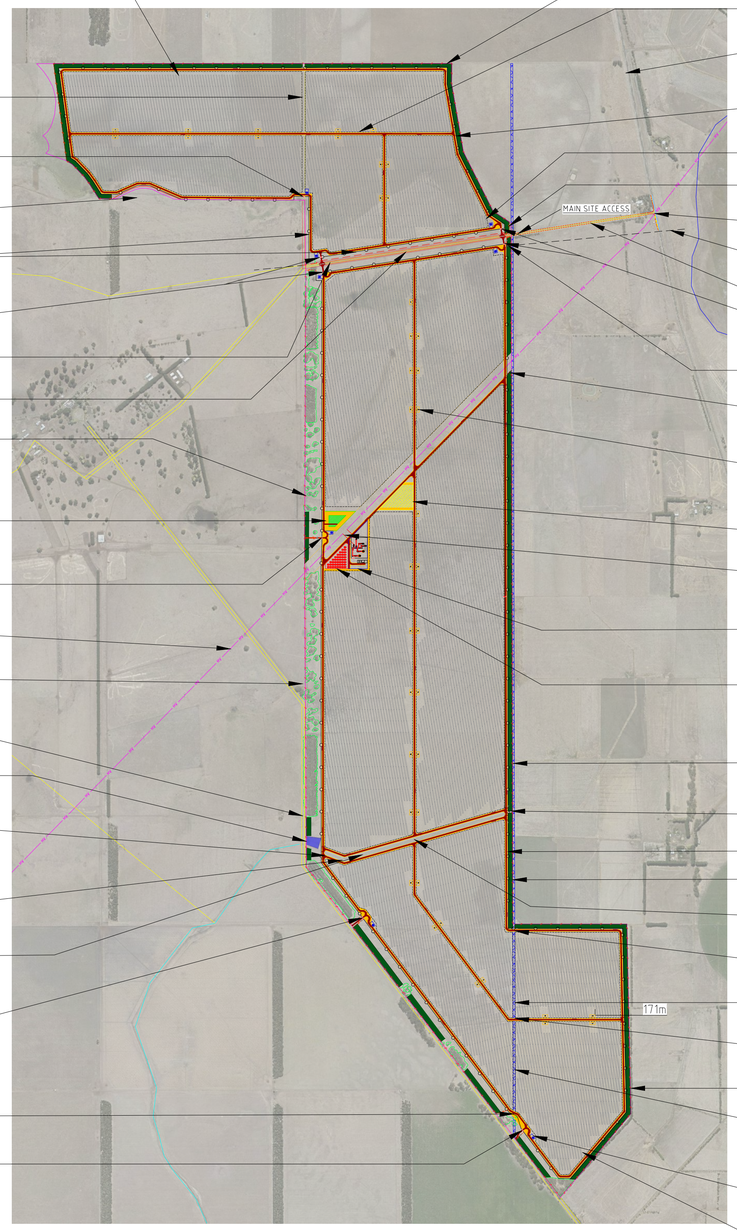


DISTANCE BETWEEN ROWS (NORTHERN ARRAY)
13.00m PILE TO PILE

MENINGOORT RD
UNFORMED WITHIN SITE BOUNDARY

EMERGENCY ACCESS GATE '1' 8m WIDE

AREA OF ABORIGINAL LIKELIHOOD
EXCLUSION ZONE

20m OFFSET FROM EXISTING
ROAD TO FENCE BOUNDARY

MAIN ENTRY POINTS '3' AND '4' GATED 8m WIDE

PORTION OF EXISTING 11kV LINE
TO BE BURIED UNDERGROUND

UNDERGROUND CABLES TO BE INSTALLED UNDER MENINGOORT RD

FLOOD CONSTRAINT
INFRASTRUCTURE LIMITED TO FENCE, TRACK AND ARRAYS

OPERATIONS BUILDINGS
SEE 'APPENDIX D, OPERATIONS BUILDINGS PLAN' FOR DETAIL
118m FROM SITE BOUNDARY

EMERGENCY ACCESS GATE '2' 8m WIDE

220KV OVERHEAD TRANSMISSION LINE (EXISTING)

EXISTING VEGETATION
WITHIN THE PROJECT BOUNDARY

VEGETATION BUFFER
5m BETWEEN EXISTING AND VEGETATION SCREENS

FLOOD CONSTRAINT
INFRASTRUCTURE LIMITED TO TRACK AND FENCE

CULVERT (3 x 600mm PIPES) AT DRAIN CROSSING
SEDGE REMOVAL

15m FLOOD EXCLUSION ZONE
(7.5m EITHER SIDE OF THE CENTRE OF THE DRAIN)

EAST WEST DRAIN
CONTAINS NATIVE SEDGE

EMERGENCY ACCESS GATE '3' 8m WIDE

CULVERT (2 x 600mm PIPES) AT DRAIN CROSSING

EMERGENCY ACCESS GATE '4' 8m WIDE

VEGETATION SCREEN
20m WIDE

INTERNAL TRACK NETWORK

DARLINGTON CAMPERDOWN ROAD

ASSET PROTECTION ZONE (APZ)
10m WIDE APZ LOCATED AROUND THE INTERNAL
TRACK NETWORK INCLUDING THE PERIMETER
ACCESS TRACK

TRACKER LENGTH 56m

FARM ACCESS TO NORTH EAST FIELD OUTSIDE SITE

PROPOSED IMPROVEMENTS TO THE INTERSECTION OF
MENINGOORT ROAD AND DARLINGTON-CAMPERDOWN ROAD

11kV OVERHEAD LINE (EXISTING, CONT.)

MENINGOORT ROAD (UPGRADE TO 7m WIDE)

MAIN ENTRY POINTS '1' AND '2' GATED 8m WIDE

6m GAP IN VEGETATION SCREENING

SITE ACCESS TO DRAIN
2 x 3m WIDE GATE ON EACH FENCE LINE

INVERTER STATION
CONTAINS 2 INVERTERS
INSTALLED ON 26x22m HARDSTAND

TEMPORARY CONSTRUCTION COMPOUND AND LAYDOWN AREA
1.44 ha WITH 10m APZ

POINT OF CONNECTION TO EXISTING TRANSMISSION LINE
186m FROM SITE BOUNDARY

SUBSTATION AREA
1.76 ha WITH 10m APZ
214m FROM SITE BOUNDARY

BATTERY AREA
0.91 ha WITH 10m APZ
102m FROM SITE BOUNDARY

NORTH SOUTH DRAIN
WITHIN DRAINAGE RESERVE 10m
OUTSIDE SITE BOUNDARY

CULVERT (12 x 300mm PIPES) AT DRAIN CROSSING
REMOVAL OF SEDGE

SECURITY FENCE (2.5m HIGH)
OFFSET 2m TO SCREEN

AGRICULTURAL FENCE (1.2m HIGH)

UNDERGROUND CABLE
HORIZONTAL BORE TO BE USED TO INSTALL CABLE
UNDERNEATH EXISTING DRAIN WITHOUT DISTURBING AREA

CULVERT (2 x 300mm PIPES) AT DRAIN CROSSING

NORTH SOUTH DRAIN
LOCATED WITHIN 10m WIDE DRAINAGE RESERVE

CULVERT (1 x 300mm PIPE) AT DRAIN CROSSING

SITE BOUNDARY

DRAINAGE RESERVE EXCLUSION ZONE (10m)
TRACK AND CABLES ONLY,
HORIZONTAL BORE TO BE USED TO INSTALL CABLE
UNDERNEATH DRAINAGE RESERVE WITHOUT DISTURBING AREA

WATER TANK
100kL
INSTALLED ON 16m x 26m HARDSTAND
WATER TANKS ARE LOCATED AT EACH ACCESS POINT

DISTANCE BETWEEN ROWS (SOUTHERN ARRAY)
12.75m PILE TO PILE

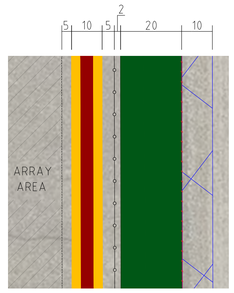
SITE PLAN VIEW
SCALE 1:15000

BILL OF MATERIALS (INDICATIVE)			
MATERIAL	DESCRIPTION	QUANTITY	UNITS
HV CABLE	240mm2 SINGLE CORE Al	285	km
DC CABLE	SUB-ARRAY (10mm2) TWIN Cu	120	km
DC CABLE	STRING (4mm2) TWIN Cu	3400	km
INVERTER STATIONS	SMA MVPS 5500-EV	41	EA
MODULES	TYPICAL 440W	641088	EA
TRACKERS	NEXTRACKER GEMINI 2P	5724	EA
COMBINER BOXES	1000V 32-INPUT COMBINER BOX (IP65)	954	EA
PIER	NEXTRACKER PIER, 4m DEEP	57240	EA

OVERALL SYSTEM SPECIFICATION		
MODULE	641088	TYPICAL 440W
INVERTER STATION	41	SMA MVPS 5500-EV (CONTAINING 2x 2750kVA INVERTERS)
INVERTER	82	SMA SUNNY CENTRAL 2750-EV
BATTERY	100	MWh
DC CAPACITY	282.08	MWp
AC CAPACITY	200.00	MVA (LIMITED FROM 225.5MVA)
DC/AC RATIO	1.41	

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL DIMENSIONS TO BE VERIFIED ON SITE BY CONTRACTOR.
2. PRINT IN COLOUR.
3. THIS DRAWING IS BASED ON THE INFORMATION SUPPLIED TO THE DESIGNER FROM ITS CLIENTS OR SUBCONTRACTORS AND HAS BEEN PROVIDED IN ACCORDANCE WITH GSES' TERMS AND CONDITIONS.
4. EXACT INVERTER LOCATION AND PIER HEIGHT TO BE CONFIRMED IN DETAILED DESIGN.

LEGEND:
- INVERTER STATION (ON HARDSTAND)
- WATER TANK WITH HARDSTAND
- SITE ACCESS GATE (MAIN & EMERGENCY)
- INTERNAL TRACK NETWORK
- ASSET PROTECTION ZONE (APZ)
- ACCESS ROAD (EXISTING)
- EXISTING VEGETATION
- PROPOSED VEGETATION
- OVERHEAD HV TRANSMISSION LINE
- OVERHEAD HV TRANSMISSION LINE (EXISTING)
- OVERHEAD 11kV LINE (EXISTING)
- UNDERGROUND 11kV LINE
- TRANSMISSION LINE EASEMENT
- SECURITY FENCE
- DRAINAGE RESERVE
- PROJECT BOUNDARY
- ARRAY AREA BOUNDARY
- LAYDOWN AREA
- OPERATIONS AREA
- BATTERY AREA
- SUBSTATION AREA
- 1.2m HIGH AGRICULTURAL-STYLE FENCE
- ACCESS GATE TO VEGETATION SCREEN & DRAIN (3m)



NOTE:
DO NOT MEASURE OR SCALE PLAN.
WRITTEN DIMENSIONS (METRES) TO TAKE PRECEDENCE

EASTERN BOUNDARY DETAIL (TYP)
1:1250

SITE PLAN APPENDIX LIST
- APPENDIX A: BATTERY AND SUBSTATION PLAN
- APPENDIX B: SUBSTATION ELEVATION
- APPENDIX C: BATTERY ELEVATION
- APPENDIX D: OPERATIONS BUILDINGS ELEVATION
- APPENDIX E: GATE ELEVATION
- APPENDIX F: TRACKER ELEVATION
- APPENDIX G: INVERTER ELEVATION
- APPENDIX H: INVERTER MAX. ELEVATION
- APPENDIX I: PILE EXAMPLE

NOT FOR CONSTRUCTION

REVISION PANEL

REV	DATE	DRN	DETAILS	APR'D
7	13/10/20	H.S	ISSUED WITH DCA UPDATES	A.B
6	09/07/20	H.K	UPDATED AS PER CLIENT COMMENTS	A.B
5	01/07/20	H.S	UPDATED BASED ON CLIENT FEEDBACK	A.B
4	19/06/20	H.S	FINAL ISSUE FOR DEVELOPMENT APPROVAL	A.B
3	17/06/20	H.S	ADDED INVERTER NUMBERING	A.B

CURRENT REV CONTRACTOR: GSES
CURRENT REV PROJECT:

CURRENT REV 13/10/2020
AUTHORISED
A.BONANNO
SIGNATURE

DESIGN PANEL

DESIGNED	29/05/2020	AUTHORISED	29/05/2020
H.SMITH		A.BONANNO	
DRAWN	29/05/2020	SIGNATURE	
H.SMITH			
REVIEWED	29/05/2020		
B.COOK			

CONTRACTOR: GSES

ngse
NG ELECTRICAL PTY LTD

BOOKAAR 200MW SOLAR FARM
520 MENINGOORT ROAD, BOOKAR VIC 3260
SOLAR GENERATION
SITE PLAN VIEW

A1 SHT SIZE
TOTAL SHEETS: 7
PROJECT No: P1017
REVISION
MAXIMO ID:
SUPERSEDES:
DRAWING NUMBER
P1017-01-001-01

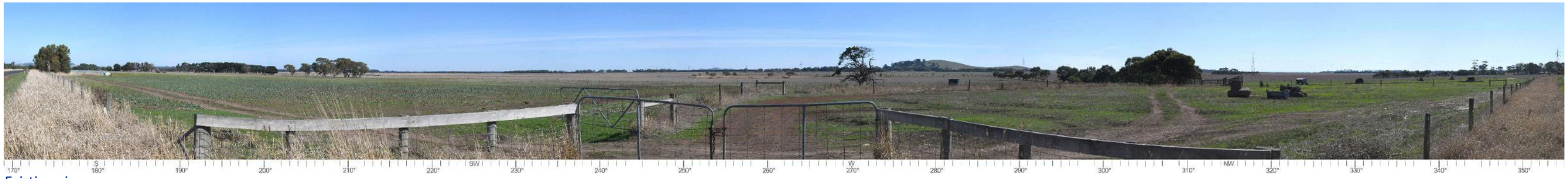
Appendix B. Photomontages

B.1 Reapplication Photomontage

VIEWPOINT 7 – Darlington-Camperdown Road #3

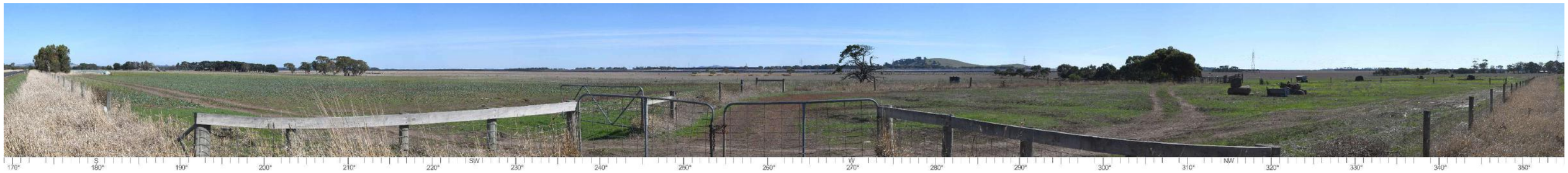
View looking south to north

(GPS 54 H, 684317 m E, 5776955 m S)



