



# VISUAL IMPACT ASSESSMENT PROPOSED AVONLIE SOLAR FARM



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# 1.0 Introduction

## 1.1 Introduction

### 1.1.1 Background

Moir Landscape Architecture have been commissioned by NGH Environmental to prepare a Visual Impact Assessment (VIA) for the proposed Avonlie Solar Farm, located approximately 20 kilometres south of Narrandera in New South Wales.

The VIA will support the DA submission for the proposal. The purpose of this report is to provide a qualitative and quantitative assessment of the visibility and potential visual impacts of the proposal.

Survey work for the study was undertaken during January 2018 using key viewpoints and locations with potential views towards the Study Site. The report details the results of the field work, documents the assessment of the landscape character and visual setting, and makes recommendations to assist in the mitigation of any potential impacts resulting from the proposed development. This information will assist the community and relevant authorities to understand and assess the likely visual impacts.

The proposed Avonlie Solar Farm is located approximately 20 kilometres south of Narrandera, near Sandigo (See Figure 1).



Figure 1: The Study Site

# 2.0 The Proposal

## 2.1 The Proposal

### 2.1.1 The Study Site

The proposed solar farm is located approximately 20km south of Narrandera, New South Wales within the located within the Narrandera Shire Council area. The project site is located to the west of the Sturt Highway and east of Strontian Road, south of Quilters Road.

The site occupies approximately 633 ha of relatively flat land currently used for agricultural purposes, predominantly cropping activities. The site has been selected as it is relatively flat, easily accessible (situated close to the Sturt Highway) and is located within close proximity to the TransGrid network.

### 2.1.2 Proposed Development

The proposal is for a solar and energy storage facility which will consist of the following components:

Panels	670,000
PCUs (solar)	40
Tracker motors	7,900
Array posts	95000

- Around 670,000 solar panels mounted on a single axis tracker (no fixed type option).
- Access tracks
- A total solar capacity up to around 200MW
- Operations and maintenance building with associated car parking
- An electrical substation
- Overhead and underground electrical cable reticulation
- Energy storage
- Security fencing and CCTV

There will be no excessive removal of vegetation and existing vegetation along boundary fences will be retained and incorporated into the design.

