



YARRANLEA SOLAR FARM

VISUAL IMPACT ASSESSMENT REPORT

Prepared For
Yarranlea Solar Pty Ltd

November 2016



Prepared By Environmental Ethos on behalf of
Yarranlea Solar Pty Ltd

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1. INTRODUCTION

This report has been prepared by Environmental Ethos on behalf of the proponent Yarranlea Solar Pty Ltd to assess the potential visual impact of the Yarranlea Solar Farm (the Project). The Project comprises of the installation and operation of a 100 MW solar farm that will utilise photovoltaic (PV) modules to generate electricity.

The Project site is part of a freehold rural property located at 538 and 752 Yarranlea Road, Yarranlea (Lots 3347 on A341649, 2 on RP18249, 2 on A34925, 2 on RP7475) within the Toowoomba Regional Council area. The total footprint of the proposed development will cover an area of approximately 300 hectares (ha) and will be completed in up to four (4) stages.

1.1. Location and Landscape Context

The Project site is located approximately 44 kilometres south-west of the town of Toowoomba and 10 kilometres west of Pittsworth township, within the Darling Downs region of Queensland, *refer Figure 1.*

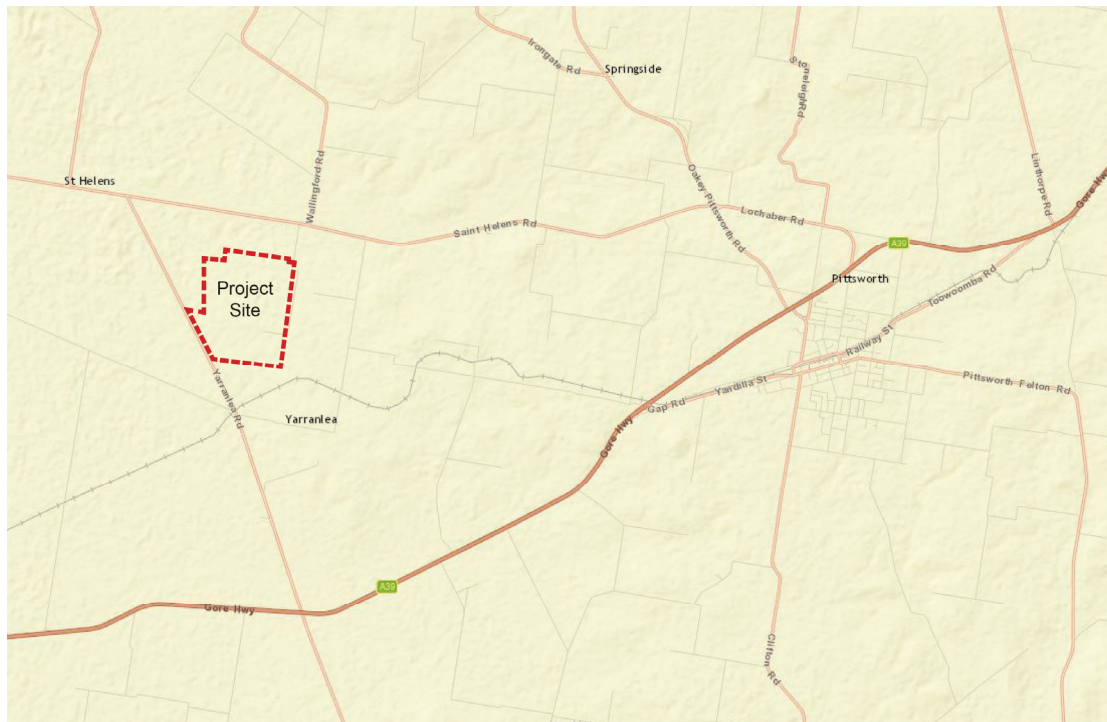


Figure 1: Site Location Plan

The study area is bounded by Yarranlea Road to the west and rural properties to the north, east and south. An Ergon Substation is located on the corner of Yarranlea Road and Millmerran Branch Rail Line to the south of the Project site, connection to the substation is required as part of the Project. An existing track (Murlaggan Road) runs through the centre of the site, through access will be retained, however visual amenity from this track is not considered as the track is within the Project site. A rural dwelling is located on the Project site and will be removed as part of the proposed development. The site is currently used for cropping, which is the primary land use within the Project surrounds.

1.2. Policy Context

The Project site is located within the 'Black Soil Plains' landscape character area as identified in the *Scenic Amenity Study, (Toowoomba Regional Council, 2009)*¹, refer Figure 2. The site assessment undertaken as part of this study confirmed the flat cropping landscape of the Project site, and area to the west of the site, as characteristic of this landscape character type. The landscape character to the east is mapped as 'Pittsworth Hills' in the *Scenic Amenity Study (2009)* and this is consistent with the site assessment results.

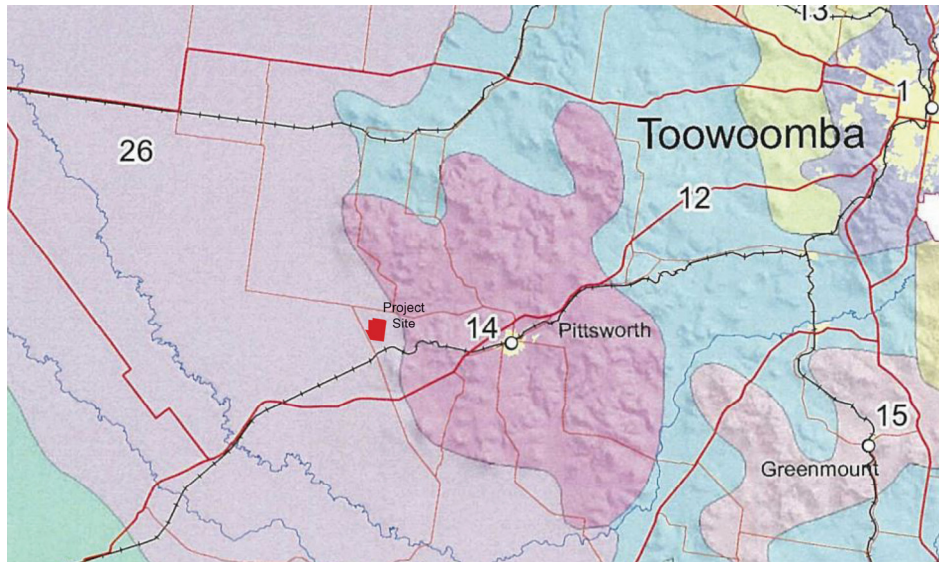


Figure 2: Exert from Landscape Character Map: Scenic Preference Study (2009), showing the Project in LCU 26 – Black Soil Plains, with LCU 14 – Pittsworth Hills, to the east.

The *Scenic Amenity Study* classified the flat pastures and cropping landscapes of the 'Black Soil Plains' as moderate to low visual exposure and having medium to low scenic amenity, refer Figure 3.

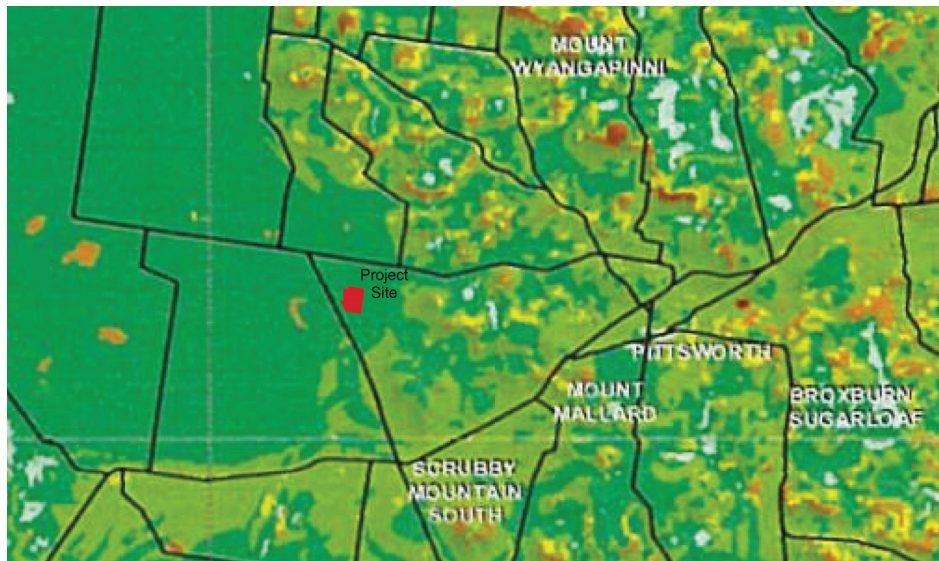


Figure 3: Exert from Scenic Amenity Map: Scenic Preference Study (2009), showing the Project area classified as 5 – Low to Moderate Scenic Amenity.

¹ <http://www.tr.qld.gov.au/planning-building/planning-development/planning-scheme>

The proposed scenic amenity management objectives for the Project site are as follows:

- *Maintain scenic amenity and scenic preference to these landscapes where feasible*
- *Any development that reduces scenic preference to be accompanied by an impact study that addresses the impact on scenic amenity, economic, social, and environmental outcomes.*

This report addresses the potential impact of the Project on scenic amenity, and the potential impact on views from surrounding roads and rural dwellings within the viewshed.

2. SCOPE OF THE ASSESSMENT

The scope of this visual impact assessment has been developed to address the policy requirements and includes the following:

- Description of the methodology used to undertake the study.
- Description of the elements of the Project with the potential to impact visual amenity during construction and operation.
- Assessment of the potential visibility of the Project and baseline conditions.
- Identification of landscape character, views and visual amenity.
- Assessment of the visual effect and impact of the Project including potential changes to landscape character, views, and visual amenity.
- Assessment of potential mitigations measures to avoid, mitigate or manage potential impacts.

3. METHODOLOGY

The methodology used in this assessment is based on the *Guidelines for Landscape and Visual Impact Assessment (GLVIA)*, Third edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013².

3.1. Desktop Assessment

A desktop study of base information was undertaken including topography, drainage, vegetation, land use, transport, and agricultural land management practices within the Project area. The Zone of Theoretical Visibility (ZTV) referred to as the 'viewshed', was identified based on topography and vegetation. The potential location of visually sensitive receptors (rural dwellings and roads) within the viewshed, were identified to inform the scope of the field study. The types of vegetation communities within the Project area was reviewed in relation to their location and screening potential. Preliminary consideration of mitigation options was undertaken, including the screening potential of the proposed landscape buffers.

² *Guidelines for Landscape and Visual Impact Assessment (GLVIA)*, Third edition, Landscape Institute and Institute of Environmental Management & Assessment, 2013

3.2. Field Study

A field study was undertaken and photographs collected from publically accessible viewpoints throughout the Project's viewshed. The screening potential of existing landform and vegetation was confirmed on site. The landscape character of the Project site and surrounding areas was assessed in relation to the visual absorption capacity of the landscape, the condition, and the contribution to the scenic amenity from surrounding roads and rural properties.

3.3. Impact Assessment

The assessment of visual impacts includes changes in the character of available views resulting from the Project, and changes in the visual amenity of visual receptors. The assessment process takes into consideration the baseline conditions for both landscape character and visual amenity, and assesses these against the proposed effect of change resulting from the Project. The process for assessing the sensitivity of landscape and visual receptors to changes is outlined below.

Landscape Character

In order to establish the landscape baseline, the existing landscape character was identified within the study area and classification confirmed against the Landscape Character Units (LCUs) detailed in the *Scenic Amenity Study (2009)*. These LCUs generally comprise of a pattern of natural elements such as; soil types, landforms, vegetation, and water, as well as human elements such as disturbance, development and cultural significance, that combine to create specific patterns and characteristics that are distinctive to particular localities.

The sensitivity of each LCU to change was assessed in relation to the *Scenic Amenity Study (2009)* preference and amenity outcomes. The extent to which a landscape can accommodate change of a particular type and scale without unacceptable adverse effects on the existing landscape character is dependent on the physical characteristics of the landscape and the scale and nature of the change in contrast to the receiving environment. In this case the proposed change is from cropping fields to a solar farm.

Visual Sensitive Receptors

Visual Sensitive Receptors (VSR) are individuals and/or defined groups of people who have the potential to be visually affected by the project. The sensitivity of each VSR is dependent on both the sensitivity of the group to changes in the landscape/view, and the location and activity of the VSR. The value a community places on a landscape/views can also be recognised through designation, in this study the landscape preference outcomes of the *Scenic Amenity Study (2009)* provides the basis for community values within the Toowoomba Regional Council area.

Magnitude of Change

The magnitude of change in the visual baseline is dependent on the proportion the Project occupies in a viewer's field of vision, the extent of intrusion into the foreground, middle-ground and background, the capacity or ability of the landscape to accommodate the change, the duration of the effect, and the reversibility of the effect.

3.4. Evaluation of significance and mitigation of potential impacts

Impact Significant

Evaluation of the significance of visual impacts is undertaken using a process similar to a risk matrix, where the significance of impacts are determined by comparing the impact magnitude against the sensitivity of landscape character and visual receptors. It should be noted the matrix approach provides a guide to potential severity of impacts; to ensure potential impacts are detailed such that mitigation measures are identified and assessed, a narrative section is included in the evaluation.

Mitigation Measures




The Project includes 'embedded' mitigation measures, that is, the design of the Project has taken into consideration the requirement for visual screening and incorporated landscape buffers into the layout of the Project. Embedded mitigation measures will vary over time as vegetation grows and the screens become established. The Project description outlines the proposed landscape treatments to the boundary of the solar farm.

4. PROJECT DESCRIPTION

The general layout of the Project is as show in *Appendix A*. The main elements of the Project with the potential to effect visual change are the construction and operation of the solar panels and tracking system, the associated infrastructure buildings, and the upgrades to the power line connection. Vegetation screening, fencing, and access roads are also proposed as part of the Project and these elements will also effect visual change. The key components of the Project with the potential to result in landscape and visual change are summaries in *Tables 1 and 2*.


4.1. Construction

Table 1. Project Elements and Processes during Construction

Project element/process	Indicative Imagery
Planting of landscape buffers: as detailed in the plan L01 - Typical Landscape Plan (<i>refer Appendix A</i>), including formation of access tracks, clearing of weeds, ground preparation and planting of endemic trees and shrubs.	
Construction of plant and associated infrastructure: including erection of fences, control room and battery storage, and upgrading of transmission line.	
Installation of tracking system and solar modules: including minor levelling and footings.	

