Whitehaven

2025

# Maules Creek Continuation Project

## Environmental Impact Statement

Appendix M
Landscape and Visual Impact Assessment

# TABLE OF CONTENTS

## LIST OF TABLES



## LIST OF FIGURES

## LIST OF PLATES



## LIST OF ATTACHMENTS

# 1 Introduction

## 1.1 Overview of Maules Creek Coal Mine

The Maules Creek Coal Mine (MCCM) is an open cut coal mine located approximately 17 kilometres (km) north-east of Boggabri, New South Wales (NSW) (Figure 1). MCCM is a joint venture between Aston Coal 2 Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 per cent [%]), ICRA MC Pty Ltd (a wholly owned subsidiary of Itochu Corporation) (15%) and J-Power Australia Pty Ltd (a wholly owned subsidiary of Electric Power Development Co. Ltd) (10%). MCCM is operated by Maules Creek Coal Pty Ltd (MCC).

Mining operations at MCCM are currently approved until 31 December 2034 with a coal extraction rate of up to 13 million tonnes per annum (Mtpa) in accordance with Project Approval (PA) 10_0138 (as modified). The existing MCCM comprises a single open cut pit, Northern Emplacement and Southern Emplacement areas, and Mine Infrastructure Area (MIA) (Figure 2). The MIA includes the Coal Handling and Preparation Plant (CHPP), run-of-mine (ROM) coal stockpiles, product coal stockpiles, train load-out infrastructure, workshops and administration buildings, hardstand and laydown areas, car parking, wash bays, and other associated infrastructure.

## 1.2 Maules Creek Continuation Project

MCC is seeking approval to continue open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044). Development Consent for the Maules Creek Continuation Project (the Project) is being sought under the State Significant provisions (i.e. Division 4.7) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). A detailed description of the Project is provided in Section 3 of the Environmental Impact Statement (EIS). The indicative Project general arrangement is provided on Figure 2.

Compared to the existing approved MCCM, the Project would include the following additional key activities:

- extension of open cut mining operations within Coal Lease (CL) 375, Mining Lease (ML) 1719 and Authorisation 346 to allow mining and processing of additional coal reserves until approximately 31 December 2044;
- extraction of approximately 117 million tonnes (Mt) of ROM coal (in addition to the approved MCCM coal resource of 240 Mt of ROM Coal);
- extraction of up to 14 Mtpa of ROM coal (i.e. a 1 Mtpa increase from the currently approved maximum ROM coal mining rate of 13 Mtpa);
- a revegetation program to establish approximately 2,300 hectares (ha) of native woodland in the vicinity of the MCCM (i.e. in addition to any offset and rehabilitation obligations);
- an increase in the operational workforce to an average of approximately 940 people, with a peak operational workforce of approximately 1,030 people;
- continued operation of the existing CHPP and train load-out and rail spur infrastructure, with upgrades as required;
- continued transport of up to 12.4 Mtpa of product coal via rail (i.e. no change to the currently approved maximum product coal transport rate);
- development of an integrated waste rock emplacement landform that incorporates geomorphic design principles;
- construction and use of a remote go-line, access and infrastructure area;
- continued operation and extension of the MCCM water management system;
- upgrades to workshops, electricity distribution and other ancillary infrastructure;
- continued placement of coal rejects within the mined-out void and the out-of-pit overburden emplacement areas;



LEGEND

- MCCM Mining Tenement Boundary (CL and ML)
- Mine Site
- Local Government Boundary
- State Forest
- State Conservation Area, Aboriginal Area
- Rail Line

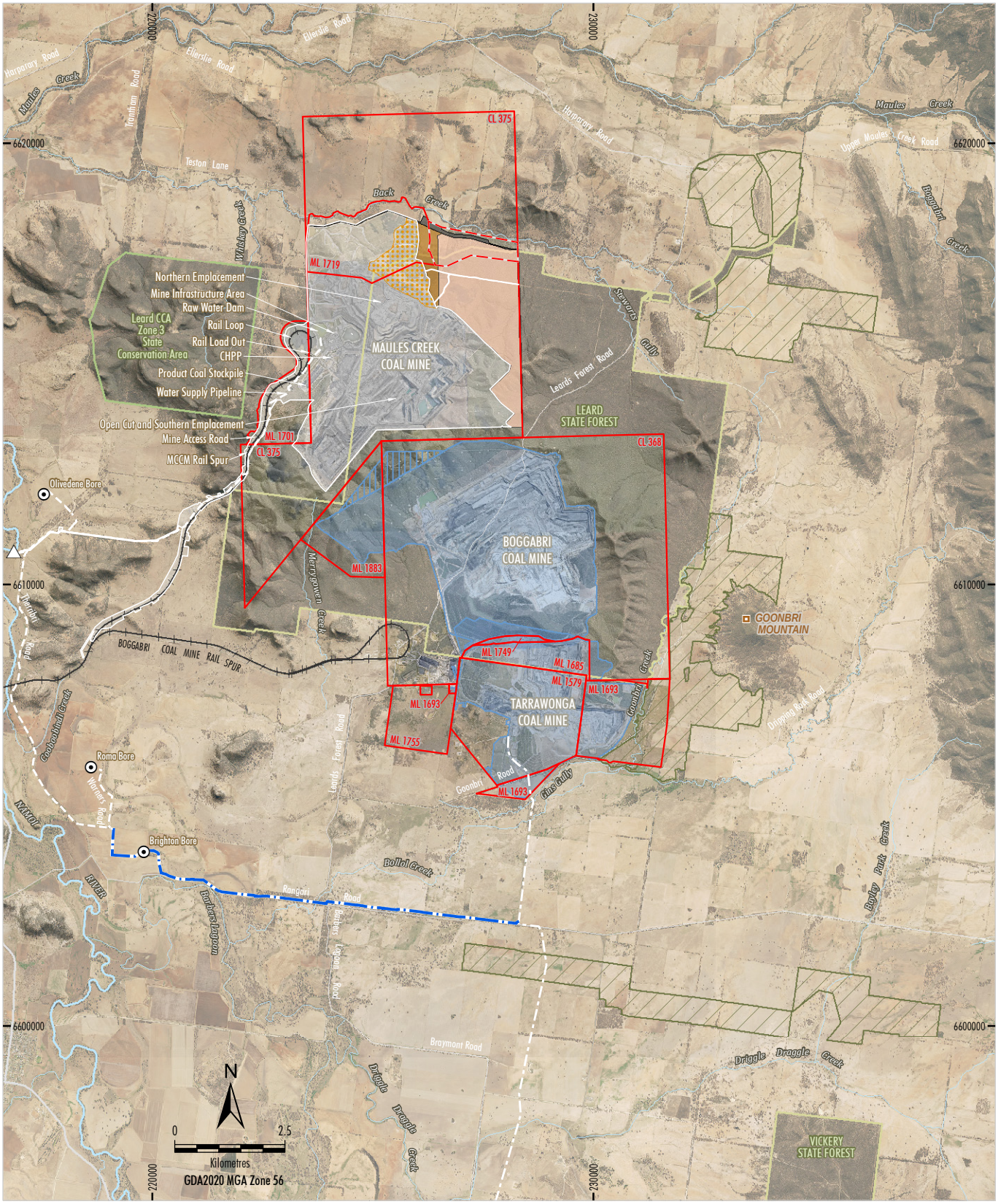
*Source: NSW Spatial Services (2023); Geoscience Australia (2011)*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Project Location**

**Figure 1**




WHC-23-95 EIS_App CL_202A

LEGEND

- Rail Line
- State Conservation Area
- State Forest
- Mining Tenement Boundary (ML and CL)
- Provisional Mining Lease Application Area
- Other Mining Operation *
- Other Mining Operation - Proposed *
- VCM to TCM Water Transfer Pipeline

Existing/Approved MCCM Development

- Approximate Extent of Existing/Approved Surface Development
- MCCM Water Supply Pipeline
- MCCM Groundwater Supply Bore
- MCCM Namoi River Pump Station

Maules Creek Continuation Project

- Indicative Go-line, Access and Infrastructure Area
- Indicative Open Cut Extension Area
- Indicative Overburden Emplacement Extension
- Existing Overburden Rehabilitation to be Disturbed
- Indicative Landscape Revegetation Zones#
- Indicative Water Transfer Pipeline (Proposed)

*Source: NSW Spatial Services (2024)*
*Orthophoto Mosaic: Whitehaven (2019-2024)*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

General Arrangement of the Project

** BCM boundary digitised from Figure 1 of the BCM Modification 10 Scoping Letter.*

*#Landscape Revegetation Zones shown on this figure are approximate extents only.*

**Figure 2**

- construction and operation of a water transfer pipeline between the MCCM water pipeline network and the approved Vickery Coal Mine (VCM) to Tarrawonga Coal Mine (TCM) pipeline;
- ongoing exploration activities; and
- other associated infrastructure, equipment and activities.

### 1.3 Assessment Context

This Landscape and Visual Impact Assessment forms part of the EIS which has been prepared to accompany a Development Application made for the Project in accordance with Part 4 of the EP&A Act. The Project Secretary's Environmental Assessment Requirements (SEARs) regarding the Landscape and Visual Assessment have been considered and implemented. This includes:

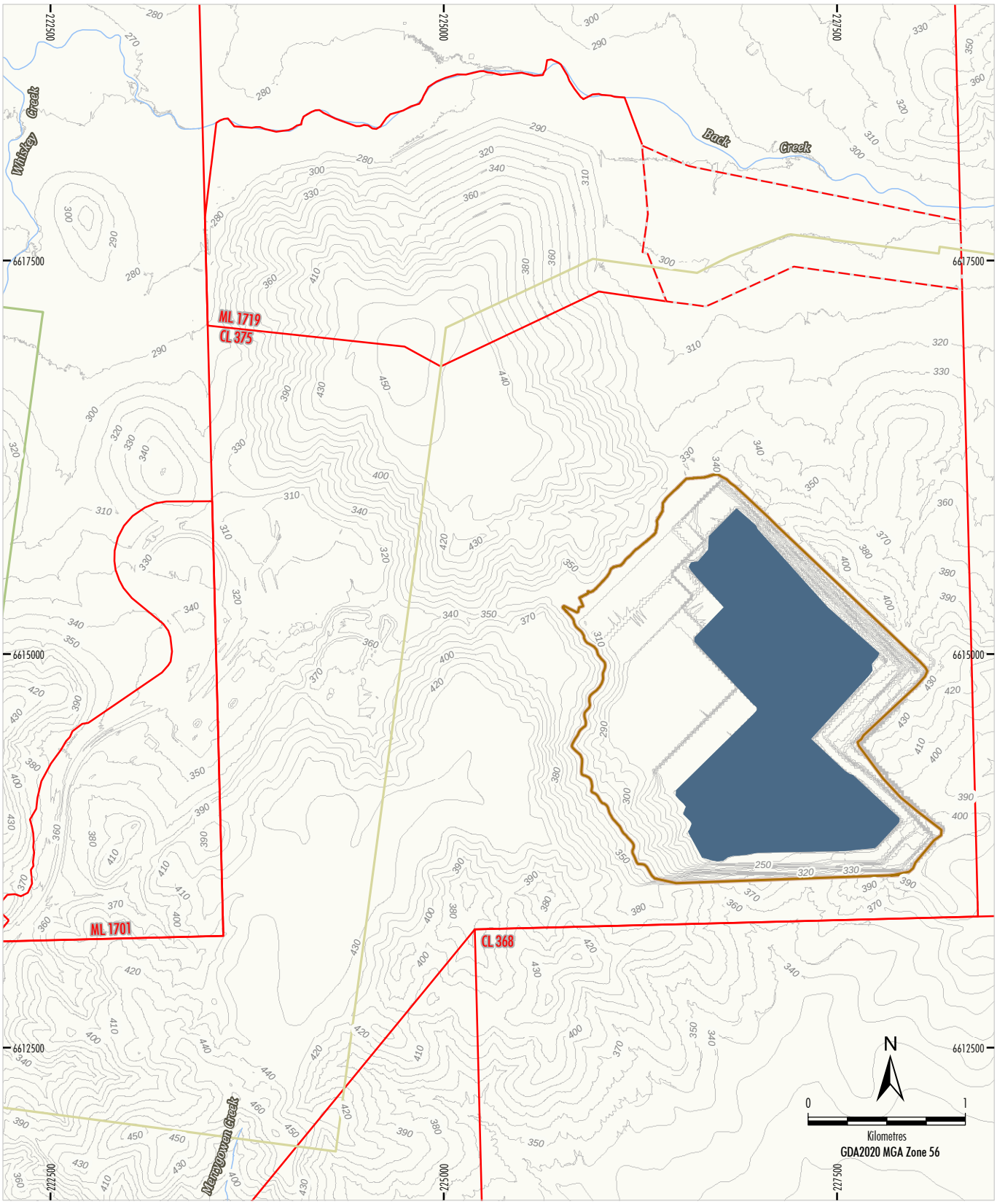
- An assessment of the likely visual impacts of the development from key public and private vantage points.
- An assessment of the lighting impacts of the development on local receivers and on the Siding Spring Observatory in accordance with the *Dark Sky Planning Guideline* (Department of Planning and Environment [DPE[1]], 2023), including measures to minimise lighting impacts.
- Consideration of *AS 4282-1997 Control of the obtrusive effects of outdoor lighting guidelines*.

In addition, the Landscape and Visual Assessment has considered the *National Light Pollution Guidelines for Wildlife* (Cth Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2023).

The Landscape and Visual Impact Assessment assesses the proposed mining landforms, Landscape Revegetation Zones and ancillary infrastructure associated with the Project. This assessment investigates the visual impact of interim operational activities during the life of the Project (Financial Year [FY] 2032) as well as the Final Rehabilitated Landform following the completion of rehabilitation. To assess the visual effects of the interim Project activities, FY2032 was selected on the basis that active overburden emplacement is occurring on the Southern Emplacement as it approaches its maximum height and the Northern Emplacement was conservatively assumed to be undergoing active overburden emplacement (however, some rehabilitation would likely be established at this time, refer Figure 7b). The Project landform has also been comparatively assessed with the existing/approved landform and land uses to determine potential additional effects. The approved MCCM final landform and land uses is shown on Figure 3, and a conceptual final landform and land use for the Project is shown on Figure 4.

These components are described in further detail in Section 4. It is anticipated from previous visual assessments that the open cut mining operations (e.g. elevated overburden emplacement areas) would have the most significant impact, the Landscape Revegetation Zones have potential to reduce visual impact due to screening, and the water transfer pipeline would have minimal impact. Considering these components are predicted to vary in visual impact, the visual impacts of the Project will be described separately; however, the overall visual impact will be assessed together.

[1] The DPE is now known as the Department of Planning, Housing and Infrastructure (DPHI).




*Source: NSW Spatial Services (2024)*

LEGEND

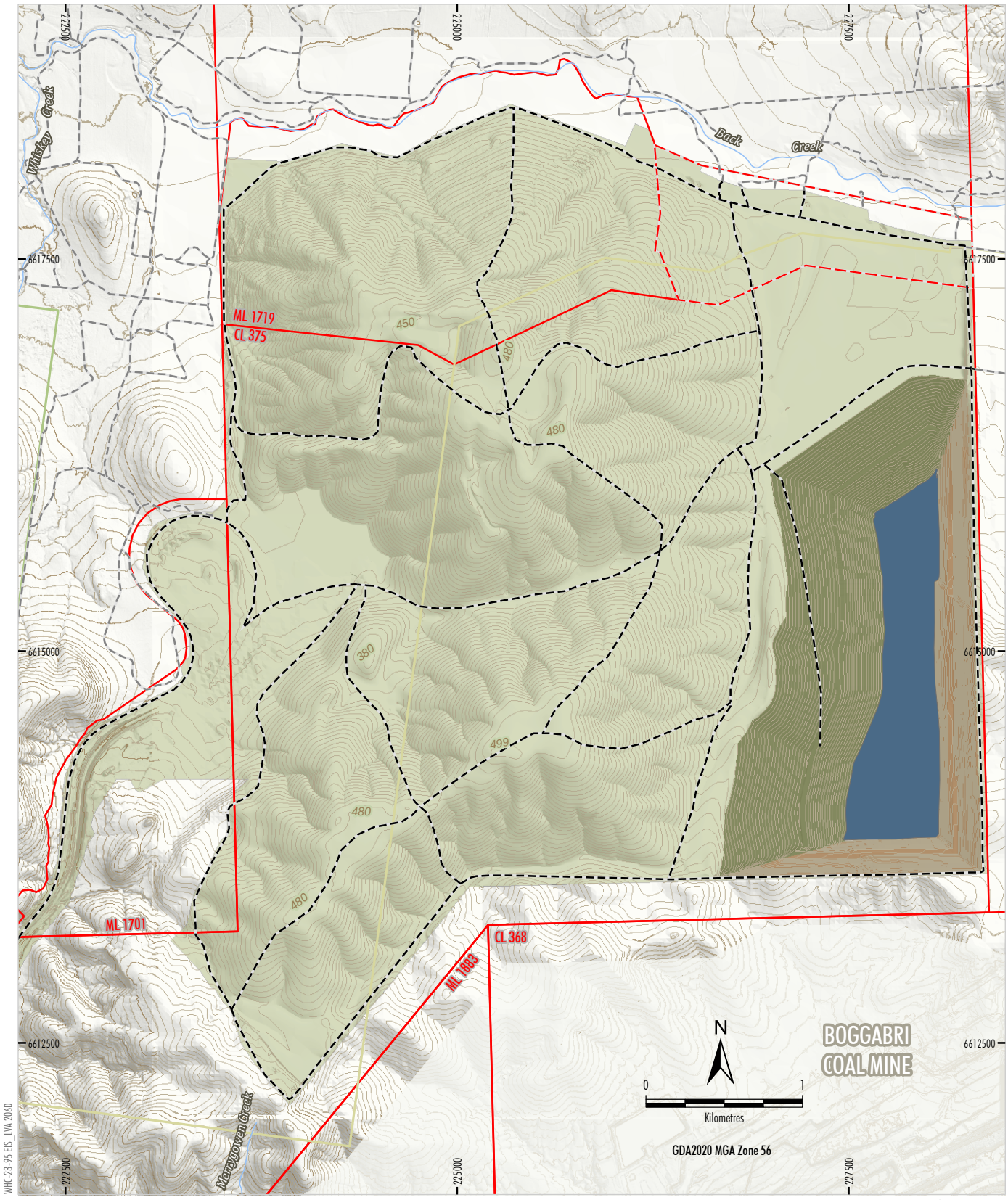
- State Forest
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Approximate Perimeter of Final Void
- Approximate Extent of Final Void Lake

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Approved Final Landform 2034**

**Figure 3**




WHC-23-95 EIS_LVA 206D

*Source: NSW Spatial Services (2024)*

LEGEND
- State Conservation Area
- State Forest
- Provisional Mining Lease Application Area
- Final Void Water Body
- Native Woodland
- Native Vegetation
- Highwall
- Existing Firebreaks
- Indicative Fire Trails/Access Tracks*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Conceptual Final Landform and Final Land Use**

** Fire trails/access tracks as indicative only and will be subject to further design as part of mine rehabilitation for closure*

**Figure 4**

# 2 Assessment Methodology

## 2.1 Introduction

This assessment considers how the proposed Project would potentially alter the existing landscape and/or alter existing approved visual impacts from the current MCCM.