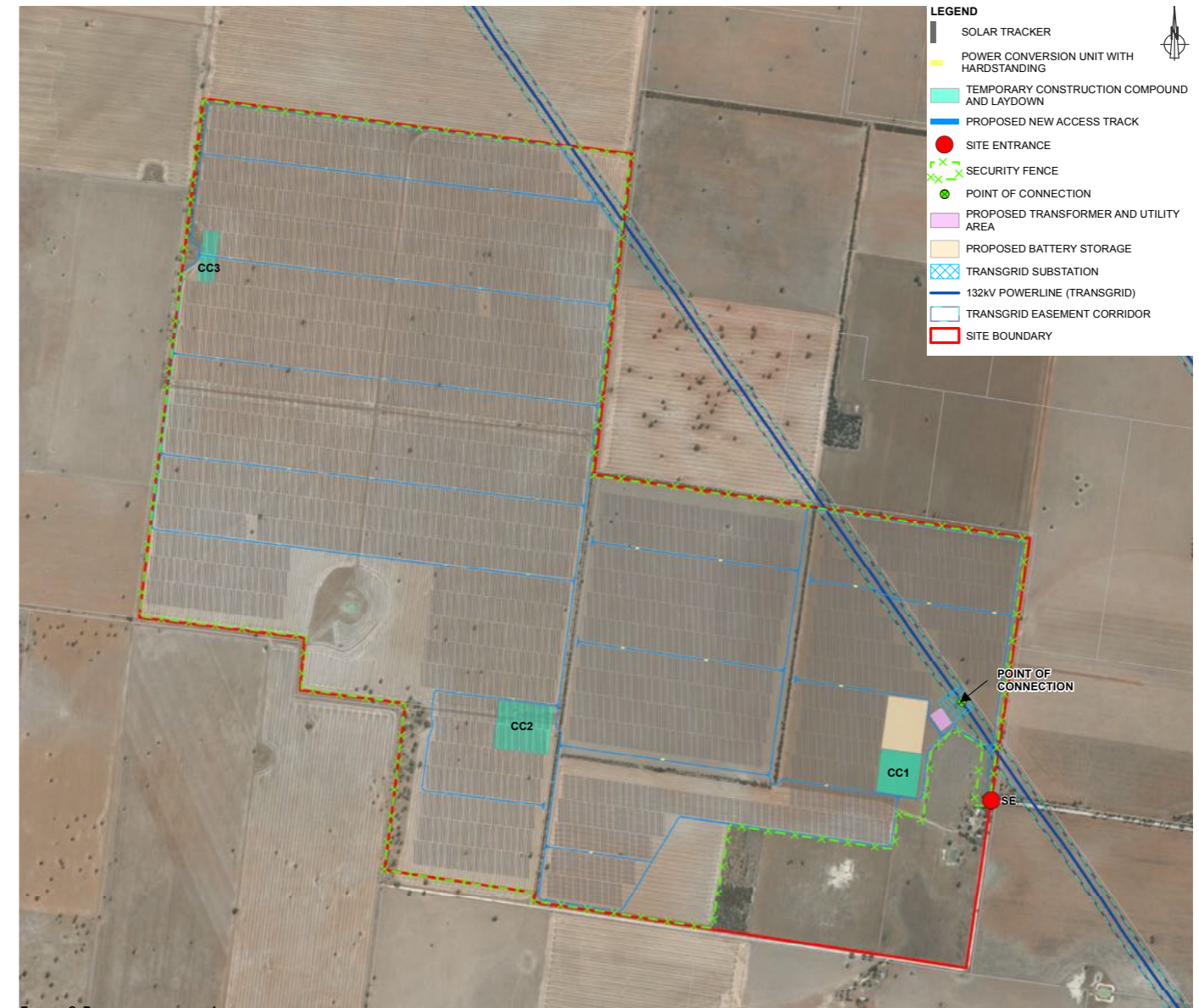


Figure 2: The Proposed Solar Farm



# 3.0 Study Method

## 3.1 Visual Impact Assessment (VIA)

A Visual Impact Assessment (VIA) is used to identify and determine the value, significance and sensitivity of a landscape. The method applied to this study involved 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.
- 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 reduce the amount of subjectivity entering into visual impact assessment and to provide sufficient data to allow for third party verification of results.

## 3.2 Definitions

### 3.2.1 Landscape Values

In addition to the Visual Quality, landscape values 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. Landscape values are the cultural attributes (social, indigenous, artistic and environmental) as well as the aesthetics of a place.



Figure 3: Landscape Values

### 3.3.2 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.
- 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.



# 3.0 Study Method

## 3.3 Visual Impact Assessment Method

The potential visual impact of the proposal is then assessed based on the relationship between the visual sensitivity (refer to **Section 3.3.1**) and visual effect (refer to **Section 3.3.2**).

### 3.3.1 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 viewing time decreases.
- Visual sensitivity decreases as the number of potential viewers decreases.
- 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 1** below (adapted from URBIS, 2009).

VISUAL SENSITIVITY RATING					
	DISTANCE FROM SOLAR FARM				
LANDUSE	0-1 km	1-2 km	2 - 4.5 km	4.5-7 km	> 7 km
Townships	HIGH	HIGH	HIGH	LOW	NIL
Recreational Reserve	HIGH	HIGH	HIGH	LOW	NIL
Homestead	HIGH	HIGH	MOD	LOW	NIL
Rural Township	HIGH	HIGH	MOD	LOW	NIL
Main Highway	MOD	MOD	LOW	NIL - LOW	NIL
Local Roads	MOD	MOD	LOW	NIL - LOW	NIL
Farm Road	LOW	LOW	NIL - LOW	NIL - LOW	NIL
Agricultural Land	LOW	LOW	NIL - LOW	NIL - LOW	NIL

**Table 1:** Visual Sensitivity Rating Table (Adapted from Urbis, 2009)

### 3.3.2 Visual Effect

Visual effect is defined as 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.

#### Level of Visual Contrast

Low level: 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 ie. Topography and vegetation.

Moderate level: 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 level: 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.

### 3.3.3 Visual Impact Rating

Visual impact refers to the change in appearance of the landscape as a result of development. (EPHC, 2010). 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 **Table 2** below (URBIS, 2009).

VISUAL IMPACT RATING				
		VISUAL EFFECT		
		HIGH	MODERATE	LOW
VISUAL SENSITIVITY	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 Rating Table (Adapted from Urbis, 2009)



# 4.0 Landscape Character

## 4.1 Landscape Character

### 4.1.1 Regional Landscape Character

The Site is located within Sandigo approximately 20 kilometres south of Narrandera and 70 kilometres WNW of Wagga Wagga in South Western NSW. Narrandera and its villages sit at the heart of the agricultural hub known as the Riverina, and at the gateway to the productive Murrumbidgee Irrigation Area. The Riverina is distinguished from other Australian regions by the combination of flat plains, warm to hot climate and an ample supply of water for irrigation. Bordered on the south by the state of Victoria and on the east by the Great Dividing Range, the Riverina covers those areas of New South Wales in the Murray and Murrumbidgee drainage zones to their confluence in the west (Wikipedia).

### 4.1.2 Land Use

A combination of hot climate, high soil fertility and access to water has resulted in a productive and agriculturally diverse area. Land within the Study Area is largely utilised for grazing and cropping purposes. A small number of isolated homesteads are located within the Study Area, associated with agricultural land use, generally surrounded by remnant vegetation and / or screen planting.

### 4.1.3 Topography

The Site and surrounding land is relatively flat, as a result views are expansive in most areas where vegetation is cleared.

### 4.1.4 Vegetation

The Site and its surrounding area has been largely cleared of native vegetation. The dominant tree species of the area are White Cypress and Red Gums. Some remnant vegetation remains along roadsides, water lines and scattered through the cleared paddocks. Wind break and screen plantings are typical within the study area, generally along property boundaries and surrounding homesteads.

### 4.1.5 Water Bodies

The Murrumbidgee River is the main water body located within the region. The river runs in a generally south east direction through Narrandera. Much of the agricultural industry in the area relies on irrigation from the Murrumbidgee and its main tributaries. Sandy Creek is a major tributary of the Murrumbidgee, running in a south direction towards Sandigo.

