 July 2018 and revised on 19 December 2018. The EARs identify matters which must be addressed in the EIS and essentially form its terms of reference. Table 1.1 lists individual requirements relevant to this visual impact assessment and where they are addressed in this report.

Table 1.1 Visual impact assessment related EARs

Requirement	Section addressed
“The likely visual impacts of the development on private land in the vicinity of the development and key vantage points in the public domain, paying particular attention to any temporary and permanent modification of the landscape (e.g. overburden dumps, bunds, tailings facilities), and - the lighting impacts of the development”	
• Visual impacts	
– Visual effect of Project components landscape (e.g. waste emplacement areas, bunds, tailings facilities)	Section 4 Visual Effect of the
– Lighting Impacts	Section 6.5 Lighting Effects and Section 7 Visual Impact
– Visual sensitivity of receptors (private land in the vicinity of the development and key vantage points in the public domain)	Section 5 Visibility and visual sensitivity
– Visual effect on specific viewpoints	Section 6 Visual Effect
– Visual impacts	Section 7 Visual Impact

To inform the preparation of the EARs, DPIE invited other government agencies to recommend matters to be address in the EIS. These matters were taken into account by the Secretary for DPIE when preparing the EARs. Copies of the government agencies' advice to DPIE were attached to the EARs.

1.3.1 Issues Raised by Local Government Agencies

Table 1.2 Relevant Local Government requirements

Local Council or Agency	Requirements relevant to visual assessment	Section Addressed
Blayney Shire Council:	Potential off- site impacts (noise, dust, visual, lighting and groundwater”, (Table 34 SIA Scoping Study).	Section 6.5 Lighting Effects and Section 7 Visual Impact
Carbonne Shire Council:	<u>Item 2: Environmental characteristics of the site including:</u> • Visual characteristics and site visibility and proximity of dwellings to the mine. • Environmental impacts of the proposed development on the natural environment.	Section 3: Existing Environment Section 5: Visibility and visual sensitivity Section 6: Visual effects Section 7: Visual Impact Section 9: Mitigation

Local Council or Agency	Requirements relevant to visual assessment	Section Addressed
	<u>Item 8: Site land management strategy</u> - Visual screening - Rehabilitation strategy - Future rehabilitation options for site	
Lithgow City Council	No objections/ concerns.	
Heritage Council of NSW	Concern regarding the local heritage items, “Kareela’, homestead and garden”, “Iralee’, homestead, gardens and outbuilding” and “Public school and teacher’s residence (former)” listed on the Blayney LEP 2012 located nearby – to the south of the mine site. the visual impacts of the proposed development on views to and from surrounding heritage items.	Section 5: Visibility and visual sensitivity Section 9: Mitigation
Office of Environment and Heritage	Historic heritage consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant)...	Section 3: Existing Environment Section 5: Visibility and visual sensitivity Section 6: Visual effects Section 7: Visual Impact Section 9: Mitigation
Roads and Maritime Services	Identification and assessment of potential impacts of mining operations, such as blasting, lighting, visual and drainage, including the pipeline development on the function and integrity of all affected roads.	Section 5: Visibility and visual sensitivity Section 6: Visual effects Section 7: Visual Impact Section 9: Mitigation

1.4 Project application area and study area

The Visual Impact Assessment (VIA) will address the EARs and will include an assessment of:

- Existing land uses, landscape and visual amenity values of the area;
- the likely visual impacts of the development on private land in the vicinity of the development and key vantage points in the public domain, paying particular attention to any temporary and permanent modification of the landscape (e.g. waste emplacement areas, bunds, tailings facilities);
- visual impacts in short and long term;
- cumulative impacts; and
- the lighting impacts of the development.

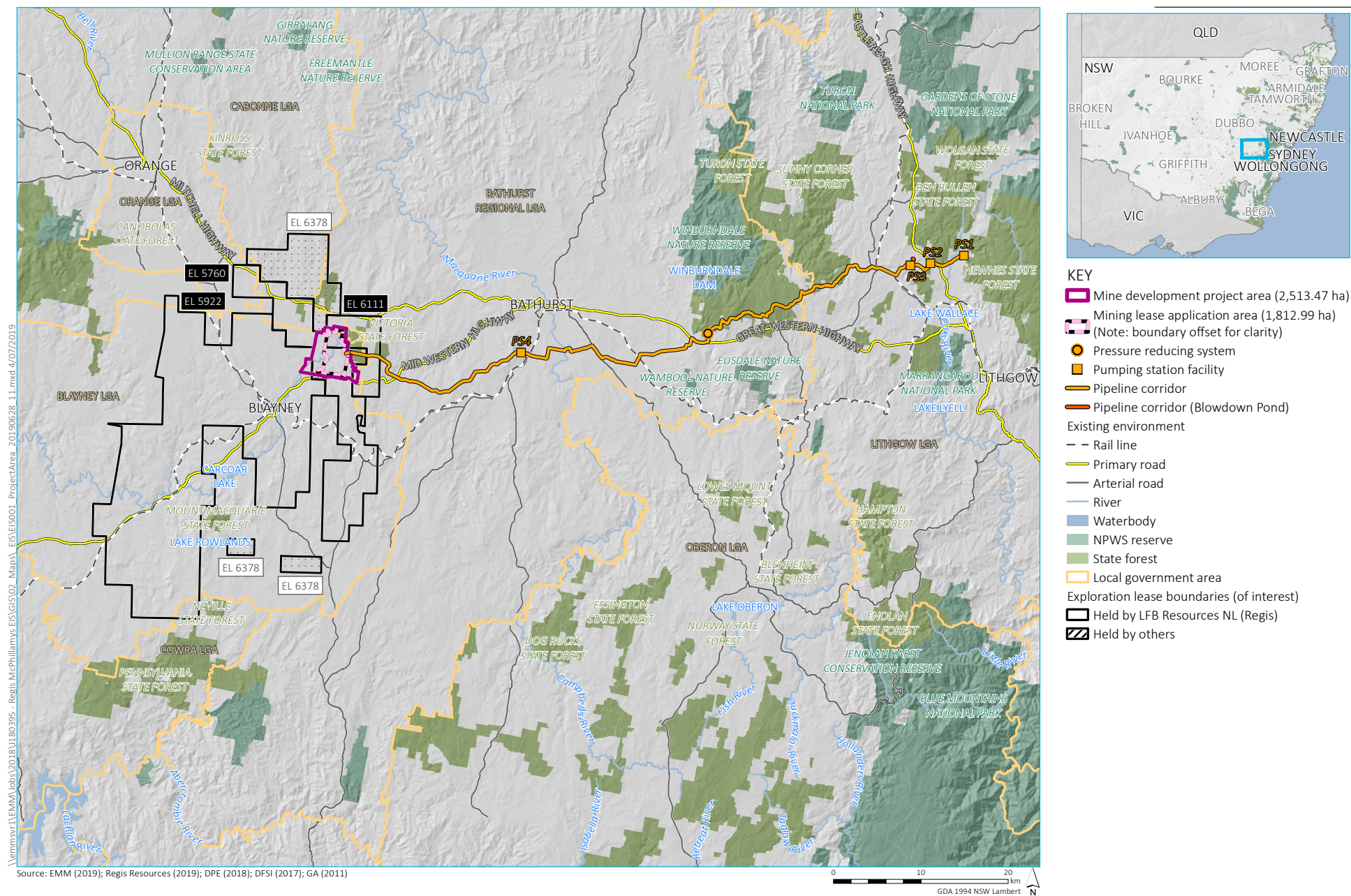
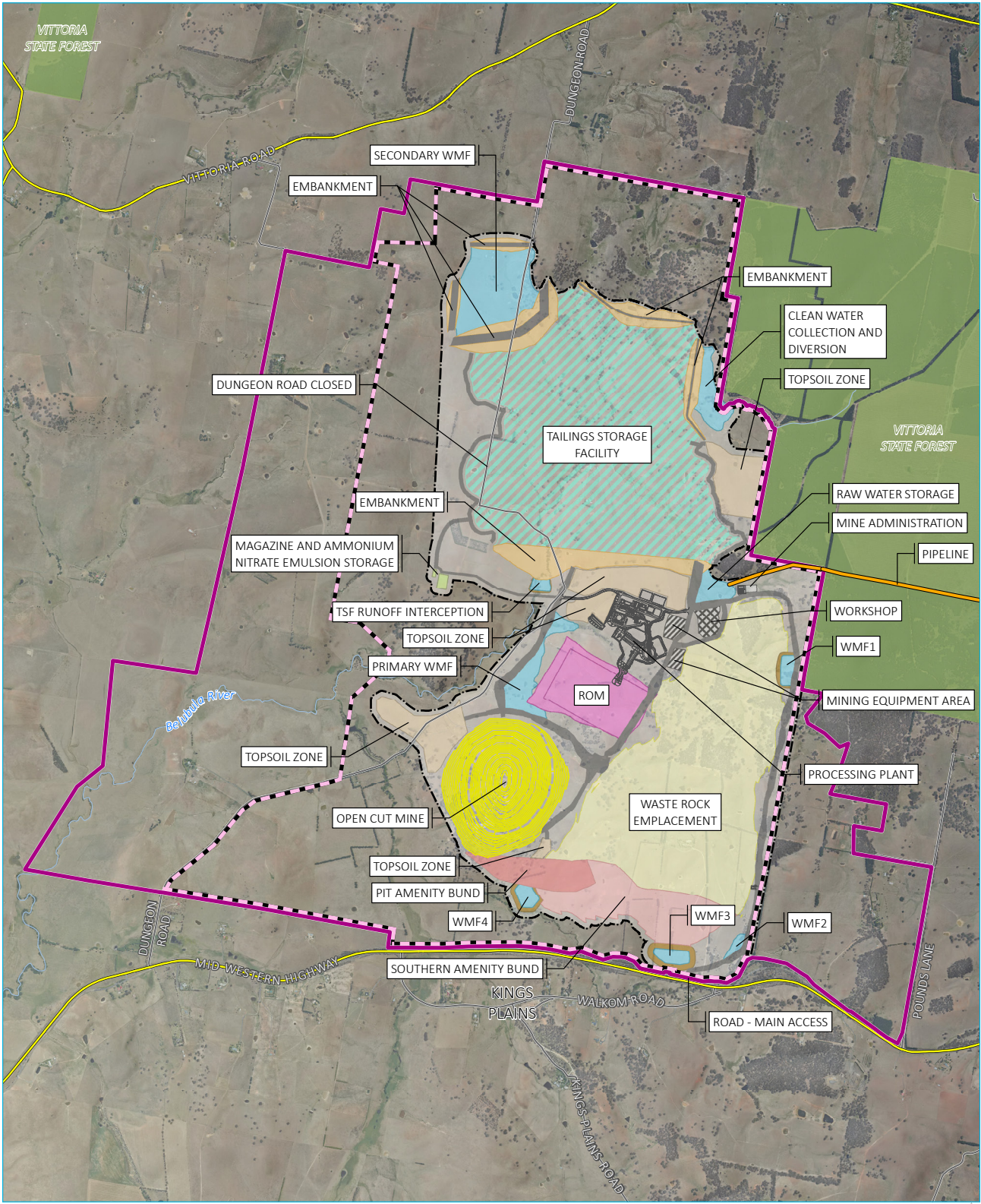


Figure 1.1 | Project application area - regional setting



Source: EMM (2019); Regis Resources (2019); Survey Graphics (2019); DPE (2018); DFSI (2017); GA (2011)

KEY

- Project application area
- Mine development project area (2,513.47 ha)
- Mining lease application area (1,812.99 ha) (Note: boundary offset for clarity)
- Disturbance footprint
- Pipeline corridor
- Project general arrangement
- Plant layout

- Road
- Water management facility (WMF)
- Sediment basin structure
- Existing environment
- Main road
- Local road
- Belubula River
- State forest

Figure 1.2 | Mine development general arrangement

2. ASSESSMENT METHODOLOGY

The methodology to determine the level of visual impact of the Project involves a consideration of the existing visual environment. This includes a consideration of appearance of the existing landscape (existing landscape settings) and how this changes from various viewing locations. In this way the visual character of the landscape and the visual sensitivity of the various viewing locations can be determined.

Secondly, the visual effect of the Project is determined by considering the visual characteristics of the Project in the context of the landscape within which it is seen.

A combined consideration of both visual sensitivity and visual effect determines the visual impacts and the degree of impact guides the level of mitigation required. The overall method of visual assessment of the existing landscape and the Project in the context of the landscape is outlined in **Error! Reference source not found..**

2.1 Evaluation of the existing visual environment

The evaluation of the existing visual environment consists of the assessment of the appearance of the existing landscape from key viewing locations. It also includes consideration of the statutory framework within which any development must be considered.

2.1.1 *Landscape setting*

The landscape setting can be defined in terms of topography, vegetation, hydrological and land use features. These elements define the existing visual character of the landscape adjacent to the Project. Within any landscape there are areas of similar visual features that are defined as a Visual Character Unit (VCU). Defining the landscape in terms of these units assists in understanding the visual character of the landscape as a whole.

2.1.2 *Viewing locations*

The viewing locations are those areas where people are likely to obtain a view of the Project. These viewing locations have different significance based on numerous factors, collectively evaluated through land use and distance.

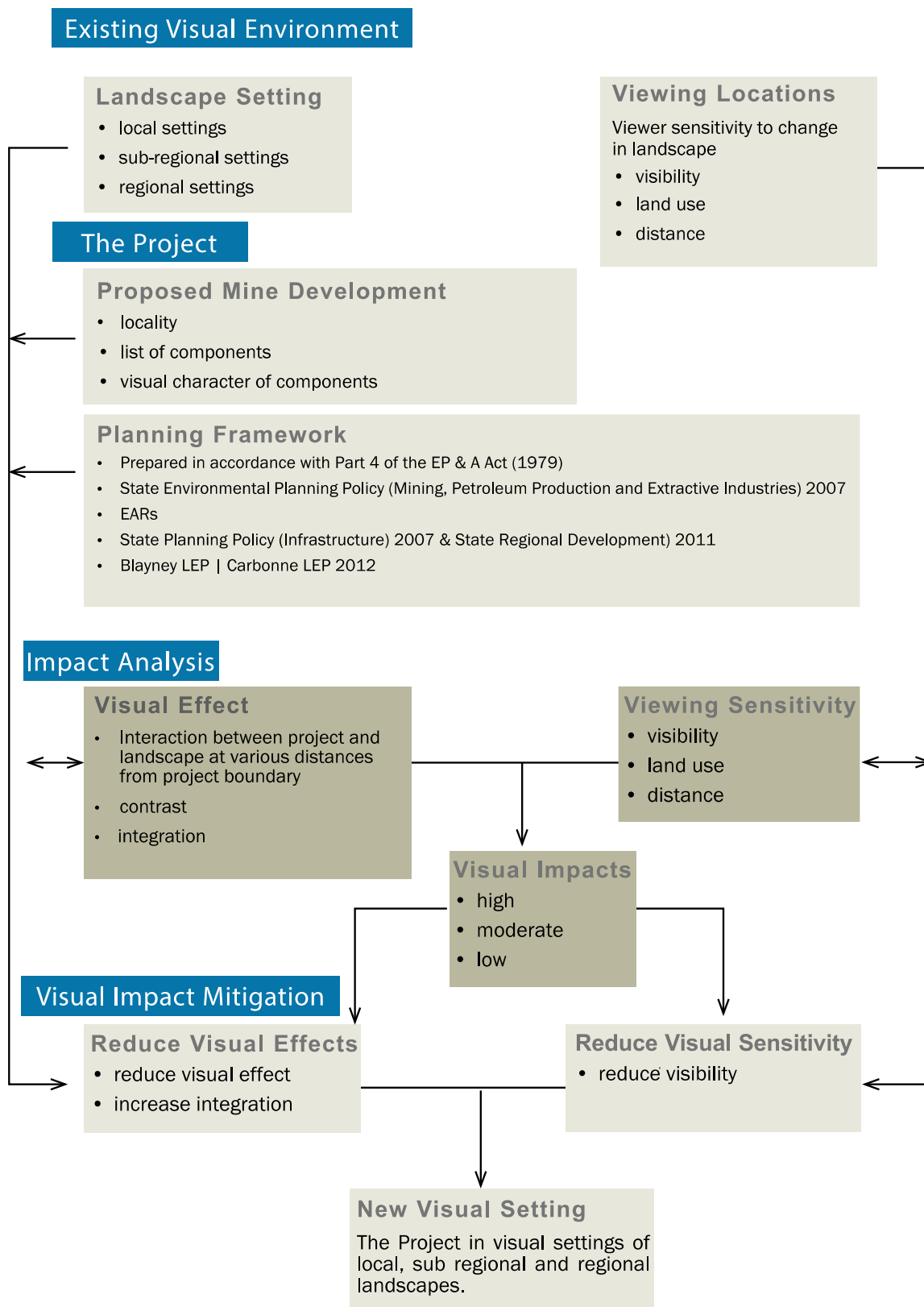


Figure 2.1 *Visual assessment methodology*

2.2 Applicable policy and legislation

2.2.1 State

Environmental Planning and Assessment Act 1979

The EP&A Act is the overarching planning legislation in NSW. This Act provides for the creation of planning instruments that guide land use.

This impact assessment has been prepared in accordance with Part 3A of the EP&A Act. The EP&A Act requires that environmental impacts including visual impacts are assessed and mitigated where necessary as identified in Section 1.3.

2.2.2 Regional

- Central West and Orana Regional Plan 2036

2.2.3 Mining - State Environmental Planning Policy requirements

- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy (Infrastructure) 2007

2.2.4 Relevant Local Plans

- Blayney Local Environmental Plan 2012
- Cabonne Local Environmental Plan 2012
- Blayney Shire Strategic Community Plan 2025

2.3 Analysis of the Project and its setting

The Project area is evaluated to define the visual elements that are most significant from a visual perspective. The Project area elements are defined as being major or minor and are considered in terms of how they contrast with the existing environment.

The analysis of the interaction between the existing visual environment and the Project area provides the basis for determining impacts and potential mitigation strategies. By defining the visual effect of the Project area and testing the visual sensitivity from key viewing locations the overall visual impact can be determined.

Table 2.1 | Visual Effect Levels

Visual Properties			Visual Effect Levels		
Contrast Levels with elements in primary view zone	Visual Integration with elements in primary view zone	Visual Effect Levels	High Visual Effect	Moderate Visual Effect	Low Visual Effect
High Development elements do not borrow form, shape, line, colour or texture or scale from existing features of the visual setting and contrast levels with existing landscape are high.	Low The development lacks integration with visual setting because of scale totally dominating the ability of site or surrounding features, vegetation and/or topographic features to integrate with the development.	Level 1	It occupies more than 2.5% of the primary view shed	It occupies between 2.5 - 1% of the primary view shed	It occupies less than 1% of the primary view shed
Moderate Development elements borrow from some features of the visual setting in terms of form, shape, line, pattern, colour and scale, reducing visual contrast with existing setting.	Moderate The development has some degree of visual integration with setting due to other features, vegetation and /or topography, achieving some level of integration.	Level 2	It occupies more than 20% of the primary view shed, generally when in a foreground location	It occupies between 20-10% of the primary view shed	It occupies less than 10% of the primary view shed
Low Development elements borrow extensively from features in visual setting in terms of form, shape, line, pattern, colour and scale, minimizing contrast with the existing setting.	High Visual integration is high due to other landscape features, such as vegetation and/or topography, achieving dominance, screening or filtering.	Level 3	The development occupies more than 40% of the primary view shed	The development occupies 40-30% of the primary view shed	The development occupies less than 30% of the primary view shed
			Very Low Visual Effect.		
Contrast between existing landscape and project development or restoration is unperceivable in terms of landform, vegetation and or land use elements, as perceived/ seen by an impartial viewer not familiar with any development.	Integration level of any project development is at a maximum with development elements integrating with existing form, pattern, shape, line, colour and texture of the landscape setting within which it occurs.	Level 4	Reflecting unperceivable contrast and very high visual integration levels of development and/ or its landscape restoration.		

2.3.1 *Visual effect*

Visual effect is a measure of the level of visual contrast and integration of the Project area with the existing landscape.

The degree to which the visual characteristics of the Project contrast with the existing landscape determines the level of visual effect. A newly created mine will have a higher visual effect due to strong contrast. Extension of operations in an existing mine will have a lesser visual effect. In a similar way, high visual integration is achieved when a development is of a small scale compared to the surrounding landscape. A successfully rehabilitated project will integrate with the existing landscape through use of similar visual elements (forms, patterns, lines, colours and textures) that minimise the contrast of the development with the surroundings and mitigate the visual impact of the development.

The magnitude of the visual effect as outlined in Table 2.1 is determined by a balanced consideration of the following:

Contrast and integration

The level of contrast and integration of the Project area with its surrounding landscape determine visual effect. The form, pattern and colour of project components will contrast to varying degrees with the surrounding landscape, and the comparative scale of the development will define a level of integration with the environment.

The proportion of a view that includes Project areas

For any given level of contrast and integration the lower the proportion of the view that is occupied by the Project area the lower will be the level of visual effect. This is determined by defining the proportion of the total field of view occupied by the Project area, or more appropriately determined by defining what percentage of the Primary View Zone it occupies, see Figure 2.3.

The Primary View Zone (PVZ) is the most critical and central part of a view. It is not the total view, but the most important part. It is that area that is occupied by an arc created by sight lines from the eye radiating out vertically and horizontally at angles of 30° in the horizontal plane and 20° in the vertical plane around a centre view line.

Measuring the percentage of the PVZ occupied by a development will provide a more critical measure than a measure of the development in the context of the whole view zone which will include both primary and secondary view areas, representing a view arc of 120° - 150°, instead of a view arc of 60° represented by the primary view zone only.

Generally, a high visual effect level will result if a visible area of the Project area has a high visual contrast and low integration to the surrounding landscape.

A low or very low visual effect level will occur if there is minimal contrast between the visible area of the Project area and the existing landscape setting or if the area occupied by the Project area are only small parts of a total view.

The consideration of the level of visual effect and the percentage of the primary view that the development occupies will determine the overall impact. For example, a development that is determined as Category I when considering level of contrast and integration but occupies 1% or less of the primary view has a low visual effect.

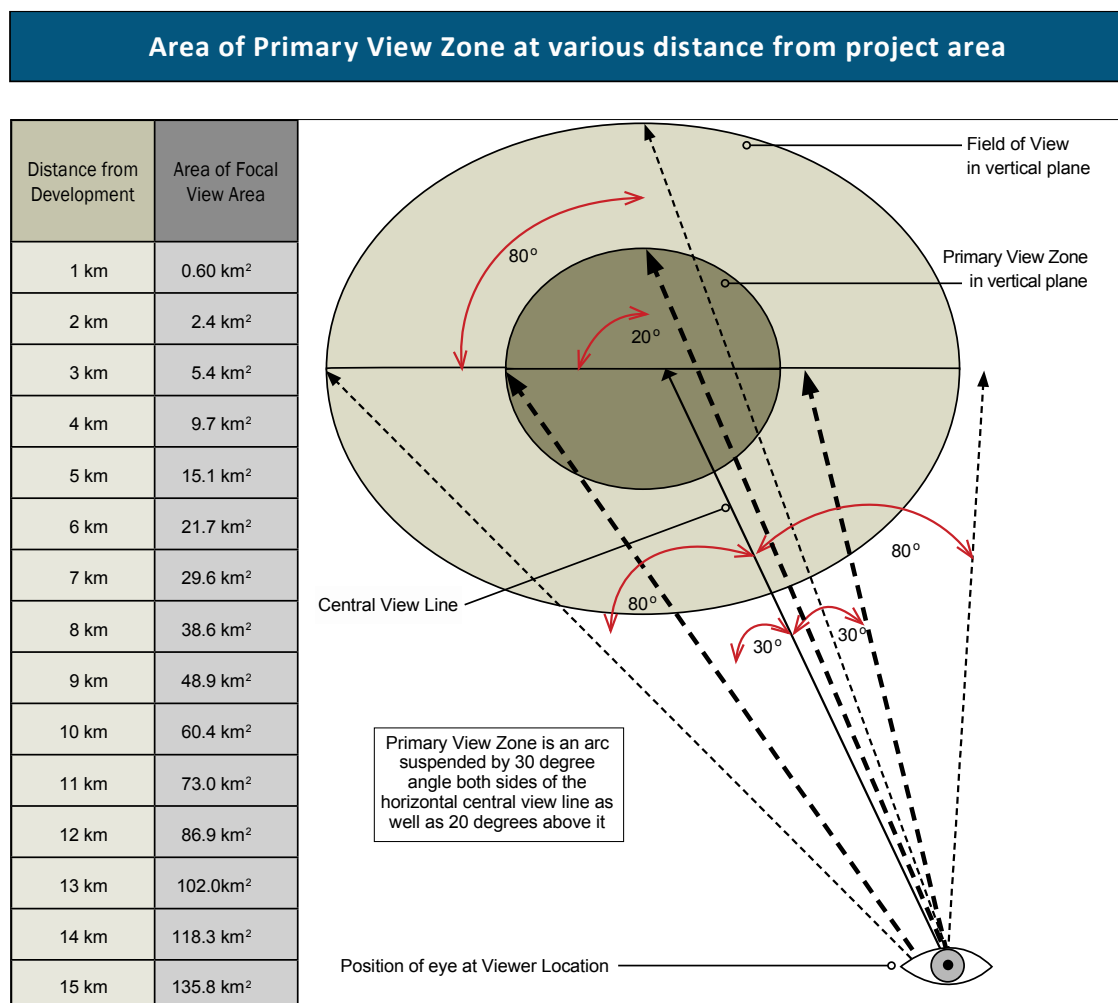


Figure 2.2 Area of Primary View Zone at various distances from the development

Table 2.2 Visual sensitivity

Land Use	Visual Sensitivity Levels			
	Nearest visible mine area less than 2.5km away	Nearest visible mine area between 2.5km - 7.5km	Nearest visible mine area between 7.5km - 12.5km away	Nearest visible area more than 12.5km away
Urban and rural houses	High Sensitivity	High Sensitivity	Moderate Sensitivity	Low Sensitivity
Destinations of visually high sensitive land uses eg. lookouts, recreation areas	High Sensitivity	Moderate Sensitivity	Moderate Sensitivity	Low Sensitivity
Designated tourist roads eg Mitchell Highway and Mid Western Highways	High Sensitivity	Moderate Sensitivity	Low Sensitivity	Low Sensitivity
Commercial Facilities	High Sensitivity	Moderate Sensitivity	Low Sensitivity	Low Sensitivity
Other main roads eg Vittoria Road,	Moderate Sensitivity	Low Sensitivity	Low Sensitivity	Very Low Sensitivity
Minor local roads in rural zone eg Kings Plains Road.	Moderate/Low Sensitivity	Low Sensitivity	Very Low Sensitivity	Very Low Sensitivity
Broad acre rural lands	Low Sensitivity	Low Sensitivity	Very Low Sensitivity	Very Low Sensitivity

2.3.2 Visual sensitivity

Visual sensitivity is a measure of how critically a change to the existing landscape may be when viewed by different land use areas and other stakeholders from varying distances.

In this regard, residential, tourist and / or recreation areas generally have a higher visual sensitivity than other land use areas including industrial, agricultural or transport corridors. This is because land uses, such as residential, use the scenic amenity values of the surrounding landscape and may be used as part of a leisure experience, often over extended viewing periods. Table 2.2 indicates the levels of visual sensitivity associated with the Project area.

However, the visual sensitivity of individual residences may range from high to low, depending on the following additional factors:

- Screening effects of any intervening topography, buildings or vegetation. Residences with well screened views of the Project area will have a lower visual sensitivity than those with open views;
- Viewing distance from the residence, or other sensitive receptor, to visible areas of the Project area. The longer the viewing distances, the lower the visual sensitivity; and
- General orientation of residences, or sensitive receptor, to landscape areas affected by the Project area. Residences with strong visual orientation towards the Project area, i.e. those with areas such as living rooms and/or verandas orientated towards it, will have a higher visual sensitivity than those not orientated towards the Project area, and which do not make use of the views toward the Project area.

For any area to be given a sensitivity score, it must have visibility of the Project area. Project area visibility is determined by field assessment, map and aerial photo evaluation and/or computer assessment of topographic and vegetation data.

2.3.3 Visual Impact

Determining impacts on potential viewers involves consideration of the number of viewers, the types of viewers and their potential sensitivity to changes in the visible landscape that will occur if the proposed Project area is built, and the likely duration of their views of the Project area.

The level of visual impact of the Project area is determined by combined consideration of the visual effect and the visual sensitivity. This combined consideration is illustrated in Table 2.3.

Table 2.3 Visual Impact

		Visual Sensitivity			
		High	Moderate	Low	Very Low
Visual Effect	High	High Visual Impact	High/Moderate Visual Impact	Moderate/Low Visual Impact	Moderate/Low Visual Impact
	Moderate	High /Moderate Visual Impact	Moderate Visual Impact	Moderate/Low Visual Impact	Low Visual Impact
	Low	Moderate/Low Visual Impact	Moderate/Low Visual Impact	Low Visual Impact	Very Low Visual Impact
	Very Low	Low Visual Impact	Very Low Visual Impact	Very Low Visual Impact	Very Low Visual Impact

Visual Impact is dependent on the interaction between visual effect and sensitivity.

2.3.4 *Indirect impacts to visual amenity*

Indirect impacts are impacts that occur away from the Project area location, in either a spatial or temporal sense. Indirect visual impacts are generally subtle, sometimes temporary, and usually are much less significant than the direct visual impacts of the Project area. Indirect visual impacts may be particularly important in the context of cumulative visual impacts, as the presence of multiple facilities in an area may have subtle effects over time that are not apparent or may be insignificant on an individual project basis.

2.3.5 *Cumulative impacts*

An appropriate radius of analysis is required to include all relevant existing developments. The cumulative impacts should also consider potential future actions that could affect the landscape and account for future generations of viewers.

Cumulative visual impacts are the combined effects from the proposed Project area with other past, present, or likely future actions (typically development activities), within a prescribed distance from the proposed Project area.

The impact of a single project considered by itself may be small while it may contribute to a broader cumulative impact with other adjacent activities. These activities could include the building of similar mining facilities or other types of facility.

Cumulative visual impacts can occur:

- Where multiple facilities are seen within the same view without the viewer turning his/her head (the facilities may be juxtaposed so that one is seen “through” the other;
- Where multiple facilities can be seen successively if the viewer turns his/her head; or
- Where multiple facilities are viewed in succession as the viewer moves through the landscape (e.g., driving on highways, hiking trails, or boating on rivers). In this case, multiple facilities can impact the viewing experience for moving viewers even if the facilities are not visible from a single common viewpoint.

Cumulative visual impacts are important with respect to increasing numbers of mining projects because the high visibility of large scale changes to the landscape over long distances increases the chances that multiple projects are in view at the same time or in succession for moving viewers. The development of mining resources involves new pipelines, roads, increased traffic, dust, and light sources at night, which taken together have the potential for transforming landscape character on a local scale in a relatively short timeframe.

2.4 *Visual impact mitigation*

Visual impact mitigation strategies address onsite and offsite viewers, visual effects and sensitivity factors over time.

2.4.1 *Reduce visual effects*

Rehabilitation of disturbed areas associated with the Project area will decrease the visual contrast created by mining operations to the existing landscape. The rehabilitation strategies that emulate patterns, shapes, line and colour of the existing landscape will reduce the contrast between the Project area and the existing landscape, reducing visual effect levels.

2.4.2 **Reduce visual sensitivity**

Reducing visual sensitivity is achieved by carrying out treatments to minimise visibility to the Project area. Due to the scale of open cut mine components, screening is often best done close to the point of viewing. Such screening treatments can be used to enhance the landscape view and reframe views towards areas not affected by mining activities.

2.4.3 **New visual setting**

On completion of mining operations and following rehabilitation, a new local landscape will be created. This new landscape will reflect post mining land.

2.4.4 **Dynamic visual impacts – and dynamic visual assessment**

Increasingly, consideration of cognitive/ dynamic landscape impacts is becoming critical to the assessment of a project. Recently land and environment courts have taken into consideration these matters such as referred to in item 174 of *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7.

This consideration was also given significant weight in the NSW Planning Assessment Commission Determination Report Drayton South Coal Project (SSD 6875) in relation to perceptions of damage to reputation of local enterprises.

Sensitivity to changes in the viewed landscape is related to the viewers' attitudes, expectations individual preferences and the activities being undertaken at the time. However, there are perspectives related to perceptions and changes to either "image" or branding" of a business, enterprise or locality.

- Dynamic Visual Assessments are less quantitative and more subjective
- Indirect impacts: Light glow, windblown dust and blasting plumes.
- Time: Consideration of past views and expectations of what will happen in future.
- Movement: Consideration of the viewer moving between different viewpoints and aggregating the different perspectives into their perception of the mine.
- Perception: Influence of other factors (e.g. mining-related vehicles on public roads, aerial photography, media and internet) on the viewers perception of the mine.

Landscape has been defined as '...an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors' (Kaymaz, 2012).

Human factors are expressed through a wide range of rural and urban land uses. In the Blayney Region this includes an agricultural rural lifestyle. Other manifestations include towns and villages as well as roads of various scales and character and other infrastructure such as power lines, quarries and existing and closed mines in the region.

Landscape assessment seeks to identify and describe variation in the character of the landscape, with reference to elements and features both natural and cultural, as understood by human perception (Figure 2.3) or cognitive mapping. It differs from visual assessment in that it considers all sensory perception of the landscape.

Dynamic landscape assessment refers to the collective evaluation of these values at a regional and subregional level in addition to local area assessment. It reflects people's perceptions as they move through the landscape. A dynamic landscape assessment for the Project is presented in Section 8.

Viewer Characteristics

Individual characteristics of the viewer affect the perception of contrast and the ability to discern objects in the landscape.

