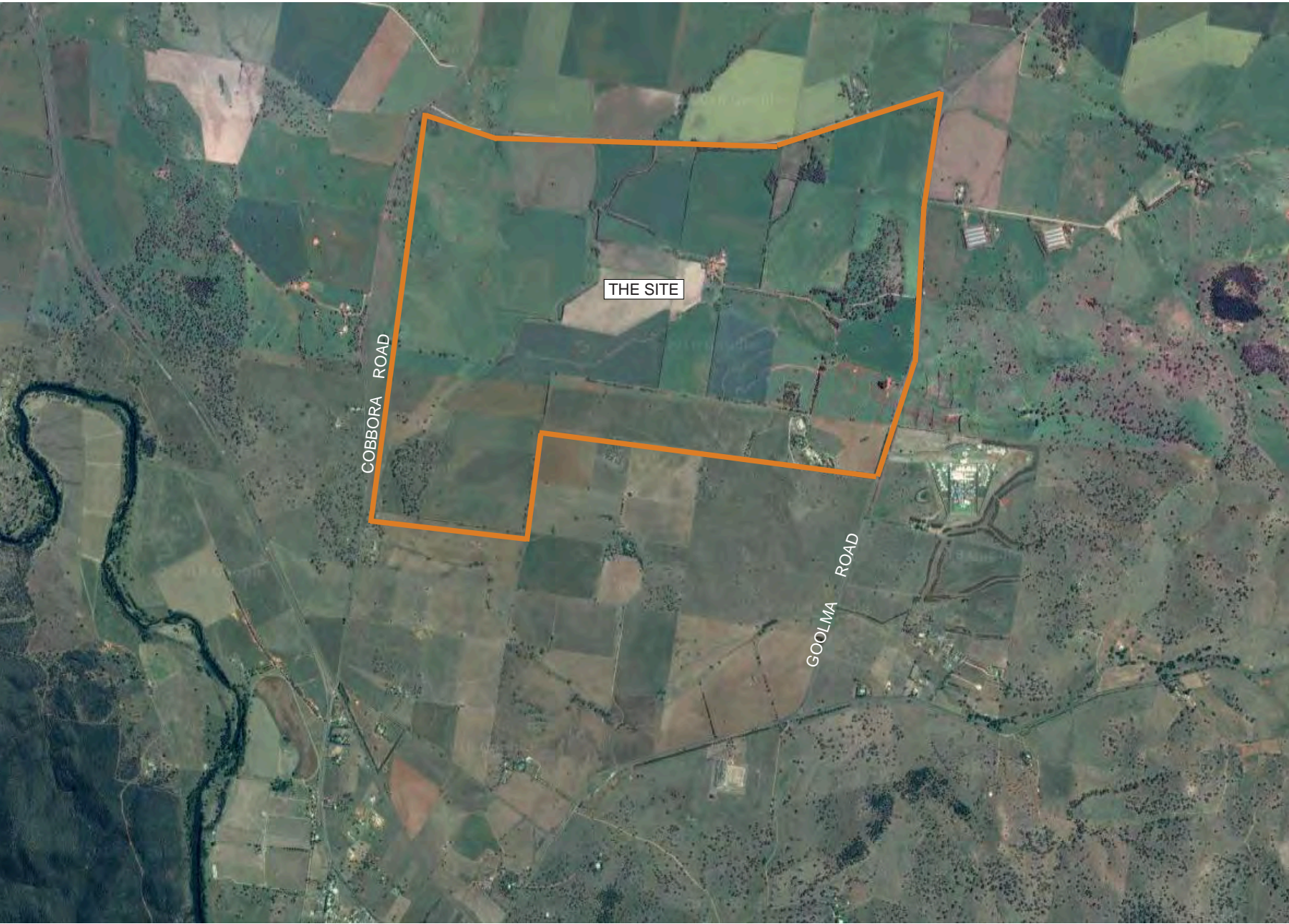


APPENDIX H VISUAL IMPACT ASSESSMENT

VISUAL IMPACT ASSESSMENT



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PROPOSED SOLAR PLANT WELLINGTON NORTH SOLAR PLANT AT GOOLMA ROAD, WUULUMAN, NSW

Prepared for: NGH ENVIRONMENTAL

Project No: 1527 Issue:E Date: 26 JUNE 2018



1.0 Introduction

1.1 Background

Moir Landscape Architecture have been commissioned by NGH Environmental to prepare a Visual Impact Assessment (VIA) for the proposed solar plant at Lots 75-84, 88, and 119-121/DP 2987, Lots 1 and 2 / DP 1104720, Lot 3/DP 976701, Lots 1-3 /DP 808748, Lot 100 /DP 750760, Lot 1/DP 664645 and Lot 1/ DP 1206579, known as Wellington North Solar Plant Goolma Road, Wuuluma NSW 2820 (the Study Site) Solar plant site: Lots 75-84, 88, and 119-121/DP 2987, Lots 1 and 2 /DP 1104720, Lot 3/DP 976701, Lots 1-3 /DP 808748, Lot 100 /DP 750760, Lot 1/DP 664645 and Lot 1/ DP 1206579.

Freehold agricultural land and commercial land zoned RU1 Primary production under the Wellington Local Environmental Plan 2012.

Western transmission line option: Lot 1 DP807187, Lot 69-73 DP2987, Lot 1 DP100778, Lot 12 DP572344 and Lot 2 DP1226751

Agricultural land, zoned RU1 Primary production and SP2 Infrastructure under the Wellington Local Environmental Plan 2012. (Refer to Figure 2).

Eastern transmission line option: Lot 32 DP622471, Lot 2 DP 1141897, Lot 6561 DP 1141897 and Lot 15 DP 1018104

Agricultural and industrial land, zoned RU1 Primary production, R5 Large Lot Residential and SP2 Infrastructure under the Wellington Local Environmental Plan 2012. (**Refer to Figure 2**).

Wellington Substation: Lot 1 DP 1226751

Industrial land, zoned SP2 Infrastructure under the Wellington Local Environmental Plan 2012. (**Refer to Figure 2**).

As cadastral information has little influence in defining visual catchments this assessment aims to identify the landscape character, and dominant features of the relevant visual catchments that the Study Site lies within. The purpose of this report is to provide an assessment of the potential visual impact of the proposal within the defined visual catchments.

Survey work was undertaken between November 2017 and March 2018 using key viewpoints and locations with potential views towards the site. The report details the results of the field work, documents the assessment of the landscape character and visual setting, and assesses potential visual impacts associated with the proposal. The report makes recommendations concerning measures to mitigate any impacts arising from potential development.

1.2 Project Requirements

The report addresses the requirements related to the preparation of a visual impact assessment as part of the environmental assessment outlined in the Secretary's Environmental Assessment Requirements (SEARS).

The SEARS state the report must:

- Include an assessment of the likely visual impacts and cumulative impacts of the development (including any glare, reflectivity and night lighting) on surrounding residences, scenic or significant vistas, air traffic and road corridors in the public domain;

- Have regards to the Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring;
- Include a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners.

Additional Landscape Visual Impact Assessment (LVIA) Best Practice Considerations

- Include a full assessment of the visual impacts associated with the solar plant, including identification and documentation of all key viewing points and corridors particularly from identified sensitive lands. This should also include the associated transmission line.
- Include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures for the solar plant;
- Provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented; and
- Provide an assessment of the potential for reflectivity from the panels and associated infrastructure, and any safety impacts for motorists or aircraft.