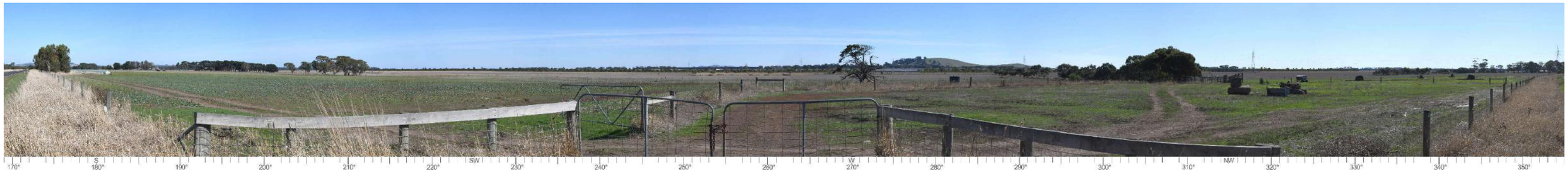
Existing view

See Sheet 2/3 | See Sheet 4/5 | See Sheet 6/7



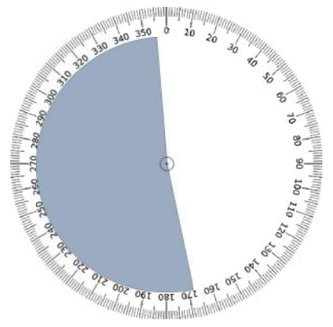
Photomontage

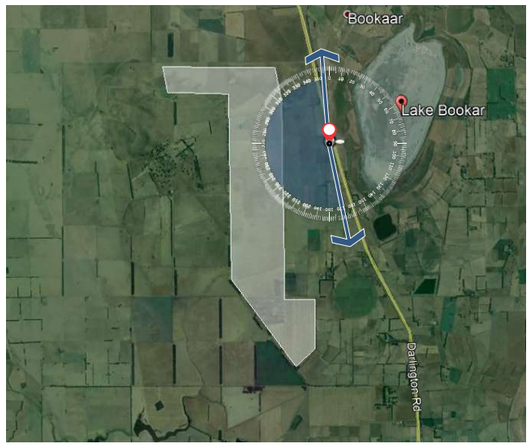
See Sheet 2 | See Sheet 4 | See Sheet 6



Photomontage - With landscape screening

See Sheet 3 | See Sheet 5 | See Sheet 7





Viewpoint Map

Distance to Project: Approximately 870m west

Viewpoint location and orientation

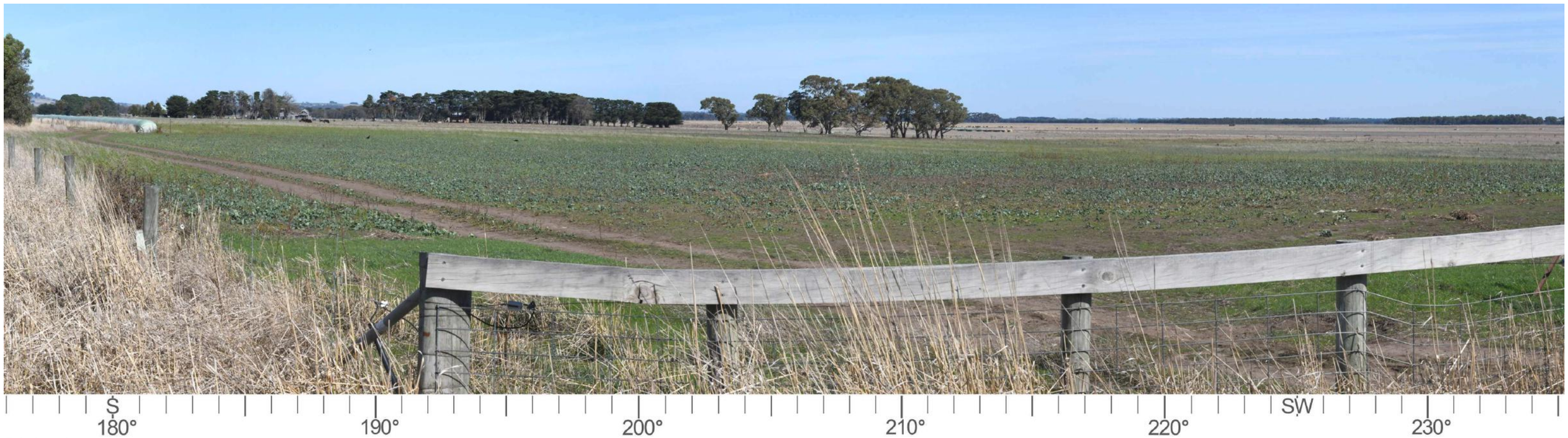
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 1/8 DATE: 06/10/2020

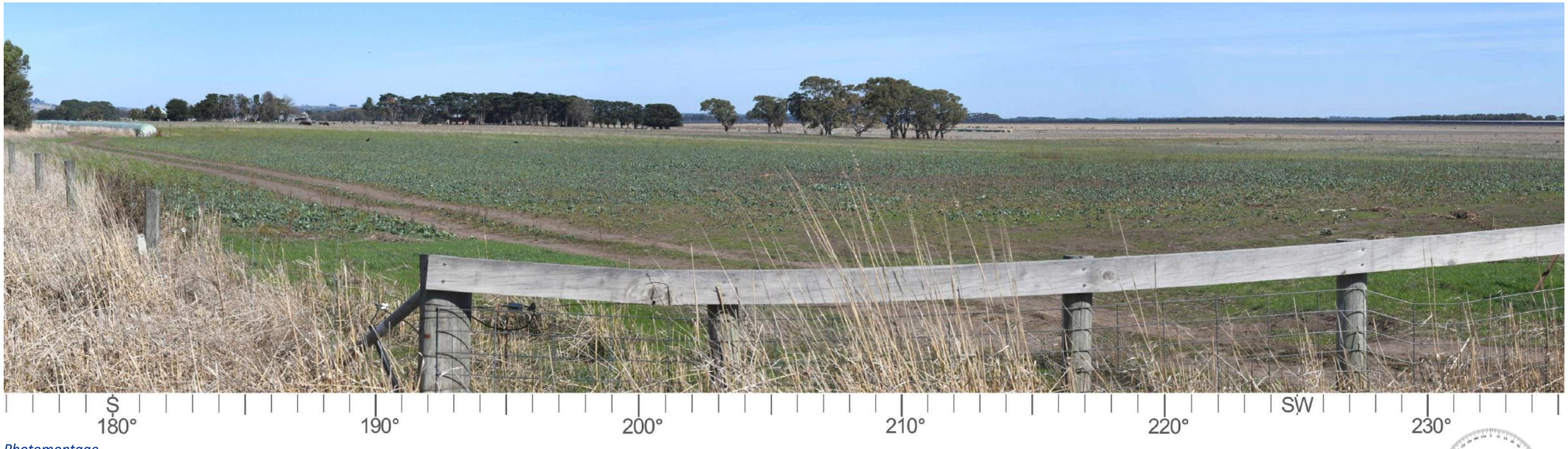
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south to south west

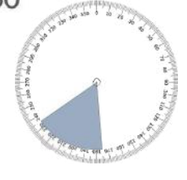
(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage



Jacobs

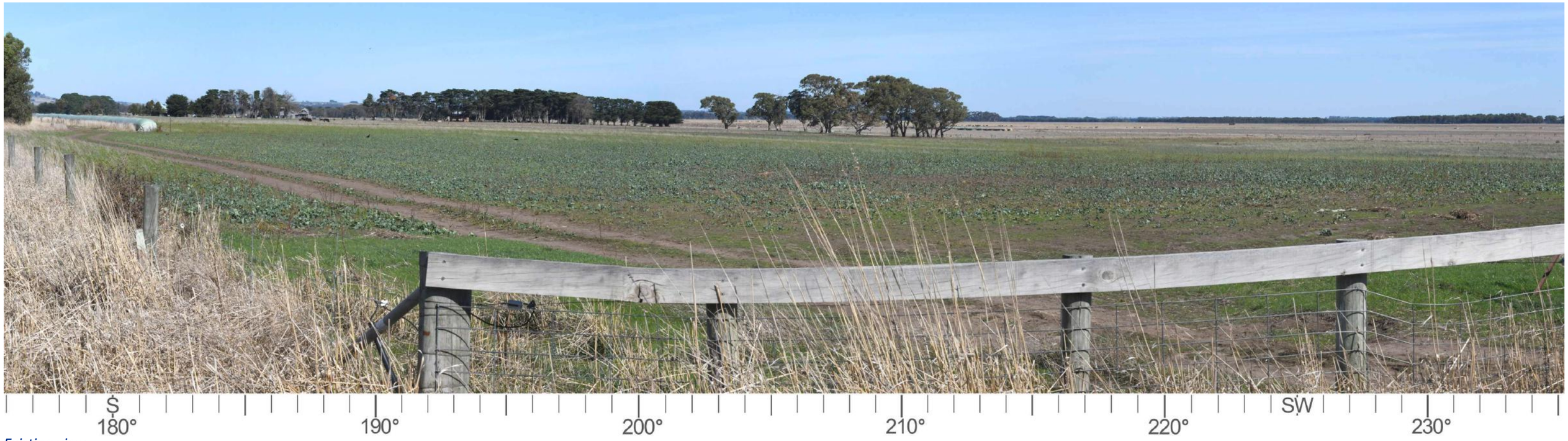
Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 2/8 DATE: 06/10/2020

Distance to Project: Approximately 870m west

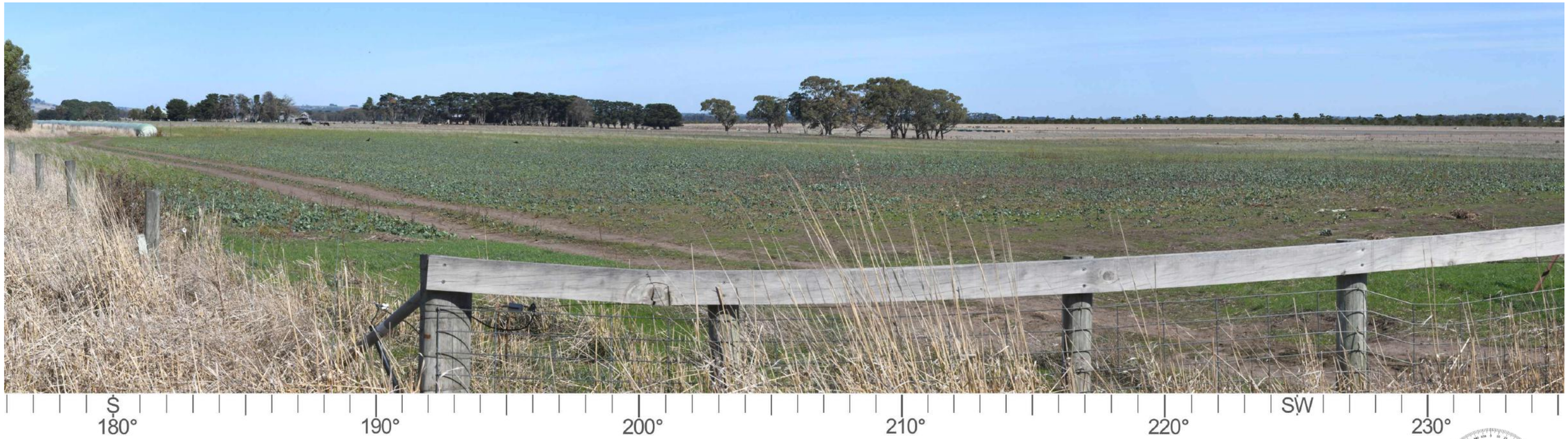
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south to south west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage - Landscape Screening

Distance to Project: Approximately 870m west

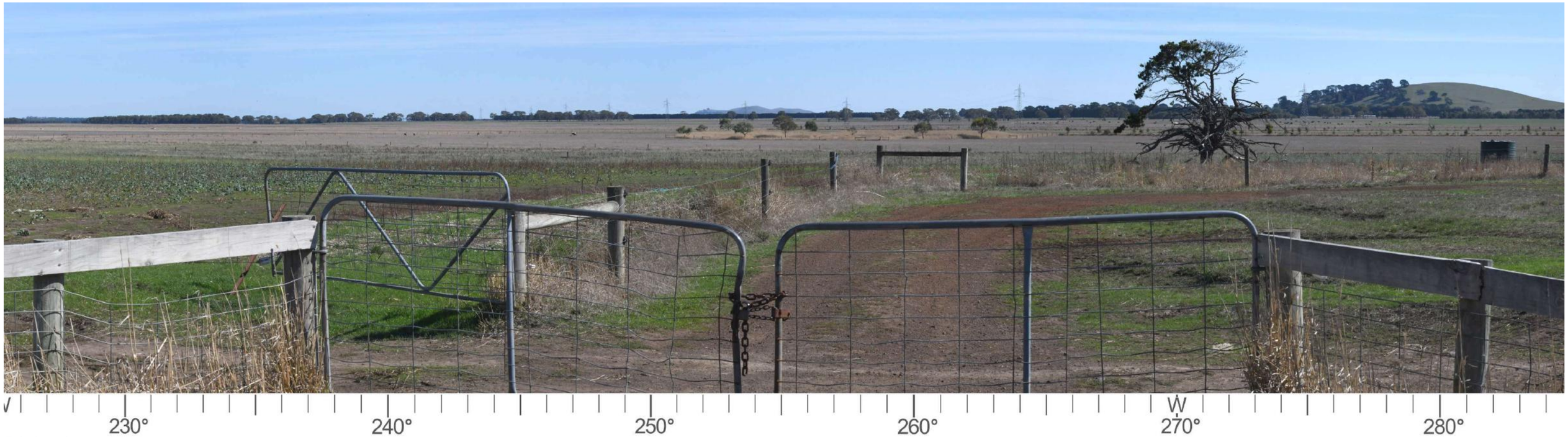
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 3/8 DATE: 06/10/2020

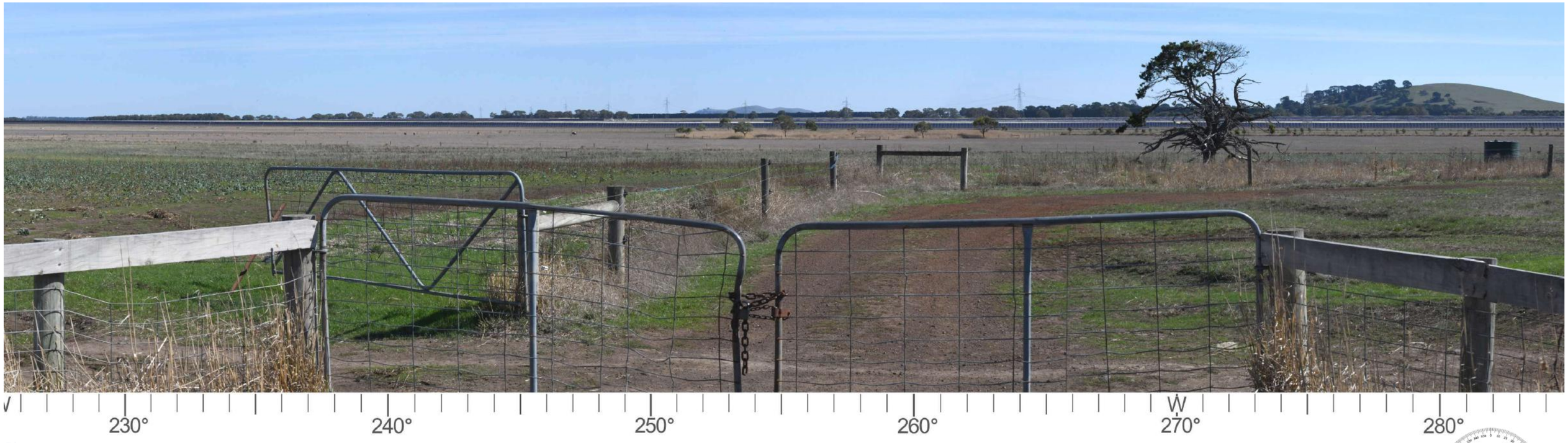
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south west to west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

Distance to Project: Approximately 870m west

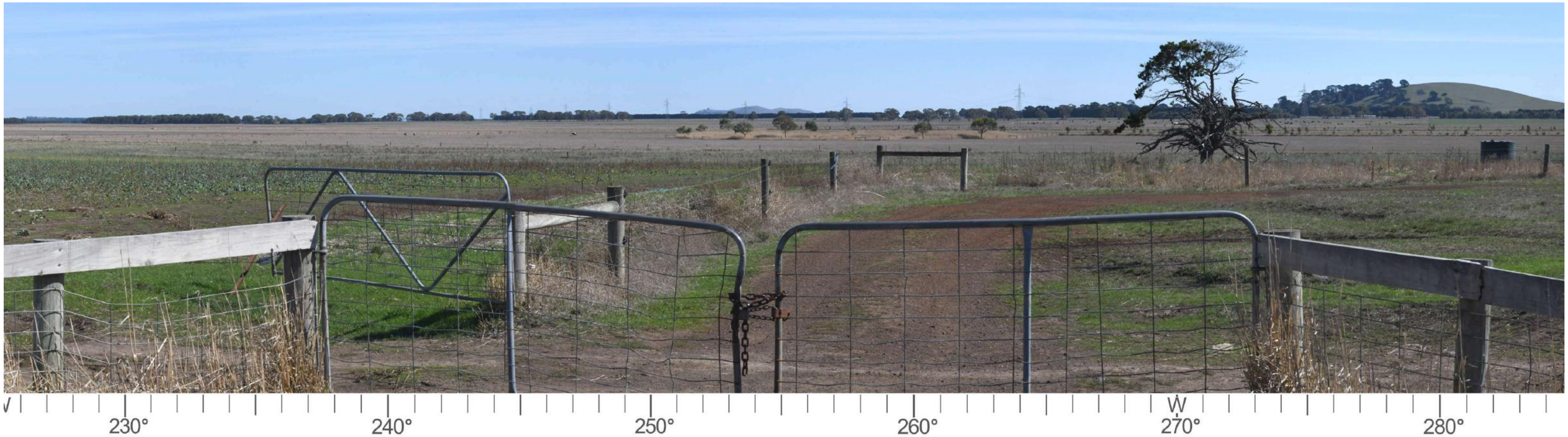
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 4/8 DATE: 06/10/2020

