



# **Appendix N Visual Impact Assessment**



xenith

# BOGGABRI COAL MINE MODIFICATION 10

VISUAL IMPACT ASSESSMENT  
Boggabri Coal Operations Pty Ltd  
May 2025

# Contents

1.	INTRODUCTION	2
1.1	OVERVIEW	2
1.2	BACKGROUND	2
1.3	PURPOSE	3
1.4	DOCUMENT STRUCTURE	5
2.	EXISTING ENVIRONMENT	6
2.1	NATURAL ENVIRONMENT	6
2.2	LANDOWNERSHIP	6
2.3	LAND USE	10
2.3.1	Agriculture	10
2.3.2	Extractive Industries	10
2.3.3	Town Centres	12
2.3.4	Public Roads	12
2.3.5	State Forest and Conservation Area	13
2.3.6	Biodiversity Offsets	13
2.3.7	Vegetation Corridor	13
2.3.8	Mine Rehabilitation	13
2.4	PRIMARY VISUAL CATCHMENT	14
2.5	VISUAL CHARACTER UNITS	14
2.5.1	Namoi River Flood Plain	14
2.5.2	Lowland Foothills	14
2.5.3	Rural Lands	15
2.5.4	Town Areas	15
2.5.5	Surrounding Ranges	15
2.5.6	Mine and Industrial Area	15
3.	METHODOLOGY	16
3.1	MODIFICATION VISUAL EFFECT	16
3.1.1	Boggabri Coal Mine MOD 10 Overview	16
3.1.2	Mine Components	16
3.1.3	Mine Areas	17

3.1.4	Overburden Emplacement Area	23
3.1.5	Infrastructure Elements	24
3.2	MODIFICATION VISUAL EFFECT SUMMARY	24
3.2.1	Mine Area	25
3.2.2	OEA	25
3.2.3	Other Infrastructure Elements	25
3.3	VIEWING LOCATIONS	25
3.3.1	North Sector	26
3.3.2	East Sector	26
3.3.3	South East Sector	26
3.3.4	South West Sector	31
3.3.5	West Sector	39
3.4	VISUAL SENSITIVITY	39
3.4.1	Visual Impact	39
4.	IMPACT ASSESSMENT	40
4.1	NORTH SECTOR	40
4.2	EAST SECTOR	40
4.3	WEST SECTOR	40
4.4	SOUTH EAST SECTOR	40
4.4.1	Residences	40
4.4.2	Local Roads	41
4.5	SOUTH WEST SECTOR	41
4.5.1	Residences	41
4.5.2	Boggabri Town	41
4.5.3	Kamilaroi Highway	42
4.5.4	Therribri Road	42
4.5.5	Tourist Localities	42
4.6	NIGHT LIGHT	42
4.6.1	General	42
4.6.2	Direct Light Effects	43
4.6.3	Diffuse Light Effects	43
4.6.4	Night Light Impact Summary	43
4.7	SUMMARY	43

5.	MITIGATION & MANAGEMENT	45
6.	REFERENCES	46
7.	ABBREVIATIONS	47

## Tables

Table 1	Private Receivers within 7.5 km of the Project Boundary	7
Table 2	Viewing Points and Approximate Distance to the Project Boundary	25
Table 3	Visual Impact Methodology	39
Table 4	Summary of the Visual Impact of MOD 10	43




## Figures

Figure 1	Conceptual Modification Layout	4
Figure 2	Indicative View Sectors, Visual View Point Locations and Land Ownership	9
Figure 3	Conceptual Mine Plan (Year 2031)	19
Figure 4	Conceptual Mine Plan (Year 2034)	20
Figure 5	Conceptual Mine Plan (Year 2036)	21
Figure 6	Conceptual Final Landform	22
Figure 7	Visual Cross Section VP3	30
Figure 8	Visual Cross Section VP1	34

## Plates

Plate 1	VP3 - Corner of Rangari Road and Braymont Road / South East Sector ..	28
Plate 2	VP4 - Rangari Road / South East Sector .....	29
Plate 3	VP1 - Rangari Road / South West Sector .....	32
Plate 4	VP2 - Boston Street, Boggabri Town / South West Sector .....	36
Plate 5	VP5 - Kamilaroi Highway / South West Sector .....	38

Document issue approval			
Title	BOGGABRI COAL MINE MODIFICATION 10		
Client	Boggabri Coal Operations Pty Ltd		
Status	Final	Project/document no.	3115IDEM
Date	May 2025	Revision no.	02

Approvals				
	Name	Position	Signature	Date
Prepared by	Alexander Holz	Environmental Scientist		16/05/2025
Reviewed by	Nathan Cooper	Principal		16/05/2025
Approved by	Nathan Cooper	Principal		16/05/2025

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# 1. INTRODUCTION

## 1.1 OVERVIEW

Xenith Consulting Pty Limited (Xenith) (formerly James Bailey & Associates (JBA)) has been engaged by Boggabri Coal Operations Pty Limited (BCOPL) to undertake a Visual Impact Assessment (VIA) for the proposed extension to mining operations at the Boggabri Coal Mine (BCM) (MOD 10). MOD 10 proposes the continuation of mining operations at BCM towards the north-west beyond the approved Mine Disturbance Boundary but entirely within the existing Project Boundary. Key parameters for MOD 10 include:

- › The continued recovery of coal down to the Templemore Coal Seam within the approved Mine Disturbance Boundary recovering up to 15.4 Million tonnes (Mt) (approximate) of additional Run of Mine (ROM) coal resource;
- › The progression of mining operations into the Modification Disturbance Footprint to enable the recovery of an additional 14.5 Mt of ROM coal down to the Templemore Coal Seam;
- › Disturbance to an additional 85 hectares (ha) of land within the Project Boundary, maintain the existing Vegetation Corridor as conditioned in SSD 09\_0182;
- › The extension to the life of mining operations by four years until the end of 2040; and
- › Amendments to the Conceptual Final Landform design resulting from the additional mining proposed.

This VIA will be appended to the Modification Report in support of an application to modify State Significant Development (SSD) 09\_0182 under Section 4.55(2) of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

## 1.2 BACKGROUND

BCOPL operates the BCM on behalf of Idemitsu Australia Pty Ltd (IA) and its joint venture partners. BCM is located approximately 15 km north east of the township of Boggabri in the North West Region of New South Wales (NSW) and is located wholly within the Narrabri Local Government Area.

Open cut mining at BCM commenced within the Leard State Forest in 2006 in accordance with DA 36/88 which was originally granted in 1989. BCM operates in accordance with SSD 09\_0182 which permits the extraction of up to 8.6 Million tonnes per annum (Mtpa) of ROM coal from the site until 31 December 2036. SSD 09\_0182 was originally granted under the former Part 3A of the EP&A Act on 18 July 2012 and is supported by the *Continuation of Boggabri Coal Mine Environmental Assessment* (Hansen Bailey, 2010) (Boggabri EA). A VIA for the BCM was undertaken as part of the Boggabri EA titled '*Continuation of Boggabri Coal Mine Visual Impact Assessment*' (**Integral, 2010a**) (**2010 VIA**).

SSD 09\_0182 has been modified on nine occasions to date. The majority of these modifications did not result in material changes to the visual character of the BCM. MOD 8 to SSD 09\_0182 (as amended) was the most recent modification that resulted in changes to the mined landform and accordingly had the potential to alter visual impacts associated with the BCM. MOD 8 provides approval for the increased depth of mining operations, a 5 m increase to the maximum height of the main overburden emplacement area (OEA) and adjustments to the final landform design.

MOD 10 to SSD 09\_0182 consists of an increase in the mining disturbance area of the approved mining operations into the Modification Mining Area see Figure 1 (further described in Section 3.1).

## 1.3 PURPOSE

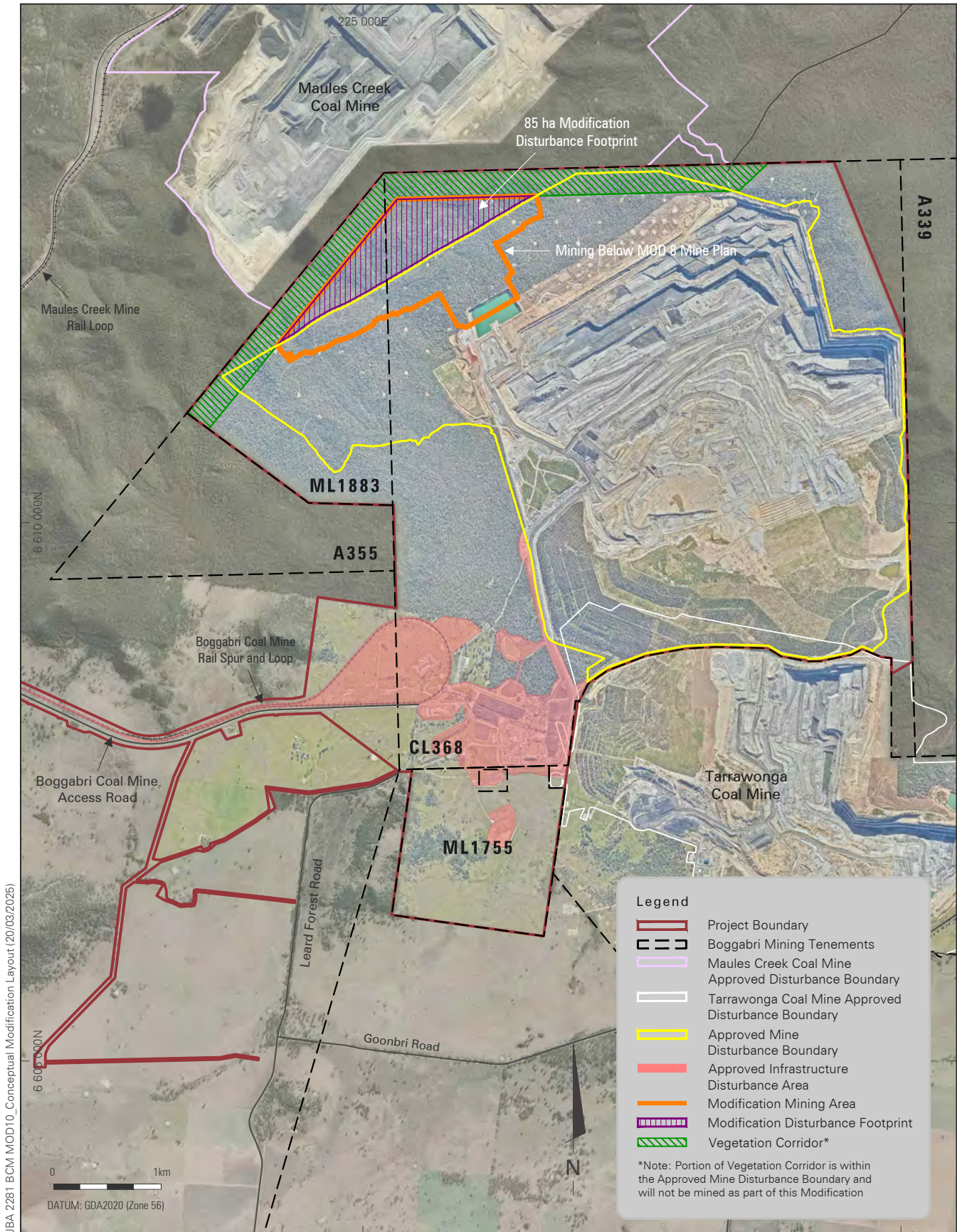
The 2010 VIA described the visual landscape/setting of the region surrounding the BCM and determined the visual impacts of the continuation of BCM on the character of the existing landscape within and adjacent to the Project Boundary. The Project Boundary is shown on Figure 1.

The *Boggabri Coal Mine Modification 8 Visual Impact Assessment* (Hansen Bailey, 2021) (MOD 8 VIA) was prepared to support the MOD 8 Application (as amended) and assess the potential visual impacts within the contemporary landscape. The MOD 8 VIA relied upon the description of the primary visual catchment (PVC), view sectors and view locations provided within the 2010 VIA. It was determined that the operational changes sought by MOD 8 would not result in any additional material impacts on the surrounding visual landscape at any private receiver. Accordingly, no additional mitigation or management measures were required beyond those previously established and implemented for the BCM.

This VIA provides an assessment of the potential visual impacts to the contemporary landscape values resulting from the proposed mine plan changes sought by MOD 10. This VIA relies upon the description of the PVC, view sectors and view locations previously described for the locality within the 2010 VIA and MOD 8 VIA.

This VIA provides:

- › An overview of the existing visual settings created by various landscapes in and around the BCM;
- › An assessment of the visual character and visual effect created by the approved operations at the BCM (as previously assessed within the 2010 VIA and MOD 8 VIA);
- › Considers the visibility of the components of MOD 10 from sensitive receivers;
- › An assessment of the likely visual impacts of MOD 10 giving regard to visual effect and sensitivity;
- › Recommendations over the management and mitigation strategies to ameliorate additional adverse visual impacts by MOD 10; and
- › Consideration of cumulative visual impacts in the locality and consideration of night light effects.



JBA 2281 BCM MOD10\_Conceptual Modification Layout (20/03/2025)

BOGGABRI COAL MINE MODIFICATION

Conceptual Modification Layout

**FIGURE 1**



## 1.4 DOCUMENT STRUCTURE

This VIA is structured as follows:

- › Section 2 provides a discussion on the topography, natural features, land use and land ownership of the environment which the BCM is part of. It also describes any changes that have taken place since the preparation of the 2010 VIA and the MOD 8 VIA;
- › Section 3 describes the methodology used to develop this VIA and refers to the 2010 VIA where relevant. The evaluation of the existing visual environment consists of the assessment of both the landscape and viewing locations within it, and the effects of BCM within the visual environment;
- › Section 4 considers each view sector and describes the visual impact at representative locations as a result of the MOD 10 mining landform in the contemporary environment surrounding BCM. It also provides an overall summary where views are likely to change as a result of MOD 10;
- › Section 5 describes proposed mitigation and management measures to address the incremental impacts from MOD 10; and
- › Sections 6 and 7 list the abbreviations and relevant references used in this document.