4.2. Operation

Table 2. Project Elements and Processes during Operation

Project element/process	Indicative Imagery
Operation of solar farm: includes solar tracking, cleaning operations and minor maintenance works.	

5. BASELINE CONDITIONS

The baseline for the visual assessment is an understanding of the existing landscape and visual qualities within the site and surrounding area that may be affected by the proposed development.

5.1. Viewshed Analysis

The extent of the viewshed is the extent of potential visibility of the Project within the landscape. Visibility was assessed based on topography and the screening potential of existing vegetation. The extent of the viewshed is as outlined in *Figure 4 - Appendix B*.

5.2. Landscape Character

The landscape character units within the viewshed are detailed below:

Low Lying Rural Landscape (Black Soil Plains)

The low lying rural areas are characterised by a flat flood-plain landscape predominately used to grow crops. Some remnant vegetation remains along drainage lines, road reserves, and in isolated groups along fence lines. Views across the viewshed are generally mid to long-range, with a backdrop of low undulating hills to the north, south and east. Constructed elements within the landscape include agricultural buildings and infrastructure, water storage dams, rural dwellings, roads, power lines, a substation, and a rail line.



Plate 1: Photograph of Low Lying Rural Landscape

Undulating Hills (Pittsworth Hills)

To the north, south and east of the Project site the landscape character comprises of low undulating hills predominantly used for grazing. These areas retain some remnant native vegetation including woodland communities. These undulating hills ‘frame’ the Project site and provide a backdrop to views across the site. Several rural dwellings are located in elevated locations with views across the low lying landscape.



Plate 2: Photograph of Undulating Hill

5.3. Views and Visual Amenity

The visual amenity assessment has been undertaken based on representative viewpoints from publically accessible locations within the viewshed. The location of the 16 viewpoints are shown in the *Figure 4 - Appendix B*. The representative views are detailed in *Appendix C*.

6. ASSESSMENT OF VISUAL EFFECT

Impacts on views and the visual amenity may occur during both construction and operational stages of the Project. The magnitude of change to views and visual amenity is dependent on the extent of visual exposure or visibility of the various Project elements, the compatibility of the development with the surrounding landscape, and the duration of the impacts.

Since mitigation measures have been embedded into the Project in the form of landscape buffers, residual impacts refer to post establishment phase.

A summary of the predicted magnitude of change from each key viewpoint is outlined in *Table 3*.

Table 3. Magnitude of Change to the Visual Baseline

VIEWPOINT LOCATION AND DIRECTION (REFER APPENDIX B & C)	PROJECT VISIBILITY AND DISTANCE TO THE NEAREST PROJECT ELEMENT	LOCATION OF THE PROJECT IN THE FIELD OF VIEW	COMPATIBILITY OF THE PROJECT WITH THE VISUAL BASELINE	MAGNITUDE OF CHANGE IN THE VISUAL BASELINE	DURATION	VIEWER NUMBERS
VP01 Yarranlea Road Long-range view - north east	Distance to project boundary approximately 180 m. Project elements visible in the short term include, upgraded power line, control room and battery storage facilities, perimeter fence, solar panels and tracking system, and inverters. In the long term the perimeter fence, vegetation screen, upgraded power line and potentially the roof of the battery storage shed will remain visible.	Vegetation buffer and power line upgrade located in the foreground, Solar panels, tracking system and inverters located in the middle ground.	Vegetation buffer – highly compatibility as native vegetation is present in the landscape. Buildings and power lines are compatible as these elements already exist in the landscape. Solar panels, tracking system and inverters are considered moderately compatible to the existing landscape, as although these elements cover a large area, their low profile (less than 4 m above ground level) does not present a significant vertical disruption within the flat landscape.	The main long term change to the visual baseline will be the shortening of views as a result of the vegetation buffers and the visibility of the upgraded power lines and roofline of the storage shed. In the short term prior to screening by the buffer vegetation the solar farm will be visible as a low profile constructed element in the landscape. Refer to <i>Photomontage VP01 – Appendix D</i>	Operating life of Solar Farm	Low
VP02 Yarranlea Road Long-range view - east	Distance to project boundary approximately 30 m. Project elements visible in the short term include, upgraded power line, control room and battery storage facilities, perimeter	Power lines, control room and battery storage facilities located in the foreground surrounded by vegetation screen,	As for VP01	The main long term change in the visual baseline will be the shortening of views as a result of the vegetation buffers and the visibility of the upgraded power lines and roofline of	Operating life of Solar Farm	Low

	fence, solar panels, tracking system, and inverters. In the long term the vegetation screen will be visible screening the solar farm. The upgraded power line, roof of the battery storage shed and perimeter fence will remain visible.	solar panels and inverters located in the middle ground.		the storage shed. In the short term prior to screening by the buffer vegetation, the solar farm will be visible as a low profile constructed element in the landscape.		
VP03 Yarranlea Road Long-range view - east	Distance to project boundary approximately 38 m. Project elements visible in the short term include, upgraded power line, new farm machinery shed and hardstand, perimeter fence, solar panels, tracking system, and inverters. In the long term the vegetation screen will be visible screening the solar farm. The upgraded power line and farm shed will remain visible.	Upgraded power line, new farm machinery shed and hardstand, perimeter fence located in the foreground. Solar panels located in the foreground surrounded by vegetation screen. Solar panels and inverters extending into the middle ground.	Vegetation buffer – highly compatibility as native vegetation is present in the landscape. Machinery shed and hardstand - compatible as these elements are commonly found in the surrounding landscape. Solar panels, tracking system and inverters are considered moderately compatible to the existing landscape, as although these elements cover a large area, their low profile (less than 4 m above ground level) does not present a significant vertical disruption within the flat landscape.	The main long term change in the visual baseline will be the presence of the machinery shed and the upgraded power lines, although these are elements which already exist within the landscape. Visibility of solar panels and inverters will be short term, as once the buffer planting establishes the vegetation will provide a screen.	Operating life of Solar Farm	Low

VP04 Yarranlea Road Long-range view – south east	<p>Distance to project boundary approximately 780 m. Project elements visible in the short term include, new farm machinery shed, perimeter fence, solar panels, tracking system, and inverters. In the long term the vegetation screen will be visible screening the solar farm. The farm shed will remain visible.</p>	<p>Solar farm and perimeter screen located in the middle ground.</p>	<p>As for VP03</p>	<p>The main long term change in the visual baseline will be the screen vegetation in the middle ground view. Visibility of the solar panels and inverters will be short term, as once the buffer planting establishes the vegetation will provide sufficient screening.</p>	<p>Operating life of Solar Farm</p>	<p>Low</p>
VP05 Yarranlea Road Long-range view – south east Viewpoint close to rural dwelling at OP08	<p>Distance to project boundary approximately 1.3 km. As a result of the low profile of the solar panels, tracking system and inverters, at distances greater than 1 km these project elements will be visually insignificant when viewed across a flat landscape.</p> <p>In the short term the perimeter fence will not be visible at this distance, the solar panels and tracking system, and inverters may be noticeable as a narrow line of constructed elements within the landscape. In the long term the vegetation screen</p>	<p>Solar farm and perimeter screen located in the back ground.</p>	<p>Vegetation buffer – highly compatibility as native vegetation is present in the landscape.</p> <p>Solar panels, tracking system and inverters are considered moderately compatible to the existing landscape, as although these elements covers a large area, their low profile (less than 4 m above ground level) does not present a significant vertical disruption within the flat landscape.</p>	<p>The main long term change in the visual baseline will be the screen vegetation in the background view. Visibility of the solar panels and inverters in the short term is considered minor due to distance from the view point. Once the buffer planting establishes the solar panels, tracking system and inverters will not be visible.</p>	<p>Operating life of Solar Farm</p>	<p>Low</p>

	will be visible as a narrow band of vegetation in the distance.					
VP06 Corner Yarranlea Road and Pittsworth-Norwin Road Long-range view – south east	Distance to project boundary approximately 1.75 km. As a result of the low profile of the solar panels, tracking system and inverters, at distances greater than 1 km these project elements will be visually insignificant when viewed across a flat landscape.	Solar farm and perimeter screen located in the back ground.	Vegetation buffer – highly compatibility as native vegetation is present in the landscape. Solar panels, tracking system and inverters are considered moderately compatible to the existing landscape, as although these elements covers a large area, their low profile (less than 4 m above ground level) does not present a significant vertical disruption within the flat landscape.	The main long term change in the visual baseline will be the screen vegetation in the background view. Visibility of the solar panels and inverters is considered minor to insignificant due to distance from the view point, once the buffer planting establishes the vegetation will provide sufficient screening.	Operating life of Solar Farm	Low
VP07 Pittsworth-Norwin Road Long-range view – south	Distance to project boundary approximately 860 m. Project elements visible in the short term include, solar panels, tracking system, and inverters. In the long term the vegetation screen will be visible screening the solar farm.	Solar farm and perimeter screen located in the middle ground.	As for VP06	The main long term change in the visual baseline will be the screen vegetation in the middle ground. Visibility of the solar panels and inverters will be short term, as once the buffer planting establishes the vegetation will provide sufficient screening.	Operating life of Solar Farm	Low
VP08	Distance to project boundary approximately 830 m.	Solar farm and perimeter screen	As for VP06	The main long term change in the visual baseline will be the screen vegetation in the	Operating life of Solar Farm	Low

Pittsworth-Norwin Road Long-range view – south	<p>Project partially screened by existing vegetation.</p> <p>Project elements visible in the short term include, solar panels, tracking system, and inverters. In the long term the proposed vegetation screen will be visible screening the solar farm.</p>	located in the middle ground.		middle ground view. Visibility of the solar panels and inverters will be short term, as once the buffer planting establishes the vegetation will provide sufficient screening.		
VP09 Wallingford Road Long-range view – south Viewpoint close to rural dwelling OP11	<p>Distance to project boundary approximately 1.68 km.</p> <p>Project partially screened by existing vegetation.</p> <p>As a result of the low profile of the solar panels, tracking system and inverters, at distances greater than 1 km these project elements will be visually insignificant when viewed across a flat landscape.</p> <p>The slight elevation of the view point above the project site is not considered sufficient to significantly increase visibility of the Project from this distance.</p> <p>In the short term the perimeter fence will not be</p>	Solar farm and buffer planting located in the back ground.	As for VP06	<p>The main long term change in the visual baseline will be the screen vegetation in the background view. Visibility of the solar panels and inverters will be short term, as once the buffer planting establishes the vegetation will provide sufficient screening refer <i>Photomontage VP09 – Appendix D.</i></p>	Operating life of Solar Farm	Low

	visible at this distance. The solar panels, tracking system, and inverters may be noticeable as a narrow line of constructed elements within the landscape. In the long term the vegetation screen will be visible as a narrow band of vegetation in the distance.					
VP10 Wallingford Road Long-range view – south Viewpoint close to rural dwelling OP13	<p>Distance to project boundary approximately 2.2 km. Project partially screened by existing vegetation. Since this viewpoint is greater than 2 km from the Project the project elements will not be easily distinguishable as individual objects. However due to the elevated position of the viewpoint relative to a flat plain visibility increases and therefore the Project as a unified 'object' in the landscape may be visible.</p> <p>In the long term the vegetation screen will partially screen the Project.</p>	Solar farm and buffer planting located in the back ground.	As for VP06	The main long term change in the visual baseline will be the change in surface within the area covered by the solar farm. Visually the solar panels and inverters will be barely discernable as individual objects. The surface change will be from cropping fields to a constructed element. Once the buffer planting establishes the vegetation will provide partial screening.	Operating life of Solar Farm	Low

VP11 Roche Road Long-range view – west Viewpoint close to rural dwelling OP06	Distance to project boundary approximately 1.06 km. Project screened by topography and existing vegetation.	Solar farm not visible	Solar farm not visible	Solar farm not visible	N/A	N/A
VP12 Roche Road Long-range view – west Viewpoint close to rural dwelling OP05	Distance to project boundary approximately 1.03 km. Since this viewpoint is greater than 1 km from the Project will not be visually significant within the landscape. However due to the elevated position of the viewpoint relative to a flat plain visibility increases and therefore the Project may potentially be noticeable. In the long term the vegetation screen will partially screen the Project.	Solar farm and buffer planting located in the back ground.	As for VP06	The main long term change in the visual baseline will be the change in surface within the area covered by the solar farm. Visually the solar panels and inverters will be barely discernable as individual objects. The surface change will be from cropping fields to a constructed element, refer to <i>VP12 Photomontage – Appendix D</i> . Once the buffer planting establishes the vegetation will provide partial screening.	Operating life of Solar Farm	Low
VP13 Murlaggan Road	Distance to project boundary approximately 1.83 km. Project partially screened by existing vegetation.	Solar farm and perimeter screen located in the back ground.	As for VP06	The main long term change in the visual baseline will be the change in surface within the area covered by the solar	Operating life of Solar Farm	Low

Long-range view – west	<p>Since this viewpoint is almost 2 km from the Project, the project elements will not be easily distinguishable as individual objects. However due to the elevated position of the viewpoint relative to a flat plain visibility increases and therefore the Project as a unified 'object' in the landscape may be visible.</p> <p>In the long term the vegetation screen will partially screen the Project.</p>			<p>farm. Visually the solar panels and inverters will be barely discernable as individual objects. The surface change will be from cropping fields to a constructed element. Once the buffer planting establishes the vegetation will provide partial screening.</p>		
VP14 Roche Road Long-range view – north west	<p>Distance to project boundary approximately 1.07 km. Project screened by topography and existing vegetation.</p>	Solar farm not visible	Solar farm not visible	Solar farm not visible	N/A	N/A
VP15 Desmond Lane Long-range view - north	<p>Distance to project boundary approximately 700 m. Project elements visible in the short term include, upgraded power line, battery storage facilities, perimeter fence, solar panels, tracking system, and inverters. In the long term the</p>	Solar farm located in the middle ground.	<p>Vegetation buffer – Highly compatibility as native vegetation is present in the landscape.</p> <p>Shed roof and power lines are compatible as these elements already exist in the landscape.</p>	<p>The main long term change in the visual baseline will be the increase in native vegetation in the view as a result of the landscape buffer planting. The upgraded power lines and roofline of the storage shed may be visible. In the short</p>	Operating life of Solar Farm	Low

	vegetation screen, upgraded power line and potentially the roof of the battery storage shed may be visible.		Solar panels, tracking system and inverters are considered moderately compatible to the existing landscape, as although these elements covers a large area, their low profile (less than 4 m above ground level) does not present a significant vertical disruption within the flat landscape.	term prior to screening by the buffer vegetation the solar farm will be visible as a low profile constructed element in the landscape.		
VP16 Watson Road Long-range view – east	Distance to project boundary approximately 1.53 km. Project screened by existing vegetation.	Solar farm not visible	Solar farm not visible	Solar farm not visible	N/A	N/A

7. ASSESSMENT OF VISUAL IMPACT

7.1. Changes to Landscape Character

The landscape character of the Project site is consistent with the 'Black Soil Plains' landscape character unit as defined in the *Scenic Amenity Assessment (2009)*. The 'Black Soil Plains' landscape was identified in the *Scenic Amenity Assessment (2009)* as having moderate to low visual exposure, and a medium to low scenic amenity preference. Buildings and infrastructure existing within the landscape including: farm sheds, rural dwellings, dams, roads, power lines, a substation, and a rail line. To the south, east and north of the Project viewshed the landscape character includes undulated hills which are consistent with the landscape character unit 'Pittsworth Hills' as detailed in the *Scenic Amenity Assessment (2009)*.