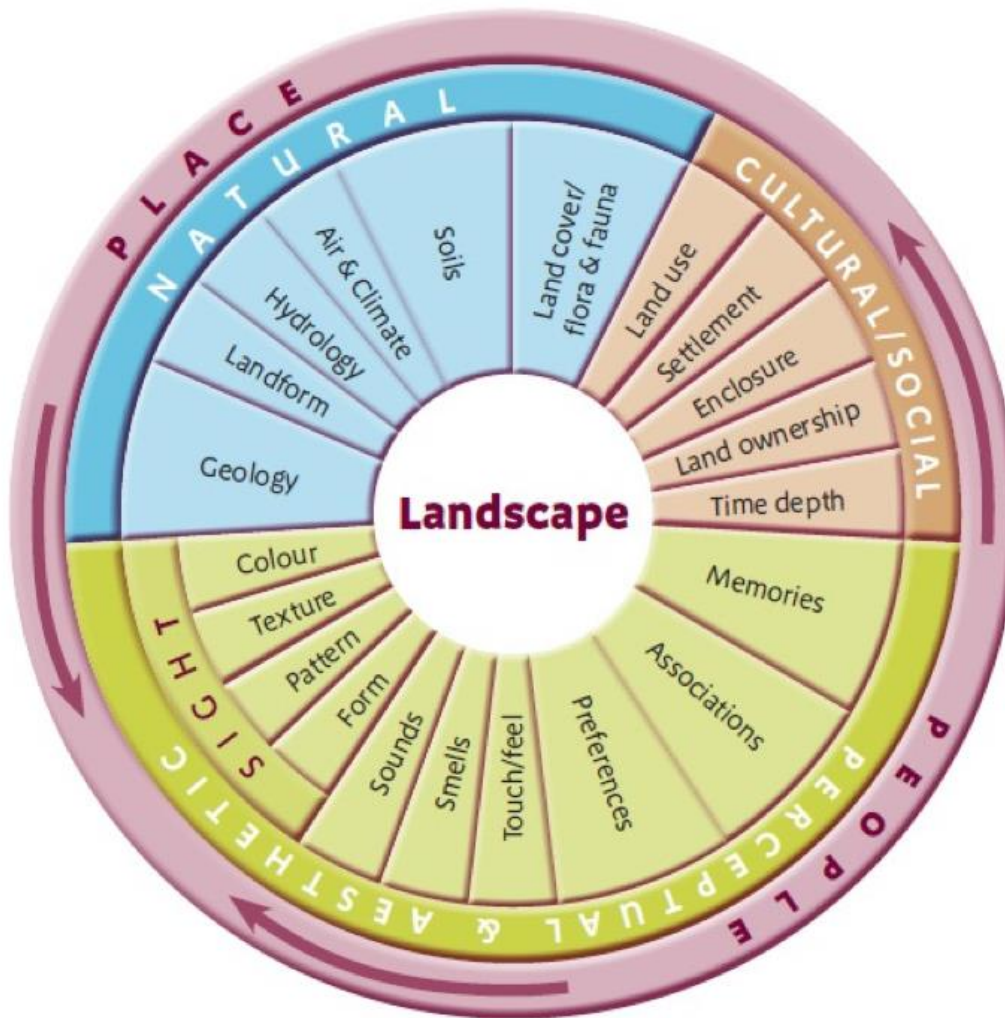


Figure 2.3 Landscape Characteristics

Source: Natural England (2014)

3. EXISTING ENVIRONMENT

3.1 Introduction

This section establishes the visual character of the Project area created by a range of different landscapes, which vary as a result of topography, vegetation cover and land use types. Based on visual differences created by these landscape elements, seven Visual Character Units (VCU) were established.

For the purposes of this assessment, the McPhillamys Gold Project open cut mine area is located within the area of the Primary Visual Catchment (PVC) as illustrated in Figure 3.1.

The PVC covers an area of approximately 232 km² and is defined by a connecting 73 km perimeter of higher elevation ridgelines surrounding the Project area. The western slopes of the Great Dividing Range forming the eastern section of that perimeter.

3.2 Visual Study Area

The Visual Study Area (VSA) includes the most significant parts of the PVC from which the Project areas potentially could be seen. This establishes a visual catchment visible from a combination of locations within a defined setting.

The majority of critical views of the Project area are located in the VSA. The VSA and PVC are illustrated in Figure 3.1.

Key landscape features within the VSA include:

- Mount Macquarie (1,204m AHD) – located approximately 24km to the south-west of the Project area.
- Mount Canobolas - (1,395m AHD) - located approximately 35km to the west-northwest of the Project area.
- Belubula River
- Plantations
- Undulating hills – grazing lands

3.3 Project area and surrounds

The Project area is located within a predominantly rural setting and is surrounded by dispersed rural residential development incorporating both small and large rural holdings. Blayney LGA is described in the Blayney 2020 Masterplan (PDG 2016) as *“rich with historic, cultural and natural assets, along with productive sectoral resources and rolling rural landscapes”*.

The Blayney LGA has a strong mining heritage and mining remains a key industry in the LGA.

Cattle grazing is the dominant rural land use in the area surrounding the Project area.

Other land uses surrounding the Project area include:

- The Vittoria State Forest adjoining the eastern boundary of the Project area;
- Mid Western Highway adjoining the southern boundary of the Project area,
- Guyong Road to the far west of the Project area boundary;

- Vittoria Road to the far north of the Project area boundary; and the
- Locality of Kings Plains immediately south of the Project area.

Generally, topography surrounding the Project area ranges from 900m AHD and 1,000m AHD with moderate to gentle slopes down to open valleys. The PVC defines the divide between the Macquarie and Lachlan River catchments.

3.3.1 *Existing mines, quarries, resource extraction and recycling*

Existing mining and resource extraction are significant contributors to local industry and employment growing faster than agriculture between 2006 and 2016 (Hansen Bailey 2019 Appendix T of EIS). The presence of such industries acknowledges the community's licence to operate within the region.

These industrial uses occur both with the PVC and more broadly within region extending to the Orange LGA.

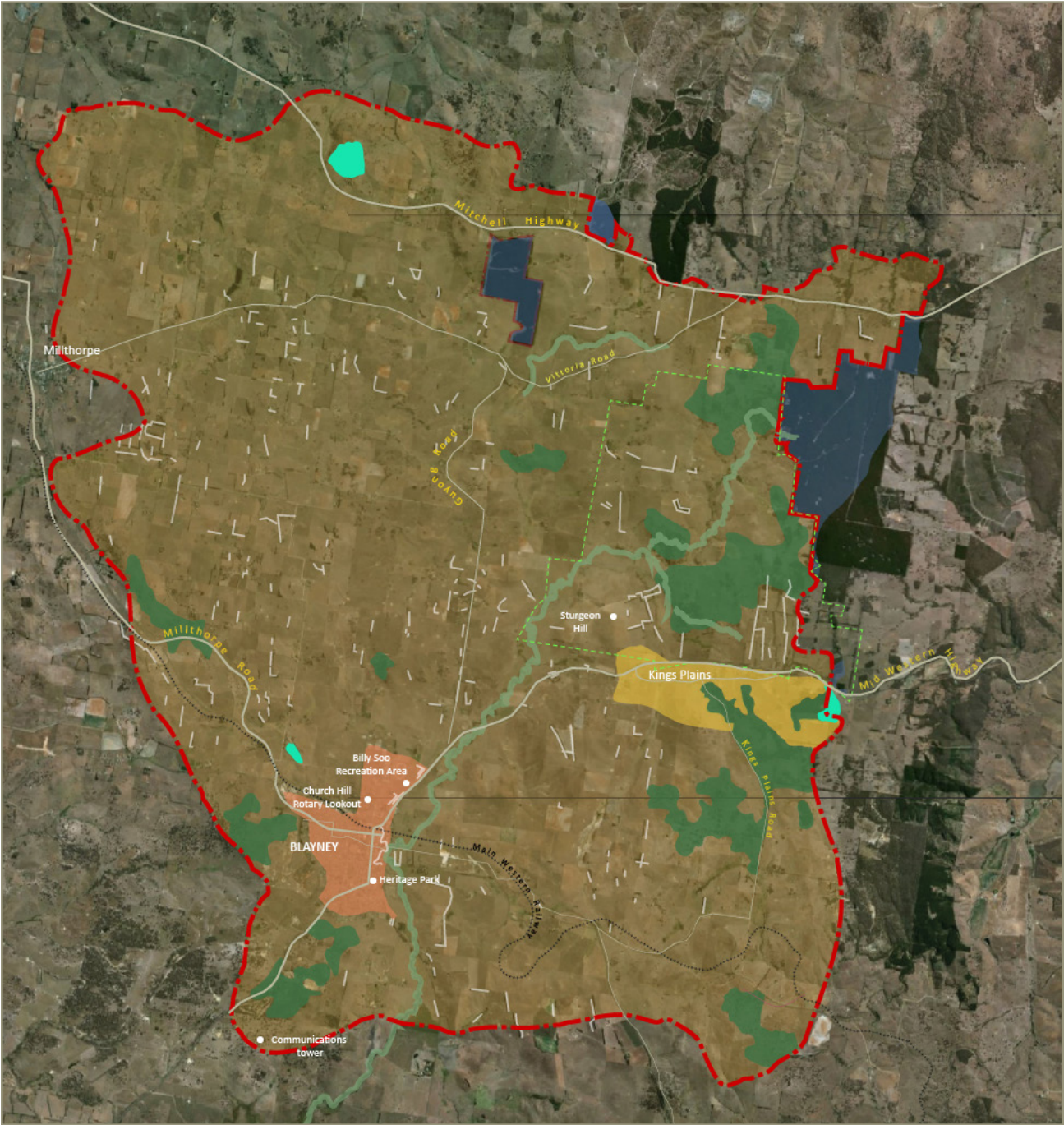
These include:

- Waste resource recycling station (W2R) – (Blayney LGA) within the PVC
- East Guyong Rock Quarry – (Carbonne LGA) within the PVC
- Cadia Valley Operations – (Blayney LGA and Carbonne LGA) outside the PVC
- Shadforth Quarry – (Orange LGA) outside the PVC
- Browns Creek mine (closed) – outside the PVC
- Blayney Quarry (Blayney LGA) – outside the PVC
- Quarry to west of Bathurst – outside the PVC

3.3.2 *Other major projects in the Region*

In the context of the Project proposal and consideration of future cumulative impacts, other major projects under approval for within local LGAs include:

- Bathurst Second Circuit, Mt Panorama (Bathurst LGA)
- Brewongle Solar Farm (Bathurst LGA)
- Flyers Creek windfarm (Blayney LGA)
- Kempfield Silver Mine (Bathurst LGA)
- Cadia East Gold/Copper (Mod 12) (Blayney LGA and Carbonne LGA)
- Orange Waste Project (MOD2) (Carbonne LGA and Orange LGA)



key

- Primary visual catchment
- Main roads
- Main Western Railway
- Mine Development Project area

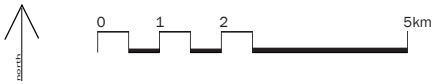


Figure 3.1 | Visual study area and visual catchment units
The visual settings of the Project sites are created by a range of landscapes with different topography, vegetation, and land use features. Considered together, these create a number of distinctive visual character units (VCU). Any view may include a number of VCUs.

3.4 Visual character units

The visual character of the landscape in the vicinity of the Project area is defined by the mosaic of topographic form, vegetation patterns, the riparian network of the Belubula River system and the residential settlement patterns. These landscape features combine in various ways to create distinct areas of visual uniformity defined as Visual Character Units (VCU). The VCUs combine in various vistas from viewing locations such as residences and roadways.

Figure 3.1 illustrates the VCUs within the VSA and include:

- Blayney township VCU
- Kings Plains locality VCU
- Undulating hills VCU
- Open woodland VCU
- Creek lines VCU
- Plantation forestry VCU
- Resource extraction and recovery uses VCU

3.4.1 *Blayney township VCU*

The town of Blayney is located on the Mid Western Highway approximately 8 km south-west of the Project area and 240 km west of Sydney. Blayney was originally gazetted in 1843 with land allocated for farming.

It is situated on the Belubula River and valley in a lower lying area surrounded by undulating grazing lands that enclose the township from most aspects. There are longer views along the river corridor to the north-east towards the Project area.

The older business centre and main street (Adelaide Street) and older residential areas of the township are on generally flat alluvial flood plain adjacent the Belubula River. The older grid layout streets are lined with mature canopy shade trees characteristic of NSW rural towns. Newer residential areas are located on the lower slopes of the hills that surround Blayney to the west and south-west.

Local topographical landmarks within the town include:

- Church Hill Rotary Lookout (935m AHD), a memorial park with simple picnic facilities located on the northern edge of the town. It provides broader more distant views in all directions; and
- Errol Hill trig station to the south-west of the town (1,060m AHD) that is site to the local communications tower.

Blayney contains several older buildings of architectural and heritage interest including several notable churches. Blayney's wide streets, heritage village character and general amenity give the township tourist appeal and is promoted as part of a heritage village trail for regional visitors (Figure 3.2).

Blayney has a number of heritage-listed sites that contribute to its heritage appeal and place as a tourist destination.

3.4.2 *Kings Plains VCU*

Kings Plains is a small rural settlement located on Walkom Road immediately south of the Project area and approximately 8 km east of Blayney and 30 km west of Bathurst (Figure 3.1). Access to Kings Plains is via the Mid Western Highway. The settlement of Kings Plains has an estimated resident population (ERP) of 45 people¹ and consists of a combination of rural lifestyle blocks and larger rural landholdings. Many of these residents have either existing older homes or have developed newer homes on the north facing slopes oriented towards the Project area to access the existing views onto the hills and landscape north of the Mid Western Highway.

Some residences have optimised this outlook with outdoor living areas; others have reoriented their views or enclosed them within established landscaped gardens around the homes.

Within Kings Plains there are heritage items listed in Blayney LEP 2012 as follows:

- “Kareea’ – homestead and garden
- “Iralee” – homestead, garden and outbuilding
- “Public school and teacher’s residence (former)”

These heritage buildings and residences contribute to the visual character and social / cultural profile of the location. These items will be discussed in further detail in Section 5.

3.4.3 *Undulating hills VCU*

The majority of the VSA is comprised of undulating agricultural/ grazing lands with few distinctive peaks or high points characteristic of rural farming areas in this Central Western NSW. This VCU has high visual integrity in that it is a consistent landscape uninterrupted by development, industry or residential expansion.

Throughout this VCU are expressions of cultural settlement and husbandry such as windbreaks of mature typically exotic tree species (cypress and poplar species) that create distinctive darker green more defined linear landscape patterns on roadsides, driveways, ridgelines and fence lines.

3.4.4 *Open woodland VCU*

Within the Open woodlands VCU are clusters of native woodland often on hills and elevated locations that contrast from the open undulating character of the surrounding hills. Within these wooded hills the landscape character is more closed, and views are more contained.

These wooded hills create variation in visual texture and patterning in the landscape within the VSA.

¹ Hansen Bailey (2019) McPhillamys Gold Project Social Impact Assessment Report



Views of Blayney from Church Hill Rotary Lookout including heritage listed railway station and churches. Blayney is surrounded by Undulating Hills VCU and lies at the south-western edge of the PVC. Belubula River is also within this view.



Wide tree lined streets with shaded pedestrian footpaths within the main business area.

Figure 3.2 | Blayney township VCU

Blayney's heritage character and wide tree lined streets give it high visual appeal making it a drawcard for tourists.



Figure 3.3 | Kings Plains VCU

The residences are typically orientated to face north to capture broader views of undulating rural landscapes. Some older homes have established gardens surrounding the properties.



Figure 3.4 | Undulating hills VCU
 This VCU covers most of the PVC and is the dominant landscape character in rural Central Western NSW presenting large scale broad vistas of high visual integrity.



Figure 3.5 | Cultural landscapes and windbreaks
Throughout the Undulating Hills VCU, these windbreaks and roadside planting create distinctive landscape patterns that contrast with the surrounding sparse rural areas.



Figure 3.6 Open woodland VCU

Within the PVC are scattered areas of remnant indigenous Open woodland vegetation; these are typically on the more elevated areas and ridges.

3.4.5 *Creek lines VCU*

Belubula River is a water course that is part of the Lachlan catchment that flows south and west from Vittoria midway between Bathurst and Orange. The river is joined by several minor tributaries within the PVC.

The river is visibly defined by lines of vegetation along its banks creating a visual contrast in areas where vegetation is sparse within the VCU. There is typically a linear pattern of denser more verdant vegetation and mature trees providing dappled shade and habit along the river edges.

The ephemeral nature of some parts of the river is the result of changing water flows and seasonal rainfall in the catchment. This VCU creates minor visual features in the landscape and visual backdrops to many of the adjoining open fields and grazing or croplands. Its visual effect in the landscape is limited to local screening or filtering.

3.4.6 *Plantation forestry VCU*

The Vittoria State Forest adjoins the eastern boundary of the Project area and the areas further to the north of Mitchell Highway and north-east between the Mitchell Highway and the Mid Western Highway. Rectilinear landscape patterns of mature dense green row planted trees interspersed with bare fields cleared by ongoing logging.

These plantation forests create visual barriers to views. Plantation forestry is a common land use within this region.

3.4.7 *Resource extraction and recovery uses VCU*

In contrast to the surrounding rural landscape, resource extraction and recovery activities result in different landscape patterns, textures and visual character.

The two examples within the PVC are small scale and include:

- Waste to Resource - w2r
- East Guyong Rock Quarry

Waste to Resource - w2r

This facility operates a waste to energy non-thermal, low emissions composting and vermiculture facility or “Recycling Park” on the south side of the Mid Western Highway adjacent eastern PVC ridgeline.

The onsite activities include stockpiling resources, excavations, earth moving, on site storage, processing and hauling of micronutrient-rich worm castings product.

The facilities are viewed from the highway.

East Guyong Rock Quarry

This facility is located to the north of the Mitchell Highway in the north-west of the PVC is an isolated example of excavation and open cut disturbance to the rural agricultural character of the PVC. The quarry creates a small area of contrasting visual character with cleared vegetation and exposed disturbed site partially visible from the Mitchell Highway.

Visual bunds have been developed along the adjacent roadside between the highway and the quarry. These topographic forms and landscape patterns create a different small landscape character unit relevant to this study.

3.5 Summary

The VCUs within the PVC are dominated by the landscape character of the Undulating hills VCU. The other character units are spatially much smaller but significant due to sensitivity of land uses within them. Together they create a limited range of visual settings and views.

The cultural and economic significance of Blayney, being the seat of local government is reinforced by its heritage character and the general amenity of the township, creating an appealing tourist destination and desirable place to live.

Kings Plains VCU is a contained but isolated cluster of large rural lifestyle blocks and residences that offer a quiet rural setting, some with broad open views to the surrounding Undulating Hills and grazing landscape.

The Undulating Hills VCU provides the overall context for all the other VCUs within the PVC. It generally extends across all areas within the PVC not occupied by Plantation forestry or Blayney township. The overall character is one of gently undulating rural landscape with high visual amenity value.

The Open Woodland VCU is distinctive in character and occupies scattered knolls or ridgelines such as Bushrangers Hill and 'Ingledoon' Hill). These areas of woodland provide contrast in texture and landscape patterns to the grassed undulating hills contributing to the views within the PVC while providing some visual screens both to and within the Project area boundary. In this regard the Open Woodland VCU within the Project area site are a significant asset.

The Creek line VCU is significant when it is in foreground views such as when driving north-east from Blayney towards the Project area. The lines of vegetation can provide screening in these flat locations.

Plantation forest VCU also provide significant visual screening to the Project area from the east and north. The density of trees and limited recreational use reduces views into the Project area boundary from these areas.

The Resource extraction VCU is significant as an example of excavation and disturbance of existing topography and landscape patterns within the broader PVC rural views.

The mine infrastructure and processing area are situated within gently undulating landscape of wooded ridgelines and open valleys which limit some views into the area. The open cut mine is situated on the north face of a wooded hill adjacent the Mid Western Highway. Surrounding topographic features (Sturgeon Hill) limit some views to the operational areas. The waste rock emplacement and amenity bund are situated on undulating hills bounded by plantation forestry to the east and north and the Mid Western Highway to the south. These provide screening from some directions but views from the Kings Plains VCU and the Mid Western Highway will include this development in varying degrees.

All the VCUs interact visually to create various landscape settings as seen from a range of viewpoints. Collectively these VCUs create the landscape and frame the view at times revealing then screening view corridors to the Project areas.



Figure 3.7 | Creek lines VCU

Creek lines define the lower lying drainage catchment within the surrounding undulating grazing lands. Vegetation delineates creek lines in the landscape, often providing visual barriers to more distant views.



Figure 3.8 | Plantation forestry VCU

The Plantation forestry VCU occupies the north-east of the PVC creates strong visual wall of contrasting darker green and a hogenous pattern of trees planted in rows. This PVC limits views from within or outside the PVC.



Views into this waste resource recycling station (W2R) from the Mid Western Highway on entering the PVC from the east. Small scale areas of disturbance and stockpiles of resource materials and/ or overburden contrast against the surrounding rural landscapes



Figure 3.9 | Resource extraction and recovery uses VCU
 Quarrying and resource extraction create contrasting landscape patterns due to disturbance to natural topography and vegetation textures and colours. The type of activity is different to the surrounding grazing land uses.

4. VISUAL EFFECT OF THE PROJECT

This section evaluates the various components of the Project area and defines their visual effects in terms of how these elements contrast with the existing landscapes.

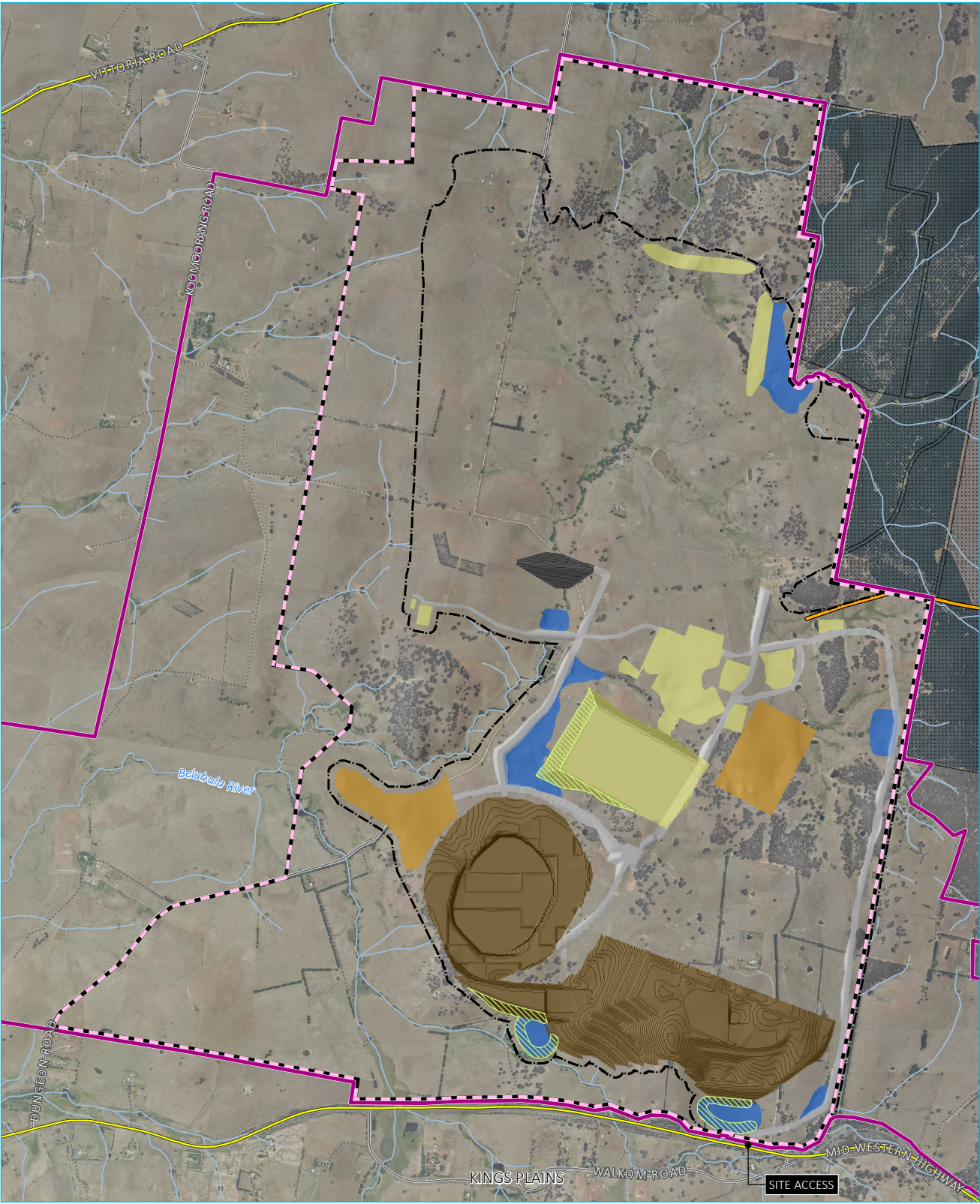
4.1 Project area components

Components of the Project area that have the potential for material visual implications, include;

4.1.1 Mine Development

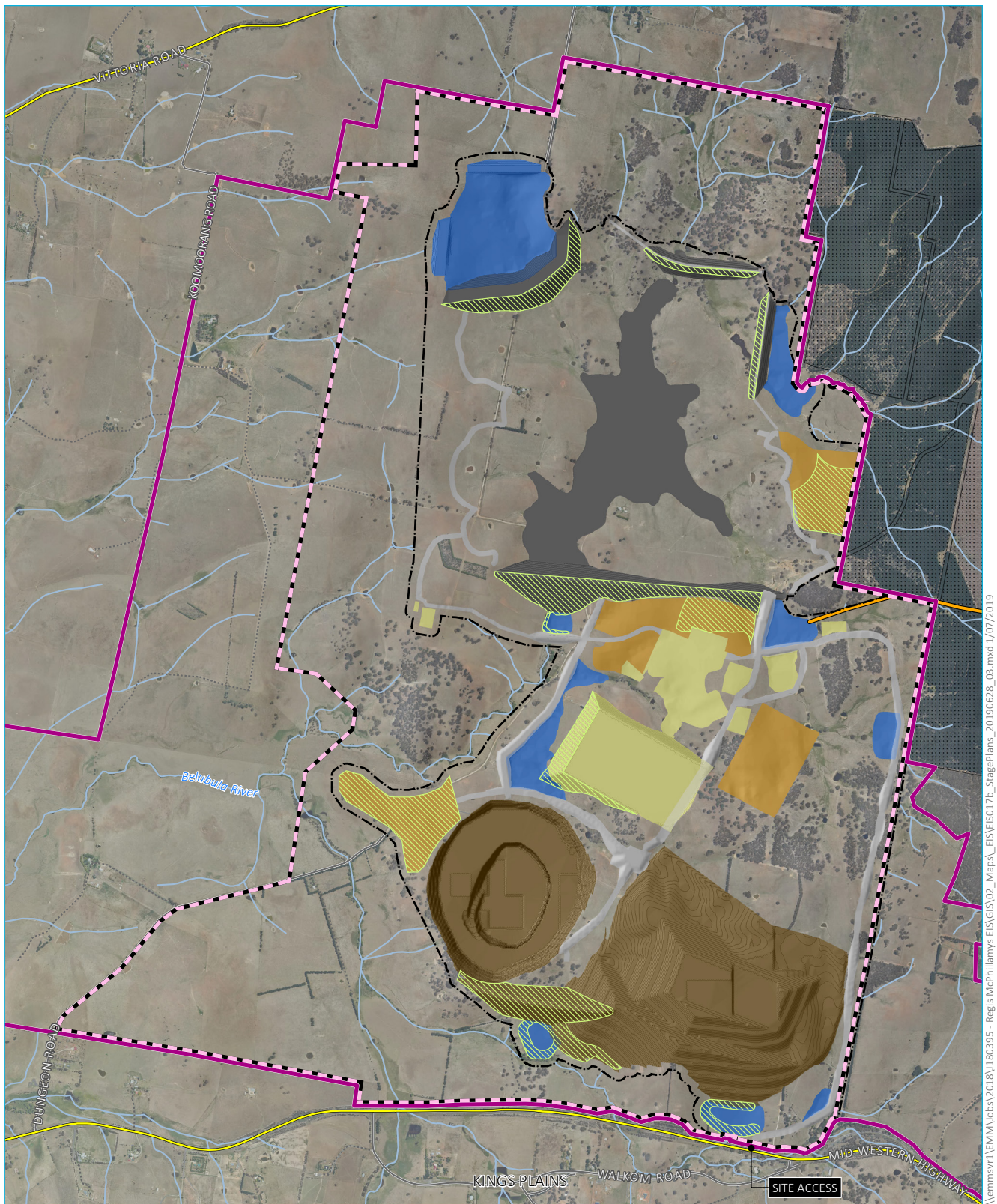
The project will have a total life of 15 years, including construction, mining and processing activities and rehabilitation and decommissioning. The construction phase will be between 1 to 2 years with around 10 years of ore extraction and processing followed by a decommissioning phase. There will be some overlap between these phases. Figure 4.1 illustrates the conceptual layout of the Mine Development which will comprise the following key components.

- Development of a single open cut mine with a diameter of approximately 1,050 m and a final depth of approximately 460 m.
- Placement of waste rock into engineered waste rock emplacement that will include encapsulation for potentially acid forming waste rock. The waste rock emplacement will be constructed and rehabilitated progressively over the life of the mine, utilizing a fleet of excavators and trucks and supporting ancillary equipment. It will be designed, to the extent practicable, to act as an amenity bund, shielding surrounding residents from activities within the Project area.
- Two amenity bunds; the southern portion of the waste rock emplacement (southern amenity bund) and the pit amenity bund will be constructed and rehabilitated in the early years of the mine development to provide noise and visual bunds for the remainder of operations.
- Placement of mined ore onto a Run-Of-Mine (ROM) pad for storage prior to processing.
- Construction and operation of a conventional carbon-in-leach (CIL) processing facility including crushing, grinding, gravity, cyanide leaching, gold recovery, tailings thickening, cyanide destruction and tailings disposal circuits. The CIL Processing Plant, with a capacity to process up to 7 Million tonnes of ore per annum (Mtpa), will incorporate a range of ancillary infrastructure including workshops, reagent and other stores, laboratory and office facilities.
- Construction and operation of an engineered Tailings Storage Facility (TSF) to store up to 50 million m³ (70 million tonnes) of tailings material.
- Construction of a new intersection on the Mid Western Highway and site access road.
- Construction of water management infrastructure, including water storages and pollution control infrastructure.
- Establishment and use of ancillary infrastructure, including administration, workshop, stores, water management, power supply and other infrastructure (including security fencing and camera surveillance).
- Establishment of a final landform that is stable, secure, non-polluting and requiring ongoing land management equivalent to surrounding undisturbed land.



