Appendix 59 Landscape and Visual Impact Assessment – Willowdale Mine, Larego Mine

Landscape and Visual Impact Assessment

Willowdale Mine, Larego Mine Region

Alcoa of Australia Limited

6 February 2025

→ The Power of Commitment

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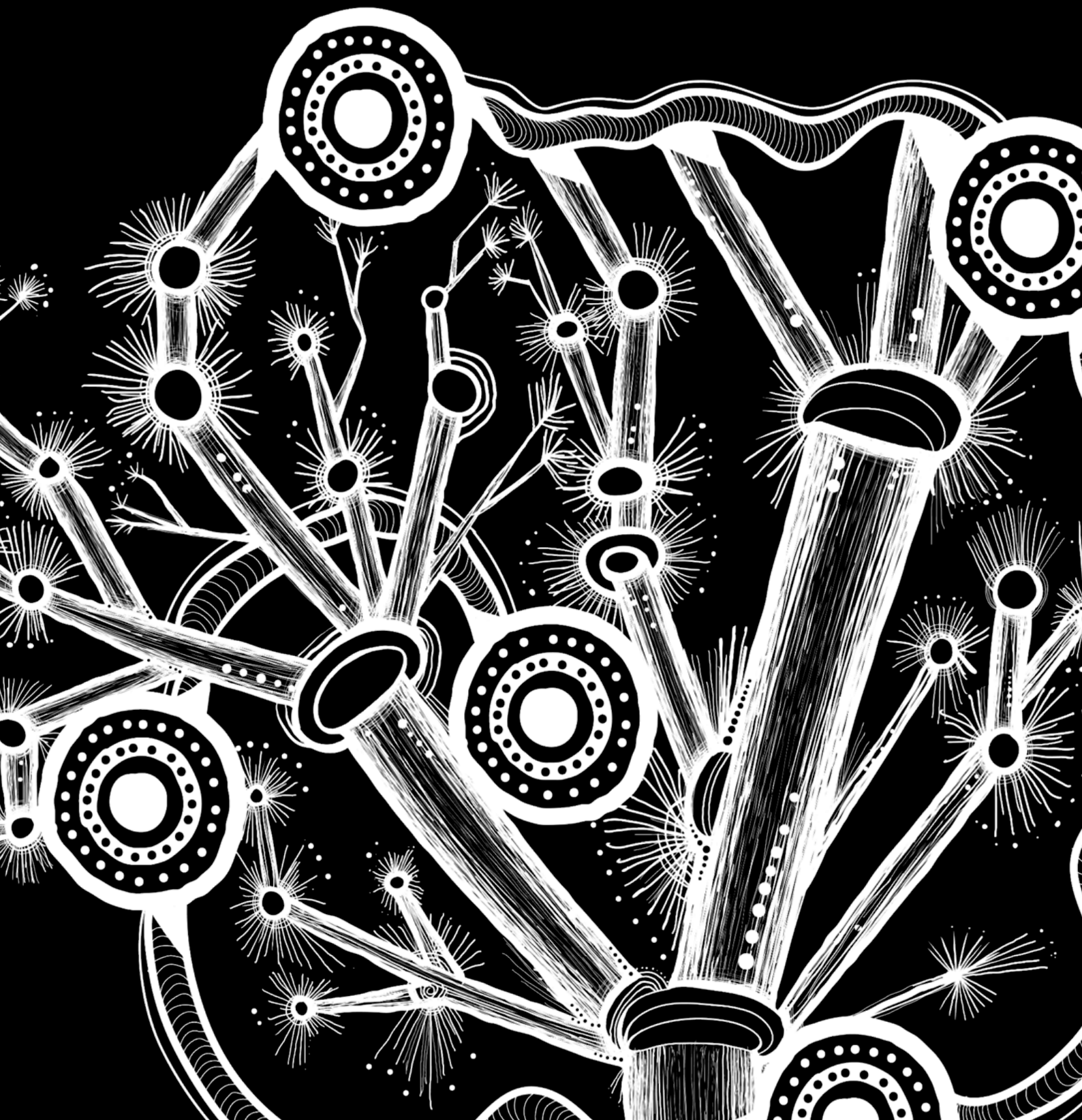
Acknowledgement of Country

GHD acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the land, water and sky throughout Australia on which we do business. We recognise their strength, diversity, resilience and deep connections to Country. We pay our respects to Elders of the past, present and future, as they hold the memories, knowledges and spirit of Australia. GHD is committed to learning from Aboriginal and Torres Strait Islander peoples in the work we do.



Executive summary

Introduction

Alcoa of Australia Limited (Alcoa) is operating the Willowdale Mine in the Larego Mine Region in accordance with a Mining Management Program (MMP) assessment under Alcoa's State Agreements. The MMP is subject to progressive update and approval on an annual basis by the Independent Technical Advisory Group (ITAG) and is then endorsed for Ministerial approval with the Bauxite Strategic Executive Committee (BSEC) advising the Minister as part of this process. Alcoa commits to undertake a Social Surroundings Impact Assessment (SSIA) to support this MMP. A Landscape and Visual Impact Assessment (LVIA, this report) is one of the technical studies required as part of the SSIA.

This LVIA considers existing mined areas and proposed mining areas within the Larego Mine Region five-year mine plan (2023-2027) (the Proposal) and assesses sensitive receptors within 10 km of mining operations, including recreational trails, public roads and elevated viewpoints. This has resulted in a Study Area, generally confined to the likely extent of visibility of the mine areas within the surrounding context, that extends approximately 10 km to the north, east and south of Larego Mine Region and to South Western Highway to the west.

Larego Mine Region is situated in Western Australia's Peel and South West regions, within the shires of Harvey and Waroona. The LVIA Study Area encompasses the shires of Harvey, Waroona, Boddington and Collie and is situated east of the townsites of Yarloop and north-east of Harvey.

Method

This LVIA is informed by a desktop review, site inspections, identified landscape character units and values, and review of previous studies within a similar landscape context. The LVIA assesses potential landscape and visual impacts from eight viewpoints (sensitive receptor locations). The findings of the assessment, including mitigation and management measures, are related to both the landscape character units and viewpoints.

Sensitive receptors of varying degrees of significance were identified, including residents, users of state forest, tracks, trails, camping grounds, and roads and recreational facilities. These receptors are associated with the Darling Plateau's natural setting values, the quality of the surrounding forest and landscape, and the results of community and stakeholder engagement indicating concerns in relation to visual impact on the nearby communities, state forests, and roads.

Proposal summary

The Proposal, that will be used as the basis for this LVIA, includes existing mined areas, proposed mining areas and rehabilitation as identified in Larego Mine Region five-year mine plan (2023-2027). Existing mined areas comprise both ceased mine pits and secondary haul roads (yet to be rehabilitated) as well as active mine pits and haul roads. Proposed mining areas comprise components of Larego Mine Region five-year mine plan yet to be implemented. Mining activities included within this stage of work consist of vegetation clearing, mining earthworks (e.g. mine pits and secondary haul roads) and active mining (ore extraction). In addition, the Proposal also includes staged rehabilitation. The baseline used for this LVIA is the pre-mining landscape of the Darling Plateau forest within the Larego Mine Region characterised by open forests within an undulating landscape.

Findings

A variety of established vegetation is present within the Study Area, which are predominantly native Jarrah forest that has previously been subject to intermittent timber harvesting and regrowth, mine site rehabilitation and areas of pine plantation. The vegetated landscape is dissected by steep river valleys and interspersed with granite outcrops.

Three Landscape Character Units (LCUs) within the Study Area were identified and assessed:

– **LCU1 Darling Plateau forest -** generally high significance of impact on key features of the existing landscape character due to the valued forest area and high sensitivity to change.

– **LCU2 Mining activities** - generally negligible significance of impact on key features of the existing landscape character. Anticipated changes associated with the Proposal would not be out of character with LCU2.
– **LCU3 Undulating rural plains** - generally negligible significance of impact on key features of the existing landscape character.

The visual impacts associated with existing mined areas and proposed mining areas, relevant to LCU1 and LCU2, are considered long-term. Progressive rehabilitation would occur concurrent to mining, on closure of mine pits. Once the vegetation is established rehabilitation would be permanent.

Eight viewpoint locations were chosen, to represent views from sensitive receptor locations towards or within Larego Mine Region, with relevance to existing mined areas and proposed mining areas The assessment found that visual impacts from VP6 Mount William were high-moderate and VP7 Zig Zag Road and VP8 Driver Road were assessed as high due to discernible changes in the baseline conditions resulting from existing mined areas that are out of scale with the pre-existing view. The impacts from VP1 to VP5, were defined as negligible.

A section of Munda Biddi Trail is impacted by existing mined areas and will remain so until the mine pits are ceased, and rehabilitation has occurred and established. Once the vegetation is established, rehabilitated vegetation would be permanent.

Mitigation and management measures

Visual management objectives defined for the Study Area include:

– Best practice siting and design of the Proposal away from sensitive locations, including Munda Biddi Trail.
– Protection and maintenance of existing landscape character, such as the valued views of the dense forest.
– Restoration or enhancement of degraded landscape character, seeking opportunities for planned rehabilitation of the original landform or vegetation.

Key landscape character recommendations include minimising vegetation removal through consolidation of proposal haul roads and mine pits throughout Dwellingup State Forest and establishing distances and requirements for the retention of existing vegetation between Munda Biddi Trail and proposed mining areas.

Conclusion

By implementing the recommended mitigation and management measures, in addition to prioritised rehabilitation of key locations, there is potential to further reduce the landscape and visual impacts of the Proposal.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.4 and the assumptions and qualifications contained throughout the report.

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Terminology

Terminology	Definition
Alcoa of Australia Limited	The proponent of the Proposal.
Cumulative impact	The incremental impact of the Proposal when added to other current and known likely future developments.
Landscape character	The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place.
Landscape character unit	Areas of homogenous (similar) patterns of visual characteristics such as landform, vegetation, water form and land use as well as individual features.
Landscape impacts	Changes in the character and quality of the landscape that occur as a result of change and development, while *visual impacts* relate to the appearance of these changes.
Magnitude	The measurement of the scale, form and character of a development proposal when compared to the existing condition. In the case of visual assessment this also relates to how far the proposal is from the viewer. Combines with sensitivity, magnitude provides a measurement of impact.
Receptor	An aspect of the landscape or view that could be impacted, such as physical resources or viewer groups.
Study Area	Consists of land in the vicinity of, and including, the Proposal site. The Study Area is a wider area surrounding the Proposal site as defined in this assessment, including landscape that has the potential to be indirectly impacted by the Proposal.
Susceptibility to change	The capacity of the landscape to accommodate a change of a particular type or scale, without adverse effects on the existing landscape character.
The Proposal	Existing mined areas and proposed mining areas within the Larego Mine Region five-year mine plan (2023-2027)
View	Comprises a portion of a landscape seen by an observer.
Viewpoint	The point from which a view is observed.
Visual amenity	The overall quality of views that people enjoy of their surroundings.
Visual impact assessment	The analysis of changes in the appearance of the landscape as a result of development. Impacts may be either negative or positive.
Visual receptor	Individuals and/or defined groups of people who have the potential to be affected by the Proposal.

Abbreviations

Abbreviations	Definition
Alcoa	Alcoa of Australia Limited
BSEC	Bauxite Strategic Executive Committee
EP Act	Environmental Protection Act (1986) Western Australia
DBCA	Department of Biodiversity, Conservation and Attractions
EPA	Environmental Protection Authority Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
GHD	GHD Pty Ltd
GPS	Global Positioning System
ha	Hectares
ITAG	Independent Technical Advisory Group
km	Kilometres
LCU	Landscape Character Unit
LDA	Limited Disturbance Area
LGA	Local Government Area
LPS	Local Planning Strategy
LVIA	Landscape and Visual Impact Assessment
m	Meters
MSZ	Mining Sensitivity Zone
SSIA	Social Surrounds Impact Assessment
VP	Viewpoint
WA	Western Australia
ZTV	Zone of Theoretical Visibility

1. Introduction

1.1 Background

Alcoa of Australia Limited (Alcoa) mining operations comprise Willowdale and Huntly bauxite mines, which are located in Alcoa's Mining Lease 1SA within the Northern Jarrah Forest of south-west Western Australia (WA).

Alcoa's Willowdale Mine supplies bauxite to the Wagerup Alumina Refinery. It currently operates within the Larego Mine Region that Alcoa would like to expand operations within.

Larego Mine Region is located within the shires of Waroona and Harvey, traditional lands of the Binjareb people. Located within the Peel and South West region, approximately 120 km south-east of Perth, Larego Mine Region is situated east of the townsites of Yarloop and north-east of Harvey.

1.2 Purpose and scope of this report

This Landscape and Visual Impact Assessment (LVIA) will inform a Social Surrounds Impact Assessment (SSIA) to support the Mining and Management Program (MMP) approval of the Willowdale Mine under Alcoa's State Agreements. The SSIA is to be conducted in accordance with Environmental Protection Authority Environmental Factor Guideline – Social Surroundings (EPA 2023).

This LVIA considers existing mined areas and proposed mining areas within Larego Mine Region five-year mine plan (2023-2027) (the Proposal) and assesses the sensitive receptors within 10 km of mining operations, including recreational trails and facilities, public roads and elevated viewpoints. This has resulted in a Study Area that extends approximately 10km to the north, east and south of Larego Mine Region and to South Western Highway to the west.

1.3 Report structure

The report is comprised of the following sections as shown in Figure 1.

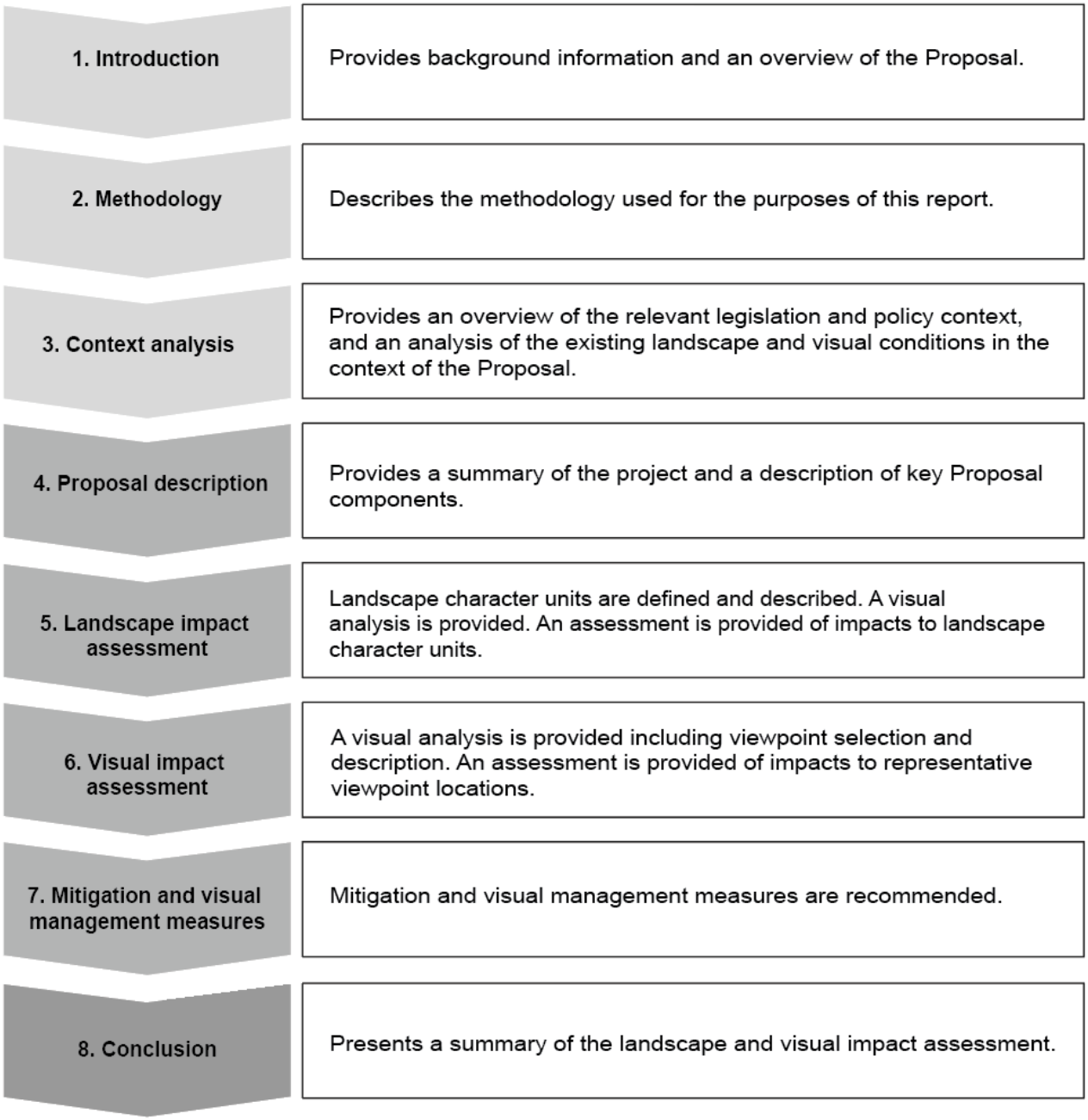


Figure 1 Report structure

1.4 Limitations

This report: has been prepared by GHD for Alcoa and may only be used and relied on by Alcoa the purpose agreed between GHD and Alcoa as set out in Section 1.2 of this report. GHD otherwise disclaims responsibility to any person other than Alcoa arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring after the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.5 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Alcoa and others who provided information to GHD (including government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.5 Assumptions

There is no national guidance on the assessment of landscape and visual impacts specific to Australia. However, in Western Australia (WA), the industry typically refers to *Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design (*Western Australian Planning Commission, 2007). This assessment has also referred to:

– Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute, 2013)
– Environmental Factor Guideline: Social Surroundings (Environmental Protection Authority, 2023)

The assessment aims to be objective and describe any potential changes factually. While potential impacts resulting from the Proposal are defined, the significance of these changes requires qualitative (subjective) judgements. The conclusion of this assessment therefore combines objective measurement and professional interpretation. While this assessment aims to be objective, it is recognised that LVIA can be subjective, and individuals are likely to associate different visual experiences to the Study Area.

This assessment is based on the Proposal and receptor information provided to GHD at the time of writing. The scope of this assessment does not include consideration of landscape and visual impacts from lighting or during nighttime conditions.

The Proposal, that will be used as the basis for this assessment, includes existing mined areas and proposed mining areas, as identified in Larego Mine Region five-year mine plan (2023-2027). Existing mined areas comprise both ceased mine pits and secondary haul roads (yet to be rehabilitated) as well as active mine pits and haul roads. Proposed mining areas comprise components of Larego Mine Region five-year mine plan that have yet to be implemented. Mining activities included within this stage of work consist of vegetation clearing, mining earthworks (e.g. mine pits and secondary haul roads) and active mining (ore extraction). In addition to existing and proposed mining areas the Proposal includes staged rehabilitation. The baseline used for this assessment is the pre-mining landscape of the Darling Plateau forest within Larego Mine Region characterised by open forests within an undulating landscape.

Aboriginal heritage has not been considered within this report.

2. Methodology

This section outlines the methodology used to assess the impacts of the Proposal on the landscape character and visual amenity. Refer to Figure 2 for methodology outline diagram.

Steps	Description / Outcomes
1 Define the scope of assessment / set the context	Define the study area boudary and set the context to the project. Review background information including: • Legislation and policy context • Exisiting landscape context including: topograpgy and hydrology data, land use zoning and cadastral data, vegetation maps and CALM landscape character types
2 Describe the visual landscape character	Identify and describe the landscape charcter units based on uniform patterns of vegetation, topography, water form, and land use. Determine the value associated with each landscape unit
3 Evaluate the way the visual landscape character is viewed, experienced and valued	Undertake visual analysis including identifing and describing: • Key views • Viewing locations and their significance • Visual character preferences
4 Determine visual management objectives	Determine objectives for managing visual landscape character, including annotated maps and photographs as required, identifying the location of any priority areas or sites.
5 Describe proposed development	Analyse, describe and illustrate the main visual components of the project. Illustrations, drawings or simulations of the project should be realistic and comprehensive.
6 Describe the potential Landscape impacts	Identify and describe likely changes to the landscape character including: • List likely changes in landscape character, based on the outcome of Step 2 • Extent of the area likely to be affected by the project • Likely changes to the landscape character throughout the staging of the project. Evaluate likely changes and/or impacts including: • Assess the magnitude, duration and significance of each specific landscape impact • Assess the capacity of the landscape to accommodate change • Determine if an impact will be temporary or permanent and whether the effect will be beneficial, neutral or adverse • Identify uniqueness or rarity of the affected landscapes • Determine the significance of impacts by considering both magnitude of change and sensitivity of the landscape.
7 Describe the potential Visual impacts	Identify and describe likely changes to the visual landscape and views including: • List likely changes in views, based on the outcome of Step 3 • Extent of the area likely to be affected by the project • Likely changes to views throughout the staging of the project. Evaluate likely changes and/or impacts of each project option including: • Assess the magnitude, duration and significance of each specific visual impact • Determine if an impact will be temporary or permanent and whether the effect will be beneficial, neutral or adverse • Identify value placed onto the impacted views • Determine the significance of impacts by considering both magnitude of change and sensitivity of view
8 Develop visual management measures	Determine whether visual management objectives can be achieved Identify measures that reduce negative impacts; and facilitate positive impacts
9 Prepare final recommendations	Summarise the findings and describe any mitigation measures

Figure 2 Visual landscape planning process

2.1 Standards and guidance

Where practicable, the landscape and visual impacts associated with the Proposal have been assessed in accordance with the advice provided in national and state recognised resource documents and in accordance with all relevant legislation. These include but are not limited to the following:

– *Visual Landscape Planning in Western Australia: a manual for evaluation, assessment, siting and design* (Western Australia Planning Commission, 2007)
– *Environmental Factor Guideline: Social Surroundings* (Environmental Protection Authority, 2023)
– *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013)

2.2 Context analysis

2.2.1 Study Area

A key component of defining the scope of evaluation and setting the context is determination of the Study Area. The extent of the Study Area, for the Proposal, was informed by a desktop review, site inspection in addition to previous studies of a similar type and/or within a similar landscape context. This provided an understanding of the existing landscape context that resulted in a Study Area that is generally confined to the likely extent of visibility of the Larego Mine Region within the surrounding context, as stipulated in Section 3.1.

2.2.2 Legislation and policy context

A review of key planning designations, policies and guidance was undertaken in relation to landscape and visual amenity. The emphasis of the review was to identify designations, protections, values, and objectives relevant to the landscape and visual environment of the Study Area, including scenic amenity values.

Relevant planning legislation has been summarised in Section 3.2 to provide context for development within the locality, however, there is no requirement for Alcoa's mining operations to conform with referenced planning schemes and/or to seek development approval. Alcoa's operations are carried out on mining tenure and are subject to state agreements which prevail according to their terms over any other act of law.

2.2.3 Landscape context

Relevant background information relating to the Proposal and the Study Area was reviewed and summarised (refer to Section 3.3). This included information regarding to the existing landscape and visual environment such as:

– Topography and hydrology data
– Land use zoning and cadastral data
– Vegetation maps
– *Reading the Remote - Landscape Characters of Western Australia* study. (Department of Conservation and Land Management, 1994).
– Google aerial and street view imagery
– Stakeholder and community feedback on valued landscapes and views.