## 2. EXISTING ENVIRONMENT

*This section provides a discussion on the topography, natural features, land use and land ownership of the existing environment for the BCM. It also describes any changes that have taken place since the preparation of the 2010 VIA and MOD 8 VIA.*

### 2.1 NATURAL ENVIRONMENT

The BCM is generally bound by the topography of the Willow Tree Range which wraps around the north, east and west of the approved mining operations (Figure 1). The lower lying floodplains associated with the Namoi River and its tributaries are located to the south and south west of the BCM. The Willow Tree Range includes steep slopes and crests (up to a maximum elevation of 467 metres (m) Australian Height Datum (AHD)) and forms a broad south west facing basin, leading down to the floodplain of the Namoi River and associated tributaries.

Goonbri Mountain (543 m AHD) is located approximately 3 km east of the Project Boundary. Goonbri Mountain comprises an isolated mountain located on the western extremity of the Nandewar Range. The Nandewar Range lies approximately 10 km to the north east of the Project Boundary.

The major watercourse in the region is the Namoi River. It has a catchment area of approximately 4,200,000 hectares (ha) and forms part of the Murray Darling Basin. The Namoi River catchment is bounded by the Great Dividing Range in the east, the Liverpool Ranges and Warrumbungle Ranges in the south, and the Nandewar Ranges to the north. The catchment of the Namoi River upstream of the Boggabri township is approximately 2,200,000 ha and yields a mean annual streamflow of 906,470 Megalitres per year.

The Namoi River is regulated by Keepit Dam on its main channel as well as Split Rock Dam on the Manilla River (a tributary of the Namoi River). These dams facilitate the provision of regulated flows for downstream water users. BCM is located within the catchments of Nagero Creek and Bollol Creek, both of which are tributaries of the Namoi River.

### 2.2 LANDOWNERSHIP

Landownership within and surrounding BCM is shown in Figure 2. The figure divides the surrounding areas into sectors with an indicative buffer applied to the Project Boundary to assist with the description of potential visual impacts.

**As stated in the 2010 VIA** *"private residences that are within a 7.5 km radius of the Project Boundary may have high sensitivity, dependant on visibility and view orientation. Residences beyond this distance would have a 'moderate sensitivity'". This VIA has incorporated a consistent approach to that adopted in the 2010 VIA such that a 7.5 km buffer has been implemented for the Project Boundary. It is worthy to note that no private sensitive receivers in the vicinity of the BCM are within 7.5 km of the Modification Mining Area.*

The BCM is located within the Leard State Forest, which is Crown land. The land within the Leard State Forest is managed by the Forestry Corporation of NSW on behalf of the Crown. BCOPL owns the land on which the rail spur is located, with the exception of those parts jointly owned with Whitehaven Coal (WHC) and small parcels of Crown land and local roads.

WHC has significant landholdings to the north, west and south of the Leard State Forest. These landholdings are associated with Maules Creek Coal Mine (MCCM) and Tarrawonga Coal Mine (TCM). Due to the significant landholdings owned by BCOPL and/or WHC within the locality, there is a significant buffer of mine-owned land between the BCM mining operations and the nearest private freehold land.

The mining operations associated with MOD 10 will be undertaken on Crown land (Leard State Forest). The ownership of land in the vicinity of BCM is illustrated in Figure 2.

There are three remaining private residences with acquisition rights (i.e. within the Zone of Affection (ZOA)) under SSD 09\_0182. These include sensitive receivers identified (ID) as 44, 48 and 90. All other residences previously within the ZOA are either owned by BCOPL, WHC or are jointly owned.

The closest private receivers, not within the ZOA, are receivers 140 and 147 which are located approximately 5.5 km and 6.5 km east and south east respectively from the Project Boundary. Receivers 140 and 147 are located within the South Eastern Sector.

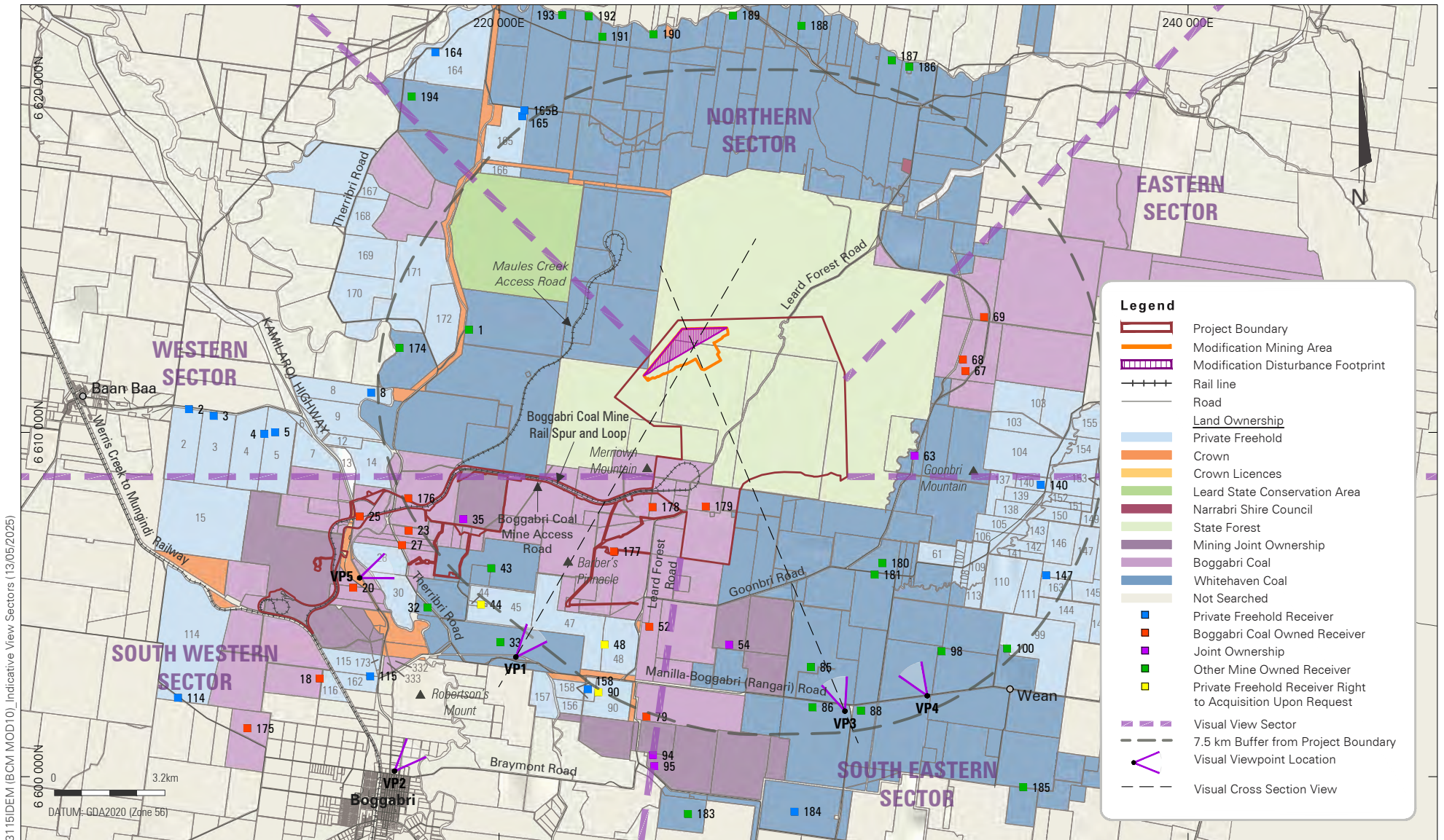
Since the 2010 VIA, there have been changes to the ownership of previously private receivers within 7.5 km of the Project Boundary (shown in Figure 2). It is noted that receivers 48 (within the ZOA), 140 and 147 are the only privately owned receivers located within 7.5 km of the Project Boundary. Receivers 44 and 90 (within the ZOA) are located immediately on the outskirts of the 7.5 km buffer from the Project Boundary. All receivers within 7.5 km of the Project Boundary are outlined in Table 1.

Table 1 Private Receivers within 7.5 km of the Project Boundary

Receiver ID	Property Name	Landownership Status	
		2010 VIA	This VIA
South East Sector			
54	Tarrawonga	Private Landholder	Joint Ownership
85	Ambardo	Private Landholder	Whitehaven Coal
86	Kyalla	Private Landholder	Whitehaven Coal
98	Flixton	Private Landholder	Whitehaven Coal
100	Bailey Park	Private Landholder	Whitehaven Coal
140	Sylvania	Private Landholder	Private Landholder
147	Coomalgah	Private Landholder	Private Landholder
South West Sector			
44*	Glenhope	Private Landholder	Private Landholder (ZOA)
48	Wilberoi East	Private Landholder	Private Landholder (ZOA)
52	Jeralong	Private Landholder	BCOPL
90*	Barbers Lagoon	Private Landholder	Private Landholder (ZOA)
158*	KL Grover	Private Block with no residence	Private Landholder
West Sector			
None	-	-	-
East Sector			
67	Goonbri (Mallee Park)	Private Landholder	BCOPL

Receiver ID	Property Name	Landownership Status	
		2010 VIA	This VIA
68	Goonbri	Private Landholder	BCOPL

*\*Outside of 7.5 km but has been considered for assessment within this VIA.*



BOGGABRI COAL MINE MODIFICATION

Indicative View Sectors, Visual View Point Locations and Land Ownership

**FIGURE 2**



## 2.3 LAND USE

The major land uses in the vicinity of BCM are agriculture, coal mining and forestry. Each is briefly described below.

### 2.3.1 Agriculture

Agriculture is the dominant land use in the North West Region of NSW. Historically, agricultural enterprises in the region have included grazing and dry land pasture improvement. The construction of Keepit Dam and Split Rock Dam within the upper Namoi River catchment has ensured a more reliable supply of water during prolonged dry periods. As a result, these dams have facilitated the introduction of intensive cropping to the region.

The alluvial floodplain of the Namoi River supports highly productive agricultural land. The floodplain supports both dry land and irrigated cropping, as well as pasture establishment enterprises. The land surrounding the floodplain is primarily used for grazing, including sheep and cattle grazing.

### 2.3.2 Extractive Industries

BCM is located adjacent to MCCM to the north and TCM to the south as shown on Figure 1. The three mines are collectively referred to as the Leard Forest Mining Precinct (or the Boggabri-Tarrawonga-Maules Creek (BTM) Complex). Several other coal mines are present in the region including Narrabri Underground Mine, Rocglen Mine, Sunnyside Mine, Vickery Mine and Werris Creek Mine.

Mining operations at TCM were considered within the 2010 VIA. However, since the preparation of the Boggabri EA and grant of SSD 09\_0182 in 2012, TCM has obtained approvals for changes to mining operations and MCCM has been approved, both of which have resulted in changes to the surrounding visual landscape.

#### 2.3.2.1 Maules Creek Coal Mine

The currently approved MCCM was not considered in the 2010 VIA as it was not yet approved. MCCM operates under Project Approval (PA) 10\_0138 which was approved on 23 October 2012.

A VIA was undertaken for MCCM to support the *Maules Creek Mine Environmental Assessment* (Hansen Bailey, 2011) (Maules Creek EA).

PA 10\_0138 has been modified on eight occasions to date, with Modification 4 being withdrawn. The most recent approval was Modification 9 which was approved on 20 March 2024 to facilitate changes to the existing biodiversity offset strategy and the construction and use of the new Roma Bore electricity transmission line (Whitehaven Coal, 2022). Modifications to PA 10\_0138 generally resulted in minor changes **to the visual impacts of the development on the surrounding visual landscape. VIA's were completed for** Modifications 1,2 and 7, however it was determined that any impacts were not material beyond those assessed in the Maules Creek EA. Accordingly, no additional management measures have been required for the development. The main visual features identified in the *Maules Creek Coal Project Visual Impact Assessment* (Maules Creek VIA) (Integral, 2010b) and subsequent modifications relevant to this VIA are discussed below.

##### 2.3.2.1.1 Open Pit Face

The Maules Creek VIA identified that a high visual effect would be experienced of views towards the open pit face which would be created by the colour of the raw earth and exposed rock contrasting with the surrounding landscape. A strong form was created due to the shape and line characteristics of the open pit face differing to the surrounding landscape.

This effect could not be reduced until the final landform was created at the end of mining with only the void left untreated to some degree. The final void would not be visible to sensitive receivers in the foreground and middle-ground, so the visual effect had no impact significance. Potential views would be limited to far background viewing locations within Mt Kaputar National Park over 25 km away.

The open pit face occurs in the existing environment as part of the BTM Complex and creates a strong form, shape and line characteristics that differ from the existing landscape (Integral, 2010b).

#### 2.3.2.1.2 Overburden Emplacement Area

Modification 7 to MP10\_0138 sought approval to increase the height of a section of the Northern OEA to up to 455 m AHD for the purpose of incorporating macro-and micro-relief into the landform design. The construction of these changes was proposed to commence in 2021 and be completed by 2023, with rehabilitation of the eastern, northern and north western faces proposed to be completed by the end of 2025. The western and southern faces were proposed to be rehabilitated during mine closure (Whitehaven 2021).

The southern in pit OEA is constructed behind and to the south west of the mining face. Its elevations will screen views from the east to the western in pit OEA. The OEA was proposed to be constructed over the full life of the mine and at year 21 reach a final elevation of approximately 430 m AHD. However, Modification 7 to MP10\_0138 sought changes to the final landform to incorporate macro- and micro-relief into the final landform design, including localised higher points on the northern OEA (up to approximately 455 m AHD) to replicate natural drainage systems and improve integration with the surrounding environment. At the highest point, this is approximately 105 m above natural ground level on the eastern face. Significantly, the outer faces of this emplacement were not initially proposed to be rehabilitated until later in the mine life. Currently progressive rehabilitation works are being carried out in this area.

