WEE WAA SOLAR FARM

Visual Analysis

Prepared for:

Providence Asset Group

704/99 Bathurst Street, SYDNEY NSW 2000

SLR Ref: 620.30235 Version No: -v2.0 FEBRUARY 2021

PROJECT NAME

Location	Lot 191, DP 757125 3843 Yarrie Road, Wee Waa, NSW 2388
Project Number	620.30235.00000
Client	Providence Asset Group

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BASIS OF REPORT

DOCUMENT CONTROL

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620.30235.00000-v0.1	February 2021	Dallas Ellis	Dean Butcher	Dean Butcher
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1. INTRODUCTION

1.1 Background

This Visual Analysis has been prepared for the proposed Solar Farm near Wee Waa, NSW.

This visual analysis assessment has been prepared to provide an effective and objective assessment of the anticipated high level impacts of the project on the surrounding visual environment.

SLR has worked closely with other members of the project team in determining and rating visual impacts of the proposed solar farm project works on its immediate surrounds as well as suggesting mitigation measures to further reduce any impacts that may occur.

1.2 Site Location

The land on which the Solar Farm is located (the subject site) for the proposed Solar Farm (the project) is situated approximately 2.9 km south east of the Wee Waa Township.

The site is located along an unnamed, private access track which connects to Yarrie Lake Road.

The proposed development will consist of solar panels mounted on single-axis trackers connected to a power conversion station with an access and hardstand area from the existing unamed access road.

The development will be confined to Lot 191, DP757125 (**Figure 1**).

Figure 1. Locality Plan

2. BASELINE VISUAL ENVIRONMENT

2.1 Subject Site and Surrounding Context

The subject site is located on the southern and northern sides of Yarrie Lake Road, Wee Waa and is a typically open cropped and grassed rural site, similar to those rural properties surrounding it. The site is approximately 2.9km south east of Wee Waa township. The site, like its surrounding context is typically flat with no major land form features visible from the site.

2.1.2 Roads and Access

Yarrie Lake Road is a local road north of the subject site, which joins Culgoora Road further north. There are a number of local unsealed roads around the site such as Sandy Hook Lane, but the majority of vehicular access in the area are private tracks between rural areas for rural-based activities.

2.1.3 Vegetation

The subject site has been cleared of vegetation except for a few scattered specimens remaining which are located on the northern edge of the proposed Solar Farm.

The local area in general is very sparsely vegetated, with some established vegetation along the Yarrie Lake Road, other local roads and property boundaries. Vegetation along the sites northern and eastern boundaries terminate views outside of the site whilst also limiting views into the site external to it.

2.1.4 Structures

There are no structures on the subject site. There are a number of rural residential dwellings in the surrounding area to the north and east of the site and higher density detached residential dwellings in the township of Wee Waa to the north.

2.1.5 Infrastructure

The subject site has power poles and lines running past it on the southern and northern sides and a private air strip adjacent to the site on the northern side.

3. LANDSCAPE CHARACTER ANALYSIS

3.1 Regional Context

The landscape character of the region surrounding the site is flat, open rural lands used with a mix of pastoral and agricultural uses. Whilst the vegetation is sparse on the agricultural lands, it is typically concentrated around the local waterways. This however is generally not within the local visual context of the site.

3.2 Baseline Visual Character of Subject Site and Surrounds

The subject site is typical of the rural landscape character of the region in that it is open and typically devoid of tree and vegetation cover except for along boundaries and roads.

As the size of the site is small in the context of its surrounds, it utilises the ‘borrowed landscape’ of the adjoining rolling hills to define its visual context and define local views.

4. PROPOSAL

4.1 Project Description

A full description of the proposal is provided within the main Statement of Environmental Effects and site plans, but a brief description is as follows. Section 4.1.1 identifies key elements of the proposal that are of particular relevance to an assessment of impacts on the visual analysis.

