

PINE RIDGE SOLAR FARM

Visual Analysis

Prepared for: **Providence Asset Group** 704/99 Bathurst Street, SYDNEY NSW 2000





PROJECT NAME

Location	Lot: 209, 219 and 270 DP750615 Cartwrights Lane, Wyalong NSW 2671	
Project Number	630.30642.00000	
Client	Providence Asset Group	

PREPARED BY

SLR Consulting (Pty Ltd)

ABN 29 001 584 612

Level 16, 175 Eagle Street, Brisbane, QLD 4000

PO Box 26, Spring Hill QLD 4004 Australia

Phone +61 7 3858 4815

www.slrconsulting.com

BASIS OF REPORT

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1. INTRODUCTION

1.1 Background

This Visual Analysis has been prepared for the proposed modification application to the approved solar farm (DA2022/0004) near Wyalong, NSW to include an 11MWH Battery Energy Storage System Unit.

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 modification to the 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 approved Solar Farm is located (the subject site) is situated approximately 4km south east of West Wyalong town centre on the outskirts of the town.

The site is located to the west of Goldfields Way (B85) and south of the Newell Highway. 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 track adjacent to the railway line. The development will be confined to Lot 209, Lot 219 and Lot 270, DP750615 (Figure 1).

LEGEND

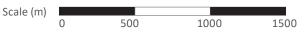


Proposed Lease Area (Subject Site)

Railway (Cootamundra Lake Cargello Railway Tracks)



Figure 1. Locality Plan





2. BASELINE VISUAL ENVIRONMENT

2.1 Subject Site and Surrounding Context

The subject site is located to the east of the Wargin Road and is an open agricultural field, similar to those properties surrounding it. The site, like its surrounding context to the north west and south, is gently undulating. The subject site is bordered to the north by a vegetated buffer of existing trees adjacent to the railway line, rural residential housing and agricultural land to the west and south. There is an existing quarry approximately 1.8km south of the subject site.

2.1.2 Roads and Access

The subject site does not directly front any local or state roads. Wargin Road is approximately 700 meters to the west of the subject site as is Cartwrights Lane which is an unsealed road to the southeast. Goldfields Way (B85) and the Newell Highway are both State Roads and are located east and north of the subject site respectively. Neither of them have access to the subject site nor have any views to it.

2.1.3 Vegetation

The subject site has been cleared of vegetation for agricultural purpose except for a small stand of existing trees on the northern side of the site which has been retained and excluded from the Solar Farm. The most dominant vegetation within the context of the subject site is a 100 meter wide vegetated buffer that is adjacent to the rail line north of the site. The buffer is well established with a mix of native trees and shrubs and an approximate height in the range of 10 to 15 meters height. It is moderately dense and provides a strong visual edge to the site. Views through the buffer are uncommon.

Other stands of established vegetation are present to the south and east of the site.

Existing mature vegetation along property boundaries and fence lines also exist in the area, with the closest being along the western fence line/ boundary approximately 50 meters from the subject site. Whilst the density of vegetation is low, the mature trees are well established and provide a moderately visual element within the surrounding flat agricultural context.

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 south and west of the site which can be described as low density detached residential dwellings and minor rural structures. To the north and west of the subject site the density and form of built structures becomes more urban, but these cannot be seen from the subject site.

2.1.5 Infrastructure

The subject site has power poles and lines running past it on the northern side as well as the rail line to the north.

2.1.6 Water Bodies

There are a number of agricultural dams in the near vicinity of the site. Two small, local dams are located west of the site with others located a short distance to the south. These are not highly visible or prominent within the landscape but some have existing vegetation surrounding them which highlights their location.

3. LANDSCAPE CHARACTER ANALYSIS

3.1 Regional Context

The landscape character of the region surrounding the site is gently undulating, open rural lands used mainly for agricultural purposes. Whilst the vegetation is sparse on the agricultural lands, it is typically concentrated in specific areas such as around the existing vegetated buffer to the north 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. As the size of the site is small in the context of its surrounds, it utilises the 'borrowed landscape' of the adjoining vegetation stands to define its visual context and local views.