2.3 Landscape character and visual analysis

2.3.1 Site inspection

A site inspection was undertaken by a landscape architect and a landscape planner on 10 May 2024 with weather conditions including interspersed rain, cloud cover with varied levels of visibility. An additional site inspection was undertaken by a landscape planner and environmental scientist on the 21 August 2024 with weather conditions including interspersed rain, cloud cover with varied levels of visibility. During the site inspections, the Study Area

was walked and driven to gain representative views of the Proposal site from publicly accessible viewpoints. The purpose of the inspection was to:

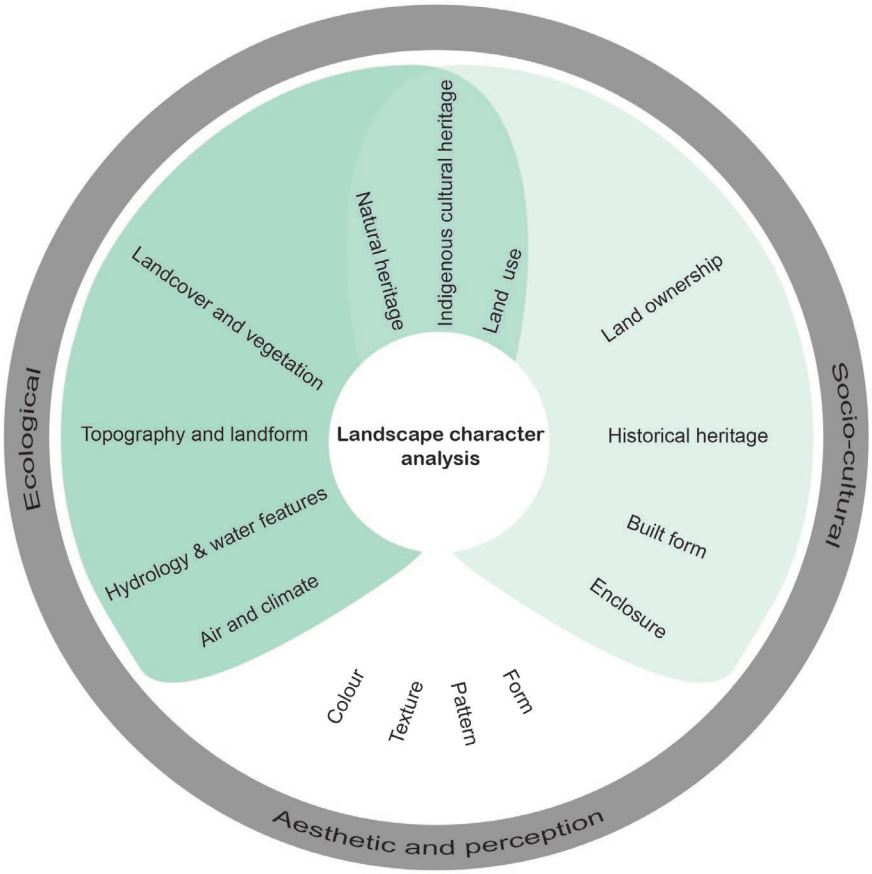
– Inspect the Study Area and appreciate views to / from the Proposal.
– Inspect publicly accessible locations identified in the desktop analysis as likely to provide views of the Proposal.
– Identify sensitive visual receptor locations.
– Assess the landscape character of the Study Area and identify landscape sensitivities.
– Undertake visual assessment site photography.

The coordinates of each viewpoint were recorded during the site inspection. At each location a photographic record of landscape features, key views and receptors was obtained along with field notes and sketches.

2.3.2 Landscape character units

Landscape Character Units (LCUs) generally comprise homogenous patterns of characteristics such as landform, vegetation, water form and land use as well as individual features, as identified during the context analysis, stakeholder and community feedback, and site inspection.

The blend of elements (shown in Figure 3) contribute to shaping a landscape character which defines distinct landscapes with unique attributes and sense of place.



(Source: Adapted from An Approach to Landscape Character Assessment (Natural England, 2014)

Figure 3 Landscape character elements

This approach has been used to establish the existing landscape character within the Study Area and to provide a framework for measuring the impact of the Proposal. This assists in:

– Defining landscape elements that contribute to defining character

– Defining landscape character attributes
– Identifying landscape value

The assessment of the existing environment also considers factors which have influenced landscape change in the past and those that are likely to do so in the future. The landscape character units are defined in Section 3.4.1.

Values associated with the landscape have also been identified for each LCU. Landscape value considers designated and undesignated landscapes and all elements such as environmental, cultural, historical and visual that form the landscape. When defining landscape value, considerations include landscape quality, scenic quality, rarity, representativeness, conservation value, recreation value, and associations. Refer to Table 1 for criteria used to determine landscape character value.

Table 1 Landscape character value criteria

Landscape value	Criteria
High	Landscape character elements in good or above average condition and/or that make a strong positive contribution to landscape character. May include nationally important features.
Medium	Landscape character elements in reasonably good condition and/or that make an average contribution to the local character, which may include locally important landscape features.
Low	Landscape character elements in below average condition and/or that are not particularly distinctive local features.

2.3.3 Visual analysis

How a landscape is viewed is of critical importance in understanding changes in the landscape and how people perceive them. Visual landscapes are related to peoples' sense of place and quality of life. How people view, perceive, experience and interact with landscape can be varied and diverse.

Visual analysis of the existing conditions involves identifying existing viewing location, identifying who viewers are and how they experience the landscape, identifying key views, and determining visibility. This assists in the understanding how the proposed changes may impact the existing viewing experience and values. Stakeholder and community feedback has been reviewed to aid the identification of valued locations and visual elements within the Study Area.

A visual analysis of the Study Area was mapped, including identification of viewing locations. Sensitive visual receptors (sensitive receptors) were identified, and their level of significance given, in line with guidance provided within the *Visual Landscape Planning in Western Australia* guidelines (Western Australia Planning Commission, 2007) (refer to Table 2 for criteria). Level of significance generally increases with the importance of the view, the degree of sensitivity of the viewers, the degree to which experiencing the landscape is integral to the enjoyment of a travel route or site, and the length of duration of a view. These criteria were used to assist in determining which sensitive receptor locations to consider for assessment. Refer to Section 3.5for the visual analysis of the Study Area.

Table 2 Sensitive receptor level of significance

Rating	Criteria
Level 1: national / state significance	State highways and other main roads (sealed or unsealed) with high levels of vehicle usage; designated tourist routes, scenic drives; recreation, conservation, cultural or scenic sites, areas, viewpoints and lookouts of state or national significance, including their access routes; walking, cycle or bridle tracks of national or state significance; towns, settlements or residential areas; passenger rail lines; navigable waterways of national or state recreation importance; ocean sites of national or state recreation importance, e.g. surf breaks; and views of national or state importance.
Level 2: regional significance	Main roads with moderate levels of vehicle usage (sealed or unsealed); recreation, conservation, cultural or scenic sites, areas, viewpoint, and lookouts of regional or high local significance (including their access routes); navigable waterways of regional recreation significance; walking, cycle or bridle paths of regional significance; and views of regional importance.
Level 3: local significance	All remaining roads with low levels of vehicle usage; locally significant roads or tracks; recreation and other use areas of local significance; navigable waterways of local recreational significance; walking, cycle or bridle paths of local significance; and views of local importance.

2.4 Visual management objectives

The purpose of visual management objectives is to manage the visual character of the landscape within the Study Area. The legislation and policy review, context analysis, LCUs and visual analysis form a basis for the development of appropriate management objectives and strategies, refer to Section 3.6.

Visual management objectives were developed for each landscape character unit and are generally categorised as follows:

– Best practice siting and design
– Protection and maintenance of visual landscape character
– Restoration of degraded character or enhancement of opportunities, for example, for viewing.

2.5 Proposal description

The main visual components of the Proposal were identified and described, for both existing mined areas, proposed mining areas, and staged rehabilitation (refer to Section 4).

2.6 Landscape and visual impact assessment

This section includes an assessment of impacts to landscape character, with an assessment provided for each LCU defined within the Study Area. Following this, an assessment of visual impacts was undertaken from key viewpoint locations.

2.6.1 Assessment of impacts to landscape character

Assessment of impacts to landscape character deals with the effect of change and development on landscape as a resource. The assessment focuses on how the development would affect the elements that make up the landscape, including the aesthetic and perceptual aspects of the landscape and its distinctive characteristics.

The consideration of potential impacts to landscape character is determined based on the sensitivity of the existing landscape to the proposed change, and the magnitude of change that is likely to occur.

The sensitivity of a landscape is determined on the capacity of the landscape to accommodate the change (susceptibility to change) of a particular type and scale, without adverse effects on existing landscape character, and the value of the existing landscape. A judgement on the level of sensitivity is made and a rating of high, medium or low applied.

The magnitude of change to landscape character depends on the nature, scale and duration of the change expected to occur. It also depends on the loss, change or addition of any feature to the existing landscape.

The sensitivity and magnitude of landscape effects address the following specific criteria:

– Sensitivity of landscape to proposed change, is based on the landscapes susceptibility to change, and the value of the landscape (refer to Table 1 for landscape value criteria and Table 3 for capacity to accommodate change criteria).
– Magnitude of landscape effect, based on the size, scale of change, the geographical extent of effects, and the duration and reversibility of effects (refer to Table 4).

Refer to Section 5 for the assessment of impacts to landscape character.

Table 3 Susceptibility to change (landscape character)

Landscape susceptibility	Definition
High susceptibility to change	The type of development proposed could have a detrimental effect on the landscape character, condition or value. Mitigation measures are unlikely to reduce the impacts of the change.
Moderate susceptibility to change	Any change caused by the type of development would be unlikely to have a significant adverse effect on the landscape character, condition or value that could not be mitigated.
Low susceptibility to change	Development of this type is unlikely to have an adverse effect on the landscape character, condition or value. Mitigation measures would be effective in neutralising adverse effects.

Table 4 Magnitude of change criteria (landscape character)

Rating	Criteria
High	A substantial/obvious change to the landscape character due to total loss of, or change to, elements, features or characteristics of the landscape. Would cause a landscape to be permanently changed and its quality diminished. Mitigation measures are unlikely to reduce the impacts of the change.
Moderate	Discernible changes in the landscape character due to partial loss of, or change to elements, features or characteristics of the landscape, however, has potential to be partly mitigated. The change would be out of scale with the landscape character, and at odds with the local pattern and landform, and would leave an adverse impact on the landscape character.
Low	Minor loss or alteration to one or more key landscape character elements, features or characteristics, or the introduction of components that may be new but may not be uncharacteristic within the existing landscape character. Mitigation measures would be effective in neutralising adverse effects.
Negligible	Almost imperceptible or no change in the landscape character as there is little or no loss of/or change to the elements, features or characteristics of the landscape. Mitigation measures would be effective in neutralising adverse effects and/or improve the landscape character.

2.6.2 Zone of theoretical visibility assessment

Zone of Theoretical Visibility (ZTV) mapping is a computer-generated analysis which identifies land from which it is theoretically possible to view the components of the Proposal. These have been used primarily to guide the site analysis and representative viewpoint selection. ZTV mapping was undertaken with reference to processes outlined in the following guidelines:

– *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013).
– *Visual Representation of Wind Farms Guidance, version 2.2* (Scottish Natural Heritage, 2017)

ESRI ArcGIS software was used to model the ZTV of the Proposal. A digital elevation model with 10m resolution was used with the ZTV mapped using the following parameters:

– A viewing height of 1.7 m, which is the average within the typical viewing level range of an adult.
– Tipping truck height (maximum): 13 m
– Excavator height (maximum): 15 m

The GIS software then digitally determines the likely extent over which the feature would be visible or not visible. In interpreting the ZTV, the following issues must be considered:

– The ZTV only considers the landform and does not include land cover factors such as the presence of buildings and trees, therefore it represents the worst-case scenario of potential visual impact.
– The ZTV does not consider the effect of distance. The greater the distance from the Proposal, the lower the impact, as the development will take up a smaller portion of the view, and atmospheric conditions may reduce the visual prominence of the Proposal.
– The ZTV is only accurate to the resolution of the elevation model.

2.6.3 Assessment of visual impacts

The assessment of visual impact involves an understanding of the sensitivity of viewing locations, the likely changes to the views, and an evaluation of the significance of the likely changes. Visual receptors have been considered in terms of the view they are likely to obtain from within the Study Area including consideration of any key vantage points such as lookouts, where there is particular interest in the view. Visual receptors are identified based on proximity of the receptor to the Proposal, as the most affected visual receptors are anticipated to be located closest to the Proposal unless located at an elevated vantage point. The type of receptor is also considered, as different viewer types would have different perceptions of the change.

A series of eight representative viewpoint locations were selected for assessment based on the visual analysis of the Study Area and understanding of the Proposal (refer to Figure 10). Existing views were represented using a panorama technique (refer Section 2.6.6). An assessment of each viewpoint is provided which includes assessment of the sensitivity of the viewpoint to change, identification and description of the likely changes to the view, assessment of the magnitude of change that is likely to occur, and overall level of significance of the visual effect.

The sensitivity of each viewpoint is considered to be dependent on the importance of the view, its existing scenic qualities, the presence of other existing built elements in the view, and the type of visual receptor and their likely interest in the view. The magnitude of change to views and visual amenity depends on the nature, scale and duration of the change that is expected to occur. This depends on the loss, change or addition of any feature in the field of view of the receptor including an assessment of the level to which the change contrasts with the existing view or expected view of the landscape.

The assessment considers the likely impacts of the Proposal (refer to Section 6). The level of effect on a view depends on factors such as the extent of visibility, degree of obstruction of existing features, degree of contrast with the existing view, angle and duration of the view, and the distance from the Proposal.

The sensitivity and magnitude of visual effects address the following specific criteria:

– Sensitivity of visual receptor to proposed change, based on susceptibility of visual receptors to change, and value attached to the view (refer to Table 5).

Magnitude of change, based on the size or scale of the change, geographical extent of effects, and duration and reversibility of effect (refer to Table 6).

Table 5 Sensitivity criteria (visual)

Rating	Criteria
High	Occupiers of residential properties, at home or going to or from, with long viewing periods, within close proximity to the proposed development; Communities that place value upon the landscape and enjoyment of views of their setting.
Moderate	Outdoor workers who have a key focus on their work who may also have intermittent views of the Study Area; Viewers at schools, or similar, when outdoor play and recreation areas are located within close proximity but viewing periods are limited; Occupiers of residential properties with long viewing periods, at a distance from or screened from the Study Area.
Low	Road users in motor vehicles, trains or on transport routes that are passing through or adjacent to the Study Area and therefore have short term views; Viewers indoor at their place of work, schools or similar.
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short; Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the Study Area and have partially screened views and short viewing times.

Table 6 Magnitude of change criteria (visual)

Rating	Criteria
High	A substantial/obvious change to the existing view due to total loss of, or change to, elements, features or characteristics of the view. Would cause a view to be permanently changed and its quality diminished.
Moderate	Discernible changes in the existing view due to partial loss of, or change to elements, features or characteristics of the view, however, has potential to be partly mitigated. The change would be out of scale with the existing view and would leave an adverse impact on the view.
Low	Minor loss or alteration to one or more key view elements, features or characteristics, or the introduction of components that may be visible but may not be uncharacteristic within the existing view.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of/or change to the elements, features or characteristics of the view.

2.6.4 Duration of impact

Landscape and visual impacts can be temporary or permanent in nature. The duration of impacts, as shown in Table 7, was used to assist in assessing the landscape and visual impacts associated with the Proposal.

Table 7 Duration of impact

Duration	Years of impact
Temporary	Impacts lasting 1 year or less
Short term	Impacts lasting 1 to 5 years
Medium term	Impacts lasting 5 to 10 years
Long term	Impacts lasting 10 to 25 years
Permanent	Impacts lasting over 25 years

2.6.5 Significance of impacts

The combination of sensitivity and magnitude determines the significance of impact on the visual environment or representative viewpoint. Refer to Table 8 which illustrates the matrix used to determine the significance of impacts.

Table 8 Significance of impact matrix

		Magnitude of change			
		High	**Moderate**	**Low**	**Negligible**
Sensitivity	**High**	High	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

2.6.6 Panorama

All photographic images were captured using a 50-millimetre fixed focal length lens on a 35-millimetre full frame format camera at a camera height of 1.6 metres. All photograph GPS locations were recorded and mapped.

A series of eight viewpoint locations were chosen and existing views represented using a panorama technique. This technique involves the stitching together of a number of adjoining images using the Adobe Photoshop software program representing an 80-degree horizontal field of view.

The panorama methodology is guided by industry accepted techniques recommended in *Visual Representation of Development Proposals: Technical Guidance Note 06/19* (Landscape Institute, 2019).

2.7 Mitigation and management measures

This process involved determining whether the visual management objectives identified can be achieved, and provision of mitigation and management measures to reduce negative impacts identified through the assessment. The mitigation and management measures relate to both the LCUs as well as views.

3. Context analysis

This section provides a summary of the Study Area and considers the planning and landscape context. Furthermore, a detailed description of the varied landscape characteristics of the Study Area is provided.

3.1 Study Area

The Study Area for this assessment is generally confined to the likely extent of visibility of Larego Mine Region within the surrounding context. This has resulted in an indicative Study Area which extends approximately 10 km to the north, east and south of Larego Mine Region and to South Western Highway to the west. Infrastructure corridors are included within the Study Area as height and visibility of the conveyors and haul roads will not extend significantly beyond these boundaries. The Study Area was informed by a desktop review and site inspection of the existing landscape context in addition to previous studies of a similar type and/or within a similar landscape context. Refer to Figure 4 for the Study Area extent.

3.2 Legislation and policy context

3.2.1 State legislation and policy

Alumina Refinery Agreement Act 1961 (WA)

The Alumina Refinery Agreement Act 1961 (WA) is a State Agreement between Alcoa and the WA Government. This agreement forms part of the regulatory framework that Alcoa operates under. Under the Alumina Refinery Agreement Act, Alcoa has been granted the bauxite mining lease area (ML1SA).

Environmental Factor Guidelines Social Surroundings (EPA 2023)

For the purpose of the Environmental Impact Assessment (EIA) process, the EPA (2023) defines social surroundings as it is presented in the EP Act: *In the case of humans, the reference to social surroundings in the definition of environment … is a reference to aesthetic, cultural, economic, and other social surroundings to the extent to which they directly affect or are affected by physical or biological surroundings.* The overarching function of social surrounds being to protect social surroundings from significant harm.

Amenity is generally defined in the guidelines as the qualities, characteristics and attributes of a place that make a positive contribution to quality of life. In relation to EIA amenity values consist of the ability for people to live and recreate within their surrounds without any unreasonable interference with their welfare, health, comfort, and convenience in addition to visual amenity. Elements that contribute to visual amenity quite often include natural landscapes and views including areas of high heritage, social or cultural significance due to their scenic quality or natural features.

Statement of Planning Policy No 2: Environment and Natural Resources Policy (2003)

A state policy that includes specific measures relevant to the protection of landscapes such as measure *5.9* Landscape that highlights WA's diverse high value landscapes and scenic areas.

The policy recognises that as the State grows, it will be increasingly important to ensure that landscapes valued by the community are protected. To do this, it is necessary to identify the landscape types and features requiring special attention and develop appropriate management and planning policies that can positively contribute to their maintenance and enhancement. To achieve this, planning strategies, schemes and decision-making should:

i. Identify and safeguard landscapes with high geological, geomorphological or ecological values, as well as those of aesthetic, cultural or historical value to the community, and encourage the restoration of those that are degraded.

ii. In areas identified in 5.9 (i) above, consider the level or capacity of the landscape to absorb new activities and incorporate appropriate planning and building design and siting criteria to ensure that new development is consistent and sensitive to the character and quality of the landscape.

iii. Consider the need for a landscape, cultural or visual impact assessment for land use or development proposals that may have a significant impact on sensitive landscapes.

3.2.2 Region and sub-region legislation and policy

Peel Region Scheme (May 2013)

The Peel Region Scheme applies to components of the Study Area located within the Shire of Waroona and the Shire of Boddington. Of relevance to this assessment is the scheme aim to promote sustainable development, protect areas of regional conservation significance and provide for the extraction of minerals and rehabilitation of the affected land.

The majority of the Study Area covered by the Peel Region Scheme comprises land reserved land for state forest. There are pockets of land with regional open space zoning with other zoning types consisting of rural, waterway and industrial.

The Peel Region Scheme outlines the purpose for each reserve and zone within the Study Area, as follows:

– Regional open space - to protect the natural environment, provide recreational and cultural opportunities, safeguard important landscapes and sites of cultural or historical significance and provide for public access.
– State forests - reserved lands to recognised state forests.
– Rural - to provide for the sustainable use of land for agriculture, assist in the conservation and wise use of natural resources including water, flora, fauna, and minerals, provide a distinctive rural landscape setting for the urban areas and accommodate carefully planned rural living developments.
– Waterway - to recognised coastal and inland waterways and lakes, provide for navigation in, and public access to, those waterways and lakes where appropriate and to protect environmental, landscape and cultural values.
– Industrial – to provide for manufacturing industry, the storage and distribution of goods and associated uses.

South West Regional Planning and Infrastructure Framework (2015)

The South West Planning and Infrastructure Framework applies to components of the Study Area located within the Shire of Harvey and the Shire of Collie. The framework seeks to guide future planning and development within the southwest region over the next 20 years and specifies the importance of mineral extraction and processing as a major and important contributor to the southwests economy.

– The Western Australian Planning Commission position on the extraction of mineral resources as specified in the framework includes:
– Support for mining in the southwest acknowledging its significance and important contribution to the region's economy.
– Ensure that where mining occurs its impacts are carefully managed, and the land is restored appropriately.
– Restrict incompatible land uses in identified mineral resource areas so not to jeopardise future mining proposals.

Greater Bunbury Region Scheme (2014)

Greater Bunbury Region Scheme is applicable to components of the Study Area located in the Shire of Harvey. The scheme purpose of relevance to this assessment is to provide for the reservation and protection of land for conservation, recreation and public purpose and applicable aims include:

(a) Promote the sustainable development of land considering relevant environmental, social and economic factors.

(h) Protect strategic mineral and basic raw materials of State and regional importance and provide for the effective and timely extraction of minerals and raw materials and subsequent rehabilitation of affected land.

Bunbury-Geographe sub-regional planning strategy (2022)

The Bunbury-Geographe sub-regional planning strategy applies to the components located within the Shire of Harvey. The purpose of this Strategy is to plan for and manage growth in the Bunbury-Geographe subregion to the

year 2050. The strategy outlines that Mining is a significant industry driving the sub-regional economy providing employment to the local people. The strategy highlights the need to sustainably manage natural resources, to respond to the potential impacts of climate change and to natural hazards (such as fire) on existing and new developments. In relation to this assessment, the strategy aims to provide protection to areas with high biodiversity significance and other environmental values with high amenity value.

3.2.3 Local legislation and policy

Shire of Harvey Local Planning Strategy (2020)

The majority of the Study Area is located within the Shire of Harvey. Planning direction for the Shire of Harvey is set out in the LPS in order to address short, medium and long term strategic goals and development expectations over a 15 year time period. The LPS core theme of heritage and environmental conservation via identification and encouragement of areas that have cultural, historical and environmental significance is of relevance to this assessment. In addition, applicable to the Study Area, the LPS states that the Darling Range is an area of significant landscape value including the Darling Scarp and the range plateau and valleys.

Shire of Harvey Local Planning Scheme No.2 (2024)

The Shire of Harvey Local Planning Scheme No.2 establishes the Shire's objectives and purposes for land use within this LGA. Lake Brockman, Striling Dam, Harvey River, Dwellingup State Forest and Harris River State Forest are located within the Shire of Harvey. Of relevance to this assessment is the objective to preserve and protect native vegetation to enhance biodiversity, to identify if a development approval will have a detrimental effect on the environment or affect the visual amenity within the scheme area.

With regards to extractive industries, the scheme identifies that where the local government considers visual amenity impacts to not be appropriately mitigated on the western escarpment of the Darling Range the development will generally not be supported. This is to safeguard the amenity of the Shire's local landscape and to protect and maintain land within a Landscape Protection Area.

Shire of Waroona Local Planning Scheme No.7 (2021)

The northwest portion of the Study Area sits within the Shire or Waroona and is subject to the Shire of Waroona Local Planning Scheme No.7. The scheme establishes the Shires objectives and purposes in relation to land use in the LGA. The Scheme aims to promote and protect the amenity of the area though the means of zoning and development controls.

The scheme ensures that mining and mineral processing within the area are able to provide significant contributions to the District economy while emphasising the value of the environment and natural resources. In regard to the environment and conservation this document specifies the importance of the ability to conserve, protect and enhance the biodiversity of the region by taking into account the cumulative impacts of activities. Impacts on biodiversity, the environment and heritage values are considered in determining the sustainability of a development.

The Murray River, Lake Kabbarnup and Lake Navario are located within the Shire of Waroona. The scheme highlights the importance of Conservation and Catchment Reserves by establishing a 100 m boundary between any conservation or water catchment reserves and the Murray and Harvey River, unless Planning consent is granted.

Shire of Collie Local Planning Strategy (2020)

A small southeastern component of the Study Area is located within the Shire of Collie meaning it is subjected to the Shire of Collie Local Planning Strategy (LPS). The purpose of the LPS is to provide guidance to land use planning and development within the Shire. The Shire supports the extraction of materials and outlines that this may have potential to impact the rural character of the landscape. Therefore, the LPS highlights that all licenses must be complied with to minimise damage to vegetation, waterways and the amenity of the area.

Shire of Collie Local Planning Scheme No.6 (2023)

The Shire of Collie Local Planning Scheme establishes the Shire's objectives and purposes for land use within the LGA. The scheme aims to improve the aesthetic appeal of the Collie townships and safeguard its natural resources and resource based economic activities.

Key development and guidelines of relevance to this assessment include:

– protect, conserve and enhance the natural environmental values.
– protect the Collie Coal Basin as a future mining resource.
– development is not detrimental to the amenity of adjoining owners or residential properties in the locality.

