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EnergyConnect (NSW – Eastern Section)

Visual and landscape character impact assessment

December 2021

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Glossary

Term	Definition
Amenity	*'The pleasantness of a place as conveyed by desirable attributes including visual, noise, odour etc.'* (Australian Institute of Landscape Architects QLD 2018)
Construction impact area	Refers to the area that would be directly impacted by construction of the proposal comprising the following: — construction of all proposal infrastructure elements (including the proposed transmission line alignment, transmission line easement, substation site works (at both the proposed Dinawan 330kV and upgraded and expanded Wagga Wagga substations), optical repeater infrastructure, and other ancillary works) — locations for construction elements such as construction compounds and accommodation camps, access tracks (excluding public roads proposed to be used for access routes), site access points, water supply points, laydown and staging areas, concrete batching plants, brake/winch sites and site offices. The area is identified based on realistic project component locations and areas however it is indicative at this stage. The area would be confirmed during finalisation of the design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation. This area includes the operational impact area (including areas required for maintenance) (refer definition below).
Cultural Landscape	A cultural landscape is a physical area with natural features modified by human activity resulting in patterns of evidence layered in the landscape. These layers give a place its distinctive spatial, historical, aesthetic, symbolic and memorable character. Within cultural landscapes there are areas where human impact is more obvious. These places '*…may include components, contents, spaces and views*' (Murray–Darling Basin Authority, 2019).
Glare	*'Condition of vision in which there is discomfort or a reduction in ability to see, or both, caused by an unsuitable distribution or range of luminance, or to extreme contrasts in the field of vision.'* (AS4282:2019)
Landscape	*'All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.'* (TfNSW 2020)
Landscape character	The … '*combined quality of built, natural and cultural aspects which make up an area and provide its unique sense of place'*. (TfNSW 2020)
Landscape character zone (or area)	*'An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately nearby.'* (TfNSW 2020)
Magnitude	Magnitude is 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.*' (TfNSW 2020)
Operational impact area	Refers to the area that would be directly impacted by permanent components of the proposal, including all proposed infrastructure elements such as the proposed transmission towers, any new substation infrastructure and permanent access tracks.

Term	Definition
(the) proponent	NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust (referred to as Transgrid). Transgrid is the operator and manager of the main high voltage (HV) transmission network in NSW and the Australian Capital Territory (ACT) and is the Authorised Network Operator (ANO) for the purpose of an electricity transmission or distribution network under the provisions of the Electricity Network Assets (Authorised Transactions) Act 2015.
(the) proposal	The proposal is known as 'EnergyConnect (NSW – Eastern Section)' The proposal would involve the following key features: — about 375 kilometres of new 330 kilovolt (kV) double circuit transmission line and associated infrastructure between the Buronga substation and the proposed Dinawan 330kV substation — connection of the proposed transmission lines to the existing Buronga 330kV substation — construction of a new 330kV substation around 30 kilometres south of Coleambally, referred to as the proposed Dinawan 330kV substation — about 162 kilometres of new 500kV double circuit transmission line and associated infrastructure between the proposed Dinawan 330kV substation and the existing Wagga Wagga substation at Wagga Wagga, NSW — upgrade and expansion of the Wagga Wagga substation to accommodate three new line bays, two reallocated bays and associated civil works (road, kerb, gutter, drainage works and earthworks) — provision of three optical repeater structures and associated connections to existing local electrical supplies — new/and or upgrade of access tracks as required ancillary works required to facilitate the construction of the proposal (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).
Proposal alignment	For this assessment an indicative centreline of the landscape study area has been selected for the proposed route for the transmission line (the proposal alignment). It is noted that the alignment may be modified to a different location within the landscape study area during detailed design however the assessment presents a representative assessment of impacts. Due to limited receivers in the area the assessment should remain appropriate to these changes. The proposal alignment would comprise transmission line towers and wires within an easement.
Landscape study area	This study considers a wider 'landscape study area' which includes a visual catchment which varies according to the land cover (vegetation and built form) and topography of the landscape (out to approximately 12 kilometres from proposed alignment of the transmission line easement centreline).

Term	Definition
Transmission line easement	An area surrounding and including the transmission lines, which is a legal right allowing for construction of the transmission line, along with ongoing access and maintenance of the lines and will be acquired from landholders either by agreement or pursuant to compulsory acquisition process. The easement width would be 80 metres wide.
Sense of place	The intangible qualities and character of a place, interpreted and valued by people.
Sensitivity	*'Susceptibility of a landscape or receptor to accommodate change without losing valued attributes.*' (Australian Institute of Landscape Architects QLD 2018) The sensitivity of a landscape character zone or view is '*its capacity to absorb change*'. (TfNSW 2020)
Sky glow	'*The brightening of the night sky that results from radiation (visible and non-visible), scattered from the constituents of the atmosphere (gaseous, molecules, aerosols and particulate matter), in the direction of observation.*' It comprises Natural sky glow and artificial sky glow. (AS4282:2019)
Spill light	*'Light emitted by a lighting installation that falls outside of the design area. Spill light may or may not be obtrusive depending on what it affects'* (AS4282:2019)
Values	*'Any aspect of landscape or views people consider to be important. Landscape and visual values may be reflected in local, state or federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed.'* (Australian Institute of Landscape Architects QLD 2018)
View	'*Any sight, prospect or field of vision as seen from a place, and may be wide or narrow, partial or full, pleasant or unattractive, distinctive or nondescript, and may include background, mid ground and/or foreground elements or features.*' (Australian Institute of Landscape Architects QLD 2018)
Viewpoint	'*The specific location of a view, typically used for assessment purposes*.' (Australian Institute of Landscape Architects QLD 2018)
Visual absorption capacity	'*The potential for a landscape or scene to absorb a particular change without a noticeable loss of valued attributes.*' (Australian Institute of Landscape Architects QLD 2018)

Executive summary

The proposal

Transgrid (electricity transmission operator in New South Wales (NSW)) and ElectraNet (electricity transmission operator in South Australia (SA)) are seeking regulatory and environmental planning approval for the construction and operation of a new High Voltage (HV) interconnector between NSW and SA, with an added connection to north-west Victoria. Collectively, the proposed interconnector is known as EnergyConnect.

The proposal, focusing on the eastern section of EnergyConnect in NSW, would involve the construction and operation of new high voltage transmission lines between Buronga and Wagga Wagga, the provision of a new 330kV substation at Kidman Way that will be known as the Dinawan substation and an upgrade and expansion of the existing Wagga Wagga substation.

Approach to this landscape and visual impact assessment

The assessment considers a landscape study area which extends beyond the proposal study area to include areas where there would be views to the proposal. This assessment considers the proposal, starting at the Buronga substation, and divides it into a number of landscape character areas used for the consideration of both landscape and visual impacts. These are the Mallee shrubland and rural landscape, Murrumbidgee River plain rural landscape, Lockhart rural valley landscape, Great Dividing Range foothills landscape and Wagga Wagga rural fringe landscape. It also considers views from the air for the entire landscape study area.

This assessment identifies the potential landscape and visual impact of the proposal during the day and at night, for the period of construction and operation. GIS analysis, photomontages and cross sections have been developed to analyse and communicate the potential visibility of the proposal to assist in the interpretation of visual impact.

Landscape impact

The landscape study area includes landscapes of regional, local and neighbourhood landscape sensitivity. There would be typically low to moderate landscape impacts during construction and operation of the proposal. There would be some minor landform change and the removal of vegetation, particularly in the eastern portion of the alignment, where there is greater vegetation cover and a more hilly landform. Generally, the proposal would have many small areas of direct landscape impact and the transmission line easement would avoid important landscape features, such as lakes (including dry relic lake beds), The Rock and Mallee Cliffs, Yanga and Oolambeyan National Parks.

Visual impact

For a proposal of this length and scale, the visual impacts are relatively low and have a relatively small influence. Any visual impacts would be low, low-moderate or moderate visual impacts.

There would be low and moderate-low visual impacts on views from roads within the Mallee shrubland and rural landscape, between Buronga and Balranald, during construction and operation. This is due to the relatively low sensitivity of these routes and the absorption capacity of the landscape with taller vegetation, an undulating terrain and precedent of existing power infrastructure.

There would be low and low-moderate visual impacts on views from roads within the Murrumbidgee River plain rural landscape, between Balranald and Urana, during construction and operation. This includes views from the Cobb and Newell highways, Four Corners Road and other similar roads which cross the proposal in this area. This is due to the relatively low sensitivity of these routes, precedent of existing transmission line infrastructure and lack of other visual features in these views, which increases the visual absorption capacity. In the vicinity of the proposed Dinawan substation, these impacts would increase to moderate adverse during construction and operation in views from Kidman Way, due to the large scale and extent of the construction works and presence large scale infrastructure.

There would be moderate-low and moderate visual impacts in views from roads throughout the Lockhart rural valley landscapes during construction and operation of the proposal. This includes views from Lockhart-The Rock Road, Bullenbong Road and the Olympic Highway, which cross the proposal alignment in this area. This is due to the relatively low sensitivity of these routes and the absorption capacity of the landscape with taller vegetation, an undulating terrain and precedent of existing power infrastructure. These impacts would increase to a high-moderate adverse along Urana-Lockhart Road during construction and operation, due to the removal of a large area of vegetation and proximity of the easement to viewers using the road. Along Albury Lockhart Road, the visual impact would be negligible, due to the greater distance from the proposal, screening effect of intervening existing trees and low sensitivity of this route.

As the Proposal alignment nears Wagga Wagga, there would be moderate-low and low visual impact during construction and operation of the proposal, including views from Holbrook, Boiling Down and Butterbush roads. This is due to the presence of an existing substation and convergence of transmission lines in this location.

Scenic or significant vistas and road corridors in the public domain

The view from The Rock nature reserve was the only significant vista identified in the landscape study areas and no mapped scenic views were identified. There would not be a visual impact in the view from The Rock due to the nature of this panoramic view which includes views across a varied landscape including existing transmission infrastructure, townships, roads and rail. The landscape and visual impacts within this study area have been identified with a focus on identifying views from scenic routes, views to landscapes with scenic value and views from road corridors. The relative scenic value of these views has been considered in determining the sensitivity level of each view in accordance with the assessment methodology.

Air traffic

There are scenic flights operating from the Lockhart Airport, offering views over Lake Cullivel and Lake Urana and the surrounding agricultural areas. The proposal would be able to be seen from the air, within the vast open, predominantly flat landscape of the Lockhart rural valley and Murrumbidgee River plains. During construction, there would be a moderate visual impact on views from the air in the vicinity of Lake Cullivel, however, this would be localised and reduce to moderate-low during operation. In other areas, while the works would be visible unobstructed from the air, it would be seen with a complex landscape where other transmission and related infrastructure are seen and largely absorbed. This would result in a moderate-low visual impact during construction, reducing to a negligible visual impact during operation.

Night lighting

In the Mallee shrubland and rural landscape and Lockhart rural valley landscape character areas there would be a high-moderate adverse visual impact during construction of the proposal. This would be due to works extending up to 7.00pm and the short duration when there would be lighting required along the transmission line construction areas and lighting at the proposed construction compounds at Balranald. This impact would be contained to small areas of the construction footprint at any one time and be temporary. During operations this would reduce to a negligible visual impact as there would be no permanent lighting proposed along the alignment within these landscapes.

There would be a high-moderate adverse visual impact during construction within the Murrumbidgee River plains rural landscape, where construction requires night work, night deliveries and security lighting at the Cobb Highway compound, the Dinawan substation and adjacent camp and laydown area. This impact would be contained to small areas of the construction footprint at any one time and be temporary. During operation the permanent security lighting at Dinawan substation would be limited and there would be no lighting along the transmission line easement, resulting in a moderate visual impact.

In the Great Dividing Range foothills landscape and Wagga Wagga rural fringe landscape character areas there would be moderate-low and low visual impact during construction due to works extending up to 7.00pm on a daily basis and the short duration when there would be lighting required in areas used for construction, including the Wagga Wagga substation expansion site and nearby compound. This impact would be contained to small areas of the construction footprint at any one time and be temporary.

During operation, this would reduce to a negligible visual impact, as there is no lighting proposed along the transmission line easement and the lighting proposed at the substation expansion site would be in character with the existing substation.

Views from surrounding residences

There would be mainly low potential for visual impacts in areas associated with the western end of the proposal. This would include the sections within the Mallee shrubland and the Murrumbidgee River plain rural landscape character areas, where there are fewer private residences, some vegetation cover and a visual compatibility with existing transmission line infrastructure.

In the Lockhart rural valley landscape character there would also be mainly the potential for low visual impacts due to the large distances and visual absorption capacity of the landscape. However, there are several locations where there is the potential for a low-moderate and high visual impact due to the close proximity of the proposal and limited vegetation cover.

There would be a greater potential for a visual impact from private residences in the Lockhart rural valley landscape character as the number of residences increases and there are more properties in closer proximity to the alignment. This would include several properties where there is the potential for a moderate or high visual impact and one property where there is a very high potential visual impact.

In the Great Dividing Range foothills landscape character area, there are similarly a larger concentration of residential residences, reducing the distances between residences and existing transmission line infrastructure. Furthermore, the landform becomes hilly so that there would be more elevated vantage points, and there are several ridge crossings where the transmission line towers would be more visually prominent. There would mostly be the potential for moderate and high visual impacts to properties within a kilometre of the alignment in this area, where there is a view to the transmission line easement intersecting or converging with another, or crossing a ridgeline, and where there is vegetation removal.

There would also be a small number of potential high and some moderate and low-moderate potential visual impacts identified within the Wagga Wagga rural fringe landscape character area. This area has a high visual absorption capacity due to the undulating landform, existing vegetation, and the prevailing character of transmission line and energy infrastructure.

For residences where there is a higher potential visual impact, various mitigation measures would be considered. These measures may include the provision of screening vegetation on private property. Such measures would potentially reduce the extent of visual change and reduce the potential visual impact.

Residual visual impacts

For residences where the project is predicted to have a high or very high visual impact, opportunities for screening vegetation would be investigated in consultation with the affected landholder and implemented during construction. Screening vegetation has the potential to reduce the extent of the proposal that would be visible. Screening vegetation would establish over time and would vary in effectiveness due to landform and existing vegetation cover.

Overall, those residences identified as having a high potential visual impact would be reduced to a moderate residual visual impact with the appropriate positioning of screening vegetation over time. At the property where a potential very high visual impact was identified, the visual impact would potentially be reduced to a high residual visual impact as it is unlikely that the nearest transmission line towers would be substantially screened by vegetation due to their scale and proximity.

Cumulative landscape and visual impact

There is the potential for a cumulative landscape and visual impact associated with this proposal with the EnergyConnect (NSW – Western Section) and the Buronga Solar Farm during operation as these projects would both contribute to landscape character change and alter the amenity of local views in close proximity to the EnergyConnect (NSW – Eastern Section). Any cumulative visual impact would be experienced from a small area and there would be an opportunity to reduce the visual impacts of the respective project through the implementation of screening vegetation.

1. Introduction

1.1 Proposal context and overview

Transgrid (electricity transmission operator in New South Wales (NSW)) and ElectraNet (electricity transmission operator in South Australia (SA)) are seeking regulatory and environmental planning approval for the construction and operation of a new High Voltage (HV) interconnector between NSW and SA, with an added connection to north west Victoria. Collectively, the proposed interconnector is known as EnergyConnect.

EnergyConnect aims to reduce the cost of providing secure and reliable electricity transmission between NSW and SA in the near term, while facilitating the longer-term transition of the energy sector across the National Electricity Market (NEM) to low emission energy sources.

EnergyConnect has been identified as a priority transmission project in the NSW Transmission Infrastructure Strategy (NSW Department of Planning and Environment (DPE), 2018), linking the SA and NSW energy markets and would assist in transporting energy from the South-West Renewable Energy Zone to major demand centres.

EnergyConnect comprises of several sections (shown on Figure 1-1) that would be subject to separate environmental planning approvals under the relevant jurisdictions. It includes:

- NSW sections including:

  Western Section, which would extend from:

  - the SA/NSW border (near Chowilla in SA) to Transgrid's existing Buronga substation
  - Buronga substation to the NSW/Victoria border at Monak (near Red Cliffs in Victoria)

  - Eastern Section, which would extend from the Buronga substation to the existing Wagga Wagga substation
- a Victorian Section, which would extend from the NSW/Victoria border to Red Cliffs substation
- a SA Section, which would extend from Robertstown to the SA/NSW border.

Transgrid is currently seeking planning approval for the NSW – Eastern Section (the proposal), which is the subject of this EIS.

Transgrid has previously sought and received separate environmental planning approvals for the NSW – Western Section of EnergyConnect and Victorian Section. ElectraNet is responsible for obtaining environmental planning approval for the section of EnergyConnect located in SA.

1.1.1 Proposal objectives

The primary objective for EnergyConnect (including the proposal) is to reduce the cost of electricity by providing secure electricity transmission between NSW and SA in the near term and facilitate the longer-term transition of the energy sector across the NEM to low emission energy generation sources. More specifically, EnergyConnect (including the proposal) aims to:

- lower power prices
- improve energy security
- increase economic activity
- support the transition to a lower carbon emission energy system
- support a greater mix of renewable energy in the NEM.

FIGURE 1-1: OVERVIEW OF ENERGYCONNECT

1.2 The proposal

Transgrid is seeking approval under Division 5.2, Part 5 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) to construct and operate the proposal. The proposal has been declared as Critical State significant infrastructure under Section 5.13 of the EP&A Act.

The proposal was also declared a controlled action on 30 September 2020 and requires a separate approval under the (Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999*. The proposal is subject to the bilateral assessment process that has been established between the Australian and NSW governments.

1.3 Proposal overview

1.3.1 Proposal study area

The proposal study area comprises a generally one kilometre wide corridor between the Buronga substation and the Wagga Wagga substation. It traverses around 540 kilometres in total. It encompasses the indicative disturbance area and transmission line easement, which has been applied to identify the constraints nearby to the proposal which may or may not be indirectly impacted by the proposal.

The proposal study area is located in regional western NSW across a number of Local Government Areas (LGAs), being the following: Wentworth Shire; Balranald Shire; Murray River; Edward River; Hay Shire; Murrumbidgee; Federation; Lockhart Shire; and Wagga Wagga LGAs.

1.4 Key proposal features

The key components of the proposal include:

- about 375 kilometres of new 330 kilovolt (kV) double circuit transmission line and associated infrastructure between the existing Buronga substation at Buronga and the proposed Dinawan 330kV substation
- connection of the proposed transmission lines to the existing Buronga 330kV substation
- construction of a new 330kV substation around 30 kilometres south of Coleambally, referred to as the proposed Dinawan 330kV substation
- connection of the proposed transmission lines to the proposed Dinawan substation
- about 162 kilometres of new 500 kilovolt (kV) double circuit transmission line and associated infrastructure between the proposed Dinawan substation and the existing Wagga Wagga substation at Wagga Wagga, NSW

upgrade and expansion of the Wagga Wagga substation to accommodate the new transmission line connections including the installation of new line bays, relocation and upgrade of existing bays and associated electrical and civil works (road, kerb, gutter, drainage works and earthworks)

provision of three optical repeater structures and associated connections to existing local electrical supplies

- new and/or upgrade of access tracks as required
- ancillary works required to facilitate the construction of the proposal (e.g. laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps).

An overview of the proposal is provided in Figure 1-2. Further detail on the key infrastructure components of the proposal and construction activities are provided in Chapter 5 and Chapter 6 of the main EIS document respectively.

Tower types

The final design tower types for the proposal would consist of a combination of the following):

- suspension towers for intermediate / straight sections of the transmission line, comprised of either:
    - a free-standing tower (330kV and 500kV sections) – (also referred to a suspension towers) are self-supporting and typically have a wider base but do not require other supporting infrastructure (such as guy wires). A typical height would be between around 40 and 60 metres. These tower types would have a typical permanent base footprint area of around 14 metres by 14 metres (or around 196 square metres)
    - a guyed steel tower (330kV section only) – consisting of a thinner tower design with guy wires and ground anchors attached to provide stability. Typical height would be between around 40 and 60 metres. These tower types would have a typical permanent base footprint area of around 48 metres by 51 metres (or around 2,448 square metres including the area to the guywire extents, noting that not all of this area would be directly impacted/require clearing. Only a radial area of around 20 metre around the guy pole and a radial area of around five metres around each guywire extent would be required to be cleared of vegetation)
- strain towers (330kV and 500kV sections) – which consist of a wider base and are self-supporting. This type of tower is used for the first and last tower of the transmission line, at major road or river crossings, and where there is a change in direction. This type of tower can also be used for structural reasons to break up long runs of suspension towers. Typical height would be between around 40 and 65 metres. These tower types would have a typical permanent base footprint area of between around 24 metres by 24 metres and 26 metres by 26 metres (or between 576 and 676 square metres).

Examples of these tower types are shown in Figure 1-3 and Figure 1-4.

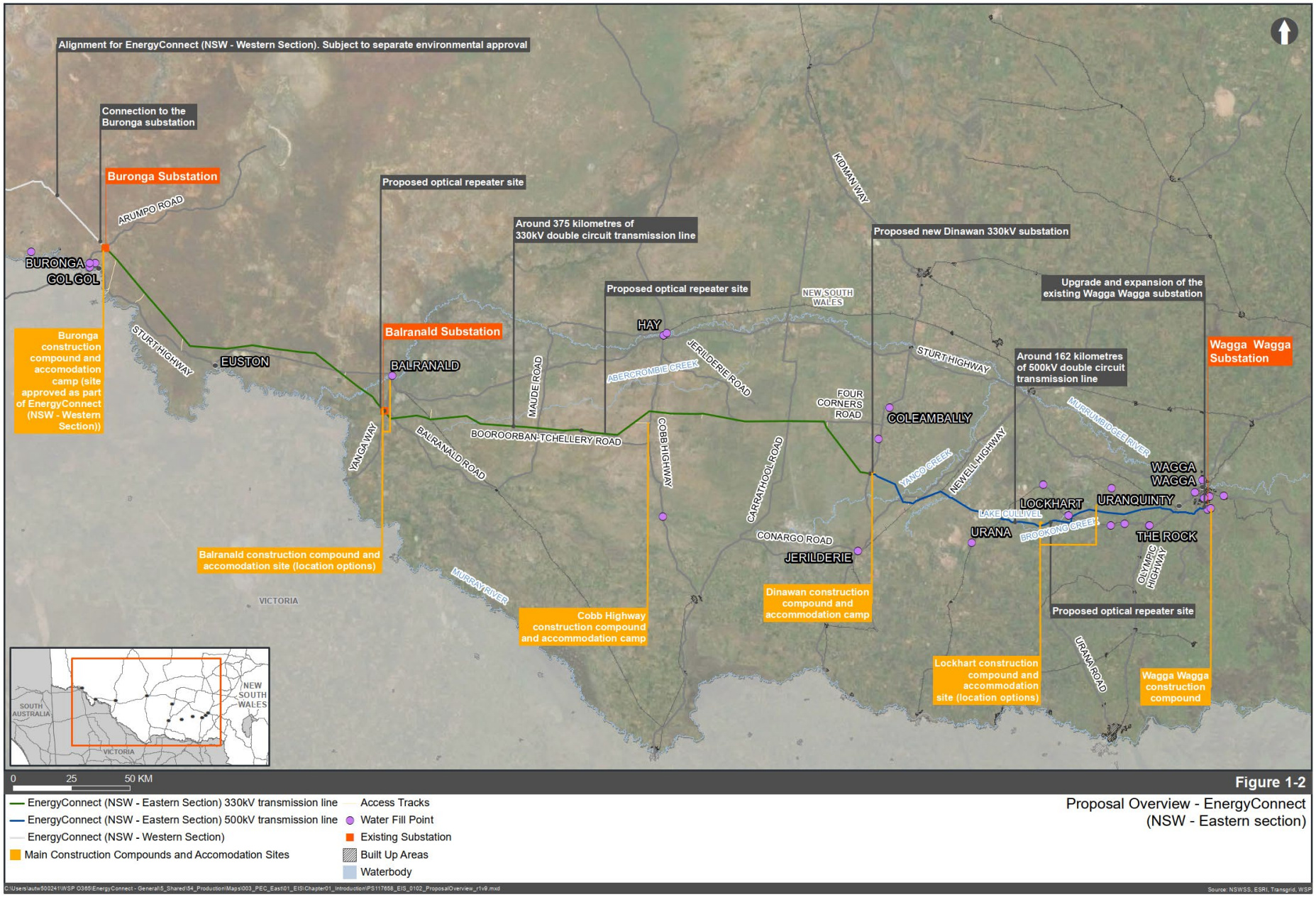

Figure 1-2

Proposal Overview - EnergyConnect (NSW - Eastern section)

FIGURE 1-2 PROPOSAL OVERVIEW – ENERGYCONNECT (NSW – EAST SECTION)

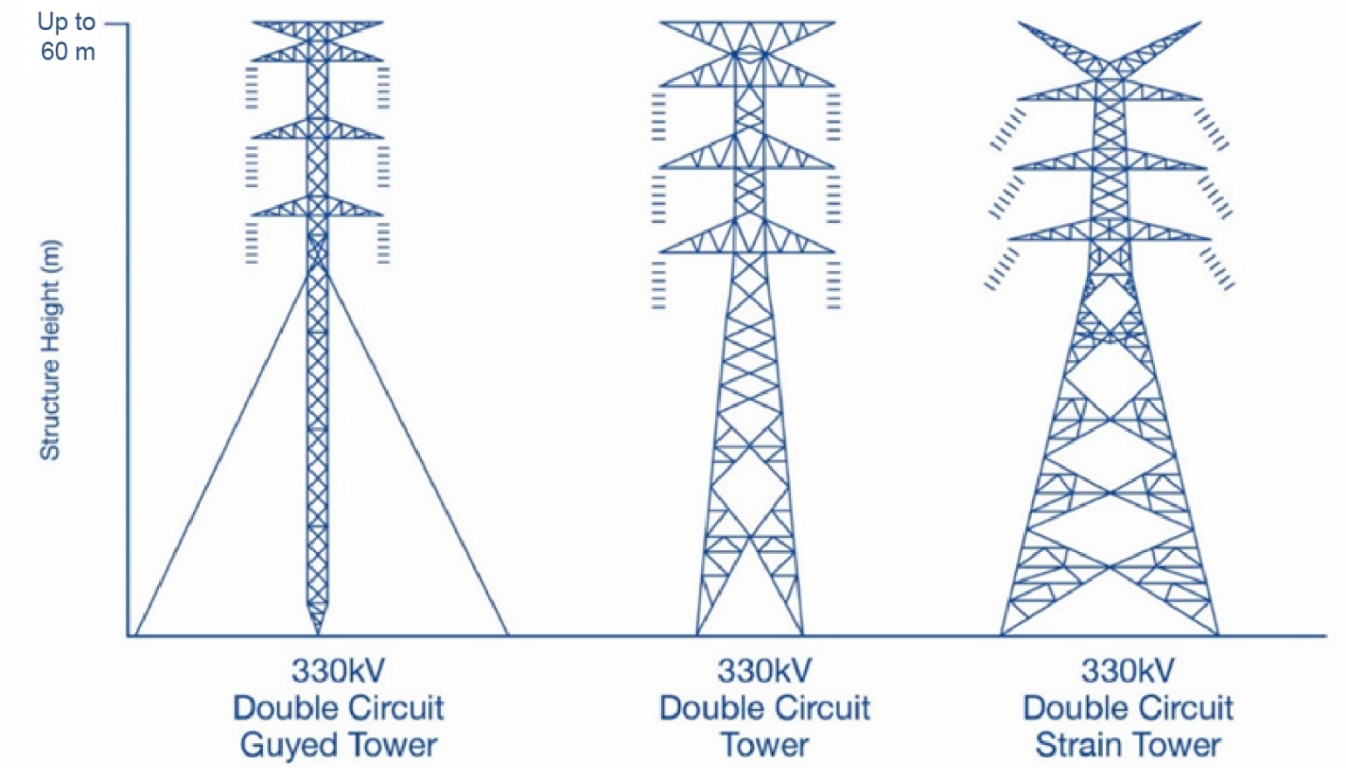

FIGURE 1-3 PROPOSED CONCEPT DESIGN FOR THE TRANSMISSION LINE TOWERS ON THE 330KV LINE

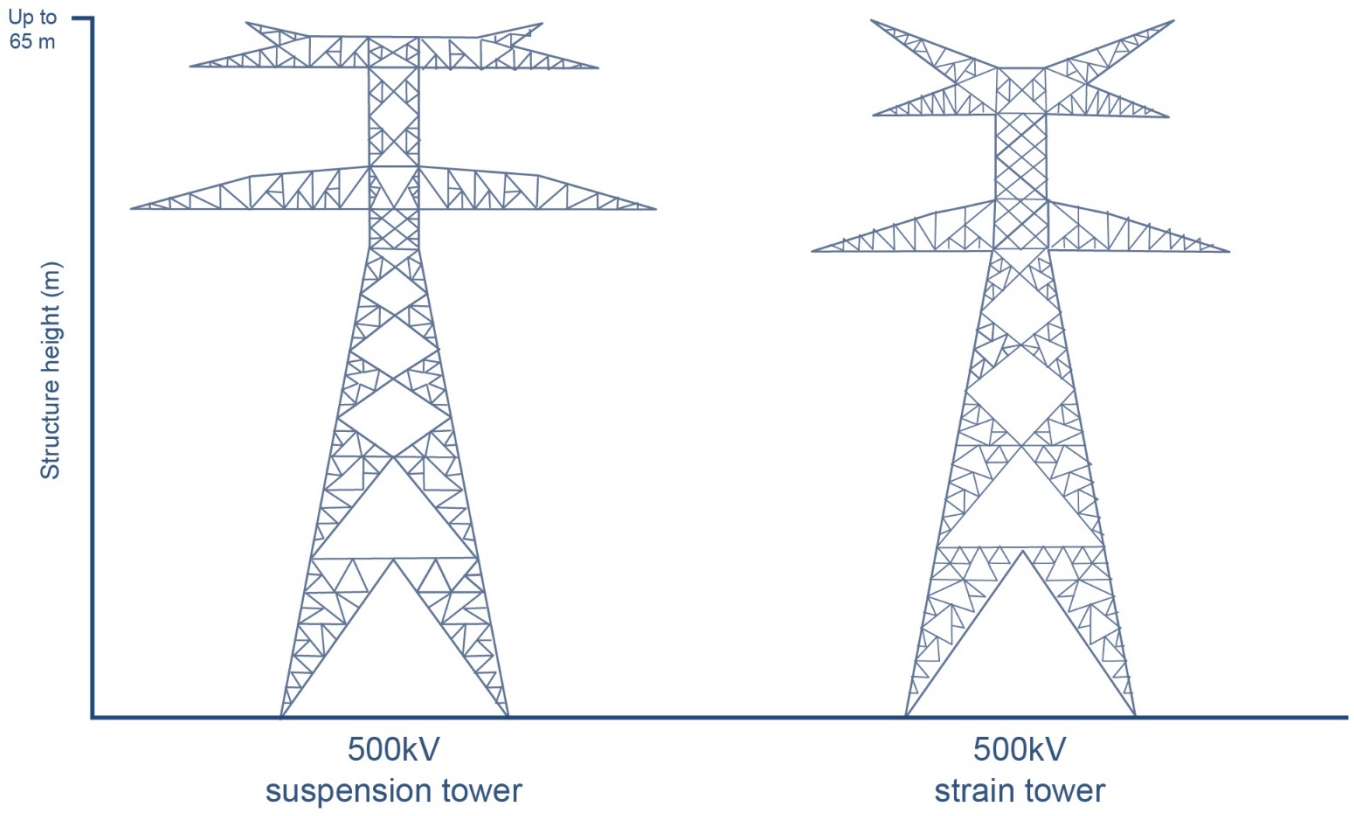

FIGURE 1-4 PROPOSED CONCEPT DESIGN FOR THE TRANSMISSION LINE TOWERS ON THE 500KV LINE

1.4.1 Construction

Key construction works

Key construction works for the proposal would typically include (but not be limited to):

- site establishment works, which may include (but not be limited to):
  - establishment of construction compound and accommodation sites, access tracks and service relocations
  - vegetation clearance
  - transportation of equipment such as steelwork, high voltage plant, switchgear, between dock and site as part of the construction works
- ancillary works to facilitate the construction of the proposal (e.g. intermediate laydown and staging areas, concrete batching plants, brake/winch sites, site offices and accommodation camps)
- construction of the proposed transmission lines, which would include (but not be limited to):
  - access tracks to accommodate safe access of construction machinery and materials to each transmission line tower site
  - earthworks (including establishment of construction pads) and the construction of footings and foundations for each transmission line tower
  - erection of the new transmission line towers using crane(s) and or helicopter(s)
  - stringing of the conductors and overhead earth wires and optical ground wire
  - installation of earthing conductors
  - testing and commissioning of the transmission lines
- construction of the proposed Dinawan 330kV substation, which would include (but not be limited to):
  - civil construction works including earthworks
  - slab construction at the new substation site
  - electrical fit out with new substation equipment;
  - testing and commissioning of the new substation equipment
- upgrade and expansion of the existing Wagga Wagga substation to enable the proposed connection and operation of the new transmission lines which would include (but not be limited to):
  - civil construction works including earthworks and slab construction at the expanded substation site;
  - electrical fit out with new substation equipment;
  - testing and commissioning of the new substation equipment;
- connection of the proposed transmission lines to the existing Buronga substation
- demobilisation and remediation of areas disturbed by construction activities.

A detailed description of construction works for the proposal is further described in Chapter 6 of the Environmental Impact Statement (EIS).

Construction program

Construction of the proposal would commence in late-2022, subject to NSW Government and Commonwealth planning approvals.

The construction of the transmission lines and substation facilities would take approximately 18 months. The upgraded and expanded Wagga Wagga substation and the proposed Dinawan 330kV substation are expected to be operational by late-2024. Site decommissioning and remediation would extend around six months beyond the commissioning (operational) phase, with estimated completion in mid-2025.

The final program would be confirmed following approval of the proposal.

Indicative duration of transmission line construction activities

Construction at each transmission line tower would be intermittent and construction activities would not occur for the full duration at any one location. Figure 1-5 presents an indicative duration of construction activities associated with the transmission line towers. These durations could vary and breaks between activities may be shorter which may lead to longer inactive periods in subsequent stages of construction at an individual transmission line tower. Durations of any particular construction activity, and respite periods, may vary for a number of reasons including (but not limited to), multiple work fronts, resource and engineering constraints, works sequencing and location.

These activities would also have multiple work fronts, therefore (for example) foundation works or tower erection would be occurring in several locations along the easement at the same time.

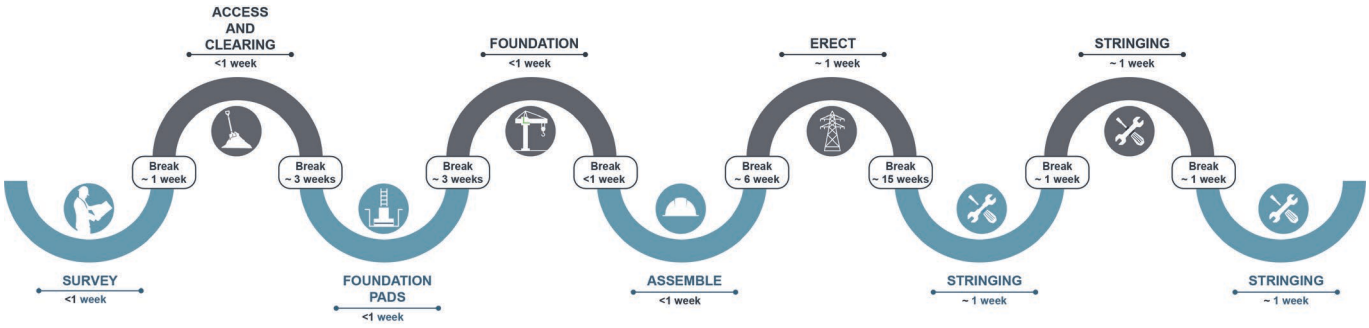

FIGURE 1-5 INDICATIVE DURATION OF CONSTRUCTION ACTIVITIES AT TRANSMISSION LINE AT EACH TOWER SITE

1.5 Purpose of this technical report

This technical paper is one of a number of technical papers that form part of the EIS for the proposal.

The purpose of this technical paper is to identify and assess the potential impacts of the proposal in relation to landscape and visual impacts. It responds directly to the Secretary's environmental assessment requirements (SEARs) (refer to Section 1.5) and has been prepared with consideration of relevant guidance for landscape and visual impact assessment. Further detail on the methodology applied in this assessment is detailed in Section 3 of this technical paper.

1.6 Secretary's environmental assessment requirements

The NSW Department of Planning, Industry and Environment (DPIE) has provided the SEARs for the EIS. The requirements specific to this assessment and where these aspects are addressed in this technical report are outlined in Table 1-1.

TABLE 1-1: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS – AMENITY

Reference	SEARs requirements	Where addressed in this report
Key Issue – Amenity	An assessment of the likely visual impacts of the project on: • surrounding residences • scenic or significant vistas • night lighting • air traffic road corridors in the public domain	 Section 5.5 Section 5.3 Section 5.3 Section 5.3

1.7 Structure of this report

The structure and content of this report is as follows:

- *Chapter 1 – Introduction:* Outlines the background and need for the proposal, and the purpose of this report
- *Chapter 2 – Legislative and policy context:* Provides an outline of the key legislative requirements and policy guidelines relating to the proposal
- *Chapter 3 – Methodology:* Provides an outline of the methodology used for the preparation of this technical paper
- *Chapter 4 – Landscape impact assessment:* Describes the potential landscape impacts associated with the proposal during construction and operation
- *Chapter 5 – Visual impact assessment:* Describes the potential visual impacts associated with the proposal during construction and operation, day and night
- *Chapter 6 – Cumulative impacts:* Outlines the potential cumulative impacts with respect to other known developments within the vicinity of the proposal
- *Chapter 7 – Mitigation measures*: Outlines the proposed mitigation measures for the proposal
- *Chapter 8 – Conclusion*: Provides a conclusion of the potential impacts of the proposal on the surrounding landscape character and visual amenity
- *Chapter 9 – References*: Identifies the key reports and documents used to generate this report.

2. Legislative and policy context

The following review identifies key documents which provide relevant guidance for the visual and landscape character assessment of the proposal. This review should be read in conjunction with the planning report and its response to the planning scheme benchmarks.

2.1 Regional planning framework

2.1.1 Far West Regional Plan 2036

The western part of the proposed transmission line is in the 'southern area' of the Far West region, comprising Balranald and Wentworth local government areas (LGAs). The southern area is well known for its '*diverse agriculture and connections to the Murray River and Victoria*'. The area has '*diverse landscapes and environmental features*', including bushlands and nationally and internationally recognised wetlands, productive areas of irrigated agriculture, the Murray, Darling and Murrumbidgee rivers and their associated floodplain areas and tributaries. Protecting and managing the region's environmental assets is a key priority of this plan. These assets are the existing conservation areas, river systems, wetlands and lagoons, and native vegetation of high conservation value, including vegetation types that have been over-cleared or occur within over-cleared landscapes. The proposed transmission line would cross the Murrumbidgee River about 13 kilometres south west of Balranald.

Distance is identified as a constant challenge to the region, with access to reliable telecommunications and electricity supply network key priorities for supporting the region's three key employment sectors: agriculture, mining and tourism (Goal 1, Direction 8 and 12). Development of renewable energies and associated industries, including solar and wind projects, are also recognised as an opportunity around Wentworth and Balranald (Goal 1, Direction 4).

2.1.2 Riverina Murray Regional Plan 2036

The central and eastern part of the proposed transmission line crosses the centre of the Riverina Murray Region, between Balranald substation (Yanga Way) and Wagga Wagga. The region is '*one of the most productive and diverse agricultural regions in Australia*', giving rise to its claim as the '*food bowl of Australia*' (p.13). Protection of the region's important agricultural land identified from '*land use conflict and fragmentation'* is identified as a priority (Goal 1, Direction 1).

The diversity and richness of the Riverina Murray environment is highly valued by residents, a major attraction for visitors and the foundation for the region's productive natural resources. The protection, management and restoration of the region's environmental assets, including major rivers, waterways and wetlands, '*for the ongoing enjoyment of residents and visitors*' is identified as a priority in the regional vision (p.8). The region contains extensive areas of potential '*High Environmental Value'* (Figure 5: Environmental assets), including the Murray and Murrumbidgee river corridors, wetlands and lagoons, and native vegetation of high conservation value. Development of a strong tourism industry that '*leverages the area's strong high environmental values*' is identified as a priority for the Murrumbidgee Shire (p.63).

The region relies on high-quality utility infrastructure, including electricity and telecommunications, to service agricultural and manufacturing industries and drive future economic competitiveness. Deficiencies in the energy network across the region, particularly in areas such as Hay, have been identified as a '*major barrier to business development and industry diversification or expansion*' (Goal 3, Direction 21).

Development of renewable energies and associated industries, including solar and wind projects, are also recognised as a 'priority growth sector' (Goal 1, p.15). Wagga Wagga has been identified as having potential for wind generated energy, while the area around Carrathool is more '*suitable for large-scale solar power generation and geothermal energy*' (Goal 1, Direction 11).

2.2 Local planning schemes

The transmission line would cross the following LGAs, west to east:

- Wentworth Shire Council
- Balranald Shire Council
- Murray River Council
- Edward River Council
- Hay Shire Council
- Murrumbidgee Council
- Federation Council
- Lockhart Shire Council
- Wagga Wagga City Council.

Details of relevant planning documents are described below where a specific reference to landscape character or visual amenity, particularly in relation to energy generation, storage and transmission infrastructure, has been made.

2.2.1 Wentworth Shire Council

Wentworth Shire Council Local Strategic Planning Statement, 2020

Wentworth Local Strategic Planning Statement (LSPS) sets the land use framework for Wentworth Shire's economic, social and environmental land use needs over the next 20 years. It addresses the planning and development issues of strategic significance for the Shire through planning priorities and actions, spatial land use direction and guidance.

Wentworth Shire is recognised as having '*significant levels of solar exposure, high wind speeds*' and the '*interconnector proposal between South Australia and NSW*' (known as EnergyConnect) has been identified as a key project to '*provide security of energy supply and facilitate large-scale solar and wind projects in the Shire*' (Planning Priority 3, Direction 4, Wentworth Shire Council, 2020). In particular, the area southeast of Buronga is identified as a '*high wind area'* for potential renewable energy production (Map 1 - Structure Plan Map).

Wentworth Local Environmental Plan 2011

The purpose of the *Wentworth Local Environmental Plan 2011* (LEP) is to '*encourage and manage ecologically sustainable development within Wentworth*' (cl.1.2.2a). It aims to '*encourage the retention and enhancement of land that supports the primary economic activities within Wentworth for productive agriculture*' whilst conserving and protecting areas of cultural heritage and environmental significance, including conservation parks, reserves and the Murray and Darling River systems (cl.1.2.2b-d).

Most of the proposed transmission line would pass through the Primary Production zone (RU1). The aims of this land use zone include to protect '*both mixed dryland and irrigation agricultural land uses*' in the shire that together '*form the distinctive rural character of Wentworth*' and to '*minimise the fragmentation and alienation of resource lands*' (Part 2, Land Use Table, Zone RU1).

The proposed transmission line passes through one large area zoned Environmental Conservation (E2), south of Mallee Cliffs National Park, adjacent to the existing Buronga to Balranald 220kV transmission lines. A key objective of this zone is to '*protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values*' (Part 2, Land Use Table, Zone E2).

The Murray River is identified as a visually important landscape in this shire, however, the proposal would be about six kilometres at is closest point from this river, and therefore not located within view.

Wentworth Shire Development Control Plan 2011

The Wentworth Shire Development Control Plan (DCP) supports the Wentworth LEP by providing additional objectives and controls for administering development.

The DCP recognises the visual quality of the rural landscape, stating that development in rural areas should be '*consistent with the rural character*' and avoid '*significant environmental features, such as natural forms, remnant native vegetation, wetlands or natural watercourses and drainage*' (chapter 5, s.5.3).

It states that adequate buffer areas and setbacks should be used to '*minimise negative impacts on rural dwellings from agriculture and rural industry*' and landscaping and other screening options should be used to '*reduce the total buffer distance required between dwellings and adjoining land uses*' (chapter 5, s.5.8.3). It also suggests that consideration is given to the '*design and materials of industrial buildings facing roads, particularly main roads*' and the design of buildings '*where they are adjacent to residential areas or other land uses*' (chapter 7, s.7.1.1). It also requires external storage areas at industrial sites '*shall not be visible from a public place*' or '*suitably screened (with dense landscaping and/or fencing)*' (chapter 5, s.5.3).

The proposed transmission line is outside of the Buronga and Gol Gol structure plan area and the associated master plan area. Although the plan recognises the importance of the shire's rural '*views and vistas'* in relation to the design and placement of Highway Promotional Signs (chapter 3, s.10), the plan does not identify any specific views, lookouts or landscape character areas for protection.

2.2.2 Balranald Shire Council

Balranald Shire Council Local Strategic Planning Statement, 2020

Balranald LSPS sets the land use framework for Balranald Shire's economic, social and environmental land use needs over the next 20 years. It complements the Far West Regional Plan 2036 by implementing the directions and actions at a local level.

Balranald Shire can be divided into two geographic regions: the wetlands (incorporating the five rivers and their associated wetland connectors and lakes) and the outback including such environmental assets as the Mungo National Park and the Willandra Lakes World Heritage Area. Agriculture is the largest industry in the Shire, including the '*rich farmlands'* along the Murray and Murrumbidgee Rivers. The proposed transmission line passes through the southern part of the Shire, within the rural landscape between Euston and Balranald, along the existing Buronga to Balranald 220KV transmission line easement.

Access to transmission infrastructure, land availability and favourable climate conditions make Balranald Shire a '*competitive location for large scale solar, energy storage, and associated renewable energy generation technologies*' and the shire '*aspires to become an International Centre for Excellence in Solar Renewable technologies*' (p.21). The '*proposed high voltage interconnector (HVI) between NSW and South Australia*' (p.24) (known as EnergyConnect) has been identified as a key project to provide security of energy supply and facilitate large-scale solar

projects in the Shire such as Limondale Solar Farm and Sunraysia Solar Farm, both located near the proposal alignment, south of Balranald.

Balranald Local Environmental Plan 2010

One of the aims of *Balranald Local Environmental Plan 2010* (LEP) is to '*encourage the retention of productive rural land in agriculture*' (cl.1.2.2b). In particular, it aims to '*encourage the retention and enhancement of land that supports the primary economic activities within Wentworth for productive agriculture*' whilst conserving and protecting areas of cultural heritage and environmental significance, including conservation parks, reserves and the Murray and Darling River systems (cl.1.2.2b-d).

The proposed transmission line crosses the Primary Production zone (RU1). An aim of this land use zone is to '*minimise the fragmentation and alienation of resource lands'* and *'minimise conflict between land uses within the zone*' (Part 2, Land Use Table, Zone RU1).

Yanga National Park, including the historic Yanga Woolshed, is zoned National Parks and Nature Reserves (E1) and now part of larger Murrumbidgee Valley National Park. This area is located about three kilometres north of the proposed transmission line. There are no other conservation areas or heritage items near the proposal. The proposed transmission line crosses the Murrumbidgee River, southwest of Balranald which is zoned RU1. An objective of the '*Development on river front areas'* clause aims to '*protect the amenity, scenic landscape values'* of riverfront areas (cl.6.5.1d).

There is no Development Control Plan available for the Balranald Shire Council area.

2.2.3 Murray River Council

Murray River Council Local Strategic Planning Statement, 2020

Murray River LSPS sets the land use framework for economic, social and environmental land use needs over the next 20 years. It outlines how the Council will '*manage growth and change to maintain the high levels of environmental amenity, liveability and landscape quality that characterise our area'* (p.8).

The Murray River Council is in the '*Riverine Plains in the central part of the Murray Basin*'. It has an '*array of floodplains, wetlands and freshwater lakes, together with nationally and internationally significant forests and National Parks*', including Yanga National Park and State Conservation Area (p.32). The proposed transmission line passes through the northern part of this council area, south east of Balranald, crossing the southern part of the Murrumbidgee Valley Nature Reserve and crossing Abercrombie Creek. Planning priority 7 of the LSPS aims to '*identify and protect environmental values'* including '*riverine systems, national and regional parks, state forests and internationally significant — Ramsar-listed — wetlands'*, ensuring that '*new areas for development will only be considered if environmental impacts can be minimised or avoided'* (p.60).

Wakool Local Environmental Plan 2013

The proposed transmission line would pass through the former Wakool Shire Council area, now part of Murray River Council. Relevant aims of this LEP are to '*reinforce the strong rural character of Wakool'* and to '*avoid the unnecessary fragmentation of rural land'* (cl.1.2.2a and c). The LEP also aims to '*encourage the continued use of agricultural land for primary production'* whilst conserving and enhancing Wakool's natural assets (cl.1.2.2b and e).

The proposed transmission line would pass through about 20 kilometres of the National Parks and Nature Reserves zone (E1), at the southern end of Murrumbidgee Valley Nature Reserve, and a narrow area of the Forestry zone (RU3), east of Yanga Way. The proposed transmission line crosses the Abercrombie Creek, east of Murrumbidgee Valley Nature Reserve. Abercrombie Creek

is not identified on the Watercourse Map which relates to the '*Riparian land and watercourses'* clause (cl.6.4).

Elsewhere, the proposed transmission line would cross the Primary Production zone (RU1). An aim of this land use zone is to '*minimise the fragmentation and alienation of resource lands'* and '*minimise conflict between land uses within this zone'* whilst allowing the '*development of complementary non-agricultural land uses that are compatible with the character of the zone'* (Part 2, Land Use Table, Zone RU1).

Wakool Development Control Plan 2013

The DCP supports the Wakool LEP by providing additional objectives and controls for administering development. This DCP recognises the visual quality of the rural landscape and aims to '*ensure that development enhances the character and desired qualities of the Shire including, but not limited to, the river and landscape settings … and the rural setting'* (s.A.1.4[b]). It also aims to '*encourage development that responds to its context and is compatible with the existing and desired built environment, local infrastructure, landscape, and public domain*' (s.A.1.4[h]).

It also states that siting, landscaping and other screening options should be used to locate and/or screen outdoor storage areas to '*minimise the visual impact and clutter of these areas from public areas and streets'* and consider the '*visual image'* of an area or '*streetscape'* (s.B.2.7, s.B2.9). The site-specific controls for natural environment aims to '*avoid or minimise the removal of significant trees and vegetation on-site through appropriate site planning and building locations'* to *'maintain and enhance the visual and landscape setting of the Shire, particularly, its rivers, watercourses and wetlands*' (s.C.1.1).

2.2.4 Edward River Council

Edward River Local Strategic Planning Statement, 2020

Edward River LSPS sets out the 20-year vision for land use planning in the LGA, outlining '*how change will be managed to maintain the high levels of liveability and landscape quality that characterises the Edward River region'* (p.4). It identifies the '*special characteristics that contribute to the regions local identity and recognises the shared community values to be maintained and enhanced'* (p.4).

Tourism is noted as '*a growing industry in Edward River region today'* (p.7). The Edward River, Murray Valley Regional Park and '*iconic Hay Plains'* are identified as key attractions for many tourists and offer the '*local and visiting community with a rich natural environment for recreation'* (p.7). The plan states that '*it is the agricultural sector that underpins the region's economy'* with the region being '*one of the most extensive high water irrigation areas in NSW'* (p.10). As such, the number one planning priority for Edward River LGA is to support a wide range of agricultural industries through a combination of dry land and irrigated farming practices.

Planning priority 6 also recognises that '*infrastructure is critical to the proper functioning and wellbeing of the community both now and in the future'*, including electricity and telecommunication facilities (p.19).

Conargo Local Environmental Plan 2013

The proposed transmission line would cross the northern part of the former Conargo Shire Council area, now part of Edward River Council. This LEP aims to '*protect, enhance and conserve agricultural land through the proper management, development and conservation of natural and human-made resources'* whilst conserving, protecting and enhancing the '*environmental and cultural heritage of Conargo'* (cl.1.2.2c and e).

The proposed transmission line is located entirely within the Primary Production zone (RU1). Objectives of the zone RU1 that are relevant to this assessment include:

- *'To minimise the fragmentation and alienation of resource lands*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones*
- *To allow for the development of non-agricultural land uses that are compatible with the character of the zone'* (Part 2, Land Use Table, Zone RU1).

There is no Development Control Plan available for the former Conargo Shire Council area.

2.2.5 Hay Shire Council

Hay Shire Council Local Strategic Planning Statement, 2020

Hay LSPS establishes a 20 year vision for land use planning in the shire, outlining how growth and change will be managed to '*maintain the high levels of environmental amenity, liveability and landscape quality that characterises the Hay Shire*' (p.2). The character of the shire is defined by the '*iconic Murrumbidgee River*', its '*diverse productive agricultural land*' and '*wide diversity of vegetation, including grassy plains, Chenopod shrublands, shrubby box woodlands and River Red Gum forests*' (p.21-22, and Planning Priority 4). The proposed transmission line passes through the southern part of the council area, between the Cobb Highway and Jerilderie Road, passing through agricultural land and crossing a number of creeks.

The LSPS priorities the '*growth of Renewable Energy'* and identifies the Shire as being in a '*good position to cater for renewable energy on all scales'* due to the '*ample sunshine, level topography, affordable land, and grid connections available'* (Planning Priority 9).

Hay Local Environmental Plan 2011

The Hay LEP aims to '*protect, enhance and conserve agricultural lands'* whilst ensuring '*areas of high ecological value or significant land sensitivity are enhanced'* (cl.1.2.2). In particular, the LEP aims to '*protect the amenity, scenic landscape values'* of the shire's '*riverine corridors'*, ensuring that any development in these areas avoids '*visual disturbance to the existing landscape*' (cl.6.4).

The proposed transmission line traverses the Primary Production zone (RU1). An aim of this land use zone is to '*minimise the fragmentation and alienation of resource lands'* (Part 2, Land Use Table, Zone RU1). The LEP also aims to '*minimise conflict between land uses within this zone and land uses within adjoining zones'* (Part 2, Land Use Table, Zone RU1).

There is no Development Control Plan available for the former Hay Shire Council area.

2.2.6 Murrumbidgee Council

Murrumbidgee Council Local Strategic Planning Statement, 2020

Murrumbidgee LSPS sets the land use framework for the new LGA's economic, social and environmental land use needs over the next 20 years. In the LSPS foreword, it acknowledges the '*unique natural and built character*' of the area and '*protects what makes it a special place for residents and visitors alike*'. (Forward, Ruth McRae Mayor, 2020)

Located in the Riverina Region of south-western New South Wales, Murrumbidgee is recognised as being a '*thriving agricultural region'* with over 100 kilometres of natural river frontage to the Murrumbidgee River. '*Productive agricultural land'* has been identified as one of the key strategic agendas for economic growth and the LSPS seeks to '*prevent development that reduces the amount of land available for agriculture'* or '*creates conflict with agriculture and the wider agricultural supply chain*' (p.26).

The LSPS also supports the provision of '*best possible telecommunication service*' (p.24) and '*projects for renewable energy and in particular solar farms*' (p.28). The proposed transmission line crosses through the centre of this region, south of the Murrumbidgee River and Oolambeyan National Park. The proposed Dinawan 330kV substation is located about 30 kilometres south of Coleambally, beside (east of) Kidman Way.

Murrumbidgee Local Environmental Plan 2013

The LEP aims to '*protect, enhance and conserve agricultural and horticultural land through the proper management, development and conservation of natural and man-made resources*' (cl.1.2.2a). It also aims to '*conserve the environmental heritage of the land'*, including conservation parks, reserves, and river systems (cl.1.2.2d).

The proposed transmission line passes through the Primary Production zone (RU1). Relevant aims of this land use zone are to '*minimise the fragmentation and alienation of resource lands'* and '*minimise conflict between land uses within this zone and land uses within adjoining zones'* (Part 2, Land Use Table, Zone RU1).

The proposed transmission line is located alongside Four Corners Road, about four kilometres south of Oolambeyan National Park (former pastoral station), and about 18 kilometres south of the main picnic area and built heritage precinct within the park. The LEP refers to the *National Parks and Wildlife Act 1974* for the management of this area, including the Plan of Management for Oolambeyan National Park (NSW Office of Environment and Heritage, 2016). From Four Corners Road, the proposed transmission line continues south-east, in a new transmission line easement, in an agricultural landscape within the former Jerilderie Shire Council Area towards Kidman Way and Yanko Creek.

There is no Development Control Plan available for the Murrumbidgee Council area.

Jerilderie Local Environmental Plan 2012

The LEP aims to '*maintain and enhance agricultural land through the proper management, development and conservation of natural and man-made resources*' (cl.1.2.2a). It also aims to '*conserve the environmental heritage of the land'*, such as creek and river systems (cl.1.2.2d).

The proposed transmission line passes through a new corridor, within the Primary Production zone (RU1). It leaves the existing Balranald to Darlington Point transmission lines at Four Corners Road and extends south west, crossing Kidman Way, Yanko Creek and the Newell Highway. The proposed Dinawan 330kV substation is located beside (east of) Kidman Way, about 30 kilometres south of Coleambally and south of the Coleambally irrigation area. Relevant aims of the RU1 land use zone are to '*minimise the fragmentation and alienation of resource lands'* and '*minimise conflict between land uses within this zone and land uses within adjoining zones'* (Part 2, Land Use Table, Zone RU1).

Jerilderie Development Control Plan 2012

The DCP supports the Jerilderie LEP by providing additional objectives and controls for administering development. This DCP recognises the visual quality of the rural landscape and aims to '*protect the scenic values of the rural landscape and environment and encouraging development to be unobtrusive and sympathetic to the surrounding rural setting'* (s.2.4). It also aims to '*maintain and enhance existing vegetation to provide buffers and landscaped visual relief within rural areas'* (s.2.4).

2.2.7 Federation Council

Federation Local Strategic Planning Statement, 2020

Federation Council local government was formed in 2016 from the merger of the Corowa Shire with its neighbouring Urana Shire. This LSPS sets the land use framework for the new LGA's economic, social and environmental land use needs over the next 20 years. The LSPS acknowledges agriculture and tourism as key industries that drive the area's prosperity. Accordingly, the LSPS aims to '*protect the region's diverse and productive agricultural land'* (Planning Priority 1, Direction 1) and '*protect and manage the region's many environmental assets'* (Planning Priority 1, Direction 15) such as Lake Urana and the Murray River (p.9).

Planning Priority 2 is focussed on '*Rural Areas'* and managing land use conflict between agricultural land users and adjoining non-agricultural land owners is listed as a challenge. The LSPS also supports the provision of power infrastructure, listing '*Project Energy Connect'* as a key project for the area (p.17). The proposed transmission line crosses through the northern part of this council area, through the rural area north of Urana and crossing Colombo Creek, within a new transmission line easement.

Urana Local Environmental Plan 2011

The proposed transmission line would cross the northern part of the former Urana Shire Council area, now part of Federation Council. The transmission line would be located in a new easement and located entirely within the Primary Production zone (RU1). The LEP aims to '*minimise the fragmentation and alienation of resource lands*' in the Primary Production zone (Part 2, Land Use Table, Zone RU1). It also aims to '*minimise conflict between land uses within this zone and land uses within adjoining zones'* (Part 2, Land Use Table, Zone RU1).