This assessment comprises of two discrete components:

- Landscape character impact assessment (the assessment of potential impact on an area's cumulative built, natural and cultural character or sense of place).
- Visual impact assessment (the assessment of potential impacts on views).

In the absence of guidelines outlining a standardised methodology for the assessment of landscape and visual impacts for coal mining developments in NSW, this assessment has been prepared in consideration of the methodology detailed in the *Large-Scale Solar Energy Guideline: Technical Supplement for Landscape Character and Visual Impact Assessment* (the Technical Supplement) (Department of Planning, Housing and Infrastructure [DPHI], 2024). The Technical Supplement provides guidance for quantitative assessment techniques that can be applied to evaluate the potential visual impacts of the Project. It is noted that because of the modular nature of solar developments, the mitigation options suggested in the Technical Supplement may not be available or feasible for mining operations.

## 2.2 Previous Visual Assessments

The visual environment and landscape character impacts of the MCCM and surrounds has been previously described in the following:

- Maules Creek Coal Project Visual Impact Statement (Integral Landscape Architecture and Visual Planning [Integral], 2010).
- Maules Creek Coal Mine Landform Modification – Modification Report (Whitehaven, 2021) (Landform Modification).

The surrounds of the MCCM have not been significantly altered since the initial Landscape and Visual Assessment in 2010; therefore, previously identified landscape characteristics, visual impacts and recommended mitigation measures of the MCCM have been considered for this assessment. Features such as the neighbouring Boggabri Coal Mine (BCM) and TCM commenced operation prior to the construction of the MCCM and remain operational. The closest locality, Maules Creek, has experienced population changes since the commencement of the MCCM. The population declined from 182 in 2006 (Australian Bureau of Statistics [ABS], 2006) to a population of 87 in 2021 (ABS, 2021). This change is likely to result in lower visual impacts due to less visual sensitivity which is discussed further in section 2.4 and 6.

This assessment considers the findings of these previous assessments and implements quantitative assessment methodology from contemporary guidelines (i.e. the Technical Supplement) as a means to assess the potential landscape and visual impacts of the Project.

## 2.3 Landscape character Assessment

The landscape character assessment determines how the Project would affect the area's overall character and sense of place taking into consideration the broader societal values of the landscape. This is conducted through investigating the elements that form the landscape, aesthetic and perceptual aspects and distinctive character (DPHI, 2024).

The Technical Supplement (DPHI, 2024) identifies key tasks to be undertaken in a landscape character assessment which are summarised below.

### 2.3.1 BASELINE ANALYSIS

The baseline analysis should identify and describe (DPHI, 2024):

- the elements that make up the landscape in the study area, including:
  - physical influences (such as geology, soils, landform, natural drainage and water bodies);
  - ecological characteristics and land cover of an area (such as whether it is forested, wetland, scrub, grass etc.) and the quality and type of vegetation cover;
  - the influence of human activity, including land use and management and the character of any settlements and buildings;
  - key landscape features or attributes of the landscape associated with high visual interest or quality that stand out visually in the landscape, including natural features (such as a distinctive mountain peak or hilltop), cultural or agricultural features;
- the aesthetic and perceptual aspects of the landscape, particularly emphasising those that are key characteristics contributing to the distinctive character of the landscape (such as its scale, complexity, openness, tranquillity, or wildness);
- aspects of the landscape that have important Aboriginal cultural heritage value (with the exception of artefacts and intangible values that would be assessed in detail as part of an Aboriginal Cultural Heritage Assessment [ACHA]), including why they are valuable to the community;
- the overall character of the landscape in the study area, including any distinctive landscape character types or areas that can be identified (see further guidance below);
- the condition of the landscape, including the condition of elements or features such as buildings or vegetation;
- the planning designations of an area relating to landscape character, including sensitive land use designations, zonings and heritage listings; and
- the location of any existing operational or approved large-scale energy developments within a regional and local context, including projects which may have the potential to create direct or indirect cumulative impacts with the project.

*Identify Landscape Character Zones*

The Technical Supplement specifies that when a landscape has different qualities, the study area must be divided into various character zones. These Landscape Character Zones (LCZ) should divide the landscape using common distinguishing visual characteristics such as landforms and major land cover features (i.e. a combination of vegetation, water bodies and landforms) from which key landscape features can be identified (DPHI, 2024).

*Assess the Landscape Character Impact*

The impact of the Project on each LCZ is determined through an evaluation of the sensitivity of the landscape and the magnitude of the proposal's specific impacts (DPHI, 2024).

The sensitivity and magnitude are to be assigned a rating of low, moderate or high that will determine the overall landscape character impact to the landscape character on any given zone. The sensitivity of the landscape character type should be rated based on the inherent capability of the area to absorb changes from the project.

The following matters should be considered when determining a project's magnitude (DPHI, 2024):

- size and scale including:
  - the extent of existing landscape elements that may be lost and the contribution of that element to the character of the landscape;
  - the extent to which the project becomes a minor or major element in the landscape and its dominance in the visual catchment;
  - the extent to which the project changes the key characteristics of the landscape, which are critical to its distinctive character;
- geographical area – the area of the landscape over which the effects will be experienced, having regard to the nature and scale of the project's effects. This could vary from the immediate setting of the site to larger scales where the project may influence several landscape characters zones; and
- duration and reversibility of the effects on the landscape.

As the Technical Supplement does not provide a method for assessing the overall landscape character impact, this assessment has adopted the matrix provided in Table 1 to form conclusions regarding the landscape character impacts. This matrix has been adapted from the visual impact matrix provided in the Technical Supplement using the description of the landscape character assessment (DPHI, 2024).

**Table 1**
**Landscape Character Impact Matrix**

| | High Landscape Sensitivity | Moderate Landscape Sensitivity | Low Landscape Sensitivity | Very Low Sensitivity |
|---|---|---|---|---|
| **Very High Magnitude** | High | High | Moderate | Moderate |
| **High Magnitude** | High | Moderate | Moderate | Low |
| **Moderate Magnitude** | Moderate | Moderate | Low | Low |
| **Low Magnitude** | Moderate | Low | Low | Very Low |
| **Very Low Magnitude** | Low | Low | Very Low | Very Low |

## 2.4 Visual Impact Assessment

The Technical Supplement provides that applicants must conduct a visual impact assessment for all public viewpoints and private receivers according to the process illustrated in Figure 5. The Technical Supplement describes three levels of assessments which should be undertaken proportionate to the likely impacts of the development (DPHI, 2024). These are defined below:

- Simple Assessment – conduct a basic assessment using worst-case assumptions about the likely magnitude and visual sensitivity. Proceed to undertake an intermediate assessment if impacts could be moderate or higher.
- Intermediate Assessment – produce wireframes to more accurately determine the magnitude rating. Proceed to undertake a detailed assessment if impacts continue to be moderate or higher.
- Detailed Assessment – prepare photomontages and undertake the field visits to more accurately assess scenic quality and determine the effectiveness of existing or proposed screening in mitigating potential impacts.

A detailed assessment has been undertaken to assess conservatively the visual impacts of the Project. This is explained in further detail in Section 2.4.2 below.

### 2.4.1 VISUAL MAGNITUDE

The visual magnitude of a project is its apparent size within a viewshed. It is a key factor in determining the overall visual impact. The visual magnitude is determined by splitting a view into a grid comprising cells 1 degree (°) high and 10° wide and counting the number of cells a project would occupy (DPHI, 2024). The Technical Supplement provides a magnitude grid tool with these dimensions as a transparent grid to overlay proportionately to a view and calculate the occupancy of cells.

**Table 2**
**Visual Magnitude Thresholds**

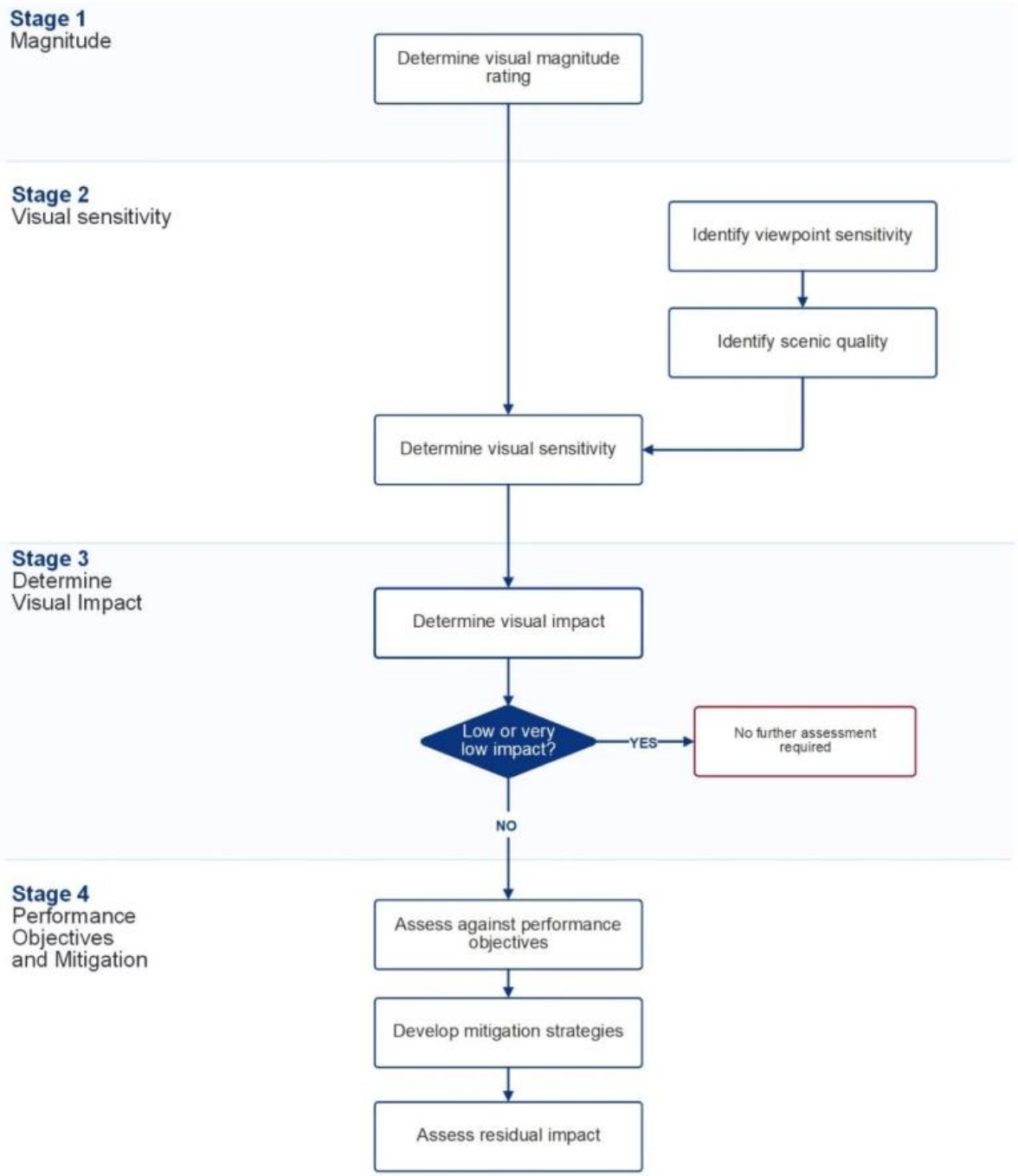
| Number of Occupied Cells | Visual Magnitude Rating |
|---|---|
| 1 to 7 | Very Low |
| 8 to 14 | Low |
| 15 to 25 | Moderate |
| 26 to 36 | High |
| More than 37 | Very High |

*Source: (DPHI, 2024)*

As existing viewpoints and photographic extents from previous visual assessments have been adopted, the Technical Supplement methodology has been modified as follows:

- Existing panoramic viewpoints have been adopted which do not necessarily include a 180° horizontal view.
- The panoramic photos were captured using a 20 millimetre (mm) focal length; therefore, to abide by the 50 mm lens requirement, the existing image was cropped vertically from 55° to 27° to mimic the view captured by a 50 mm lens.
- To be conservative, a cell has been considered “occupied” if the incremental extent of the Project enters a cell[2].

[2] The Technical Supplement uses a 25% threshold to identify an occupied cell. However, the 25% threshold has conservatively not been applied for this assessment.




*Source: (DPHI, 2024)*

**Figure 5 Visual Impact Assessment Process**

### 2.4.2 VISUAL SENSITIVITY

Visual sensitivity refers to the quality of the existing view and how sensitive the view is to the proposed change. As discussed in the Technical Supplement, visual sensitivity is determined by classifying the sensitivity of each viewpoint and categorising the scenic quality of the area in view (Table 6). These two components are described below.

Viewpoint sensitivity relates to the relative importance of viewpoints and the value that the community or visitors may place on landscapes viewed from public use areas, public travel pathways and private viewpoints (i.e. dwellings). Views from dwellings are categorised based on their importance (i.e. primary of secondary views as described in Table 3). Viewpoint sensitivity is classified into one of four ratings (very low, low, moderate and high). A higher rating is associated with factors such as higher volumes of traffic, individuals, and the heritage listings. The viewpoint sensitivity classifications alongside examples are provided in Table 4.

Scenic quality refers to the holistic and relative scenic, cultural or aesthetic value of a landscape within the viewshed based on the presence or absence of key landscape features associated with community perceptions of very low, low, moderate or high scenic quality (DPHI, 2024). The scenic quality classification criteria with relevant examples are provided in Table 5.

Once the viewpoint sensitivity and scenic quality has been determined, these ratings are combined to determine the overall visual sensitivity of each viewpoint using the matrix in Table 6.

### 2.4.3 DETERMINATION OF VISUAL IMPACT

The overall visual impact rating of each viewpoint must be determined for each assessed viewpoint by combining the visual magnitude and visual sensitivity ratings provided in Table 7.

**Table 3**
**Primary and Secondary Viewpoints from Rural Dwellings**

| Primary Viewpoint | Secondary Viewpoint |
|---|---|
| Principal/frequented living spaces (for example, living rooms, kitchens, dining areas) | Less frequented living and service areas (e.g. bedrooms, laundries, bathrooms, garages, studies) |
| Front and rear views from a rural dwelling, particularly from any porch, balcony, verandah, entertainment area, adjacent garden, deck or patio | Side views from a dwelling |

*Source: (DPHI, 2024)*

**Table 4**
**Viewpoint Sensitivity Levels and Examples**

| Viewpoint Type | Very Low Viewpoint Sensitivity | Low Viewpoint Sensitivity | Moderate Viewpoint Sensitivity | High Viewpoint Sensitivity |
|---|---|---|---|---|
| **Private Receiver** | Private recreation areas and sporting fields (land zones RE2). | Secondary view from dwelling rural area (zoned RU1, RU2, RU3, RU4 and RU6), large lot residential areas (zones R5) and environmental or conservation areas (zoned C2, C3 and C4). | Primary view from dwellings in rural areas (zones RU1, RU2, RU3, RU4 and RU6), large lot residential areas (zoned R5) and environmental conservation areas (zones C2, C3 and C4).<br>Tourist and visitor accommodation (bed-and-breakfasts, motels and hotels) and places of worship. | Dwellings in residential and rural villages (zoned R1, R2, R3, R4 and RU5).<br>Historical rural homesteads/residences on the national, state or local heritage list. |
| **Public Viewpoint** | State highways, freeways and classified main roads.<br>Local sealed and unsealed roads. | Cemeteries, memorial parks.<br>Tourist roads and scenic drives.<br>Significant entry ways to regional towns and cities.<br>Walking tracks and navigable waterways. | Tourist uses in tourist areas (zones SP3).<br>Publicly accessible green and open spaces, including picnic areas, parks, public recreation areas and lookouts.<br>Town centres and central business districts. | N/A |

*Source: (DPHI, 2024)*

**Table 5**
**Scenic Quality Levels and Frame of Reference**

| Viewpoint Type | Very Low Scenic Quality | Low Scenic Quality | Moderate Scenic Quality | High Scenic Quality |
|---|---|---|---|---|
| Landform | Large expanses of flat or gently undulating terrain.<br>Indistinct, dissected or broken landforms that provide little illusion of spatial definition or landmarks with which to orient. | Mostly flat or gently undulating terrain with isolated areas of undulating topography. | Steep, hilly and undulating ranges that are not visually dominant.<br>Broad shallow valleys.<br>Moderately deep gorges or moderately steep valley walls.<br>Minor rock outcrops. | Isolated peaks, steep rocky ridges, cones or escarpments with distinctive form and/or colour contrast that become focal points.<br>Large areas of distinctive rock outcrops or boulders.<br>Well-defined, steep sided valley gorges. |
| Vegetation | Extensively cleared and cropped areas with very limited variation in colour and texture.<br>Pastoral areas, human created paddocks, pastures or grassland and associated buildings typical of grazing lands. | Predominantly cleared and cropped areas with small areas of variation in colour and texture.<br>Most pastures or grasslands with small blocks of distinct native vegetation. | Predominantly open forest or woodland combined with some natural openings in patterns that offer some visual relief.<br>Vegetative stands that exhibit a range of size, form, colour, texture and spacing including human influenced vegetation such as vineyards, and orchards. | Strongly defined patterns with combinations of native forest, naturally appearing openings, streamside vegetation and/or scattered exotics.<br>Distinctive stands of vegetation that may create unusual forms, colours or textures in comparison to surrounding vegetation. |
| Waterbodies | Absence of natural waterbody.<br>Farm dams, irrigation canals or stormwater infrastructure. | Minor water forms, such as creeks and streams. | Intermittent streams, lakes, rivers, swamps and reservoirs. | Visually prominent lakes, reservoirs, rivers, streams, wetlands and swamps.<br>Presence of harbour, inlet, bay or open ocean. |
| Social and Cultural | Places of worship, cemeteries/memorial parks, private open spaces. | Places of worship, cemeteries, memorial parks, private open spaces.<br>Local heritage sites. | Local or state heritage sites.<br>Distinguishable entry ways to a regional city as identified in the Transport and Infrastructure SEPP. | Culturally important sites, wilderness, world heritage areas, and protected areas.<br>World, national and state heritage sites. |
| Human Presence | Dominating presence of infrastructure, human settlements, highly modified landscapes and higher density populations such as regional cities, industrial areas, agricultural transport or electricity infrastructure. | Highly modified landscaped with visible infrastructure, such as transmission lines and railway corridors. | Dispersed yet evident presence of human settlement such as villages, small towns, isolated pockets of production and industry, lower scale and trafficked transport infrastructure. | Natural, undisturbed landscape.<br>Minimal evidence of human presence and production. |