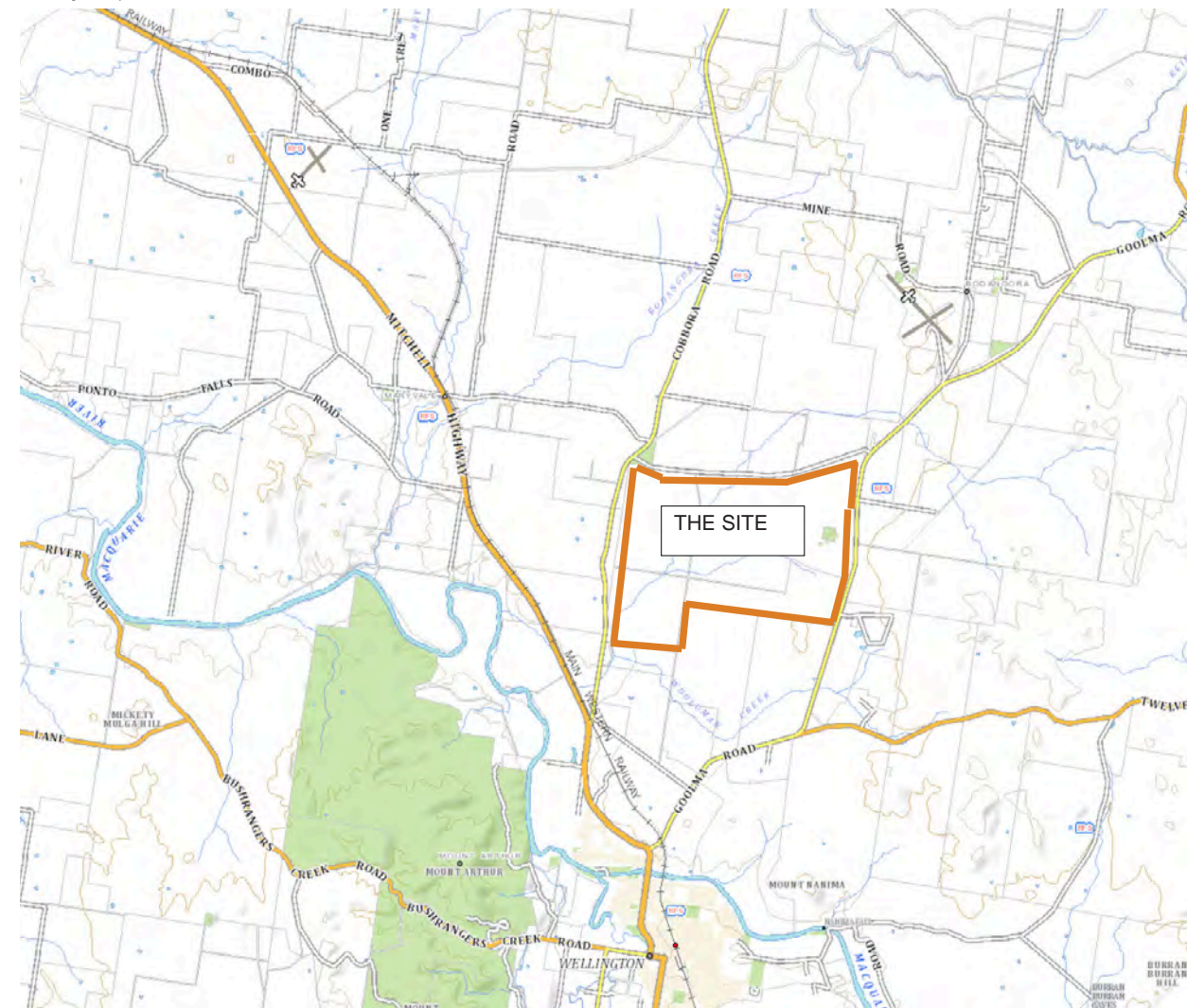


FIGURE 1: Site Locality Plan

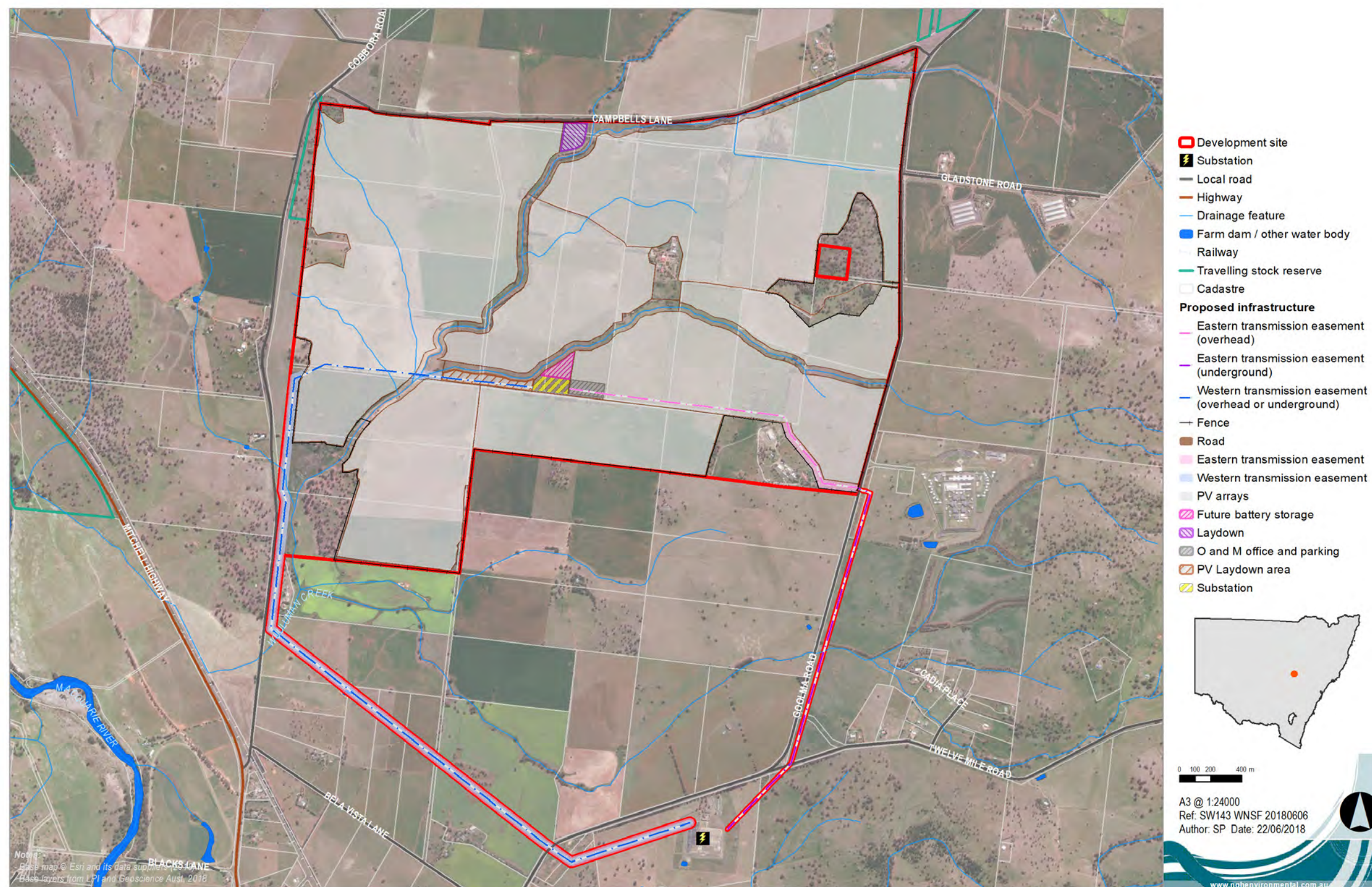


FIGURE 2: Site Infrastructure Plan

2.0 Study Method

2.1 Visual Impact Assessment (VIA)

VIA is used to identify and determine the value, significance and sensitivity of a landscape. The method applied to this study involves systematically evaluating the visual environment pertaining to the site and using value judgements based on community responses to scenery. The assessment was undertaken in stages as noted below:

The first stage of the process involves:

- Objective assessment of the relative aesthetic value of the landscape, defined as visual quality and expressed as high, medium or low. This assessment generally relates to variety, uniqueness, prominence and naturalness of the landform, vegetation and water forms within each character type;
- Determination of the landscape sensitivity and its ability to absorb different types of development on the basis of physical and environmental character.
- An assessment of viewer sensitivity to change. This includes how different groups of people view the landscape (for example, a resident as opposed to a tourist), and how many people are viewing and from how far;
- The undertaking of a viewpoint analysis to identify areas likely to be affected by development of the site and a photographic survey using a digital camera and a handheld GPS unit to record position and altitude; and
- An assessment of visual impacts and the preparation of recommendations for impact mitigation. Suggestions are made for suitable development patterns that would maintain the areas visual quality.

The second stage of the assessment involves a quantitative approach. The quantification of the visual impacts is defined by methods including:

- Preparation of photomontages depicting the proposal and recommended mitigation measures.

The purpose of the above methodology is to reduce the amount of subjectivity entering into visual impact assessment and to provide sufficient data to allow for third party verification of results.

2.2 Guidelines and Statutory Framework

There are no specific guidelines for the development of solar farms in NSW. The following provides an overview of the, guidelines, relevant frameworks and considerations of authorities utilised to form the methodology for this visual impact assessment. In addition to these guidelines and frameworks, solar farm related literature and previous Visual Impact Assessments have been utilised in the preparation of the report.

2.2.1 Wellington Local Environmental Plan 2012

The *Wellington Local Environmental Plan 2012* currently remains the relevant planning instrument for this

area having been incorporated into the newly amalgamated Dubbo Regional Council. No relevant policies of landscape or scenic quality guidelines apply to this area within the *Wellington Local Environmental Plan 2012*.