Potential changes to the existing landscape character resulting from the Project, both in the short term and long term, are detailed below.

Short Term Changes to Landscape Character

The main change to the landscape character of the Project site, in the short term, will be the introduction of a large low profile constructed element into the flat rural landscape. This change will include the cropping fields within the Project bounds being covered by solar panels and tracking system, and the introduction of inverters into the solar field. The height of these elements, which form the majority of the Project, are approximately 3 to 4 metres above ground level. The resulting built element is largely horizontal with limited vertical disruption to the horizon line (*refer to Appendix D photomontages*). The Project sits within the existing pattern of fields, resulting in little to no visual disruption to the 'pattern' of land use across the viewshed.

The introduction of buildings (control room and battery storage shed), new farm shed, fencing, and power line upgrades are not considered likely to change the landscape character within the viewshed as these elements are already present in the landscape.

The landscape surrounding the Project site has some capacity to accommodate the type of change envisaged due to the low profile of the Project and presence of existing vegetation. The establishment of screening vegetation surrounding the Project as detailed in the Typical Landscape Plan (*refer Appendix A*) will in most cases screen the project from surrounding roads and rural dwellings.

The Project will have no impact to the landscape character of the 'Pittsworth Hills' landscape character unit.

Long Term Changes to Landscape Character

Upon establishment of the landscape buffers surrounding the Project, long term changes in landscape character are considered unlikely since the solar farm will, in most cases, be fully screened by vegetation and the presence of native vegetation is consistent with the existing landscape character.

Changes in landscape character as viewed from elevated locations are considered unlikely due to the scale of change relative to the scale of the landscape. Whilst the Project may remain partially visible from some elevated locations, the Project covers a relatively small area within the pattern of

rural land uses characteristic of the Black Soil Plains. Since the scale of the landscape is large and views are expansive, a small area of change in land use cover is unlikely to result in a significant change to the character of the landscape within the viewshed.

7.2. Changes to Views and Visual Amenity

The visual effect of the Project on views and visual amenity within the viewshed is outlined below.

Changes to views from Yarranlea Road

Yarranlea Road adjoins the Project's western boundary and provides the closest viewpoints to the Project. The view corridor along Yarranlea Road's is characterised by generally mid to long-range views across a flat rural landscape, with some short-range views of existing vegetation as represented in VP01 to VP05 (*refer Appendix C*). Existing vegetation along the view corridor is intermittent and provides some screening to the Project. Views from Yarranlea Road include the existing substation, power lines and rail line. One rural dwelling is located on the northern section of the road and is partially screened by vegetation.

The main changes to views from Yarranlea Road as a result of the Project are illustrated in *Photomontage VP01 – Appendix D* and outlined below:

- In the short term, changes in mid-range views as a result of the construction of the solar panels, tracking system and inverters.
- In the short-term, changes in short-range views as a result of the control room and battery storage buildings, power line up grade and perimeter fence.
- In the long term, increase in dense vegetation in the foreground and mid ground views as a result of the establishment of screen planting.

It is not anticipated that the construction and operation of the solar farm will have a significant visual effect on views from Yarranlea Road as the Project has a low profile in the landscape and will be screened by existing vegetation and/or the proposed buffer planting.

Changes to views from Pittsworth-Norwin Road

Pittsworth-Norwin Road (also referred to as Saint Helens Road) is located approximately 800 metres from the northern boundary of the Project. Views from this road are characterised by long range views across a flat rural landscape as represented in VP07 and VP08 (*refer Appendix C*). Native vegetation is limited to the middle ground and background of views. Existing power lines run along the southern verge.

Changes to views from Pittsworth-Norwin Road as a result of the Project are not anticipated to be significant due to the distance from the Project. Initially the solar panels and inverters may be noticeable in the middle ground, however the proposed buffer planting will screen these elements once established.

Changes to views from Wallingford Road

Wallingford Road runs north of the Project with the intersection of Pittsworth-Norwin Road being the closest point at 800 metres. Views south from this road are characterised by the slightly elevated

vantage point providing long range views across a flat rural landscape as represented in VP09 and VP10 (*refer Appendix C*).

Changes to views from Wallingford Road as a result of the Project are not anticipated to be significant due to the distance from the Project. Initially the solar panels and inverters may be visible as a narrow line of constructed elements in the background of the view, *refer Photomontage VP09 – Appendix D*. Once established the proposed buffer planting will provide a full to partially screen dependent on the elevation of the viewer as they ascend the hill. Since travellers generally experience short duration views the minor change in the background of the view is not likely to be noticeable in the long term.

Changes to views from Roche Road

Roche Road runs parallel to the Project's eastern boundary with the closest point at 1.03 km from the Project boundary. Views west from this road are characterised by their elevated vantage point and long range views across a flat rural landscape as represented in VP011, VP12, and VP14 (*refer Appendix C*).

Changes to views from Roche Road as a result of the Project are not anticipated to be significant due to the distance from the Project. Initially the solar panels and inverters may be discernable as constructed elements in the background of the view, the proposed buffer vegetation will provide a partial screen to the Project. In the long term the Project is likely to be visible above the vegetation screen, due to the elevated location relative to the flat plain. However as the Project is not disruptive to the pattern of land use across the landscape, the scale of change will be minor relative to the scale of the landscape, *refer to Photomontage – VP12 Appendix D*.

Changes to views from Murlaggan Road

Similar to Roche Road, views west from this road are characterised by their elevated vantage point and long range views across a flat rural landscape as represented VP13 (*refer Appendix C*). Due to distance from the Project, changes to the view are not anticipated to be significant and the Project may be discernable as a narrow line of constructed elements in the background of the view. The proposed buffer planting will partially screen these elements once established.

Changes to views from Rural Dwellings

The assessment of potential changes to views from rural dwellings within the viewshed is based on the desktop viewshed analysis and site assessment of views from publically accessible locations. Access to private properties did not form part of this study and therefore a qualitative evaluation of potential changes to views has been undertaken based on publically accessible viewpoints in close proximity to the dwellings. Where possible these viewpoints were selected with similar elevation and direction of view. The results of this evaluation are summarized below:

- There is one (1) rural dwelling within 500 metres of the Project site which is screened from the Project by existing vegetation (OP1).
- There are four (4) rural dwellings between 500 metres and 1 kilometre from the Project (OP2, OP3, OP5 & OP7), 2 of which are screened from the Project by existing vegetation (OP2 & OP7).

- Views from the rural dwelling at OP3 are represented in Viewpoint 13 (*refer to Appendix C*) potential changes to views are detailed in *Table 3*.
- Views from the rural dwelling at OP5 are represented in Viewpoint 12 (*refer to Appendix C*) potential changes to views are detailed in *Table 3* and shown in *Photomontage VP12 Appendix D*.
- There are three (3) rural dwellings between 1 to 1.5 kilometres from the Project (OP4, OP6 & OP8), 2 of which are screened from the Project by existing vegetation and topography (OP4 & OP6).
- Views from the rural dwelling at OP8 are represented in Viewpoint 05 (*refer to Appendix C*) potential changes to views are detailed in *Table 3*.
- There are a further six (6) rural dwellings at a distance greater than 1.5 kilometres from the Project (OP 9 to OP14), 2 of which are screened from the Project by existing vegetation and topography (OP9 & OP14).
- Views from the rural dwelling at OP10 are represented in Viewpoint 13 (*refer to Appendix C*) potential changes to views are detailed in *Table 3*.
- Views from the rural dwellings at OP11 and OP12 are represented in Viewpoint 09 (*refer to Appendix C*) potential changes to views are detailed in *Table 3* and shown in *Photomontage VP09 Appendix D*.
- Views from the rural dwelling at OP13 are represented in Viewpoint 10 (*refer to Appendix C*) potential changes to views are detailed in *Table 3*.

Once the buffer planting to the perimeter of the Project becomes established it is anticipated that the Project will be sufficiently screened from rural dwellings located within low lying areas to result in no significant change to visual amenity. In relation to the rural dwellings located on hills surrounding the Project site, it is anticipated that the distance between these dwellings and the Project is sufficient to render any change in views as potentially noticeable but not sufficient to change the nature of the view.

The impact significance of the Project on views and visual amenity are summarised in section 7.3 below.

In addition, comment has been received from the community in relation to the potential reflectivity of the solar panels at night i.e. reflecting moonlight. Since moonlight is significantly less intense than sunlight, reflection of moonlight from the solar panels does not present a glare hazard, rather it may be regarded as a potential visual amenity issue. In regard to the reflectivity of solar panels, research has confirmed solar panels are less reflective than water. Reflection of moonlight from the solar panels, if it does occur, is therefore likely to be less than water. Given the presence of large water storage dams within the viewshed, which may reflecting moonlight, the Project is not considered likely to result in a noticeable change to the visual amenity of the landscape at night.

7.3. Significance of Predicted Impacts

The significance of predicted impacts on landscape character and visual amenity have been summarised in *Tables 4 and 5*.

Table 4. Significance of predicted impacts on affected landscape character

<i>Landscape Character</i>	<i>Sensitivity to Change</i>	<i>Predicted change</i>	<i>Magnitude of Change</i>	<i>Predicted Impact Significance</i>
Low Lying Rural Landscape (Black Soil Plains)	Low to Moderate	Landcover change as a result of the Project	Low: considerable change to landscape character over a restricted area, but will not alter the fundamental character of the landscape	Minor
Undulating hills (Pittsworth Hills)	No Change	No Change	N/A	N/A

Table 5. Significance of predicted impacts on affected views and visual amenity

<i>Views and View Corridors</i>	<i>Sensitivity to Change</i>	<i>Predicted change (Long Term)</i>	<i>Magnitude of Change</i>	<i>Predicted Impact Significance</i>
Views from Yarranlea Road	Low to Moderate	Increase in vegetation along the view corridor as a result of the buffer planting. Some elements of the Project (farm shed, power line upgrade, roof of battery storage shed) may remain visible.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Minor
Views from Pittsworth-Norwin Road	Low to Moderate	Increase in vegetation in the middle ground of views as a result of the buffer planting.	Slight: a small change to the visual baseline which is insignificant, not distinct and is expected to blend with the baseline view	Negligible
Views from Wallingford Road	Low to Moderate	Increase in vegetation in the back ground of views as a result of the buffer planting. Potential for minor visible change in land cover as a result of the solar panels and inverters.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Minor
Views from Roche Road	Low to Moderate	Increase in vegetation in the back ground of views as a result of the buffer planting. Potential for minor visible change in land cover as a result of the solar panels and inverters.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Minor

Views from Murlaggan Road	Low to Moderate	Increase in vegetation in the back ground of views as a result of the buffer planting. Potential for minor visible change in land cover as a result of the solar panels and inverters.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Minor
Views from Watson Road	Low to Moderate	No change	No change	No change
Views from rural dwellings at OP01, OP02, OP04, OP6, OP07, OP09, & OP14	High	No change	No change	No change
Views from rural dwelling at OP03	High	Increase in vegetation in the middle ground of views as a result of the buffer planting. Some elements of the Project (power line upgrade, and roof of battery storage shed) may remain visible.	Slight: a small change to the visual baseline which is insignificant, not distinct and is expected to blend with the baseline view	Minor
Views from rural dwellings at OP05 and OP10	High	Increase in vegetation in the back ground of views as a result of the buffer planting. Potential for minor visible change in land cover as a result of the solar panels and inverters.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Moderate
Views from rural dwelling at OP08	High	Increase in vegetation in the middle ground of views as a result of the buffer planting. New farm shed may be visible.	Slight: a small change to the visual baseline which is insignificant, not distinct and is expected to blend with the baseline view	Minor
Views from rural dwelling at OP11	High	Increase in vegetation in the back ground of views as a result of the buffer planting. New farm shed may be visible.	Slight: a small change to the visual baseline which is insignificant, not distinct and is expected to blend with the baseline view	Minor
Views from rural dwellings at OP12 and OP13	High	Increase in vegetation in the back ground of views as a result of the buffer planting. Potential for minor visible change in land cover as a result of the solar panels and inverters.	Low: some perceptible changes to views, but will not alter the fundamental visual amenity of the landscape	Moderate

8. POTENTIAL MITIGATIONS MEASURES

Proposed buffer plantings to screen the Project have been integrated into the Project design. *Table 6* summarises the proposed landscape and visual amenity protection measures.