*Source: (DPHI, 2024)*

**Table 6**
**Visual Sensitivity Matrix**

| Viewpoint Sensitivity Level | High Scenic Quality | Moderate Scenic Quality | Low Scenic Quality | Very Low Scenic Quality |
|---|---|---|---|---|
| **High Viewpoint Sensitivity** | High | High | Moderate | Low |
| **Moderate Viewpoint Sensitivity** | High | Moderate | Moderate | Low |
| **Low Viewpoint Sensitivity** | Moderate | Low | Low | Very Low |
| **Very Low Viewpoint Sensitivity** | Very Low | Very Low | Very Low | Very Low |

*Source: (DPHI, 2024)*

**Table 7**
**Visual Impact Matrix**

| Magnitude | High Visual Sensitivity | Moderate Visual Sensitivity | Low Visual Sensitivity | Very Low Visual Sensitivity |
|---|---|---|---|---|
| **Very High Magnitude** | High | High | Moderate | Moderate |
| **High Magnitude** | High | Moderate | Moderate | Low |
| **Moderate Magnitude** | Moderate | Moderate | Low | Low |
| **Low Magnitude** | Moderate | Low | Low | Very Low |
| **Very Low Magnitude** | Low | Low | Very Low | Very Low |

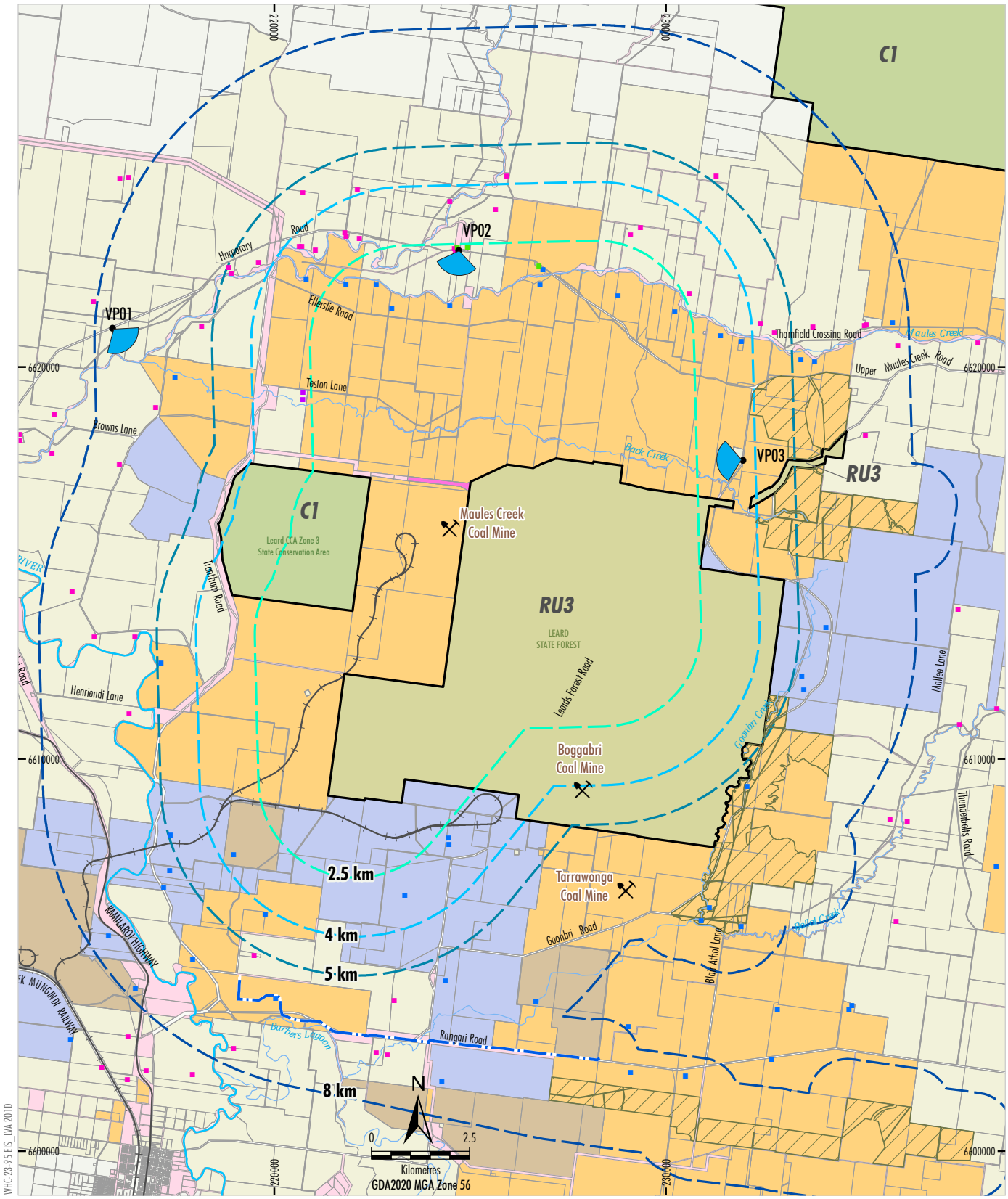
*Source: (DPHI, 2024)*

### 2.4.4 PRELIMINARY ASSESSMENT

A preliminary assessment was undertaken as advised by the previous version (DPE, 2022), prior to the updated Technical Supplement (DPHI, 2024), to scope potential viewpoints to assess in the detailed viewpoint assessment.

A desktop review was conducted in 2023 to determine potential viewpoints of the Project. This involved the development of a video visual simulation using available topography data along a 30 km route to the north of the Project. This was conducted along Harparary Road and included viewpoints previously used by Integral (2010) and the Landform Modification (Whitehaven, 2021) visual impact assessments. The speed of the video resembled a vehicle moving at the respective speed limit as a representation of how the Project would be viewed along the road. Several locations briefly revealed views of the Project; however, these views were minimal. Additional factors such as low traffic in the area and the short duration of exposure to the visual impact make these viewpoints insufficient for a detailed viewpoint assessment. Therefore, the preliminary assessment did not identify any new additional viewpoints to be investigated.

As discussed in Integral (2010) the visibility of the existing MCCM is generally restricted to the northern areas. A combination of the topography of the region, the Leard State Forest, Leard State Conservation Area and riparian vegetation along creeks provides significant screening of the MCCM for potential viewpoints, particularly in the west and east. Integral (2010) identified potential views of the existing MCCM from elevated terrain near the Kamilaroi Highway, however, the area does not contain any visual receivers and are located over 10 km from the MCCM. As identified in the desktop review, views can be seen from local roads; however, the majority of these views are screened by adjoining roadside and creek side vegetation. Further, due to the BCM and TCM located south of the Project, there are no assessable viewpoints located to the south. Since 2010, Whitehaven has purchased a number of properties surrounding the MCCM (Figure 6).




LEGEND

- Indicative Water Transfer Pipeline (Proposed)
- Crown Land
- Whitehaven
- Whitehaven/idemitsu
- Idemitsu
- RCLALC
- Relevant Landholder
- Landholder Not Identified
- Railway
- Indicative Landscape Revegetation Zones#
- Leard CCA Zone 3 Conservation Area (C1)
- Leard State Forest ( RU3)

- Mine Owned
- Privately Owned
- Privately Owned – Mitigation/Acquisition on Request
- Privately Owned – School/Community

Assessment Areas

- Transport Visual Impact Assessment Area (2.5 km)
- General Visual Impact Assessment Area (4 km)
- Recommended Landscape Character Assessment Area (5 km)
- Landscape Character Assessment Area ^ (8 km)
- Visual Simulation Location

*Source: NSW Spatial Services (2024); NSW Land Registry Services (2023); Whitehaven Coal (2024); Stewart Surveys (2023)*

** Remaining surrounding area is Narrabri LEP RU1 Land Zoning*

*# Landscape Revegetation Zones shown on this figure are approximate extents only*

*^ A 1 km buffer has been added around the water transfer pipeline and Landscape Revegetation Zones*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

Land Ownership and Assessment Areas

**Figure 6**

The existing environment which contributes to the potential location of viewpoints is discussed further in Section 3.2.

### 2.4.5 DETAILED VIEWPOINT ASSESSMENT

The Technical Supplement outlines the following steps as refinements from an intermediate assessment. Considering an intermediate assessment was not undertaken, these steps were conducted to determine the visual impact rather than make refinements. Thus, the wording of the steps below have been modified to accommodate for the absence of an intermediate assessment.

Detailed assessment provides an opportunity to refine the magnitude and visual sensitivity inputs using panoramic photomontages and field visits. Panoramic photomontages provide a highly effective means of assisting stakeholders and authorities in appreciating the scale and scope of a proposed project's visual presence in context with the landform, land uses and existing vegetation (DPHI, 2024).

#### *Visual Magnitude*

The steps outlined in the Technical Supplement to determine the visual magnitude are as follows (DPHI, 2024):

1. Capture a panoramic photograph from the viewpoint that comprises 180 degrees (°) of horizontal field of view.
2. Superimpose a 3D-rendered model and the magnitude grid tool on the panoramic photograph.
3. Verify whether vegetation or built elements would obstruct any elements of the Project.
4. Calculate the magnitude rating based on the number of occupied cells and the thresholds in Table 2.

Existing screening should be considered effective, and a cell unoccupied if:

- existing vegetation would substantially screen elements of the project such that any residual view would be very intermittent.
- any existing screening would effectively mitigate the view of the project such that moving the viewpoint a few metres in any direction would not significantly change the amount of screening.
- the vegetation is not temporary, seasonal or identified as a common weed.

#### *Performance Objectives and Impact Mitigation*

The Technical Supplement outlines performance objectives that are applicable to large-scale solar development, including avoidance, mitigation, re-siting and re-sizing of solar components. It is noted some measures that are highly applicable to a modular solar development may be less applicable in a mining context.

The visual impact mitigation measures to be implemented for the Project are described in Section 7.

# 3 Existing Environment

## 3.1 Introduction

This section describes the existing landscape character and visual environment associated with the Project. This is necessary to establish a baseline upon which to assess the Project's landscape and visual impacts.

As described in Section 2.2, the existing environmental setting of the MCCM has been assessed previously. This assessment considers the findings of previous assessments, including approved and existing visual impacts when establishing a baseline environment to assess the potential incremental impacts of the Project.

## 3.2 Existing Landscape and Visual Setting

The existing landscape and visual setting of the Project area is predominantly occupied by surrounding agricultural enterprises, existing mine operations, small rural dwellings, the Leard State Forest and conservation areas. The majority of the Project area is located within the Leard State Forest (Figure 2).

The existing MCCM is within a mining precinct that includes the BCM and the TCM (referred to as the BTM Complex). The vicinity of the Project has been subject to extensive mineral exploration drilling since the 1970s; therefore, features such as drill pads and narrow access tracks are dispersed throughout the Leard State Forest (Whincop Archaeology Pty Ltd [Whincop], 2025).

Two small residential areas are located within the landscape and visual setting consisting of the village of Maules Creek to the north and Harparary to the west (Square Peg Social Performance, 2025).

The Project area is located within the Namoi River catchment, a major river system located between the tablelands of the Nandewar Range and broad plains of the Gunnedah Basin. Ephemeral creeks and drainage lines meander within the Project area (Whincop, 2025). Back Creek is located approximately 200 m north of the MCCM and Maules Creek is located approximately 4 km north of the MCCM.

The area is characterised by several landform units namely rolling hills and gently undulating plains which encompass a large proportion of the area. Several moderately sloped landforms can be seen within localised sections of the plains, particularly in areas of Leard State Forest, which are associated with slightly higher landforms of the Maules Creek Formation geological unit (Whincop, 2025).

The north of the Project area is dominated by open grasslands on undulating plains due to the clearance of native vegetation associated with agricultural activities. Dryland cropping and cattle grazing is also present in the north (Whincop, 2025). Surrounding ridges are located south of the Project beyond Rangari road, and a mountainous range towards the north-east, associated with Mount Kaputar. The area west of the MCCM consists of plains and gentle hills (Integral, 2010).

It is noted that a number of biodiversity offset areas have been established around the BTM Complex (Figure 2). The objective of the offset areas is to establish and preserve woodland in perpetuity. In some cases, wooded areas within the offset areas remain relatively sparse, however, are expected to revegetate over the life of the Project.

### 3.3 Assessment Area

In accordance with the Technical Supplement, different components of this assessment are required to be informed by different study areas. The Technical Supplement provides proposed study area distance for the landscape character assessment as outlined below and shown on Figure 6:

- Landscape Character Assessment Area considers features within a 5 km radius of the Project.
- General Visual Impact Assessment Area considers public and private viewpoints within a 4 km radius of the Project.
- Transport Visual Impact Assessment Area considers viewpoints from public roads and rail lines within 2.5 km of the Project.

For this assessment, the radius of the Landscape Character Assessment Area has been extended to an 8 km radius from the Project mining operations components to include the previously assessed viewpoints by Integral (2010) and the Landform Modification (Whitehaven, 2021). A 1 km boundary from the water transfer pipeline and Landscape Revegetation Zones was also used for the Landscape Character Assessment Area due to the significantly lower visual impact of these Project components.

### 3.4 Land Ownership

Land ownership surrounding the Project predominantly consists of existing mining operations and agricultural activities (Figure 6). The Project is proposed partly within the Leard State Forest owned by Forestry Corporation of NSW. Located south of the Project area are BCM operated by Idemitsu Australia Pty Ltd (Idemitsu), and land managed by Whitehaven.

The freehold land surrounding the existing MCCM and Leard State Forest is largely managed by Whitehaven and Idemitsu with some freehold land leased for agricultural activities. The Red Chief Local Aboriginal Land Council (RLALC) owns a parcel of land within the existing MCCM development footprint.

The majority of private landholdings are dispersed several kilometres north of the Project area within the village of Maules Creek. Additionally, there are several private landholdings to the west in Harparary. A small number of private landholdings are located within the vicinity of the Project and discussed further in Section 5.1.

# 4 The Project

The Project would include the following key changes to the approved MCCM:

- the continuation of open cut operations to allow mining of additional coal reserves for a further 10 years (i.e. until 31 December 2044);
- a revegetation program to establish approximately 2,300 ha of native woodland in the vicinity of the MCCM (i.e. over and above any offset and rehabilitation obligations); and
- construction and operation of a water transfer pipeline between the MCCM pipeline network and the approved VCM to TCM pipeline.

## 4.1 Project Area

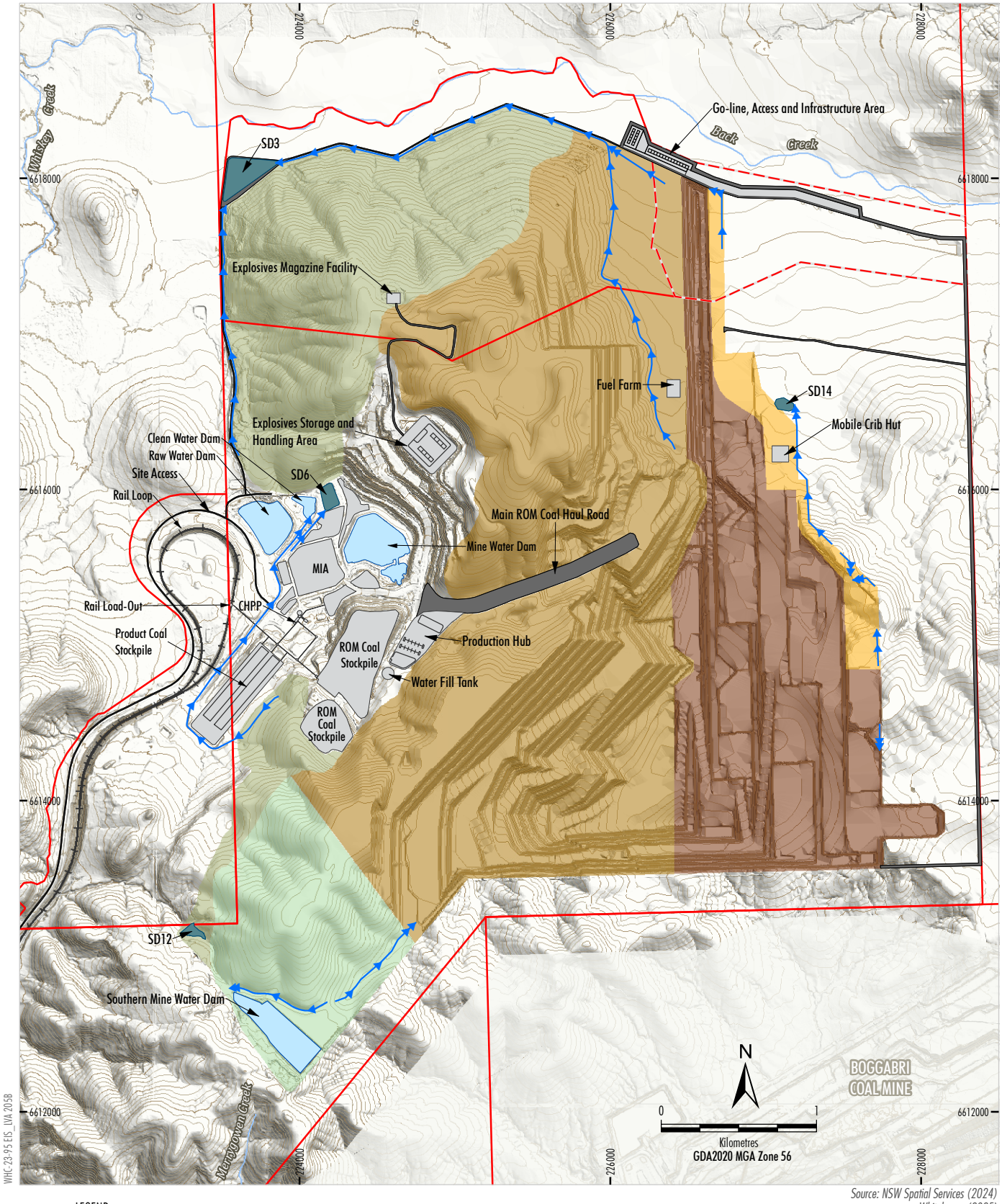
The Project proposes the extraction of coal resources within existing MCCM tenements to the east of the existing/approved MCCM operations (Figure 2).

The proposed water transfer pipeline would be constructed along Rangari Road on land managed by Whitehaven and within road reserves and Crown land (Figure 2).

Landscape Revegetation Zones would be established on cleared land to the south and east of the existing MCCM (refer Figure 2).

Figures 7a to 7d shows the conceptual general arrangements and indicative progress of open-cut mining of the Project in Years 2029, 2032, 2036 and 2040. These indicative general arrangements are based on currently planned production and mine progression. The mining sequence and rate of mining may vary to consider localised geological features, coal market quality and volume requirements, mining economics and Project detailed engineering design. The sequence of mining and/or general arrangement may also be modified throughout the life of the operation to maintain compliance with the applicable amenity criteria specified in the Project Development Consent for surrounding private residences.