- KEY**
- | | |
|---|---|
| Mine development project area (2,513.47 ha) | Vittoria State Forest |
| Mining lease application area (1,812.99 ha) | Completed works |
| Disturbance footprint | Mine infrastructure area (under construction) |
| Pipeline corridor | Mining operations (open cut & waste rock emplacement) |
| Mine plan contour (2.5 m) | Road |
| Existing environment | Tailings storage facility construction |
| Main road | Topsoil zone |
| Local road | Water management area |
| Vehicular track | Mine rehabilitation |
| Watercourse/drainage line | 70% cover - hydromulched/grass |

**Figure 4.1 | Mine development stage plan
- Year 1**

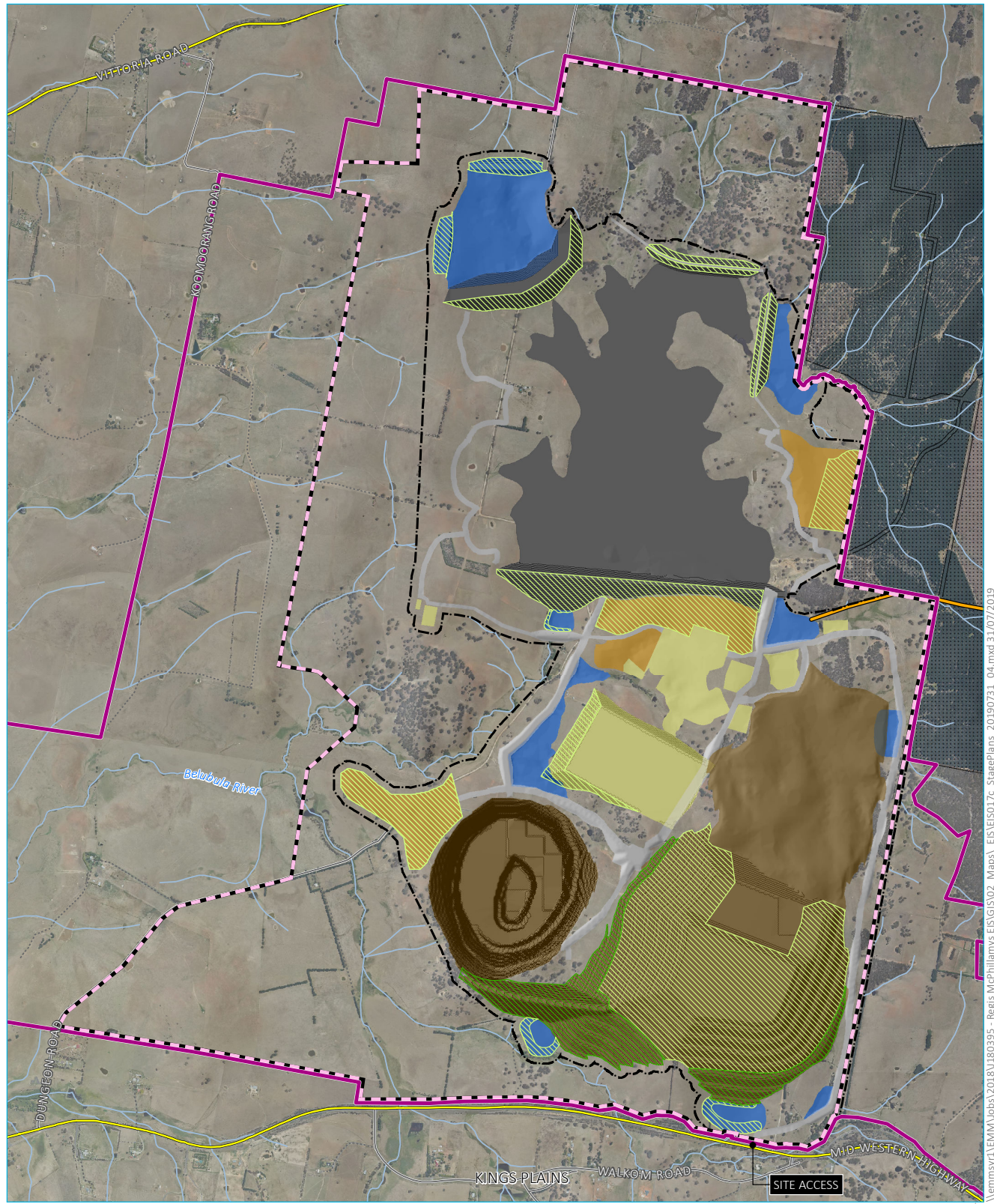


Source: EMM (2019); Regis Resources (2019); Survey Graphics (2019); DFSI (2017); GA (2011)

KEY

- | | |
|--|--|
| Mine development project area (2,513.47 ha) | Vittoria State Forest |
| Mining lease application area (1,812.99 ha) | Completed works |
| Disturbance footprint | Mine infrastructure area |
| Pipeline corridor | Mining operations (open cut & waste rock emplacement) |
| Mine plan contour (2.5 m) | Road |
| Existing environment | Tailings storage facility |
| Main road | Topsoil zone |
| Local road | Water management area |
| Vehicular track | Mine rehabilitation |
| Watercourse/drainage line | 70% cover - hydromulched/grass |

**Figure 4.2 | Mine development stage plan-
Year 2**

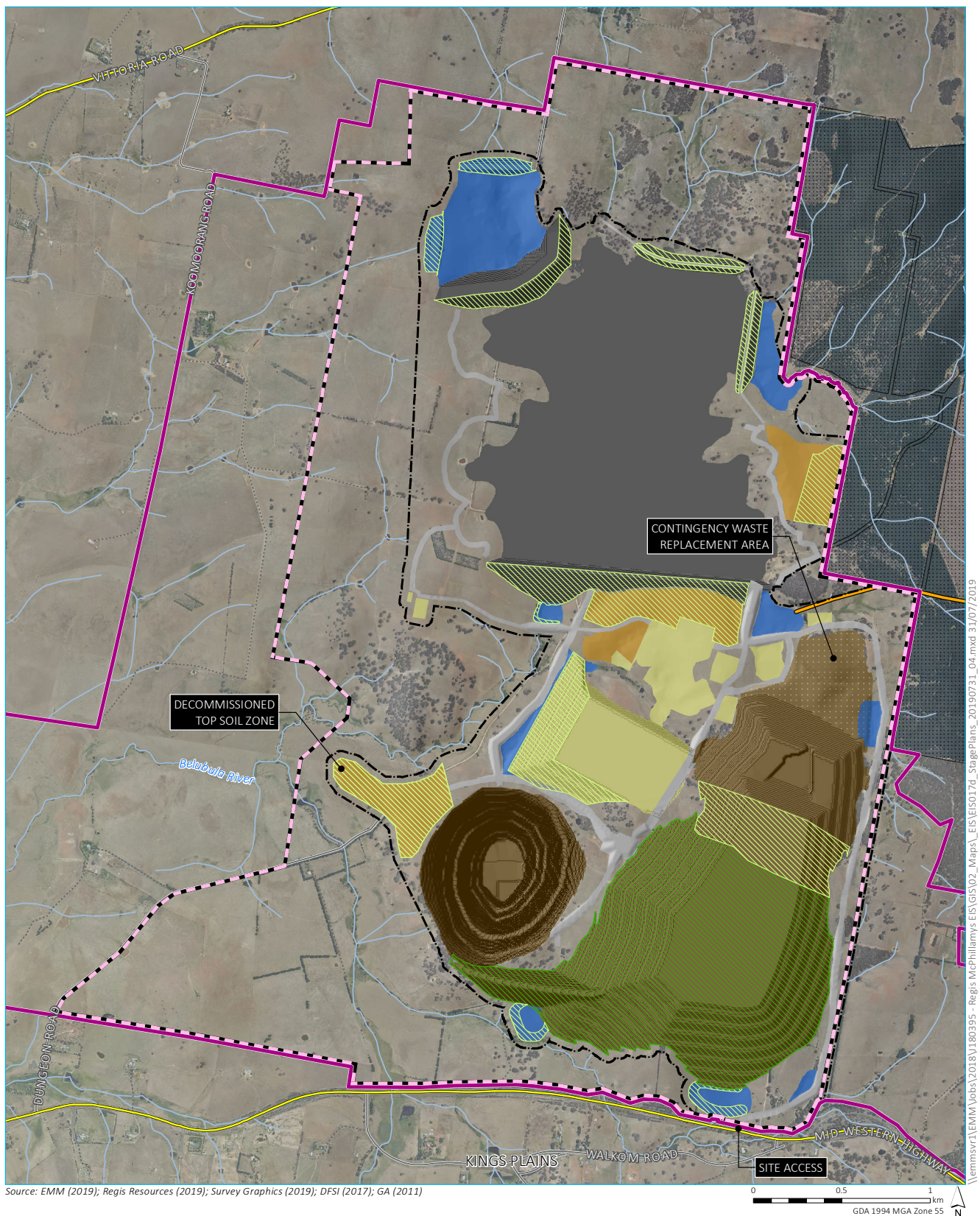


Source: EMM (2019); Regis Resources (2019); Survey Graphics (2019); DFSI (2017); GA (2011)

KEY

- | | |
|---|---|
| Mine development project area (2,513.47 ha) | Vittoria State Forest |
| Mining lease application area (1,812.99 ha) | Completed works |
| Disturbance footprint | Mine infrastructure area |
| Pipeline corridor | Mining operations (open cut & waste rock emplacement) |
| Mine plan contour (2.5 m) | Road |
| Existing environment | Tailings storage facility |
| Main road | Topsoil zone |
| Local road | Water management area |
| Vehicular track | Mine rehabilitation |
| Watercourse/drainage line | 70% cover - hydromulched/grass |
| | Early stages of open woodland establishment |

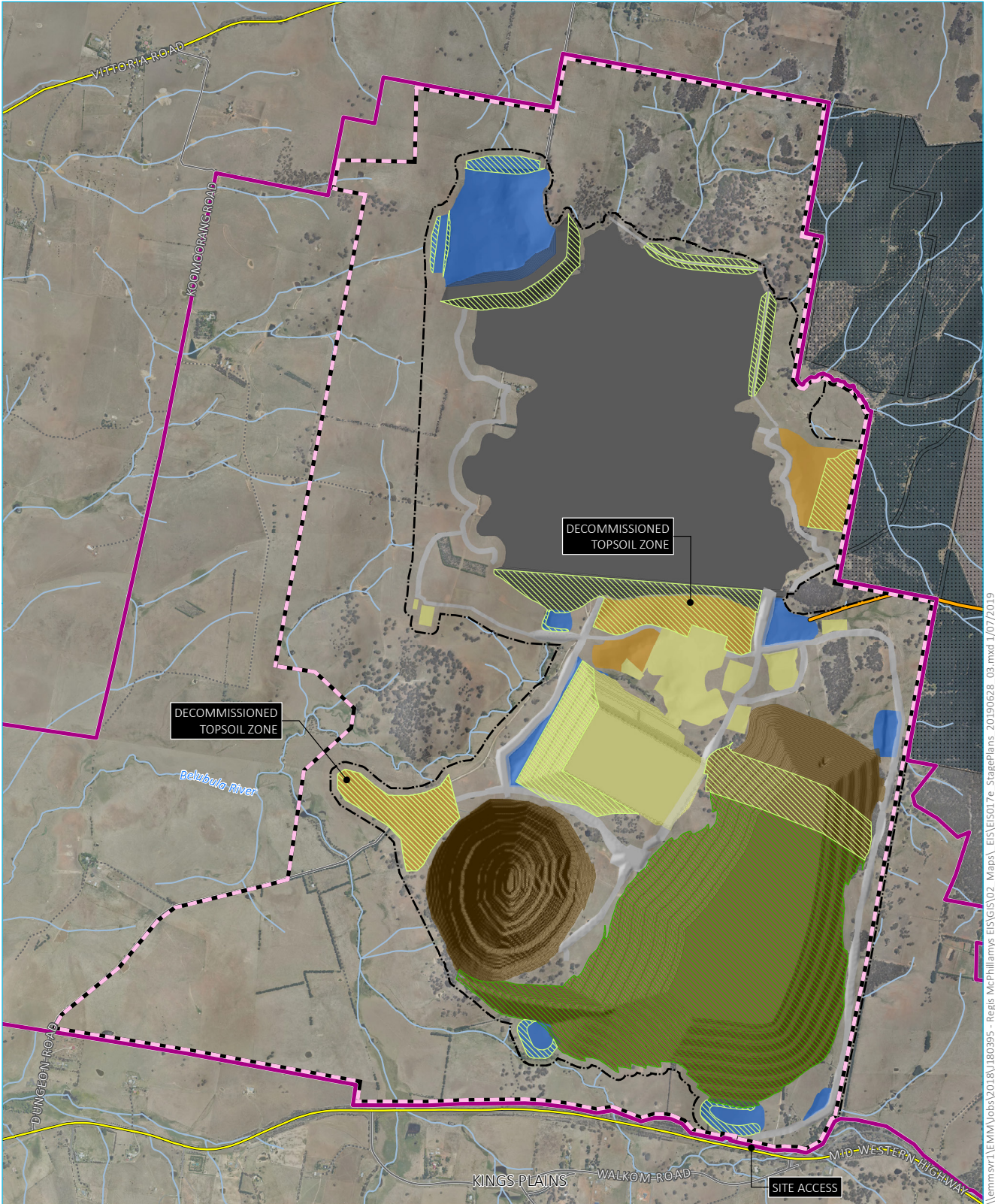
Figure 4.3 | Mine development stage plan - Year 4



KEY

- Mine development project area (2,513.47 ha)
- Mining lease application area (1,812.99 ha)
- Disturbance footprint
- Pipeline corridor
- Mine plan contour (2.5 m)
- Existing environment
- Main road
- Local road
- Vehicular track
- Watercourse/drainage line
- Vittoria State Forest
- Completed works
- Mine infrastructure area
- Mining operations (open cut & waste rock emplacement)
- Road
- Tailings storage facility
- Topsoil zone
- Water management area
- Mine rehabilitation
- 70% cover - hydromulched/grass
- Early stages of open woodland establishment

**Figure 4.4 | Mine development stage plan
- Year 8**

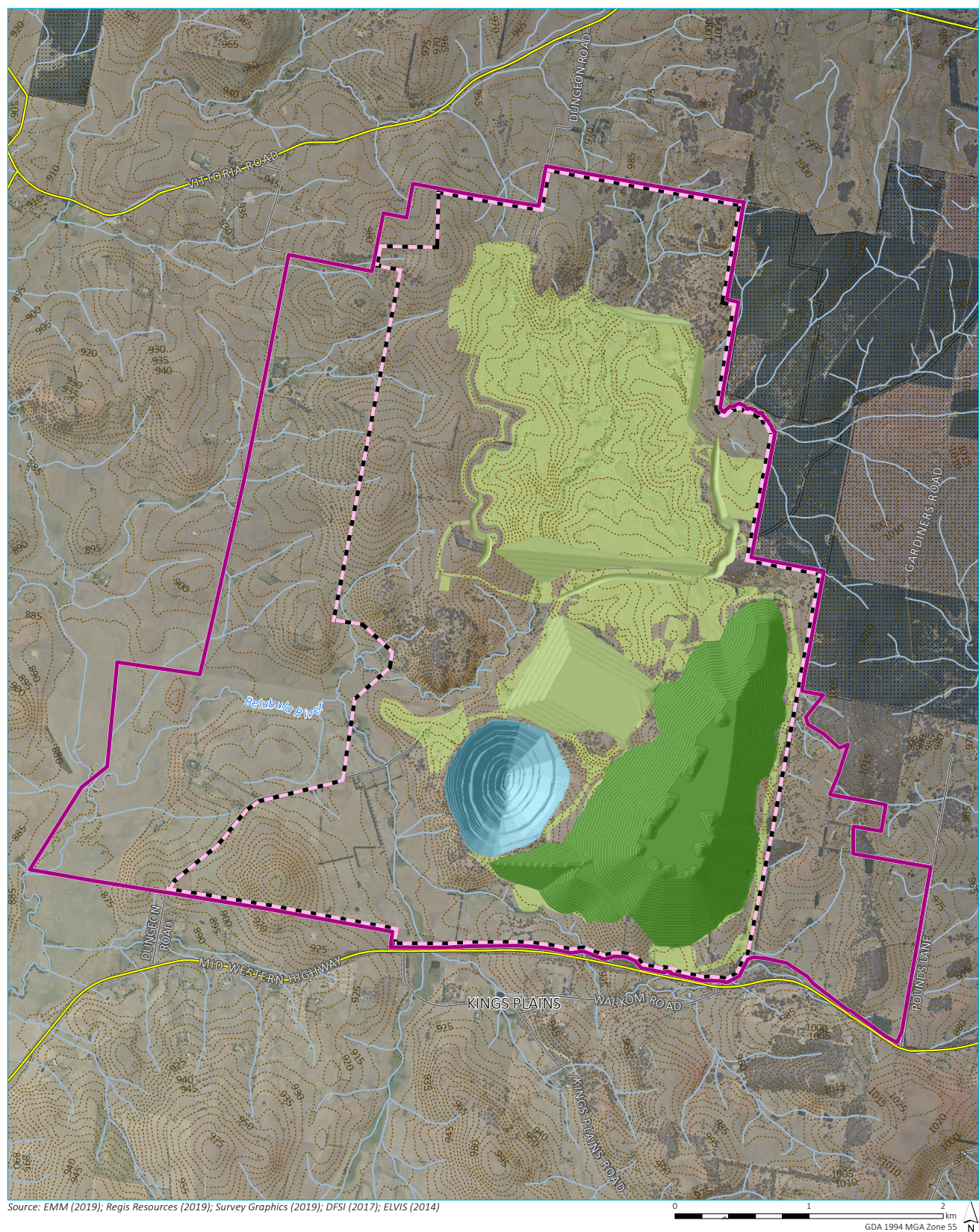


Source: EMM (2019); Regis Resources (2019); Survey Graphics (2019); DFSI (2017); GA (2011)

KEY

- | | |
|---|---|
| Mine development project area (2,513.47 ha) | Vittoria State Forest |
| Mining lease application area (1,812.99 ha) | Completed works |
| Disturbance footprint | Mine infrastructure area |
| Pipeline corridor | Mining operations (open cut & waste rock emplacement) |
| Mine plan contour (2.5 m) | Road |
| Existing environment | Tailings storage facility |
| Main road | Topsoil zone |
| Local road | Water management area |
| Vehicular track | Mine rehabilitation |
| Watercourse/drainage line | 70% cover - hydromulched/grass |
| | Early stages of open woodland establishment |

Figure 4.5 | Mine development stage plan - Year 10



Source: EMM (2019); Regis Resources (2019); Survey Graphics (2019); DFSI (2017); ELVIS (2014)

KEY

- Existing environment
- Main road
- Local road
- Vehicular track
- Watercourse/drainage line
- Existing contour (5 m)
- Vittoria State Forest

- Project application area
- Mine development project area (2,513.47 ha)
- Mining lease application area (1,812.99 ha)
(Note: boundary offset for clarity)
- Mine plan contour (2.5 m)
- Conceptual final landform elements
- Rehabilitated area (grazing)
- Rehabilitated area (open woodland)
- Void

Figure 4.6 | Conceptual final landform

4.2 Project Components

4.2.1 Open Cut Mine	
Components and Physical character	Development and operation of a single circular open cut mine with a diameter of approximately 1,050 metres (m) and a final depth of approximately 460 m, developed by conventional open cut mining methods encompassing drill, blast, load and haul operations. On average 7 million tonnes and up to 8.5 million tonnes per annum (Mtpa) of ore will be extracted during operations.
Visual effect	Year 1 to Year 2 - Level 1 visual effects <i>There will be the initial vegetation clearing, topsoil stripping and stockpiling in open cut mine excavation area. Excavation equipment and mine vehicles will be located moving across site and into open cut mine area. Excavations occur at elevations exposed to views from locations to the north-west, west, south-west, south and south-east.</i> <i>Tree retention to southern face of open cut mine hill limits extent of surface disturbance and resulting visual contrast.</i> <i>Vehicle movement and excavation equipment will generate direct and diffuse light effects for night operations, moving to and from and around the Project area. Visual contrast with surrounding rural agricultural rural setting will be high in terms of colours and texture of cleared and stripped areas. Visual integration with existing rural character will be low.</i> <i>Where there are visible Project components, the level of visual effect decreases with distance as discussed further in Section 6.</i>
	Year 4: Open cut mine benching and access roads are established, with open cut mine excavation below rim level of open cut mine. Any benching and haul road out of the pit will be shielded by Pit Amenity bund and southern amenity bund. Excavation equipment and haul trucks will move around site spilling diffuse light and possibly some direct light effects over the adjacent amenity bund. <i>Visual contrast will be reduced, and integration increased as excavations and operations will occur below open cut mine rim levels. Visual effects will be Level 2.</i>
	Years 8 to Year 10: As for Year 4, however diffuse light spill out of open cut mine will be lower as open cut mine depth increases. No additional visual effect. Light spill and diffuse light effects will be reduced as operations cease after Year 10. Visual effect will be Level 2.
	Final: Open pit will be a void with perimeter fencing and open woodland planting around stabilised rim edges and slopes. Visual effect will be Level 4.

4.2.2 Southern Amenity Bund and Pit Amenity Bund	
Components	The southern amenity bund forms the southern extent of the waste rock emplacement while the pit amenity bund runs from the highest point south of the open cut, connecting to the southern amenity to the east. Both amenity bunds have been designed to mitigate noise and visual impacts on receivers residing in Kings Plains to the south and south west of the mine development. The pit amenity bund is expected to be constructed in Year 1. The southern amenity bund is expected to be constructed between Year 1 and Year 4 of the mine life.
Physical Character	Waste earth and rock from open cut mine mounded and benched to form constructed bunds. Three small water management facilities (WMFs) and associated embankments will be located along toe of the southern face of southern amenity bund and waste rock emplacement. Following completion of finished profiles, the southern face and final land form will be progressively rehabilitated and revegetated.
Visual effect	Year 1 to Year 2 - Level 1 visual effects <i>Initial vegetation clearing, topsoil stripping and stockpiling will occur progressively for southern amenity bund areas. Initial emplacement areas will be along the Project area's southern face, south-east of the open cut mine. The disturbance areas will spread east from a starting waste emplacement area and expand in width and height.</i> <i>Earth moving equipment and mine vehicles will be viewed moving across site and onto the bund emplacement areas. Emplacement areas will be exposed to views from locations to the south-west, south and south-east.</i> <i>Vehicle movement and earth moving equipment will generate direct and diffuse light effects for night operations, moving to and from and around the Project area, specifically along the developing haul roads between the open cut mine and the southern amenity bund. Visual contrast with surrounding rural agricultural rural setting will be high in terms of colours and texture of cleared and stripped areas. Visual integration with existing rural character will be low.</i> <i>By Year 1, the pit amenity bund will be constructed, providing shielding of the open cut pit and main haul road exiting the pit. Rehabilitation for these components will be implemented to reduce visual effect.</i> <i>Re-establishment of new landforms that emulate the existing landscape and the follow-up grading, topsoiling and re-grassing of slopes will enable treatments to achieve Level 3 visual effects once grass cover responds to seasonal change consistent with adjoining grassland.</i> <i>This effect will be achieved within 6-12 months after landforms are completed and have reverted to more natural profiles, colours and textures.</i> Year 4: The southern amenity bund will be complete, extending from the pit amenity bund east towards the Project boundary. Elevation of waste material has increased across the southern face with central bench area reaching maximum elevation. Lower benched slopes of amenity bund will be rehabilitated with established grass cover and cultural planting.

	<i>Visual scale of new landform is larger than previous topography.</i> <i>The southern face will appear a combination of differing levels of visual contrast with surrounding rural agricultural setting as the rehabilitation becomes established. Upper levels of the southern amenity bund will remain in moderate contrast in terms of colours and texture of waste rock material, with contrast being reduced on the lower slopes around the toe by the established rehabilitation and greening of disturbed areas. Integration with existing rural character will be low until the entire south face is rehabilitated with grass cover. This would reduce visual effect to Level 2.</i>
	Year 8 to 10: <i>The southern amenity bund will have established rehabilitation across the face consisting of immature woodland, grassing and areas of cultural planting character (includes hedge rows and creek line vegetation patterns).</i> <i>Visual scale of new landform is larger than previous topography.</i> <i>New tree planting will take 5-7 years to enable rehabilitated landscapes to achieve acceptable colour, texture, line, shapes and patterns that emulate surrounding natural and cultural tree patterns. This will enable rehabilitation to achieve Level 3 visual effects maximising visual integration.</i>
	Year 10: <i>The southern amenity bund will be an established part of the landscape setting with the rehabilitation creating a mix of planting patterns that reflect the surrounding landscape setting. Patterns on the southern face include dense dry sclerophyll forest on upper profile with intermediate slope covered with variable edges of woodland. Lower slopes will contain established cultural planting similar to those in surrounding rural settings (refer Figure 9.1).</i> <i>Visual contrast will be further reduced as maturing vegetation improves visual integration of landform within existing setting.</i> <i>Visual effects will be Level 3 to 4.</i>
	Final: <i>Establishment of a final landform that is stable, secure, non-polluting and requiring ongoing land management equivalent to surrounding undisturbed land.</i> <i>The pit amenity bund will initially be seeded with introduced grass species to provide erosion protection and to improve visual amenity. The pit amenity bund will ultimately be regraded and seeded with open woodland and open forest species similar to the WRE.</i> <i>Established landform is higher and larger in scale than existing topographic features in area surrounding the Project.</i> <i>With successfully established rehabilitation tree planting and grass cover across the face of the bund, the visual contrast will be reduced, and visual integration achieved.</i> <i>The local landscape setting and views will be changed due to scale and shape the of new landform but will be similar in colours and texture to the surrounding rolling hills of local setting. Open woodland character and pattern of tree densities will emulate existing landscape setting.</i> <i>Visual effects will be Level 4.</i>

4.2.3 Waste Rock Emplacement	
Components	Placement of waste rock into engineered waste rock emplacement what will include encapsulation for potentially acid forming waste rock. The waste rock emplacement will be constructed and rehabilitated progressively over the life of the mine, utilising a fleet of excavators and trucks and supporting ancillary equipment. It will be designed, to the extent practicable, to act as an amenity bund, shielding surrounding residents from activities within the Project area. WRE also include water storage components (see Section 4.2.7).
Physical Character	Waste earth and rock from open cut mine mounded and benched to form constructed bund. Following completion of finished profiles, the final land form will be progressively rehabilitated and revegetated.
Visual effect	Year 1 to Year 2 - Level 1 visual effects <i>Initial vegetation clearing, topsoil stripping and stockpiling will occur progressively for waste rock emplacement areas. Initial emplacement areas will be along the Project area's southern face, (see 4.2.2 Southern Amenity Bund). This bund will shield residents to the south from waste rock emplacement development after 18 months.</i>
	Year 4: <i>The waste rock emplacement extends north from behind the southern amenity bund parallel to the Project boundary. Elevation of waste material has increased with central bench area reaching maximum elevation. Visual effects will be Level 1 where visible.</i>
	Year 8 to Year 10: <i>The waste rock emplacement extends from open cut mine east towards the Project boundary and to the north to adjacent the ROM with progressive rehabilitation following development of finished micro-topographic design and natural land form.</i> <i>Vehicle movement and earth moving equipment will generate diffuse light effects for night operations, moving around the Project area, specifically along the haul roads between open cut mine and waste rock emplacement. These lighting effects will be reduced to the south, the Mid Western Highway and Kings Plains areas due to southern amenity bund screening .</i> <i>Visual scale of new landform is larger than previous topography.</i> <i>The upper benches and sides will have established ground cover and some revegetation planting as the early stage of open woodland establishment, reducing visual contrast and improving visual integration with the surrounding setting.</i> <i>Visual effects will be Level 2.</i>
	Year 10: <i>The waste rock emplacement reaches full extent within the Project area. Final micro-topography on upper surfaces and sides will be achieved. A combination of grasslands and open woodland will be established and extend across upper levels of full waste rock emplacement. Cultural planting patterns will be established on lower slope areas.</i>

	Visual scale of new landform is larger than previous topography. Visual contrast will be reduced as vegetation improves visual integration of new landform within existing setting (refer Figure 9.1). Visual effects will be Level 3.
	Final: Establishment of a final landform that is stable, secure, non-polluting and requiring ongoing land management equivalent to surrounding undisturbed land. Established landform is higher and larger in scale than existing topographic features in area surrounding the Project. With successfully established open woodland tree patterns and ground cover, the visual contrast will be reduced, and visual integration improved. The local landscape setting and views will be changed due to scale and shape the of new landform but will be similar in colours and texture to the surrounding rolling hills of local setting. Open woodland character and pattern of tree densities will emulate existing landscape setting. Visual effects will be Level 4.

4.2.4 Mining Fleet	
Components	See below
Physical Character	All the mining operations are performed by a large industrial scale mining fleet including excavators and shovels, haul trucks, dozers, graders, drill rigs and water carts. This mining fleet is oversized equipment, with a very industrial scale and character. It will be constantly moving around within the Project area, along site access road and internal haul roads between open cut mine and the ROM, processing plant and waste rock emplacement.
Visual effect	The mining fleet forms, colours and lines contrast strongly with the surrounding landscape however each element is mobile therefore its visual effect is ephemeral, evident only when the equipment is within a viewing location which may be for short periods of time. On that basis the mining fleet components will have a Level 1 (but temporary) visual effect.

4.2.5 Run-Of-Mine (ROM) pad, carbon-in-leach (CIL) processing plant	
Components	Placement of mined ore onto a Run-Of-Mine (ROM) pad for storage prior to processing. Construction and operation of a conventional carbon-in-leach (CIL) processing plant including crushing, grinding, gravity, cyanide leaching, gold recovery, tailings thickening, cyanide destruction and tailings disposal circuits. The CIL Processing Plant, with a capacity to process up to 7 Million tonnes of ore per annum (Mtpa), will

	incorporate a range of ancillary infrastructure including workshops, reagent and other stores, laboratory and office facilities.
Physical Character	There will be areas of disturbance to ground surfaces and topography with material changes to the visual landscape above ground. All built components will generally be painted in colours that borrow from the surrounding visual setting unless where safety requirements dictate alternatives (i.e. green). Most significantly will be the night lighting from various sources including trucks, work areas, equipment and head lamps moving about the site. This will occur in an area previously in significant night darkness due to its rural land use and sparse residential population.
Visual effect	Year 1 to Year 2 - Level 1 visual effects <i>Initial vegetation clearing, topsoil stripping and topsoil stockpiling will occur to accommodate these operational areas.</i> <i>Earth moving equipment and mine vehicles will be moving across site and onto the ROM areas. ROM areas will be exposed to possible views from locations to the south-west, west and north-west.</i> <i>The stockpiles will be low components, approximately 5 m in height and will create strong contrast with the existing setting, resulting in a Level 1 visual effect where localised views are available. However, placement of screening barriers such as painted shipping containers will shield views onto the ROM Pad from the west reducing visual effects and direct lighting effects.</i> <i>Mined ore will be placed on the ROM pad to north-east of the open cut mine. The northern, western and southern sloped embankments of the pad will be 70% hydro mulched and grassed around Year 2, reducing the visual contrast of colours. Integration of ROM Pad landform would be moderate, with a Level 2 visual effect.</i> <i>Construction of the processing plant will be large scale and industrial in character. The major infrastructure elements will create a Level 1 effect where they are visible due to strong contrasts with the surrounding rural landscapes. Views to the processing plant are very limited due to location within natural topographic features and ROM embankments.</i> <i>All construction activities will create high levels of visual contrast and low visual integration with surrounding rural setting, generating night light effects during its 24 hour operations.</i> Years 4: <i>Following construction, these areas will continue to be operational areas with movement of mine vehicles and earth moving equipment from open cut mine to ROM and around loading facilities.</i> <i>Embankment grassing will be established, reducing its visual contrast. Visual effects will be Level 2.</i> <i>Visual integration of processing plant remains low due to scale and night light effects discussed in Section 6. Visual effects will be Level 1.</i>

	Year 8 to Year 10: As above, with expansion of ROM embankments around northern, western and southern sides. The final finished pad is rehabilitated with hydro mulch and grassing reducing the overall colour contrast. Visual effects will be Level 2. Infrastructure and processing plant continue unchanged at Level 1 visual effect.
	Final: The majority of mine infrastructure areas will have relatively flat gradients, other than the outer batters of the ROM Pad. It is possible that some infrastructure may be retained, such as hardstands and/or workshop buildings post mining for beneficial re-use subject to appropriate approvals; however, for the purposes of this strategy, it is assumed that all infrastructure will be removed. All available areas will be regraded and returned to grassed pastures suitable for grazing. Visual effects will be indiscernible from surrounding rural setting. Visual effects will be Level 4.

4.2.6 Tailings Storage Facility (TSF)	
Components	Construction and operation of an engineered Tailings Storage Facility (TSF).
Physical Character	The infrastructure consists of a rock embankment raised in stages to impound waste slurry comprising finely ground tailings to the north of the ROM and infrastructure areas. The TSF is contained by constructed embankments across topographic drainage lines. These components are broad dam like structures; the main TSF embankment will have a maximum height of 49 metres.
Visual effect	Year 1 to Year 2 - Level 1 visual effects Initially, the south facing embankment will be developed across the watercourse at the southern perimeter of the TSF. Embankments will be constructed along the eastern and northern perimeters. Initial vegetation clearing, topsoil stripping and stockpiling will occur progressively for the TSF and embankment footprint. Earth moving equipment and mine vehicles will be viewed moving across site. Disturbance and construction will be viewed of southern embankment areas will be viewed from locations to the west and south-west. Vehicle movement and earth moving equipment will generate dust, direct and diffuse light effects for night operations, moving around the tailings pond footprint, specifically along the developing haul roads between the open cut mine and the embankment waste emplacement sites. Visual contrast with the surrounding rural agricultural rural setting will be high in terms of colours and texture of cleared and stripped areas. Visual integration with existing rural character will be low resulting in Level 1 visual effects. Year 4: The southern embankment will have extended to its full width with establishment of 70% hydro mulch and grassing. Before rehabilitation, visual contrast with surrounding rural agricultural rural setting will be high in terms of colours and

	texture of cleared and stripped areas. Visual integration with existing rural character will be low. Rehabilitation for these components will be implemented to reduce visual effects to Level 2.
	Year 8 to Year 10: Rehabilitation of 70% hydro mulch and grassing will be implemented across all embankment faces which will reduce visual contrast and improve visual integration. Visual effect will be reduced to Level 3 visual for views to these components.
	Final: During the final decommissioning and rehabilitation phase, the tailings will be overlain by a capillary break layer of NAF waste rock, approximately 0.5 m thick. This rock will be primarily sourced from the Secondary WMF embankment, as well as other embankments that were established early in the mine life. Approximately 0.7 m growth media cover will then be placed across the TSF surface, consisting of approximately 0.6 m subsoil capped with 0.1 m topsoil. Prior to placing the topsoil, the cap will be allowed to settle and if necessary, additional subsoil placed to achieve the final landform design and required soil depth to achieve an LSC class of 4, followed by topsoil placement and revegetation with pasture species by either drill or broadcast seeding. The final TSF landform will grade gently towards a clean water diversion to the south-east of the TSF embankment. Minor reshaping works may be required, and it may be necessary to install shallow grass lined drains to facilitate free draining on the landform to the permanent clean water diversion to the east of the TSF. Visual effects will be Level 4.

4.2.7 Construction of water management infrastructure, including water storages and pollution control infrastructure.	
Components	Construction of water management infrastructure, including water storages and pollution control infrastructure.
Physical Character	Construction and operation of surface and groundwater management and reticulation infrastructure including pipelines, and associated infrastructure for diversion of clean water or management of operational water. The majority of the water management infrastructure components will be long horizontal pipelines that will follow the ground contours.
Visual effect	Year 1 - 10: The pipelines generally will have a plain linear form and line. These and the other industrial infrastructure components will contrast in form, colour and texture to the surrounding landscape but will generally have a low profile modifying the level of visual effect (Level 2 visual effect) and will have very little visual effect outside of the Project area boundary.
	Final: Following decommissioning, visual effect will be Level 4.

4.2.8 <i>Construction of a new intersection on the Mid Western Highway and site access road.</i>	
Components	Construction of a new intersection on the Mid Western Highway and site access road.
Physical Character	Construction will require some vegetation clearance, excavation and earth moving, grading and resurfacing of new road sections. New intersection and mine access road will be established off the Mid Western Highway to the east of the waste rock emplacement and Kings Plains / Walkom Road turn-off. This will provide access to the mine site for mine transport vehicles. Dungeon Road north of the Project area boundary will be closed or realigned as per Blayney Council requirements. The roads will require normal cut and fill configuration and will be established by the end of Year 1.
Visual effect	Year 1 to Year 2 – Level 2 visual effect <i>Vegetation clearing and earthworks will create areas of contrasting colour and texture in disturbed areas. Views from the Mid Western Highway will potentially be affected. In the short-term, views of construction activity and traffic management signage and equipment will be evident from the Mid Western Highway creating moderate levels of contrast against the existing visual setting.</i> <i>As the Dungeon Road closure will be incorporated into the Project area and disturbance footprint, the visual effect is considered in Section 4.2.3, Section 4.2.5 and Section 4.2.6.</i> <i>The new intersection and site access road will be similar in character to the normal Mid Western Highway road infrastructure and will create a Level 2 visual effect.</i> Year 1 - 10: Intersection will be established and be consistent in character to other rural intersections along this highway with a Level 3 visual effect. <i>The level of traffic and large scale mine equipment will create a visual contrast to the existing rural setting.</i> Final: Intersection will be retained to continue to access for monitoring as required, agricultural lands post mining and minimise the number of accesses onto the highway. Visual effect will be Level 4, consistent with other rural road intersections with the highway.

4.2.9 <i>Internal road network</i>	
Components	Internal roads connecting the open cut mine to amenity bund, waste rock emplacement and ROM Pad for transport of overburden and mined ore, infrastructure maintenance and site inspections. These internal roads will also be part of construction stages required for moving materials around Project area e.g. TSF embankment construction.