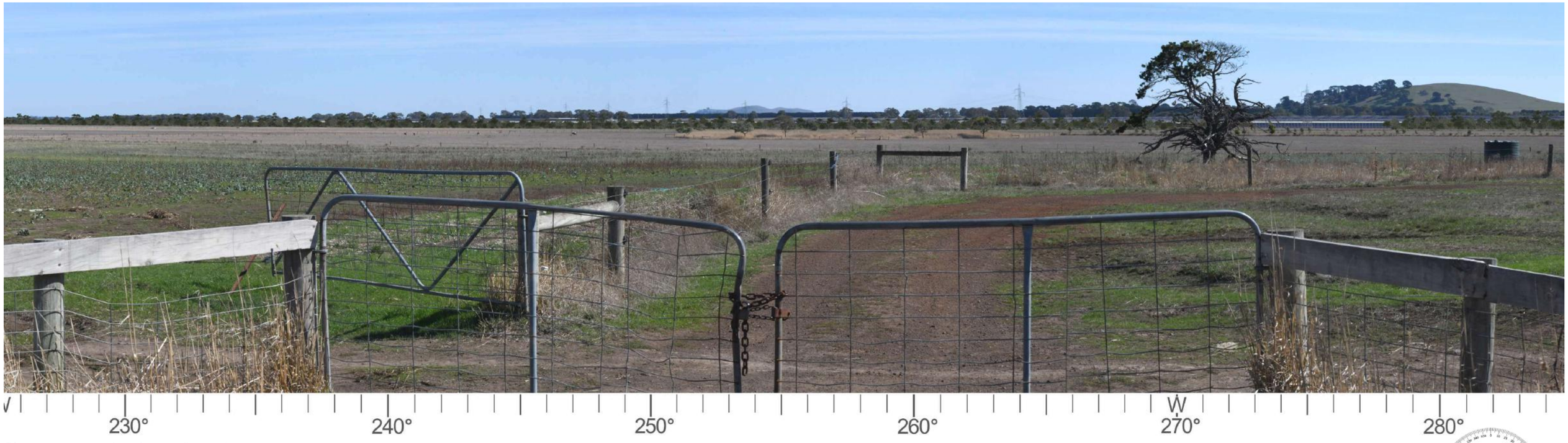
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south west to west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage - Landscape Screening

Distance to Project: Approximately 870m west

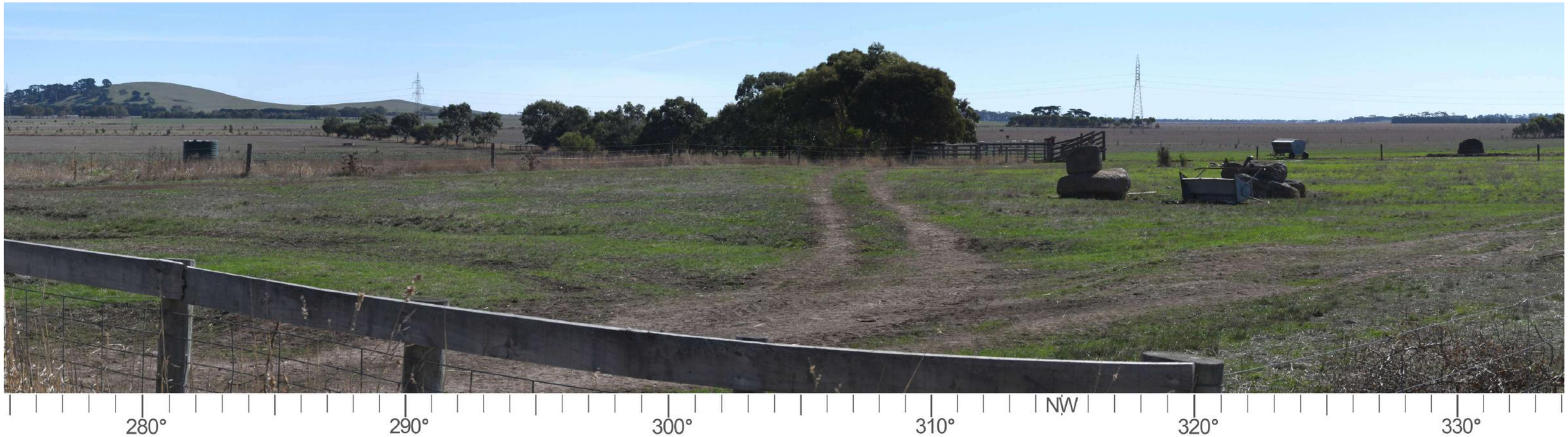
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 5/8 DATE: 06/10/2020

VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking west to north west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view

Photomontage

Distance to Project: Approximately 870m west

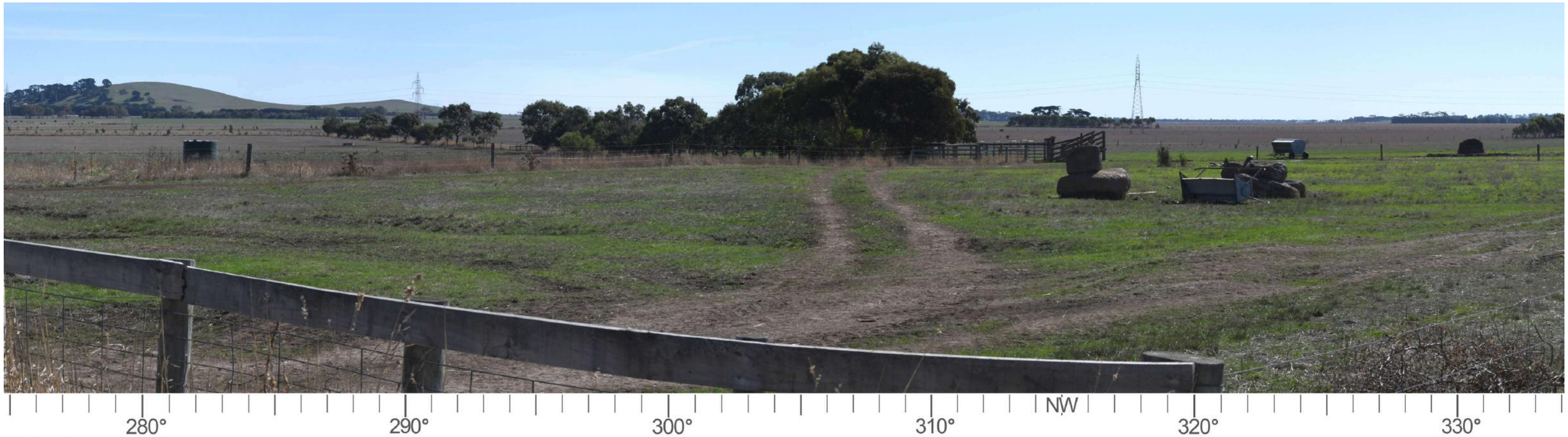
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 6/8 DATE: 06/10/2020

VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking west to north west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view

Photomontage

Distance to Project: Approximately 870m west

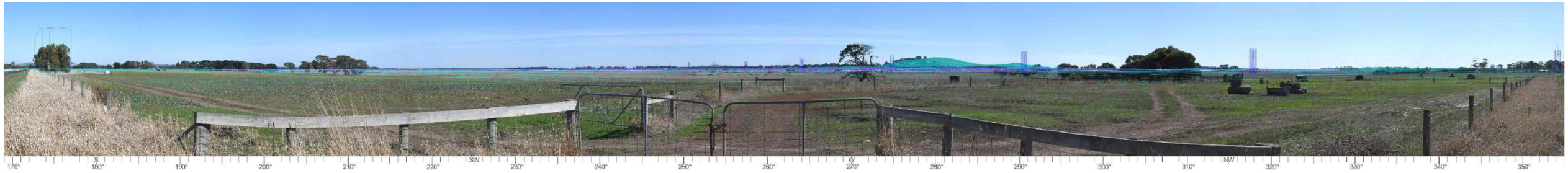
Jacobs

Bookar Solar Farm (Re-application 2020): VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: SM
SHEET: 7/8 DATE: 06/10/2020

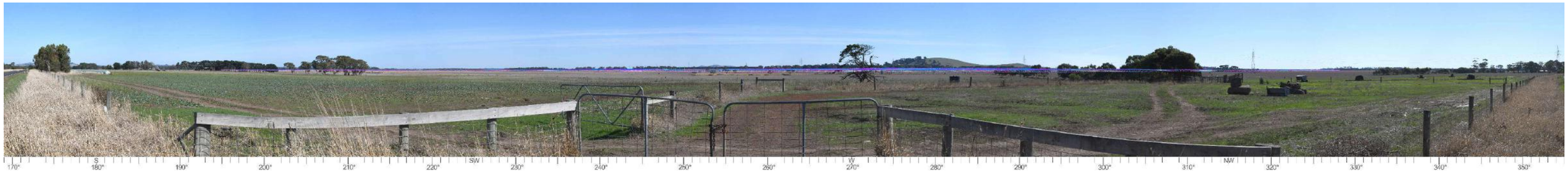
VIEWPOINT 7 – Darlington-Camperdown Road #3

Wireframe view looking south to north

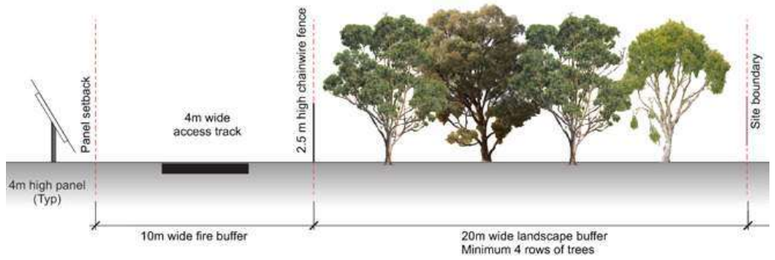
(GPS 54 H, 684317 m E, 5776955 m S)



Existing wireframe view

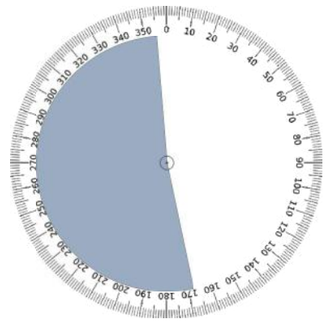


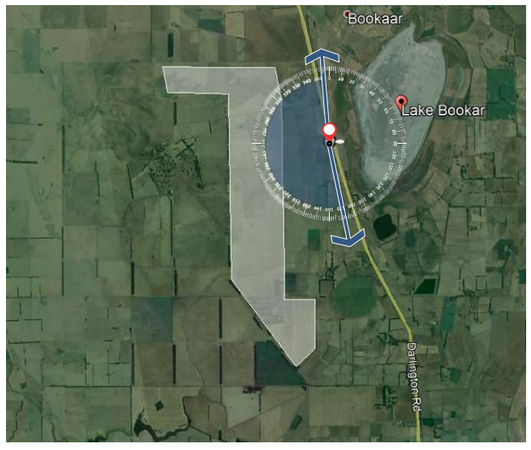
Wireframe view



Landscape screening indicative section

The Project proposes a 20m wide landscape buffer, consisting of 4 rows of native species. Landscape screening has been modelled using a range of species at an average height of 8m, and a maximum height of 12m for some Eucalypt species.





Viewpoint Map

Distance to Project: Approximately 870m west

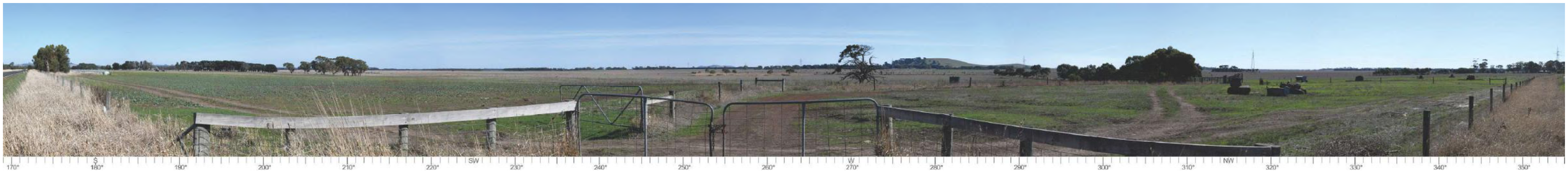
Viewpoint location and orientation

B.2 Previous Application Photomontage

VIEWPOINT 7 – Darlington-Camperdown Road #3

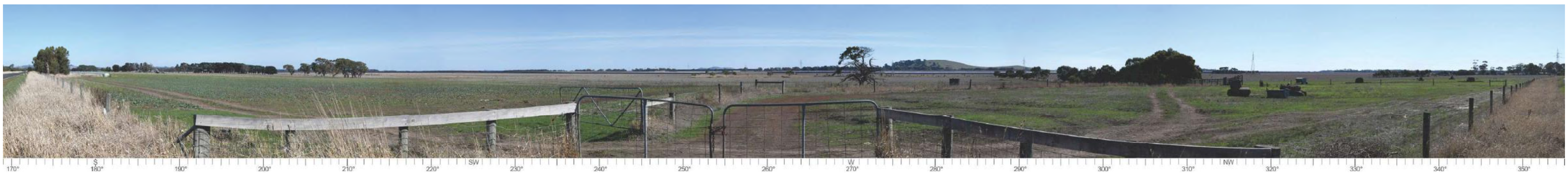
View looking south to north

(GPS 54 H, 684317 m E, 5776955 m S)