### 4.1.6 Infrastructure

The Site is located between the Sturt Highway (to the east) and Strontian Road (to the west). The Sturt Highway is a major travel corridor which form apart of a major link between Adelaide and Sydney. Locally, the Highway provides access between Narrandera and Wagga Wagga, running along the western edge of Sandy Creek. Other notable infrastructure includes agricultural equipment and transmission lines. Large 132kV transmission lines transverse the landscape within the study area.

### 4.1.7 Cultural Heritage

The Narrandera Township has a significant Aboriginal population, and the Narrandera and district locality has been home to the Aboriginal people for thousands of years. Wiradjuri people from this area have a deep connection with the Murrumbidgee River and its surrounds. The river, creeks and waterholes sustain every need – food tools, clothing, and shelter as well as nourishing the essential social and spiritual needs of the people. The name Narrandera derives from the local Wiradjuri clan called Narrungdera and according to our local elders, means ‘place of many lizards’.



Cleared flat land typical of the Site



Windbreak planting along boundary / fence line typical of the area.



Transmission Lines and Stanchions



Sturt Highway (Roadside vegetation)



# 5.0 Viewpoint Assessment

## 5.1 Viewpoint Analysis

### 5.1.1 Viewpoint Selection Process

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

Viewpoints are selected to illustrate a combination of the following;

- present landscape character types,
- areas of high landscape or scenic value,
- visual composition (eg. focused or panoramic views, simple or complex landscape pattern),
- range of distances,
- varying aspects and elevations,
- varying extent of solar farm visibility (full and partial visibility), and
- sequential views along specific routes.

A total of 12 viewpoints were taken during the field work process and have been assessed and included in the report. The locations and general viewing direction of each viewpoints have been identified in **Figure 4**. 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 VIA study have been taken predominantly from accessible public land (typically roads) which were identified as having a potentially high visual impact through the desktop review process.

The viewpoint assessment provide a description of the existing visual landscape. Photomontages have been included in the Section 6.0 (from four of the viewpoints) of the report to provide an indication of the proposed view.



Figure 4: Viewpoint Assessment Locations



# 5.0 Viewpoint Assessment



**VIEWPOINT VP01** Corner of Sturt Highway and Sandigo Boree Creek Road



**VIEWPOINT VP01** Zoomed and cropped view from Corner of Sturt Highway and Sandigo Boree Creek Road

VIEWPOINT VP01		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Corner of Sturt Highway and Sandigo Road	This photograph was taken from the corner of Sturt Highway and Sandigo Road looking in a generally west direction toward the Study Site. Land in this area is predominantly cleared and flat with the exception of wind break planting along boundaries. Existing transmission lines are visible in the middle ground.	From this location it is likely the proposed solar farm would be largely screened by existing vegetation. The southern extent of the solar farm may be visible from this location, however due to the distance to the site and speed of travel it is unlikely to be noticed by motorists travelling along the Sturt Highway.
COORDINATES	34°54'53.61"S 146°38'4.37"E		
ELEVATION	152m		
VIEWING DIRECTION	Generally West		
DISTANCE TO SITE	2.17km		
LAND USE	Main Road	The visual sensitivity of this viewpoint has been rated as <b>low</b> due to the land use and distance to the site.	The visual effect has been assessed as <b>low</b> resulting in a <b>low</b> visual impact rating from this viewpoint.
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP02** Muntz Road



**VIEWPOINT VP02** Zoomed and cropped view from Muntz Road

VIEWPOINT VP02		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
<b>SUMMARY OF VIEWPOINT</b>			
<b>LOCATION</b>	Muntz Road	This viewpoint was recorded on Muntz Road near the proposed Site Entrance. Muntz Road is an unsealed minor road which runs in a generally west direction off Sandigo Road and provides access to the derelict homesteads 'Pineview' and 'Smeatonvale'. Land in this area is generally flat with scattered vegetation predominantly located along the roadside.	The photograph has been taken from Muntz Road at the proposed location of the Site Entrance. From this location it is likely the proposal would result in views to a number of solar panels, the proposed battery storage area, transformer and temporary construction compound. Vegetation in the foreground is likely to fragment these views.
<b>COORDINATES</b>	34° 55'25.08"S 146°36'34.37"E		
<b>ELEVATION</b>	154m		
<b>VIEWING DIRECTION</b>	Generally West		
<b>DISTANCE TO SITE</b>	0.01km		
<b>LAND USE</b>	Farm Road	The visual sensitivity of this location has been rated <b>low</b> due to the land use.	The visual effect has been assessed as <b>moderate</b> resulting in a <b>low</b> visual impact rating.
<b>VISUAL EFFECT</b>	Moderate		
<b>VISUAL IMPACT</b>	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP03** Muntz Road