Shire of Boddington Local Planning Strategy (2018)

The north-east portion of the Study Area is within the Shire of Boddington LGA. Planning direction for the Shire of Boddington is set out in the LPS, considering local needs and aspirations. Mining buffer areas are addressed in this document with consideration of visual amenity, with buffers in accordance with the Department of Mines, Industry, Regulation and Safety guidelines.

Within rural areas the Shire of Boddington LPS supports continued operation and expansion of primary production enterprises where rural amenity and environmental impacts can be managed. This is actioned through ensuring that development is compatible with a reasonable standard of rural amenity.

With regards to the environment and conservation this document specifies the importance of the Shire of Boddington's visual amenity, created by its landscapes and vistas, and the imperative to protect and maintain this key asset wherever possible. Specific strategies relevant to this objective include:

– *Encourage the protection of the Shire of Boddington's landscape and scenic qualities by protecting high conservation value area from proposals to clear vegetation.*
– *Encourage development that reflects and enhances the Shire of Boddington's natural, cultural, visual and built character.*
– *Support the protection of landscape and their visual amenity, as well as the character of 'view-sheds' associated with major roads and tourist routes.*

Shire of Boddington Local Planning Scheme No. 3 (2021)

The Shire of Boddington Local Planning Scheme No.3 establishes the Shires objectives and purposes for land use within the LGA. Mining Buffer areas are addressed in this document with consideration to development in Special Control Areas ensuring landowners are aware of potential mining operations and to protect and management known or prospective mineral resources. Of relevance to this assessment is the objective to conserve, protect and enhance the biodiversity of the area and to consider adverse cumulative impacts (including amenity) on biodiversity, environmental and heritage value.

3.2.4 Other guiding documents

Forest Management Plan 2024-2033 (2023)

The state forests located within the Study Area include Dwellingup State Forest and Harris State Forest. These forests are subject to the Conservation Commission of Western Australia's Forest Management Plan 2024-2033 (2023). The plan outlines strategic goals, identifies values and threats and proposed operations and key performance indicators for the management of lands vested in the Conservation Commission.

The plan identifies amenity and aesthetic value as a key social and economic value, stating that the '*natural landscapes in the planning area are valuable for their intrinsic qualities, for the quality of life and enjoyment of people, and for the economic benefits they generate.'*

Visual resource management on Land and Waters Policy statement No. 34 (1989)

The purpose of this policy is to ensure that all land uses and waters managed by the Department of Conservation and Land Management, now the re planned and carried out in a way that sustain the beauty of the natural environment. Of relevance to this assessment, the policy stipulates that all mining activities including exploration and rehabilitation phases are planned so as to minimise the impact on existing landscape values.

Western Australia Comprehensive Regional Assessment: National Estate Aesthetic Value Identification and Assessment Project- Visual Assessment (1998)

The Western Australia National Estate Aesthetic Value Identification Project considers the assessment of places with National Estate aesthetic significance to ensure forest-related places of National Estate aesthetic value are appropriately protected and managed. Assessment considers the aesthetic values of the Regional Forest Agreement of the South-West Forest Region and the Australian Heritage Commission criteria of aesthetic significance. The assessment identifies the importance of visual amenity, maintaining value and protecting aesthetic qualities. The following places, within the Study Area, are included in the National Estate Aesthetic Value database:

– Bibbulmun Track
– Lake Brockman
– Harvey River
– Stirling Dam

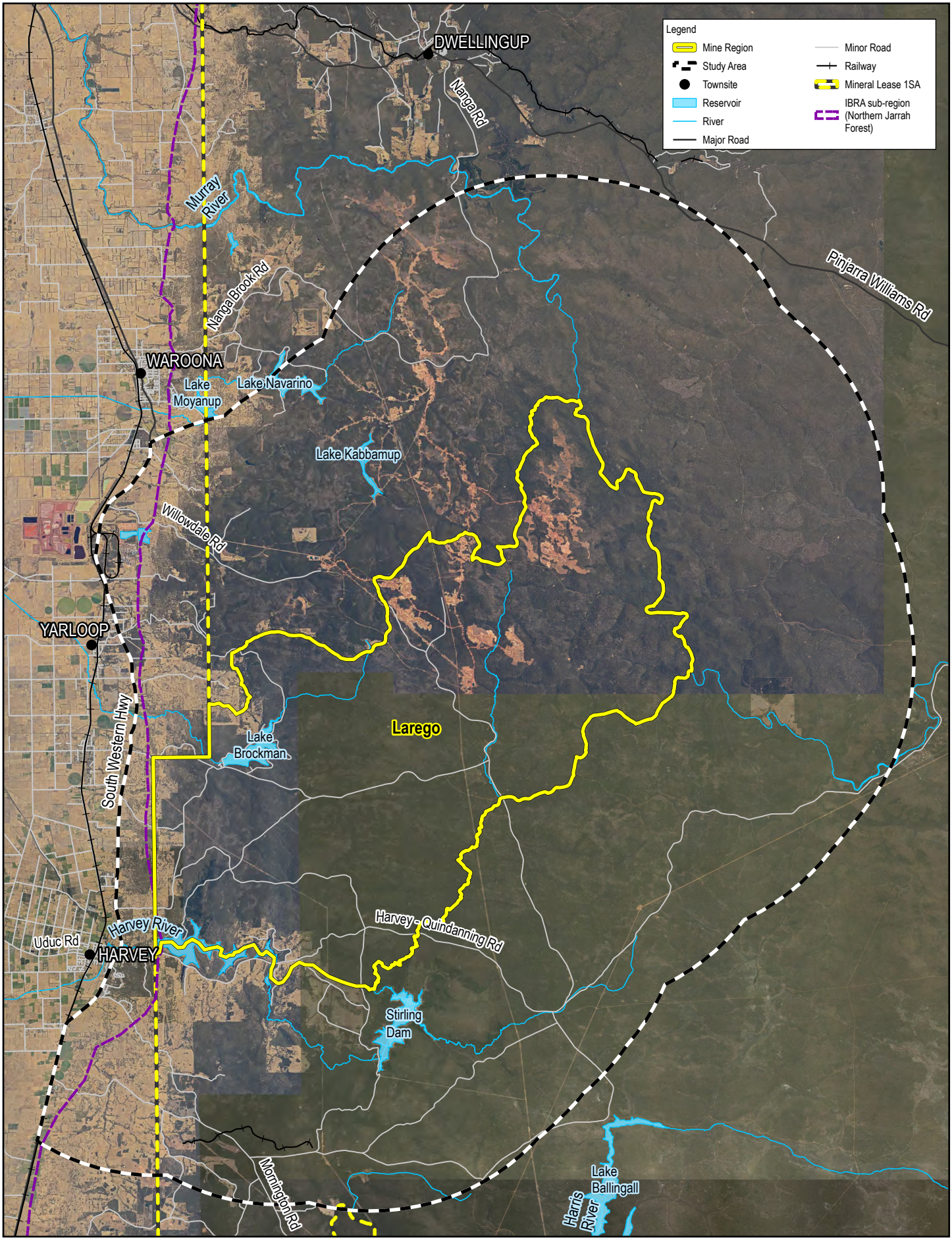
Local Recreational Trails Plans

Recreational areas, trails and facilities have been identified and classified in accordance with published State and regional planning documents, including:

– WA Strategic Trails Blueprint 2022-2027 (Common Ground Trails(a), 2021), (DLGSC & DBCA, 2022).
– Peel Regional Trails Strategy (Common Ground Trails(b), 2019) - incorporating local trail plans for the Shire of Boddington and Shire or Waroona
– Perth and Peel Mountain Bike Master Plan (Common Ground Trails(c), 2017)

This plan specifies the development of Boddington as a locally significant mountain bike trail town to attract the recreation and tourism markets from the nearby nationally significant locations.

– Two Year Action Plan for Nature-Based Tourism in Western Australia 2019 and 2020 (Department of Biodiversity, Conservation and Attractions, 2019)
– This includes an aim to continue to promote, maintain and improve the Bibbulmun and Munda Biddi trails and encourage new industry investment in accommodation and visitation products.



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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego.

Study Area

Project No. **12632796**
Revision No. **E**
Date **3/11/2024**

FIGURE 4

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3.3 Landscape context

The following section provides an overview of the existing landscape context for the Study Area.

3.3.1 Topography and hydrology

The Proposal is located within the topographic landform of the Darling Plateau within the Darling Uplands subtype. The Darling Plateau is a rolling landscape cut by steep river valleys studded with granite outcrops (monadnocks) and boulders which protrude from the surrounding landscape. The Darling Uplands is bordered by the Darling Scarp, which is the surface expression of the Darling Fault, located to the west of the Study Area.

The landscape within the western portion of the Study Area consists of a relatively flat and low-lying landscape. To the east of this the elevation increases as it forms part of the Darling Range. The Darling Range consists of an undulating landscape, with areas of sharp dissections of valleys.

Several waterbodies dissect the surface of the Study Area with valleys and irregular slopes throughout. Major dams within the area include the Stirling Dam and Logue Brook Dam. Lake Navarino, Lake Labbamup and Lake Brockman are all located within the Study Area. Multiple rivers traverse the Study Area including the Murray River, Harvey River and Brunswick River. shows the topography and hydrology features within the Study Area. Figure 6 shows the topography and hydrology features within the Study Area.

3.3.2 Land use and built form

The Larego Region is located within an area zoned as state forest. Land use within the Study Area also includes regional open space, rural (including Rural 1 – General Farming, Rural 2- Irrigated Agriculture, Rural 4 – Hills Face, Rural 5 – Darling Range) special industry, industrial, priority agriculture, urban development and residential in addition to waterways, reservoirs and rivers (Refer to Figure 7).

The state forests, reserves and areas adjacent to reservoirs within the Study Area are used by hikers/walkers, mountain bike riders, campers, other recreational users, tourists, and nearby community members. Two prominent recreational trails run through the Study Area, the Bibbulmun Track and the Munda Biddi Trail. The Bibbulmun Track is a long-distance hiking trail that traverses the local forest in the northeast of the Study Area (outside the Larego Mine Region eastern boundary). The Munda Biddi Trail is an off-road mountain bike trail that bisects the Study Area, a component of which is located within Larego Mine Region.

As indicated in Figure 7, the Study Area includes a number of DBCA legislated lands including Dwellingup State Forest, Lane Poole Reserve Harris River State Forest and Falls Brook Nature Reserve.

3.3.3 Vegetation

The Study Area consists of a variety of established vegetation types with the predominant vegetation type being native forest, Jarrah forest and replanted native forest that occurs in small pockets within the Study Area (Figure 8). The vegetation within the Study Area includes the pre-European vegetation complexes, as identified in the South West Forest Region of WA vegetation complexes and Swan Coastal Plain vegetation complexes database (Department of Parks and Wildlife, 2016) as itemised in Table 9.

Roads within the Study Area are generally enclosed by dense vegetation on either side meaning views out to the wider landscape are limited. Aside from the areas of cleared agricultural land to the west of the Study Area, the only other components of cleared areas are within the Willowdale Mine – Larego, Orion and Arundel mine regions.

Table 9 Vegetation complexes within the Study Area

Vegetation complex	Description
South West forest region of WA (DBCA-047)	
Cooke Complex	Dominantly an open forest of *Eucalyptus marginata* and *Corymbia calophylla* on deeper soils within many visually prominent outcrops. Some closed heath's with *Myrtaceae* and *Proteaceae* species on granite rocks and some soil areas with *Eucalyptus laeliae*, and *Allocasuarina huegeliana* and *Eucalyptus wandoo*.

Vegetation complex	Description
Darling Scarp	Mosaic of open forest of *Eucalyptus marginata* with some admixtures with *Eucalyptus laeliae* in the north, and *Corymbia haematoxylon* in the south on deeper soils adjacent to outcrops, woodland of *Eucalyptus wandoo*, low woodland of *Allocasuarina huegeliana* on shallow soils over granite outcrops, closed heath of *Myrtaceae – Proteaceae* species and lithic complex on near granite outcrops.
Dwellingup Complex	Dominantly comprised of open forest to woodlands which includes *Eucalyptus marginata* and *Corymbia calophylla* on lateritic uplands.
Goonaping Complex	An open forest of *Eucalyptus marginata* and *Eucalyptus marginata subsp. thalassica* on sandy gravels. With some low woodlands of *Banksia attenuata* within the drier sandier sites with some *Banksia menziesii* and low open woodland of *Melaleuca preissiana* and *Banksia littoralis* within the moister sandy soils.
Helena 1 Complex	An open forest of *Eucalyptus marginata* and woodland of dominantly *Eucalyptus wandoo* on the deeper soils ranging to closed heaths and lithic complex on shallow soils associated with granite on steep slopes of valleys in semiarid and arid zones.
Lowdon	Open forest of Corymbia calophylla-Eucalyptus marginata subsp. marginata-Agonis flexuosa with some Eucalyptus wandoo and occasional Corymbia haematoxylon on slopes, and woodland of Eucalyptus rudis-Melaleuca rhaphiophylla on valley floor in the humid zone.
Murray 1 Complex	An open forest of *Eucalyptus marginata*, *Corymbia calophylla* and *Eucalyptus patens* on valley slopes. With some woodlands of *Eucalyptus rudis* and *Melaleuca rhaphiophylla* on the valley floors.
Murray 2	Open forest of Eucalyptus marginata subsp. thalassica-Corymbia calophylla-Eucalyptus patens and woodland of Eucalyptus wandoo with some Eucalyptus accedens on valley slopes to woodland of Eucalyptus rudis-Melaleuca rhaphiophylla on the valley floors in semiarid and arid zones.
Swamp Complex	Comprised of a low open woodland of *Melaleuca preissiana* and *Banksia littoralis*, closed scrub of *Myrtaceae* spp., a closed heath of *Myrtaceae* spp. and sedgelands of *Baumea* and *Leptocarpus* spp. Located within seasonally wet or moist sand, peat, and clay soils within valleys.
Yarragil 1 Complex	Open forest of *Eucalyptus marginata* subsp. *marginate* and *Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* within valleys
Yarragil 2 Complex	An open forest of *Eucalyptus marginata* subsp. *thalassica* and *Corymbia calophylla* on slopes, woodland of *Eucalyptus patens* and *Eucalyptus rudis* with *Hakea prostrata* and *Melaleuca viminea* within valleys.
Swan Coastal Plain (DBCA-046)	
Guildford Complex	A mixture of open forest to tall open forest of Corymbia calophylla (Marri) - Eucalyptus wandoo (Wandoo) - Eucalyptus marginata (Jarrah) and woodland of Eucalyptus wandoo (Wandoo) (with rare occurrences of Eucalyptus lane-poolei (Salmon White Gum)). Minor components include Eucalyptus rudis (Flooded Gum) - Melaleuca rhaphiophylla (Swamp Paperbark).
Dardanup Complex	Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford.
Serpentine River Complex	Closed scrub of Melaleuca species and fringing woodland of Eucalyptus rudis (Flooded Gum) - Melaleuca rhaphiophylla (Swamp Paperbark) along streams.
Forrestfield Complex	Vegetation ranges from open forest of Corymbia calophylla (Marri) - Eucalyptus wandoo (Wandoo) - Eucalyptus marginata (Jarrah) to open forest of Eucalyptus marginata (Jarrah) - Corymbia calophylla (Marri) - Allocasuarina fraseriana (Sheoak) - Banksia species. Fringing woodland of Eucalyptus rudis (Flooded Gum) in the gullies that dissect this landform.

3.3.4 Landscape character types of Western Australia

The WA landscape have been classified into landscape character types as part of the *Reading the Remote - Landscape Characters of Western Australia* study (Department of Conservation and Land Management, 1994). This study classifies the landscapes of WA into broad landscape character types in terms of '*common distinguishing visual landform, vegetation, water form and land-use characteristics*. The Study Area is located within the Darling Plateau, subtype Darling Uplands landscape character types. This characterisation will assist with informing the LCUs for the Study Area.

3.3.5 Community and stakeholder engagement

Alcoa has been engaged with a broad range of stakeholders regarding the Proposal since ~2014. This includes current and future mine neighbours, Waroona and Harvey Shires, locally based state and federal MPs, people affiliated with Hoffman Mill, the managers of the Logue Brook Dam DBCA camping areas and privately run Lake Brockman Tourist Park, and the Munda Biddi Trail Foundation.

A variety of engagement methods have been deployed to ensure stakeholders and community members can access information and have opportunities for meaningful consultation. Alcoa has actively listened to stakeholders and community members, considering their feedback in commissioning studies like this.

Stakeholders who Alcoa has engaged with in relation to the Proposal are included in Table 10.

Table 10 Stakeholder types

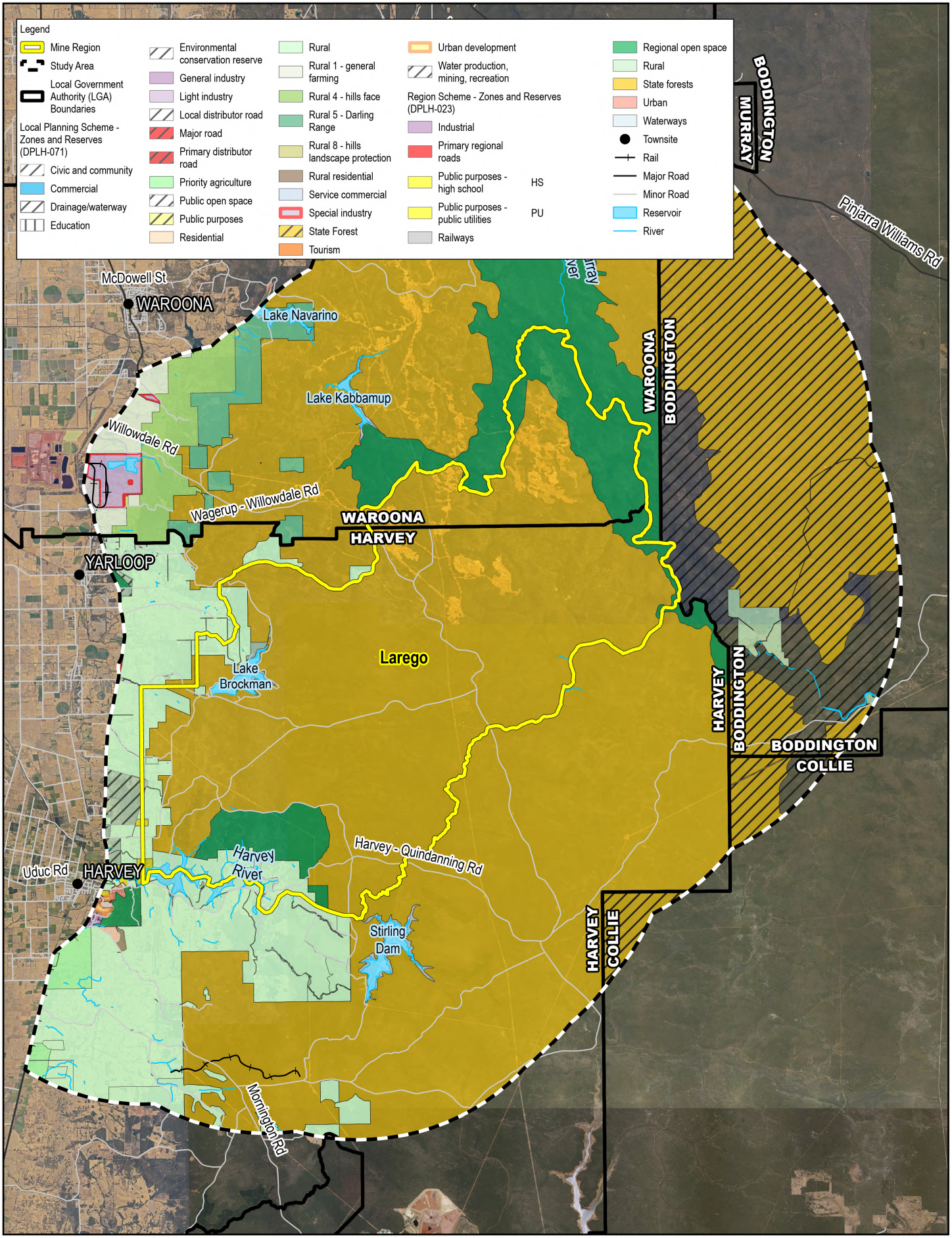
Stakeholder type	Specifics
State Government	– Departments – Jobs Tourism, Science and Innovation; Biodiversity, Conservation and Attractions; Local Government, Water Corporation, Sport and Cultural Industries. – Agencies – EPA Tourism WA – Local Members of Parliament –Murray-Wellington; South-West
Local Government	– Shire of Waroona – Shire of Harvey
Recreation and tourism groups	– Back to Hoffman Mill Reunion Group – Munda Biddi Trail Foundation
Environmental groups	– Harvey River Restoration Taskforce
Community groups	– Nearby communities and nearby private landowners/residents
Traditional Owners	– Harvey Aboriginal Corporation

Areas of concerns raised by stakeholders raised concerns relative to landscape and visual impacts associated with Larego Mine Region related to potential impacts on a range of values including recreation and ecotourism, local communities and their forest setting, private properties, transport routes, clearing, rehabilitation and cumulative impacts as detailed in Table 11.

Table 11 Stakeholder feedback

Value	Concerns
Recreation and ecotourism	– Potential impacts on visual and landscape values that forested areas provide for the general recreational and ecotourism product of the Larego area, both current and envisaged. The Harvey Shire and DBCA are pursuing increased recreational and ecotourism offerings, with Harvey harbouring a desire to be known as trails towns via their Harvey Trails and Adventure Strategy document. – Alcoa is providing funding to DBCA to compensate for the loss of the Hoffman Mill camping and recreation area. DBCA Wellington branch has indicated it will use the funding to upgrade and potentially develop new recreational facilities in and around Logue Brook Dam. DBCA Wellington and Alcoa are working together closely to ensure potential mining-related impacts (noise, dust, visual amenity) are mitigated. – Potential landscape and visual impacts on recreational and ecotourism facilities in the Larego area, including formal and informal tracks, trails and associated campsites including the nationally recognised Munda Biddi Trail, which runs through the south-west of the Larego Mine Region.
Private properties	– Potential visual amenity impacts on private properties near the proposed mine regions, in particular landowners to the west of the Larego Mine Region, and Lake Brockman Tourist Park.

Value	Concerns
Transport routes	– Potential visual impacts on public roads that fall within or near the proposed mine region. This includes the public roads of Clarke, Logue Brook Dam, Logue Brook, Zig Zag, Driver, Kevron, Dupont and Tallanalla roads, and Dandenong Formation.
Clearing	– Potential visual impacts associated with the extent of clearing associated with bauxite mining.
Rehabilitation	– Potential visual impacts associated with the length of time required for rehabilitated forest to become established
Cumulative impacts	– Potential visual impacts associated with Alcoa's past, present and future operations, including beyond those currently being assessed.
Operational impacts	– Operational and blast noise, dust, loss of/changes to public routes in the area.