Although not yet constructed, the 5MW solar farm at the site was approved in 2022 and this application seeks to include BESS development within the approved solar farm footprint.





PROPOSAL

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

- Solar array area of approximately 10.3 hectares within a total fenced area of approximately 13.7 hectares
- Solar array mounted on trackers (465 sets)
- Rectangular photovoltaic module
- Trackers area horizontal single-axis type
- Solar array up to 2.575m high with +/-60° rotation angle (**Figure 2.2** illustrates the dimensions)
- Trackers orientated north south
- Associated infrastructure
- Power Conversion Station (PCS)
- Entry to the site via improved access from Wargin Road
- Security fencing
- Car park area
- Offload and hardstand area
- On site stormwater detention

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

Construction office

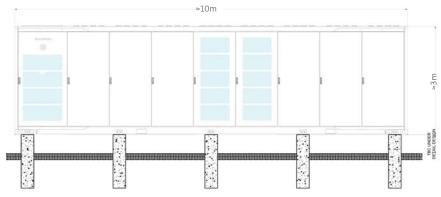
The proposed modification to the approved solar farm will include the following elements:

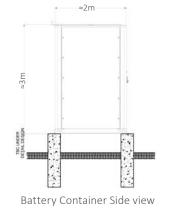
Battery Storage Units (Figure 2.2 illustrates the dimensions)

4.1.2 Solar panel dimensions and arrangement

The solar array module dimensions are approximately 1.1 m wide x 2.6m high. They are mounted on a tracking system that will maximise the electricity production. The tracking system will be arranged in rows running in a north-south direction, as shown in **Figure 2**. The solar panels rotate from east to west throughout the day, to ensure they remain as close to perpendicular to the sun as possible.

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.





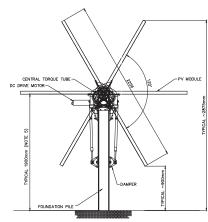


Figure 2.2 Battery Storage Units





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;
- The report included a desktop analysis and a visual site investigation in March 2021. The desktop review included the review of aerial photography, site topography and vegetation cover.

Photo-montages 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 (DSLR) camera with a 50 mm lens.

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

The six 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.

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 5.8 and show the following overlays of information.

- Existing visual baseline (existing landform);
- 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);
- 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 attributable to the 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.

Six 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	 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	 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

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



5.6.1 Selected Viewpoints



Figure 3. Selected Visual Receptors and Direction of View

During the site inspection of the site and local area, detailed photographic documentation was made of the landscape character and conditions in order to inform this report. There were a number of locations other than the listed viewpoints where photographs were taken to determine the degree of visibility of the site within the local area. These viewpoints although useful in determining the contextual character of the area did not provide clear and unencumbered views of the site and therefore were not used in the determination of potential visual impacts of the Solar Farm on the surrounding environment.



5.6.2 Viewpoint 1 - Existing



Receptor - VP1	Location	
Coordinate Location	33°56′27.018″ S 147°14′15.174″ E	
View Description	View looking north east towards the Solar Farm from Wargin Road	
Distance from Site Approx. 830m		

- Rural landscape dominated by Wargin Road in the foreground.
- Vegetation along the road and northern edge of site terminates views from this viewpoint.



5.6.3 Viewpoint 1 - Proposed



Receptor - VP1 Summary of Impact Assessment		
Receptor Sensitivity	Negligible	
Magnitude of Landscape Change	Low	
Impact Significance	Minor - Negligible	
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.	