4.1.1 Indicative project Layout

The solar electricity generating facility will consist of the following elements:

- Solar array area of approximately 9.9 hectares within a total fenced area of approximately 13.6 hectares
- Solar array mounted on trackers (154 sets)
  - Rectangular photovoltaic module
  - Trackers area horizontal single-axis type
  - Solar array up to 2.6m high with +/-60° rotation angle
  - Trackers orientated north - south
- Associated infrastructure
  - Power Conversion Station (PCS)
  - Entry to the site via improved access from the unnamed, private access track which connects to Yarrie Lake Road
  - Security fencing
  - Car park area
  - Offload and hardstand area

During construction, temporary facilities located within the site may include:

- Construction office

4.1.2 Solar panel dimensions and arrangement

The proposed solar array module dimensions are approximately 1.1 m wide x 2.3m high. They are mounted on a tracking system that will maximise the electricity production. The tracking system rotates about a north-south axis to follow the sun with the aim of orienting each panel to be as close to perpendicular as possible to the incoming sun.

The tracking systems will be arranged in rows running in a north-south direction as indicated in **Figure 2.** The enclosure for the solar panel arrays and associated equipment will cover approximately 13.6Ha.

The diagram in **Figure 2.1** illustrates the dimensions and rotation of the panels. The panels only rotate from east to west and are not tilted toward the north.

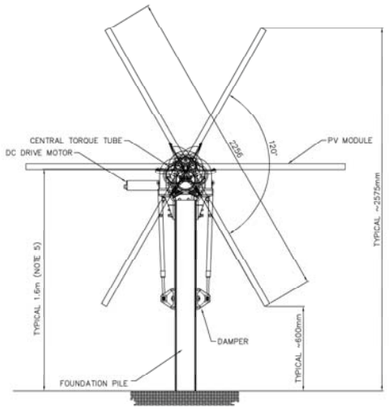

Figure 2.1 Solar panel / tracking system

Figure 2. Concept layout of the project

5. VISUAL IMPACT ASSESSMENT

5.1 Process

The Visual Impact Analysis generally applies the assessment techniques set out in the 'Guidelines for Landscape and Visual Impact Assessment, Third Edition' (2013) prepared by The Landscape Institute and the Institute for Environmental Management and Assessment (UK).

The analysis includes the following:

- Review of the proposal (scale, bulk, height, technical specifications and landscape);
- Analysis of the subject site (visual exposure, visual qualities and landscape values);
- Identification of potential impacts on key receptors including the rating of magnitude for each receptor group;
- Rating of impact significance for each receptor group;
- The significance is evaluated as a product of the sensitivity or value of the receptor, and the magnitude of impacts on the receptor;
- Potential mitigation measures to meet the necessary planning requirements and any community expectations; and
- The report included a desktop analysis and a visual site investigation in November 2020. The desktop review included the review of aerial photography, site topography and vegetation cover.

Photomontages were also prepared to inform the analysis.

5.2 Assessment of Visual Impacts for Key Receptors

Photographic imagery was taken of the site to assist in the assessment of visual impacts. Photos were taken with a Canon EOS 6D Mark II digital single-lens reflex (DLSR) camera with a 50 mm lens.

Three photomontage images were prepared to assist in the Visual Analysis process; all from public receptor points.

The five receptors used in the photomontage were selected to investigate a range of visual solutions and illustrating views from areas of perceived sensitivity. During the site investigation, local areas around the site were observed to determine the potential visibility of the proposed Solar Farm.

For the purposes of this Visual Analysis a Photomontage image was produced from each of the three viewpoints chosen. The approximate extent of the proposed Solar Farm has been identified to give a general impression of the location on site and the approximate height.

The Photo montage Images are represented in Section 5.6 and show the following overlays of information.

- Existing visual baseline (existing landform); and
- Overlay of the final solar farm proposed development.

5.3 Receptor Sensitivity

The receptor sensitivity is derived from a combination of factors including:

- Receptors interest in the visual environment (high, medium or low interest in their everyday visual environment and the duration of the effect);
- Receptors viewing opportunity (prolonged, regular viewing opportunities); and
- Number of viewers and their distance/ angle of view from the source of the effect, extent of screening/ filtering of view.