Urana Shire Development Control Plan 2011

The Urana Shire DCP supports the Urana LEP by providing additional objectives and controls for administering development. Although not specifically relevant to power infrastructure such as the proposal, this DCP recognises the unique character of the rural landscape and aims to '*ensure development is responsive to site constraints*' and that '*adequate buffers'* are provided to '*reduce conflicts between rural/agricultural uses and residential amenity*' (s.R2). It also states that siting, landscaping and other screening options should be used to locate and/or screen outdoor storage areas to avoid any '*detrimental effect on residential amenity'* (s.C2).

2.2.8 Lockhart Shire Council

Lockhart Local Strategic Planning Statement

Lockhart LSPS sets the land use framework for Lockhart Shire Council's economic, social and environmental land use needs over the next 20 years. It addresses the planning and development issues of strategic significance to the Council through planning priorities and actions, spatial land use direction and guidance. The proposed transmission line crosses through the rural landscape generally in an east-west direction, generally between Boree Creek Road and The Rock-Collingullie Road. The transmission line is located in a new corridor west of Lockhart. East of Lockhart, the proposal generally follows the alignment of the existing Finley to Uranquinty transmission line.

Lockhart is located '*in the heart of the Riverina'* and is one of the region's '*most productive agricultural and pastoral areas*' (p.11). Tourism, especially heritage and eco-tourism, have '*seen good positive growth over recent years'*, with towns such as The Rock and Lockhart, as well as '*natural attractions*' such as The Rock Nature Reserve, providing interest for visitors. In particular,

The Rock is identified as one of the Shire's most '*impressive landmarks… rising above the surrounding plains, and marking a special site of indigenous history*' (p.27).

Lockhart's rural lands also '*form an important part of the area's identity*' and considered to '*provide highly valued scenic amenity and rural character*' (p.19).

Lockhart Local Environmental Plan 2012

Relevant aims of this LEP are to '*conserve the environmental heritage of Lockhart*' whilst facilitating '*growth and development*' (cl.1.2.2e and b). The proposed transmission line would pass through the northern part of the Lockhart Shire, generally between Boree Creek Road and The Rock-Collingullie Road. The proposal is almost entirely located within the Primary Production zone (RU1), except for a small area west of Urana-Lockhart Road zoned Forestry (RU3) south west of Lockhart. The RU1 zoning aims to '*minimise the fragmentation and alienation of resource lands*' and '*minimise conflict between land uses within this zone*' (Part 2, Land Use Table, Zone RU1). The Forestry zone (RU3) objectives will '*enable other development that is compatible with forestry land uses*' (Part 2, Land Use Table, Zone RU3).

Lockhart Shire Development Control Plan 2016

This DCP supports the Lockhart LEP by providing additional objectives and controls for administering development. The DCP recognises the '*visual amenity and character of towns and villages within Lockhart Shire*' as well as the '*character and amenity*' of the Shire's rural land, stating that intrusive development in rural areas such as extractive industries should have '*extensive vegetation buffers*' to protect adjoining uses from '*visual impacts*' (Section C, Rural Development). It also states that '*trees and vegetation that contribute to the environmental and amenity value of the local area and region are conserved*' (Section C, Environmentally Sensitive Areas).

The proposed transmission line is located in the rural area south and south east of Lockhart, about two kilometres from the main street and conservation area. While the DCP refers to the '*high integrity and aesthetic values*' (s.6.1) of buildings within the town centre, it makes no reference to views to/from the setting of the town.

2.2.9 Wagga Wagga City Council

Wagga Wagga Local Strategic Planning Statement

This LSPS sets the land use framework for the LGA's economic, social and environmental land use needs over the next 20 years. The key outcome for of the LSPS is to find the '*balance between growth, the natural environment, sustainability and liveability*' (p.8).

An option for a bypass road to the south of the city is proposed in the structure plan, generally linking the Sturt Highway east and west of the city, near Kapooka Barracks and the airport. The route is generally located to the north of the proposed transmission line, along the southern edge of Wagga's large lot residential area at Springvale and Lake Albert. '*Further residential sprawl south will be discouraged to protect this corridor*' (Principle 6).

Principle 11 is focussed on rural areas and managing land use conflict between agricultural land users and adjoining non-agricultural land owners is noted as a challenge. The LSPS considers the '*relationship between the rural areas around the urban area of Wagga Wagga is critical to the ongoing success of the entire region*' and the '*fragmentation of lands*' should be avoided in order to maintain agricultural production and the '*scenic appeal of the rural landscape*' (Principle 11, p.43).

The hilly area to the south of the city and proposed transmission line is also identified as an '*high value environmental amenity area*' in the structure plan, to be protected and enhanced (Principle 1).

Wagga Wagga Local Environmental Plan 2010

The Wagga Wagga LEP aims to '*co-ordinate development'* such as the '*provision of public infrastructure and services*' whilst ensuring to '*avoid or minimise impacts on environmental values and protect environmentally sensitive areas*' (cl.1.2.2c-d).

Most of the proposed transmission line is located in the Primary Production zone (RU1) south of Wagga Wagga. The proposed Wagga Wagga substation expansion site and nearby construction compound is also located in the RU1 land use zone. The RU1 land use zoning aims to encourage primary industry production whilst minimising the '*fragmentation and alienation of resource lands'* and maintaining '*the rural landscape character of the land'* (Part 2, Land Use Table, Zone RU1). The RU1 zoning also aims to '*minimise conflict between land uses within this zone and land uses within adjoining zones'* (Part 2, Land Use Table, Zone RU1).

The landscape area also includes the northern part of the RU2 Rural Landscape zone south of Wagga Wagga, at Gelston Park/Gregadoo Hills. The RU2 zoning aims to encourage '*primary industry production'* whilst maintaining '*the rural landscape character of the land'* (Part 2, Land Use Table, Zone RU2). The eastern end of the proposed transmission line, south of Wagga Wagga substation, is zoned SP1 Special Activities, and contains the Gregadoo Waste Facility. The SP1 zoning aims to '*facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land'* (Part 2, Land Use Table, Zone SP1).

There are several local heritage items located within the landscape study area, including (west to east):

- Wyadra Grave Site at South Boundary Road, Pearson
- Liquid Explosives Store site at 88 Hanging Rock Road, Uranquinty
- 'Rowan', a rural property at 6910 Holbrook Road
- 'Ivydale', a rural property at 83 Ashfords Road.

The LEP aims to conserve the heritage significance of heritage items, including their '*settings and views*' (cl.5.10).

Wagga Wagga Development Control Plan 2010

This DCP supports the Wagga Wagga LEP by providing additional objectives and controls for administering development. The '*visually prominent ridges'* areas of '*higher ground'* throughout the LGA such as Gelston Park/Gregadoo Hills south of Wagga Wagga are considered to '*establish the visual setting of the city and villages*'. These hills are within the RU2 zone and located in close proximity to the proposed transmission line, in the vicinity of Holbrook Road. The design principles in section 5.1 of the DCP (Development on ridges and prominent hills) aim to keep development '*below these points … to protect the natural skyline'* and maintain the '*visual and landscape setting'* of Wagga Wagga (s.5.1). Relevant controls for development in these areas include:

- '*Buildings, structures, infrastructure or services (including access roads and driveways) are to be kept below significant ridgelines.*
- *The assessment of applications for development in visually prominent locations is to consider potential impacts on distant views towards the site.*
- *Development on the higher slopes is not to interrupt the ridgeline'*. (s.5.1, C1-C3)

The DCP provides guidance for '*development in the vicinity of a heritage item'* to ensure the proposal is '*designed and sited to protect the significance of the heritage item'* and *'minimise the impact on the setting of the item*' by:

- *'a) Providing an adequate area around the heritage item to allow its interpretation.*
- *b) Retaining original or significant landscaping associated with the heritage item.*
- *c) Protecting and allowing the interpretation of archaeological features associated with the heritage item.*
- *d) Retaining and respecting significant views to and from the heritage item*' (s.3.2.4, C2).

The DCP considers '*landscaping'* to be '*an important aspect of development, and complements good design'*. It further states that '*trees, shrubs and green spaces can "soften" the impact of buildings'*. The following are relevant landscape objectives for all developments:

- *'Retain and protect existing vegetation, particularly large and medium trees, and conserve significant natural features of the site'*
- *'Encourage landscape that responds to existing site conditions'* and *'local character'*
- *'Ensure the landscape adequately complements the proposed built forms and minimises the impacts of scale, mass and bulk of the development on the existing area and surrounding streetscapes, view sheds and neighbourhood amenity*' (s.2.3).

3. Methodology

3.1 Guidance for landscape and visual impact assessment

A range of guidance is available for the assessment of landscape and visual impact. However, the industry typically refers to the following guidance:

- *The Guidance Note for Landscape and Visual Assessment* (GNLVA), Australian Institute of Landscape Architects Queensland, 2018
- Guideline for Landscape Character and Visual Impact Assessment EIA-N04, Transport for NSW, 2020
- *The Guidelines for Landscape and Visual Impact Assessment* (GLVIA), Third Edition, 2013, prepared by the Landscape Institute and Institute of Environmental Management & Assessment.

The following steps were undertaken in the assessment of the landscape and visual impacts of the proposal.

3.2 Assessment of landscape impact

Landscape is defined as … '*All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure*.' (TfNSW, 2020).

The landscape assessment begins with the identification of landscape character areas. An assessment of landscape impact was then carried out by identifying the sensitivity of each landscape character area, and the likely magnitude of change expected as a result of the proposal. These factors were combined to make an overall assessment of landscape impact.

3.2.1 Identification of landscape character areas

The landscape assessment begins with the identification of landscape character areas. Landscape character is the … '*combined quality of built, natural and cultural aspects which make up an area and provide its unique sense of place'.* (TfNSW, 2020)

The landscape study area has been divided into landscape character areas that reflect the qualities of the built, natural and cultural environment, including geology, topography, vegetation, waterways, built form, patterns and types of land use.

3.2.2 Landscape sensitivity

Landscape sensitivity refers to the value placed on a landscape and its susceptibility to change. The sensitivity of a landscape may reflect the frequency and volume of users but it may also reflect valued characteristics such as rarity, tranquillity, scenic amenity and its contribution to sense of place. The value of landscapes can be described in Federal, State and local government masterplans and planning documents and protected by legislation. These protections reflect the importance of landscape resources to the local, regional and state-wide community.

Landscape sensitivity in this assessment is therefore considered in the broadest possible context, from those landscapes of national importance through to those considered to be landscapes of importance locally.

Table 3-1 lists the landscape sensitivity levels that apply to this assessment.

TABLE 3-1: LANDSCAPE SENSITIVITY LEVELS

Landscape sensitivity	Description
National	- Landscape feature or place protected under national legislation or international policy e.g. the Red Top Lookout at the World Heritage Listed Mungo National Park. - These landscapes are generally unique and uncommon nationally.
State	- Landscape feature or place that is heavily used and/or is iconic to the State, e.g. Lake Victoria. - These landscapes are generally unique to or uncommon within the state.
Regional	- Landscape feature or place that is heavily used and valued by residents of a major portion of a city or a non-metropolitan region and / or - Places with regionally important scenic value or to landscape features. - These places are generally unique or uncommon within the region.
Local	- Landscape feature valued and experienced by concentrations of residents and/or local recreational users and / or - Places of local scenic value or local landscape features. - These views are likely to be somewhat common within the landscape.
Neighbourhood	- Places where without any particular scenic values or local landscape features - These places are likely to be common within the landscape.

3.2.3 Magnitude of change to the landscape

The changes to the landscape that would occur as a result of the proposal are assigned a magnitude of change level. This considers direct impacts on the landscape such as the removal of trees and tree canopy, open space and public realm areas, as well as indirect impacts, such as changes to the function of an area of open space or the public realm. The magnitude of change can result in adverse or beneficial effects.

Table 3-2 lists the magnitude of change levels that have been used in this assessment.

TABLE 3-2: LANDSCAPE MAGNITUDE OF CHANGE LEVELS

Magnitude of change	Description
Very High	- The landscape is altered such that the proposal dominates and / or transforms its character, amenity and / or function.
High	- The proposal substantially changes and / or is not compatible with the character, amenity, and function of the landscape. - This would result in an extensive and / or severe change in landscape values.
Moderate	- The proposal somewhat changes and / or is not compatible with the character, amenity, and function of the landscape. - This would result in a considerable and / or unsympathetic change in landscape values.
Low	- The proposal changes are minor and / or are compatible with the character, amenity, and function of the landscape. - It would result in a slight change in landscape values.
Negligible	- The proposal would not change the character, amenity and/ or function of the landscape. - If there is a change, it would not be perceived as altering the landscape values.

3.2.4 Assigning landscape impact levels

An assessment of landscape impact has been made by combining the landscape sensitivity and magnitude of change levels for each landscape character area and assigning an impact level (refer to Table 3-3).

TABLE 3-3: LANDSCAPE IMPACT LEVELS

	Sensitivity				
Magnitude	**National**	**State**	**Regional**	**Local**	**Neighbourhood**
Very high	Very high	Very high	High	High-Moderate	Moderate
High	Very high	High	High-Moderate	Moderate	Moderate-Low
Moderate	High	High-Moderate	Moderate	Moderate-Low	Low
Low	High-Moderate	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

3.3 Assessment of visual impact

The assessment of visual impact uses a representative viewpoint assessment approach. Representative viewpoints have been selected from the potential visual catchment of the proposal. Each view has then been assessed by identifying the magnitude of change level created by the proposal, and the sensitivity of the expected viewer. Combined, these characteristics of the view are then used to assign a level of potential visual impact. This methodology is explained more fully in the following paragraphs.

3.3.1 Existing visual conditions

Visual catchment and potential visibility of the proposal

A map has been prepared to illustrate the potential visual catchment of the proposal and extent of visibility from areas within this catchment. This visibility analysis uses a digital terrain model and points on the top of each transmission line tower along the proposal alignment, to identify the areas from which views to the proposal may be seen. The analysis shows areas where a greater number of transmission line towers are visible, as a darker colour.

The terrain data included one metre LIDAR data provided by Transgrid and one second SRTM Derived Hydrological ((DEM-H) version 1.0 Geoscience Australia 2011). The model does not include land cover features (i.e. trees and buildings). This is therefore represents a worst-case scenario and the first step in the analysis process.

3.3.2 Representative viewpoint assessment

Site inspections were carried out during June of 2020. These inspections verified the results of a preliminary viewshed analysis.

Views representative of the site have been selected, they include views from areas where the greatest number of viewers are likely to congregate, such as lookouts, road corridors and scenic routes, as well as locations in sensitive recreational and natural areas.

Photomontages have been prepared for representative viewpoints along the length of the proposal to support the assessment of impact. These views illustrate locations where the proposal would be seen from locations of higher sensitivity and also to show a typical view within each landscape character area.

Visual sensitivity

Visual sensitivity refers to the nature and duration of views. Locations from which a view would potentially be seen for a longer duration, where there are higher numbers of potential viewers and where visual amenity is important to viewers can be regarded as having a higher visual sensitivity.

To ensure the impacts are attributed fairly, the sensitivity of each viewpoint is considered in the broadest context of possible views, including those of national importance through to those considered to have a neighbourhood importance. The following terminology has been used to describe the level of visual sensitivity, see Table 3-4.

TABLE 3-4: VISUAL SENSITIVITY TABLE

Visual sensitivity	Description
National	- Heavily experienced view to a national icon, e.g. view from the Red Top Lookout at the World Heritage Listed Mungo National Park, and / or - Views to areas with a scenic value of national importance or to landscape features of the state, and / or - Views from World Heritage Listed Places. - These views are generally unique and uncommon nationally.
State	- Heavily experienced view to a feature or landscape that is iconic to the state, e.g. views from the Blue Mountains or the view from the Memorial lookout at Lake Victoria, and / or - Views to areas with a scenic value recognised by the state. - These views are generally unique or uncommon within the state.
Regional	- Heavily experienced view to a feature or landscape that is iconic to a major portion of a city or a non-metropolitan region, or an important view from an area of regional open space. e.g. view to The Rock from Urana Street in the town of The Rock, and / or - Views to areas of regionally important scenic value or to landscape features of the region. - These views are generally unique or uncommon within the region.
Local	- High quality view experienced by concentrations of residents and/or local recreational users, and/or large numbers of road or rail users, and / or - Views to areas of local scenic value or to local landscape features. - These views are somewhat common within the landscape.
Neighbourhood	- Views where visual amenity is not particularly important to the wider community, such as lower quality views briefly glimpsed from roads. - These views are likely to be common within the landscape.

Magnitude of change

The magnitude of change refers to the change to the landscape that would occur as a result of development from a given viewpoint. This includes what has changed, and how it has changed. Visual modification describes the extent of change and identifies elements which are removed or added, changed in colour and texture, and compatibility of new elements with the existing landscape. Visual modification can result in an improvement or reduction in visual amenity.

A high magnitude of change would result if the development contrasts strongly with the existing landscape. Whereas a low degree of visual modification occurs if there is minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the development and the environment in which it sits. In this situation the development may be noticeable but does not markedly contrast with the existing modified landscape.

Table 3-5 lists the terminology used to describe the level of visual modification.

TABLE 3-5: MAGNITUDE OF CHANGE

Magnitude of change	Description
Very high	- The view is altered such that the proposal visually dominates and transforms the character of the view. - It would result in a substantial change in the amenity of the view.
High	- The proposal is visually prominent, and / or contrasts with the character of the view. - It would result in a considerable change in the amenity of the view.
Moderate	- The proposal is somewhat prominent and / or is not compatible with the character of the view. - It would result in a noticeable change in the amenity of the view.
Low	- The proposal is not visually prominent and / or is visually compatible with the character of the view. - It would result in a slight change in the amenity of the view.
Negligible	- The proposal is not visible, is not visually prominent in the view and / or is compatible with the character of the view. - It would result in no perceived change in the amenity of the view.

There are some general principles regarding the relationship between the proposal and the landscape which determine the magnitude of change level. These principles, or assumptions, relate to how well a transmission line can be absorbed into the landscape and what is considered to be more or less visually harmonious. These principles have been applied generally to the viewpoint assessment, and include:

- Scale, the larger the scale of the towers, the more visually prominent they are likely to be
- Form, the style and form of the infrastructure can assist in the absorption of development into a view i.e. lattice transmission line towers can be seen through and more visually light weight in some settings
- Distance, the greater the distance, the less prominent the transmission line towers are likely to be
- Landform, the location of the transmission line towers in relation to the surrounding landform i.e. landform may intervene and screen views, or may allow greater visibility if the proposal elements are located on higher ground
- Vegetation, taller trees, and more dense vegetation will screen and reduce visibility
- Development context and character, the presence of other existing infrastructure of a similar character can increase the compatibility of development within a view; and
- Alignment and line, simple lines and an alignment reflecting the patterns of the existing landscape can reduce visual contrast, whereas intersecting lines and discordant alignments can increase the visual prominence of proposal elements.

These principles have been applied generally to the viewpoint assessment.

Assigning visual impact levels

An assessment of visual impact has been made by combining the visual sensitivity and magnitude of change levels for each representative viewpoint and assigning an impact level (refer to Table 3-6).

TABLE 3-6: VISUAL IMPACT LEVELS

	Sensitivity				
Magnitude	**National**	**State**	**Regional**	**Local**	**Neighbourhood**
Very high	Very high	Very high	High	High-Moderate	Moderate
High	Very high	High	High-Moderate	Moderate	Moderate-Low
Moderate	High	High-Moderate	Moderate	Moderate-Low	Low
Low	High-Moderate	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

Photomontages

Ten photomontages have been prepared to illustrate the expected changes to views as a result of the proposal at representative locations along the overall length of the proposal. Photomontages are created using a combination of 3D modelling and photo editing techniques.

The process used to prepare these images was as follows:

- GPS coordinates and details of the camera was recorded
- A terrain model was prepared using contours with 5-metre intervals
- The camera was positioned in the model using the photograph GPS data for each image
- The digital surface model was used to align the view; and
- The transmission line towers, wires and associated infrastructure were modelled in 3D and materials assigned to the model.

These modelled views were then edited in photoshop to insert the model into the photograph.

For this assessment a proposed centreline of the transmission line easement has been selected for the proposed route for the transmission line (the proposal alignment). It is noted that the proposal alignment may be modified to a different location along the transmission line easement during finalisation of the proposal design however the assessment presents a representative assessment of impacts. Due to limited receivers in the area the assessment should remain appropriate to these changes.

The photomontages used in this assessment represent the operational view to the proposal. Photomontages of construction activity or construction camps have not been prepared as these

Transmission line towers have been modelled at the maximum assumed height (60 metres for the 500kV transmission line) using a typical lattice tower that shows a worst-case scenario in terms of visual complexity. There would be some

The viewpoints used to create these photomontages were chosen to represent a range of viewing locations along the proposal corridor, from a distance and orientation where the proposal would be most visible. The photomontage locations were also chosen to illustrate views from areas with the greatest visual sensitivity and where the greatest number of viewers would be located.

Distant views were not selected as the detail of the model would not be evident and the extent of change in the photograph would be less.

3.3.3 Assessment of night-time visual impact

An assessment of the potential visual impacts of the project at night has been undertaken for each landscape character area.

The assessment of night-time impact has been carried out with a similar methodology to the daytime assessment. However, the assessment also draws upon the guidance contained within AS4282 *Control of the obtrusive effects of outdoor lighting* (2019).

AS4282 identifies four main potential effects of lighting, which are, the effects on residents, transport system users, transport signalling systems and astronomical observations. Of relevance to this assessment is the effects of lighting on the visual amenity of residents and transport system users.

AS4282 identifies environmental zones which are useful for categorising night-time landscape settings. The following assessment has used these environmental zones to describe the existing night-time visual condition and assign a sensitivity to these settings.

Night-time visual sensitivity

The environmental zone (defined in AS4282) which best describes the existing night-time visual condition of the site has been selected. These zones are typical night-time settings and reflect the predominant light level of each landscape character area. Each environmental zone is assigned a level of sensitivity as described in Table 3-7.

TABLE 3-7: ENVIRONMENTAL ZONE SENSITIVITY – NIGHT-TIME

	Environmental Zones (AS4282:2019)	
Sensitivity level	**Description**	**Examples**
Very high	A0: Intrinsically dark	UNESCO Starlight Reserve IDA Dark Sky Parks Major optical observatories No road lighting – unless specifically required by the road controlling authority
High	A1: Dark	Relatively uninhabited rural areas No road lighting – unless specifically required by the road controlling authority
Moderate	A2: Low district brightness	Sparsely inhabited rural and semi-rural areas
Low	A3: Medium district brightness	Suburban areas in towns and cities
Very low	A4: High district brightness areas	Town and city centres and other commercial areas Residential areas abutting commercial areas

Night-time magnitude of change

Following the sensitivity assessment, the magnitude of change that would be expected within each landscape character area at night is then identified. These changes are described, as relevant, in terms of:

- Sky glow – which is the brightening of the night sky
- Glare – condition of vision in which there is discomfort or a reduction in ability to see
- Light spill – light emitted by a lighting installation that falls outside of the design area.

Table 3-8 lists the categories used to describe the visual magnitude of change at night.

TABLE 3-8: VISUAL MAGNITUDE OF CHANGE LEVELS – NIGHT-TIME

Magnitude of change	Description
Very high	- Substantial change to the level of skyglow, glare or light spill expected, and / or - The lighting of the proposal would transform the character of the surrounding setting at night, and / or - The effect of lighting would be experienced over an extensive area and / or
High	- Considerable change to the level of skyglow, glare or light spill and / or - The lighting of the proposal would noticeably contrast with the surrounding landscape at night and / or - The effect of lighting would be experienced across a large portion of the landscape.
Moderate	- Alteration to the level of skyglow, glare or light spill would be expected, and / or - The lighting of the proposal would contrast somewhat with the surrounding landscape at night, and / or - The effect of lighting would be experienced across a moderate portion of the landscape.
Low	- Alteration to the level of skyglow, glare or light spill would be expected, and / or - The lighting of the proposal would not contrast substantially with the surrounding landscape at night, and or - The effect of lighting would be experienced across a small portion of the landscape.
Negligible	- Either the level of skyglow, glare and light spill is unchanged or - if it is altered, the change is generally unlikely to be perceived by viewers or - compatible with the existing or intended future use of the area.

Night time visual impact levels

An assessment of night-time visual impact has been made by combining the visual sensitivity of the environmental zone with the night-time visual magnitude of change for each area generally and assigning an impact level (refer to Table 3-9).

TABLE 3-9: VISUAL IMPACT LEVELS – NIGHT TIME

	Sensitivity (AS4282:2019 Environmental Zone)				
Magnitude	Very high (A0)	High (A1)	Moderate (A2)	Low (A3)	Very low (A4)
Very high	Very high	Very high	High	High-Moderate	Moderate
High	Very high	High	High-Moderate	Moderate	Moderate-Low
Moderate	High	High-Moderate	Moderate	Moderate-Low	Low
Low	High-Moderate	Moderate	Moderate-Low	Low	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

3.3.4 Impacts on views from private properties

There is no guidance for the assessment of visual impact on views for private properties that applies to energy transmission projects in NSW. However, the assessment of visual impact on views from private residential properties is generally guided by the planning principles for 'view sharing' provided in the judgment of the NSW Planning Environment court in the *Tenacity Consulting V Warringah Council* [2004}, NSWLEC 140. View sharing is when a property … 'enjoys existing views and a proposed development would share that view by taking some of it away.' (NSWLEC 140, 2004)

While the approach set out in this judgment is more suitable for urban settings, the principles can be applied to regional landscape settings in a more general way and with considerations of scenic preference appropriate for the range of landscapes available within the setting of the proposal.

Due to the scale of the project and number of potential sensitive receivers, the following assessment has been undertaken as a desktop analysis, and therefore a conservative approach has been taken to impact levels. It is intended that the properties identified as having high or very high potential visual impacts would warrant further investigation during subsequent stages including engagement with landowners to identify the actual impact level and potential for mitigation of these impacts.

Assessment steps

To determine whether view sharing is reasonable the judgment identifies a four-step assessment process. As the approach set out in this judgment is more suited to urban settings, and therefore adjustments to the method were made to account for the scale of the landscape and project were applied to the project.

The steps identified in this judgment have been revised and undertaken as follows:

Step 1: Assess views to be affected

- All residences have been identified within 5km of the Proposal and a desktop analysis of topography and vegetation cover was used to identify properties that may have affected views.

Step 2: Consider from what part of the property the views are obtained

Each residence has been considered as one vantage point. If a high or very high potential adverse visual impact identified, then during the finalisation of the proposal design a visit to the property would be required to confirm the orientation of the residence, location of living areas and extent of the visibility.

Step 3: Assess the extent of the impact

- Based upon a desktop assessment of landform, vegetation cover and distance, a description of the potential visibility of the Proposal is described.
- A potential impact level is then assigned to the receiver based upon the potential impact levels described in Table 3-10. This table includes a range of factors that are typical indicators of each impact level, with a combination of these scenarios being present for each level of impact.

Step 4: Assess the reasonableness of the proposal that is causing the impact.

- the reasonableness of the proposal is usually considered in relation to development controls set by local government in their Local Environmental Plan and Development Control Plan. However, these controls are not applicable to a proposal of this type and scale, being a Critical State significant infrastructure project.

The judgment indicates that a with a complying proposal, the question is 'whether a more skilful design could provide the applicant with the same development potential … and reduce the impact on the views of neighbours.' If the answer is no … 'the impact would probably be considered reasonable'. Some potential visual impacts would be reduced with localised screening vegetation. In the case of properties identified as having a high or very high potential visual impact, a site visit would be undertaken to confirm the actual extent of visibility and appropriateness of localised screening vegetation in consultation with the landholder.

It is important to note that a view of the proposal does not necessarily constitute a visual impact.

3.4 Mitigation and management measures

Where a visual impact has been identified as a result of the proposal, methods for reducing and managing these impacts have been considered and specific mitigation approaches recommended. These mitigation and management measures address both construction and operational impacts.

3.5 Residual visual impact

The likely effectiveness of the of the proposed mitigation measures on private receiver views has been anticipated and a potential likely residual impact nominated for those residential properties which have been identified as having a high or very high visual impact.

3.6 Cumulative and interactive effects

Incorporating cumulative effects into the impact assessment widens the assessment to include not only direct effects, but also collective effects.

Cumulative effects of projects can indicate that the combination of effects created by multiple projects may be greater than the sum of the individual effects. Cumulative impacts between projects have been addressed based on assumptions about the likely implementation of proposed projects within neighbouring areas.

TABLE 3-10: VISUAL IMPACT LEVELS – PRIVATE PROPERTIES

Potential visual impact level	Description
Very high	Potential for a substantial / overwhelming change to views, may include one or a combination of the following: - Towers or substation located in close proximity - Towers of a large height and scale - Transmission line extending across the view with multiple towers visible - Transmission line changes direction and may include larger corner towers - Towers prominently located on a ridgeline - Limited screening by vegetation or landform - Large areas of vegetation removed - Prominent new access tracks and / or landform change visible.
High	Potential for a considerable change to views, may include one or a combination of the following: - Towers or substation located in foreground of the view - Towers of a large height and scale - Transmission line extending across the view with multiple towers visible - Transmission line changes direction and / or includes larger corner towers - Towers prominently located on a ridgeline - Limited screening by vegetation or landform - Large areas of vegetation removed - Some new access tracks and / or landform change visible.
Moderate	Potential for a noticeable change to views, may include one or a combination of the following: - Towers or associated infrastructure located in the middle ground - Towers of a moderate to large height and scale - Several towers visible or partly seen - Some screening by vegetation or landform - Some vegetation removal, access tracks and / or landform change visible.
Low-Moderate	Potential for a noticeable change to views, may include one or a combination of the following: - Towers or associated infrastructure located in the middle to background - Towers of a moderate to large height and scale - Several towers may be partly seen above or between vegetation - Some screening by vegetation or landform - Some vegetation removal, access tracks and / or landform change visible.
Low	Potential for a slight change to the views, may include: - Towers glimpsed in the background - Infrastructure visible but not prominent - Other similar infrastructure visible - Glimpses to vegetation removal, access tracks and / or landform change
Negligible	No change visible or the infrastructure would not be discernible in the view.

4. Existing conditions

4.1 Topography and landscape features

The site traverses a vast landscape between Buronga substation in the west and the Wagga Wagga substation in the east. The topography of the landscape proposal area is gently undulating in the west, between Buronga and east towards Balranald, where the landform is formed by the Murray and Murrumbidgee Rivers and includes several lakes. East of Balranald the landform flattens out to vast plains for several hundred kilometres until the landform begins to change in the vicinity of Urana-Morundah Road, between Lake Urana and Cullivel. In this area the landform becomes more undulating as the proposal alignment passes to the south of Lockhart and approaches the foothills of the Great Dividing Range. To the east of Lockhart, the landform rises to a series of generally north to south aligned ridge lines, becoming progressively steeper to the east, and including the prominent rocky spine of 'The Rock' located to the south of the proposal but prominent in views. To the east, the landform rises to several north south ridgelines in the vicinity of The Rock and Uranquinty, south west of Wagga Wagga. As To the east of a prominent ridgeline at Rowan, the landform forms a bowl, surrounding the Lake Albert and the township of Wagga Wagga, to the north east of the proposal alignment. (Refer **Appendix A**, sheet 1 to 6).

4.2 Visual catchment of the proposal

The visual catchment of the site is determined by the landform, building and vegetation cover of the land. As such there would be greater potential visibility of the site in areas to the west where the landform is flatter and there is less vegetation. The diagrams at **Appendix B** shows the potential visual catchment of the proposed transmission line easement based on landform.

Generally, there would be a medium level of visibility in areas surrounding the Buronga substation and east to Yanga National Park, where the landform is gently undulating and there is scattered tree cover. Due to the flat landform and low level of tree cover, there would be a high potential visibility of the transmission line easement from areas between the Yanga National Park and Four Corners. There are, however, few private residences in this area and large distances between intersecting roads.

The potential visibility of this proposal would reduce in the vicinity of the proposed Dinawan 330kV substation and Kidman Way and to Lake Cullivell where the vegetation cover increases. Again, this area includes scattered private residences and few roads that offer views to the proposed transmission line easement.

Near Lockhart and east to Wagga Wagga, the undulating landform, and increased tree cover would reduce the potential visibility of the proposal to smaller catchments, however there are substantially more potential receivers in this area. In particular, the valleys created between ridgelines would contain views, so that there would be greater visibility along the route from elevated land, whereas, within the valleys intervening trees would screen views along the transmission line easement somewhat (refer to **Appendix B**).

4.3 Landscape and visual sensitivity of the study area

The sensitivity of the landscape study area is influenced by a range of tourist routes, facilities and land uses located throughout the study area. The following list summarises these generally and have been used to identify representative viewpoints and define the visual sensitivity of each view.

In particular, the landscape study area includes several important historic, cultural and environmental tourist places and routes. The location of a view on a tourist route or within a designated open space area or reserve typically increases its sensitivity due to the greater number of likely viewers and the greater emphasis that travellers, tourists and recreational users have on landscape appreciation. Key receivers identified as likely to have an elevated visual sensitivity are:

- The Classic Australian Drive which is a scenic route following the Sturt Highway through the Riverina Murray region between Wentworth and Wagga Wagga. This is a heavily trafficked route.
- The Mallee Cliffs National Park includes extensive areas of flat to undulating sandy red plains and linear sand dunes and functions primarily as a nature conservation area. Public access is restricted.
- The Lake Benanee rest area, Euston
- The Kidman Way, which is a historic touring route between Albury and Bourke
- Yanga National Park, Yanga State Conservation Area and Yanga Nature Reserve, which is part of the Murrumbidgee Valley National Park, and includes the Yanga Homestead precinct, including Yanga Lake, Yanga homestead and woolshed, lakeside walking track, Regatta Beach picnic area and viewing deck
- Oolambeyan National Park, a former pastoral station converted to a conservation area, containing Oolambeyan homestead heritage precinct (19 kilometres north of the Proposal) with picnic area, used for daytime low-impact, self-reliant recreation
- The Rock nature reserve, a forested ridgeline reserve south west of Wagga Wagga offering scenic walking trails and lookout over the surrounding rural Riverina plains.
- The Newell Highway, which is part of the Route 39 touring route between Victoria and Queensland.
- The Long Paddock - Cobb Highway Touring Route (The modern Cobb Highway follows part of the great network of stock routes that became known as “The Long Paddock” - a historic web of tracks and trails linking stock-breeding areas of inland NSW and Queensland with emerging markets in Victoria)

Other than the scenic lookout at The Rock nature reserve, no scenic or significant views or vistas have been identified within the landscape study area that would have a view to the proposal.

5. Landscape assessment

5.1 Landscape character areas

While there is a diverse mosaic of landscapes within the proposal alignment, five broad landscape character areas have been identified for the purposes of this assessment. These are based on similar topography, vegetation type and cover, and land use.

These landscape character areas are (west to east):

- Mallee shrubland and rural landscape
- Murrumbidgee River plain rural landscape
- Lockhart rural valley landscape
- Great Dividing Range foothills landscape
- Wagga Wagga rural fringe landscape.

The following section includes a description of the existing conditions in each of these landscape character areas, describes the sensitivity of each landscape character area, the magnitude of change expected because of the project and assigns an impact level.

The location of these landscape character areas is shown in **Appendix C**, Sheet 1 to 6.

5.1.1 Mallee shrubland and rural landscape

Existing conditions:

This landscape character area extends generally between Buronga and Balranald. The landscape in this area is gently undulating and consists of sparse native eucalyptus forest (including mallee shrubland), with some cleared areas of open rural plains and irrigated farmland. (Refer to Figure 5-1)
In most areas, the proposed transmission line easement crosses areas of mallee scrub, characterised by low eucalyptus trees with an understorey of low native shrubs and grasses. Some small areas have been cleared for agricultural uses, near Buronga, Mallee, Euston and Balranald. These agricultural uses include sheep and cattle grazing on native low shrubs (typically saltbush and bluebush shrublands) and pastures near Buronga and Mallee. There are also areas of broadacre cropping (including cereal grains, legumes and cotton), as well as viticulture and horticulture (mainly fruit and nut trees) industries in areas close to the Murray River, north of Euston, and the Murrumbidgee River, south of Balranald.

There are several seasonally dry relic lake beds, such as Lake Gol Gol and Gol Gol Swamp, to the south of the transmission line easement, and freshwater lakes such as Lake Benanee and Lake Waldaira Lake. While some of these are not visually prominent, they form local visual features and distinctive formations in the landscape. Other visual features in this area include the patches of black oak and belah forest in central and western parts of the areas, and the Murrumbidgee River at the eastern end of the area as it transitions to the Murrumbidgee plains, including river red gum vegetation.

This character area is traversed by the busy Sturt Highway, connecting the small rural towns of Euston and Balranald, and there are a small number of intersecting roads, radiating from these towns. This area also includes large-scale power infrastructure, including the Buronga to Red Cliffs and Buronga to Balranald 220kV transmission lines, Buronga substation at Arumpo Road and Balranald substation at Yanga Way. Solar farm development is also emerging in areas near Balranald, including the Limondale and Sunraysia Solar Farms.

There are also various agricultural structures including livestock saleyards, rural merchandise and machinery businesses, grain receival points including silos, and various sheds, workshops, packing and processing facilities supporting the range of agricultural uses.

While there are a number of areas zoned for forestry and environmental conservation and management (Wentworth LEP 2011 and Wakool LEP 2013) within the landscape study area, such as Lake Gol Gol, they are not intended for recreational use and do not contain dedicated trails or lookouts. Lake Benanee, however, located about 1.5 kilometres south of the proposed transmission line easement includes visitor facilities, including a lakeside viewing shelter, beach area and camp site, offering southerly views across the lake a 'particularly scenic stretch of the Murray' (NSW Government Destination NSW, 2020).

Landscape sensitivity:

This area is a predominantly rural landscape, valued and experienced from properties on the sparsely populated farmland and from relatively low use rural roads. There would be larger numbers of residents and visitors to the area travelling along the Sturt Highway, a major inland route, and on the outskirts of the towns. While this is a relatively common landscape in this region, the Wentworth LEP 2011 recognises the mix of dryland and irrigation agricultural land uses as a part of the '*distinctive rural character of Wentworth*' (cl.1 Land Use Table, Zone RU1). The '*amenity, scenic landscape values*' of riverfront areas such as the Murrumbidgee River are also recognised an important to Balranald Shire (Balranald Shire Council, 2010, cl.6.5.1d). Overall, the Mallee shrubland and rural landscape character area is of **local sensitivity**.

Landscape impact during construction:

In this area, the proposed transmission line easement extends along the existing Buronga to Balranald 220kV transmission line in a south easterly direction between the Sturt Highway and Mallee Cliffs National Park, east towards Euston, then south east towards Balranald substation, crossing the Sturt Highway and Murrumbidgee River.

Construction access tracks and sites prepared for minor staging, storage and laydown ancillary areas would be established within the existing transmission line easement, adjacent and parallel to the existing Buronga to Balranald 220kV transmission lines. All vegetation would be removed at each transmission line tower worksite, this impact that would occur intermittently along the transmission line easement, up to a frequency of between around 450 and 600 metres. There would also be vegetation removal for construction assess tracks and laydown areas. There would be vegetation removal at compound site areas, including the removal of an area of agricultural land to the north west of the Balranald substation. Within the corridor there would be some further vegetation removal.

FIGURE 5-1 MALLEE SHRUBLAND AND RURAL LANDSCAPE, CHARACTER IMAGES

The alignment of the transmission line easement would largely avoid areas of native bushland, and the dry relic lakes, to the south of the Sturt Highway, which are important local landscape features. However, there would be areas where native trees would be removed within farmland and at creek and river crossings, including at the Murrumbidgee River crossing south west of Balranald. There would be little opportunity for additional planting along the corridor, however, impacted areas would be stabilised/rehabilitated to a standard either as close as practicable to the pre-existing conditions and/or stabilised rehabilitated as agreed with the landowner.

There would only be small and localised landform modification, with this character area, with minor regrading required for installation of the towers, in the predominantly flat to undulating landform. The character of the site during construction would be temporary altered with the presence of construction activity along the proposal corridor and also vehicles transporting materials and equipment within the surrounding areas.

Overall, while the works would be small at each site, combined this work would extend across a large area, so that there would be a moderate magnitude of change to a landscape. As this is a landscape of local landscape sensitivity, this would result in a **moderate-low landscape impact** during construction.

Landscape impact during operation:

The proposal would be aligned parallel to an existing transmission line. The predominantly agricultural land uses would continue under the new transmission lines and around the transmission line easement. While there would be some access tracks maintained, all other areas impacted by construction, outside the operational footprint, would be stabilised/rehabilitated to a standard either as close as practicable to the pre-existing conditions and/or stabilised rehabilitated as agreed with the landowner. There would be transmission line towers, regularly spaced for about 150 kilometres across this landscape character area.

Overall, due to the intensification of the transmission line infrastructure in this landscape, there would be a low magnitude of change to this landscape, which is of local landscape sensitivity, and a **low landscape impact** during operation.

5.1.2 Murrumbidgee River plain rural landscape

Existing conditions:

This landscape character area extends generally between the towns of Balranald and Urana. The landscape in this area consists generally of open, flat rural plains associated with the Murrumbidgee River and its tributaries. Known as the 'iconic Hay plains' (Edward River Council, 2019, p.7), the high soil fertility and use of water from river systems through water storage and irrigation systems has made this area highly productive, allowing it to develop into one of the most productive and agriculturally diverse areas of Australia. Irrigated crops grown within the area include rice, cotton, cereal grains and legumes, hay and horticulture. Other agricultural uses generally occur on land not suitable for cropping, including dairy and grazing of sheep and cattle.

Murrumbidgee Valley Nature Reserve is located in the western part of this area, including Yanga National Park, Yanga Nature Reserve and Yanga State Conservation Area, on the Lower Murrumbidgee River floodplain. This area includes former Yanga Pastoral Station, a major rural property that supported cattle, dryland cropping and red gum harvesting for commercial timber, and currently being restored for its social and environmental values, including the river channels that river red gum forests which are an '*iconic value'* of the parks (NSW Office of Environment and Heritage, 2018).

The proposed transmission line easement would pass through the southern part of Yanga State Conservation Area, alongside the existing transmission lines. The visitor facilities in this reserve are located over five kilometres away from the proposal alignment. The 'significant views' from the

Yanga Homestead Group and woolshed are also over nine kilometres from the proposed transmission line easement (NSW Office of Environment and Heritage, 2013, p.382) and would not have a view to this proposal.

There is existing power infrastructure within this landscape character area including the Balranald to Darlington Point 220kV transmission lines and the Deniliquin to Coleambally 132kV transmission lines. The landscape surrounding the proposed transmission line easement also contains various major agricultural structures including cotton gins, machinery sheds and grain receival points including silos. There are several arterial roads which support local and regional transport, including the Cobb and Newell Highways, and Kidman Way, which cross the proposed transmission line easement.

Landscape sensitivity:

This area is a predominantly rural landscape, valued and experienced by relatively low use local roads, as well as visitors to the area travelling along the Long Paddock - Cobb Highway and Kidman Way tourist drives. The landscape within Murrumbidgee Valley Nature Reserve, specifically Yanga State Conservation Area, is a protected area, and as such the 'natural and cultural values' of this area should be protected (NSW Office of Environment and Heritage, 2018). While this landscape character extends across a broad area and is a relatively common landscape in this region, the Hay draft Local Strategic Planning Statement recognises the mix of dryland and irrigation agricultural land uses in this area as a part of the '*iconic Hay plains*' (Edward River Council, 2019, p.7). Overall, the Murrumbidgee plains rural landscape character area is of **local sensitivity**.

Landscape impact during construction:

All vegetation within the area used for construction would be removed including at each transmission line tower site, which would be located at a frequency of between around 450 and 600 metres along the route. There would be vegetation removed for construction access tracks and laydown areas along the corridor. There would also be some vegetation removal required at the Cobb Highway compound, proposed for a site to the south of Hay, and at the proposed Dinawan 330kV substation and construction compound at Kidman Way, south of Coleambally. In some areas this would involve the removal of trees but mostly, due to the proposal location adjacent to an existing power easement and within a largely treeless rural landscape, this would mostly involve the removal of shrubs, groundcovers and grasses (where required). Any trees within the transmission line easement which exceed vegetation clearance requirements would be removed.

Overall, as the landform of the area is predominantly flat, there would only be small and localised modifications to the terrain. Existing access tracks would be used where possible to avoid further disruption to the circulation and rural function (e.g. cropping and livestock grazing), and vehicular access and movement in this area. The character of the site during construction would be temporary altered with the presence of construction activity along the proposal corridor and also vehicles transporting materials and equipment within the surrounding areas.

Due to the limited vegetation cover and flat landform, and presence of energy infrastructure in the vicinity, there would be a low magnitude of change to this landscape. This is a landscape of local landscape sensitivity and there would be a **low landscape impact** during construction.

Landscape impact during operation:

The proposed transmission line easement would follow the route of the existing Balranald to Darlington Point 220kV transmission line in an east-west direction between Yanga Way and the locality of Four Corners. From this point the transmission line easement extends south east through a rural landscape towards Urana, crossing Kidman Way and the Newell Highway.

FIGURE 5-2 MURRUMBIDGEE RIVER PLAIN RURAL LANDSCAPE, CHARACTER IMAGES

In most of this landscape character area, the proposal would be located alongside an existing transmission line, comprising towers of a similar form, scale and general appearance. To the east of Four Corners Road, the proposal would introduce a new corridor of large scale transmission towers and a new substation to this rural landscape.

The predominantly agricultural land uses would continue under the new transmission lines and around the transmission line easement and proposed Dinawan 330kV substation. While there would be some access tracks maintained, all other areas impacted by construction, outside the operational footprint, would be stabilised/rehabilitated to a standard either as close as practicable to the pre-existing conditions and/or stabilised rehabilitated as agreed with the landowner. There would be little opportunity for additional planting, however, due to the relatively flat topography, there would be minimal changes to the terrain.

Overall, there would be an additional line of transmission line towers, regularly spaced for about 300 kilometres across this landscape character area, similar scale to the existing towers and a new substation. However, this landscape has the capacity to absorb existing large scale transmission lines without altering the prevailing character of the rural landscape.

As there would be limited change to the vegetation cover and landform, and capacity for this vast landscape to absorb large scale energy infrastructure, there would be a moderate magnitude of change to this landscape, which is of local landscape sensitivity, and a **moderate-low landscape impact** during operation.

5.1.3 Lockhart rural valley landscape

Existing conditions:

This landscape character area is located '*in the heart of the Riverina'*, generally between Urana and Uranquinty, west of Wagga Wagga (Lockhart Shire Council, 2020, p.11). The landscape contains flat, open plains of dryland arable fields, with grazing pastures on more undulating areas unsuitable for farming. The Rock is located to the south of this landscape and is identified as the '*best known landmark in the Riverina'* (Lockhart Shire Council – Tourism, 2020). The Rock recreation reserve includes walking trails and a lookout that provides scenic views over the surrounding area, including this landscape. The rural lands also '*form an important part of the area's identity'* and considered to '*provide highly valued scenic amenity and rural character'* (Lockhart Shire Council, 2020, p.19).

The area is settled, containing a network of rural roads, homesteads and cottages on rural properties and a collection of small towns. Tourism, especially heritage and eco-tourism, have '*seen good positive growth over recent years'*, with towns such as The Rock and Lockhart, as well as '*natural attractions*' such as The Rock Nature Reserve, providing interest for visitors. Between Urana and the locality of Brookong, the proposed transmission line easement is located in a rural area. East of Brookong, the proposed alignment is adjacent to the existing Finley to Uranquinty 132kV transmission lines. Other infrastructure in the area include a higher concentration of rural structures including sheds, workshops, packing and processing facilities, supporting the surrounding agricultural uses.

Landscape sensitivity:

This landscape includes rural areas of the central Riverina, which are identified as having amenity and scenic landscape values in the *Lockhart Shire LSPS 2020* (Lockhart Shire Council, 2020, p.11). This area also includes the township of Lockhart, a local conservation area, and The Rock Nature Reserve, a local landmark and vantage point to view the surrounding rural area. This landscape would be appreciated by small numbers of people travelling along the network of rural roads, including tourists and visitors to the region. Overall, the Lockhart rural valley landscape character area is of **local sensitivity**.

FIGURE 5-3 LOCKHART RURAL VALLEY LANDSCAPE, CHARACTER IMAGES

Landscape impact during construction:

All vegetation within the area used for construction would be removed including at each transmission line tower site, which would be located at a frequency of between around 450 and 600 metres along the route. There would be vegetation removed for construction access tracks and laydown areas along the corridor.

There would be vegetation within a section of the Brookong State Forest, north of Urana-Lockhart Road, that would be removed. Any trees within the transmission line easement which exceed vegetation clearance requirements would also be removed. There may be further vegetation removed at the Lockhart construction compound and accommodation camp site which would be established in a location on the outskirts of Lockhart, either along Urana-Lockhart Road to the south west of Lockhart or along County-Boundary Road to the north east of Lockhart. The vegetation removal in this landscape character area would be greater than the more open areas in the west of the landscape study area, as this landscape character area includes more tree cover.

As the landform of the area is undulating, there would also be areas of localised landform modifications to accommodate the transmission line towers and also at the construction compound and accommodation camp site. Existing access tracks would be used where possible to avoid further disruption to the circulation and rural function (e.g., livestock grazing), and vehicular access and movement in this area. This work would introduce large construction equipment and heavy vehicles into the landscape to undertake the earthworks, vegetation clearing, erect the towers and string the wires.

Overall, there would be a moderate magnitude of change to a landscape of local landscape sensitivity, and a **moderate-low landscape impact** during construction.

Landscape impact during operation:

To the west of Lockhart, the proposal would introduce a new corridor of large-scale transmission towers, regularly spaced across the rural landscape, passing to the south of the town of Lockhart, and then to the east of Lockhart, the proposal would be located alongside an existing transmission line easement. While there are other transmission lines in the vicinity, and there would be some compatibility with the character of the landscape to the east of Lockhart, the proposed towers would be larger in scale and create a new corridor to the south of the town.

The predominantly agricultural land uses would continue under the new transmission lines and around the transmission line easement. While there would be some access tracks maintained, outside the operational footprint all other areas impacted by construction would be stabilised/rehabilitated to a standard either as close as practicable to the pre-existing conditions and/or stabilised rehabilitated as agreed with the landowner. This would include the impacted areas of the Lockhart construction compound and accommodation camp.

While there would be more vegetation removed in this landscape character area, this landscape has greater vegetation cover, and an undulating landform, which would increase its capacity to absorb the proposed transmission line infrastructure. Overall, there would be a moderate magnitude of change to this landscape, which is of local landscape sensitivity, and a **moderate-low landscape impact** during operation.

5.1.4 Great Dividing Range foothills landscape

Existing conditions:

This landscape character area consists of hilly upland areas and escarpments rising above the surrounding rural plains, west of Wagga Wagga. The landscape generally separates the rural valley landscape east of Lockhart, and the rural plains along the Murrumbidgee River, near Wagga Wagga. It forms part of the western slopes of The Great Dividing Range (Eastern Highlands), and includes several north south aligned ridges, reflecting the underlying volcanic geology of the area, including The Rock. The Rock stands 364 metres above the surrounding plains and is identified as the '*best known landmark in the Riverina'* (Lockhart Shire Council – Tourism, 2020). The Rock nature reserve has both environmental and cultural value and includes walking trails and a lookout that provides scenic views over the surrounding area.

To the south and south west of Wagga Wagga, this landscape includes '*visually prominent ridges and higher ground'* extending between Kapooka, Gregadoo and Gelston Park. This area provides '*the visual setting of the city'* and includes '*important visual reference points'* for the city of Wagga Wagga (City of Wagga Wagga Council, 2010a, s.5.1). The Wagga Wagga DCP also identifies the intention of '*keeping development below these points … to protect the natural skyline'* of Wagga Wagga (s.5.1).

Due to the steeper landform, there are larger areas of mature vegetation. There are some residences scattered on some of these areas, offering views across the surrounding landscape. There are existing transmission line easements and roads crossing the lower ridgelines.

Landscape sensitivity:

This landscape includes ridgelines and hills which are valued local and regional landscape feature. These slopes are visually important to the visual setting of Wagga Wagga, and The Rock nature reserve, is a visual marker within the region and vantage point to view the surrounding rural area. This landscape would be appreciated by small numbers of people travelling along the network of rural roads, including tourists and visitors to the region. Overall, the Great Dividing Range foothills landscape character area is of **regional landscape sensitivity**.

Landscape impact during construction:

The proposed transmission line easement would be located beside the existing Jindera and Darlington Point to Wagga 330kV transmission lines, which traverse over this hilly landscape, west of Holbrook Road. All vegetation within the area used for construction would be removed including at each transmission line tower site, for construction access tracks and laydown areas along the corridor. Trees and vegetation within the transmission line easement would be removed in accordance with the easement vegetation clearing requirements as required . This landscape character area has a greater vegetation coverage and there would be more vegetation removal required as the transmission line easement crosses the ridgelines to the east of The Rock-Collingullie Road and at Rowan. Due to the hilly landform, there would be some landform modification required to prepare each transmission tower site and install the foundations.

Overall, due to the more challenging terrain for construction, and greater vegetation cover, there would be a moderate magnitude of change to a landscape of regional landscape sensitivity, and a **moderate landscape impact** during construction.

FIGURE 5-4 GREAT DIVIDING RANGE FOOTHILLS LANDSCAPE, CHARACTER IMAGES

Landscape impact during operation:

While this proposal would include towers of a similar height, scale and form to those which currently exist. The additional transmission line would increase the presence of energy infrastructure in this landscape character area as the alignment would parallel the existing transmission line easements and crossings of the ridgelines. There would be two locations in this landscape character area where the proposed new transmission line easement crosses the *visually prominent ridges and higher ground*, detracting from the *'natural skyline*' and adding to the unsympathetic development within the '*visual setting of the city*' (City of Wagga Wagga Council, 2010a, s. 5.1). Due to the landform and landcover there would be localised landform change to create flat areas for the transmission line towers and vegetation along the easement would be either removed or trimmed. There would be little opportunity for the reinstatement of trees along the corridor, however, grasses would be reinstated in any impacted areas.

Overall, due to the topography, extent of vegetation that would have been removed, and role of this landscape in the setting of the adjacent towns including Wagga Wagga, there would be a moderate magnitude of change and a **moderate landscape impact** during operation.

5.1.5 Wagga Wagga rural fringe landscape

Existing conditions:

This landscape character area has a transitional character, containing rural activities on the southern outskirts (the fringe) of Wagga Wagga. This area is located between the Murrumbidgee River and the elevated lands associated with the Great Dividing Range. The landform in this area is generally flat and low-lying, including flat to gently undulating rural plains. There is vegetation alongside roads, creeks and surrounding residences within this landscape. This tree cover encloses some views, so that views across the landscape are often contained to smaller visual catchments.

The area has a semi-rural landscape character, including small farms and acreage properties as well as rural residential development which form the southern outskirts of Wagga Wagga. The area also contains urban fringe land uses including light industrial activities such as waste and recycling facilities and an existing substation. The landscape is traversed by a complex network of transmission lines connecting to the substation, many of which intersect at the locality of Rowan. There are a large variety of transmission tower types and sizes in this landscape, including a parallel set of Uranquinty and Wagga 132kV transmission lines, intersecting with the Yanco and Australian Newsprint Mills to Wagga 132kV transmission lines, as well as three sets of larger 330kV transmission lines extending between Wagga and Jindera, Darlington Point and Lower Tumut. This existing energy transmission infrastructure creates visual clutter and detracts from the rural character of this area.

Landscape sensitivity:

This area consists of a semi-rural landscape on the land fringing the urban area of Wagga Wagga. This landscape would be appreciated by a larger number of people, including local residents and workers from the scattered light industrial activities, people travelling along the Olympic Highway, as well as local roads such as Holbrook, Oxley Bridge and Gregadoo East Roads. Overall, the Wagga Wagga rural fringe landscape character area is of **neighbourhood landscape sensitivity**.

Landscape impact during construction:

The proposed transmission line easement would parallel the alignment of the Darlington Point to Wagga 330kV transmission lines. Vegetation within the area used for construction would be impacted with some completely removed and some vegetation within the easement being trimmed to lower heights. Full removal of all trees and ground cover vegetation is expected at each transmission line tower site, which would occur intermittently across the landscape, and for construction access tracks and laydown areas.

FIGURE 5-5 WAGGA WAGGA RURAL FRINGE LANDSCAPE, CHARACTER IMAGES

There would also be vegetation removed at the Wagga Wagga substation upgrade and expansion site, proposed for an area within the western portion of the existing substation site, and at the Wagga Wagga construction compound site which would be located between Ashfords and Mitchell roads, east of Wagga Wagga substation. In some areas this would involve the removal of trees but in cleared rural areas this would mainly be the removal of groundcovers and grasses.

As the landform of the area is predominantly flat, there would only be small and localised modifications to the terrain. Existing gates and roads along Boiling Point Road would be used where possible to access the corridor, avoiding further disruption to the circulation and rural function (e.g., livestock grazing), and vehicular access and movement in this area.

Overall, due to the extent of vegetation removal and scale of construction activity, there would be a moderate magnitude of change to a landscape of neighbourhood landscape sensitivity, and a **low landscape impact** during construction.

Landscape impact during operation:

This proposal would increase the presence of energy infrastructure into this landscape, further detracting from the semi-rural landscape character somewhat. The towers would generally be of a similar scale as others within this area, and the expansion of the existing substation infrastructure would reduce the area of rural landscape within this area. The additional substation infrastructure would, however, be located within the existing substation and in the vicinity of other light industrial uses such as a major waste disposal facility (to the south) and would not substantially change the character of this part of the landscape character area. The additional transmission towers would, however, add to the complex network of transmission lines traversing this landscape and connecting to Wagga Wagga substation. The transmission line easement would follow the alignment of two existing easements, including towers of a similar height, scale and form. There would be little opportunity for additional planting, however, due to the relatively flat topography, there would be minimal changes to the terrain.

Overall, due to the intensification of the energy infrastructure, reducing the extent of rural landscape and vegetation within the area, there would be a moderate magnitude of change and a **low landscape impact** during operation.

5.2 Summary of landscape impacts

Table 5-1 summarises the identified landscape impacts of this proposal.

TABLE 5-1: SUMMARY OF LANDSCAPE IMPACTS

			Construction		Operation	
	Landscape character area	Landscape sensitivity	Magnitude of change	Landscape impact	Magnitude of change	Landscape impact
1	Mallee shrubland and rural landscape	Local	Moderate	Moderate-Low	Low	Low
2	Murrumbidgee River plains rural landscape	Local	Low	Low	Moderate	Moderate-Low
3	Lockhart rural valley landscape	Local	Moderate	Moderate-Low	Moderate	Moderate-Low
4	Great Dividing Range foothills landscape	Regional	Moderate	Moderate	Moderate	Moderate
5	Wagga Wagga rural fringe landscape	Neighbourhood	Moderate	Low	Moderate	Low

6. Visual impact assessment

6.1 Assessment of daytime visual impacts

6.1.1 Selection of representative viewpoints

A site visit was undertaken during June of 2020. The following viewpoints were selected as representative of the range of views to the proposal. This includes views from publicly accessible locations (typically existing road corridors along the alignment) which have been identified as having increased visual sensitivity or where people are likely to congregate. Views chosen were from all highways and from a range of intersecting roads intermittently along the alignment.