Physical Character	Construction will require vegetation clearance, excavation and earth. This will provide access to the mine site for mine transport vehicles. The internal haul roads will be unsealed.
Visual effect	Year 1 to Year 2 – Level 1 visual effect <i>Vegetation clearing and earthworks will create areas of contrasting colour and texture in disturbed areas.</i> <i>Vehicle movement and earth moving equipment will generate dust, direct and diffuse light effects for night operations, moving around the developing haul roads between the open cut mine and the various waste emplacement sites.</i> <i>Direct and indirect lighting effects will be evident particularly on the southern face adjacent Project southern boundary due to the movement of haul trucks and mine equipment prior to completion of southern amenity bund and pit amenity bund. Areas to the south of the Project will experience these visual effects most significantly during the development of and to a lesser extent up until the completion of the southern amenity bund.</i> <i>The haul roads and associated mine fleet movement will be seen across the southern face as it advances in elevation to reach final profile. Visual contrast with surrounding rural agricultural rural setting will be high in terms of colours and texture of cleared and stripped areas. Visual integration with existing rural character will be low resulting in Level 1 visual effects.</i> Year 4 - 10: Internal haul roads will be established and operational. Visual effects will be limited to areas north of the southern amenity bund which will screen direct lighting effects from mine operations and fleet movement. Diffuse lighting effects will continue with amenity bund providing some shielding of overall glow to residents south of the Project area. <i>The level of traffic and large scale mine equipment and light effects will create a high visual contrast and low visual integration to the existing rural setting. Visual effects will be Level 1.</i> Final: Following the cessation of mining, surface infrastructure will be safely decommissioned. Infrastructure items will be dismantled or demolished (depending on whether they will be re-used or recycled). Services will be disconnected and removed, and all concrete footings will be removed to around 1 m below ground level. If any contamination is found, then the area will be appropriately remediated so that it is suitable for the agreed future land use of grazing. <i>Several roads and tracks could also be retained for use by future landowners'. Agreement for ongoing use and management of roads will be sought with landholders or third parties. Some roads may also be temporarily retained following rehabilitation as access roads for rehabilitation monitoring purposes. This will be determined in consultation with stakeholders and council.</i> <i>Final result where rehabilitated will be a mix of pasture and open woodland.</i> <i>Visual effect will be Level 3.</i>

4.2.10 <i>Ancillary infrastructure</i>	
Components	Establishment and use of ancillary infrastructure, including administration, workshop, stores, water management, power supply and other infrastructure (including security fencing and camera surveillance).
Physical Character	These elements relate to the operation of the mine facility and service the onsite workforce. Many are low or flat features, (such as fencing and water management) that have low visual effect. However, given its location enclosed within hills and adjacent the Vittoria State Forest, it will be viewed cumulatively with the mine infrastructure (plant) components from some external view locations to the west.
Visual effect	<i>When viewed individually, these buildings and components are of domestic scale and will not be dissimilar to a cluster of farm buildings and associated equipment and will have a low visual effect Level 3.</i> <i>The other features within this area have an industrial character and contrast strongly in form, line and texture from the surrounding landscape. Together they will have a high visual effect when viewed locally.</i> Final: <i>Following the cessation of mining, surface infrastructure will be safely decommissioned. Infrastructure items will be dismantled or demolished (depending on whether they will be re-used or recycled). Services will be disconnected and removed, and all concrete footings will be removed to around 1 m below ground level. If any contamination is found, then the area will be appropriately remediated so that it is suitable for the agreed future land use of grazing.</i> <i>The majority of mine infrastructure areas will have relatively flat gradients, other than the outer batters of the ROM pad. It is possible that some infrastructure may be retained, such as hardstands and/or workshop buildings post mining for beneficial re-use subject to appropriate approvals; however, for the purposes of this strategy, it is assumed that all infrastructure will be removed.</i> <i>Final result where rehabilitated will be a mix of pasture and open woodland. Visual effect will be Level 4.</i>

Table 4.1 Project Component visual effect summary

Project Component	Mine Stage Visual Effect			
	Year 2	Year 8	Year 10	Final
Open cut mine	Level 1	Level 2	Level 2-3	Level 3
Southern Amenity Bund/Pit Amenity Bund	Level 1	Level 2	Level 2-3	Level 4
Waste Rock Emplacement	Level 1	Level 2	Level 2-3	Level 4
Mining Fleet	Level 1	Level 1	Level 1	Not applicable
Run-Of-Mine (ROM) pad, carbon-in-leach (CIL) processing plant	Level 1	Level 1-2	Level 1-2	Level 3
Tailings Storage Facility (TSF)	Level 1	Level 2	Level 3	Level 4
Water management infrastructure	Level 1	Level 2	Level 2	Level 3
Intersection on the Mid Western Highway and site access road	Level 2	Level 3	Level 3	Level 3
Internal road network	Level 1	Level 1	Level 3	Level 3
Ancillary Infrastructure	Level 3	Level 3	Level 3	Level 4

5. VISIBILITY AND VISUAL SENSITIVITY

5.1 Introduction

This section of the report evaluates the visibility of the various elements of the Project from locations surrounding the Project boundaries. Visibility will vary depending on a combination of topography and vegetation, especially when close to points of viewing.

The sensitivity of the various areas that have views of the Project will depend on the land use. Land use areas or activities that utilise the view, private residences, will have a high sensitivity as discussed in Section 5.5. Conversely, areas such as rural lands will have a low sensitivity. A consideration of sensitivity must be responsive to local conditions and current perceptions about the visual amenity aspects of a landscape as illustrated through current land use practices.

The determination of visibility and sensitivity give direction to potential mitigation strategies (Section 7) for any areas with high visual impact.

Field assessment, evaluation of mapping and aerial photography and computer analysis assisted in defining the VSA as shown on Figure 5.1. This area contains the most critical locations with potential views to the Project.

To assist evaluation of this visibility, the visual study area has been divided into the Northern, Eastern, Southern and Western View Sectors. The visibility from each of these sectors is described in Sections 5.1 (see Figure 5.1).

There needs to be visibility of the various mine components for a visual sensitivity and a visual impact to be incurred. Areas that do not have a view of the Project will not be directly impacted.

5.2 Significant topographic features

Some topographic features contribute to limiting the visibility of the Project area. These features limit views to the north, east, south and west in different ways.

The gently undulating hills across the PVC create local view sheds and changing view angles and glimpses dependent on location in relation to the Project area. The limited number of accessible high points limit overviews.

The PVC ridgeline generally limits views from beyond the visual catchment in all directions. Though elevation range is small throughout the PVC, some higher points provide broader views across lower open valley areas. Views are more likely when near the Project area as longer views are screened by the consistent rolling hills.

Some of higher points in the PVC such as Smiths Hill (1,093m AHD) to the south and “Errol” Hill (communications tower) to the south-west will have longer views being higher than the undulating hills within the PVC.

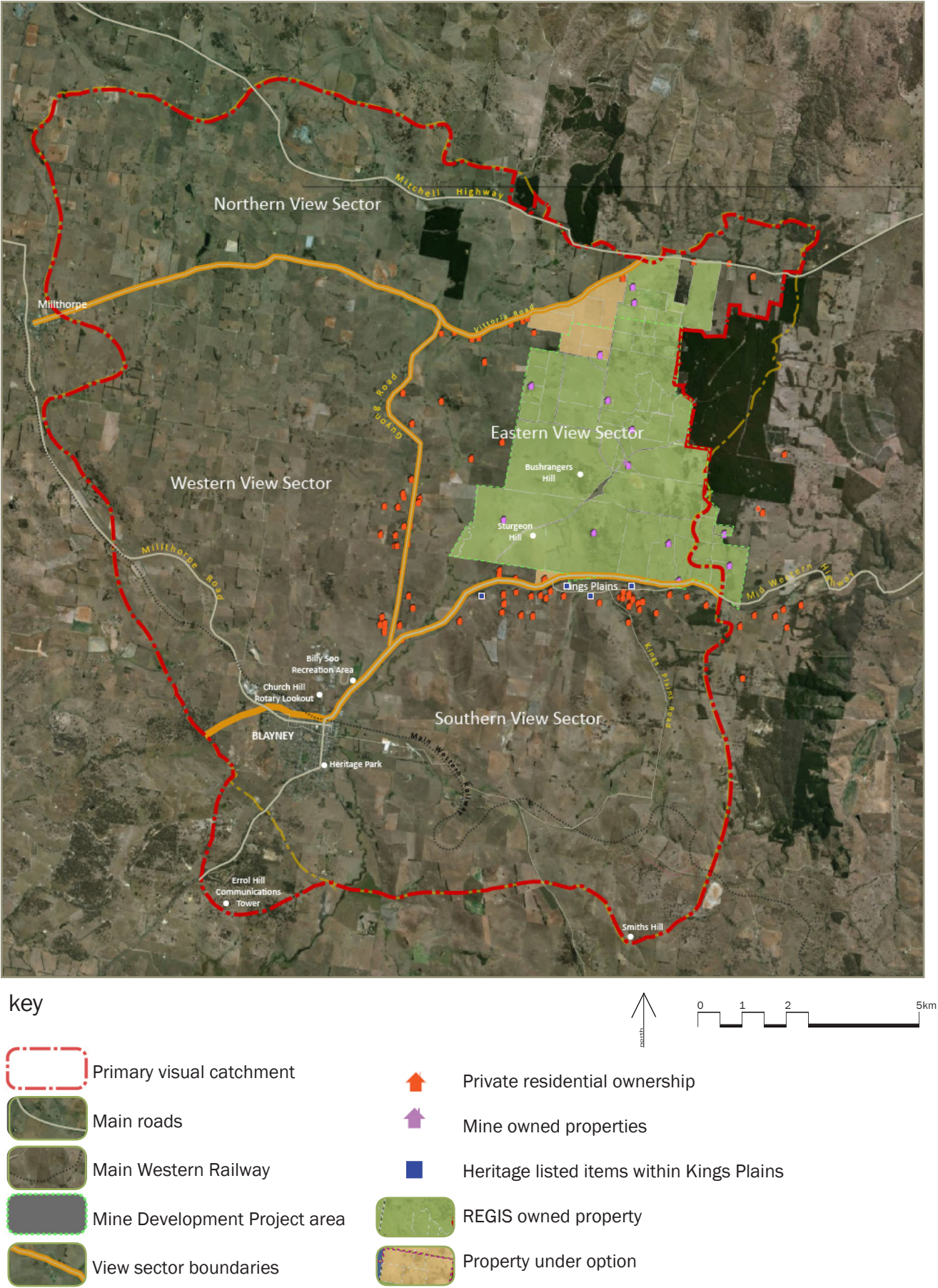


Figure 5.1 | *View sectors and sensitive receptors*

Local features that limit views include:

- *Bushrangers Hill* – a north-south ridge within the Mine Development Project Area that creates a minor viewshed to the east and west of the ridge when viewed from Guyong Road. This ridge falls within the Open Woodland VCU.
- *Sturgeon Hill* – an isolated hill used for local meteorological measurements near Kings Plains north of the Mid Western Highway. It creates partial screening of views from the west, especially from Guyong Road and the Mid Western Highway.
- *Rolling hills and ridge lines to the north and west of the Project boundary. These topographic features provide significant screening to areas in the north and north west of the Project.*

Potential for views to the Project area from the Mid Western Highway are therefore limited to locations in close proximity to the Project Area or from elevated locations along the PVC.

Beyond the Mid Western Highway, the elevation rises gently to further undulating hills that provide enough elevation to contain most views to the north.

To the west, the communications tower hill at 1,060 m AHD south-west of Blayney will have broad extensive views across the PVC. However, there is limited public access from this elevated location. Church Hill Rotary Lookout has an elevation of 935m AHD and is an accessible location with views to the north, east and south.

5.3 Significant vegetation areas

Tree cover is important in providing potential screening of the Project components in both sites. It is especially significant when it is close to the viewing locations as shown in Figure 5.3.

Significant screening is provided by the extensive areas of plantation forestry in the east of the PVC and by areas of roadside tree and shrub planting mainly along the Mid Western Highway. These examples filter or screen views into the Project areas from some view locations.

5.4 Effect of foreground elements

In addition to the screening effect of native woodland, especially that associated with the vegetation along the creeks and drainage lines, cultural plantings around rural residences and villages also create screening effects. Cultural plantings and residual tree areas in the foreground or near middle ground can be significant in reducing views to the Project sites. Similarly, vegetation around residences or village streets can greatly assist in screening views to the Project (refer to Figure 5.4).



Figure 5.2 | Significant topographic features - Project area from Guyong Road - views east
Topographic features in foreground or near middleground of sensitive receptors are effective in screening views to Project areas.



Figure 5.3 | Screening effects of vegetation along Mid Western Highway
Vegetation in the foreground such as along the Mid Western Highway is effective in screening views.



Kings Plains homestead ("Kareela"). Vegetation around the residence filters views to the Project area.



Low roadside berm between Project area and Mid Western Highway provides screening of views to operational areas.

Figure 5.4 | Foreground elements screen views
Vegetation and topography can screen distant views.

5.5 Sensitive receptors

5.5.1 *Blayney township*

Blayney is situated within the Belubula River valley catchment with potential for views along the river valley in the direction of the Project area. The town contains several elevated locations around its western perimeter that have more distant views around the PVC. It is approximately 5 km to the Mine Development Project boundary and approximately 5.5 km to the Mine Lease Application Area boundary.

The township's heritage character supports some tourism with visitors travelling to the heritage towns of NSW Central West.

5.5.2 *Kings Plains locality*

This small locality close to the Mid Western Highway is the only residential cluster outside of Blayney township within the primary visual catchment. The residences within the township have variable views into the Project area. The locality is approximately 1.2 km from the face of open cut mine area and approximately 0.5 km to the Project area boundary.

5.5.3 *Heritage listed locations*

A number of heritage items listed in Schedule 5 – Environmental Heritage (Blayney LEP 2012) are located within Kings Plains to the south of the Project area.

- | | | |
|--|--------------------------|-------|
| • “Iralee”, homestead, gardens and outbuildings | 3011 Mid Western Highway | Local |
| • “Lynfern”, homestead, garden, stables and woolshed | 3293 Mid Western Highway | Local |
| • “Kareela”, homestead and garden | 61 Walkom Road | Local |
| • Public school and teacher's residence (former) | 2942 Walkom Road | Local |

5.5.4 *Rural Residences*

There are a limited number of rural residences spread throughout the PVC. Most significant are those located to the south and south-west of the Project boundary.

5.5.5 *Tourist/recreation areas*

In addition to Blayney township generally, the following locations are specific tourist / recreation areas:

- Billy Soo Rest Area is located on the northern side of the Mid Western Highway. It is approximately 3.9 km to the Mine Development Project boundary and 4.5 km to the nearest Mine Lease Application Area boundary. It is included in on-line lists of rest stops for travellers in NSW.
- Church Hill Rotary Lookout is located on the north side of the township. There are broad views to the north, east and south across the PVC. The lookout is approximately 4.5 km to the Mine Development Project boundary and 5.1 km to the nearest Mine Lease Application Area boundary.
- Heritage Park Rest Area is located on the in low lying south-west edge of Blayney township. It contains a community performance space, public facilities and play areas. The park is approximately 5.7 km to the Mine Development Project boundary and 6.1 km to the nearest Mine Lease Application Area boundary.
- Vittoria State Forest located to the east and north-east of the Project area is used by recreational 4WD and trail bike enthusiasts.



Figure 5.5 | Blayney township sensitive receptor
Buildings and tree cover within streets and gardens often screen views beyond the town edge.



Walkom Road, Kings Plains



Rural residences scattered through the Kings Plains locality to the south of the Project area boundary.



Location of heritage listed items within Kings Plains.

Figure 5.6 | Kings Plains - sensitive receptors
Rural residences are sensitive receptors with visibility often depending on foreground gardens and view orientation.



Residence on Guyong Road



Figure 5.7 | Rural residences - sensitive receptors
Rural residences are sensitive receptors with visibility often depending on foreground gardens and view orientation.



Billy Soo Rest Area - Mid Western Highway



Views east from Church Hill Rotary Lookout in Blayney.



Heritage Park in Blayney

Figure 5.8 | Tourist and recreation areas sensitive receptors

5.5.6 *Tourist Roads/Highways*

The Mid Western Highway (State Route A41) runs generally northeast-southwest connecting Bathurst to Cowra and services rural destinations further west and south via Blayney. It bisects the PVC centrally from east to west directly south of the Project area.

The Mitchell Highway connects Bathurst to Orange as part of the National Highway A32 corridor, which stretches from Sydney to Adelaide via Dubbo and Broken Hill. It crosses the PVC from east to west, to the north of the Project area.

Highways used as part of designated tourist routes have a high to low sensitivity dependent upon distance from a view. Neither of the above highways are part of any designated tourist route but are utilised by people travelling to and from destinations such as Blayney and Millthorpe, both recognised tourist destinations. The experience along those routes becomes part of that expectation and experience of those road users.

Main Roads

- Walkom Road is a sealed road servicing the locality of Kings Plains.
- Vittoria Road / Millthorpe Road is a sealed road running east to west between the Mitchell Highway and the town of Millthorpe outside the western of the PVC.

Local Roads

- Guyong Road is a narrow sealed road running north to south linking Vittoria-Millthorpe Road to the Mid Western Highway. It provides access to rural residences and properties located along this road.
- Kings Plains Road is an unsealed road running north to south from Kings Plains through rural grazing country to the south of the PVC.

Other than the Guyong and Vittoria Roads, most others are local rural roads used to access rural residences and grazing lands. Unless roads have regular tourist usage, they have will have moderate to low visual sensitivity.

5.5.7 *Rural areas*

The predominant land use within the visual catchment and the primary visual catchment is rural production land, including, grazing sheep, cattle and alpaca. These land uses occur in various sectors around the Project Boundary.

All of these rural areas in the north, east, south and west sectors have a low visual sensitivity, excluding residences and other sensitive locations within these rural areas.



Views from the Mid Western Highway looking east towards the Mine Project area.



Views west along Walkom Road in Kings Plains village.



Views from Guyong Road looking south.



Vittoria Road north of the Mine Project area. Vegetation filters views to locations outside the road corridor.

Figure 5.9 | Roads - sensitive receptors
Roads have varying status and sensitivity reflecting the type of use of the road. Visibility depends on roadside vegetation and surrounding topography.



Figure 5.10 | Rural areas- sensitive receptors
Rural lands have varying status and sensitivity reflecting how land is used. Visibility depends on vegetation and surrounding topography.

5.6 Visibility and visual sensitivity in the Northern View Sector

The extent of this view sector is illustrated in Figure 5.1. This sector is dominated by low sensitivity rural lands, but includes numerous rural residences, the Mitchell Highway, Vittoria-Millthorpe Road Vittoria State Forest and the East Guyong Rock Quarry.

Rural Residences

There are several rural residences located within this sector. Most are surrounded by residential gardens or are screened by local topography. Direct views to the Project are unlikely. There will be some views of 'sky glow' created by the nightly construction/ operational activities in Project area.

Views from residences closer than 7.5 km will have a high sensitivity.

Mitchell Highway

Localised low ridgelines run parallel to the south of the Mitchell Highway limiting views south into the Project area. Roadside vegetation between the eastern edge of the PVC and the turn off to Millthorpe-Vittoria Road also screens views to the south. Parts of Vittoria State Forest screen views south-west from the highway near Mine Lease Application Area boundary.

Where views from the Mitchell Highway to Project components are less than 2.5 km distance there will be high visual sensitivity. Most components are more than 2.5 km away so views will have moderate visual sensitivity.

Local Roads

- Millthorpe – Vittoria Road

Views in the Project area from this road are possible in a few elevated locations in the Western view sector. See Viewshed 5 and 6 Millthorpe Road.

Views from this road closer than 7.5 km will have a moderate to low sensitivity.

5.7 Visibility and visual sensitivity in the Eastern View Sector

The view sector is generally comprised of grazing lands and state forest with scattered rural residences mainly to the west and south of the Project area within the view sector. There is one commercial activity, the Beekeepers Inn on the Mitchell Highway.

State forest recreation trails

Views from fire trails within the state forest used for fire management and recreation will have low sensitivity. Although they are within 2.5 km from the Project area, trail bashing and bike trail riding is activity orientated and not dependant on 'scenic' amenity to provide or diminish quality of the recreational use.

Commercial facilities

Views to the Project area from the Beekeepers Inn are contained by local topography and the dense screening of the Vittoria State Forest between the location and the Project area northern boundary. Any views from this location will have Moderate visual sensitivity being between 2.5km and 7.5 km from Project area.

Rural residences

There are several rural residences in this sector; those within the Project area are already mine owned. Outside this Project area, the residences within 7.5 km of the Project area will have a high visual sensitivity. Some private residences will be screened from Project areas by Vittoria State Forest and local topography.

There will be some ‘sky glow’ effects created by the nightly construction/ operational activities in Project area; these effects may be diminished by intervening vegetation and local topography.

Local Roads

Dungeon Road lies within this sector and is a rural road to properties around and within the Project area. Some of this road will be incorporated into the mine development and will have low visual sensitivity.

Rural Lands

All rural land that has views to the Project area will have low visual sensitivity.

5.8 Visibility and visual sensitivity in the Southern View Sector***Kings Plains locality including rural residences***

There are several rural residences in this sector. Residences are within 7.5 km of the Project area (all residences) will have a high visual sensitivity.

In addition, the land surrounding these residences has high visual sensitivity as it is part of the amenity experience of the resident’s lifestyle. Their enjoyment / lifestyle includes the activities and expansive views experienced at various locations within their properties.

Direct lighting will be experienced early in the mine life before the development of the open pit and southern amenity bunds. After that there will be some ‘sky glow’ effects created by the nightly construction/ operational activities in Project area; these effects may be diminished by intervening vegetation and local topography.

Some private residences will be screened from Project areas by their garden vegetation and local topography.

Heritage listed items in Kings Plains

The heritage items listed in Section 5.3.3 are within 7.5km of the Project area and have high visual sensitivity.

Of concern to the Heritage Council of NSW are ‘the visual impacts of the proposed development on views to and from surrounding heritage items. ‘Iralee’, ‘Lynfern’ and the public school will have views to the development of the pit and southern amenity bund. ‘Kareela’ is well screened by its residential gardens which contain views to within the property.

Mid Western Highway

The highway runs directly along the southern Project area boundary (closest distance to the Project toe of WMF3 embankment is approximately 70 m. Views into the Project area are limited to a few localised positions on the highway within a 3 km stretch directly adjacent the Project area. Local topographic features and vegetation provide screening along most viewpoints from both the east and west travel directions.

Critical locations are the elevated road crest at the eastern extent of the PVC views and the stretch of highway adjacent the Kings Plains locality turnoff.

From these locations there will be short duration views onto Project area southern flank.

Views will include:

- Road works associated with new site access road
- Southern outer face of the WMF embankments at base of waste rock emplacement during construction and rehabilitation stages – distance of approximately 70 m
- Southern outer face of the southern amenity bund and pit amenity bund during construction and rehabilitation stages – distance of approximately 270 m to 550 m at nearest point to highway along southern tow.
- Southern outer face of waste rock emplacement during construction and rehabilitation stages– distance of approximately 650 m at nearest point to highway.
- Road works to close Dungeon Road turn off from Mid Western Highway

As a tourist route and gateway into the Blayney area, Mid Western Highway sections within 7.5 km of will have high visual sensitivity.

Direct lighting will be experienced early in the project life, before the completion of the southern and pit amenity bunds. After that there will be some ‘sky glow’ effects created by the nightly construction/ operational activities in Project area; these effects may be diminished by intervening vegetation and local topography.

Local Roads

Walkom Road is accessed via the Mid-Western Highway and services the residences and community within the locality of Kings Plains via a 2.7 km loop. It is a sealed dual lane road travelling generally east-west and is less than 2.5 km from the south of the southern face of the active Project area.

Direct lighting will be experienced early in the mine life, before the completion of the southern and pit amenity bunds. After that there will be some ‘sky glow’ effects created by the nightly activities in the Project area; these effects may be diminished by intervening vegetation and local topography.

Due to its close proximity <2.5 km, views from this road will have a moderate visual sensitivity.

Kings Plains Road – a minor local road, is generally screened from views to the Project area by local topography and vegetation. There will be sky glow night light effects along this road due to the surrounding dark sky context. Views from this road closer than 2.5 km will have a Moderate to low sensitivity.

Rural Lands

With the exception of Kings Plains Locality and the Highway, the Project Area is directly surrounded by rural grazing lands. All broad acre rural land in the Southern View Sector outside the properties within Kings Plains has low visual sensitivity.

5.9 Visibility and visual sensitivity in the Western View Sector

Blayney township

Views from Blayney are generally limited by topography and intervening vegetation. The majority of the township is low lying along the Belubula River flood plain. The more elevated areas of the township have limited distant views to the Project Area.

Any views within Blayney less than 7.5 km (eastern perimeter) will have high visual sensitivity.

Any views from the western elevated residences are greater than 7.5 km, accordingly, will have moderate visual sensitivity.

Billy Soo Rest Area

Billy Soo Rest Area lies on low flat topography adjacent the highway. View shed analysis identifies limited intervisibility between the rest area and the Project Area. There may be some views of the upper limits of the waste rock emplacement at approximately 8 km from the rest area.

Views from this location between 2.5 km and 12.5 km will have moderate visual sensitivity.

Church Hill Rotary Lookout

Church Hill Rotary Lookout is on an elevated knoll (approximately 935m AHD) with expansive views towards the Project area. View shed analysis identifies some intervisibility between the lookout and the Project Area. There may be some views of the southern amenity bund and upper limits of the waste rock emplacement at approximately 7.5 km to 9.5 km distance.

Views from this location between 2.5 km and 12.5 km will have moderate visual sensitivity.

Heritage Park Rest Area

Located on edge of Blayney, views of the Project from this recreation area between 2.5 km and 12.5 km will have moderate visual sensitivity.

Rural Residences

There are several rural residences in this sector. Most are scattered along the Guyong Road ridge north of the Mid Western Highway. Residential properties in this context may have views of the Project area along the western boundary.

Views may include:

- Open cut mine
- Western face of water management facility embankments
- Mine infrastructure and ancillary facilities
- ROM Pad
- Processing plant
- Waste rock emplacement

Views to the nearest Project component are approximately 3.8 km to the east of most residences in this group. Viewshed analysis identifies a horizontal extent of views that will include Project components to be approximately 3.7 km with Bushmans Hill providing local topographic screening to some of the TSF area.

All houses with views to the Project area will have high visual sensitivity.

Direct lighting will be experienced during the construction and operation phases as the Project area is viewed along the western boundary. After that there will be some 'sky glow' effects created by the nightly activities in Project area; these effects may be diminished by intervening vegetation and local topography.

Local topography and residential garden vegetation may screen or filter views to Project areas.

Mid Western Highway

The nearest section of the Mid Western Highway in this view sector is over 2.5 kms from nearest Project component. Topography and vegetation screen most views from this distance and view direction.

Views from the highway in the western view sector will have moderate visual sensitivity.

Local Roads

- Guyong Road

Views in the Project area from this road are possible in a few elevated locations in the Western view sector. Views from this road closer than 2.5 km will have a low sensitivity.

Rural Lands

With the exception of Blayney Township, the Project Area is directly surrounded by rural grazing lands. All broad acre rural land in the Western View Sector outside Blayney Township has low visual sensitivity.

5.10 Summary

Generally, the high sensitivity land uses within the PVC are the township of Blayney, its recreation areas and lookout and the widespread rural residential properties. The town of Blayney is over 7.5 km from the Project area; at this distance visual sensitivity is reduced. Accordingly, Blayney has moderate visual sensitivity.

Other residences within 7.5 km of the Project area have high visual sensitivity to any views of the Project areas. The cluster of elevated north facing residences within Kings Plains have high visual sensitivity. Some of the heritage items will have similar visual sensitivity.

All sectors will receive the effects of sky glow due to night time project activity. Rural residences less than 7.5km from the light source will be the most sensitive.

As tourist routes, both the Mitchell Highway and the Mid Western Highway will have high visual sensitivity to any views within 7.5 km. Views into Project areas are limited to a 600m section of the Mid Western Highway as it passes to the south of the Project areas southern face when passing the Project from both the east and west on the Mid Western Highway. Outside this section of the highway, local topography screens views onto the southern face of the Project across all stages.

Views from other roads include Guyong Road to the west and Walkom Road to the south. Where closer than 2.5 km from seen Project areas visual sensitivity will be moderate.

All other local rural roads will have low visual sensitivity. All sectors are dominated by low visual sensitivity rural grazing lands which will have a range of visibility to the Project areas.



The sector is dominated by rural lands and rural residential properties.



Views from Millthorpe - Vittoria Road looking south across undulating grazing lands.



Views from Millthorpe - Vittoria Road looking west.

Figure 5.11 | Northern View Sector
Views from within the Northern Sector. The sector is dominated by rural lands.



View from Mine Project area towards south and west with Kings Plains in near middle ground.



This view looks west with the proposed Mine Project area in the foreground and middleground.

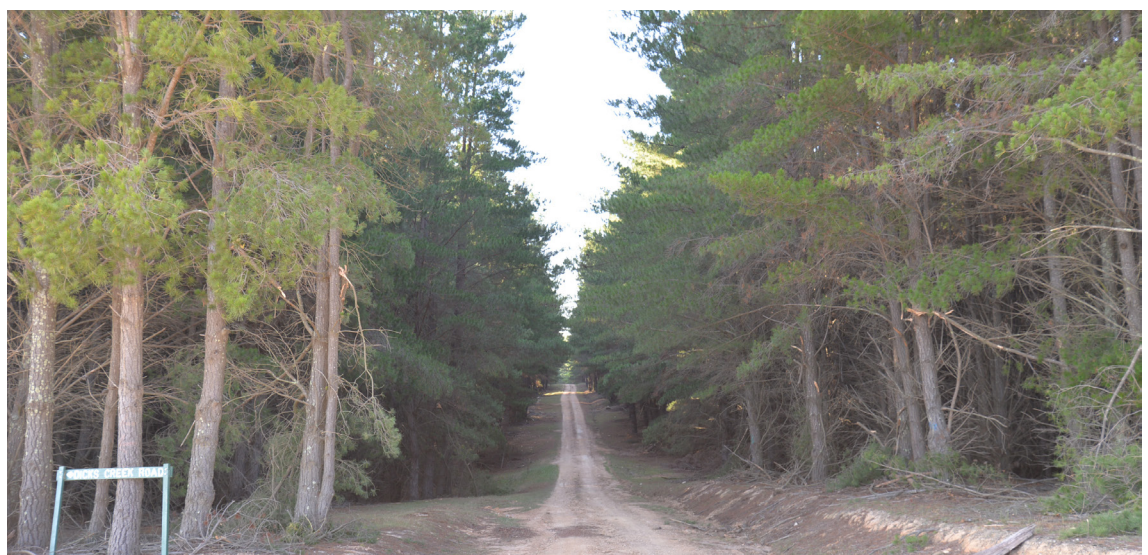


Figure 5.12 | Eastern View Sector
The sector is dominated by rural lands and forestry.



Kings Plains Road - views south to edge of PVC.



Kings Plains Road - views to the north towards Kings Plains village.



Looking south towards southern extent of the PVC, Smith's Hill and telecommunications tower.

Figure 5.13 | Southern View Sector
The Southern View Sector is dominated rural grazing lands.



Views west from northern Guyong Road across flatter rural lands. Quarry is visible in the distance.



Views west from Guyong Road across the rural grazing lands.



Views from Church Hill Rotary Lookout towards the north of the Western Sector.

Figure 5.14 | Western View Sector
The Western View Sector also contains sensitive land uses - Blayney, Lookout and rural residences.

6. VISUAL EFFECT

6.1 General

The potential sensitive viewing locations (receptors) around the Project area have been defined in detail in Section 5.

This section defines the visual effect of various project components on external view locations around the site. To assess the visual effects of project components on view locations around the McPhillamys Project area, views were considered from the northern, southern, eastern and western view sectors. The visual effects were considered from a number of representative viewing locations and have also been assessed through photomontage development.

6.2 View selection rationale

The representative viewing locations used in this assessment are shown in **Error! Reference source not found..**

The photomontage locations were selected to illustrate a range of typical views and worst-case scenarios as seen from the various view locations. These locations were selected from numerous sites where views were photographed, and GPS coordinates logged.

Viewpoints were also selected to ensure they captured as broad a selection of potentially impacted views as possible.

6.3 Photomontage Illustration of Visual Effect

WESTERN SECTOR

6.3.1 VP 1 – Guyong Road – Garvey roadside

This viewpoint is representative of those visual effects to be expected when viewed from residences and their surrounding lands, close to this view location on Guyong Road. It also reflects the short duration views from vehicles travelling along Guyong Road. See Figures 6.2 and Figure 6.3.

During mine life

Up to Year 2, there will be vegetation clearing, topsoil stripping and stockpiling and creation of new landforms for TSF embankments, waste rock emplacement and amenity bunds. There will be high level contrast in colour and texture as the existing colours are replaced by the higher contrasting exposed earth.

New landforms will have low contrast in shape and form to existing setting of undulating rural hills and low ridgelines within this view. However, colour contrast will be high until grass rehabilitation is achieved.

Construction of infrastructure components will form a minor part of this new view, though will be partially screened by new landforms along western face.

From Year 2 to Year 10, progressive rehabilitation of the waste emplacement, southern amenity bunds, ROM Pad, WMF embankment faces and topsoil stockpile areas over the mine life will reduce visual contrasts with existing setting. There will be some contrast created by the elevated horizon line of waste rock emplacement rising above the existing horizon. The horizontal linear

scale and regular form of new embankments and newly grassed surfaces also contrast with the existing setting.

Views to infrastructure components and ancillary facilities will have moderate contrast with existing rural setting; distance from these components from this view location will limit the extent of visual effects in this context.

Final landform and new planting

The final landform, now with well established grass cover and new tree planting, has reduced visual contrast. Micro-relief of the final landform ridgeline of the waste emplacement area will increase visual integration with the existing topography (Figure 7.3e). Established rehabilitation of new landforms and embankments will have low contrast to the surrounding settings.

Long term visual effects are reduced significantly when the established planting patterns further compliment the microtopographic landforms and grassing.

Long term effects

Visual contrast will now be very low as tree patterns and grass cover textures mature to resemble surrounding landscape patterns. Visual integration will now be high with minimal discernible differences to surrounding landscape character of rolling hills.

Lighting effects

Direct lighting will be visible up to Year 2 where vehicles and earth moving equipment move around the Project area and on higher elevations on waste rock emplacement whilst waste rock material continues to be deposited to upper levels over the life of the Project.

Sky glow effects from the Project area will occupy the centre of this view and create moderate to high contrast to existing dark sky character of the existing setting.