2.2.2 Secretary’s Environmental Assessment Requirements (SEARS)

The SEARS state the report must:

- Include an assessment of the likely visual impacts and cumulative impacts of the development (including any glare, reflectivity and night lighting) on surrounding residences, scenic or significant vistas, air traffic and road corridors in the public domain;
- Have regards to the Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring;
- Include a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners.

2.2.3 Dark Sky Planning Guideline - Protecting The Observing Conditions at Siding Spring

These guidelines are to be considered in the development of the lighting design for the proposal as the development is within the 200km Dark Sky protection zone surrounding the Siding Springs Observatory.

2.0 Study Method (cont'd.)

2.3 Definitions

Definitions for terms used throughout the VIA have been included in this section of the report.

2.3.1 Landscape Values

Landscape values are the set of principles that aid judgement of the place. These include attributes such as culture (heritage/indigenous), social, environmental as well as the aesthetics (judgements of nature, taste and beauty) are shown in **Figure 3**.

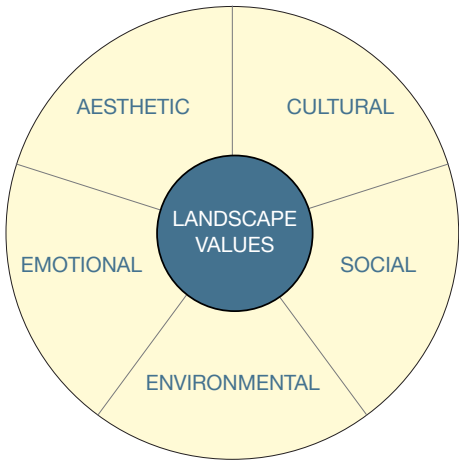


FIGURE 3: Landscape Values.

2.3.2 Visual Quality

Visual quality of an area is essentially an assessment of how viewers may respond to designated scenery. Scenes of high visual quality are those which are valued by a community for the enjoyment and improved amenity they can create. Conversely, scenes of low visual quality are of little value to the community with a preference that they be changed and improved, often through the introduction of landscape treatments.

As visual quality relates to aesthetics its assessment is largely subjective. There is evidence to suggest that certain landscapes are constantly preferred over others with preferences related to the presence or absence of certain elements. The rating of visual quality for this study has been based on scenic quality ratings and on the following generally accepted assumptions arising from scientific research (DOP, 1988):

- Visual quality increases as relative relief and topographic ruggedness increases;
- Visual quality increases as vegetation pattern variations increases;
- Visual quality increases due to the presence of natural and/or agricultural landscapes;
- Visual quality increases owing to the presence of water forms (without becoming too common) and related to water quality and associated activity; and
- Visual quality increases with increases in land use compatibility.

In addition to the above, cultural items may also endow a distinct character to an area and therefore contribute to its visual quality due to nostalgic associations and the desire to preserve items of heritage significance.

In addition to the before mentioned, cultural items may also endow a distinct character to an area and therefore contribute to its visual quality due to nostalgic associations and the desire to preserve items of heritage significance.

2.3.3 Visual Sensitivity

Visual sensitivity is a measure of how critically a change to the existing landscape is viewed by people from different areas. The assessment is based on the number of people affected, land use, and the distance of the viewer from the proposal. (EDAW, 2000).

For example, a significant change that is not frequently seen may result in a low visual sensitivity although its impact on a landscape may be high. Generally the following principles apply:

- Visual sensitivity decreases as the viewer distance increases;
- Visual sensitivity decreases as the viewing time decreases; and
- Visual sensitivity can also be related to viewer activity (e.g. a person viewing an affected site whilst engaged in recreational activities will be more strongly affected by change than someone passing a scene in a car travelling to a desired destination).

Sensitivity ratings are defined as high, moderate or low and are shown in the table below (Adapted from EDAW, 2000).

| VISUAL SENSITIVITY | | | | | |
|--------------------------------|----------------|-------|---------------|-------|------------|
| LAND USE | DISTANCE ZONES | | | | |
| | FOREGROUND | | MIDDLE GROUND | | BACKGROUND |
| | 0-1 | 1-2km | 2-4.5 | 4.5-7 | > 7kms |
| Tourist / Recreation | High | High | High | Mod | Low |
| Residential: Rural or Urban | High | High | High | Mod | Low |
| Main Travel Corridor | Mod | Mod | Low | Low | Low |
| Minor / Local Roads | Mod | Mod | Low | Low | Low |
| Railway Line (Freight) | Low | Low | Low | Low | Low |
| Industrial Areas | Low | Low | Low | Low | Low |

TABLE 1: Visual Sensitivity Table.

2.0 Study Method (cont'd.)

2.3.4 Visual Effect

Visual effect is the interaction between a proposal and the existing visual environment. It is often expressed as the level of visual contrast of the proposal against its setting or background in which it is viewed.

Low visual effect: occurs when a proposal blends in with its existing viewed landscape due to a high level of integration of one or several of the following; form, shape, pattern, line, texture or colour. It can also result from the use of effective screening often using a combination of landform and landscaping.

Moderate visual effect: occurs where a proposal is visible and contrasts with its viewed landscape however, there has been some degree of integration (e.g. good siting principles employed, retention of significant existing vegetation, provision of screen landscaping, appropriate colour selection and/or suitably scaled development).

High visual effect: results when a proposal has a high visual contrast to the surrounding landscape with little or no natural screening or integration created by vegetation or topography.

2.3.5 Visual Impact

Visual impact is the combined effect of visual sensitivity and visual effect. Various combinations of visual sensitivity and visual effect will result in high, moderate and low overall visual impacts as suggested in the below table (URBIS, 2009).

| VISUAL IMPACT | | | | |
|---------------------------|----------|---------------------|-----------------|-----------------|
| | | VISUAL EFFECT ZONES | | |
| | | HIGH | MODERATE | LOW |
| VISUAL SENSITIVITY LEVELS | HIGH | High Impact | High Impact | Moderate Impact |
| | MODERATE | High Impact | Moderate Impact | Low Impact |
| | LOW | Moderate Impact | Low Impact | Low Impact |

TABLE 2: Visual Impact Table.

2.3.6 Photomontages

A photomontage is a visualisation based on the superimposition of an image (i.e. the development - building, road, structure or landscape addition) onto a photograph for the purpose of creating a realistic representation of proposed or potential changes to a view. (Horner and Maclellann et al, 2006). Photomontages have been utilised in this Visual Impact Assessment (refer to **Section 6.0**) to assist in the impact assessment of the proposal.

2.3.7 Photomontage Development Process

Photomontages are representations of the development that are superimposed onto a photograph of The Site. Photomontages developed for this report have been prepared in accordance with LMCC's *Scenic Management Guidelines*. The process for generating these images involves computer generation of a wire frame perspective view of The Site and the topography from each viewpoint.

The photo simulations based on photography from typical sensitive viewpoints are included within the following analysis section. The images that the photo simulations were captured with a Canon EOS 50D Mark III Full Frame Digital SLR through a 50mm fixed focal lens which closely represent the central field of vision of the human eye.

2.4 Community Consultation

The degree to which viewers will be impacted is a result of an individuals personal response to the solar plant. This report is intended to be a tool to assist individuals in making an informed decision on the visual impact.

Community Consultation for this project has been undertaken directly by AGL.

3.0 Landscape Character

3.1 Regional Context

The Site is located in the Orana Region in central New South Wales and within Dubbo Regional Council Local Government Area (LGA). The region is predominately rich agricultural land utilised for wheat, beef cattle and sheep farming. The site is located approximately 7km to the north of Wellington urban area, and directly adjacent to Wellington Correctional Centre and Wellington Sub Station.

Wellington is an inland country town located at the junction of the Macquarie and Bell River in inland New South Wales. The town is located approximately 370km by road north west of Sydney, at the foothills of Mount Arthur.

Wellington was first settled in 1823 by a party of convicts and soldiers at the junction of the Macquarie and Bells Rivers. The convicts were removed 8 years later and the town was turned over to the Missionary Society Mission before becoming a gazetted town in 1846. Up until recently Wellington was the administrative town of the Wellington Shire Council with a population of approximately 4,600 people. The Wellington LGA was amalgamated into Dubbo Regional Council in 2016.



Wellington Train Station & Cameron Park

The closest major towns to the study area are Dubbo, located approximately 40km and Mudgee located approximately 60km from the site. Both Mudgee and Dubbo are large regional town centres servicing the Orana region of NSW. Tourist roads including Goolma Road run through the Study Area connecting to these major towns.