Table 6. Landscape and Visual Protection Measures

<i>Activity</i>	<i>Protection Measure</i>	<i>Description</i>	<i>Application</i>
Construction Stage	Landscape buffers	Buffer zone plantings are to be installed prior to construction.	As detailed in the Landscape Concept Plan
Construction Stage	Limiting the extent of disturbance	Disturbance to the landscape will be limited to the footprint of the Project	As detailed in the Landscape Concept Plan

9. CONCLUSION

The Project site was identified as located within the 'Black Soil Plains' landscape character unit as defined in the *Scenic Amenity Study (Toowoomba Regional Council, 2009)*. This landscape character unit is classified as having a low to moderate level of visual exposure, and a medium to low scenic amenity preference. The landscape is a flat flood plain landscape significantly modified by rural activities, some native vegetation remains however the predominant land cover is cropping land and pasture. Existing built form within the landscape includes: farm sheds, rural dwellings, dams, roads, power lines, a substation, and a rail line. Views are generally long range and in some cases expansive views to the horizon.

Assessment of the potential change to landscape character as a result of the Project identified a potentially minor impact to landscape character resulting from the change from cropping land to solar farm. This change whilst significant within the bounds of the Project site, occurs over a relative small area compared to the scale of the landscape. In addition the low profile of the Project's elements and the proposed buffer planting significantly limits the Project's visibility within the viewshed. As a result the Project is not considered likely to alter the fundamental character of the landscape within the viewshed.

Assessment of potential impacts to views and visual amenity with the viewshed as a result of the Project identified a potentially minor impact on views from surrounding roads. Travellers are generally considered 'Moderately' sensitive to adverse changes in the landscape as views are of short duration and not the entire focus of attention. In most cases the proposed buffer planting will effectively screen the Project from adjoining roads. Where roads are elevated above the flood plain landscape (Wallingford, Roche and Murlaggan Roads) these locations provide vantage points and the Project may be visible above the screen planting. However such changes to the view, whilst potentially noticeable, are not considered likely to fundamentally affect the visual amenity of the landscape due to the small scale of change resulting from the solar farm, relative to the large scale of the landscape.

Assessment of the potential impacts of the Project on views and visual amenity as seen from the 14 rural dwellings within the Project's viewshed, identified seven (7) properties would not be impacted by the Project.

The closest rural dwelling with potential views of the Project is located on Desmond Lane at approximately 700 metres from the Project's southern boundary (*refer OP03 – Appendix B*). Views of the solar panels and tracking system from this property will be screened by the proposed buffer planting in the long term, the *Photomontage VP01 Appendix D* illustrates a similar view at closer proximity to the Project. There may remain some visibility of the upgraded power lines and roofline of the proposed battery storage shed, however these elements will be seen in the context of the existing substation and power lines within the view. The potential impact on views and visual amenity is considered minor, as the remaining visible elements of the Project are anticipated to blend with the visual baseline.

The one (1) rural dwelling on Yarranlea road (*refer OP08 – Appendix B*) may also have partial views of the Project during construction, however these views are considered likely to be effectively screened by the establishment of the buffer planting. The *Photomontage VP01 Appendix D* illustrates the effect of screening vegetation relative to a viewpoint at similar elevation to the solar farm i.e. within the same flood plain landscape as the solar farm. In the long term there may remain partial visibility of the new farm shed however farm sheds are common within the existing landscape character. The potential impact on views from this property are considered minor as the solar fields will be screened by vegetation and the remaining visible elements of the Project (the farm shed) is anticipated to blend with the visual baseline.

The remaining five (5) rural dwellings are located in elevated positions on the hills surrounding the Project and have long-range views across the flood plain. Due to the elevated location of the viewpoint relative to the Project there is the potential that elements of the Project may remain partially visible above the proposed buffer planting.

Three (3) rural dwellings are located on Wallingford Road (*refer OP11, 12 & 13 – Appendix B*) to the north of the Project site at a distance greater than 1.5 kilometres. At this distance the Project may be visible as a change in land cover from cropping fields to solar panels although over a relative small area comparative to the viewshed. The *Photomontage VP09 Appendix D* illustrates the potential visibility of the Project before and after establishment of the proposed screening vegetation. In the long term, it is anticipated the Project will not be visible from OP11, and potentially slightly visible above the screening vegetation from OP12 and OP13 due to the increased elevation of these properties. The potential impact on views from these properties is considered moderate, as the Project may result in a noticeable change in the view but will not be sufficient to change the nature of the view.

Two (2) rural dwellings are located to the east of the Project site (*refer OP5 & OP10 – Appendix B*). One property is located on Roche Road at a distance of approximately 1 kilometre from the Project site. This property faces north and views are not directed across the Project site. Potential changes to views in the vicinity of this property are shown in *Photomontage VP12 – Appendix D*. The potential impact on views from this dwelling is considered moderate, as the Project may result in a noticeable change in views from the property but will not be sufficient to change the nature of the view. The other rural dwelling is located on Murlaggan Road at a distance of approximately 1.8 kilometres

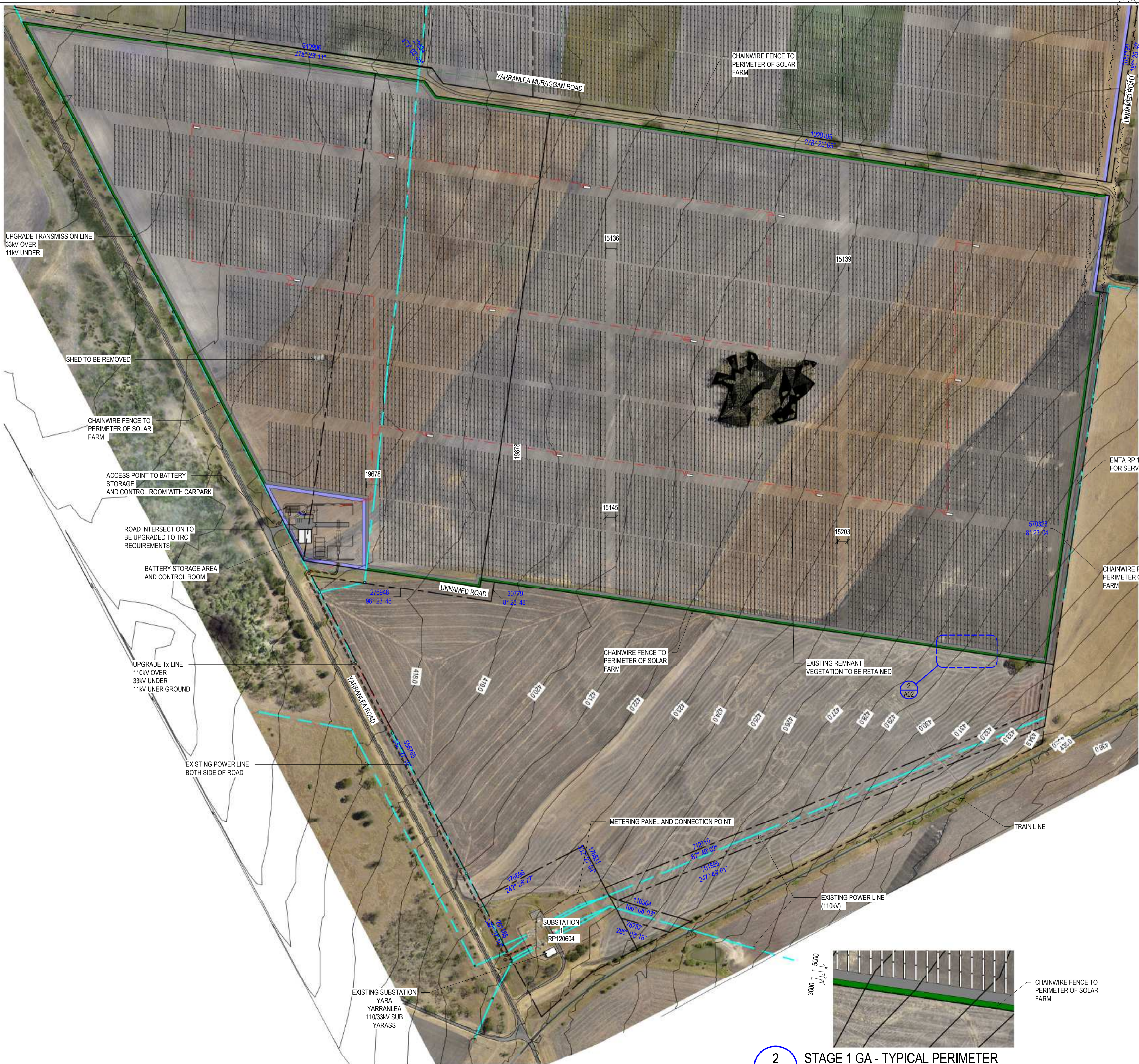
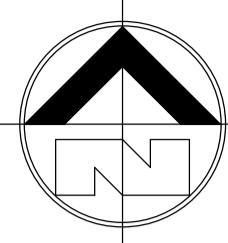
from the Project site. At this distance the Project may be visible as a minor change in land cover from cropping fields to solar panels, although the individual project elements are unlikely to be discernable. The potential impact on views from this dwelling is considered moderate, as the Project may result in a noticeable change in the view but will not be sufficient to change the nature of the view.

In summary, the assessment found the Project is not considered likely to alter the fundamental character of the landscape within the viewshed once the buffer planting is established. Therefore the scenic preference rating of the landscape is not considered likely to change as a result of the Project.

The assessment identified a limited number of rural dwellings located in elevated positions that may have partial views of the Project above the buffer planting. Potential changes to views may be noticeable, however due to the distance from the Project and scale of change relative to the landscape, these changes to views are not considered sufficient to change the nature of the view.

APPENDIX A:

PROJECT LAYOUT PLANS AND TYPICAL LANDSCAPE PLAN



PROJECT TEAM

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STAGE 1 SCHEDULE

NAME	AREA
ACCESS TRACK	22354m²
BUILDINGS	580m²
CARPARK BITUMEN	1123m²
GRAVEL COVER	3610m²
INVERTERS	207m²
LANDSCAPING	15722m²
SOLAR PANELS	276 665m²
TOTAL	320261m²

- LANDSCAPING BUFFER (3m)
- LANDSCAPING BUFFER (5m)
- EXISTING HOUSE
- ACCESS TRACK
- LEASE BOUNDARY / PROPERTY LINE
- BOUNDARY

F	LANDSCAPING REVISED	19.08.2016	R.J.R.
E	FOR COUNCIL APPROVAL	17.06.2016	J.A.W
D	ERGON CLEARANCE INCREASED	15.06.2016	J.A.W
C	PLANS AMENDED	01.06.2016	R.J.R.
B	BACKGROUND IMAGE REALIGNED	27.01.2016	R.J.R.
A	DRAWING AMENDED	22.01.2016	R.J.R.
REV	DESCRIPTION	DATE	BY

Status

FOR APPROVAL

NOT TO BE USED FOR CONSTRUCTION

Project
PROPOSED YARRANLEA SOLAR FARM
538 AND 752, YARRANLEA ROAD,
YARRANLEA
for
YARRANLEA SOLAR PTY LTD

Title

STAGE 1 GA PLAN

Drawn	Date	Chkd	Date
R.J.R.	14.07.2016	N.C.	
Design	Date	Apprd	Date
N.C.			
Scale	A1	Certif	Date
As indicated			
Project No.	Dwg. No.	Rev	
15-282	A02	F	

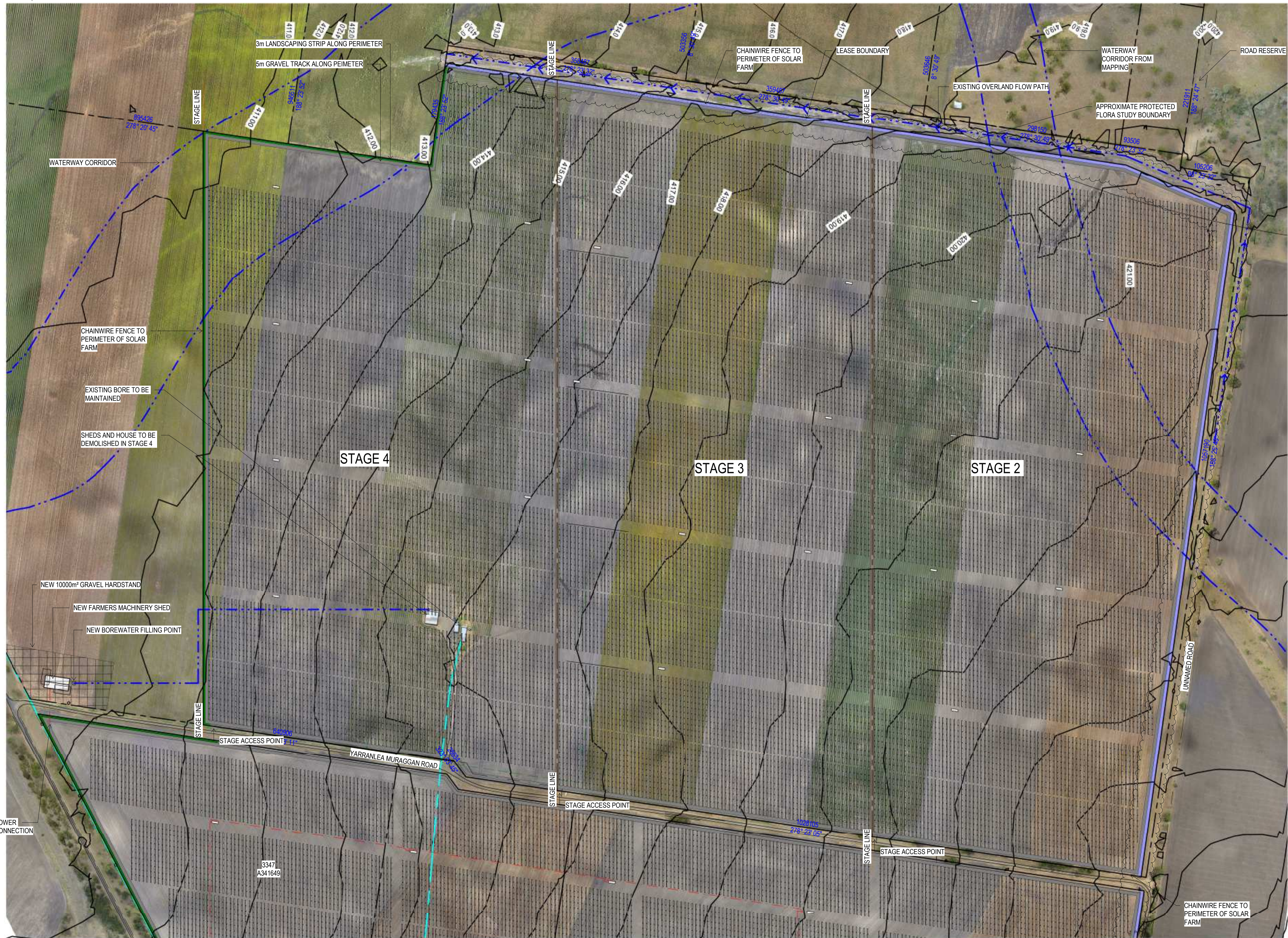
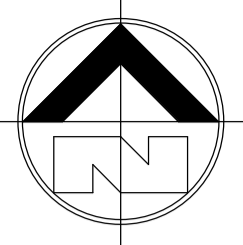
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1 STAGE 1