5.6.4 Viewpoint 2 - Existing

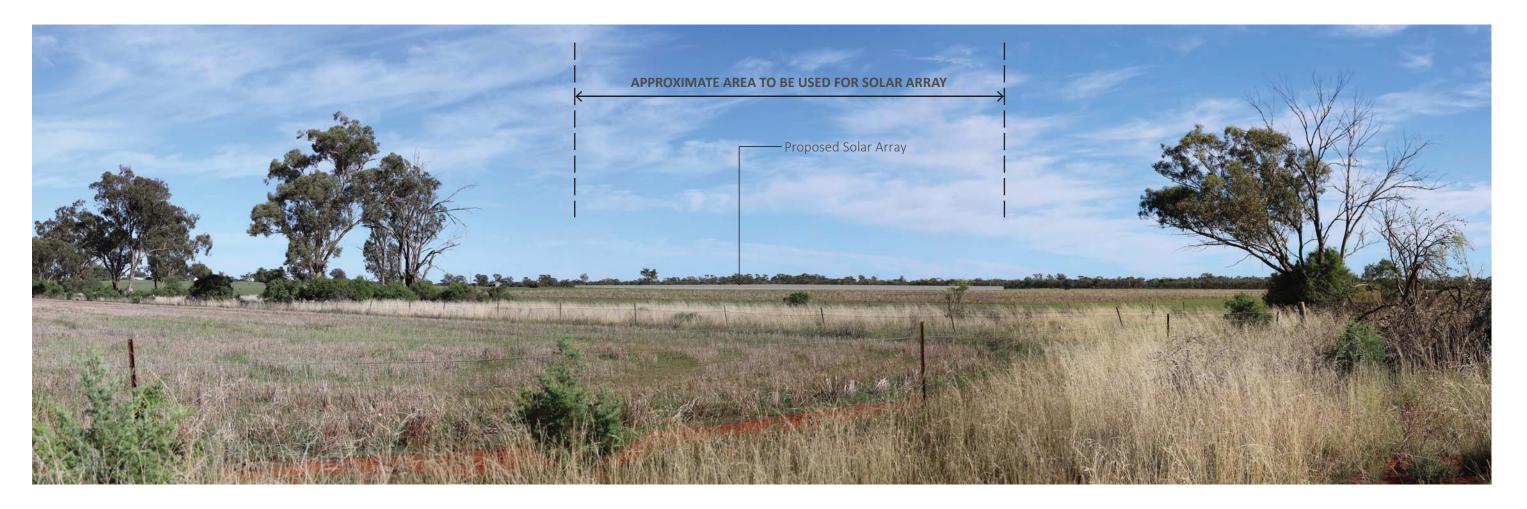


Receptor - VP2	Location
Coordinate Location	33°56′42.93″ S 147°15′19.2″ E
View Description	View looking north west towards the Solar Farm from Cartwrights Lane
Distance from Site	Approx. 750m

- Rural landscape dominated by open fields in the foreground.
- Vegetation along the northern edge of site terminates views from this viewpoint while vegetation along the fence and boundary lines breaks up open views.



5.6.5 Viewpoint 2 - Proposed



Receptor - VP2 Summary of Impact Assessment		
Receptor Sensitivity	Negligible	
Magnitude of Landscape Change	Low	
Impact Significance	Minor - Negligible	
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.	