Dubbo and Mudgee Main Streets

Bodangora is a small, historical village located approximately 3.5km north east of the proposed solar plant site. Bodangora was formerly known as Mitchell's Creek and has a rich history in Gold Mining and Farming. Located just over 11km north east of Wellington, Bodangora is today a small settlement of rural residential properties within close proximity to the Wellington Airport.



St Pauls Church & Bodangora village (Source: The Bodangora Website)

The land of the region is generally used for grazing purposes and cropping. Crops include wheat, oats, legume, canola, peas and large areas of lucerne. The main animal enterprises include: cattle, prime lambs and wool. A number of isolated homesteads are located throughout the region generally servicing the agricultural industry.



Sheep Grazing

Improved Pasture

3.2 Cultural Heritage

The area was traditionally Wiradjuri country, the largest Aboriginal language group in NSW. The Wiradjuri country stretches from the eastern boundary of the Great Dividing Range to as far west as Nyngan. The Wiradjuri people were known as the people of three rivers the Macquarie River, Lachlan River and Murrumbidgee River.

The Wellington district has a rich history in Gold Mining. As early as 1839 Gold is believed to have been collected from the Namina estate near Mitchells Creek. In 1851 a discovery of Gold at Summer Hill Creek was made public starting the Gold Rush in the Wellington district. In 1869 Mitchells Creek Mining Co was founded. Stuart Town (formerly known as Ironbarks) was established in the 1870's housing many European and Chinese miners.

The area surrounding what is now known as the village of Bodangora was originally part of the 'Naima' estate, utilised mainly for sheep grazing. In 1873 a flour mill opened up in Dubbo and land within the Bodangora district was recognised by early pioneers as suitable for wheat grazing.

3.0 Landscape Character (cont'd.)

3.3 Local Landscape Character

The site is located approximately 7km north of the Wellington urban area, Wellington Correctional Centre is located to the east, the Mitchell Highway (A32) and rail line approximately 1 km to the west and the Macquarie River is location approximately 1.7 km to the west of the site. The electrical sub station and significant transmission lines are visible within the argricultural landscape setting contrasting with the traditional rural landscape character.

LAND USE

The site is zoned RU1 Primary Production. To the south of the site is an area of rural residential lots zoned R5 Large Lot Residential and to the east the Wellington Correctional Centre zoned SP2 Infrastructure.

TOPOGRAPHY

The landform of the study area is typically sloping to undulating topography with local rises. A hill in the eastern section of the site has an elevation of approximately 400m AHD, and the site gently falls to the south west to an elevation of approximately 300m AHD. A small valley with a watercourse runs from the central northern border to the south west corner of the site. Distant views are generally limited by vegetation and topography, with many views enclosed. Some distant views are possible from higher areas.

ROADS

Major roads include the Mitchell Highway (A32) to the west, which is approximatley 1 km from the site and Goolma road which is directly adjacent to the site to the east. The A32 runs west of the site in a north-south direction. Goolma road is a main road linking Wellington and Gulgong, which runs from the A32 to the north-east. Cobbora Road runs from the A32 in a northerly direction. A number of minor local roads service the rural residential properties where the site is located including Campbells Lane.

VEGETATION

The landscape typical of the region is predominately cleared, open grazing land with scattered groupings of remnant native trees. Retained vegetation is also common along water courses, roadsides and along the perimeters of paddocks and property boundaries. Land surrounding the site has been predominatnly cleared for rural paddocks and residential use, with some native and exotic vegetation plantings associated with the residential lots.

WATER BODIES

A number of small intermittent watercourses run throughout the site in the form of small streams and minor drainage lines. Wuuluman Creek runs in a westerly direction within the land adjacent to the site to the south. These creek lines form part of the Macquarie River Catchment, draining into Lake Burrendong. These watercourses generally lack riparian vegetation and are prone to erosion.

INFRASTRUCTURE

Infrastructure in the area is generally limited to roads, power lines and farm structures. A wind farm approximately 2km north of Bondangara and 5.5km north of the site is currently being constructed. Infrastructure associated with the Wellington Correctional Centre is locatded to the east of the site with the substation to the South-East.

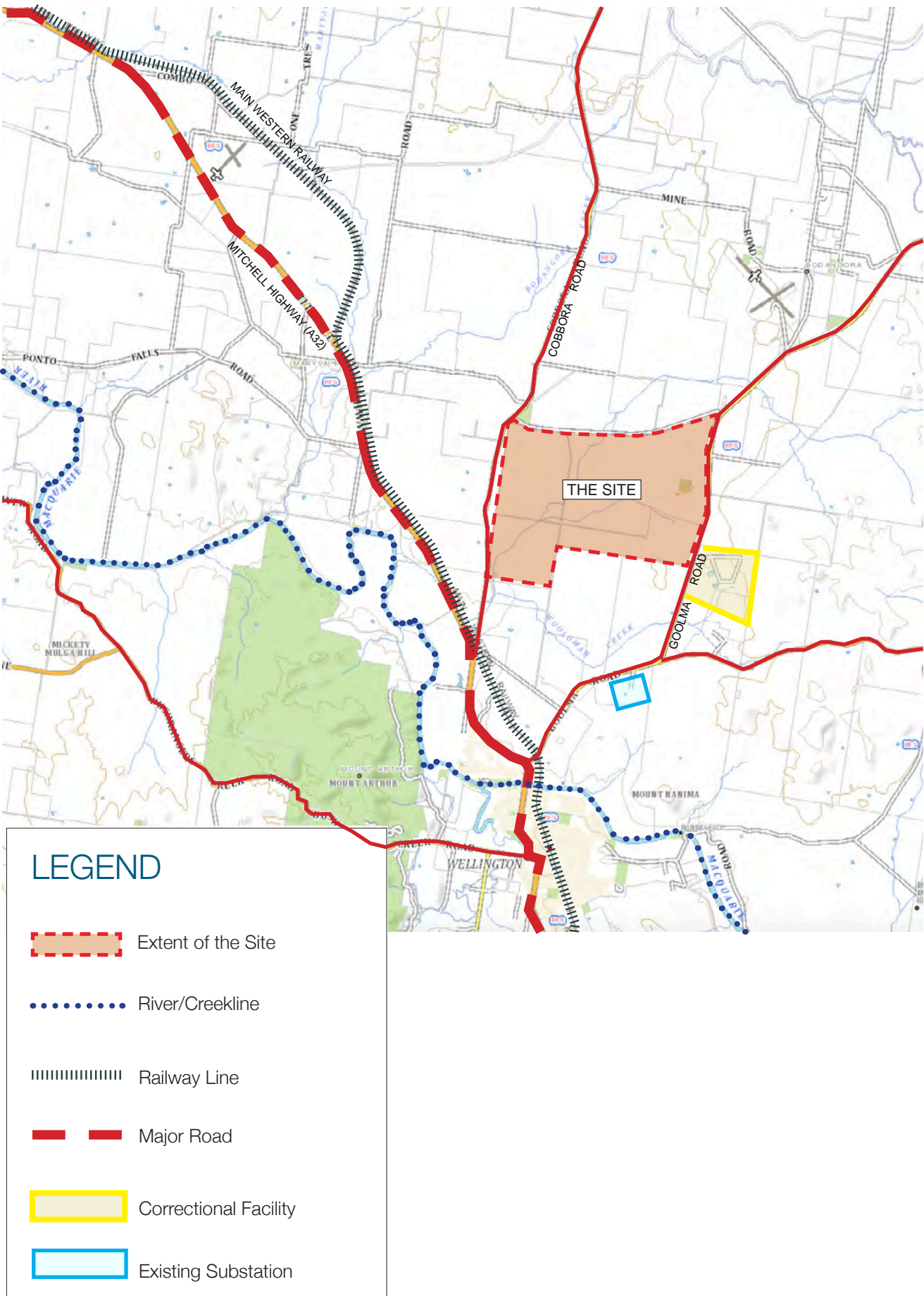


FIGURE 4: Existing Visual Character (Source: Sixmaps)

4.0 The Proposal

4.1 Site Description

The solar plant site comprises approximately 970ha of freehold land (Refer Section 1.1 for Lot & DP Numbers). These lots are currently run as agricultural enterprises (including one private landholder and one commercial enterprise; the Soil Conservation Service) and electricity distribution and generation (Transgrid assets; existing transmission lines and substation). The solar plant site is bounded by Campbells Lane to the north, Goolma Road to the east, private land and Cobbora Road to the west and private agricultural land to the south.