**VIEWPOINT VP03** Zoomed and cropped view from Muntz Road

VIEWPOINT VP03		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Muntz Road	View from Muntz Road 1500m east of Sandigo Road looking in a generally west direction towards the proposal. Land in this area is predominantly open, cleared with the exception of the large, mature Pine trees which line the roadside. Views are expansive, extending to the west to vegetation and power lines located on the Study Site.  The visual sensitivity of this viewpoint is <b>low</b> .	From this location it is likely the proposed Solar Farm and associated infrastructure (including the proposed battery storage area, transformer and temporary construction compound) would be visible to the north west.  The visual impact is likely to be <b>low</b> resulting in a <b>low</b> visual impact rating which would be reduced if mitigation methods outlined in this report were employed.
COORDINATES	34°55'26.93"S 146°36'56.67"E		
ELEVATION	154m		
VIEWING DIRECTION	Generally West		
DISTANCE TO SITE	0.60 km		
LAND USE	Farm Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP04** Corner of Muntz Road and Sandigo Road



**VIEWPOINT VP04** Zoomed and cropped view from Corner of Muntz Road and Sandigo Road

VIEWPOINT VP04		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
<b>SUMMARY OF VIEWPOINT</b>			
<b>LOCATION</b>	Corner of Muntz Road and Sandigo Road	This photograph was taken from the corner of Muntz Road and Sandigo Road looking in a generally west direction towards the Site. Views from this location extend across cleared flat rural land. Vegetation associated with the boundary of the Site is visible in the background. Vegetation associated with Muntz Road partially screens views towards the west.  The visual sensitivity of this viewpoint has been rated <b>low</b> .	It is likely vegetation associated with Muntz Road would screen views towards the southern portion of the Site. Screening vegetation to the north of Muntz Road will fragment views of the solar farm and associated infrastructure. Solar panels associated with the northern section of the Site may be visible through scattered vegetation to the north west. The visual effect has been assessed as <b>low</b> resulting in a visual impact rating of <b>low</b> from this location.  <b>Refer to Photomontage 01.</b>
<b>COORDINATES</b>	34°55'35.08"S 146°37'56.87"E		
<b>ELEVATION</b>	153m		
<b>VIEWING DIRECTION</b>	Generally South South West		
<b>DISTANCE TO SITE</b>	2.10km		
<b>LAND USE</b>	Local Road		
<b>VISUAL EFFECT</b>	Low		
<b>VISUAL IMPACT</b>	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP05** Corner of Birrego Road & Sandigo Road



**VIEWPOINT VP05** Zoomed and cropped view from Birrego Road & Sandigo Road

VIEWPOINT VP05		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
<b>SUMMARY OF VIEWPOINT</b>			
<b>LOCATION</b>	Corner of Birrego Road & Sandigo Road	This photograph was taken from the corner of Birrego Road and Sandigo Road approximately 2.6 kilometres south east of the Site. Property 'Ellerslie' is located to the north west of this viewpoint, accessed off Sandigo Road. The property is surrounded by screening vegetation. Land in this area is generally cleared grazing land. Views from this location are contained by vegetation associated with property 'Ellerslie' and vegetation associated with Birrego Road.  The visual sensitivity rating of this viewpoint is <i>low</i> .	It is likely from this viewpoint, views towards the proposal would be predominantly screened by vegetation associated with the property 'Ellerslie' to the north. Some fragmented views towards a small portion of the proposal may be available through vegetation in the middle ground of the photograph, however it is likely the proposal would not be noticeable from this location.  There is likely to be no noticeable variation to the existing visual landscape from this viewpoint.
<b>COORDINATES</b>	34°56'15.77"S 146°37'49.51"E		
<b>ELEVATION</b>	158m		
<b>VIEWING DIRECTION</b>	Generally North West		
<b>DISTANCE TO SITE</b>	2.60km		
<b>LAND USE</b>	Local Road		
<b>VISUAL EFFECT</b>	Nil		
<b>VISUAL IMPACT</b>	Nil		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP06** Birrego Road



**VIEWPOINT VP06** Zoomed and cropped view from Birrego Road

VIEWPOINT VP06		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Birrego Road	This viewpoint was recorded from a break in roadside vegetation along Birrego Road, near the entry to property 'Hillsbrae', approximately 2.35 kilometres south of the Site. Photograph was taken in a generally north direction overlooking the flat land which has been cleared. Screening vegetation located along lot boundaries is visible in the background.  The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	It is likely the proposal would be visible from this viewpoint in the distance to the north. Existing vegetation is likely to fragment views towards the proposal from this location.  The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.  <b>Refer to Photomontage 02.</b>
COORDINATES	34°56'57.55"S 146°35'49.74"E		
ELEVATION	161m		
VIEWING DIRECTION	Generally North		
DISTANCE TO SITE	2.35km		
LAND USE	Farm Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP07** Strontian Road



**VIEWPOINT VP07** Zoomed and cropped view from Strontian Road

VIEWPOINT VP07		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Strontian Road	This viewpoint was recorded from Strontian Road at the intersection with Gap Road looking in a generally south east direction. Strontian Road is a sealed local road located to the west of the Site. Land in this area is generally cleared with the exception of remnant vegetation scattered in paddocks and along boundaries. Large stanchions are visible in the foreground with transmission lines running in a generally south east direction.  The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	It is likely the proposal would be screened by vegetation in the foreground from this location. There is unlikely to be any noticeable change to the existing visual landscape from this location.
COORDINATES	34°54'52.32"S 146°32'39.81"E		
ELEVATION	145m		
VIEWING DIRECTION	Generally East		
DISTANCE TO SITE	2.75km		
LAND USE	Local Road		
VISUAL EFFECT	Nil		
VISUAL IMPACT	Nil		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP08** Quilters Road