Rehabilitation continued in 2023 with a total of 297 ha of rehabilitation recorded at MCCM as of the end of December 2023. Progressive rehabilitation at MCCM for 2023 encompassed a total of 20.9 ha in accordance with the Forward Work Program for 2023 (Whitehaven Coal, 2023).

Rehabilitation continued on the northern OEA (specifically in the north west) during the 2023 reporting period. Monitoring results indicate that rehabilitation at MCCM is progressing positively. Monitoring results also indicate that rehabilitation which is around four years old is meeting all average and minimum completion criteria requirements. Similarly, third and second year rehabilitation has met almost all completion criteria with the exception of the over-story canopies average percentage. Notwithstanding, all sites achieved the minimum requirements for each completion criteria parameter (NSW Government, 2024).

#### 2.3.2.2 Tarrawonga Coal Mine

TCM operations were considered in the 2010 VIA. However, TCM now operates under PA 11\_0047 which was approved 22 January 2013 (i.e. following the determination of SSD 09\_0182).

PA 11\_0047 has been modified on ten occasions to date. A visual impact assessment was undertaken for TCM to support the *Tarrawonga Coal Project Environmental Assessment* (Resource Strategies, 2011) (Tarrawonga EA). Modification 5 to PA 11\_0047 included an assessment of an increase in bank cubic meters of rock to its OEA. There was no material changes to the final landform and impacts were considered less than what was assessed in the Tarrawonga EA.

Modification 7 to PA 11\_0047 sought approval for an extension to mining operations to the north as well as a reduced approved Mine Disturbance Boundary to the south to prevent potential issues arising with interaction in the Goonbri Creek Alluvium. This has led to a reduced disturbance footprint and reduced visual impact to the South East (Whitehaven 2020). These changes required revisions to the Final Landform design due to the reduction to the approved mining footprint which offered minor changes to the visual landscape assessed in the Tarrawonga EA. Accordingly, Modification 7 sought minor changes in the height of the northern OEA to a height of approximately 376 m AHD and the Southern OEA to a height of approximately 370 m AHD. Which were originally approved to a height of 370 m AHD and 360 m AHD respectively.

The main visual features identified in the *Tarrawonga Coal Project Visual Assessment* (Urbis, 2011) (Tarrawonga VIA) relevant to this VIA are discussed below.

#### 2.3.2.2.1 Extension of the Open Cut

Modification 7 proposed the extension of mining at TCM further east in Mining Lease (ML) 1579 and Mining Lease Application (MLA) 2 and further north into parts of BCM Coal Lease 368 with progressive backfilling of the mine void. It was envisaged the mine plan changes may result in potential visual impacts as a result of contrasting colours and textures of the open cut mining operations against the existing landscape.

Progressive rehabilitation of the open cut mine landforms would reduce contrast with surrounding environment. Visual screening in the form of a flood bund (up to 2.5 m high) and earth bund (up to 6 m high), once vegetated, would reduce potential views of the open cut.

#### 2.3.2.2.2 Expansion of the Northern and Southern Emplacement Extents

The final elevation of the Northern Emplacement changed slightly as part of the Final Landform redesign for Modification 7 bringing the maximum elevation to at 376 m AHD.

Similarly, the height of the Southern Emplacement was marginally increased to a maximum height of 370 m AHD (i.e. an increase of 10 m).

Progressive rehabilitation of the Northern and Southern Emplacements will be undertaken to reduce the contrast between landforms and the surrounding environment. Visual screening in the form of a flood and earth bund, once vegetated, would reduce potential views of the emplacement areas.

#### 2.3.2.3 Cumulative Assessment

The assessment of cumulative visual impacts considered the combined effects of TCM with the effects of BCM. The combined disturbance areas of TCM and BCM represent a very small proportion of the Namoi Valley and cumulatively would not detract from the **region's rural nature**.

Views of TCM and BCM would generally only be available from viewpoints to the south or west, where receivers were located on elevated areas with no foreground vegetation screening present.

To minimise cumulative impacts, the Northern Emplacement was proposed to be integrated with the waste rock emplacement at the BCM. Given the above, it is expected that the cumulative visual impacts as a result of TCM and BCM would continue to be low.

### 2.3.3 Town Centres

The township of Boggabri is situated on the Kamilaroi Highway between Gunnedah and Narrabri and 15 km to the south west of the BCM (see Figure 2). The town has a mix of residential, institutional, commercial and industrial land uses.

The township is located immediately adjacent to the Namoi River Flood plain and is generally on flat to gently sloping land.

### 2.3.4 Public Roads

Key public roads in the vicinity of the BCM are the Kamilaroi Highway, Rangari (or Manilla) Road, Goonbri Road and Leard Forest Road (see Figure 2). The portion of Leard Forest Road within the Project Boundary was previously closed to enable the progression of approved mining operations at BCM.

### 2.3.5 State Forest and Conservation Area

The Leard State Forest is located within and adjacent to the Project Boundary and is approximately 8,134 ha **in size (in total)**. **Dominated by native vegetation communities consisting of Ironbark, White Box, Blakely's Red Gum and White Cypress Pine**, selective logging activities have been undertaken in the past. However, the Leard State Forest remains in a generally forested state. The parts of the Leard State Forest that are not reserved for mining can continue to be used for recreation purposes.

The Leard State Conservation Area is located approximately 5 km north west of the Project Boundary and covers an area of 1,176 ha. In addition, Mt Kaputar National Park is located approximately 25 km to the north of the Project Boundary. Mt Kaputar National Park covers an area of approximately 36,817 ha and possesses significant recreational value.

### 2.3.6 Biodiversity Offsets

**BCM's Namoi Offset Area is located on either side of the existing operational rail line, within the South West View Sector.** The offset area supports significant areas of floodplain vegetation including numerous natural soaks and approximately 7 km of the Namoi River. The western portion of the Namoi Offset Area contains significant areas of grassy and shrubby woodland with relatively few disturbances.

**BCM's Jerralong Offset Area adjoins the Namoi Offset Area and is located within the South East View Sector.** The Jerralong property has been used as grazing land in the past and much of it remains as open grassland habitats with remnant woodlands dominated by Poplar Box (*Eucalyptus populneus*), White Box (*E. albens*) and stony rises dominated by White Cypress Pine (*Callitris glaucophylla*). Overtime, the BCM Offsets will regenerate into open woodland which in some instances, will result in improved amenity of the area.

### 2.3.7 Vegetation Corridor

A Vegetation Corridor was imposed on the original BCM consent as part of the approvals process. BCM is required to have a 250 m buffer from their shared ML (or Project Boundary) with MCCM. A similar condition was transcribed in the MCCM approval conditions which has led to the existence of the collective 500 m buffer between the two mines, commonly referred to as the Vegetation Corridor.

The Vegetation Corridor consists primarily of Narrow-leaved Ironbark - Cypress pine - White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion (PCT592) of which comprises approximately 60% of the Modification Disturbance Footprint (i.e. the area of additional disturbance within the Modification Mining Area).

### 2.3.8 Mine Rehabilitation

Rehabilitation is progressively undertaken at BCM to minimise the long-term effects of mining. The Final Land Uses at BCM includes a revegetated landscape comprising a mixture of native grassy woodland, shrubby woodland/open forest and riparian forest vegetation types with fauna habitat for threatened species to encourage the re-establishment of pre-mining biodiversity values. It also includes areas of land to be returned to a grassy state for grazing purposes in the current infrastructure areas.

Rehabilitated areas are proposed to (and currently to some extent) form part of a regional east west wildlife corridor created as part of the BCM Biodiversity Offset Strategy. The proposed corridor creates a linkage to remnant vegetation between Namoi River (west of BCM) through the Leard State Forest to the Nandewar Range (east of BCM).

## 2.4 PRIMARY VISUAL CATCHMENT

The PVC for BCM was described within the 2010 VIA and represented the area from which the majority of potential critical views of the BCM would be able to be experienced, based on a consideration of topography alone as a screening element.

The PVC has not measurably changed for this VIA from that described within the 2010 VIA.

## 2.5 VISUAL CHARACTER UNITS

A landscape setting can be defined in terms of topography, vegetation, hydrology and land use features. These elements define the existing visual character of the landscape that BCM interacts with. Within any landscape, there are areas of similar visual features are defined as a Visual Character Units (VCUs).

VCUs are rarely seen in isolation but rather in combination with one another from any viewing location. Defining the landscape in terms of these VCUs assists in understanding the visual character of the landscape with BCM interacts. In consideration of the existing environment (Section 2), the 2010 VIA identified the following VCUs within the PVC that combine to make up a particular view from any viewing location: Namoi River Flood Plain; Lowland Foothills; Rural Lands; Town Area; Surrounding ranges; and Mine and Infrastructure Area.

These VCUs remain contemporary and are each briefly described below.

### 2.5.1 Namoi River Flood Plain

The Namoi River Flood Plain VCU is relatively flat with grass / crop cover that allows for long views from the cleared rural lands to the surrounding ranges. Also occurring on the flood plain are remnant Red Gum woodlands that can screen long distance views.

There are a number of scattered rural residences within the Namoi River Flood Plain VCU. However, they are generally limited due to the flood potential within the Namoi River Flood Plain VCU. They occur at the edges or on slightly elevated areas above the floodplain.

There are a number of roads which pass through this VCU. Generally, these roads skirt the flood plain and like the rural residences, are generally located in the lower part of the Foot Hill VCU for flood avoidance purposes. The Namoi River Flood Plain VCU supports and provides a connection between the Town Area and Lowland Foothills VCUs.

### 2.5.2 Lowland Foothills

To the south, these hills are generally gently sloping rising to form the ridges of the surrounding ranges. These hills for the greater part have been cleared for grazing purposes and support grasslands with scattered trees or open forest woodlands on steeper areas and along some gully lines. The southern part of the VCU has a number of foothills that exist in isolation and in most instances are not connected directly to any particular surrounding range in the south. The elevation of the hills in the vicinity of Barber's Pinnacle limits visibility to the BCM in a northerly direction (from these southern view locations), however residences located on the elevated slopes of the foothills have potential views to existing mining operations.

In the east, these hills are dominated by more gently sloping low elevation hills, the land cover is a mixture of grasslands, woodlands and open forest. These hills generally continue to the east eventually linking with the Vickery State Forest with an average elevation of 320 m AHD. These hills limit views of existing mining operations at BCM, however, there are views from some elevated locations.

To the west, the foothills are a series of hills to the north west of the Boggabri township, the most prominent being Mount Boggabri. This series of foothills also provide screening for the Boggabri and Maules Creek Rail Spur and connection to the Werris **Creek Mungindi Railway**. **The lookout at 'Gins Leap' provides views to the north east across the flood plain.**

This VCU supports many rural residences in the lower and more gentle sloped areas adjacent to the flood plain and in the more intensively cleared grazing areas rural lands.

### 2.5.3 Rural Lands

The Rural Lands VCU is the most extensive unit covering a range of agricultural land uses, the major use is grazing. The general character of the unit is of gently rolling topography with scattered tree cover and stronger tree belts in some locations along roadways and drainage lines. There are rural residences within this VCU.

### 2.5.4 Town Areas

The township of Boggabri is situated on the Kamilaroi Highway between Gunnedah and Narrabri and 15 km to the south west of the Project Boundary. The town has a mix of residential, institutional, commercial and industrial land uses, this along with its open space and streetscape character help create the visual character of the town.

### 2.5.5 Surrounding Ranges

The surrounding ranges generally consist of steep forested slopes that define the edges of the VCU. The surrounding ranges VCU include the Willow Tree Range, Mt Boggabri and associated ridges to the west and the Nandewar Range to the east. The Willow Tree Range encompasses the BCM, on the western, northern and eastern sides of the mining area and forms an unbroken line that function as a visual barrier to the mine as seen from those directions.

### 2.5.6 Mine and Industrial Area

The visual character and scale of the BTM Complex (as defined in Section 2.3.2) are strong enough to create a VCU based on the visual character of the mines.

The visual impacts of TCM and MCCM are described in Section 2.3.2.

The existing BCM generally consists of an active mine pit, OEA, haul roads, and mine infrastructure facilities. The site already has a strong industrial visual character.

## 3. METHODOLOGY

*This section describes the methodology used to develop this VIA and refers to the 2010 VIA and/or the MOD 8 VIA where relevant. The evaluation of the existing visual environment consists of the assessment of both the landscape and viewing locations within it, and the effects of BCM within the visual environment.*

### 3.1 MODIFICATION VISUAL EFFECT

Visual effect is a combination of the visual properties of BCM against the approved operations, with consideration of the proportion of the view occupied by the changes proposed at BCM.

The degree to which the visual characteristics of the components of MOD 10 contrasts with the existing landscape will determine the type of visual effect. For example, a newly created mine pit and pre-rehabilitated OEA has high visual contrast and low visual integration.

In a similar way, a development is said to be integrated with the existing landscape based on issues of scale, position in the landscape and contrast. High visual integration is achieved if a development is dominated by the existing landscape, is of small scale and or of limited contrast.

The visual properties of the components of MOD 10 interact with the proportion of the view that is occupied by a development (including the approved BCM) to produce the level of visual effect. For any type of visual properties, the lower the proportion of the view that is occupied by the development, the lower the level of visual effect.

The more the visual element integrates with the surrounding environment, the larger proportion of the view it will need to occupy to have the same level of visual effect as a higher contrasting visual element.

#### 3.1.1 Boggabri Coal Mine MOD 10 Overview

MOD 10 to SSD 09\_0182 proposes the orderly progression of mining operations at BCM towards the north west beyond the approved Mine Disturbance Boundary, but entirely within the existing Project Boundary. The additional mining area proposed by MOD 10 is illustrated on Figure 1. This additional mining proposed by MOD 10 would involve the following:

- › Recovery of an additional 30 Mt of ROM coal to produce approximately 25 Mt of product;
- › Disturbance to an additional 85 ha of land; and
- › Extension to the life of mining operations by four years until the end of 2040.