The detailed mining sequence for any given period would be documented in the relevant Forward Program under the Rehabilitation Management Plan (RMP) Framework.




WHC-23-95 EIS_LVA 2058

*Source: NSW Spatial Services (2024)*
*Whitehaven (2025)*

LEGEND

- Rail Line
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Active Mining
- Active Overburden Emplacement
- Topsoil Stripping
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure Area
- Internal Road and Access Track
- Water Storage
- Sediment Dam
- Key Surface Water Drain (Conceptual)*

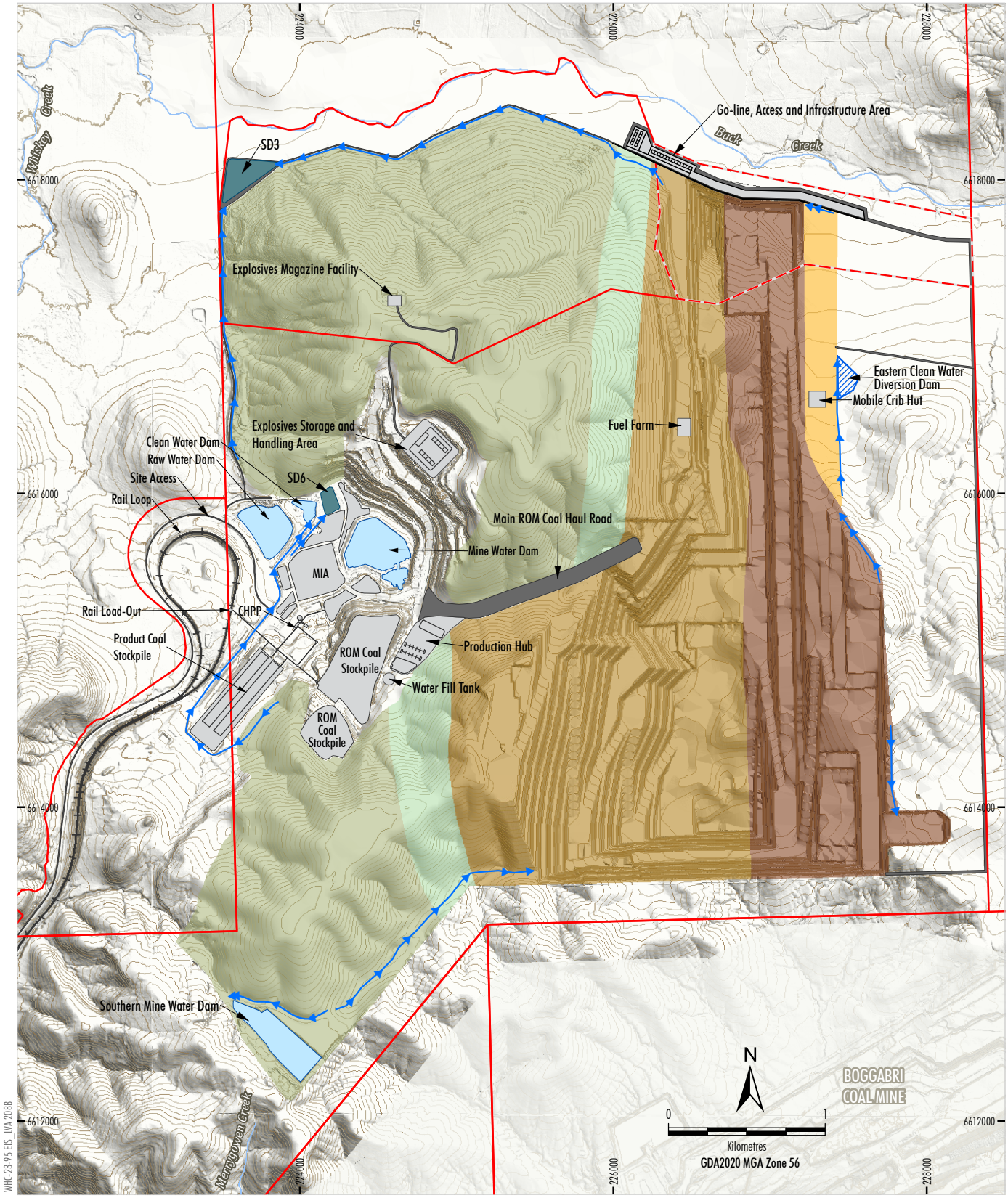
**While not shown on this general arrangement, temporary water storages may be constructed along the drains to enable water to be contained and pumped to a water storage (e.g. to prevent water flowing into the open cut pit).*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Indicative General Arrangement FY2029**

**Figure 7a**




WHC-23-95 EIS_LVA 2088

*Source: NSW Spatial Services (2024)*
*Whitehaven (2025)*

LEGEND

- Rail Line
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Active Mining
- Active Overburden Emplacement
- Topsoil Stripping
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure Area
- Internal Road and Access Track
- Water Storage
- Sediment Dam
- Highwall Dam (Conceptual)
- Key Surface Water Drain (Conceptual)*

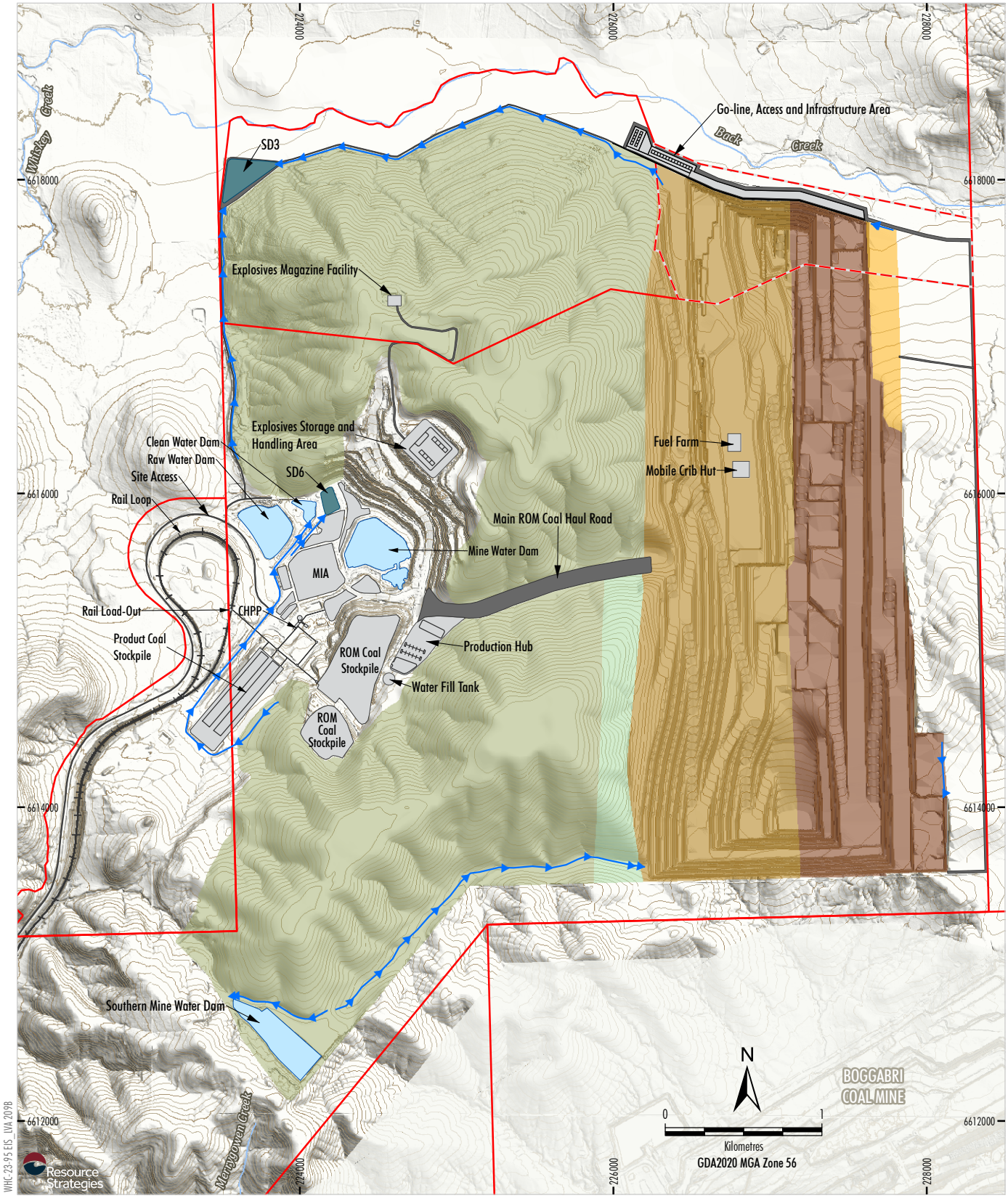
**While not shown on this general arrangement, temporary water storages may be constructed along the drains to enable water to be contained and pumped to a water storage (e.g. to prevent water flowing into the open cut pit).*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

Indicative General Arrangement FY2032

**Figure 7b**




*Source: NSW Spatial Services (2024)*
*Whitehaven (2025)*

LEGEND

- Rail Line
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Active Mining
- Active Overburden Emplacement
- Topsoil Stripping
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure Area
- Internal Road and Access Track
- Water Storage
- Sediment Dam
- Key Surface Water Drain (Conceptual)*

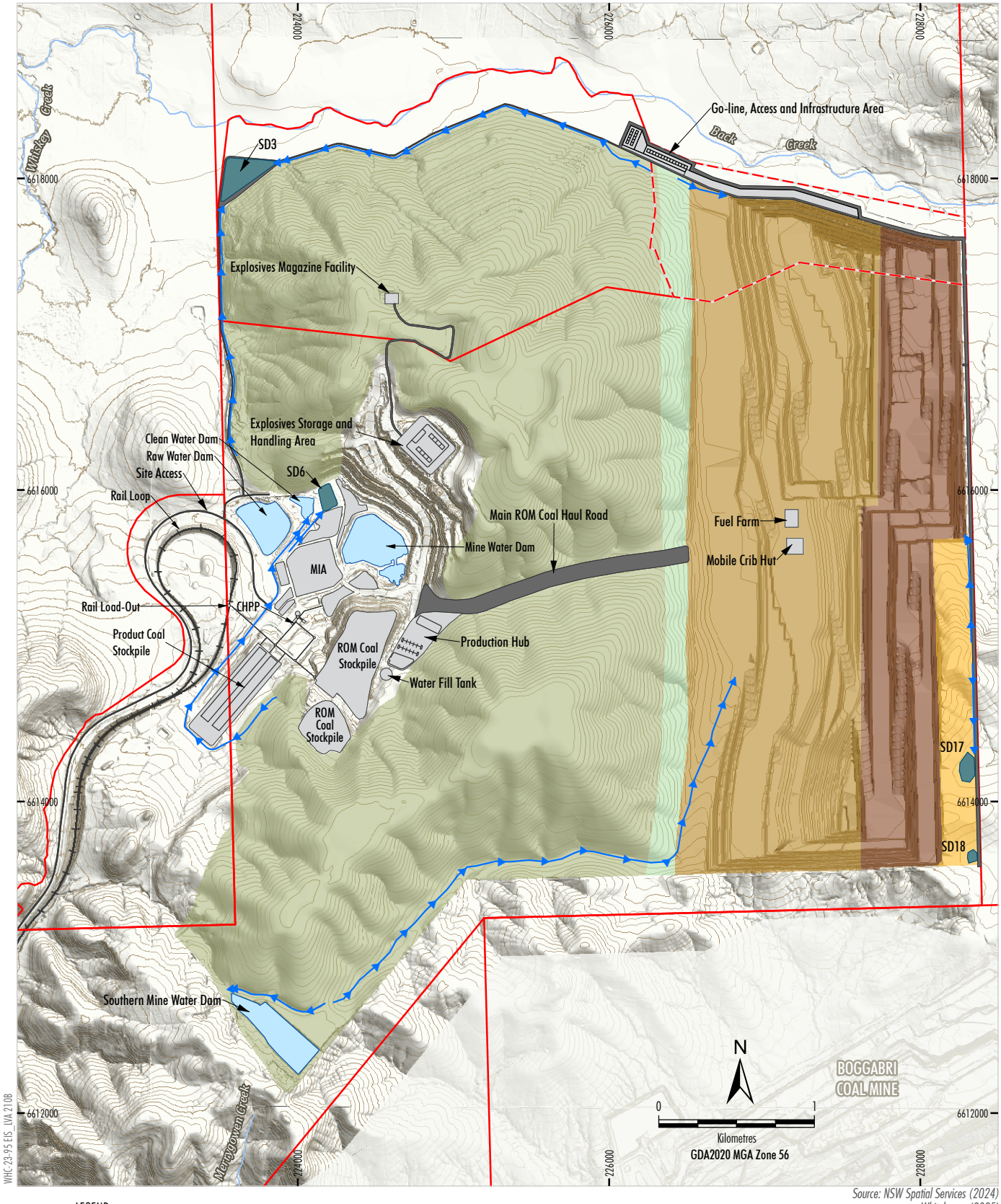
**While not shown on this general arrangement, temporary water storages may be constructed along the drains to enable water to be contained and pumped to a water storage (e.g. to prevent water flowing into the open cut pit).*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Indicative General Arrangement FY2036**

**Figure 7c**




WHC-23-95 EIS_LVA 2108

*Source: NSW Spatial Services (2024)*
*Whitehaven (2025)*

LEGEND

- Rail Line
- Provisional Mining Lease Application Area
- Mining Tenement Boundary (ML and CL)
- Active Mining
- Active Overburden Emplacement
- Topsoil Stripping
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure Area
- Internal Road and Access Track
- Water Storage
- Sediment Dam
- Key Surface Water Drain (Conceptual)*

**While not shown on this general arrangement, temporary water storages may be constructed along the drains to enable water to be contained and pumped to a water storage (e.g. to prevent water flowing into the open cut pit).*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Indicative General Arrangement FY2040**

**Figure 7d**

## 4.2 Construction

The level of construction activity for the Project is limited due to the proposed use of the existing coal handling, preparation and transport infrastructure at the approved MCCM (i.e. existing CHPP and rail load-out facilities), and existing large water storages.

Over the life of the Project, construction activities are expected to include:

- development of a water transfer pipeline between the MCCM water pipeline network and the approved VCM to TCM pipeline early in the Project;
- development of a go-line, access and infrastructure area in approximately Year 1 (FY2028); and
- progressive development of dams, pumps, water diversions, pipelines, drains, storages and other water management equipment and infrastructure.

Construction related to the Project would not be a major contributor to potential visual impacts from public viewpoints.

## 4.3 Mining Operations

Throughout the progression of the Project, the disposal of waste rock would increase the height of the Northern Emplacement and Southern Emplacement as well as backfilling of the open-cut pit areas. The height of the Northern Emplacement would increase from the approved height of approximately 455 metres Australian Height Datum (m AHD) to approximately 490 m AHD (approximately 35 m increase). Furthermore, the Southern Emplacement would increase from the approved height of approximately 430 m AHD to approximately 499 m AHD (approximately 69 m increase).

From a visual and landscape character perspective, the extension of Northern and Southern Emplacement areas would be the principal change observed during the Project life.

## 4.4 Landscape Revegetation Zones

The wider landscape surrounding the MCCM (and the Leard State Forest) has historically been extensively cleared for grazing livestock and dry land cropping. The Leard State Conservation Area was the only conserved area in the immediate vicinity of the MCCM under the *National Parks and Wildlife Act 1974* until MCC began to establish biodiversity offset areas and secure them under Conservation Agreements in perpetuity (Figure 2).

MCC is currently implementing a program to restore woodland within the biodiversity offset areas. Since 2016, approximately 3,126 ha of plantings has been completed by MCC (Plate 1).

**Plate 1 Example of Areas Undergoing Active Revegetation across MCCM Offset Areas**

As part of the Project, MCC would expand the revegetation program to include an additional 2,300 ha of land (Figure 2) making it one of the largest revegetation projects in NSW.

The additional revegetation areas are termed Landscape Revegetation Zones. The Landscape Revegetation Zones are proposed as part of the Project to:

- provide a larger area of native vegetation cover than currently exists in the local region of Leard State Forest;
- complement the existing Leard Forest Regional Biodiversity Strategy by expanding habitat adjacent to Leard State Forest and restoring linkages between woodland patches/existing conserved areas; and
- provide a larger benefit (net gain[3]) compared to offsetting alone (i.e. it would be additional/in excess to standard biodiversity offset/credit requirements).

A key aspect to the initiative is anticipated to be that MCC would plant approximately 500 to 800 ha of trees in the planting season per year for the first three to five years of the Project, upon its approval and commencement. This initiative would establish approximately 2,300 ha of native woodland within approximately three to five years of approval of the Project. The Landscape Revegetation Zones would be located on land that is owned and managed by Whitehaven, historically cleared and currently Category 1-Exempt Land (under the *Local Land Services Act 2013*) or derived native grassland.

The revegetation works would target establishment of self-sustaining woodland vegetation communities that are likely to have once occurred prior to clearance considering soil, landscape position, topography and surrounding native vegetation. From a visual and landscape character perspective, due to the use of existing surrounding native vegetation, it is predicted that the Landscape Revegetation Zones would provide greater visual amenity to the region and assimilate into the landscape.

### 4.5 Coal Processing and Production

There is no change proposed to the approved coal production and rail transport limits for the existing MCCM to support the Project. The existing MCCM CHPP would have sufficient capacity to process up to the 14 Mtpa of ROM coal and therefore no major upgrades to the CHPP are required; however, the Project would seek an extension of the use of existing CHPP and train load out and rail spur infrastructure until 31 December 2044.

[3] The NSW Biodiversity Offset Scheme sets a standard of no net loss.

### 4.6 Water Transfer Pipeline

The proposed water transfer pipeline would be located along Rangari Road on Crown Land, road reserves and land managed by Whitehaven. The pipeline would connect the MCCM water pipeline network and the approved, but yet to be constructed at the time of writing, VCM to TCM pipeline.

The water transfer pipeline would be constructed by a combination of trenching, underboring and sections placed directly on-ground. The pipeline would be constructed such that there is no impact to canopy vegetation. For trenched sections of the pipeline, construction would include excavation of an approximate 0.5 m wide and 1 m deep trench to accommodate for the 355 mm pipe diameter (approximately), pulling pre-welded pipeline sections into place, laying the pipe and backfilling the trench with the excavated spoil. Backfilling of trenches would be undertaken progressively, and as soon as practicable after the pipeline installation is completed.

The primary visual impact would be associated sections of the pipeline which are placed on-ground during mining operations. These sections of pipeline would be removed following the completion of mining operations unless an alternative post-mining land use is identified during closure planning.

The proposed water transfer pipeline corridor would be rehabilitated with native grasses where disturbance of vegetation occurs.

### 4.7 Progressive Landform Development and Rehabilitation

At the existing MCCM, rehabilitation is undertaken progressively to facilitate a safe, stable and non-polluting final landform. Final landforms incorporate micro-relief, with drainage lines designed to replicate natural geometry, and emplacements designed to improve topographic linkages with the surrounding environment and provide greater sympathetic visual amenity.