**VIEWPOINT VP08** Zoomed and cropped view from Quilters Road

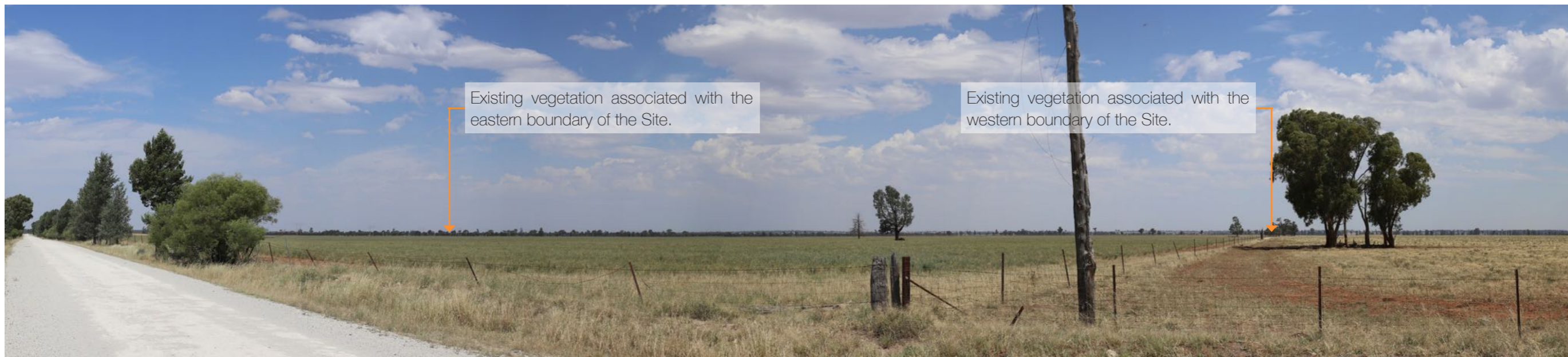
VIEWPOINT VP08		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Quilters Road	This viewpoint was recorded from Quilters Road approximately 700 metres east of the intersection with Strontian Road. Quilters Road is an unsealed farm road which runs through grazing land in a generally east to west direction between the Sturt Highway and Strontian Road. Views extend across cleared flat land to distant vegetation.  The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	It is likely the proposal would be visible from this viewpoint in the distance to the south. Existing vegetation along the western boundary of the Site is likely to slightly fragment views towards the proposal from this location.  The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.  <b>Refer to Photomontage 03.</b>
COORDINATES	34°53'31.87"S 146°34'18.36"E		
ELEVATION	152m		
VIEWING DIRECTION	Generally South		
DISTANCE TO SITE	1.10km		
LAND USE	Minor Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP09** Quilters Road



**VIEWPOINT VP09** Zoomed and cropped view from Quilters Road

VIEWPOINT VP09			
SUMMARY OF VIEWPOINT		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
LOCATION	Quilters Road	This viewpoint was recorded from Quilters Road approximately 1.35km east of Strontian Road. The road is an unsealed farm road which runs through grazing land. Views extend across cleared flat land to distant vegetation. Vegetation is limited to a small number of isolated trees scattered through the cleared land and along the east and western boundary of the Site.	It is likely the proposal would be visible from this viewpoint in the distance to the south. Existing vegetation is likely to fragment views towards the proposal from this location.  The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.
COORDINATES	34°53'30.40"S 146°34'43.91"E		
ELEVATION	153m	The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	
VIEWING DIRECTION	Generally South		
DISTANCE TO SITE	0.98km		
LAND USE	Minor Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP10** Quilters Road



**VIEWPOINT VP10** Zoomed and cropped view from Quilters Road

VIEWPOINT VP10		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Quilters Road	This viewpoint was recorded from Quilters Road approximately 2.2km metres west of Sturt Highway near the entry to 'Belalie'. Views extend across the generally flat, cleared land to distant vegetation in the south west. Views to the south east are screened by vegetation along a lot boundary in the middle ground. Power lines are visible in the distance.  The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	It is likely the northern extent of the Solar Farm proposal would be visible from this viewpoint to the south west.  The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.
COORDINATES	34°53'43.40"S 146°35'53.44"E		
ELEVATION	152m		
VIEWING DIRECTION	Generally South		
DISTANCE TO SITE	0.90km		
LAND USE	Farm Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP11** Quilters Road



**VIEWPOINT VP11** Zoomed and cropped view from Quilters Road

VIEWPOINT VP11			
SUMMARY OF VIEWPOINT		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
LOCATION	Quilters Lane	This viewpoint was recorded at Quilters Road, near the intersection to Sturt Highway. Land is generally cleared with the exception of vegetation in the middle ground. Buildings and infrastructure associated with the historical Avondale property is visible to the south of this viewpoint. Power lines run through the landscape.  The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	It is likely a small section of the proposed solar farm would be visible through the break in vegetation to the south west of this viewpoint.  The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.  <b>Refer to Photomontage 04.</b>
COORDINATES	34°53'47.01"S 146°36'59.96"E		
ELEVATION	152m		
VIEWING DIRECTION	Generally South West		
DISTANCE TO SITE	2.10km		
LAND USE	Minor Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Assessment