There are no proposed changes to the currently approved mining methods, annual ROM coal extraction rate of up to 8.6 Mtpa, the operational workforce, nor the coal seams approved to be mined at BCM. Further to this, MOD 10 does not seek to change the approved operational hours, mining related infrastructure, water management system, coal handling and processing, transport methods and rates and access to the mine site.

MOD 10 will result in some changes to the approved Conceptual Final Landform, including minor adjustments to the partially infilled final void and the main OEAs.

#### 3.1.2 Mine Components

From a visual perspective, MOD 10 relates to increasing the footprint of the open cut mining area and adjustments to the final landform design.

The mine development elements have been divided into major and minor elements which are relevant to this VIA. Major elements have the potential for significant visual effect in relation to external view.

Minor elements, although not insignificant in horizontal scale, have a less significant visual effect due to lack of vertical scale and visual projection outside the Project Boundary.

Both the major and minor components already occur within the existing environment because of the already established (and approved) BCM, and the neighbouring TCM and MCCM. The increase in the footprint for open cut mining is the only major mine development component proposed to change as part of MOD 10. There are some minor variations in OEA landforms, however these aspects are unlikely to be materially different from the currently approved BCM.

### 3.1.3 Mine Areas

#### 3.1.3.1 Physical Character

MOD 10 seeks approval for disturbing an additional 85 ha of native vegetation to the immediate north of the approved Mine Disturbance Boundary whilst remaining entirely within the approved Project Boundary. Certain landforms within the Modification Mining Area include elevated areas of the Leard State Forest which may be visible from view locations above the approved mining operations at BCM.

Currently approved mining operations are scheduled to continue towards the north west using east west strips. As part of the MOD 8 Mine Plans (as amended), **BCM's approved operations were realigned to a north to south orientation with a westerly advancing face until the end of December 2036.** MOD 10 proposes to continue to follow this approach, albeit the extended mining operations towards the north and into the Modification Mining Area.

The 2010 VIA concluded that BCM is largely contained within the basin formed by the natural ridge line of the Willow Tree Range and that mining in the north western direction along the lower eastern slopes of the western ridge would not cause any significant impacts outside of this area. The mine plan changes resulting from MOD 10 are proposed to take place in the period between 2028 and 2036.

##### 3.1.3.1.1 2031

Figure 3 illustrates the 2031 staged mine plan for MOD 10. The 2031 staged plan represents some of the early years of mining operations within the south eastern extent of the Modification Mining Area. Given the elevation of this area in relation to the mining operations within the approved Mine Disturbance Boundary, some views of active mining operations may be visible to southern receivers. However, these views would be experienced with the approved BCM operations occurring within the same field of view.

##### 3.1.3.1.2 2034

Figure 4 illustrates the 2034 staged mine plan for MOD 10. Mining operations within the stage plan have advanced towards the west and have largely cleared the land within the Modification Mining Area. The south western portion is the only section of the Modification Mining Area which is not disturbed at this stage. The highwall along the northern extent of mining operations has been developed during the course of mining operations. Views towards this highwall area may be experienced within the same field of view and higher in elevation above the approved BCM mining operations from southern receivers. However, these views would generally be from more than 7.5 km away from the Project Boundary and further to that of the Modification Mining Area in which would represent a small portion of the field of view.

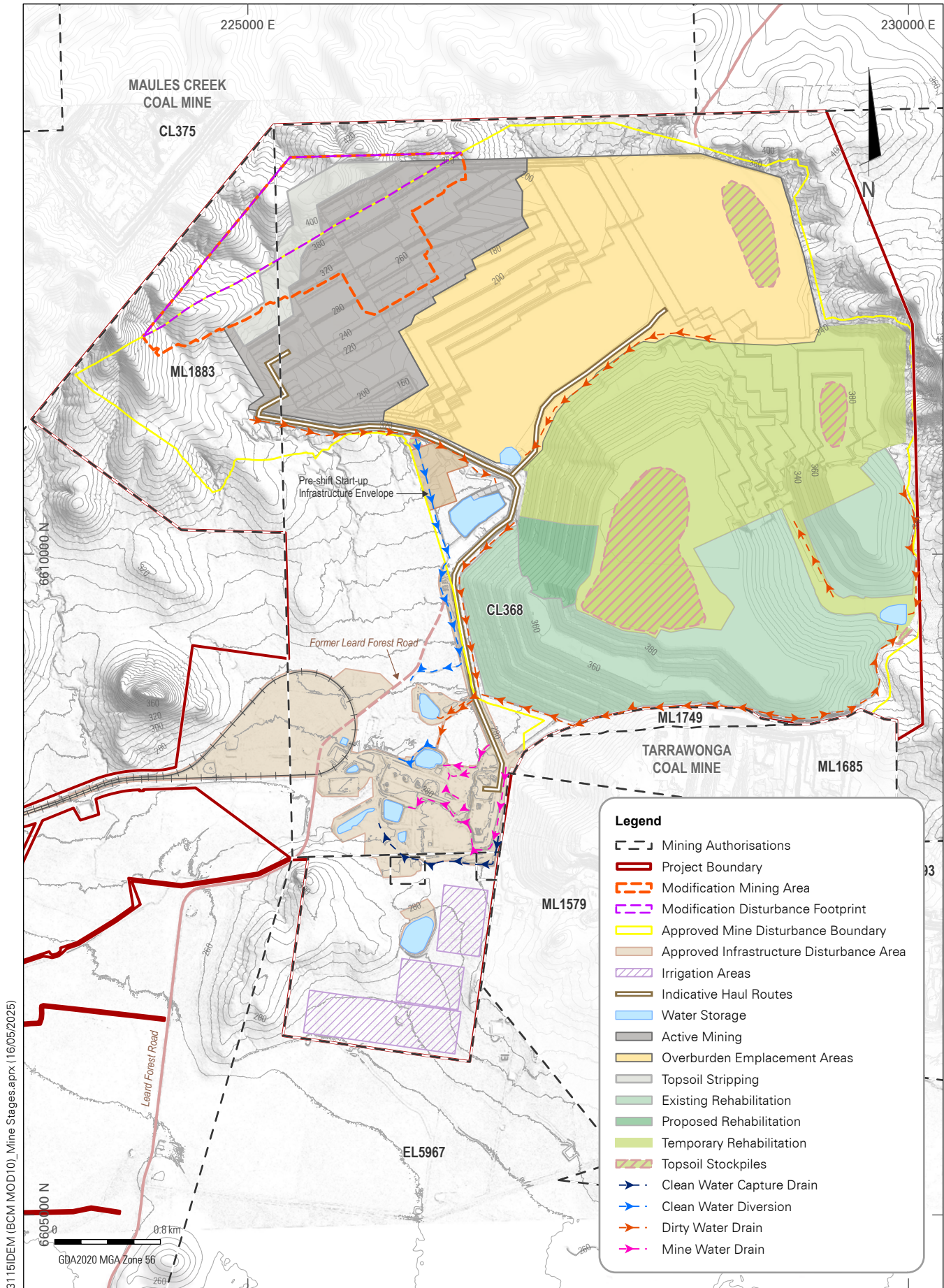
##### 3.1.3.1.3 2036

Figure 5 illustrates the 2036 staged mine plan for MOD 10. Mining operations will have advanced within the previously disturbed footprint for the Modification Mining Area. Approved mining operations at BCM have also progressed towards the west. The visibility of the mine plan changes proposed by MOD 10 will not be materially different from those experienced in 2034, albeit the progression of the deeper less visible mining operations towards the west.

#### 3.1.3.1.4 Final Landform

The Conceptual Final Landform for MOD 10 is shown in Figure 6. The Conceptual Final Landform design considers the treatment of the northern highwall. Overburden materials will be emplaced against the northern highwall and effectively shaped down with a concave landform.

When compared to the approved Conceptual Final Landform design from MOD 8 (as amended), the proposed landform design for MOD 10 offers a significant improvement for views towards this area as well as providing benefits including improved drainage.



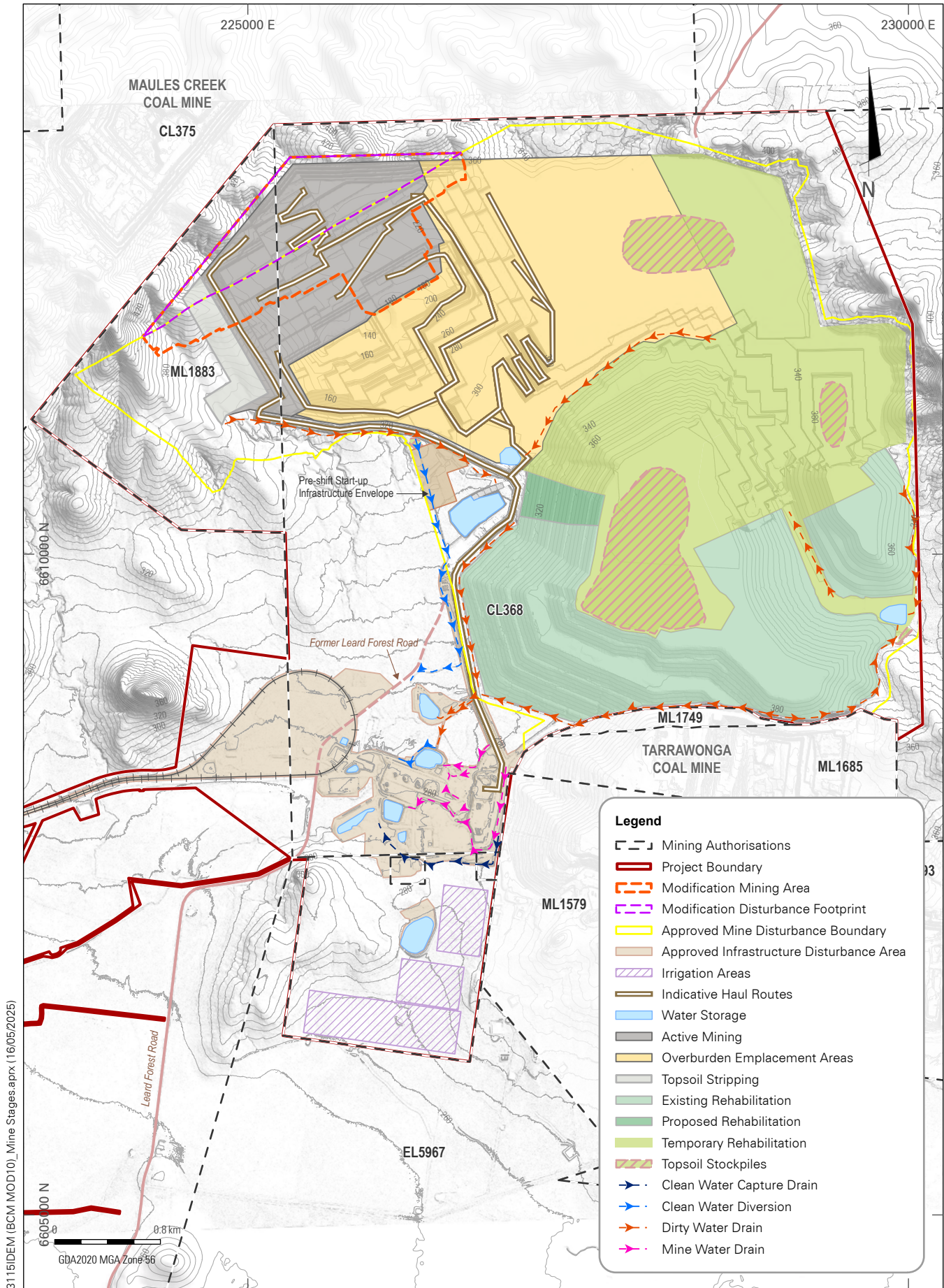
3115IDEM (BCM MOD10)\_Mine Stages.aprx (16/05/2025)

BOGGABRI COAL MINE MODIFICATION

Conceptual Mine Plan (Year 2031)