As part of the Project, MCC would continue to progressively develop and revegetate the final landform to reduce visual impacts on potential receivers, and continue to monitor the performance of rehabilitation and implement remediation as required. The conceptual final landform has been developed using geomorphic design principles (such as GeoFluv$^{TM}$) to create a natural landform design aimed at achieving long-term erosional stability, reduce maintenance and improve aesthetic value on rehabilitated landforms.

### 4.8 Final Landform and Land Use

The final landform of the Project has been designed based on key design principles provided below:

- The final landform is safe, stable and non-polluting.
- The emplacement landform incorporates macro-relief to avoid simple blocky forms.
- Surface water drainage from the final landform would incorporate micro-relief to increase drainage stability, avoid major engineered drop structures and limit erosion.
- Surface water drainage paths would be reinstated in the free-draining final landform to return flows to the natural environment.
- The size and depth of the final void would be minimised as far as is reasonable and feasible.
- The drainage catchment of the final void would be minimised as far as is reasonable and feasible.

The Project would result in one final void remaining in the rehabilitated landform. The mine sequencing has been designed to locate the final void away from Back Creek. To maximise the ecological value of the area associated with the final void, the low walls of the final void would be reshaped to a suitable gradient for creating potential habitat for fauna known to occur in the area. Proposed post-mining land uses for the Project area include native and open woodland areas.

The catchment area draining to the final void in the originally approved MCCM final landform was approximately 904 ha. The Project would introduce drains/swales to reduce the catchment area draining to the final void catchment area to approximately 440 ha. (Figure 4).

A conceptual Rehabilitation and Mine Closure Strategy has been developed for the Project in consideration of relevant guidelines and the existing MCCM RMP and is presented in Attachment 7 of the EIS.

MCC has undertaken an assessment of potential post-mining land uses (e.g. establishment of woodland forest) taking into account relevant strategic land use objectives of the area in the vicinity of the MCCM, current land use including the rehabilitation completed or to be completed at the MCCM within and adjacent to the Project Mining Area and the potential benefits of the post-mining land use to the environment, future landholders and the community (Attachment 7 of the EIS).

# 5 Landscape Character Assessment

This landscape assessment considers how the Project would impact elements that comprise the landscape, aesthetic and perceptual aspects of the landscape and its distinctive character (DPHI, 2024).

## 5.1 Baseline Analysis of Landscape Character

Elements of the regional landscape within an 8 km radius of the Project include extensively cleared plains used primarily for agricultural production, forest, woodland associated with the Leard State Forest and Leard State Conservation Area as well as the existing operational mines (MCCM, BCM and TCM).

### 5.1.1 LANDSCAPE CHARACTER AND SURROUNDING ENVIRONMENT

The Technical Supplement provided the *Descriptions for NSW (Mitchell) Landscapes – Version 2* (Mitchell Landscapes) (Mitchell, 2002) for guidance on classifying landscapes.

The following landscapes described in Mitchell Landscapes (Mitchell, 2002) have been identified within the Landscape Character Assessment Area:

- **Liverpool Alluvial Plains:** undulating hills and sloping plains with alluvial channels and floodplains. General elevation 300 to 350 m AHD, local relief less than 10 m. Open grasslands of various grasses and occasional gum tree species.
- **Bugaldie Uplands:** stepped stony ridges with a general elevation of 350 to 490 m AHD local relief of 50 to 150 m, extensive joint controlled stream network. Abundant outcrop on ridge tops with a large variety of vegetation species.
- **Mooki-Namoi Channels and Floodplains:** channels, floodplains and terraces of the Mooki and Namoi Rivers on the Liverpool Plains Ecosystem in Quaternary fluvial sediments. General elevation of 275 to 350 m AHD and local relief of 20 m.
- **Kaputar Slopes:** lower slopes of the Kaputar volcanic complex with radiating finger-like ridges capped by basalt over lower Permian and Triassic quartz sandstone, lithic sandstone, silty sandstone, conglomerate and thin coal measures. General elevation of 300 to 500 m AHD and a local relief of 80 m.
- **Tamworth-Keepit Slopes and Plains:** extensive area of undulating to rolling slopes and plains with low hills and low ranges. Complex geology of folded and faulted sedimentary and metamorphic rocks. General elevation of 500 to 800 m AHD, with a local relief of 250 m with some peaks reaching 1,100 m AHD.
- **Upper Namoi Swamps and Lagoons:** linear swamps and abandoned channels on the floodplain of the Namoi River in Quaternary fluvial sediments, usually separated from the channel by low levees. General elevation of 250 m AHD and local relief less than 5 m.

### 5.1.2 NATIONAL PARKS AND NATURE RESERVES

The current MCCM and proposed Project area is partially located within the Leard State Forest, which is a significant landscape feature of the region. The Leard State Forest encompasses an area of 7,458 ha of native vegetation (DPE, 2015). The Leard State Forest is dominated by open eucalypt and cypress trees that adjoin the Willow Tree Range in the south which reaches approximate heights of 460 m AHD (Integral, 2010).

The Leard State Conservation Area is located to the west of the Project, adjacent to the MCCM and covers an area of 1176 ha (Office of Environment and Heritage, 2012). This area contains large areas of rocky outcrop, steep slopes and prominent spurs and ridges (Integral, 2010)

Mount Kaputar National Park is visible along the eastern and northern skylines of the Landscape Character Assessment Area. The park areas consist of recreational activities such as camping, picnicking and bushwalking (Integral, 2010). It is noted that Integral (2010) investigated viewpoints from various lookouts and concluded, negligible visibility of the Project due to either distance or foreground vegetation; however, in the context of the landscape character of the broader area, Mount Kaputar is a feature of the landscape.

### 5.1.3 AGRICULTURE

The Project area is located within the 'Northern Plains' region as per the *New England North West Strategic Regional Land Use Plan* within the Narrabri LGA. Cotton is the major crop of the region followed by irrigated agriculture due to the construction of several dams in the area. The Artesian bores support the beef cattle industry, supplying stock and domestic water in many areas. To the north of the Project area is the 'Golden Triangle' which consists of an area of 350,000 ha particularly suited to growing high quality wheat (Department of Planning and Infrastructure, 2012).

Whitehaven currently leases land surrounding the MCCM for agricultural purposes, which would continue for the Project. Agricultural production is a key supporter of the Narrabri LGA and the New England North West Region primarily through the production of cereal crops, sheep, lambs and meat cattle (ABS, 2010).

### 5.1.4 EXISTING MINING AND INDUSTRIAL OPERATIONS

The Landscape Character Assessment Area consists of areas of land managed by Whitehaven or Idemitsu for the purpose of mining and extraction activities. In addition to the existing MCCM, the other approved mines within the Landscape Character Assessment Area include the BCM and TCM.

Landscape character and visual impacts associated with these operations have been extensively assessed and approved as part of the environmental approvals process.

### 5.1.5 PRIVATE LANDHOLDINGS

The private residences within the Landscape Character Assessment Area are primarily located within the village of Maules Creek and are spread out along Harparary Road.

All residences within the Landscape Character Assessment Area are located on land characterised as 'RU1-Primary Production'. Due to the small populations within Harparary and Maules Creek and the dominance of agricultural land and extraction operations, the residences have not been categorised as 'RU5- Village' or 'R1- Residential'.

The nearest private residences to the Project area are located approximately 3 km west and 4.5 km north. The two residences to the west of the Project are subject to Acquisition Upon Request rights in accordance with Condition 1, Schedule 3 of PA 10_0139.

### 5.1.6 CONSIDERATION OF HERITAGE

An Aboriginal Cultural Heritage Assessment (ACHA) has been prepared for the Project by Whincop. The ACHA revealed no particular landform or landscape was identified to be of significance; however, the identified Aboriginal cultural heritage sites were concentrated along Back Creek, confirming the significance of waterways as a feature within the broader landscape. The cultural values consultation undertaken for the ACHA revealed themes that relate to the landscape value. It is discussed that the Kamilaroi people are considered to have traversed the region for trade, hunting and foraging along established routes defined by the topography (Whincop, 2024).

A non-Indigenous Cultural Heritage Assessment (NICHA) was also performed for the Project (Extent Heritage Pty Ltd, 2024). There were no significant heritage features identified from these assessments, nor recognised under the *Narrabri Local Environmental Plan 2012*.

Potential impacts and mitigation of heritage is provided in the main text of the EIS, ACHA (Appendix F of the EIS) and NICHA (Appendix G of the EIS).

## 5.2 Landscape Character Zones

In consideration of the discussion above and previous visual assessments performed for the MCCM, the landscape within the Landscape Character Assessment Area can be categorised into the following broad landscape character zones (LCZs) (Figure 8):

- LCZ 1 – Village.
- LCZ 2 – Alluvial Plains and Undulating Slopes.
- LCZ 3 – Uplands.
- LCZ 4 – Rivers and Creeks.
- LCZ 5 – Surrounding Ranges.
- LCZ 6 – Mining Operations.

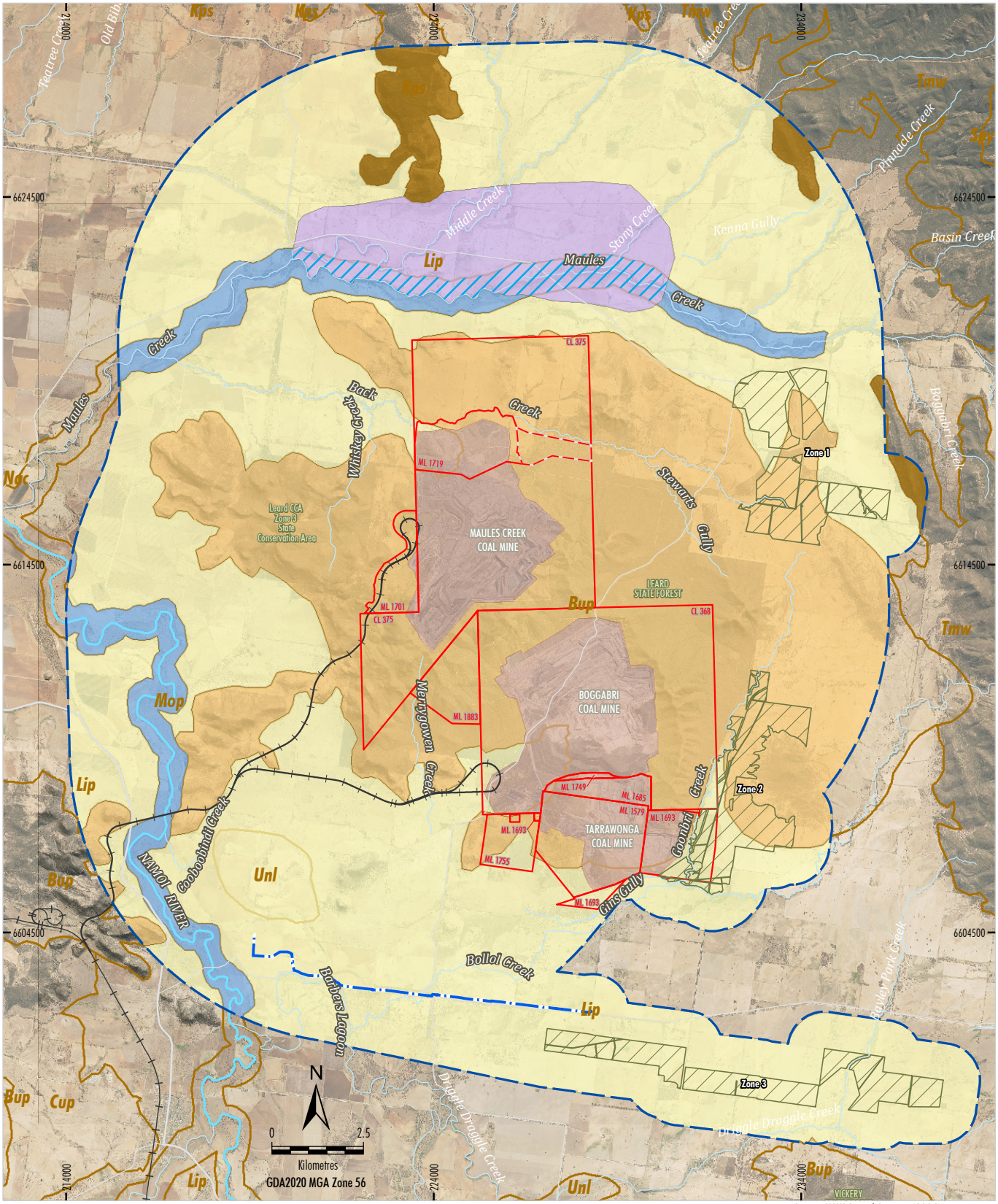
Further discussion regarding these broad classifications is provided below.

### 5.2.1 LCZ 1 – VILLAGE

This LCZ consists of the village of Maules Creek and any private residence located within the Landscape Character Assessment Area. All residential areas have small and sparse populations. The highest density residences are located in Maules Creek directly north of the Project area. This township consists of rural properties, a public school, a community hall and a church. The population of Maules Creek was 87 in 2021. (ABS, 2022). Images of the LCZ are presented in Plates 2 and 3.


**Plate 2: Maules Creek Primary School**

**Plate 3: Maules Creek Local Church**




Source: NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven Coal (2024-2019)

LEGEND

- Rail Line
- Mining Tenement Boundary (ML and CL)
- Provisional Mining Lease Application Area
- Indicative Water Transfer Pipeline (Proposed)
- Indicative Landscape Revegetation Zones#

Assessment Areas

- Landscape Character Assessment Area (8 km)

Landscape Character Zones

- LCZ 1 - Village
- LCZ 2 - Alluvial Plains and Undulating Slopes
- LCZ 3 - Uplands
- LCZ 4 - Rivers and Creeks
- LCZ 5 - Surrounding Ranges
- LCZ 6 - Mining Operations

Mitchell Landscapes

- Bup - Bugaldie Uplands
- Cup - Cubbo Uplands
- Gyc - Gwydir Channels and Floodplains
- Kps - Kaputar Slopes
- Lip - Liverpool Alluvial Plains
- Mop - Mooki - Namoi Channels and Floodplains
- Nac - Namoi Channels and Floodplains
- Spy - Split Yard Plateau
- Tmw - Tamworth - Keepit Slopes and Plains
- Unl - Upper Namoi Swamps and Lagoons

# *Landscape Revegetation Zones shown on this figure are approximate extents only*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

**Landscape Character Zones**

**Figure 8**

### 5.2.2 LCZ 2 – ALLUVIAL PLAINS AND UNDULATING SLOPES

LCZ 2 occupies the second largest area within the Landscape Character Assessment Area and encompasses the northern, western and southern areas adjacent to the Project boundaries. The LCZ aligns with the Mitchell Landscapes (Mitchell, 2002) “Liverpool Alluvial Plains” and “Upper Namoi Swamps and Lagoons”. A history of extensive agriculture has occurred within this LCZ.

Sections of transport, infrastructure and rail transport system associated with the MCCM is located within this LCZ as well as parts of the BCM and TCM.

The landscape is characterised by undulating hills and sloping plains, with alluvial channels, floodplains and outwash fans. The elevation of the LCZ ranges between 300 to 350 m AHD with a local relief of less than 10 m. Along the low angle slopes are various alluvial soils and clay, with texture contrast. The open grasslands of this area comprise the following species:

- Plains grass (Austrostipa aristiglumis);
- *Panicum sp*.;
- Windmill grass (*Chloris truncata*);
- Blue grass (*Dichanthium sericeum*);
- Myall (*Acacia pendula*);
- White box (*Eucalyptus albens*);
- Yellow box (*Eucalyptus melliodora*);
- Bimble box (*Eucalyptus populnea*);
- Wilga (*Geijera parviflora*);
- River red gum (*Eucalyptus camaldulensis*) along streams;
- Cumbungi (*Typha orientalis*); and
- Common reed (*Phragmites australis*).

Images of the LCZ are provided in Plates 4 and 5.

**Plate 4: Agricultural Land Use within the Alluvial Plains and Undulating Slopes LCZ**

**Plate 5: Agricultural Mixed Land Use with Anthropogenic Features within the Alluvial Plains and Undulating Slopes LCZ**

### 5.2.3 LCZ 3 – UPLANDS

LCZ 3 predominantly comprises the Leard State Forest, Leard State Conservation Area, and land used for agricultural practices. LCZ 3 is largely coincident with the mapping from the Bugaldie Uplands as described by Mitchell (2002). The existing MCCM and Project area is located within this LCZ.

This LCZ contains the existing MCCM, Leard State Conservation Area, Leard State Forest and part of BCM. This LCZ borders and surrounds existing mining operations including the MCCM, BCM and TCM. The northern part of this LCZ, has been cleared due to agriculture and previous historical pastoral land uses. Nonetheless, the Leard State Conservation Area and the majority of Leard State Forest provides a display of native forest in the region.

Topographic features characterising these uplands are stepped stony ridges. The general elevation ranges between 350 to 490 m AHD. Within this landscape are various mountains such as several peaks within Leard State Forest with elevations of 374 m AHD, 449 m AHD, and 402 m AHD (NSW DCCEEW, 2024) This series of peaks is located east of the Project, providing screening effects of the Project area from the east such as the Leard State Forest Road.

This landscape contains a wide variety of flora. Mitchell (2002) describes the distribution of these species to appear on various landforms and soil types as described below.

Vegetation found on ridges and stony slopes:

- green mallee (*Eucalyptus viridis*);
- white mallee (*Acacia cheelii*);
- red ironbark (*Eucalyptus sideroxylon*);
- black cypress pine (*Callitris endlicheri*);
- rusty spider flower (*Grevillea floribunda*);
- mint bush (*Prostanthera sp.*);
- nodding blue lily (*Stypandra glauca*); and
- rock fern (*Cheilanthes sieberi*).

Vegetation found on sandy flats:

- narrow-leaved ironbark (*Eucalyptus crebra*);
- red stringybark (*Eucalyptus macrorhyncha*);
- black cypress pine (*Callitris endlicheri*);
- brown bloodwood (*Corymbia trachyphloia*); and
- rough-barked apply (*Angophora floribunda*).

Vegetation found on volcanic rocks:

- white box (*Eucalyptus albens*); and
- port Jackson fig (*Ficus rubiginosa*).

A representative image of LCZ 3 is displayed in Plate 6.

**Plate 6: Aerial View of the Uplands Landscape Showing the MCCM and Leard State Forest**

### 5.2.4 LCZ 4 – RIVERS AND CREEKS

LCZ 4 consists of the Namoi River, Maules Creek and its tributaries in the vicinity of the Project. The Namoi River traverses the landscape in a north-to-south direction approximately 7 km west of the Project area. Maules Creek flows into the Namoi River approximately 11.5 km west of the MCCM. The Namoi River is an important feature in the landscape as it supplies water for irrigated agriculture, urban areas, stock and domestic, and mining. Spanning across a length of 700 km, the towns that rely upon Namoi River include Tamworth, Narrabri and Gunnedah (Murray-Darling Basin Authority, 2023).