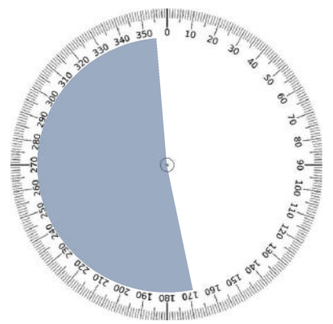
Existing view

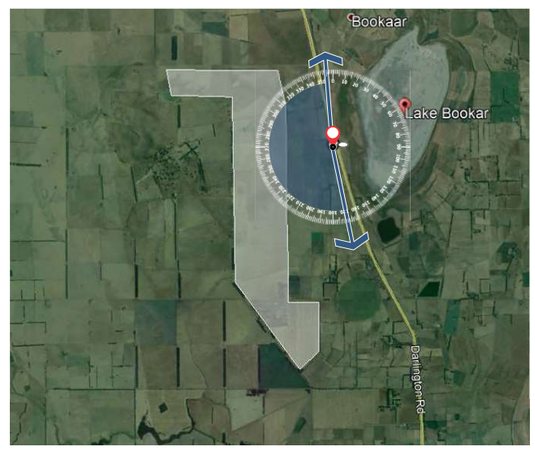
See Sheet 2 *See Sheet 3* *See Sheet 4*



Photomontage

See Sheet 2 *See Sheet 3* *See Sheet 4*





Distance to Project: Approximately 870m west

Viewpoint location and orientation

Viewpoint Map

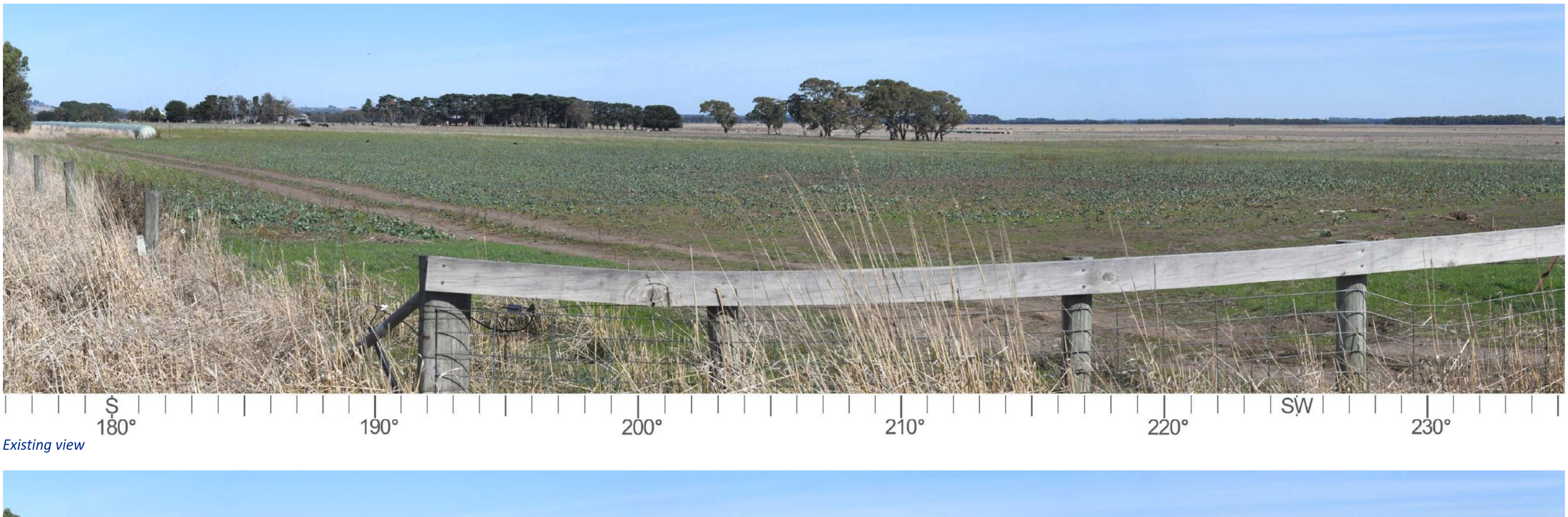
JACOBS

Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 1/5 DATE: 27/05/2019

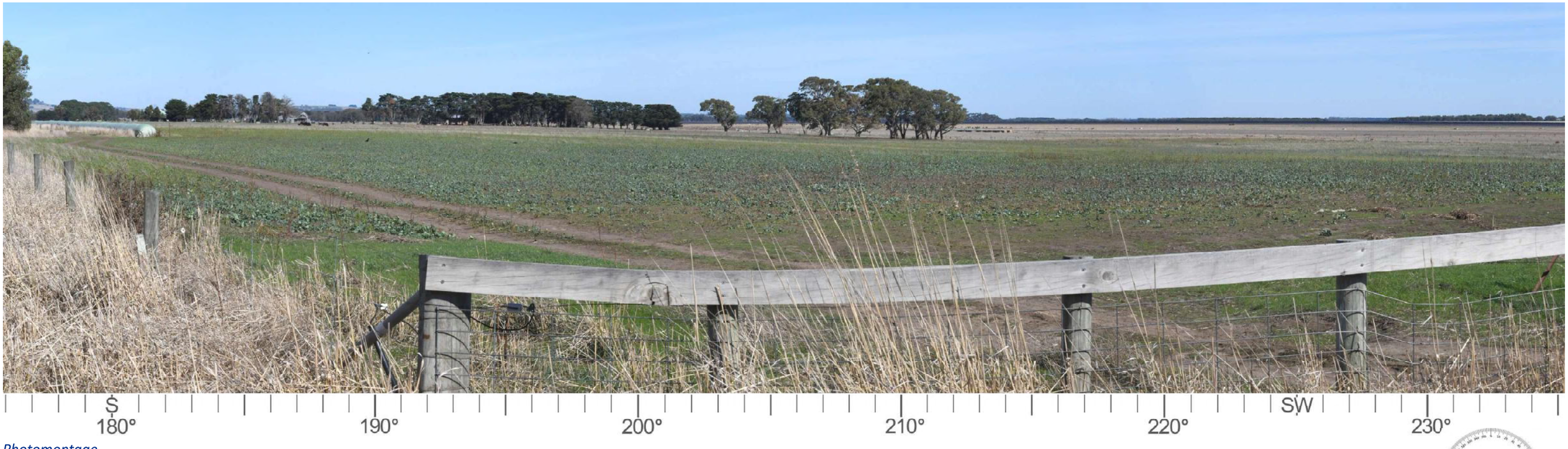
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south to south west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

JACOBS

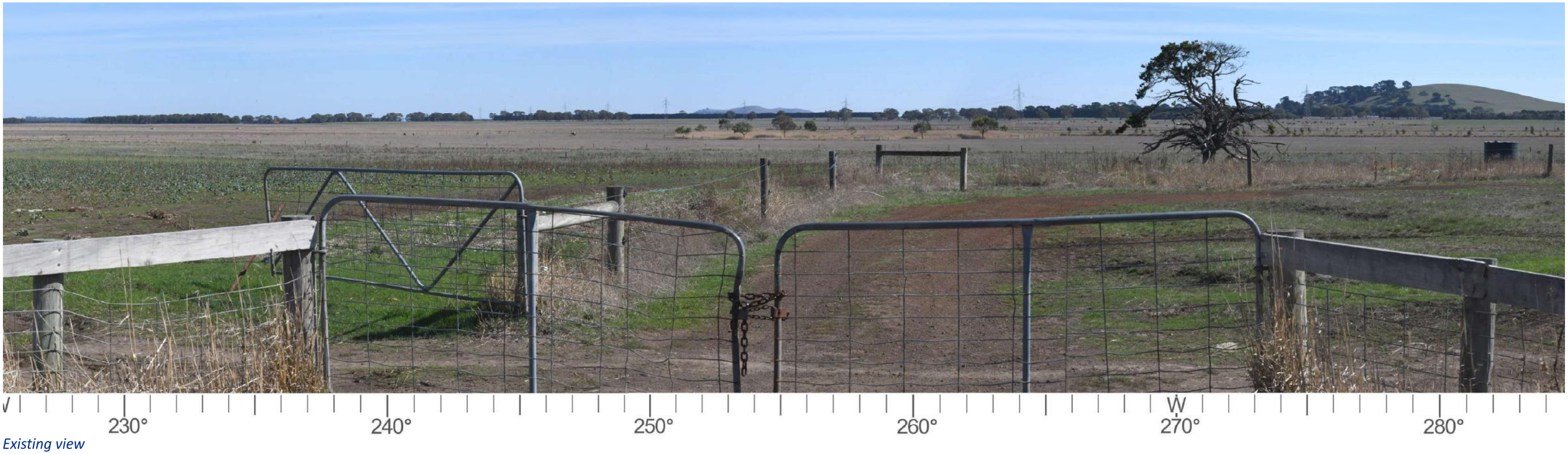
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 2/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

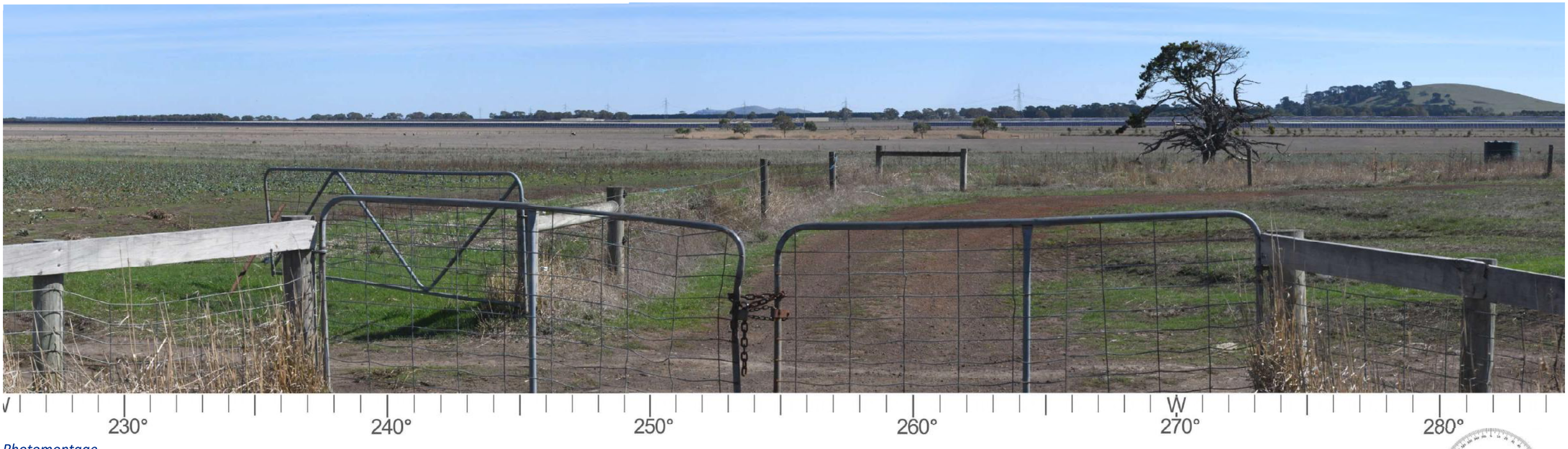
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south west to west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

JACOBS

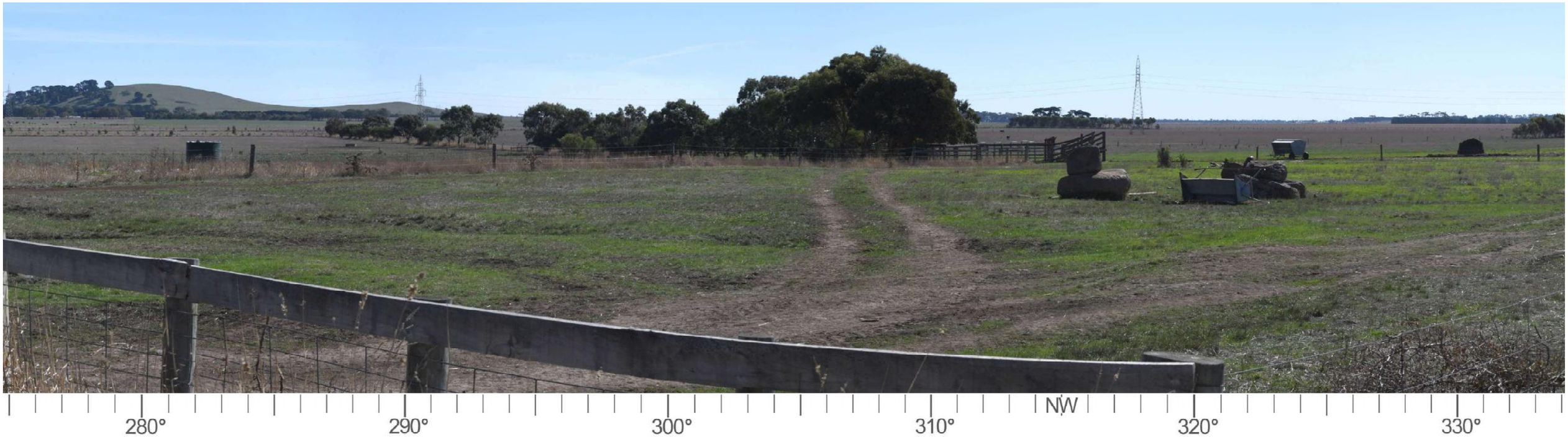
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 3/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

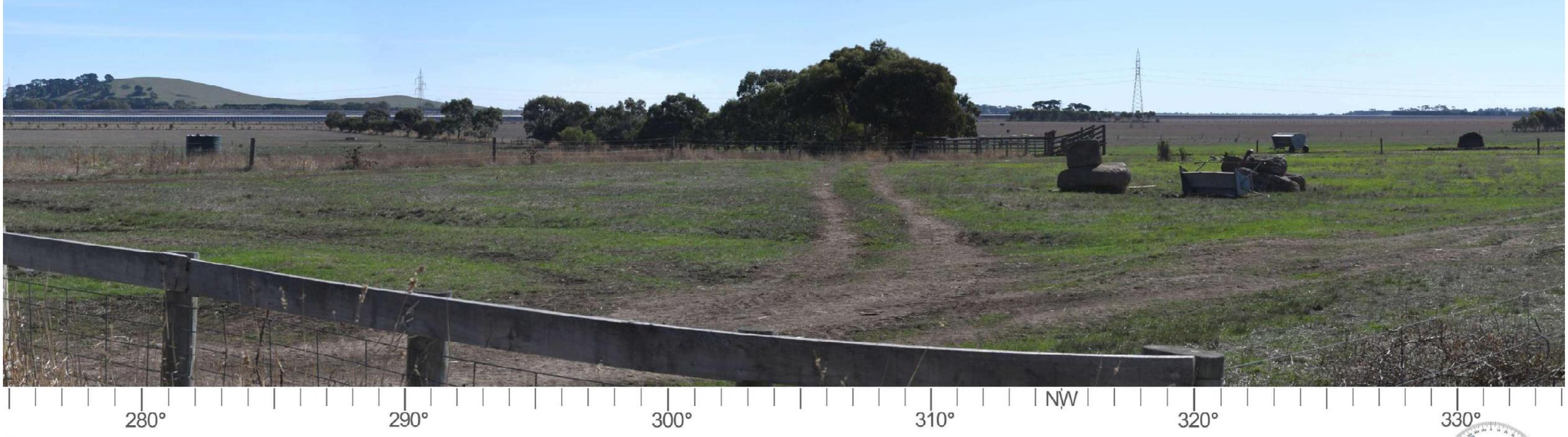
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking west to north west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

JACOBS

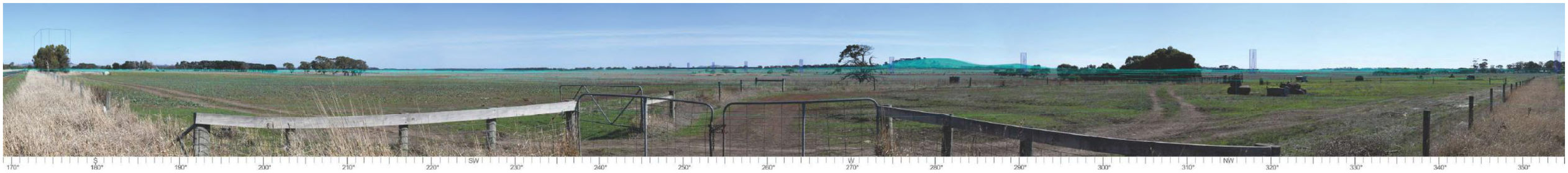
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 4/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

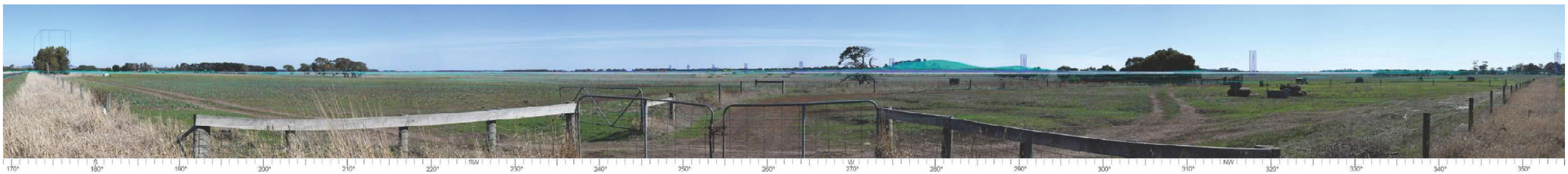
VIEWPOINT 7 – Darlington-Camperdown Road #3

Wireframe view looking south to north

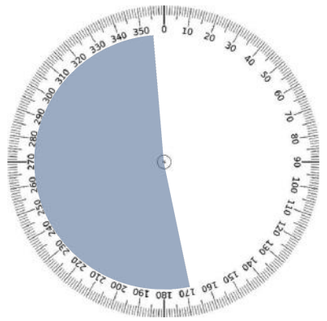
(GPS 54 H, 684317 m E, 5776955 m S)

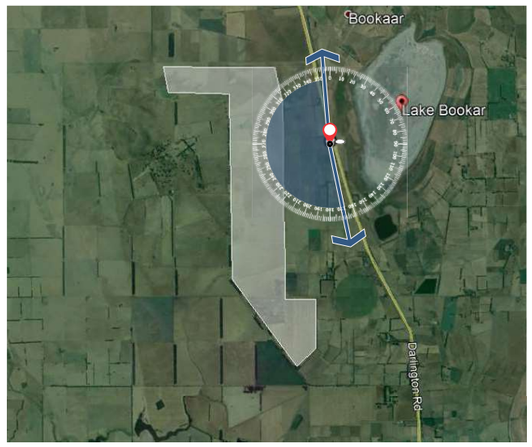


Existing wireframe view



Wireframe view





Distance to Project: Approximately 870m west

Viewpoint location and orientation

Viewpoint Map

Appendix C. Draft Landscape Plan

Bookaar Solar Farm Draft Landscape Plan

Introduction

Oz Trees Colac Pty Ltd has been commissioned by Bookaar Renewables Pty Ltd to provide a plan to establish and manage a number of native vegetation screens for the proposed Bookaar Solar Farm at and adjacent to 520 Meningoort Road, Bookaar. The purpose of the proposed vegetation screens are to provide a visual barrier that will screen views of the solar farm over its 30-year lifetime. As such, the requirement for the success of the screens will be the ability to establish them quickly with a density at maturity that will ensure views of the Solar Farm are adequately screened.