5.6.4 Viewpoint 3 - Existing

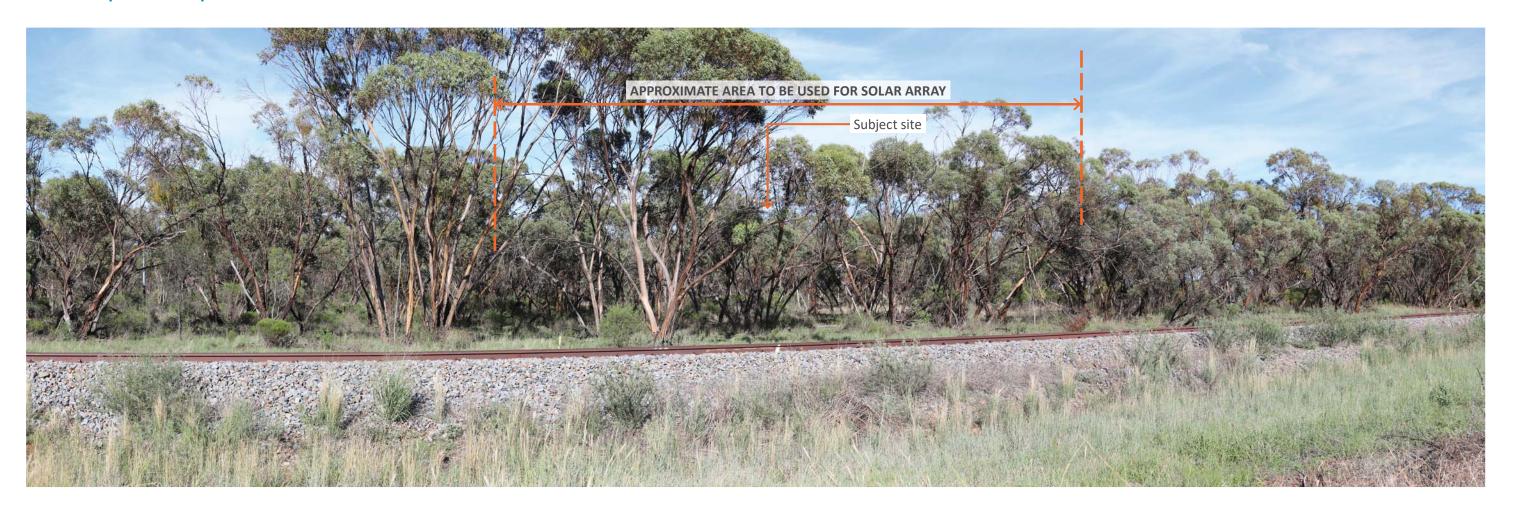


Receptor - VP3	Location	
Coordinate Location	33°56′17.652″ S 147°15′32.07″ E	
View Description	/iew looking west towards the Solar Farm from Goldfields Way	
Distance from Site	Approx. 680m	

- Rural landscape dominated by the Cootamundra Lake Cargello Railway Tracks in the foreground.
- Vegetation along the Western side of the railway tracks terminates views from this viewpoint.



5.6.5 Viewpoint 3 - Proposed



Receptor - VP3 Summary of Impact Assessment		
Receptor Sensitivity	Negligible	
Magnitude of Landscape Change	Negligible	
Impact Significance	Negligible	
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.	



5.6.6 Viewpoint 4 - Existing



Receptor - VP4	Location	
Coordinate Location	33°55′54.498″ S 147°15′16.968″ E	
View Description	Description View looking south west towards the Solar Farm from Goldfields Way	
Distance from Site Approx. 500m		

- Rural landscape dominated by boundary line vegetation in the foreground and open fields in the middle ground.
- Vegetation along the northern edge of site (background of this view) terminates views from this viewpoint.



5.6.6 Viewpoint 4 - Proposed



Receptor - VP4 Summary of Impact Assessment				
Receptor Sensitivity	Negligible			
Magnitude of Landscape Change	Negligible			
Impact Significance	Negligible			
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.			



5.6.6 Viewpoint 5 - Existing



Receptor - VP5	Location	
Coordinate Location	33°56′5.076″ S 147°14′21.408″ E	
View Description	View looking east from Wargin Road	
Distance from Site	Approx. 750m	

- Rural landscape dominated by open fields in the foreground. Vegetation to either side of this view is also prominent.
- Vegetation along Wargin Road and the northern edge of the site are prominent whilst views of vegetation along the boundary line in the middle ground breaks up open views.



5.6.6 Viewpoint 5 - Proposed



Receptor - VP5 Summary of Impact Assessment				
Receptor Sensitivity	Negligible			
View Magnitude of Landscape Change	Low			
Impact Significance	Minor - Negligible			
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.			



5.6.6 Viewpoint 6 - Existing



Location	
33°56′18.984″ S 147°14′19.17″ E	
View Description View looking east from Wargin Road towards the Solar Farm site	
Approx. 750m	

- Rural landscape dominated by Wargin Road in the foreground.
- Vegetation along the road and northern edge of site terminates views from this viewpoint.



5.6.6 Viewpoint 6 - Proposed



Receptor - VP6 Summary of Impact Assessment				
Receptor Sensitivity	Negligible			
View Magnitude of Landscape Change	Negligible			
Impact Significance	Negligible			
Mitigation Measures	From this viewpoint no mitigation measures are considered necessary.			