VP1 Visual effect

Distance from visible Project element:	4.5 km
Area of Primary view zone (PVZ) occupied by the Project in this view (refer to Figure 2.2).	2.9%
Visual effect: Refer Table 2.1	During mine life: Level 1 – High During rehabilitation: Level 2 – Low Final landform: Level 3 – Low Long term: Level 4 – Very low

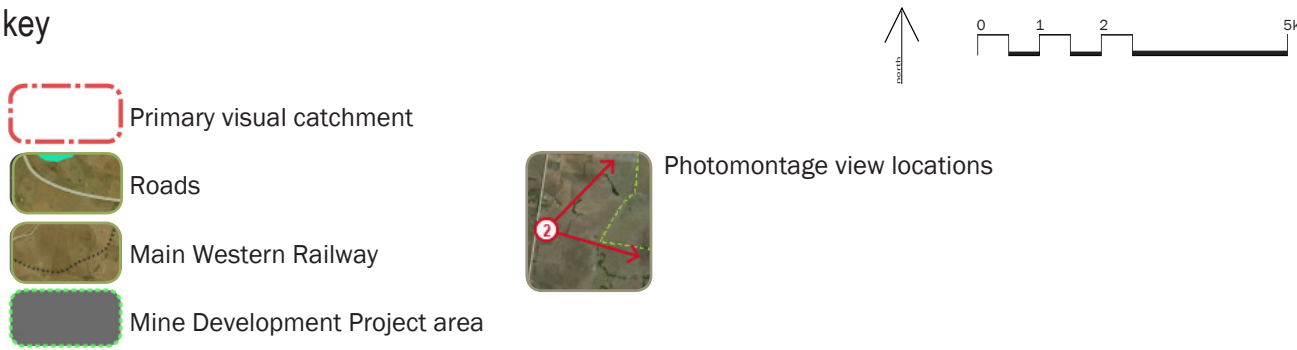
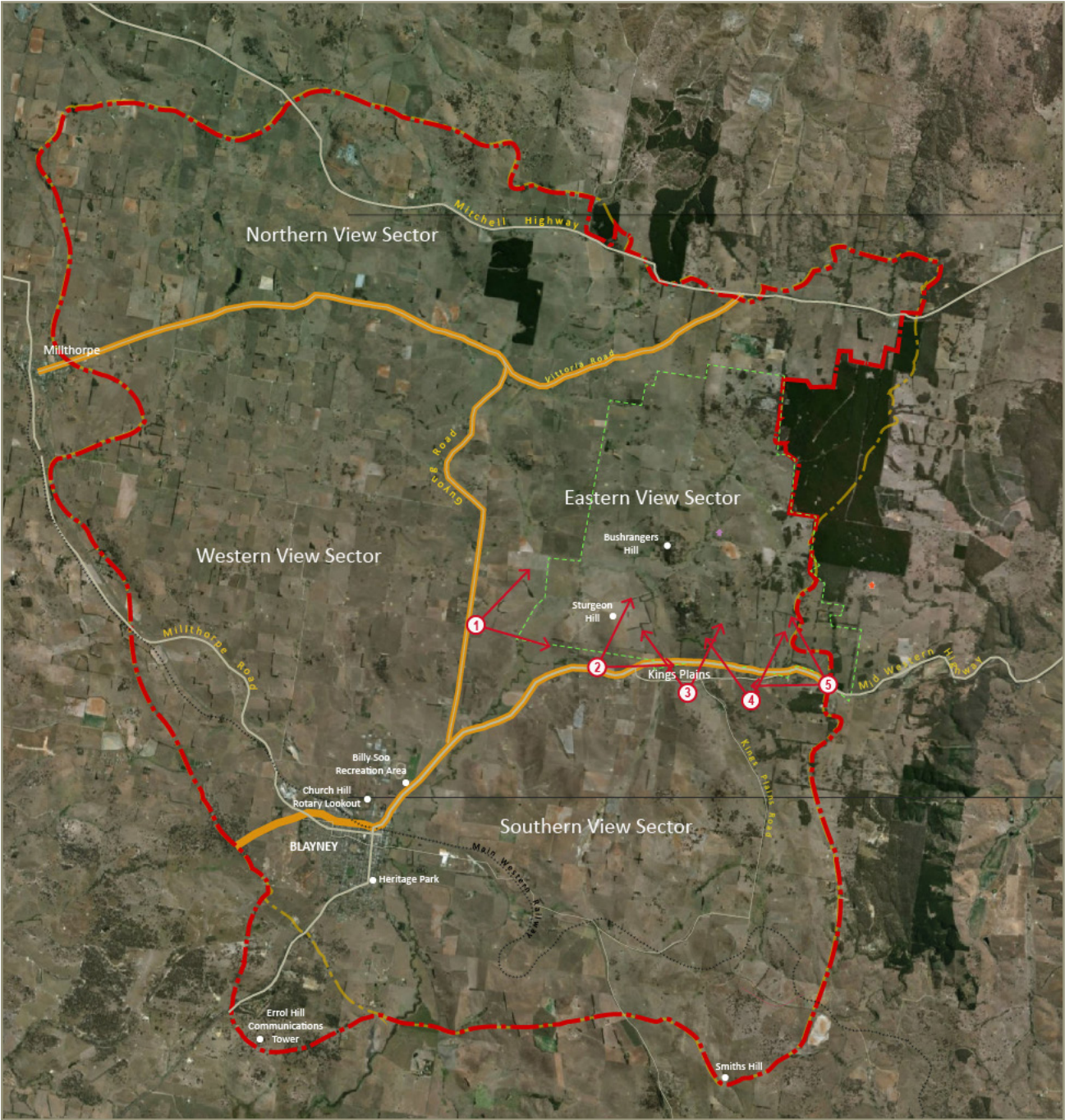


Figure 6.1 | Photomontage view locations

VP 1: Garvey Roadside - Guyong Road

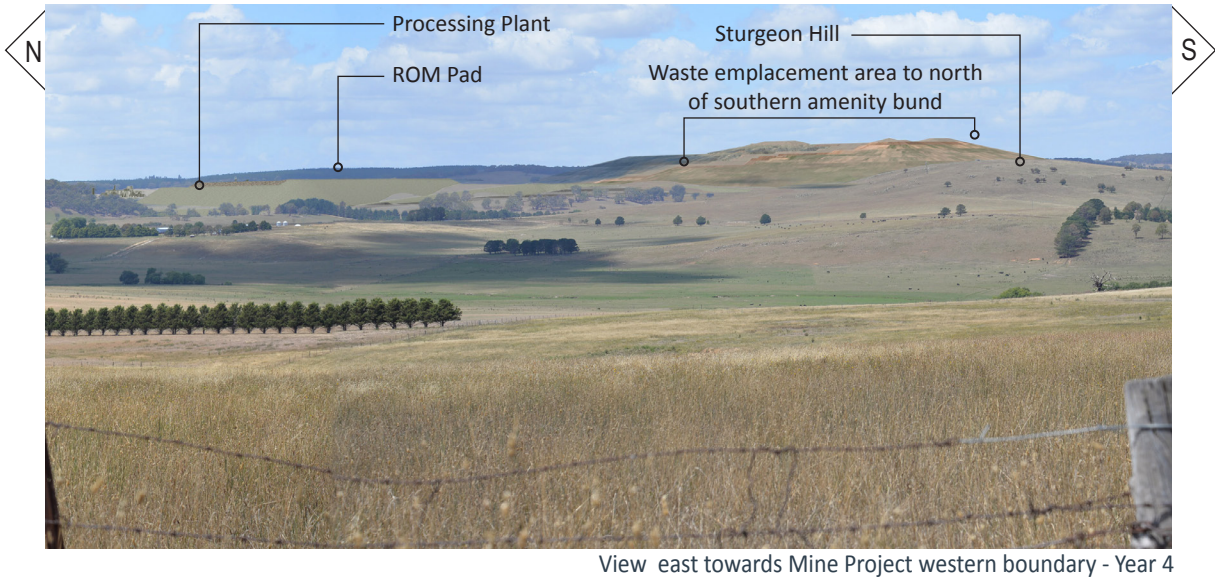


Figure 6.2 | Photomontage VP1 - Garvey Roadside - Existing view to Year 4

VP 1: Garvey Roadside - Guyong Road



View east towards Mine Project western boundary - Year 8

Micro-relief of landform creates a well integrated profile within rural setting. Established rehabilitation reduces visual contrast.



View east towards Mine Project western boundary - Final Landform

Vegetation patterns and final landform profile create a view that is well integrated with the surrounding rural setting.

Figure 6.3 | Photomontage VP1 - Garvey Roadside - Year 8 to Final Landform

6.3.2 VP 2 – Mid Western Highway

This view is from the highway travelling east. It is representative of the short duration views from the highway whilst passing the Project area southern face. Views onto this face are limited to an approximately 3.2 km long stretch of the highway. Outside this section, such views are screened by intervening topography such as Sturgeon Hill or filtered by roadside vegetation. See Figure 6.4 and Figure 6.5.

During mine life

Development of the waste rock emplacement will continue for the life of the mine as waste rock from operations is deposited. Initially there will be vegetation clearing, topsoil stripping, stockpiling and creation of new landforms. At Year 2, the faces of the southern and pit amenity bunds and the waste rock emplacement are in centre view, seen as contrasting bands of exposed earth and rock and rehabilitation (hydromulching and grassing). This will begin to lower visual contrasts. Haul roads will also be viewed. The sides of WMF embankments can also be seen as contrasting earth material at the toe of the slope.

Construction of infrastructure components will form a minor part of this new view, though will be partially screened by new landforms.

From Year 4 to Year 8, the southern amenity bund face will have progressive rehabilitation (grassing and early stages of woodland establishment). By Year 8, a significant level of rehabilitation should be achieved, lowering visual contrast for the south face. The advancement of the waste rock emplacement now exceeds previous existing ridgeline in elevation and changes character to a stepped landform. Integration with setting is reduced by contrasting exposed earth and new man-made large scale landforms.

Final landform and new planting

The final landform, now with well established grass cover and new tree planting, has reduced visual contrast. Form is consistent with surrounding undulating rural character; scale of new landform is larger than existing setting but similar to landscape character in this rural setting. The pit bund has been regraded to lower the height of the final bund.

Long term visual effects are reduced significantly when the established planting patterns further compliment the microtopographic landforms and grassing.

Long term effects

Visual contrast will now be very low as tree patterns and grass cover textures mature to resemble surrounding landscape patterns. Visual integration will now be high with minimal discernible differences to surrounding landscape character of rolling hills.

VP2 Visual effect

Distance from visible Project element:	2.1 km
Area of Primary view zone (PVZ) occupied by the Project in this view	10.7%
Visual effect: Refer Table 2.	
During bund construction:	Level 1 – High
During bund rehabilitation:	Level 2 – Moderate
Final landform:	Level 3 – Low
Long term:	Level 4 – Very low

VP 2: Mid Western Highway west



Existing view



Southern amenity bund under development. Waste rock emplacement creates contrasts in colour and texture due to loss of vegetation cover.

Year 2



Waste rock emplacement reaches final height on southern face. Early rehabilitation reduces visual contrast of exposed south face.

Established grass seeding to lower slopes improves visual integration.

Year 4

Figure 6.4 | Photomontage VP2 - Mid Western Highway - west - Existing view to Year 4

VP 2: Mid Western Highway west



Figure 6.5 | Photomontage VP2 - Mid Western Highway - west - Year 8 to Final Landform

SOUTHERN VIEW SECTOR

VP 3 – Kings Plains Residence

This view is representative of residential or locality views at lower elevations along Walkom Road / Kings Plains area south of the Mid Western Highway and the Project boundary.

The tree covered hill in centre view is the south face of the Project open cut mine and which is the focal point of this view from this Kings Plains residence. A low intervening ridgeline between this view and the southern boundary of the Project area screens existing views of elevated slopes north of the highway within the Project area. See Figure 6.6 and Figure 6.7.

During construction/ development of amenity bunds

Up to Year 2, there will be vegetation clearing, topsoil stripping and stockpiling and creation of new landforms in WMF embankments and amenity bunds. There will be high level contrast in colour and texture as the existing colours are replaced by the higher contrasting exposed earth. New landforms (amenity bunds and WMF embankments) will have high contrast in scale and form and low integration with existing setting of undulating rural hills and low ridgelines within this view.

Parts of the infrastructure area to the north of open cut mine will be within view until completion of southern amenity bund. Development of the waste rock emplacement will continue for the life of the mine as waste rock from operations is deposited. By Year 4, following completion of the southern amenity bund, the waste emplacement will be screened from this view location.

From Year 4 to Year 8, the southern face of the southern amenity bund will have progressive rehabilitation (grassing and early stages of woodland establishment). By Year 8, a significant level of rehabilitation should be achieved, lowering visual contrast for the south face. The advancement of the waste rock emplacement now exceeds previous existing ridgeline in elevation. Integration with setting is reduced by contrasting exposed earth and new constructed landforms.

Final landform and new planting

The final landform, now with well established grass cover and new tree planting, has reduced visual contrast. Form is consistent with surrounding undulating rural character; scale of new landform is larger than existing setting but similar to landscape character in this rural setting.

The pit amenity bund has been regraded to lower the height of landform and improve visual amenity. Long term visual effects are reduced significantly when the established planting patterns further complementing the microtopographic landforms and grassing.

Long term effects

Visual contrast will now be very low as tree patterns and grass cover textures mature to resemble surrounding landscape patterns. Visual integration will now be high with minimal discernible differences to surrounding landscape character of rolling hills.

Lighting effects

Direct lighting will be visible potentially up to Year 4 where vehicles and earth moving equipment move around the Project area. This will improve following completion of pit amenity bund which

will shield haul trucks exiting the open cut pit and lighting from the infrastructure areas. Direct lighting will potentially be visible from haul trucks on the waste rock emplacement prior to completion of the southern amenity bund. Following completion of bund, direct lighting effects will be avoided where possible by waste emplacement behind progressively constructed light barriers, some direct lighting may escape on higher elevations of the waste rock emplacement near southern extent from movement of haul vehicles and waste emplacement.

Operational lighting from the infrastructure and ancillary facilities will be screened by the amenity bunds and waste rock emplacement.

Sky glow effects from the Project area will occupy this view at night and create moderate to high contrast to existing dark sky character of the existing setting.

VP3 Visual effect

Distance from visible Project element:	1.0 km
Area of Primary view zone (PVZ) occupied by the Project in this view (refer to Figure 2.2).	47.2%
Visual effect: Refer Table 2.1	Level 1 – High
During construction of amenity bunds:	Level 2 – High
During rehabilitation of amenity bunds:	Level 3 – High
Final landform:	Level 4 – Low
Long term:	

VP 3: Kings Plains Residence

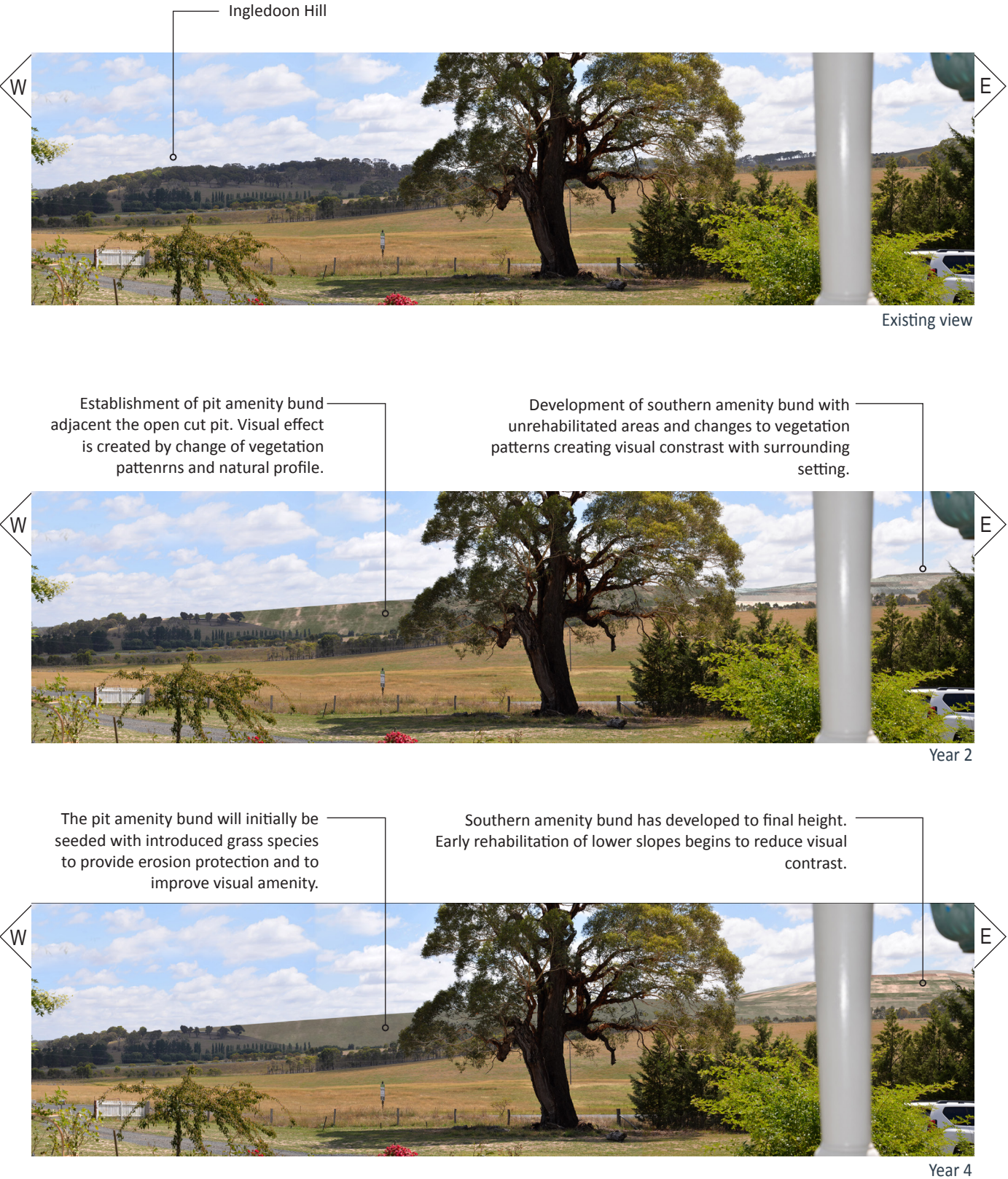


Figure 6.6 | Photomontage VP3 - Kings Plains Residence - Existing view to Year 4

VP 3: Kings Plains Residence

Rehabilitation of grassing and vegetation to pit amenity bund reduces visual contrast of lower slopes.

Upper slopes have levels of contrast in colour and texture with surrounding setting. Micro-relief implemented to upper profile of waste rock emplacement contributes to improved visual integration.



Year 8

Southern amenity bund completed. Rehabilitation of grassing and vegetation to slopes reduces visual contrast. Micro-relief implemented to upper profile of waste rock emplacement contributes to improved visual integration.

The pit amenity bund has been regraded to achieve lower height landform and improve visual amenity.



Final landform

Figure 6.7 | Photomontage VP3 - Kings Plains Residence - Year 8 to Final Landform

VP4 – Kings Plains Residence

This view is representative of residential or locality views at higher elevations along Walkom Road / Kings Plains area directly south of the Project boundary.

Views from this residence reflect open views to the north from some lower residences within Kings Plains. Existing primary views include undulating rural grazing lands, stands of woodland and other Kings Plains residences and property. The linear fence line planting along hill/ridgeline in centre right of view is indicative of extent of proposed waste rock emplacement. See Figure 6.8 and Figure 6.9.

During construction/ development of amenity bunds

During construction/ development of amenity bunds (pit amenity bund by year 1 and southern amenity bund by Year 4 there will be vegetation clearing on hill slopes and open pastures, topsoil stripping and stockpiling and creation of new landforms (WMF embankments and amenity bunds) in centre of view in areas currently screened by vegetation.

Haul roads and truck movements will be visible until amenity bund achieves final finished levels. New landforms (amenity bund and WMF embankments) will have high contrast in scale and form to existing setting of undulating rural hills, low ridgelines and woodland within this view. Visual integration will be low as due to stepped landform character until micro-relief and rehabilitation of southern face of southern amenity bund has been completed.

The visual effects occupy a significant percentage of the primary view zone in this view.

Construction of the waste rock emplacement will continue for the life of the mine as waste rock from operations is deposited. It will become part of the view as the elevation of the waste rock emplacement increases during operations and is seen above the low foreground ridgeline.

From Year 2 to Year 8, the southern face will have progressive rehabilitation (grassing and vegetation planting) lowering visual contrast. By Year 4, following completion of the southern amenity bund, the waste emplacement will be screened from this view location.

From Year 4 to Year 8, the southern face of the southern amenity bund will have progressive rehabilitation (grassing and early stages of woodland establishment). By Year 8, a significant level of rehabilitation should be achieved, lowering visual contrast for the south face. The advancement of the waste rock emplacement now exceeds previous existing ridgeline in elevation between open cut mine and eastern extent of waste rock emplacement. Integration with setting is improved by establishment of rehabilitation across the southern face.

Haul roads and truck movement is now limited to the higher elevations of the waste rock emplacement. There will be no visibility of haul trucks exiting the open cut pits after development of the pit amenity bund. By Year 4, following completion of the southern amenity bund, there will be no visibility of haul trucks on the waste rock emplacement.

Final landform and new planting

The final landform, now with well established grass cover and new tree planting, has reduced visual contrast. Form is consistent with surrounding undulating rural character; scale of new landform is larger than existing setting but similar to landscape character in this rural setting.

The pit amenity bund has been regraded to lower the height of landform and improve visual amenity.

Long term visual effects are reduced significantly when the established planting patterns further compliment the microtopographic landforms and grassing.

Long term effects

Visual contrast will now be very low as tree patterns and grass cover textures mature to resemble surrounding landscape patterns. Visual integration will now be high with minimal discernible differences to surrounding landscape character of rolling hills.

Lighting effects

Direct lighting will be visible potentially up to Year 4 where vehicles and earth moving equipment move around the Project area. This will improve following completion of pit amenity bund which will shield haul trucks exiting the open cut pit and lighting from the infrastructure areas. Direct lighting will potentially be visible from haul trucks on the waste rock emplacement prior to completion of the southern amenity bund. Following completion of bund, direct lighting effects will be avoided where possible by waste emplacement behind progressively constructed light barriers, some direct lighting may escape on higher elevations of the waste rock emplacement near southern extent from movement of haul vehicles and waste emplacement.

Operational lighting from the infrastructure facilities and ancillary facilities will be screened by the amenity bunds and waste rock emplacement.

Sky glow effects from the Project area will occupy this view at night and create moderate to high contrast to existing dark sky character of the existing setting.

VP4 Visual effect

Distance from visible Project element:	0.83 km
Area of Primary view zone (PVZ) occupied by the Project in this view (refer to Figure 2.2).	68.5%
Visual effect: Refer Table 2.1	
During construction of amenity bunds:	Level 1 – High
During rehabilitation of amenity bunds:	Level 2 – High
Final landform:	Level 3 – High
Long term:	Level 4 - Low

VP5 – Mid Western Highway – Views west

This view is from the highway travelling west near eastern extent of the PVC. It represents the short duration views from the highway whilst passing the Project area southern face looking towards significant topographic features in the distance such as Mt Conobolas centre left of view. See Figure 6.10 and Figure 6.11.

Views from this angle reduce the amount of view occupied by the Project. Thick plantation pine forests to the north of highway limit view angles at this location. Views will open out along an approximately 3.2 km long stretch of the highway. Outside this section, such views are screened by intervening roadside vegetation.

During construction/ development of amenity bunds

During construction/ development of amenity bunds (pit amenity bund by year 1 and southern amenity bund by Year 4 there will be vegetation clearing on hill slopes and open pastures, topsoil stripping and stockpiling and creation of new landforms (WMF embankments and amenity bunds) in centre of view in areas currently screened by vegetation.

Initially there will be vegetation clearing, topsoil stripping, stockpiling and creation of new landforms. At Year 2, the faces of the amenity bund and waste rock emplacement are right of the highway, seen as contrasting bands of exposed earth and rock and visible haul roads. The sides of WMF embankments can also be seen as contrast earth material at the tow of the slope.

From Year 2 to Year 8, the southern face will have progressive rehabilitation (grassing and vegetation planting) lowering visual contrast. By Year 4, following completion of the southern amenity bund, the waste emplacement will be screened from this view location.

From Year 4 to Year 8, the lower sections of the southern amenity bund will have progressive rehabilitation (grassing and early stages of woodland establishment). By Year 8, a significant level of rehabilitation should be achieved, lowering visual contrast for the south face. The advancement of the waste rock emplacement now exceeds previous existing ridgeline in elevation between open cut mine and eastern extent of waste rock emplacement. Integration with setting is improved by establishment of rehabilitation across the southern face.

Haul roads and truck movement is now limited to the higher elevations of the waste rock emplacement. There will be no visibility of haul trucks exiting the open cut pits after development of the pit amenity bund. By Year 4, following completion of the southern amenity bund, there will be no visibility of haul trucks on the waste rock emplacement.

Final landform and new planting

The final landform, now with well established grass cover and tree planting, has reduced visual contrast. Form is consistent with surrounding undulating rural character; scale of new landform is larger than existing setting but similar to landscape character in this rural setting.

The pit amenity bund has been regraded to lower the height of landform and improve visual amenity.

Long term visual effects are reduced significantly when the established planting patterns further compliment the microtopographic landforms and grassing.

Lighting effects

Direct lighting will be visible potentially up to Year 4 where vehicles and earth moving equipment move around the Project area. This will improve following completion of pit amenity bund which will shield haul trucks exiting the open cut pit and lighting from the infrastructure areas. Direct lighting will potentially be visible from haul trucks on the waste rock emplacement prior to completion of the southern amenity bund. Following completion of bund, direct lighting effects will be avoided where possible by waste emplacement behind progressively constructed light barriers, some direct lighting may escape on higher elevations of the waste rock emplacement near southern extent from movement of haul vehicles and waste emplacement.

Operational lighting from the infrastructure facilities and ancillary facilities will be screened by the amenity bunds and waste rock emplacement.

Sky glow effects from the Project area will occupy this view at night and create moderate to high contrast to existing dark sky character of the existing setting.

VP5 Visual effect

Distance from visible Project element:	2 km
Area of Primary view zone (PVZ) occupied by the Project in this view (refer to 2.2).	3.6%
Visual effect: Refer Table 2.1 During construction of amenity bunds: During rehabilitation of amenity bunds: Final landform: Long term:	Level 1 – High Level 2 – Moderate Level 3 – Low Level 4 – Very low

VP 4: Kings Plains Residence



Figure 6.8 | Photomontage VP4 - Kings Plains Residence - Existing view to Year 4

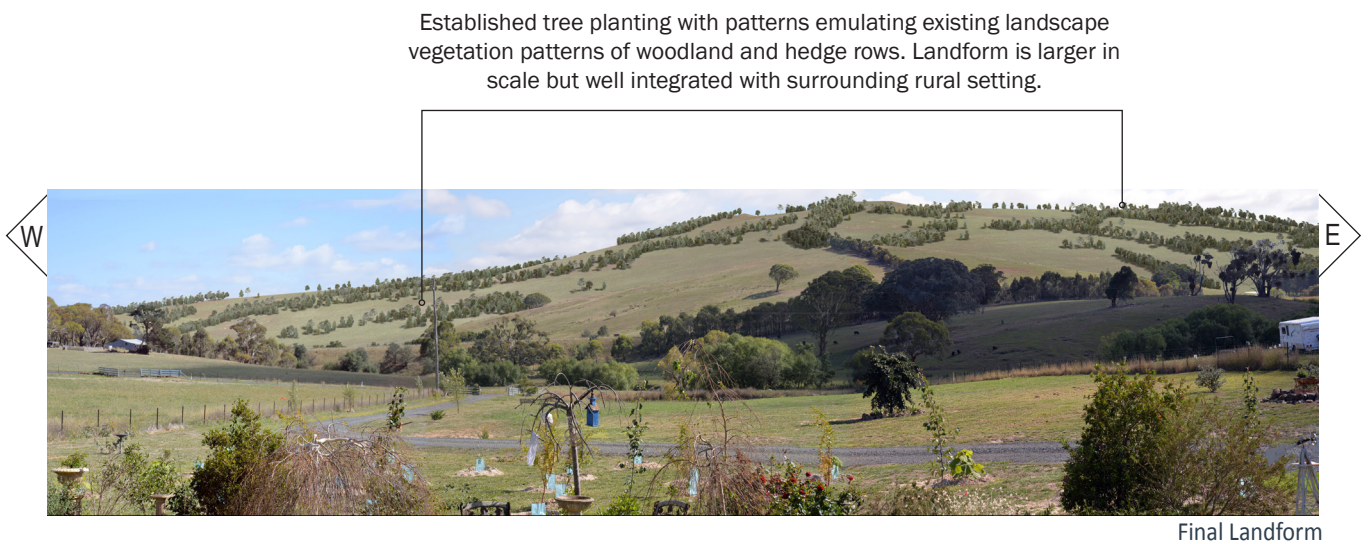
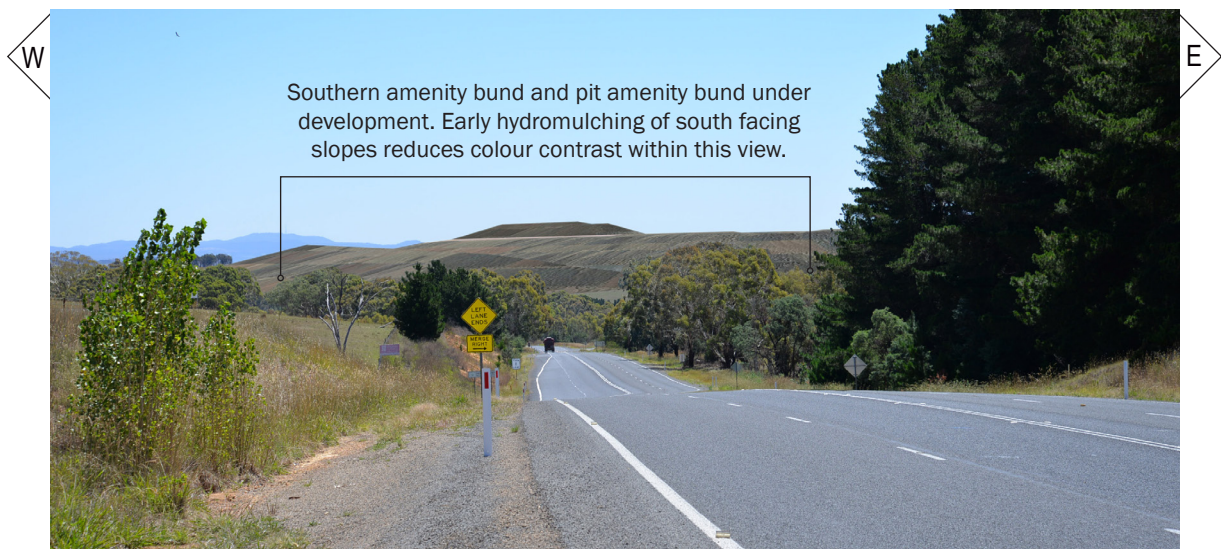


Figure 6.9 | Photomontage VP4 - Kings Plains Residence - Year 8 to final landform

VP5: Mid Western Highway - East



Existing view



Year 2



Year 4

Figure 6.10 | Photomontage VP5 - Mid Western Highway east - Existing view to Year 4

VP 5: Mid Western Highway - East

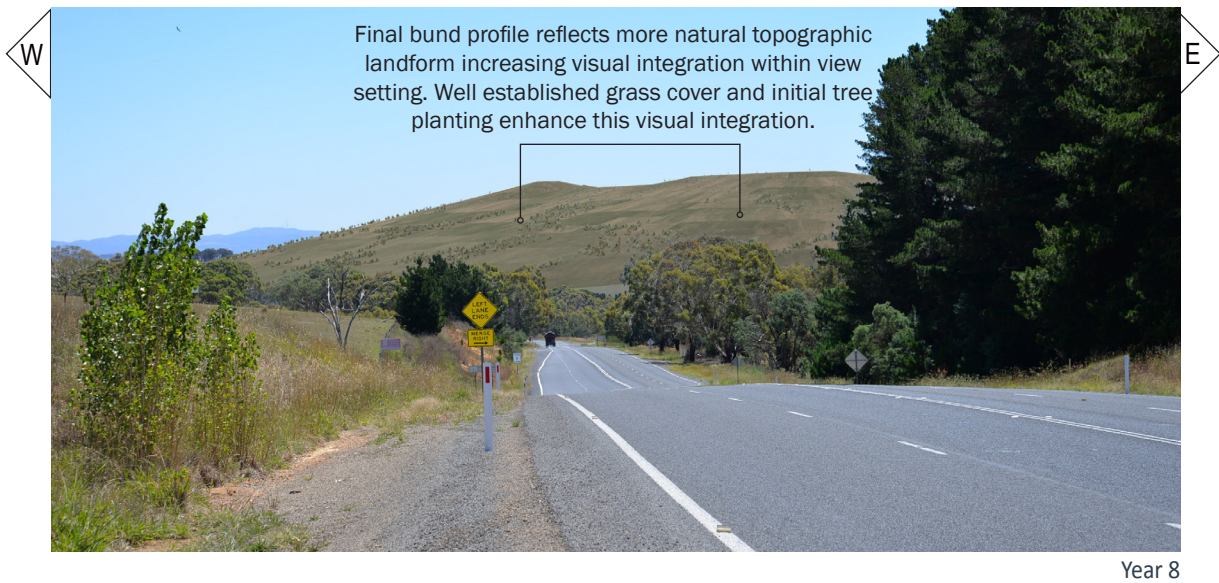


Figure 6.11 | Photomontage VP5 - Mid Western Highway east - Year 8 to Final Landform

6.4 Viewpoint visual effect summary

Table 6.1 *Visual effects summary*

View location	Nearest Visible Project component	Distance	Visual sensitivity	Visual effect
VP1	Guyong Road – Garvey Roadside	4.5 km	Low	During mine life: High Final landform: High Long term: Very low
VP2	Mid Western Highway – views east	2.1 km	High	During mine life: High Final landform: High Long term: Very low
VP3	Kings Plains Residence	1.0 km	High	During mine life: High Final landform: High Long term: Very low
VP4	Kings Plains Residence	0.83 km	High	During mine life: High Final landform: High Long term: Very low
VP5	Mid Western Highway – Views west	2 km	High	During mine life: High Final landform: High Long term: Very low

6.5 Lighting Effects

There are two types of lighting effects (also termed light pollution) that could be generated by the Project, direct light effects and diffuse light effects. Direct light effects result from when the light source is directly visible and will be experienced if there is a direct line of sight between the light source and viewpoint.

Diffuse light effects relate to the general night-glow that results from light of sufficient strength being reflected into the atmosphere. Diffuse light effect will create a local focal point that will vary with distance and atmospheric conditions such as fog, low clouds and/or dust particles which all reflect light.

Both of these light effects are absent in the existing environment immediately surrounding the Project. Local townships generate low levels of night glow.

Visual effects of lighting (*“impacts of lighting on amenity and ‘dark sky’”*) were identified as a concern in the Social Impact Assessment (Hansen Baily 2019) contained in Appendix T of the EIS.

Research and academic writing in recent years have identified that “light pollution hides the night sky from rural as well as urban observers.”² Gallaway (2010) also describes how the night sky has a significant range of values including scientific value, historical value, cultural value, recreational value, beauty, and inspirational or spiritual value.