**VIEWPOINT VP12** Sturt Highway



**VIEWPOINT VP12** Zoomed and cropped view from Sturt Highway

VIEWPOINT VP12		VIEWPOINT DESCRIPTION	POTENTIAL VISUAL IMPACT
SUMMARY OF VIEWPOINT			
LOCATION	Sturt Highway	This photograph was taken from the Sturt Highway approximately 700 metres north of Sandigo Road. Views across the cleared flat land have been fragmented from this location by roadside vegetation. Power lines and screen planting run through the landscape in the middleground.	It is likely the eastern section of the proposed solar farm would be visible through the break in vegetation to the south of this viewpoint as indicated. Due to the speed of travel along the Sturt Highway, views would be fleeting and hard to discern.
COORDINATES	34°54'39.98"S 146°37'44.07"E		
ELEVATION	153m	The visual sensitivity rating of this viewpoint is <b>low</b> due to distance and land use.	The visual effect has been rated as <b>low</b> resulting in a <b>low</b> visual impact rating for this viewpoint.
VIEWING DIRECTION	Generally South West		
DISTANCE TO SITE	1.70km		
LAND USE	Major Road		
VISUAL EFFECT	Low		
VISUAL IMPACT	Low		



# 5.0 Viewpoint Analysis

## 5.2 Overview of Viewpoint Analysis

As was discussed in the rationale for the viewpoint selection process, the recorded viewpoints are generally representative of the worst case scenario. For each viewpoint, the potential visual impact was analysed through the use of a combination of the 3D terrain modelling, 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 methodology in Section 3.0). A summary of the results for each viewpoint has been included in Table 3.

The proposal is likely to be visible from all of the viewpoints assessed as part of this VIA. The visual sensitivity was rated as low for all of the recorded viewpoints, due to a combination of the viewing distance and land use.

The visual impact was rated as low for the majority of viewpoint locations. This was mainly due to the distance to the proposal and screening vegetation. The proposal would be screened by vegetation from viewpoints VP05 and VP07 and therefore there would be no variation to the existing landscape character. A moderate visual effect was recorded for VP02, mainly due to the close proximity to the proposal, however due to the low visual sensitivity of this viewpoint the visual impact would be low.

VIEWPOINT	PHOTO-MONTAGE	LOCATION	VISUAL SENSITIVITY RATING	VISUAL EFFECT RATING	VISUAL IMPACT RATING
VP01		Corner of Sturt Highway and Sandigo Road	LOW	LOW	LOW
VP02		Muntz Road	LOW	MODERATE	LOW
VP03		Muntz Road	LOW	LOW	LOW
VP04	PM01	Corner of Muntz Road and Sandigo Road	LOW	LOW	LOW
VP05		Corner of Birrego Road and Sandigo Road	LOW	NIL	NIL
VP06	PM02	Birrego Road	LOW	LOW	LOW
VP07		Strontian Road	LOW	NIL	NIL
VP08	PM03	Quilters Road	LOW	LOW	LOW
VP09		Quilters Road	LOW	LOW	LOW
VP10		Quilters Road	LOW	LOW	LOW
VP11	PM04	Quilters Road	LOW	LOW	LOW
VP12		Sturt Highway	LOW	LOW	LOW

Table 3: Summary of Viewpoint Assessment



# 6.0 Photomontages

## 6.1 Photomontage Development

### 6.1.1 Photomontage Selection Process

Photomontages of the project shown within the existing context were prepared to assist in the impact assessment of the proposed Solar Farm. A variety of indicative viewpoints have been selected for the preparation of photomontages to. A total of four viewpoints were selected for the production of photomontages which are generally those viewpoints determined to have the greatest potential for visual impact and best represent a range of distances as well as locations with differing views. Locations of the photomontages are shown on **Figure 5**. The photomontages are based on a worst case scenario of the project without the inclusion of the proposed mitigation methods. Zoomed and cropped photomontages have been included in the report to provide clarity.

### 6.1.2 Photomontage Development Process

Photomontages are representations of the solar farm that are superimposed onto a photograph of the Site. The process for generating these images involves computer generation of a wire frame perspective view of the solar panel array and the topography from each viewpoint. The photo simulations based on photography from typical sensitive viewpoints are included within the following analysis section. An indicative layout of the approved solar farm has been illustrated in the photomontages.