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Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego

Project No. **12632796**
Revision No. **C**
Date **6/11/2024**

Planning zones

FIGURE 5

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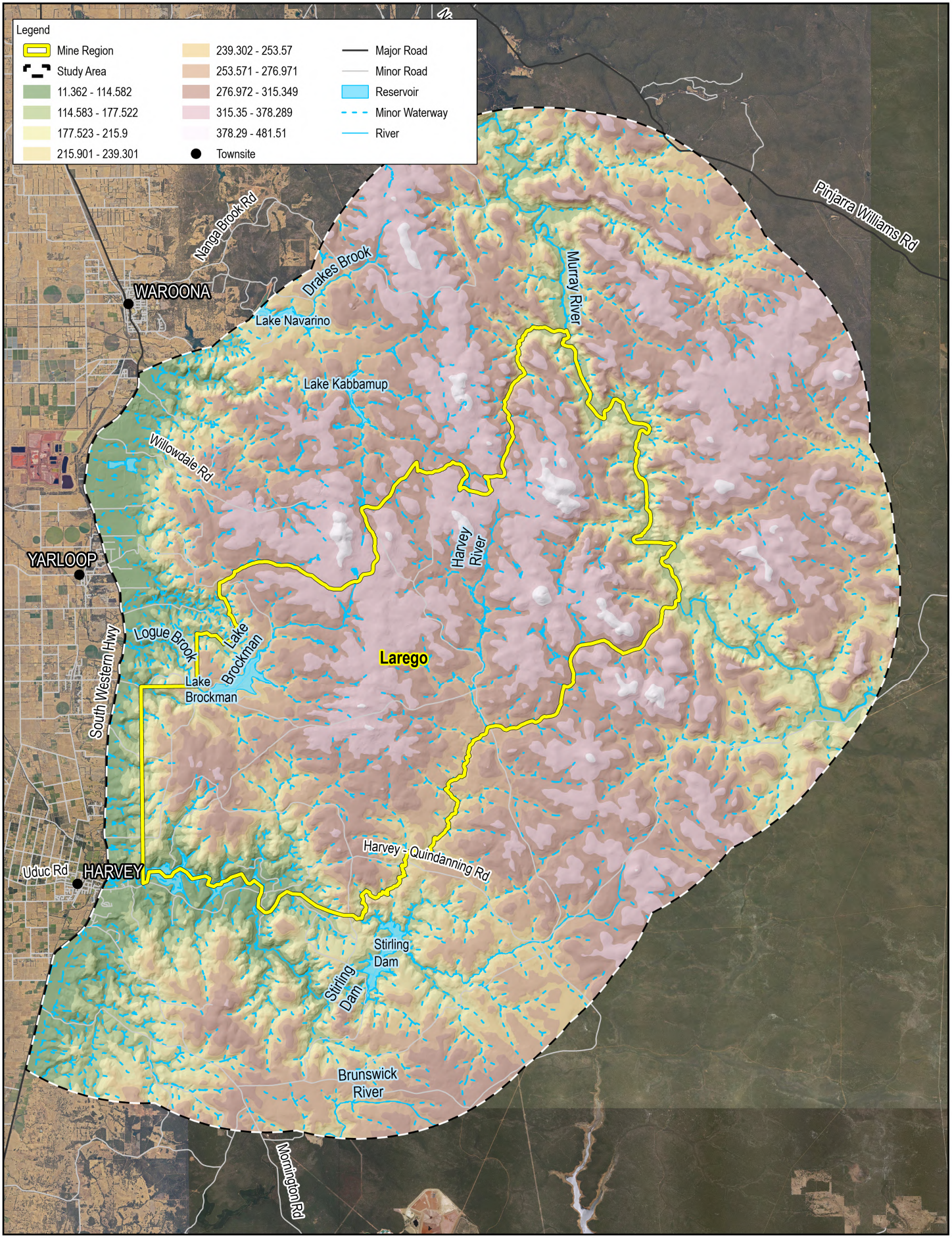

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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego

Project No. **12632796**
Revision No. **C**
Date **6/11/2024**

Existing topography and hydrology

FIGURE 6

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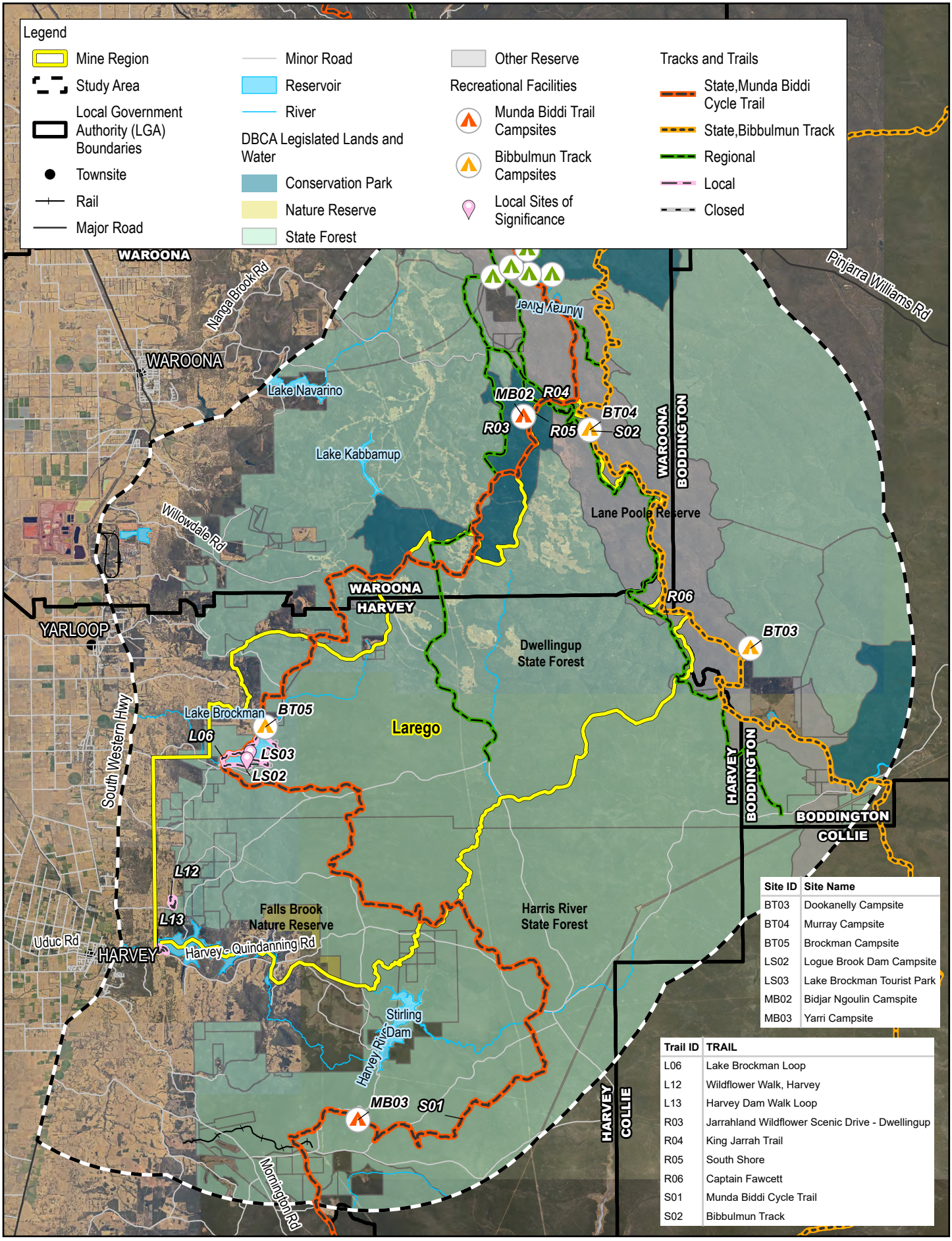

Site ID	Site Name
BT03	Dookanelly Campsite
BT04	Murray Campsite
BT05	Brockman Campsite
LS02	Logue Brook Dam Campsite
LS03	Lake Brockman Tourist Park
MB02	Bidjar Ngoulin Camspite
MB03	Yarri Campsite

Trail ID	TRAIL
L06	Lake Brockman Loop
L12	Wildflower Walk, Harvey
L13	Harvey Dam Walk Loop
R03	Jarrahland Wildflower Scenic Drive - Dwellingup
R04	King Jarrah Trail
R05	South Shore
R06	Captain Fawcett
S01	Munda Biddi Cycle Trail
S02	Bibbulmun Track

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Kilometers

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego.

Project No. **12632796**
Revision No. **F**
Date **4/11/2024**

Existing reserves and infrastructure

FIGURE 7

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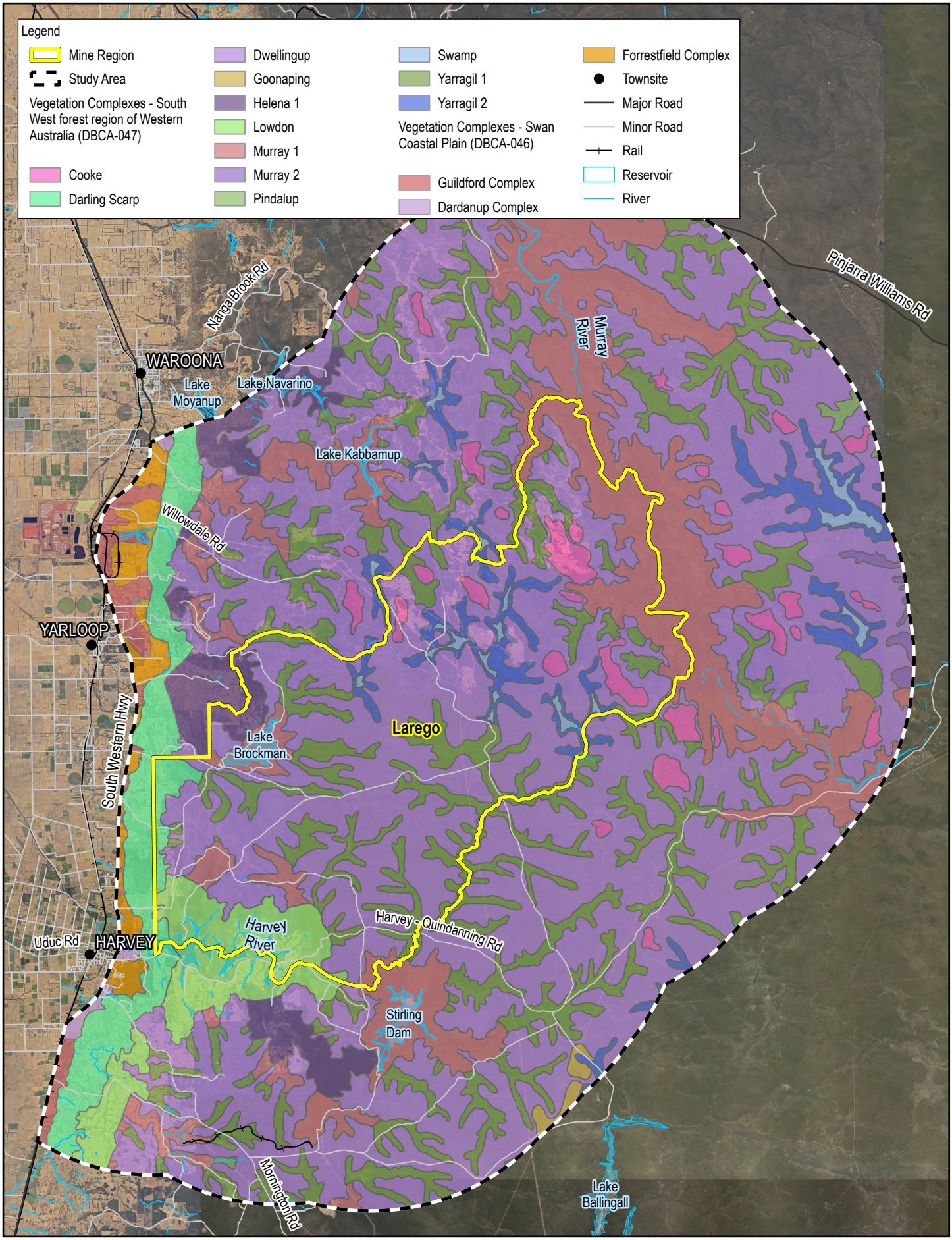

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Kilometers

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego.

Project No. **12632796**
Revision No. **D**
Date **4/11/2024**

Existing vegetation complex

FIGURE 8

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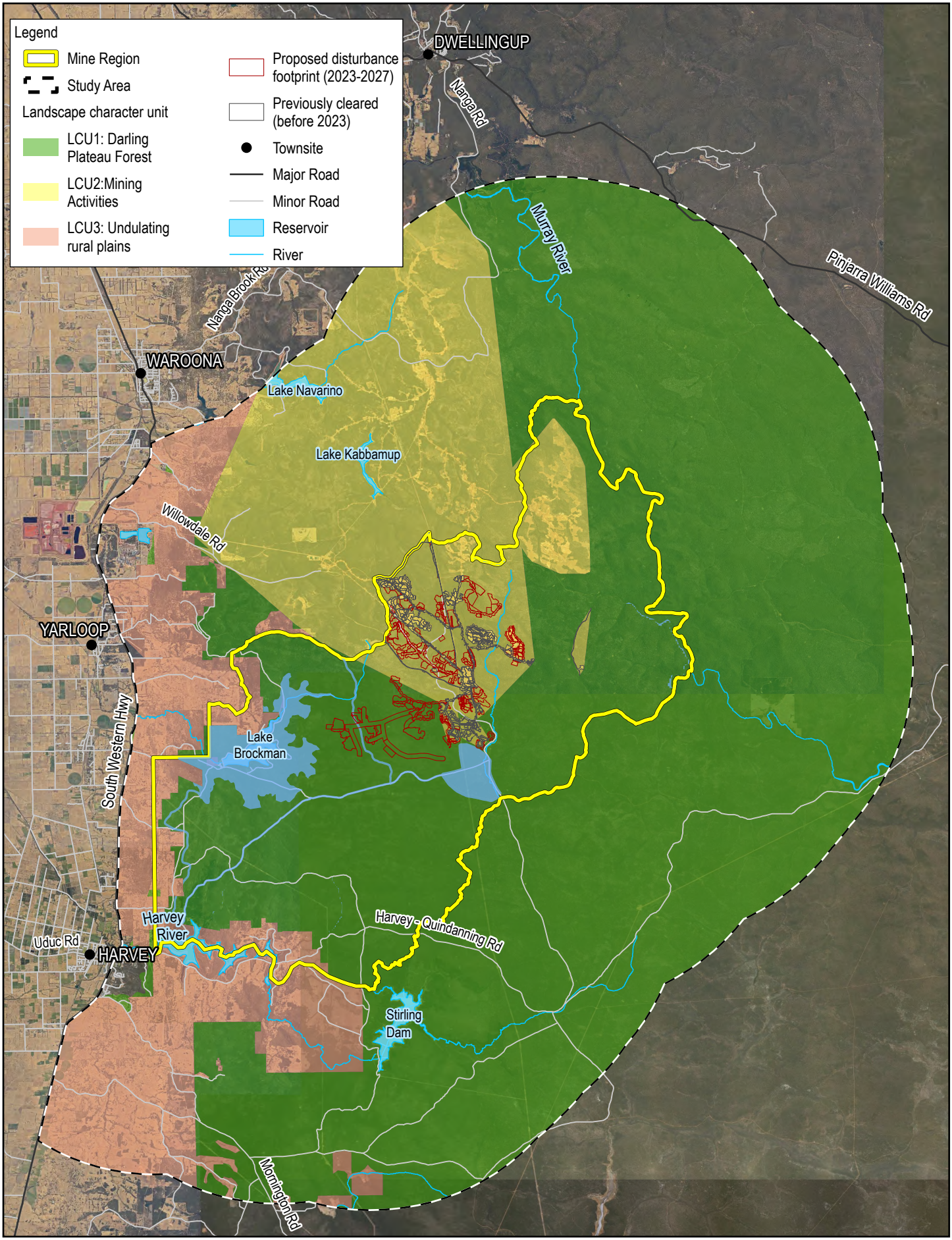
3.4 Landscape character and visual baseline

3.4.1 Landscape character units

Based on the review of the existing landscape context and the *Landscape Character Types of WA* (Department of Conservation and Land Management, 1994), the LCUs were defined. It is recognised there may be Aboriginal heritage within these LCUs, however, these have not been considered within this report. For additional information refer to the SSIA. The following LCUs were defined for the Study Area as illustrated in Figure 9.

– Landscape character unit 1 (LCU1): Darling Plateau forest
– Landscape character unit 2 (LCU2): Mining activities
– Landscape character unit 3 (LCU3): Undulating rural plains



Paper Size ISO A4

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Kilometers

Map Projection: Transverse Mercator
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Grid: GDA 1994 MGA Zone 50

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Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego.

Project No. **12632796**
Revision No. **F**
Date **4/11/2024**

Landscape character units

FIGURE 9

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3.4.2 LCU1: Darling Plateau forest

Photo 1 *Clarke Road*

Photo 2 *Logue Brook Dam Road*

Photo 3 *Scarp Road, Munda Biddi Trail*

Photo 4 *Harris River Rocky Lookout*

Photo 5 *Southern edge of Logue Brook Dam*

Photo 6 *North-eastern edge of Logue Brook Dam*

Description

LCU1 is comprised predominantly of Dwellingup State Forest, Harris River State Forest, and Falls Brook Nature Reserve.

The topography of the landscape typically consists of rolling hills with small waterway valleys running throughout. The landscape is studded by large rough granite outcrops. The Jarrah forests are noted as being popular for tourism, including scenic drives, camping, walking tracks, cycling trails and elevated points with panoramic views. The dams and lakes within LCU1 are noted for their high scenic quality, including Stirling Dam and Logue Brook Dam / Lake Brockman. There are some areas of cleared native vegetation and pine plantations, planted in a more formalised layout, visually contrasting with the native vegetation of the area. The pine plantations represent the area's historical timber heritage and add to the landscape character. The key characteristics of LCU1 are listed in Table 12.

Table 12 Key characteristics of LCU1

Character element	Description
Landform	Gullies and valleys, undulating landform with rolling hills. Granite outcrops, escarpments, depressed basins, and dams are key features of this LCU.
Vegetation	Native vegetation includes dense Jarrah forest with a predominantly banksia understory, species include: *Eucalyptus marginata* (Jarrah), *Eucalyptus calophylla* (Marri), *Eucalyptus patens* (Blackbutt), Eucalyptus megacarpa, *Eucalyptus wandoo* (Wandoo) with an understory of *Banksia grandis* (Bull Banksia), *Xanthorroea preissii* (Grass Tree), *Hakea trifurcate* (Two-leaf Hakea) and *Drynandra sessilis* (Parrot Bush). There are some cleared areas within forest areas.
Waterways/reserves	Key waterways include Harvey Dam, Stirling Dam, Waroona Dam, Logan Brook Dam/ Lake Brockman, Murray River, and Harvey River. Key reserves include Lane Poole Reserve, Falls Brook Nature Reserve and Korijekup Conservation Park.
Land use	Land use primarily consists of state forests used for logging, conservation and tourism such as camping and walking/cycling trails.
Infrastructure	Harvey-Quindanning Road is a sealed road traversing through LCU1. Other roads include unsealed Clarke Road and Honeymoon Road. LCU1 also includes 4WD tracks, walking and cycling trails, and large water storage dams. There are numerous campground within LCU1, centred around Lake Brockman.
Cultural and characteristics	Tourist values are associated with the forest, Lane Poole Reserve, Munda Biddi Trail and Bibbulmun Track.
Spatial qualities	Tall forest within an undulating landscape. Views are typically enclosed apart for elevated areas along the Bibbulmun Track which has some panoramic views.

Landscape character values

Values associated with LCU1 include dense vegetation of high ecological value. The state forests have a scenic value associated with the vegetation communities, landscape connectivity value, and values associated with active and passive recreation. LCU1 therefore has a **high** landscape character value.

3.4.3 LCU2: Mining activities

Photo 7 *Example of crusher (Myara Mine Region)*

Image: Supplied by Alcoa

Photo 8 *Example of active mining site*

Photo 9 *Example of haul road and rehabilitation (Myara Mine Region)*

Image: Supplied by Alcoa

Photo 10 *Example haul road and rehabilitation (Myara Mine Region)*

Description

LCU2 comprises previous and existing mined areas of Larego, Orion and Arundel and associated vegetation clearance within Dwellingup State Forest.

LCU2 is dominated by gravel road networks and cleared vegetation which allows for open views across the landscape in addition to mine pits, hauls roads and associated mining activities. Existing dense forest is retained on the edges and in patches throughout LCU2. Within Larego Mine Region staged revegetation is occurring within ceased mining areas. The key characteristics of LCU2 are listed in Table 13.

Table 13 *Key characteristics of LCU2*

Character element	Description
Landform	The landform within this LCU is typically gently undulating. Larego mine pits are located on the mid-slopes where the bauxite is located.
Vegetation	Vegetation coverage is limited due to mining activity. There are large areas of cleared vegetation with some remnant vegetation of the local state forests. Species include *Eucalyptus marginata* (Jarrah), *Eucalyptus calophylla* (Marri), *Eucalyptus patens* (Blackbutt), *Eucalyptus wandoo* (Wandoo) with an understory of *Banksia grandis* (Bull Banksia), *Xanthorroea preissii* (Grass Tree), *Hakea trifurcate* (Two-leaf Hakea) and *Drynandra sessilis* (Parrot Bush).
Waterways / reserves	Lake Novarino and Lake Kabbamup are located within LCU2 with the Murray River located relativity close to the east side of LCU2. Lane Poole Reserve is the only reserve within LCU2.
Land use	Land use is primarily mining.

Character element	Description
Infrastructure	Mine pits, haul road networks and mine facilities including sheds, a crusher, and a conveyor.
Cultural and characteristics	This LCU is associated with the bauxite mining industry and the workforce this industry supports. It is a key place of work and income stream for residents of surrounding communities.
Spatial qualities	A mining landscape with open views across cleared areas and remnant vegetation.

Landscape character values

There is remnant vegetation within the existing mined areas of Larego, Orion and Arundel mine regions; however, remnant vegetation within a mining landscape is considered to have a limited contribution to the local character. There are no specific values associated with LCU2 as part of the policy review. LCU2 therefore has a **low** character value.

3.4.4 LCU3: Undulating rural plains

Photo 11 *Harvey-Quindanning Road*

Photo 12 *Logue Brook Dam Road*

Photo 13 *South Western Highway*

Photo 14 *Willowdale Road*

Photo 15 *Corner of Dix Road and South Western Highway*

Photo 16 *Logue Brook Dam Road*

LCU3 is located to the west of the Study Area and on the eastern side of South Western Highway. Additionally, there are some patches of rural landscape that penetrated the native forest located between Harvey River Dam and Stirling Dam. The gently undulating topography, as well as land use, provide a picturesque rural setting. The primary land use is agricultural practices, and farming and includes associated infrastructure.

Native trees are visible within LCU3 ranging from dense patches to scattered and single trees. Linear trees can be seen along the roads, adjacent to Harvey River, and seasonal water corridors.

Harvey River traverses through LCU3, providing a significant natural setting that enhances the aesthetic appeal of the area. LCU3 is predominantly a rural landscape with a gently undulating topography that provides open and enclosed views of the surrounding landscapes with native forests in the background of the eastern views. The key characteristics of LCU3 are listed in Table 14.

Table 14 Key characteristics of LCU3

Character element	Description
Landform	The terrain consists of a gentle, rolling landform, with more flat areas near the South Western Highway.
Vegetation	LCU3 has undergone extensive clearing of its native forest vegetation. There are scattered pockets of remnant native vegetation throughout the area, particularly along roads, adjacent to waterways, around Yarloop Rifle Club and within Korijekup Conservation Park.
Waterways	Harvey River traverses through the south of the Study Area. There are some seasonal waterways and constructed dams within LCU3.
Land use	Land use is predominantly agriculture and pastureland.
Infrastructure	South Western Highway is located on the western side of LCU3. There are other local roads such as Logue Brook Dam Road, Dix Road, Black Rock Road, Burney Road, and Hoffman Road. There are some scattered rural residential buildings with a denser residential area in the south-west of the Study Area in close proximity to Harvey Dam. Powerline infrastructure and lighting are other forms of infrastructure located within LCU3.
Cultural and characteristics	Agriculture and farming are the main cultural activities in LCU3. A wine company, a vineyard, and tourist accommodations exist within this LCU. South West Horse Trails and Memorial Shrine are other cultural elements of LCU3.
Spatial qualities	LCU3 has a gently undulating topography with open and long views in some areas and enclosed views in other areas where the topography, buildings, and vegetation limit or obstruct the views.

Landscape character values

The local values associated with LCU3 encompass the rural landscape setting, which is appreciated for its visual and scenic quality, as well as an environmental overlay that acknowledges the high biodiversity values of areas of native forest within both private and public land. In addition, Harvey River traverses through LCU3 which is of high environmental and cultural value. There are also some seasonal water features and dams within private properties. LCU3 is valued by tourists and local residents, however, as a result of the mix of natural and human-made feature values, LCU3 is considered to have **moderate** landscape value.

3.5 Visual baseline

3.5.1 Sensitive receptors

Key sensitive receptors within the Study Area are outlined in Table 15. The sensitive receptors level of significance has been determined in accordance with the *Visual Landscape Planning in Western Australia* guidelines (Western Australia Planning Commission, 2007). The sensitive receptor levels of significance will be taken into consideration when identifying the sensitivity of viewpoint locations.

Table 15 Sensitive receptors and level of significance

Sensitive receptor	Level of significance
Visitors to Dwellingup State Forest and Harris River State Forest	Level 1: national / state significance
Users of the Bibbulmun Track and Munda Biddi Trail	Level 1: national / state significance
South Western Highway road users	Level 1: national / state significance
Visitors to Harvey Dam, Stirling Dam, Lake Navarino (Waroona Dam), and Lake Brockman (Logan Brook Dam)	Level 2: regional significance
Visitors to regional ecotourism destinations including recreation, art, food, wine and similar venues	Level 2: regional significance
Willowdale, Harvey-Quindanning, and Mornington Road users	Level 2: regional significance
Users of local tracks and trails around Harvey Dam (Harvey Dam Walk Loop and Harvey Wildflower Ridge Walk), and Lake Brockman (Lake Brockman Loop) in addition to Captain Fawcett 4WD trail.	Level 3: local significance
Local road users including but not limited to Honeymoon Road, Clarke Road, Medway Road, Dix Road, Logue Brook Dam Road and Black Rock Road	Level 3: local significance

3.5.2 Visual features and experiences

Regional reserves

Lane Poole Reserve, Falls Brook Nature Reserve, Dwellingup State Forest and Harris River State Forest are located within the Study Area. Several nature-based experiences are available within these areas including campgrounds as detailed in Table 16.