A tributary of Maules Creek, Back Creek, is located approximately 200 m north of the Project; however, it is not grouped within this LCZ due to its ephemerality and tendency to be dry for the majority of the year.

This LCZ is primarily based on the *Mooki Namoi Floodplains and Channels* from Mitchell Landscapes (Mitchell, 2002). This LCZ comprises channels, floodplains and terraces of the Mooki and Namoi Rivers on the Liverpool Plains Ecosystem in Quaternary fluvial sediments. The general elevation ranges between 275 to 350 m AHD with soils consisting of brown clays and recent alluvium. Species found within this LCZ include:

- river red gum (*Eucalyptus camaldulensis*);
- river oak (*Casuarina cunninghamiana*);
- rough-barked apple (*Angophora floribunda*);
- plains grass (*Austrostipa aristiglumis*); and
- couch (*Sporobolus mitchelli*).

This LCZ creates visual backdrops to the adjoining open fields and croplands. This LCZ also creates visual filters to views of the Project through foreground and middle-ground screens of long-distance views. Several roads cross the channels of this LCZ.

A representative image of LCZ 4 is displayed in Plate 7.

**Plate 7: Namoi River Adjacent to Therribri Road**

### 5.2.5 LCZ 5 – SURROUNDING RANGES

LCZ 5 occupies a small portion of the Landscape Character Assessment Area north and east of the Project (Figure 8). This LCZ combines the Mitchell Landscape *Kaputar Slopes* and *Tamworth – Keepit Slopes and Plains* (Mitchell, 2002). The distant ranges along the north-east of the Project area average 800 m AHD, providing visual contrast to the undulating hills of the Uplands and extensive alluvial plains.

The characteristics of this landscape include a general elevation of 500 to 800 m AHD, with complex geology of folded and faulted sedimentary and metamorphic rocks with minor interbedded volcanics. Present in the north of the Landscape Character Assessment Area are the Kaputar Slopes which are the lower slopes of the Mount Kaputar National Park - a landscape feature providing various recreational activity opportunities such as hikes and lookouts. The Mount Kaputar National Park is located outside of the Landscape Character Assessment Area but has been considered as it was covered in the previous visual assessment by Integral (2010). The Mount Kaputar National Park is a visually sensitive area; however, as identified by Integral (2010), the lookouts are located over 25 km away and are screened by foreground vegetation in the distance.

The soil profiles of this LCZ consist of red-brown loam and clay loam overlying basalt, with sandstone, deep black earths in the lowest valleys. Species present within this LCZ include:

- kurrajong (*Brachychiton populneus*),
- yellow box (*Eucalyptus melliodora*),
- white box (*Eucalyptus albens*);
- rough-barked apple (*Angophora floribunda*) and
- blakely's red gum (*Eucalyptus blakelyii*).

A representative image of LCZ 5 is displayed in Plate 8.

**Plate 8: Ranges in the Distance Viewed from Harparary Road**

### 5.2.6 LCZ 6 – MINING OPERATIONS

Mining operations have been a significant landscape feature within the vicinity of the MCCM for the past two decades. These include:

- The approved MCCM;
- BCM; and
- TCM.

The alteration of the local topography associated with this LCZ contributes to the impact of human activity to the landscape character of the region. The majority of land within the Landscape Character Assessment Area consists of land managed by Whitehaven and Idemitsu; therefore, the radius of viewpoints is limited due to the inability of public access within a close radius of the current MCCM and Project area.

The permanent alteration of local topography associated with this LCZ contributes to the influence human activity has on the landscape character of the region.

**Plate 9: Mining Operations within the Existing MCCM**

## 5.3 Landscape Character Impact Assessment

In consideration of the LCZs identified above, an assessment of potential landscape character impacts associated with the Project is provided below.

### 5.3.1 LCZ1 – VILLAGE

*Sensitivity*

This LCZ is associated with residences, a public school, a church, a community hall and recreational spaces within Maules Creek village. Considering this LCZ largely comprises residential viewpoints, it will therefore be more sensitive to landscape character impacts. Notwithstanding, many residential dwellings are oriented away from the Project area, reducing the sensitivity of the LCZ. Further, this LCZ contains a small population, dispersed residential areas and low-scale transport and infrastructure. As the landscape has been previously modified, it is considered that this LCZ has some capacity to absorb further landscape character impacts of the Project areas.

The Landscape Revegetation Zones are proposed to be located to the south and east of the Project area, thus would not contribute to screening effects of residences to the north of the Project.

The sensitivity of the Village LCZ 1 is considered to be Moderate (Table 8).

*Magnitude*

The Project is not located in this LCZ; therefore, no landscape elements would be lost due to the Project.

Whilst the Project would not impact landscape elements in the LCZ, views of the Project would be evident within the LCZ. However, views of the Project would be minor and, as a result, the Project would not dominate the visual catchment, nor would it become a landscape element of the LCZ.

The magnitude of landscape impacts on LCZ 1 is considered to be Very Low (Table 8). Visual impacts are assessed separately, refer to Section 6.3.

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, there is expected to be a Low landscape character impact to the Village LCZ as a result of the Project.

**Table 8**
**Summary of LCZ 1 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **Moderate**<br>— The LCZ consists of the residential viewpoints within the village of Maules Creek.<br>— Many residential viewpoints experience screening of the Project due to topography, vegetation or orientation.<br>— This LCZ has been modified for anthropogenic use, and as such, is considered to have some capacity to absorb further landscape character impacts. | **Very Low**<br>— The Project would not be located in the LCZ.<br>— No area of LCZ 1 would be directly impacted or removed as a result of the Project.<br>— The Project would not directly affect the landscape elements within the LCZ.<br>— Incremental visual impacts associated with the Project would be visible from Maules Creek village.<br>— Geomorphic design principles would be incorporated into the Project landform design to mimic surrounding natural topography.<br>— The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time, however topographic changes would be permanent. |

### 5.3.2 LCZ 2 – ALLUVIAL PLAINS AND UNDULATING SLOPES

*Sensitivity*

This LCZ contains high productivity agricultural land and has been heavily modified from its natural state through extensive native vegetation clearance for agricultural practices. Furthermore, several roads are located within this LCZ including the Kamilaroi Highway. The LCZ has been significantly impacted by human modifications; therefore, is considered to have the capacity to absorb landscape character impacts associated with the Project.

The water transfer pipeline is located within this LCZ. Two privately-owned residences are located within 500 m of the pipeline (Figure 6). As described in Section 4.6, the construction of the pipeline would occur early in the Project and the areas used would be rehabilitated post-use. Sections of the pipeline (approximately 35 centimetres high) are proposed to be underbored, trenched and located on-ground. The on-ground sections of the pipeline would be aligned such that clearing of trees is avoided. This would largely retain the visual amenity of the vegetation adjacent to Rangari Road. In consideration of the design, as well as the location being adjacent to an established road, it is predicted the sensitivity of the LCZ to this component would be minor.

The entire area of Landscape Revegetation Zone 3 and part of Zones 1 and 2 are located within this LCZ and would replace cleared land with woodland vegetation. It is anticipated this LCZ would be able to absorb the landscape changes as the vegetation would consist of native vegetation already present within the landscape.

The sensitivity of the Alluvial Plains and Undulating Slopes LCZ is considered to be Low (Table 9).

*Magnitude*

Components of the existing MCCM are located within this LCZ; therefore, the extension of mining operations for the operation of the Project would continue to impact this LCZ.

The proposed water transfer pipeline would be located within this LCZ. The water transfer pipeline would be constructed by a combination of trenching, underboring and sections placed directly on-ground. Sections of pipeline placed directly on-ground would typically be located away from the edge of Rangari Road, however, some views of the pipeline would be possible along sections of Rangari Road.

Landscape Revegetation Zone 3 and part of Zones 1 and 2 are located within this LCZ.

The magnitude of landscape impacts to the Alluvial Plains and Undulating Slopes LCZ is considered to be Moderate (Table 9). Visual impacts are assessed separately, refer to Section 6.4.

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, the Alluvial Plains and Undulating Slopes LCZ is anticipated to experience a Low landscape character impact as a result of the Project.

**Table 9**
**Summary of LCZ 2 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **Low**<br>– LCZ 2 has been significantly modified through historical agricultural operations.<br>– Anthropogenic modifications are evident through native vegetation clearance, roads, and existing mining infrastructure. As such, the LCZ is considered to have capacity to absorb landscape character impacts associated with the Project.<br>– The water transfer pipeline is anticipated to have a minor visual impact, being located adjacent to an existing road, with two private landholders within 500 m of Rangari Road.<br>– The proposed Landscape Revegetation Zones are anticipated to integrate into this LCZ as it would contain native vegetation prevalent in the area. | **Moderate**<br>– Features of the existing MCCM are located within this LCZ, which would continue to impact the LCZ for the duration of the Project.<br>– The proposed water transfer pipeline and Landscape Revegetation Zones are also located within this LCZ; however, these features are predicted to be minor, or assimilate readily into the LCZ.<br>– The Project would be visible from this LCZ.<br>– Geomorphic design principles would be incorporated into the Project landform design to mimic surrounding natural topography.<br>– The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time, however topographic changes would be permanent.<br>– The removal of the water transfer pipeline following the completion of mining would remove this potential visual impact. |

### 5.3.3 LCZ 3 – UPLANDS

*Sensitivity*

The Uplands LCZ consists of the Leard State Forest, Leard State Conservation Area, mining areas, agricultural land and roads. The Leard State Forest has been a forest reserve since 1878 and the Leard State Conservation Area was reserved as a state conservation area (Community Conservation Area Zone 3) in 2005.

The Leard State Conservation Area covers approximately 1,176 ha of LCZ 3, to the west of the Project (Office of Environment and Heritage, 2012). Due to the conservation of the Leard State Conservation Area, it has not undergone intense anthropogenic impacts. The Leard State Forest is prominent in eastern viewpoints looking towards the Project due to the elevation of the forested hills. The Leard State Forest has been cleared historically by mining operations, and to a lesser extent, forestry operations.

Other areas that are not forest include modified landscape, containing roads, and cleared land largely associated with agricultural activities. These aspects of LCZ 3 have the potential to absorb the visual impacts of the open cut extension, overburden emplacement extension and infrastructure areas associated with the Project.

The Landscape Revegetation Zones proposed for the Project would assimilate in the Uplands landscape as they would consist of vegetation present within the Leard State Conservation Area and Leard State Forest and expand on the forest feature.

In consideration of the above, the sensitivity of the Uplands LCZ is determined to be Moderate (Table 10).

*Magnitude*

The majority of the Project area is located within this LCZ, as well as parts of the existing and approved MCCM, BCM and TCM. As such, direct landscape impacts associated with the Project would largely occur within the Uplands LCZ.

The Project would be visible from a viewpoint located within this LCZ, and as such, the Project would be a noticeable landscape element.

The Project would not significantly modify the landscape character of the LCZ due to the presence of existing coal mining operations within or adjacent to the Uplands LCZ (i.e. approved MCCM, BCM, and TCM).

The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time, however, topographic changes would be permanent.

Parts of the proposed Landscape Revegetation Zones would be located within Uplands LCZ. The Landscape Revegetation Zones would visually assimilate with the forest features of the LCZ.

In consideration of the above, the magnitude of landscape impacts on the LCZ are considered to be Moderate (Table 10). Visual impacts are assessed separately, refer to Section 6.4.

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, there is expected to be a Moderate landscape character impact to the LCZ as a result of the Project.

**Table 10**
**Summary of LCZ 3 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **Moderate**<br>– The landscape has been highly modified through existing mining and agricultural operations.<br>– Human modifications of this LCZ are evident through intermittent clearance of native vegetation, the presence of roadways, agricultural infrastructure and infrastructure associated with mining.<br>– This LCZ is considered to have some capacity to absorb future landscape character impacts.<br>– No specific legislatively mandated controls are relevant to this LCZ. | **Moderate**<br>– The Project would largely occur within the LCZ.<br>– The Project would be visible from some locations in the LCZ.<br>– The influence of human activity is evident in the LCZ (i.e. agricultural uses and adjacent coal mining operations).<br>– The Project would change the landscape character of part of the LCZ; however, this is consistent with the presence of several existing coal mining operations within the Uplands LCZ (i.e. approved MCCM, BCM and TCM).<br>– The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time, however topographic changes would be permanent.<br>– Geomorphic design principles would be incorporated into the Project landform design to mimic surrounding natural topography.<br>– The parts of the Landscape Revegetation Zones located in this LCZ would visually assimilate with the forest areas in this LCZ. |

### 5.3.4 LCZ 4 – RIVERS AND CREEKS

*Sensitivity*

The Namoi River within LCZ 4 is used for anthropogenic activities such as water utilities, agriculture, grazing and forestry (NSW Government, 2024). The land surrounding the waterways has experienced extensive anthropogenic impacts through vegetation clearance for agriculture and the construction of roads. Furthermore, located adjacent to this LCZ is the village of Maules Creek as well as several other residences associated with Harparary. Harparary Road and Therribri Road traverse over several sections of Maules Creek in this LCZ. Riparian vegetation is still present along the banks of Maules Creek; however, past the riparian zone, the land has been extensively cleared for agricultural activities.

The channels and the associated riparian vegetation features of LCZ 4 are sensitive to clearance and anthropogenic impact; however, this has already previously occurred for the agricultural enterprises in the region.

In consideration of the above, the sensitivity of the Rivers and Creeks LCZ is considered to be Moderate (Table 11).

*Magnitude*

Aside from a water supply infrastructure associated with the existing MCCM which traverses Namoi River, the Project area does not lie within LCZ 4; and therefore, would not result in any direct impact to the Rivers and Creeks.

The magnitude of landscape impacts on the Rivers and Creeks LCZ is considered to be Low (Table 11). Visual impacts are assessed separately, refer to Section 6.4.

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, the landscape character impact is expected to be Low.

**Table 11**
**Summary of LCZ 4 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **Moderate**<br>– LCZ 4 has experienced extensive clearance and water use to accommodate for nearby towns, agricultural enterprises and mining activities.<br>– Several areas of Namoi River and its tributaries retain visual integrity and have riparian vegetation present along its channels. | **Low**<br>– The Project would not be located within this LCZ and is unlikely to be visible from this LCZ due to intervening topography and/or vegetation. |

### 5.3.5 LCZ 5 – SURROUNDING RANGES

*Sensitivity*

This LCZ comprises extensive areas approximately 10 km or more to the north and east of the Project. Due the elevations and characteristics of the Mount Kaputar Ranges, this LCZ is present as a background feature for many surrounding areas, including the western viewpoints of the Project.

LCZ 5 has not been historically significantly impacted by anthropogenic changes. Vegetation along the Nandewar Ranges have been preserved within the Mount Kaputar National Park. The LCZ would not be highly sensitive to changes associated with the Project due to its significant distance from the Project.

Considering the above, the sensitivity of LCZ 5 is considered to be High (Table 12).

*Magnitude*

Given the significant distance to the LCZ 5 and the absence of viewpoints towards the Project, the Project would result in no direct impacts to this LCZ.

In consideration of the above, the magnitude of landscape impacts on the LCZ are considered to be Low (Table 12). Visual impacts are assessed separately, refer to Section 6.4.

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, there is expected to be a Moderate landscape character impact due to the Project.

**Table 12**
**Summary of LCZ 5 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **High**<br>— This LCZ consists of landscape features of scenic quality from the Nandewar Range.<br>— This LCZ helps to characterise the general area due to topography and untouched scenery.<br>— Distance eliminates any potential sensitivity impacts. | **Low**<br>— The Project would not be located within LCZ 5.<br>— The Project is unlikely to be visible from this LCZ. |

### 5.3.6 LCZ 6 – MINING OPERATIONS

*Sensitivity*

As previously mentioned, the mining operations which comprise LCZ 6 are located within the LCZ 3.

This LCZ consists of the mining operations in the vicinity of the Project including BCM, TCM and the approved MCCM. The landscape of this LCZ has been significantly modified from the activities and infrastructure associated with mining operations. This allows for the Project to assimilate with this LCZ due to the similarity of processes conducted.

There is no public access to the mining operations, thus there are no sensitive receivers located in this LCZ.

Due to the human intervention of the landscape, the sensitivity of LCZ 6 would be Very Low (Table 13).

*Magnitude*

The Project would continue to operate the current MCCM within this LCZ as well as extend operational areas into LCZ 3. This would result in the expansion of landscape elements associated with this LCZ in contrast to the elimination of landscape elements. These features are associated with the Project opencut extension area and overburden emplacement area.

The Project would not alter key landscape characteristics associated with the LCZ.

The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time; however, topographic changes would be prevalent and permanent.

In consideration of the above, the magnitude of the landscape impacts at the LCZ are considered to be Low (Table 13).

*Landscape Impact*

In consideration of the matrix in Table 1 and Table 6, the landscape character impact on LCZ 6 is determined to be Very Low.

**Table 13**
**Summary of LCZ 6 Landscape Character Impacts**

| Sensitivity | Magnitude |
|---|---|
| **Very Low**<br>— The landscape is highly modified by existing mining operations.<br>— Key landscape elements consist of large-scale coal mining operations and associated infrastructure.<br>— This LCZ has a very high capacity to absorb landscape impacts associated with the Project. | **Low**<br>— The Project would be partially located within this LCZ.<br>— The Project would be clearly visible in this LCZ.<br>— The landscape character of the LCZ has been strongly influenced by human activities.<br>— The progressive rehabilitation and landform development proposed as a component of the Project would reduce some visual impacts over time, however topographic changes would be prevalent and permanent. |

### 5.3.7 SUMMARY OF LANDSCAPE CHARACTER IMPACTS

The landscape character impact of the Project is summarised in Table 14.

**Table 14**
**Summary of Landscape Character Assessment Results**

| Landscape Character Zone | Sensitivity | Magnitude | Landscape Character Impact |
|---|---|---|---|
| LCZ 1 – Village | Moderate | Very Low | **Low** |
| LCZ 2 – Alluvial Plains and Undulating Slopes | Low | Moderate | **Low** |
| LCZ 3 – Uplands | Moderate | Moderate | **Moderate** |
| LCZ 4 – Rivers and Creeks | Moderate | Low | **Low** |
| LCZ 5 – Surrounding Ranges | High | Low | **Moderate** |
| LCZ 6 – Mining Operations | Very Low | Low | **Very Low** |

With the final landform design and progressive rehabilitation applied at the current MCCM in accordance with the RMP, the Project would result in similar visual impacts and a rehabilitated landform similar to its surrounding landscape with the exception of the final void which would not be visible from public or private viewpoints.

# 6 Visual Impact Statement

The visual impact assessment considers the likely impacts of the Project on key viewpoints within the private and public domain (DPHI, 2024). It should be noted that all the viewpoints assessed are located from public vantage points.