The following views (grouped by landscape character area) have been assessed in this technical paper:

Mallee shrubland and rural landscape

1. View south from Arumpo Road to the Buronga substation
2. View east from Sturt Highway, near Lake Benanee
3. View north west from Benanee Road to alignment
4. View east from Sturt Highway to alignment crossing
5. View south from Yanga Way to alignment crossing
6. View south from Balranald Road to alignment crossing

Murrumbidgee River plain rural landscape

7. View south from Cobb Highway
8. View east at the intersection of Conargo and North Boundary Road
9. View east along four Corners Road
10. View south along Kidman Way to proposed Dinawan 330kV substation
11. View south east along Newell Highway

Lockhart rural valley landscape

12. View north along Urana-Lockhart Road
13. View south west along Albury Lockhart Road
14. View east along Lockhart-The Rock Road
15. View south along Bullenbong Road
16. View northeast from the Olympic Highway

Great Dividing Range foothills landscape

17. View north west from Holbrook Road

Wagga Wagga rural fringe landscape

18. View east from Holbrook Road
19. View west from Boiling Down Road
20. View southwest from Butterbush Road.

The location of these viewpoints is shown in **Appendix D**. In addition, views from the air have been addressed for the whole landscape study area.

6.1.2 Assessment of representative viewpoints

The following section includes an assessment of each representative view and identifies the daytime visual impacts. These are arranged by landscape character area.

Mallee shrubland and rural landscape

Viewpoint 1: View south from Arumpo Road to the Buronga substation

FIGURE 6-1 VIEW SOUTH FROM ARUMPO ROAD TO THE BURONGA SUBSTATION

Location: 34°06'0.40"S, 142°15'56.24"E

Existing conditions: This view shows a rural landscape, partially enclosed with patches of low native woodland trees beside the roads and within adjacent fields. The terrain is flat, and most of the land along this section of Arumpo Road is used for grazing pastures. The existing Buronga 220kV substation can be seen to the north of the road (right of view). The steel lattice transmission line towers and wires of the 220kV Buronga to Balranald and Buronga to Red Cliffs transmission lines can be seen crossing the road, in the middle ground of view.

Further development of energy related projects is likely in the vicinity of the substation, including a proposed 1,200-hectare solar farm (in planning, not approved), on a site about 1.5 kilometres north of the existing substation site (behind this viewpoint), on land currently used for cropping and grazing (Renew Estate, 2018).

The Buronga construction compound and camp (approved as a part of the EnergyConnect NSW-Western Section project) would be used to support this proposal and would be seen in the background of this view, about 500 metres to the south west, beyond the existing Buronga substation. Vegetation would have been removed to accommodate this compound and camp. The upgrade and expansion of the existing Buronga substation and an upgrade of the existing Buronga to NSW/Victoria border at Monak, was also previously assessed in the EnergyConnect EIS NSW-Western Section, and would be seen in the background of view, rising above the vegetation in this view.

Sensitivity: Arumpo Road is a two-lane sealed road providing access to local homesteads and properties north of Gol Gol and Buronga, used mainly by residents, visitors and staff at the properties and substation. This road is also part of the 'Wentworth to Mungo Loop' tourist drive and is of **local visual sensitivity**.

Visual impact during construction: The Buronga construction compound and camp (subject to approval as a part of the EnergyConnect NSW-Western Section project) would continue to be present in this view, located in the background, about 500 metres to the south west, and beyond the existing Buronga substation.

The proposed transmission line for this proposal would be located parallel to the existing 220kV Buronga to Balranald transmission line easement and in the middle ground of this view, extending east from the substation and over the road. The proposed transmission line would cross Arumpo Road about 500 metres south west of this viewpoint, in front of the existing transmission corridor. Due to intervening vegetation, the construction work at each transmission line tower site (including excavation and levelling works, vegetation removal and foundation construction) is unlikely to be seen from this location. However, the installation of the transmission line towers and stringing of the wires and conductors, particularly as they cross the road, would be seen, rising above the tree line. This would involve the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. This view would also include vehicles accessing the proposal site, construction compound and accommodation camp, and travelling south along Arumpo Road.

Overall, due to proximity and extent of the construction works, there would be a moderate magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: The vegetation that screens the substation would be retained and would continue to filter views to the substation. The proposed Buronga to Balranald transmission towers would cross Arumpo Road diagonally, with transmission wires seen overhead crossing the road. This transmission line would be aligned generally parallel to the 220kV transmission line easement and of a similar height to the existing towers.

The proposed transmission line would be somewhat absorbed into this view due to the existing transmission line towers and substation. Due to the larger scale of the transmission line towers, which would rise prominently above treeline, and the mix of towers seen in this view, there would be a low magnitude of change and a **low visual impact** overall.

Viewpoint 2: View east from Sturt Highway, near Lake Benanee

FIGURE 6-2 VIEW EAST FROM STURT HIGHWAY, NEAR LAKE BENANEE

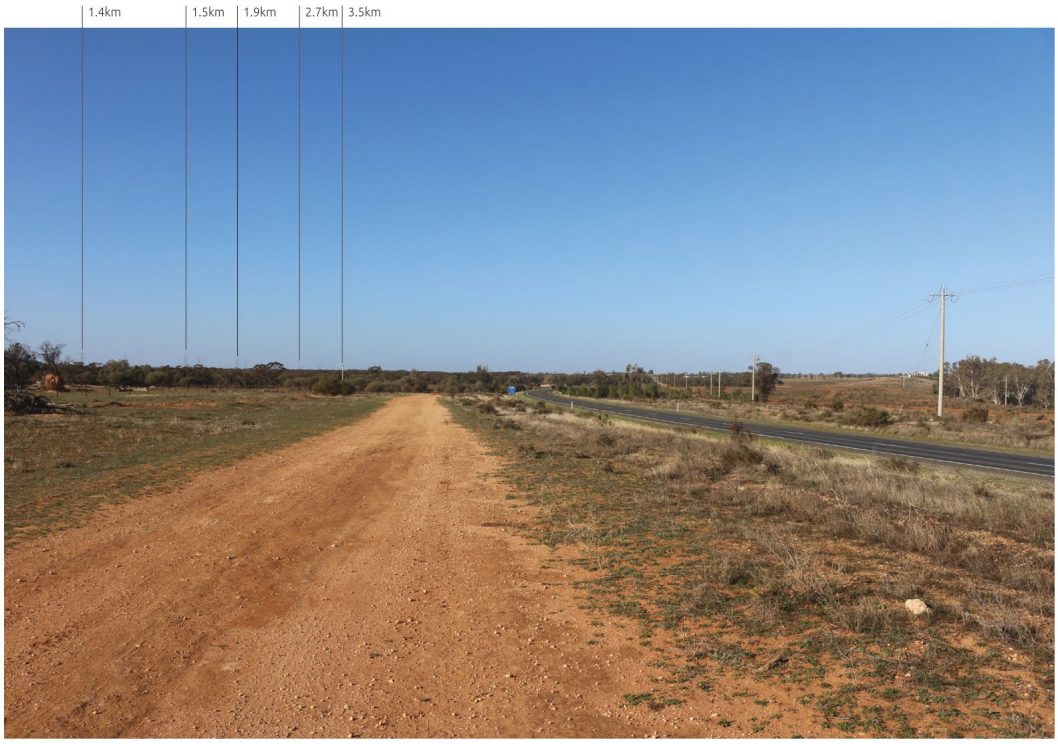

FIGURE 6-3 VIEW EAST FROM STURT HIGHWAY, NEAR LAKE BENANEE, PHOTOMONTAGE

Location: 34°30'49.00"S, 142°50'13.08"E

Existing conditions: This view shows the flat, rural plain extending north of the Murray River, in the vicinity of Lake Benanee, seen from the Sturt Highway. The landscape has been partially cleared for agricultural use and includes sheep and cattle grazing on pastures. The existing Buronga to Balranald 220kV steel lattice transmission towers and wires are visible in the background of view, about one kilometre away. The posts and wires of the local power network can also be seen along the Sturt Highway, rising above the surrounding rural plains.

Sensitivity: The Sturt Highway in this location is a two-lane road providing access between Buronga and Balranald and forms part of 'The Classic Australian Drive' tourist route. While this view is experienced by high number of receivers, including tourists, residents and freight transporters, the presence of existing large scale power infrastructure reduces the sensitivity of this view. This view is of **local visual sensitivity**.

Visual impact during construction: The proposed transmission line easement would be located about 500 metres north of the Sturt Highway, beyond and aligned generally parallel to the existing alignment of the Buronga to Balranald transmission line towers. The vegetation between the road and the construction site would screen any excavation and levelling works at each tower construction site, including vegetation clearing and foundation construction. Installation of the galvanised steel towers and stringing of the wires and conductors would, however, be visible rising above the intervening vegetation. This work would include the use of large machinery such as cranes and ground pulled draw wire or stringing drones to string the lines. This work would be seen through, but also rise above, the existing transmission line towers. There would be additional construction vehicles seen transporting transmission line tower steelwork via the Sturt Highway that would also be seen intermittently from this location.

The proposal works would be seen in the background of this view, from fast moving vehicles on the highway, and would not be prominent in this view. Due to the distance and screening of the intervening vegetation in the fore and middle ground of the view, the works would be largely absorbed into the broader view, which already contains transmission infrastructure. Overall, there would be a low magnitude of change and a **low visual impact**.

Visual impact during operation: There would be an additional row of transmission lines visible adjacent to the existing transmission lines seen in the background of this view. These towers and lines would be height, form, style and alignment, increasing their absorption into the view. The vegetation seen in the middle ground of this view would screen the lower section of the towers and the rural uses seen from this location would continue. Overall, there would be a low magnitude of change to this view, which is of local visual sensitivity, and a **low visual impact** during operations.

Viewpoint 3: View north west from Benanee Road to alignment

FIGURE 6-4 VIEW NORTH WEST FROM BENANEE ROAD TO ALIGNMENT

Location: 34°30'46.31"S, 142°52'42"E

Existing conditions: This view shows a largely cleared rural property in the vicinity of Lake Benanee, north of the Murray River. The landform in this location is flat and low-lying and there are grazing activities visible in the fore and middle ground of this view. The Buronga to Balranald 220kV steel lattice transmission towers and wires can be seen in the background of this view, about 900 metres away, rising above the surrounding rural plain and intervening vegetation.

Sensitivity: Benanee Road is a local road, extending north from the Sturt Highway, used mainly by local residents and their visitors. Views such as this are common within the areas to the north of Lake Benanee. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line construction works would be located parallel and north of the existing Buronga to Balranald transmission line. The vegetation in the background of view, would screen views to the excavation and levelling works at each tower construction site. Installation of the galvanised steel towers and stringing of the wires and conductors would be seen rising above this vegetation and seen through and alongside the existing transmission line towers. This work would include the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required.

The distance to the proposed transmission line easement, the screening effect of the intervening vegetation and context of existing power transmission infrastructure, would reduce the prominence of the works in this view. Overall, there would be a low magnitude of change to this view, which is of neighbourhood visual sensitivity, and a **negligible visual impact**.

Visual impact during operation: The proposed transmission line would be aligned parallel to the existing Buronga to Balranald transmission line easement and seen in the background of this view. The transmission line towers would be evenly spaced, extending across the flat rural landscape in view, and visible rising above the intervening vegetation. While these towers would be of a similar height to the existing towers, and add further power transmission infrastructure to this view, this context would allow this work to be somewhat absorbed into the view.

While the works would be clearly visible and multiple towers would be seen, extending across the background of this view, the proposal would not dominate or change the prevailing character. Overall, there would be a low magnitude of change, and a **negligible visual impact**.

Viewpoint 4: View east from Sturt Highway to alignment crossing

Location: 34°36'38.82"S, 143°18'24.12"E

Existing conditions: This view shows the flat, rural plain extending either side of the Sturt Highway, north of the Murrumbidgee River, in the vicinity of Waldaira Lake. Most of the landscape in this location has been cleared for agricultural use and includes sheep and cattle grazing on pastures. The existing Buronga to Balranald 220kV transmission line easement can be seen crossing the highway, about 700 metres from this location, with the steel lattice towers and wires rising above the surrounding plains.

Sensitivity: The Sturt Highway in this location is a two-lane road providing access to/from Balranald and forms part of 'The Classic Australian Drive' tourist route. This route also includes views south to Waldaira Lake, a seasonal freshwater lake, and local landscape feature. Although this view is experienced by high number of receivers, including tourists, residents and motorists, the presence of existing large scale power infrastructure reduces the sensitivity somewhat. This view is of **local visual sensitivity**.

Visual impact during construction: The proposed transmission line easement would be located parallel with and to north east of the existing alignment of the Buronga to Balranald transmission line, seen in this view. The excavation and levelling works at each tower construction site, including vegetation clearing and foundation construction, would be clearly seen due to the limited vegetation cover in the area. Installation of the galvanised steel towers and stringing of the wires and conductors would also be visible, including the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. Existing access tracks would be upgraded and widened, and vehicles and machinery would be seen moving along the corridor and accessing the site from the highway. Vehicles transporting transmission line tower steelwork along the Sturt Highway may also be visible from this location at times.

Overall, the works would be clearly seen in the middle ground of this view, extending either side of the highway, however, the context of existing power infrastructure and traffic along the highway would reduce the prominence of the proposal. Overall, there would be a moderate magnitude of change to this view, which is of local visual sensitivity, and a **moderate-low visual impact**.

FIGURE 6-5 VIEW EAST FROM STURT HIGHWAY TO ALIGNMENT CROSSING

FIGURE 6-6 VIEW EAST FROM STURT HIGHWAY TO ALIGNMENT CROSSING, PHOTOMONTAGE

Visual impact during operation: The proposed transmission line easement would be aligned parallel to the existing Buronga to Balranald transmission line easement and seen in the middle ground of this view, crossing the highway diagonally. There would be numerous transmission line towers visible across this view, becoming smaller as the distance from the highway increases. The towers would be evenly spaced and seen rising high above the surrounding flat rural landscape. These towers would be similar in height and style to the existing towers, with the towers closest to the highway being the most prominent.

While the works would extend across this view, the proposal would be visually compatible with the alignment, form and character of the existing power infrastructure. Together the double row of towers, crossing the view at an angle, would increase the prominence of power infrastructure in this view. Overall, there would be a moderate magnitude of change, and a **moderate-low visual impact**.

Viewpoint 5: View south from Yanga Way to alignment crossing

FIGURE 6-7 VIEW SOUTH FROM YANGA WAY TO ALIGNMENT CROSSING

Location: 34°46'20.51"S, 143°31'55.12"E

Existing conditions: The landform in this location is gently undulating and includes some vegetation cover. A travelling stock reserve is located along Yanga Way, and the movement of livestock would be visible at times. Balranald substation can be seen in the centre of this view, with 220kV steel lattice transmission towers and wires seen crossing the highway, about 700 metres away. The infrastructure in this corridor, as well as the local power network alongside Yanga Way, rise above the surrounding rural plains. Further to the south, and to the west of Yanga Way, two solar farms have been recently constructed near the substation, including Limondale Solar Farm and Sunraysia Solar Farm, both 1,000-hectare sites. The solar farms cannot be seen from this location due to intervening roadside vegetation.

Sensitivity: Yanga Way is a local road, extending north-south between Balranald and Tooleybuc, used mainly by local residents and their visitors. It provides access to local rural properties and other localities such as Limondale Solar Farm and Sunraysia Solar Farm. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line would extend either side of the substation, crossing Yanga Way about 600 metres from this location, in front of the existing transmission line. Some of the transmission line tower sites would be seen in the vicinity of the road, with works including the removal of any trees, shrubs and undergrowth, excavation and levelling, and foundation construction. There would also be works to install the galvanised steel towers and stringing of the wires and conductors visible at these sites and across the road. There would be construction equipment and vehicles seen in the middle ground of this view, using the highway to access the site. A construction compound and accommodation camp site would also be established to the west of the road, about 1.2 kilometres away from Yanga Way (right, out of view). This site would include site offices, laydown areas and other ancillary works required to support construction and would be partially screened from the road by vegetation within adjacent fields.

While the works would be seen extending across a large part of the middle ground of this view, the existing power infrastructure and roadside vegetation, would increase the capacity of this view to absorb this infrastructure. Overall, there would be a moderate magnitude of change to this view and a **low visual impact** during construction.

Visual impact during operation: The proposed transmission line would cross the road diagonally, in front of the existing substation and aligned parallel with the transmission line, in the middle ground of this view. The transmission line towers would be evenly spaced, extending across the view, and visible rising above the intervening vegetation. The transmission line easement and towers would have a similar visual character to the existing transmission line towers seen in this view, but would add further visual complexity to the intersection of transmission lines at the substation.

While the works would extend across the middle ground of this view, this scene has a greater capacity to absorb this change due to the presence of power infrastructure, undulating landform and vegetation cover. Overall, there would be a low magnitude of change, and a **negligible visual impact**.

Viewpoint 6: View south from Balranald Road to alignment crossing

FIGURE 6-8 VIEW SOUTH FROM BALRANALD ROAD TO ALIGNMENT CROSSING

Location: 34°47'44.54"S, 143°33'47.08"E

Existing conditions: This view is from a local rural property entrance on Balranald Road. The landscape in view is typical of the Murray River plain rural landscape, including flat mostly cleared agricultural land that has been used for cropping and grazing over several decades. Yanga Station, now National Park, is visible to the north (left of view) including eucalyptus forest along the southern edge of Yanga Lake. The existing Balranald to Darlington Point 220kV transmission line easement can be seen crossing the landscape and Balranald Road, about 900 metres away, with the steel lattice towers and wires rising above the surrounding plains.

Sensitivity: Balranald Road is an unsurfaced road, extending east-south between Yanga Way (near Balranald) and Moulamein, used mainly by local residents and their visitors. Views such as this are common within this area south of Balranald. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line easement works would be located parallel and in front of (north) the existing Balranald to Darlington Point transmission line easement. Due to the limited vegetation cover in this rural area, the excavation and levelling works at each tower construction site would be visible. Installation of the galvanised steel towers and stringing of the wires and conductors would also be seen from this location, including use of large machinery such as cranes and ground pulled draw wire or stringing drones as required.

While the works would be in the background of this view, the existing transmission line infrastructure, would increase the compatibility of these works with the surrounding scene. Overall, there would be a moderate magnitude of change to this view, which is of neighbourhood visual sensitivity, and a **low visual impact**.

Visual impact during operation: The proposed new transmission line easement would be in the background of this view, about 850 metres from this location, beyond the existing transmission lines. The towers would be of a similar height, form and style, and located parallel to the existing transmission line easement alignment. The existing vegetation would be retained and would partly screen views to the lower section of the new transmission line towers where it intervenes. The existing rural uses continue around corridor.

While the works would extend across this view, the proposal would be somewhat visually compatible with the alignment, form, and character of the existing power infrastructure. The towers would be of a similar height and style to the existing transmission lines. Together the double row of towers would slightly increase the prominence of power infrastructure in this view. Overall, there would be a low magnitude of change to this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact**.

Murrumbidgee River plain rural landscape

Viewpoint 7: View south from Cobb Highway

Location: 34°48'9.34"S, 144°46'36.35"E

Existing conditions: This view shows the vast and largely treeless rural plains, typical of the western Riverina landscape south of Hay. The landform in this location is flat, consisting of cleared agricultural land. The Balranald to Darlington Point 220kV steel lattice transmission towers and wires can be seen crossing perpendicular to the highway, extending south west towards Balranald substation.

Sensitivity: The Cobb Highway in this location is a two-lane road providing access between Hay and Booroorban, and forms part of 'The Long Paddock - Cobb Highway Touring Route' from Echuca Moama on the Victorian border, through to Wilcannia. Although this view is experienced by a larger number of people, including tourists and locals, the presence of existing large scale power infrastructure slightly reduces the sensitivity of this location. This view is of **local visual sensitivity**.

FIGURE 6-9 VIEW SOUTH FROM COBB HIGHWAY

FIGURE 6-10 VIEW SOUTH FROM COBB HIGHWAY TO ALIGNMENT CROSSING, PHOTOMONTAGE

Visual impact during construction: The new transmission line easement would be located parallel with and in front of the existing Balranald to Darlington Point transmission line. In this vast, treeless landscape all works to construct the proposal would be seen unobstructed. That would include the removal of grasses and groundcovers and landform shaping at each tower site, foundation construction, installation of the galvanised steel towers and stringing of the wires and conductors. This work would include the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. The works would be located on small sites spaced apart, so that several sites would be seen sequentially in this view.

Construction vehicles would be seen in the middle ground of view, travelling along the corridor access track. There would also be vehicles transporting transmission line tower steelwork along the Cobb Highway that would be seen at times from this location.

While the presence of the existing transmission line infrastructure provides a precedent of infrastructure in this view, the works would contrast with the open rural landscape and rise prominently against the skyline in this view. Overall, there would be a moderate magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: The proposal alignment would be in the middle ground of this view, aligned parallel to the existing transmission lines, and extending across this view. There would be several towers visible, unobstructed, and evenly spaced across this view. The use and character of the land surrounding the new towers would remain. The presence of existing transmission line infrastructure, and lack of other visual features in this view, increases the visual absorption capacity of this view. While the towers would rise prominently above the surrounding landscape, they would not dominate or change the prevailing character of this view. Overall, there would be a low magnitude of change, and a **low visual impact**.

Viewpoint 8: View east at the intersection of Conargo and North Boundary Road

FIGURE 6-11 VIEW EAST AT THE INTERSECTION OF CONARGO AND NORTH BOUNDARY ROAD

Location: 34°51'14.89"S, 145°24'59.50"E

Existing conditions: This view shows the vast rural plains south of the Murrumbidgee River, west of Coleambally. The landform is flat and low-lying, consisting of cleared agricultural land. Swamps are typical in this area, such as Bowna Swamp (centre of view), seasonally filled and surrounded by trees. The steel lattice towers and wires of the existing 220kV Balranald to Darlington Point transmission line can be seen crossing Conargo Road and continuing east towards Coleambally.

Sensitivity: Conargo and North Boundary roads are local roads, used mainly by nearby residents and their visitors. Views such as this are common within the rural area west of Coleambally. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: Construction of the proposed transmission line easement would be located parallel with and to the north of the existing Balranald to Darlington Point transmission lines (left of view). The entire construction of each tower near this road would be visible, including excavation and levelling works at each tower site, foundation construction, installation of the galvanised steel towers and stringing of the wires and conductors. The works would be located on small sites spaced apart, so that several sites would be seen sequentially in this view. Construction vehicles would be seen in the middle ground of view, travelling along the corridor access track. The use of large machinery such as cranes and ground pulled draw wire or stringing drones would be visible as required. Beyond Bowna Swamp, the ground level works at each tower site would be screened by the vegetation in and around the swamp.

While the works would be prominent and seen against the skyline in this view, the presence of existing power infrastructure in this view sets a visual precedent, increasing the compatibility of proposal construction with the view. Overall, there would be a moderate magnitude of change and a **low visual impact**.

Visual impact during operation: The proposed transmission line easement would be aligned parallel to the existing transmission line, extending across and into the background of this view, towards the Bowna Swamp. There would be several towers visible, rising to a similar height to the existing towers, evenly spaced across the view and largely unobstructed by vegetation. The use and character of the rural landscape surrounding the transmission line easement would remain. The existing transmission line easement provides a precedent of transmission line infrastructure in this view. However, together the proposal and the existing power line infrastructure would increase the presence of transmission line infrastructure in this view.

While the new transmission line towers rise prominently above the surrounding landscape and seen against the skyline, they would not dominate or alter the prevailing character of this view. Overall, there would be a low magnitude of change, and a **negligible visual impact**.

Viewpoint 9: View east along four Corners Road

FIGURE 6-12 VIEW EAST ALONG FOUR CORNERS ROAD

Location: 34°51'19.15"S, 145°29'5.34"E

Existing conditions: This view shows the rural plains south of the Murrumbidgee River, west of Coleambally, on the western edge of the Coleambally Irrigation Area. The landform is flat and low-lying, consisting of cleared agricultural land that has been used for grazing. The existing 220kV steel lattice transmission towers and wires can be seen aligned parallel to and north of Four Corners Road, which extends east towards Coleambally.

Sensitivity: Four Corners Road is an unsealed road, used mainly by nearby residents and their visitors. Views such as this are common within this rural area west of Coleambally. This view is of neighbourhood visual sensitivity.

Visual impact during construction: Construction of the proposed transmission line easement would be located beside four Corners Road, parallel and to the north of the existing Balranald to Darlington Point transmission lines (left of view). The works would be located on small sites spaced apart, so that several transmission tower sites would be seen sequentially in this view. Due to the sporadic vegetation cover beside the road and in adjacent fields, views to the ground level works at each tower construction site would be partially screened from view. Installation of the galvanised steel towers and stringing of the wires and conductors would be visible, rising above the treeline, including the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. Vehicles and machinery would be seen intermittently, in the middle ground of view, moving along the corridor access track between tower sites.

While the works would be seen in close-range and viewed against the skyline from this location, the presence of existing power infrastructure would increase the compatibility of the proposal with the view. Overall, there would be a moderate magnitude of change and a low visual impact.

Visual impact during operation: The proposed transmission line easement would be aligned parallel to the existing transmission lines and Four Corners Road, extending from the foreground to the background of this view. There would be several towers visible, evenly spaced across this view, with vegetation screening the lower sections of the towers in some instances. These new towers would be similar in height and form to the existing transmission line towers. The use and character of rural land seen under and around these towers would be retained. The presence of existing transmission line infrastructure increases the capacity for this view to absorb the proposed change.

While the towers would rise prominently above the surrounding landscape and be seen against the skyline, they would not dominate or change the prevailing character of this view. Overall, there would be a low magnitude of change, and a negligible visual impact.

Viewpoint 10: View south along Kidman Way to proposed Dinawan 330kV substation

FIGURE 6-13 VIEW SOUTH ALONG KIDMAN WAY TO PROPOSED DINAWAN 330KV SUBSTATION

FIGURE 6-14 VIEW SOUTH ALONG KIDMAN WAY TO PROPOSED DINAWAN 330KV SUBSTATION, PHOTOMONTAGE

Location: 35° 3'29.89"S, 145°47'29.07"E

Existing conditions: This view shows the flat, rural landscape either side of Kidman Way, south of Coleambally. There is some roadside vegetation and a group of trees to the west of the road at the Cadell Road intersection. Otherwise, the landscape consists of cleared agricultural land that currently used for grazing. Local transmission poles and overhead wires can be seen aligned parallel to Kidman Way, and also crossing this road about 40 metres to the south and extending west.

Sensitivity: Kidman Way in this location is a two-lane road providing access between Jerilderie and Coleambally, and forms part of is a historic touring route between Albury and Bourke, passing through the Riverina region. Rural views such as this are experienced by high number of receivers, including tourists, residents, and freight transporters. This view is of **local visual sensitivity**.

Visual impact during construction: Construction of the Dinawan 330kV substation would be seen in the centre of this view. The substation site would extend across a large part of the middle and background of this view (left of view), including the clearing of the vegetation within the site and earthworks, followed by works to construct the access tracks, footings and installation of the substation infrastructure. Construction of the transmission line towers would be seen to either side of the substation, including foundation works, erection of the towers and stringing of the wires and conductors. The corridor would be perpendicular to and cross the highway about 600 metres away. The transmission line towers, and substation infrastructure, would be visible rising above the surrounding existing vegetation and rising above the horizon.

A construction compound and accommodation camp site would be established beside the substation construction site, including a large laydown area to the north east of the substation site (around 20 to 25 hectares), for storage of equipment and stockpiling, including use of mobile screening plant. Construction vehicles would be seen travelling along Kidman Way, including vehicles transporting compound and camp infrastructure, equipment and plant, materials, spoil and waste, as well as mini-buses and light vehicles associated with construction workers travelling to and from transmission line construction areas.

Overall, due to the large scale and extent of the construction works, there would be a high magnitude of change and a **moderate visual impact**.

Visual impact during operation: The new Dinawan 330kV substation and transmission line towers would occupy a large area the flat, rural landscape seen in this view. The substation would introduce large scale infrastructure to this view, replacing the rural landscape. The substation and transmission towers would be seen from the road, with little screening by the existing landform or vegetation. The new transmission line easement would be aligned across the background of this view and these towers would be taller and larger than the existing local power towers. No additional landscaping is proposed as part of the Dinawan substation.

Overall, due to setback of the substation from the road and openness of the landscape, there would be a moderate magnitude of change and a **moderate-low visual impact**.

Viewpoint 11: View south east along the Newell Highway

FIGURE 6-15 VIEW SOUTH EAST ALONG THE NEWELL HIGHWAY

FIGURE 6-16 VIEW SOUTH EAST ALONG THE NEWELL HIGHWAY, PHOTOMONTAGE

Location: 35° 7'9.74"S, 146° 4'49.22"E

Existing conditions: This view shows the vast and mostly treeless rural plains, typical of the western Riverina landscape in the vicinity of Yanco Creek. The landform in this location is flat and low-lying, consisting of cleared agricultural land, used for cropping and grazing. The Colombo Creek corridor is visible in the background of view, defined by mature vegetation. Other than local transmission poles and overhead wiring extending along the western side of the highway (right out of view view), there is no transmission line infrastructure seen from this location.

Sensitivity: The Newell Highway in this location is a two-lane road providing access between Jerilderie and Narrandera, and forms part of the 'Route 39' touring route between Victoria and Queensland, passing through the Riverina region. Rural views such as this are experienced by high number of receivers, including tourists, residents and freight transporters. This view is of **local visual sensitivity**.

Visual impact during construction: Construction of the proposed new transmission line easement would be located over 2.5 kilometres to the south east of this location, and seen in the background of the view. In this largely treeless rural landscape, the construction of each tower would be seen unobstructed, including excavation and levelling works at each tower site, foundation construction, installation of the galvanised steel towers and stringing of the wires and conductors. There would be large machinery such as cranes and ground pulled draw wire or stringing drones as required. The works would be located on small sites spaced apart, so that several sites would be seen sequentially across the view. Transportation of transmission line tower steelwork along the Newell Highway would also be visible at times from this location.

While this construction activity would contrast with the rural character of this view, it would be seen in the background of view, against a backdrop of vegetation lining the Colombo Creek corridor. Overall, there would be a low magnitude of change and a **low visual impact**.

Visual impact during operation: The proposal would introduce large scale linear infrastructure to this rural view. The transmission line towers would be parallel to the Colombo Creek corridor, with several transmission towers visible, evenly spaced, extending across the background of this view. Although there would be no screening from intervening vegetation, the towers would be seen against a vegetated backdrop, reducing their visual prominence. While the towers would rise above the surrounding landscape, they would not be prominent or change the prevailing character of this view. Overall, there would be a low magnitude of change, and a **low visual impact**.

Lockhart rural valley landscape

Viewpoint 12: View north along Urana-Lockhart Road

FIGURE 6-17 VIEW NORTH ALONG URANA-LOCKHART ROAD

Location: 35°14'18.50"S, 146°40'40.04"E

Existing conditions: This view shows the gently undulating rural landscape along Brookong Creek valley, south west of Lockhart, consisting of cleared agricultural land used for grazing and cropping. Local transmission poles and overhead wires are seen running parallel to Urana-Lockhart Road. The Brookong State Forest can be seen to the west of the road, and the trees along the eastern side of the road corridor screens and filters views to the adjacent rural areas and homesteads.

Sensitivity: Urana-Lockhart Road in this location is a two-lane road providing access between Lockhart and Urana, used mainly by nearby residents and their visitors. This view includes the Brookong State Forest and is on the approach to the town of Lockhart. This view is of **local visual sensitivity**.

Visual impact during construction: Construction of the proposed transmission line would be located to the west of the road to (left of view north, and right of view south). In the north facing view, the transmission line would extend east across the road and towards Brookong Creek. This work would include the removal of bushland within the State Forest and adjacent to the road for each tower site and any vegetation within the transmission line easement which exceed vegetation clearance requirements would be removed. The vegetation within the road verge would be retained. The works would include the installation of the galvanised steel towers and stringing of the wires and conductors, rising above the height of the adjacent treeline. This work would include the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required in close proximity to the viewer. There would also be construction vehicles and machinery seen travelling along the corridor and access tracks.

Due to the removal of a large area of vegetation, in close proximity to this view and the scale of the construction activity would reduce the amenity of this view, contrasting with the scale and character of this view. Overall, there would be a very high magnitude of change and a **high-moderate visual impact**.

Visual impact during operation: There would be a new partially cleared corridor with tall steel lattice towers and lines aligned parallel to the road and extending north for over a kilometre along this view. This transmission line easement would be partly filtered through roadside trees but remain prominent in the foreground and extending along these views. The transmission towers would contrast with the character of the view, introducing large scale infrastructure into an otherwise leafy view characterised by bushland and roadside vegetation.

Due to the large scale of the proposed towers, extent of vegetation that would have been removed or trimmed and the proximity of the corridor to the viewer, there would be a very high magnitude of change. As this view is of local visual sensitivity, there would be a **high-moderate visual impact**.

FIGURE 6-18 VIEW SOUTH FROM URANA-LOCKHART ROAD

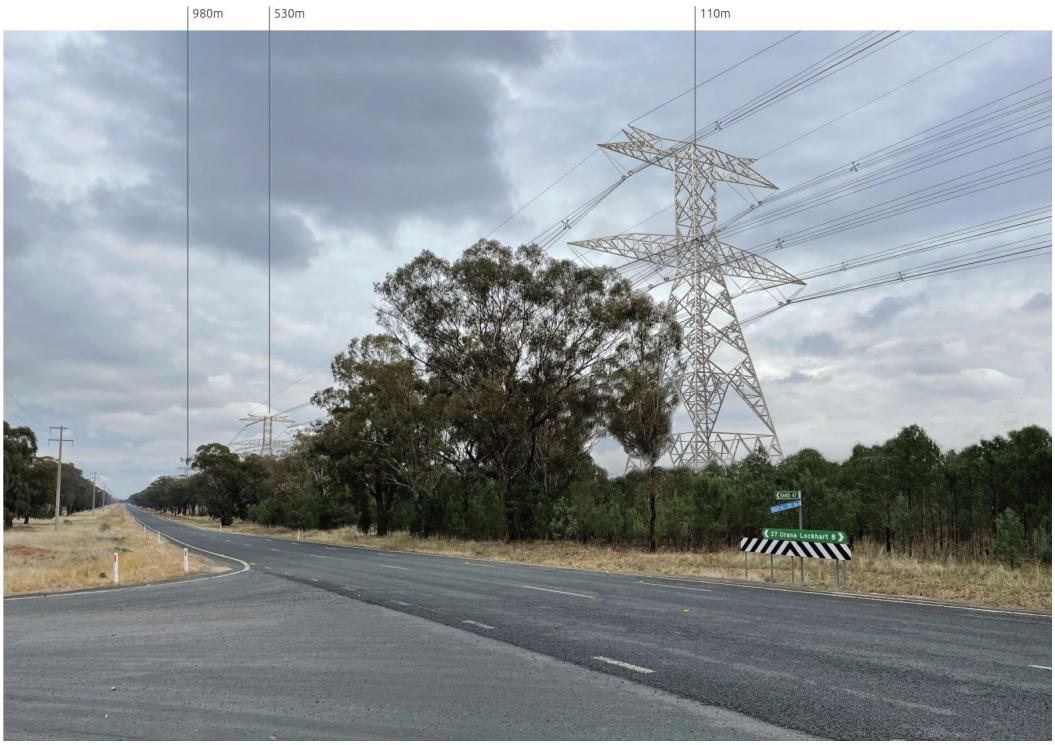

FIGURE 6-19 VIEW SOUTH FROM URANA-LOCKHART ROAD, PHOTOMONTAGE

Viewpoint 13: View south west along Albury Lockhart Road

Location: 35°14'16.73"S, 146°43'22.33"E

Existing conditions: This view shows the gently undulating rural landscape of the Brookong Creek valley south of Lockhart, consisting of cleared agricultural land used for grazing. The Finley to Uranquinty 132KV transmission poles and overhead wires are seen crossing the road in the middle ground of view. Views from the road are filtered by mature trees and shrubs within fields, along the road and nearby creeklines.

Sensitivity: Albury Lockhart Road in this location is a two-lane road providing north-south access between Lockhart and Walbundrie, used mainly by nearby residents and their visitors. Rural views such as this are common within this rural area of the Brookong Creek valley, south of Lockhart. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line construction would be in the background of this view, crossing perpendicular to Albury Lockhart Road about 1.5 kilometres to the south. Each transmission tower site would be spaced apart evenly in this flat rural landscape, so that several transmission tower sites would be seen sequentially in this view. Due to the vegetation cover beside the road and in adjacent fields, views to the ground level works at each tower construction site would be partly screened or filtered through trees. Installation of the galvanised steel towers and stringing of the wires and conductors would be visible, rising above the trees, including the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. Vehicles and machinery would be seen intermittently, travelling along the corridor access track.

The works would include the installation of large transmission towers, which would be seen against the skyline in the background of this view. Due to the distance, and screening effect of intervening existing trees, there would be a low magnitude of change and a **negligible visual impact**.

Visual impact during operation: The existing transmission lines seen in the foreground of view would be retained and an additional corridor of new large-scale transmission line towers, would be seen in the background of this view, crossing Albury Lockhart Road. The vegetation seen across this view would partly screen and filter views to the transmission line towers. Where the transmission line towers are near the road there is less intervening vegetation, and the towers would be more prominent, and the wires crossing the road would be seen.

Overall, the proposed transmission line would be somewhat absorbed into the view, but where it is seen, the towers would be larger than others seen in the vicinity, resulting in a moderate magnitude of change to this view. As this view is of neighbourhood visual sensitivity there would be a **low visual impact**.

FIGURE 6-20 VIEW SOUTH WEST ALONG ALBURY LOCKHART ROAD

FIGURE 6-21 VIEW SOUTH WEST ALONG ALBURY LOCKHART ROAD, PHOTOMONTAGE

Viewpoint 14: View east along Lockhart-The Rock Road

Location: 35°13'52.14"S, 146°44'19.83"E

Existing conditions: This view shows the undulating rural plain extending east of Lockhart. The landscape has been partially cleared for agricultural use, including mainly cropping with some areas grazing pastures. Views from the road are filtered by mature trees and shrubs within fields, along the road and nearby creeklines. The Finley to Uranquinty 132KV transmission poles and wires are seen in the middle ground of view, crossing the road about 200 metres away. The infrastructure in this corridor, as well as the local power network alongside Lockhart-The Rock Road, rise above the surrounding rural plains.

Sensitivity: Lockhart-The Rock Road in this location is a narrow two-lane road providing east-west access between Lockhart and The Rock, it is the main eastern entry to the township of Lockhart and would be used by a moderate number of tourists, residents and their visitors. Rural views such as this are common within this rural area east of Lockhart. This view is of **local visual sensitivity**.

Visual impact during construction: The proposed transmission line construction would be located in the middle ground of view, crossing Lockhart-The Rock Road diagonally, about 250 metres to the east. Due to the vegetation cover beside the road and in adjacent fields, there would be some filtering of the views to the works. However, where there is no intervening vegetation, there would be construction activity seen at each of the transmission tower sites. This would include the installation of the galvanised steel towers and stringing of the wires and conductors, be visible, rising above the surrounding trees. There would be large vehicles and machinery used such as cranes and ground pulled draw wire or stringing drones as required. There would also be construction vehicles and machinery would be seen intermittently, travelling along the corridor access tracks. Construction of the towers adjacent to the road, where the transmission line easement alignment changes angle, would be more prominent in this view.

While the presence of existing power infrastructure would increase the compatibility of proposal construction slightly, the scale of the works would contrast with the surrounding rural landscape. Overall, there would be a moderate magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: An additional corridor of new large scale transmission line towers, would be seen alongside the existing Finley to Uranquinty transmission poles and crossing the Lockhart-The Rock Road in the middle ground of this view. The new transmission line easement would cross the local power lines, creating visual clutter and rising well above the surrounding trees. The vegetation along the road and within the adjacent fields would provide some screening of views to the some of the towers as they approach the road. The existing rural uses seen across this view would remain.

Overall, the introduction of a new series of transmission line towers that are substantially larger than the existing transmission lines would increase the intensity of transmission infrastructure seen from this location. There would be a high magnitude of change to this view, which is of local visual sensitivity, and a **moderate visual impact**.

FIGURE 6-22 VIEW EAST ALONG LOCKHART-THE ROCK ROAD

FIGURE 6-23 VIEW EAST ALONG LOCKHART-THE ROCK ROAD, PHOTOMONTAGE

Viewpoint 15: View south along Bullenbong Road

Location: 35°12'32.59"S, 147° 2'20.06"E

Existing conditions: This view shows the flat, rural plain extending along the Bullenbong Creek valley, north west of The Rock. The landscape in the centre of this view has been cleared for agricultural use, including cropping and grazing pastures. The Rock Nature Reserve (Kengal Aboriginal Place) is a prominent visual feature, rising abruptly from the surrounding plains. The Rock is identified as one of the Shire's most '*impressive landmarks*' providing '*highly valued scenic amenity and rural character*' (Lockhart Shire Council, 2020, p.19) within the Riverina region. The Finley to Uranquinty 132KV transmission poles and wires are seen in the middle ground of view, crossing the road about 250 metres away.

Sensitivity: Bullenbong Road in this location is a two-lane road providing access between Lockhart Road and The Rock, used mainly by nearby residents and their visitors. The Rock is an important local visual landmark, and this view is improved by the backdrop of this feature and ridgeline. This is an incidental view to the mountain, which are common within the rural area to the north west of The Rock. This view is of **local visual sensitivity**.

Visual impact during construction: The proposed transmission line construction would be located in the middle ground of view, passing through the adjacent rural fields and crossing Bullenbong Road diagonally, about 300 metres to the south east. In this largely flat, rural landscape, each transmission tower site would be spaced apart evenly and views to the ground level works at several transmission tower construction sites would be seen from this location. The installation of the galvanised steel towers and stringing of the wires and conductors would also be visible, rising above the treeline along Burkes Creek (left of view), including the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required. Construction vehicles and machinery would also be seen, travelling along the corridor access track.

Although the presence of existing power infrastructure would increase the compatibility of proposal construction slightly, the construction activity would contrast with the rural character of this view and potentially interrupt views to The Rock. Overall, there would be a moderate magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: The Finley to Uranquinty transmission poles would be retained, and an additional corridor of new large scale transmission line towers, would be seen aligned parallel to this corridor, passing through this rural area and crossing Bullenbong Road. From this location, the towers would partly interrupt the views to The Rock. As there is very little intervening vegetation, there the new transmission line infrastructure would be seen unobstructed and multiple towers would be seen in succession. While the existing rural uses seen in this view would continue, the proposal would increase the scale of the transmission infrastructure seen in this view, creating some visual clutter to this view.

Overall, due to the extent of the transmission line easement seen from this location, large scale of the towers, and potential obstruction of the view to The Rock, there would be a high magnitude of change. As this view is of local visual sensitivity, there would be a **moderate visual impact**.

FIGURE 6-24 VIEW SOUTH ALONG BULLENBONG ROAD

FIGURE 6-25 VIEW SOUTH ALONG BULLENBONG ROAD, PHOTOMONTAGE

Viewpoint 16: View northeast from the Olympic Highway

Location: 35°12'55.21"S, 147°12'44.50"E

Existing conditions: This view shows the flat, rural plain surrounding Uranquinty, southwest of Wagga Wagga. The Darlington Point to Wagga 330kV transmission line towers and wires are seen in the middle ground of view, extending east towards Wagga Wagga substation. The transmission line easement is aligned parallel to the driveway in view, about 350 metres north of the associated residence. The infrastructure in this corridor, as well as the local power network alongside the Olympic Highway and in nearby fields, rise above the surrounding rural plains. The elevated ridgeline, in the locality of Rowan, is an attractive visual feature, and encloses this view.

Sensitivity: The Olympic Highway in this location is a two-lane road providing access between The Rock and Uranquinty, passing through the Riverina region southwest of Wagga Wagga. Rural views such as this are experienced by higher number of receivers, including tourists, residents and workers travelling on the road and rail corridor. This view is of **local visual sensitivity**.

Visual impact during construction: The proposed transmission line construction activity would be aligned perpendicular to the Main Southern Railway and Olympic Highway (left, out of view) and would continue east across the rural fields in the middle ground of this view. The transmission line easement would be parallel to and in front of the existing Darlington Point to Wagga transmission towers. In this largely flat, open rural landscape, each transmission tower site would be spaced apart evenly and views to the ground level works would be seen from this location. Construction vehicles and machinery would be seen, travelling along the corridor access track, during construction. The installation of the galvanised steel towers and stringing of the wires and conductors would also be visible, and seen against the skyline in this view, including the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required.

While the presence of the existing large scale transmission line increases the capacity of this view to absorb the character of the temporary construction activity, the works would contrast somewhat with the otherwise rural character of this view. Due to the proximity of the transmission line easement and scale of the works there would be a moderate magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: A new corridor of large-scale transmission line towers would be seen in front of and parallel to the existing Darlington Point to Wagga transmission line, crossing a rural area and viewed against the attractive backdrop of the ridgeline to the south west of Wagga Wagga. These towers would have a similar form but be larger than the existing transmission line towers seen in this view.

While the existing rural uses seen in this view would continue under the transmission line easement, the proposal would intensify the infrastructure character in this view, adding more visual clutter and further detracting from the rural landscape and view to the attractive ridgeline. Overall, this would result in a high magnitude of change to this view, which is of local visual sensitivity, and a **moderate visual impact**.

FIGURE 6-26 VIEW NORTHEAST FROM OLYMPIC HIGHWAY

FIGURE 6-27 VIEW NORTHEAST FROM THE OLYMPIC HIGHWAY, PHOTOMONTAGE

Great Dividing Range foothills landscape

Viewpoint 17: View north west from Holbrook Road

FIGURE 6-28 VIEW NORTH WEST FROM HOLBROOK ROAD

Location: 35°12'42.51"S, 147°19'59.96"E

Existing conditions: This view shows the eastern foothills of the Great Diving Range on the south western outskirts of Wagga Wagga. The landscape consists of cleared small lot agricultural land used for grazing in flat areas, transitioning into hilly upland areas in the background of view. Two major power infrastructure corridors are visible, including the Jindera and Darlington Point to Wagga 330kV transmission towers, extending east towards the Wagga Wagga substation. This power infrastructure is seen against the skyline in this view, increasing their prominence, and detracting from the amenity of the otherwise rural view.

Sensitivity: Holbrook Road in this location is a two-lane road providing north-south access between Wagga Wagga and Mangoplah, used mainly by nearby residents and visitors to this area. Rural views such as this are common within this rural area south of Wagga Wagga. This is an incidental view to the ridgeline, typical of views in this valley. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line construction works would be located parallel to and in front of the existing double row of transmission towers. From this location, the ground level works to install each transmission tower would be visible and may include some vegetation clearing and earthworks to prepare each site. Vehicles and machinery would be seen, travelling along the corridor access track, in the middle ground of view. The installation of the galvanised steel towers and stringing of the wires and conductors would also be visible, against seen a hillside and rising above the skyline in this view. This would include the use of large machinery such as cranes and ground pulled draw wire or stringing drones as required.

While the presence of existing power infrastructure increases the capacity of this view to absorb additional infrastructure somewhat, the construction works would be prominent, located on the ridgeline, and would contrast with the otherwise rural character of this view. Overall, there would be a moderate magnitude of change and a **low visual impact**.

Visual impact during operation: A new row of large-scale transmission line towers would be seen in front of and parallel to the existing transmission lines, in the middle ground of view. While the existing transmission line towers increase the capacity of this view to absorb the change, by adding a third row of transmission towers, the overall presence of this transmission line infrastructure would increase. The proposed transmission line towers would be of a similar form to the existing towers but would be larger in scale. The new corridor would be in front and down the slope from the existing towers, and these new towers would be seen against the backdrop of the existing towers and hillside fields and vegetation.

Overall, the overall presence of this transmission line infrastructure would increase, and there would be further complexity added to this view due to the larger scale of the new towers. These towers would be located together and prominently on the ridgeline, reducing the amenity of this view. Overall, there would be a high magnitude of change to this view, which is of local visual sensitivity, resulting in a **moderate-low visual impact**.

Wagga Wagga rural fringe landscape

Viewpoint 18: View east from Holbrook Road

FIGURE 6-29 VIEW EAST FROM HOLBROOK ROAD

Location: 35°12'7.17"S, 147°19'55.03"E

Existing conditions: This view shows the rural plains on the southern outskirts of Wagga Wagga. The landscape in view consists of partially cleared small lot agricultural land used for grazing. The landform is flat, with a backdrop of '*visually prominent ridges*' and areas of '*higher ground*' at Gelston Park/Gregadoo Hills, south of Wagga Wagga, which are considered to '*establish the visual setting of the city*' (s.5.1, Wagga Wagga DCP 2010). Several transmission line easements are visible from this location, along several alignments that intersect, converge and extend to the Wagga Wagga substation. The Jindera to Wagga Wagga 330kV steel lattice transmission tower and overhead wires are most prominent and seen against the skyline in this view. This power infrastructure creates visual clutter and detracts from the amenity of an otherwise attractive rural view.

Sensitivity: Holbrook Road in this location is a two-lane road providing north-south access between Wagga Wagga and Mangoplah, used mainly by nearby residents and visitors to this area. Rural views such as this are common within this rural area south of Wagga Wagga. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: The proposed transmission line construction would extend from west to east, crossing Holbrook Road diagonally (right of view), in the middle ground of this view. The corridor would be located parallel to and behind the existing transmission towers. Each transmission tower site would be spaced apart evenly and views to the ground level works would be seen from this location. This would include the clearing of some vegetation at the tower sites, including trees, and clearing of trees which exceed vegetation clearance requirements within the easement. There would be earthworks to prepare each site and establish access tracks. Construction vehicles and machinery would be seen accessing the site via Holbrook Road and travelling along the corridor access track.

The installation of the galvanised steel towers and stringing of the wires and conductors would also be visible and seen rising above the skyline and seen in the context of the hilly areas of Gelston Park/Gregadoo Hills, south of Wagga Wagga in the background.

While the presence of existing transmission line infrastructure within this view, increases the capacity of this view to absorb the proposed construction activity, the proposal would contrast with the otherwise rural character of this view and add further visual clutter to this view of the backdrop of hills. Overall, there would be a moderate magnitude of change and a **low visual impact**.

Visual impact during operation: A new corridor of large-scale transmission line towers would be seen behind and parallel to the existing transmission lines, in the middle ground of this view. The existing rural uses seen in this view would continue, however, there would be a third row of transmission towers of a similar style but larger scale, intensifying the presence of transmission line infrastructure in this view. The towers would be seen rising above the skyline and hilly areas at Gelston Park/Gregadoo Hills, further disrupting the view to this local visual feature.

While existing rural uses seen in this view would continue, the proposal would add further transmission line infrastructure to this view, detracting from the character of this view. Overall, there would be a moderate magnitude of change, to this view which is of neighbourhood visual sensitivity, and a **low visual impact**.

Viewpoint 19: View west from Boiling Down Road

Location: 35°11'52.43"S, 147°21'23.28"E

Existing conditions: This view shows the flat, rural plain extending along Rowan Road, south of Wagga Wagga. The landscape has been predominantly cleared for agricultural use, including mainly grazing pastures with some cropping. The '*visually prominent ridges'* and areas of '*higher ground'* at Gelston Park/Gregadoo Hills enclose this view, rising from the surrounding rural plains (s.5.1, Wagga Wagga DCP 2010). A double row of large steel lattice towers part of the Uranquinty to Wagga Wagga transmission towers and overhead wires are a dominant feature in the middle ground of this view, aligned parallel to Rowan Road. These existing transmission line easements are viewed against backdrop of hills and rise above the skyline.

Sensitivity: Rowan Road in this location is an unsealed road providing east-west access between Holbrook and Plumpton roads, used mainly by nearby residents and their visitors. Although the Gelston Park/Gregadoo Hills are a local feature, rural views such as this are common within this area south of Wagga Wagga. This view is of **neighbourhood visual sensitivity**.

Visual impact during construction: Construction of the proposed transmission line would be aligned parallel to Boiling Point Road, on the far side (south) of the existing transmission towers. In this largely flat, rural landscape, each transmission tower site would be spaced apart evenly and views to the ground level works would be seen from this location, with some filtering by the vegetation along Boiling Down Road and within adjacent fields in some locations. Construction vehicles and machinery would be seen in this view, travelling along an access track within the corridor. The installation of the galvanised steel towers and stringing of the wires and conductors would also be visible and seen rising above the skyline and backdrop of ridges at Gelston Park/Gregadoo Hills.

The presence of the existing transmission lines increases the capacity of this view to absorb the proposed additional transmission line easement. However, the introduction of additional transmission line easement would further detract from the otherwise rural view, and further disrupt views to the backdrop of hills. Overall, there would be a moderate magnitude of change and a **low visual impact**.

Visual impact during operation: A new corridor of large scale transmission line towers would be seen beyond and aligned parallel to the existing transmission lines, in the middle ground of view. While the proposed power line towers would be a lattice structure, they would be of a different design and of a larger scale than the existing towers. They would also be spaced further apart and would not be grouped together with the existing towers. While existing rural uses seen in this view would continue to be seen around and through the transmission line easement, the proposal would further add to the visual clutter created by the transmission line infrastructure seen in this view. The towers would be seen against the skyline and ridges at Gelston Park/Gregadoo Hills, further obstructing the view to this local visual feature. While the presence of transmission line infrastructure in this view increases the capacity of this view to absorb this change, this proposal together with the existing towers at inconsistent spacings would be visually prominent.

Generally, there would be a compatibility between the existing and proposed transmission lines, however, the proposal would further detract from the amenity of this view. Overall, due to the proximity and extent of the corridor seen from this location, there would be a high magnitude of change. As this is a view of neighbourhood visual sensitivity there would be a **moderate-low visual impact**.

FIGURE 6-30 VIEW WEST FROM BOILING DOWN ROAD

FIGURE 6-31 VIEW WEST FROM BOILING DOWN ROAD, PHOTOMONTAGE

Viewpoint 20: View southwest from Butterbush Road

FIGURE 6-32 VIEW SOUTHWEST FROM BUTTERBUSH ROAD

Location: 35° 11'31.93"S, 147°24'4.55"E

Existing conditions: This view is located on a ridgeline on the southern outskirts of Wagga Wagga, east of Mitchell Road, containing rural lifestyle lots. From this location, the landscape transitions to larger rural lots to the south, and large lot residential and general low density residential areas to the north (right and out of view). The landform is slightly elevated above the surrounding rural plain south of Wagga Wagga, with the '*visually prominent ridges*' and areas of '*higher ground*' at Gelston Park/Gregadoo Hills forming a backdrop to the view.

The upper section Wagga Wagga substation (left of view), a telecommunications tower and several transmission towers are visible. Much of this infrastructure is located below the ridgeline, this infrastructure creates some visual clutter and detracts from the otherwise rural view. There are several larger light industrial uses, also located within this valley, but largely screened by intervening vegetation and landform.

Sensitivity: Butterbush Road is used mainly by nearby residents and their visitors. Although the Gelston Park/Gregadoo Hills are a local visual feature, rural views such as this are common within this area south of Wagga Wagga. This view is of neighbourhood visual sensitivity.

Visual impact during construction: Most of the Wagga Wagga substation expansion works (left of view) would be screened by intervening landform and vegetation. However, the installation of electrical equipment, including use of cranes, would be seen rising above the treeline. Wagga construction compound would be established to the east of the existing substation, between Ashfords and Mitchell roads, including offices, amenities, workshops and construction support facilities. Views to this site would also be mostly screened by intervening landform and vegetation.

The construction of the proposed transmission line would also be visible, extending west (right of view) of the substation and located behind (south) of the existing transmission towers. Construction activity including the use of vehicles and machinery would be glimpsed where there are gaps in the trees. Installation of the galvanised steel towers and stringing of the wires and conductors would also be visible, rising above the trees. The prominence of this work would be reduced as this work would be viewed against the backdrop of the surrounding rural landscape.

The presence of existing power infrastructure would increase the compatibility of proposal construction activity and screening effect of the vegetation within this valley would reduce the prominence of the construction activity in this view. Overall, there would be a moderate magnitude of change and a low visual impact.

Visual impact during operation: The expanded Wagga Wagga substation would be visible, seen against the backdrop of trees and rural landscape, below the skyline, and would be largely adsorbed in into the character of this view. The construction compound would have been dismantled and this area rehabilitated. A new corridor of large-scale transmission line towers would be seen to the south and parallel to the existing transmission lines, in the middle and background of this view. The existing towers are not prominent in this view, being partly screened by intervening vegetation and lower than the ridgeline beyond. The third row of transmission line towers would be spaced intermittently across this view, and while being of a similar form, they would be of a larger scale and not grouped with the existing alignment. The tower locations would require the removal of blocks of vegetation and clearing of a wide easement. However, they would not rise above the hills in the background and would be compatible with the prevailing character of this view. The new towers would, however, add to the infrastructure seen in this view, and create some additional visual clutter.

Overall, due to the visual absorption capacity of this view and location of the proposal mainly on the valley floor amongst an existing framework of mature trees, there would be a moderate magnitude of change to this view. This view is of neighbourhood visual sensitivity and there would be a low visual impact.

Views from the air

Existing conditions: There are scenic flights operating from the Lockhart Airport, offering views over Lake Cullivel and Lake Urana and the surrounding agricultural areas including the visually attractive patchwork of agricultural fields.

Sensitivity: There are scenic flights offered from the Lockhart Airport, are for tourist and recreational purposes, the views from these flights are of **regional visual sensitivity**.

Visual impact during construction: The area impacted by construction would be located to the south of Lockhart and extending west to the south of Lake Cullivel. These works would be seen from the air, within the vast open, predominantly flat landscape of the Lockhart rural valley and Murrumbidgee River plains. The area to the south of Lockhart has some vegetation cover, which would assist with the absorption of this work into the view. However, the landscape becomes more open with less buildings and vegetation in the vicinity of Lake Cullivel. The works would be visible near the southern edge of Lake Cullivel but would not be seen within views surrounding Lake Urana.

In many locations, particularly in the vicinity of Lockhart, there are existing transmission lines, seen crossing the landscape. While the removal of vegetation and transmission line towers would be seen, they would be seen in a vast landscape and not contrast substantially with the surrounding landscape.

There would be a reduction in the amenity of the views from the air in the vicinity of Lake Cullivel, however, this would be localised. In this area there would be a moderate magnitude of change and a **moderate visual impact**.

In other areas, while the work to construct the project would be visible unobstructed from the air, it would be seen with a complex landscape where other transmission and related infrastructure are seen and largely absorbed. This would result in a low magnitude of change and a **moderate-low visual impact**.

Visual impact during operation: The transmission line easement would create a strong line across the landscape in views from the air. This infrastructure would be seen near Lake Cullivel which is a local visual feature and visually interesting from the air.

Upon completion of the works, the areas impacted by construction would have been reinstated and the surrounding rural uses would be restored. There would continue to be a reduction in the amenity of the views from the air in the vicinity of Lake Cullivel due to the presence of the large towers, and line the transmission line easement forms, with several turns as it traverses the landscape. In this area there would be a low magnitude of change in the view and a **moderate-low visual impact**.

In other areas surrounding Lockhart, the new transmission line easement would be seen with a complex landscape where other transmission and related infrastructure are seen and would be largely absorbed into the view. Overall, there would be a negligible magnitude change in surrounding areas and a **negligible visual impact**.

There would be no impact on scenic views surrounding Lake Urana.

6.1.3 Summary of daytime visual impacts

The daytime visual impacts are listed in Table 6-1.