Table 16 Campgrounds

Campgrounds	Location
Logue Brook Dam Campsite	Logue Brook Dam campsite is located within the northwest component of the Study Area servicing the Munda Biddi Trail
Lake Brockman Tourist Park	Adjacent to Logue Brook Dam campsite, Lake Brockman Tourist Park includes cabins, campsites, glamping tents, family tents and luxury tents.
Brockman Campground	Brockman Campground is another campground within the northwest component of the Study Area servicing Munda Biddi Trail

Rural areas

Rural areas are located on the western outskirts of state forests. Properties are typically cleared for grazing and set within the surrounding native bushland. Clearings provide open views into the surrounding forested area from roads, farmlands and residences. The dense native forest on the eastern side of rural areas frames views, creates a visual backdrop and establishes a distinct rural setting.

Local roads in this area are surrounded by native vegetation within a gently undulating terrain. Views along road corridors are framed by dense vegetation, with some clearings that allow open filtered views through the forested areas.

Bibbulmun Track

The Bibbulmun Track is a long-distance walking track, stretching 1000 km from Kalamunda, in the Perth Hills, to Albany on the south coast, winding through the south-west of WA.

The track runs along the east of the Study Area through undulating terrain and along ridgelines of dense native vegetation. Views of the local vegetation and surrounding state forests are a key experience of Bibbulmun Track users.

Munda Biddi Trail

Munda Biddi Trail is a 1000 km nature-based, off-road mountain biking experience from Mundaring to Albany. The current alignment of Munda Biddi Trail extends across the north of the Larego Mine Region near Lane Poole Reserve. It then passes along the western and southern sides of Lake Brockman where there is a tourist park and two campgrounds. It then broadly traverses the central axis of Larego Mine Region and the Study Area, typically following the low-lying terrain where views are restricted by the dense native forest.

Scenic drives

The people of WA and tourists to the region value the area's picturesque scenery and embrace scenic drives. South Western Highway is a popular tourist route for travellers, connecting south-east of Perth with Walpole. Views from the highway are typically short-term views and generally include views of flat and undulating farmland and dense native forest surrounding the highway.

Lake Navarino (Waroona Dam), Lake Brockman (Logan Brook Dam), Harvey Dam and Stirling Dam

The Study Area includes a number of dams situated in attractive natural settings that provide recreational functions. Lake Navarino is utilised for water skiing, boating, canoeing, kayaking and freshwater fishing. It also has accommodation (from cottages to campsites) available in addition to a restaurant and general store. Swimming, boating, water skiing, trout fishing, walking and mountain bike riding are recreational activities available at Lake Brockman in addition to camping and boat launching.

Stirling Dam has an amphitheatre for concerts and cultural events, boat ramp, BBQ, picnic gazebo, parking toilets and walking trails and also a place for enjoying the abundance of wildflowers in the area between August and October. Harvey Dam offers a range of recreational activities including fishing and picnicking.

3.6 Visual management objectives

This section contains visual management objectives relevant to the Study Area and Proposal. This section supplements the objectives identified in Section 2.4. The context analysis, LCUs and visual analysis have been used to form the basis for establishing appropriate management objectives and strategies to manage the visual character of the landscape within the Study Area.

3.6.1 Best practice siting and design

Earthworks, mine pit locations, haul road networks and haul road crossing points should be sited within the natural topographic context of the landscape. Where possible, siting should be positioned behind the natural screening of local vegetation and landforms. In addition, natural drainage patterns should be retained to reduce impact on vegetation and soils beyond the mining areas. The natural landform and vegetation features should be retained where possible within the Proposal site. The proximity to sensitive receptors including residential properties, the Bibbulmun Track and Munda Biddi Trail should be considered when siting the network of mine pits and haul roads.

3.6.2 Protection and maintenance of landscape character

Valued elements that define the existing landscape character, where possible, are recommended for protection. This includes the distinct forested areas, surrounding peri-urban areas, rural areas, and the natural undulating hills of the Darling Plateau, including the Darling Scarp. Where possible, vegetation and terrain near sensitive receptors and along roadways should be retained to screen views of proposed mining activities.

3.6.3 Restoration of degraded character or enhancement of opportunities

Within forested areas, the character of the landscape appears to be in good condition. All vegetation clearing should be rehabilitated in keeping with the existing vegetation complexes and vegetation composition. Vegetation health across the entire mine region should be subject to long term monitoring to ensure rehabilitation activities and screening are effective. Re-contouring of mined sites should also be adopted to re-establish the original landform character and the natural vegetation diversity.

4. Proposal description

This section provides a detailed overview of the main visual components that have potential to affect the landscape character and visual amenity of the Study Area. Components include earthworks, vegetation removal and re-establishment, mining infrastructure and mining activities.

4.1 Proposal summary

Alcoa proposed to continue to operate in Larego Mine Region until 2040. The Proposal consists of existing mined areas and proposed mining areas within the Larego Mine Region five-year mine plan (2023-2027), in addition to rehabilitation, as itemised in Table 17 and illustrated in Figure 10. Mining activities occurring during this time consist of lines of clearing, pit and secondary haul road development, crushing, material transfer (via conveyor) and rehabilitation which will enable continuity of bauxite supply to the Wagerup Alumina Refinery.

Larego Mine Region comprises approximately 31,506 ha and lies south of Orion and Arundel mine regions. The infrastructure corridor connecting this mine region to the existing mine infrastructure at Arundel runs north-west from the crusher at Larego. Larego Mine Region is bound Harvey Dam to the south and the Bibbulmun Track to the east and extends west beyond Logue Brook Dam to the ML1SA boundary. Larego Mine Region does not include Stirling Dam.

Table 17 Proposal components

Component	Description
Existing mined areas	– Ceased mine pits and haul roads (not rehabilitated) – Active mine pits and secondary haul roads
Proposed mining areas	– Proposed vegetation clearing – Proposed mining earthworks (e.g. mine pits and secondary haul roads) – Proposed active mine pits and secondary haul roads
Rehabilitation	– Recontouring – Subsoil and topsoil reinstatement – Ripping – Seeding / planting – Fertilising

4.2 Limited disturbance areas

Alcoa has developed Limited Disturbance Areas (LDA) which will act to minimise direct impacts to areas of environmental and social value. The LDA specifies areas where mine pits are not permitted. This is not applicable to the construction of haul roads, mine infrastructure and facilities which are permitted in the LDA. High environmental and social values contribute to the determination of LDA's, and associated buffers are specified in Table 18.

Table 18 Limited disturbance areas

Value	Buffer
Registered Aboriginal heritage site	10m
Aboriginal heritage sites identified during surveys	10m
European heritage sites	10m
Confirmed Black Cockatoo suitable and known nest trees	50m
Old growth forest as identified by DBCA	50m
Granite outcrops	50m
Stream zone / riparian vegetation	100m

4.3 Reservoir protection zones

Stirling Dam Reservoir Protection Zone (RPZ) intersects with the Larego Mine Region. The purpose of RPZs is to protect public drinking water supply from contamination through the exclusion of all human activity within the area (except approved operations). The RPZ generally extend to 2 km from the top water level of the reservoir.

4.4 Mine pits

Vegetation clearance will be required for mine pit establishment as shown in Figure 10. Photo 17 provides an example of mine pits during mining operations.

4.5 Haul roads

Ore will be trucked from the mine pits to the Larego Mine Region mine facilities via the primary haul road. Secondary haul roads, relative to mine pit locations, will also be developed to enable ore transportation between mine pits and the primary haul road. Including pavement and berms, haul roads will typically be 50 m wide with clearing of approximately 50-70 m depending on topography and sump locations. Photo 18 provides an example of a typical haul road. Trucks, excavators and other mine vehicles would frequent the haul roads within the mine region during mining operations.

4.6 Access roads

During Larego construction, Alcoa made commitments to DBCA regarding realignment and upgrades to some public roads within and surrounding Larego Mine Region inclusive of Zig Zag Road, Driver Road and Logue Brook Road.

4.7 Conveyors

Ore will be crushed at the mine facility and conveyed using the existing conveyor from Larego Mine Region to Wagerup Alumina Refinery.

4.8 Mine facilities

Mine facilities located within Larego Mine Region have a footprint of approximately 1 km x 1 km or 100 ha and include:

– refuelling and washdown facilities
– fuel and oil storage
– crusher
– laydown areas
– offices and carparks
– wastewater treatment
– water pumping station

Refer to Figure 10 for locations of mine facilities. Photo 19 to Photo 22 indicate the scale and character of the existing mine facilities utilising examples from Huntly Mine, Myara Mine Region.

Image: Supplied by Alcoa

Photo 17 Mine pit

Image: Supplied by Alcoa

Photo 18 Haul road

Image: Supplied by Alcoa

Photo 19 Infrastructure area

Image: Supplied by Alcoa

Photo 20 Vehicle fuel bay

Image: Supplied by Alcoa

Photo 21 Crusher

Image: Supplied by Alcoa

Photo 22 Vehicle wash bay

4.9 Total vegetation clearing

Estimated clearing for continuation of the Willowdale Mine operations within Larego Region over the Proposal period (2023-2027) is presented in Table 19. Estimated clearing is based on an Indicative mine disturbance footprint for existing mined areas and proposed mining areas within Larego Mine Region. As presented in Table 19 mining activities within the Larego Mine Region between 2023-2027 will result in approximately 1084 ha of vegetation clearance.

Table 19 Larego Mine Region vegetation clearance 2023-2027

Year	Total
2024	349 ha
2025	448 ha
2026	234 ha
2027	53 ha
Total clearing	**1,084 ha**

4.10 Construction

Construction is scheduled to occur between 2025-2026, with mining activities continuing throughout this time. Construction activities include but not limited to:

– Vegetation clearance for construction of haul roads, conveyor and infrastructure areas
– Construction of facilities within the infrastructure area including vehicle wash bays, vehicle maintenance sheds, storage sheds
– Construction of gated mine area, access roads, haul roads, intersections with public roads, conveyors and waterway crossings
– Presence of construction machinery and works within and around the mine regions.

The workforce is currently approximately 400 (280 direct employees, 140 contractors). The workforce would be drive in drive out on a daily basis, with no living accommodation currently proposed. The construction workforce is expected to commute to Larego Mine Region via South Western Highway and Willowdale Road.

Temporary construction compounds would be established within the footprints proposed for the new mine facilities and mine pits as required.

4.11 Operation

Bauxite occurs as tabular ore pods that vary in depth from 2-10 m and average about 3.5 m. The mining pits are located within the ore pods. Bauxite occurs in the upper to mid slopes of the Darling Plateau and is generally absent from lower slopes, streams and swamps, as well as granite outcrops. Accordingly, mining does not occur in these landforms.

Mine development occurs progressively on a pit-by-pit basis and comprises clearing, overburden stripping and caprock blasting. The ore is removed by large excavators and transported by haul trucks via a network of haul roads to the mine facilities. Equipment present in a typical mining pit are light-emitting diode lighting towers, one excavator or loader and one to two haul trucks with mining operations occurring 24 hours a day, 7 days a week.

At the mine facilities the haul trucks deliver the ore to the crusher. The ore is subject to primary and secondary crushing and loaded onto the conveyor, which connects to the transfer station on the existing conveyor system that leads to the refinery.

4.12 Rehabilitation duration and schedule

Alcoa's rehabilitation aims to re-establish a self-sustaining Jarrah forest ecosystem that fulfils forest land uses that include conservation, timber production, water catchment and recreation.

Following completion of mining within mine pit areas disturbed areas would be rehabilitated to Jarrah forest and monitored until completion criteria has been met. The proposed phases of the rehabilitation include pit recontouring, subsoil and topsoil reinstatement, ripping followed by seeding and / or planting of nursery raised seedlings and fertilizing as itemised in Table 20 and illustrated in Photo 23 to Photo 27.

The expected duration between completion of mining in Larego and commencement of rehabilitation of secondary haul roads in those regions would be between 12 months and the expected life of region. The life of the region depends on access required for the next mining region.

Table 20 Overview of rehabilitation establishment

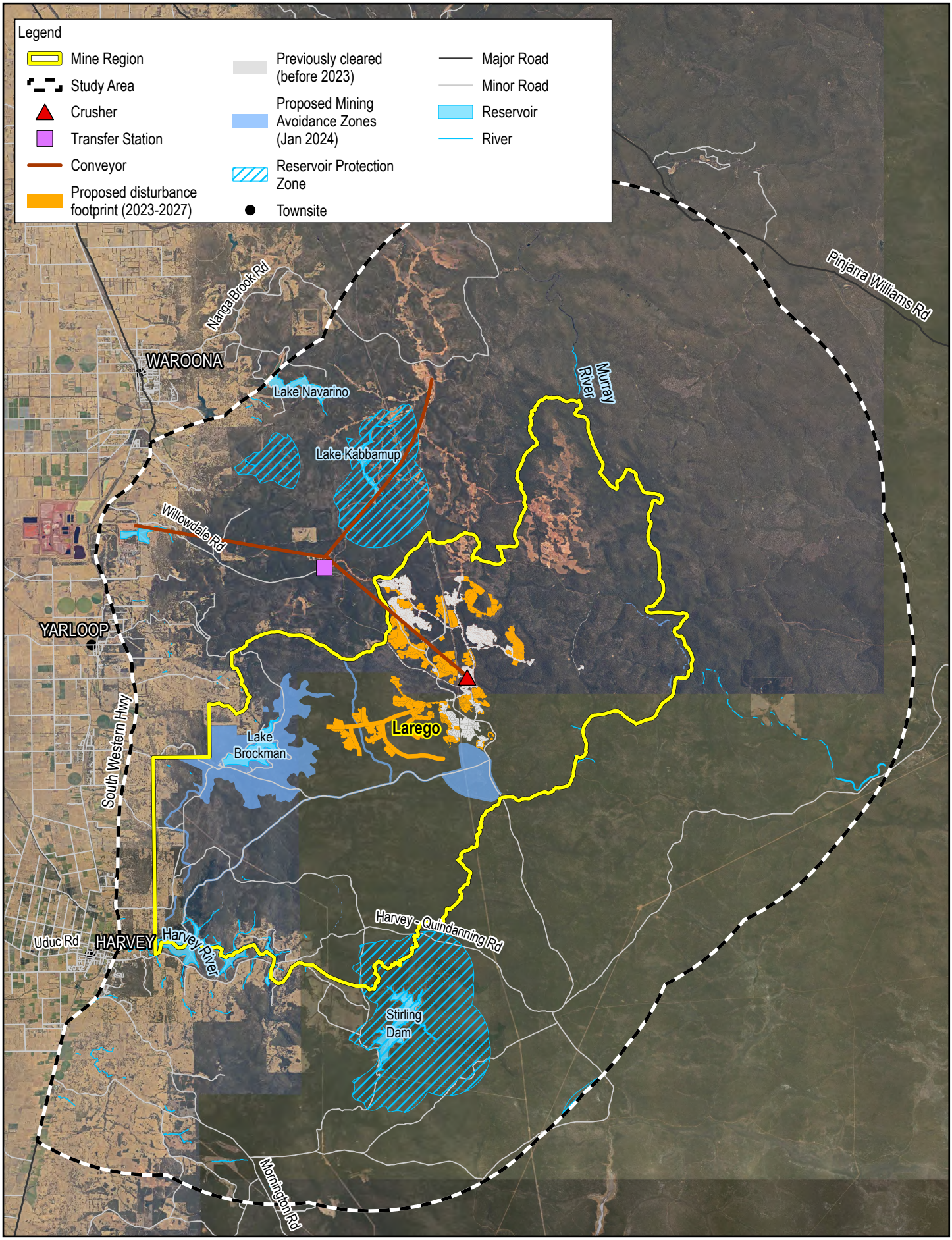
Pre-mining – Predominantly immature forest (21-70 years since last harvest). – Some mature trees retained. – Mosaic of varying regeneration, compaction and recovering biodiversity from previous timber harvesting. – Prescribed burning on a rotation of approximately 10 years.	 *Image: Supplied by Alcoa* ***Photo 23 Example of pre-mining vegetation***
Completed rehabilitation (3 years from clearing) – Black Cockatoo trees with suitable and known nesting hollows retained. – Landscaped, deep ripped pit floors. – Friable, permeable, furrowed substrate. – Topsoil, seeding and planting. – Tree stocking to meet biodiversity objectives. – Fauna habitats installed at one per hectare. – State forest access tracks re-instated. – Open ground noticeably distinct from surrounding canopy as viewed from distant highpoints.	 *Image: Supplied by Alcoa* ***Photo 24 Example of completed rehabilitation***
Establishment stage (1-5 years from completion) – Dominant shrub layer. – Emerging tree saplings. – Mesh guards around ‘recalcitrant’ re-sprouter species. – Exotic ephemeral species peak. – Early development of ground cover and fauna refuge. – Developing litter layer, low fuel levels. – Opportunity to prescribe burn surrounding forest. – Ground cover reduces visual effect of mining as viewed from distant highpoints.	 *Image: Supplied by Alcoa* ***Photo 25 Example of establishment stage***
Juvenile stage (6-15 years from completion) – Canopy layer developing into pole form up to 14 m height. – Proteaceous understorey provides Black Cockatoo foraging habitat. – Establishing native vegetation outcompetes ephemeral exotic species. – Prescribed burning excluded as canopy is low and trees vulnerable to fire damage. – Growing canopy further reduces visual effect of mining as viewed from distant highpoints	 *Image: Supplied by Alcoa* ***Photo 26 Example of juvenile stage***

Immature stage (16-30 years from completion)

- Jarrah and Marri young pole form up to 20 m height, dominate the forest structure.
- 'Recalcitrant' re-sprouter species spread laterally from original plantings.
- Myrtaceous overstorey provides Black Cockatoo foraging habitat.
- Increasing vertebrate fauna diversity.
- Opportunity to prescribe burn rehabilitation and surrounding forest.
- Canopy blends with surrounding forest as viewed from distant highpoints.

Image: Supplied by Alcoa

Photo 27 Example of immature stage



Paper Size ISO A4

0 1.5 3 4.5 6

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Project Components

FIGURE 10

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5. Landscape impact assessment

The following section includes an assessment of the impacts to landscape character as a result of the Proposal. Refer to Section 3.4 for a description of LCUs.

5.1 LCU1: Darling Plateau forest

Refer to Table 21 for LCU impact assessment.

Table 21 LCU1 impact assessment

Criteria	Assessment
Anticipated change to landscape character	Larego Mine Region is located within the Dwellingup State Forest, Harris River State Forest, Falls Brook Nature Reserve and includes key characteristics as identified within Table 12. Part of the Proposal would occur within LCU1. Occurring on a pit by pit basis the anticipated changes related to existing mined areas and proposed mining areas initially including vegetation clearing, overburden stripping and caprock blasting. Operation activities consist of ore removal (via large excavators) and ore transportation by haul trucks via a network of haul roads to mine facilities. Several areas of vegetation within Dwellingup State Forest would be cleared for the construction of the haul roads and mine pits. Vegetation clearance would occur in stages over the course of the mining operation. Moreover, construction activity and machinery would be present within LCU1. Rehabilitation will occur three years from clearing with the exception of long term infrastructure. The completion of rehabilitation vegetation would progressively mature, becoming established to an immature stage at 16-30 years (refer to 4.12 for rehabilitation development).
Landscape value	**High** (refer to Section 3.4.2)
Susceptibility to change	The susceptibility to change is considered **high**, as the type of development proposed would have a detrimental effect on some areas of landscape character, condition and value that could not be mitigated in the immediate future.
Sensitivity to change	The sensitivity to change is **high**, as elements of the landscape character, including the State Forests vegetation, in addition to the landscapes spatial qualities and natural characteristics seen throughout the Darling Plateau forest are understood to have a high sensitivity.
Magnitude of change	The magnitude of change is considered **high** as the removal of vegetation and the addition of mining activities, haul roads, and infrastructure would substantially alter several areas of LCU1, diminishing its quality. As a result, some existing features and characteristics of LCU1 would resemble those of LCU2, greatly reducing the value of the landscape character. Over time rehabilitation of the ceased mine pits and haul roads may integrate these cleared areas back into the surrounding vegetated landscape.
Duration of impact	The impacts associated with existing mined areas and proposed mining areas are considered long-term (refer to Table 7 for duration of impact). Rehabilitation within the ceased mine pits would commence three to four years from clearing and would become established to a mature stage at 16-30 years from completion (refer to Section 4.11 for rehabilitation phases). Rehabilitation would be permanent once established.
Significance of impact	The significance of impact, for areas of LCU1 where mining activity is proposed, is assessed as **high** during construction and operation, as the magnitude of change and sensitivity to change are both high.

5.2 LCU2: Mining activities

Refer to Table 22 for LCU2 impact assessment.

Table 22 LCU2 Assessment

Criteria	Assessment
Anticipated change to landscape character	The Proposal occurs within LCU1 and LCU2 as shown in Figure 9. Occurring on a pit by pit basis the anticipated changes related to existing mined areas and proposed mining areas within Larego Mine Region initially including vegetation clearing, overburden stripping and caprock blasting. Operation activities consist of ore removal (via large excavators) and ore transportation by haul trucks via a network of haul roads to mine facilities. During operation, a peak workforce of approximately 280 direct employees and 140 contractors are anticipated to access Larego Mine Region. Rehabilitation will occur three years from clearing with the expectation of long-term infrastructure. The completion of rehabilitation vegetation would progressively mature, becoming established to an immature stage at 16-30 years (refer to 4.12 for rehabilitation development).
Landscape value	**Low** (refer to 3.4.3)
Susceptibility to change:	The susceptibility to change is considered **low**, as development of this type will unlikely have an adverse effect on this existing landscape character, condition, or existing value as the development is not uncharacteristic of LCU2.
Sensitivity to change	The sensitivity to change is **low**. Although there is some remnant vegetation present within LCU2 the landscape value and the susceptibility to change are low due to there being no specific values associated with LCU2 identified as part of the policy review.
Magnitude of change	The magnitude of change is considered **negligible**, as the removal of vegetation and construction and operation of haul roads and pits would not be significantly uncharacteristic to LCU2.
Duration of impact	The impacts associated with existing mined areas and proposed mining areas would be considered to be long-term (refer to Table 7 for duration of impact). Rehabilitation within the ceased mine pits would commence three to four years from clearing and would become established to a mature stage at 16-30 years from completion (refer to Section 4.12 for rehabilitation phases). Rehabilitation would be permanent once established.
Significance of impact	The significance of impact is assessed as **negligible**. This is due to vegetation clearing, mining operation and staged rehabilitation not being significantly uncharacteristic to LCU2.

5.3 LCU3: Undulating rural plains

Refer to Table 23 for LCU3 impact assessment.

Table 23 LCU3 Assessment

Criteria	Assessment
Anticipated change to landscape character	LCU3 is not located within or in close proximity to Larego Mine Region, therefore no changes to the key characteristics of LCU3 outlined in Table 14 are anticipated.
Landscape value	**Moderate** (refer to Section 3.4.4)
Susceptibility to change:	The susceptibility to change is considered **high,** as the type of development proposed would have a detrimental effect on some of the areas landscape character, condition and value that could not be mitigated in the immediate future.
Sensitivity to change	The sensitivity to change is considered **moderate**, as LCU3 has locally important features that makes a generally positive contribution to landscape character.
Magnitude of change	The magnitude of change is considered **negligible** as LCU3 as existing mined areas, proposed mining areas and rehabilitation is not proposed within LCU3. As such there will be no loss of/or change to the elements, features or characteristics that contribute to the landscape character.
Duration of impact	N/A
Significance of impact	The significance of impact, associated within existing mined areas, proposed mining areas and rehabilitation, is assessed as **negligible**. While the sensitivity to change has been assessed as moderate, there is no change anticipated to occur within LCU3.