² Gallaway, T. (2010) JOURNAL OF ECONOMIC ISSUES Vol. XLIV No. 1 March 2010

Sky glow from escaped anthropogenic light degrades visual night sky quality. (Duriscoe, Anderson, Luginbuhl and Baugh 2018)

Aesthetic Losses

Aesthetic damages are, perhaps, the largest costs of light pollution. Economists have studied how air pollution reduces the visibility of scenic assets.

Paradoxically, light pollution is inexpensively corrected if individuals and communities become aware of the social costs of lighting and stop treating the night as an open access resource. Simply turning off lights is a start. ³

Australian/New Zealand Standard (AS/NZS) 4282:2019 *Control of the obtrusive effects of outdoor lighting* outlines the potential influence of night-lighting impacts on the surrounding environment, in particular Section 2.3 states:

The obtrusive effects of the lighting system may be significantly influenced by the following factors:

- a) The use of the area abutting or in close proximity to the proposed development.
- b) The topography of the area surrounding the lighting installation. Residential developments at a lower level than that of the lighting installation are more likely to be subjected to a direct view of the luminaires.
- c) Physical features, such as adjacent buildings, trees and spectator stands, that may be effective in restricting light spill beyond the boundaries of the development.
- d) The existing ambient lighting characteristics relative to the proposed lighting.
- e) The location of the proposed development relative to—
 - (i) areas of special significance, e.g. areas having cultural, environmental, historical or scientific importance;
 - (ii) harbours, airports, waterways, roads or railway systems where spill light from the proposed development may interfere with the visibility of signalling systems; or
 - (iii) community and scientific optical observatories where spill light from the proposed development may interfere with astronomical observations.

The visual effect of night-lighting will be influenced by the location of operations, the elevation of the viewpoint and the presence of any barriers such as topographic features and/or vegetation.

Changes in night-lighting will primarily occur during mine development activities, including earthworks and construction of the processing plant and mine infrastructure in the first 2 years, then for life of mine at the ROM, mine entry area and transport, maintenance and rehabilitation operations. Night-lighting at the Project area will be significantly different to that currently experienced.

Sensitive receptors surround the Project area with the concentration of residential receptors towards the south and west of the Project area (i.e. Kings Plains locality and Guyong Road). The closest residences to the south-west of the Project area are owned by McPhillamys. There are 13 residences in the northern sector along Vittoria Road and Mitchell Highway.

³ *ibid*

Blayney township has high visual sensitivity, however distance from light emitted by the Project reduces its visual sensitivity to moderate. It also generates its own visual light effects diluting any effects from outside sources.

The western view sector contains 15 residences scattered along Guyong Road. Due to proximity and visibility of the Project area, these residences will have high visual sensitivity to any lighting effects created by the Project.

6.5.1 *Direct Light Effects*

During Mine Life

Direct lighting effects will occur during early mine development activities and the earthworks for the southern and pit amenity bunds and waste rock emplacement. This will be limited to a two year construction period.

These activities will be observed by sensitive receptors to the south of the Mid Western Highway and from residences in the western view sector along Guyong Road. Residences in the east and north will be shielded from direct lighting by a combination of local topography and intervening vegetation.

Following the development of the pit and southern amenity bunds, direct lighting to the south will be shielded.

The majority of the lighting associated with mining projects is typically associated with product processing infrastructure, workshops and transport facilities.

For the Project, these operational components will be located to the north of the open cut pit, the amenity bunds and the waste rock emplacement (refer Figure 4.1). Lighting associated with the infrastructure will be hooded limiting the ability to produce potential direct light effects.

There will also be vehicles and mobile equipment moving around the Project area. There will be no off-site haulage.

During the operational phase of the Project, the potential for direct light effects will be generally limited to residential receptors to the west and to the south prior to the completion of the southern amenity bund.

Direct lighting has the potential to result in a higher impact, in comparison to diffuse lighting, however it will be limited to the west of the Project as the completion of the pit and southern amenity bunds will limit direct light effects to the south of the Project.

6.5.2 *Diffuse Light Effects and Impacts*

Light pollution and sky glow are currently limited to that created by Blayney township (8 km) and Bathurst (30 km) from the Project area thereby reducing their sensitivity to this visual effect. Kings Plains and the residences around the Project area generate insignificant light pollution resulting in dark sky night conditions and higher sensitivity to any changes.

Any diffuse lighting effects will have lower but broader effects due to the prevalence of atmospheric moisture or background particulate matter such as dust or fog. This will create a halo of light above the source of construction and operational lighting.

Existing radiance levels at the proposed Project area range between 0.17×10^{-9} watts per square centimetre (W/cm^2) to 0.24×10^{-9} W/cm^2 (Figure 6.12). Immediately adjacent to the Project area

within Kings Plains and along Guyong Road, the existing levels of diffuse light range from $0.24 \times 10^{-9} \text{ W/cm}^2$ to $32 \times 10^{-9} \text{ W/cm}^2$ due to localised residential light levels.

During construction and operation, the increase in radiance levels and resulting diffuse light effects associated with the Project will increase significantly from these low levels. Localised sky glow will be experienced by residential receptors in all view sectors.

The visual impacts of diffuse lighting associated with the Project will be significant compared to the low existing diffuse lighting levels.

There is potential for diffuse light from the Project to be observed from elevated locations, such as from the highest vantage points at the Church Hill Rotary Lookout and will be distinguishable within the dark sky local context.

Mitigation measures (on-site and off-site) that will be incorporated into the Project design are discussed in Section 8. These mitigation measures will reduce the visual effect of the Project, but due to sensitivity in relation to night lighting, the visual impact of night-lighting on sensitive receptors will be moderate to high.

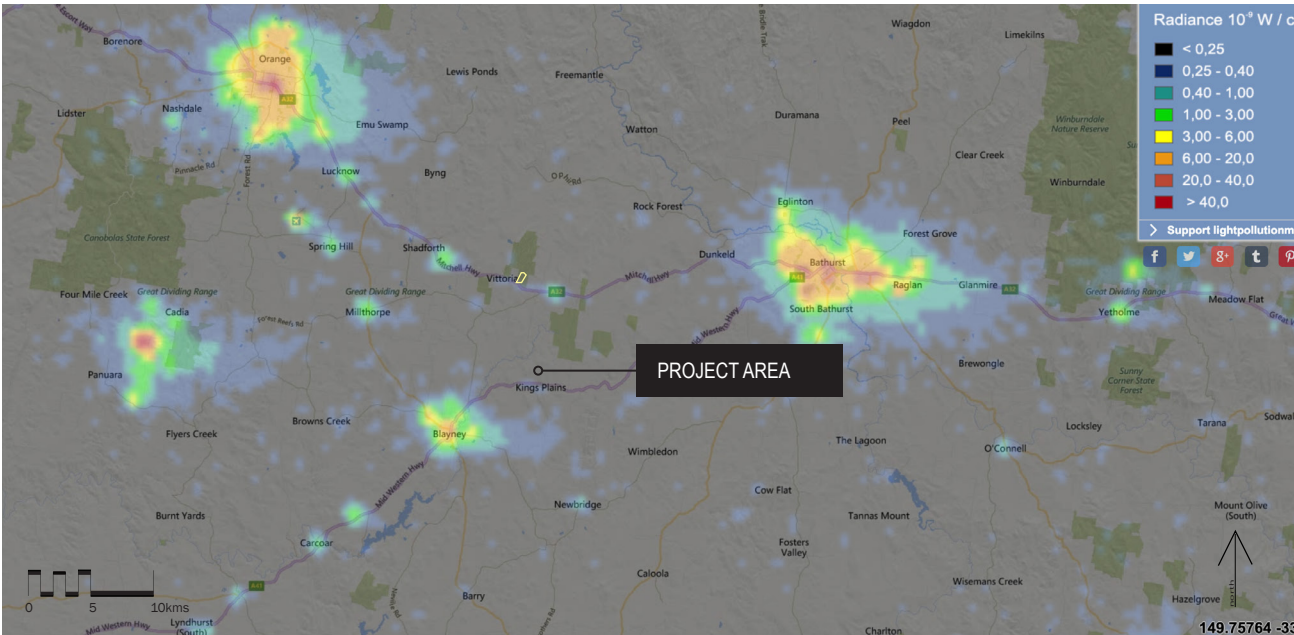


Figure 6.12 | Light pollution map - Bathurst - Blayney region

7. VISUAL IMPACT

7.1 General

The visual effects of the various elements of the Project were discussed in Section 4 of this report. The visual sensitivity levels of the Project were discussed in Section 5 of this report.

This section considers the visual impact of the Project based on visual effect and sensitivity values. The impact of the development will vary according to the visual effect of the Project, its visibility, and the visual sensitivity of areas from which it is seen. These two factors are considered together as indicated in Table 2.3 to determine impact levels. The visual impacts are considered in relation to the various sectors.

7.2 Visual impacts in the Northern View Sector

Commercial facilities

There will be no views to the Project area from the commercial facility (Beekeepers Inn). Accordingly, there will be no visual impact. There will be lighting impacts from sky glow to the south seen over the intervening topography, in previously dark night area.

Rural Residences

There will be no views to the Project area from any rural residences in the northern view sector. Accordingly, there will be no visual impact.

There will be lighting impacts from sky glow to the south seen over the intervening topography, in previously dark night area.

Mitchell Highway

There will be no views to the Project area from the Mitchell Highway. Accordingly, there will be no visual impact.

Local Roads

Where there are views to Project components from Vittoria Road (*Moderate to low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final Landform and new planting:	Low visual impacts
Long term:	Very Low visual impacts

Rural Lands

Where there are views to Project components from surrounding rural lands (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very Low visual impacts

7.3 Visual impacts in the Eastern Sector

State forest recreation trails

Where there are views to Project components from recreation trails within Vittoria State Forest (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

Intervening vegetation from the plantation forest will provide significant screening from many trails within this recreation area. Where there are breaks in this forest due to logging, views to the Project area will become more significant as it occupies larger proportions of the PVZ in a view.

Rural Residences

Where there are views to Project components from rural residences (*High sensitivity land use*) the following visual impacts apply.

During construction and operations:	High visual impacts
During rehabilitation:	High to Moderate visual impacts
Final landform and new planting:	Moderate to Low visual impacts
Long term:	Very low visual impacts

Intervening topography and vegetation from the plantation forest will provide significant screening for many residences. There will be direct lighting impacts from vehicle movement on site access roads and diffuse lighting impacts from sky glow to the south seen over the intervening topography, in previously dark night area.

Local Roads

Dungeon Road has low visual land use sensitivity with most of the road being within the Project Boundary. The southern section adjacent the Mid Western Highway will continue to provide access to two private residential properties. Where there are views to Project components from this 550 m section of Dungeon Road (*Low sensitivity*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

Rural Lands

Rural lands surround the Project boundary. Where there are views to Project components from surrounding rural lands (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

7.4 Visual impacts in the Southern Sector

Kings Plains locality and rural residences

Residences within this area of views sector have varying degrees of visual impacts to views to the Project dependant on the amount of the PVZ is occupied by views to the Project components.

This range includes:

- **Category A:** full front on views within the viewpoint PVZ;
- **Category B:** partial views where the Project occupies one side of the viewpoint PVZ;
- **Category C:** minimal or limited views to the Project due to intervening topography and / or vegetation; or
- **Category D:** no available views to the Project within the residential viewpoint PVZ.

Views will vary from different residences due to screening by intervening topography and vegetation (either natural or part of visual mitigation planting).

Category determination for all residential receptors will require individual on-site assessment to confirm levels of localised visual impacts and levels of mitigation discussed in Section 8.

Where there are views to Project components from rural residences (*High sensitivity land use*) the following visual impacts apply (dependent on distance from the nearest visible components and category determination).

During construction of amenity bunds	High visual impacts
During rehabilitation:	High to High/ Moderate visual impacts
Final landform and new planting:	High to Moderate/ Low visual imp
Long term:	Low visual impacts

Where there are views to Project components from the section of the Mid Western Highway adjacent the Project area (approximately 7.5 km section), (*High sensitivity land use*) the following visual impacts apply.

During construction of amenity bunds	High visual impacts
During rehabilitation:	High/ Moderate visual impacts
Final landform and new planting:	Moderate / Low visual impacts
Long term:	Very low visual impacts

Heritage items

Views into and out of 'Kareela' will be screened by existing mature residential gardens that surround the property therefore minimising visual impacts.

Views into 'Iralee' will be unaffected. Views from 'Iralee' will be impacted as per Category A Kings Plains residences above. This site is an occupied residence. Mitigation measures to reduce impacts are discussed in Section 9.

The public school site is also surrounded by mature vegetation which will filter views north of the site. Localised views into the site from Walkom Road are generally unchanged. The view to a modified background in the middle distance will be filtered by the surrounding trees.

'Lynfern' further to the west is screened from the Project by topographic features and local vegetation along eastern property boundary. The primary views from the north of the property face to the north-west on to high amenity rural landscapes.

There will be indirect lighting impacts to all four sites and direct lighting impacts similar to Kings Plains residences to all but 'Lynfern'.

Commercial facilities

There will be no views to the Project area from the commercial facility (Drayshed Nursery). Accordingly, there will be no visual impact. There will be lighting impacts from sky glow to the south seen over the intervening topography, in previously dark sky area.

Local Roads

Walkom Road provides access to the Kings Plains locality community and residences. The proximity to nearest visible Project components results in a moderate visual land use sensitivity. Views will vary along the length of Walkom Road due to screening by intervening topography and vegetation (either natural or part of visual mitigation planting).

Where there are views to Project components from Walkom Road (*Moderate sensitivity land use*) the following visual impacts apply.

During construction and operations:	High/ Moderate visual impacts
During rehabilitation:	High/ Moderate visual impacts
Final landform and new planting:	High/ Moderate visual impacts
Long term:	Very low visual impacts

Kings Plains Road has moderate to low visual sensitivity with most of the road further than 2.5 km from nearest visible Project components. Where there are views to Project components from Kings Plains Road (*Moderate sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

Rural Lands

Where there are views to Project components from broad acre rural lands (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

7.5 Visual impacts in the Western Sector

Blayney Township

Where there are views to Project components from Blayney at distances of <7.5 km to nearest visible Project components (*High sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate / Low visual impacts
During rehabilitation:	Moderate / Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very low visual impacts

Rural residences

Where there are views to Project components from the houses (*High sensitivity land use*) scattered along Guyong Road to the west of the Project area and nearest visible Project components the following visual impacts apply.

During construction and operations:	High visual impacts
During rehabilitation:	Moderate / Low visual impacts
Final landform and new planting:	Moderate / Low visual impacts
Long term:	Very Low visual impacts

Recreation Areas and Lookouts

Billy Soo Rest Area, Church Hill Rotary Lookout and Heritage Park Rest Area will have *Moderate land use sensitivity* due to distances from nearest visible Project components. Where there are views to Project components from these locations the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Moderate to Low visual impacts
Final landform and new planting:	Very Low visual impacts
Long term:	Very Low visual impacts

Commercial Facilities

The visual impacts for any commercial facilities (*High sensitivity land use*) in this view sector are consistent with those of Blayney Township as they will be located within or around the perimeter of the township.

Mid Western Highway

The Mid Western Highway has moderate visual sensitivity with most of the highway further than 2.5 km from nearest visible Project components. Where there are views to Project components from the Mid Western Highway (*Moderate sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate visual impacts
During rehabilitation:	Moderate/ Low visual impacts
Final landform and new planting:	Moderate / Low visual impacts
Long term:	Very Low visual impacts

Local Roads

Guyong Road has low visual sensitivity with the road further than 2.5 km from nearest visible Project components. Where there are views to Project components from Guyong Road (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very Low visual impacts

Rural Lands

Where there are views to Project components from broad acre rural lands (*Low sensitivity land use*) the following visual impacts apply.

During construction and operations:	Moderate to Low visual impacts
During rehabilitation:	Low visual impacts
Final landform and new planting:	Low visual impacts
Long term:	Very Low visual impacts

7.6 Impact of Night Light

Direct and indirect night lighting effects will impact areas directly around the Project boundary and to a lesser extent the rural areas and township of Blayney within the PVC in the context of this area being a dark sky area.

Direct lighting impacts will occur up to completion of the southern amenity bund along the southern perimeter of the Project boundary area dependent upon direct line of sight to construction and operational activities. Following completion of the bund, direct lighting impacts would continue to be experienced by receptors to the west and north-west with direct line of sight views to the ongoing operations within the mine development area.

Diffuse lighting effects will be more widespread due to the dome of the sky glow effect from the mine operations at night. Atmospheric conditions such as dust and local seasonal fog will intermittently exacerbate this impact.

Local natural and constructed topographic features i.e. ridgelines, hills and the southern and pit amenity bunds may shield some of the light emitted from the sources along the line of sight of the observer. This shielding becomes more significant when the light source is very near the ridge or hill. In addition to smaller topographic features, over distances, the Earth's curvature increasingly enhances the shielding of emitted light from distant sources. (Cinzano, Falchi and Elvidge 2000).

Accordingly, diffuse lighting impacts will be experienced in varying degrees. It will be dependent upon location, shielding topographic features and distance from the Project.

7.7 Cumulative impacts

Within an appropriate radius of analysis to the Project area, the other relevant existing developments are:

- Cadia Valley Operations;

- W2R;
- quarries (four visible from roads within the region); and
- previous Browns Creek Mine (closed), now a landscaping business (Australian Natural Landscapes).

In the context of these existing developments, the cumulative impacts will result from the combined effects from the Project together with these developments. The cumulative impacts could occur:

- Where multiple facilities are seen within the same view without the viewer turning his/her head (the facilities may be juxtaposed so that one is seen “through” the other;
- Where multiple facilities can be seen successively if the viewer turns his/her head; or
- Where multiple facilities are viewed in succession as the viewer moves through the landscape (e.g. driving on highways, recreation trails, or relaxing on the Belubula River). In this case, multiple developments can impact the viewing experience for moving viewers even if the facilities are not visible from a single common viewpoint.

The last instance is the most relevant in this setting where the journey along the Mid Western Highway between Bathurst and centres further west may include views of one or all of these developments.

Of significance is the overall high visual integrity of the regional landscapes around the Project area. The above existing developments are unlikely to be seen in any one sitting except from elevated locations such as the Church Hill Rotary Lookout in Blayney. As a result, though this is a moderate scale mining project and will create changes to the landscape over time, it is unlikely that multiple developments will be in the same view at any one time.

However, the development of the Project, involving a new or upgraded electric transmission line, communications towers, in addition to the core mining operations, when taken together have the potential for transforming landscape character in a relatively short time frame.

7.8 Visual impact summary

The following Table 7.1 summarises visual impacts for the worst-case period of visual impacts which will occur from Year 0 to Year 2. Visual impacts will continue for Kings Plains until completion of the southern amenity bund by the end of Year 4. In some locations the impact levels will be reduced over time following Visual Mitigation as described in Section 9 and mine site rehabilitation program as described in the Rehabilitation and Landscape Management Strategy (refer Appendix U of the EIS).

Table 7.1 *Visual impact summary*

Receptor	Land Use Sensitivity	Visual Sensitivity	Visual Effects	Visual Impact
NORTHERN VIEW SECTOR				
Rural residences	High	Low (No views)	Low	No impacts
Highways	High	Low (No views)	Low	No impacts
Local roads (Vittoria Road)	Moderate to Low	Moderate to Low	High to Moderate	Moderate to Low
Rural lands	Low	Low	Low	Moderate to Low
EASTERN VIEW SECTOR				
State Forest recreation trails	Low	Low	High to Moderate	Moderate to Low
Commercial facilities	High	Low (No views)	Low	No impacts
Rural residences	High	High	High	High
Local roads (Dungeon Road)	Low	Low	High	Low
Rural lands	Low	Low	High	Moderate to Low
SOUTHERN VIEW SECTOR				
Kings Plains Locality	High	High	High	High
Rural residences	High	High	High	High
Heritage listed items	High	High	High to Low	High to low
Highways	High	High	High	High
Local Roads (Walkom Road)	Moderate	Moderate	High	High
Local roads (Kings Plains Road)	Moderate to Low	Moderate to Low	High to Moderate	Moderate to Low
Rural lands	Low	Low	High	Moderate to Low

Receptor	Land Use Sensitivity	Visual Sensitivity	Visual Effects	Visual Impact
WESTERN VIEW SECTOR				
Blayney Township	High	High to Moderate	Low	Moderate to Low
Rural residences	High	High	High	High
Recreation areas - Billy Soo Rest area - Church Hill Rotary Lookout - Heritage Park	High	Moderate	Low	Moderate to Low
Commercial Facilities	High	High to Moderate	Low	Moderate to Low
Highway	High	Moderate	Moderate to Low	Moderate to Low
Local roads (Guyong Road)	Moderate to Low	Low	High	Moderate to Low
Rural lands	Low	Low	High	Moderate to Low

8. DYNAMIC LANDSCAPE ASSESSMENT OF IMPACTS

The natural and cultural/social elements of the landscape and the potential impacts of the Project on these elements are assessed in detail by other relevant technical experts, including:

- Mine development land capability and soils assessment (Sustainable Soils Management 2019a) contained in Appendix H of the EIS
- Mine development agricultural impact statement (Sustainable Soils Management 2019b) contained in Appendix I of the EIS
- Mine development noise and vibration impact assessment (Muller Acoustic Consulting 2019a) contained in Appendix L of the EIS
- Mine development air quality and greenhouse gas assessment (EMM 2019b) contained in Appendix M of the EIS
- Mine development Aboriginal and historical cultural heritage assessment (Landscape 2019) contained in Appendix P of the EIS
- Mine development traffic and transport assessment (Constructive Solutions 2019) contained in Appendix O of the EIS
- Mine development social impact assessment (Hansen Bailey 2019) contained in Appendix T of the EIS

Accordingly, this dynamic landscape assessment focuses on the perceptual and aesthetic characteristics of a landscape, including visual, sound, smell, touch/feel, preferences, associations and memories. The latter elements of preferences, associations and memories are influenced by the receptors' existing understanding of the landscape (e.g. through exposure to media describing the landscape prior to arrival). Whilst dynamic landscape assessment considers each of these inputs to a receptor's perception of the landscape, it is accepted that sight is the most dominant sensory input (Porteous, 1996; Kaymaz, 2012).

Table 8.1 outlines potential impact mechanisms considered as part of this assessment.

Table 8.1 *Dynamic Landscape Assessment of Impacts*

Landscape Characteristics	Potential Impact Mechanism
<i>Sight</i>	▪ Direct visual impacts (assessed separately in Sections 5,6 and 7) ▪ Visual impacts from night lighting (assessed separately in Section 7.3) ▪ Visual impacts whilst travelling through sub-region and region (e.g. views from the public road network or views from planes/ helicopters) ▪ Indirect visual impacts (e.g. additional mine-related vehicles on roads, mine staff wearing high visibility clothing in public places or visible dust and road entry signs to sites)
<i>Sounds</i>	▪ Noise/ vibration from construction, operation, road and or rail activities

Landscape Characteristics	Potential Impact Mechanism
<i>Smells</i>	▪ Odour generated by the Project (e.g. from blasting and processing)
<i>Touch/feel</i>	▪ Not applicable given public access to the Project site would be restricted, with minor exception potentially from dust events.
<i>Preferences, associates and memories</i>	▪ Viewing media related to the Project (including news articles, company statements, public information days and Google Earth) ▪ Mapping and aerial photography ▪ Existing reports ▪ Engaging with Regis representatives ▪ Memories of historical land uses and / or projects

Individual perception varies between individuals and can therefore be difficult to assess. The NSW Department of Planning and Environment's (2017) Social Impact Assessment Guideline for State Significant Development state the following with respect to assessing perceptions of adverse impacts:

When considering perceptions of adverse impacts on amenity, an evaluation must be made of the reasonableness of those perceptions. This evaluation involves 'the identification of evidence that can be objectively assessed to ascertain whether it supports a factual finding of an adverse effect on amenity...': *Telstra Corporation Ltd v Hornsby Shire Council* [2006] NSWLEC 133.

Accordingly, the assessment of perceptions in this dynamic landscape assessment draws, in part, on the assessment of potential adverse effects on amenity undertaken by other technical experts, where relevant (as listed above).

8.1 Sensitive Receptors

Receptors considered particularly sensitive to potential dynamic impacts of the Project on the local landscape are:

- Kings Plains locality;
- rural residences; and
- Mid Western Highway.

The small locality of Kings Plains has a rural residential character. The community values and cultural identity of Kings Plains residents are based in the rural history of the local area, the picturesque landscapes, the country town feel and a quiet rural way of life. This country locality character is considered sensitive to potential dynamic landscape impacts associated with mining.

The town of Blayney would have a similar sensitivity but is located at a distance, reducing its visual sensitivity other than through knowledge based impacts.

'The primary assessment area is characterised by a quiet rural residential ambience, with scattered rural residential development and generally quiet country roads. Paddocks, bushland, and proximity to the State Forest contribute to the enjoyment of open space. Residents enjoy a relatively quiet and in some cases isolated existence, this is despite the presence of the Mid Western Highway. Initial consultation indicates that residents of Kings Plains and residents neighbouring the Mine Site value the peaceful rural amenity, the rural vistas, the lack of traffic on local road networks, relative isolation from neighbours and the proximity to the regional centres of Orange and Bathurst.⁴ There are a number of scattered rural residences within the PVC. Landholders and families near the Project area enjoy a rural way of life which includes:

- agriculture and forestry as central to local employment and to family and community wellbeing;
- mining which also contributes to local employment; and
- social and recreational activities based around outdoor activities, environmental appreciation including appreciation of a dark sky environment, regular community events and celebration of rural heritage.

Rural residences are considered sensitive to potential dynamic landscape impacts given the aesthetic of the landscape is considered central to the rural way of life.

8.2 Potential Dynamic Landscape Impacts

Dynamic visual assessment takes into account human perceptions of the landscape (beyond sight) through sound (blasting and traffic), smell and touch (dust).

The natural and cultural/social elements of the landscape are assessed by other relevant technical experts. Accordingly, this dynamic landscape assessment is focused on three components:

- ephemeral effects;
- other visual effect experiences at regional and subregional scale;
- educational inputs.

8.3 Ephemeral Environmental Effects

These are due to non-visual environmental elements such as noise, dust and smell which may be experienced by receptors (viewers) within the PVC. These ephemeral effects can be positive experiences (e.g. sound of a water fall), or negative (e.g. smell of rubbish, sound of machinery). In this way, ephemeral effects of the Project, when significant, can lessen the experience of the landscape.

8.3.1 Sounds

As discussed above, Regis has located the infrastructure behind topographic features either natural or constructed (the waste rock emplacement and amenity bund).

⁴ Hansen Bailey McPhillamys Gold Project Social Impact Assessment Scoping Report (November 2017)

Muller Acoustic Consulting (MAC) has modelled potential noise impacts associated with the Project and found that between Years 1 to Year 4, noise impacts would be negligible as they are:

- of a minor magnitude;
- are of a temporary nature (PY1 to PY4);
- decrease over time; and
- can be managed accordingly in conjunction with the appropriate monitoring system and management controls⁵

Following that project phase, noise emissions are expected to reduce during decommissioning and final rehabilitation.

Any incidence of negative perception of sound at sensitive receptors may evoke temporary memories of adverse landscape impacts. In the context of the Project, distances from receptors and intervening topography, this adverse impact is considered to be low.

8.3.2 **Smells**

Regis has strategically located the mine infrastructure away from sensitive receptors to the south of the southern amenity bund and waste rock emplacement, which reduces the likelihood of odour impacts off-site. Events that could potentially cause releases of odour (i.e. blasts) would be managed and monitored during operations, however it is not expected that spontaneous combustion would occur at the Project.

In an unlikely occurrence of odour impacts off-site, there may be a temporary adverse landscape impact of short duration based on an educated understanding of the Project.

8.4 **Visual Effects of Proposal Outside Seen Area.**

In addition to dynamic perceptions created by sound and smell, the effects on a viewers' perceptions, gained accumulatively from moving away from a particular location can affect dynamic impacts. Such views (memories) would become part of the visual diary of the Project as seen from anywhere around it, generally within the PVC.

Such viewing then forms part of that viewer's perceptions of the Project at local, sub-regional and regional levels.

Dynamic landscape assessment considers these perceptions from both outside the PVC and within it in areas that do not have views of the Project.

The existing visual landscape settings inform perceptions of current mining affected landscapes and possible changes to those settings. Those settings include:

- local setting (Kings Plains, Guyong Road, Mid Western Highway);
- sub-regional setting (PVC) including Blayney; and
- regional setting (Bathurst/ Carbone/ Orange region).

This visual impact assessment report identifies that the visual impacts will be attributed to the visual effects created by significant views of the development of the waste rock emplacement

⁵ Muller Acoustic Consulting (2019) Noise and Vibration Impact Assessment

and amenity bunds, open cut mine, the ROM and infrastructure and ancillary facilities as seen from either the Kings Plains and/ or adjacent rural residences surrounding the Project area.

However, views of the Project from around the PVC more broadly, may contribute to the perceptions of the Project at those sensitive receptors (residential receptors) in locations with no views. This would include from road travel along the Mid Western Highway, Mitchell Highway, Vittoria Road, Guyong Road and Kings Plains Road.

8.4.1 ***Sub-regional Landscape***

In both the sub-regional and regional contexts, the Project's visible components are considered to be significant in terms of extent of visibility and the visual context which includes peaceful rural landscapes of high visual integrity.

The only other examples of broader scale disturbance occur at East Guyong Rock Quarry and waste resource recycling station (W2R) adjacent the Mid Western Highway within the PVC.

The Project would be an extension of the Resource Extraction Uses VCU. However, this extension to visual effect of the broader sub-regional and regional Resource Extraction Uses VCU is significant.

As defined in this landscape and visual assessment, various operations have different levels of visual effect, open cut mine and emplacement areas and infrastructure areas having a level 1 visual effect, and roads potentially having a level 1 or 2 visual effect. The additional visual effect of these areas for the Project, when considered with existing low intensity mining and resource extraction areas within the sub-regional and regional visual catchment is significant.

The total visible disturbance from the Project would be significant in this context.

Travels at this sub-regional scale would result in significant views of the Project on this journey however will be mitigated by effective rehabilitation and landscape screening treatments.

8.4.2 ***Regional Landscape***

On a regional scale, the Project is approached from the east via the Mid-Western Highway and from the west via either Orange or Cowra.

As seen from a journey along the Mid Western Highway and Millthorpe Road from Bathurst to Orange, the developing face of the southern amenity bund and waste rock emplacement and the open cut mine operations are visible from a 600 m stretch of the Highway. This view is seen in the larger context of 'seen' mining at the on the same journey.

There are three other locations along this journey where resource extraction can be seen (Swan Ponds Quarry, Blayney Quarry and Shadforth Quarry). Both are at a much smaller scale but contribute to the cognitive mapping of a location and cumulative disturbance within a region (Figures 8.1).

The only other example of current large scale resource extraction and disturbance occurs outside the PVC at Cadia Mine to the south-west.

Other major projects proposed in the Blayney and neighbouring LGAs include:

- Bathurst Second Circuit, Mt Panorama (Bathurst LGA)
- Brewongle Solar Farm (Bathurst LGA)
- Flyers Creek windfarm (Blayney LGA)

- Kempfield Silver Mine (Bathurst LGA)
- Cadia East Gold/Copper (Mod 12) (Blayney LGA and Carbone LGA)
- Orange Waste Project (MOD2) (Carbone LGA and Orange LGA)

This broader experience of minimal mining increases the significance of the significant areas of visible disturbance of the Project on a regional scale.

Aerial views (including via Google Earth) illustrate the existing intact rural character of the region where there are few mine areas in the region from Bathurst to Orange. The areas of mine-related disturbance in this regional view are insignificant. The addition of the total disturbed area from the Project to this overall view is considered significant in the construction and operational stages.

The final landform and long term visual effects after rehabilitation and tree planting establishment will be consistent with surrounding rural character.

8.5 Knowledge Based Perception

Perceptions on the basis of knowledge gained by reading, hearing and or seeing reports on previous, existing and proposed activities having an effect on personal perceptions. This perception input goes beyond any consideration of visual perception as it is based on all inputs that create a knowledge base of a landscape setting and the projects within it.

Such knowledge gained through public information would create an overarching awareness of this Project

8.6 Stakeholder Engagement

Memories, associations and preferences of a project are obtained via stakeholder engagement (Natural England, 2014). A SIA has been prepared for the Project in accordance with the NSW Department of Planning and Environment's (2017) Social Impact Assessment Guideline for State Significant Development

The scoping study consultation for the SIA (Hansen Bailey 2019 Appendix T of EIS) included:

- interviews with Bathurst, Blayney, Orange, Carbone, Cowra and Lithgow Shire Council representatives;
- consultation with neighbouring landholders and community members;
- SIA workshop with community and government agencies;
- interviews with representatives of Community and interest groups i.e. NSW Farmers and the Environmentally Concerned Citizens of Orange (ECCO);
- consultation with Indigenous community representatives, Orange Local Aboriginal Land Council.

The SIA summarises and assesses the concerns and issues raised by stakeholders throughout the engagement process.

Regis has emphasised the importance of positive community engagement since announcing its intention to acquire EL 5760. Opportunities for community feedback in relation to the EIS have been provided through:

- Information sessions held at both Kings Plains and Blayney.

- Regular correspondence via a full time community engagement manager.
- Distribution of newsletters to the community surrounding the Project.
- One on one meetings with affected residences and land owners.
- Community surveys.

Regis is committed to contributing to the local community. Over the last five years, Regis has provided sponsorship and financial support to many organisations in the region. Regis has continued to show a strong focus on engagement with the community.

8.7 Dynamic Landscape Impact

Individual perception varies between individuals and can therefore be difficult to assess. In this context it appears appropriate to consider the NSW Department of Planning and Environment's (2017) Social Impact Assessment Guideline for State Significant Development, which states the following with respect to assessing perceptions of adverse impacts:

When considering perceptions of adverse impacts on amenity, an evaluation must be made of the reasonableness of those perceptions. This evaluation involves 'the identification of evidence that can be objectively assessed to ascertain whether it supports a factual finding of an adverse effect on amenity...': *Telstra Corporation Ltd v Hornsby Shire Council* [2006] NSWLEC 133.

Accordingly, it is considered that the scale of impact of the Project on the landscape and the mitigation of those impacts in the context of existing land use patterns at the regional, subregional and local scales would create moderate to high dynamic landscape impacts during construction and operation; there are those who have an existing adverse perception of mining activity no matter how low the impacts or how informative the educational inputs. This impact is not necessarily tied to one's experience of the actual landscape and can create an adverse perception in those that have not even experienced the area.