The solar plant site is intended to be owned by Wellington North Solar Farm Pty Limited, with the exception of Lot 3 DP 808747 and Lot 88 DP 2987. These two lots will remain under the ownership of the Soil Conservation Service. An easement for the transmission line would be created either through three properties for the eastern option or six properties for the western option. The existing Wellington Substation, located on Lot 1 DP 1226751, is owned by Transgrid.

The proposal site is located on land zoned as RU1 Primary Production under the Wellington Local Environmental Plan 2012. Both transmission line options extend offsite to the existing substation on Goolma Road. The eastern transmission line option would occur on land zoned RU1 Primary Production, SP2 Correctional Facility, SP2 Classified Road and SP2 Electricity Supply. The western transmission line option would occur on land zoned RU1 Primary Production, R5 Large Lot Residential, SP2 Classified Road and SP2 Electricity Supply.

Agricultural cropping and grazing for production and environmental consulting services are the existing onsite land uses. The proposal site comprises of several large paddocks which consist of undulating hills that have been largely cleared for cropping. Remnant vegetation throughout the site is derived from a community of White Box Woodland and Yellow Box Woodland. The remnant areas have been highly disturbed and lack native understory, due to grazing and pasture improvement practices. Plantings of native species have been used as wind breaks and for rehabilitation along onsite waterways. A dry land salinity plantation is located in the north east of the site.

Four dams occur within the solar plant site; three along the south-western boundary and one in the south-eastern corner. Six watercourses occur within the solar plant site; all are tributaries of Wuuluman Creek.

One residential dwelling is located within the solar plant site; within Lot 84 / DP2987. The dwelling is listed as an item of local heritage significance under Schedule 5 of the Wellington Local Environmental Plan 2012.

The solar plant site also contains a Soil Conservation Service (SCS) facility. The SCS is an environmental consulting and soil conservation business entity within the Department of Primary Industries (DPI). There are approximately five buildings and five sheds within the Soil Conservation Service Land. Accommodation facilities are also associated with the SCS. The SCS site is in the south eastern

portion of the proposal site (Lot 2 and 3 / DP808748 and Lot 88 / DP2987). One 132kV transmission line intersects the south western corner of the solar plant site and continues south east to meet the other transmission line, west of the existing Wellington Substation. The proposal site has two current mineral titles:

- Exploration licence 6178 held by Modeling Resources Pty Ltd occupies the majority of the site.
- Exploration licence 8505 held by Drummond West Pty Ltd occupies a small portion of the south eastern corner of the proposal site.

4.0 The Proposal (cont'd.)

4.2 Proposed Development

The Wellington North Solar Plant proposal involves the construction, operation and decommissioning of a ground-mounted photovoltaic solar array which will generate approximately 300MW (AC) to be supplied directly to the national electricity grid. The solar plant site is approximately 970ha (2,397 acres) of which approximately 818ha (2,021 acres) will contain solar plant infrastructure. An additional area of up to 37ha is required for transmission line easements to connect to the existing Wellington substation. Some internal works are also required within the Wellington substation. The total development footprint for the proposal is 855ha.

The solar plant site would have three vehicular access points. The primary access point during construction for light and heavy vehicles would be off Campbells Lane, along the northern boundary of the site. Campbells Lane would be accessed via Cobbora Road and the Mitchell Highway. Two existing driveways would also be used as access points (one currently leads to the existing residence and the other to the SCS facility). These access points would be used mostly by light vehicles.

It is anticipated that the proposed Wellington North Solar Plant would include the following infrastructure elements:

MORE DETAILED SUMMARY:

- Approximately 1.2 million PV modules, spaced 4-8m and mounted on east-west horizontal tracking systems or north-orientated fixed-tilt structures (both fixed and tracking options are considered viable for the Proposal).
- Up to approximately 155 PV inverter stations to allow conversion of DC module output to AC electricity and transformation to medium voltage for site reticulation (typically 22kV or 33kV).
- Underground electrical conduits and cabling to connect the solar panels, combiner boxes and inverters.
- An onsite substation containing up to two transformers and associated switchgear.
- Up to approximately 7km of 132kV or 330kV, overhead or underground transmission line to the existing TransGrid 330kV substation (either an east and or west transmission line).
- Additional electrical transformation equipment to be positioned in close proximity to the existing TransGrid substation, if the 132kV transmission line option is progressed.
- Site access off Campbells Lane, with additional access for mostly light vehicles off Goolma Road.
- Internal access tracks and upgrades to existing access roads, where required.
- Site office and maintenance building with associated car park.
- Space for future energy storage facility. Energy storage is not currently proposed and therefore is not part of this assessment.
- Perimeter security fencing and CCTV.
- Vegetation planting to provide visual screening for specific viewers, as required.

DETAILED DESCRIPTION OF PANELS:

The Proposal involves the installation of PV solar panels, arranged in a series of rows positioned to maximise the use of the solar resource available at the site. The Proposal detail design would consider two options for the configuration of PV panels:

1. Fixed configuration, where the panels would be placed on fixed frames running in rows from east to west and tilted to the north; or
2. Single axis tracking, where the panels would be in rows configured in a north-south direction and the panels would track the sun from east to west throughout the day.

In either configuration, the panels would be fixed to and supported by ground-mounted framing. The ground mounted frame piles would be driven or screwed into the ground. During the piling installation, work would be undertaken to avoid disturbing the existing ground cover to minimise ground disturbance and limit the potential for erosion.

The typical dimensions of the PV solar panels are up to 2m by 1m, which provides a surface area of approximately 2 square metres (m2) per PV solar panel. PV solar panels are designed for maximum light absorptivity and constructed of solar glass with an anti-reflective surface treatment. Subject to detailed design and the selected configuration the edge of the panels would be up to 4m high when fully tilted. Approximately 1,200,000 PV solar panels could be accommodated at the site, providing an estimated capacity in the order of 300MW (AC). The final number of PV solar panels within the development footprint would be dependent on detailed design, availability and commercial considerations at the time of construction.

5.0 Viewpoint Analysis

5.1 Viewpoint Analysis

This part of the visual assessment considers the likely impact that development would have on the existing landscape character and visual amenity by selecting prominent sites, otherwise referred to as viewpoints.

5.1.1 Viewpoint Selection Process

Viewpoints are selected to illustrate a combination of the following:

- Present landscape character types;
- Areas of high landscape or scenic value;
- Visual composition (e.g. focused or panoramic views, simple or complex landscape pattern);
- Range of distances;
- Varying aspects;
- Various elevations;
- Various extent of development visibility (full and partial visibility); and
- Sequential along specific routes.

Viewpoints have been carefully selected to be representative of the range of views within the study area. The selection of viewpoints is informed by topographical maps, field work observations and other relevant influences such as access, landscape character and the popularity of vantage points.

A total of **14 viewpoints** were taken as part of the field work process. The viewpoints were taken from publicly accessible roads surrounding the site. The viewpoints which have been included represent the areas from where the development would appear most prominent, either based on the degree of exposure or the number of people likely to be affected.

It is important to note that viewpoints for this study have been taken only from accessible public land (refer to **Figure 6** for locations).

5.1.2 Process of Viewpoint Analysis

Once the viewpoint had been selected, panoramic photographs were taken at eye level from the viewpoints towards The Site. Photographs were taken with a Canon EOS 5D Mark III digital SLR through a 50mm lens to best represent the perspective of the human eye.

The visual impact of the viewpoint was then assessed both on site and with the topographic and aerial information to ensure accuracy. Viewpoint photographs and analysis has been included the following pages. The findings of the viewpoint analysis have been quantified and are summarised as follows.