TABLE 6-1: SUMMARY OF VISUAL IMPACTS

			Construction		Operation	
	Location	Visual sensitivity	Magnitude of change	Visual impact	Magnitude of change	Visual impact
	Mallee shrubland and rural landscape					
1	Viewpoint 1: View south from Arumpo Road to the Buronga substation	Local	Moderate	Moderate-Low	Low	Low
2	Viewpoint 2: View east from Sturt Highway, near Lake Benanee	Local	Low	Low	Low	Low
3	Viewpoint 3: View north west from Benanee Road to alignment	Neighbourhood	Low	Negligible	Low	Negligible
4	Viewpoint 4: View east from Sturt Highway to alignment crossing	Local	Moderate	Moderate-Low	Moderate	Moderate-Low
5	Viewpoint 5: View south from Yanga Way to alignment crossing	Neighbourhood	Moderate	Low	Low	Negligible
6	Viewpoint 6: View south from Balranald Road to alignment crossing	Neighbourhood	Moderate	Low	Low	Negligible
	Murrumbidgee River plains rural landscape					
7	Viewpoint 7: View south from Cobb Highway	Local	Moderate	Moderate-Low	Low	Low
8	Viewpoint 8: View east at the intersection of Conargo and North Boundary Road	Neighbourhood	Moderate	Low	Low	Negligible
9	Viewpoint 9: View east along four Corners Road	Neighbourhood	Moderate	Low	Low	Negligible
10	Viewpoint 10: View south along Kidman Way to proposed Dinawan 330kV substation	Local	High	Moderate	Moderate	Moderate-Low
11	Viewpoint 11: View south east along Newell Highway	Local	Low	Low	Low	Low
	Lockhart rural valley landscape					
12	Viewpoint 12: View north along Urana-Lockhart Road	Local	Very high	High-Moderate	Very high	High-Moderate
13	Viewpoint 13: View south west along Albury Lockhart Road	Neighbourhood	Low	Negligible	Low	Negligible
14	Viewpoint 14: View east along Lockhart-The Rock Road	Local	Moderate	Moderate-Low	High	Moderate

			Construction		Operation	
	Location	Visual sensitivity	Magnitude of change	Visual impact	Magnitude of change	Visual impact
15	Viewpoint 15: View south along Bullenbong Road	Local	Moderate	Moderate-Low	High	Moderate
16	Viewpoint 16: View northeast from the Olympic Highway	Local	Moderate	Moderate-Low	High	Moderate
	Great Dividing Range foothills landscape					
17	Viewpoint 17: View north west from Holbrook Road	Neighbourhood	Moderate	Low	High	Moderate-Low
	Wagga Wagga rural fringe landscape					
18	Viewpoint 18: View east from Holbrook Road	Neighbourhood	Moderate	Low	Moderate	Low
19	Viewpoint 19: View west from Boiling Down Road	Neighbourhood	Moderate	Low	High	Moderate-Low
20	Viewpoint 20: View southwest from Butterbush Road	Neighbourhood	Moderate	Low	Moderate	Low
	Views from the air					
1.	Scenic flights from Lockhart (Lake Cullivel)	Regional	Moderate	Moderate	Low	Moderate-Low
2.	Scenic flights from Lockhart (areas surrounding Lockhart)	Regional	Low	Moderate-Low	Negligible	Negligible
3.	Lake Urana	Regional	No impact	No impact	No impact	No impact

6.2 Assessment of night-time impacts

Each landscape character area has been used to assess the night-time impacts of the proposal.

6.2.1 Mallee shrubland and rural landscape

Sensitivity: At night, this landscape would have low light levels with scattered rural residences across the landscape. There would be some denser clusters of residences near townships and light from vehicles travelling along local roads, Arumpo Road and the Sturt Highway, contributing to the light levels. The sky glow from nearby settlements such as Buronga, Gol Gol, Euston and Balranald may also influence this character area. Overall, this landscape includes areas of Dark (A1) which has a **high visual sensitivity**.

Visual impact during construction: Construction along the transmission line easement would occur over extended construction hours along a majority of the construction impact area and otherwise between 7am and 7pm, seven days a week. Some out of hours works are also proposed, given the distance to sensitive receivers for the majority of the construction impact area, and the shift arrangements of the workforce given the remote nature of the proposal.

There would be some lighting required to support work during these extended work hours and out of hours work activities. This may include task lighting associated with the construction works as well as headlights from staff and construction vehicles accessing the site and moving along the transmission line easement.

The facilities at the main construction compound and accommodation camp sites at Buronga and Balranald (including laydown/delivery areas, concrete batching and workforce accommodation) would also require lighting. The construction compounds would operate between 7am and 7pm, seven days a week and the camp would operate 24 hours a day, seven days a week. Lighting would be required at these facilities when they are operating outside of daylight hours.

Overall, the lighting at these sites would contrast with the surrounding predominantly dark landscape and there would be a moderate magnitude of change to this landscape. This landscape is of high visual sensitivity and there would be a **high-moderate visual impact** in these locations at night. This impact would be experienced in localised areas surrounding the construction compound and accommodation camps, and from roads and residences where they are located within view of the works.

Visual impact during operation: During operation there would not be any lighting proposed along the main transmission lines. As a result, there would be a negligible magnitude of change to a landscape of high visual sensitivity, and a **negligible visual impact** at night.

6.2.2 Murrumbidgee River plains rural landscape

Sensitivity: This rural landscape is predominantly dark with limited light sources at night, such as lighting associated with homesteads and agricultural buildings on rural properties, and vehicles on remote roads. Overall, this landscape includes areas of Dark (A1) which has a **high visual sensitivity**.

Visual impact during construction: Construction along the transmission line easement would occur over extended construction hours along a majority of the construction impact area and otherwise between 7am and 7pm, seven days a week. Some out of hours works are also proposed given the distance to sensitive receivers for the majority of the construction impact area, and the shift arrangements of the workforce given the remote nature of the proposal.

There would be some lighting required to support work during these extended work hours and out of hours work activities including task lighting associated with the construction works as well as headlights from staff and construction vehicles accessing the site and moving along the transmission line easement. There is very little vegetation across this landscape and therefore little natural screening of this lighting

The facilities at the construction compound and accommodation camp at the proposed Dinawan 330kV substation site (including laydown/delivery areas, concrete batching and workforce accommodation) would also require lighting. The construction compounds would operate between 7am and 7pm, seven days a week and the camp would operate 24 hours a day, seven days a week. Lighting would be required at these facilities when they are operating outside of daylight hours. In this area there is more vegetation, which would somewhat contain views to this lighting.

Overall, the lighting at these sites would contrast with the surrounding predominantly dark landscape and there would be a moderate magnitude of change to this landscape. This landscape is of high visual sensitivity and there would be a **high-moderate visual impact** at night.

Visual impact during operation: During operation there would not be any lighting proposed along the main transmission lines. There would, however, be some minor security lighting provided at the proposed Dinawan 330kV substation. This lighting would be somewhat contained by the vegetation within the surrounding fields and along Kidman Way, and not be appreciably greater than other surrounding homesteads. Overall, there would be a low magnitude of change to a landscape of high visual sensitivity, and a **moderate visual impact** at night.

6.2.3 Lockhart rural valley landscape

Sensitivity: At night, this landscape would have low light levels with scattered rural residences across the landscape. There would be some denser clusters of residences in the vicinity of the township of Lockhart where there would also be more vehicles travelling along local roads, contributing to the light levels. There would be a general sky glow above the settlements which would also influence this character of this area. Overall, this landscape is an area of Low district brightness (A2) and has a **moderate visual sensitivity** at night.

Visual impact during construction: While there are no construction and accommodation camp sites planned in the Lockhart rural valley landscape character area, there would be works along the transmission line easement that would occur over extended construction hours and otherwise between 7am-7pm, 7 days a week. Some out of hours works are also proposed given the distance to sensitive receivers for the majority of the construction impact area, and the shift arrangements of the workforce given the remote nature of the proposal.

Consequently, there would be lighting required including lighting at the minor staging, storage and laydown ancillary areas as well as headlights from staff and construction vehicles accessing and moving along the transmission line easement. This lighting would contrast with the surrounding area of low district brightness.

Overall, there would be a moderate magnitude of change to this landscape, which is of moderate sensitivity, and a **moderate visual impact** at night.

Visual impact during operation: During operation there would not be any lighting proposed along the main transmission line. Therefore, there would be a negligible magnitude of change to this landscape which is of moderate sensitivity, and a **negligible visual impact** at night during operation.

6.2.4 Great Dividing Range foothills landscape

Sensitivity: At night, this landscape would have low light levels with scattered rural residences across the landscape and a greater density of trees on the steeper, hilly landscape. This landform and vegetation cover would provide some screening of light sources within this area. There are also less roads crossing the hilly terrain, and therefore fewer vehicle headlights seen in this area. There are no densely settled areas within this landscape character area, however, the towns and highway in the surrounding landscape would influence the light levels in this area. Overall, this landscape is an area of Low district brightness (A2) and has a **moderate visual sensitivity** at night.

Visual impact during construction: While there are no construction and accommodation camp sites planned in the Great Dividing Range foothills landscape character area, there would be works along the transmission line easement that would occur between 7am-7pm, 7 days a week. Some out of hours works are also proposed given the distance to sensitive receivers for the majority of the construction impact area, and the shift arrangements of the workforce given the remote nature of the proposal.

Consequently, there would be lighting required during winter (and potentially for other periods) for a short duration in the early evening. This would include lighting at the minor staging, storage and laydown ancillary areas as well as headlights from staff and construction vehicles accessing and moving along the transmission line easement. This lighting is likely to contrast somewhat with the surrounding area of low district brightness. This effect would only occur for a short duration each day and for a short time within the proposal construction program.

Overall, there would be a low magnitude of change to this landscape, which is of moderate sensitivity, and a **moderate-low visual impact** at night.

Visual impact during operation: During operation there would not be any lighting proposed along the main transmission line. Therefore, there would be a negligible magnitude of change to this landscape which is of moderate sensitivity, and a **negligible visual impact** at night during operation.

6.2.5 Wagga Wagga rural fringe landscape

Sensitivity: At night, this landscape would have medium light levels with scattered rural residences across the landscape and a greater density of residences to the north on the outskirts of Wagga Wagga. While the vegetation cover would provide some screening of light sources within this area, there would be a bright skyglow associated with the city of Wagga Wagga. This would include the lights from vehicles travelling along roads within this area. Overall, this landscape is an area of medium district brightness (A3) and has a **low visual sensitivity** at night.

Visual impact during construction: There is a construction compound site planned in this landscape character area, that would operate between 7am and 7pm, seven days a week. Some out of hours works are also proposed given the distance to sensitive receivers for the majority of the construction impact area, and the shift arrangements of the workforce given the remote nature of the proposal.

Lighting would be required at these facilities when they are operating outside of daylight hours. In this area there is more vegetation, which would somewhat contain views to this lighting.

There would also be works along the transmission line easement that would occur between 7am-7pm, 7 days a week. Consequently, there would be lighting required during winter (and potentially for other periods) for a short duration in the early evening. This would include lighting at the minor staging, storage and laydown ancillary areas as well as headlights from staff and construction vehicles accessing and moving along the transmission line easement. This lighting is likely to be absorbed into the surrounding area of medium district brightness.

Overall, there would be a low magnitude of change to this landscape which is of low sensitivity, and a **low visual impact** at night.

Visual impact during operation: During operation there would not be any lighting proposed along the main transmission line, however, there may be some additional lighting at the substation. However, this lighting would be screened by the surrounding vegetation in most views and otherwise absorbed into the surrounding setting which is of medium district brightness. Overall, there would be a negligible magnitude of change to this landscape which is of low sensitivity, and a **negligible visual impact** at night during operation.

6.2.6 Summary of night-time visual impacts

These identified visual impacts at night are listed in 2.

TABLE 6-2: SUMMARY OF VISUAL IMPACTS AT NIGHT

			Construction		Operation	
	Location	Visual sensitivity	Magnitude of change	Visual impact	Magnitude of change	Visual impact
1	Mallee shrubland and rural landscape	High	Moderate	High-Moderate	Negligible	Negligible
2	Murrumbidgee River plains rural landscape	High	Moderate	High-Moderate	Low	Moderate
3	Lockhart rural valley landscape	Moderate	Moderate	Moderate	Negligible	Negligible
4	Great Dividing Range foothills landscape	Moderate	Low	Moderate-Low	Negligible	Negligible
5	Wagga Wagga rural fringe landscape	Low	Low	Low	Negligible	Negligible

6.3 Impact on views from private residences

582 private residences were identified within 5 kilometres of the Proposal, plus residences within the towns and regional city of Wagga Wagga. Of these, 240 residences were considered (some individually and some forming groups of residences) in relation to potential visual impact.

The potential for a visual impact at each of these private residences has been addressed and arranged by landscape character area. **Appendix F** includes the location of these private residences. **Appendix G** includes a detailed analysis of potential visual impact for each receiver group and **Appendix H** includes further analysis of those receivers identified as having the potential for a very high or high visual impact. These impacts are described in the following section.

6.3.1 Mallee shrubland and rural landscape character area

In this landscape character area private residences are scattered across the rural landscape so that there are typically large distances between these residences and the transmission line easement. This proposal would follow the existing power line easement through this area and the presence of the existing transmission lines and towers would increase the visual absorption capacity of these views due to the visual compatibility of this proposal with the existing transmission infrastructure.

Overall, there are about sixteen (16) rural residences in this landscape character area there which would have the potential for **low** visual impact during operations. There is one (1) residence that would have a slightly higher, **low – moderate,** potential for a visual impact due to there being less intervening existing vegetation. Overall, considering the length of this proposal there relatively few receivers and low visual impacts in this section of the corridor.

6.3.2 Murrumbidgee River Plain rural landscape character area

In this landscape character area private residences are scattered across the rural landscape so that there are typically large distances between these residences and the transmission line easement. This proposal would follow the existing power line easement through this area and the presence of the existing transmission lines and towers would increase the visual absorption

capacity of these views due to the visual compatibility of this proposal with the existing transmission infrastructure.

In this landscape character area there about fifteen (15) rural residences which would have the potential for **low** visual impact, five (5) would have a **low - moderate** visual impact, one (1) would have a **moderate** potential visual impact. There would be six (6) private residences that have the potential for a **high** visual impact.

The high visual impacts would be from residences located within relatively close proximity to the transmission line easement. This landscape has low levels of vegetation cover and at these closer distances, the transmission line towers would be seen rising above any intervening vegetation. (Refer to Figure 6-33, 6-34 and 6-35)

Overall, considering the scale and length of this proposal there are a relatively low number of receivers that have the potential for high visual impacts in the Murrumbidgee River Plain rural landscape character area section of the corridor.

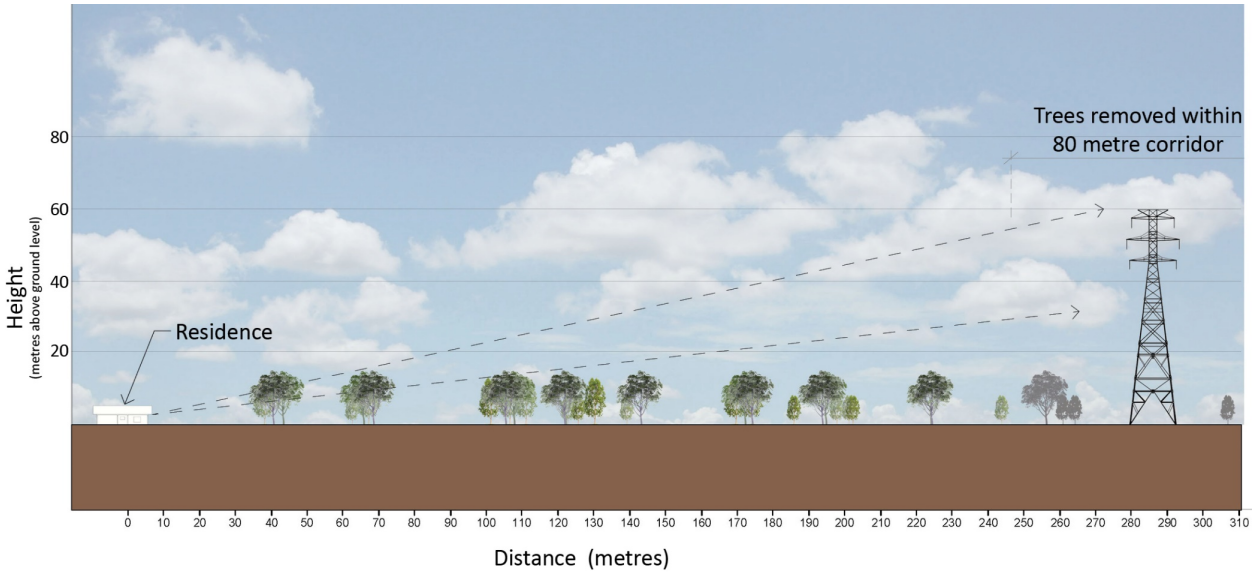

FIGURE 6-33 CROSS SECTION 823 FERNBANK ROAD, ARGOON (R422), HIGH POTENTIAL VISUAL IMPACT

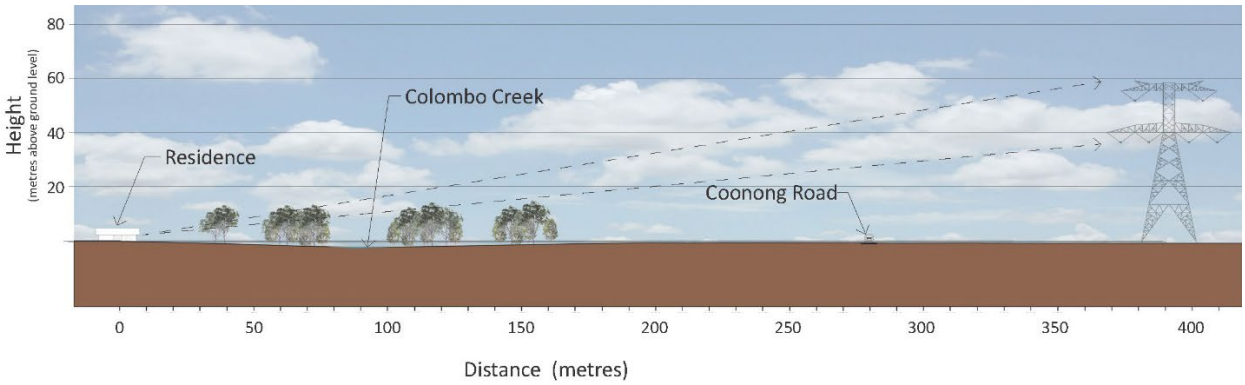

FIGURE 6-34 CROSS SECTION 877 COONONG ROAD, MORUNDAH (R20522), HIGH POTENTIAL VISUAL IMPACT

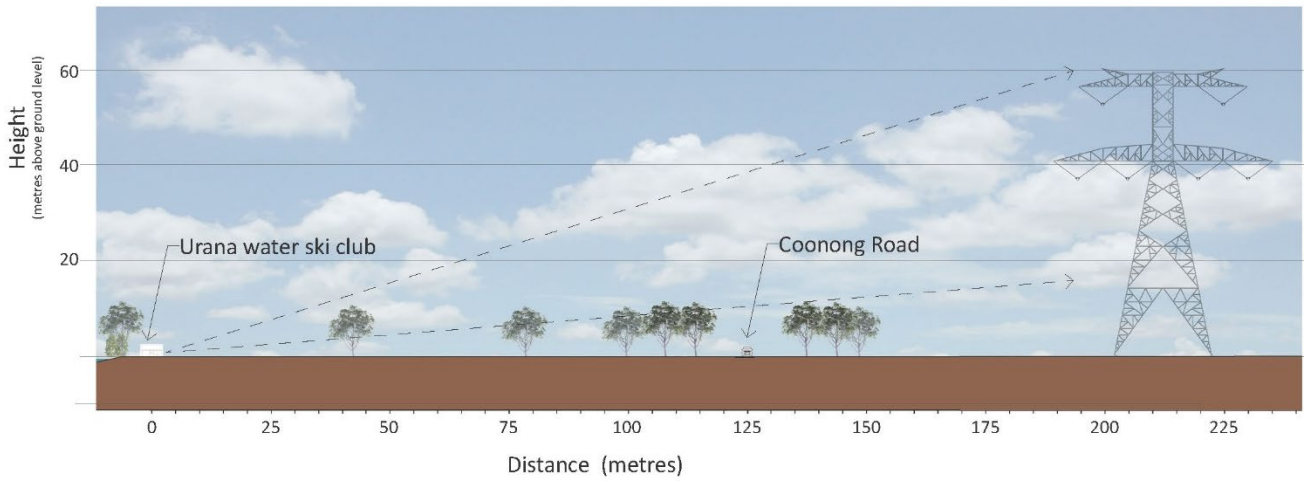

FIGURE 6-35 URANA WATER SKI CLUB, (R534), HIGH POTENTIAL VISUAL IMPACT

6.3.3 Lockhart rural valley landscape character area

In this landscape character area there is an increased density of private residences scattered across the rural landscape and concentrated around the town of Lockhart so that there would be less distance between properties and between these residences and the proposed transmission line easement. This proposal would follow the existing power line easement through some parts of this alignment, but mostly it is a new easement. Some residences may have views to the vegetation within the Brookong nature reserve, some of which would be removed, increasing the level of potential visual impact.

The transmission line easement would cross an elevated area to the east of Lockhart, the introduction of additional transmission towers onto this elevated land and vegetation removal would be prominent from the surrounding area and increase the potential visual impact. In this area there is also several existing transmission lines that converge, increasing the potential for a visual impact due to the introduction of towers of a different size and shape and potentially converging with others in a way that increases its prominence.

In this landscape character area about twenty-one (21) residences that would have a potential **low - moderate** visual impact and eighteen (18) have the potential for a **moderate** visual impact. Fifteen (15) residences have the potential for a **high** visual impact and one (1) would potentially have a **very high** visual impact.

The potential high and very high visual impacts would be from residences located within relatively close proximity to the transmission line easement, where there is limited natural screening by landform or vegetation, and the transmission line towers and potential vegetation removal would be prominent. (Refer to Figure 6-36 and 6-37)

During construction there would be potential for a **high** visual impact from five (5) residences that are located in close proximity to the proposed laydown and construction camp south west of Lockhart, and the Bruckner Gnadbro construction accommodation camp east of Lockhart. From these private residences there is a potential for impacts during the day and at night.

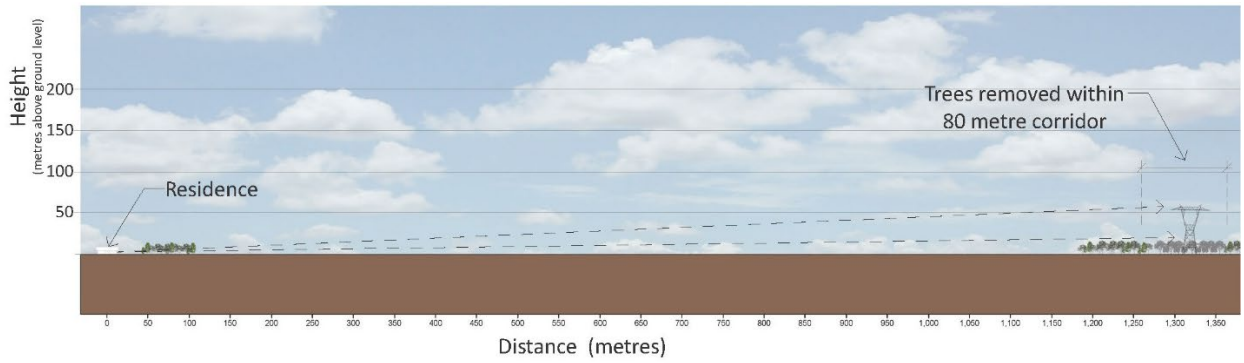

FIGURE 6-36 4338 BOREE CREEK ROAD, URANA (R11317), MODERATE POTENTIAL VISUAL IMPACT

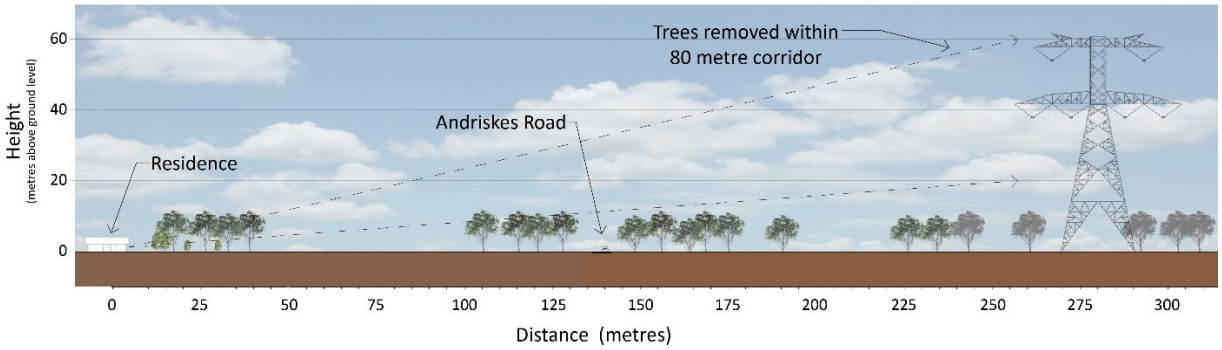

FIGURE 6-37 ANDRISKES LANE, CULLIVEL (R385), VERY HIGH POTENTIAL VISUAL IMPACT

6.3.4 Great Dividing Range foothills landscape character area

In this landscape character area there is an increased density of private residences on elevated land. There would be less distance between properties and between these residences and the proposed transmission line easement, and the elevated vantage point allows for longer range views and reduces the potential effectiveness of screening vegetation in some locations. The proposal would follow the existing power line easement through this area and the presence of the existing transmission lines and towers would increase the visual absorption capacity of these views due to the visual compatibility of this proposal with the existing transmission infrastructure where this occurs. The transmission line easement would cross the ridgeline at Rowan. The introduction of further transmission towers onto this elevated land and vegetation removal would be prominent from the surrounding area and increase the potential visual impact levels. In this area there is also several existing transmission lines that converge, increasing the potential for a visual impact due to the introduction of towers of a different size and shape and potentially converging with others in angled alignments that attract the eye.

In this landscape character area there about seven (7) residences that would have a potential **low - moderate** visual impact, forty (40) have the potential for a **moderate** visual impact and thirteen (13) have the potential for a **high** visual impact.

The residences where there is the potential for a high visual impact are located within close proximity to the transmission line easement, where there is limited natural screening by landform or vegetation, there would be vegetation removal and the towers would be in more elevated locations so that they would be more prominent. While in some locations the new transmission line towers would be seen in the context of other power infrastructure, the towers would be of a larger scale and / or not located parallel to nor be aligned with the existing tower spacings (refer to Figure 6-38, 6-39 and 6-40).

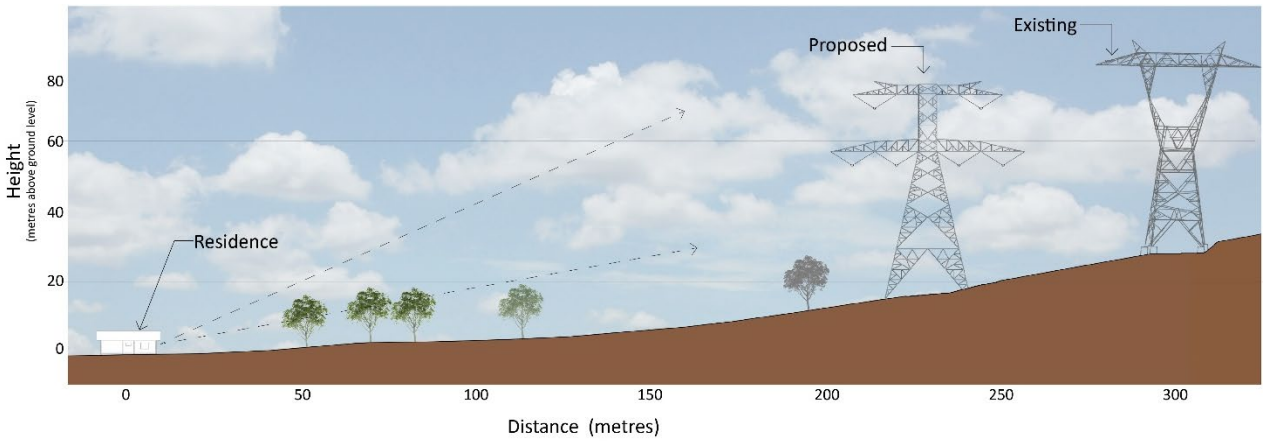

FIGURE 6-38 ROWAN (R26750), HIGH POTENTIAL VISUAL IMPACT

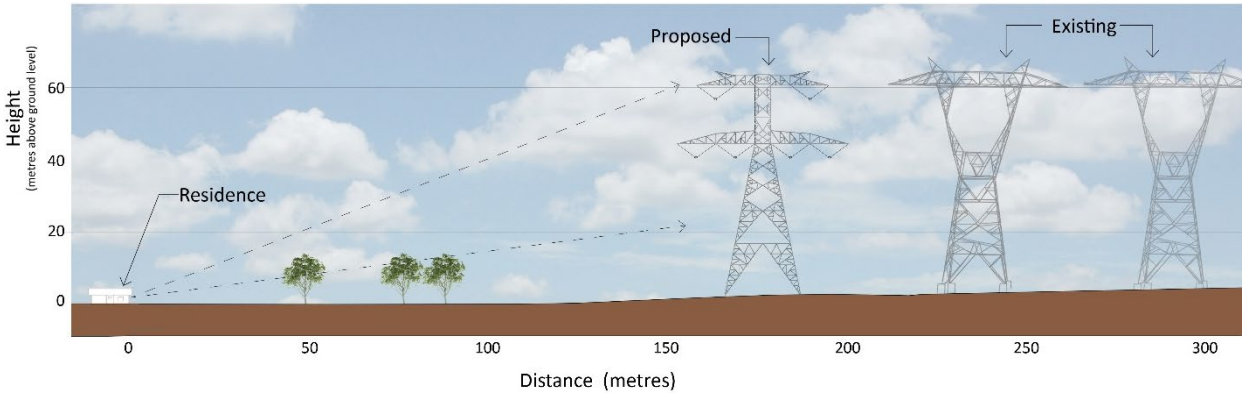

FIGURE 6-39 ROWAN (R26749), HIGH POTENTIAL VISUAL IMPACT

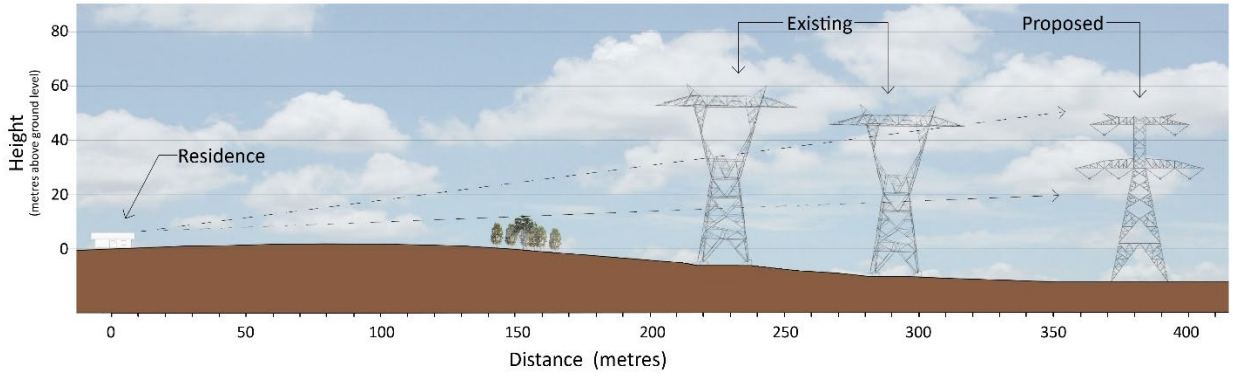

FIGURE 6-40 6823 HOLBROOK ROAD, ROWAN (R504), HIGH POTENTIAL VISUAL IMPACT

6.3.5 Wagga Wagga rural fringe landscape character area

In this landscape character area there is an increased density of private residences on the plains, and on the outskirts of Wagga Wagga. There are also several other transmission line easements in this area, the existing Wagga Wagga substation and industrial scale uses such as the Gregadoo Recycling and Waste Management Centre. Due to this increased density, and the existing transmission lines, there would be less distance between residential residences and the proposed transmission line easement. This landscape has some vegetation cover that reduces long range views within the area.

This proposal would follow the existing power line easement through this area and the presence of the existing transmission lines and towers would increase the visual absorption capacity of these views due to the visual compatibility of this proposal with the existing transmission

Rowan and be viewed from some locations. The additional transmission line towers on the elevated land and vegetation removal would be more prominent and increase the potential visual impact levels. There are also areas where the existing transmission lines converge, potentially in angled alignments that attract the eye, and also increasing the potential for a visual impact due to the introduction of towers of a different size and shape potentially being visually jarring.

In this landscape character area there about eleven (11) residences that would have a potential **low - moderate** visual impact, twenty (20) have the potential for a **moderate** visual impact, two (2) have the potential for a **high** visual impact.

The residences where there is the potential for a high visual impact would be located within relatively close proximity to the transmission line easement, where a greater area of vegetation removal is likely to be seen, and in locations where there would be both transmission line infrastructure and the Wagga Wagga substation expansion seen. Overall, there would be a relatively low number of private properties with the potential for a high impact in this area.

During construction there would be potential for a **high** visual impact from two (2) residences that are located in close proximity to the proposed Wagga Wagga compound.

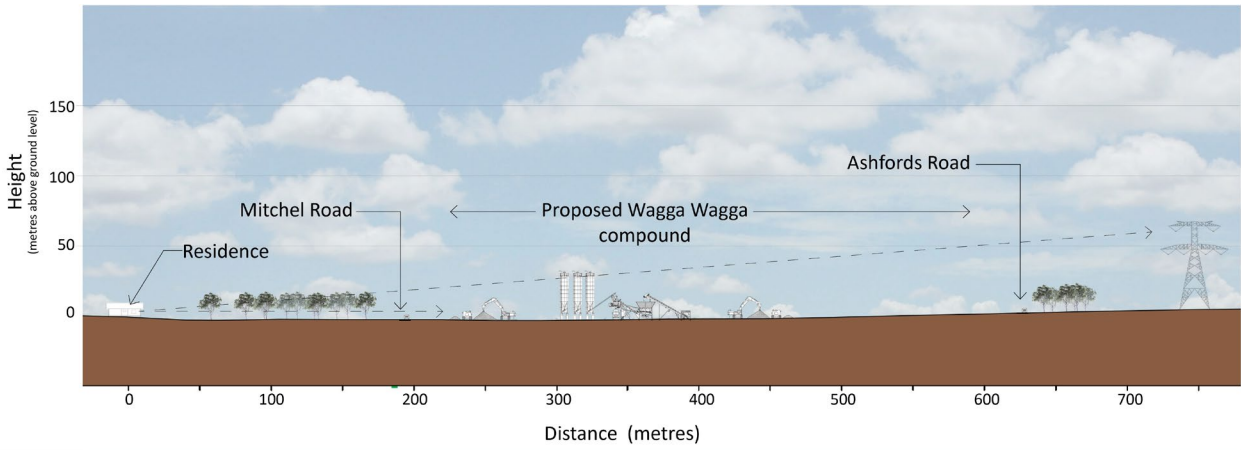

FIGURE 6-41 'ARUNDEL' 1504 GREGADOO EAST ROAD, GREGADOO (R737), HIGH POTENTIAL VISUAL IMPACT DURING CONSTRUCTION, MODERATE POTENTIAL VISUAL IMPACT DURING OPERATION

6.3.6 Summary of visual impact from private residences

The following tables summarise the findings of this assessment of visual impact from private residences project during construction (Table 6-3) and during operations (Table 6-4).

TABLE 6-3: SUMMARY OF RESIDENTIAL RECEIVER ASSESSMENT DURING PROJECT CONSTRUCTION

Potential level of impact	Receiver ID no.	Number of receivers affected
Lockhart rural valley landscape character area		
High	12297, 12293, 26870, 26871,546	5
Wagga Wagga rural fringe landscape character area		
High	737, 202	

TABLE 6-4: SUMMARY OF RESIDENTIAL RECEIVER ASSESSMENT DURING PROJECT OPERATIONS

Potential level of impact	Receiver ID no.	Number of receivers affected
Mallee shrubland and rural landscape character area		
Low	15158, 1161, 26769, 15157,1685, 26768, 20512, 20511, 20513, 1579, 49, 26775, 1229, 26778, 26780, 15164	16
Low-Moderate	14916	1
Murrumbidgee River Plain rural landscape character area		
Low	26785, 15167, 1153, 15168, 26791, 26792, 72, 26794, 26795, 15171, 1655, 10238, 13454, 380, 426	15
Low-Moderate	1670, 26796, 12740, 20520, 10239	5
Moderate	20521	1
High	422, 20519, 20522, 20523, 533, 534 (picnic shelter)	6
Lockhart rural valley landscape character area		
Low	8990, 10018, 11688, 13207, 11138, 241, 20556, 412, 15450, 10004, 15553, 20552, 453, 20530, 10070	15
Low-Moderate	14911, 378, 26830, 12297, 12294, 10739, 10740, 8991, 1511, 10008, 406, 417, 10006, 420, 421, 10072, 416, 10007, 1702, 10003, 9997	21
Moderate	371, 11318, 11317, 414, 384, 8989, 415, 451, 10002, 10001, 1126, 9996, 454, 218, 207, 209, 26902, 419	18
High	12943, 14909, 12942, 12296, 450, 461, 432, 249, 188, 1712, 468, 211, 208, 26908, 26907	15
Very High	385	1
Great Dividing Range foothills landscape character area		
Low	469, 26936, 221, 222, 225, 497, 496, 20561, 235, 20569, 499, 20568, 20570, 873, 872, 193, 871, 195, 20578, 517, 519, 424, 525, 423	25
Low-Moderate	272, 315, 26966, 26968, 26969, 15853, 273	7
Moderate	223, 279, 180, 182, 183, 184, 26926, 26927, 26931, 176, 26951, 286, 26954, 177, 174, 276, 26963, 20567, 20566, 234, 321, 26989, 26991, 26993, 229, 26992, 26990, 231, 874, 322, 230, 498, 27026, 20565, 20575, 20425, 20426, 20564, 20571, 215.	40
High	185, 186, 26950, 20533, 26749, 26750, 20572, 500, 501, 502, 503, 504, 313	13
Wagga Wagga rural fringe landscape character area		
Low	320, 194, 27004, 858, 855, 856, 860, 219, 859	9
Low-Moderate	27033, 27032, 259, 842, 843, 844, 853, 854, 861, 862, 27034	11
Moderate	851, 27027, 191, 852, 192, 846, 259, 845, 260, 847, 268, 27005, 27006, 27007, 27008, 27009, 20388, 27010, 27011, 737	20
High	202, 27028	2

TABLE 6-4: SUMMARY OF RESIDENTIAL RECEIVER ASSESSMENT DURING PROJECT OPERATIONS

Potential level of impact	Receiver ID no.	Number of receivers affected
Mallee shrubland and rural landscape character area		
Low	15158, 1161, 26769, 15157,1685, 26768, 20512, 20511, 20513, 1579, 49, 26775, 1229, 26778, 26780, 15164	16
Low-Moderate	14916	1
Murrumbidgee River Plain rural landscape character area		
Low	26785, 15167, 1153, 15168, 26791, 26792, 72, 26794, 26795, 15171, 1655, 10238, 13454, 380, 426	15
Low-Moderate	1670, 26796, 12740, 20520, 10239	5
Moderate	20521	1
High	422, 20519, 20522, 20523, 533, 534 (picnic shelter)	6
Lockhart rural valley landscape character area		
Low	8990, 10018, 11688, 13207, 11138, 241, 20556, 412, 15450, 10004, 15553, 20552, 453, 20530, 10070	15
Low-Moderate	14911, 378, 26830, 12297, 12294, 10739, 10740, 8991, 1511, 10008, 406, 417, 10006, 420, 421, 10072, 416, 10007, 1702, 10003, 9997	21
Moderate	371, 11318, 11317, 414, 384, 8989, 415, 451, 10002, 10001, 1126, 9996, 454, 218, 207, 209, 26902, 419	18
High	12943, 14909, 12942, 12296, 450, 461, 432, 249, 188, 1712, 468, 211, 208, 26908, 26907	15
Very High	385	1
Great Dividing Range foothills landscape character area		
Low	469, 26936, 221, 222, 225, 497, 496, 20561, 235, 20569, 499, 20568, 20570, 873, 872, 193, 871, 195, 20578, 517, 519, 424, 525, 423	25
Low-Moderate	272, 315, 26966, 26968, 26969, 15853, 273	7
Moderate	223, 279, 180, 182, 183, 184, 26926, 26927, 26931, 176, 26951, 286, 26954, 177, 174, 276, 26963, 20567, 20566, 234, 321, 26989, 26991, 26993, 229, 26992, 26990, 231, 874, 322, 230, 498, 27026, 20565, 20575, 20425, 20426, 20564, 20571, 215.	40
High	185, 186, 26950, 20533, 26749, 26750, 20572, 500, 501, 502, 503, 504, 313	13
Wagga Wagga rural fringe landscape character area		
Low	320, 194, 27004, 858, 855, 856, 860, 219, 859	9
Low-Moderate	27033, 27032, 259, 842, 843, 844, 853, 854, 861, 862, 27034	11
Moderate	851, 27027, 191, 852, 192, 846, 259, 845, 260, 847, 268, 27005, 27006, 27007, 27008, 27009, 20388, 27010, 27011, 737	20
High	202, 27028	2

7. Cumulative impact

Cumulative impact assessment means the consideration of other nearby development projects along with the proposal. Projects with the potential for cumulative impacts with the proposal were identified through a review of publicly available information and environmental impact assessments from the following databases:

- NSW Major Projects website (NSW Government, searched October 2021)
- Relevant council websites (searched October 2021)
- Australian Government – Department of Environment and Energy, EPBC Public notices list (Australian Government, searched October 2021).

A number of proposed developments have been identified and these include:

- EnergyConnect (NSW – Western Section)
- Buronga Solar Farm
- Buronga Landfill Expansion
- Buronga – Gol Gol residential expansion
- Inland Rail – Albury to Illabo
- Uranquinty Solar Farm
- Gregadoo Solar Farm.

7.1 EnergyConnect (NSW – Western Section)

The NSW – Western Section of EnergyConnect would comprise around 135 kilometres of new 330kV double circuit transmission line and associated infrastructure between the SA/NSW border and the existing Buronga substation, upgrade of the Buronga substation and upgrade of the existing 22 kilometre 220kV single circuit transmission line between the Buronga substation and the NSW/Victoria border at Monak. Transgrid has previously sought, and received, separate environmental planning approvals.

The EnergyConnect (NSW – Western Section) was approved in September 2021. Construction of the proposal is scheduled to commence in early-2022 (enabling phase). The construction of the transmission lines would take approximately 18 months while the Buronga substation upgrade and expansion would be delivered in two components and be operational by late-2023. Site decommissioning and remediation is expected to extend approximately one year beyond the commissioning (operational) phases, with estimated completion in early 2025.

The EnergyConnect (NSW – Western Section) project would occur at the western end of the current proposal and include some parallel alignment for the first six kilometres of the proposal alignment.

Potential cumulative landscape impact:

This project would be seen together with this proposal in views in the vicinity of the Buronga substation. The changes expected for the approved project would be similar in nature to those proposed by this proposal. This would include some minor landform changes, the removal of vegetation and introduction of large scale energy transmission line infrastructure. This would further change the landscape character of this area from rural to a character where energy infrastructure prevails. This landscape has a relatively high capacity to absorb the transmission lines, as this is not an intact rural landscape, with existing large existing substation, and scattered

intensive rural uses with sheds and other towers. If approved, there would be a cumulative landscape impact associated with this project in combination with the proposal.

Potential cumulative visual impact:

This approved project would be seen in views to the proposal. When viewed together they would further alter the character with additional transmission towers seen in the vicinity of the substation. There is, however, a visual compatibility between the existing substation and existing transmission lines with further similar character infrastructure. Furthermore, while the landscape is relatively flat, it has some visual absorption capacity to accommodate further infrastructure with existing scattered areas of vegetation which separate the proposal areas from surrounding rural properties.

If approved, there would be a cumulative visual impact associated with this project and the proposal. However, this would be in views seen primarily from a small section of Arumpo Road. Furthermore, the landscape seen in these views have a high visual absorption capacity for electrical infrastructure due to the surrounding vegetation.

7.2 Buronga Solar Farm

The Buronga Solar Farm development includes a 400 MW solar farm with energy storage and associated infrastructure located adjacent to the proposal Buronga substation. The EIS for the project is currently being prepared. The project would also involve the construction of a 220kV or 330kV transmission line for connection to the existing Buronga substation. The construction schedule for the proposal is identified as being about approximately 18 to 24 months from site establishment to completion (noting commencement subject to approval from DPIE).

Potential cumulative landscape impact:

The solar farm would require some minor landform change and removal of vegetation and would introduce energy generation infrastructure and additional transmission lines into the landscape. These changes would further transform the landscape character from rural to a character where energy infrastructure prevails. However, the landscape has a relatively high capacity to absorb the transmission lines as this is not an intact rural landscape, with a large existing substation, and scattered intensive rural uses with sheds and other towers. If approved, there would be a cumulative landscape impact associated with this project in combination with the proposal.

Potential cumulative visual impact:

This project would be seen in views to the proposal. When viewed together they would further alter the character with additional transmission towers and lines and the introduction of solar infrastructure. There is, however, a visual compatibility between the existing substation and existing transmission lines with further similar character infrastructure. Furthermore, while the landscape is relatively flat, it has some visual absorption capacity to accommodate further infrastructure with existing scattered areas of vegetation which separate the proposal areas from surrounding rural properties.

If approved, there would be a cumulative visual impact associated with this project and the proposal. However, this would be in views seen primarily from a small section of Arumpo Road. Furthermore, the landscape seen in these views have a high visual absorption capacity for electrical infrastructure due to the surrounding vegetation.

7.3 Buronga Landfill Expansion

The proposal includes the expansion to the existing Buronga landfill to allow for an increase in the total quantity of waste that can be accommodated from 30,000 tonnes to 100,000 tonnes of general waste per annum. The proposal would consist of the construction of multiple additional landfill cells over the next 30 years comprising a volume of approximately 4.8 million cubic metres over an area of approximately 395,000 square metres (including the current active landfill cell).

Potential cumulative landscape impact:

This project is located on the outskirts of Gol Gol where there is an existing landfill site and within an open mallee shrubland setting, similar to the proposal site. The landscape impact of this landfill expansion would not be associated with the proposal, having landscape impacts of a different character to this proposal. The changes expected from the landfill expansion would be different in nature to those expected from the proposal in that there would be substantial landform change as well as vegetation removal, whereas the proposal would have smaller areas of localised impact along a corridor and minor landform change. Overall, there would not be any cumulative landscape impact expected because of the proposal when this landfill expansion occurs.

Potential cumulative visual impact:

The Buronga landfill expansion would not be seen in any views which also includes the proposal, or in a sequence of views along the highway that would be noticeably changed by the landfill project and proposal. For these reasons there would not be a potential visual impact between the proposal and the Buronga landfill expansion.

7.4 Buronga – Gol Gol residential expansion

Wentworth Shire Council is proposing new subdivisions to provide approximately 500 new large residential housing allotments in the Buronga – Gol Gol growth area, approximately 10 kilometres to the west of the proposal.

It is not expected that there would be cumulative impacts to flood risk and geomorphology because the development would need to comply with the Wentworth Shire Council Development Control Plan 2011 which outlines conditions for erosion and sediment control and flood liable land.

No timeframe on proposed development of the urban release areas has been identified at this time, however should the proposed residential expansion commence at the same time as the construction of the proposal, this may result in some cumulative visual impacts.

Potential cumulative landscape impact:

This project is located on the outskirts of the existing town and has a more intensive agricultural character than the proposal alignment. The landscape impact of this residential expansion would not be associated with the proposal. The changes expected of this residential expansion project would be different in nature to those expected from the proposal in that there would be a larger landform change and area of agricultural land removed, whereas the proposal would have smaller areas of localised impact along a corridor within a broader scale rural landscape. Overall, there would not be any cumulative landscape impact expected because of the proposal when this expansion occurs.

Potential cumulative visual impact:

The Gol Gol residential expansion area would not be seen in any views which also includes the proposal, or in a sequence of views along the highway that would be noticeably changed by the project and proposal. For these reasons there would not be a potential visual impact between the proposal and the Gol Gol residential expansion.

7.5 Inland rail – Albury to Illabo

ARTC is proposing to upgrade the Albury to Illabo section, along the 185 kilometres of existing operational narrow-gauge railway from the Victorian/New South Wales border to Illabo in regional NSW. The Proposal would provide clearance of the existing 'Main South' corridor to operate 1,800 metres long, 6.5 metres high, double stacked trains and includes the provision of dual track in areas for train passing. The project is made up of discrete sections of proposed upgrade, including upgrades within the existing rail corridor at Uranquinty, The Rock and within the centre of Wagga Wagga.

Subject to planning approval, construction is planned to commence in mid-2023 and complete by late 2024. Operations to commence in 2025.

Potential cumulative landscape impact:

The Inland rail – Albury to Illabo project would be located mainly within the existing rail corridor near The Rock and within the township of Uranquinty. This project would intensify the character of the rail corridor in these areas but would not affect the landscape character of the project study area. As such, there would not be a cumulative landscape impact associated with this project in combination with the proposal.

Potential cumulative visual impact:

The proposal would not be viewed together with the Albury to Illabo project, however, there may be sequential views where this project and the proposal would be seen consecutively in the vicinity of The Rock and Uranquinty. The Inland rail project would not have a similar visual character and would not be associated with the visual impacts of the current proposal.
If approved, there would not be a cumulative visual impact associated with this project and the proposal.

7.6 Uranquinty Solar Farm

Origin Energy is proposing to develop a commercial scale solar photovoltaic site and associated battery storage at Uranquinty. The proposal would have a capacity of up to 200 megawatts (MW) of renewable energy production for the local electricity supply. The site is located north-west of Uranquinty village along Uranquinty Cross Road, around 15 kilometres south-west of Wagga Wagga. Given current timing for the proposed solar farm, there is the potential for the proposal and the solar farm construction periods to overlap

Potential cumulative landscape impact:

The Uranquinty Solar Farm would be located over two kilometres to the north of this proposal site but in a similar rural landscape. This project would be located alongside the existing Uranquinty power station and introduce further energy generation infrastructure and additional transmission lines into the landscape. If approved, there would be a cumulative landscape impact associated with this project in combination with the proposal whereby there would be a greater presence of energy infrastructure in the rural landscapes to the west of Uranquinty.

Potential cumulative visual impact:

This project would not be seen in views to the proposal but may be seen sequentially when travelling around Uranquinty. When viewed sequentially, the transmission line would have a similar nature to the transmission lines associated with the new solar farm. If approved, there would be a cumulative visual impact associated with this project and the proposal.

7.7 Gregadoo Solar Farm

The Gregadoo Solar Farm would be located about 13 kilometres south-east of Wagga Wagga. The project is proposed to comprise construction, operation and decommissioning of a maximum 47 MW solar farm and associated infrastructure. Construction is expected to commence mid-2021.

Potential cumulative landscape impact:

The Gregadoo Solar Farm would introduce energy generation infrastructure and additional transmission lines into the landscape, changing the landscape character from rural with energy transmission infrastructure to a character where energy infrastructure prevails. The landscape has a relatively high capacity to absorb the transmission lines as this is not an intact rural landscape, with the existing large substation, and scattered intensive rural uses with sheds and other structures. If approved, there would be a cumulative landscape impact associated with this project in combination with the proposal.

Potential cumulative visual impact:

This project would be seen in views to the proposal from Boiling Down Road, and elevated residential properties to the north-east of the site on Mitchells Road. When viewed together they would further alter the character with the introduction of solar infrastructure, additional transmission towers and lines. There is, however, a visual compatibility between the existing substation, the existing transmission lines and the solar farm and with further similar character infrastructure. The landscape is relatively flat with existing scattered areas of vegetation which separate the proposal areas from surrounding residential properties.

If approved, there would be a cumulative visual impact associated with this project and the proposal. This impact would be in views seen from the elevated properties on Mitchells Road, and from Boiling Down Road.

7.8 Summary

If approved, there would be a cumulative landscape impact associated with this proposal and the Buronga solar farm during operation. These projects would require the removal of vegetation and landform change, altering the character of the surrounding landscape. There is also the potential for a cumulative visual impact associated with this proposal and the Buronga solar farm during operation due to their proximity and the scale of visual change that would be experienced from Arumpo Road. However, these views are seen from a small area so that the cumulative effect would not be widely experienced.

Due to the landscape and visual separation between the proposal and the Buronga landfill Expansion and Buronga – Gol Gol residential expansion sites, there would not be any cumulative landscape and visual impact expected.

If approved, there would be a cumulative landscape and visual impact associated with this project in combination with the Uranquinty Solar Farm and The Gregadoo Solar Farm during construction and operation.

8. Mitigation Measures

8.1 Mitigation already incorporated into the proposal alignment

The location of the transmission line easement has already anticipated visual amenity in refining the alignment. This includes:

- minimising the number of intersections with other infrastructure, which would require the use of taller towers;
- avoiding towns along the transmission line easement by following a route which is located a distance to the south of Lockhart and Uranquinty;
- minimising intersections with existing farm infrastructure, areas of vegetation within conservation areas and cultural heritage places;
- following the alignment of existing transmission line easements where possible to minimise areas where the proposal would be located in a greenfield location where there is no visual precedent; and
- using the existing Buronga and Wagga Wagga substation sites for the additional substation infrastructure so as to co-locate this and to utilise a location which is away from residential receivers and other prominent community viewpoints.

There are only a few mitigation techniques that can reduce the visual impacts of the proposal due to the size of the transmission line towers, length of the transmission line easement and character of the infrastructure. Subject to other technical design considerations, these opportunities are described in the following sections.

8.2 Mitigation measures

The following mitigation measures should be considered to further reduce the potential visual impacts identified in this assessment. Refer Table 8-1.

9. Residual visual impacts

For residences where the project is predicted to have a **high** or **very high** visual impact, opportunities for screening vegetation would be investigated in consultation with the affected landholder and implemented during construction (refer to mitigation measure LV5). Screening vegetation has the potential to reduce the extent of the Proposal that would be seen e.g. reduce the number of towers visible or reduce the area of the tower that is visible. Screening vegetation would establish over time and would vary in effectiveness with the landform and existing vegetation cover.

In the case of residential properties which have been identified as having a **high** potential visual impact, where screening vegetation can be located to reduce the visibility of the towers, the visual impact would be reduced to a **moderate** visual impact. (Refer to **Appendix H)**

At the property where a potential **very high** visual impact was identified, the potential for effective screening is less due to the close proximity of the towers to the residence and their scale in relation to the potential size of screening vegetation. However, the visual impact would potentially be reduced to a **high** visual impact as the provision of appropriately located screening vegetation would reduce the visibility of the Proposal somewhat over time.

Overall, there would be one (1) property where there would be a residual **high** visual impact and the remainder would experience a **moderate** visual impact or less.

TABLE 8-1: MITIGATION MEASURES

REFERENCE	MITIGATION MEASURE	TIMING	APPLICABLE LOCATION(S)
LV1	Opportunities for the retention and protection of existing trees within the disturbance area would be identified during detailed construction planning. Identified trees of high conservation significance would be retained and protected where practicable.	Pre-construction	Whole of proposal
LV2	Temporary and permanent access would be designed to minimise vegetation removal, changes to landform, and visual impacts where practicable.	Pre-construction	Whole of proposal
LV3	Lighting at construction compounds and accommodation camps would be designed and operated in accordance with AS4282-2019 Control of the obtrusive effects of outdoor lighting	Pre-construction and construction	Construction compound and accommodation camps
LV4	The Tree Protection Zone of retained trees within or immediately adjacent to the disturbance area would be managed in accordance with AS4970-2009 Protection of Trees on Development Sites where practicable to minimise the impact of the works on the long-term health of these trees.	Pre-construction	Whole of proposal
LV5	For residences where the project is predicted to have a high or very high visual impact, opportunities for screening vegetation would be investigated. Appropriate visual screening or other options would be confirmed in consultation with the affected landholder and implemented during construction. Vegetative screening would be maintained by the landholder.	Construction	Transmission line
LV6	Lighting at the substations would be designed and operated in accordance with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.	Operation	Dinawan 330kV substation and Wagga Wagga substation upgrade / expansion

10. Conclusion

10.1 Landscape impact

This landscape study area includes landscapes of regional, local and neighbourhood landscape sensitivity. There would be some minor landform change and the removal of vegetation, particularly in areas to the east of the alignment, where there is greater vegetation cover and a more hilly landform. However, the transmission line easement has a high capacity to absorb the proposed transmission line and associated infrastructure. Those landscape impacts which have been identified range from low to moderate impact during construction and operations.

10.2 Visual impact

For a proposal of this length and scale, the visual impacts are relatively low and have a relatively small influence. Those visual impacts which have been identified mostly having a low to moderate visual impact.

There is generally a greater visual impact during construction than during operations. Most visual impacts would be experienced from roads, as the alignment avoids all towns and public recreation areas.

There would be low and moderate-low visual impacts on views from roads within the Mallee shrubland and rural landscape, between Buronga and Balranald, during construction and operation. This is due to the relatively low sensitivity of these routes and the absorption capacity of the landscape with taller vegetation, an undulating terrain and precedent of existing power infrastructure.

There would be mostly low and negligible visual impacts on views from roads within the Murrumbidgee River plain rural landscape, between Balranald and Urana, during construction and operation. With a moderate adverse visual impact from Kidman Way the vicinity of the proposed Dinawan substation, during construction and operation, due to the large scale and extent of the construction works and presence of a construction camp.

There would be moderate and moderate-low visual impacts in views from roads throughout the Lockhart rural valley landscapes during construction and operation of the proposal. This is due to the relatively low sensitivity of these routes and the absorption capacity of the landscape with taller vegetation, an undulating terrain and precedent of existing power infrastructure. These impacts would increase to a high-moderate adverse visual impact at Urana-Lockhart Road during construction and operation, due to the removal of a large area of vegetation and the alignment extending parallel to the road.

Nearing Wagga Wagga, there would be mostly low visual impacts during construction and operation of the proposal, due to the presence of an existing substation and convergence of transmission lines in this location.

10.3 Scenic or significant vistas and road corridors in the public domain

There are no adverse impacts anticipated on significant vistas within the landscape study area. Views within the landscape study area were considered with a focus on views from road corridors that are scenic routes and include views to landscapes with scenic value. In most locations the alignment would cross roads, rather than be aligned parallel to them, reducing the potential for a visual impact that would be experienced for a long duration. Notably, there would be a high adverse visual impact from Urana-Lockhart Road, on the approach to Lockhart, where an area of vegetation is proposed to be removed and the transmission line easement would parallel the road for a short section.

10.4 Air traffic

There are scenic flights operating from the Lockhart airport, offering views over Lake Cullivel and Lake Urana and the surrounding agricultural areas. The proposal would be seen from the air, within the vast open, predominantly flat landscape of the Lockhart rural valley and Murrumbidgee River plains. During construction, there would be a moderate visual impact on views from the air in the vicinity of Lake Cullivel, however, this would be localised and reduce to moderate-low during operation. In other areas, while the work project would be visible unobstructed from the air, it would be seen with a complex landscape where other transmission and related infrastructure are seen and largely absorbed. This would result in a moderate-low visual impact during construction, reducing to a negligible visual impact during operation.

10.5 Night lighting

In the Mallee shrubland and rural landscape and Murrumbidgee River landscape character areas there would be a high-moderate visual impact during construction of the proposal, which would be localised to transmission line construction areas and lighting at the proposed construction compounds at Balranald. These impacts would be temporary. During operations this would reduce to a negligible visual impact as there would be no permanent lighting proposed along the alignment within these landscapes.