**FIGURE 3**



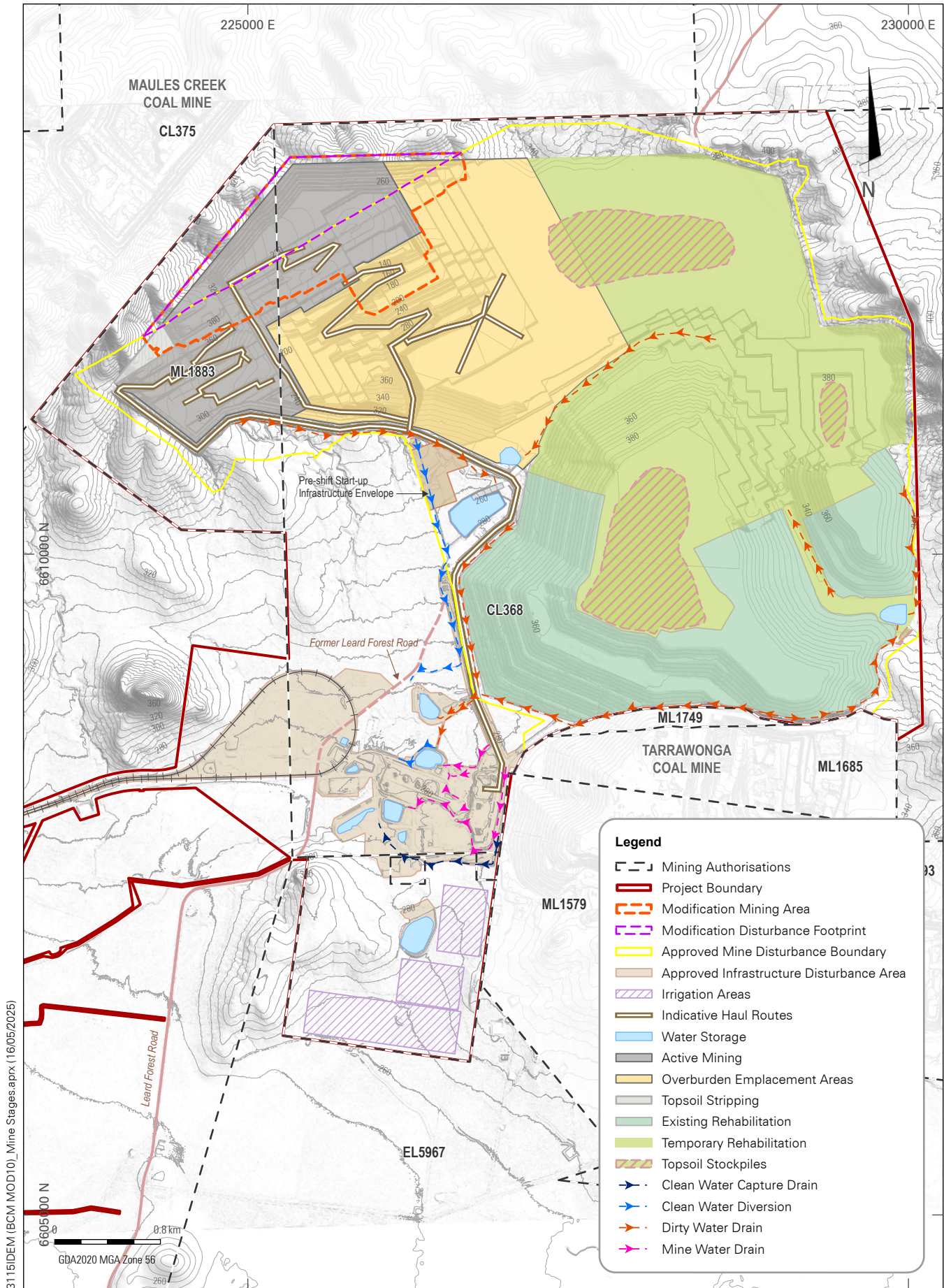
3115IDEM (BCM MOD10)\_Mine Stages.aprx (16/05/2025)

BOGGABRI COAL MINE MODIFICATION

Conceptual Mine Plan (Year 2034)



**FIGURE 4**



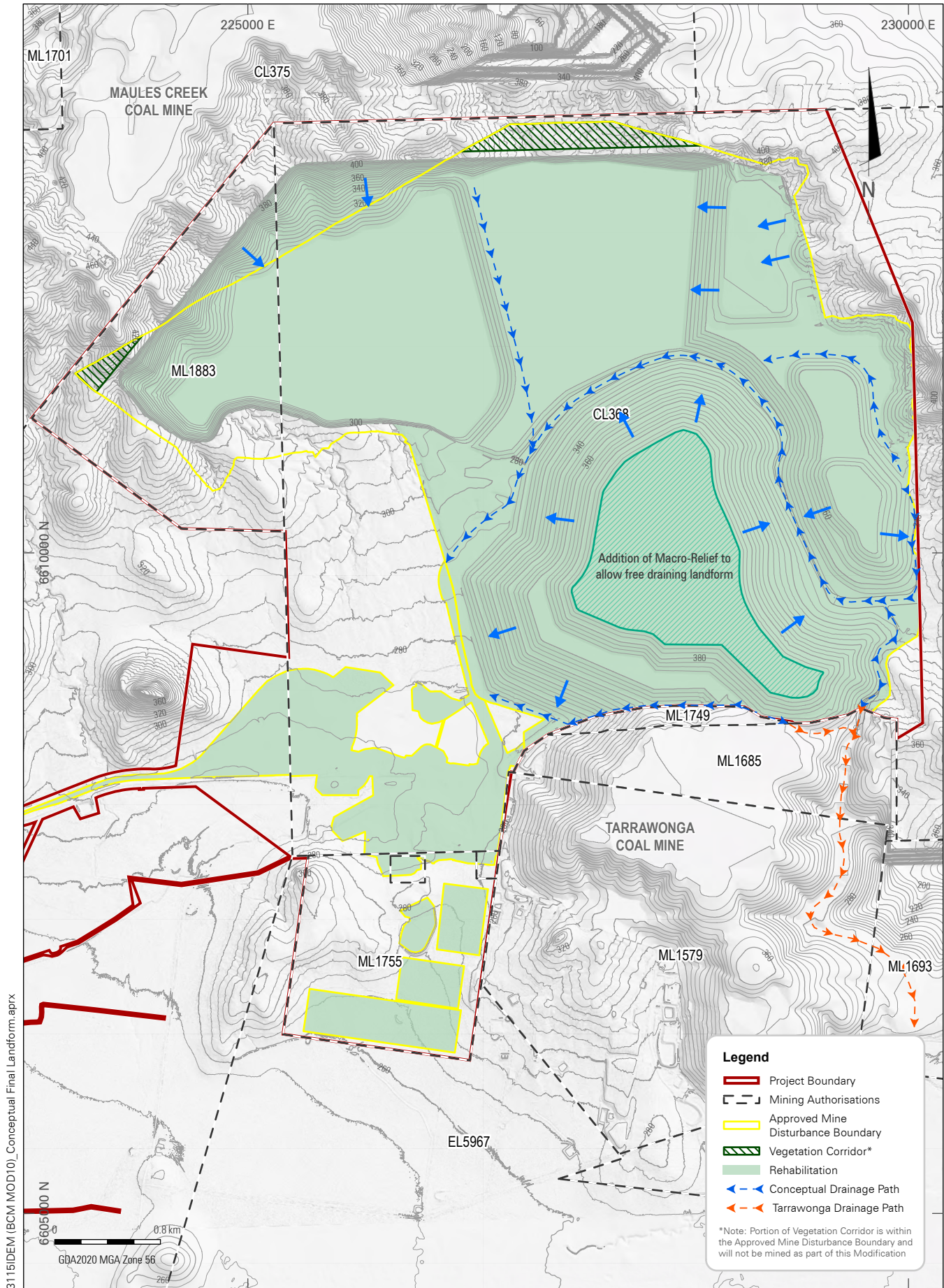
3115IDEM (BCM MOD10)\_Mine Stages.aprx (16/05/2025)

BOGGABRI COAL MINE MODIFICATION

Conceptual Mine Plan (Year 2036)



**FIGURE 5**



BOGGABRI COAL MINE MODIFICATION

Conceptual Final Landform Design

FIGURE 6



### 3.1.3.2 Visual Effect

The 2010 VIA described the visual effect of the mine void on the character of the surrounding landscape. The MOD 10 mine plan seeks a northerly extension to the current footprint of approved mining operations which will be viewed (by some southern receivers only) in conjunction with the approved mining operations. The northern extent of mining will develop a highwall cut into topography which has an elevation of approximately 440 m AHD. The description of visual effect from the 2010 VIA relevantly states:

***"The mine void consists of two significant components, the 'highwall' (active mining area) and the 'low wall' which forms part of the OEA. These are the major visual components of the void, however both are generally below natural ground level and therefore only visible to view points with higher elevations.***

*The exception may be a limited extent of the highwall above an elevation of 380m, close to the end of the mine life. These areas are limited in scale and are fragmented. These small areas may be visible over the top of existing topography and vegetation and or the rehabilitated overburden emplacement areas to the south of the highwall towards the end of the mine life of 21 years.*

*The visual effect of mine void is created by the colour of the raw earth and exposed rock contrasting with the surrounding landscape. The open mining face also creates strong form, shape and line characteristics that differ from the existing landscape. These effects are greatly decreased over distance and by atmospheric conditions such as cloud cover, backlight and heat haze.*

*The location of the void within Leard State Forest, its enclosure by the Willow Tree Range and the OEA eliminates views into the mine void from all locations.*

*The mine void creates a moderate to high visual effect. This effect cannot be reduced until the final landform is created at the end of all mining activity with only the void left untreated to some degree. However as stated above, these voids are not visible to sensitive receptors in the surrounding landscape so the visual effect has no impact significance."*

Parts of the northern highwall will be visible to some southern receivers where intervening foreground topography and vegetation allow. These views will be experienced in the same field of view as those experiencing views towards the approved mining operations. The additional mining for MOD 10 within the elevated sections of the Leard State Forest (higher than 380 m AHD) will occur in areas higher than the previously approved mining operations. The conceptual final landform for MOD 10 contains a treated highwall which will be established by emplacing overburden materials against the highwall to establish a concave landform.

### 3.1.4 Overburden Emplacement Area

#### 3.1.4.1 Physical Character

The mine plan changes sought by MOD 10 will result in an increase in the total volume of overburden and reject materials to be moved.

The additional overburden material will be used to backfill the mining void areas, where feasible, whilst also marginally extending the northern portion of the existing OEA at BCM.

The OEA located in the southern portion of the Project Boundary will be constructed to a maximum height of 400 m reduced level (RL). This is a 5 m increase above MOD 7, approved as part of MOD 8, to incorporate macro-relief elements to the surface of the final landform design.

The north easterly extension of the OEA will only be temporary due to materials emplaced within the vicinity to accommodate the proposed east west drain within the Conceptual Final Landform design. This material will be excavated at the completion of mining operations and be used to backfill the mining void.

The temporary emplacement of these materials during mining operations will be generally shielded by the surrounding Willow Tree Range along the eastern side of the operation and the existing TCM operation to the south.

#### 3.1.4.1.1 Visual Effect Summary

The 2010 VIA described the visual effect of the OEA on the character of the surrounding landscape. The increase in elevation from 395 m to 400 m as part of MOD 8 was not considered visually significant, as it was only a small increase in bulk over the whole of the OEA (representing a 1.3% increase). No increase in the maximum OEA height is proposed as part of MOD 10. As such, no material impacts are expected as a result of the adjustments to the OEAs as part of MOD 10.

As the proposed changes to the OEAs by MOD 10 has been assessed to not result in any additional significant visual effects, the description of visual effect from the 2010 VIA remains the same, as follows:

*"The OEAs will create strong contrasting form in the landscape, and will initially also have a strong colour contrast. This contrast and high visual effect will be reduced to moderate/low by landscaping and progressive rehabilitation following mining. The high contrast is somewhat offset by the moderate integration level achieved by the OEA being below the natural forested ridge line of the Willow Tree Range.*

*Visual effect levels are generally moderate due to the small area of OEA that would be in an un-rehabilitated state at any one time. These effects would reduce to low over and very low as tree cover matures and obtains mature foliage colour and texture values."*

Mine plans for MOD 10 propose the temporary rehabilitation of sections within the southern OEA as mining progresses towards the north. The proposed temporary rehabilitation for the years in which mining progresses into the Modification Mining Area are depicted in Figure 3 to Figure 5. These proposed temporary rehabilitation areas will generally be screened by surrounding topography of the Northern OEA, TCM landforms and the Willow Tree Range. Accordingly, no visual impacts are likely to be attributed to the temporary rehabilitation of these areas of the OEA.

### 3.1.5 Infrastructure Elements

#### 3.1.5.1 Physical Character

No additional infrastructure is proposed as part of MOD 10.

#### 3.1.5.2 Visual Effect

Whilst there is an increase in the approved Mine Disturbance Boundary, the general infrastructure areas are to remain the same. Accordingly, the visual effects of the infrastructure areas will not increase from what was described for the 2010 VIA.

## 3.2 MODIFICATION VISUAL EFFECT SUMMARY

The visual effects of the mine elements continue to vary from high to low. However, most significant high visual effect areas are generally not openly visible to external view locations. The outer face of the OEA will continue to be visible to some southern view locations, and there are no additional incremental visual effects of this element as a result of MOD 10. To a marginal extent the relocation of the highwall further to the north and to an increasing elevation within the Modification Mining Area whilst mining is occurring may be seen above the approved mining operations and the OEA. However, these views will only be from southern receivers at distances greater than 7.5 km from the Project Boundary. MOD 10 proposes to emplace overburden and shape this down to a concave slope at mine closure. This concave slope will be revegetated which in turn will reduce the visual effects of this visible mining landform.

### 3.2.1 Mine Area

The establishment and excavation of the mine area will continue to have a high visual effect throughout the life of the mine. However, views towards the mine area will be limited from external viewing locations. As mining progresses into the Modification Mining Area in year 2028, these views will increase marginally until prevailing overburden emplacement shields these views or the final highwall is rehabilitated following mine closure in 2040.

### 3.2.2 OEA

MOD 10 will result in the extension to the approved Mine Disturbance Boundary to the North West. The additional overburden to be encountered by this additional mining operations will result in changes to the OEAs and the final landform design. Some materials will need to be temporarily emplaced within the mine landforms, including within the region of the proposed east west drain to be established within the Conceptual Final Landform. These temporary landforms will generally be screened from external views. Some temporary landforms that are visible by limited views will be seen from material distances and form a small proportion of the view. Accordingly, the visual impact of the OEA landforms under MOD 10 will not materially change from those considered for MOD 8.

### 3.2.3 Other Infrastructure Elements

As no further infrastructure elements are proposed as part of MOD 10, there will be no visual effects from additional infrastructure elements.

## 3.3 VIEWING LOCATIONS

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

The 2010 VIA evaluation was completed in sectors: north, east, south east, south west and west.

This VIA uses the viewing sectors developed in the 2010 VIA, which are shown in Figure 2. The description for each sector provided below is relevant for the contemporary landscape within this VIA.

An initial desktop review was completed prior to site attendance to identify potential locations in which views of the Modification Mining Area and associated activities within the Project Boundary could be observed. It was identified that similar sensitive receivers would potentially be impacted by the mine plan changes for MOD 10 as with MOD 8. For consistency with previous assessments, the viewing locations used for the MOD 8 VIA were adopted for this VIA.