Whilst the assessment of visual values and effects is largely measured on a qualitative basis, assessment against scale enables a more objective evaluation and comparison of sensitivity of receptors and magnitude of effects. The Receptor Sensitivity Rating is described as being High, Medium, Low or Negligible as described in **Table 1.**

5.4 Magnitude of Landscape Change

The Magnitude of Change to the landscape character depends on the nature, scale, intensity, extent and duration of the impacts/ change due to proposal. The magnitude of change also depends on the loss, change or addition of any feature to the existing landscape and is based on the character type that is most likely to be impacted by the project prior to the addition of any mitigation measures.

The Magnitude of Change is described as being High, Medium, Low or Negligible as described in **Table 2**.

Descriptions of Magnitude and Sensitivity are illustrative only and there is no defined boundary between levels of impacts.

Table 1. Receptor Sensitivity Rating

Receptor Sensitivity	Description
High	• Visitors to heritage sites, regionally important locations, scenic routes, lookouts within 2.5km with quality views, important views of the site and surrounding areas where landscape is the specific focus. • High numbers of visitors • Views to landscape that are rare and or unique and are possibly vulnerable to change • Views from residences within 1km of the site or are representative of high quality views
Medium	• Travellers/visitors along roads or rail routes that are not scenic routes but offer quality views within 2.5km of the site • Medium numbers of visitors/ residents (rural communities or townships) • Views that are representative of local character or sense of place but are not rare or unique • Views from residences beyond immediate vicinity (1km-5km) of the site or are representative of moderate quality views • Recreational users/ viewers beyond 2.5km from the site with moderate interest in their surrounds
Low	• Travellers/visitors along roads or rail routes that are not scenic routes but offer reasonable views within 4km of the site • People at place of work where setting or views not important to quality of working environment • Recreational users not dependent on views or scenic quality of landscape • View experience takes in broad context with which site is visible but not an important element. • Small numbers of visitors with passing interest in their surroundings (those travelling along mid-level roads) • Viewers whose interest is not specifically focused on landscape or scenic qualities (commuters, workers)
Negligible	• Very occasional or low level of users with passing interest in their surrounds (those travelling along minor roads or views from the air) • Travellers/visitors along unsealed roads offering views greater than 4km of the site

5.5 Impact of Significance on Landscape Character

The Impact Significance is evaluated according to 2 key criteria as noted above and is reflected in **Table 3.**

The rating is a means of comparing impacts on different receptors. Professional judgement and experience have been applied in order to identify the level of significance for each character type which has been assessed on its own merits.

- The sensitivity of the receptor or existing landscape; and
- The magnitude of the change or impact that is likely to occur.

The process of assessment and the use of the ratings tables reflect typical outcomes for visual impacts.

- Impacts on receptors that are particularly sensitive to change in views and visual amenity are more likely to be significant.
- Impacts that constitute a substantial change to the visual environment are likely to be more significant than the impacts that do not cause substantial change.

5.6 Summary of Potential Landscape Character Impacts

The following sheets summarise the assessment of impacts on each of the identified visual receptor groups.

Three representative viewpoints were identified where the site could be seen preferably from public locations. Due to the distances from the site, presence of topographic and vegetated features, surrounding structures and the limited views from publicly accessible areas, the choice of viable views was limited. The following sheets describe and rate the sensitivity of each viewpoint, the nature and magnitude of impacts likely to occur and the resultant significance of impacts for each receptor.

Typically views to the site from local roads and other public locations in the area were very limited. Photos from each receptor are provided and photomontages prepared to show how the proposed Solar Farm will be perceived from that particular viewpoint. Mitigation measures have been included where appropriate.

Table 2. Magnitude of Change

Magnitude of Change	Description
High	Dominant Change • Major change in view at close distances, affecting substantial part of the view continuously visible for a long duration or obstructing a substantial part or important elements of the view • Overwhelming loss or additional features in the view such as the nature of view or character of landscape fundamentally changed • Views to key landscape features affected • Visual amenity of local residents or road users substantially diminished • Substantial change to the landscape due to loss of and or change to elements, features or characteristics of the landscape creating an overall worsening of landscape quality
Medium	Considerable Change • Clearly perceptible changes in views at intermediate distances resulting in either distinct new element in a significant part of the view or a more widely ranging, less concentrated change across a wider area • Significant loss or addition of features in the view, such that nature of view or character of landscape is altered • Noticeable contrast of any new features in the view such that the nature of the view or landscape character is changed • Noticeable contrast of any new features or changes compared to existing landscape • Views to key landscapes partially obstructed but views remain intact
Low	Noticeable Change • Minor memorable change to the landscape or views • Temporary or reversible impact • Landscape dominant element and built form/ development well integrated within it • Little permanent change or no fundamental change to local landscape character
Negligible	Barely Perceptible Change • No memorable or rarely perceptible change to landscape character or key views