There would be a high-moderate adverse visual impact during construction within the Murrumbidgee River plains rural landscape, where construction requires night work, night deliveries and security lighting at the Cobb Highway compound, the Dinawan substation and adjacent camp and laydown area. However, during operation the permanent security lighting at Dinawan substation would be limited and there would be no lighting along the proposal corridor, resulting in a moderate visual impact.

In the Great Dividing Range foothills landscape and Wagga Wagga rural fringe landscape character areas there would be moderate-low and low visual impact during construction due some work along the transmission line construction areas, including the Wagga Wagga substation expansion site and nearby compound. During operation, this would reduce to a negligible visual impact, as there is no lighting proposed along the transmission line easement and the lighting proposed at the substation expansion site would be in character with the existing substation.

10.6 Views from surrounding residences

Considering the scale and length of this proposal, passing through well settled rural areas in the vicinity of the Murray and Murrumbidgee rivers, there would be a relatively small number of visual impacts on private residential properties. This is due to much of the proposal passing through vast landscapes where the alignment has been located to either parallel an existing transmission line easement or to avoid areas of vegetation and residences. The greatest potential visual impact from private residences occurs in the east where the easement would cross more elevated land, and where the residence would be in close proximity to the alignment and therefore there would be limited potential for screening by landform or vegetation, and the transmission line towers would be prominent in views.

The residences with a high or very high potential visual impact, further investigation would be undertaken to determine the actual visual impact and the suitability of screening vegetation to reduce the visual impact would be determined in consultation with the landholder.

10.7 Residual visual impacts

There is the potential for screening vegetation to be provided, in consultation with the affected landholders, that would reduce the number of towers or reduce the area of the towers visible from those private residences identified as having high or very high potential visual impact. The effectiveness of screening vegetation would vary with landform, existing vegetation cover and potentially improve over time.

Those private residences which have been identified as having a high potential visual impact have the potential to be reduced to moderate visual impact. The one (1) property where a potential very high visual impact was identified, would also be reduced to a high visual impact with the provision of screening vegetation at appropriate locations.

Overall, there would be one (1) property where there would be a residual high visual impact and all others would have a moderate visual impact or less.

10.8 Cumulative landscape and visual impact

There is the potential for a cumulative landscape and visual impact associated with this project and the Project Energy Connect – Western Section and Buronga solar farm during operation. These projects would both contribute to landscape character change and alter the amenity of views in the vicinity of the Buronga substation.

Generally, it is expected that the cumulative visual impact would be experienced from a small area, and there would be an opportunity to reduce the visual impacts of the respective project through the implementation of screening vegetation.

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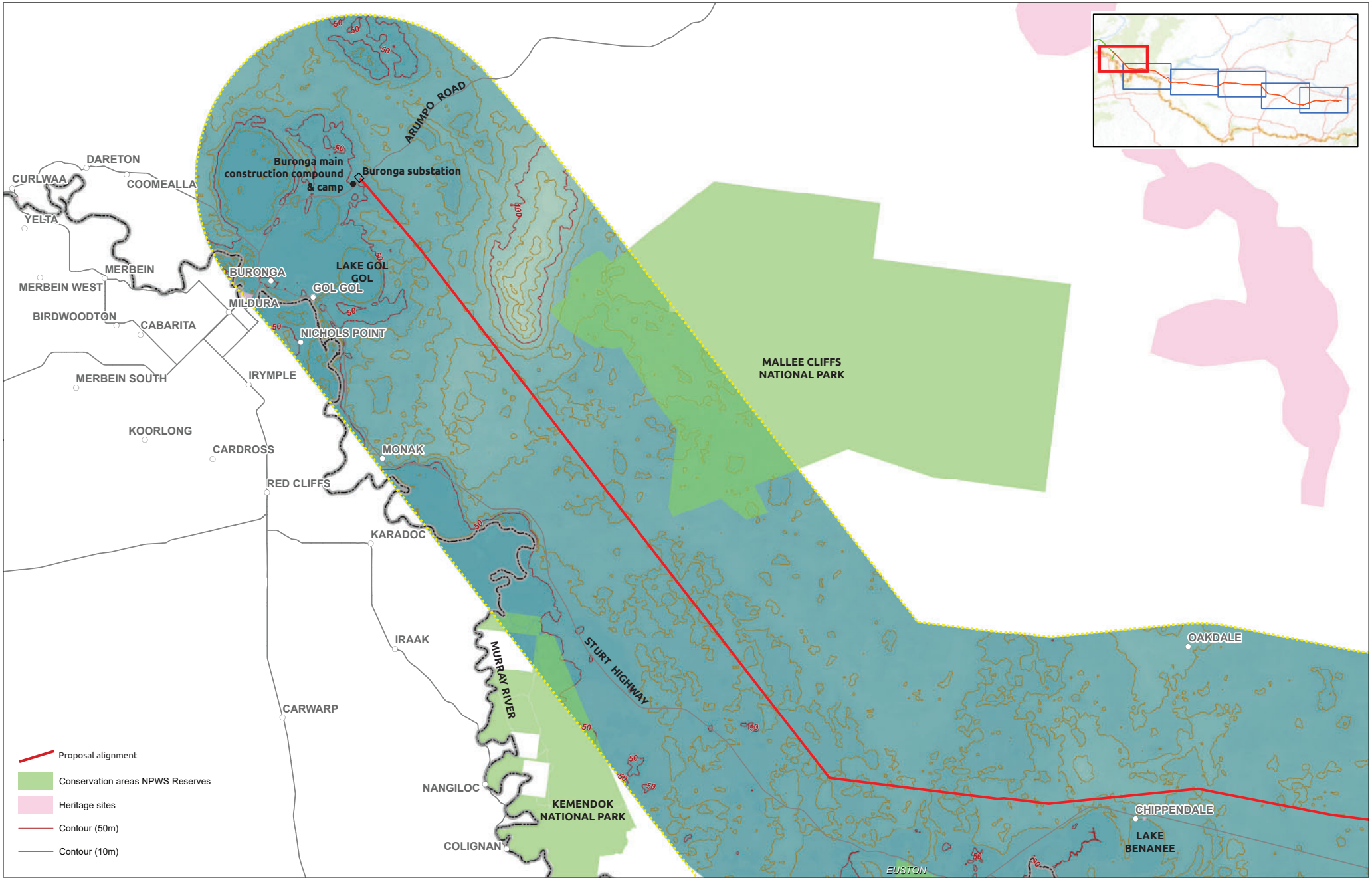
Appendix A - Topography plans



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EnergyConnect

Landscape and visual impact assessment - **Topography** (Buronga to Lake Benanee)

north

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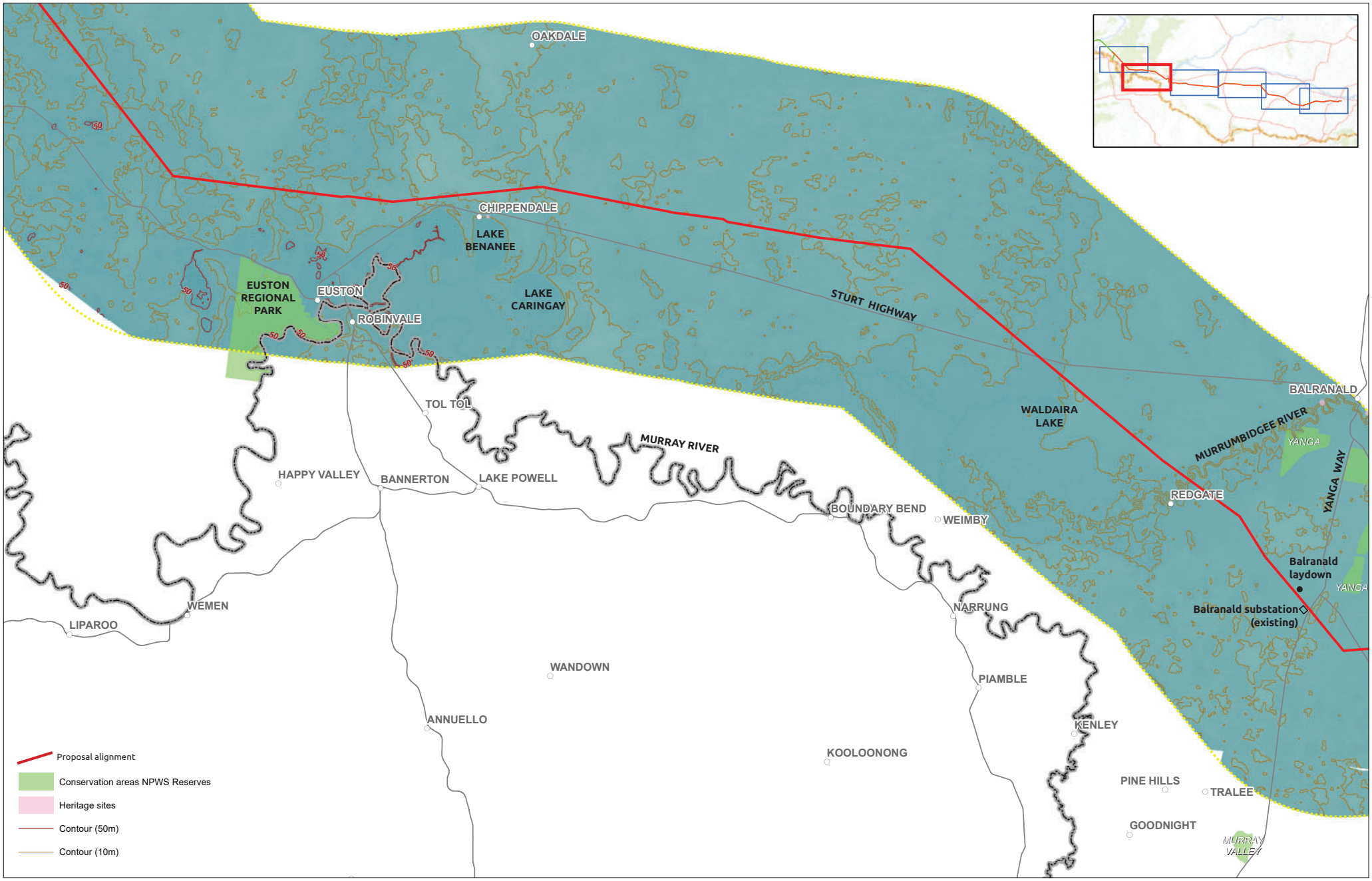

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EnergyConnect

Landscape and visual impact assessment - **Topography** (Lake Benanee to Balranald)

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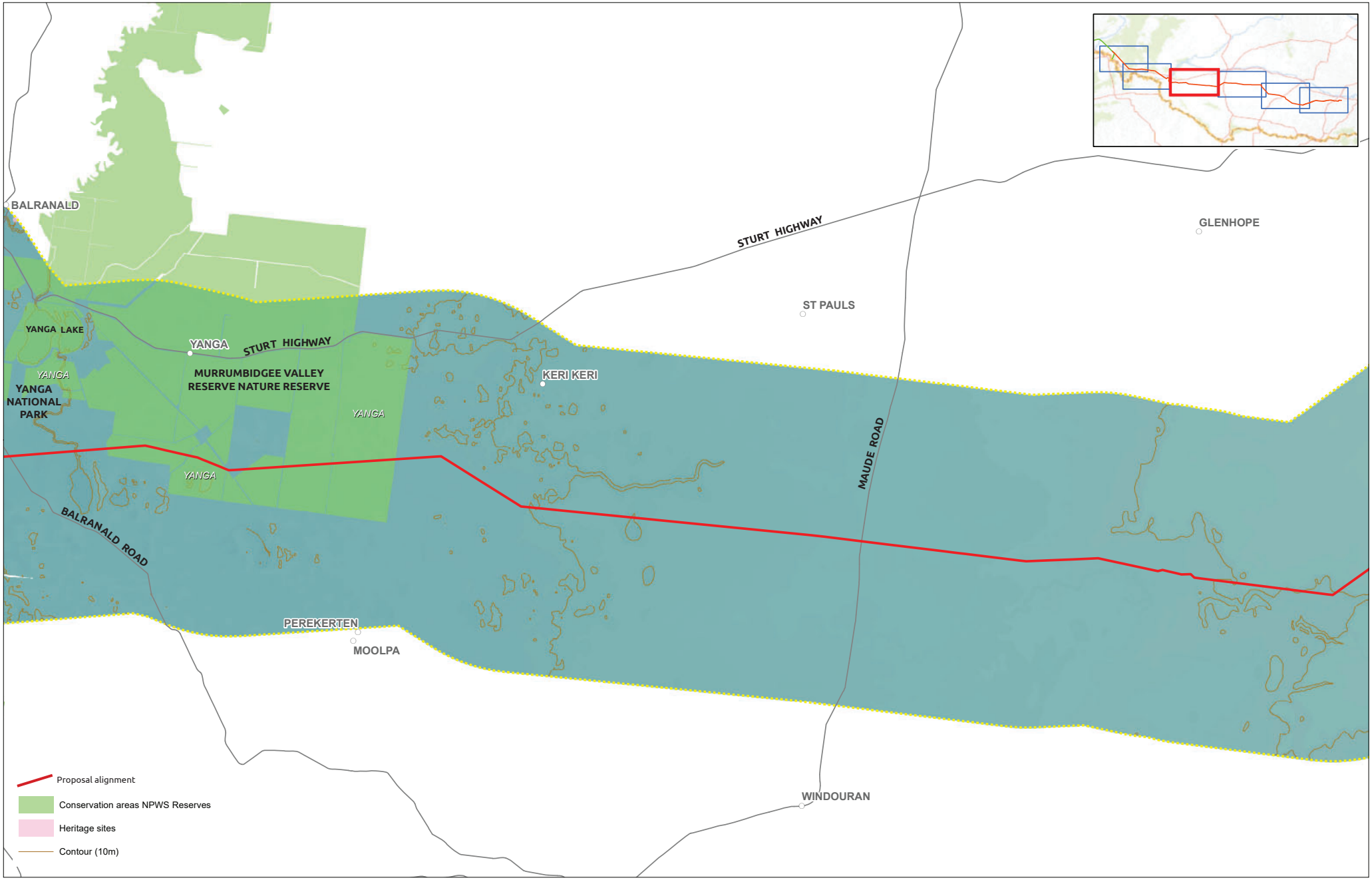

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EnergyConnect

Landscape and visual impact assessment - **Topography** (Yanga Lake to Maude Road)

north

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EnergyConnect

Landscape and visual impact assessment - **Topography** (Cobb Highway to Four Corners)

north

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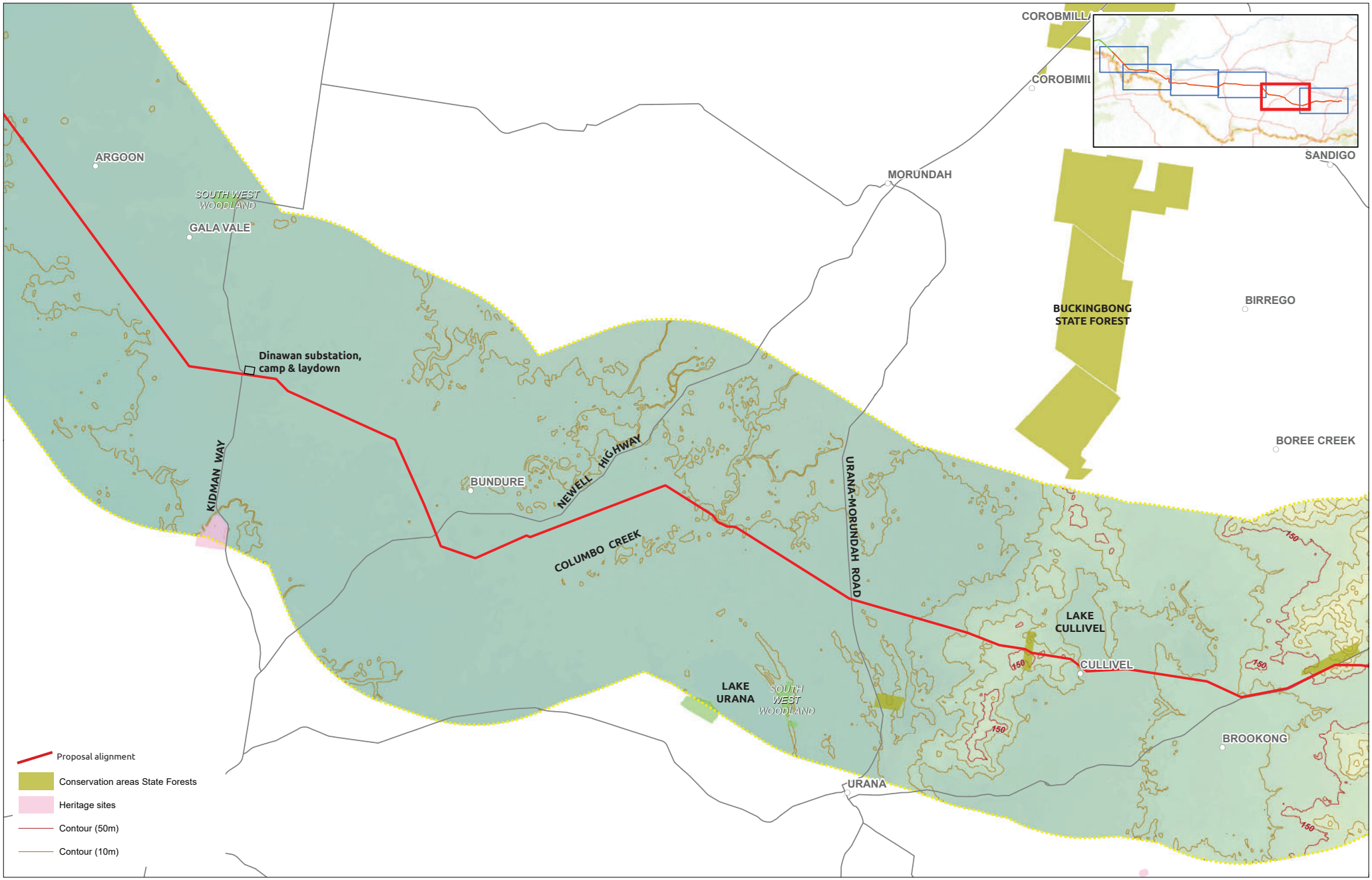

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EnergyConnect

Landscape and visual impact assessment - **Topography** (Argoon to Brookong)

north

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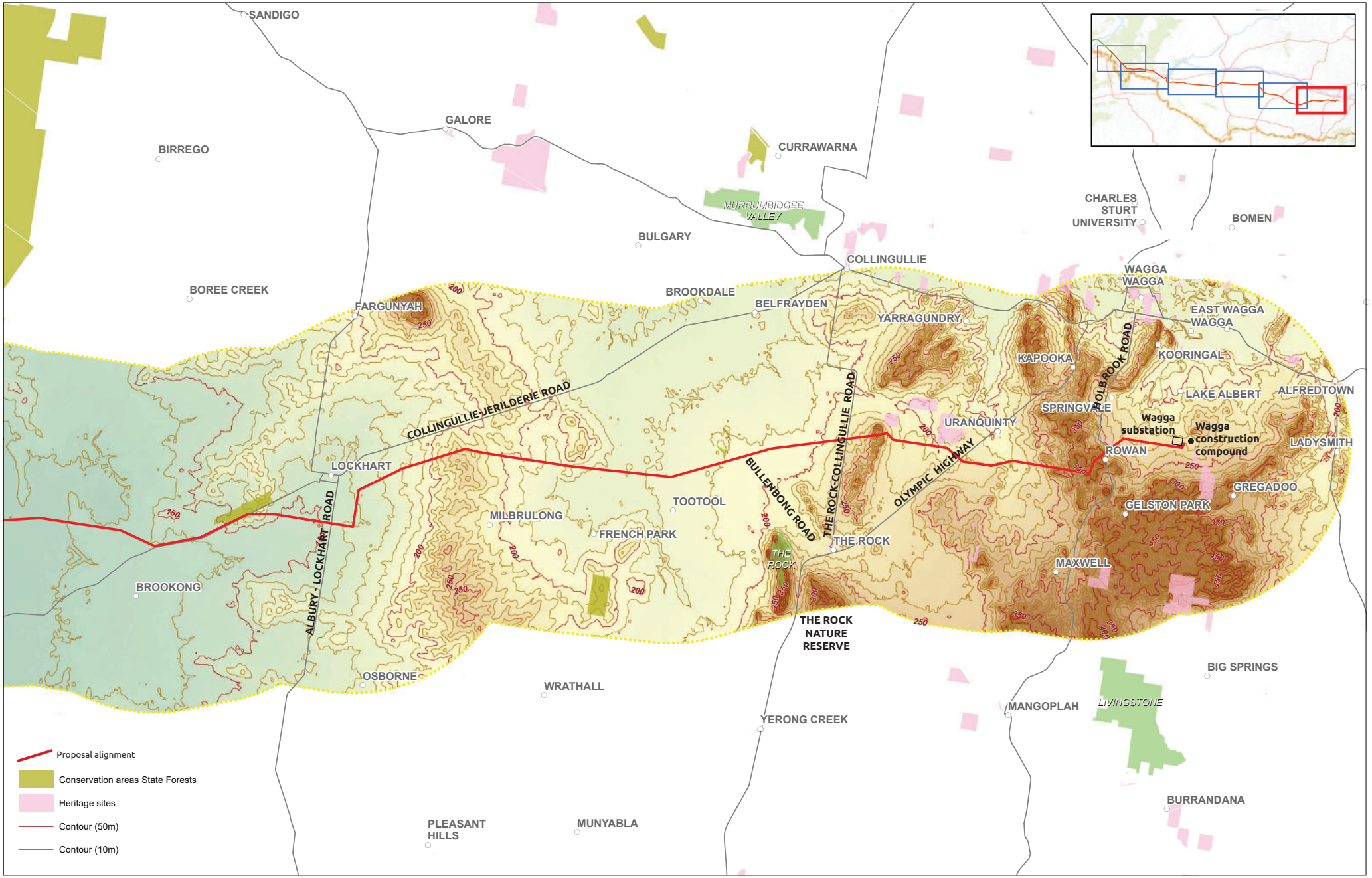

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EnergyConnect

Landscape and visual impact assessment - **Topography** (Brookong to Wagga Wagga)

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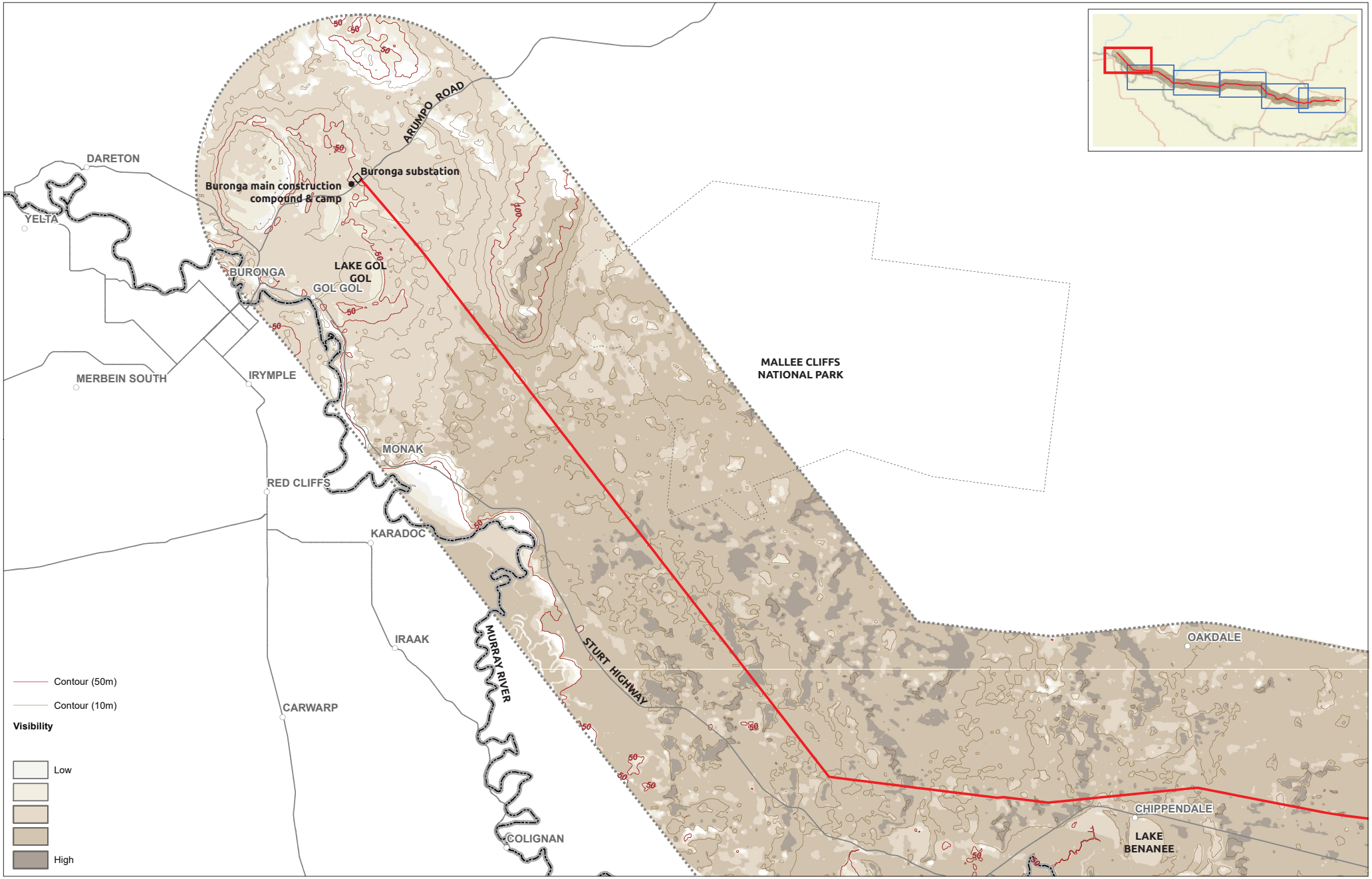
Appendix B - Visibility plans



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EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Buronga to Lake Benanee)

north

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EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Lake Benanee to Balranald)

north

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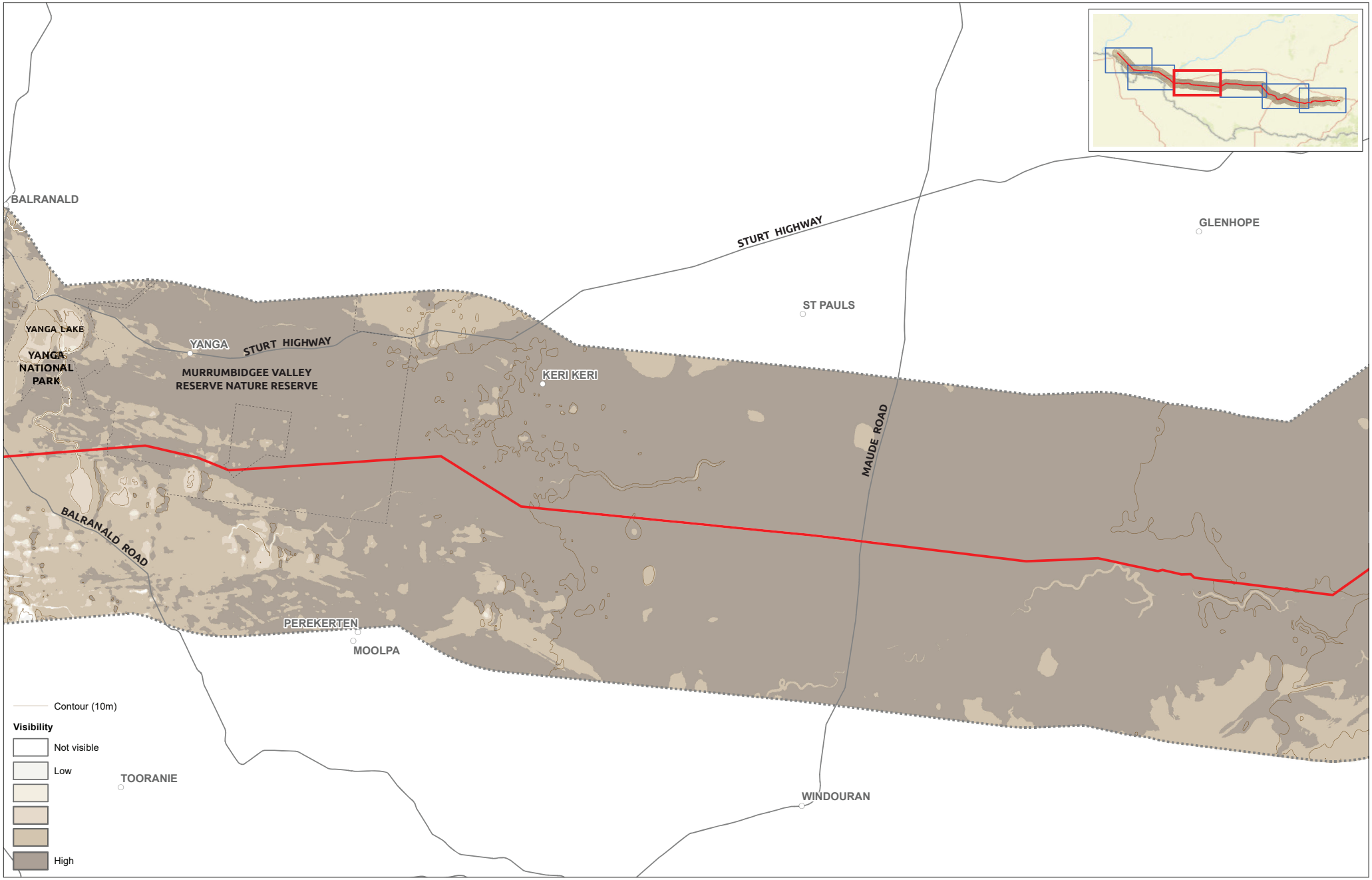

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EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Yanga Lake to Maude Road)

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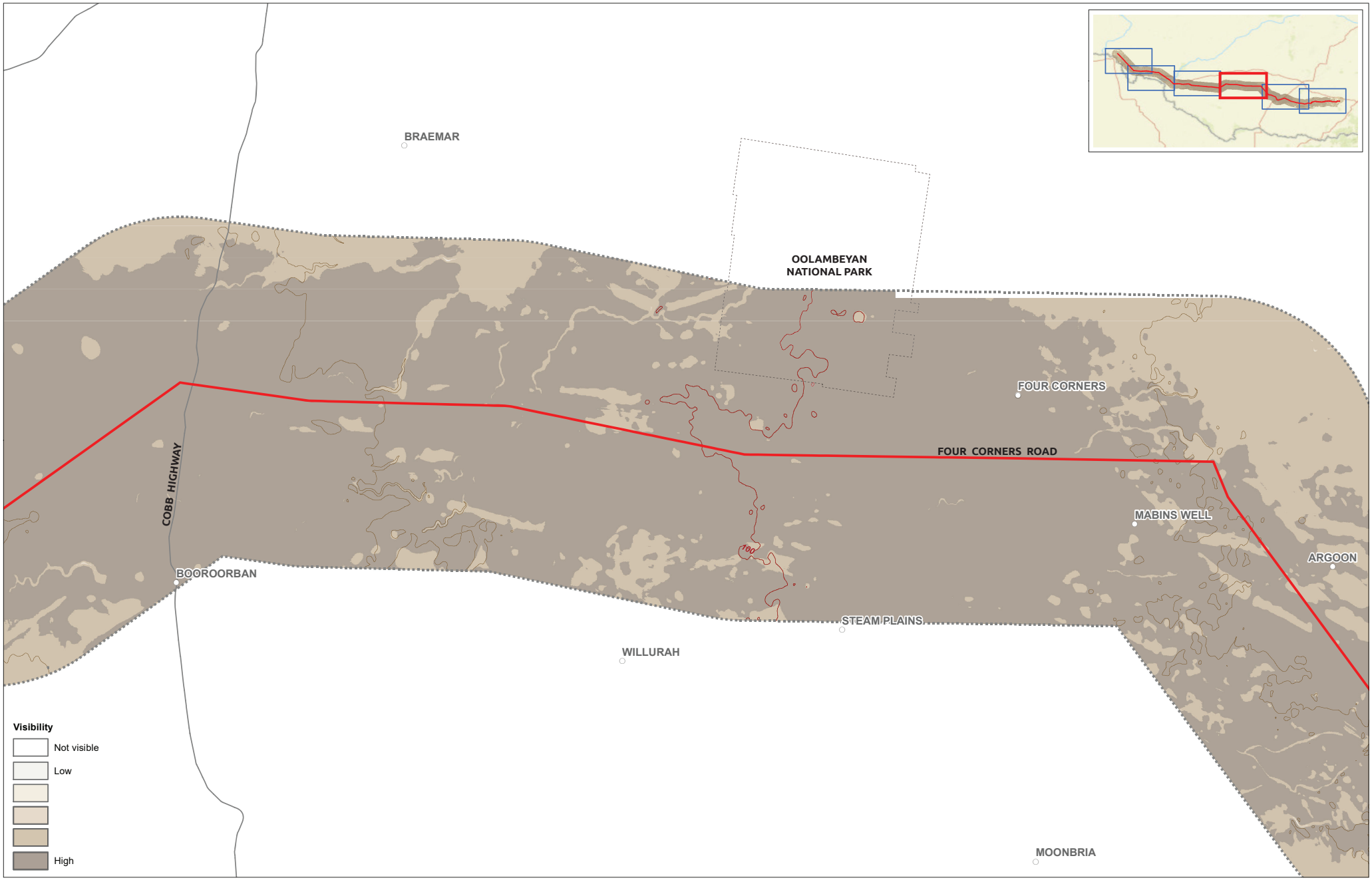

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EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Cobb Highway to Four Corners)

north

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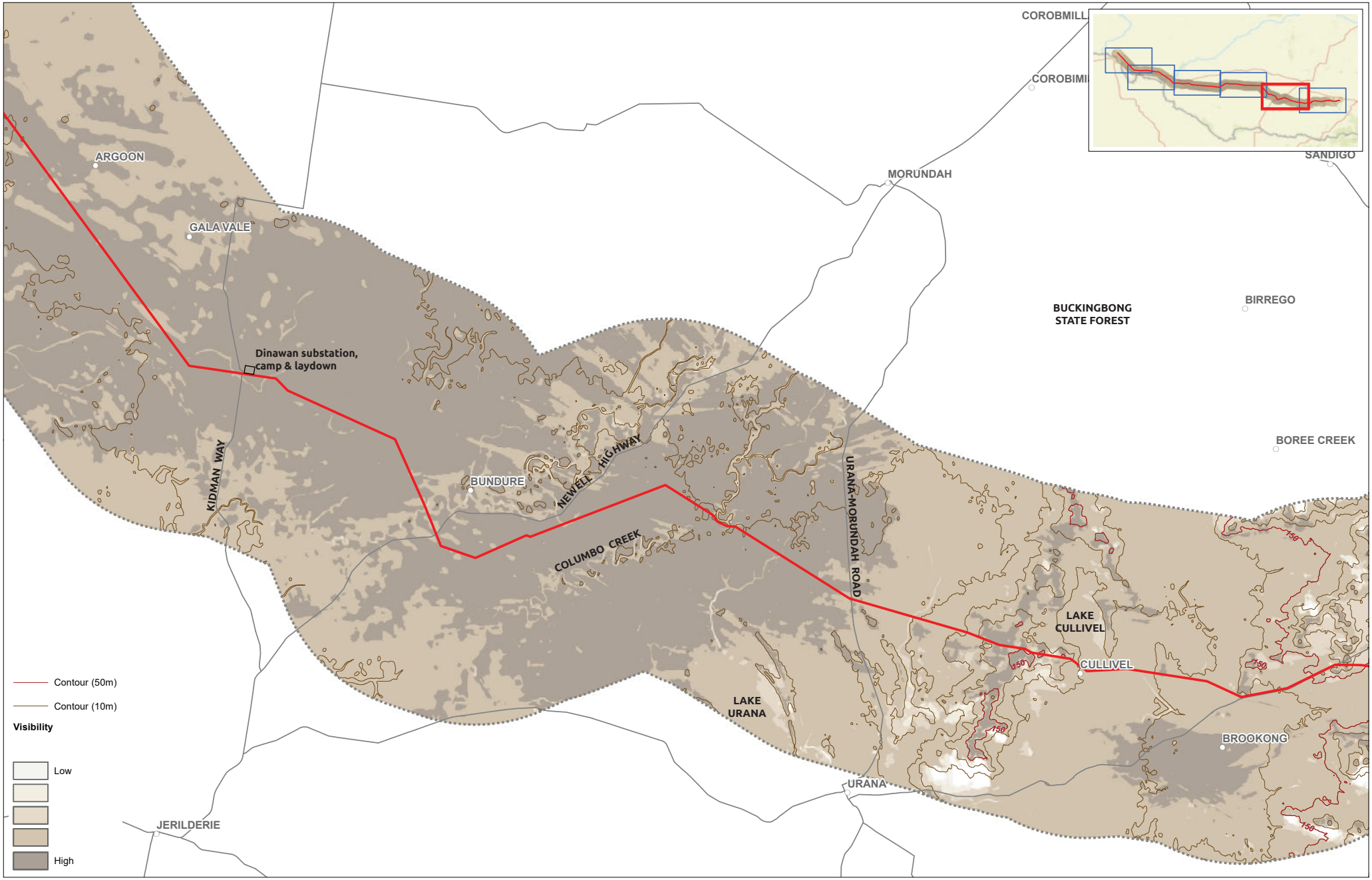

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EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Argoon to Brookong)

north

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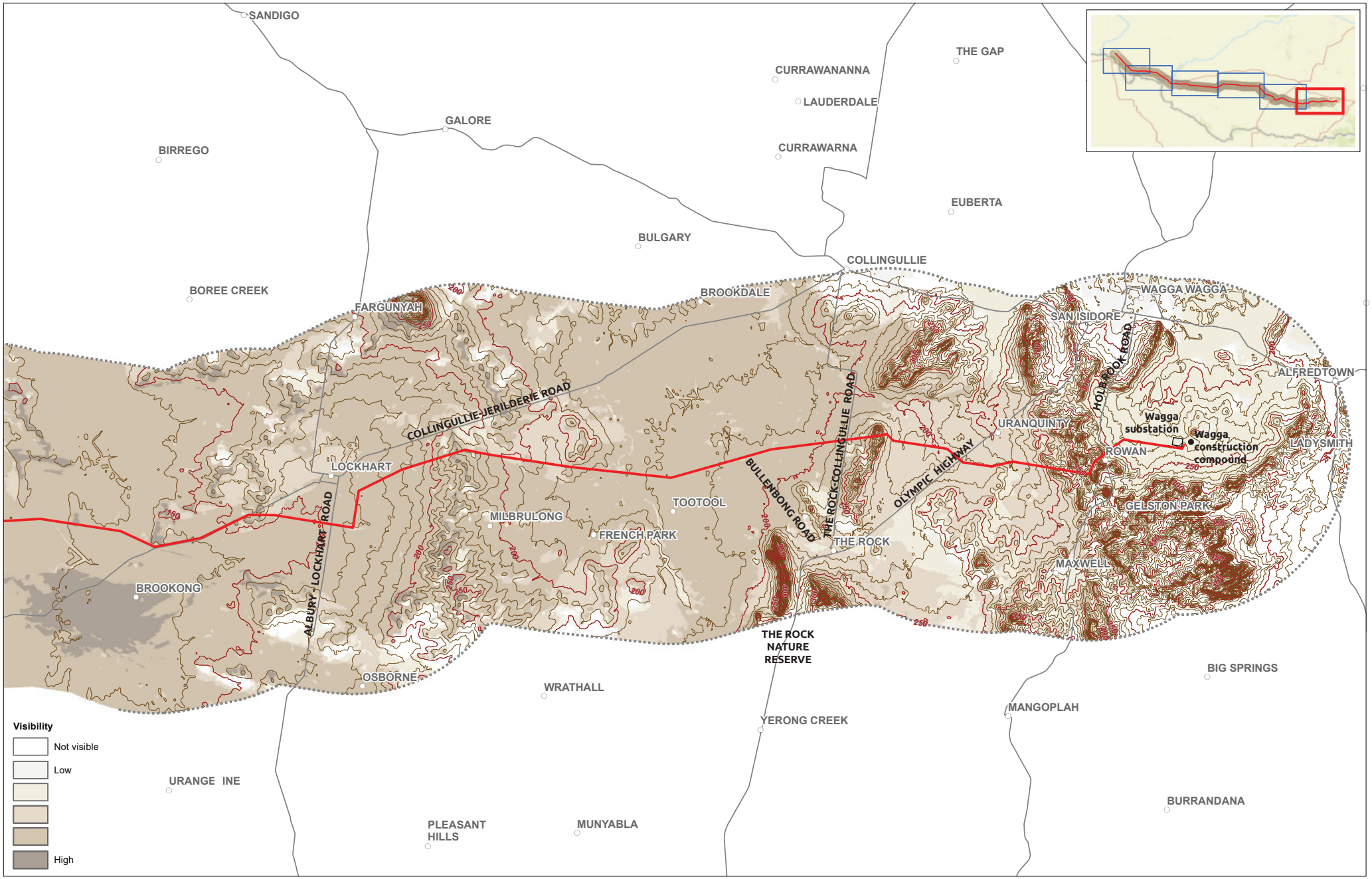


iris

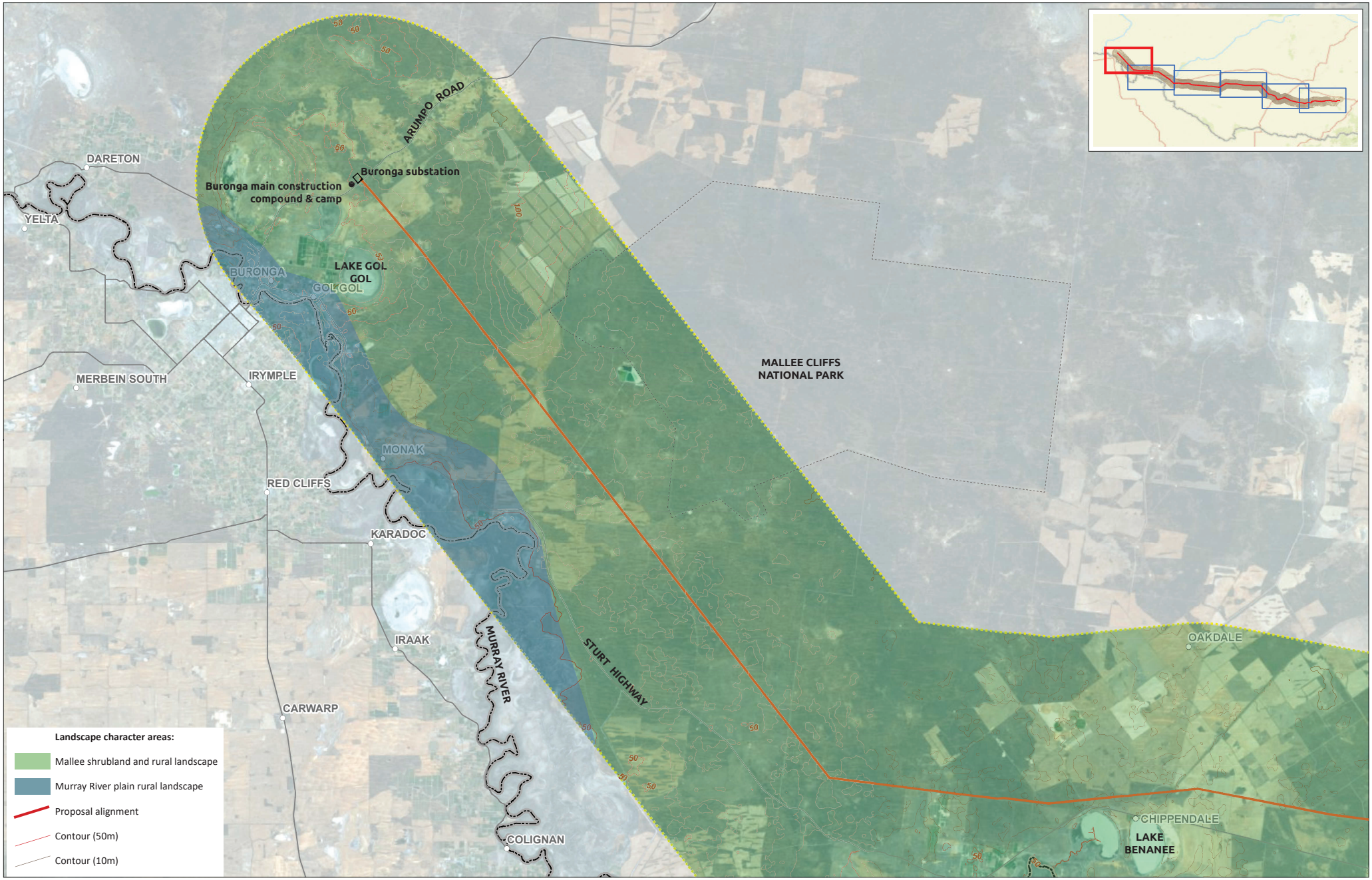
EnergyConnect

Landscape and visual impact assessment - **Pattern of visibility** (Brookong to Wagga Wagga)

north

0 5 10 15km

Appendix C - Landscape character area plans



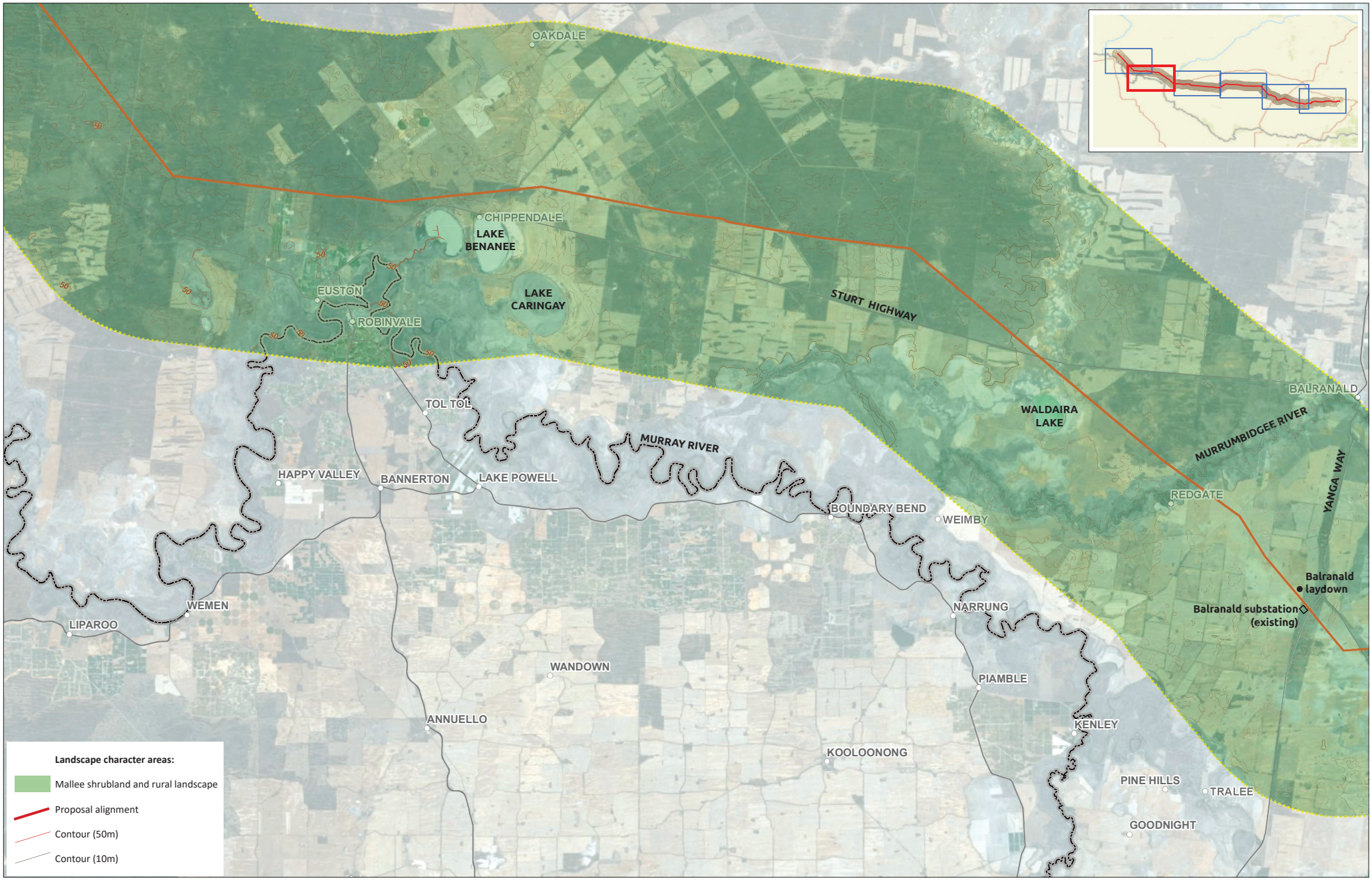
iris

EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Buronga to Lake Benanee)

north

0 5 10 15km



iris

EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Lake Benanee to Balranald)

north

0 5 10 15km

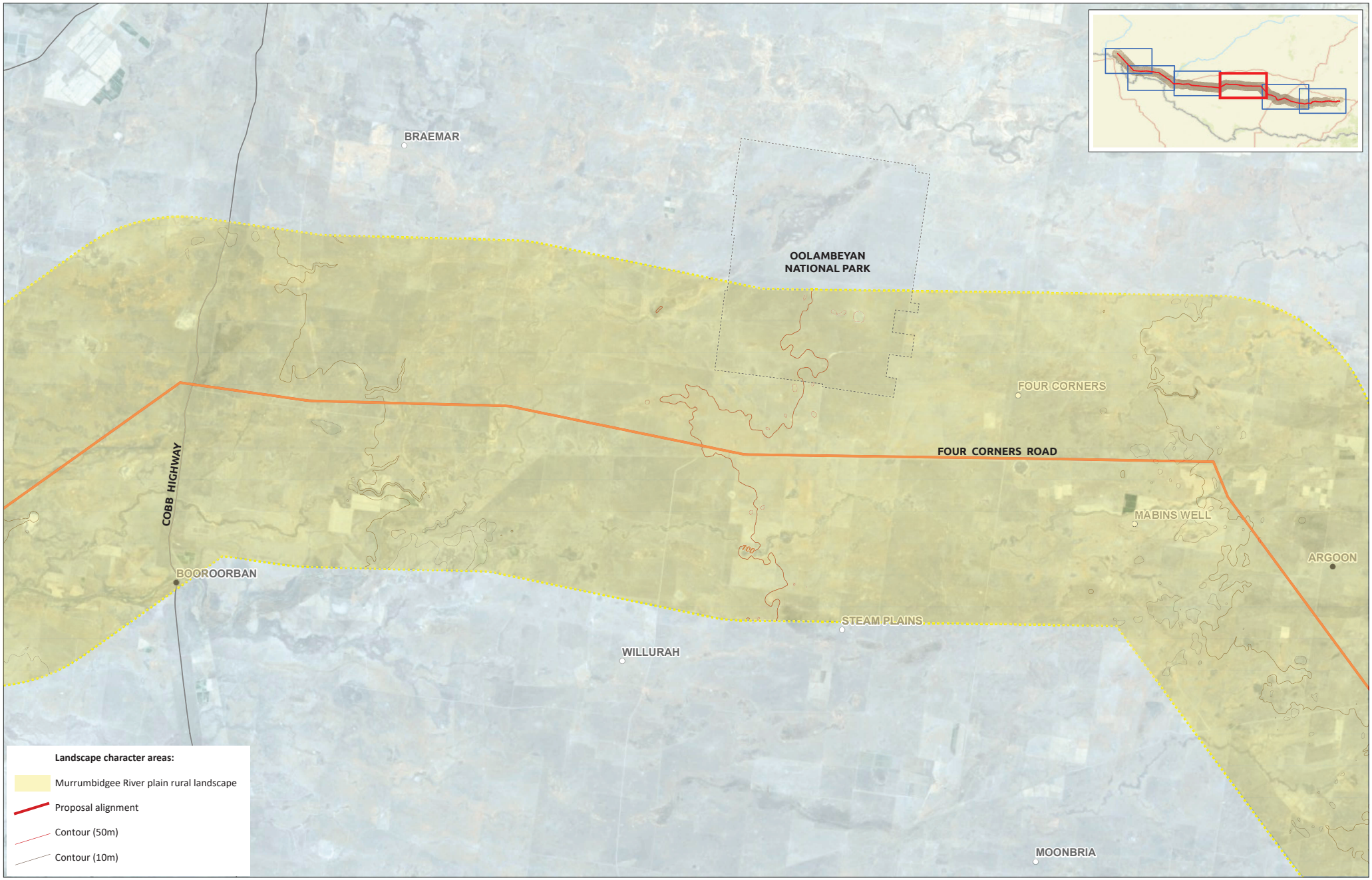
iris

EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Yanga Lake to Maude Road)

north

0 5 10 15km



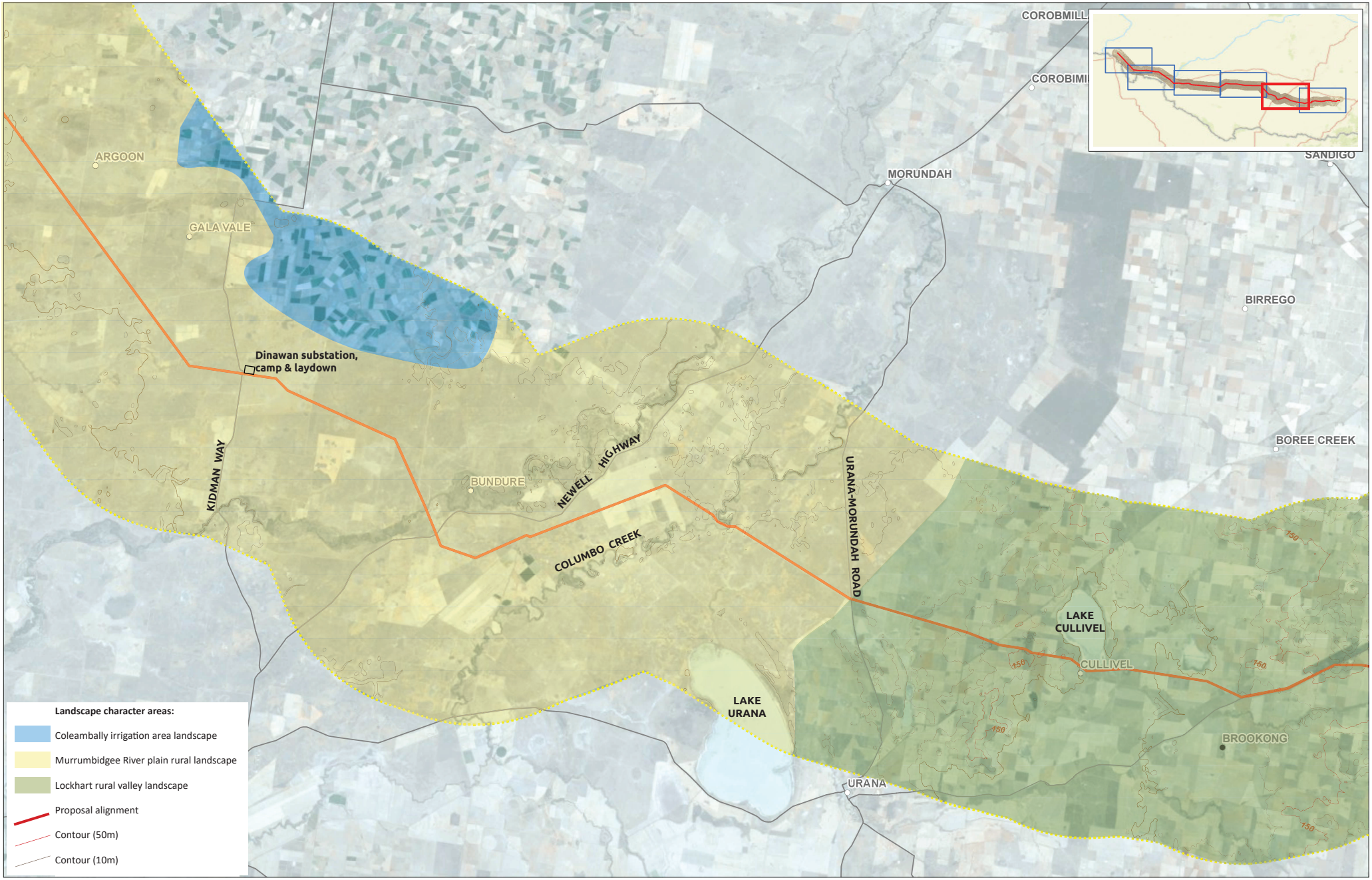
iris

EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Cobb Highway to Four Corners)

north

0 5 10 15km



iris

EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Argoon to Brookong)

north

0 5 10 15km

iris

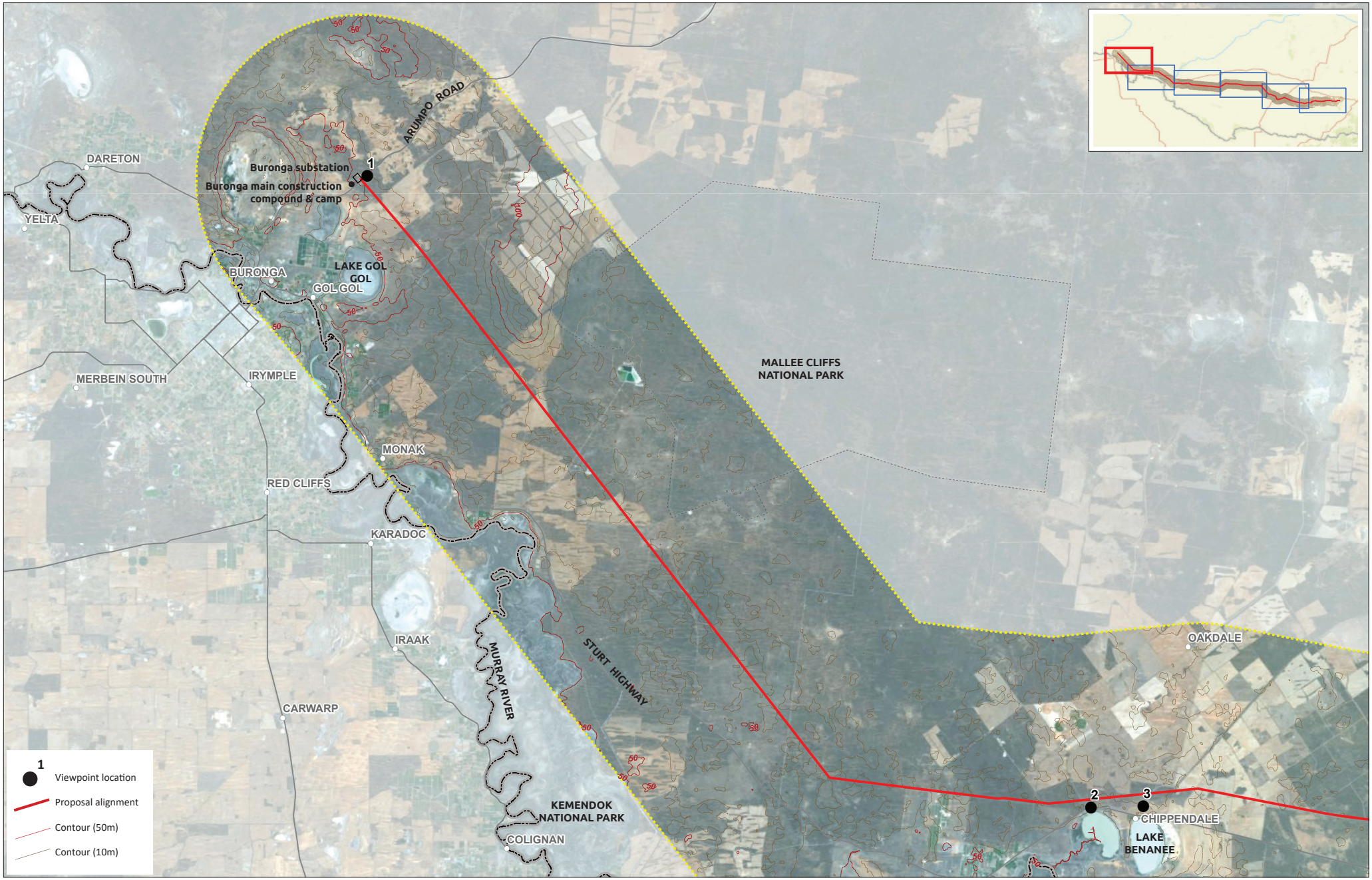
EnergyConnect

Landscape and visual impact assessment - **Landscape character areas** (Brookong to Wagga Wagga)