6. Visual impact assessment

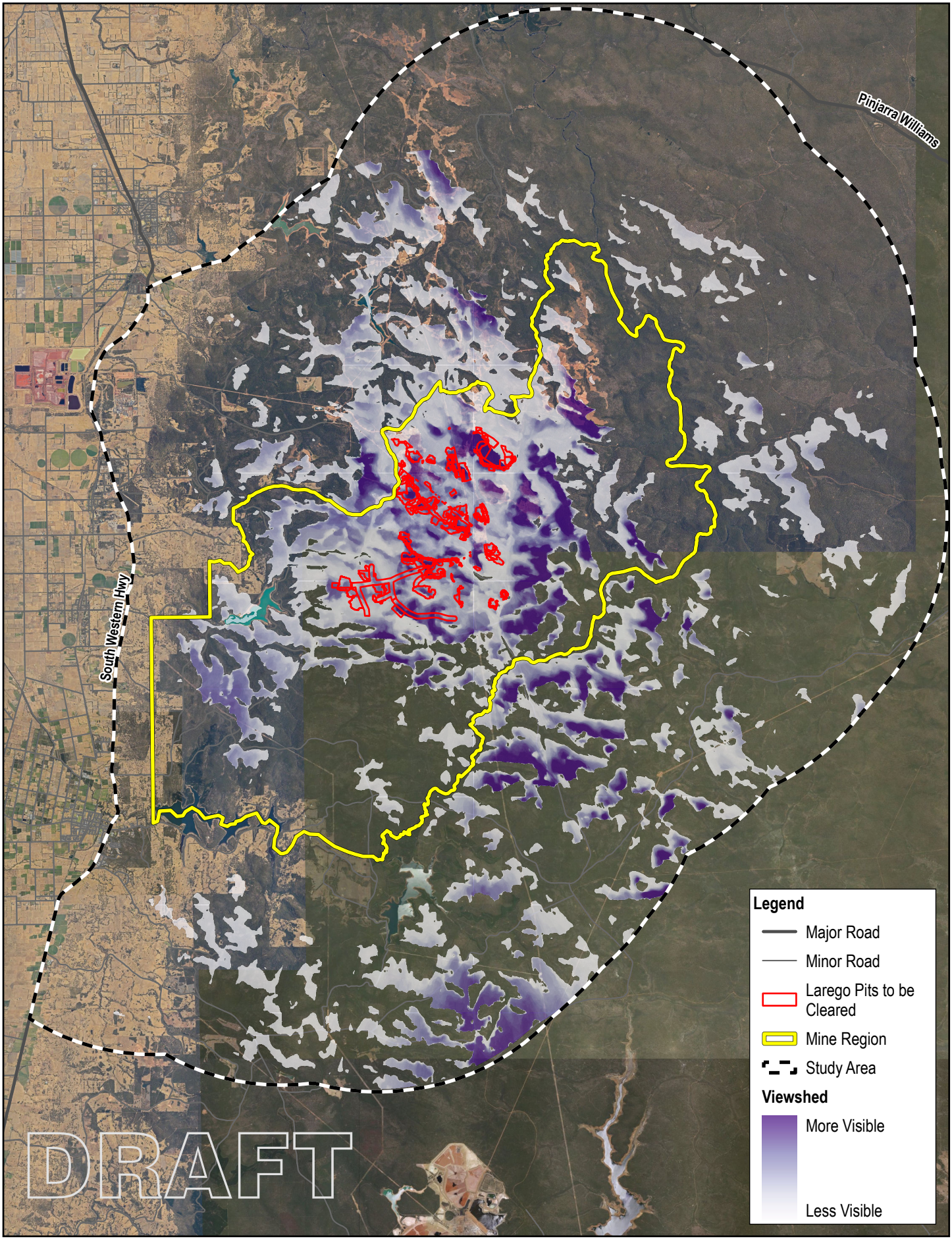
This section includes the ZTV analysis, the identification of the viewpoint locations, visual impact assessment from these locations, and an overview of construction impacts.

6.1 Zone of theoretical visibility analysis

A ZTV analysis was undertaken for the Proposal. The following sections provide a discussion of this mapping analysis. Refer to Section 2.6.2 for ZTV methodology.

The ZTV analysis for Larego facility (within Larego Mine Region) was undertaken using the indicative height of a tipping truck in the centre of the facility, with the proposed truck tipping height being 13m. This scenario was chosen for the analysis to understand where the most visible elements of the proposed infrastructure area would theoretically be visible from.

Generally, the theoretical visibility of the Larego Mine Region is more visible within elevated locations of the mine region. Outside of the mine region, there is theoretical visibility from isolated elevated areas such as Mount William. Refer to Figure 11 for the Larego Mine Region viewshed.



Paper Size ISO A4

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Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Revision No. **E**
Date **22/11/2024**

Larego Region Viewshed

FIGURE 11

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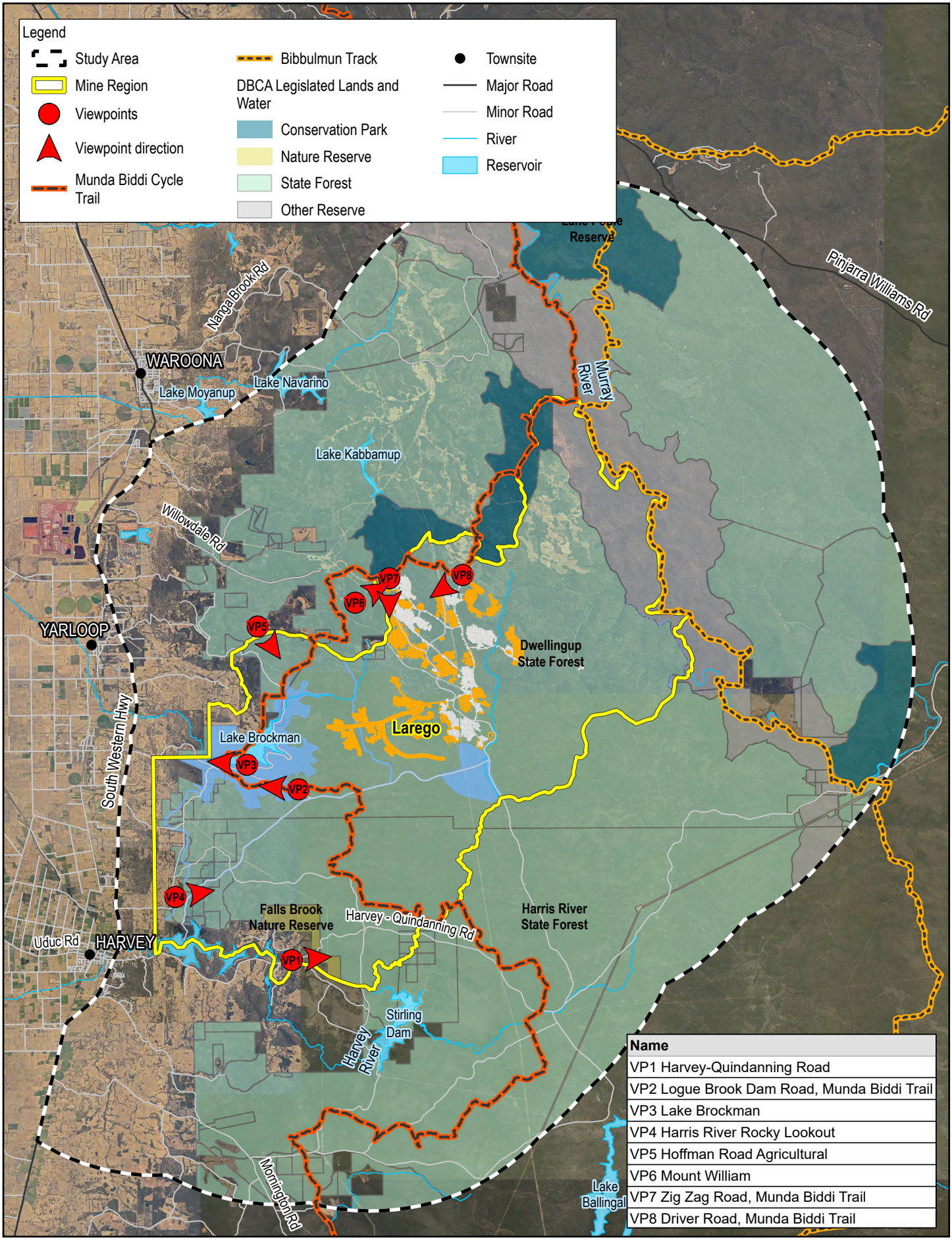
6.2 Viewpoint location

Based on the visual analysis, the ZTV analysis and combined with an understanding of the Proposal, viewpoint locations were selected for assessment of visual receptors. Refer to Table 24 and Figure 12 for viewpoint locations. For each viewpoint, a panorama of the existing view is provided, together with a description of the existing view, anticipated changes, and impact assessment rating.

Table 24 Viewpoints

Viewpoint	Location	Sensitive receptors
VP1	Harvey Quindanning Road	– Residents – Road users – Tourists – Local industry workers
VP2	Logue Brook Dam Road, Munda Biddi Trail	– Recreational users – Road users – Tourists – Local industry workers
VP3	Lake Brockman / Logue Brook Dam	– Recreational users – Tourists
VP4	Harris River Rocky Lookout	– Recreational users – Tourists
VP5	Hoffman Road	– Residents
VP6	Mount William	– Recreational users – Tourists – Local industry workers
VP7	Zig Zag Road, Munda Biddi Trail	– Recreational users – Tourists – Local industry workers
VP8	Driver Road, Munda Biddi Trail	– Recreational users – Tourists – Local industry workers



Name
VP1 Harvey-Quindanning Road
VP2 Logue Brook Dam Road, Munda Biddi Trail
VP3 Lake Brockman
VP4 Harris River Rocky Lookout
VP5 Hoffman Road Agricultural
VP6 Mount William
VP7 Zig Zag Road, Munda Biddi Trail
VP8 Driver Road, Munda Biddi Trail

Paper Size ISO A4

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Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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Revision No. **E**
Date **4/11/2024**

Viewpoints locations

FIGURE 12

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6.2.1 Viewpoint 1 Harvey-Quindanning Road

Viewpoint 1 (VP1) is located adjacent to Harvey-Quindanning Road approximately 1.3 km from Larego Mine Region as shown in Figure 13. VP1 is facing east as shown in Photo 28. Refer to Table 25 for assessment.

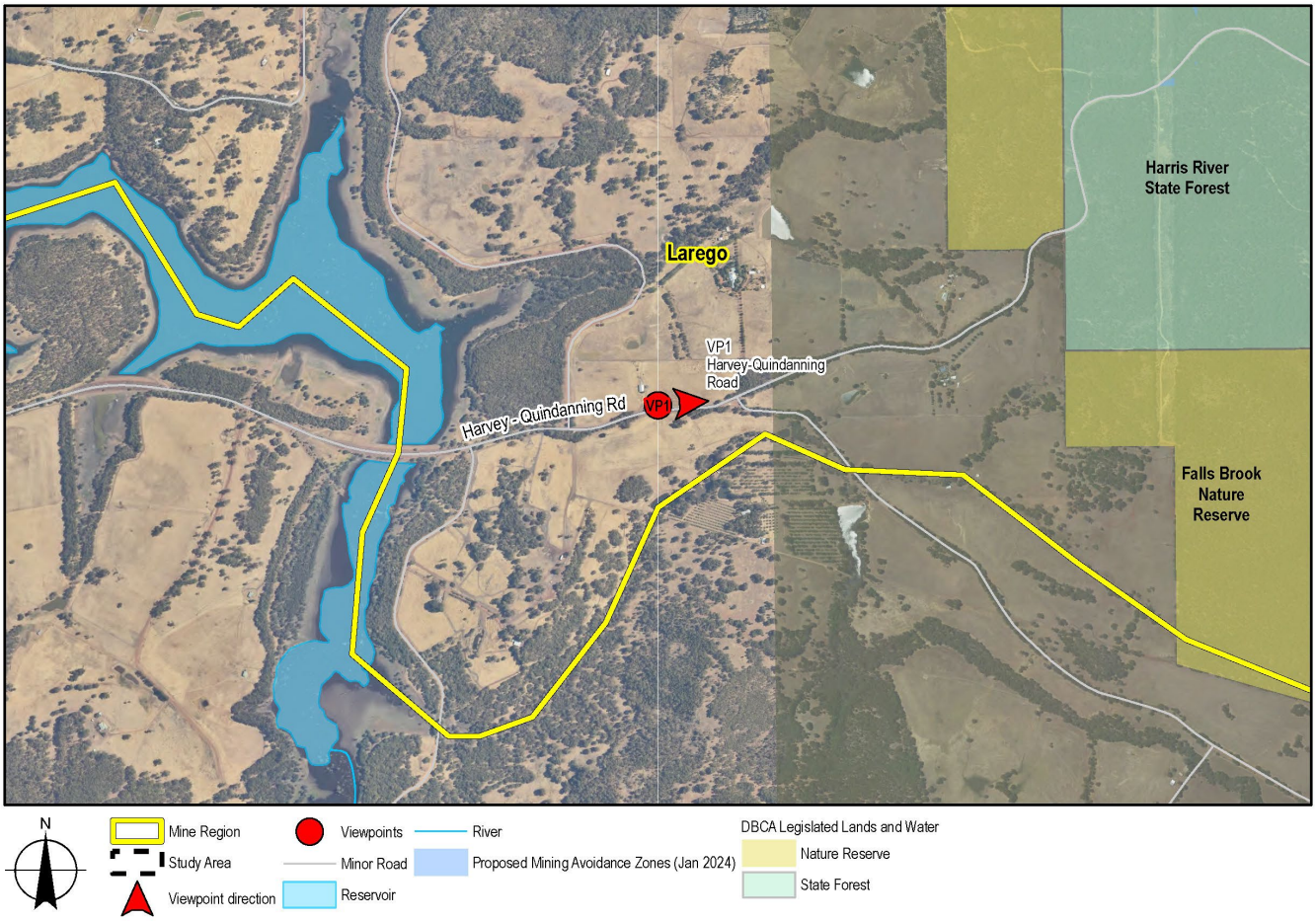


Figure 13 VP1 Location plan

Photo 28 View east from Harvey-Quindanning Road

Table 25 VP1 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 33º 4’ 58” S, 115º 59’ 30” E, Elevation: 105m. VP1 is located approximately 1.3 km south-west of the existing Larego Mine Region, looking east. This viewpoint is representative of views experienced by local industry workers, residents, tourists and road users.
Description of existing view	The foreground view consists of very gently undulating vibrant green pastureland, slightly rutted with car tracks, with a small quality of textured straw-coloured hay adjacent to the fence line. Rural fencing separates the pastureland from the road reserve which includes a stand of marri trees. The midground view includes the muted tones of a stand of remnant vegetation, backed by a homestead surrounded by exotic planting. Centre to right of this view a dense stand of remnant vegetation provides a gradual transition between the agricultural land and natural landscape beyond. The natural form of the background view is dominated by densely vegetated, moderately inclined, hills and valleys. The combination of elements contributes to a quintessential rural aesthetic.
Anticipated change to view	There is no anticipated change to the existing view from existing mined areas, proposed mining areas or rehabilitation.
Sensitivity to change	The sensitivity to change is considered as **moderate** as Harvey-Quindanning Road is a locally significant road that provides scenic views across a rural landscape. Community members and visitors alike place value upon this landscape setting and enjoyment of rural vistas.
Magnitude of change	The magnitude of change from existing mined areas, proposed mining areas and rehabilitation is **negligible** as the Proposal is located in the north-east component of Larego Mine Region meaning it is screened from this viewpoint by densely vegetated hills within Harris River State Forest.
Duration of impact	N/A
Significance of impact	The significance of impact is assessed as **negligible** as the Proposal existing mined areas, proposed mining areas and rehabilitation is and will continue to be screened by the densely vegetated hills within Harris River State Forest.

6.2.2 Viewpoint 2 Logue Brook Dam Road, Munda Biddi Trail

Viewpoint 2 (VP2) is located adjacent to Logue Brook Dam Road, approximately 1.7km from Lake Brockman as shown in Figure 14. VP2 is facing north-west as shown in Photo 29 towards Munda Biddi Trail within Larego Mine Region. Refer to Table 26 for assessment.

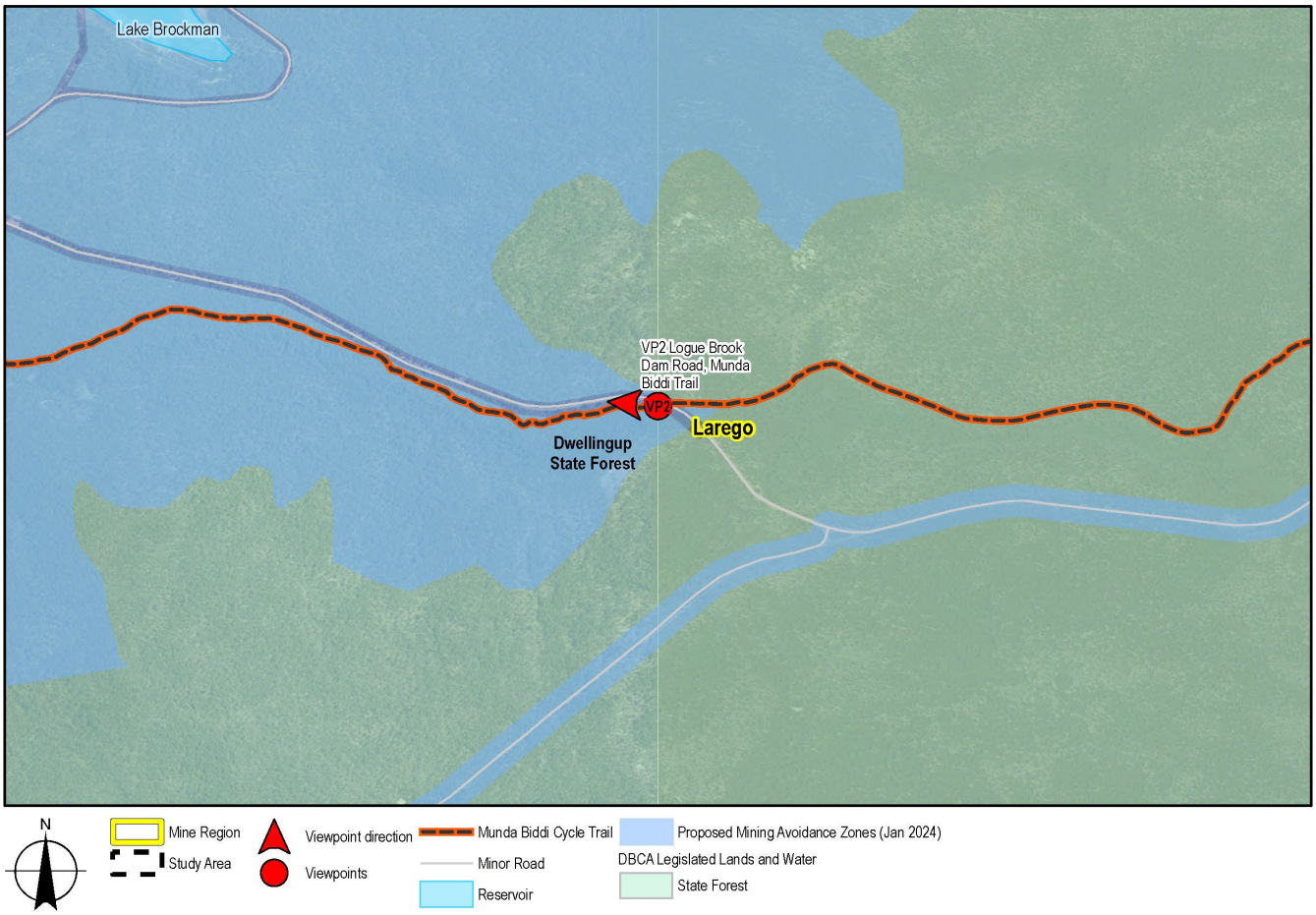


Figure 14 VP2 Location plan

Photo 29 View north-west at the intersection of Logue Brook Dam Road and Munda Biddi Trail

Table 26 VP2 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 33º 0’ 48” S, 115º 59’ 47” E, Elevation: 273m VP2 is located within the existing Larego Mine Region, looking north-west. This viewpoint is representative of views experienced by recreation users and ad hoc day visitors accessing Hoffman Mill and/or Munda Biddi Trail, in addition to local industry workers and road users.
Description of existing view	The view comprises the leaf lined mid brown compacted earth track of Mundi Biddi Trail surrounded by the muted tones of the natural vegetation of Dwellingup State Forest. The garish blue of Munda Biddi Trail name sign and directional marker are at odds with the muted tones of the forest and unpaved roadway. The level terrain and natural forest obstruct the view to the background providing a sense of enclosure and balance aided by the pattern of textured brown to grey/black and white linear tree forms in contrast to the feathery green and light brown of the understorey vegetation. The earthen form of Logue Brook Road, surrounded by native vegetation completes this view.
Anticipated change to view	There is no anticipated change to the existing view from existing mined areas, proposed mining areas or rehabilitation as the haul roads and mine pits are, and will continue to be, constructed behind the dense vegetation of the Dwellingup State Forest, approximately 7 km away.
Sensitivity to change	The sensitivity to change is considered **high**, as recreational tourists utilising Munda Biddi Trail place value upon the landscape and enjoyment of views of their setting.
Magnitude of change	The magnitude of change from existing mined areas, proposed mining areas and rehabilitation would be **negligible** as there is no anticipated change to the existing view.
Duration of impact	N/A
Significance of impact	The significance of impact is assessed as **negligible** from existing mined areas, proposed mining areas and rehabilitation. This is due to the existing dense vegetation that would screen mine pit locations and haul roads.

6.2.3 Viewpoint 3 Lake Brockman

Viewpoint 3 (VP3) is located at Lake Brockman boat launching facility, adjacent to Lake Brockman Tourist Park as shown in Figure 15. VP3 is facing north-west as shown in Photo 30 within Larego Mine Region. Refer to Table 27 for assessment.

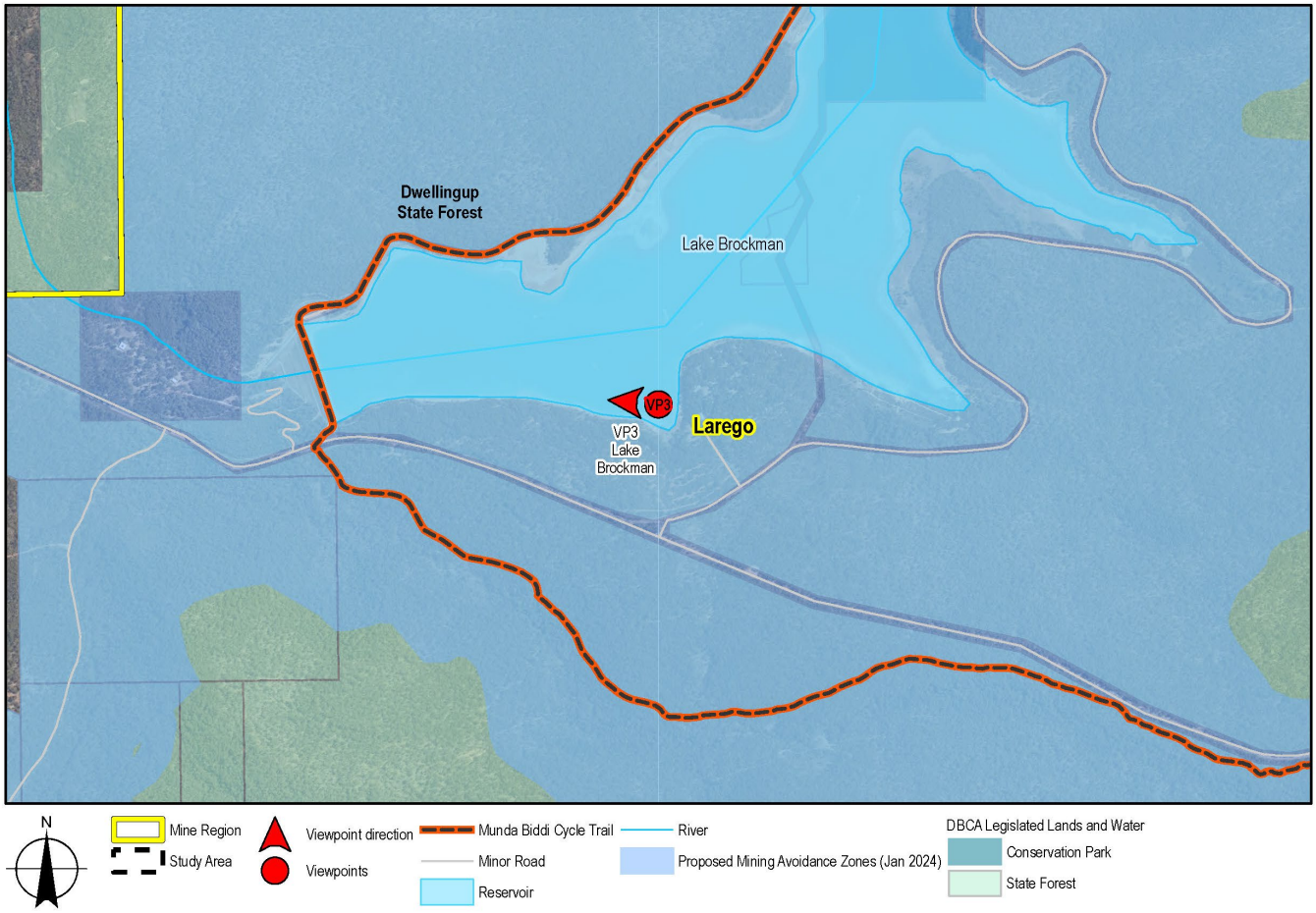


Figure 15 VP3 Location plan

Photo 30 View north-west from Lake Brockman

Table 27 VP3 Impact Assessment

Criteria	Comments
Location and view direction	GPS location: 33º 0’ 12” S, 115º 58’ 19” E, Elevation: 244m VP3 is located within the existing Larego Region, looking north-west. This viewpoint is representative of views experienced by recreational users and tourists accessing Lake Brockman / Logue Brook Dam and Lake Brockman Tourist Park.
Description of existing view	VP3 provides an open and expansive view that is balanced with a limited colour palette. Serving as a boat launching facility the foreground consists of very gently inclining earth surface that is finely textured, and rust toned that connects to the water’s edge of Logue Brook Dam in an uneven manner. The surrounding landform is densely vegetated and rimmed with a creamy / rust embankment which connects to the slightly rippled form of the ice blue waterbody. In symmetry with the foreground the background view consists of a moderately inclining rust toned earth bank that abuts the water’s edge, fringed with densely vegetated undulating hills typical of the Darling Uplands.
Anticipated change to view	Existing mined areas proposed mining areas, and rehabilitation within Larego Mine Region occur and will continue to occur within the north-west component of the mine region. In addition, in January 2024, a MSZ was proposed for Logue Brook Dam resultant in a buffer between Lake Brockman and any mining activity. As such there is no anticipated change to the view.
Sensitivity to change	The sensitivity to change is considered **high**, as users of Dwellingup State Forest and visitors to Lake Brockman place a high value upon water bodies and the surrounding landscape in addition to enjoyment of views of their setting.
Magnitude of change	The magnitude of change from existing mined areas and proposed mining areas is considered **negligible**, as there is no anticipated change to the existing view.
Duration of impact	N/A
Significance of impact	The significance of impact is assessed as **negligible** from existing mined areas, proposed mining areas and rehabilitation. This is due to inclusion of the proposed MSZ (Jan 2024), and the Proposal being located to the north-east component of Larego Mine Region.