1:3000

2 STAGE 1 GA - TYPICAL PERIMETER

1:1000



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STAGE 2 SCHEDULE

NAME	AREA
ACCESS TRACK	12366m²
INVERTERS	103m²
LANDSCAING	7800m²
SOLAR PANELS	142336m²
TOTAL	160605m²

STAGE 3 SCHEDULE

NAME	AREA
ACCESS TRACK	9989m²
INVERTERS	103m²
LANDSCAING	2380m²
SOLAR PANELS	145894m²
TOTAL	158366m²

STAGE 4 SCHEDULE

NAME	AREA
ACCESS TRACK	13015m²
INVERTERS	103m²
LANDSCAING	5001m²
SOLAR PANELS	142868m²
TOTAL	160987m²

	LANDSCAPING BUFFER (3m)
	LANDSCAPING BUFFER (5m)
	EXISTING HOUSE
	LEASE BOUNDARY / PROPERTY LINE
	ACCESS TRACK
	BOUNDARY

E	LANDSCAPING REVISED	19.08.2016	R.J.R.
D	FOR COUNCIL APPROVAL	17.06.2016	J.A.W.
C	PLANS AMENDED	01.06.2016	R.J.R.
B	WATERWAY CORRIDORS ADDED	15.02.2016	R.J.R.
A	DRAWING AMENDED	22.01.2016	R.J.R.
REV	DESCRIPTION	DATE	BY

Status

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NOT TO BE USED FOR CONSTRUCTION

Project

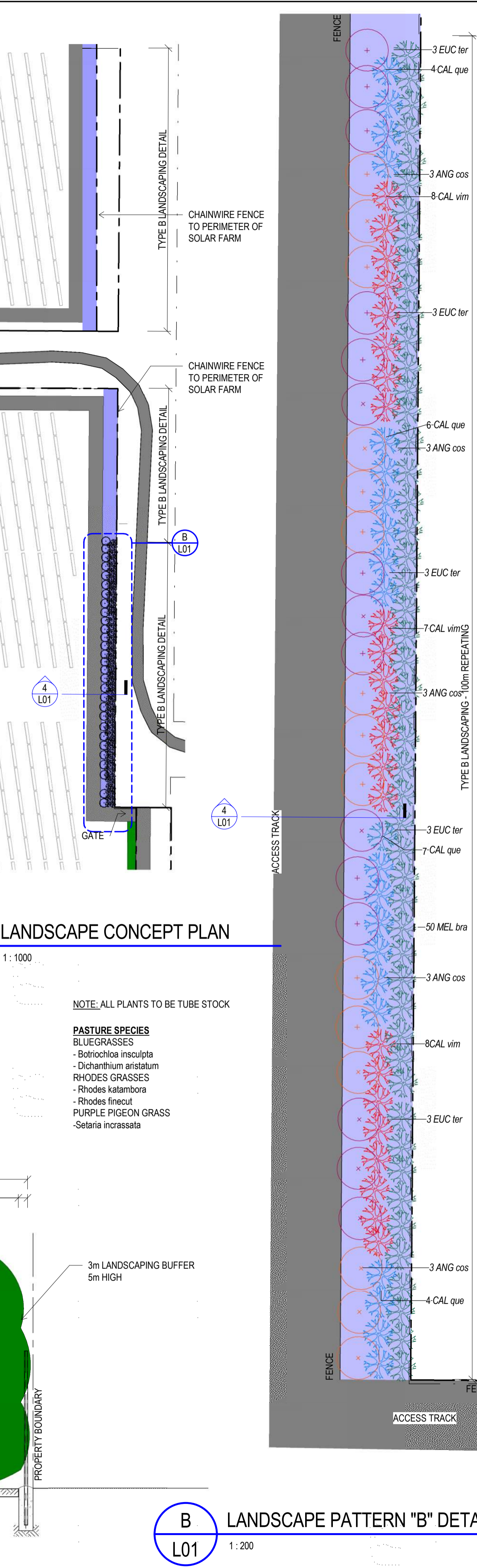
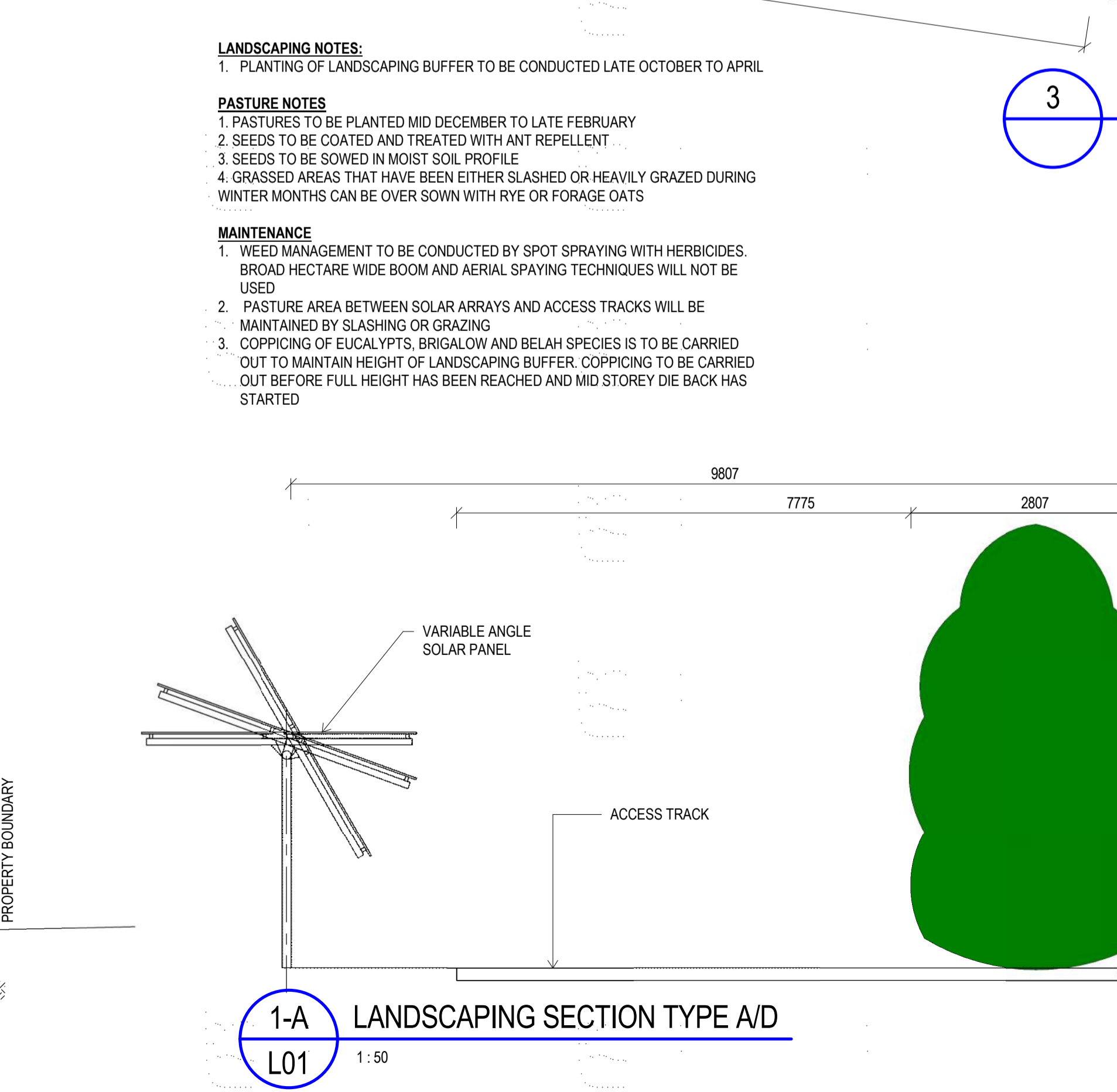
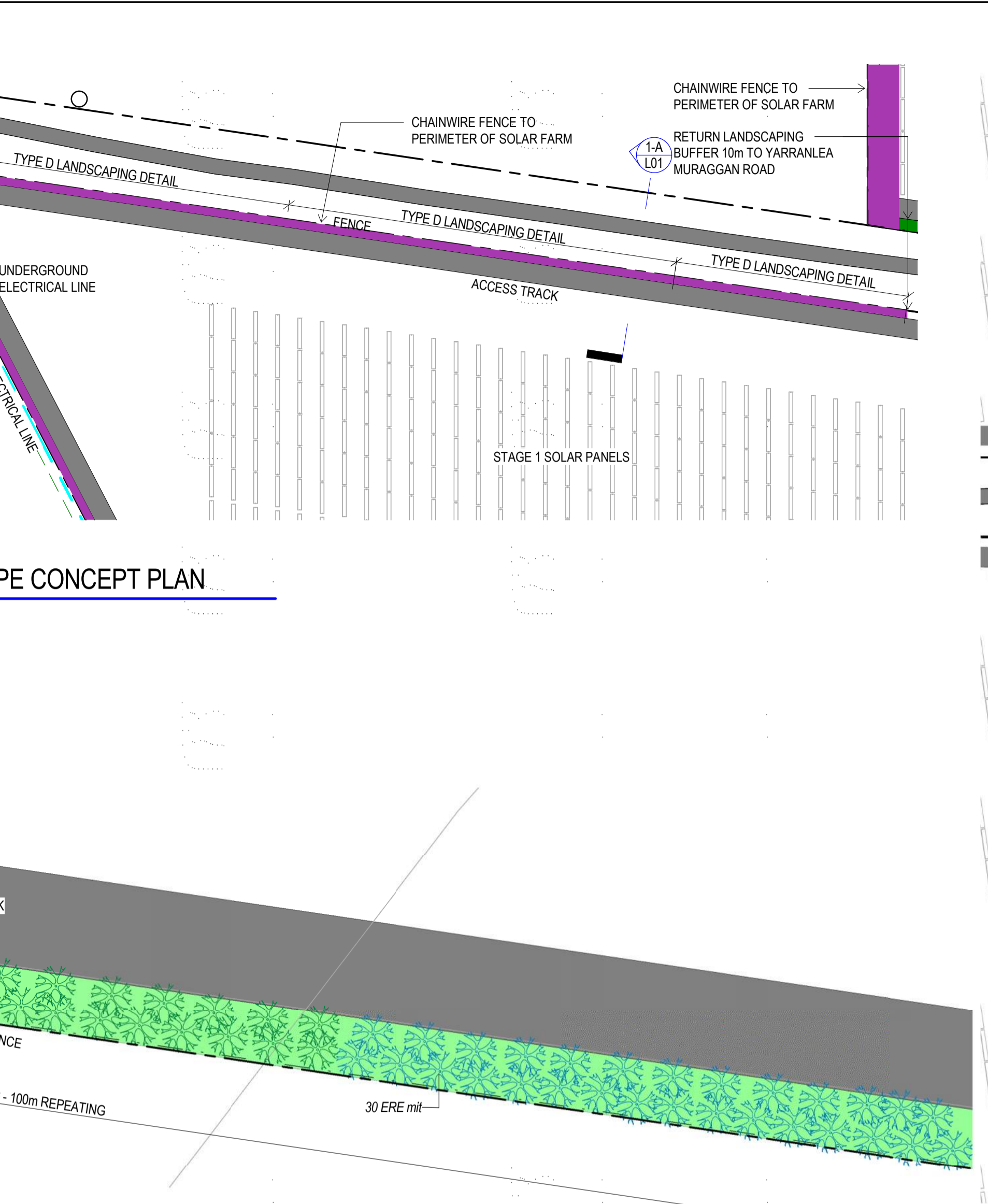
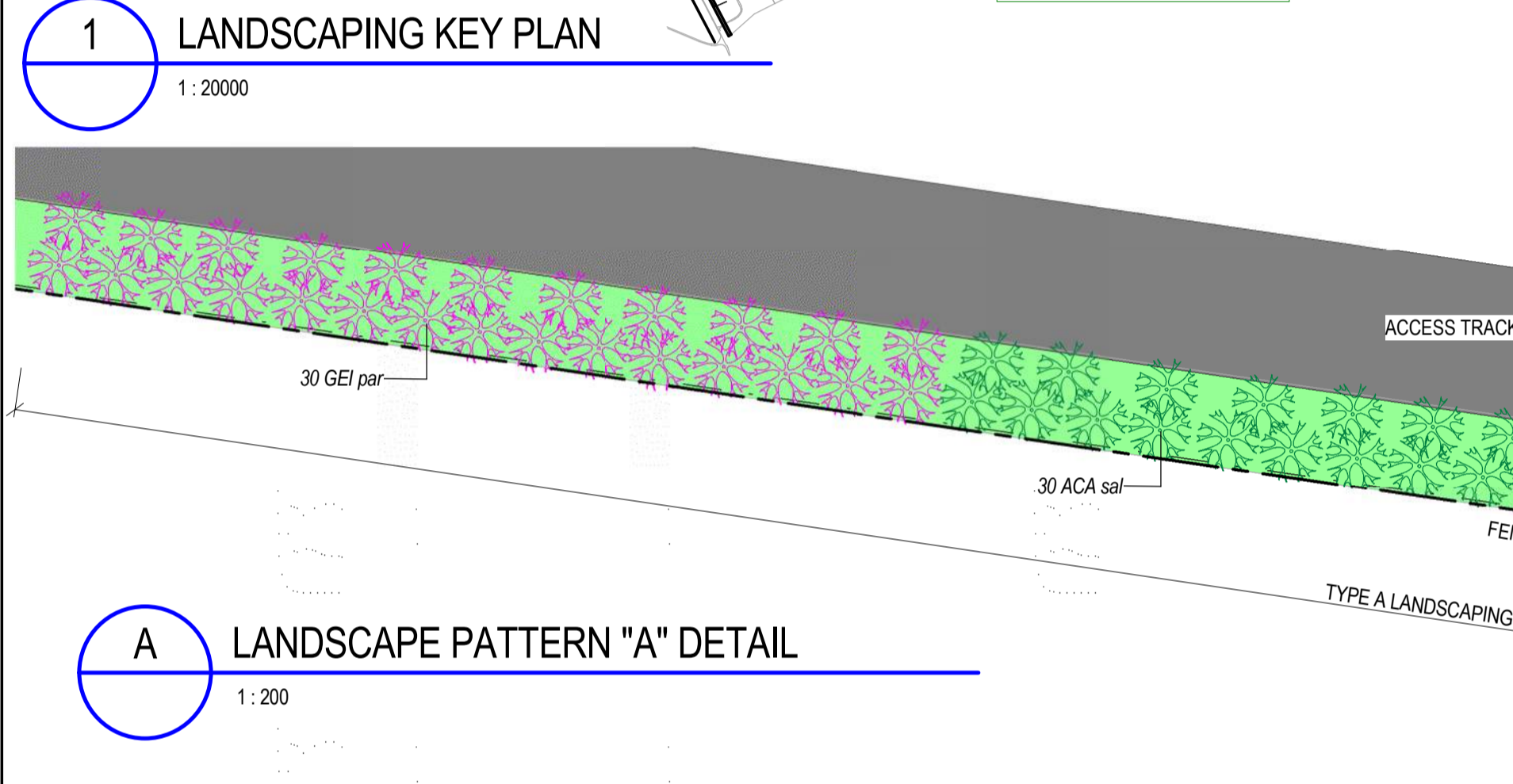
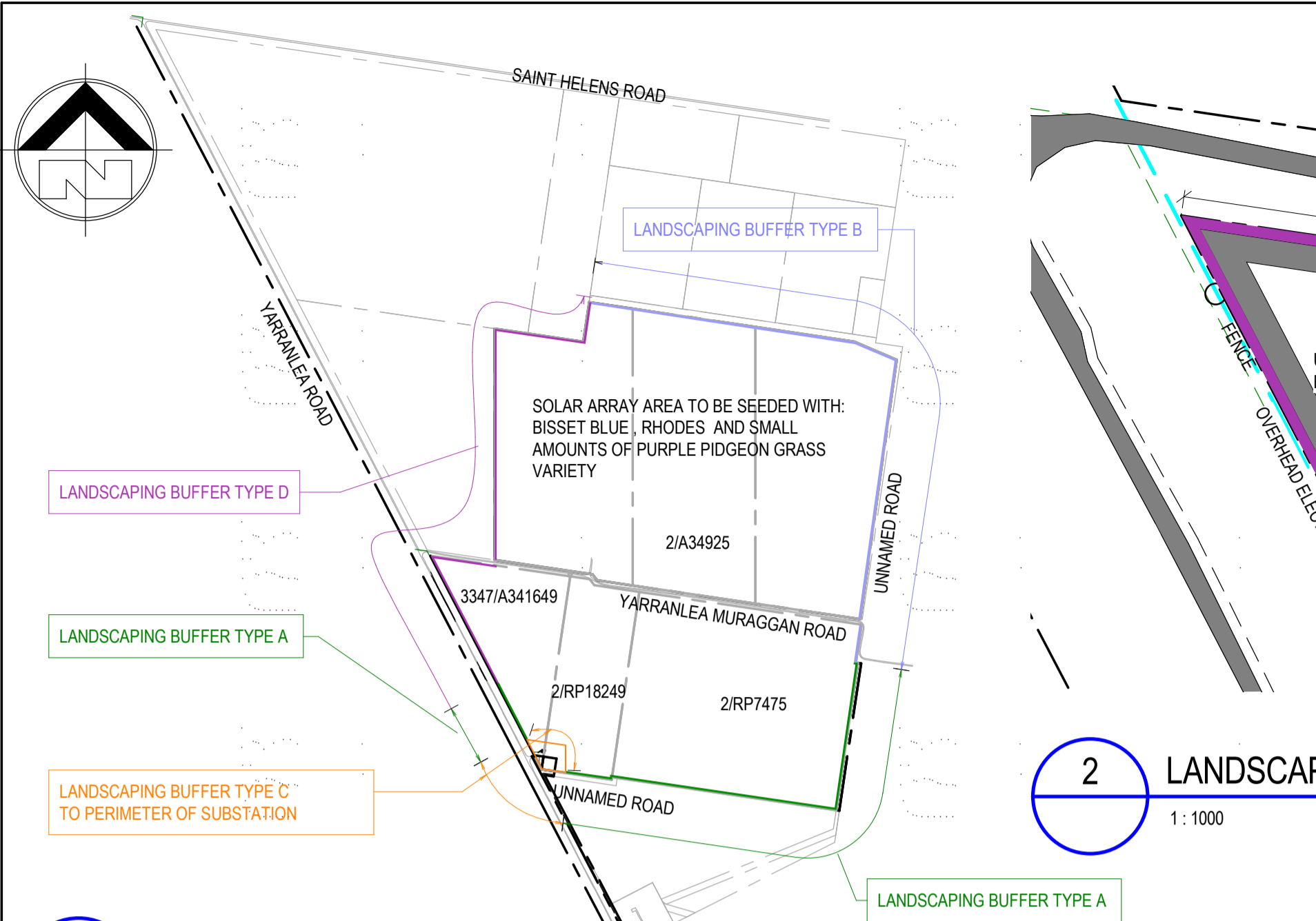
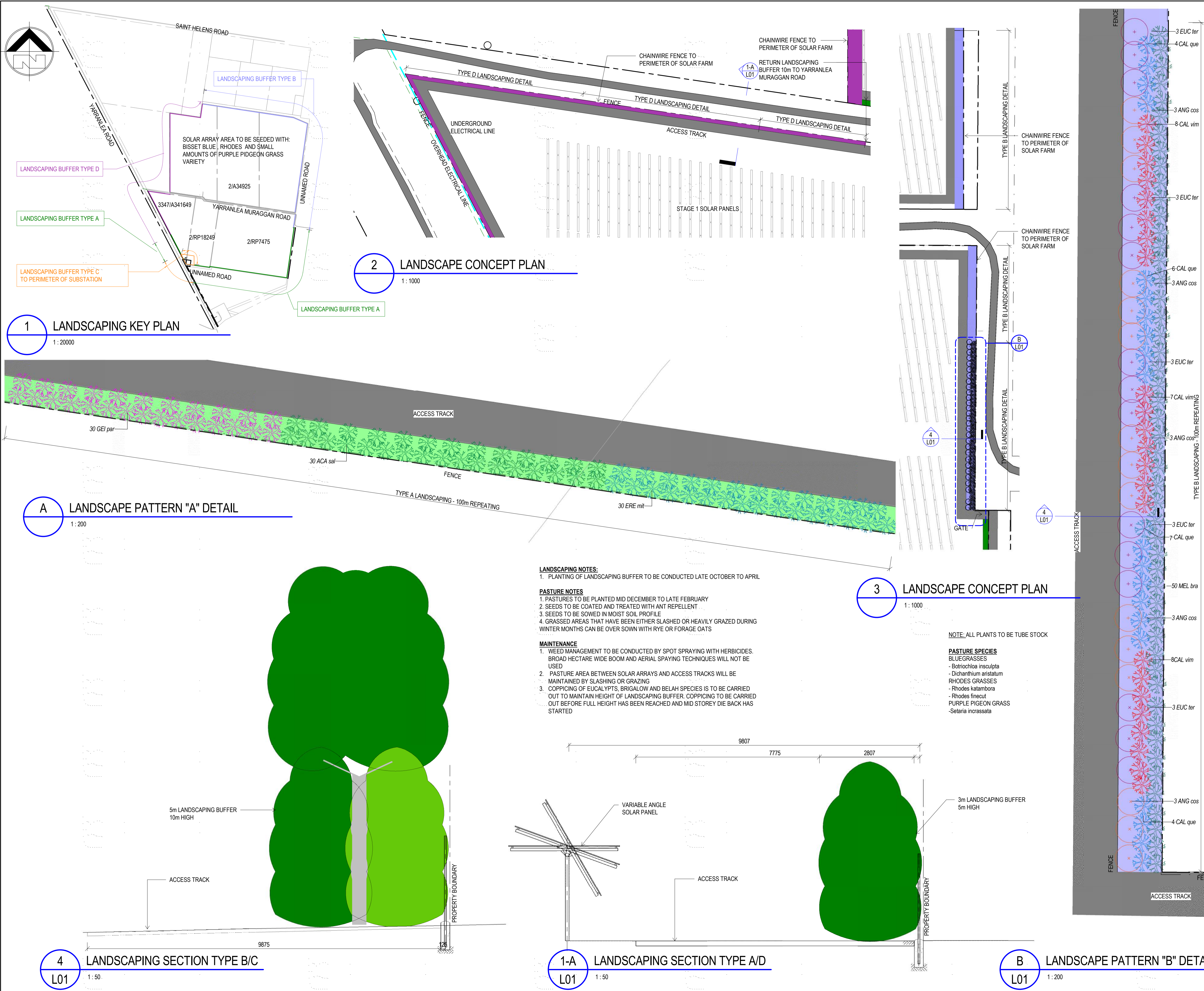
PROPOSED YARRANLEA SOLAR FARM
538 AND 752, YARRANLEA ROAD, YARRANLEA
for
YARRANLEA SOLAR PTY LTD