A field visit occurred over the period from 25 to 27 September 2023 at five key viewpoints across the various view sectors. The five viewing locations subject of this VIA are provided in Table 2 and shown in Figure 2Figure 1. A photograph from each viewing location is provided below in the relevant sector.

Table 2 Viewing Points and Approximate Distance to the Project Boundary

View Point	Description	Approximate Distance to Project Boundary (km)
VP1	Rangari Road / South West Sector	8
VP2	Boston Street, Boggabri Town / South West Sector	12

View Point	Description	Approximate Distance to Project Boundary (km)
VP3	Corner of Rangari Road and Braymont Road / South East Sector	6.5
VP4	Rangari Road / South East Sector	7.5
VP5	Kamilaroi Highway / South West Sector	12

### 3.3.1 North Sector

Immediately to the north of the Project Boundary are the forested ridges of the Willow Tree Range. The Willow Tree Range will continue to screen the majority of mining activities from view from this sector. Part of the Modification Mining Area will extend beyond the ridge of the Willow Tree Range in the far north western corner at approximately RL 440 m and dropping to an elevation on the other side of approximately RL 410 m. This section of the mining area will cause only a marginal reduction in elevation for this ridgeline. As the canopy species of PCT 592 are primarily made up of Narrow-leaved Ironbark, Cypress Pine and White Box Gums with an average mature height of approximately 20 m, the visibility to the north of the Modification Mining Area will be reduced by the intervening vegetation in the Vegetation Corridor.

Further, the MCCM has been established and developed since the 2010 VIA. MCCM has three approved OEAs ranging from 430 m to 440 m RL. The visibility of the mining operations and final landform within the Modification Mining Area from views within the Northern sector will be significantly reduced due to the approved OEA at MCCM.

The North sector was assigned a low sensitivity to BCM in the 2010 VIA which will continue to apply for MOD 10.

### 3.3.2 East Sector

There are no private receivers located within the East Sector which are within 7.5 km of the Project Boundary (see Table 1). Nevertheless, the Willow Tree Range (with a maximum height of 467 m AHD) continues to screen the proposed mining operations at BCM from external views at the mine owned receivers within the East Sector. Therefore, the sector continues to have a low visual sensitivity to the mining operations at BCM.

### 3.3.3 South East Sector

#### 3.3.3.1 Residences

The 2010 VIA stated that:

*"Also above this elevation there may be potential views to small sections of the highwall of the mining void in the latter years of the mine life. However, if seen these will be isolated elevated pockets of disturbance contained within the framework of surrounding forest and rehabilitated OEAs."*

Field assessments completed since the Boggabri EA have indicated that the Willow Tree Range and the OEAs at the adjacent TCM currently screen potential views towards the northern portion of the approved Mine Disturbance Boundary. Accordingly, views towards this northern mining area are limited.

There are two remaining private residences remaining in this sector within 7.5 km of the Project Boundary (see Table 1). They include receivers 140 and 147. However, these residences (at its closest point) is over 10.5 km from the closest point of the Modification Mining Area.

Views from receiver 140 toward the Project Boundary are screened by topographic features associated with Goonbri Mountain (with a natural elevation of 543 m AHD) and the Willow Tree Range. Therefore, this view location is considered to have a low visual sensitivity.

**Receiver 147 is located just within the 7.5 km of the Project Boundary. The 2010 VIA stated that “private residences with a 7.5 km radius of the Project Boundary and may have a high sensitivity.” Receiver 147 is** partially screened by the Willow Tree Range (375 m elevation at this location). The view from receiver 147 would also include views of the TCM southern OEA, therefore, in consideration of both the partial screening and views toward TCM. Furthermore, the distance to the Modification Mining Area from receiver 147 is over to 12 km with the majority of the views obscured by the TCM landforms and the main southern OEA at BCM. Accordingly, receiver 147 is considered to have a low sensitivity.

The remaining residences within this sector and within 7.5 km of the Project Boundary are mine owned and accordingly have a low visual sensitivity.

### 3.3.3.2 Local Roads

There have been two changes to the local road network since the 2010 VIA. Heavy vehicles now transport **coal from TCM south along “Haul Road south of Goonbri Road” (Halcrow, 2011), and head east along** Rangari Road before exiting south onto Bluevale Road. This transport route is used in both directions by up to 156 heavy vehicles per day at a coal production rate of 2 Mtpa (Halcrow, 2011).

Goonbri Road was also upgraded in 2014 after the closure of a section of the Leard Forest Road within the BCM mining lease areas.

The abovementioned changes do not impact on the description for local roads from the 2010 VIA, reproduced as follows:

***“The main roads in the south east sector are the Manilla Road and to a lesser extent Goonbri Road. Both roads would continue to have low sensitivity ratings at distances greater than 2.5 km.”***

View Point (VP) 3 and VP 4 provide a contemporary representation of the views toward the BCM and TCM OEAs from Rangari Road (also known as Manilla Road) (see Plate 1 and Plate 2). Rehabilitated faces of the BCM and TCM OEAs can be seen from these viewpoints. The ongoing emplacement, shaping and rehabilitation of the upper slopes of the southern faces of the main BCM OEA will be visible across the TCM mining landform from these locations. However, the progression of mining activities to the north west into areas of the Modification Mining Area as proposed by MOD 10 will be generally screened by the BCM OEA and the existing TCM landform. A cross section at VP3 was created for this VIA comparing the likely views resulting from the 2031 and 2036 Mine Plans (Figure 7).

Plate 1 VP3 - Corner of Rangari Road and Braymont Road / South East Sector

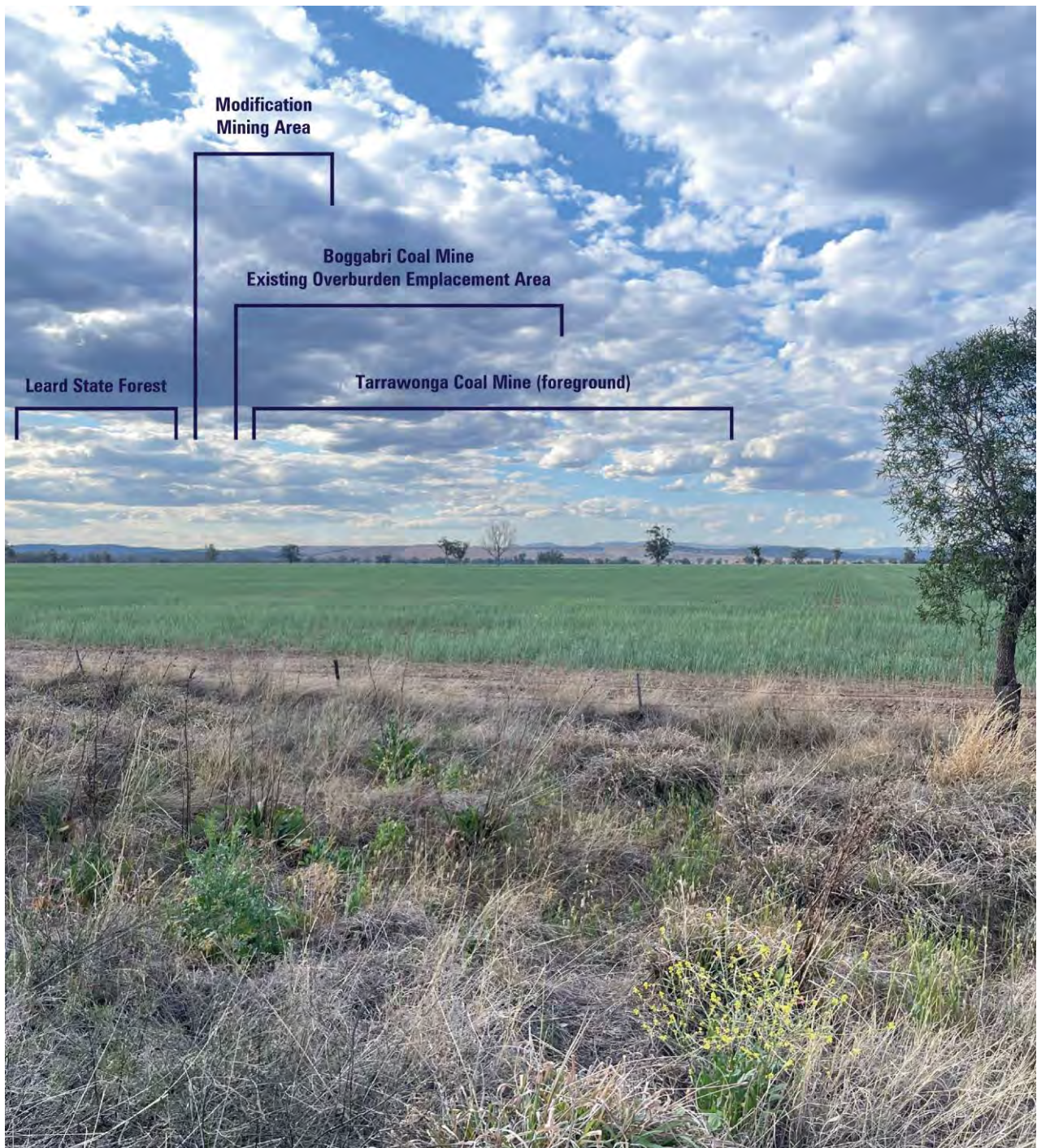


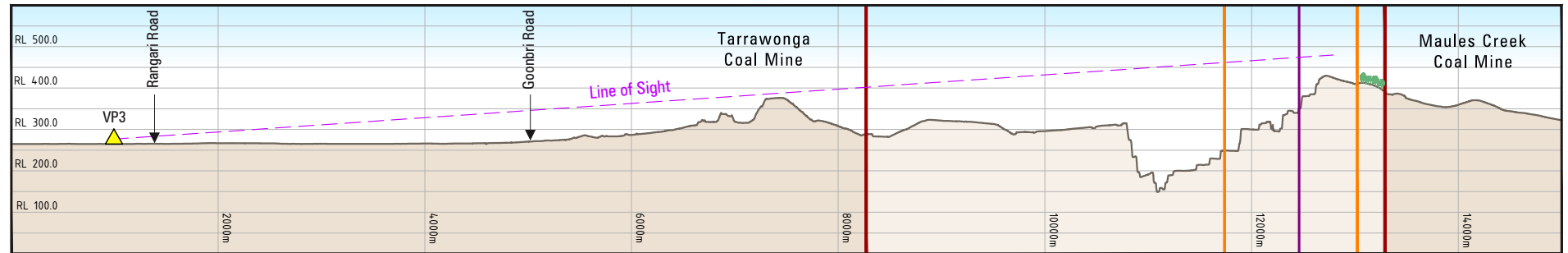
Plate 2 VP4 - Rangari Road / South East Sector



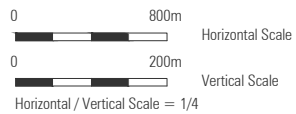
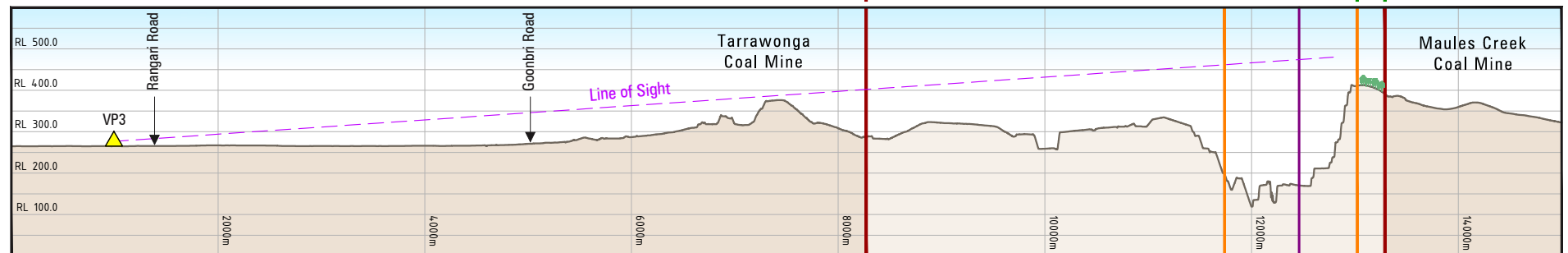
3115IDEM (BCM MOD10)\_Visual Long Sections (15/05/2025)

### 2031 Landform

South

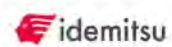


### 2036 Landform



BOGGABRI COAL MINE MODIFICATION

Visual Cross Section VP3 - Years 2031 and 2036



**FIGURE 7**

### 3.3.4 South West Sector

#### 3.3.4.1 Residences

##### 3.3.4.1.1 OEA

The 2010 VIA stated that:

*"Micro-topographic features of the foothills south of the Leard State Forest, in addition to the major features of Merriown Mountain and Barbers Pinnacle, vegetation in the foreground or near middle ground of many residences as well as general homestead orientation in directions other than the Project Boundary minimise views to the mining area.*

*There are potential views based on topography in some locations so that if there are not any foreground trees there may be some views to the Project Boundary, especially when the OEA achieves RL 395. Also, above this elevation there may be potential views to small sections of the high wall of the pit in the latter years of the mine life. However, if seen these will be isolated elevated pockets of disturbance contained within the framework of surrounding forest and rehabilitated OEAs.*

*Private residences within a 7.5 km radius of the Project Boundary may have a high sensitivity, dependant on visibility and view orientation. Residences beyond this distance would have a moderate sensitivity if they have views of the southern OEA".*

There are three private residences remaining in this sector (receivers 44, 48 and 90) which are within the BCM ZOA and are located approximately 7.5 km of the Project Boundary at its closest point. However, all private residences are located at greater distances from the highest point of the Modification Mining Area.

**"Glenhope" (or receiver 44) continues to be screened by topographic features associated with Barber's Pinnacle.** Barber's Pinnacle can be seen in Plate 3. The 2010 VIA did not provide a sensitivity level at this location; therefore, this VIA considers its sensitivity to be low due to the intervening topography screening views towards the BCM.