Table 3. Effect Significance Rating

Receptor Sensitivity	Magnitude of Change in Landscape				
	High (Dominant Change)	Medium (Considerable Change)	Low (Noticeable Change)	Negligible (Barely Perceptible Change)
High	High	Moderate-High	Moderate	Minor-Moderate
Medium	Moderate-High	High	Minor-Moderate	Minor
Low	Moderate	Minor-Moderate	Minor	Minor-Negligible
Negligible	Minor-Moderate	Minor	Minor-Negligible	Negligible

5.6.1 Selected Viewports

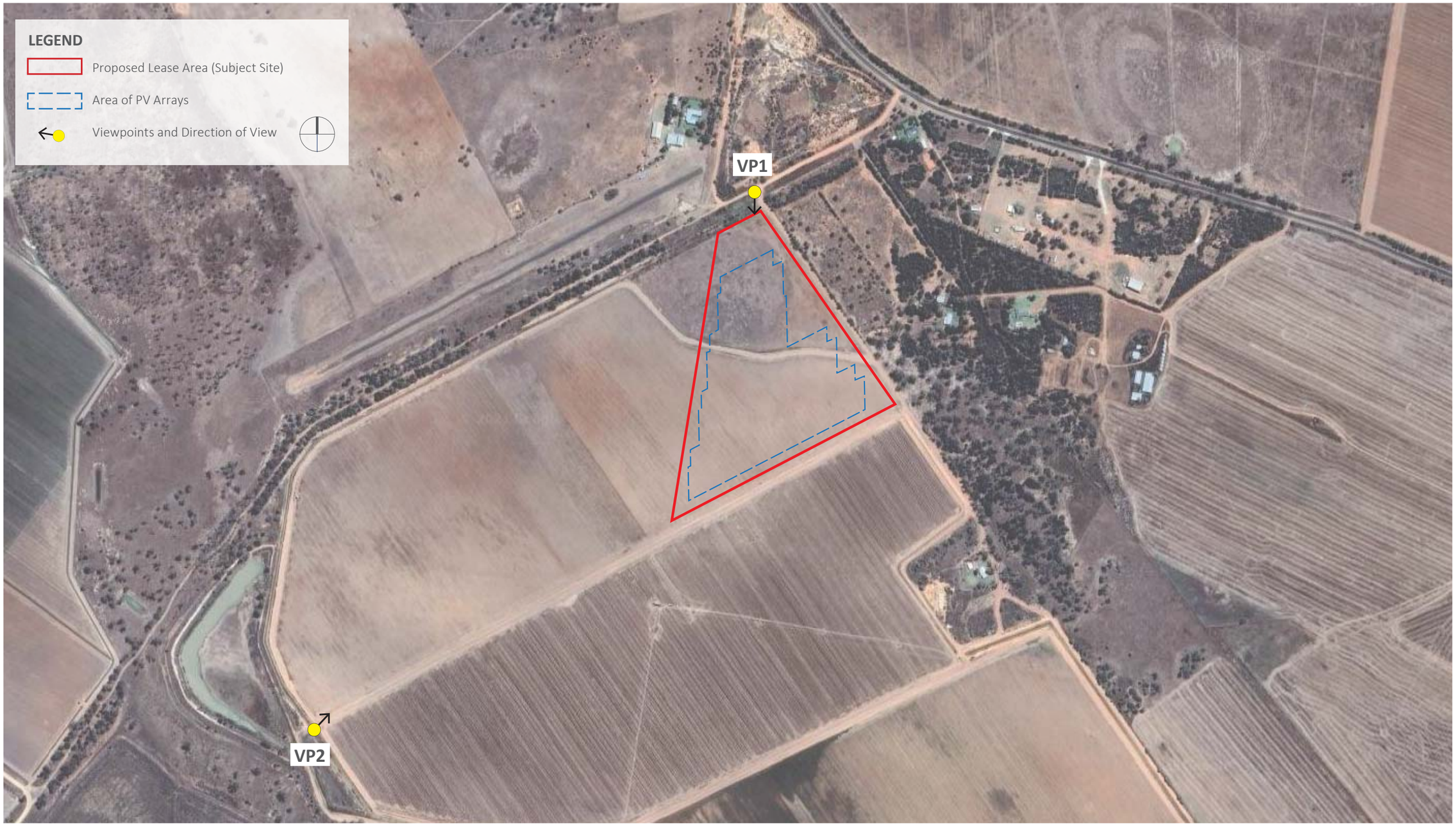

Figure 3. Selected Visual Receptors and Direction of View

5.6.2 Viewpoint 1 - Existing

Receptor - VP1	Private access track which connects to Yarrie Lake Road, Wee Waa
Coordinate Location	30°15’2.112” S 149°27’23.082” E
View Description	View from the private access track, looking south east toward the proposed solar farm site.
Distance from Site	Approximate 30m
Comments • Open rural (agricultural) landscape, with minimal canopy vegetation in the background except along the boundary lines to the south and west. Established vegetation visible in the foreground of the view within the verge areas. • Generally flat landscape with no prominent topographical landform visible from this viewpoint	

5.6.3 Viewpoint 1 - Proposed

Receptor - VP1 Summary of Impact Assessment	
Receptor Sensitivity	Negligible
View Magnitude of Landscape Change	Medium
Impact Significance	Minor
Mitigation Measures	• No mitigation necessary

5.6.4 Viewpoint 2 - Existing

Receptor - VP2	Private access track which connects to Yarrie Lake Road, Wee Waa
Coordinate Location	30°15’36.45” S 149°26’49.716” E
View Description	View from the private access track, looking north east
Distance from Site	Approximate 835m
Comments • Open rural (agricultural) landscape, with minimal canopy vegetation in the background except along the boundary lines to the north east. Established vegetation visible in the foreground of the view. • Generally flat landscape with no prominent topographical landform visible from this viewpoint	

5.6.5 Viewpoint 2 - Proposed

Receptor - VP2 Summary of Impact Assessment	
Receptor Sensitivity	Negligible
View Magnitude of Landscape Change	Low
Impact Significance	Minor - Negligible
Mitigation Measures	• No mitigation measures recommended

6. SUMMARY OF ASSESSMENT