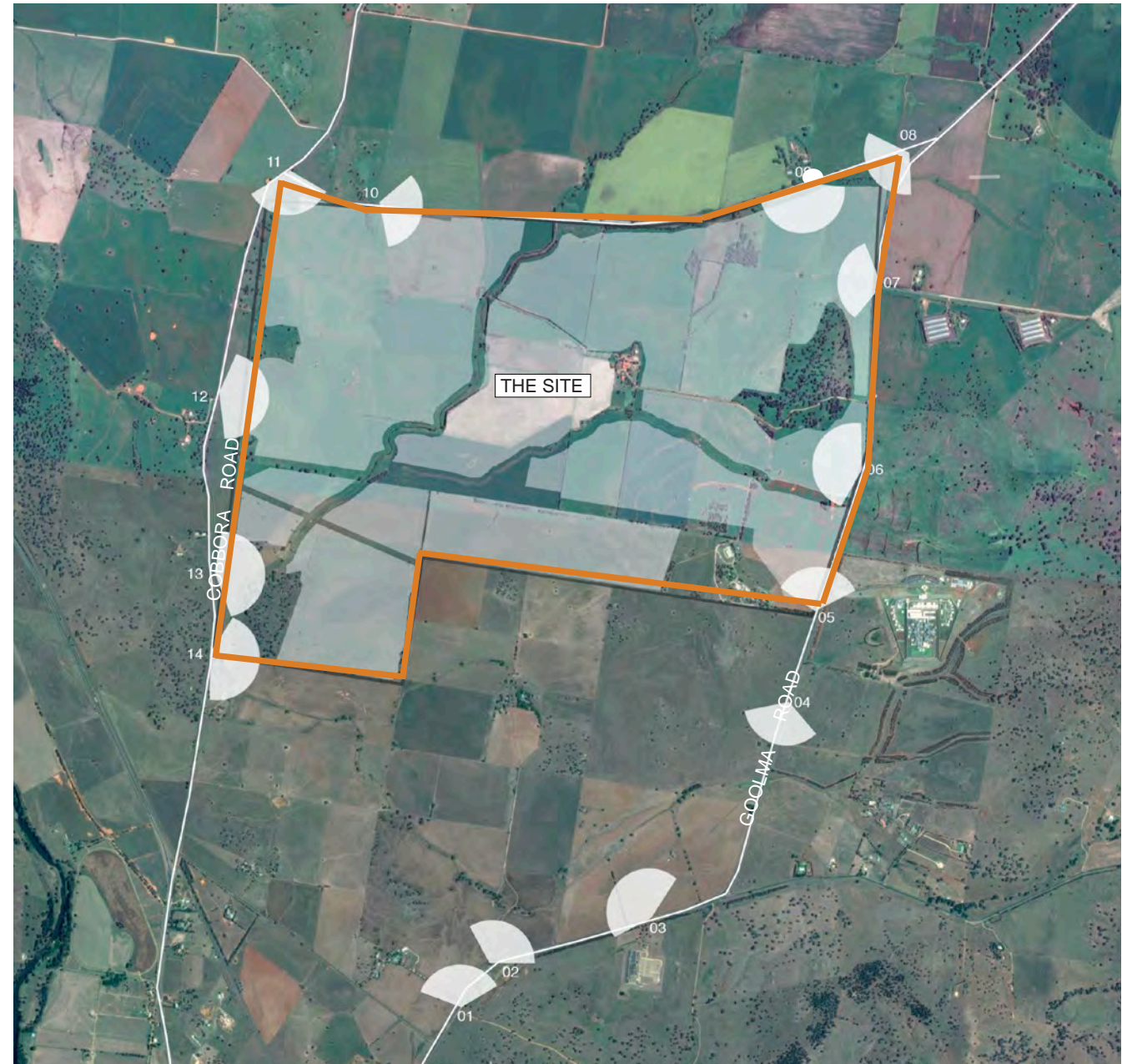


FIGURE 6: Viewpoint Assessment Locations (Source: Sixmaps)

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP01 Goolma Road



VIEWPOINT VP01 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP01 | | |
|----------------------|------------------------------|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Goolma Road | The viewpoint is taken from the gate at the property along the boundary of Lot 1 DP588075 and Lot 2 DP 588075. The view landscape shows the line of vegetation following a creek line in the foreground and a general rise to a hilltop in the north east. The visual sensitivity of the viewpoint is assessed as moderate . |
| COORDINATES | 32°31'03.65"S 148°57'41.93"E | |
| ELEVATION | 348m | |
| VIEWING DIRECTION | Generally North | |
| DISTANCE TO SITE | 2.9km | |
| LAND USE | Main Road | |
| VISUAL EFFECT | LOW | |
| VISUAL IMPACT | LOW | |
| | | POTENTIAL VISUAL IMPACT |
| | | From this viewpoint the proposed solar plant will be visible, appearing as a thin grey line on the horizon. The solar plant will be partially screened due to a combination of the topography, distance from the viewpoint and the existing vegetation in the foreground. The visual effect from this viewpoint is assessed as low resulting in an overall visual impact of low . |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP02 Goolma Road



VIEWPOINT VP02 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP02 | | |
|----------------------|------------------------------|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Goolma Road | The viewpoint is taken from Goolma Road at property Lot 2 DP 588075. |
| COORDINATES | 32°31'11.96"S 148°58'13.44"E | |
| ELEVATION | 360m | The view landscape shows the line of vegetation following a creek line in the foreground and a general rise to a hilltop in the north east. |
| VIEWING DIRECTION | Generally North North East | |
| DISTANCE TO SITE | 2.65km | The sensitivity of the viewpoint is rated as moderate . |
| LAND USE | Main Road | |
| VISUAL EFFECT | LOW | |
| VISUAL IMPACT | LOW | |
| | | POTENTIAL VISUAL IMPACT |
| | | From this viewpoint the proposed solar plant will be visible, appearing as a thin grey line on the horizon. The solar plant will be partially screened due to a combination of the topography, distance from the viewpoint and the existing vegetation in the foreground. |
| | | The visual effect from this viewpoint is assessed as low resulting in an overall visual impact of low . |

5.0 Viewpoint Analysis (cont'd.)



REFER TO ZOOMED & CROPPED IMAGE BELOW

VIEWPOINT VP03 Goolma Road



VIEWPOINT VP03 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP03 | | |
|----------------------|------------------------------|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Goolma Road | The viewpoint is taken from Goolma Road at property Lot 1 DP 34690. This viewpoint is at the entry to the Wellington Substation The view is across open pasture to the North towards the site. The sensitivity of the viewpoint is rated as moderate . |
| COORDINATES | 32°31'27.61"S 148°57'51.95"E | |
| ELEVATION | 347m | |
| VIEWING DIRECTION | Generally North West | |
| DISTANCE TO SITE | 2.1km | |
| LAND USE | Main Road | |
| VISUAL EFFECT | LOW | |
| VISUAL IMPACT | LOW | POTENTIAL VISUAL IMPACT |
| | | From this viewpoint views to the solar plant will be predominantly screened by topography and distance from the viewpoint and the existing vegetation in the foreground. The visual effect from this viewpoint is assessed as low resulting in an overall visual impact of low . |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP04 Goolma Road



VIEWPOINT VP04 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP04 | | | |
|----------------------|------------------------------|---|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Goolma Road | Viewpoint north towards the site. The ridgeline forming the horizon line forms the southern boundary of the proposal. This topographical rise constrains views to the site The visual sensitivity of the site is rated as moderate . | The topography of the visible landform screens views to the site. Subsequently the Visual Effect is Nil and the overall Visual Impact is Nil |
| COORDINATES | 32°31'14.71"S 148°58'11.36"E | | |
| ELEVATION | 367m | | |
| VIEWING DIRECTION | Generally North | | |
| DISTANCE TO SITE | 1.4km | | |
| LAND USE | Main Road | | |
| VISUAL EFFECT | Nil | | |
| VISUAL IMPACT | Nil | | |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP05 Goolma Road



VIEWPOINT VP05 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP05 | | |
|----------------------|------------------------------|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Goolma Road | Viewpoint from the corner of Lot 3 DP 808748. The landscape is fairly flat agricultural lands. The photo is taken at the entry to the Soil Conservation Service Facility. The property buildings and curtilage are not in view. Established tree planting is situated within the boundary on Goolma Road. |
| COORDINATES | 32°30'26.74"S 148°58'28.50"E | |
| ELEVATION | 400m | |
| VIEWING DIRECTION | Generally North | |
| DISTANCE TO SITE | 10m | |
| LAND USE | Main Road | The treeline in the middle ground is associated with boundary planting to the North of the Soil Conservation Service Facility buildings. |
| VISUAL EFFECT | Moderate | |
| VISUAL IMPACT | Moderate | |
| | | The visual sensitivity of the view is rated as moderate |
| | | POTENTIAL VISUAL IMPACT |
| | | The solar plant will be visible from this location situated in the open paddock area in the cropped view. It is likely that the boundary planting will screen views from Goolma Road as vehicles travel further to the North. As access to this view is brief the Visual Effect is rated as moderate resulting in an overall visual impact of moderate . |
| | | Refer photomontage PM01. |