Title

STAGE 2, 3 AND 4 GA PLANS

Drawn	Date	Chkd	Date
R.J.R.	14.07.2016	N.C.	
Design	Date	Apprd	Date
N.C.			
Scale	A1	Certif	Date
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Project No.	Dwg. No.	Rev	
15-282	A03	E	

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YARRANLEA SOLAR

Planting Schedule Type A (100m Section)

Code	Botanical Name	Common Name	#	Mature Height
Shrub				
ACA sal	Acacia salicina	Sally wattle	30	20m
ERE mit	Eremophila mitchelli	False sandalwood	29	6m
GEI par	Geijera parviflora	Willga	26	10m

Planting Schedule Type B (100m Section)

Code	Botanical Name	Common Name	#	Mature Height
Tree				
ANG cos	Angophora costata	Smooth-barked Apple	6	25m
EUC ter	Eucalyptus tereticornis	Blue Gum	6	50m
Shrub				
CAL que	Callistemon quercinus	Oakey Bottlebrush	21	10m
CAL vim	Callistemon viminalis	Weeping bottlebrush	23	10m
MEL bra	Melaleuca bracteata	Black Tea Tree	50	10m

Planting Schedule Type C (100m Section)

Code	Botanical Name	Common Name	#	Mature Height
Shrub				
CAL que	Callistemon quercinus	Oakey Bottlebrush	26	10m
CAL vim	Callistemon viminalis	Weeping bottlebrush	24	10m
MEL bra	Melaleuca bracteata	Black Tea Tree	52	10m

Planting Schedule Type D (100m Section)

Code	Botanical Name	Common Name	#	Mature Height
Tree				
Aca har	Acacia harpophylla	Brigalow	10	10m
CAS cri	Casuarina cristata	Belah	20	10m
Shrub				
ACA sal	Acacia salicina	Sally wattle	25	20m
ERE mit	Eremophila mitchelli	False sandalwood	29	6m
GEI par	Geijera parviflora	Willga	24	10m

D	LANDSCAPING MODIFIED	10.11.2016	R.J.R.
C	LANDSCAPING REVISED	19.08.2016	R.J.R.
B	FOR COUNCIL APPROVAL	17.06.2016	J.A.W
A	DRAWING AMENDED	22.01.2016	R.J.R.
REV	DESCRIPTION	DATE	BY
Status	NOT TO BE USED FOR CONSTRUCTION		

FOR APPROVAL

NOT TO BE USED FOR CONSTRUCTION

Project

PROPOSED YARRANLEA SOLAR FARM

538 AND 752, YARRANLEA ROAD, YARRANLEA

for YARRANLEA SOLAR PTY LTD

Title

TYPICAL LANDSCAPE PLAN

Drawn	Date	Chkd	Date
J.A.W.	14.07.2016	R.J.R.	