As a local organisation, Oz Trees has extensive experience in the region, and more specifically in the Bookaar area, having provided tree planting services to many of the landholdings in and around Bookaar, including the Meningoort landholding on which the solar farm will be constructed.

The following report details the design, site preparation, species selection, planting regime and maintenance required to install a successful vegetation screen at the proposed Site. Note, species selection will need to consider site specifics including local climatic conditions, soil type and slope position.

This report has been compiled following a site inspection conducted by the Oz Trees on the 30 June 2017, and in consultation with Bookaar Renewables.

Design

The purpose of the design of the vegetation screens is to reduce views towards the proposed solar farm, with an understanding that the screens will be required to have a lifespan to match the approximate 30 year life of the Proposal. These factors have been considered to inform the design below.

The vegetation screens would be planted within a 20 m band along much of the perimeter of the Solar Farm as shown on the Site Plan that accompanies the main Planning Report. The geometry of a suitable planting plan is provided in Figure 1 below, along with an illustrative cross section of the Proposal's boundary in Figure 2. The staggered design of the planting plan will maximise the visual density of the screens while providing adequate area between individual plants to avoid competition and encourage maximum growth.

Using this design, it is estimated that an effective screen with adequate density and height (approximately 4 m) could be established within 4 years. This is based on the outcome of other plantings in the area.

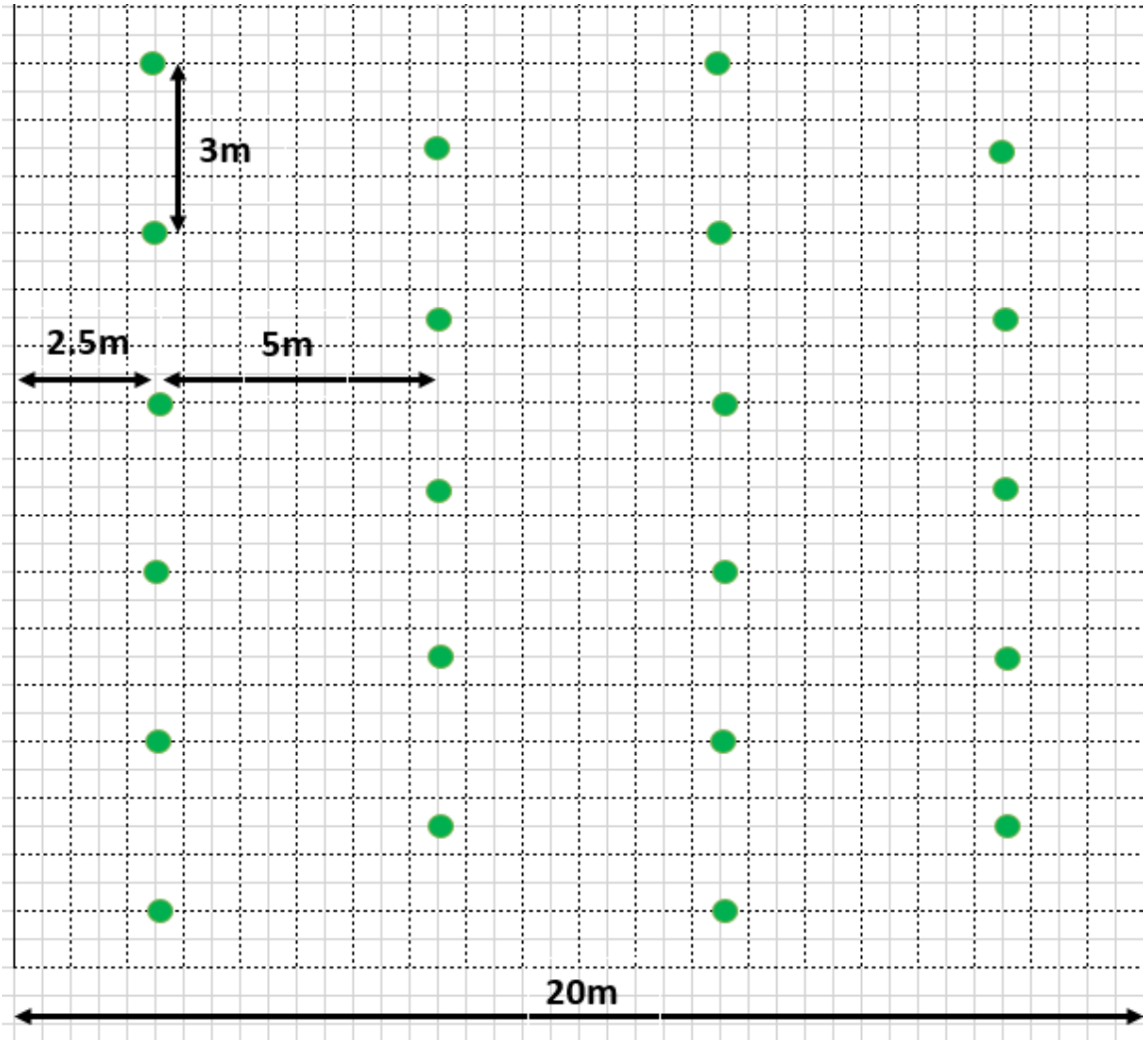


Figure 1: Approximate Geometry of the proposed vegetation screen.

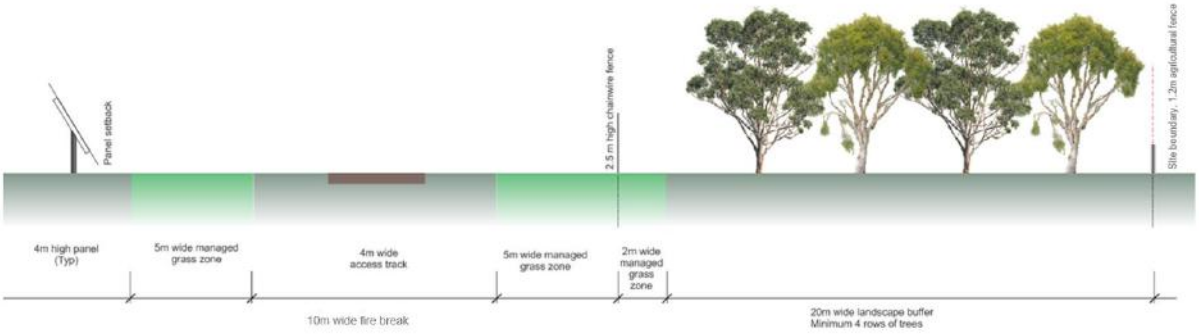


Figure 2: Illustrative cross section of screen and proposal boundary

Species selection will be key to achieving the required outcome of the vegetation screens. Selection will need to consider both the required height of the screen while ensuring that in combination the plantings achieve the necessary density to provide adequate screening. Based on the findings of the Landscape and Visual Impact Assessment and the VCAT decision, the vegetation screens are required to be at least 4 meters high to screen the Proposal.

In light of this, it is recommended that a combination of small, medium, and larger trees are used to form the overall architecture of the screen.

A list of potential species is provided below. This list is based on successful Oz Tree plantings in the area, and has been developed in consultation with 'Fire Risk Consultants', who compiled the 'Bushfire Risk Assessment Report and Mitigation Plan' that accompanies the Planning Report.

Species List:

Eucalyptus maculate, **Spotted Gum**

Eucalyptus camaldulensis, **Red Gum**

Eucalyptus Leucoxylon, **Pink Flowering Yellow Gum**

Casuarina glauca, **Bulloak**

Eucalyptus radiata, **Narrow Leaved Peppermint**

Eucalyptus yarraensis, **Yarra Gum**

Eucalyptus cladocalyx, **Sugar Gum**

Eucalyptus leucoxylon megalocarpa, **Red Flowering Yellow Gum**

Allocasuarina littloralis, **Black Sheoak**

Allocasuarina verticillata, **Drooping Sheoak**

Banksia marginata, **Silver Banksia**

Melaleuca lanceolate, **Moonah**

Note:

1) The species list has been modified based on advice outlined in the Bushfire Risk Assessment.
2) The final selection of species will be determined after soil checks at the Site, and will be developed in line with the CFA's 'Plant Selection Key' to ensure suitability (see https://www.cfa.vic.gov.au/plan-prepare/plant-selection-key).

Planting Methodology

Site Visit:

A site visit would be conducted prior to finalising species selection for the screens. The site visit would include a detailed assessment of the soils across all the areas designated for the vegetation screens. The final species selection would be based on the findings of the soil assessment, noting that a range of soil types occur across the Site. In Oz Trees experience, by matching species selection to soil type, it is possible to increase planting success and optimise growth rates.

Planting Methodology:

Oz Trees recommends using tube stock (seedlings) rather than more established plants as survival rates are higher and any perceived growth advantages are lost over a period of four years due to root stock growth from the tube stock seedlings.

Site preparation to increase available moisture in the soil profile is critical to establishing successful plantings. The two most important factors for increasing moisture in the soil are:

- Controlling competition – weeds and in particular grasses are the biggest reason why seedlings do not establish properly. Weeds directly compete with seedlings for available moisture. By spraying weeds and grasses, soil moisture is allowed to accumulate in the soil prior to planting; and
- Ripping the soil – ripping will ensure that any rainfall is immediately stored in the soil profile. It also provides a good environment for seedling roots by aerating the soil. Ripping is an absolute necessity when planting seedlings.

Spraying:

Each of the rows needs to be sprayed (out to 2m) to remove weeds and grasses to control competition and increase soil moisture. Weeds and in particular grasses are the biggest reason why seedlings do not establish properly. Weeds directly compete with seedlings for available moisture. By spraying prior to planting, soil moisture is encouraged to accumulate in the soil profile which is then available to new plants as they establish.

It is recommended that the site is spayed approximately 3 to 4 weeks prior to land preparation.

Land Preparation:

To prepare the site for planting each row needs to be ripped and mounded about 4 to 6 weeks after spraying. The soil is ripped to a depth of approximately 800 mm using a large winged ripper which piles the excavated soil into a mound adjacent to the rip line (shown in Figure 2). A second pass breaks down any large clods and flattens the top of the mound for planting. The height of the mound when complete varies (a little) depending on the soil type and grass present at time of mounding, but on average the height would be about 400mm. This ripping and mounding process shatters the soil profile making the mounded soil friable and provides a large flat raised soil mass in which to establish the new plantings.

In addition, the rip lines adjacent to the soil mounds allow rainfall to soak into the soil profile providing a moisture store below the soil surface under the mounded soil into which the new plants

are to be planted. This water store encourages the plants to send their roots down towards the moisture stored at depth as the surface soil dries out accelerating root development and in turn increasing plant resilience. It should be noted, it is important to establish the rip lines at least 3 months prior to planting to ensure an adequate moisture store can be created in the soil profile before planting.

The mounding also provides protection for young plants which can be susceptible to waterlogging during flood events if they are planted at natural ground level. This is important in this situation as flooding is known to occur at the Site. A design feature that will be particular to this proposal, will be the need to break up the mound lines intermittently to ensure that flood water can drain unimpeded through the site. This will be achieved by reinstating a 2 m length of the soil mound into the rip line between each of the planting locations as shown on Figure 2. This will mean that each plant will be planted into a mound of soil approximately 2m long and 2 m wide.

This planting methodology has been included in the flood assessment for the Site and has been deemed suitable for flooding events (Flood Assessment).

Figure 3: Mounding process

Spraying:

A pre-planting spray would be applied about 3 weeks prior to planting. This residual herbicide spay would provide a shield that would kill germinating weed seeds for up to 7 months preventing weed competition as the new plants establish their roots.

Planting:

The optimal time for tree planting is late autumn or early spring, as this is the best time to plant in this area. It is not optimal to have young unestablished tube stock sitting in cold wet conditions during the early winter months.

Tree Guards:

Plant guards (1 litre milk cartons) would be secured over each new plant to protect them from the weather and pests such as hares, birds and rabbits. Tree guards have been shown to provide the optimal protection for young trees. They create a microclimate around the immature plant,

increasing the growth rate. Protection during their first two seasons of growth is critical to their long-term success rate. Tree guards also protect young plants from climatic extremes and spray drift from follow up weed control.

Fencing

The vegetation screens should be fenced to prevent sheep and cattle grazing in the tree lines.

Maintenance to optimise growth

To ensure optimal success, the tubestock seedlings should be maintained regularly for 2 years and then intermittently over the life of the solar farm. Maintenance should include follow up inspections to monitor survival rates and assess watering and weed management requirements.

Maintenance to reduce bushfire risk

Vegetation screens should be maintained in accordance with advice provided in Appendix D of the 'Bushfire Risk Assessment and Mitigation Plan', which sets out the following principles to reduce potential fuel loads:

- Removal of Dead vegetation within the screens before the declared Fire Danger Period;
- Management of groundcover under the screens to ensure growth does not exceed 100mm during the Fire Danger Period; and
- Removal of branches within 2m of the ground.

For further detail see Appendix D of the 'Bushfire Risk Assessment Report and Mitigation Plan'.

Replants

In the Bookaar area using the planting methodology described above, it is usual to achieve a planting success rate of approximately 90%. As such, to ensure that the screens are successful and don't end up with gaps, it is important to replace any plants that do not thrive as soon as possible. Missing or defective tree guards should also be replaced during regular maintenance in the first 1 -2 years. If the maintenance program is implemented as described no replants should be required beyond 2 years.

Weed Control

Competition from weeds will compromise growth rates and the vigour of young plants. Weeds will need to be sprayed regularly. On average, weed spraying should occur three times over a twelve-month period. Timing will vary depending on weed growth.

Watering

Depending on climatic conditions in any given year, watering is usually not required for seedlings. However, watering can be beneficial depending on the soil moisture levels at the time of planting, and whether a dry summer subsequently develops. As such, the requirement for watering should be monitored throughout the first 24 months to ensure the new plants have a good start.

Existing vegetation screens in the area

Below are some photos of a screen planted by OZ Trees in the surrounding area at 24 months after planting, and at 5 years after planting. As can be seen, if all the steps are followed correctly relatively quick growth rates can be achieved.

Photo: Vegetation screen 24 months after planting

Photo: Vegetation screen 5 years after planting (it is estimated that these trees are approximately 5m high).

Appendix D. Expert Witness Statement: Visual Impact, Landscape and Visual Impact Assessment – Final May 28, 2019

Bookaar Solar Farm

Bookaar Renewables Pty Ltd

Expert Witness Statement: Visual Impact

Landscape and Visual Impact Assessment

FINAL

May 28, 2019

Bookaar Solar Farm, VCAT Reference No. P2390/2018

Project No:	
Document Title:	Expert Witness Statement: Visual Impact
Document No.:	
Revision:	Draft 1.0
Date:	May 28, 2019
Client Name:	Bookaar Renewables Pty Ltd
Client No:	
Project Manager:	Hayden Burge
Author:	Hayden Burge
File Name:	EWS_LVIA_Lake Bookaar Solar Farm

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Appendix A. Hayden Burge CV

Appendix B. Instructions

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Appendix D. Oz Trees screen planting detail

1. Introduction

Bookaar Renewables Pty Ltd (the Proponent) seek to develop an approximately 200MW solar farm (the Bookaar Solar Farm) at 520 Meningoort Road, Bookaar.

The Proponent lodged a planning permit application (Application No: PP2018/060) and supporting documents with the Corangamite Shite Council (Council) to develop a renewable energy facility (REF) and associated infrastructure.

Council issued a notice of decision to refuse to grant a planning permit on 01 October 2018. The reasons for refusal are discussed in detail in 2.1.

The Proponent lodged an application for review to VCAT on 29 November 2018.

The following report will discuss the proposed solar farm in the context of views towards the site to determine the visual implications and appropriateness of the project within the context of the existing landscape setting.

1.1 Expert Evidence – Practice Note

I acknowledge that I have read and complied with the VCAT Practice Note – PNVCAT2, Expert Evidence, 1 October 2014. In compliance with this Practice Note, I provide the following information.