5.0 Viewpoint Analysis (cont'd.)

W



VIEWPOINT VP06 Goolma Road



VIEWPOINT VP06 Zoomed and cropped view from Goolma Road

| VIEWPOINT VP06 | | |
|----------------------|------------------------------|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Goolma Road | Viewpoint from the corner of Lot 1 DP 808748. The landscape is gently undulating open pastoral land. Scattered vegetation, particularly along the rises is a key feature of the landscape. The visual sensitivity of the site is rated as moderate |
| COORDINATES | 32°29'57.41"S 148°58'39.54"E | |
| ELEVATION | 395m | |
| VIEWING DIRECTION | Generally West | |
| DISTANCE TO SITE | 10m | |
| LAND USE | Main Road | |
| VISUAL EFFECT | High | |
| VISUAL IMPACT | High | POTENTIAL VISUAL IMPACT |
| | | The solar plant will be visible from this location. Lot 1 DP 808748 is included in the development proposal. Due to the contrasting nature of the panels within the view the visual effect of the Study Site from this viewpoint is rated high resulting in an overall visual impact of high . |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP07 Intersection of Gladstone Road & Goolma Road



VIEWPOINT VP07 Zoomed and cropped view from the intersection of Gladstone Road and Goolma Road

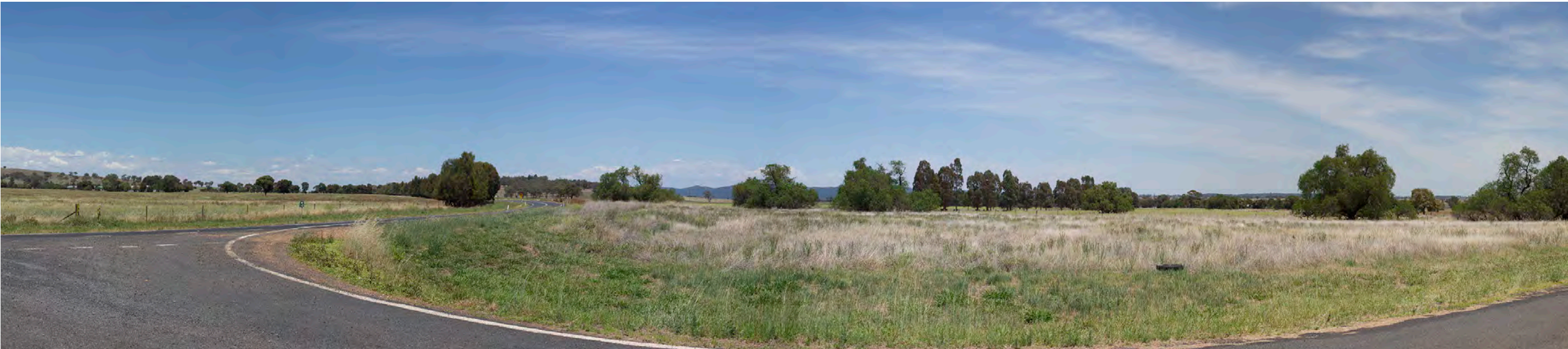
| VIEWPOINT VP07 | | | |
|----------------------|------------------------------|---|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Goolma Road | Viewpoint from the intersection of Gladstone Road and Goolma Road. | The solar plant will be visible from this location. . Due to the close proximity and contrasting nature of the panels within the view the visual effect of the Study Site from this viewpoint is rated high resulting in an overall visual impact of high .. |
| COORDINATES | 32°29'20.18"S 148°58'42.42"E | | |
| ELEVATION | 384m | | |
| VIEWING DIRECTION | Generally West | The view is of gently undulating pastoral land with distant views to vegetated ridgelines. | Refer photomontage PM02. |
| DISTANCE TO SITE | 10m | A vegetated rise is visible to the south and vegetation associated with a dense area of woodland situated on lower ground directly to the west. | |
| LAND USE | Main Road | The visual sensitivity of this viewpoint is rated as moderate | |
| VISUAL EFFECT | High | | |
| VISUAL IMPACT | High | | |

5.0 Viewpoint Analysis (cont'd.)

WSW



VIEWPOINT VP08 View from the intersection of Goolma Road and Campbells Lane



VIEWPOINT VP08 Zoomed and cropped view from Campbells Lane

| VIEWPOINT VP08 | | | |
|----------------------|------------------------------|--|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Campbells Lane | Viewpoint from the corner of Lot 1 DP 206579. The landscape is generally flat agricultural lands. The view is from the corner of Goolma Road and Campbells Lane Rising land can be see to the south west to an adjoining property. Vegetation on the property boundary is visible in the foreground. Visual sensitivity from this viewpoint is rated as moderate | The solar plant will be visible from this location. Lot 121 DP 2987 is included in the development proposal. |
| COORDINATES | 32°28'52.85"S 148°58'48.54"E | | |
| ELEVATION | 376m | | Views to the panels will be screened by vegetation in the foreground with some glimpse views. |
| VIEWING DIRECTION | Generally West South West | | |
| DISTANCE TO SITE | 400m | | The visual effect of the Study Site from this viewpoint is moderate resulting in an overall visual impact of moderate . |
| LAND USE | Local Road | | |
| VISUAL EFFECT | Moderate | | |
| VISUAL IMPACT | Moderate | | |

5.0 Viewpoint Analysis (cont'd.)



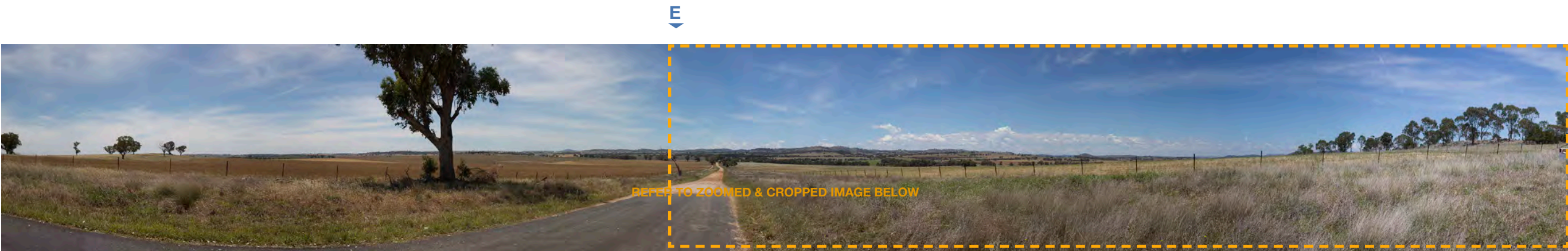
VIEWPOINT VP09 Campbells Lane



VIEWPOINT VP09 Zoomed and cropped view from Campbells Lane

| VIEWPOINT VP09 | | | |
|----------------------|-----------------------------|---|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Campbells Lane | Viewpoint from Lot 120 DP 2987120. The landscape is fairly flat agricultural lands sloping down to the west with scattered vegetation in the background over a minor rise in the south. | The solar plant will be visible from this location. Lot 120 DP 2987120 is included in the development proposal. The close proximity of the panels to the fenceline results in a high Visual Effect. |
| COORDINATES | 32°29'0.87"S 148°58'25.86"E | | |
| ELEVATION | 364m | The view is taken at Campbells Lane. Due to the low traffic use of Campbells Lane the visual sensitivity is rated as low | The overall Visual Impact is rated as moderate |
| VIEWING DIRECTION | Generally South | | |
| DISTANCE TO SITE | 60m | | |
| LAND USE | Local Road | | |
| VISUAL EFFECT | High | | |
| VISUAL IMPACT | Moderate | | |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP10 View East along Campbells Lane



VIEWPOINT VP10 Zoomed and cropped view from Campbells Lane

| VIEWPOINT VP10 | | | |
|----------------------|-----------------------------|--|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Campbells Lane | Viewpoint from Lot 81 DP 2987. The view is taken along Campbells Lane at a minor high point. The landscape is gently undulating with the land primarily cleared with scattered vegetation. Due to the low use of Campbells Lane the visual sensitivity is rated as low | The solar plant will be visible from this location. Lot 81 DP 2987 is included in the development proposal. The close proximity of the panels to the fenceline results in a high Visual Effect. The overall Visual Impact is rated as moderate |
| COORDINATES | 32°29'3.86"S 148°56'44.61"E | | |
| ELEVATION | 340m | | |
| VIEWING DIRECTION | Generally East | | |
| DISTANCE TO SITE | 10m | | |
| LAND USE | Local Road | | |
| VISUAL EFFECT | High | | |
| VISUAL IMPACT | Moderate | | |