However, in the context of "...considering perceptions of adverse impacts on amenity, an evaluation must be made of the reasonableness of those perceptions", it is considered that the dynamic landscape impact is moderate to high. This is based on intensity and extent of visual and other perceptual experiences of the Project in the context of existing landscape settings that include minor mining activity in the locality, sub region and more significant mining within the region. Such perceptions are likely to remain for a larger part of the operational phase, even when out of view, due to the complete knowledge set all members of the community have from information sessions and newsletters.

This high level of impact can be lowered by:

- reducing sensitivities through appropriate mitigation treatments and on/off site landscape treatments,
- demonstrate responsible and thorough implementation of recommended mitigation strategies, and
- continuing liaison and action with the community.

Dynamic impacts will reduce as perceptual effects relating to operations, including visual effects are reduced.



Photo source: Google EarthPro 2018

Swan Ponds Quarry as seen to south of the Mid Western Highway approximately 9 km south-west of Bathurst.



Photo source: Google EarthPro 2018

Small scale quarry as seen to the north of the Mid Western Highway approximately 500 m from highway 8.5 km west of Bathurst.



Quarry - a small scale operation as seen from Millthorpe Road approximately 500 m from highway 3.5 km west of Blayney.



Shadforth Quarry - as seen from Millthorpe Road approximately 150 m from roadside 13 km east of Orange.

Figure 8.1 | Dynamic impacts - other seen resource extraction on journey from Bathurst to Orange

9. MITIGATION

There are numerous visual mitigation measures incorporated into the design of the Project. These include:

- property acquisition to provide a substantial buffer between proposed mine infrastructure and nearby residences;
- locating the mine within existing screening ridge lines and topographic features and state forest;
- location of mine infrastructure which significantly reduces the scale of potential off-site amenity impacts;
- priority development of the pit and southern amenity bunds to screen development of open cut, infrastructure and haul roads at early stage of mine development;
- develop mine and waste rock emplacement staging to create progressive minor screening bunds;
- limit night-time operational activity where ever practicable on the waste rock emplacement to areas screened by the waste rock emplacement;
- progressive rehabilitation and development of an appropriate landform that incorporates natural design principles;
- develop the western edge of the waste rock emplacement to enable rehabilitation of this aspect in relation to views from western view locations such as Guyong Road residences;
- incorporate micro-topographic design and natural land form topographic articulation of waste rock emplacement design and rehabilitation strategies;
- location of site access road and intersection with the Mid Western Highway to the east of view limiting ridge lines to east of PVC;
- implementation of early off-site residential visual mitigation planting;
- use of compatible tones for building and cladding colours in forest tones (such colours will include tonal variations of existing colours) to assist in assimilating components into the setting; and
- inclusion of visual landscape objectives in the rehabilitation strategy.

Mitigation measures proposed in relation to reducing visual impacts relevant to the Project include:

- On-site treatments to reduce visual effects of the Project components by reducing visibility for sensitive receptors and reducing the level of contrast.
- Off-site treatments at viewer locations to reduce visual sensitivity.
- Such treatments would also assist in reducing the effect of indirect night light that is strongest at near horizon/earth locations rather than high in the evening/night sky.

9.1 On-site treatments

On-site treatments involve rehabilitation of landforms and land cover, while off-site treatments could involve a range of treatments to screen views, filter views and/or reorientate primary views, should this be necessary.

Regis will conduct ongoing consultation with stakeholders surrounding the Project area over the life of the Project to identify any issues in relation to visual impacts on surrounding sensitive viewing locations. Following further consultation with the stakeholders, additional measures may be implemented to increase visual mitigation at specific sensitive viewer locations.

9.1.1 ***Open cut mine***

1. Continue established practice of seed collection from appropriate indigenous trees that will be removed within the disturbance footprint to provide for seedling supply for on-site landscape rehabilitation programmes and as further specified by project ecologist.
2. Remove vegetation from areas to be impacted by the open cut mine development ensuring as far as possible remaining trees are not damaged by falling process.
3. Create on-site stockpiles for mulched vegetation and appropriate topsoil storage to maintain viability of soil for rehabilitation works.
4. Protect and maintain existing trees and vegetation screening below open cut mine clearing zone from mine machinery and damage by creating vehicle and machinery exclusion zones.
5. Provide additional screening at key locations, undertaken in consultation with nearby landholders and relevant community groups.
6. Use barriers such as shipping containers painted in muted colours consistent with surrounding colour palette, strategically positioned around open cut mine area to provide short-term screening from night-lights and views to construction and/ or operations before below ground level operations achieve natural topographic screening.
7. Plan haul roads to minimise direct light effects on southern residences as well as the more distant western residences.

9.1.2 ***Waste Rock Emplacement Area***

8. As the highest visual priority, complete the southern face of the amenity bund and waste rock emplacement to provide a visual and landscape buffer to ongoing within the Project area as seen from residences to the south, most significantly Kings Plains.
9. With the community give consideration to the possible staging of this emplacement on either side of the middle hill creating an eastern and western emplacement either side of the hill prior to the final emplacement that will link east and west over the top of the existing middle hill. Such a strategy may have benefits in limiting the extent of impact at any one time to a smaller area, e.g. a third of the whole emplacement at any one time.
10. Immediately upon consolidation of lifts, complete restoration of grassland using planting mixes to create cover crops and longer-term grass cover that will emulate surrounding grassland so that natural grassland colouring and texture can be achieved following establishment.
11. Design a planting strategy with the community using a combination of grasslands woodlands and cultural planting patterns that emulate existing patterns in the landscape to recreate a pattern in keeping with existing landscape pattern and avoiding ill-considered mass plantings that reflect regular row and planting patterns except in the cultural hedgerow plantings for lower slope areas.
12. Maintain new plantings and where necessary complete replacement landscape works to ensure planned patterns are achieved and viable in the longer run.
13. Upon mine closure consideration to be given to the creation of a tourist lookout on a high point in consultation with community and LGA.
14. Following the completion of the southern amenity bund, the construction of the western edge of the waste rock emplacement should be a priority, (especially that part that is south of

Bushranger Hill) to limit views to the emplacement from western view locations. Rehabilitation of this edge should emulate the southern waste rock emplacement face and margins.

15. Rehabilitation of the top of the emplacement should be open woodland using species endemic to the locality. Densities and patterning of the woodland should be irregular and emulate surrounding woodland patterns (see Figure 9.1).

9.1.3 *Run-of-Mine Pad*

16. Rehabilitate ROM Pad retention batters and slopes with grassland treatment emulating surrounding grassland to achieve natural grassland colouring and texture following establishment.
17. Monitor effectiveness of hydro mulching and grass seeding, reseeding any areas where unsatisfactory levels of grassing are achieved following establishment.
18. Following above treatments implement tree planting with fast growing acacias and other native species along with planting of more advanced slower growing eucalypts. Acacias to be being planted up to three rows deep at the top levels of the ROM embankment. Eucalypts need to be inter-planted in these rows with irregular tree line fingers extending below these rows to create a natural tree line that emulates surrounding woodland patterns.
19. Utilise barriers (see Item 6 above) to screen ROM materials, working machinery and night lighting from surrounding lines of viewing / to create a physical screen until adjacent ROM slope tree cover is established enough to complement and improve visual integration of this Project component. Screens to be coloured muted tones that emulate surrounding woodland palette. Consider the opportunity for a community development or engagement activity involving local residents and youth to provide themed murals as a backdrop to tree screen filter growing on ROM embankments.

9.2 Off-Site Treatments

Off-site mitigation measures may include the development of roadside tree screens and in consultation local private landholders regarding the need for treatments at residences where views of the Mine Development are available and will create high visual impacts.

It should be noted that off-site treatments have already initiated on several residential properties south of the Project area.

9.2.1 *Residences*

Residences to the south and south-west of the mine lease area are the most affected by the Project operations, with houses further to the north-west, north and east screened from operational and built form components. These residences have been categorised according to the levels of visual impacts from views to the Project. This is dependent on the amount of the PVZ is occupied by views to the Project components (see to Figure 9.2).

This range includes:

- **Category A:** full front on views within the viewpoint PVZ; (houses to the south and south-east) (Appendix Figures A.1 to A.4);
- **Category B:** partial views where the Project occupies one side of the viewpoint PVZ; (south-west) (Appendix Figures A.4 to A.7);
- **Category C:** minimal or limited views to the Project due to intervening topography and / or vegetation; (west and north-west) (Appendix Figures A.8 to A.9); or

- **Category D:** no available views to the Project within the residential viewpoint PVZ (north and east) (Appendix Figures A.10).

Views will vary from different residences due to screening by intervening topography and vegetation (either natural or part of visual mitigation planting). All sectors with the exception of the south sector have areas of view that do not include mine operational areas.

A range of treatments are recommended with a sliding scale budget relating to the degree of impact based on distance and orientation of view to mine operational areas (See Categories).

Further engagement to be undertaken with potentially impacted landholders to test suitability of identified mitigation measures.

- Conduct a landscape workshop to illustrate visual planning and landscape theory and practice and its application to a range of typical visual interaction conditions. All affected residents will be invited to attend.
- At this workshop illustrate a range of approved treatments and their applications in the context of visual impact mitigation. These treatments could be demonstrated via field visits to existing residential sites.
- Upon request, work with individual land owners to develop site specific landscape concept plans using a range of soft and hard landscape solutions to implement visual screening/integration strategies for affected properties.
- Further engagement to be undertaken with potentially impacted landholders to test suitability of identified mitigation measures.

Mitigation treatments are listed from least to most intense.

1. Implement soft landscape works as soon as practical, to maximise plant growth.
2. Implement hard landscape works when planning approval is granted.
3. Supplement planting with appropriate landscape management strategies, including water supply, weed control and fertilizing consideration for a two to three year establishment and consolidation period.
4. Where **existing** planting residential planting is achieving screening outcomes, consideration is given to making a contribution payment for the screening effects that vegetation is achieving. This will not apply to existing indigenous vegetation.

9.2.2 Roads

Roads that will benefit from landscape treatments include Mid Western Highway, Walkom Road and to a lesser degree Guyong Road due to increased distance to operations (Figure 9.2).

Visual assessment will enable planting plans to be prepared to mitigate impacts on these travel routes and also assist in some instances to ameliorate views from residential locations. Such plantings will enhance local amenity post mining especially in Kings Plains. Such planting strategies will be designed working with community input.

Mid Western Highway

Highway planting will include fast growing acacias to create screening from locations within Regis land bordering the Mid Western Highway (refer Landscape Management Plan); and on highway road verges. Verge planting will require highway authority approval, but its safety aspect should assist in achieving this (Figure 9.2).

Walkom Road

Walkom Road roadside planting of more formal avenue trees with contrasting flowering trees at entrance intersections will contribute to visual screening over time, improve general shade and visual amenity and strengthen village character and identity consistent with other local villages e.g. Millthorpe (Figure 9.2).

Guyong Road

This will consist of more informal groupings of fast growing native species at locations with unobstructed views to the western face of mine operations.

9.2.3 Other

Other landscape strategies could be considered to be social impact reduction strategies but will assist in reducing visual and landscape sensitivity to the project.

- Establishment of an off-site 'Green Office' to plan, implement and manage ongoing planting and landscape works.
- Consideration is given (with community acceptance) to the purchase of a residence and/ or block in Kings Plains for this purpose.
- Use of existing nursery at Kings Plains to provide planting stock for off-site landscape works including provision of semi-advanced and advanced stock for more expedient screening outcomes.
- Establishment of a nursery (if required) with existing nursery to provide a mass planting seedling stock to allow for woodland planting in on site rehabilitation areas
- As stated under on-site Treatments the establishment of a landscape on the southern slopes of the Waste Rock Emplacement Area that topographically and vegetatively reflects community input.
- Following mine closure explore mechanisms for the longer-term dedication of an area that takes in the southern slopes of the waste rock emplacement and 100m beyond skyline to a Kings Plains Park be established with the local Council.

9.2.4 Lighting – Impact Mitigation

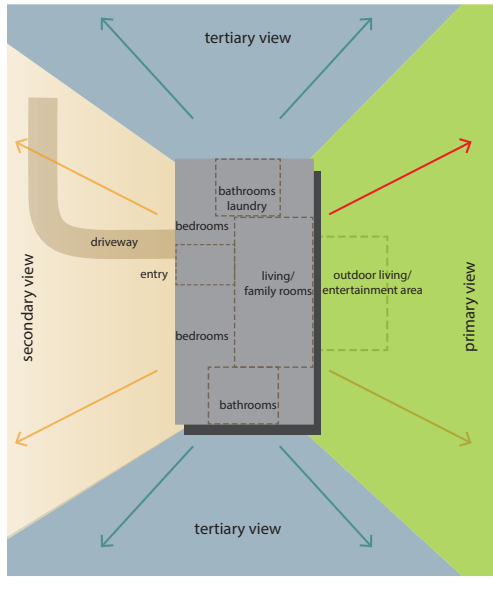
- Sky glow is a visual amenity problem that is less amenable to control. Because sky glow is caused both by reflected light and direct light from the installations, restricting design illuminances to the minimum necessary for the application will provide additional mitigation.
- All external lighting associated with the Project will comply with AS/NZS 4282:2019 – Control of the Obtrusive Effects of Outdoor Lighting, including the minimisation of light spill through the following:
- Restriction of night lighting to the minimum required for operations and safety requirements, where appropriate.
- Use of unidirectional lighting techniques and adequate aiming of lights (including consideration of mounting heights).
- Use of shielded fittings to limit the spill of lighting where available and safe to do so.
- Use of anti-reflective paint to light spill surfaces (where the designer has a choice of surfaces, it is desirable that a surface with the lowest practical reflectance be selected, compatible with the function of the area).
- Upward spill light will be minimised and lighting will generally be directed either downwards, or away from the south and Kings Plains.

- Night-lighting will be restricted to the minimum required for operational and safety requirements so as to avoid over-lighting.
- Energy efficient lighting will be used for any new fixed lighting installed, where available and safe to do so.
- Where floodlights are required, asymmetric beams will be used. Fixed lights will not be directed towards reflective surfaces.
- Where necessary and in consultation with affected landholders, the provision of screening (curtains, cladding, natural or physical screening) on private properties.
- Lighting will use warm white colours for fixed lighting, where available and if compliant with industrial lighting standards.



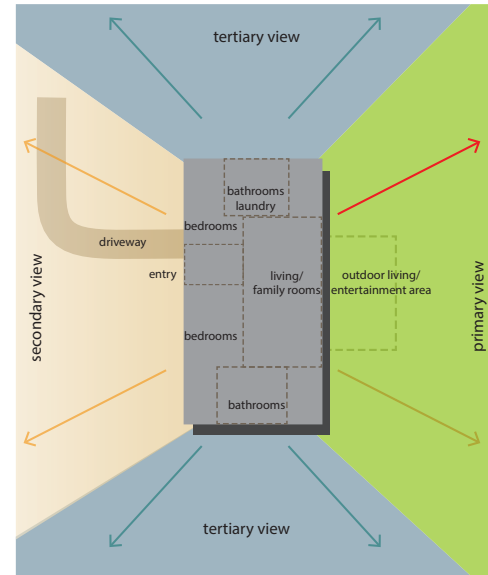
Figure 9.1 | On-site and off-site rehabilitation and visual mitigation - Mid Western Highway and Walkom Road

Views within primary view zone - Category A and Type B



Category A

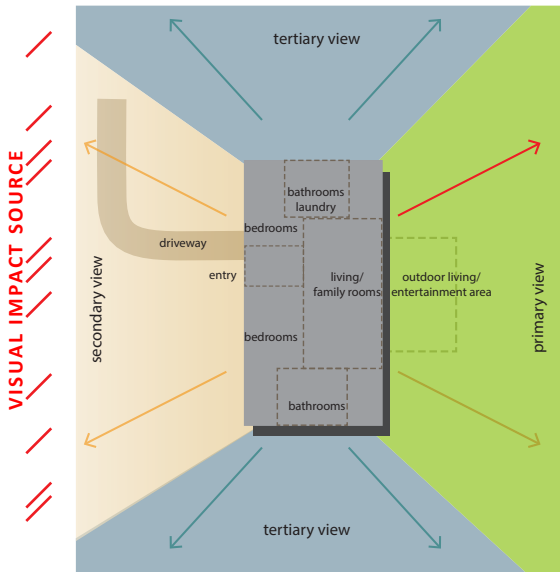
Full view of Project across the residential Primary View Zone when looking towards the Mine Project. Limited or minimal intervening vegetation or topographic features to screen views to the Mine Project.



Category B

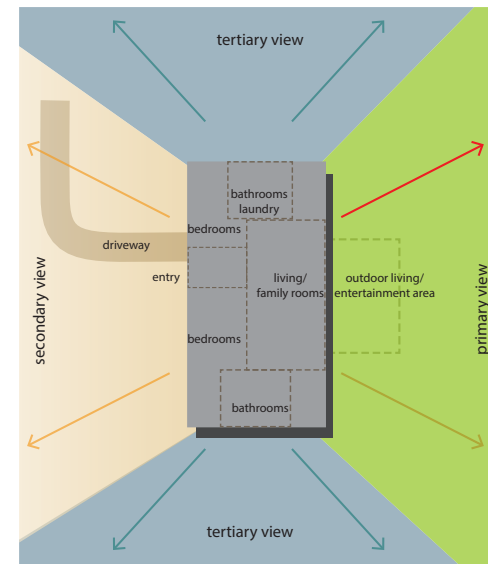
Partial view of Project across the residential Primary view Zone. Intervening vegetation or topographic features to screen parts of views to the Mine Project.

Views within secondary view zone - Category C and Category D



Category C

Minimal or limited views to the Mine Project due to intervening topography and / or vegetation across the residential Secondary View Zone. Limited or minimal Intervening



Category D

Partial view of Project across the residential Secondary View Zone. Intervening vegetation or topographic features to screen parts of views to the Mine Project.

Figure 9.2 | Residential view categories for mitigation treatment

10. CONCLUSION

10.1 Issues

Issues identified by the EARS and addressed in this visual impact assessment included but were not limited to:

- visual sensitivity of receptors
- visual effects of the project components
- visual effect on specific (representative) viewpoints
- visual impacts
- lighting impacts.

Specifically the SIA characterised the Project assessment area as:

“a quiet rural residential ambience, with scattered rural residential development and generally quiet country roads. Paddocks, bushland, and proximity to the State Forest contribute to the enjoyment of open space. Residents enjoy a relatively quiet and in some cases isolated existence, this is despite the presence of the Mid Western Highway. Initial consultation indicates that residents of Kings Plains and residents neighbouring the Mine Site value the peaceful rural amenity, the rural vistas, the lack of traffic on local road networks, relative isolation from neighbours and the proximity to the regional centres of Orange and Bathurst.”⁶ In relation to visual impacts, this document also considered the identified stakeholder concerns which included:

- vegetation removal on the mine site;
- stress and anxiety around potential future impacts of the Mine Development on lifestyle and ability to claim compensation;
- impacts of lighting on amenity and ‘dark sky’; and
- potential visual impacts on the surrounding landscape and residential amenity.

The visual impact assessment component has given consideration to these issues and community values in the conclusions for the Project.

10.2 Key Project components

The Project comprises the following key components with the potential to alter existing views and visual amenity values within the surrounding areas:

- Development and operation of a single circular open cut mine with 24 hour operational program;
- construction and use of a conventional carbon-in-leach processing facility and run-of-mine pad;
- placement of waste rock into a waste rock emplacement and amenity bunds;

6

- construction and use of an engineered TSF to store tailings material;
- construction and operation of associated mine infrastructure, water management infrastructure and ancillary facilities; and
- establishment and use of a site access road and intersection with the Mid Western Highway.

Following visual assessment according to the VPA methodology as described in Section 2.0, the following conclusions summarise the outcomes of this study.

10.3 Open cut

The open cut location is on the elevated part of a hill exposed to views from the south-east of the Project area around to the north-west of the site. The open cut operations and changes to the existing landscape setting will impact views and visual amenity in varying degrees dependent upon view angle and distance from the operations.

The highest level of visual impacts will occur early in the project life in the Southern View Sector prior to the development of the pit amenity bund and development of the open cut below existing ground level. These impacts will include direct and indirect light impacts.

Receptors impacted:

- some rural residences within and surrounding Kings Plains locality
- a section of the Mid Western Highway adjacent the southern Project boundary
- Walkom Road

In the Western View Sector, visual impacts to rural residences will be high, and moderate to low for other receptors.

In the Eastern View Sector visual impacts will range from high (rural residences), high to moderate in state forest recreation trails and moderate to low for local roads and rural lands.

In the Northern View Sector visual impacts will be limited by screening topography. Views from local roads and rural lands will have moderate to low visual impacts. Other receptors will have no impacts from direct views, however there will be impacts from diffuse light effects generated by the mine.

Over time, the mine operations will remove the upper portion of the hill and progress below the rim of the open cut, reducing potential for further impact from direct views into the open cut. The remnant hill topography and associated rehabilitation will provide screening to ongoing operations for the life of the mine.

The final landform and established planting patterns will reduce the long term visual effects and visual impacts of this component.

10.4 Southern amenity bund and pit bund

Generally the southern and pit amenity bunds won't be visible from the eastern, western and northern view sectors. They will be viewed from some areas south of the Project area boundary, particularly from Kings Plains and adjacent section of the Mid Western Highway.

The development of the amenity bunds and the changes to the existing landscape setting will impact views and visual amenity in varying degrees dependent upon view angle and distance from the operations.

The highest level of visual impacts will occur early in the project life in the Southern View Sector prior to the establishment of grass cover and revegetation. These impacts will include direct and indirect light impacts.

Receptors impacted:

- some rural residences within and surrounding Kings Plains locality
- a section of the Mid Western Highway adjacent the southern Project boundary
- Walkom Road

In the Western View Sector, there will be minor impacts to rural residences as the bulk of bunds will be screened from views by intervening topography (Sturgeon Hill and remaining lower bulk of pit hill).

In the Eastern View Sector visual impacts will range from high (rural residences), high to moderate in state forest recreation trails and moderate to low for local roads and rural lands.

In the Northern View Sector visual impacts will be limited by screening topography and stage of mine life. Views from local roads and rural lands during bund development, will have moderate to low visual impacts. Other receptors will have no impacts from direct views, however there will be impacts from diffuse light effects generated by the mining and earthmoving equipment.

Over time, the completed bunds will provide shielding of mine operations to residences and receptors in the Southern View Sector. The southern face of bunds will be rehabilitated with grassland and vegetation patterns that are similar to surrounding rural setting.

The final landform and established planting patterns will reduce the long term visual effects and visual impacts of this component.

10.5 Waste rock emplacement

The waste rock emplacement will be the largest component of the Project. The location of the waste rock emplacement and amenity bund in relation to sensitive receptors will result in high visual impact over the life of the Project due the scale (height and width) of the development and proximity to receptors.

There will be impacts from direct and diffuse light effects generated by the movement of mine equipment and haul trucks.

The highest level of visual impacts will occur during the first 2 to 4 years prior to completion of southern amenity bund and implementation of any rehabilitation treatments.

Receptors impacted:

- some rural residences within and surrounding Kings Plains locality
- a section of the Mid Western Highway adjacent the southern Project boundary
- Walkom Road

Over time, the completion of initial southern amenity bund, will provide screening of mine infrastructure area to this view sector. Progressive remediation and planting works to these visible faces will soften the visual effects, however the scale of the waste rock emplacement results in ongoing high visual impacts for the life of the mine.

In the Western View Sector, the long north-south profile of the waste rock emplacement, will change the topography, views and horizon line to the east along edge of the PVC; visual impacts to rural residences will be high and moderate to low for other receptors.

In the Eastern View Sector visual impacts will range from high (rural residences), high to moderate in state forest recreation trails and moderate to low for local roads and rural lands.

In the Northern View Sector visual impacts will be limited by screening topography. Views from local roads and rural lands will have moderate to low visual impacts. Other receptors will have no impacts from direct views.

10.6 Mining Fleet

Visual effects and impacts due to the mining fleet will vary dependent upon distance from mine operations, view location and stage in life of mine.

There will be high visual impacts from direct and diffuse light effects generated by the movement of the mine fleet (mine equipment and haul trucks) over the life of the mine.

The highest level of visual impacts will occur during the first 2 to four years of life of mine in the Southern View Sector associated with construction of the open cut pit and the southern amenity bund and prior to the implementation of any rehabilitation treatments.

Receptors impacted:

- some rural residences within and surrounding Kings Plains locality
- a section of the Mid Western Highway adjacent the southern Project boundary
- Walkom Road

Following completion of pit amenity bund, direct lighting from haul trucks exiting the open cut pit will be screened and following completion of southern amenity bund all mining fleet is expected to be screened from southern view sector. Diffuse light effects emitted by the mine fleet operations to the north of the shield created by the amenity bund. There may intermittent direct light escape from movement on the top of the waste rock emplacement during night hauling.

In the Western View Sector, though at greater distances, direct and indirect lighting visual impacts to rural residences will be high and moderate to low for other receptors.

In the Eastern View Sector, visual impacts will range from high (rural residences), moderate to low in state forest recreation trails and moderate to low for local roads and rural lands.

In the Northern View Sector direct lighting visual impacts will be limited by low screening ridgelines between the Project area and receptors. Indirect (diffuse) lighting impacts will be experienced more broadly, with low intervening topography providing limited screening.

Views from local roads and rural lands will have moderate to low visual impacts. Other receptors will have no impacts from direct lighting.

10.7 ROM Pad, processing plant, ancillary facilities and mine and water management infrastructure

These operational mine components will be located within a natural depression between existing topography including ridgelines south of the Mitchell Highway, Bushranger Hill and Sturgeon Hill, and Vittoria State Forest. These local features will screen most views from the north, east and south-west reducing potential for visual impacts.

The highest level of visual impacts will occur during the first 2 years of life of mine in the Western View Sector prior to the implementation of any rehabilitation treatments to embankments and emplacement areas. High visual impact will be limited to some rural residences.

There will be impacts from direct and diffuse light effects generated by the 24 hour mine operations over the life of the mine.

Receptors with moderate to low impacts in the Western Sector include:

- Blayney township
- Recreation areas (Church Hill Rotary Lookout)
- elevated sections of Guyong Road
- Mid Western Highway west of the Project boundary
- rural lands

Views from other receptors will be unlikely.

Progressive remediation and planting works to embankments and emplacement areas will soften the visual effects and impacts of these components, however the infrastructure components will continue to have moderate to high visual impacts over the life of the mine.

In the Southern View Sector, visual impacts will be high up till Year 4. Following completion of pit amenity bund, direct lighting from haul trucks exiting the open cut pit will be screened and following completion of southern amenity bund all mining fleet is expected to be screened from southern view sector. Diffuse light effects emitted by the mine fleet operations to the north of the shield created by the amenity bund. There may intermittent direct light escape from movement on the top of the waste rock emplacement during night hauling.

The completed southern amenity bund and pit amenity bund will screen views from the south, south-east and south-west, lowering the visual impacts from ROM Pad, processing plant and water management infrastructure.

In the Eastern View Sector visual impacts will range from high (rural residences), high to moderate in state forest recreation trails and moderate to low for local roads and rural lands. The majority of rural residences and their associated rural lands in this sector have been acquired by Regis, reducing the receptor sensitivity to visual impacts.

In the Northern View Sector visual impacts will be limited by screening topography. Views from local roads and rural lands will have moderate to low visual impacts. Other receptors will have no impacts from direct views.

10.8 Tailings storage facility

The TSF components will be located within a natural depression between existing topography including Bushranger Hill and Vittoria State Forest. These local features will screen most views reducing potential for visual impacts. There will be minor views to the associated embankments from limited locations in the west and south-west resulting in high visual impacts to sensitive private rural residences in the Western and Eastern View Sectors.

In the Southern View Sector, there will be no views to the TSF and no visual impacts.

In the Northern View Sector, there will be no views to the TSF and no visual impacts.

10.9 Site access road and new intersection with Mid Western Highway

The site access road and new intersection with the Mid Western Highway are minor Project components. The location of the intersection and road in relation to sensitive receptors will result in moderate to low visual impact over the life of the Project due the scale and character of these components and screening by vegetation and topography to receptors.

There will be impacts from direct and diffuse light effects generated by the movement additional employee light vehicles and deliveries over mine life.

For access road highest level of impact limited to during construction and delivery of over sized equipment - therefore prob limited to Year 1?

The highest level of visual impacts for site access road will be limited to Year 1, during construction and delivery of oversized equipment in the Southern View Sector prior to the implementation of any rehabilitation treatments.

Receptors impacted:

- some rural residences within and to the east of Kings Plains locality; and
- a section of the Mid Western Highway adjacent the intersection.

Following the completion of the intersection the impacts due to road works will be minimal, limited to maintenance works. See Section 10.6.

In the Eastern View Sector, there will be views to the site access road and or intersection from rural roads and rural lands adjacent the intersection.

In the Northern View Sector, there will be no views to the site access road and or intersection and no visual impacts.

In the Western View Sector, there will be no views to the site access road and or intersection and no visual impacts.

10.10 Internal road network

The internal road network is a minor Project component that covers extensive areas of the Project site. The visual impact of the road network will relate to the elevation of a road and exposure to views from sensitive receptors.

Haul roads on the open cut mine before it drops below ground level and on the southern amenity bund will create high visual impacts. Haul roads north of the amenity bund and west of the waste rock emplacement will have lower visual impact due to horizontal alignment in relation to line of view from the west and north-west.

The highest level of visual impacts will occur up to Year 4 over life of mine in the Southern View Sector prior to the completion of amenity bund and the implementation of any on-site screening treatments.

Receptors impacted:

- some rural residences within Kings Plains locality and those to south-east around to the south-west; and
- a section of the Mid Western Highway adjacent the southern face of the amenity bund and .

In the Eastern View Sector, there will visual impacts to due to views to the internal road network from rural residences, rural roads and rural lands. This will include views of direct and indirect lighting effects.

In the Northern View Sector, there will be no views to the internal road network and no visual impacts.

In the Western View Sector, there will be visual impacts to due to views to the internal road network from rural residences, rural roads and rural lands west of Guyong Road.

In all sectors there will be direct and indirect lighting impacts due to movement of mine fleet along roads at night especially those haul roads at elevated locations.

Table 10.1 Mine Stage Visual Effect

Project Component	Mine Stage Visual Effect			
	Year 2	Year 8	Year 10	Final
Open cut mine	Level 1	Level 2	Level 2	Level 4
Southern Amenity Bund/Pit Amenity Bund	Level 1	Level 2-3	Level 3-4	Level 4
Waste Rock Emplacement	Level 1	Level 2	Level 2-3	Level 4
Mining Fleet	Level 1	Level 1 views from west	Level 1 views from west	Not applicable
Run-Of-Mine (ROM) pad, carbon-in-leach (CIL) processing plant	Level 1	Level 1-2	Level 1-2	Level 4
Tailings Storage Facility (TSF)	Level 1	Level 2	Level 3	Level 4
Water management infrastructure	Level 1	Level 2	Level 2	Level 4
Intersection on the Mid Western Highway and site access road	Level 2	Level 3	Level 3	Level 4
Internal road network	Level 1	Level 1	Level 1	Level 3
Ancillary Infrastructure	Level 3	Level 3	Level 3	Level 4

Summary

Generally, there will be high level visual impacts to sensitive receptors, in Kings Plains locality, rural residences and the Mid Western Highway in the Southern View Sector up to Year 2 of Project. A number of rural residences in the Eastern and Western View Sectors will also experience high levels of visual impact during the initial stages of the mine development.

Following completion of a number of strategic on-site mitigation treatments and rehabilitation establishment, visual effects will be reduced and visual effects will be reduced but will remain moderate to high for many components over the life of the mine operations where there are direct views onto operational components.

This reduction will be significant in the long term as the new post mining landforms become integrated with surrounding rural landscape character via micro-topographic design and careful rehabilitation tree planting patterns.

Over time the significant change to the existing landscape will be the scale of the new landscape topography and the direction of views available to impacted residences.

Strategic off-site mitigation treatments will reduce visual sensitivity to the Project by screening or redirecting views away from the area of visual impact or providing approved alternative offsets as deemed acceptable by stakeholders.

Night-lighting from the mine infrastructure area and movement of mine fleet will contribute significantly to the sky glow in this existing dark sky locality.

It will have localised effects in an area with sensitive receptors. Distance will reduce the visual impacts from more distant sensitive view locations in the west as it becomes part of the greater sky glow prevalent around Blayney.

In the context of existing views, this Project results in a minor cumulative impact as it will be the main contributor in this greenfield site. Other mining operations are outside the PVC.

It is considered that the dynamic landscape impact is high to moderate based on intensity and extent of visual and other perceptual experiences of the Project in the context of historic and existing mining in the region.