1.2 Name & address

Hayden Burge
Principal Landscape Architect and Visual Impact Consultant
Jacobs Group (Australia) Pty Limited
Level 11, 452 Flinders Street
Melbourne, Victoria 3000

1.3 Qualifications

I am a registered Landscape Architect with over 18 years' experience, I have a Bachelor Applied Science (Landscape Architecture) from RMIT (2000). I am a member and registered Landscape Architect with the Australian Institute of Landscape Architects.

I have given expert evidence on several visual and landscape impact matters over the past 10 years.

A Curriculum Vitae is attached in Appendix A of this report.

1.4 The facts, matters and assumptions on which the opinions in this report are based

The following summarizes the relevant documents upon which this Expert Witness Statement (EWS) has paid regard to.

- Letter of instruction to provide expert evidence – Landscape and Visual Impact Assessment;
- Bookaar Solar Farm Planning Report for the Planning Permit Application prepared by Tract Consultants dated July 2018;
- General Preliminary Layout Plan prepared by Rina Consulting dated 08 May 2018;
- Typical view of tracking structure and panels prepared by Soltec dated 02 June 2017;
- Amended Site Plan prepared by Ecological Australia dated 09 May 2019;
- Bookaar Solar Farm Landscape and visual impact assessment prepared by Tract Consultants dated 9th July 2018;

- Relevant planning scheme documents;
- Officers Report prepared by Corangamite Shire Council dated 25 September 2018;
- Notice of Refusal, prepared by Corangamite Shire Council dated 01 October 2018;
- Application for Review; and
- Statements of grounds received.

1.5 Site Inspections

I inspected the subject site and surrounds on 12 April 2019.

1.6 Instructions

I have been requested by Best Hooper acting on behalf of the Proponent in a letter dated 22 February 2019 to assist them in relation to the proposed Renewable Energy Facility within the Corangamite Shire Council. My instructions as set out in this letter were to:

"review the application and should you be in a position to support it, to prepare an expert evidence statement at the hearing of this matter. Your brief is to undertake a peer review of the analysis undertaken by PagerPower as submitted with the application and to address the landscape and visual impact merits of the proposal"

A copy of this letter is included within the appendices of this report (Appendix B).

1.7 Declaration

I have made all the inquiries I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the tribunal.

2. Statement of Grounds

Bookaar Renewables Pty Ltd (the Proponent) seek to develop a renewable energy facility (the Bookaar Solar Farm) at 520 Meningoort Road, Lots 51 and 52 and Res1 on LP5677 and adjacent parts of Meningoort Road, Bookaar.

The Proponent lodged a planning permit application (Application No: PP2018/060) and supporting documents with the Corangamite Shite Council (Council) to develop a renewable energy facility (REF) and associated infrastructure.

Council issued a notice of decision to refuse to grant a planning permit on 01 October 2018. The reasons for refusal are discussed in detail below.

The Proponent lodged an application for review to VCAT on 29 November 2018.

2.1 Council

On 01 October 2018, Council refused to grant a planning permit. The key reasons for the refusal are:

- *The use and development does not provide an acceptable outcome in terms of the Planning Policy Framework, including the Municipal Strategic Statement and local planning policy;*
- *The use and development will result in the loss of productive agricultural land and will create impacts on the continuation of primary production on adjacent land;*
- *The use and development will result in an unacceptable level of environmental impact which cannot be adequately managed;*
- *The use and development will cause unacceptable landscape and visual impacts within the local area and from key viewpoints;*
- *The use and development will not result in net community or social benefit; and*
- *The absence of solar farm planning and policy guidelines by the State Government provides a lack of direction for planning decision making.*

2.2 Objections received

Council received 86 submissions in relation to the project: 5 in support, 81 opposed. Submissions received in relation to landscape and visual impact included:

- *Degradation of natural beauty;*
- *Loss of Von Guerard's pristine vistas;*
- *Loss of productive agricultural land;*
- *Inadequate mitigations proposed by the applicant and shire advisors during the original planning permit;*
- *The expansive solar panel array (approx. 6.5km wide) will appear as a blight on the natural landscape contrary to both local and state planning policies;*
- *The solar panel array will significantly diminish the cultural heritage and landscape values of the areas as shown in Eugene Von Guerard painting of Meningoort;*
- *Impact on amenity of area and surrounding environment;*
- *Aesthetically unattractive;*
- *Clearing of native vegetation which includes red gums that are hundreds of years old, they provide habitats for bird life and other animals. They are part of the unique landscape;*

- *Aesthetic impact – proposal is to place such a large site in the middle of rolling green pastures, crater lakes and mountains;*
- *Property devaluation due to unacceptable landscape and visual impacts;*
- *The proposed use and development will destroy the existing landscape amenity of the area due to its size;*
- *An eyesore to our Lakes and Craters Area and will be seen from the Camperdown Botanic Gardens;*
- *Excessive scale;*
- *Impact on district amenity;*
- *Proximity to residences;*
- *Visual impact from our property (699 Darlington Road, Bookaar);*
- *Panels won't be adequately screened from view;*
- *The sheer size and scale of the proposed project is quite substantial and will have a negative impact on the adjoining landscape and town of Camperdown and surrounds as well as adjoining landowners, their families and businesses;*
- *unacceptable landscape and visual impact due to the sheer size of the project, there are significant mountains in the surrounding areas such as Mount Elephant and Mount Leura from these two vantage points you will be able to see the proposed project in its vastness; this project will also be seen from Camperdown's Historical Botanical Gardens which will have a visual impact and a devaluation of a historical site;*
- *The use and development will cause unacceptable landscape and visual impacts within the local area and from surrounding key viewpoints; and*
- *Inadequate mitigation of visual impacts, particularly in the early years of the proposed facility.*

3. Subject Site

The proposed Bookaar Solar Farm is located on Meningoort Road, Bookaar approximately 55km north east of Warrnambool and 7.7km north west of Camperdown.

Figure 3.1 shows the site in relation to nearby towns, roads and features.

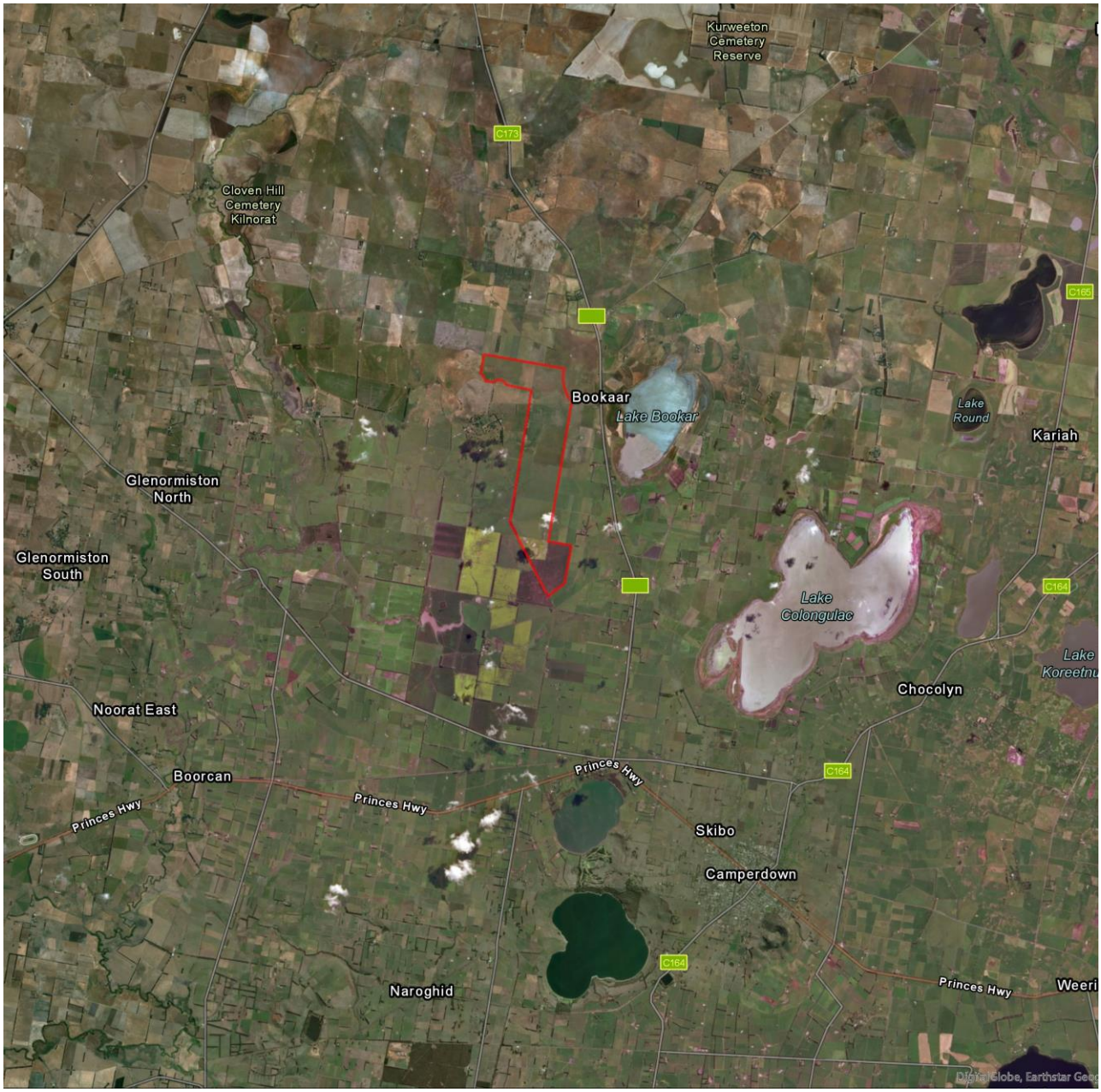


Figure 3.1: Site Location Map

The subject site is zoned Farming Zone and is currently used for cropping and grazing activity. The site is largely cleared with vegetation set along boundary lines.

The subject site at its closest point is set back approximately 580m from Darlington-Camperdown Road which is the only major road in close proximity to the site.

3.1 Surrounding land use

The area surrounding the site is predominantly used for broad-acre agriculture (cropping and grazing) as shown in the following images. All the land surrounding the site is located within the farming zone.

Figure 3.2: Site surrounds – farmland to the south of the site

The site and surrounds are characterized by cleared flat farm land with several volcanic cones visible in the distance as shown in Figure 3.3.

Figure 3.3: Site surrounds – farmland to the north of the site

Lake Bookaar lies to the east of the site on the eastern side of Darlington-Camperdown Road.

Figure 3.4: Site surrounds – Lake Bookaar to the east of the site

3.2 The Site

Meningoort homestead and its associated land holding are approximately 2024 ha in total. The site of the proposed solar farm is approximately 588ha. The project footprint is approximately 490 ha. The remaining 98 ha forms part of a separate lease agreement to a neighbouring farmer who currently uses the balance of the land for dryland cropping. Figure 3.5 shows the sites boundaries, internal layout and features.

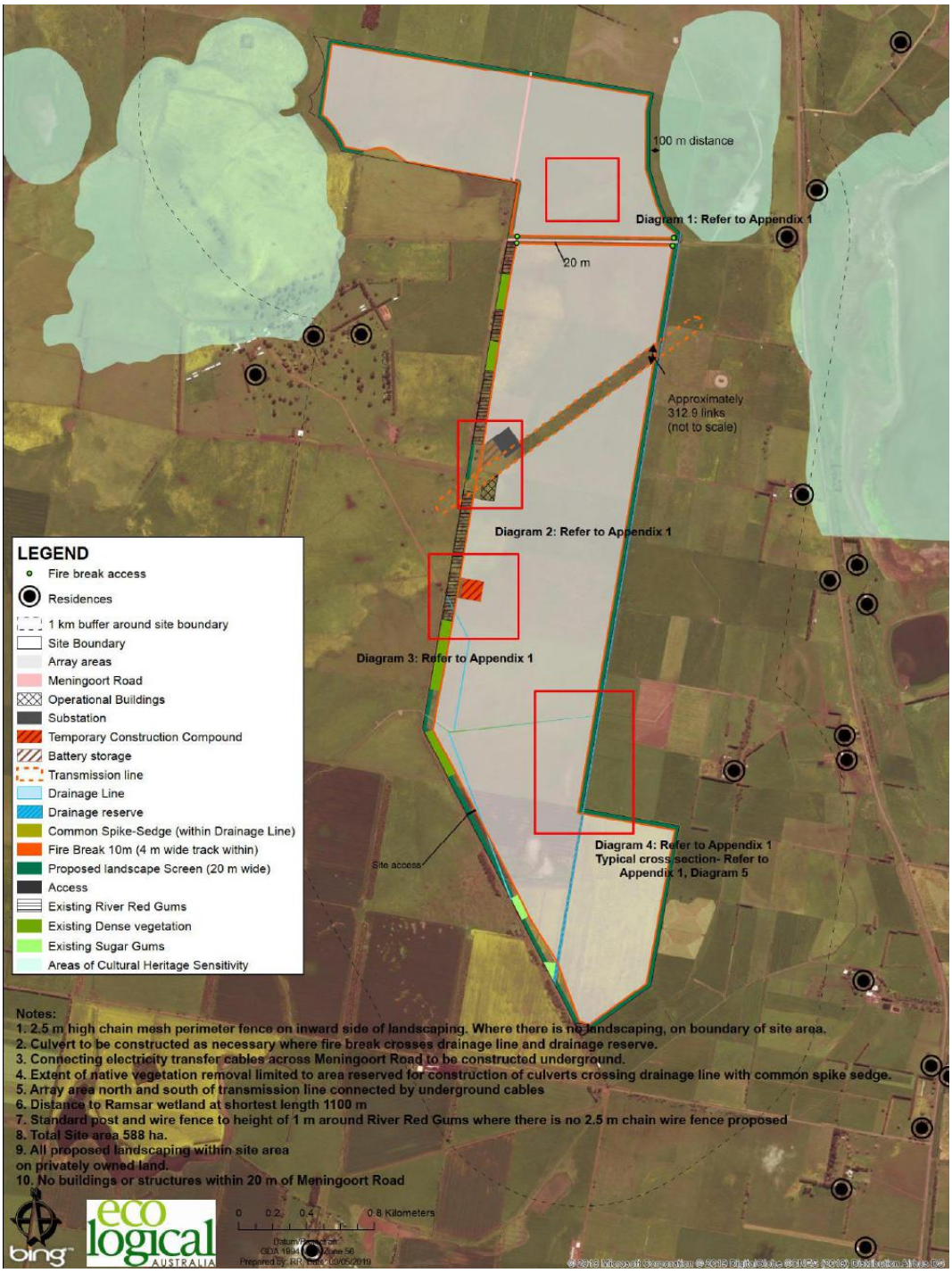


Figure 3.5: Subject site (Source: Amended Site Plan prepared by Ecological Australia 09 May 2019)

The site of the solar farm is generally flat and low-lying.

4. Planning and Policy

This chapter will briefly examine the planning controls that apply to the site and that are relevant to visual impact and amenity issues.

4.1 Policy

Council in their refusal to grant a planning permit considered that the project is inconsistent with several clauses within the Corangamite Shire Planning scheme.

This section will briefly review sections of the Corangamite Shire Planning Scheme relevant to my area of expertise. This is by no means an exhaustive review of the planning scheme, rather this review seeks to understand the objectives and requirements for considering views and visual impact for proposed solar farms in the area.

4.1.1 Clause 12 Environment and Landscape Values

Clause 12 (Environment and Landscape Values) of the Corangamite Shire Planning Scheme states that:

- *Planning should help to protect the health of ecological systems and the biodiversity they support (including ecosystems, habitats, species and genetic diversity) and conserve areas with identified environmental and landscape values.*
- *Planning should protect, restore and enhance sites and features of nature conservation, biodiversity, geological or landscape value.*

Clause 12.05-2S (Landscapes) aims to:

- *To protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments.*

Strategies to give effect to this objective are to:

- *Ensure significant landscape areas such as forests, the bays and coastlines are protected;*
- *Ensure development does not detract from the natural qualities of significant landscape areas;*
- *Improve the landscape qualities, open space linkages and environmental performance in significant landscapes and open spaces, including green wedges, conservation areas and non-urban areas;*
- *Recognise the natural landscape for its aesthetic value and as a fully functioning system; and*
- *Ensure important natural features are protected and enhanced.*

Clause 21.03 (Environment and Natural Resources) provides local content to support Clause 12 (Environmental and Landscape Values).

4.1.2 19.01 – 2S Renewable Energy

Objective – To promote the provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.