## 6.1 Classification of Viewpoints

As discussed in Section 2.4.4, the viewpoints previously assessed for the MCCM (Integral, 2010; Whitehaven, 2021) have been used for the visual impact assessment. Viewpoints 1 and 3 (western and eastern views) do not use the exact locations; however, the views are similar to those previously used. The existing views of the approved MCCM from the assessed viewpoints are shown in Attachment A and their locations relative to the Project are shown in Figure 6. In accordance with the Technical Supplement, photomontages and the Grid Tool have been composed by Truescape Ltd (Truescape).

As discussed in Section 2.4.4, screening effects surrounding the MCCM results in minimal viewpoints for assessment. The most recent visual assessment from the Landform Modification (Whitehaven, 2021) involves the individual assessment of three viewpoints covering an eastern, western and northern view. Very similar locations were used for the Project for a direct comparison of the incremental effects. These viewpoints were selected as they provide the highest potential for visual impact due to the topography and absence of screening of the Project.

Screening along sections of Harparary Road occurs due to the riparian vegetation of Maules Creek. Harparary Road is situated generally parallel to Maules Creek, therefore, for the majority of the road's length, the riparian vegetation screens views of the Project area. For approximately 8 km, Harparary Road is parallel to Maules Creek, Horsearm Creek or both. In contrast to the cleared agricultural land, the borders of the creeks are densely vegetated along the entirety of their lengths, consistently providing foreground screening in addition to the background screening from knolls in the vicinity of the Project. The meandering of the creeks and rivers in seen in Figure 8.

With the exception of the Leard State Forest, which is inaccessible to the public, land within the vicinity of the Project area is largely Whitehaven managed land, preventing the ability of the Project to be in significant view from publicly accessible roads. This reduces the likelihood of residential and public visual impacts within the 4 km radius of the Project (the proposed visual impact assessment area by the Technical Supplement). The nearest private residences to the MCCM are located approximately 3 km to the west and approximately 4.5 km to the north.

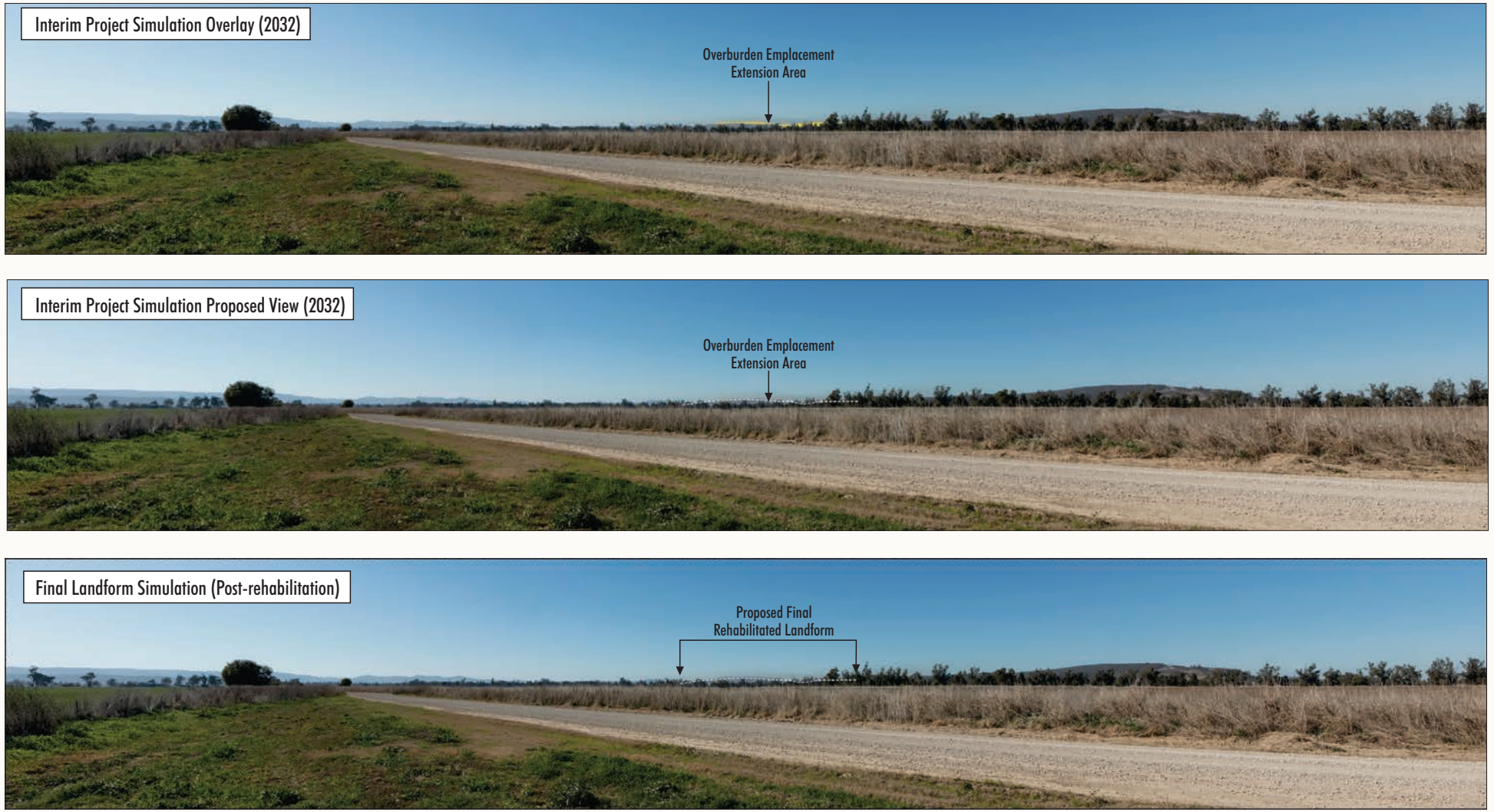
The visual impacts of the proposed Landscape Revegetation Zones and water transfer pipeline have not been simulated due to the anticipated negligible impact.

### 6.1.1 VIEWPOINT 1: WESTERN VIEW – HARPARARY ROAD

This viewpoint is located approximately 10 km north-west of the Project area along Harparary Road at an elevation of approximately 240 m AHD. Harparary Road is a public road that connects the town of Harparary to Maules Creek. Open grasslands and riparian vegetation associated with Maules Creek (located approximately 250 m distance from Viewpoint 1) dominate the foreground view. The riparian vegetation partially screens the existing MCCM and Project landforms, namely the western face of the Northern Emplacement (Figure 9). This section of the existing rehabilitation would not be disturbed by the Project. Additionally, the background in this viewpoint consists of gently sloped mountainous ranges.

The viewpoint is on a local road thus represents a public viewpoint.

Figure 9 conservatively does not incorporate any additional rehabilitation (beyond what is shown in the 2023 photo), that would occur prior to Project Year 2032.




WHC-23-95 EIS_LVA_0010

LEGEND
Approved Landform Maximum Height
Proposed Project Landform

*Source: Truescape (2025)*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

Viewpoint 1
Western View – Harparary Road

**Figure 9**

### 6.1.2 VIEWPOINT 2: NORTHERN VIEW – MAULES CREEK VILLAGE

Viewpoint 2 is located within the village of Maules Creek at Fairfax Public School looking south-southwest towards the Project. This viewpoint is situated at an elevation of 300 m AHD and approximately 6 km from the Project mining area. This viewpoint is considered to be potentially representative of residential and social/cultural views of the Project (Figure 10).

Similar to Viewpoint 1, the northern face of the overburden emplacement area would not be disturbed, reducing visual impacts this viewpoint. Figure 10 conservatively does not incorporate any additional rehabilitation (beyond what is shown in the 2023 photo), that would occur prior to Project Year 2032.

### 6.1.3 VIEWPOINT 3: EASTERN VIEW – LEARDS FOREST ROAD

This viewpoint is situated east of the Project mining area along Leards Forest Road looking west towards the Project area. The viewpoint is situated at an elevation of approximately 360 m AHD and approximately 6 km from the Project area. The Leard State Forest and surrounding vegetation screen the Project mining area for a large portion of Leards Forest Road, thus, this viewpoint is captured where there is an open view. At this location, the Project is located approximately perpendicular to Leards Forest Road.

In the foreground of the view is a fence and sign associated with the Narrabri Shire Council Quarry. The view shows a combination of dense grassy vegetation in the foreground, open cleared terrain and dense forest vegetation associated with the Leard State Forest and surrounding woodland. This location is located on generally hilly terrain with various gentle undulating slopes (Figure 11).

The viewpoint is not representative of views from a dwelling and represents a public viewpoint type.

Figure 11 conservatively does not incorporate any additional rehabilitation that would occur prior to Project Year 2032.


WHC-23-95 EIS_LVA_0020

LEGEND
Approved Landform Maximum Height
Proposed Project Landform

*Source: Truescape (2025)*

Whitehaven

MAULES CREEK CONTINUATION PROJECT

Viewpoint 2
Northern View – Maules Creek Village

**Figure 10**




WHC-23-95 EIS_LVA_0050

LEGEND
Approved Landform Maximum Height
Proposed Project Landform

*Source: Truescape (2025)*

Whitehaven
MAULES CREEK CONTINUATION PROJECT

Viewpoint 3
Eastern View – Leards Forest Road

**Figure 11**

## 6.2 Visual Sensitivity

Visual sensitivity refers to the existing quality of the view and how sensitive the view is to the proposed change. Visual sensitivity also considers factors of direction and orientation of the view (DPHI, 2024). Visual sensitivity can also be related to the orientation of a viewpoint or where a proposed development can be viewed from (e.g. living room in a residential dwelling).

Visual sensitivity is determined by identifying the individual sensitivity of a viewpoint in concert with the scenic quality of the viewshed (refer Table 6).

### 6.2.1 VIEWPOINT 1: WESTERN VIEW – HARPARARY ROAD

Viewpoint 1 is captured from Harparary Road to the north-west of the Project area. The viewpoint type of this location can be categorised as a public viewpoint as it is a local sealed road with Very Low viewpoint sensitivity. (refer Table 4).

The viewshed displays a human-modified landscape comprising extensively cleared land. Short, sparse grass cover lines the edge of this section of Harparary Road. The riparian vegetation along Maules Creek screens the foreground of the view approximately 250 m from the road. A hill within the Leard State Conservation area, west of the MCCM, rises to a height of approximately 350 m AHD. Distant mountainous ranges associated with Mount Byar approximately 25 km away, are visible in the viewshed. The view shows a flat and cleared landscape due to agricultural operations with an absence of waterbodies. The viewpoint is considered to be of Very Low scenic quality (refer Table 5).

The overall visual sensitivity of this viewpoint is Very Low (refer to Table 6).

### 6.2.2 VIEWPOINT 2: NORTHERN VIEW – MAULES CREEK VILLAGE

Viewpoint 2 is a representation of Maules Creek village. This viewpoint represents a communal area of Maules Creek village on Harparary Road considering the view is directly adjacent to Fairfax Public School. The nearby tennis court, public school and community hall collectively characterise this viewpoint as a private receiver as it correlates closest to the description of private receiver in Table 4 and is a secondary view from a dwelling rural area (zoned RU1). This viewpoint is concluded to have Low viewpoint sensitivity.

The viewshed contains flat grassy terrain with scattered trees in the foreground. Also visible in the viewshed are anthropogenic features including a dwelling, powerline, fence, shed and sealed road. Past these trees is the riparian vegetation of Maules Creek which provides further screening of the Project. Since the view is oriented south, no surrounding ranges are visible. The absence of hills provides opportunity for the Project landform to be a distinct feature, however, this is prevented by the foreground vegetation as mentioned above. The distance to the Project also helps to reduce the visibility of the overburden emplacement extension area. Much of Harparary Road contains foreground vegetation, thus this view displays a location with less foreground screening; however, the density remains sufficient to reduce the visual impacts. The school facilities and tennis court are also surrounded by vegetation; therefore, potential impacts would likely only be experienced from the commute along Harparary Road, and at the tennis courts. Due to the human impact and absence of distinctive features, the scenic quality is considered to be Moderate (refer Table 5).

Overall visual sensitivity is therefore considered to be Moderate.

### 6.2.3 VIEWPOINT 3: EASTERN VIEW – LEARDS FOREST ROAD

Viewpoint 3 is located along Leards Forest Road on RU1 zoned land, adjacent to a quarry site.

The viewpoint type can be categorised as a public viewpoint considering it is located on a local road. With no residences in the area, it is likely this view would only be experienced in transit, thus for a short moment of time. This viewpoint can therefore be classified to be of Very Low viewpoint sensitivity (refer Table 4).

No waterbodies or distinct features are visible within this view. Leard Forest Road is an unsealed gravel/dirt road. The gates and signage associated with the quarry are visible. The land has been previously cleared for agriculture and contains predominantly shrubby grasses with several trees in the foreground. This view is situated in a low-lying area of the Leard State Forest where there is no significant intervening topographic features screening the Project Landform. Since this viewpoint was captured at a similar elevation to the emplacement area approximately 360 m AHD, the mountains appear to be undulating and indistinct. There is a limited variation of colour and texture in the landscape as well as absences of waterbodies, significant social or cultural features, or distinct views. In consideration of this, the view is concluded to be of Low scenic quality (refer Table 5).

Overall, this viewpoint has Very Low visual sensitivity.

The overall visual sensitivity of each viewpoint (including viewpoint sensitivity and scenic quality) is summarised in Table 15.

**Table 15**
**Summary of Visual Sensitivity**

| Viewpoint | Viewpoint Type | Viewpoint Sensitivity | Scenic Quality | Overall Visual Sensitivity |
|---|---|---|---|---|
| **Viewpoint 1:** Western View – Harparary Road | Public Viewpoint | Very Low | Very Low | Very Low |
| **Viewpoint 2:** Northern View – Maules Creek Village | Private Receiver | Low | Moderate | Moderate |
| **Viewpoint 3:** Eastern View – Leards Forest Road | Public Viewpoint | Very Low | Low | Very Low |

## 6.3 Visual Magnitude

The visual magnitude of a project refers to its apparent size by determining the volume of horizontal and vertical fields of view occupied as per described in the Technical Supplement (DPHI, 2024). This quantitative methodology is described further in Section 2.4.5.

According to the Technical Supplement, several factors influence the visual magnitude to be taken into consideration such as:

- the project distance from the viewer;
- relative height between the viewer and the project; and
- the physical scale and dimensions of the development.

Visual magnitude ratings for the Project are assigned based on the magnitude of incremental changes associated with the Project Final Landform (refer to Figures 3 and 4).

Photomontages of the Project used to inform this visual assessment have been prepared by Truescape with panoramic photographs taken in 2023.

These photomontages with the overlayed grid are provided in Attachment B.

### 6.3.1 VIEWPOINT 1: WESTERN VIEW - HARPARARY ROAD

This viewpoint has Very Low visual sensitivity.

The Grid Tool conservatively indicates that three cells are occupied by the Project (Attachment B) which indicates a Very Low visual magnitude.

### 6.3.2 VIEWPOINT 2: NORTHERN VIEW – MAULES CREEK VILLAGE

This viewpoint has Moderate visual sensitivity.

The Grid Tool conservatively indicates that four cells are occupied by the Project (Attachment B) which indicates a Very Low visual magnitude.

### 6.3.3 VIEWPOINT 3: EASTERN VIEW – LEARDS FOREST ROAD

This viewpoint has Very Low visual sensitivity.

The Grid Tool conservatively indicates that seven cells are occupied by the Project (Attachment B) which indicates a Very Low visual magnitude.

Visual magnitude ratings for each viewpoint are summarised in Table 16.

**Table 16**
**Visual Magnitude Ratings**

| Viewpoint | Number of Cells Occupied | Visual Magnitude |
|---|---|---|
| **Viewpoint 1:** Western View – Harparary Road | 3 | Very Low |
| **Viewpoint 2:** Northern View – Maules Creek Village | 4 | Very Low |
| **Viewpoint 3:** Eastern View – Leards Forest Road | 7 | Very Low |

*Source: DPHI, 2024*

### 6.4 Visual Impact

The overall visual impact rating of each viewpoint is determined by combining the visual magnitude and visual sensitivity using the matrix provided in Table 7.

The visual impact of the Project upon each viewpoint is summarised in Table 17.

The application of the Technical Supplement methodology to the Project has resulted in lower visual impact ratings compared to findings of previous studies (i.e. Integral, 2010 and Whitehaven, 2021).

It is noted that, since the Technical Supplement methodology relies on the sensitivity of a viewpoint, this has caused a reduction in the sensitivity ratings of viewpoints located along roads (which includes two of the three viewpoints assessed) (refer Table 17).

The visual impacts assessed in the Landform Modification (Whitehaven, 2021) are concluded to have a negligible difference to Integral (2010) and therefore is consistent with the conclusions derived from Integral (2010) (Whitehaven, 2021). Integral (2010) allocated high visual impact ratings to the Northern, Eastern and Western Sectors for potential private landholders within 7.5 km of the existing MCCM. The assessment is ambiguous in its description of receivers by defining 'if views were present' and does not evaluate evidence of these high impact views. This has been re-evaluated using the methodology described in the Technical Supplement (Section 2) which assesses the visual impact based on the selected viewpoints rather than potential viewpoints. The Low visual impact derived from this assessment (Table 17) is also supported by the absence of private receivers between the viewpoints and the Project as seen in Figure 6. In consideration of the minimal cells occupied in the visual magnitude assessment, the viewpoints have received a significantly lower visual impact rating than previously assessed.

For the Northern Viewpoint located at Maules Creek Village (Viewpoint 2), Integral (2010) concluded that considering the views of the MCCM from the village are entirely dependent on vegetation screening, that the visual impact is high to moderate until the completion of rehabilitation. The Technical Supplement on the contrary assesses the view encompassing screening effects rather than considering what the impacts would be without screening. It is unlikely that the vegetation screening this viewpoint would be removed prior to the rehabilitation of the Project's Final Landform. Any clearance or development would be considered in how the visual impact would be increased.

**Table 17**
**Visual Impact Assessment**

| Viewpoint | Viewpoint Type | Viewpoint Sensitivity | Scenic Quality | Overall Visual Sensitivity | The Project Occupied Cells | The Project Visual Magnitude | The Project Visual Impact | Approved MCCM (PA 10_0138) Visual Impact[1] |
|---|---|---|---|---|---|---|---|---|
| **Viewpoint 1:** Western View – Harparary Road | Public Viewpoint | Very Low | Very Low | Very Low | 3 | Very Low | Very Low | High to moderate |
| **Viewpoint 2:** Northern View – Maules Creek Village | Private Receiver | Low | Moderate | Moderate | 4 | Very Low | Low | High to Moderate |
| **Viewpoint 3:** Eastern View – Leards Forest Road | Public Viewpoint | Very Low | Low | Very Low | 7 | Very Low | Very Low | High to Moderate |

[1] The visual impact described in the Landform Modification (Whitehaven, 2021) is being used as a comparison to the Project. The description of the visual impact has been adjusted to fit the terminology used in the Technical Supplement.