6.2.4 Viewpoint 4 Harris River Rocky Lookout

Viewpoint 4 (VP4) is located at Harris River Rocky Lookout, adjacent to Honeymoon Road as shown in Figure 16. VP4 is facing east as shown in Photo 31. Refer to Table 28 for assessment.

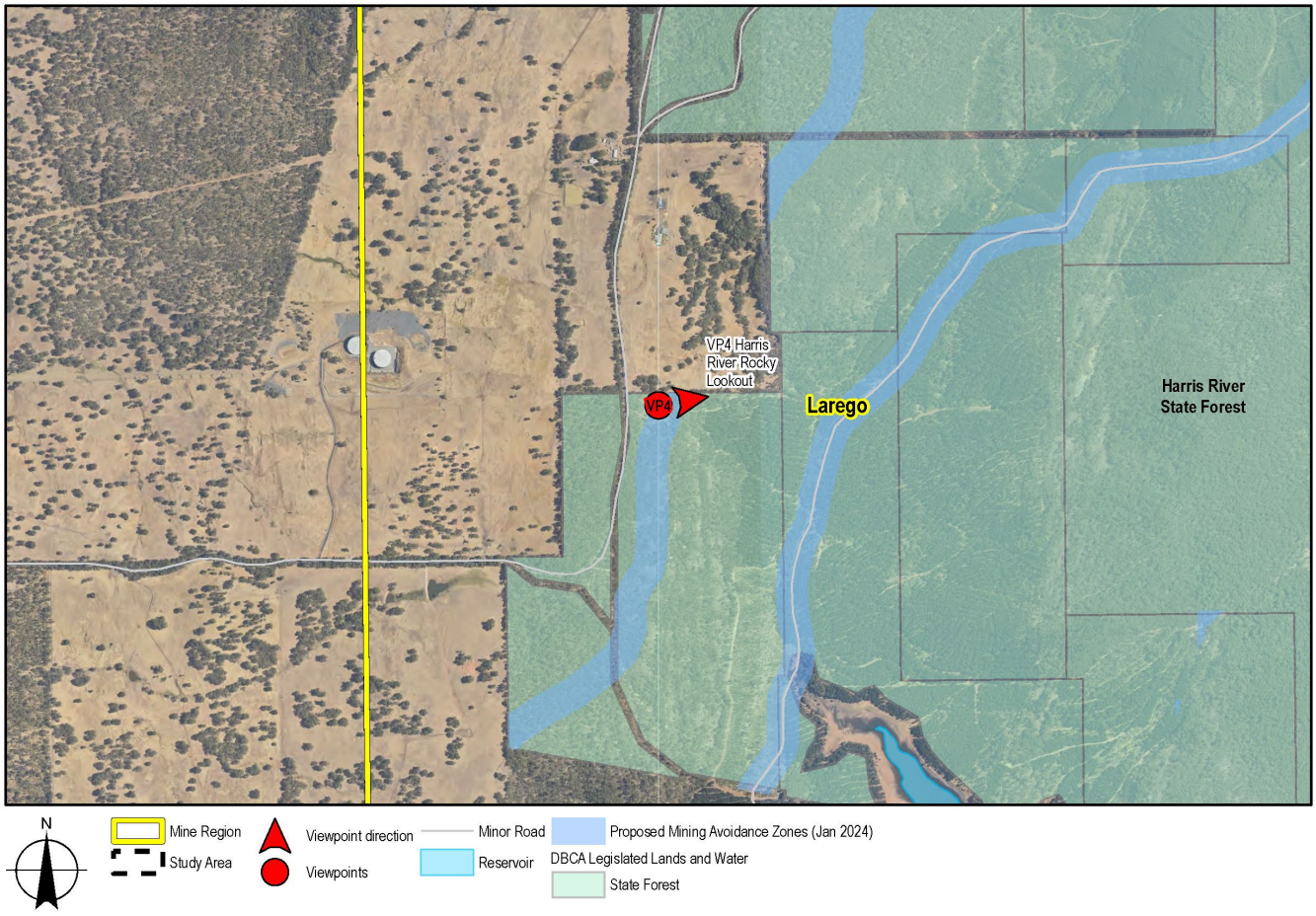


Figure 16 VP4 Location plan

Photo 31 View northeast from Harris River Rocky Lookout

Table 28 VP4 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 33º 3’ 25” S, 115º 56’ 9” E, Elevation: 229m VP4 is located towards the edge of the existing Larego Region looking northeast. This viewpoint is representative of views by recreation users and tourists.
Description of existing view	The foreground view is dominated by the textured canopy of recently burnt native bushland, studded with the vibrant green of individual trees unimpacted by fire. A rocky outcrop, covered, in patches, with low growing wispy vegetation completes the foreground view. The rocky tree lined, downwards slope connects to the undulating cleared valley and hills beyond. Visual access to the background view is provided through and above the trees. This allows glimpses of the farm house mid hillslope and gently undulating densely vegetated ridgeline beyond.
Anticipated change to view	There is no anticipated change to the view from existing mined areas, proposed mining areas or rehabilitation as the haul roads and mine pits are, and will continue to be, screened by the dense vegetation of Harris State Forest.
Sensitivity to change	The sensitivity to change is **moderate** as Harris River Rocky Ridge Lookout is a scenic site of local significance located within Harris River State Forest. Intermittent views across the Study Area, towards the Proposal, are afforded from this location.
Magnitude of change	The magnitude of change from existing mined areas, proposed mining areas and rehabilitation would be **negligible** as there is no anticipated change to the existing view.
Duration of impact	N/A
Significance of impact	The significance of impact is assessed as **negligible** from existing mined areas, proposed mining areas and rehabilitation. This is due to the distance from the Proposal and the screening provided by Harris State Forest.

6.2.5 Viewpoint 5 Hoffman Road

Viewpoint 5 (VP5) is located on a firebreak, off Hoffman Road, as shown in Figure 17. VP5 is facing south-east as shown in Photo 32. Refer to Table 29 for assessment.

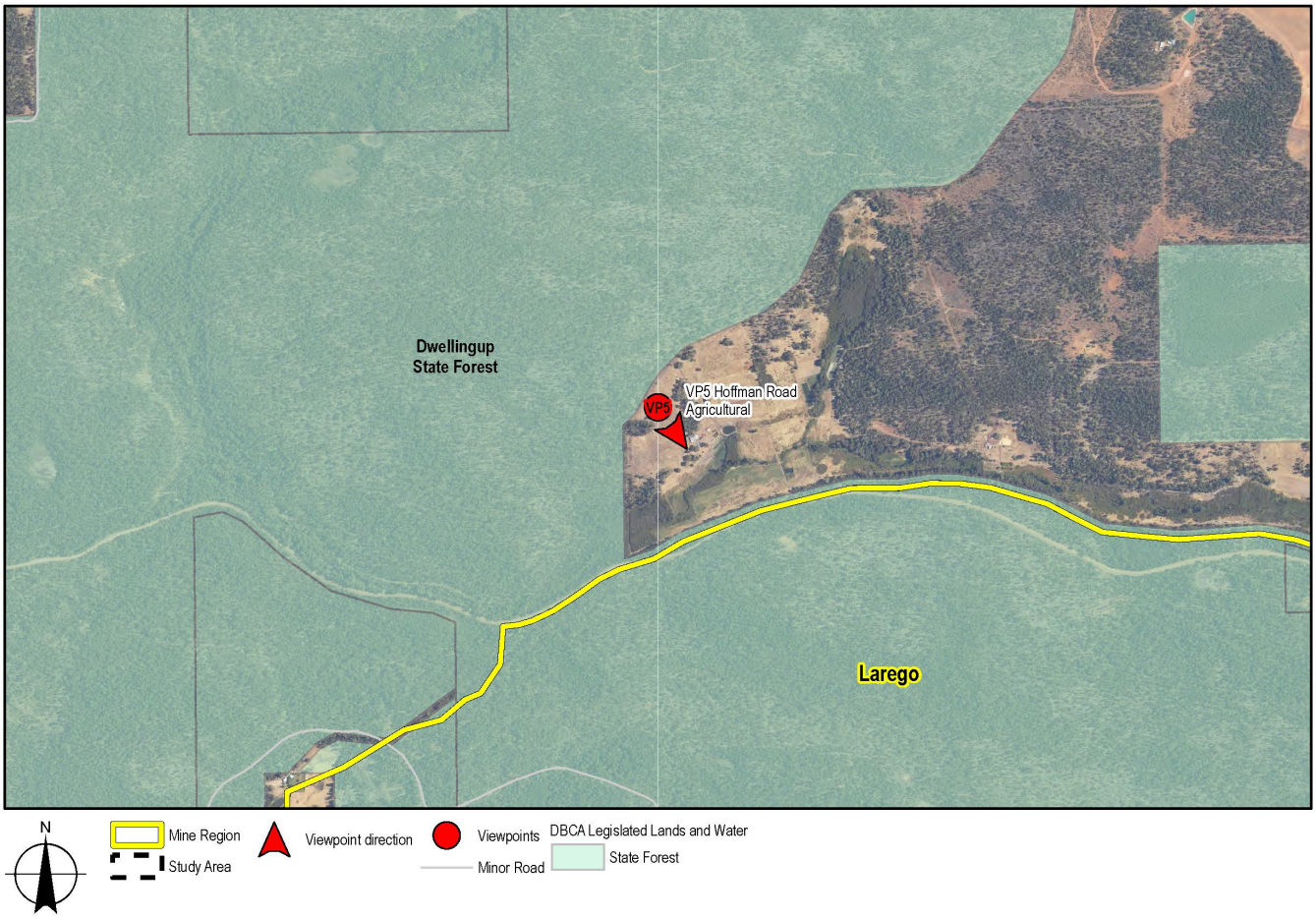


Figure 17 VP5 Location plan

Photo 32 View south-east from firebreak, off Hoffman Road

Table 29 VP5 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 32º 56’ 47” S 115º 58’ 37” E, Elevation: 302 m VP5 is located approximately 500 m from the existing Larego Mine Region looking south-east. This viewpoint is representative of views experienced by neighbouring residents and agricultural workers.
Description of existing view	A gently undulating, browning and uneven paddock spans the foreground view. The midground is fronted by areas of rock pitting with the straight line of the agricultural land abruptly ending at a stand of remnant native vegetation consisting of trees of varying height, type and spacings. This tree stand, within an open landscape, provides a seamless transition to the densely vegetated ridgeline evident within the background.
Anticipated change to view	There is no anticipated change to the view from existing mined areas, proposed mining areas or rehabilitation as the haul roads and mine pits are, and will continue to be, screened by the natural topography and dense vegetation of Dwellingup State Forest.
Sensitivity to change	The sensitivity to change is **moderate** as agricultural workers, who have a key focus on their work have intermittent views across the Study Area, towards the Proposal.
Magnitude of change	The magnitude of change from existing mined areas, proposed mining areas and rehabilitation would be **negligible** as there is no anticipated change to the existing view.
Duration of impact	N/A
Significance of impact	The significance of impact is assessed as **negligible** from existing mined areas, proposed mining areas and rehabilitation. This is due to the distance from the Proposal and the screening provided by Harris State Forest.

6.2.6 Viewpoint 6 Mount William

Viewpoint 6 (VP6) is located at Mount William as shown in Figure 18. Mount William is located to the north-west of Larego Mine Region. It is accessed via a steep 4WD track from Willowdale Road. There is an active fire tower located at the top. Recreational users also frequent Mount William to take in the elevated view across Dwellingup State Forest and Lane Poole Reserve. VP6 is facing north-east as shown in Photo 33. Refer to Table 30 for assessment.

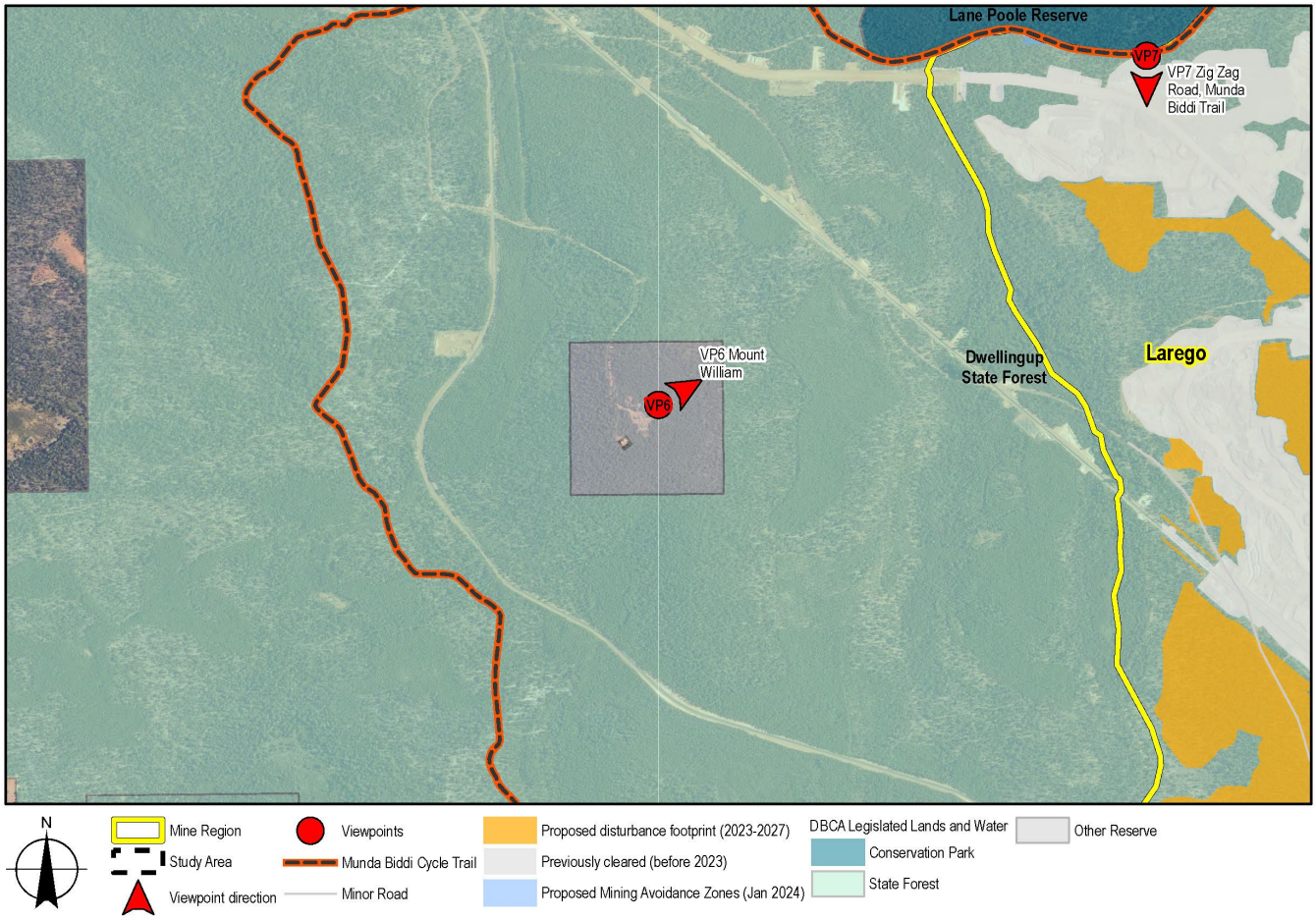


Figure 18 VP6 Location plan

Photo 33 View north-east from Mount William

Table 30 VP6 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 32º 56’ 15” S 116º 1’ 28” E, Elevation: 480m VP6 is situated approximately 1.5 km from the existing Larego Mine Region. This viewpoint is representative of views experienced by local industry workers, recreational users and tourists.
Description of existing view	VP6 largely comprises of views over a rocky outcrop across the native bushland of the Dwellingup State Forest, a component of which has been affected by fire. This elevated viewpoint looks out over the gently undulating terrain and dense canopy cover, visible in the background of this view, of Dwellingup State Forest and Lane Poole Reserve. The existing mined areas of Larego Mine Region are visible in the midground of this view with sections of the dense vegetation cleared for the mine pits and haul roads.
Anticipated change to view	From VP6 there are some views of existing mined areas (ceased mine pits) with additional areas proposed to be cleared to the right of the existing mined areas. The anticipated change in the midground view would include the presence of construction equipment, machinery, and vehicles, with areas of vegetation clearance associated with the construction of active my pits. There would be no visible change to the background of the view anticipated. Within the foreground, the view may be altered due to reestablishment of fire affected vegetation. Rehabilitation would occur in parallel with continuation of mining operations. Existing mined areas (ceased mine pits) would be progressively reestablished, thereby facilitating gradual visual integration of these disturbed areas back into the surrounding view as vegetation matures.
Sensitivity to change	The sensitivity to change is **high** as recreational users frequent VP6 to enjoy views from this setting. In addition, fire tower workers, utilising this facility as or when required, would have intermittent views of Larego Mine Region from VP6.
Magnitude of change	The magnitude of change is deemed **moderate** as existing mined areas (ceased mine pits and secondary haul roads) and proposed mining areas have and will continue to cause discernible changes in the baseline conditions due to a partial loss of natural vegetation. This change is out of scale with the pre-mining view resultant in an adverse impact on the view.
Duration of impact	The duration of impact is considered medium – long term as staged rehabilitation within existing mined areas (ceased mine pits) would commence three years from clearing and would become established to a mature stage at 16-30 years from completion (refer to Section 4.12 for rehabilitation development).
Significance of impact	The significance of impact is assessed as **high-moderate** as the sensitivity to change is high and magnitude of change is moderate. This will reduce over time as the rehabilitated area vegetation establishes.

6.2.7 Viewpoint 7 Zig Zag Road, Munda Biddi Trail

Viewpoint 7 (VP7) is located on Zig Zag Road and Munda Biddi Trail as shown in Figure 19. Zig Zag Road is located to the north of Larego Mine Region. This is a publicly accessible shared road serving as Munda Biddi Trail and is frequently used by recreational users. VP7 is facing south as shown in Photo 34 Refer to Table 31 for assessment.

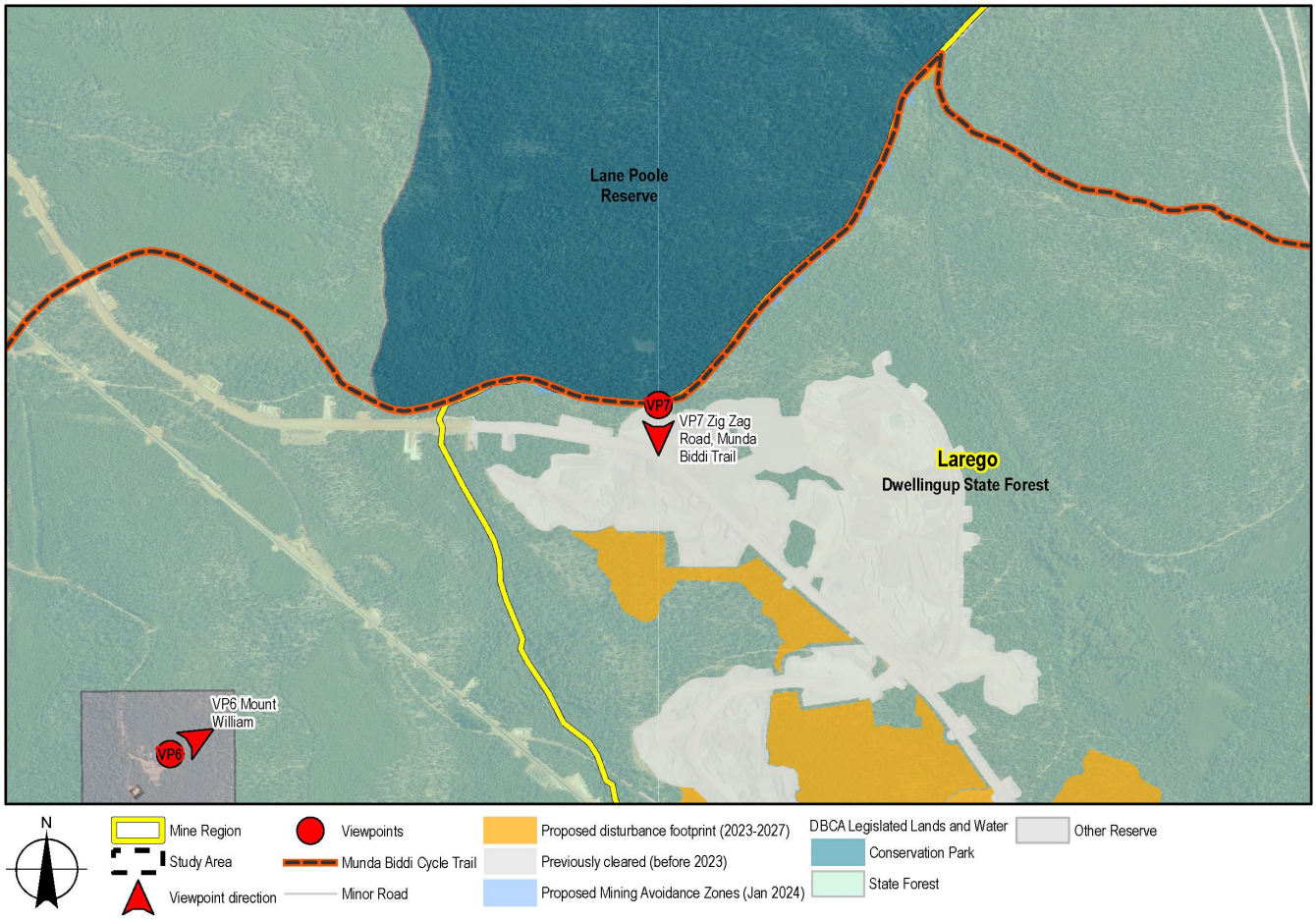


Figure 19 VP7 Location plan

Photo 34 View south from Zig Zag Road, Munda Biddi Trail

Table 31 VP7 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 32°55'39"S 116° 2'28"E, Elevation: 322.3m VP7 is located adjacent to the boundary of Larego Mine Region looking south. This viewpoint is representative of the views of local industry workers, recreational users and tourists.
Description of existing view	VP7 consists of views towards the boundary of the existing mine site from Zig Zag Road / Munda Biddi Trail. The unsealed shared roadway of Zig Zag Road/Munda Biddi Trail and narrow road reserve, with interspersed native vegetation, extends across the foreground of the view. Beyond this a post and wire fence delineate the mine site property boundary, with small seedlings planted as part of the rehabilitation of this area visible beyond the fenceline. Beyond this the land slopes up restricting views to the wider mine site with only the tops of native trees visible in the distance.
Anticipated change to view	As indicated in Photo 34, existing mined areas (active mine pits and secondary haul roads) are evident in the view. This is a change from the baseline condition whereby Zig Zag Road/ Munda Biddi Trail would have presented as a semi-enclosed road corridor surrounded by natural vegetation. During operations, filtered views of heavy machinery, haul trucks, and dust are likely to be visible in the midground. During the rehabilitation phase, which includes soil reinstatement, recontouring, ripping, and seeding/planting, the presence of machinery and workers may be noticeable for a short time. Existing mined areas, such as ceased mine pits and secondary haul roads, may remain to some degree visible during the establishment phase, but their impact will diminish over time as the Jarrah forest gradually recovers.
Sensitivity to change	The sensitivity to change is **high** as recreational users frequent VP7 to enjoy views from this setting.
Magnitude of change	The magnitude of change is deemed **high** as the Proposal has caused discernible changes in the baseline conditions due to a partial loss of natural vegetation and the inclusion of active mining. This change is out of scale with the pre-existing view, resulting in an adverse impact on the view.
Duration of impact	The duration of impact is considered medium – long term as staged rehabilitation within existing mined areas (ceased mine pits) would commence three years from clearing and would become established to a mature stage at 16-30 years from completion (refer to Section 4.12 for rehabilitation development).
Significance of impact	The significance of impact is assessed as **high** as the sensitivity to change is high and the magnitude of change is moderate. This will reduce over time as the vegetation in the rehabilitated area establishes.