Receiver 48 will have views toward the existing OEA which will be partially screened by the northern emplacement of TCM (370 m AHD), however views towards the Modification Mining Area will be screened by Barber's Pinnacle and other intervening topography and vegetation. A representative photograph was taken from Rangari Road toward BCM at location (VP1) and is shown in Plate 3. The viewing location indicates the screening provided by trees in the foreground, even if they are not immediately adjacent to the road. It can be seen that even trees in a semi-open woodland configuration assist in screening views of the mining operations.

Residences on Therribri Road would continue to have a moderate to low sensitivity to activities within the Project Boundary. However, these residences are now mine owned excepting receiver 44 which has been discussed previously in this section. Views towards the Modification Mining Area from these locations will largely be screened by intervening topography and vegetation.

Plate 3 VP1 - Rangari Road / South West Sector



A cross section at VP1 was also created for this VIA comparing the likely views resulting from the 2031 and 2036 Mine Plans (Figure 8). Proposed mining operations within the Modification Mining Area may be visible between the foreground trees on the elevated portions of the Willow Tree Range. These glimpses of the proposed mining operations by MOD 10 will form a small proportion of the field of view which will also comprise views of approved mining operations at BCM.

*Boggabri Coal Mine Modification 2031 Mine Plan*

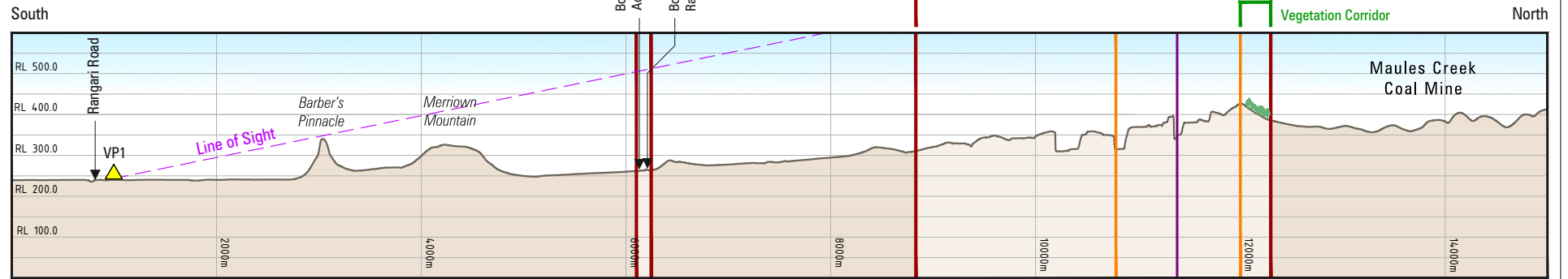
For MOD 10, the 2031 Mine Plan shows the intervening topography and vegetation obscures most views towards the Modification Mining Area from the south. The contrast of the developing mining operations and OEAs within the north east of the approved Mine Disturbance Boundary against the surrounding woodland vegetation within the Leard State Forest will create a high visual effect. However, MOD 10 will result in minimal changes to the views beyond those approved for the BCM.

*Boggabri Coal Mine Modification 2036 Mine Plan*

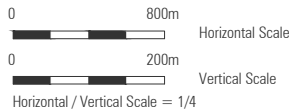
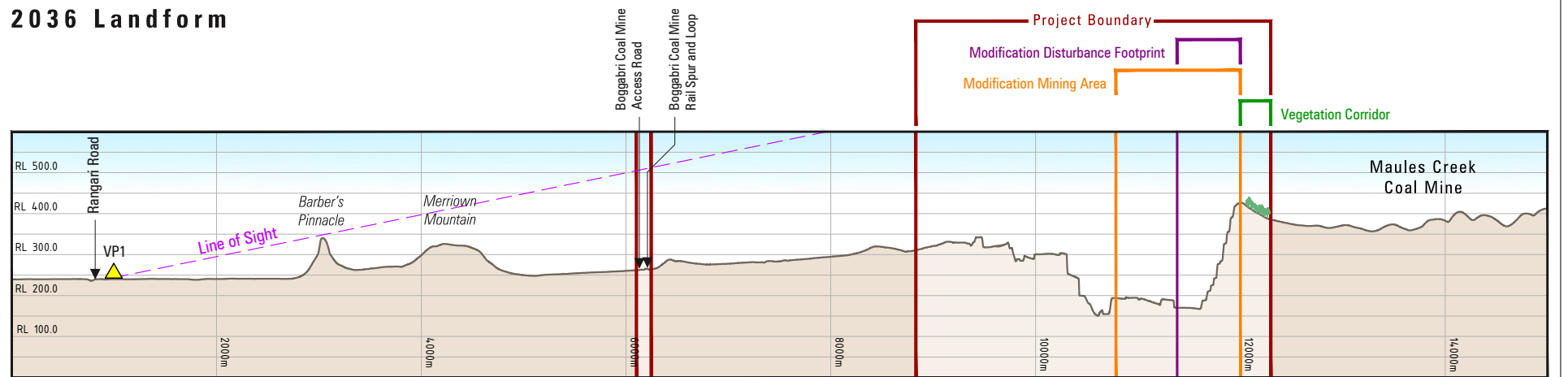
As indicated above, the MOD 10 mining operations will largely be screened by intervening topography (Barber's Pinnacle and Merriown Mountain) and woodland vegetation which provide substantial screening towards the proposed mining operations. Further, these views from the south may experience orientational views of the MOD 10 mining operations in conjunction with the approved mining operations at BCM.

3115IDEM (BCM MOD10)\_Visual Long Sections (15/05/2025)

### 2031 Landform



### 2036 Landform



BOGGABRI COAL MINE MODIFICATION

Visual Cross Section VP1 - Years 2031 and 2036



**FIGURE 8**

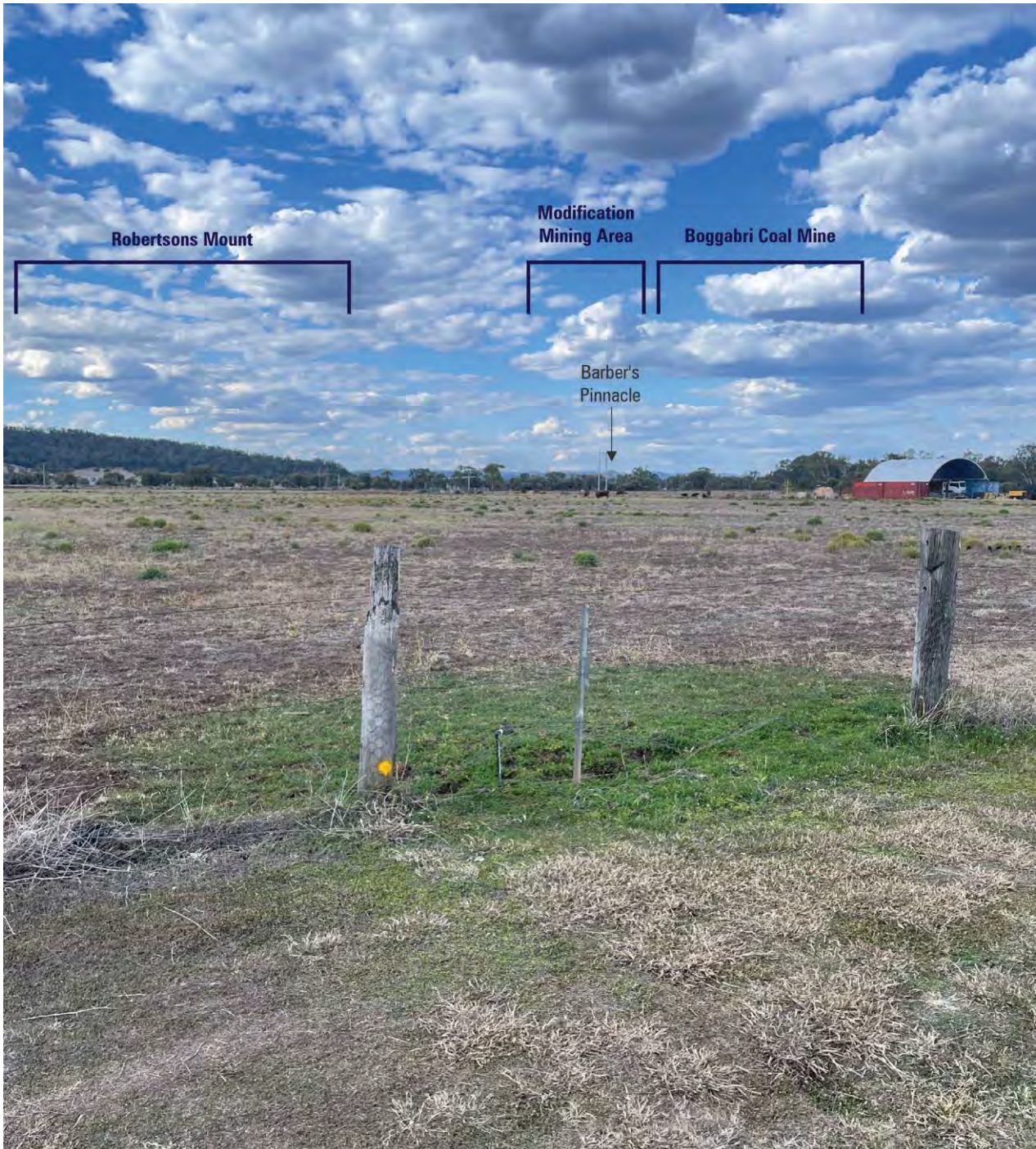
### 3.3.4.2 Boggabri Town

The north eastern corner of the Boggabri township will be generally screened by the surrounding topography including the distant Barber's Pinnacle, Merriown Mountain, the Leard State Forest and woodland vegetation alongside the Namoi River. Accordingly, views of BCM including the extension of mining operations toward the north west are unlikely to be visible from this location.

Given the distance of this location (approximately 12 km) from the Project Boundary, the views of the Leard State Forest / Willow Tree Range are obscured by foreground and middle ground trees, effectively rendering the Modification Mining Area out of view. Given that the Modification Mining Area is approximately 15 km from the Boggabri township, sensitivity to any views of the mining operation will continue to be low.

A view from Boston Street (VP2) is provided in Plate 4. Distance and foreground trees continue to screen views to the Willow Tree Range and BCM.

Plate 4 VP2 - Boston Street, Boggabri Town / South West Sector



### 3.3.4.3 Kamilaroi Highway

Distant views of the Leard State Forest and the Willow Tree Range will continue to be available from the Kamilaroi Highway alongside the Namoi River, to the north of the Boggabri township. Immediate views of the existing BCM operations including the BCM Rail Spur occur. However, the mining operations areas are generally screened by woodland vegetation alongside the Namoi River and the topography associated with Barbers Pinnacle and Merriown Mountain.

At a distance of over 10 km from the Project Boundary, the Kamilaroi Highway and the Boggabri Rest Area would continue to have a low sensitivity to the distant and generally screened views of the existing BCM operation and the Modification Mining Area. Given the perpendicular travel direction of the Kamilaroi Highway to the BCM, views are not directed toward the mining operations further indicating the low sensitivity of any views from this location.

A representative photograph of views from the Kamilaroi Highway (VP5) is shown in Plate 5. The views from this location will continue to be restricted by topographic elements including foreground vegetation on the Namoi River, Barber's Pinnacle, Merriown Mountain, associated ridges and the foothills adjacent to the Project Boundary.

Plate 5 VP5 - Kamlaroi Highway / South West Sector



#### 3.3.4.4 Local Roads

There have been no changes to the local road network in this sector since the 2010 VIA. The sector continues to support a number of local roads including Rangari Road, Therribri Road and Leard Forest Road (which has been closed at BCM).

BCM continues to be visible from parts of the Leard Forest Road within the Project Boundary, however it is not visible from this road at more distant locations due to roadside woodland vegetation cover.

Views from Rangari Road are previously discussed in Section 3.3.3.

### 3.3.5 West Sector

This sector remains entirely screened by the Willow Tree Range and elevated sections of the Leard State Forest. Accordingly, no impacts are anticipated. The West Sector is not considered further in this VIA.

## 3.4 VISUAL SENSITIVITY

Visual sensitivity is a measure of how critically a change to the existing landscape is viewed by people from different land use areas in the vicinity of a development. Visual sensitivity is a combination of the sensitivity of the land use and the visibility of BCM as a measure of distance.

Land uses that use the scenic amenity values of the surrounding landscape as part of a leisure experience and over extended viewing periods, generally have a higher visual sensitivity (e.g. residential, tourist and/or recreation areas).

Other factors affecting visual sensitivity of individual areas include:

- › Screening effects of existing topography, infrastructure or vegetation. For example, receivers whose views are screened from BCM by hills or trees will have a lower visual sensitivity than those with open views; and
- › Orientation to BCM. For example, areas with strong visual orientation towards BCM (i.e. those with areas such as the property entrance or client accommodation orientated towards it) will have a higher visual sensitivity than those orientated away from BCM.

### 3.4.1 Visual Impact

Assessing the visual impact of MOD 10 involves qualifying the change to the existing environment that BCM has with the addition of MOD 10. The magnitude of the impact will depend on the visual effect of BCM (how much it contrasts with the existing environment) and the visual sensitivity of any viewers.

The visual impact level of BCM is determined by considering together the visual sensitivity and visual effect. Table 3 Illustrates the interaction between the parameters of visual sensitivity and visual effect.

Table 3 Visual Impact Methodology

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

## 4. IMPACT ASSESSMENT

*This section considers each sector and describes the visual impact at representative locations as a result of the Modification in the contemporary environment surrounding BCM. It also provides an overall summary where impacts will change as a result of MOD 10.*

### 4.1 NORTH SECTOR

Residences and roads in this sector will continue to be screened from views by the Willow Tree Range and mining operations at MCCM. No material visual impacts are expected to be generated as a result of MOD 10 within this sector due to the progression of mining into the Modification Mining Area.