Strategies include:

- *Facilitate renewable energy development in appropriate locations;*
- *Protect energy infrastructure against competing and incompatible uses;*
- *Develop appropriate infrastructure to meet community demand for energy services;*
- *Set aside suitable land for future energy infrastructure;*

- *Consider the economic and environmental benefits to the broader community of renewable energy generation while also considering the need to minimise the effects of a proposal on the local community and environment; and*
- *Recognise that economically viable wind energy facilities are dependent on locations with consistently strong winds over the year.*

4.1.3 21.03 – Environment and Natural Resources

21.03-2 Landscapes

This clause provides local content to support Clause 12 (Environmental and Landscape Values).

Statement of Significance

The Shire's varied topography and vegetation, lake areas, volcanic cones and areas of clear pasture provide significant landscapes of high visual quality.

Lake Gnotuk and Lake Bullen Merri and their surrounds are both recognised nationally and internationally for their outstanding scientific, environmental and landscape significance. They are considered to be volcanic features of international significance in terms of their landform, geology and a as a unique scientific research site. They also form a visually attractive landscape to residents and visitors alike.

The ongoing pressure for dwellings and other developments to take advantage of these exceptional views require careful planning and management. There is significant pressure for development around Lakes Gnotuk and Bullen Merri. The careful siting of all buildings outside the craters' rims is required to protect the visual quality of the lakes and internal crater environment, as well as water quality. Careful siting is also required along the coastline. The disturbance or destruction of these features through inappropriate building, earthworks, vegetation removal and nutrient and sediment pollution must be avoided.

The key objectives include:

Objective 2 – To preserve and protect important landscape features

- *Strategy 2.1 – Maintain locally significant views and vistas*
- *Strategy 2.2 – Ensure development is sensitive to the landscape values of the area*

Objective 3 – To protect the landscape, geological, environmental and scientific significance of the crater slopes and crater rims of Lake Gnotuk and Lake Bullen Merri

- *Strategy 3.1 – Avoid development that may adversely affect the landscape, geologically, environmental or scientific significance of Lake Gnotuk and Lake Bullen Merri.*
- *Strategy 3.2 - Require new use and development around Lake Gnotuk and Lake Bullen Merri to demonstrate that it will:*
  - *Sustain and enhance lake water quality, nutrient and sediment load conditions, in order to maintain the capacity for scientific research and the operation of ecological systems together with appropriate agricultural and recreational uses;*
  - *Not modify the internal crater slopes and the geological integrity of this feature;*
  - *Retain an open visual setting, in order to maintain capacity for geological and landform studies and visual appreciation;*
  - *Be sited and designed outside the crater rims and not be substantially visible from within the crater rims;*
  - *Be sited and designed to afford maximum visual protection from public land zones and roads within the craters, using existing landforms and vegetation to provide screening;*

- *Provide new road access or infrastructure that is designed, constructed and maintained to avoid the formation of visual scars in the landscapes and to minimise surface disturbance, run-off and erosion; and*
- *Provide landscaping that is sited and designed to afford the minimum visual interruption to existing landforms.*

4.1.4 Clause 22.04 – Heritage

This policy applies to all land within the Heritage Overlay.

The objectives of this policy seek:

- *To ensure that Corangamite Shire's natural and cultural heritage is preserved and maintained;*
- *To encourage the retention and conservation of all significant and contributory heritage places;*
- *To conserve and enhance the cultural features of Corangamite's heritage places and precincts to ensure that the form and appearance of any additions, alterations, or new development is respectful of their significance; and*
- *To promote design excellence which clearly and positively supports the ongoing significance of heritage places.*

The heritage overlay applies to an area within the wider property boundary, however it does not extend to the area of the proposed solar farm.

4.1.5 Clause 53.13 – Renewable Energy Facility

Clause 53.13 – Renewable Energy Facility outlines decision guidelines for assessing renewable energy facilities.

The purpose of Clause 53.13 is:

- *To facilitate the establishment and expansion of renewable energy facilities, in appropriate locations, with minimal impact on the amenity of the area.*

The decision guidelines at Clause 53.13-3 state that:

Before deciding on an application, in addition to the decision guidelines of Clause 65, the responsible authority must consider, as appropriate:

- *The effect of the proposal on the surrounding area in terms of noise, glint, light spill, vibration, smell and electromagnetic interference;*
- *The impact of the proposal on significant views, including visual corridors and sightlines;*
- *The impact of the proposal on the natural environment and natural systems; and*
- *Whether the proposal will require traffic management measures.*

The decision guidelines for clause 53.13 in part echo the concerns of the objectors in that the project must demonstrate that there will be minimal impact on the amenity of the area.

4.2 Zones and overlays

The subject site is wholly located within the Farming Zone (FZ). A Road Zone (RDZ1) and PCRZ are located to the east of the site. Figure 4.1 shows the zoning of the site and surrounding area.

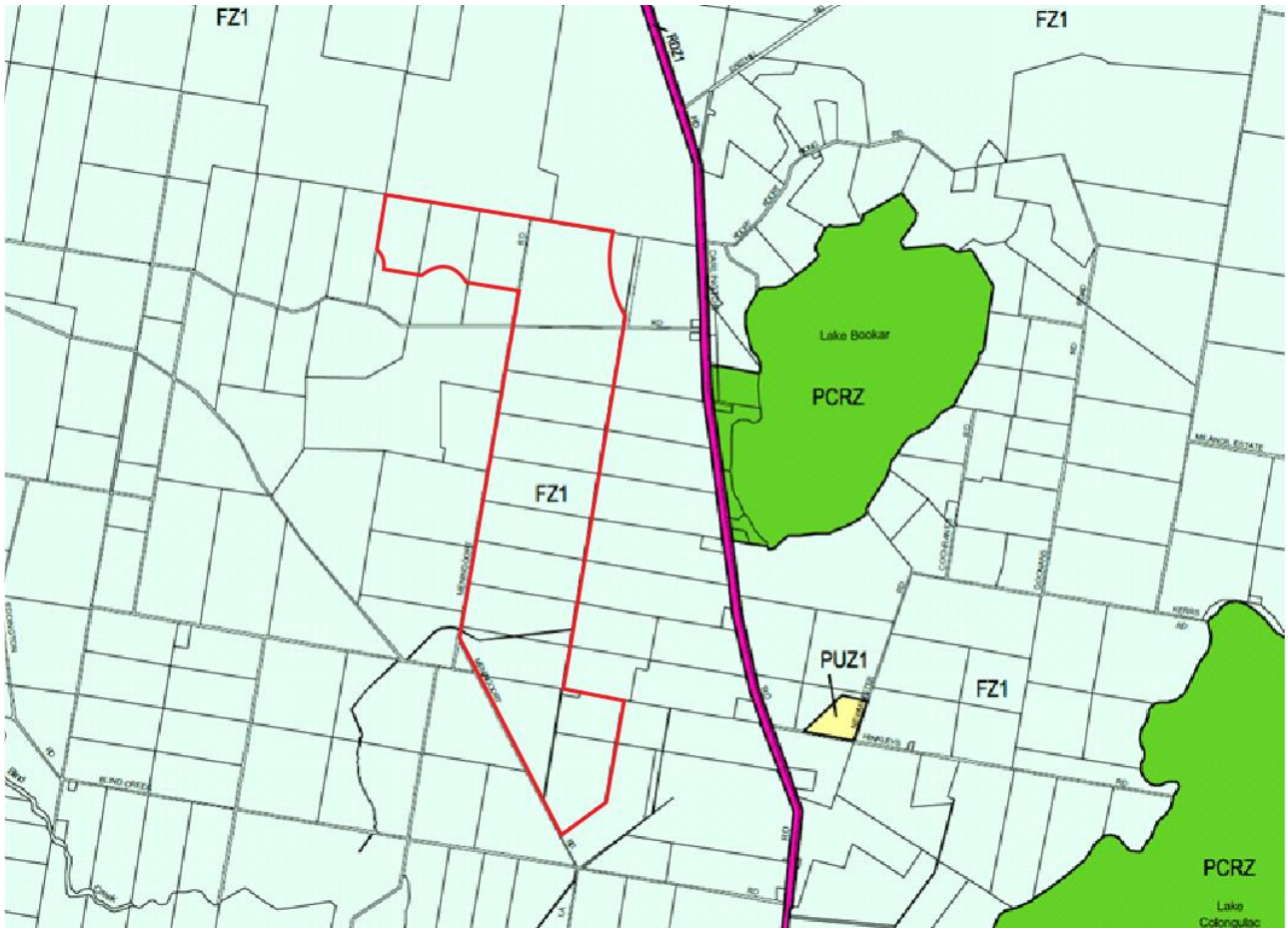


Figure 4.1: Zoning Map (Source: Landvic)

4.2.1 35.07 Farming Zone

The purpose of the Farming Zone is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework;*
- *To provide for the use of land for agriculture;*
- *To encourage the retention of productive agricultural land;*
- *To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture;*
- *To encourage the retention of employment and population to support rural communities;*
- *To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision; and*
- *To provide for the use and development of land for the specific purposes identified in a schedule to this zone.*

4.2.2 Overlays

The wider property boundary is subject to a number of overlays under the Corangamite Planning Scheme. The proposed solar farm sits outside these overlays as shown in Figure 4.2.

Figure 4.2: Overlays Map Source: LandVic

The two overlays that effect the wider property boundary are Significant Landscape Overlay – Schedule 1 (SLO1) and Heritage Overlay (HO80).

Lake Bookar is located to the east of the site within an Environmental Sensitive Overlay (ESO1)

4.2.3 Significant Landscape Overlay (SLO1)

Statement of Significance

The Shire contains some of the State's most significant volcanic landscapes and features. These areas provide visual interest with variation in topography and vegetation and are to be protected from inappropriate development.

One significant area includes Lake Gnotuk and Lake Bullen Merri and their surrounds. These lakes are both recognised for their scientific, environmental and landscape significance. They are considered to be a volcanic feature of international significance, both in terms of their geological form and as a scientific research site and the lakes and their surrounds form an outstanding and unique landscape that is attractive to both residents and visitors.

Landscape Character objective to be achieved:

- *To protect and enhance the visual and environmental quality and character of volcanic features, including crater lakes and scoria cones and their environs;*
- *To provide control over the visual impact of development on prominent volcanic features;*
- *To recognise the landscape, geological, biological, historical and recreational significance of volcanic features, including crater lakes, scoria cones and their environs;*

- *To promote the siting and design of buildings and works, including the choice of building materials that is responsive to the character of the volcanic landscape;*
- *To protect the Lake Gnotuk and Lake Bullen Merri crater slopes and crater rims from development which compromises the significance of these lakes including development that modifies the crater slopes and the geological integrity of this feature; and*
- *To protect the Lake Gnotuk and Lake Bullen Merri crater slopes and crater rims from development, which introduces additional buildings into the lakes' volcanic landscape to further remove it from a natural state or that threatens water quality through effluent or sediment runoff.*

4.2.4 Heritage Overlay (HO80)

The purpose of the Heritage Overlay is:

- *To implement the Municipal Planning Strategy and the Planning Policy Framework;*
- *To conserve and enhance heritage places of natural or cultural significance;*
- *To conserve and enhance those elements which contribute to the significance of heritage places;*
- *To ensure that development does not adversely affect the significance of heritage places; and*
- *To conserve specified heritage places by allowing a use that would otherwise be prohibited if this will demonstrably assist with the conservation of the significance of the heritage place.*

Heritage Overlay HO80 refers to the Meningoort Homestead at 520 Meningoort Road, Bookaar. This homestead is included on the Victorian Heritage Register (Ref. No H300).

Meningoort Homestead is located within the wider property boundary; however, the overlay does not extend to the location of the proposed solar farm.

4.2.5 Environmental Significance Overlay (ESO1 - Watercourses, water body and wetland protection overlay)

Statement of Significance

The Shire has Australia's largest permanent lake, Lake Corangamite, which is part of Victoria's Western Lakes Ramsar site. The Ramsar site also includes Lakes Colongulac, Bookar, Milangil, Terangpom and Gnarpurt, as well as Lake Cundare. The volcano complex of Mt Elephant, Mt Leura, Mt Sugarloaf and Mt Emu Creek are also important. The lakes of Bullen Merri and Gnotuk formed within marr craters are of international significance for their contribution to scientific endeavour especially regarding climate change studies. These significant water bodies play an important part in the ecology of the Shire and need to be protected from inappropriate land use and development.

The objectives of the ESO1 are:

- *To maintain the biological, physical and chemical quality and quantity of water within the watercourse, water body or wetland;*
- *To maintain the ability of streams and watercourses to carry natural flows;*
- *To prevent erosion of banks, streambeds and adjoining land and the siltation of watercourses, drains and other features;*
- *To protect and encourage the long-term future of fauna and flora habitats along watercourses;*
- *To ensure development does not occur on land liable to flooding;*
- *To prevent waste discharge, nutrients and other pollutants from entering watercourses and water bodies;*

- *To prevent increased surface runoff or concentration of surface water runoff leading to erosion or siltation of watercourses;*
- *To conserve existing wildlife habitats, close to natural watercourses and encourage regeneration of riparian and fringing vegetation;*
- *To minimise the potential damage caused to human life, buildings and property by flood waters;*
- *To restrict the intensity of use and development of land and to activities which are environmentally sensitive, and which are compatible with potential drainage or flooding hazards;*
- *To promote the use and environmental solutions in siting and design in preference to modification of natural systems through technical and engineering measures;*
- *To minimise the environmental impact on estuarine environments by controls over water releases and sand bar management in line with Southern Rural Water's established protocol;*
- *The natural role of wetlands in filtering nutrients and absorbing soluble pollutants in water shall be maintained. Further loss of wetlands through drainage will be discouraged; and*
- *To protect and ensure the long-term future of fauna and flora habitats in wetland and estuarine areas.*

The ESO specifically refer to the ecology and environmental function of the lakes and does not reference any landscape or visual concerns.

4.3 Other relevant documents – South West Landscape Assessment

Bookaar is located within the Western Volcanic Plains Landscape Character in the South West Landscape Assessment (SWLA).

The Department of Planning and Community Development commissioned this landscape assessment study of South West Victoria to better understand and assess the visual character and significance of the wide range of landscape types, which include the volcanic plains and cones that dominate much of the area, to the Great Dividing Range in the north, and the Grampians in the central west.

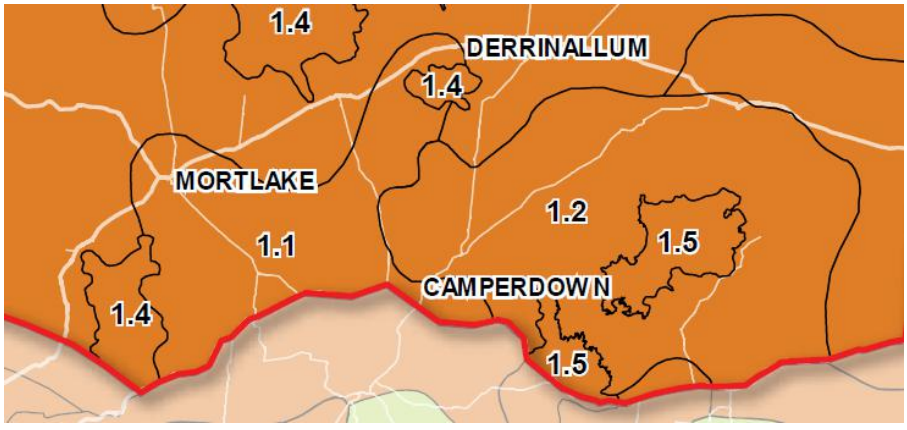


Figure 4.3: Landscape Character Types Map (Source: South West Landscape Assessment)

The subject site is located north of Camperdown within the Western Volcanic Plain 1.2 – Lakeside Stony Rises Character Unit. The Western Volcanic Plain – 1.5 Mount Leura Complex Landscape Unit is located to the south east of the subject site.

4.3.1 Landscapes of State and Regional Significance

Western Volcanic Plain – 1.2 Lakeside Stony Rises (State Significance)

This landscape is composed of dense hummocks of stony rises that circle the southern and eastern sides of Lake Corangamite. These originated from the explosive volcanic activity that occurred at Mount Porndon and the Red Rocks Complex. Few roads cut through the stony rises, and where they exist, they take the form of weaving goat tracks with sharp crests that move around the obstacles in the landscape, rather than formally surveyed roads. Vegetation is low and scrubby, with a windswept, coastal appearance. There are beautifully formed and intact dry-stone walls throughout the area.