north

0 5 10 15km

Appendix D - Viewpoint plans



iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Buronga to Lake Benanee)

north

0 5 10 15km

iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Lake Benanee to Balranald)

north

0 5 10 15km

iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Yanga Lake to Maude Road)

north

0 5 10 15km

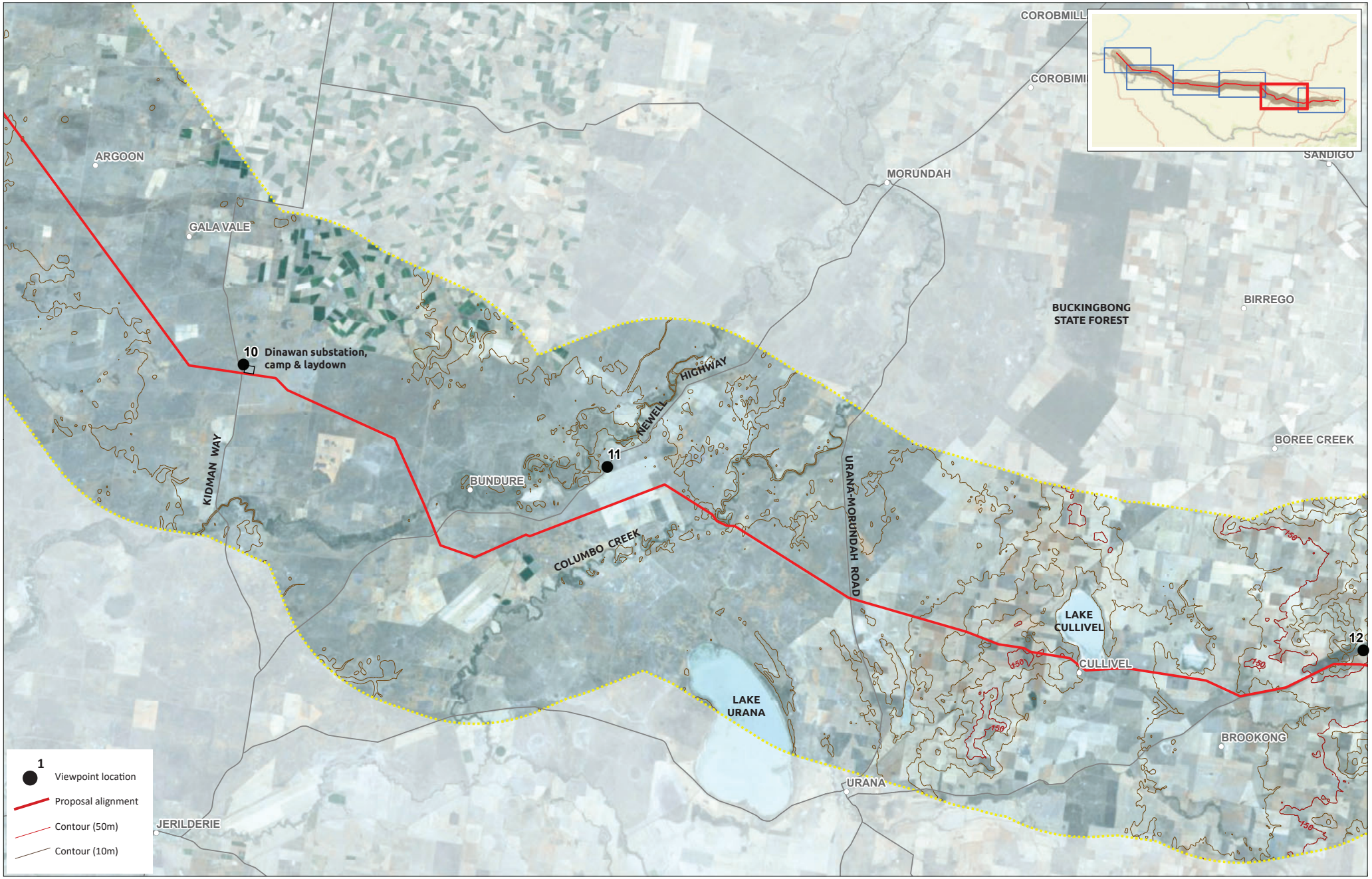
iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Cobb Highway to Four Corners)

north

0 5 10 15km



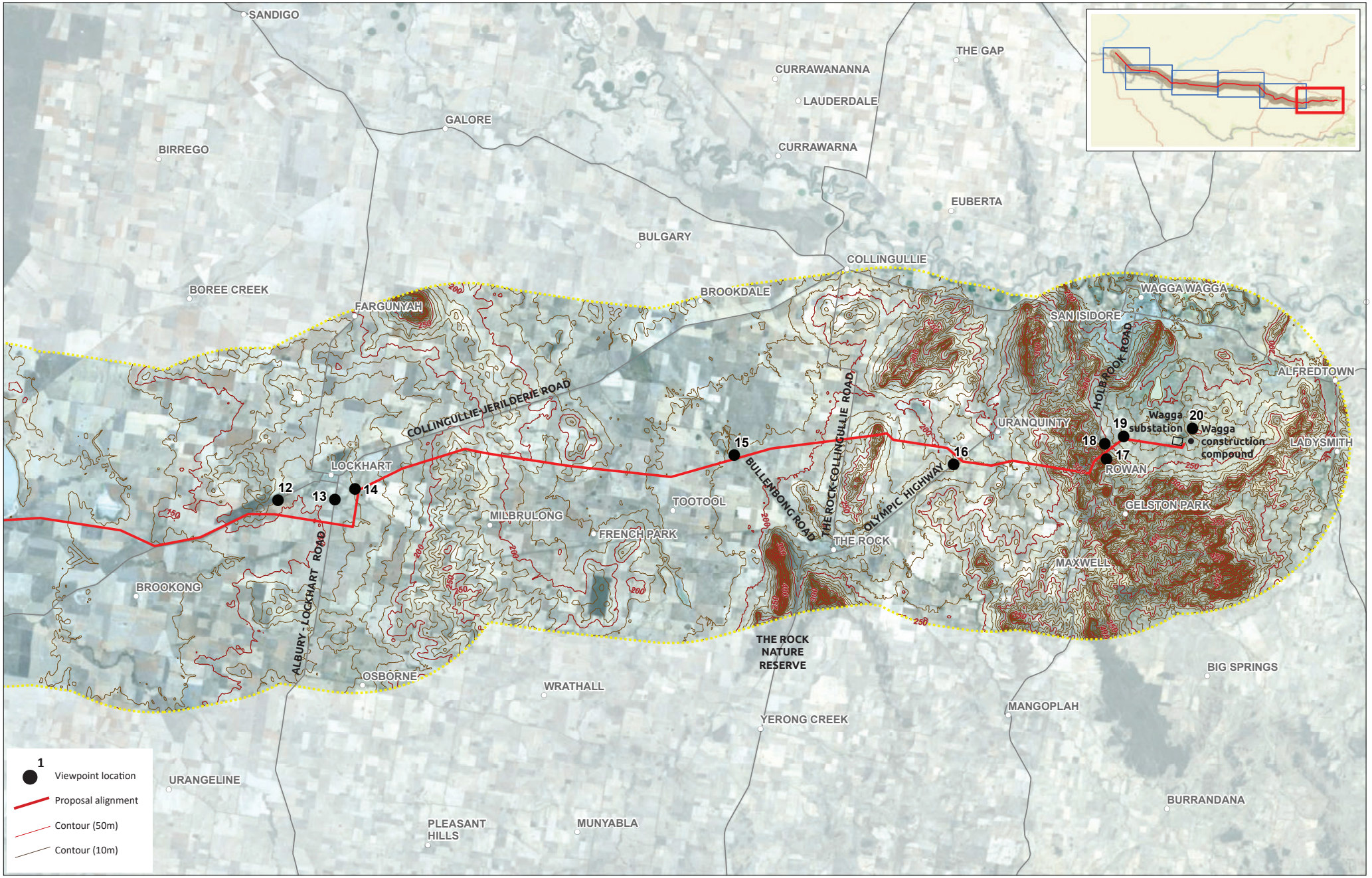
iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Argoon to Brookong)

north

0 5 10 15km



iris

EnergyConnect

Landscape and visual impact assessment - **Viewpoint plan** (Brookong to Wagga Wagga)

north

0 5 10 15km

Appendix E - Photomontages

VIEW EAST FROM STURT HIGHWAY
near Lake Benanee

Existing view

- Proposed transmission line corridor
- Existing tower
- Viewpoint

Viewpoint location

Location: 34° 3’48.61”S, 142°50’13.04”E
Focal length: 28mm

Photomontage

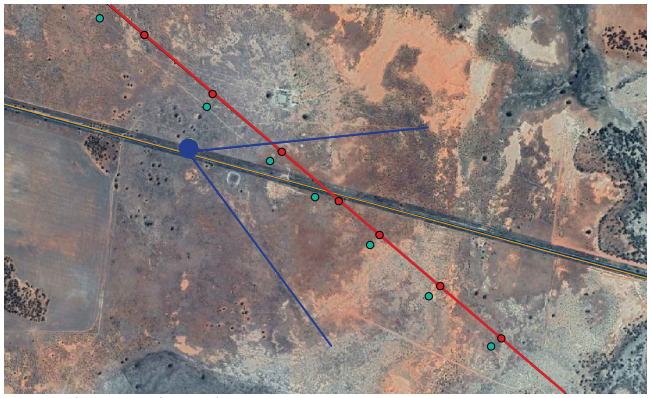
iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Sturt Highway)

VIEW EAST FROM STURT HIGHWAY
to alignment crossing

Existing view



- Proposed transmission line corridor
- Existing tower
- Viewpoint

Viewpoint location

Location: 34° 36'38.65"S, 143°18'24"E
Focal length: 28mm

Photomontage

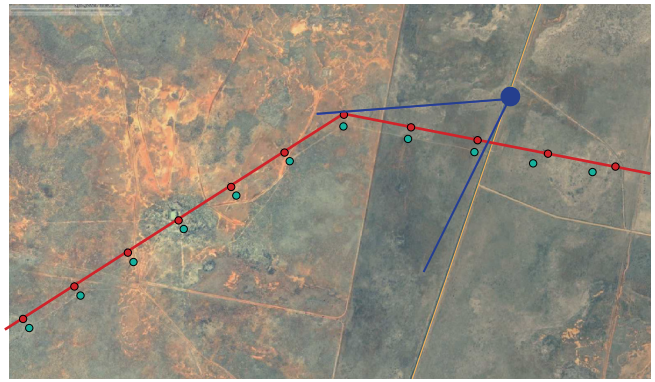
iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Sturt Highway)

VIEW SOUTH FROM COBB HIGHWAY

Existing view



Viewpoint location

Location: 34° 48'9.36"S, 144°46'36.34"E
Focal length: 28mm

Photomontage

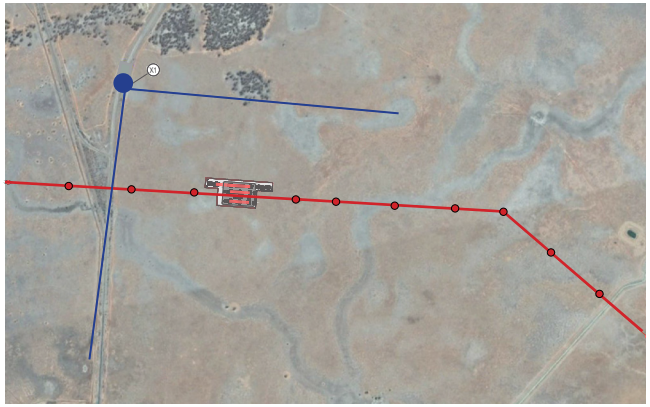
iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Cobb Highway)

VIEW SOUTH ALONG KIDMAN WAY
to proposed Dinawan substation

Existing view



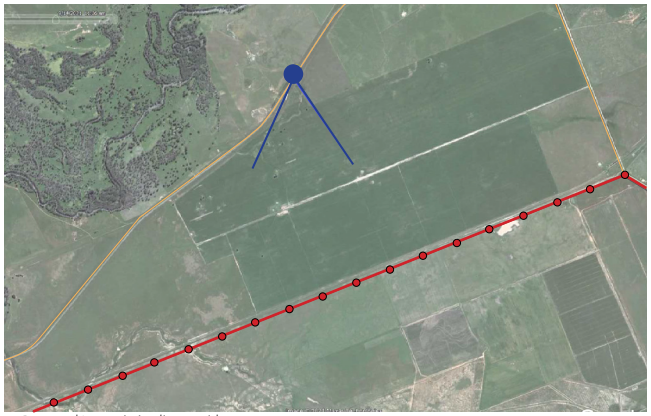
Viewpoint location

Location: 35° 3'11"S, 145°47'33.68"E
Focal length: 28mm

Photomontage

VIEW SOUTH EAST FROM THE NEWELL HIGHWAY

Existing view



Viewpoint location

Location: 35° 7’10”S, 146°4’4879”E
Focal length: 28mm

Photomontage

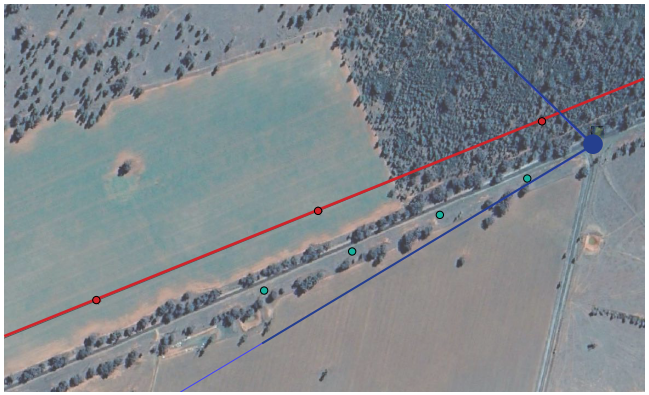
iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Newell Highway)

URANA LOCKHART ROAD

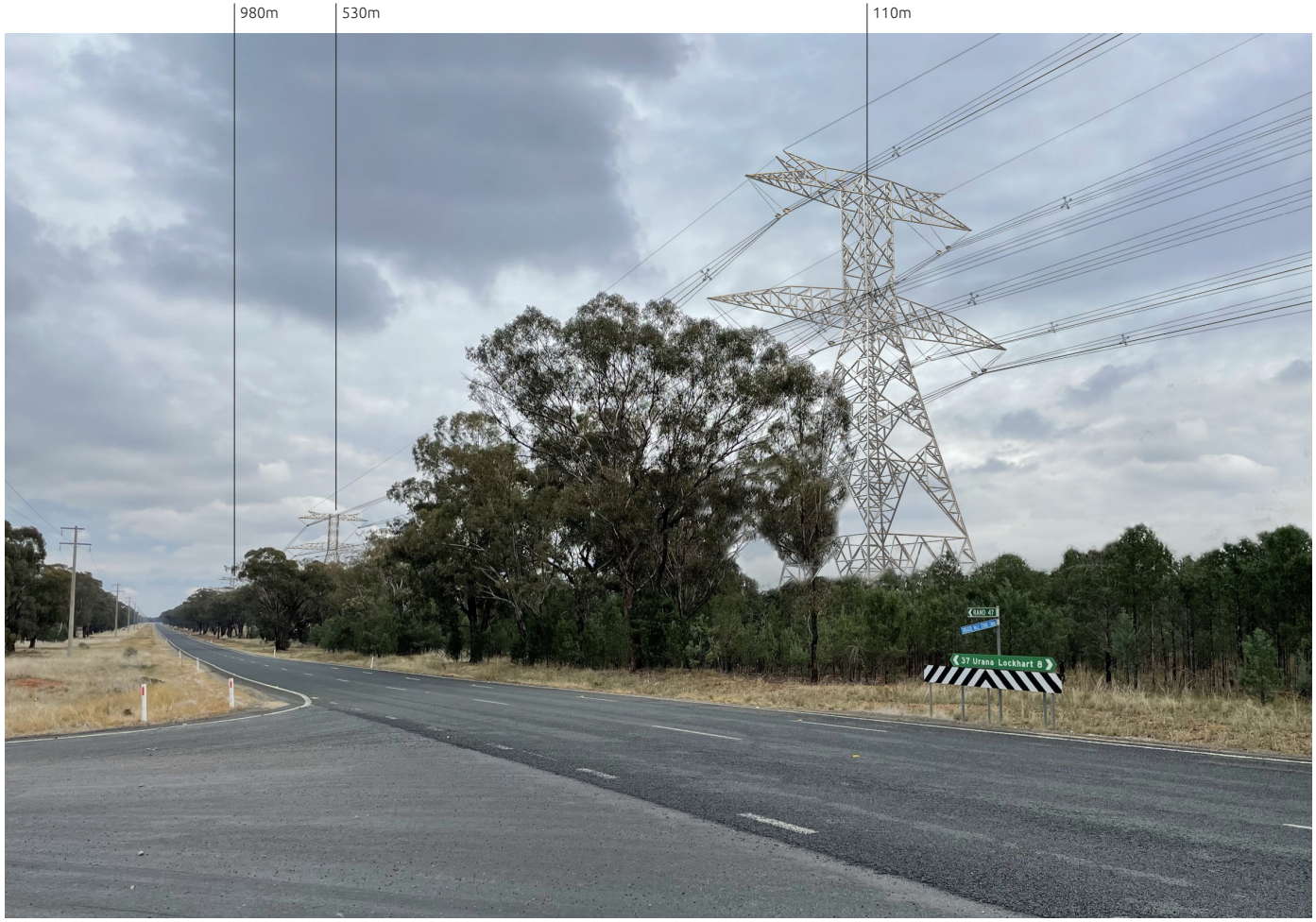
Existing view



- Proposed transmission line corridor
- Existing tower
- Viewpoint

Viewpoint location

Location: 35°15'12"S, 148°38'29"E
Focal length: 28mm



Photomontage

iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Urana Lockhart Road)

VIEW SOUTH WEST ALONG ALBURY LOCKHART ROAD

Existing view

Proposed transmission line corridor
Existing tower
Viewpoint

Viewpoint location

Location: 35° 14'16.69"S, 146°43'22.35"E
Focal length: 28mm

Photomontage

VIEW EAST ALONG
LOCKHART - THE ROCK ROAD

Existing view

Proposed transmission line corridor
Existing tower
Viewpoint

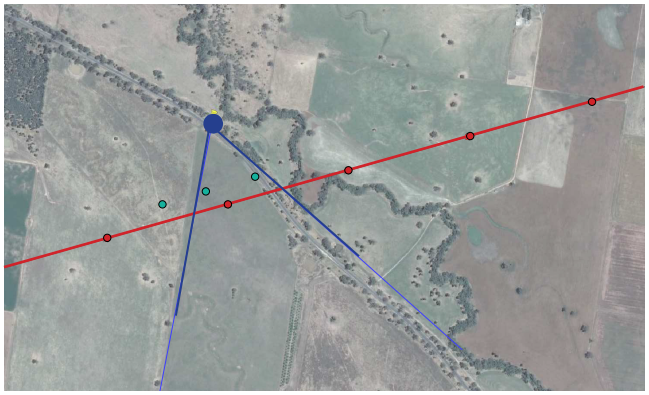
Viewpoint location

Location: 35° 14’30.89”S, 146°43’19.40”E
Focal length: 28mm

Photomontage

VIEW SOUTH ALONG BULLENBONG ROAD

Existing view



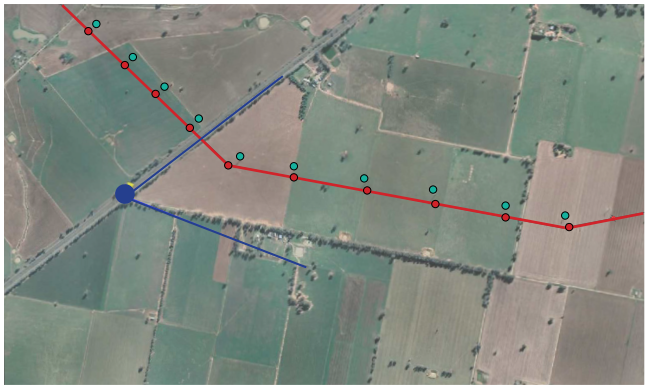
Viewpoint location

Location: 35° 12'27.35"S, 147°2'8.85"E
Focal length: 28mm

Photomontage

VIEW NORTHEAST FROM OLYMPIC HIGHWAY

Existing view



- Proposed transmission line corridor
- Existing tower
- Viewpoint

Viewpoint location

Location: 35° 12'54.45"S, 147°12'43.26"E
Focal length: 28mm

Photomontage

iris

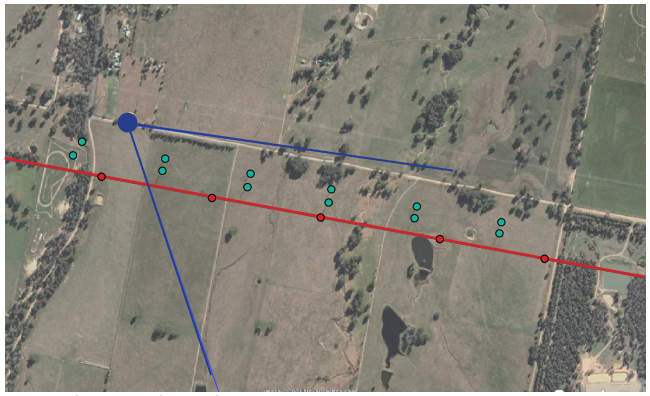
EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Olympic Highway)

VIEW EAST FROM

BOILING DOWN ROAD

Existing view



Viewpoint location

Location: 35° 11'46.15"S, 147°20'34.72"E
Focal length: 28mm

Photomontage

iris

EnergyConnect

Landscape and visual impact assessment - **Photomontage** (Boiling Down Road)

Appendix F - Private residence location plans

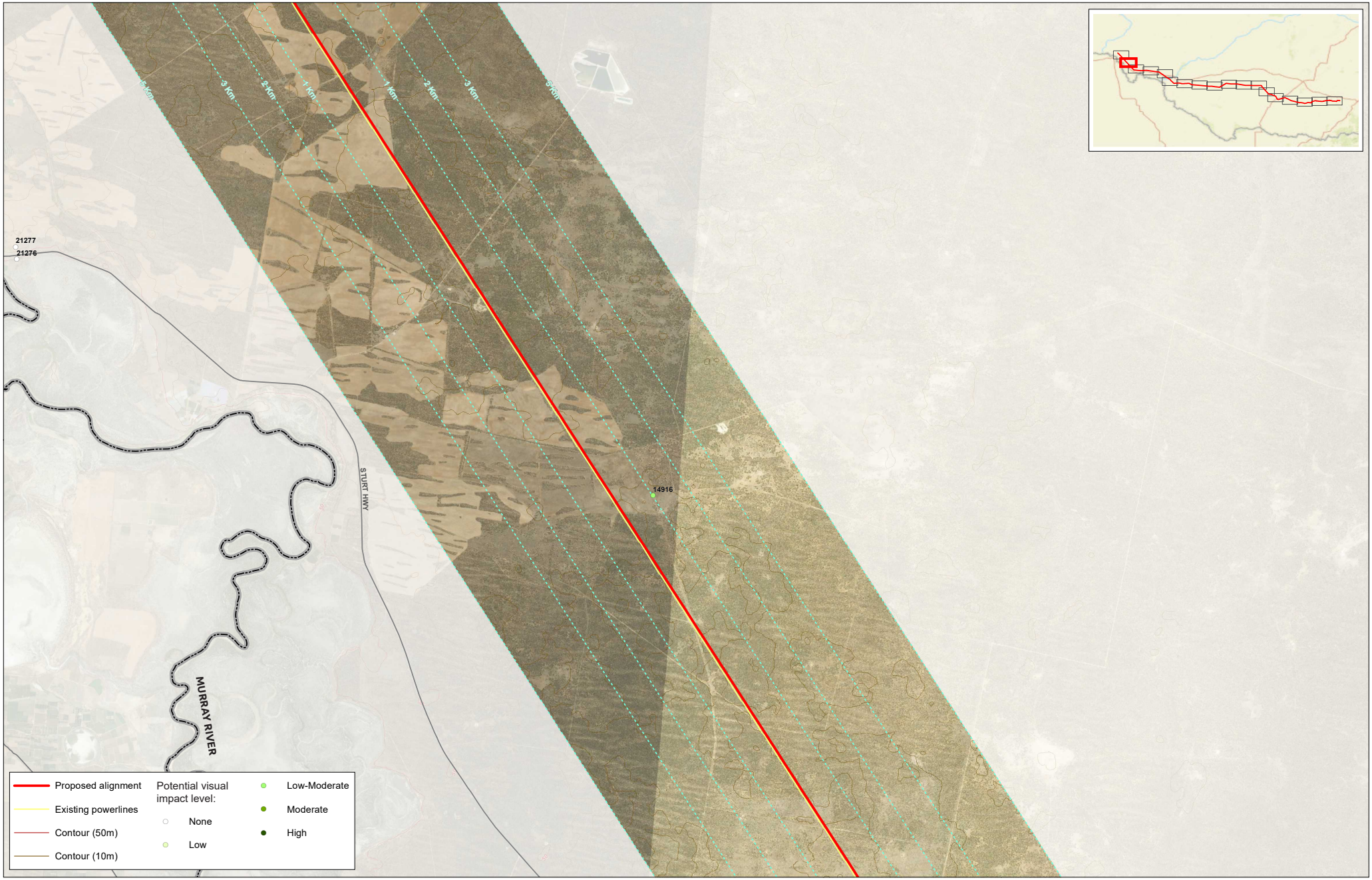
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Buronga to Trentham Cliffs)

north

0 1 2 3 4 5km



iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Trentham Cliffs to Paringi)

north

0 1 2 3 4 5km

iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Paringi to Lake Benanee)

north

0 1 2 3 4 5km

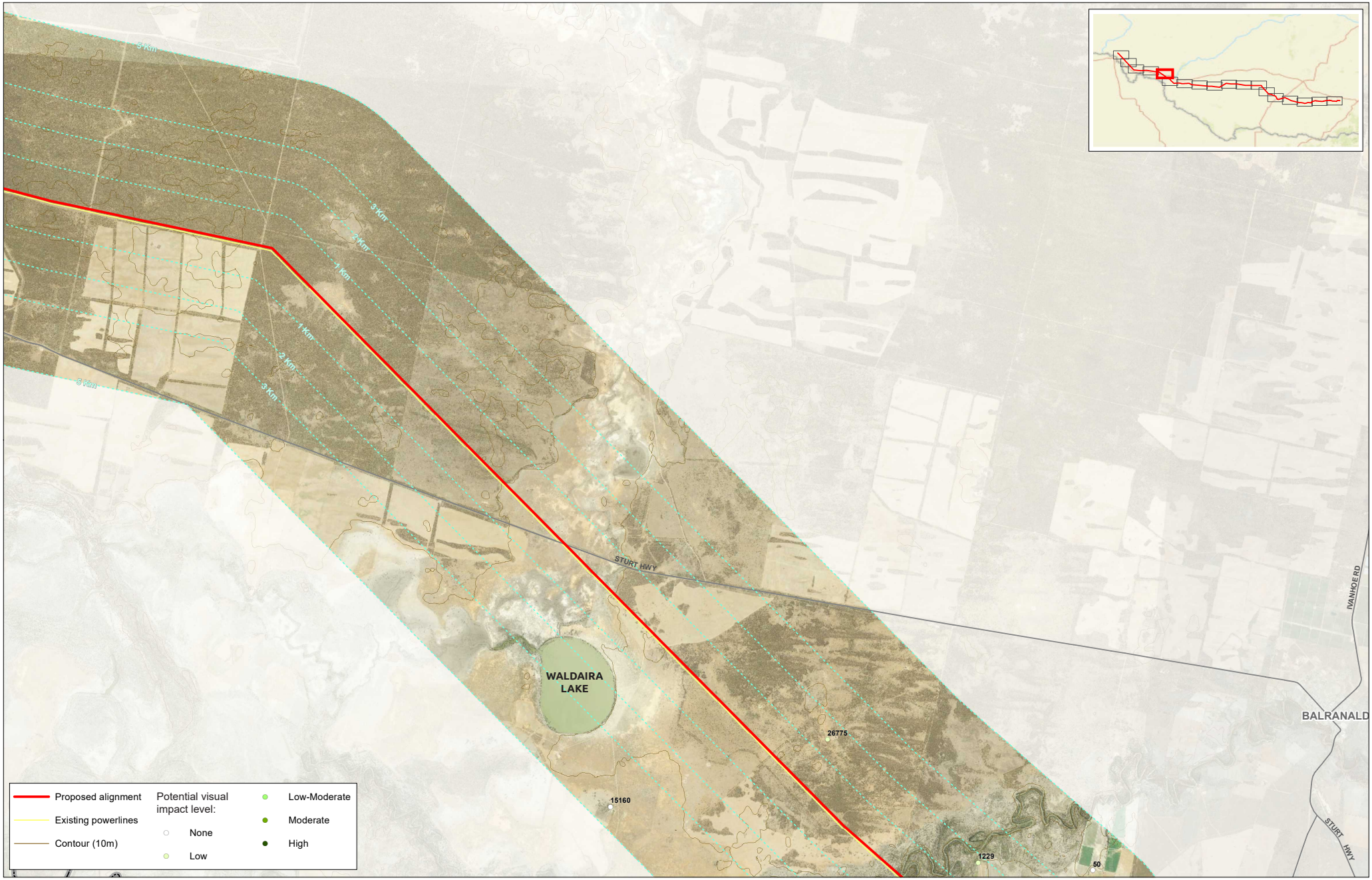
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Lake Benanee)

north

0 1 2 3 4 5km



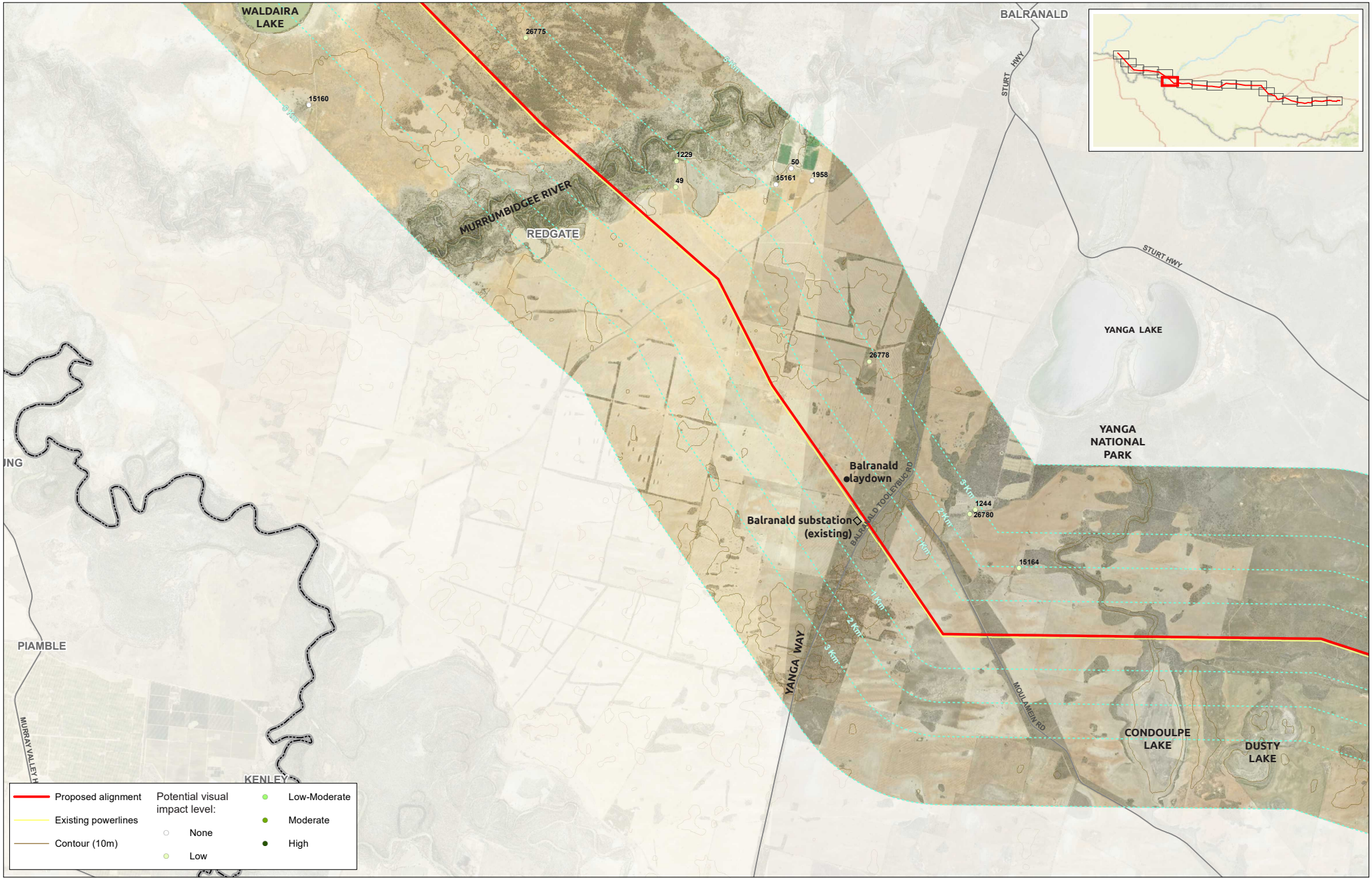
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Waldaira Lake)

north

0 1 2 3 4 5km



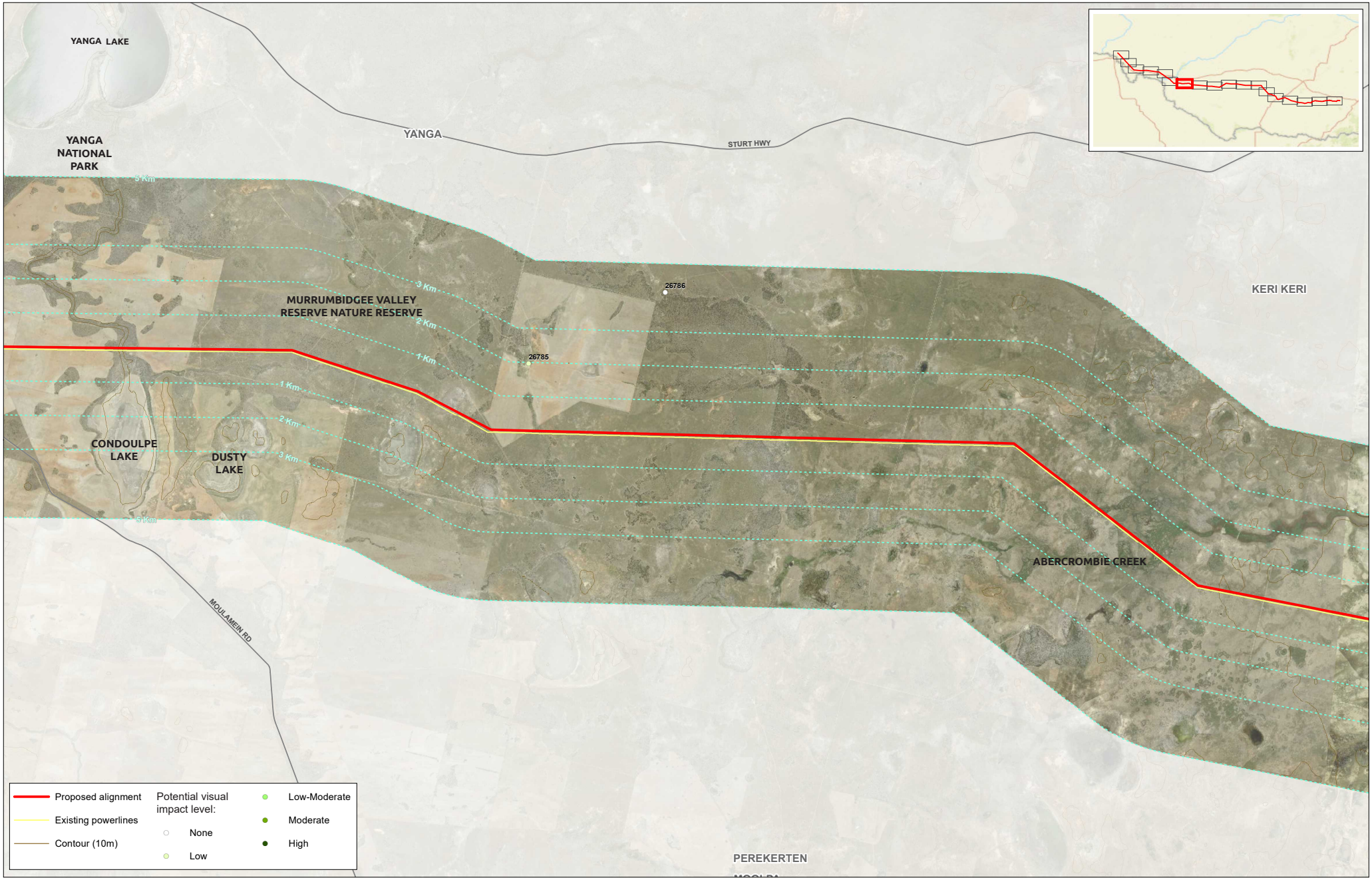
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Waldaira Lake to Balranald)

north

0 1 2 3 4 5km



iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Balranald to Abercrombie Creek)

north

0 1 2 3 4 5km

iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Abercrombie Creek to Maude Road)

north

0 1 2 3 4 5km

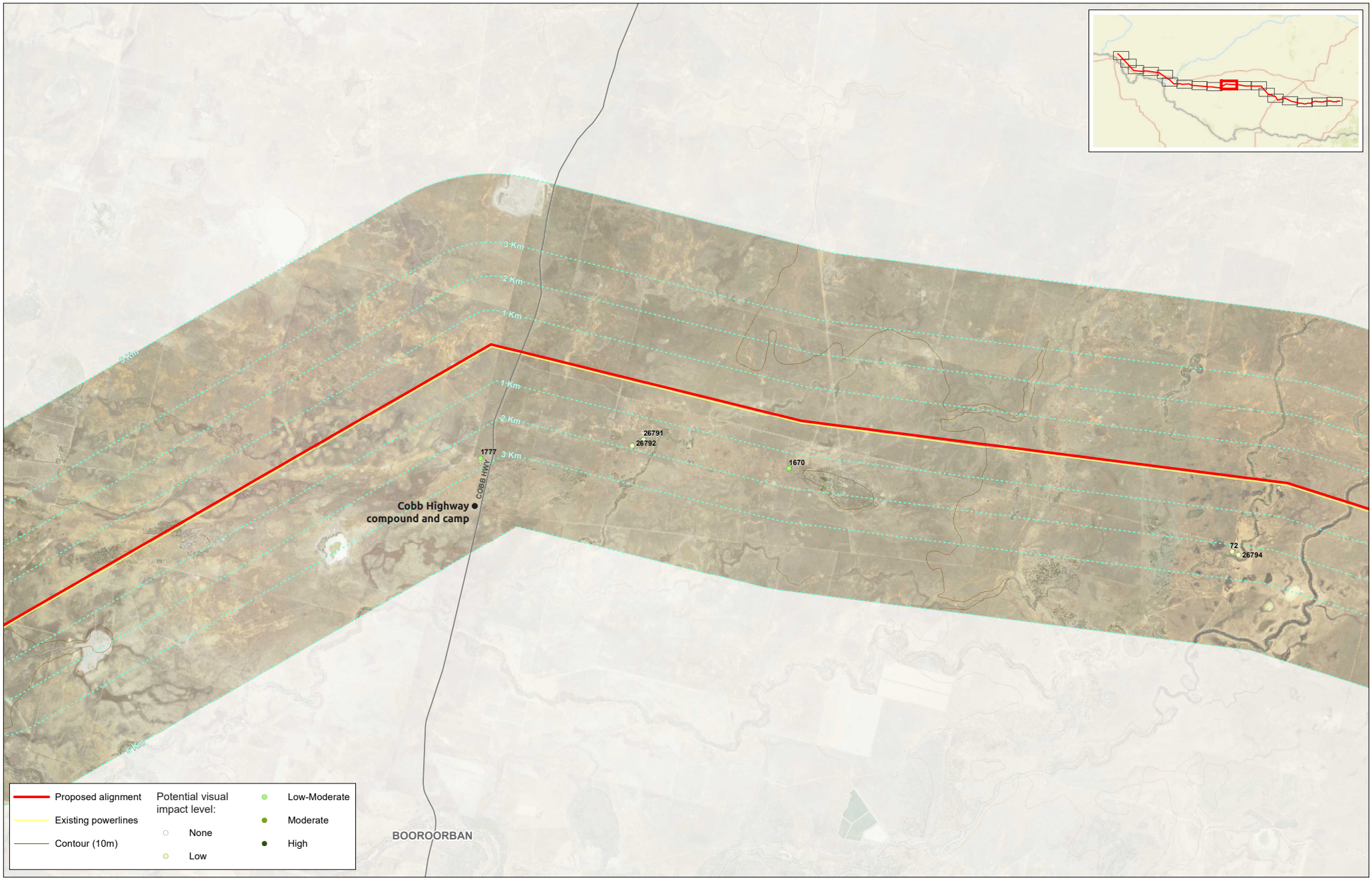
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Maude Road to Boorooban)

north

0 1 2 3 4 5km



iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Cobb Highway)

north

0 1 2 3 4 5km

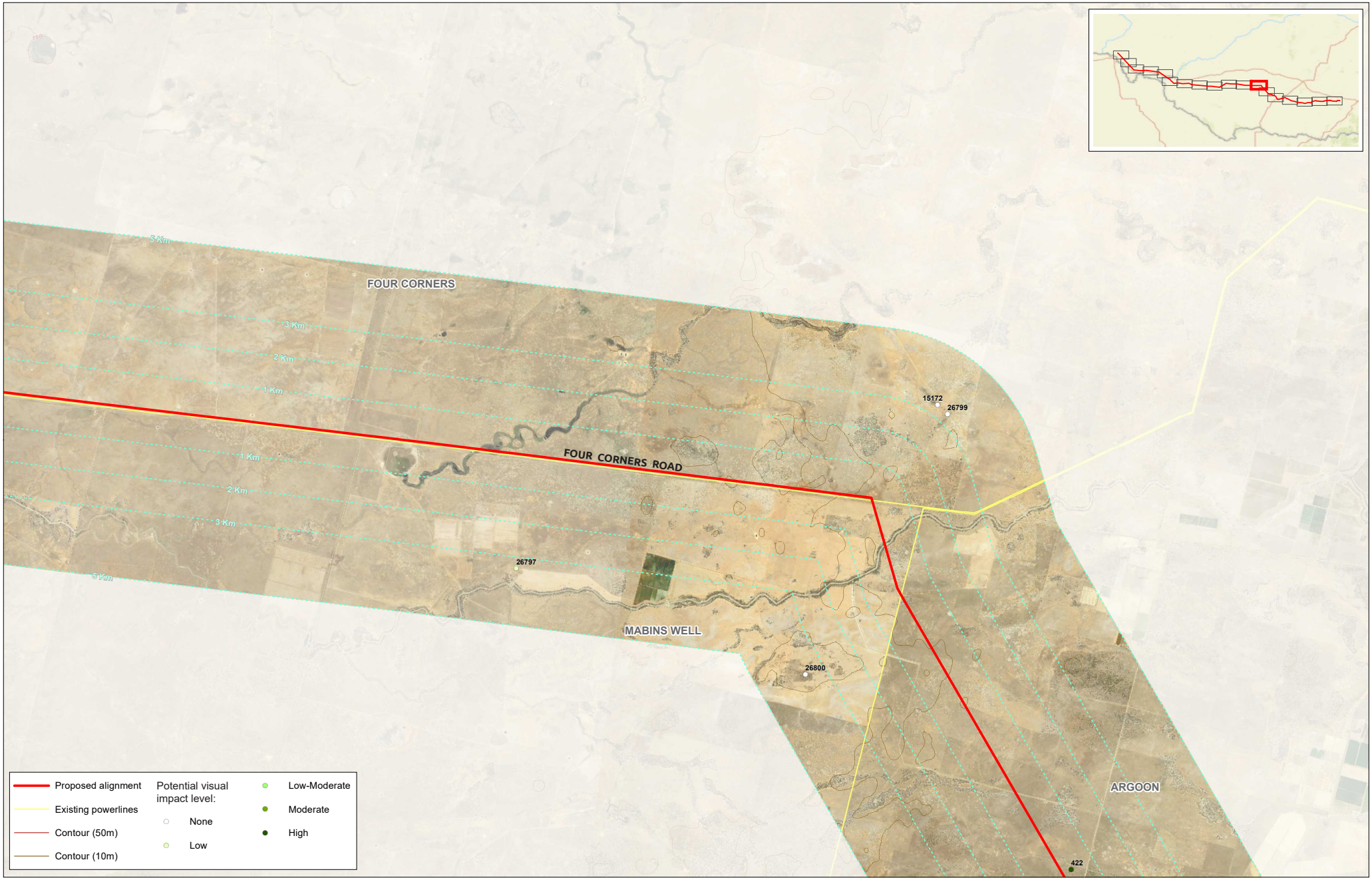
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Oolambeyan)

north

0 1 2 3 4 5km



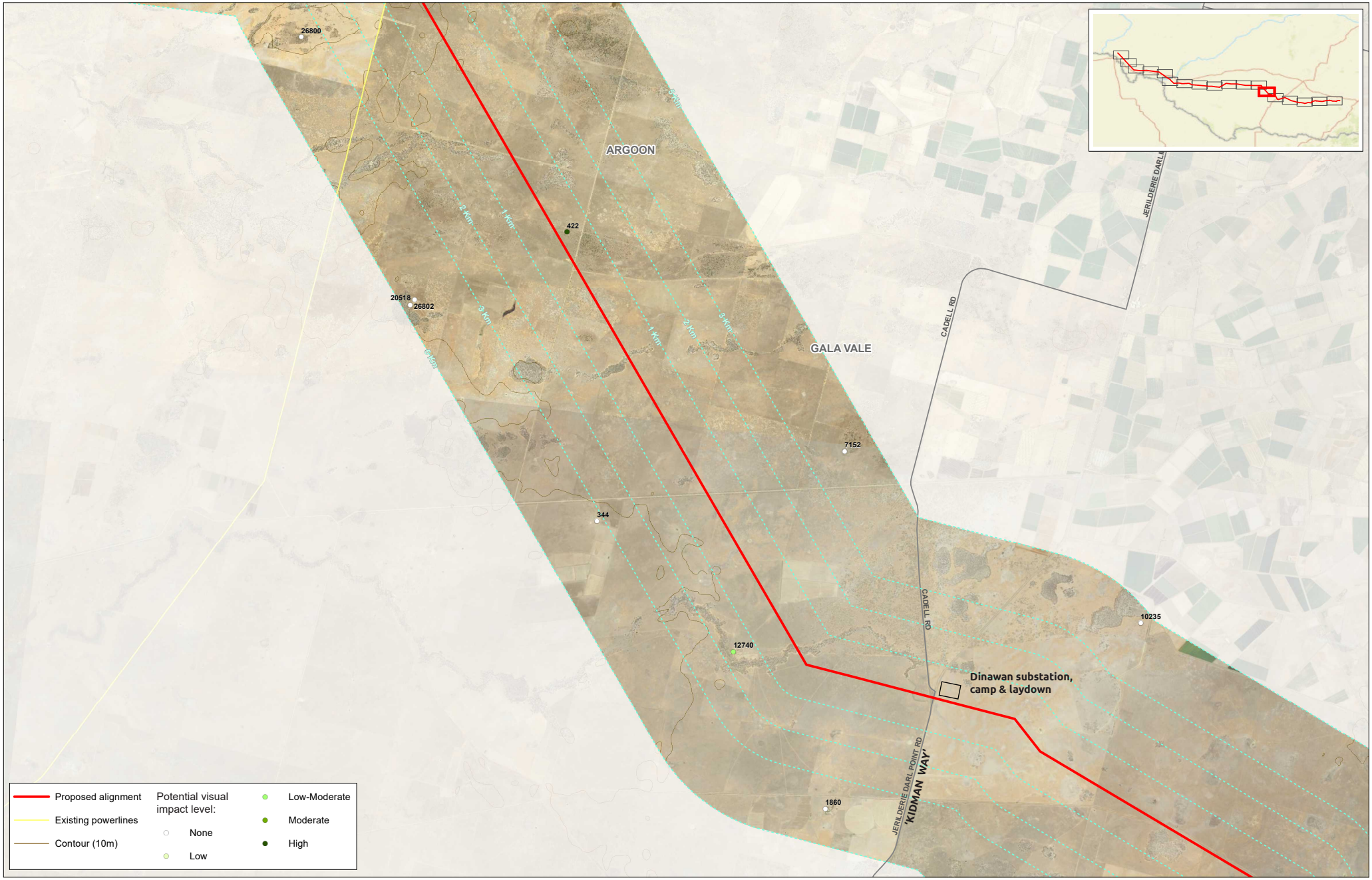
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Four Corners)

north

0 1 2 3 4 5km



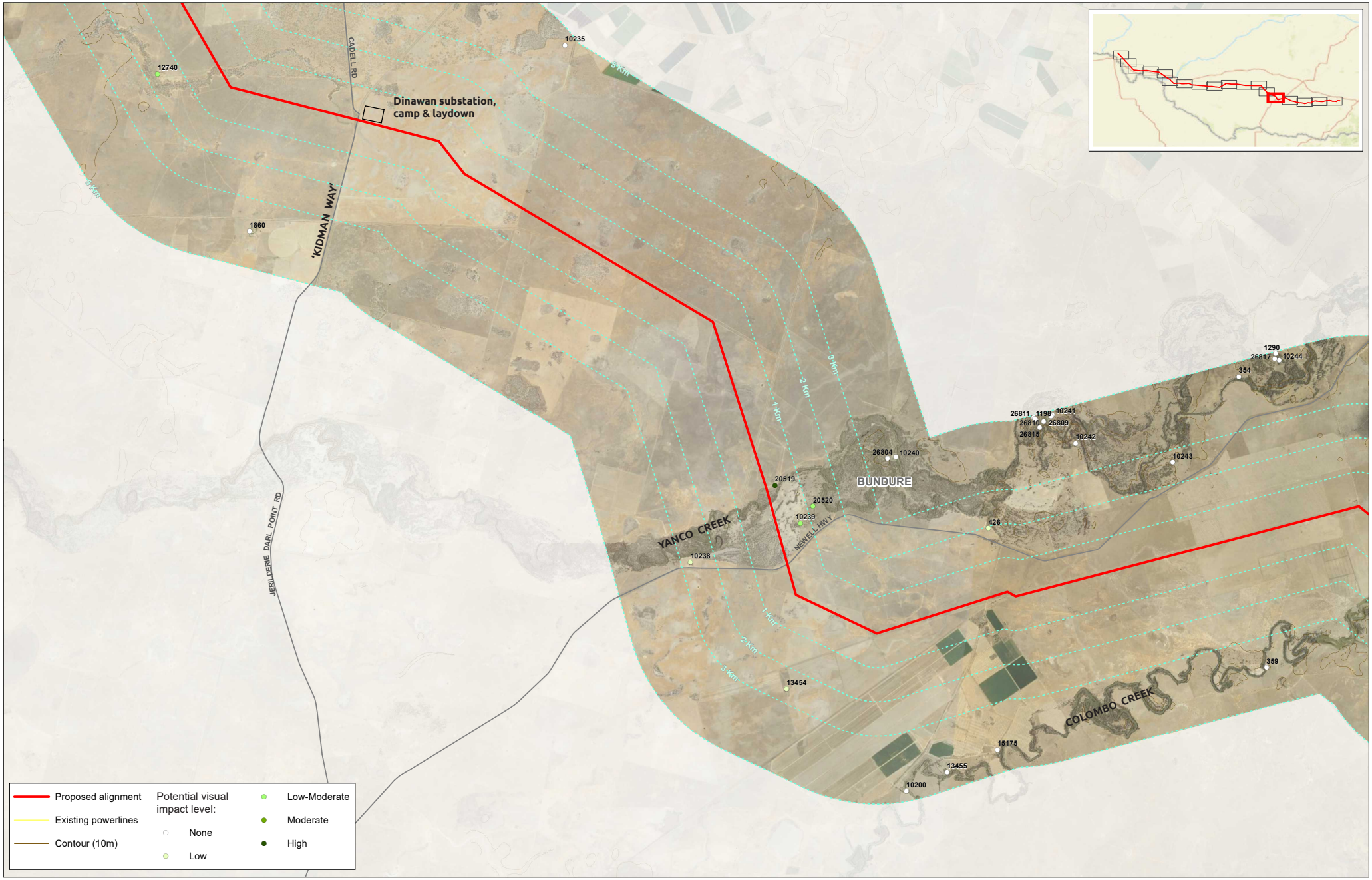
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Argoon to Kidman Way)

north

0 1 2 3 4 5km



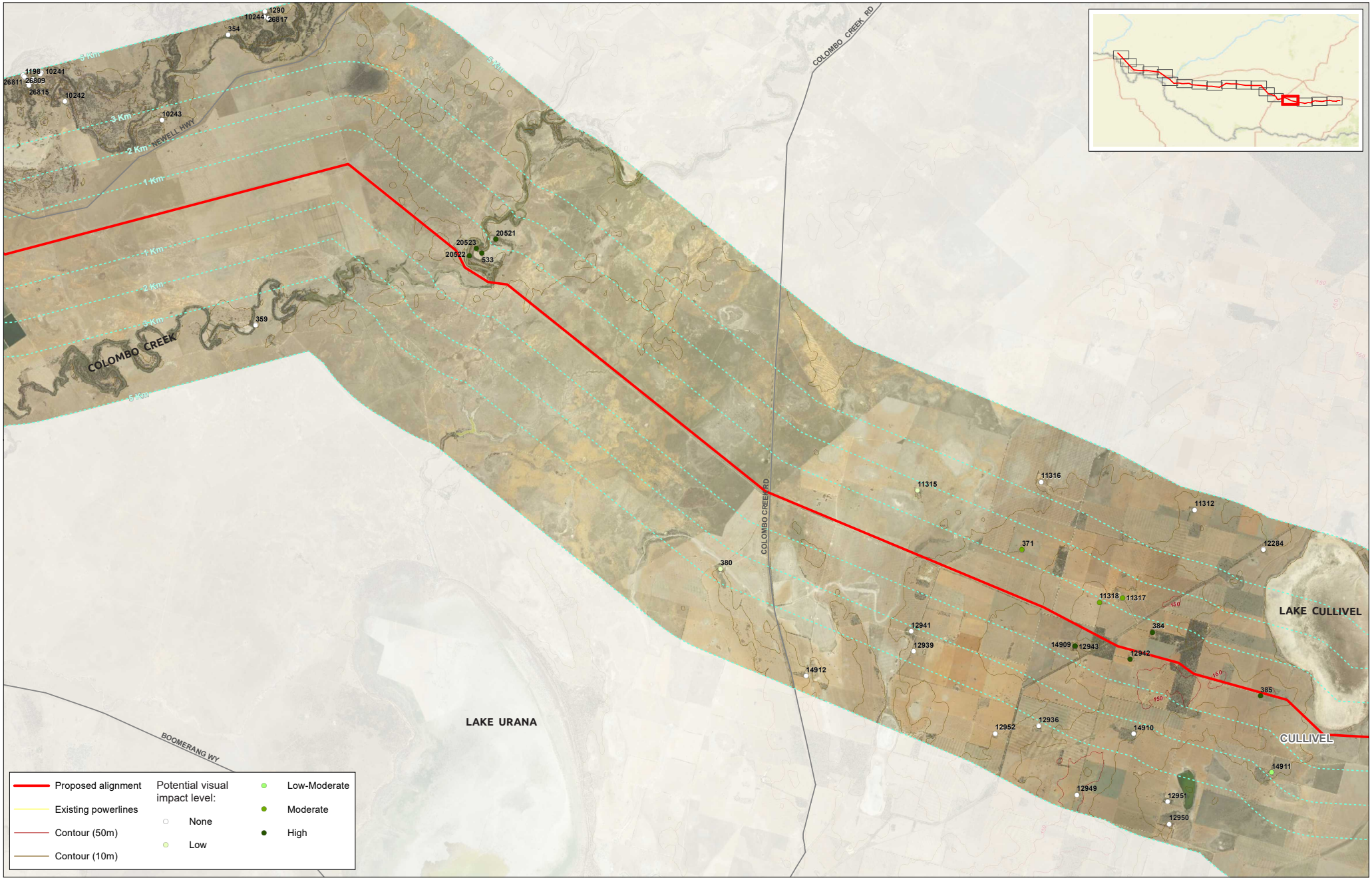
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Kidman Way to Newell Highway)