Design	Date	Apprd	Date
N.C			

Scale	A1	Certif	Date
As indicated			

Project No.	Dwg. No.	Rev
15-282	L01	D

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PROJECT TEAM

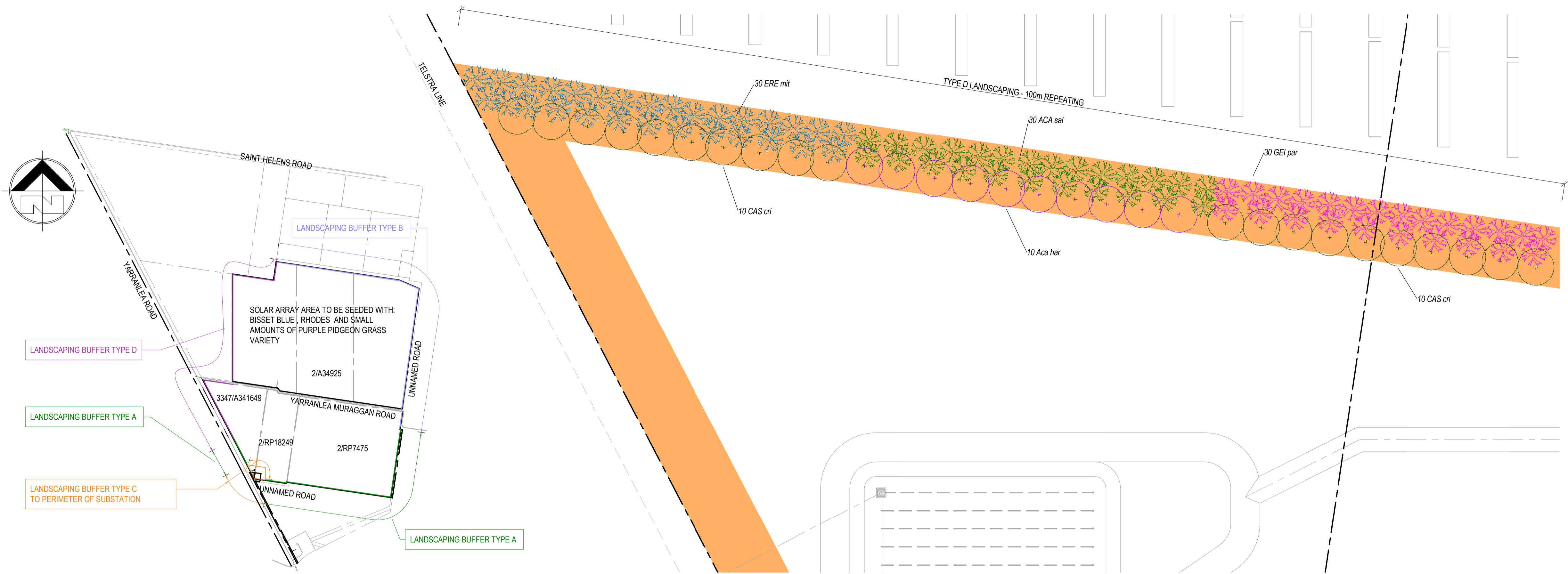
Consulting Engineer:



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YARRANLEA SOLAR

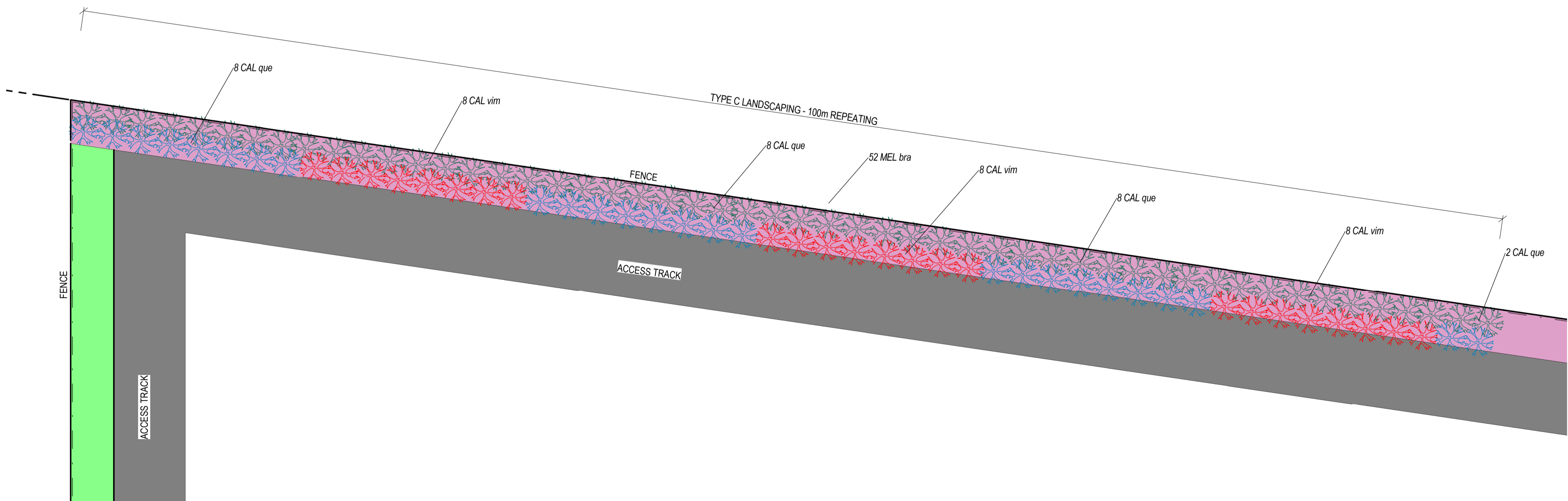


1 LANDSCAPING KEY PLAN

1 : 20000

D LANDSCAPE PATTERN "D" DETAIL

1 : 200



C LANDSCAPE PATTERN "C" DETAIL

1 : 200

A	LANDSCAPING MODIFIED	10.11.2016	R.J.R.
REV	DESCRIPTION	DATE	BY

Status

FOR APPROVAL

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Project

PROPOSED YARRANLEA SOLAR FARM
538 AND 752, YARRANLEA ROAD,
YARRANLEA
for
YARRANLEA SOLAR PTY LTD

Title

TYPICAL SUBSTATION
LANDSCAPING PLAN

Drawn	Date	Chkd	Date
J.A.W	14.07.2016	Checker	
Design	Date	Apprd	Date
N.C			
Scale	A1	Certif	Date
As indicated			
Project No.	Dwg. No.	Rev	
15-282	L02	A	

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APPENDIX B:

VIEWSHED AND VIEWPOINT LOCATION PLAN





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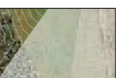

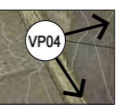
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p 07 3870 8888 f 07 3870 8888

LEGEND

-  Contours (1m intervals)
-  Solar Farm
-  Observation Points (Rural Dwellings)
-  Viewshed limits - areas screened by topography
-  Viewshed - distance from solar farm
-  Viewpoint location

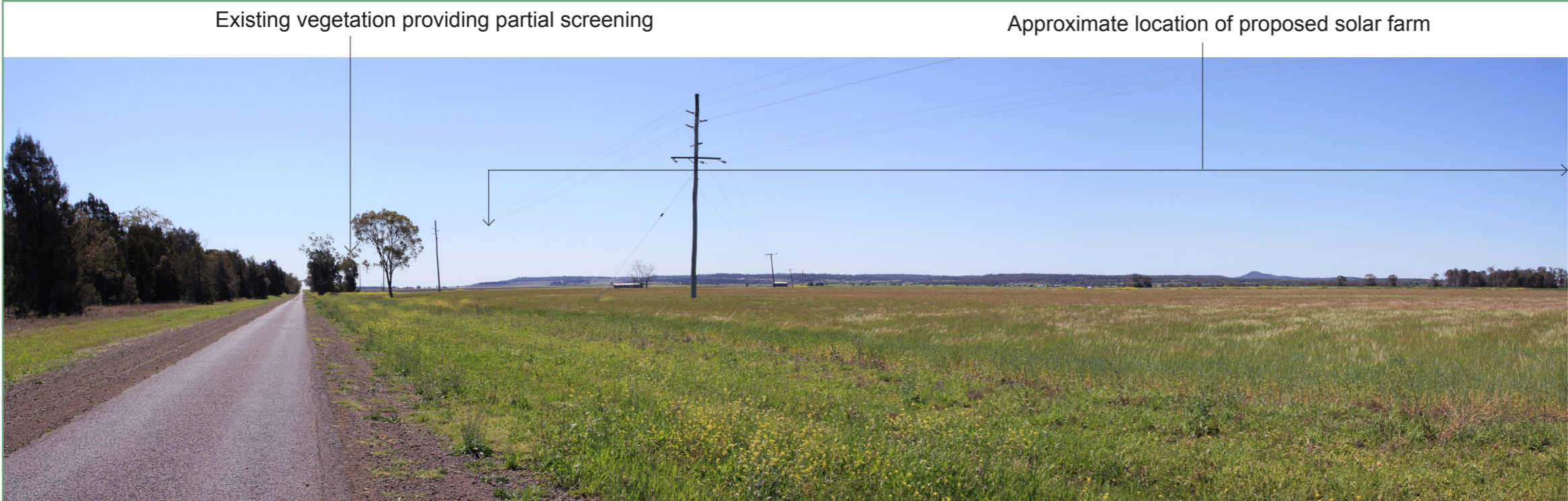
SCALE



 <div>ENVIRONMENTAL ETHOS</div>	ENVIRONMENTAL ETHOS ABN: 65 054 076 046 TEL: +61 (0) 419 407 882 Email: Info@environmentalethos.com.au	PROJECT YARRANLEA SOLAR FARM	CLIENT YARRANLEA SOLAR PTY LTD	<table><tr><th>ISSUE</th><th>DESCRIPTION</th><th>DATE</th></tr><tr><td>A</td><td>DRAFT</td><td>07/10/16</td></tr><tr><td>B</td><td>FINAL FOR SUBMISSION</td><td>15/11/16</td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>	ISSUE	DESCRIPTION	DATE	A	DRAFT	07/10/16	B	FINAL FOR SUBMISSION	15/11/16										DESIGNED BY S CRAWFORD APPROVED BY S CRAWFORD	DATE OF FIRST ISSUE 07/10/2016	 NORTH	DRAWING NAME VIEWSHED & VIEWPOINT
	ISSUE			DESCRIPTION	DATE																					
	A			DRAFT	07/10/16																					
	B			FINAL FOR SUBMISSION	15/11/16																					
PLAN																										
DRAWING NUMBER	ISSUE																									
16003-FIGURE 4	B																									

APPENDIX C:

REPRESENTATIVE VIEWS



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape in foreground and middle ground, with distance background of Undulating Hills

VISUAL AMENITY

Open long distance view across a rural landscape with some native vegetation. Infrastructure elements within the landscape includes road, sheds, buildings, and power lines.

VIEWPOINT 01 EXISTING VIEW - YARRANLEA ROAD LOOKING EAST



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Similar view to VP01 with some screening from vegetation along the road verge.

VISUAL AMENITY

Similar view to VP01, vegetation in the foreground provides some screening.

VIEWPOINT 02 EXISTING VIEW - YARRANLEA ROAD LOOKING EAST



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VISUAL IMPACT ASSESSMENT

CLIENT
YARRANLEA SOLAR
PTY LTD

ISSUE	DESCRIPTION	DATE
A	DRAFT FOR CLIENT REVIEW	03/10/16
B	FINAL FOR SUBMISSION	15/11/16

**REPRESENTATIVE
VIEWPOINTS**

PROJECT NUMBER
16003

VIEWPOINT LOCATION
YARRANLEA ROAD

VIEWPOINT NUMBER
VP01 & 02 ISSUE
B

Approximate location of proposed solar farm

Existing vegetation providing partial screening



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape in foreground and middle ground, with distance background of Undulating Hills

VISUAL AMENITY

Open view across a rural landscape with native vegetation along the road side and in the distant background. Infrastructure elements within the landscape includes road, sheds, buildings, and power lines.

VIEWPOINT 03 EXISTING VIEW - YARRANLEA ROAD LOOKING EAST ALONG EXISTING ACCESS ROAD

Approximate location of proposed solar farm



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape in foreground and middle ground, with distance background of Undulating Hills

VISUAL AMENITY

Open long distance view across a rural landscape with some native vegetation. Infrastructure elements within the landscape includes road, sheds, buildings, and power lines.

VIEWPOINT 04 EXISTING VIEW - YARRANLEA ROAD LOOKING SOUTH EAST



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**REPRESENTATIVE
VIEWPOINTS**

PROJECT NUMBER
16003

VIEWPOINT LOCATION
YARRANLEA ROAD

VIEWPOINT NUMBER	ISSUE
VP03 & 04	B

Approximate location of proposed solar farm



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape in foreground and middle ground, with distance background of undulating hills.

VISUAL AMENITY

Open long distance view across a flat rural landscape with some native vegetation in the background. Infrastructure elements within the landscape include power lines.

VIEWPOINT 05 EXISTING VIEW - YARRANLEA ROAD LOOKING SOUTH EAST - CLOSE TO OP08

Approximate location of proposed solar farm



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

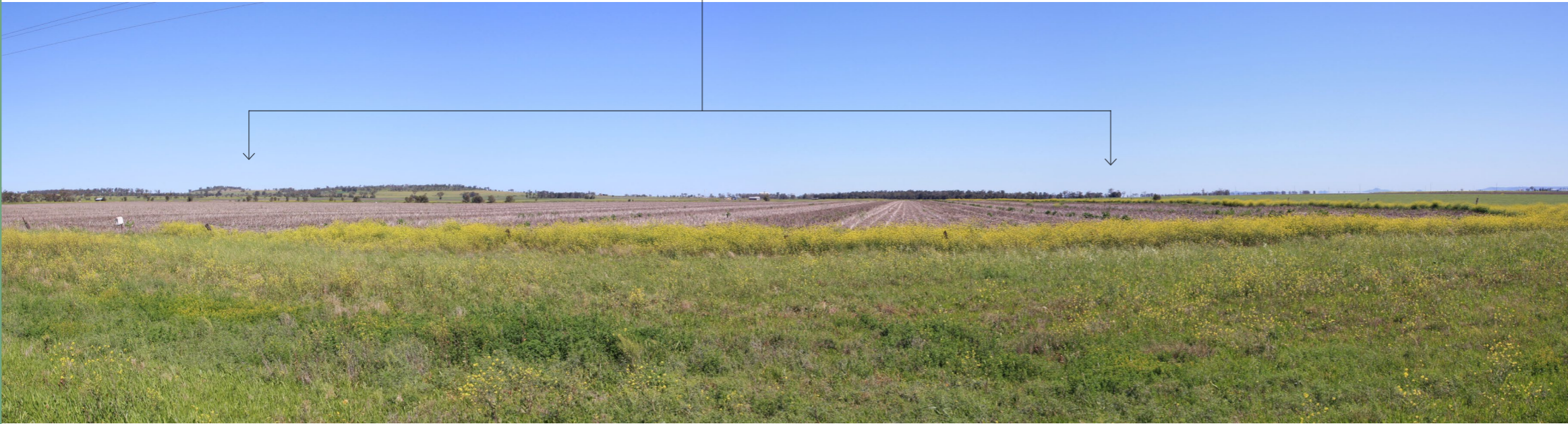
As for VP 05

VISUAL AMENITY

As for VP 05

VIEWPOINT 06 EXISTING VIEW - CORNER YARRANLEA ROAD AND PITTSWORTH-NORWIN ROAD

Approximate location of proposed solar farm



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape with distance background of undulating hills.

VISUAL AMENITY

Open long distance view across a flat rural landscape.

VIEWPOINT 07 EXISTING VIEW - PITTSWORTH-NORWIN ROAD

Existing vegetation providing screening

Approximate location of proposed solar farm



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape with distance background of undulating hills.

VISUAL AMENITY

Open long distance view across a flat rural landscape.