11. GLOSSARY AND ACRONYMS

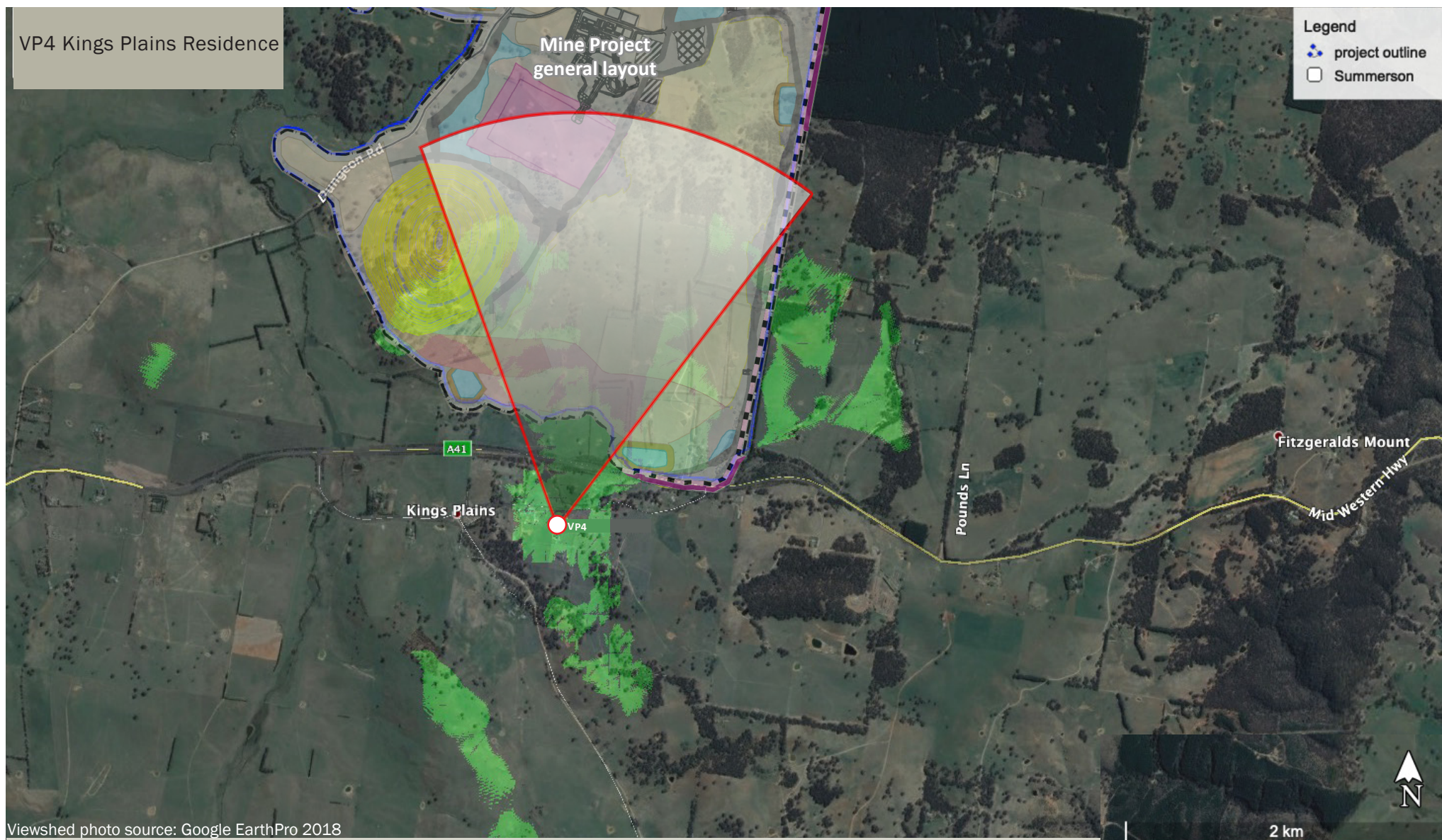
CIL	Carbon-in-leach – relating to the conventional ore processing facility
Contrast	The degree to which a development component differs visually from its landscape setting.
dark sky	This term refers to areas of the night sky being free from light pollution.
Field of View	This area includes the total view, consisting of the primary view zones above and the secondary or peripheral view zones around the primary view zone, out to about 70° either side of the central view line in both vertical and horizontal plane.
Integration	The degree to which a development component can be blended into the existing landscape without necessarily being screened from view.
LGA	Local government area e.g. Blayney or Carbone Shire Councils
NAF	Non acid forming
PVC	Primary view catchment: Areas that have potential views to the Project based on a consideration of topography alone as a screening element.
PVZ	Primary view zone. This zone is the central and most critical part of a view and is seen with the greatest clarity. It is that part of a view that is within a horizontal arc of 30° either side of the centre line of a view and a vertical arc of 20° above the horizontal.
ROM	Run-of-Mine
Screen	Intervening landscape elements such as topography or vegetation that limit the ability to see development components to a degree.
EAR	Secretary's Environmental Assessment Requirements
SIA	Social Impact Assessment
Sky glow	Changes to night sky viewing conditions due to a general luminous glow, i.e. sky glow, caused by the scattering of light in the atmosphere.
TSF	Tailings storage facility
VCU	Visual character unit: Areas of landscape with similar topographic, vegetation and land use features that create areas of similar visual character.
VP	View point

VSA	Visual study areas
Visual Effect	A measure of the visual interaction between the Project and the landscape setting within which it is located.
Visual Sensitivity	The degree to which a change to the landscape will be perceived in an adverse way.
Visual Impact	A measure of a joint consideration of both visual sensitivity and visual effect that considered together determine the visual impact of a development.
WMF	Waste management facility
WRE	Waste rock emplacement
ZVI	Zone of visual influence.

12. REFERENCES

Australian Bureau of Statistics	https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats accessed 9 February 2019.
Australian Standards	AS 4282 – 1997: Control of the Obtrusive effects of Outdoor Lighting
Blayney Shire Council	Blayney Local Environmental Plan 2012
Blayney Shire Council	Blayney 2020 Masterplan (PDG 2016)
Cinzano, Pierantonio, Fabio Falchi and Christopher D. Elvidge	Naked Eye Star Visibility and Limiting Magnitude Mapped from DMSP-OLS Satellite Data.” Monthly Notices of the Royal Astronomical Society 323 (2001a): 34-46.
Duriscoe, Dan; Anderson, Sharolyn; Luginbuhl, Christian and Baugh, Kimberly (2018)	A simplified model of all-sky artificial sky glow derived from VIIRS Day/Night band data. Journal of Quantitative Spectroscopy and Radiative Transfer, Volume 214, July 2018
Falchi, Fabio; Cinzano, Pierantonio; Duriscoe, Dan; Kyba, Christopher C. M.; Elvidge, Christopher D.; Baugh, Kimberly; Portnov, Boris; Rybnikova, Nataliya A.; Furgoni, Riccardo (2016)	The New World Atlas of Artificial Night Sky Brightness. Website: https://www.lightpollutionmap.info/#zoom=4&lat=5759860&lon=1619364&layers=B0FFFFFTFFFF
Gallaway, Terence (2010)	JOURNAL OF ECONOMIC ISSUES Vol. XLIV No. 1 March 2010
Hansen Bailey (2017)	Bailey McPhillamys Gold Project Social Impact Assessment Scoping Report (November 2017)
Isil Cakci Kaymaz (2012)	Landscape Perception, Landscape Planning, Dr. Murat Ozyavuz (Ed.), http://www.intecopen.com/books/landscape-planning/landscape-perception
Natural England (2014)	An Approach to Landscape Character Assessment.
New South Wales Department of Planning and Environment (2019)	State Significant Development – Planning Secretary’s Environmental Assessment Requirements – SSD 18-9505, 24 August 2018.
NSW Government 2017	Planning and Assessment Commission Determination Report Drayton South Coal Project (SSD 6875)
NSW Government (2013)	Local Environmental Plan 2013

13. APPENDICES



CATEGORY A - Full view in residential PVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 825 m



Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ (worst case scenario)

Southern View Sector

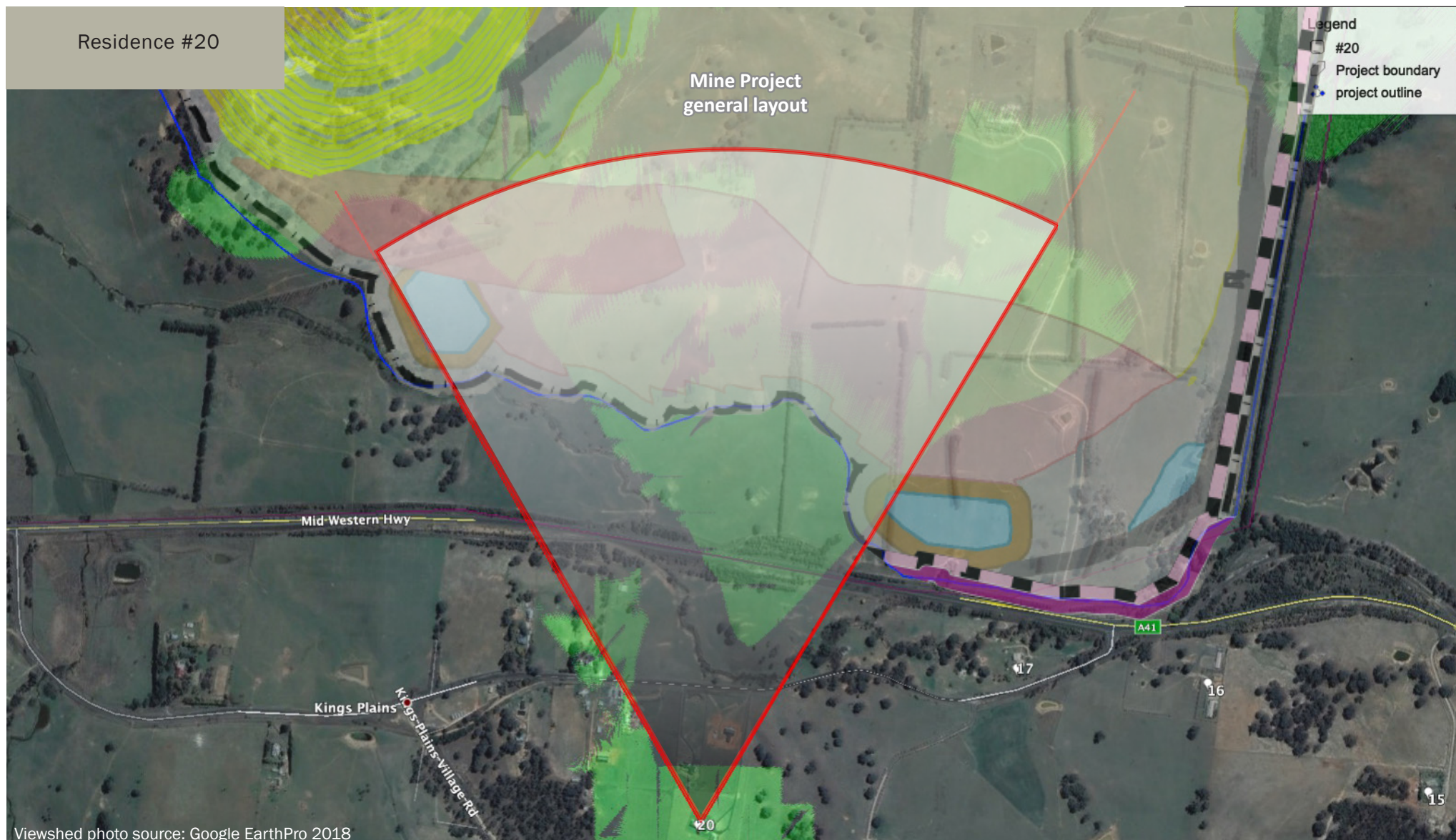
A.1 | Residential view shed for Summerson Residence

Residence #20

Mine Project
general layout

Legend

- #20
- Project boundary
- project outline



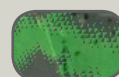
Viewshed photo source: Google EarthPro 2018

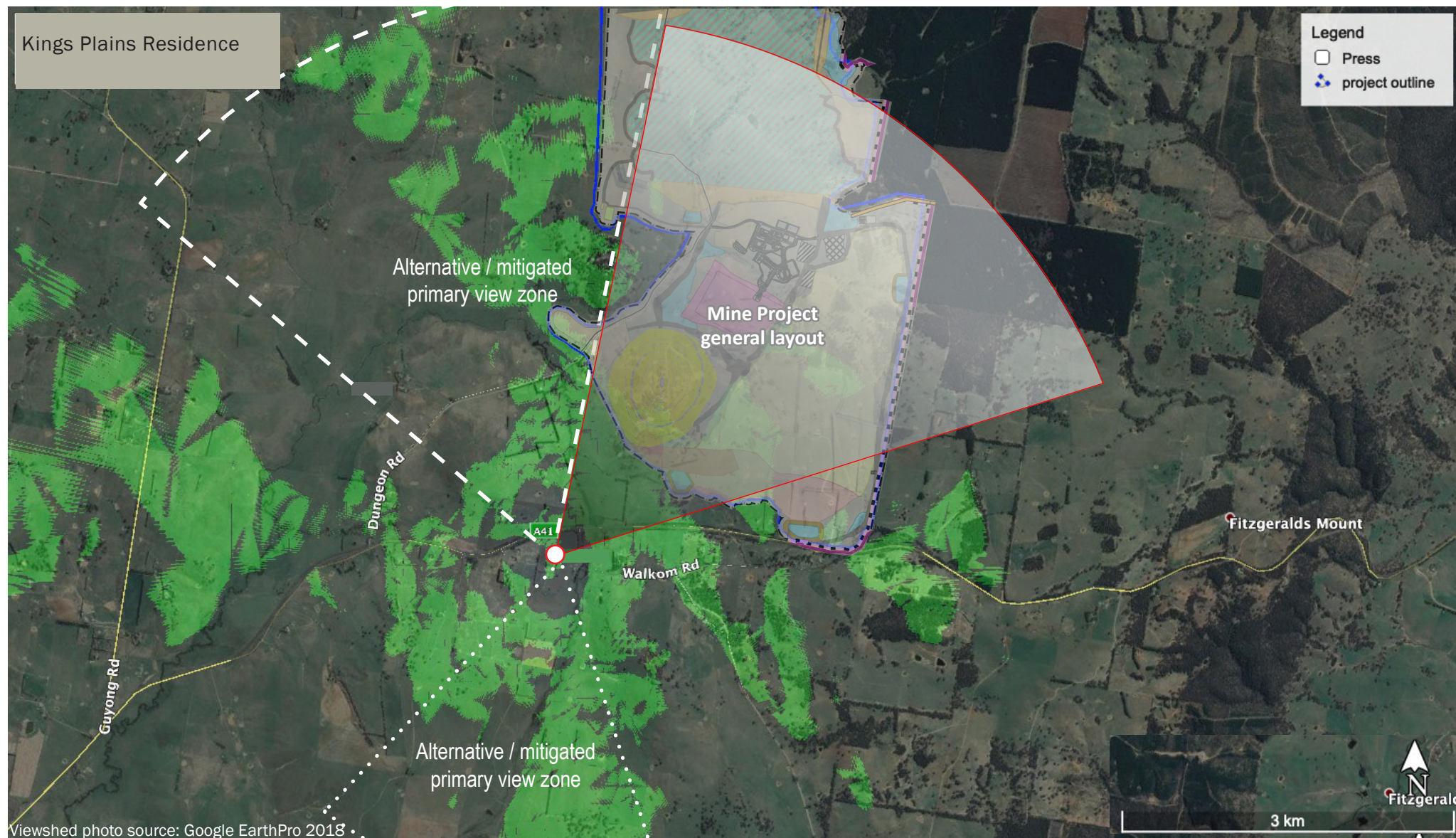
CATEGORY A - Full view in residential PVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 997m

Viewshed of existing seen areas from view height
of 2m above ground level.60° Arc of residential PVZ
(worst case scenario)**Southern View Sector****A.2 | Residential view shed for Residence #20**

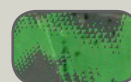


CATEGORY A - Full view in residential PVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 1,325m



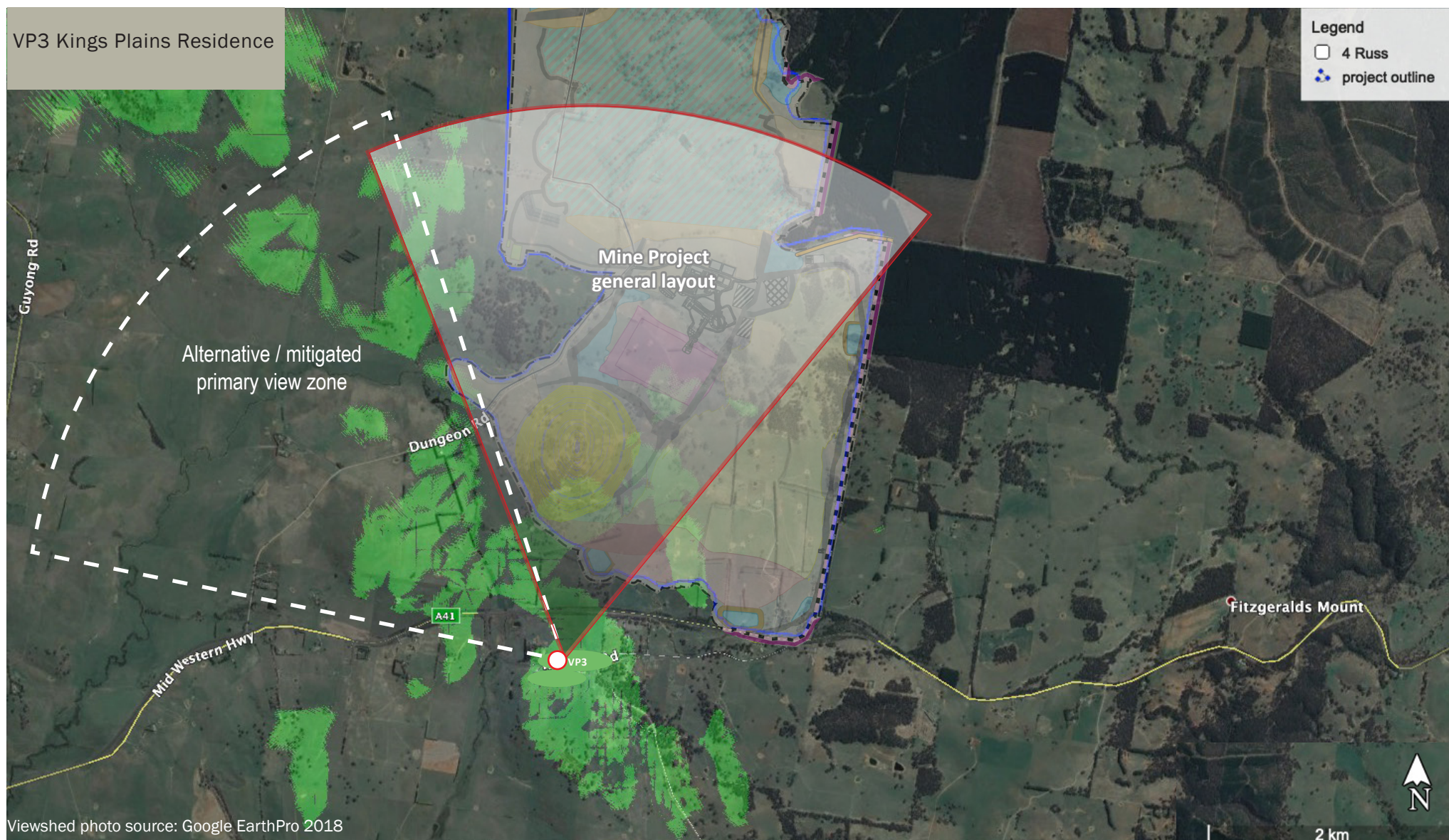
Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ
(worst case scenario)

Southern View Sector

A.3 | Residential view shed for Press Residence

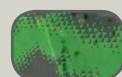


CATEGORY B - Partial View in residential PVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 974 m



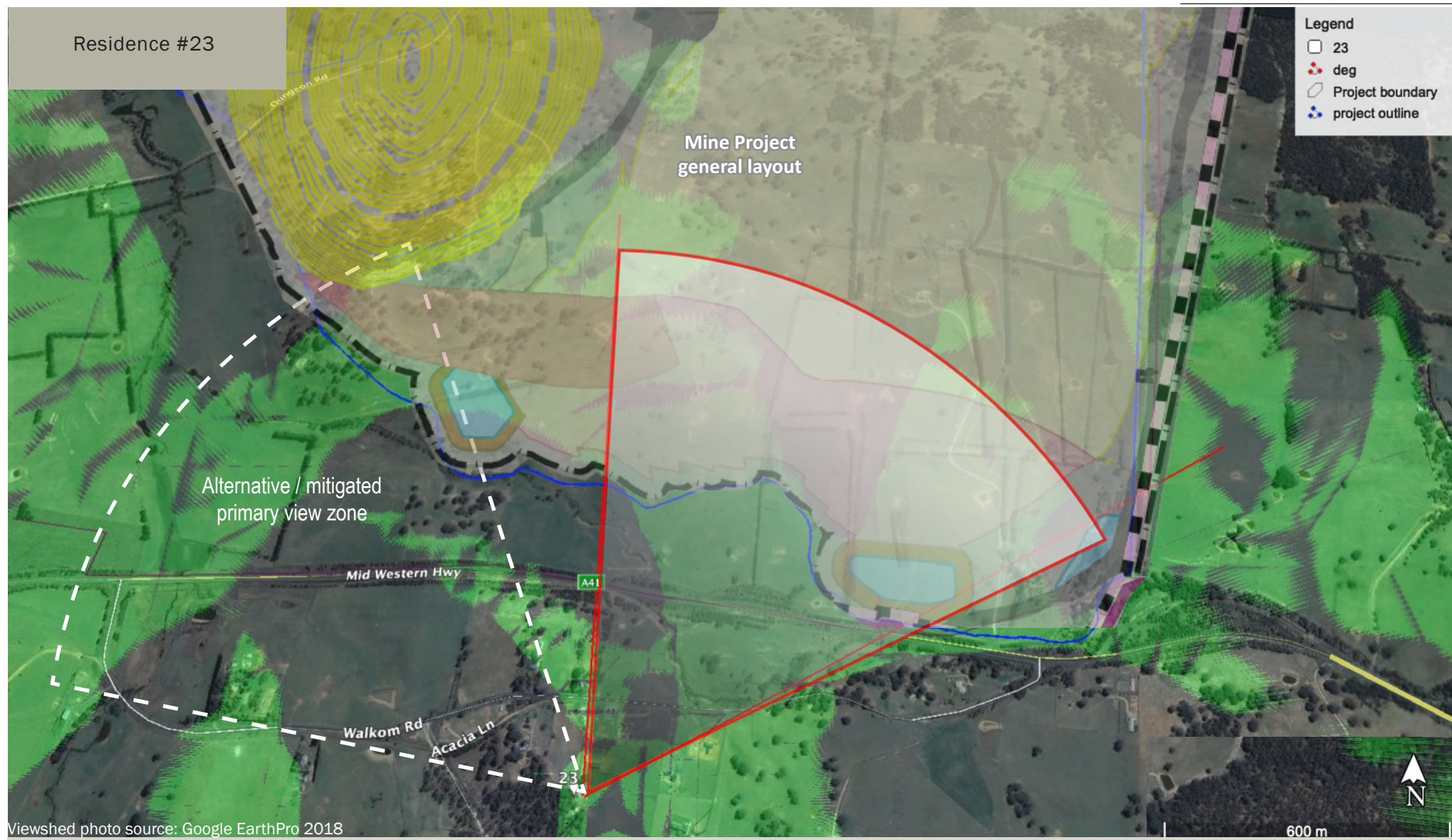
Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ
(worst case scenario)

Southern View Sector

A.4 | Residential view shed for Russ Residence

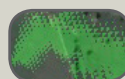


CATEGORY B - Screened/ filtered view in residential PVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 914 m



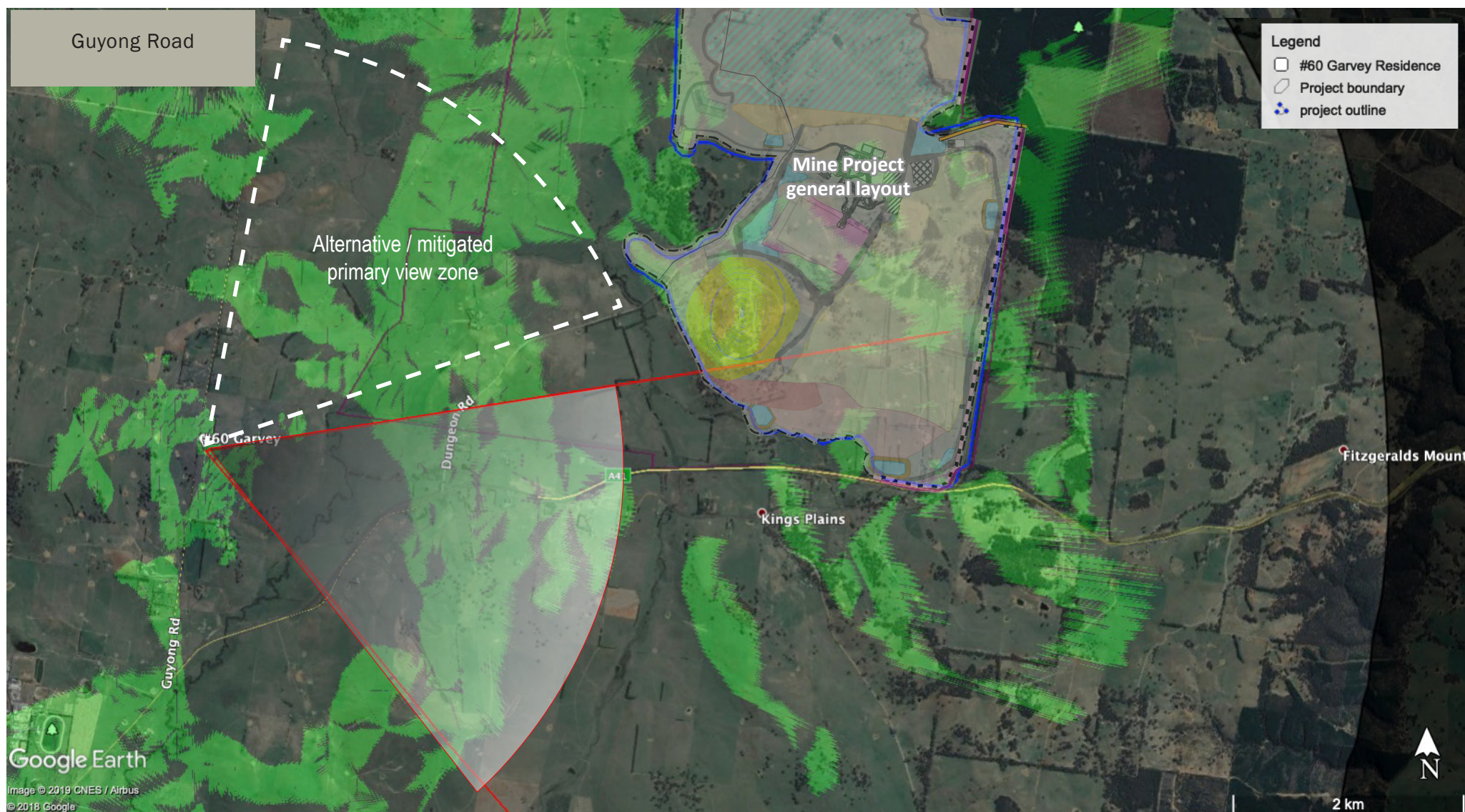
Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ
(worst case scenario)

Southern View Sector

A.5 | Residential view shed for Residence #23

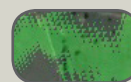


CATEGORY B - Partial views in residential PVZ

Level 2 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 4,288m



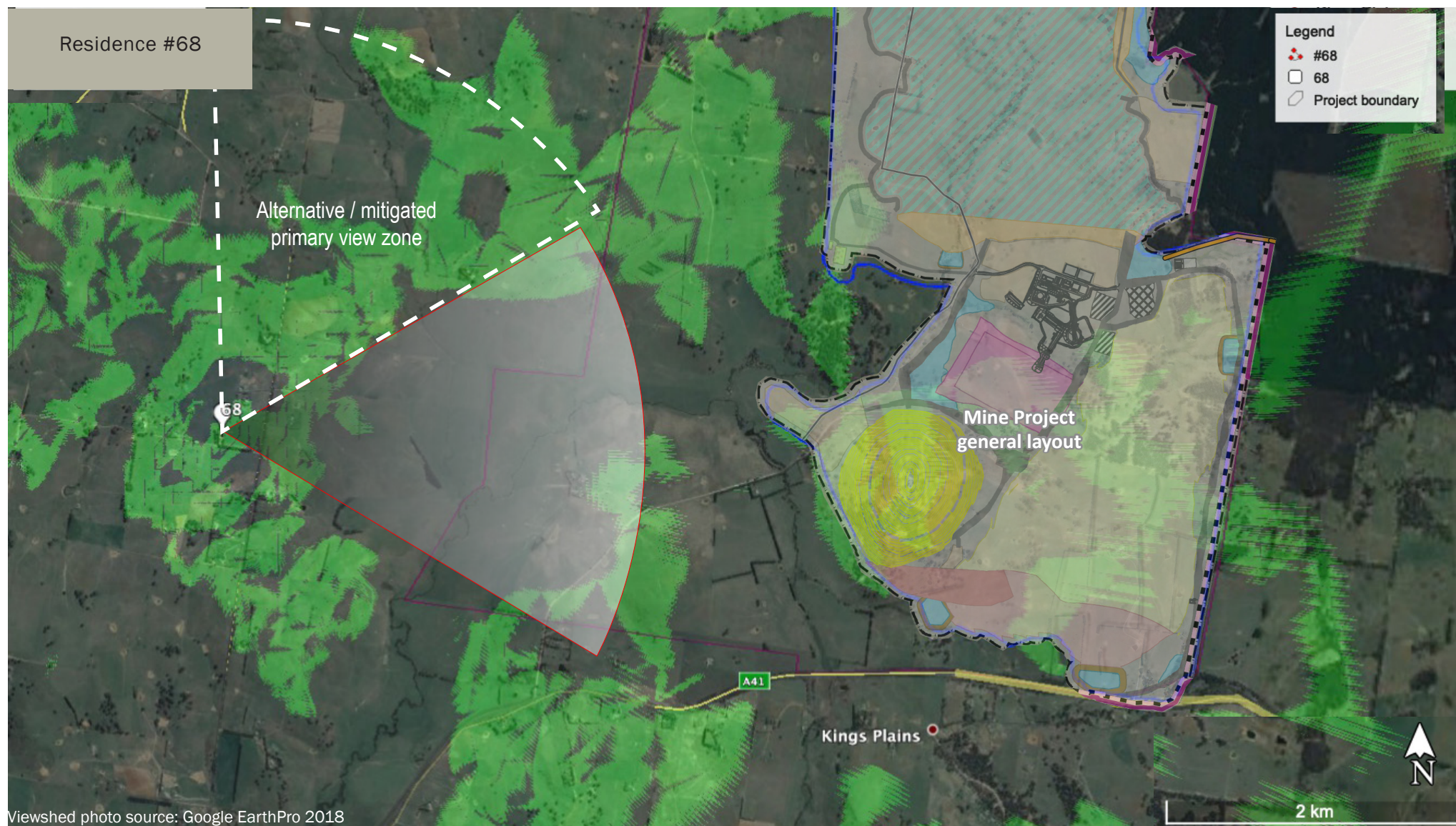
Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ (worst case scenario)

Western View Sector

A.6 | Residential view shed for Guyong Road

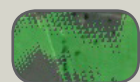


CATEGORY B - Partial Views in residential PVZ

Level 2 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 4,385m



Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ (worst case scenario)

Western View Sector

A.7 | Residential view shed for Residence #68

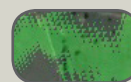


CATEGORY C - Partial Views in residential SVZ

Level 2 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 3,815m



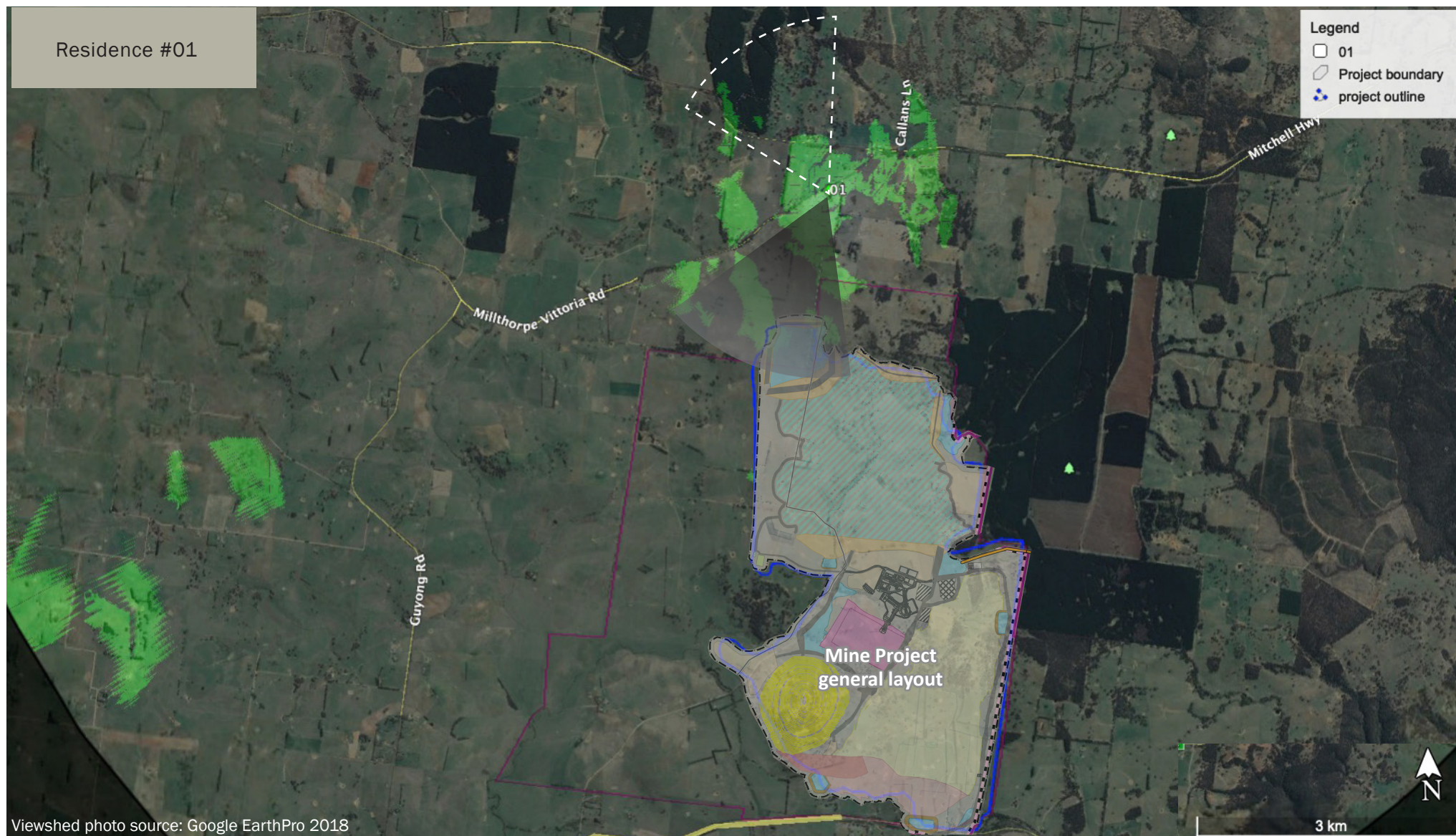
Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential PVZ (worst case scenario)

Eastern View Sector

A.8 | Residential view shed for Residence #77

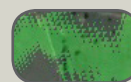


CATEGORY C - Partial Views in residential SVZ

Level 1 - during construction

Level 3 - after rehabilitation

Distance to nearest Mine Project component - approximately 1,400 m



Viewshed of existing seen areas from view height of 2m above ground level.



60° Arc of of residential SVZ
(worst case scenario)

Northern View Sector

A.9 | Residential view shed for Residence #01



CATEGORY D - No Views in residential PVZ

Views are towards the west and north-west



Viewshed of existing seen areas from view height of 2m above ground level.

Northern View Sector

A.10 | Residential view shed for Residence #88