north

0 1 2 3 4 5km



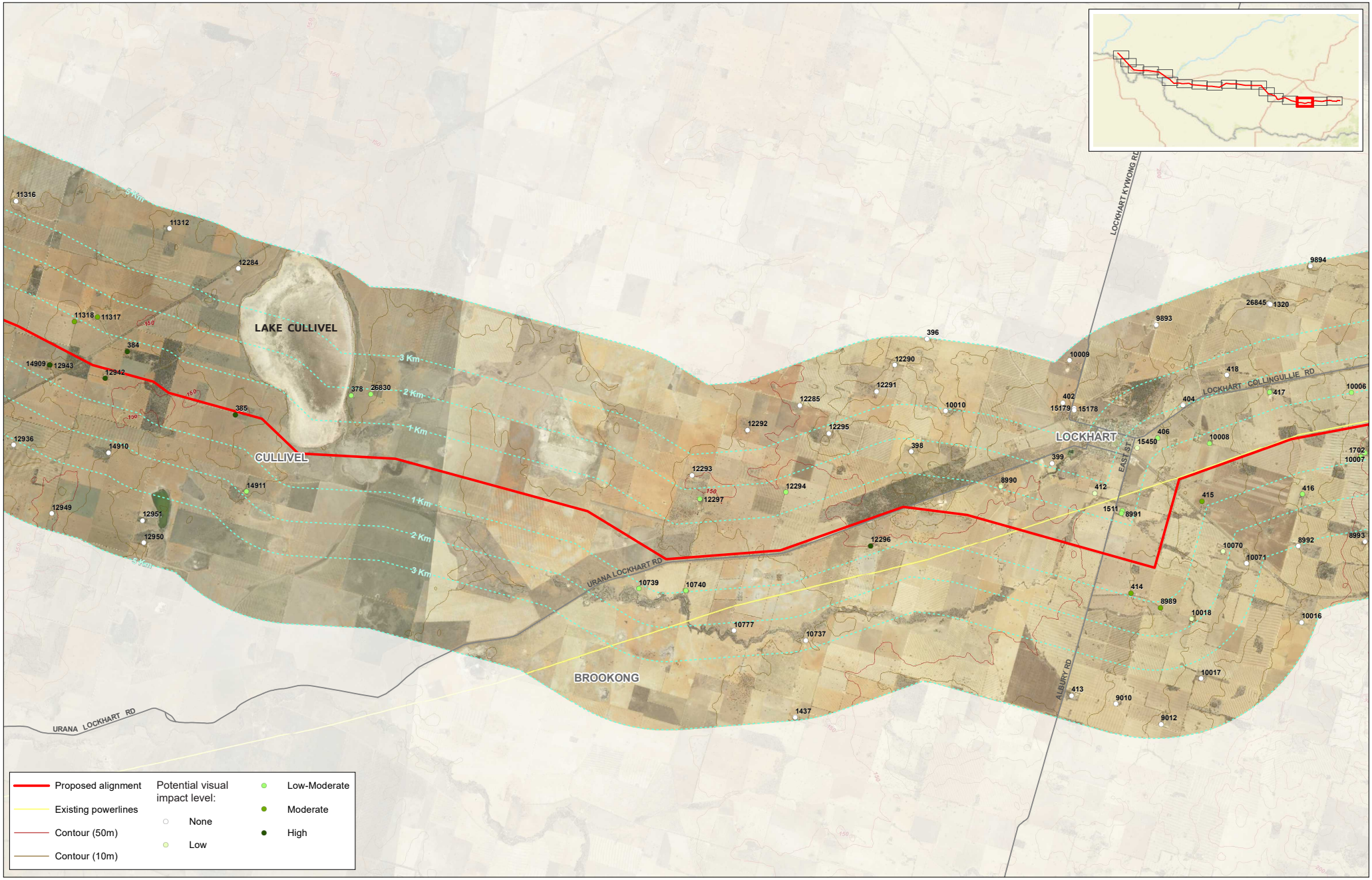
EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Newell Highway to Lake Cullivel)

north

0 1 2 3 4 5km

iris



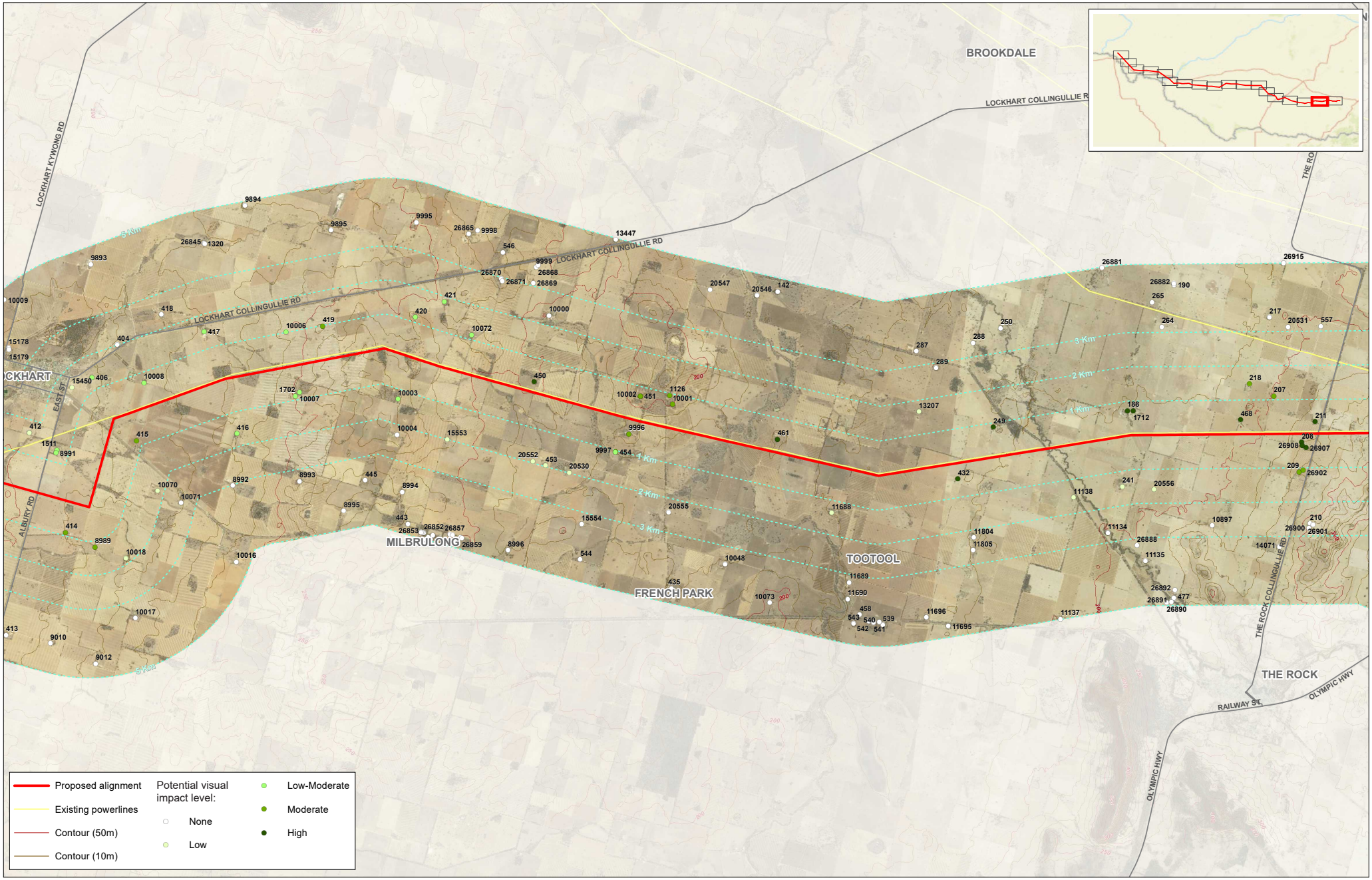
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Lake Cullivel to Lockhart)

north

0 1 2 3 4 5km



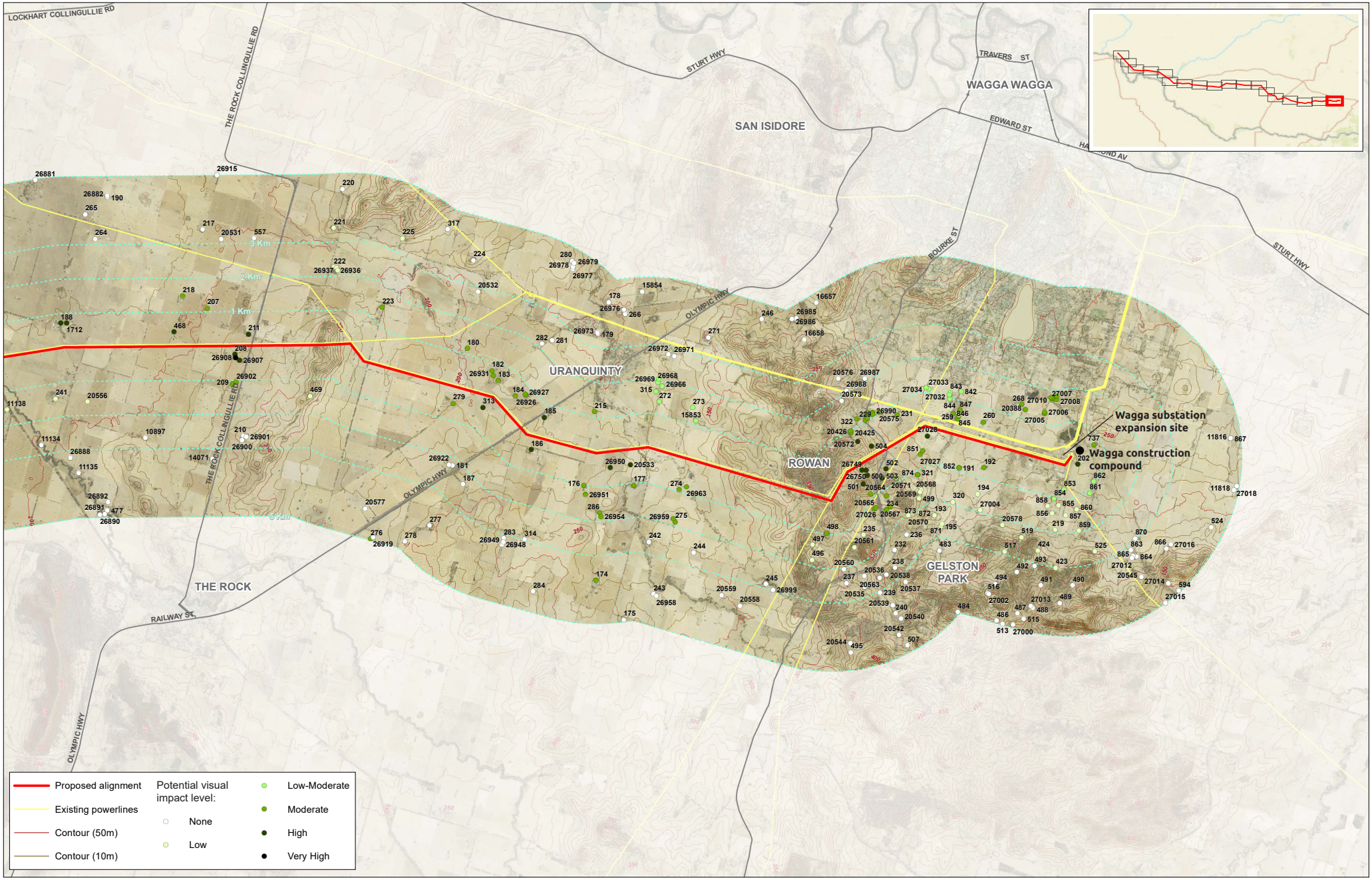
iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Lockhart to The Rock)

north

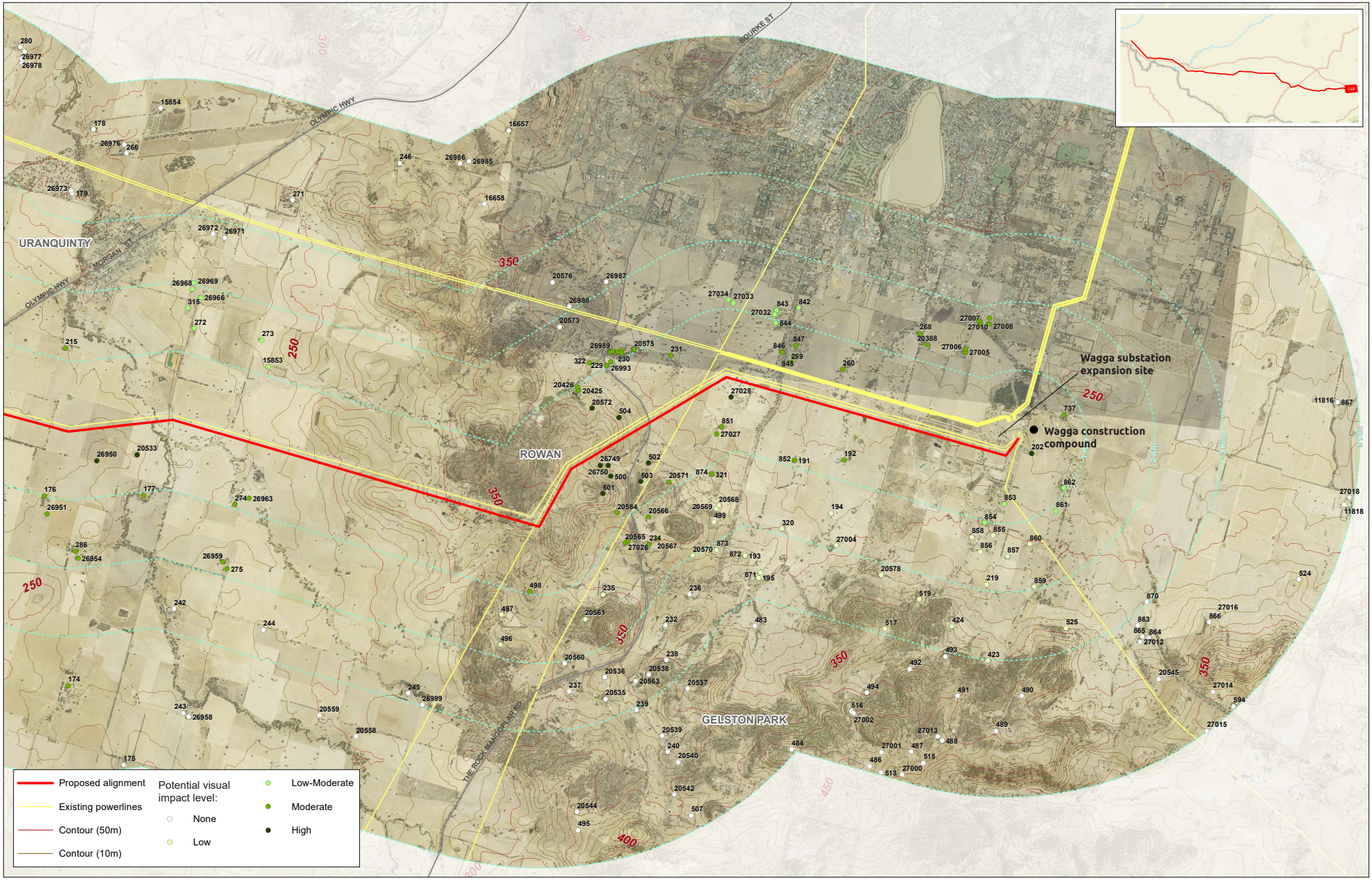
0 1 2 3 4 5km



iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (The Rock to Wagga Wagga)



iris

EnergyConnect

Landscape and visual impact assessment - **Private residence location plan** (Wagga Wagga, detail view)

north

0 1 2 2.5km

Appendix G - Private residence visual assessment detail

SUMMARY OF RESIDENTIAL RECEIVER ASSESSMENT DURING PROJECT OPERATIONS

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
Buronga to Trentham Cliffs				
2026	- 664 Arumpo Road, Wentworth	2.882 kilometres	Due to the existing vegetation, undulating landform, and distance, this property is not likely to have visibility of the proposal.	Negligible
2029, 25, 2028, 20486, 20487, 20492, 20484, 20482	Group of residences to the north of Gol Gol - 16B Drovers Drive, Mallee	3.285 kilometres	Due to the existing vegetation, undulating landform, and distance, this property is not likely to have visibility of the proposal. If the proposed transmission line is visible, these views would include the existing 220kV transmission line.	Negligible
Trentham Cliffs to Paringi				
14916	- Mallee	1.017 kilometres	Due to the limited vegetation and flat landform, this property is likely to have visibility of the proposal. The alignment would be seen in the middle to background these views would include the existing 220kV transmission line.	Low-Moderate
Trentham Cliffs to Lake Benanee				
44, 45, 1448, 1622, 14967, 14968, 14958, 14953, etc.	- Euston	3 kilometres +	Due to the intervening vegetation and distance, there would be no visibility of the proposal from Euston.	Negligible
15158, 1161, 26769	- Properties to the north of the alignment in the vicinity of Dry Lake and Lake Benanee	0.84 - 3.75 kilometres	Due to the flat landform and intervening vegetation, there would be the potential for a view to the upper portion of the proposed structures in the middle to background the views. These views would also include the existing 220kV transmission line.	Low
15157,1685, 26768, 20512,20511, 20513	- Properties to the south of the alignment in the vicinity of Dry Lake and Lake Benanee	0.98 – 2.05 kilometres	Due to the flat landform and intervening vegetation, there would be the potential for a view to the upper portion of the proposed structures in the middle to background the views. These views would also include the existing 220kV transmission line.	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
East of Lake Benanee				
1579	- 49776 Sturt Hwy, Euston	2.224 kilometres	Due to the flat landform and lack of vegetation the proposal would be the potential for a view to the proposal in the background. This view would also include the existing 220kV transmission line.	Low
Waldaira Lake				
26775	- 45207 Sturt Hwy, Balranald	1.448 kilometres	Due to the intervening vegetation the proposal is not likely to be visible from this residence.	Negligible
Waldaira Lake to Balranald				
49, 1229	- Benongal, 998 Windomal Rd, Balranald	1.202 – 1.79 kilometres	The trees within the gardens surrounding this residence would limit views to the proposal. There may be views from areas within the curtilage of the residence due to there being limited vegetation on the surrounding fields. Any views would also include the existing 220kV transmission line.	Low
1862	- 176 Weimby Rd, Balranald	2.184 kilometres	Due to the flat landform, distance and intervening vegetation there would be limited potential for a view to the proposal. If see, this view would also include the existing 220kV transmission line.	Negligible
26778	- Maffra Station, 4231 Yanga Way, Balranald	2.737 kilometres About 3 kilometres to Balranald laydown	Potential view to transmission line structures and the Balranald Laydown. The trees within the gardens surrounding this residence would limit views to the proposal. There may be views from areas within the curtilage of the residence due to there being limited vegetation on the surrounding fields. Any views would also include the existing 220kV transmission line. The view would be further mitigated by distance.	Low
26780	- 6204 Yanga Way, Yanga	2.62 – 2.83 kilometres	The trees within the gardens surrounding this residence and in the surrounding areas would limit views to the proposal. Any views would also include the existing 220kV transmission line.	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
15164	- Balranald Road, Yanga	1.954 kilometres	Due to the flat landform and limited trees between this residence and the alignment to the south there is the potential visibility of the proposal from this residence. This view would also include the existing 220kV transmission line.	Low
Murrumbidgee River Plain rural landscape character area				
Balranald to Abercrombie Creek				
26785	- Impimi, 417 Impimi Rd, Yanga	1.959 kilometres	The trees within the gardens surrounding this residence and in the surrounding areas would limit views to the proposal. However, there would potentially be views to several structures in the background of views which would also include the existing 220kV transmission line.	Low
Abercrombie Creek to Maude Road				
No residences	-	-		Negligible
Maude Road to Booroooban				
15167	- 3222 Booroorban-Tchelery Rd, Booroorban	1.957 Kilometres	Due to the flat landform and intermittent trees between this residence and the alignment to the south there is the potential visibility of the proposal from this residence. This view would also include the existing 220kV transmission line.	Low
1153	- North Bundy, Booroorban	1.906 kilometres	Vegetation to the north of this residence would limit views to the proposal. Any view would be in the background and would also include the existing 220kV transmission line.	Low
15168	- Booroorba-Tchelery Road, Booroorban	1.723 kilometres	Due to the flat landform and limited number of trees between this residence and the alignment there is the potential visibility of the proposal from this residence. This view would also include the existing 220kV transmission line.	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
Cobb Highway				
26791, 26792	- West Burrabogie Road, Booroorban	1.641 kilometres 1.890 kilometres	R26791 residence surrounding by trees and is unlikely to have a view to the proposal. There may be visibility from R26792 due to the flat landform and limited cover in areas between this residence and the alignment.	Low
1670	- West Burrabogie Road, Booroorban	1.440 kilometres	Due to the flat landform and limited tree cover between this location and the alignment there is potential for the alignment to be seen from this residence. This view would also include the existing 220kV transmission line.	Low-Moderate
72, 26794	- West Burrabogie, 2188 West Burrabogie Rd, Booroorban	2.193 – 2.262 kilometres	The trees within the gardens surrounding these residences would limit views to the proposal. Any views would also include the existing 220kV transmission line. This view would be somewhat mitigated by distance.	Low
Oolambeyan				
26795, 15171	- 4549 Jerilderie Rd, Hay South	1.832 – 2.501 kilometres	The trees within the gardens surrounding these residences would limit views to the proposal. Any views would also include the existing 220kV transmission line. This view would be somewhat mitigated by distance.	Low
26796	- North Boundary Road, Steam Plains	1.448 kilometres	Due to the flat landform and limited trees between this residence and the alignment there is the potential visibility of the proposal from this residence. This view would also include the existing 220kV transmission line. This view would be somewhat mitigated by distance.	Low-Moderate
1655	- 231 Bullewah Rd, Steam Plains	2.656 kilometres	The trees within the gardens surrounding this residence would limit views to the proposal. Any views would also include the existing 220kV transmission line. This view would be somewhat mitigated by distance.	Low
Four Corners				
26797	- Goolgumbla Road, Four Corners	3.317 kilometres	Due to the flat landform and limited trees between this residence and the alignment there is the potential visibility of the proposal from this residence. This view would also include the existing 220kV transmission line. This view would be mitigated by distance.	Negligible

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
Argoon to Kidman Way				
422	- 823 Fernbank Rd, Argoon	0.286 kilometres (0.36km and 0.395km to nearest towers)	While the landform is relatively flat and there are some intervening trees between this residence and the alignment, there is the potential for close range views to the proposal.. There would be two towers in close proximity, and multiple towers in several sectors of the view. Vegetation removal would also be visible. (Refer to Appendix H for further detail)	High
12740	- 137 Cadell Rd, Jerilderie	1.656 kilometres	Due to the flat landform and limited trees between this residence and the alignment there is the potential visibility of the proposal from this residence.	Low-Moderate
Kidman Way to Newell Highway				
20519	- Thurrowa Road, Bundure	0.273 kilometres (0.455km and 0.568km to nearest towers)	There would be a view to the proposal unobstructed and in foreground. Two towers in close proximity, both changing direction and extending the transmission line corridor across multiple view angles from this property. (Refer to Appendix H for further detail)	High
20520, 10239	- Newell Highway, Bundure8955 Newell Hwy, Bundure	1.183 kilometres 0.694 kilometres	The trees within the gardens surrounding these residences would limit views to the proposal. There would be views from the driveways approaching these residences from the Newell Highway.	Low-Moderate
10238	- Thurrowa, Newell Highway, Bundure	2.725 kilometres	The trees between this residence and the alignment along the creek would reduce the visibility of the proposal. There may be views to the to the south east across the Newell Highway to the alignment at a greater distance.	Low
13454	- Crutchs Road, Bundure	2.587 kilometres	Limited vegetation cover, mitigated by distance.	Low
426	- Newell Highway, Bundure	1.945 kilometres	The trees within the gardens surrounding this residence would limit views to the proposal. Any view would be further mitigated by distance.	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
Newell Highway to Lake Cullivel				
20522, 20523, 533	- 877 Coonong Rd, Morundah	0.275 kilometres (0.362km and 0.4km to nearest towers) 0.554 kilometres 0.623 kilometres	The trees surrounding these residences would provide some screening of these close range views. However, the proposal would be visible where there are open areas and rising above the surrounding vegetation. (Refer to Appendix H for further detail)	High
534	- Picnic shelters at the Water Ski Club	0.136 kilometres (0.225km and 0.270km to nearest towers)	The trees surrounding these picnic shelters would provide low level screening of the proposal. However, the proposal would be visible through gapes in the trees and rising above the surrounding vegetation. Two towers in close proximity, one changing the direction of the transmission line corridor. Multiple towers within 1km due to alignment change in direction.	High
20521	- 877 Coonong Rd, Morundah	1.181 kilometres	The trees surrounding this residence would provide some screening of these mid-range view. However, the proposal may be visible where there are open areas and rising above the surrounding vegetation. (Refer to Appendix H for further detail)	Moderate
380	- 7070 Federation Way, Urana	2.622 kilometres	While there are scattered trees surrounding this residence, due to the flat landform and open landscape beyond, is the potential visibility of the proposal from this residence.	Low
Lockhart rural valley landscape character area				
Lake Cullivel to Lockhart				
371	- 1174 Spraydon Rd,Urana	1.312 kilometres	Trees surrounding this residence would provide some screening of these close to mid-range views. These views would include the transmission line structures and wires as well as the vegetation removal where the alignment would cross the blocks of vegetation.	Moderate
11318, 11317	- 374 Barragunda Rd, Urana, - 4338 Boree Creek Rd, Urana	0.884 kilometres 1.318 kilometres		Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
12943, 14909, 12942	- Woodlands, 4536 Boree Creek Rd, Urana - The Pines, 1072 Cullivel Rd, Cullivel	0.578 kilometres 0.275 kilometres	Trees surrounding these residences would provide some screening of these close range views, however, this is otherwise an open view. These views would include the several towers and wires extending across the view as well as the vegetation removal where the alignment would cross the blocks of vegetation. (Refer to Appendix H for further detail)	High
384	- 4353 Boree Creek Rd, Cullivel	0.655 kilometres	Trees within this property would reduce the visibility of the transmission line. Where visible, there would be multiple towers seen extending across the view. (Refer to Appendix H for further detail)	Moderate
385	- Webbs Ln, Cullivel	0.094 kilometres (0.260km and 0.270km to nearest towers)	This is a close range view that would include the transmission line structures and wires as well as the vegetation removal within the alignment. Trees surrounding this residence would provide some close range screening. Towers either side of the residence and further towers extending across the view, including a change in direction which may bring towers into view across more than 180 degrees of the residence. (Refer to Appendix H for further detail)	Very high
14911	- Cullivel South, 105 Wandella Lane, Cullivel	1.846 kilometres	Trees surrounding this residence and in the surrounding area would provide some screening of this close to mid-range view. These views would include the transmission line structures and wires as well as the vegetation removal.	Low-Moderate
378, 26830	- 3407 Boree Creek Rd, Cullivel	1.844 kilometres	Trees and vegetation between these residences and the alignment would provide some screening of these views. These views would include the transmission line structures and wires as well as the vegetation removal in the mid to background.	Low-Moderate
12297, 12294	- 139 Commera Wilson Lane, Brookong - 1066 Urana-Lockhart Rd, Brookong	1.673 kilometres 1.551 kilometres	Trees and vegetation between these residences and the alignment would provide some screening views. These views would include the transmission line structures and wires as well as the vegetation removal in the mid to background.	Low-Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
10739, 10740	- Urana-Lockhart Rd, Brookong - 344 Urana-Lockhart Rd, Brookong	0.961 kilometres 1.152 kilometres	Residences north of Brookong Creek. Vegetation between these residences and the alignment would provide some screening views. These views would include the transmission line structures and wires as well as the vegetation removal in the mid to background.	Low-Moderate
12296	- 747 Urana-Lockhart Rd, Lockhart	0.757 kilometres	Vegetation surrounding this residence and along Urana-Lockhart Road would provide some screening of this close to mid-range view. This view would include the vegetation clearing within the Brookong Nature Reserve and transmission line structures and wires in the mid-ground of this view. Multiple towers would be visible above the vegetation. (Refer to Appendix H for further detail)	High
8990	- Killara, 329 Urana-Lockhart Rd, Lockhart	1.072 kilometres	Vegetation between these residences and the alignment would provide some screening of these views. These views would include the transmission line structures and wires as well as the vegetation removal in the mid to background. They would be seen together with and intersecting with existing transmission lines.	Low
8991, 1511	- Pine Vale, 5340 Albury Rd,Lockhart - Pine Vale, 5340 Albury Rd,Lockhart	1.262 kilometres 1.352 kilometres	Vegetation between these residences and the alignment would provide some screening of these background to mid-range views. These views would include the transmission line structures and wires as well as the vegetation removal in the background. While viewed at a distance, the transmission lines may be seen in multiple directions, as it crosses to the south and east.	Low-Moderate
414, 8989	- Woodown, 5086 Albury Rd, Lockhart - Chambers Lane, Lockhart	0.904 kilometre 1.183 kilometre	Vegetation between these residences and the alignment would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as the vegetation removal in the background. mid-background.	Moderate
10018, 10070	- Chambers Lane, Lockhart	1.847 kilometre	Vegetation between these residences and the alignment would provide some screening of these views. These views would include the transmission	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
			line structures and wires as well as the vegetation removal in the mid-background.	
415	- 254 Lockhart The Rock Rd, Lockhart	0.820 kilometre	Mid-range view to the transmission line structures and wires, including it turning corner and being viewed to the west and north. The proposal would be seen together with existing transmission lines.	Moderate
Lockhart to The Rock				
Rural areas to the east of Lockhart 10008, 406, 417, 10006, 420, 421, 10072 (North of the alignment) 416, 10007, 1702, 10003 (South of the alignment)	- Lockhart / Milbrulong - 5538 Albury Rd, Lockhart - 3567 Lockhart Collingullie Rd - 166 Richters Lane, Milbrulong	0.692 to 2 kilometres	Close to mid-range views to the transmission line structures and wires. Intervening vegetation surrounding these residences and within fields, including blocks of vegetation, would provide some screening of the proposed transmission line. The proposal would be seen together with existing transmission lines. Landform rises to an undulating north south ridgeline so that there is greater potential for views across the landscape and for views to the he transmission line corridor where it crosses higher ground.	Low-Moderate
10004, 15553, 20552, 453, 20530	- Ceranya, Milbrulong - 537 County Boundary Rd, Milbrulong - Tollendool, 310 Pat Gollashs Lane, Milbrulong - Tollendool, 310 Pat Gollashs Lane, Milbrulong - 386 Mortons Lane, Milbrulong	2.274 kilometres 1.990 kilometres 1.946 kilometres 1.969 kilometres 1.985 kilometres	Vegetation between these residences and the alignment would provide some screening of these views. These views would include the transmission line structures and wires as well as the vegetation removal in the mid-background.	Low

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
450	- 128 Slys Lane,Milbrulong (0.347km and 0.430km to tower)	0.301 kilometres (0.347km and 0.430 to nearest towers)	Trees surrounding this residence and in the surrounding area would provide some screening of this close to close-range view. These views would include the transmission line structures and wires as well as the vegetation removal. Multiple towers would be visible. The proposal would be seen together with existing transmission lines. (Refer to Appendix H for further detail)	High
451 and 10002, 10001, 1126, 9996, 454	- Holm Lea, 564 French Park-Bullenbung Rd, Milbrulong - Milbrulong - Milbrulong - St Johns, 672 French Park-Bullenbung Rd, Milbrulong - Kelvin, 730 French Park-Bullenbung Rd, Milbrulong	0.725 kilometres 0.699 kilometres 0.935 kilometres 0.436 kilometres 1.037 kilometres	Trees surrounding these residences and in the intervening fields would provide some screening of these close to mid-range view. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines.	Moderate
461, 432, 249	- 731 Hendersons Rd, Tootool - 535 Tuttys Lane, Tootool - 1066 Bullenbong Rd, Tootool	0.380 kilometres 0.458 kilometres 0.873 kilometres	Trees surrounding these residences would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. There would be multiple towers visible. The proposal would be seen together with existing transmission lines. (Refer to Appendix H for further detail)	High
11688, 13207	- 223 Hendersons Rd, Tootool - Tootool	1.357 kilometres 1.660 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines.	Low
The Rock to Wagga Wagga				
188, 1712	- Boyds Rd,The Rock	0.716 kilometres 0.715 kilometres	Trees surrounding these residences, around the dam and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines. (Refer to Appendix H for further detail)	High

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
11138, 241, 20556	- 1380 Bullenbong Rd, The Rock - Kalimna, 191 Boyds Rd, The Rock - Boyds Rd, The Rock	1.530 kilometres 1.442 kilometres 1.588 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close-mid-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines.	Low
468, 211	- McGeachies Ln, The Rock - 2 Mcgeachies Lane, The Rock	0.421 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock). (Refer to Appendix H for further detail)	High
218, 207	- Taylors Road, The Rock - Mcgeachies Lane, The Rock	1.469 kilometres 1.105 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen to the south together with existing transmission lines and possibly existing transmission lines to the north. Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock).	Moderate
208, 26908, 26907	- Kiyuga, 709 The Rock-Collingullie Road, The Rock - Collinguillie Road, The Rock - 709-709 The Rock-Collingullie Rd, The Rock)	0.247 kilometres 0.340 kilometres 0.413 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock). (Refer to Appendix H for further detail)	High
209, 26902	- Tulliallan, 621 The Rock-Collingullie Road, The Rock	1.120 kilometres 1.068 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these background to middle ground views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock).	Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
Great Dividing Range foothills landscape character area				
469	- Uranquinty	1.490 kilometres	Elevated property, with landform rising towards the alignment. There may be views to the upper portion of the transmission line towers to the north and views to the transmission line corridor to the west or east in the distance. The trees in surrounding areas would provide some screening.	Low
223	- Wyadra, 675 Uranquinty Cross Rd, Uranquinty	1.422 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some vegetation removal including crossing the highpoint to the south (between Collingullie and The Rock), viewed together with existing transmission lines parallel and intersecting.	Moderate
222,221, 225, 26936	- Atworthy, 58 Paynes Rd, Uranquinty - Blakeleigh, 167 Paynes Rd, Collingullie - Rocky Springs, 750 Uranquinty Cross Rd, Uranquinty - 58-58 Paynes Rd, Uranquinty	2.231 - 3.434 kilometres	Potential distant views to the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock). Viewed together with existing transmission lines.	Low
313	- 'Greendale' 389 Uranquinty Cross Rd, Uranquinty	0.362 kilometres	Views would include the transmission line structures and wires as well as some vegetation removal middle ground. The proposal would be seen together with existing large-scale transmission lines. There would be crossing and converging power lines visible from multiple directions. (Refer to Appendix H for further detail)	High

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
279, 180, 182, 183, 184, 26926, 26927, 26931	- Hanging Rock Rd, Bon Accord, Uranquinty385 Hanging Rock Rd, Uranquinty - Churchill Square, 88 Hanging Rock Rd, Uranquinty - 'Lakeside' 418 Hanging Rock Rd, Uranquinty - 'Bolero Park' 336 Hanging Rock Rd, Uranquinty - 70-304 Hanging Rock Rd, Uranquinty	0.484 kilometres 1.173 kilometres 0.735 kilometres 0.508 kilometres 0.512 kilometres 0.765 kilometres 0.767 kilometres 0.619 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these background to mid-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the west (between Collingullie and The Rock). May also have views to the north to the existing Uranquinty power station.	Moderate
185, 186	- Glencoin, 5888 Olympic Hwy, Uranquinty - Elswick, 5746 Olympic Hwy, Uranquinty	0.619 kilometres 0.390 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan). (Refer to Appendix H for further detail)	High
215	- Grasmere, 970 Old Station Rd, Uranquinty	1.163 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of this mid-range view. This view would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).	Moderate
272, 315, 26966, 26968, 26969, 15853, 273, and properties on the outskirts of Uranquinty	- 1268 Oxley Bridge Rd, Uranquinty - Gateside, 1345 Oxley Bridge Rd, Uranquinty - 70-304 Hanging Rock Rd, Uranquinty - 1344-1344 Oxley Bridge Rd, Uranquinty	1.370 kilometres 1.647 kilometres 1.834 kilometres 1.930 kilometres 2.026 kilometres 1.132 kilometres 1.481 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).	Low - Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
	- 122 Harveys Rd, Uranquinty - Springwood, 120 Harveys Rd, Uranquinty			
26950, 20533	- Oxley Bridge Rd, Uranquinty - 11146 Oxley Bridge Rd, Uranquinty	0.467 kilometres 0.447 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan). (Refer to Appendix H for further detail)	High
176, 26951, 286, 26954, 177, 274, 276, 26963, 275, 26959	- Blackwood, 718 Old Station Rd, Uranquinty - 718-1040 Old Station Rd, Uranquinty Springdale, - 47 Kellys Lane, Uranquinty - Croglyn, 1037 Oxley Bridge Rd, Uranquinty - Rosebrook, 1054 Oxley Bridge Rd, Uranquinty - Ivanhoe, 5232 Olympic Hwy, The Rock - Address not confirmed (1868) - 469-596 Thirteen Mile Reserve Rd, Maxwell, Uranquinty	1.000 kilometres 1.242 kilometres 1.748 kilometres 1.857 kilometres 1.049 kilometres 0.932 kilometres 4.940 kilometres 0.787 kilometres 1.868 kilometres 1.789 kilometres	Landform rises to the south increasing the potential for views to the north and across the valley and Uranquinty. Trees surrounding these residences and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).	Moderate
26749, 26750, 20572, 500, 501, 502, 503, 504, (Properties on Rowan Ridge within 1 kilometre of the proposed alignment)	- 6701-6739 Holbrook Rd, Gelston Park, Rowan - 6823 Holbrook Rd, Rowan - Ubatuba, 6645 Holbrook Rd, Gelston Park	0.172 kilometres 0.233 kilometres 0.608 kilometres 0.388 kilometres	Located on elevated land with views across the valley. Trees surrounding these residences and on intervening areas would provide some screening of these close-range views. These views would include the minor earthworks at the tower locations, transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with	High

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
	- 6720 Holbrook Rd, Rowan - 6640 Holbrook Rd, Gelston Park		existing large-scale transmission lines crossing the ridgeline. (Refer to Appendix H for further detail)	
20425, 20426, 20564, 20571	- 6823 Holbrook Rd, Rowan 'Connorton', 6879 Holbrook Rd, Rowan - 'Il Bosco', 6643 Holbrook Rd, Gelston Park - 6752 Holbrook Rd, Rowan	0.545 kilometres 0.500 kilometres 0.677 kilometres 0.294 kilometres	Located on elevated land with views across the valley. Trees surrounding these residences and on intervening areas would provide some screening of these mid-range views. The proposal would be seen together with existing large-scale transmission lines crossing the ridgeline.	Moderate
20567, 20566, 321, 874, 234, 20585, 27026, 20565	- 6588 Holbrook Rd, Gelston Park - 'Rowanfeyld', 6701 Holbrook Rd, Rowan - 728 Plumpton Rd, Rowan	1.521 kilometres 1.183 kilometres 1.113 kilometres	Located on elevated land with views across the valley. Trees surrounding these residences and on intervening areas would provide some screening of these mid-range views. These views would include the minor earthworks at the tower locations, transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale transmission lines crossing the ridgeline.	Moderate
26989, 229, 26990, 231 26991, 26993, 322, 230, 26992	- 6886-6910 Holbrook Rd, Rowan Rowan Cottage, 6886 Holbrook Rd, Rowan - 21-275 Rowan Rd, Rowan Caringa, 253 Rowan Rd, Rowan - 6886-6910 Holbrook Rd, Rowan 6909 Holbrook Rd, Rowan - 'Fairlight', 6912 Holbrook Rd, Rowan -	Between 1 and 2 kilometres	Located on elevated land with views across the valley. Trees surrounding these residences and on intervening areas would provide some screening of these mid-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale transmission lines crossing the ridgeline.	Moderate
Wagga Wagga rural fringe landscape character area				
851, 27027, 191, 852, 192	- 688 Plumpton Rd, Rowan - 688 Plumpton Rd, Rowan21-275 Rowan Rd, Rowan - Belhaven, 233 Boiling Down Rd, Rowan (192)	0.590 kilometres 0.643 kilometres 0.900 kilometres 0.900 kilometres 0.695 kilometres	Trees surrounding these residences and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal. The proposal would be seen together with existing large-scale	Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
			transmission lines. There would potentially be a view to the transmission line corridor crossing the highpoint to the west (Rowan).	
27028	- 99 Rowan Road, Rowan (191, 852)	0.259 kilometres	Trees surrounding this residence and on intervening fields would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some minor vegetation removal in multiple directions. The proposal would be seen together with existing large-scale transmission lines. (Refer to Appendix H for further detail)	High
846, 259, 845, 260, 847	- 286 Boiling Down Rd, Rowan - 517 Plumpton Rd, Rowan	0.574 kilometres	Trees surrounding these residences, along roads and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line towers and wires, and some vegetation removal. The proposal would be seen together with existing large-scale transmission towers.	Moderate
27033, 27032, 842, 843, 844	- 16 Lloyd Rd, Springvale - 456-456 Plumpton Rd, Lake Albert, Rowan - 447 Plumpton Rd, Rowan - 456 Plumpton Rd, Rowan	1.077 kilometres	Trees surrounding these residences, along roads and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line towers and wires, and some vegetation removal. The proposal would be seen together with existing large-scale transmission towers.	Low-Moderate
268, 27005, 27006, 27007, 27008, 27009, 20388, 27010	- Redbank, 106 Redbank Rd, Rowan - 91 Redbank Rd, Lake Albert11-13 Olearia Pl, Lake Albert, Gregadoo - 91 Redbank Rd, Lake Albert	1.378 kilometres 1.299 kilometres 1.340 kilometres 1.738 kilometres 1.728 kilometres 1.786 kilometres 1.251 kilometres 1.795 kilometres	Trees surrounding these residences, along roads and on intervening fields would provide some screening of these mid-range views. These views would include the transmission line towers and wires, the proposed expansion of the Wagga Wagga substation, and some vegetation removal. The proposal would be seen together with existing large-scale transmission lines and the existing substation.	Moderate
202	- Benlock, 83 Ashfords Rd, Gregadoo	0.286 kilometres	Trees surrounding this residence would provide some screening of this close-range view. These views may include the transmission line towers and wires, some vegetation removal, and the proposed expansion of the Wagga Wagga substation. The proposal would be seen together with existing large-	High

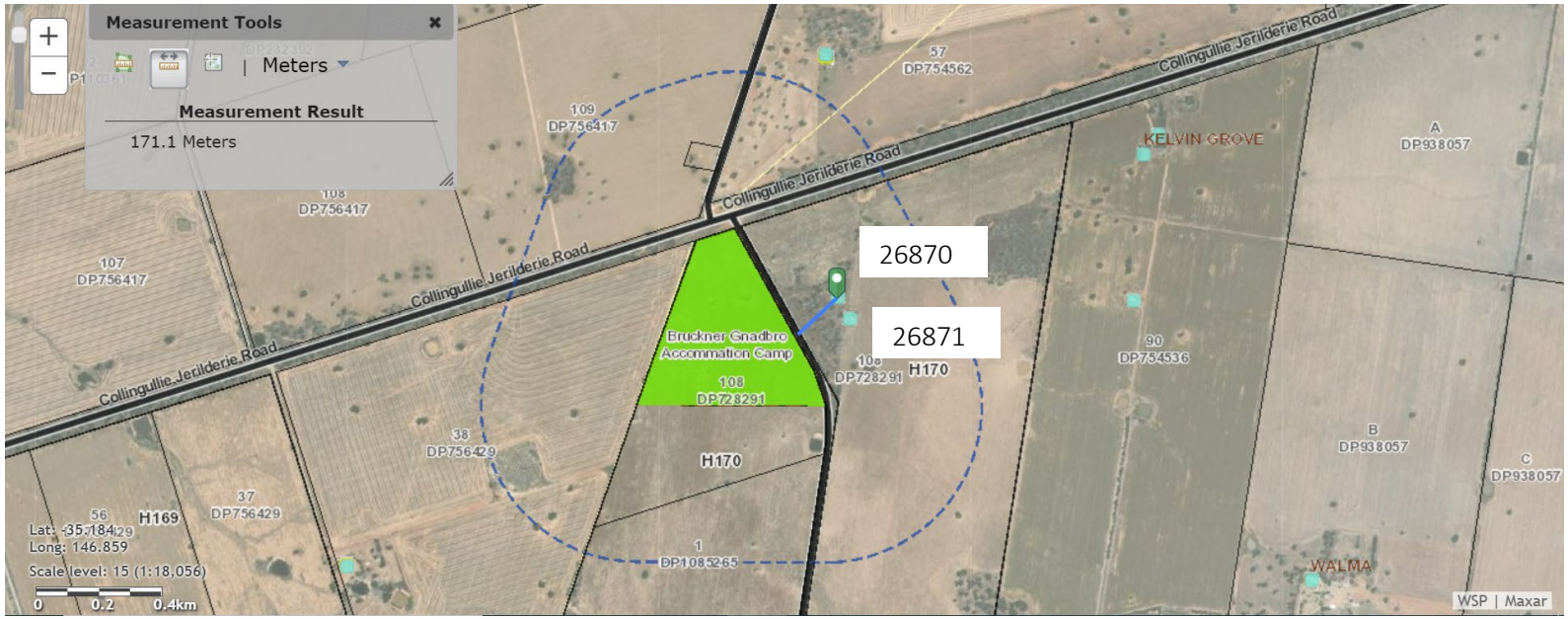
Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
			scale transmission lines and the existing substation. (Refer to Appendix H for further detail)	
737	- Arundel, 1504 Gregadoo East Rd, Gregadoo	0.757 kilometres	Trees surrounding this residence and on intervening property would provide some screening of these close to mid-range views. These views may include the transmission line towers and wires, some vegetation removal, and the proposed expansion of the Wagga Wagga substation. The proposal would be seen together with existing large-scale transmission lines and the existing substation. (Refer to Appendix H for further detail)	Moderate
853, 854, 861, 862	- Mayfield, 202 Ashfords Rd, Gregadoo - Ivydale, 10 Ivydale Rd, Gregadoo - 9 Ivydale Rd, Gregadoo	0.703 kilometres 1.028 kilometres 1.094 kilometres 0.965 kilometres	The undulating landform and trees surrounding these residences, on intervening fields, and surrounding the existing Recycling plant and Waste management centre, would provide some screening of these mid-range views. These views the transmission line towers and wires. There would be some vegetation removal that may also open up views to the existing substation. The proposal would be seen together with existing large-scale transmission lines and the existing Wagga Wagga substation and may include glimpses of the existing industrial scale buildings.	Low-Moderate

Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
320, 194, 27004, 858, 855, 856, 860, 219, 859	- 759 Plumpton Rd,Rowan - Crooked Creek, 404 Redbank Rd, Rowan - 404-470 Redbank Rd, Gregadoo, Rowan - Jillba, 216 Ashfords Rd, Gregadoo - Hillview, 232 Ashfords Rd, Gregadoo - Malie, 112 Ivydale Rd, Gregadoo - 281 Ashfords Rd, Gregadoo - Reedy Springs, 152 Ivydale Rd, Gregadoo	2 - 5 kilometres	Landform rises to a ridgeline to the south of the valley, increasing the potential for views to the proposed transmission line corridor. Trees surrounding these residences and on intervening fields would provide some screening of these long-range views. These views would include the transmission line structures and wires, the Wagga Wagga substation upgrade and some minor vegetation removal. The proposal would be seen together with several other existing large-scale transmission lines. Would potentially see the transmission line corridor crossing the highpoint to the west (Rowan). This view has a high visual absorption capacity.	Low
Impacts during construction				
26870, 26871	- Boundary Road, Milbrulong - Boundary Road, Milbrulong	0.170 km to construction compound	During construction there would be fore to middle ground views to a temporary construction compound. There is some vegetation between these properties that would provide some filtering of views. This impact would be experienced temporarily during the day and at night. (Refer to Appendix H for further detail)	High
546	- 2696 Lockhart Road, Lockhart	0.630 to construction compound	During construction there would be middle ground views to a temporary construction compound. There is some vegetation between this property that may filter these views. This impact would be experienced temporarily during the day and at night. (Refer to Appendix H for further detail)	Moderate
12297, 12293	- 139 Commera Wilson Lane, Brookong - 247 Commera Wilson Lane, Brookong	1.673 kilometres (0.130km to construction compound) 2.197 kilometres (0.700km to construction compound)	During construction there would be middle ground views to a temporary construction compound. (Refer to Appendix H for further detail)	High

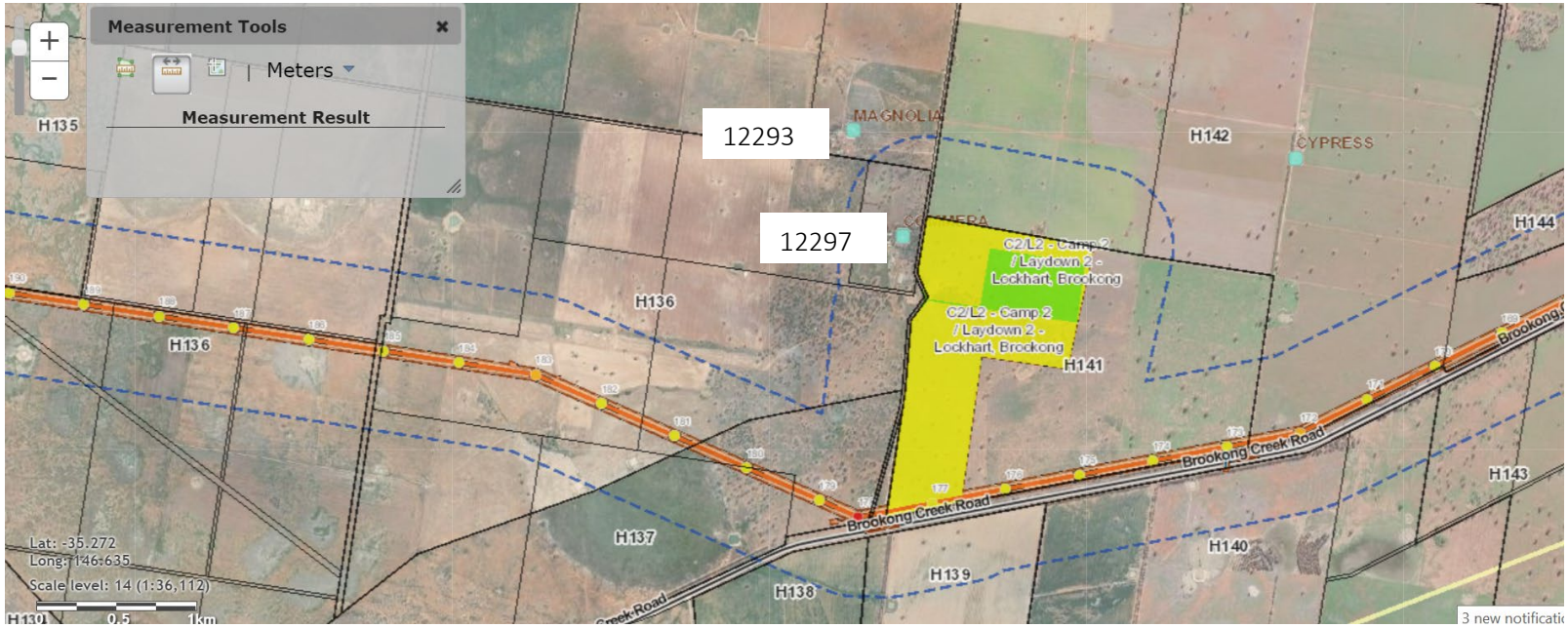
Receiver ID no.	Location / address	Approximate distance to the closest feature of the proposal	Description of visibility	Potential Level of impact
Mallee shrubland and rural landscape character area				
737, 202	- Arundel, 1504 Gregadoo East Rd, Gregadoo - Benlock, 83 Ashfords Rd, Gregadoo	0.757 kilometres 0.286 kilometres	During construction there would be fore to middle ground views to a temporary construction compound. There is some vegetation between these properties that would provide some filtering of views. This impact would be experienced temporarily during the day and at night. (Refer to Appendix H for further detail)	High

Appendix H - Supporting visual analysis of private residences with potential for high and very high visual impact

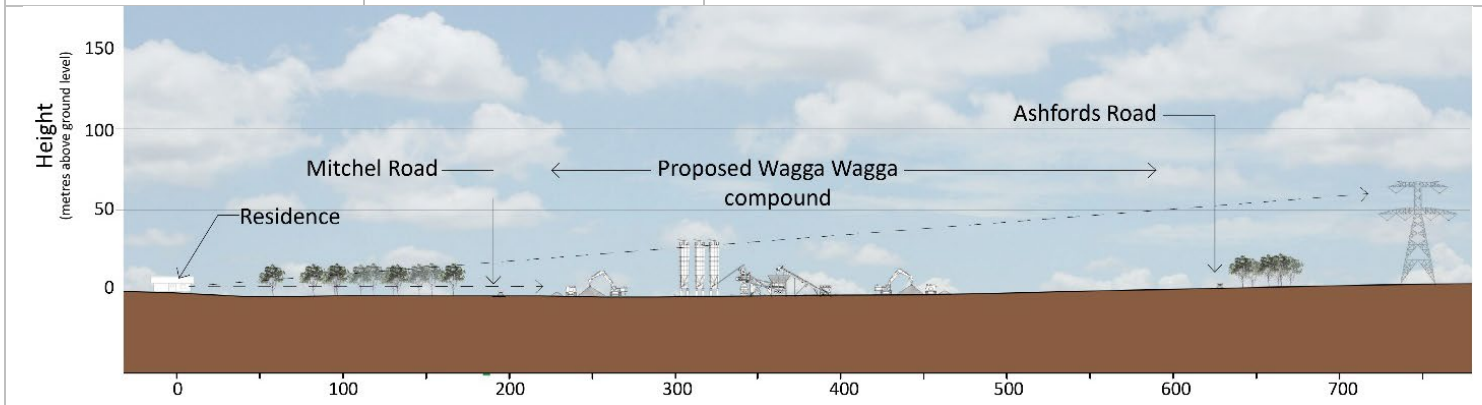
Analysis of potential visual impact during construction

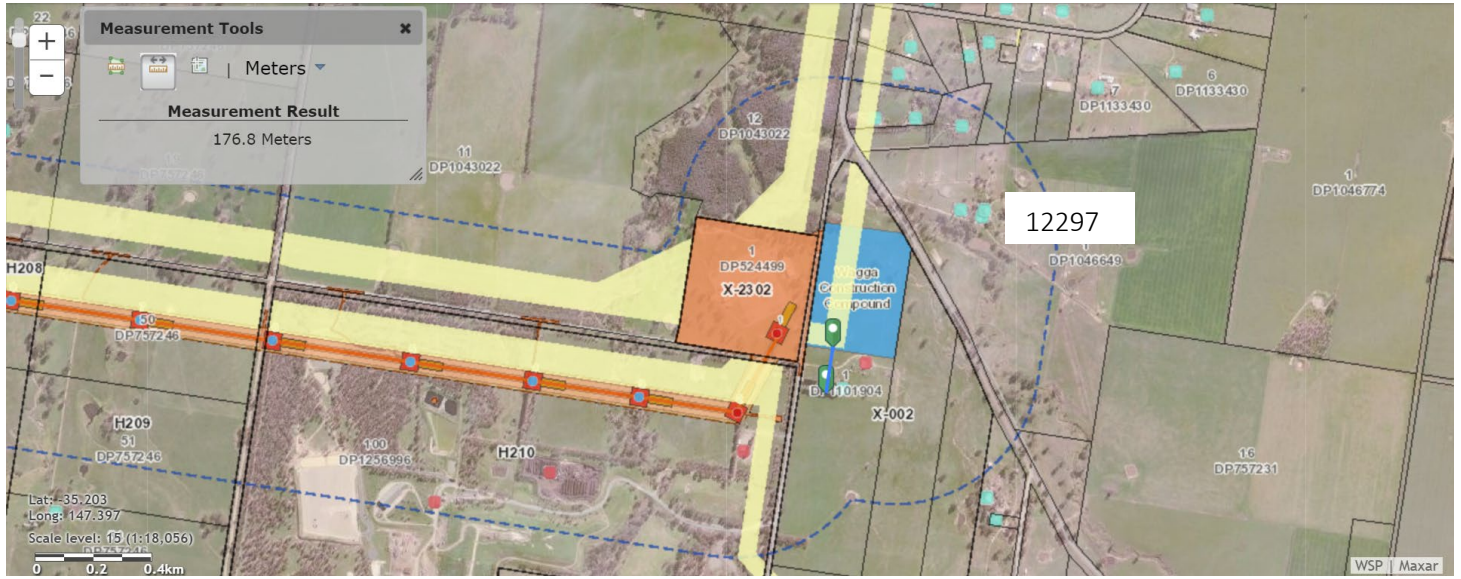
Receiver ID no.	Location / address	Approximate distance to the construction compound	Magnitude of change	Potential level of impact
26870, 26871	Boundary Road, Milbrulong	- 0.170 km	During construction there would be fore to middle ground views to a temporary construction compound. There is some vegetation between these properties that would provide some filtering of views. This impact would be experienced temporarily during the day and at night.	High
			

Receiver ID no.	Location / address	Approximate distance to the construction compound	Magnitude of change	Potential level of impact
12297, 12293	139 Commera Wilson Lane, Brookong 247 Commera Wilson Lane, Brookong	- 0.130km to construction compound - 0.700km to construction compound	During construction there would be close range views to a temporary construction compound. This impact would impact would be experienced temporarily during the day and at night.	High



Receiver ID no.	Location / address	Approximate distance to the construction compound	Magnitude of change	Potential level of impact
737, 202	Arundel, 1504 Gregadoo East Rd, Gregadoo Benlock, 83 Ashfords Rd, Gregadoo	- 0.757 kilometres - 0.286 kilometres	During construction there would be fore to middle ground views to a temporary construction compound. There is some vegetation between these properties that would provide some filtering of views. This impact would be experienced temporarily during the day and at night.	High





Analysis of potential visual impact during operations

Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
422	823 Fernbank Rd, Argoon	0.36km and 0.395km	Yes	Northwest, west and south	High	Additional trees provided around the residence, to the south and west, to screen the view of the towers but also allow views across the easement to maintain long range rural views.	Moderate

Existing conditions

The landform is relatively flat and there are some intervening trees between this residence and the alignment.

Description of visibility

Two towers within close proximity and several seen across the view through scattered trees.

Mitigating factors of design

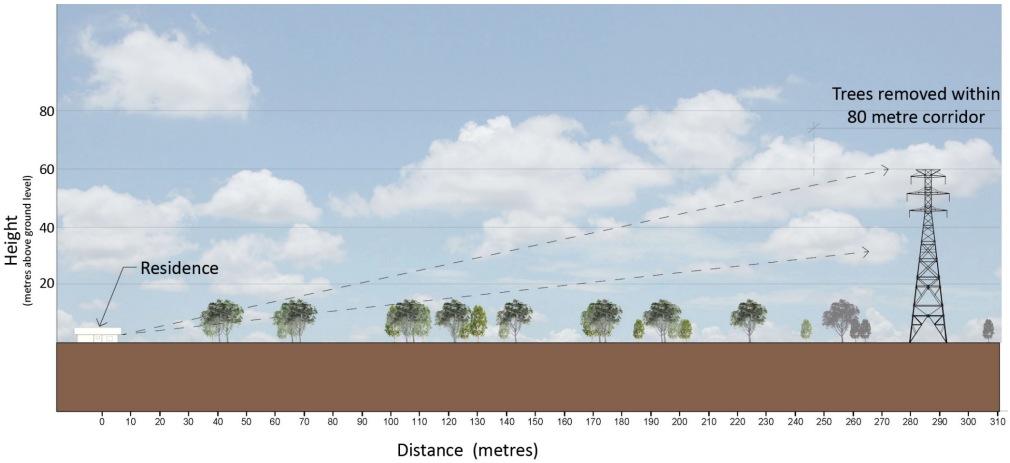
Towers have been located equidistant from this receiver to maximise their distance from the residence.