6. SUMMARY OF ASSESSMENT

6.1 Summary of Assessment

The visual environment for the subject site and surrounding area is characterised by open, gently undulating agricultural land.

Whilst the subject site has been cleared of vegetation, the local rural character of the area is evident and reinforced by the surrounding land uses and vegetation around it and in particular vegetation to the north.

The site location is isolated from West Wyalong and Wyalong and views of the site are typically not visible from the majority of local roads and the majority of rural areas within the area. This is due to the presence of vegetation and local topographic undulations that screen the site from major viewpoints.

Visibility from the local roads and streets close to the site is generally limited due to the nature of the landform and surrounding vegetation between the site and local development. However from viewpoints along a limited number of roads such as Wargin Road and Cartwrights Lane, glimpses of the site are possible. Given this limited visibility, to the site for the majority of sensitive receivers in the areas, the effects on landscape character is considered to be limited.

During the site inspection of the site and local area, detailed photographic documentation was made of the landscape character and conditions in order to inform this report. There were a number of locations other than the listed viewpoints where photographs were taken to determine the degree of visibility of the site within the local area. These viewpoints, although useful in determining the contextual character of the area, did not provide clear and unencumbered views of the site and therefore were not used in the determination of potential visual impacts of the Solar Farm on the surrounding environment.

The Solar Farm with the poposed BESS modification is considered to have an overall Effect Significance of **Minor-Negligible.**

6.2 Mitigation Measures

As described in the summary for each of the 6 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. Given the minor visual change to the rural landscape from the viewpoints, no mitigation measures are considered necessary.

Viewpoints 1, 2 and 5 will see some change in the landscape but as this is considered to be minor, no mitigation measures are necessary.

Screening to the northern boundaries is not considered necessary due to the limited visibility of the site created by the existing vegetated buffer. The existing vegetation obscures the majority of views to the Solar Farm from the northern and eastern aspects from Goldfields Way.

Table 4. Summary of Visual Impact Ratings for each Receptor

Receptor	Receptor Sensitivity	Magnitude of Change	Effect Significance
VP1	Negligible	Low	Minor - Negligible
VP2	Negligible	Low	Minor - Negligible
VP3	Negligible	Negligible	Negligible
VP4	Negligible	Negligible	Negligible
VP5	Negligible	Low	Minor - Negligible
VP6	Negligible	Negligible	Negligible



ASIA PACIFIC OFFICES

BRISBANE

Level 16, 175 Eagle Street

Brisbane QLD 4000

Australia

T: +61 7 3858 4800

F: +61 7 3858 4801

MACKAY

21 River Street

Mackay QLD 4740

Australia

T: +61 7 3181 3300

CANBERRA

GPO 410

Canberra ACT 2600

Australia

T: +61 2 6287 0800

F: +61 2 9427 8200

MELBOURNE

Level 11, 176 Wellington Parade

East Melbourne VIC 3002

Australia

T: +61 3 9249 9400

F: +61 3 9249 9499

TOWNSVILLE SOUTH

12 Cannan Street

South Townsville QLD 4810

Australia

T: +61 7 4722 8000

F: +61 7 4722 8001

NELSON

Level 4, 12 O'Connell Street

Auckland 1010

AUCKLAND

New Zealand

T: 0800 757 695

6/A Cambridge Street

Richmond, Nelson 7020

New Zealand

T: +64 274 898 628

DARWIN

Unit 5, 21 Parap Road

Parap NT 0820

Australia

T: +61 8 8998 0100

F: +61 8 9370 0101

NEWCASTLE

10 Kings Road

New Lambton NSW 2305

Australia

T: +61 2 4037 3200

F: +61 2 4037 3201

WOLLONGONG

Level 1, The Central Building

UoW Innovation Campus

North Wollongong NSW 2500

Australia

T: +61 2 4249 1000

GOLD COAST

Level 2, 194 Varsity Parade

Varsity Lakes QLD 4227

Australia

M: +61 438 763 516

PERTH

Ground Floor, 503 Murray Street

Perth WA 6000

Australia

T: +61 8 9422 5900

F: +61 8 9422 5901



www.slrconsulting.com