VIEWPOINT 08 EXISTING VIEW - PITTSWORTH-NORWIN ROAD



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape
as viewed from slightly elevated position.

VISUAL AMENITY

Open long distance view across a flat rural
landscape.

VIEWPOINT 09 EXISTING VIEW - WALLINGFORD ROAD - CLOSE TO OP11



LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape
as viewed from slightly elevated position.

VISUAL AMENITY

Open long distance view across a flat rural
landscape with some native vegetation.

VIEWPOINT 10 EXISTING VIEW - WALLINGFORD ROAD - CLOSE TO OP13

Existing vegetation screen



VIEWPOINT 11 EXISTING VIEW - ROCHE ROAD

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Predominantly Low Lying Rural Landscape
as viewed from slightly elevated position.

VISUAL AMENITY

Open long distance view across a flat rural
landscape with some native vegetation.

Approximate location of proposed solar farm



VIEWPOINT 12 EXISTING VIEW - ROCHE ROAD - CLOSE TO OP06

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape as viewed
from slightly elevated position.

VISUAL AMENITY

Open long distance panoramic view
across a flat rural landscape.



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**REPRESENTATIVE
VIEWPOINTS**

PROJECT NUMBER
16003

VIEWPOINT LOCATION
ROCHE ROAD

VIEWPOINT NUMBER	ISSUE
VP 11 & 12	B

Approximate location of proposed solar farm



VIEWPOINT 13 EXISTING VIEW - MURLAGGAN ROAD

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape as viewed
from slightly elevated position.

VISUAL AMENITY

Open long distance view across a flat rural
landscape with some native vegetation.

Existing vegetation screen



VIEWPOINT 14 EXISTING VIEW - ROCHE ROAD

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Undulating Hills used for grazing with
some native vegetation along fence lines

VISUAL AMENITY

Medium to long range view across a rural
landscape with some native vegetation.



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**REPRESENTATIVE
VIEWPOINTS**

PROJECT NUMBER
16003

VIEWPOINT LOCATION
**MURLAGGAN AND ROCHE
ROADS**

VIEWPOINT NUMBER
VP 13 & 14

ISSUE
B

Existing substation

Approximate location of proposed solar farm



VIEWPOINT 15 EXISTING VIEW - DESMOND LANE - CLOSE TO OP04

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape in foreground and middle ground, with distance background of Undulating Hills

VISUAL AMENITY

Open long distance view across a rural landscape with some native vegetation. Infrastructure elements within the landscape includes substation, sheds, buildings, and power lines.

Existing vegetation screen



VIEWPOINT 16 EXISTING VIEW - WATSON ROAD

LANDSCAPE CHARACTER UNITS
WITHIN THE VIEW

Low Lying Rural Landscape in foreground and middle ground, with distance background of Undulating Hills

VISUAL AMENITY

Open long distance view across a rural landscape with some native vegetation. Infrastructure elements within the landscape includes roads and power lines.



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PROJECT
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VISUAL IMPACT ASSESSMENT

CLIENT
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**REPRESENTATIVE
VIEWPOINTS**

PROJECT NUMBER
16003

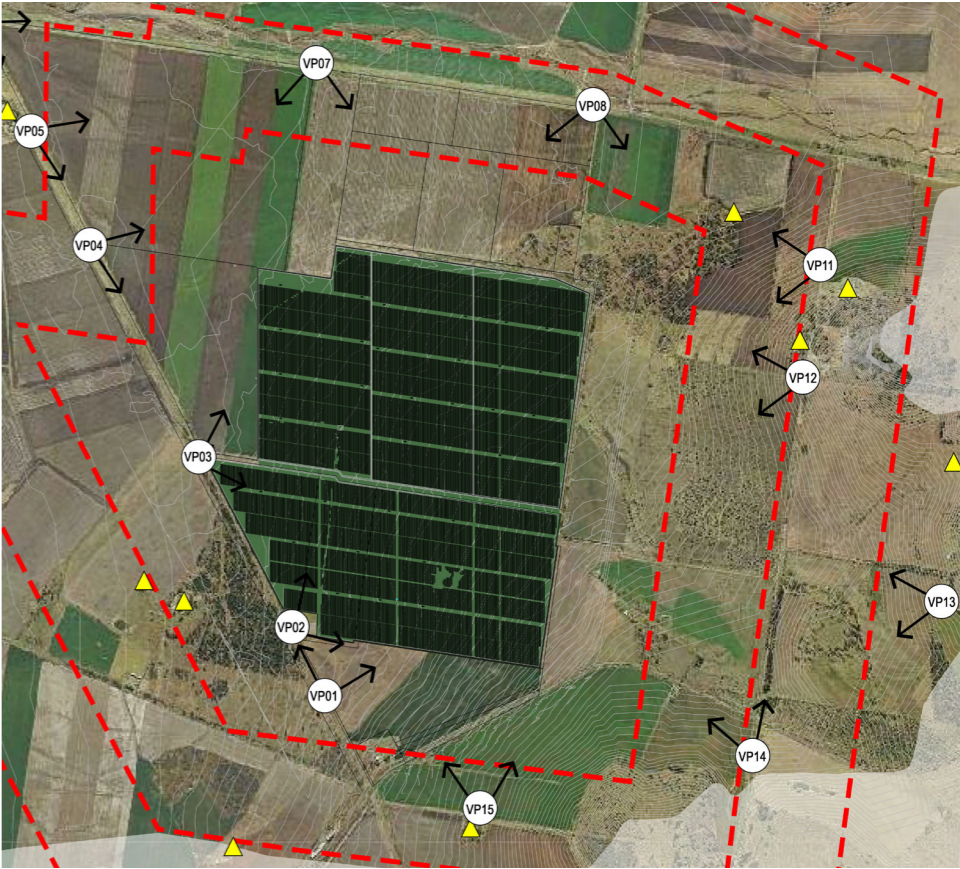
VIEWPOINT LOCATION
**DESMOND LANE AND
WATSON ROAD**

VIEWPOINT NUMBER
VP 15 & 16

ISSUE
B

APPENDIX D:

PHOTOMONTAGES



VIEWPOINT LOCATION PLAN



VP01 - EXISTING VIEW



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C	FINAL FOR SUBMISSION	15/11/16

EXISTING VIEW AND
LOCATION PLAN

PROJECT NUMBER
16003

VIEWPOINT LOCATION
VIEWPOINT 01

VIEWPOINT NUMBER
VP 01


ISSUE
C

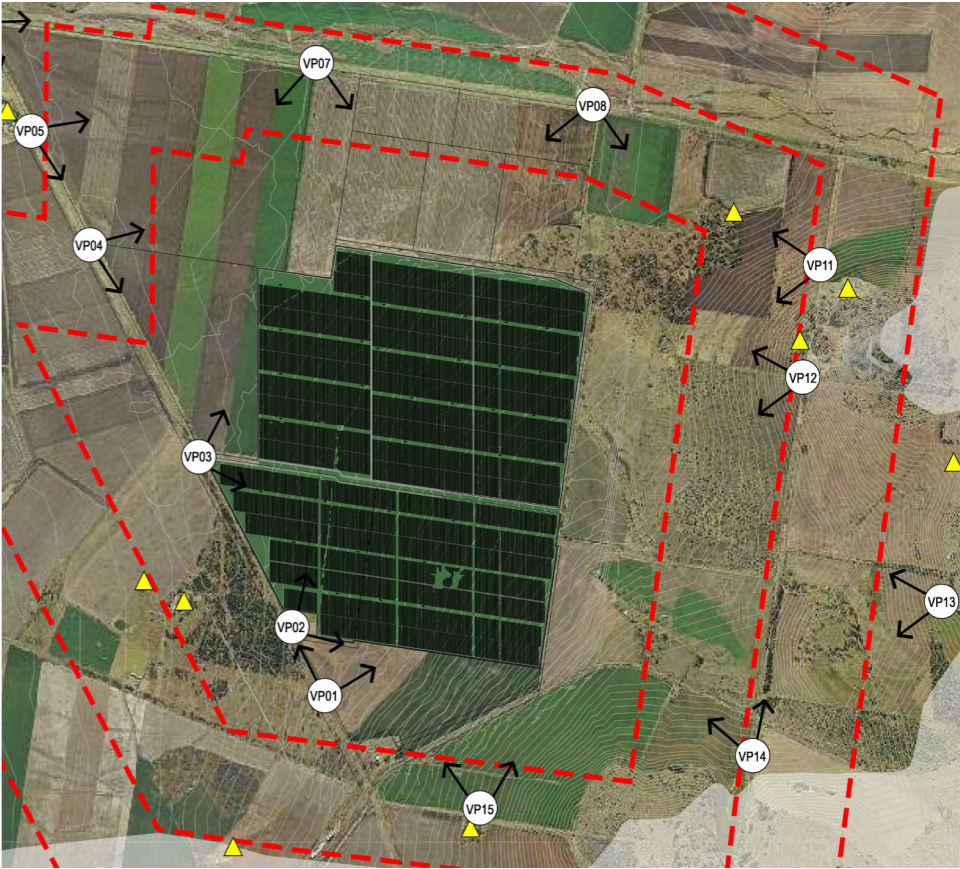


VP01 - PHOTOMONTAGE - SOLAR FIELD, CONTROL ROOM AND BATTERY STORAGE AREA - WITH IMMATURE SCREENING VEGETATION



VP01 - PHOTOMONTAGE - SOLAR FIELD, CONTROL ROOM AND BATTERY STORAGE AREA - WITH ESTABLISHED SCREENING VEGETATION

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				A	DRAFT FOR CLIENT REVIEW	10/10/16		VIEWPOINT 01	
				B	REVISED DRAFT	13/10/16			
				C	FINAL FOR SUBMISSION	15/11/16	PROJECT NUMBER 16003	VIEWPOINT NUMBER	ISSUE
								VP 01	C



VIEWPOINT LOCATION PLAN



VP09 - EXISTING VIEW



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CLIENT
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ISSUE	DESCRIPTION	DATE
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EXISTING VIEW AND
LOCATION PLAN

PROJECT NUMBER
16003

VIEWPOINT LOCATION
VIEWPOINT 09

VIEWPOINT NUMBER
VP 09


ISSUE
C

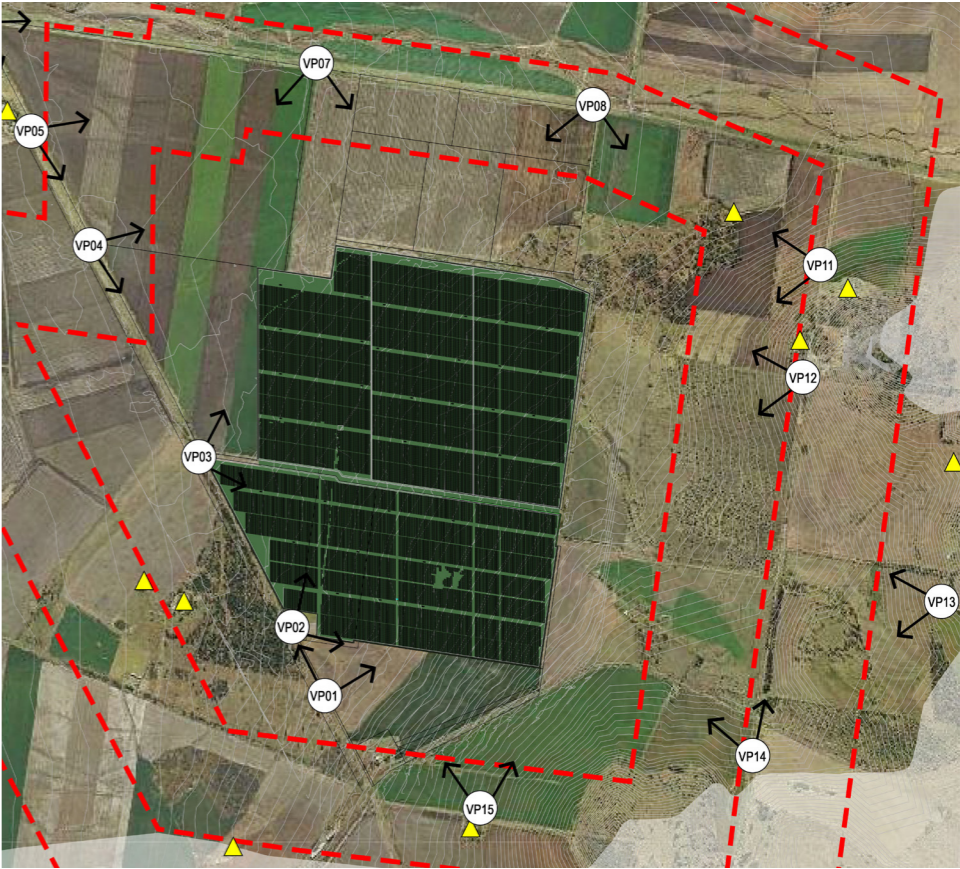


VP09 - PHOTOMONTAGE - SOLAR FARM - WITH IMMATURE SCREENING VEGETATION



VP09 - PHOTOMONTAGE - SOLAR FARM WITH ESTABLISHED SCREENING VEGETATION


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				A	DRAFT FOR CLIENT REVIEW	10/10/16			
				B	REVISED DRAFT	13/10/16			
				C	FINAL FOR SUBMISSION	15/11/16	PROJECT NUMBER 16003		VIEWPOINT NUMBER VP 09



VIEWPOINT LOCATION PLAN



VP12 - EXISTING VIEW


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				A	DRAFT FOR CLIENT REVIEW	10/10/16		PROJECT NUMBER 16003	VIEWPOINT NUMBER VP 12	ISSUE C
				B	REVISED DRAFT	13/10/16				
				C	FINAL FOR SUBMISSION	15/11/16				



VP12 - PHOTOMONTAGE - SOLAR FARM - WITH IMMATURE SCREENING VEGETATION



VP12 - PHOTOMONTAGE - SOLAR FARM WITH ESTABLISHED SCREENING VEGETATION

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				A	DRAFT FOR CLIENT REVIEW	10/10/16			
				B	REVISED DRAFT	13/10/16			
				C	FINAL FOR SUBMISSION	15/11/16	PROJECT NUMBER 16003	VIEWPOINT NUMBER VP 12	ISSUE C