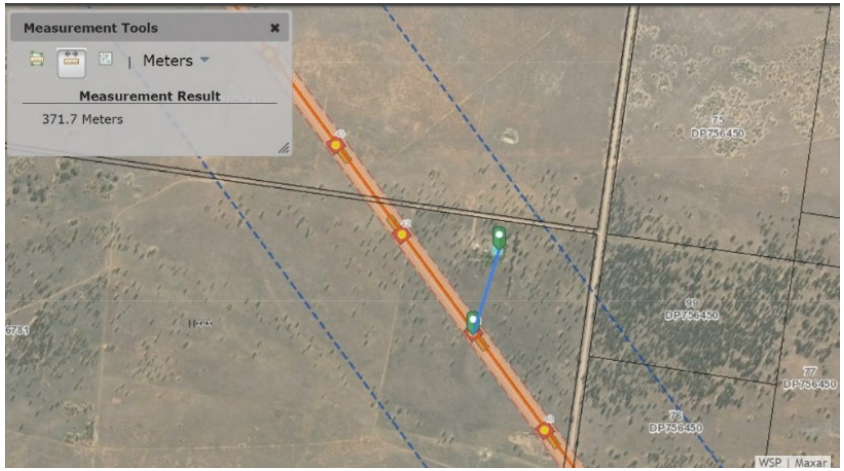
Rationale for impact rating (unmitigated)

- Close-range views
- Large scale towers
- Scattered trees, flat landform would provide limited screening
- No existing transmission lines in the view
- Transmission line extending across the view
- Multiple towers visible
- Scattered tree clearing within the easement

Effectiveness of mitigation measures

- Vegetation would provide screening over time
- Scattered trees, rather than dense screening vegetation would be in keeping and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above existing and proposed vegetation at maturity due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
20519	Thurrowa Road, Bundure	0.455km and 0.560km to nearest towers	Yes	West, south and southwest	High	Additional trees provided to the west of the receiver to screen the view of the nearest tower.	Moderate

Existing conditions

The landform is relatively flat and there are some intervening trees between this residence and the alignment.

Note: This appears to be a set of stock yards with a shade structure. To be verified.

Description of visibility

There is the potential for close range unobstructed view of a tower to the west and partly visible tower to the southwest.

Mitigating factors of design

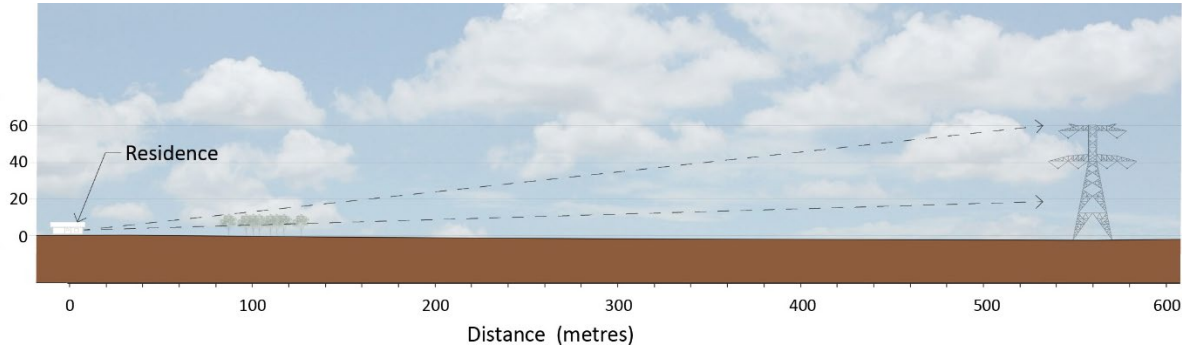
Towers have been located equidistant from this receiver to maximise distance.

Rationale for impact rating (unmitigated)

- Close-range views
- Large scale towers
- No existing transmission lines in the view
- Multiple towers visible
- Towers seen at multiple view angles
- Transmission line changes direction
- Trees to the south on flat landform would provide screening of lower parts of tower
- Some tree clearing within the easement to the south would be visible.

Effectiveness of mitigation measures

- Vegetation would provide screening over time
- Scattered trees, rather than dense screening vegetation would be in keeping and enhance the local landscape character, as well reduce the visibility of the nearest tower
- The towers may still be seen above the vegetation due to their size and proximity to the receiver
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Would reduce the number of towers visible / reduced area of each tower visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
20522, 20523, 533	877 Coonong Rd, Morundah	0.362km and 0.4km	No	Northwest, west, south and southeast.	High	Additional trees along the creek to fill gaps in existing riparian vegetation to screen the view of the nearest tower.	Moderate

Existing conditions

The landform is relatively flat and there are intervening trees surrounding the residence and along Colombo Creek.

The alignment is on an open field.

Description of visibility

The trees surrounding these residences would provide some screening of these close range views. The proposal would be visible where there are open areas and rising above the surrounding vegetation.

Mitigating factors of design

Towers have been located equidistant from this receiver to maximise distance and maximise screening effect of existing trees.

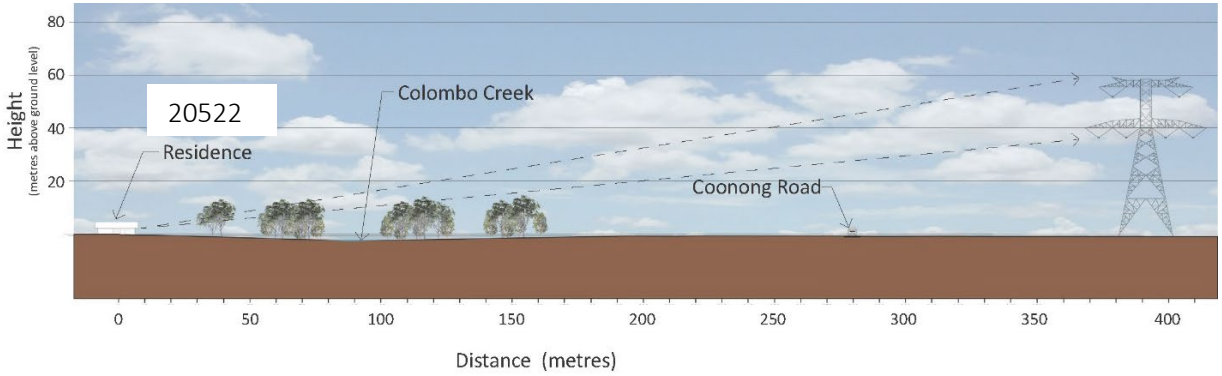
Rationale for impact rating (unmitigated)

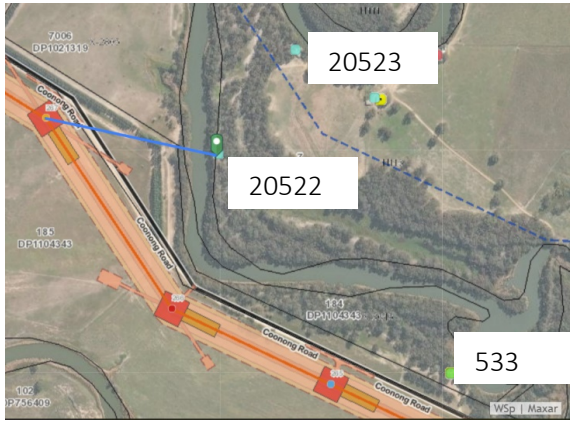
- Close-range views
- Large tower scale
- Multiple towers would be seen with several changes in direction
- Intervening vegetation would only provide lower-level screening

No existing transmission lines in the view.

Effectiveness of mitigation measures

- Vegetation would provide additional screening over time
- Dense groups of trees would be in keeping with the character of the creek and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
534	Picnic shelters at the Water Ski Club	0.225km and 0.270km	No	West, southwest, south and southeast	High	Additional trees within the water ski club land and the Coonong Road to fill gaps in existing vegetation to the south of the receiver and screen the view of the nearest tower.	Moderate

Existing conditions

The landform is relatively flat and there are intervening trees along the Colombo Creek.

The alignment is on an open field.

Note: This appears to be a picnic shelter rather than a residence. To be verified.

Description of visibility

The trees surrounding this receiver would provide low level screening of the proposal.
The proposal would be visible through gapes in the trees and rising above the surrounding vegetation.

Mitigating factors of design

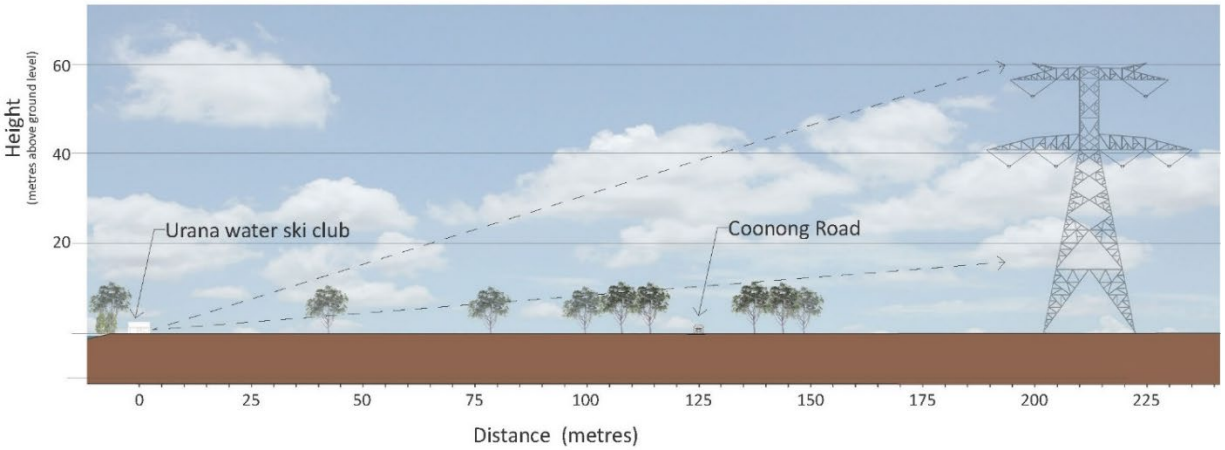
Towers have been located equidistant from this receiver to maximise distance and screening effect of existing trees.

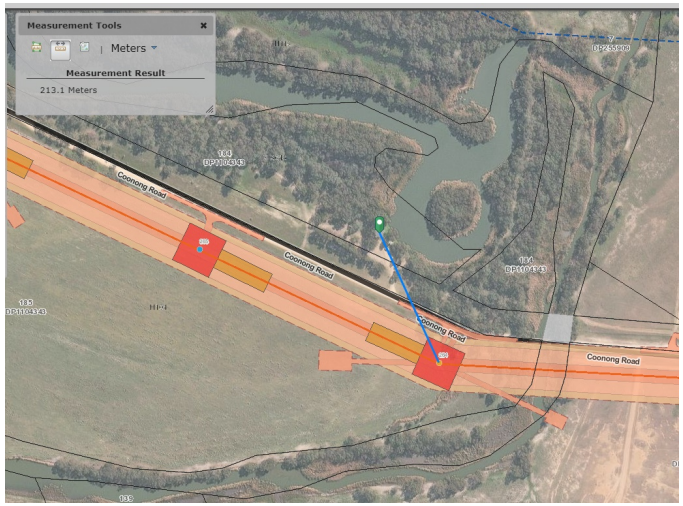
Rationale for impact rating (unmitigated)

- Close-range views
- Large tower scale
- Multiple towers would be seen with several changes in direction
- Intervening vegetation would only provide lower-level screening
- No existing transmission lines in the view.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Dense groups of trees would be in keeping with the character of the creek and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
12943, 14909	Woodlands, 4536 Boree Creek Rd, Urana	0.578 kilometres ***Note: These appear to be one building. To be verified.***	Yes	Northwest, north and northeast	High	Additional trees provided to the north and northeast of the residence to screen the view of the nearest towers.	Moderate

Existing conditions

The landform is relatively flat open fields with unobstructed views to the north. Large block of vegetation to the east.

Mitigating factors of design

Towers to the east have been located within the existing bushland which would limit visibility.

Description of visibility

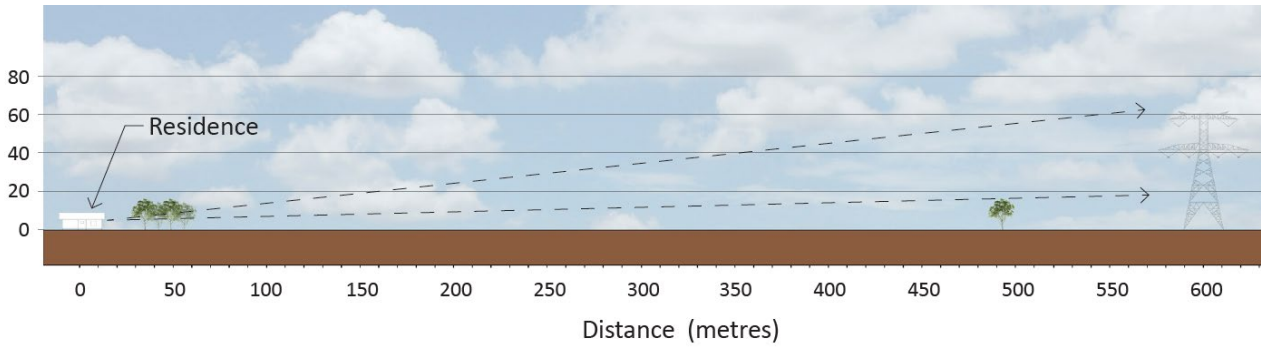
Trees surrounding these residences would provide some screening of these close-range views. However, this is otherwise an open view. These views would include the several towers and wires extending across the view as well as the vegetation removal where the alignment would cross the blocks of vegetation.

Rationale for impact rating (unmitigated)

- Close-range views
- Large tower scale
- Multiple towers would be seen
- Vegetation clearing would be glimpsed to the northeast and east
- Scattered vegetation around the house but otherwise open view to the north and northeast
- No existing transmission lines in the view.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Trees would be provide amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
12942	The Pines, 1072 Cullivel Rd, Cullivel	0.275 kilometres	Yes	Northwest, north and northeast	High	Additional trees provided to the north and northeast of the residence to screen the view of the nearest towers.	Moderate

Existing conditions

The landform is relatively flat open fields with scattered trees to the north. Large block of vegetation to the west.

Mitigating factors of design

Towers have avoided vegetation to the northwest.

Description of visibility

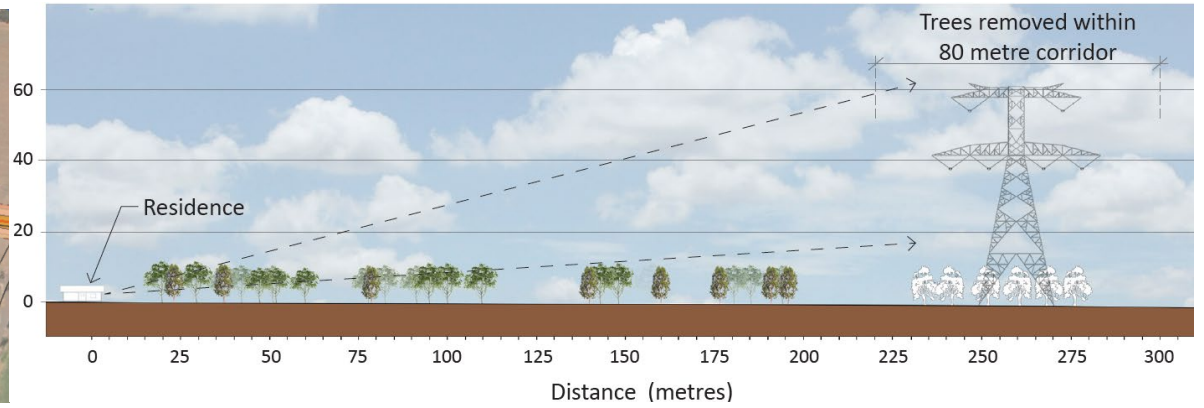
Close range view through scattered trees surrounding the residence and on adjacent fields.
These views would include the several towers and wires extending across the view as well as the vegetation removal where the alignment would cross the blocks of vegetation.

Rationale for impact rating (unmitigated)

- Close-range view and tower in close proximity to receiver
- Large tower scale
- Multiple towers would be seen
- Vegetation removal within easement may be visible to the west
- Scattered vegetation around the house but otherwise open view to the northwest, north and northeast
- No existing transmission lines in the view.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Trees would be provided amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
385	Webbs Lane, Cullivel	0.260km and 0.270km	Yes	Northwest, north, northeast and east)	Very high	Additional trees provided to the northwest and northeast of the residence to screen the view of the nearest towers.	High

Existing conditions

The landform is relatively flat with open fields and scattered trees to the north. Large block of vegetation to the west.

Note: This residence appears to be abandoned.

Description of visibility

This is a close-range view that would include the transmission line structures and wires as well as the vegetation removal within the alignment. Trees surrounding this residence would provide some close-range screening.

Mitigating factors of design

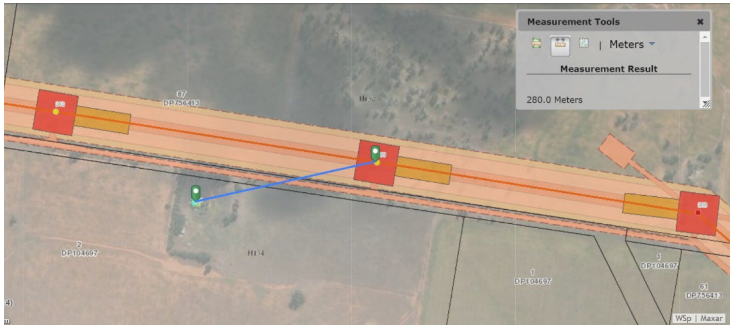
Towers have been located equidistant from this receiver to maximise the distance.

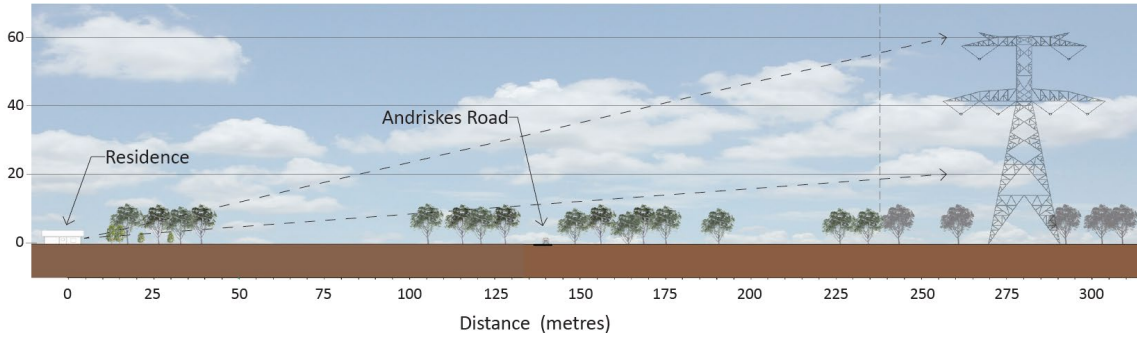
Rationale for impact rating (unmitigated)

- Close-range view
- Large tower scale
- Towers either side of the residence
- Multiple towers would be seen
- Towers including a change of direction, east of receiver may bring towers into view across more than 180 degrees of the residence.
- Vegetation surrounding the residence may provide some low-level screening
- No existing transmission lines in the view.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- Trees would provide amenity for the residence and enhance the local landscape character
- A substantial portion of the existing towers would still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
12296	747 Urana-Lockhart Rd, Lockhart	0.757 kilometres	No	West, northwest, north and northeast	High	Additional trees provided to the northwest along Lockhart Road and/or adjacent to the residence to screen the view of the nearest towers.	Moderate

Existing conditions

The landform is relatively flat, open fields with and corridors of trees along field boundaries, to the northwest and northeast. Vegetation along the Lockhart Road.

Mitigating factors of design

Towers have been located on the northern side of the road to maximise the distance.

Description of visibility

Vegetation surrounding this residence and along Urana-Lockhart Road would provide some screening of this close to mid-range view.

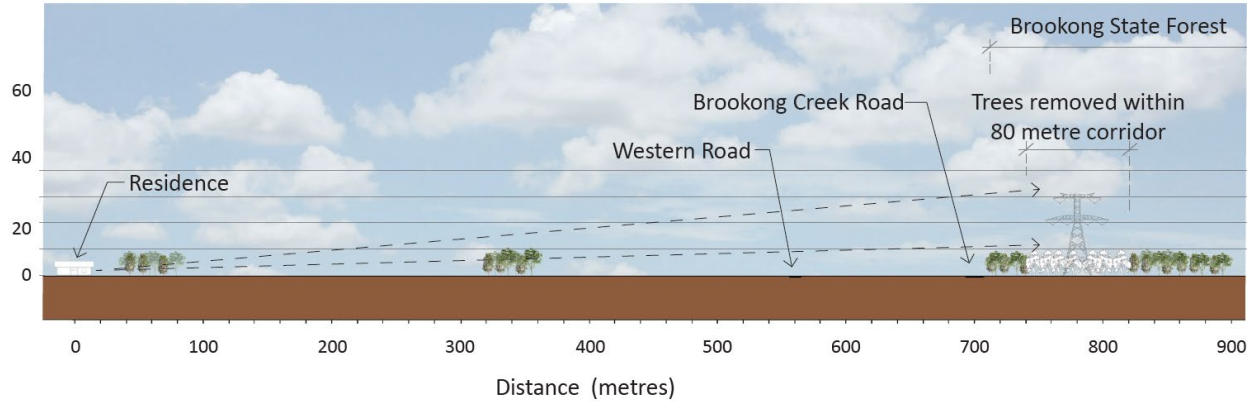
This view would include the vegetation clearing within the Brookong Nature Reserve and transmission line structures and wires in the mid-ground of this view.

Rationale for impact rating (unmitigated)

- Close to mid-range view
- Large tower scale
- Proposal extending across the view, towers would be seen above vegetation
- Multiple towers would be visible including a change in direction to the north
- Vegetation surrounding the residence may provide some low level screening
- Vegetation removal seen through road verge trees
- Some existing transmission lines potentially visible, located in other directions.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the lower portion of the towers over time
- Trees along the highway would screen the vegetation removed within the easement restoring local landscape character
- The existing towers may still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
450	128 Slys Lane, Milbrulong	0.347km and 0.430 km	Yes	Southwest, south and southeast	High	Additional trees provided to the southwest of the residence to screen the view of the nearest tower.	Moderate

Existing conditions

The landform is relatively flat with open fields to the south and some trees around this residence.

Mitigating factors of design

Transmission line has been located generally parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Close range view across the open fields with few trees. Some vegetation surrounding the residence.

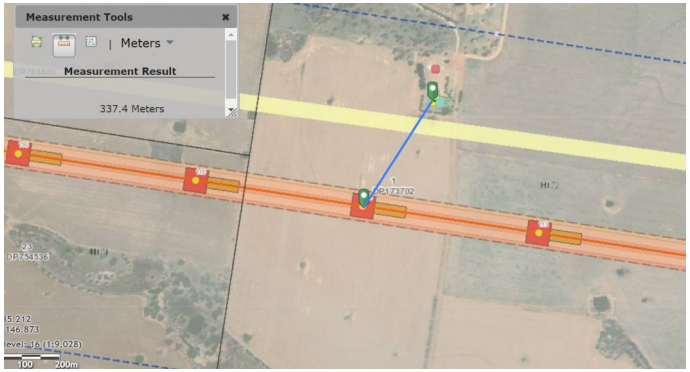
These views would include the several towers and wires extending across the view.

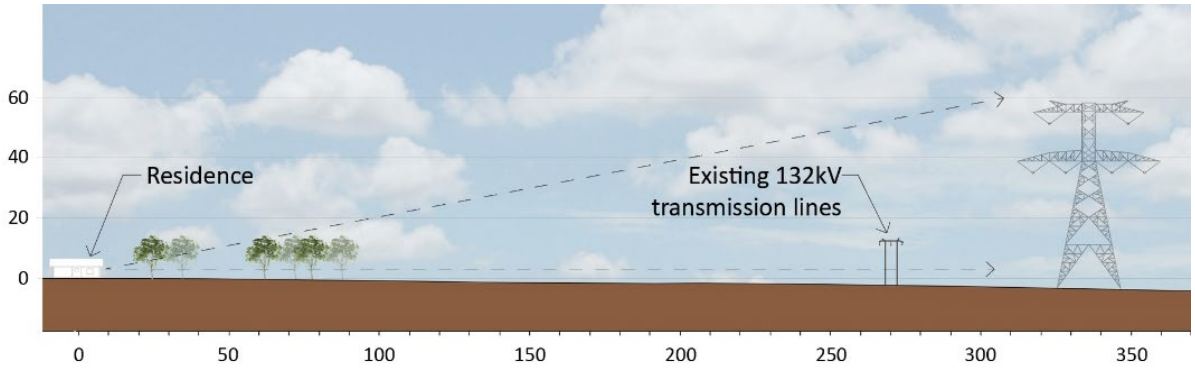
Rationale for impact rating (unmitigated)

- Close to mid-range view
- Large tower scale
- Proposal extending across the view, multiple towers would be seen
- Vegetation surrounding the residence may provide some low-level screening
- Seen through existing transmission line corridor, but not parallel, substantially larger scale structures and towers not at similar spacings
- Vegetation surrounding the house may provide some low-level screening otherwise open and unobstructed view across a flat landform.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- The towers may still be seen above existing and proposed vegetation at maturity due to their size and proximity to the residence
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
461	731 Hendersons Rd, Tootool	0.380 kilometres	Yes	Southwest, south and southeast	High	Additional trees provided to the south of the residence to screen the view of the nearest tower. Minimise vegetation removal along the transmission line corridor.	Moderate

Existing conditions

The landform is relatively flat, with open fields. Trees surrounding the residence and along the driveway. Large block of vegetation to the east.

Mitigating factors of design

Transmission line has been located generally parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

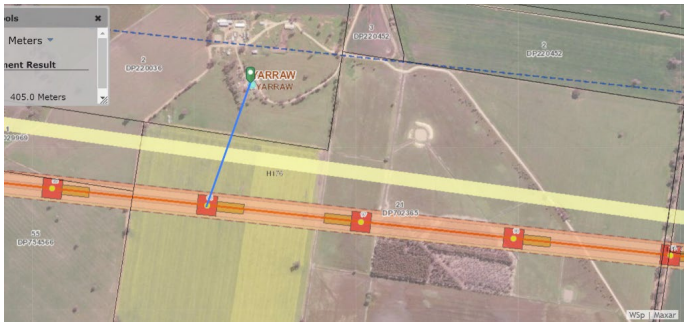
Trees surrounding these residences would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. There would be multiple towers visible. The proposal would be seen together with existing transmission lines.

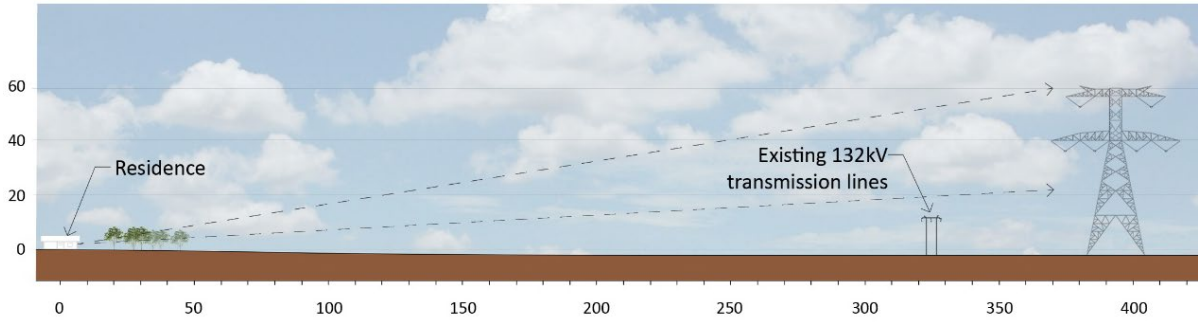
Rationale for impact rating (unmitigated)

- Close-range view
- Proposal extending across the view, multiple towers would be seen
- Visible beyond existing transmission line corridor, but not parallel and substantially larger scale structures
- Vegetation surrounding the residence would provide some screening otherwise open and unobstructed view
- Large block of existing vegetation (about 500 m away) would be removed / trimmed, detracting from amenity of view
- Tree removal for tower proposed adjacent to road near entry driveway entry (to the east) would be seen.

Effectiveness of additional mitigation measures

- Vegetation would provide screening over time
- The towers may still be seen above existing and proposed vegetation at maturity due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
432	535 Tuttys Lane, Tootool	0.458 kilometres	Yes	Northwest and north	High	Additional trees provided around the existing residence to the north to screen the nearest towers.	Moderate

Existing conditions

The landform is relatively flat with open fields. Some trees along the road to the north and northeast (beyond the corridor).

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

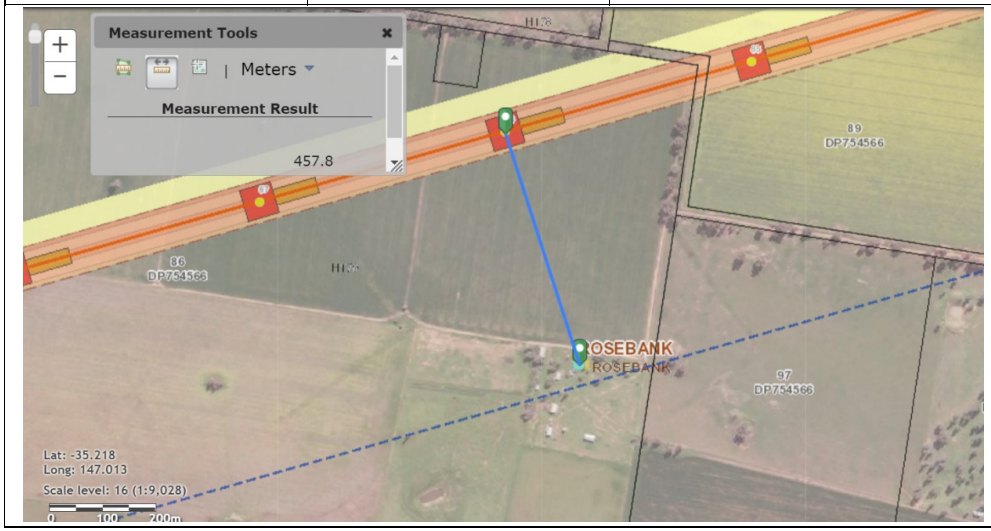
Open unfiltered view. These views would include the transmission line structures and wires as well as some vegetation removal. There would be multiple towers visible.

Rationale for impact rating (unmitigated)

- Close-range view
- Multiple towers visible extending across the view
- Seen in front of existing transmission lines, but substantially larger scale structures and towers not at similar spacings
- Flat landform, little vegetation for screening

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Trees would be provide amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size and proximity to the residence
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
249	1066 Bullenbong Rd, Tootool	0.873 kilometres	Yes	Southwest, south and southeast	High	Additional trees provided around the existing residence to the southeast to screen the nearest towers.	Moderate

Existing conditions

The landform is relatively flat with open fields. Some surrounding the residence.

Mitigating factors of design

Transmission line would be located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Open unfiltered view. These views would include the transmission line structures and wires as well as some vegetation removal. There would be multiple towers visible.

Rationale for impact rating (unmitigated)

- Close-range view
- Proposal extending across the view, multiple towers would be seen
- Seen beyond existing transmission lines, but substantially larger scale structures
- Flat landform, little vegetation for screening.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Trees would be provide amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.

Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
188, 1712	Boyds Rd, The Rock	0.716 kilometres 0.715 kilometres	Yes	Southwest, south, southeast and east	High	Additional trees provided to the southwest of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. A group of buildings with trees to the east and south.

Note: Two residences on the same property.

Description of visibility

Trees surrounding these residences, including around the dam and on intervening fields to the east and southeast would provide some screening of these close-range views. These views would include the transmission line structures and wires as well as some vegetation removal. The proposal would be seen together with existing transmission lines.

Mitigating factors of design

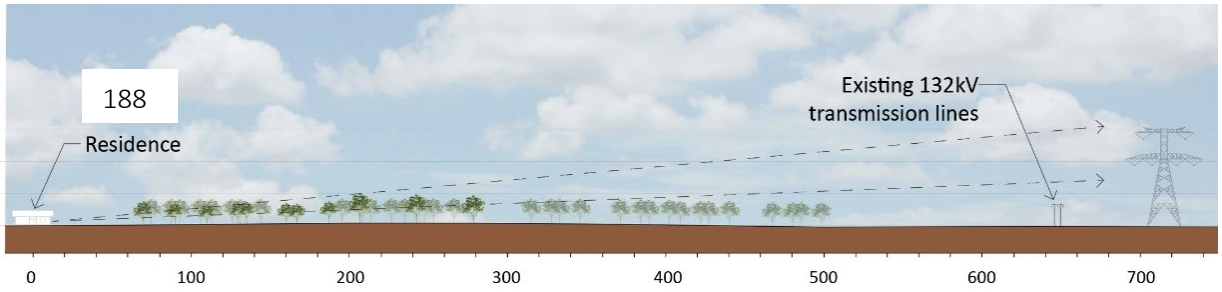
Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Rationale for impact rating (unmitigated)

- Close-range view
- Multiple towers visible extending across the view
- Changing direction at the closest point therefore different tower types seen.
- Seen beyond the existing transmission lines, but substantially larger scale towers
- Flat landform, some vegetation surrounding the houses may provide some screening.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Vegetation near the residence would filter and reduce the number of towers visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Residual impact
468	McGeachies Ln, The Rock	0.421 kilometres	Yes	Southwest, south, southeast and east	High	Additional trees provided to the south of the existing residence and / or along the intervening field boundary to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. There are trees around the residence and along some field boundaries.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

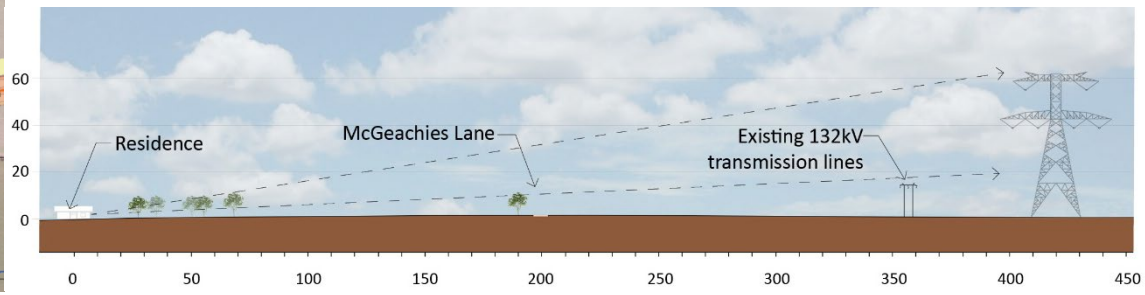
Trees surrounding these residence would provide some screening of these close-range views. These views would include the transmission line structures and wires. Potential for views to the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock).

Rationale for impact rating (unmitigated)

- Close-range view
- Multiple towers visible extending across the view
- Seen in front of existing transmission lines, but substantially larger scale structures
- Flat landform, and open view with very little vegetation within the property.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Vegetation near the residence would filter and reduce the number of towers visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
211	2 McGeachies Lane, The Rock	0.421 kilometres	No	Southwest, south and southeast	High	Additional trees provided to the southwest of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. A group of buildings with trees to the south and along field boundaries and roads.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Views would include the transmission line structures and wires as well as some vegetation removal.

Trees surrounding this residence and on intervening fields would provide some screening of these close-range views. Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock).

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view
- Seen in front of existing transmission lines, but substantially larger scale
- Flat landform, some vegetation around the house and on field boundaries to the southeast and east may reduce visibility but limited vegetation on southern fields
- May see towers and vegetation removal (about 2km) to the east on the ridge

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening over time
- Trees would improve amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers
- The towers may still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Reduced number of towers visible / reduced area of each tower visible.

Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
208, 26908, 26907	Kiyuga, 709 The Rock-Collingullie Road, The Rock	0.247 kilometres 0.340 kilometres 0.413 kilometres	Yes	Northwest, north and northeast	High	Additional trees provided to the northwest, north and northeast of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. A group of buildings with some surrounding vegetation.

Note: Two 208 and 26908, both appear to be sheds, all three receivers are on the same property.

Description of visibility

Trees surrounding these residences would provide some screening of these close-range views.

The transmission line towers and wires would be visible as well as some vegetation removal.

Would potentially see the transmission line corridor crossing the highpoint to the east (between Collingullie and The Rock).

Mitigating factors of design

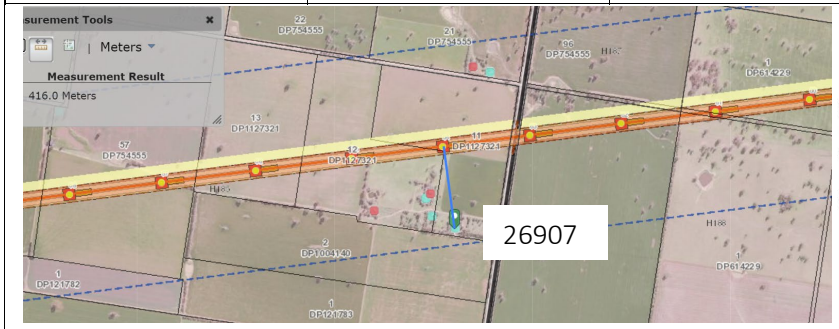
Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

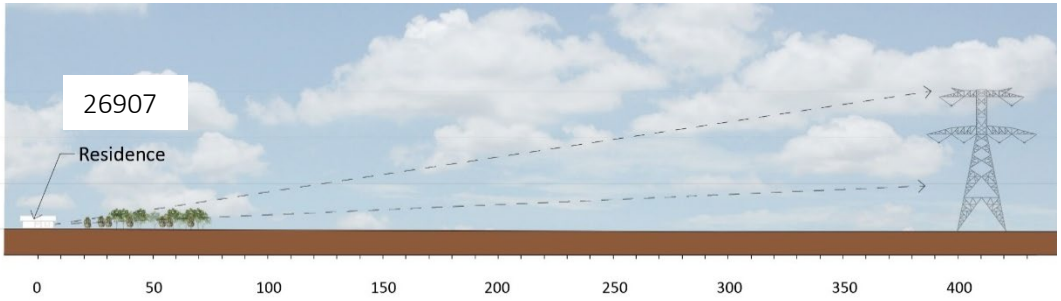
Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view
- Existing transmission lines also visible, but substantially larger scale towers
- Flat landform, and open view with some scattered vegetation within the property
- May see towers and vegetation removal (about 2km) to the east on the ridge.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers may be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
313	'Greendale' 389 Uranquinty Cross Rd, Uranquinty	0.362 kilometres	Yes	Northwest, north, northeast, east and southeast	High	Additional trees provided to the northwest, north and northeast of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields with few trees. There would be crossing and converging power lines visible from multiple directions.

Note: This structure appears to be a shed.

Description of visibility

Views would include the transmission line structures and wires. The proposal would be seen together with existing large-scale transmission lines.

Mitigating factors of design

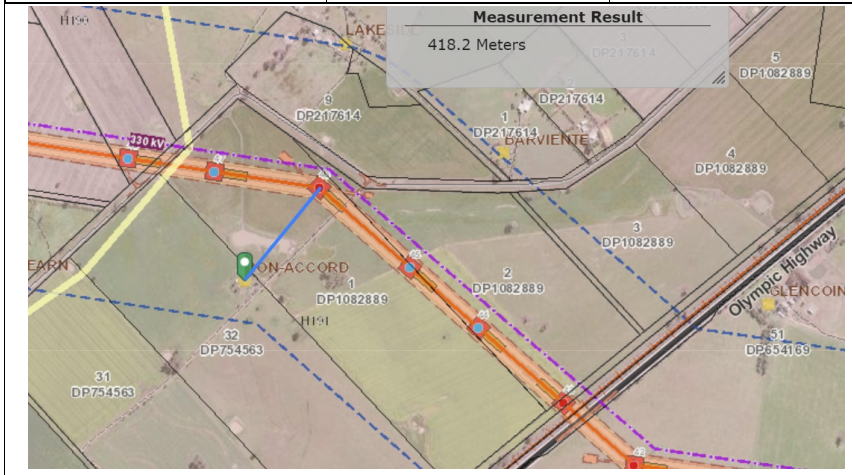
Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view including a change in direction
- Existing transmission lines also visible, similarly large scale structures and towers
- Flat landform, limited vegetation to screen the view.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers may be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
185	Glencoin, 5888 Olympic Hwy, Uranquinty	0.619 kilometres	Yes	West, southwest, south, and southeast	High	Additional trees provided to the southwest and southeast of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with vegetation along the field boundary to the north and near the residence and open fields beyond.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Trees to the south of the residence would provide some screening of these close-range views. These views would include the transmission line structures and wires. Would potentially see the transmission line corridor crossing the highpoint to the east (in Rowan).

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view, including several changes in direction
- Visible through existing transmission lines, similarly large-scale structures and towers, but not the same shape and at different spacings
- Flat landform, would be seen through vegetation along the property perimeter, and limited vegetation within fields to screen the towers

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers may be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.

Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
186	Elswick, 5746 Olympic Hwy, Uranquinty	0.390 kilometres	No	North and northeast	High	Additional trees provided to the north of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with vegetation along the field boundary to the north and near the residence and open fields beyond.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

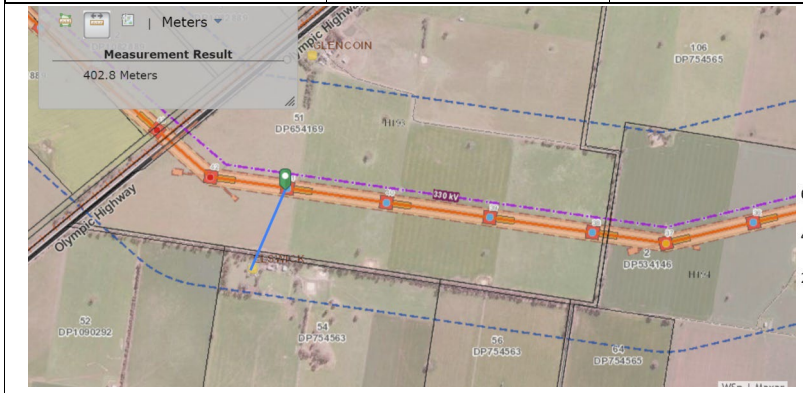
Trees to the north of the residence would provide some screening of these close-range views. These views would include the transmission line structures and wires. Would potentially see the transmission line corridor crossing the highpoint to the east (in Rowan).

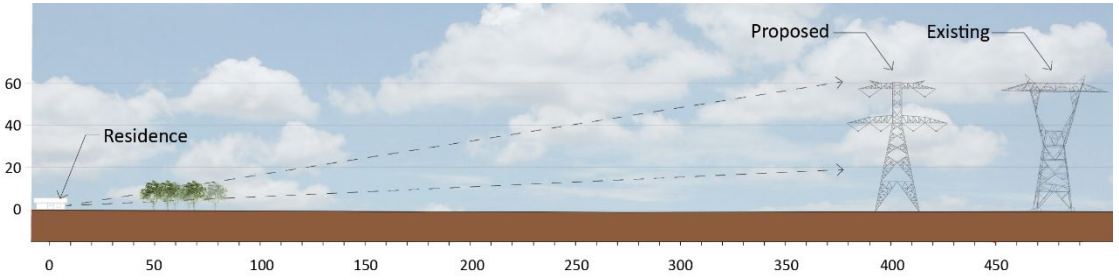
Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view, including several changes in direction
- Existing transmission lines also visible, similarly large-scale structures and towers, but not the same shape and at different spacings
- Flat landform, would be seen through vegetation along the property perimeter, and limited vegetation within fields to screen the tower.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
26950	Oxley Bridge Rd, Uranquinty	0.467 kilometres	Yes	Northwest, north and northeast	High	Additional trees provided to the north of the existing residence to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. Some trees around rural buildings and along creek to the northeast.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Views would include the transmission line structures and wires. The proposal would be seen together with existing large-scale transmission lines.
Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view, including several changes in direction
- Existing transmission lines also visible, similarly large-scale structures and towers, but not the same shape and at different spacings
- Limited vegetation within fields to screen the towers

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.
- Trees would improve amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers.

Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
20533	Oxley Bridge Rd, Uranquinty	0.467 kilometres	Yes	West, northwest and north	High	Additional trees provided to the north of the existing residence to screen the towers within the adjacent fields.	Moderate

Existing conditions

The landform is relatively flat with open fields. Some vegetation around rural buildings and along creek to the northeast.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

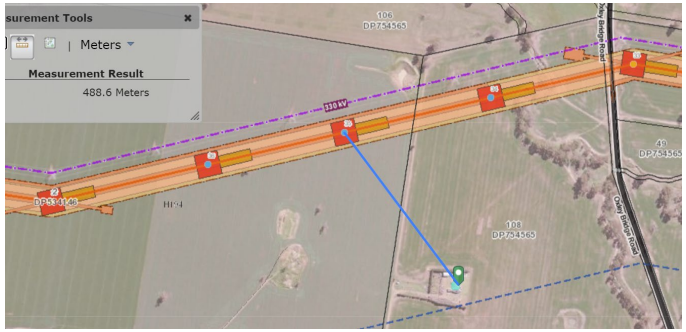
This unobstructed, close-range view would include the transmission line structures and wires as well as vegetation removal near the creek. Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).

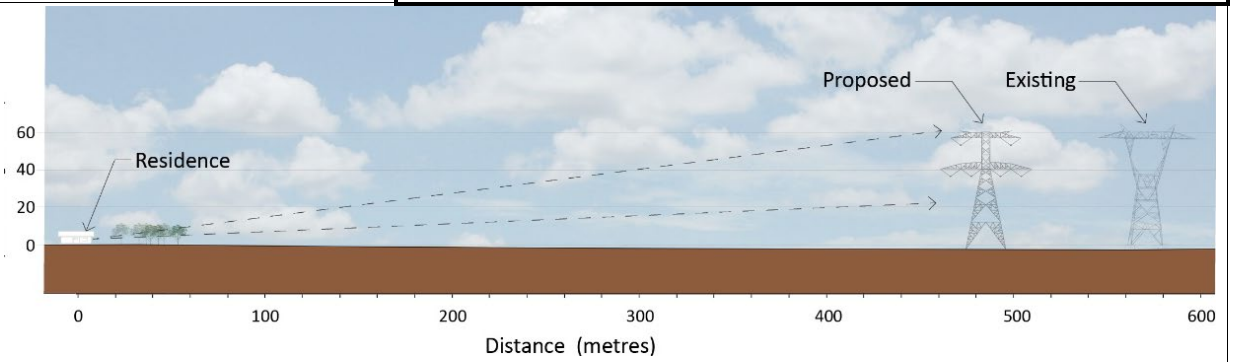
Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view, including several changes in direction
- Existing transmission lines also visible, similarly large-scale structures and towers, but not the same shape and at different spacings
- Limited vegetation within fields to screen the towers
- Towers seen from driveway on approach to residence (passes through easement)
- Would potentially see the transmission line corridor crossing the highpoint to the east (Rowan).

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.
- Trees would improve amenity for the residence and enhance the local landscape character, as well reduce the visibility of the towers.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
26749, 26750	6701-6739 Holbrook Rd, Gelston Park, Rowan	0.172 kilometres 0.233 kilometres	No	Southwest, west, northwest and north	High	Additional trees provided to the north and west of the existing residences to screen the towers within the adjacent fields and / or additional trees adjacent to the transmission line.	Moderate

Existing conditions

This residence is in an elevated location on a local ridgeline. There are scattered trees and broad views northeast.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Note: Both receivers appear to be on the same property.

Description of visibility

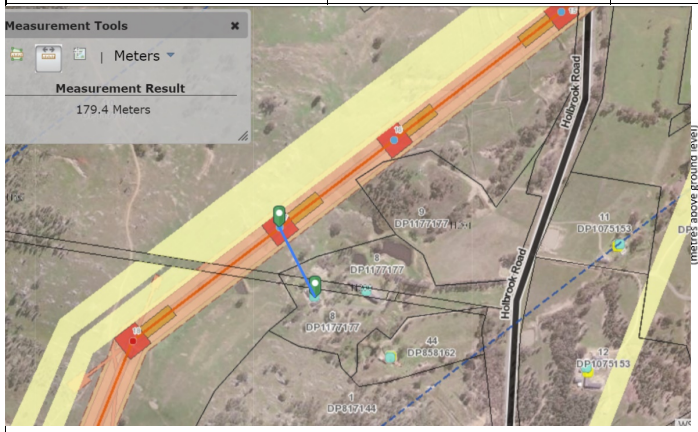
Located on elevated land with views across the valley. These views would include the minor earthworks at the tower locations, transmission line structures and wires as well as some minor vegetation removal.

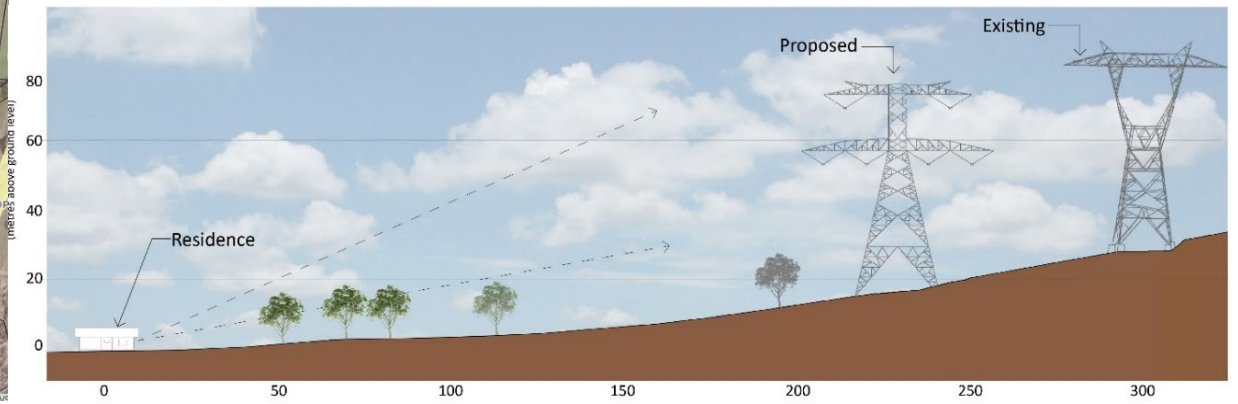
Rationale for impact rating (unmitigated)

- Close-range views
- Large scale towers
- Multiple towers visible extending across the view, including a change in direction
- Visible alongside existing transmission lines, similarly large scale towers
- Towers different shape and at different spacings
- Located prominently on ridgeline
- Local cut and fill to create a platform for the towers on sloping terrain
- Limited vegetation within fields to screen the towers

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the lower portion of the towers over time
- The existing towers would be seen above the vegetation due to their size and proximity to the residence
- Rising landform would increase the effectiveness of vegetation screening near the corridor towers
- Vegetation screening near the residence would also reduce the amount of each tower that would be visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
20572, 504	6823 Holbrook Rd, Rowan 6640 Holbrook Rd, Gelston Park	0.608 kilometres 0.249 kilometres	No	South, southeast and east	High	Additional trees provided to the south and east of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

These buildings are in an elevated location on a local ridgeline. There are scattered trees and broad views to the northeast.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together. Towers equidistant from this residence to maximise the distance.

Description of visibility

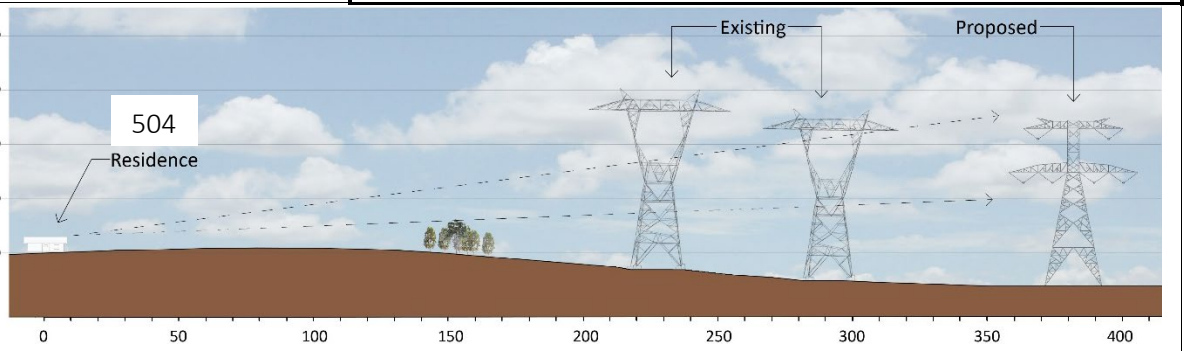
Located on elevated land with views across the valley. These views would include the minor earthworks at the tower sites, transmission line structures and wires as well as some minor vegetation removal.

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view
- Visible through existing transmission lines, similarly large-scale structures and towers
- Towers would not be the same shape and would be positioned at different spacings
- Located on elevated land
- Limited vegetation within fields to screen the towers.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers would still be seen above the vegetation due to their size
- Undulation landform may increase the effectiveness of vegetation screening where screening vegetation can be located on higher ground than the towers.
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
500, 501, 502, 503	6701 Holbrook Rd, Gelston Park 6645 Holbrook Rd, Gelston Park 6720 Holbrook Rd, Rowan 6640 Holbrook Rd, Gelston Park	0.394 kilometres 0.545 kilometres 0.500 kilometres 0.677 kilometres	No	Southwest, west, northwest and north	High	Additional trees provided to the north and west of the existing residences to screen the towers within the adjacent fields and / or additional vegetation to the south of the transmission line corridor.	Moderate

Existing conditions

These residences are located on the lower slopes of the ridgeline. There are scattered trees and broad views northeast.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

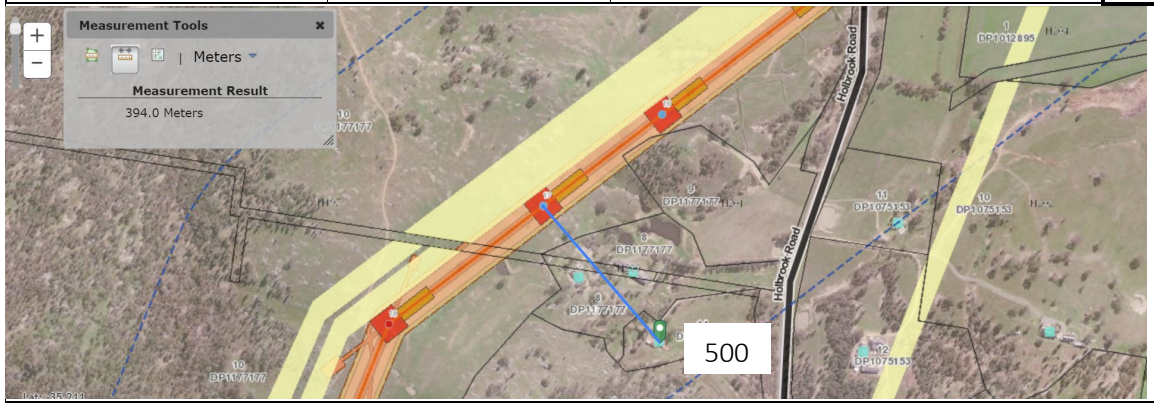
Located on elevated land with views across the valley. These views would include the minor earthworks at the tower sites, transmission line structures and wires as well as some minor vegetation removal.

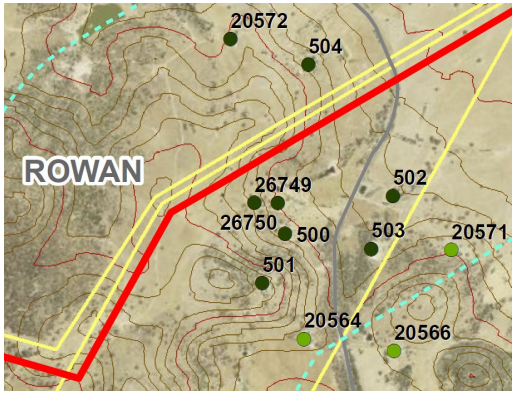
Rationale for impact rating (unmitigated)

- Close to mid-range views
- Multiple towers visible extending across the view
- Visible through existing transmission lines, similarly large-scale structures and towers
- Towers would not be the same shape and would be positioned at different spacings
- Towers located on higher ground than these residences
- Scattered vegetation and landform may reduce visibility.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers over time
- The existing towers may still be seen above the vegetation due to their size
- Undulation landform may increase the effectiveness of vegetation screening where screening vegetation can be located on higher ground than the towers.
- Additional vegetation near the residences would reduce the amount of each tower that would be visible.





Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
27028	99 Rowan Rd, Rowan	0.309 kilometres	Yes	Southwest, west, northwest, north and northeast	High	Additional trees provided to the west and north of the existing residences to screen the towers within the adjacent fields.	Moderate

Existing conditions

A group of buildings surrounded by trees on relatively flat fields.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Note: These receivers are on the same property, and one appears to be a shed.

Description of visibility

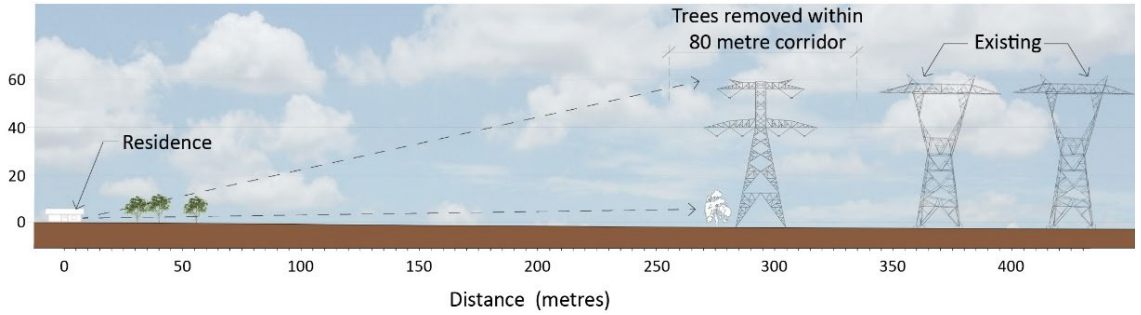
Located on elevated land with views across the valley. Trees surrounding these buildings and on intervening areas would provide some screening of these close-range views.

Rationale for impact rating (unmitigated)

- Close to mid-range views
- Transmission line towers and substation may be visible in multiple directions, changing direction and across more than 180 degrees of these buildings
- Seen in the context of existing transmission lines and substation, similarly large-scale structures and towers, but not the same shape and at different spacings
- Towers seen from driveway on approach to building (passes through easement)
- Some vegetation removal may be seen

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the lower portion of the towers over time
- Additional trees would replace some of the vegetation removed within the easement restoring local landscape character
- The existing towers may still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.



Receiver ID no.	Location / address	Approximate distance to the nearest tower(s)	Line affected	Orientation of impacted view	Potential level of impact (unmitigated)	**Mitigation measures** (subject to agreement with landholder for final measures)	Potential residual impact
202	Taradale, Benlock, 83 Ashfords Rd, Gregadoo	0.288 kilometres	No	Southwest, west and northwest	High	Additional trees provided to the northwest of the existing residence to screen the towers.	Moderate

Existing conditions

The landform is relatively flat with open fields. Trees around the residence, along the driveway and along Ashfords Road.

Mitigating factors of design

Transmission line has been located parallel to the existing transmission line, grouping like infrastructure together.

Description of visibility

Trees surrounding this residence would provide some screening of this close-range view. These views may include the transmission line towers and wires, some vegetation removal, and the proposed expansion of the Wagga Wagga substation.

Rationale for impact rating (unmitigated)

- Close-range views
- Additional transmission line towers and substation may be visible
- Seen in the context of existing transmission lines and substation
- Similarly large-scale towers, but not the same shape and at different spacings
- Flat landform, with limited vegetation within fields to screen the towers.

Effectiveness of additional mitigation measures

- Vegetation would provide additional screening of the towers and substation over time
- The existing and new towers may still be seen above the vegetation due to their size
- Flat landform would increase the effectiveness of vegetation screening as both the viewer and tower are on the similar level
- Additional vegetation near the residence would reduce the amount of each tower that would be visible.