### 4.2 EAST SECTOR

There will be no material visual impacts from MOD 10 on residences in the eastern sector with views continuing to be screened by the Willow Tree Range.

### 4.3 WEST SECTOR

This sector will continue to be screened by the Willow Tree Range. Accordingly, no visual impacts on residences are expected for this sector.

### 4.4 SOUTH EAST SECTOR

#### 4.4.1 Residences

Views of BCM from the private residences in this sector are generally screened by mining landforms created **by the existing TCM and BCM southern OEA's. Proposed mining operations are also screened by topographic** and vegetation elements of the surrounding landscape. Given views towards the Modification Mining Area will be screened, low visual effects would be experienced.

The 2010 VIA stated that:

*"a high impact would only occur if a high visual effect is experienced due to excessive exposure of pre-rehabilitated OEA. It is considered that areas of the high-wall potentially exposed to view will be limited, small scale and fragmented. Such an impact would reduce to moderate and low following rehabilitation of the exposed OEA.*

*In all, any high to moderate impact would only occur in the first five years of the mine life as the constant maturing of tree cover on the outer slopes of the southern OEA reduce effects and impact levels to very low and insignificant."*

This VIA considers that this impact is no longer occurring considering the significant amount of the southern face of the OEA that has been rehabilitated, since the 2010 VIA. There may be some low impact views when vegetation clearing, and topsoil stripping works occur in the mine plan in 2031 as mining operations progress into the Modification Mining Area. However, these views will be generally shielded by the existing TCM and BCM landforms.

## 4.4.2 Local Roads

### 4.4.2.1 Rangari Road

The visual impact on Rangari Road (also known as Manilla Road) would remain consistent with what was predicted in the 2010 VIA, as follows:

*"The visual impact on Manilla Road would remain low reflecting moderate to low visual effects and a low visual sensitivity. This would continue to reduce to very low and become insignificant and barely perceivable when rehabilitation of the outer face of the OEA is completed."*

No visual impacts are expected along Rangari Road due to the mining landforms at TCM and the Southern OEA which restricts views towards the Modification Mining Area.

### 4.4.2.2 Goonbri Road

This road will continue to have exposure to the TCM landforms, the outer face of the OEA and the upper parts of the high wall. However visual effects will continue to be generally moderate to low. Consideration needs to be given to the TCM OEA currently in the early stages of rehabilitation that almost directly borders Goonbri Road creating a significantly larger visual impact from this location compared to the sufficiently aged vegetation on the southern face of the BCM OEA at a distance of 2.5 km. Visual impact levels will therefore continue to be low and will reduce to very low when rehabilitation is complete.

## 4.5 SOUTH WEST SECTOR

### 4.5.1 Residences

There are three private receivers located within approximately 7.5 km of Project Boundary (and within the BCM ZOA). It is anticipated that these residences would continue to have a moderate visual sensitivity if views of mining operations are available. However, fieldwork and aerial photography analysis has demonstrated that views towards the activities proposed by MOD 10 will continue to be generally screened (see Section 3.3.4).

Accordingly, the visual impact to residences would remain consistent with what was predicted in the 2010 VIA, as follows:

*"Given that visual effects are likely to be low to moderate if seen, low impacts would be experienced in this sector. If high visual effects do occur due to excessive exposure of pre-rehabilitated OEA, a high impact could occur until the OEA is rehabilitated."*

### 4.5.2 Boggabri Town

Although parts of BCM continue to be visible from the Boggabri township to the west of Barber's Pinnacle, foreground screening within the town by houses, buildings, street, trees and garden planting will continue to eliminate this view. Considering the mining operations within the Modification Mining Area will occur at elevations higher than approved mining operations and be in the same field of view, these changes will be almost imperceptible.

Further, outside the town the adjoining woodlands along the Namoi River will continue to screen views towards the Project Boundary and Modification Mining Area. Accordingly, the township will continue to have a low sensitivity with limited visual effect or impact.

### 4.5.3 Kamilaroi Highway

The greatest potential visual impact on the Kamilaroi Highway will continue to be experienced from a location approximately 3 km to the north of the township of Boggabri on the journey north for up to 5 km. Potential views of the Modification Mining Area may occur, however are unlikely given the topographic elements of Barber's Pinnacle, Merriown Mountain and other elevated sections of the Leard State Forest. Woodland vegetation alongside the Namoi River also provides good screening towards the BCM. Visual effects will continue to be limited at a distance of over 10 km and the visual sensitivity will continue to be low. The impact on views from the Kamilaroi Highway will therefore be low.

### 4.5.4 Therribri Road

Visibility of the Modification Mining Area will be screened completely by intervening topography.

### 4.5.5 Tourist Localities

With the exception of Boggabri township and the Kamilaroi Highway, there continues to be no significant tourist destinations in the primary visual catchment, with the possible exception of the roadside rest area on the highway below Mount Boggabri. The BCM operation is over 10 km from this location.

**As stated in the 2010 VIA** *"Visual effects of the OEA before rehabilitation will be small in area and will continue to create a moderate to low visual effect at this distance. Also given the distance, visual sensitivity would be low."*

Given that the Modification Mining Area will not result in any additional significant visual effects, visual impacts will continue to be low and would be further reduced and will become barely perceivable following rehabilitation.

## 4.6 NIGHT LIGHT

### 4.6.1 General

The 2010 VIA described the following lighting sources:

***"The visual effect of lighting surrounding the Project Boundary will vary. It will be influenced by the locality of operations on-site, the relative level at which the viewing location is situated and the presence of any off-site barriers such as topographic features and / or vegetation.***

*There are two types of lighting effects that could be experienced from the Project. The first effect is where the light source is directly visible, and will be experienced if there is a direct line of sight between a viewing location and the light source.*

*The second effect relates to the general night-glow (diffuse light) that results from light of sufficient strength being reflected into the atmosphere. This type of effect will create a strong local focal point and the effect will vary with distance and atmospheric conditions such as fog, low cloud and / or dust particles which all reflect light."*

Both of these lighting effects already exist in the locality of BCM, TCM and MCCM. MOD 10 will not exacerbate the predicted lighting conclusions from the 2010 VIA, albeit the continuation of impacts attributed to the additional four years of mining.

**Analysis of BCOP's complaint registers for the period 2019 until 2024 did not identify any complaints associated with visual and lighting impacts.**

## 4.6.2 Direct Light Effects

Direct light effects are generally restricted to vehicles and mine void lighting. Other operational lights at BCM are hooded and directed below the horizontal as required.

Generally, BCM truck and vehicle lighting will continue to be screened by topography, vegetation and by the OEA. Mining operations that progress into the Modification Mining Area will result in some distant direct lighting effects from mine vehicles and mobile lighting sets for a short period before the mine depth increases. During this period, lighting impacts are predicted to be moderate dropping to low once direct lighting can no longer be seen. However, the foreground topography and vegetation of the surrounding landscape are expected to generally screen the majority of these rare views of lighting. BCOPL will continue to monitor and manage lighting impacts in accordance with the provisions of SSD 09\_0182.

## 4.6.3 Diffuse Light Effects

BCM, TCM and MCCM already contribute diffuse light effects into the night sky. As stated in the 2010 VIA *"depending on the proximity of the viewing zone, this glow will not create a significant visual effect."*

The influence of surrounding mining operations and associated lighting activities will continue to reduce the visual impact of diffuse light associated with BCM.

No changes are expected for diffuse night lighting from the BCM operation.

## 4.6.4 Night Light Impact Summary

The visual effect of lighting associated with BCM is expected to remain generally consistent with the currently approved development.

The major mitigation elements against night light effects from BCM are topography, vegetation and distance to sensitive receivers.

## 4.7 SUMMARY

BCM (including MOD 10) will integrate with the existing landscape based on scale, position in the landscape and contrast. High visual integration with the existing landscape is achieved as rehabilitation is progressed at BCM.

The visual properties of MOD 10 interact with the proportion of the view that is occupied by a development to produce the level of visual effect. For any type of visual properties, the lower the proportion of the view that is occupied by BCM, the lower will be the level of visual effect.

The assessed visual impacts of BCM (including MOD 10) are summarised in Table 4.

Table 4 Summary of the Visual Impact of MOD 10

Viewing Point	Visual Sensitivity	Visual Effect	Visual Impact
VP1	Low	Moderate	Moderate to Low
VP2	Moderate	Low	Low
VP3	Low	Moderate	Moderate to Low
VP4	Low	Moderate	Moderate to Low
VP5	Low	Low	Low

Visibility of the existing BCM operation and the progression of mining into the Modification Mining Area from the North, East and West Sectors will be generally screened due to surrounding topography, vegetation and adjacent mining operations.

In the South East Sector, VP3 and VP4 are anticipated to continue to experience moderate to low impacts due to potential views of the emplacement of spoil during mining operations. However, these impacts are likely to reduce over the life of the mining operations as rehabilitation in these areas commence and establish to suitable maturity. Views of the Modification Mining Area are expected to be screened by the existing TCM OEAs and the southern OEA at BCM.

Impacts at VP4 were also predicted for private receivers in the 2010 VIA which stated:

*"a high impact would only occur if a high visual effect is experienced due to excessive exposure of pre-rehabilitated OEA. It is considered that areas of the high-wall potentially exposed to view will be limited, small scale and fragmented. Such an impact would reduce to moderate and low following rehabilitation of the exposed OEA."*

However, the closest private receiver to VP4 is now receiver 147 which is partially screened by the Willow Tree Range, with TCM in the foreground and BCM located behind TCM landforms and further north. Therefore, low impacts are expected as a result of MOD 10 at this location, reducing to none following rehabilitation activities and mine closure.

In the South West Sector, VP1 is anticipated to continue to experience moderate to low impacts from MOD 10. VP2 and VP5 are predicted to continue to experience low visual impacts.

As impacts from MOD 10 are likely to be screened by the existing rehabilitation and intervening distance, a reduction in visual effects should continue to occur at VP1 (representative of the south west sector) as predicted in the 2010 VIA, as follows:

*"If high visual effects do occur due to excessive exposure of pre-rehabilitated OEA, a high impact could occur until the OEA is rehabilitated."*

The rehabilitation of mining landforms will continue to be undertaken generally in accordance with the MOD 10 staged mine plans. The southern OEA will be progressively rehabilitated in a manner consistent with achieving the Final Landform Design. The ongoing rehabilitation practices undertaken at BCM reduce the visual impact to surrounding receivers from the existing operation. Impacts from VP1 are not expected to differ from those previously identified in the 2010 VIA due to the surrounding topography and vegetation screening these areas.

## 5. MITIGATION & MANAGEMENT

*This section describes proposed mitigation and management measures resulting from the Modification impacts.*

As MOD 10 will not result in any additional material impact on the surrounding visual landscape at any private receiver, no additional mitigation or management measures beyond that outlined in the BCM EA and SSD 09\_0182 are proposed.

BCOPL will continue to manage visual and lighting impacts in accordance with Conditions 65 and 66 of SSD 09\_0182.

## 6. REFERENCES

- › Halcrow (2011). *Tarrawonga Coal Project Road Transport Assessment*
- › Hansen Bailey (2010). *Continuation of Boggabri Mine Environmental Assessment*
- › Hansen Bailey (2011). *Maules Creek Coal Mine Environmental Assessment*
- › Hansen Bailey (2021). *Boggabri Coal Mine Modification 8 Visual Impact Assessment*
- › Integral (2010a). *Continuation of Boggabri Coal Mine Visual Impact Assessment*
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- › NSW Government (2024). *Maules Creek Mine Complex Annual Rehabilitation Report.*
- › Resource Strategies (2011). *Tarrawonga Coal Project Environmental Assessment*
- › Urbis (2011). *Tarrawonga Coal Project Visual Assessment*
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- › Whitehaven Coal (2022). *Maules Creek Coal Mine Biodiversity Offset and Roma Bore Electricity Transmission Line Modification Report.*
- › Whitehaven Coal (2023). *Maules Creek Coal Mine 2023 Environmental Monitoring Reports.*
- › Whitehaven Coal (2024). *Maules Creek Coal Mine 2023 Annual Review.*

## 7. ABBREVIATIONS

Abbreviation	Meaning
AHD	Australian Height Datum
BCM	Boggabri Coal Mine
BCOPL	Boggabri Coal Operations Pty Ltd
BTM Complex	Boggabri-Tarrawonga-Maules Creek Complex
EA	Continuation of Boggabri Coal Mine Environmental Assessment 2010
2010 VIA	2010 Visual Impact Assessment
ha	Hectare
IA	Idemitsu Australia Pty Ltd
ID	Identification
JBA	James Bailey and Associates (now forms part of Xenith)
km	Kilometres
m	metres
MCCM	Maules Creek Coal Mine
Maules Creek EA	Maules Creek Mine Environmental Assessment 2011
The Modification	Boggabri Coal Mine Modification
MOD 8	Modification 8
Mt	Million tonnes
Mtpa	Million tonnes per annum
OEA	Overburden Emplacement Area
PA 10_0138	Project Approval 10_0138 in relation to the Maules Creek Coal Mine
PA 11_0047	Project Approval 11_0047 in relation to the Tarrawonga Coal Mine
PVC	Primary Visual Catchment
RL	Reduced Level
ROM	Run of Mine
SSD 09_0182	State Significant Development 09_0182 in relation to the Boggabri Coal Mine
TCM	Tarrawonga Coal Mine

Abbreviation	Meaning
Tarrawonga EA	Tarrawonga Coal Project Environmental Assessment 2011
VCU	Visual Character Unit
VP	Visual Point
ZOA	Zone of Acquisition



**xenith**

Hunter Valley  
The Singleton Centre  
Shops 4-6, Mezzanine Level  
157-159 John Street  
SINGLETON NSW 2330  
P 02 6536 2999

[xenith.com.au](http://xenith.com.au)