6.1 Summary of Assessment

The visual environment for the subject site and surrounding area is characterised by open, flat rural land.

Whilst the subject has been cleared of vegetation, the local rural character of the area is evident and reinforced by the surrounding land uses and vegetation.

Although the site location is relatively close to the Yarrie Lake Road, views of the site are unavailable due to the presence of vegetation and minor topographic landform changes.

Visibility from the Culgoora Road into the site is very limited due to the obstruction of views by the elevated railway lines as well as existing established vegetation along boundary lines and on adjoining properties.

Most of these views however will be limited due to the distances from the site and existing elements that will obscure views. As the surrounding topography is very flat, this will exacerbate the limited visibility of the solar farm elements especially given the level of prominence in the landscape will be very low. This will result typically in the solar farm having limited visual impacts on the surrounding visual environment.

6.2 Mitigation Measures

As described in the summary for each of the 2 viewpoints, the height and nature of the solar farm along with the distances from the site will mean that it will have limited visibility within the landscape and from public vantage points. Given the minor visual change to the rural landscape especially from public viewpoints, no mitigation measures are considered necessary.

The existing vegetation along the site boundaries particularly to the north and east, currently screen the site from almost all views from surrounding roads and public locations.

It would be reasonably expected that given the limited number of users and infrequent number of access areas would suggest that the solar farm would not require any mitigation measures to lessen these already minimal impacts.

The Solar Farm is considered to have an overall Effect Significance of **Minor.**

Table 4. Summary of Visual Impact Ratings for each Receptor

Receptor	Receptor Sensitivity	Magnitude of Change	Effect Significance
VP1	Negligible	Medium	Minor
VP2	Negligible	Low	Minor - Negligible

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