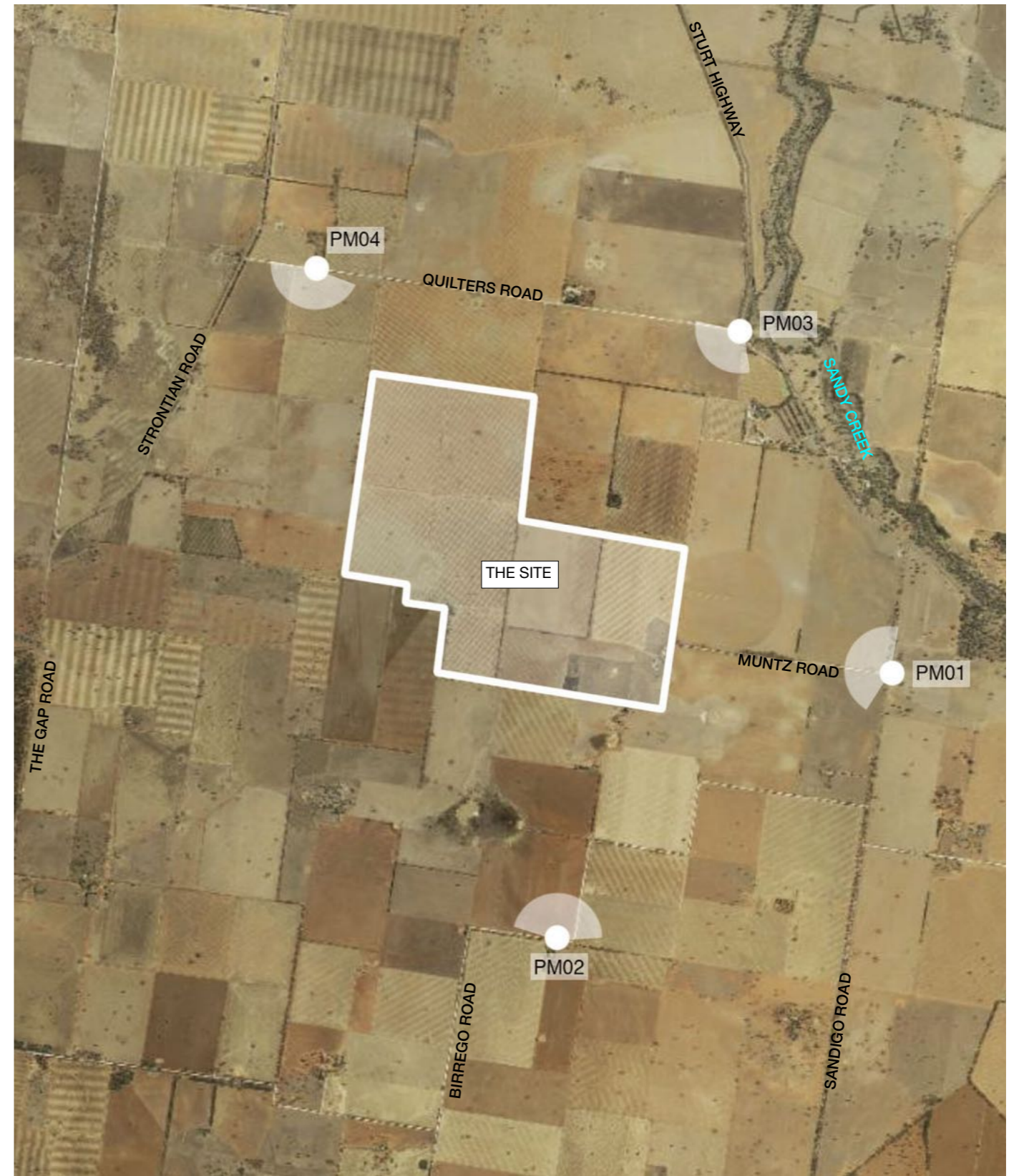


Figure 5: Photomontage Locations





PHOTOMONTAGE 01A: Existing view from Muntz Road & Sandigo Road (Viewpoint 04)



PHOTOMONTAGE 01B: Indicative extent of Solar Farm



PHOTOMONTAGE 01C: Zoomed and cropped from PM01B





PHOTOMONTAGE 02A: Existing view from Birrego Road (Viewpoint 06)



PHOTOMONTAGE 02B: Indicative extent of Solar Farm



PHOTOMONTAGE 02C: Zoomed and cropped from PM02B





PHOTOMONTAGE 03A: Existing view from Quilters Road (Viewpoint 08)



PHOTOMONTAGE 03B: Indicative extent of proposed Solar Farm



PHOTOMONTAGE 03C: Zoomed and cropped from PM03B

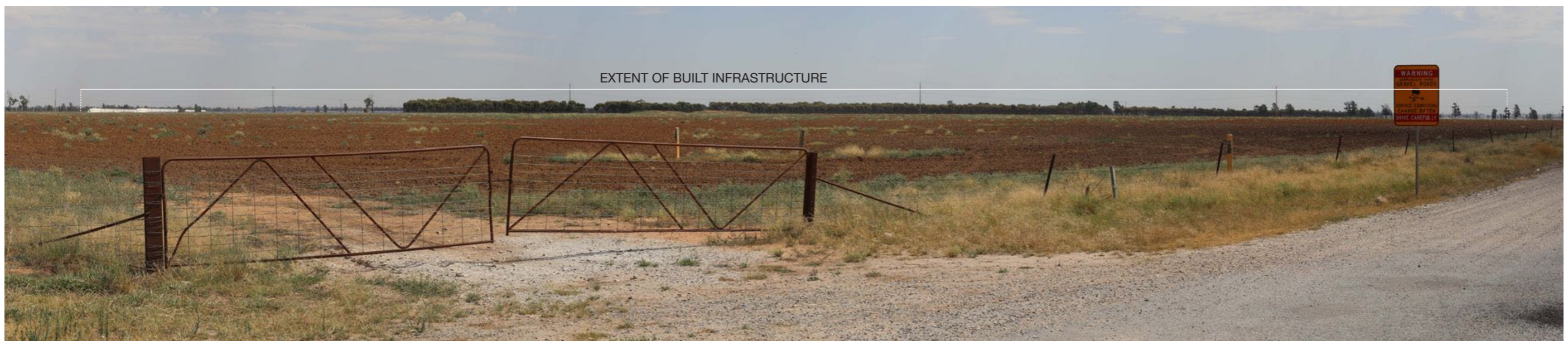




PHOTOMONTAGE 04A: Existing view from Quilters Road (Viewpoint 11)