5.0 Viewpoint Analysis (cont'd.)

S



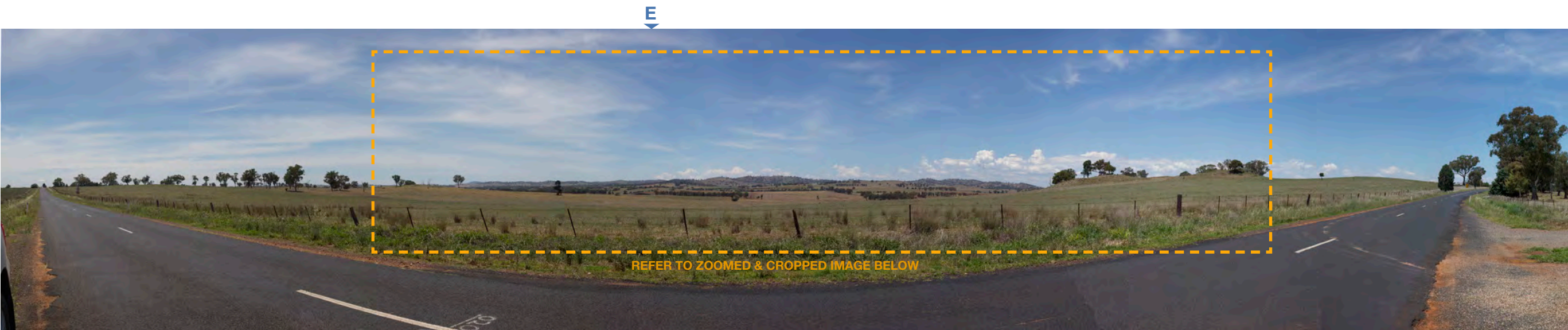
VIEWPOINT VP11 Intersection of Campbells Lane and Cobbora Road



VIEWPOINT VP11 Zoomed and cropped view from Cobbora Road the intersection of Campbells Lane and Cobbora Road

| VIEWPOINT VP11 | | | |
|----------------------|-----------------------------|---|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Cobbora Road | Viewpoint from Lot 81 DP 2987. The view is taken on Cobbora Road at the intersection with Campbells Lane, the landscape is rolling hills and agricultural lands with scattered vegetation in the foreground and along the creekline beyond the trees. | The solar plant will be visible from this location, beyond trees in the foreground however views will be screened by vegetation in the foreground. Lot 81 DP 2987 is included in the development proposal. |
| COORDINATES | 32°29'2.70"S 148°56'18.00"E | | |
| ELEVATION | 349m | | |
| VIEWING DIRECTION | Generally South | Due to the frequent traffic on Cobbora Road the Visual Sensitivity is rated as moderate . | The visual effect of the Study Site from this viewpoint is <i>moderate</i> resulting in an overall visual impact of <i>moderate</i> . |
| DISTANCE TO SITE | 280m | | |
| LAND USE | Main Road | | |
| VISUAL EFFECT | Moderate | | |
| VISUAL IMPACT | Moderate | | |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP12 View East from Cobbora Road



VIEWPOINT VP12 Zoomed and cropped view from Cobbora Road

| VIEWPOINT VP12 | | | |
|----------------------|-----------------------------|--|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION | POTENTIAL VISUAL IMPACT |
| LOCATION | Cobbora Road | Viewpoint to Lot 79 DP 2987. The view is taken at the boundary gates of 301 Cobbora Road, the landscape is characterised by gently undulating pastoral land with scattered vegetation. | The solar plant will be visible from this location although it will be considerably set back from the edge of Cobbora Road. Lot 79 DP 2987 is included in the development proposal. |
| COORDINATES | 32°29'43.11"S 148°56'6.33"E | | |
| ELEVATION | 340m | | |
| VIEWING DIRECTION | Generally East | The Visual Sensitivity of the land is considered to be moderate . | The visual effect of the Study Site from this viewpoint is moderate resulting in an overall visual impact of moderate . Refer photomontage PM03 |
| DISTANCE TO SITE | 195m | | |
| LAND USE | Main Road | | |
| VISUAL EFFECT | Moderate | | |
| VISUAL IMPACT | Moderate | | |

5.0 Viewpoint Analysis (cont'd.)



VIEWPOINT VP13 Cobbora Road



VIEWPOINT VP13 Zoomed and cropped view from Cobbora Road

| VIEWPOINT VP13 | | |
|----------------------|-----------------------------|---|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Cobbora Road | The view is taken on Cobbora Road toward Lot 76 DP2987, the predominantly undulating with open woodland on a local rise dominating the view. The Visual Sensitivity of the view is rated as moderate . |
| COORDINATES | 32°30'14.43"S 148°56'5.36"E | |
| ELEVATION | 308m | |
| VIEWING DIRECTION | Generally East | |
| DISTANCE TO SITE | 115m | |
| LAND USE | Main Road | |
| VISUAL EFFECT | Moderate | |
| VISUAL IMPACT | Moderate | The solar plant will be visible from this location however views will be fragmented by existing vegetation. The vegetation on the rise in the foreground is to be retained. Lot 79 DP 2987 is included in the development proposal. The visual effect of the Study Site from this viewpoint is moderate resulting in an overall visual impact of moderate . Refer photomontage PM04 |

5.0 Viewpoint Analysis (cont'd.)

E



VIEWPOINT VP14 Cobbora Road



VIEWPOINT VP14 Zoomed and cropped view from Cobbora Road

| VIEWPOINT VP14 | | |
|----------------------|-----------------------------|--|
| SUMMARY OF VIEWPOINT | | VIEWPOINT DESCRIPTION |
| LOCATION | Cobbora Road | The view is taken on Cobbora Road toward Lot 75 DP2987. The viewpoint is taken from a slight rise on Cobbora Road. Roadside vegetation screens views into the site. The Visual Sensitivity of this viewpoint is moderate . |
| COORDINATES | 32°30'34.62"S 148°56'4.15"E | |
| ELEVATION | 309m | |
| VIEWING DIRECTION | Generally East | |
| DISTANCE TO SITE | 460m | |
| LAND USE | Main Road | |
| VISUAL EFFECT | Low | |
| VISUAL IMPACT | Low | |
| | | POTENTIAL VISUAL IMPACT |
| | | It is likely that there will be fragmented views to the solar plant from this viewpoint. Views towards the site will be largely constrained by topography and vegetation in the foreground. Lot 79 DP 2987 is included in the development proposal. |
| | | The visual effect of the Study Site from this viewpoint is low resulting in an overall visual impact of low . |

5.0 Viewpoint Analysis (cont'd.)

5.2 Overview of Viewpoint Analysis

As discussed in the rationale for the viewpoint selection process, these viewpoints are representative of the worst case scenario. For each viewpoint, the potential visual impact was analysed through the use of a combination of topographic maps and on site analysis.

The visual sensitivity and visual effect of each viewpoint have been assessed which, when combined, result in an overall visual impact for the viewpoint (**Refer to Table 3**).

Of the **14** viewpoints assessed as part of this VIA, the proposal would be visible from a total of **13** viewpoints. Of the **13** viewpoints from which the proposal would be visible,

- Of the **13** visible viewpoints:
- 4 received a Visual Impact Rating of LOW
- 7 received a Visual Impact Rating of MODERATE
- 2 received a Visual Impact Rating of HIGH

| VIEWPOINT | VISUAL SENSITIVITY | VISUAL EFFECT | POTENTIAL VISUAL IMPACT | PHOTO MONTAGES |
|-----------|--------------------|---------------|-------------------------|----------------|
| VP01 | MODERATE | LOW | LOW | - |
| VP02 | MODERATE | LOW | LOW | - |
| VP03 | MODERATE | LOW | LOW | - |
| VP04 | MODERATE | NIL | NIL | - |
| VP05 | MODERATE | MODERATE | MODERATE | PM01 |
| VP06 | MODERATE | HIGH | HIGH | - |
| VP07 | MODERATE | HIGH | HIGH | PM02 |
| VP08 | MODERATE | MODERATE | MODERATE | - |
| VP09 | LOW | HIGH | MODERATE | |
| VP10 | LOW | HIGH | MODERATE | - |
| VP11 | MODERATE | MODERATE | MODERATE | |
| VP12 | MODERATE | MODERATE | MODERATE | PM03 |
| VP13 | MODERATE | MODERATE | MODERATE | PM04 |
| VP14 | MODERATE | LOW | LOW | - |

*Please note the Viewpoint Visibility Assessment Summary is based on the visibility assessment criteria outlined in Section 2.1 of this report.

TABLE 3 : Viewpoint Visual Impact Summary

Generally, the viewpoints which were rated as having a HIGH visual impact were taken within close proximity of the proposal in locations where there was an absence of existing vegetation to screen views into the site. Both of the HIGH rating viewpoints are situated along Goolma Road.

The Visual Sensitivity of Viewpoints along Campbells Lane was rated LOW due to the local function of the road.

Primarily viewpoints that were rated as MODERATE consisted of views into the site that were already screened or fragmented by topography or existing established vegetation.