## 6.5 Lighting Impacts

There are two types of lighting impacts generally experienced by the existing MCCM and predicted to be experienced by the Project:

- **Direct Light Effects:** experienced where the light source is directly visible through a direct line of sight from a viewing location.
- **Diffuse Light Effects**: relates to the general night glow (diffuse light) that results from light of sufficient strength to be reflected into the atmosphere.

The potential visual impacts of night-lighting associated with the Project are discussed below.

### 6.5.1 DIRECT LIGHT IMPACTS

The direct lighting impacts are expected to be similar to the current MCCM. Lighting at the Project would be sourced from lighting plants, stationary work lights, fixed/permanent lights and vehicle mounted lights consistent with the approved lighting infrastructure at the MCCM.

Potential direct light effects would be associated with headlights of haul trucks, flashing safety lights of smaller vehicles and mobile lighting equipment. Light from these activities would predominantly be screened by the overburden emplacement areas and open cut highwalls.

An increase in the height of the Northern Emplacement Area has potential to cause an increase in light effects, however the height increase is approximately 35 m and unlikely to cause significant change to the already experienced effects. The approximate 69 m AHD height increase of the Southern Emplacement Area is unlikely to cause impacts due to the absence of sensitive viewpoints to the south of the Project area due to the BCM and TCM, and due to the significant distance and intervening topography (including the Northern Emplacement Area) to the north.

Any potential impact associated with direct light effects of the Project, however, would be similar to those assessed for the approved MCCM.

MCC mitigates direct light at the current MCCM to prevent the potential for obtrusive light as defined in the AS/NZS 4282:2019 to be light that due to quantitative, directional or spectral attributes in a given context, gives rise to excessive annoyance, discomfort, distraction or a reduction in the ability to see essential information. This includes the mitigation of spill light, defined as light emitted by a lighting installation that falls outside of the design area, using structures such as directional luminaires. Although not all spill light is obtrusive, the Standard aims to minimise the potential effects.

An independent lighting review was prepared by EMM Consulting Pty Ltd (EMM) in February 2024 as part of the Independent Environmental Audit 2024 and showed that illuminance at all viewpoints were compliant to Condition 67 and 68 of PA 10_0138 which includes ensuring all external lighting associated with the project complies with the latest version of AS/NZS 4282. These mitigation measures are described in Section 7. Furthermore, the assessment did not result in any additional recommendations by the EMM (Environmental Resources Management [ERM], 2024).

### 6.5.2 DIFFUSE LIGHT IMPACTS AND SIDING SPRINGS OBSERVATORY

The existing mining operations within the vicinity of the Project area (MCCM, BCM and TCM) would continue to contribute to diffuse light effects (sky glow). This lighting effect has a lower impact than direct lighting but is more widely distributed. (Integral, 2010).

The Project is located approximately 120 km north-east of the Siding Spring Observatory and within the Dark Sky Region, defined as being within 200 km of the observatory (DPHI, 2024). In consideration of the significant distance from the Siding Springs Observatory and the expectation that diffuse lighting would continue to be similar to that of the existing/approved MCCM, BCM and TCM mining operations, there would not be a material change to existing/approved impacts to the Siding Spring Observatory.

It is expected that the potential diffuse light effects of the Project would be generally consistent with the impacts of the approved MCCM and the existing impacts of other approved developments in the vicinity of the MCCM (e.g. TCM, VCM).

The luminance at the MCCM has previously been assessed as part of a Light Impact Assessment for the Vickery Extension Project (Light Naturally, 2019). This assessment involved measuring whether the anthropogenic sources (i.e. MCCM, BCM, TCM and Boggabri Township) in the region were within the specified threshold level in the *Dark Sky Planning Guideline* of 'natural background plus 10% at 30° above the horizon'. If the assessment concludes that luminance is below 10% at an angle less than or equal to 30° above the horizon, then it is compliant. The assessment concluded that even against 'darkest background' luminance (which underestimates the localised natural sky glow in the region above Maules Creek and Boggabri), the contribution from anthropogenic sources was below the required 10% threshold at an altitude between 15° and 20° above the horizon. The Project proposes a small increase in operational and fixed plant and fleets to facilitate the 1 Mtpa increase to the ROM extraction rate. With the implementation of mitigation measures to reduce light spill (as described in Section 7), the Project is not expected to materially change the lighting sources assessed by Light Naturally (2019) for the MCCM. Furthermore, the TCM Project Approval requires coal mining operations to cease in Year 2 of the Project and transition to rehabilitation and closure, meaning its contribution to cumulative sky glow will be significantly reduced.

Mitigation measures, developed in consideration of AS/NZS 4282:2019, to minimise diffuse light impacts to the Siding Spring Observatory as far as practicable, are discussed in Section 7.

### 6.5.3 NATIONAL LIGHT POLLUTION GUIDELINES FOR WILDLIFE.

Further to the mitigation measures outlined above, the *National Light Pollution Guidelines for Wildlife* (Cth DCCEEW, 2023) (the Lighting Guidelines for Wildlife) has been considered for the Project to minimise potential impacts on biota within 20 km of the Project. Artificial light has the potential to cause negative effects to the physiology, circadian cycles, orientation, or the behaviour of biota (Cth DCCEEW, 2023). The effects can be attributed to direct lighting and diffuse lighting (skyglow) which can both result in negative impacts.

Subject to site safety requirements, the Project would incorporate lighting management principles that are generally consistent with the Lighting Guidelines for Wildlife recommended best practice lighting design including:

- Only using artificial lights for specific and defined purposes.
- Using adaptive light controls such as sensor lights.
- Using directional lighting and lighting shields to minimise potential light spill.
- Using the minimum number and intensity of light required to provide safe illumination.
- New infrastructure would use non-reflective, dark-coloured surfaces where feasible (i.e. avoidance of polished or light-coloured infrastructure which would contribute to sky glow).
- New lights would use reduced or filtered-out blue, violet and ultraviolet wavelengths

## 6.6 Cumulative Impacts

Cumulative visual impacts refer to the effects of a development in combination with other past, present or likely future developments that may have potential visual interactions.

As described in Section 1.2, the Project proposes a continuation of the existing MCCM (i.e. an operational open cut pit mine with existing surface infrastructure, mine landforms and disturbance). The Project would occur in proximal to various operational coal mines, namely:

- the approved MCCM;
- BCM; and
- TCM.

The continuation of the mining operations at the MCCM would result in the delay of the final rehabilitated landform for a further 10 years, thus continuing the visual impacts of the mining operations. As a result, the Project would be an ongoing contributor to the mining landscape character elements that are common in the region. Incorporation of geomorphic design principles into the final landform design and continuing progressive rehabilitation of mined landforms would reduce cumulative impacts.

## 6.7 Performance Objectives

The Technical Supplement requires applicants to address the visual performance objectives associated with the respective level of visual impact (DPHI, 2024). The visual impacts of all viewpoints assessed did not exceed a level higher than ‘Low’, thus no mitigation provided in the Technical Supplement is required to be implemented. Notwithstanding, lighting impact mitigation measures are discussed in Section 7.

# 7 Mitigation

MCC manages visual and lighting impacts associated with the approved MCCM in accordance with the operating conditions outlined in Conditions 67 and 68 of Schedule 3, PA 10_0138.

These existing measures include:

- implementing all reasonable and feasible measures to minimise the visual and off-site lighting impacts of the project;
- ensuring no outdoor lights shine above horizontal;
- wherever possible, ensuring that mobile equipment is appropriately designed and/or retrofitted to prevent light being directed above the horizontal;
- ensuring that all external lighting associated with the project complies with *Australian Standard AS4282 Control of Obtrusive Effects of Outdoor Lighting, 1997* or its latest version (AS 4282: 2019)*;*
- provide for the establishment of trees and shrubs and/or the construction of mounding or bunding; and
- ensuring that the visual appearance of all buildings, structures, facilities or works (including paint colours and specifications) is aimed at blending as far as possible with the surrounding landscape, to the satisfaction of the Secretary.

Methods such as the incorporation of macro-relief, geomorphic design principles and surface water drainage paths, and progressive rehabilitation to minimise visual impact associated with the Project are detailed in the Rehabilitation and Mine Closure Strategy (Attachment 7 of the EIS).

The generation of dust from mining has the potential to exacerbate the impacts of lighting. Dust generation is mitigated at the existing MCCM and would continue to be mitigated for the Project. Further detail of dust impacts and mitigation measures are provided in the Air Quality Impact Assessment (Appendix I of the EIS).

Previous assessments of the efficacy of visual mitigation measures have not resulted in recommendations for additional measures (ERM, 2024). If required, the existing visual impact management measures would be revised to reflect the Project, including any additional mitigation measures that may be required for reducing visual impacts, subject to the conditions of any development consent for the Project.

# 8 Conclusion

MCC is seeking approval for the continuation of open cut mining operations within the MCCM mining and exploration tenements for a further 10 years (from 2035 to 2044), the establishment of Landscape Revegetation Zones, and the construction of a water transfer pipeline between the MCCM Water pipeline network and the approved VCM to TCM pipeline.

## 8.1 Landscape Character Impacts

Six LCZs were assessed within an 8 km boundary of the Project mining operations components, including:

- LCZ 1 – Village.
- LCZ 2 – Alluvial Plains and Undulating Slopes.
- LCZ 3 – Uplands.
- LCZ 4 – Rivers and Creeks.
- LCZ 5 – Surrounding Ranges.
- LCZ 6 – Mining Operations.

Impacts of the Project on each LCZ are summarised in Table 18.

**Table 18**
**Summary of Landscape Character Impacts**

| Landscape Character Zone | Sensitivity | Magnitude | Landscape Character Impact |
|---|---|---|---|
| LCZ 1 – Village | Moderate | Very Low | **Low** |
| LCZ 2 – Alluvial Plains and Undulating Slopes | Low | Moderate | **Low** |
| LCZ 3 – Uplands | Moderate | Moderate | **Moderate** |
| LCZ 4 – River and Creeks | Moderate | Low | **Low** |
| LCZ 5 – Surrounding Ranges | High | Low | **Moderate** |
| LCZ 6 – Mining Operations | Low | Low | **Very Low** |

The highest landscape character impact rating is anticipated for LCZ 3 (Uplands) as it would be directly impacted by the Project disturbance footprint. Considering the historical anthropogenic land uses within the other LCZs and that they would not be directly impacted by disturbance, they are anticipated to experience a Low to Moderate landscape character impact.

## 8.2 Visual Impacts

Potential direct and diffuse light effects from the Project would be consistent with the impacts of the existing/approved MCCM and existing lighting mitigation measures would continue to be implemented.

This visual impact assessment utilised three representative viewpoints to the west, east and north of the Project. Visual impacts associated with the Project are summarised in Table 19 below.

**Table 19**
**Summary of Visual Impacts at Viewpoints 1, 2 and 3**

| Viewpoint | Overall Visual Sensitivity | Visual Magnitude | The Project Visual Impact | Approved MCCM (PA 10_0138) Visual Impact[1] |
|---|---|---|---|---|
| **Viewpoint 1:** Western View – Harparary Rd | Very Low | Very Low | **Very Low** | High to Moderate |
| **Viewpoint 2**: Northern View – Maules Creek Village | Moderate | Very Low | **Low** | High to Moderate |
| **Viewpoint 3:** Eastern View – Leards Forest Road | Very Low | Very Low | **Very Low** | High to Moderate |

[1] The visual impact described in the Landform Modification (Whitehaven, 2021) is being used as a comparison to the Project. The description of the visual impact has been adjusted to fit the terminology used in the Technical Supplement.

Viewpoints 1, 2 and 3 have been assessed to have Very Low and Low visual impact ratings. As outlined in Section 7, existing visual impact mitigation measures would continue to be implemented in accordance with the latest version of the AS/NZS 4282 to reduce potential visual amenity impacts.

# 9 References

Australian Bureau of Statistics (2006). *Maules Creek 2006 Census All persons QuickStats*.

Australian Bureau of Statistics (2010). *National Regional Profile: Narrabri (A) (Statistical Local Area).*

Australian Bureau of Statistics (2021). *Maules Creek 2021 Census All persons QuickStats.*

Commonwealth Department of Climate Change, Energy, the Environment and Water (2023). *National Light Pollution Guidelines for Wildlife.*

Department of Climate Change, Energy, the Environment and Water (2024). *NSW (Mitchell) Landscapes – Version 3.1.* https://datasets.seed.nsw.gov.au/dataset/7a1658be-a632-4d4c-8e94-5f9b3be31055

Department of Planning and Environment (2015). *Leard Forest Regional Biodiversity Strategy Stage 1 – Scoping Report.*

Department of Planning and Environment (2023). *Dark Sky Planning Guideline.*

Department of Planning and Infrastructure (2012). *New England North West Strategic Regional Land Use Plan.*

Department of Planning, Housing and Infrastructure (2024). *Large-Scale Solar Energy Guideline: Technical Supplement for Landscape Character and Visual Impact Assessment.*

Environmental Resources Management (2024). *Independent Environmental Audit 2024 – Maules Creek Mine.*

Extent Heritage Pty Ltd (2025). *Maules Creek Continuation Project Non-Indigenous Cultural Heritage Assessment.*

Integral Landscape Architecture and Visual Planning (2010). *Maules Creek Coal Project Visual Impact Assessment.*

Light Naturally (2019). *Light Impact Assessment: Vickery Extension Project*. Prepared for Whitehaven Coal.

Mitchell, Peter (2002). *Descriptions for NSW (Mitchell) Landscapes – Version 2,* NSW National Parks and Wildlife Services Murray-Darling Basin Authority (2023). *Namoi Catchment*. https://www.mdba.gov.au/basin/catchments/northern-basin-catchments/namoi-catchment

New South Wales Office of Environment and Heritage (2016). *The Central Resource for Sharing and Enabling Environmental Data in NSW.*

New South Wales Government (2024). *Namoi.* https://water.dpie.nsw.gov.au/about-us/learn-about-water/basins-and-catchments/catchments/namoi

Office of Environment and Heritage (2012). *Leard State Conservation Area (Community Conservation Area Zone 3) Plan of Management.*

Square Peg Social Performance (2025). *Maules Creek Continuation Project Social Impact Assessment.*

Whincop Archaeology Pty Ltd (2025). *Aboriginal Cultural Heritage Assessment for the Maules Creek Continuation Project in the Narrabri Shire, New South Wales.*

Whitehaven Coal Limited (2021). *Maules Creek Coal Mine Landform Modification – Modification Report.*

# ATTACHMENT A

# CURRENT VIEWS OF THE EXISTING MAULES CREEK COAL MINE FROM VIEWPOINTS 1 TO 3




WHC-23-95 EIS_LVA_004B

*Source: Truescape (2024)*

Whitehaven

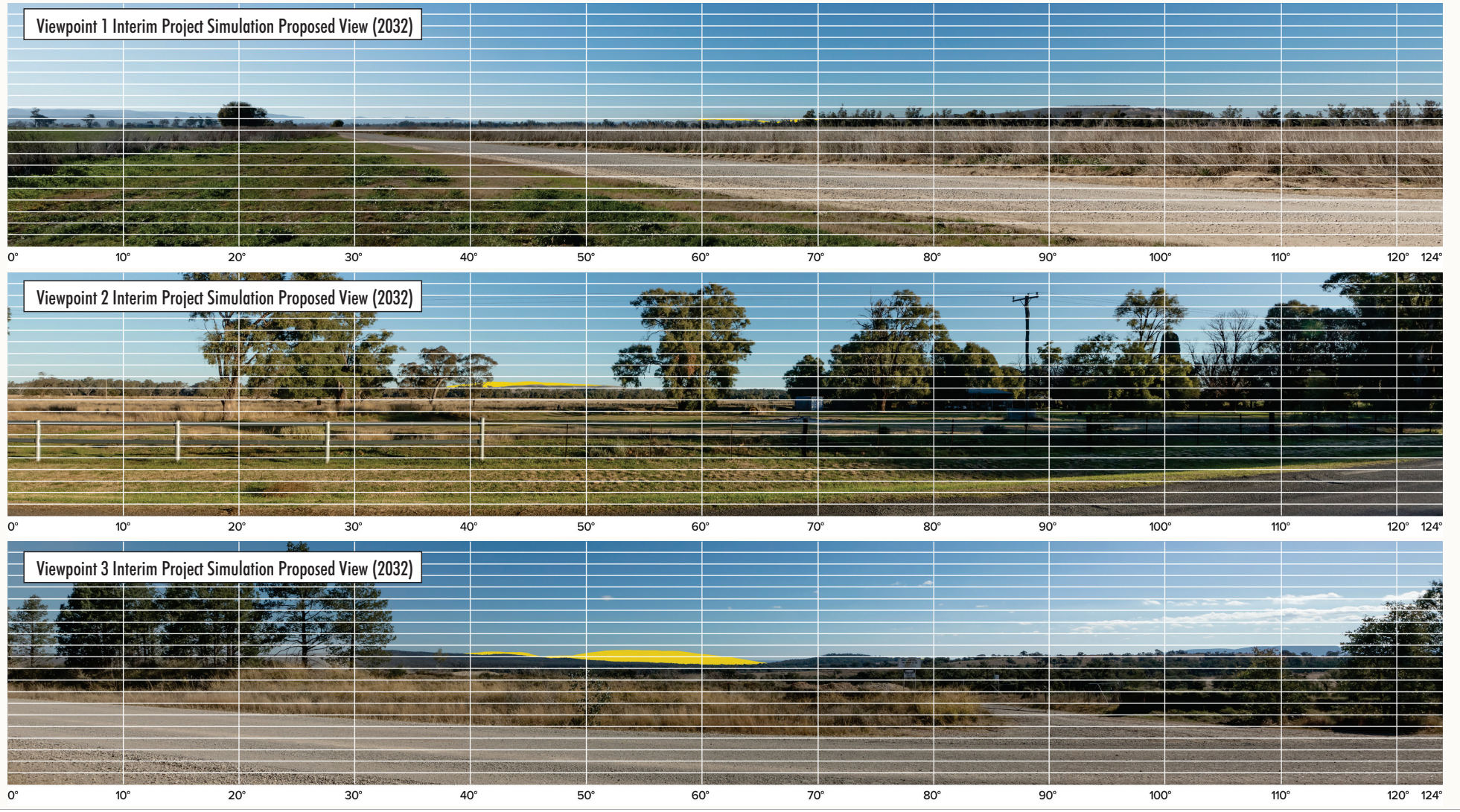
MAULES CREEK CONTINUATION PROJECT

Current Views of the Existing
Maules Creek Coal Mine
From Viewpoints 1 to 3

**Figure A-1**

# ATTACHMENT B

# VISUAL MAGNITUDE GRID TOOL VIEWPOINT ANALYSIS




WHC-23-95 EIS_LVA_0013C

LEGEND
Proposed Project Landform

*Source: Truescape (2025)*

Whitehaven
MAULES CREEK CONTINUATION PROJECT

Project Visual Magnitudes – Viewpoints 1 to 3

**Figure B-1**