6.2.8 Viewpoint 8 Driver Road, Munda Biddi Trail

Viewpoint 8 (VP8) is located on Driver Road and Munda Biddi Trail as shown in Figure 20. Driver Road is located to the north of Larego Mine Region. This is a publicly accessible shared road serving as Munda Biddi Trail that is frequently used by recreational users. VP8 is facing south-west as shown in Photo 35. Refer to Table 32 for assessment.

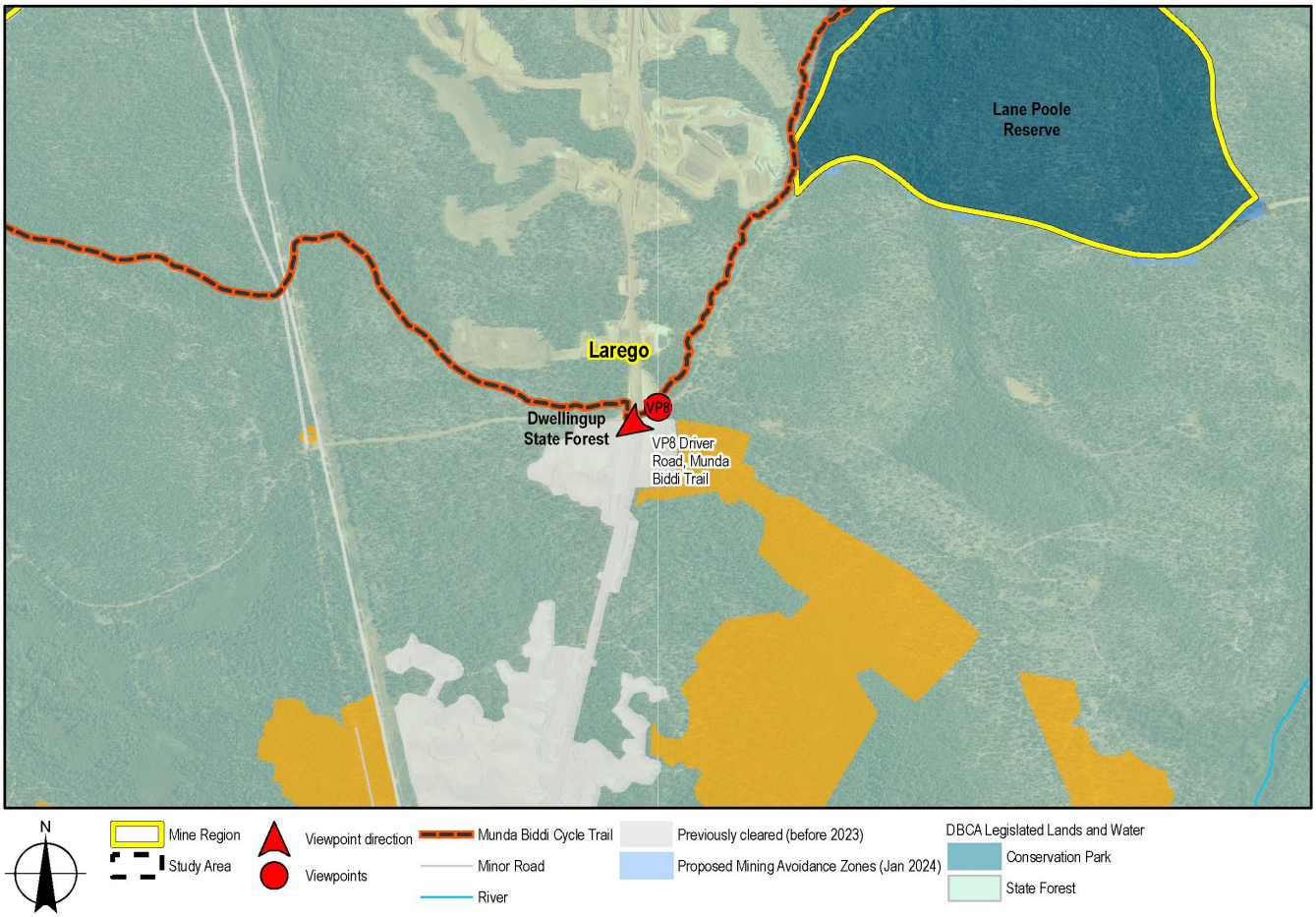


Figure 20 VP8 Location plan

Photo 35 View south-west from Munda Biddi Trail, adjacent to Driver Road

Table 32 VP8 Impact assessment

Criteria	Comments
Location and view direction	GPS location: 32°55'35"S 116°4'35"E, Elevation: 375.7m VP8 is located in close proximity to the boundary of Larego Mine Region looking south-west. This viewpoint is representative of the views of local industry workers, recreational users and tourists.
Description of existing view	VP8 primarily consists of views over the existing mine site, with mining activity running up to Driver Road, which includes a section of the Munda Biddi Trail. The unsealed trail can be seen in the left of view where it enters into the tunnel, under the active haul road. The trail progresses off Driver Road to right of the view. The active haul road is utilised as part of the current mining operations within Larego Mine Region. Remnant native trees can be seen on the right side of the view in the background.
Anticipated change to view	As indicated in photo 35, existing mined areas are evident in the view. This is a change from the baseline condition whereby Driver Road / Munda Biddi Trail would have presented as a semi-enclosed road corridor surrounded by natural vegetation. During operations, filtered views of heavy machinery, haul trucks, and dust are likely to be visible in the midground. During the rehabilitation phase, which includes soil reinstatement, recontouring, ripping, and seeding/planting, the presence of machinery and workers may be noticeable for a short time. Existing mined areas, such as ceased mine pits and secondary haul roads, may remain to some degree visible during the establishment phase, but their impact will diminish over time as the Jarrah forest gradually recovers.
Sensitivity to change	The sensitivity to change is **high** as recreational users frequent VP8 to enjoy views from this setting.
Magnitude of change	The magnitude of change is deemed **high** as the Proposal has caused discernible changes in the baseline conditions due to a partial loss of natural vegetation and the inclusion of active mining. This change is out of scale with the pre-existing view, resulting in an adverse impact on the view.
Duration of impact	The duration of impact is considered medium – long term as staged rehabilitation within existing mined areas (ceased mine pits) would commence three years from clearing and would become established to a mature stage at 16-30 years from completion (refer to Section 4.12 for rehabilitation development).
Significance of impact	The significance of impact is assessed as **high** as the sensitivity to change is high and magnitude of change is moderate. This would reduce over time as the vegetation in the rehabilitated area establishes.

7. Mitigation and management measures

7.1 Response to visual management objectives

This section includes a discussion on how the Proposal has responded to the visual management objectives identified in Section 2.4.

7.1.1 Best practice siting and design

As specified in Section 3.6.1 earthworks, mine pit locations and haul road network should be sited within the natural topographic context of the landscape and, where possible, situated beyond the natural screening of vegetation. In addition, the proximity to sensitive receptors including Munda Biddi Trail should be considered in determination of mine pit locations and haul road network.

There are two isolated components of existing mined areas that abut Munda Biddi Trail (minus vegetation buffers) within the north of Larego Mine Region which impact the experience of recreational trail users. Proposed mining areas, as indicated in Figure 10, are scheduled to occur within the same vicinity as existing mined areas, however, further impacts to Munda Biddi Trail are mitigated through maintaining vegetated buffers between the trail and further mining activity. A minimum buffer of 200 m Mining Sensitivity Zone (MSZ) between Munda Biddi trail (inclusive of Zig Zag Road and Driver Road) and mining activities is recommended to ensure that the visual impacts of the Proposal are either avoided or minimised. 200 m buffer recommendation is based on visual screening field survey conducted for the Huntly Mine Landscape and Visual Impact Assessment (GHD, 2021). There may be opportunity to reduce the buffer distance subject to ground truthing and consideration of local topography and vegetation structure that demonstrates effective visual screening, noting that the understorey vegetation screening may be substantially reduced following prescribed burns.

The MSZ components and consolidated MSZ (created by aggregating the MSZ components) are mapped for Larego in Figure 21 and Figure 22, respectively.

7.1.2 Protection and maintenance of landscape character

The valued elements that define the existing landscape character include the distinct forested areas, rural areas and the natural undulating hills of the Darling Plateau.

All existing mined areas and proposed mining areas occur within LCU2. The Proposal is generally surrounded by retained dense native vegetation, with views into the sites limited to elevated areas at a distance and isolated small sections of Munda Biddi Trail. The existing landscape character of the rural areas would be retained as these areas are located outside of the mine region.

Vegetation rehabilitation would be consistent with preexisting vegetation complexes. This would see the ceased mine pit and haul roads areas, disturbed during operations, rehabilitated to be in keeping with the landscape character of the area. Section 3.6.2 provides further guidance on retention of vegetation near sensitive receptors.

7.1.3 Character restoration or enhancement opportunities

As part of the Proposal, rehabilitation of the existing mined areas and proposed mining areas would occur with the aim to re-establish a self-sustaining Jarrah forest ecosystem that fulfils forest land uses that include conservation, water catchment and recreation.

This would include recontouring the surface of the excavated pits to tie into the surrounding landform and establishment of vegetation to restore the vegetated character of the area. Since 1988, rehabilitation has involved the re-establishment of only native species with Jarrah and Marri as dominant tree species. Coarse woody debris in the form of logs and stumps is also returned. The rehabilitation would include monitoring of the rehabilitated vegetation to provide remedial planting where required and provide an effective rehabilitation development program. Rehabilitation would include monitoring of the rehabilitated vegetation to provide remedial planting where required and provide an effective rehabilitation development program.

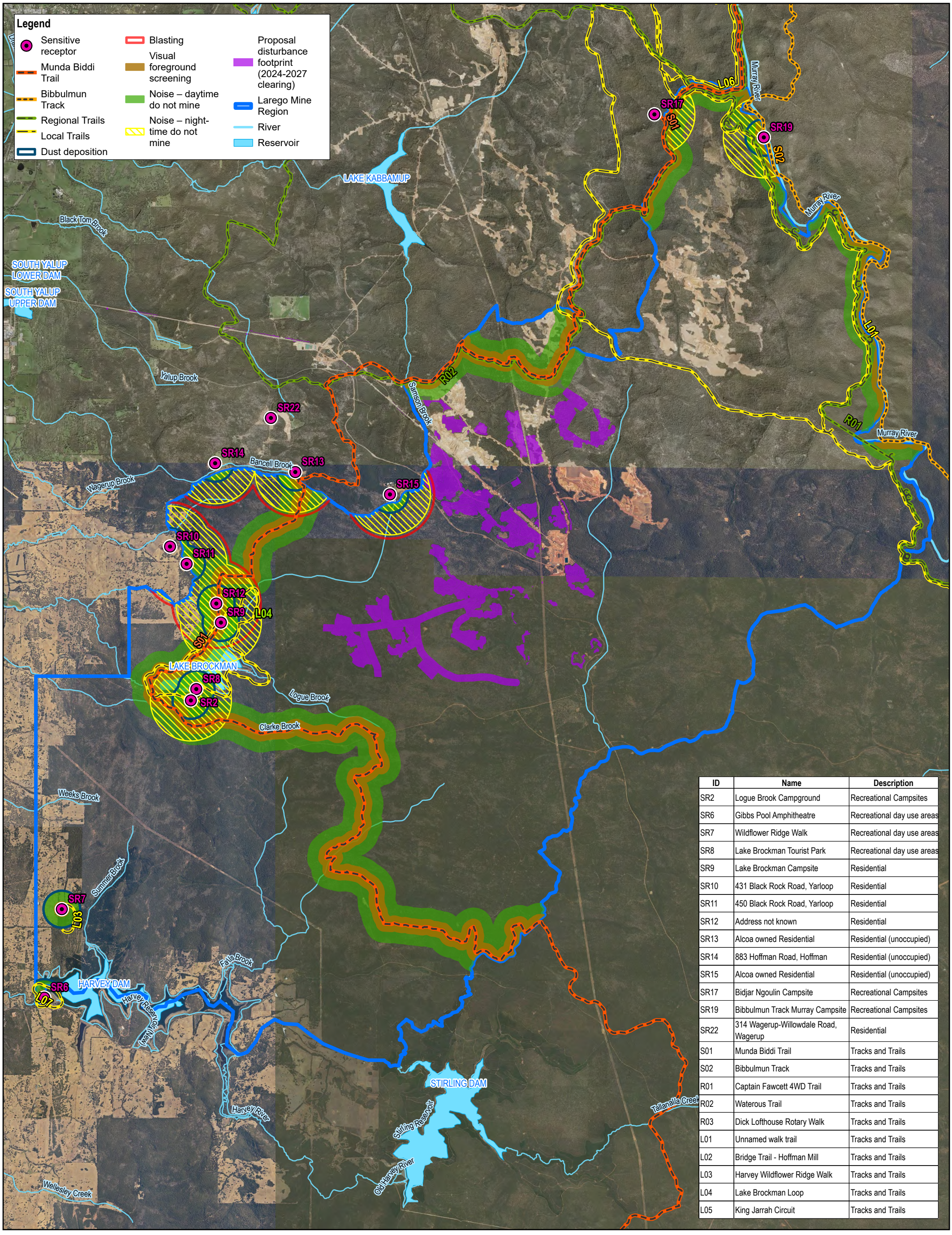
Sensitive receptors and visual features and experiences (Section 3.5) should be considered in relation to rehabilitation prioritisation, specifically views and experiences from Munda Biddi Trail.

7.2 Landscape and visual mitigation measures

Table 33 presents an overview of the primary landscape and visual impacts as outlined in Section 5 and 6, along with a range of mitigation methods to decrease the Proposals adverse effects on landscape and visual character.

Table 33 Mitigation measures

Potential Impact	Proposed mitigation
Visual impacts on tracks, trails, recreational area	*Avoid* Where possible relocate haul road routes and mine pits to avoid crossing, or being within view from, tracks and trails. *Minimise* Where possible minimise landscape and visual impacts to recreational facilities, including Munda Biddi Trail, through the provision of screening corridors suitable to the area. *Mitigate* Where existing mined areas and proposed mining areas are to be located near existing tracks, trails and recreational areas, commence rehabilitation as soon as practicable to assist in the replanted vegetation reaching establishment as soon as possible.
Removal of native vegetation within or near state forest areas and degradation of existing landscape character	*Minimise* Where possible minimise vegetation removal within Dwellingup State Forests through consolidation of haul roads and mine pit areas and clearing the minimum required area for each activity.



ID	Name	Description
SR2	Logue Brook Campground	Recreational Campsites
SR6	Gibbs Pool Amphitheatre	Recreational day use areas
SR7	Wildflower Ridge Walk	Recreational day use areas
SR8	Lake Brockman Tourist Park	Recreational day use areas
SR9	Lake Brockman Campsite	Residential
SR10	431 Black Rock Road, Yarloop	Residential
SR11	450 Black Rock Road, Yarloop	Residential
SR12	Address not known	Residential
SR13	Alcoa owned Residential	Residential (unoccupied)
SR14	883 Hoffman Road, Hoffman	Residential (unoccupied)
SR15	Alcoa owned Residential	Residential (unoccupied)
SR17	Bidjar Ngoulin Campsite	Recreational Campsites
SR19	Bibbulmun Track Murray Campsite	Recreational Campsites
SR22	314 Wagerup-Willowdale Road, Wagerup	Residential
S01	Munda Biddi Trail	Tracks and Trails
S02	Bibbulmun Track	Tracks and Trails
R01	Captain Fawcett 4WD Trail	Tracks and Trails
R02	Waterous Trail	Tracks and Trails
R03	Dick Lofthouse Rotary Walk	Tracks and Trails
L01	Unnamed walk trail	Tracks and Trails
L02	Bridge Trail - Hoffman Mill	Tracks and Trails
L03	Harvey Wildflower Ridge Walk	Tracks and Trails
L04	Lake Brockman Loop	Tracks and Trails
L05	King Jarrah Circuit	Tracks and Trails

Paper Size ISO A3

0 0.8 1.6 2.4 3.2

Kilometers

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

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GHD

Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego

MSZ components

Project No. **12632796**
Revision No. **0**
Date **06/02/2025**

FIGURE 21

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Data source: WANow: Landgate / SLIP. Created by: cbataller

Legend

- Town/Locality
- Sensitive receptor
- Munda Biddi Trail
- Bibbulmun Track
- Regional Trails
- Local Trails
- MSZ - Daytime
- MSZ - Nighttime
- Larego Mine Region
- Proposal disturbance footprint (2024-2027 clearing)
- River
- Reservoir

WAROONA
LAKE NAVARINO
LAKE MOYANUP
LAKE KABBAMUP
LAKE BROCKMAN
HARVEY DAM
STIRLING DAM
SOUTH YALUP UPPER DAM
SOUTH YALUP LOWER DAM
BALLINGALL
Waroona Drain
Samson South Drain
Black Tom Brook
Yalup Brook
Bancell Brook
Wagerup Brook
Logue Brook
Clarke Brook
Weeks Brook
Summer Brook
Falls Brook
Harvey Reservoir (New)
Stirling Reservoir
Wellesley Creek
Wokalup Creek
Samson Brook
Harvey River
Tallanall
Yarragil Brook
Murray River
SR2
SR6
SR7
SR8
SR9
SR10
SR11
SR12
SR13
SR14
SR15
SR17
SR19
SR22
L03
L04
L05
L06
L07
R01
R02
S01
S02

ID	Name	Description
SR2	Logue Brook Campground	Recreational Campsites
SR6	Gibbs Pool Amphitheatre	Recreational day use areas
SR7	Wildflower Ridge Walk	Recreational day use areas
SR8	Lake Brockman Tourist Park	Recreational day use areas
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SR22	314 Wagerup-Willowdale Road, Wagerup	Residential
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S02	Bibbulmun Track	Tracks and Trails
R01	Captain Fawcett 4WD Trail	Tracks and Trails
R02	Waterous Trail	Tracks and Trails
R03	Dick Lofthouse Rotary Walk	Tracks and Trails
L01	Unnamed walk trail	Tracks and Trails
L02	Bridge Trail - Hoffman Mill	Tracks and Trails
L03	Harvey Wildflower Ridge Walk	Tracks and Trails
L04	Lake Brockman Loop	Tracks and Trails
L05	King Jarrah Circuit	Tracks and Trails

Paper Size ISO A3

0 1.5 3

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

N

GHD

Alcoa of Australia Ltd
Landscape and Visual Impact Assessment - Larego

Consolidated MSZ

Project No. **12632796**
Revision No. **0**
Date **06/02/2025**

FIGURE 22

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8. Conclusion

This report has been prepared to assess the potential landscape and visual impacts of the Alcoa Willowdale Mine existing mined areas, proposed mining areas and staged rehabilitation of Larego Mine Region as part of the assessment of social surrounds for the Proposal.

The Study Area for this landscape and visual impact assessment is primarily within the shires of Harvey and Waroona; however, small sections also fall within the shires of Boddington and Collie. The mine region is located within Dwellingup State Forest to the north of the existing Larego Mine Region. The landscape context is a densely vegetated forest within the rolling landscape of the Darling Plateau. The vegetated landscape is cut by steep river valleys and studded with granite outcrops.

A variety of established vegetation is present within the Study Area, which are predominantly native forests with some old growth Jarrah forest, replanted native forests and sections of pine plantations.

Based on the context analysis, visual management objectives were defined for the Study Area for the best practice siting and design of the Proposal, the protection and maintenance of landscape character, and the restoration of degraded character or enhancement of opportunities. Key objectives included siting of the Proposal away from sensitive locations (including the visual impact to Munda Biddi Trail), protecting the existing landscape character (including valued views of the dense forest) and seeking opportunities for restoration of degraded character with prioritised rehabilitation.

The Study Area was reviewed and LCUs defined into three units. An assessment was undertaken, as summarised in Table 34. The assessment found that the significance of impact for LCU1 would be high as it has LCU 1 has a high landscape character value, and high sensitivity to change. Part of the proposed mining activities occur within LCU1, leading to vegetation clearance, which are uncharacteristic within the existing character. The significance of impact to LCU2 and LCU3 would is defined as negligible as existing mined areas and proposed mining areas that impact on LCU2 would not be uncharacteristic and would not impact on key features of the existing landscape character.

Table 34 Summary of impacts to landscape character

LCU	Name	Sensitivity to change	Magnitude of change	Significance of impact
LCU1	Darling Plateau forest	High	High	**High**
LCU2	Mining activities	Low	Negligible	**Negligible**
LCU3	Undulating rural plains	Moderate	Negligible	**Negligible**

Due to the Darling Plateau's valued natural setting and the quality seen throughout the surrounding forest and landscape, multiple sensitive receptors of varying levels of significance were identified, including residents, track and trail users, recreational users, campers, tourists, and road users with community and stakeholder engagement indicating concerns on visual impact on the nearby communities, state forests, tracks, trails, camps, and roads.

Eight viewpoint locations were chosen for visual assessment, to represent views from sensitive receptor locations. The assessment found that visual impacts from VP6 Mount William were high-moderate and VP7 Zig Zag Road and VP8 Driver Road were assessed as high due to discernible changes in the baseline conditions resulting from the Proposal that are out of scale with the pre-existing view. The impacts from VP1 to VP5, were negligible, as outlined in Table 35.

A section of the Munda Biddi Trail is impacted by existing mined areas and will remain so until the mine pits are ceased, and rehabilitation has occurred and established. Once the vegetation is established, rehabilitated vegetation would be permanent.

Table 35 Summary of visual impacts

Viewpoint	Location	Sensitivity to change	Magnitude of change	Overall rating
VP1	Harvey Quindanning Road	Moderate	Negligible	**Negligible**
VP2	Logue Brook Dam Road, Mundi Biddi Trail	High	Negligible	**Negligible**
VP3	Lake Brockman	High	Negligible	**Negligible**
VP4	Harris River Rocky Lookout	Moderate	Negligible	**Negligible**
VP5	Hoffman Road Agriculture	Moderate	Negligible	**Negligible**
VP6	Mount William	High	Moderate	**High-moderate**
VP7	Zig Zag Road, Munda Biddi Trail	High	High	**High**
VP8	Driver Road, Munda Biddi Trail	High	High	**High**

The Proposal was reviewed against the visual management objectives established in Section 2.4, and a response provided as to how the Proposal has responded to the visual management objectives. Key issues identified were current and future impacts to Munda Biddi Trail and the extent of vegetation removal and earthworks that would occur within the forested areas of the Study Area.

Recommendations were provided for landscape and visual mitigation measures in Section 7 which should be taken into consideration as the Proposal progresses. Mitigation measures were categorised into a hierarchy of avoid, minimise, and mitigate. Key mitigation measures in relation to visual impacts on Munda Biddi Trail were provided including, where possible, relocating proposed mining areas to avoid being within view from the trail or minimising impacts to trail users through provision of screening corridors and prioritisation of rehabilitation.

Adoption of the mitigation measures proposed, would lessen the identified landscape and visual impact of the Proposal, over time, however utilising avoidance and minimise measures proposed have the potential to further reduce the landscape and visual impacts of the Proposal.

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