PHOTOMONTAGE 04B: Indicative extent of proposed Solar Farm



PHOTOMONTAGE 04C: Zoomed and cropped from PM04B



# 7.0 Overview of Visual Impacts

## 7.1 Overview of the Visual Impact

The following provides an overview of the assessment of the potential visual impacts on the existing landscape character of the study area (see Figure 6).

Opportunities to view the proposed solar farm and its associated infrastructure are limited due to a combination of the following factors:

- Distance to the site from publicly accessible viewing locations.
- Existing boundary planting surrounding the site.
- Roadside vegetation.
- Vegetation surrounding homesteads.

Views to the proposal from the Sturt Highway (to the east of the proposal) and Strontian Road (to the west) are likely to be hard to discern due to a combination of the speed and direction of travel. Any views of the proposal from these roads would be fleeting and fragmented by existing roadside vegetation.

Views of the proposal would be available from Quilters Lane (refer viewpoints 08, 09, 10 & 11), however due to the distance to the Site and low number of viewers travelling along the road, the potential impact is minor. Quilters Road is an unsealed farm road which runs in an east west direction between Strontian Road and Sturt Highway approximately 900 metres north of the northern boundary of the Site. Existing boundary planting is likely to screen views to the majority of the proposal from the north east.

Muntz Road is a minor farm road which provides access to two homesteads. The road runs from Sandigo Road in a generally west direction towards the southern end of the Site. The proposal site entry is located off Muntz Road, however views of the proposal are fragmented by roadside vegetation and boundary planting.

A small number of homesteads are located within the study area. There is potential that some distant views may be available from these properties, however, aerial imagery indicates screening vegetation surrounding the majority of the homesteads.

Views towards the proposal are distant and due to the relatively small vertical scale of the proposal, it is likely the proposal would appear as a grey element in the landscape. There is no opportunity to view the proposal in its entirety from any location. Mitigation methods outlined in the following section of the report have the potential to further integrate the proposal into the existing visual landscape.



Figure 6: Visual Impact Overview - LCU01 - North Permanent Park Preserve



# 7.0 Visual Impact Assessment

## 7.2 Mitigation Methods

This section of the report provides recommendations which seek to achieve a better visual integration of the proposal and the existing visual character. The mitigation measures attempt to lessen the visual impact of the proposed solar farm whilst enhancing the visual character of the surrounding environment.

It is important to note that the mitigation methods proposed in this report are made notwithstanding issues raised by other consultants (eg. engineering, ecology, geology etc.). During the planning and design phase of a solar farm, mitigation strategies have been considered to lessen the visual impact of the proposal. The following recommendations are by no means an exhaustive list, however the adoption of the methods outlined will assist considerably in ensuring the proposal contributes positively to the visual quality and character of the area.

### 7.2.1 Solar Farm and Associated Infrastructure

The general principles employed through the project design phase can significantly reduce the visual impact. These include siting, access, layout and other principles which directly impact the appearance of the proposed development. General guidelines for the design development of the proposed solar farm and associated infrastructure have been outlined in the following section.

- Avoidance of unnecessary lighting, signage, logos etc.
- Consideration should be given to controlling the type and colour of building materials used especially with the use of light, highly reflective cladding and brick and tile materials which contrast dramatically with the landscape character.
- Retain and protect the existing boundary landscaping to assist in screening the proposal.
- Any proposed buildings to be sympathetic to existing architectural elements in the landscape.
- Minimise cut and fill and loss of existing vegetation throughout the construction process.
- Limit above ground infrastructure where possible.



Existing Roadside Planting - Sandigo Road



Existing boundary planting

## 7.3 Summary of Visual Impacts

With all visual impact assessments the objective is not to determine whether the proposal is visible or not visible, it is to determine how the proposal will impact on existing visual amenity, landscape character and scenic quality. If there is a potential for a negative impact on these factors it must then be investigated if and how this impact can be mitigated to the extent that the impact is reduced to an acceptable level.

The existing landscape character is predominantly agricultural and some existing infrastructure including power lines, and infrastructure associated with agricultural land use (ie. fencing, irrigation infrastructure, farm buildings) has altered the visual character.

Although the planned area of proposed development is large, locations from which the proposal would be visible are minimal. Views from surrounding residences are likely to be limited due to screen planting which is typical of the character of homesteads in the area. Due to the viewing distance from publicly accessible roads, the solar farm is likely to appear as a small grey visual element in the overall landscape.

There will be no excessive removal of vegetation and existing vegetation along boundary fences will be retained and incorporated into the design, reducing the potential visual impacts.

When implemented with appropriate environmental management and employment of the recommended mitigation measures, the proposed development could be undertaken whilst maintaining the core landscape character of the area and having a very low visual impact on the surrounding visual landscape.



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