There is a distinctive contrast between the rough, lumpy landscape and the smooth, flat waters of Lake Corangamite that are visible at high points. Among the rocks of the rises bracken, grasses and low, scrubby vegetation grows. In some parts the landscape is thick with remnant vegetation. This peters out to more open, cleared areas that remain dotted with rises. There is a stark contrast to areas clear of rocks, where pastures predominantly used for grazing open out. Nestled throughout the stony rises are a number of small lakes and seasonal wetland areas that provide additional visual interest.

Western Volcanic Plain – 1.5 Mount Leura Complex (State Significance)

Mount Leura is a complex nested maar which includes a series of scoria cones and craters that covers an area of 2.5km by 1.7km. Mount Leura is the largest of these, rising to a height of over 300m and offering panoramic views over the surrounding landscape. Separated from Mount Leura by a deep crater is the distinctive Mount Sugarloaf, an unusually symmetrical volcanic rise with a conical shape and a spiralling path indented into the steep side.

The volcanic complex contrasts in texture with the surrounding flat pastoral plains. The undulating hills and crater depressions form a visually interesting, almost surreal landscape which is punctuated by the rising cones of Mount Leura and Mount Sugarloaf.

Cropping on the lower slopes of the hilly complex intensifies the contrast in colour and texture, with lower slopes seasonally enveloped in bright green and giving way to the lighter green steep rises.

The landscape is mostly cleared of vegetation with occasional stands of vegetation and low shrubs peppering the summit of Mount Sugarloaf. Dark green exotic shelterbelts feature in the landscape and scoria mining has scarred the slopes.

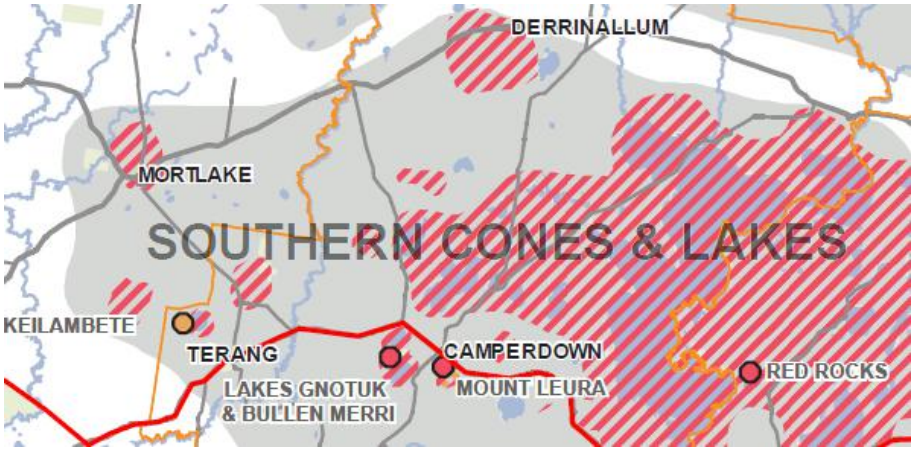


Figure 4.4: Views of State and Regional Significance Map (Source: South West Landscape Assessment)

Two significant viewing locations are located close to the proposed solar farm. These are Significant Viewing Location 1.5 – Mount Leura and 1.7 – Lakes Gnotuk & Bullen Merri.

4.4 Summary of planning considerations

It is clear that the planning policy and various clauses at various levels from state through to local seek to protect the unique landscape and geological features that the western districts of Victoria are renowned for.

These features include the elevated volcanic cones, wide open and flat plains that are punctuated by the many crater lakes found in the district.

The local planning scheme specifically recognises Mt Elephant which is approximately 20km to the north east of the Project and Mt Leura which is approximately 10km to the south east. Crater lakes include Lake Bullen Merri and Lake Gnotuk and are located approximately 5km south of the Project.

With the exception of the area identified by SLO1 to the west and Lake Bookar to the east. The Project is located within an area classified as Western Volcanic Plains is which identified as a landscape of State and Regional Significance. The site itself is within an area that is noted for its clear open areas, generally clear of rocks where the predominant use is grazing and cropping. A use which undergoes regular visual change depending on the farming practices and cropping regime. The project is visible the elevated locations of Mt Leura and the Cranbourne botanic gardens. Views from these locations are discussed at section 7 of this EWS. The is not in close proximity to other significant features identified by the local planning scheme and the SWLA.

Lake Bookar is located approximately 2km to the east of the site and is within an ESO. Lake Bookar is also part of a chain of wetlands and lakes that contribute to the Ramsar wetlands system in south west Victoria. The ESO specifically refers to the environmental and ecological functions of the lakes system and does not reference views, visual impact or amenity concerns.

The Homestead and the area within the Heritage Overlay is to the west of the project area.

5. The Proposal

The proposal seeks to develop an approximately 200MW solar farm approximately 7.7km north west of Camperdown at 520 Meningoort Road, Lots 51 and 52 and Res1 on LP5677 and adjacent parts of Meningoort Road, Bookaar (the Project). The Project will consist of approximately 700,000 individual solar panels, each measuring approximately 2.0m x 1.0m. The solar panels would be fitted to either, or a combination of:

- A single-axis tracking system
- Fixed tilt frames

The Project has a lifespan of approximately 30 years.

Key infrastructure of the development includes:

- Solar panels;
- Inverters;
- Substation;
- Battery storage;
- Site office, associated maintenance buildings and parking;
- Temporary construction compound and laydown area;
- Access tracks;
- Vegetation screens;
- Firebreaks; and
- Fencing.

Figure 5.1 shows the original proposed indicative layout submitted as part of the planning permit application and assessed by Tract in the original LVIA. These plans provide detail on the key components of the project, panel orientation, configuration and heights as well as the location of the proposed buffer and boundary plantings.

Amended plans prepared by Ecological were circulated via email on 10 May 2019. The changes relevant to landscape and visual impacts include an increase in the width of firebreak from 5.0m in the application plans to 10.0 m, a reduction is the maximum height of infrastructure within the battery storage area from 8.0 m to 5.0 removal of a short section of landscaping within the transmission line easement along the eastern boundary; re-location of the of proposed temporary construction compound further south and removing all solar arrays from Res 1 on LP4677. These changes are shown in the amended plan at Figure 5.2.

For reasons of preparing accurate photomontages that are based on a dimensioned and defined project layout, the plan circulated as part of the original application material has been used for the preparation of the photomontage discussed in Viewpoint 7 later in this report. My assessment of the project includes knowledge the changes brought about by the S5.57A application which excised areas of cultural sensitivity.

The original application plans provide a detailed panel layout that can be identified and discussed with respects to the location, set-back, spacing and orientation of the proposed solar panels and other project infrastructure. The proposed panel areas and project setbacks from key project boundaries were similar for both the original submitted plans and those that were amended and circulated on the May 10.

The following provides more detail on the key components of the Project relevant to visual impacts.

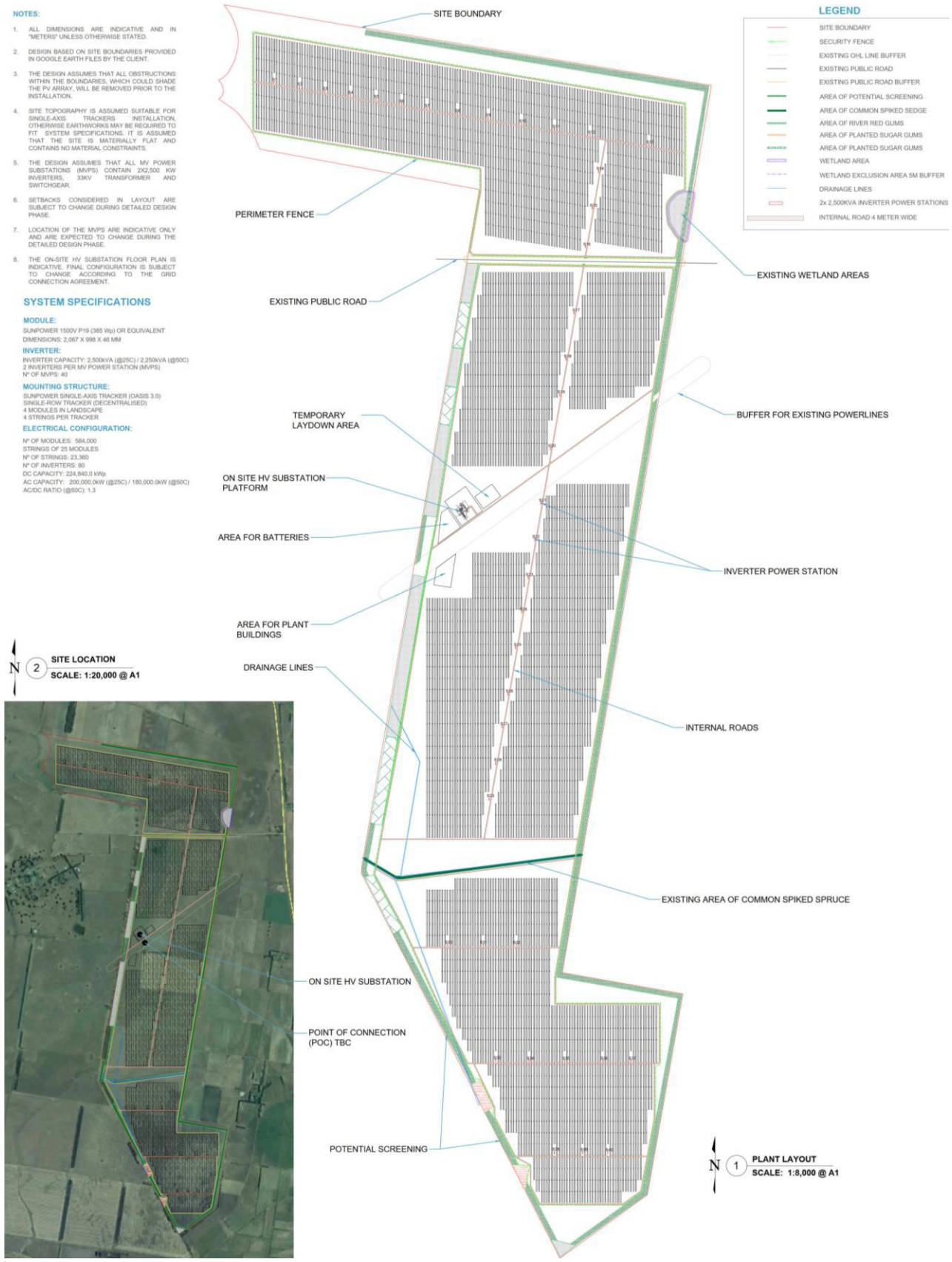


Figure 5.1: Site Layout (Source: Indicative Layout, Rina Consulting 08 May 2018)

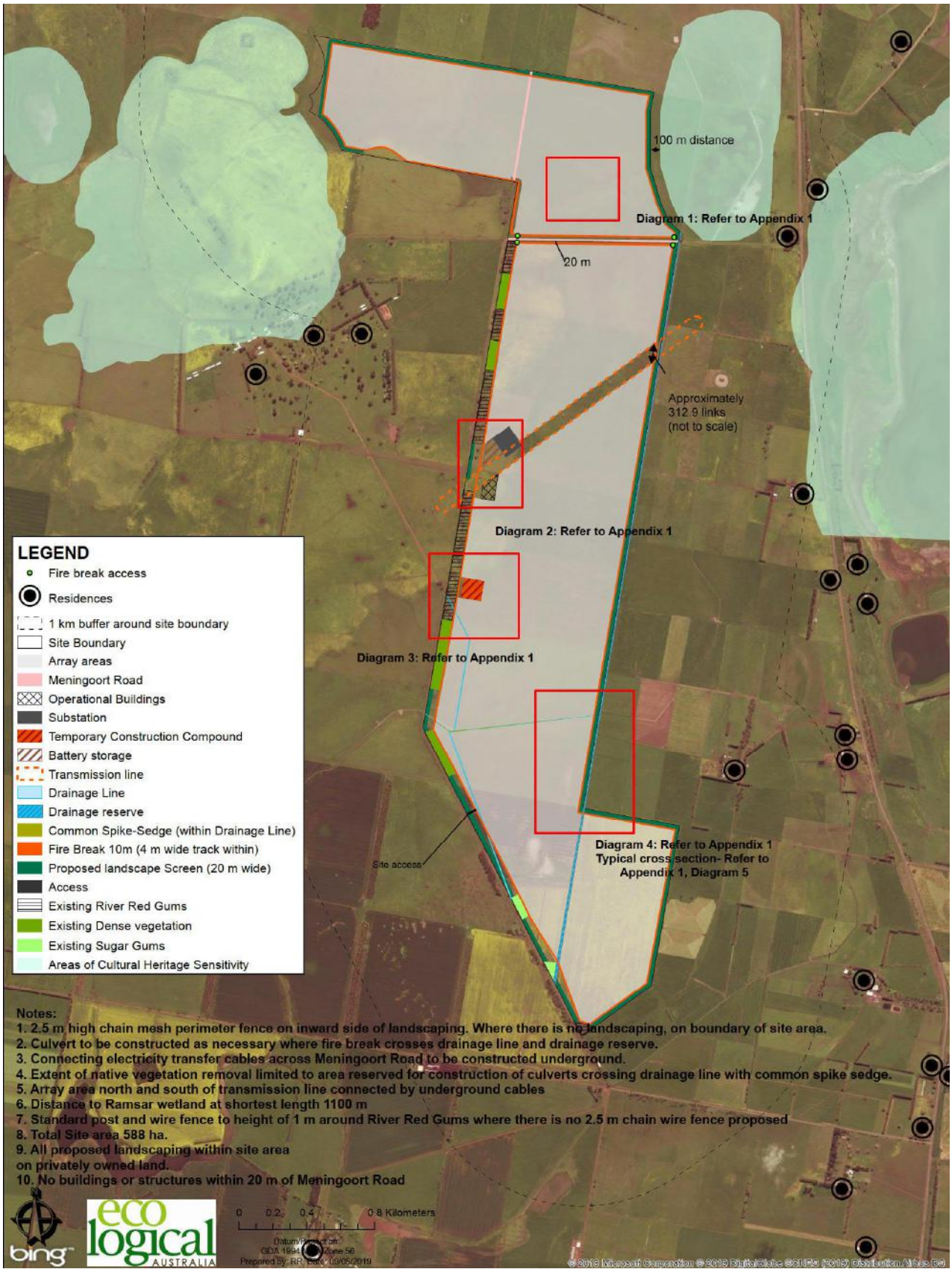


Figure 5.2: Amended Site Plan (Source: Amended Site Plan prepared by Ecological Australia 09 May 2019)

5.1 Solar Panels

The solar array will consist of approximately 700,000 individual solar panels, these would be fitted to either, or a combination of:

- A single-axis tracking system – tracking the sun from east to west as it moves throughout the day. At solar noon, panels face directly upwards. In the evening they face 60 degrees to the west and vice versa in the morning; and/or
- Fixed tilt frames – orientated so the panel faces upwards at approximately 25 to 30 degrees in a north, north-west or north-easterly direction.

Figure 5.3 and Figure 5.4 shows the key panel features relevant to views and visual impact.

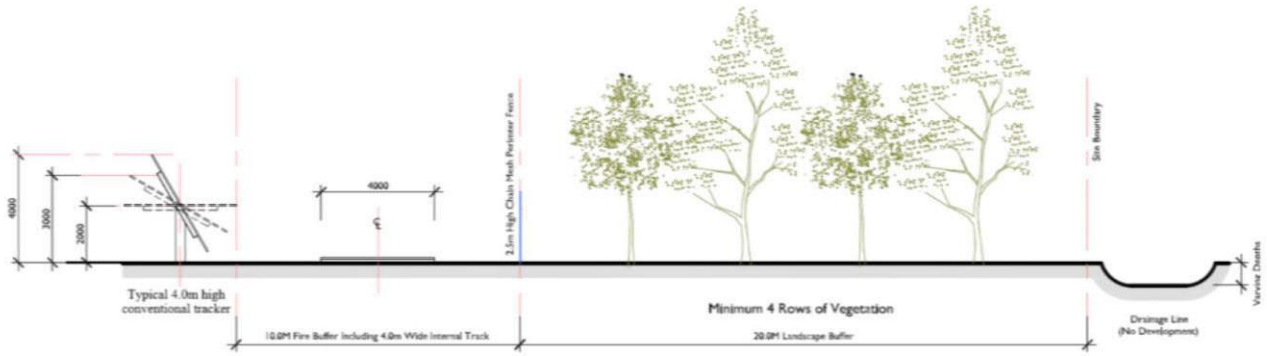


Figure 5.3: Indicative solar panel design (Source: Amended Plans Diagram 5 prepared by Ecological Australia 09 May 2019)

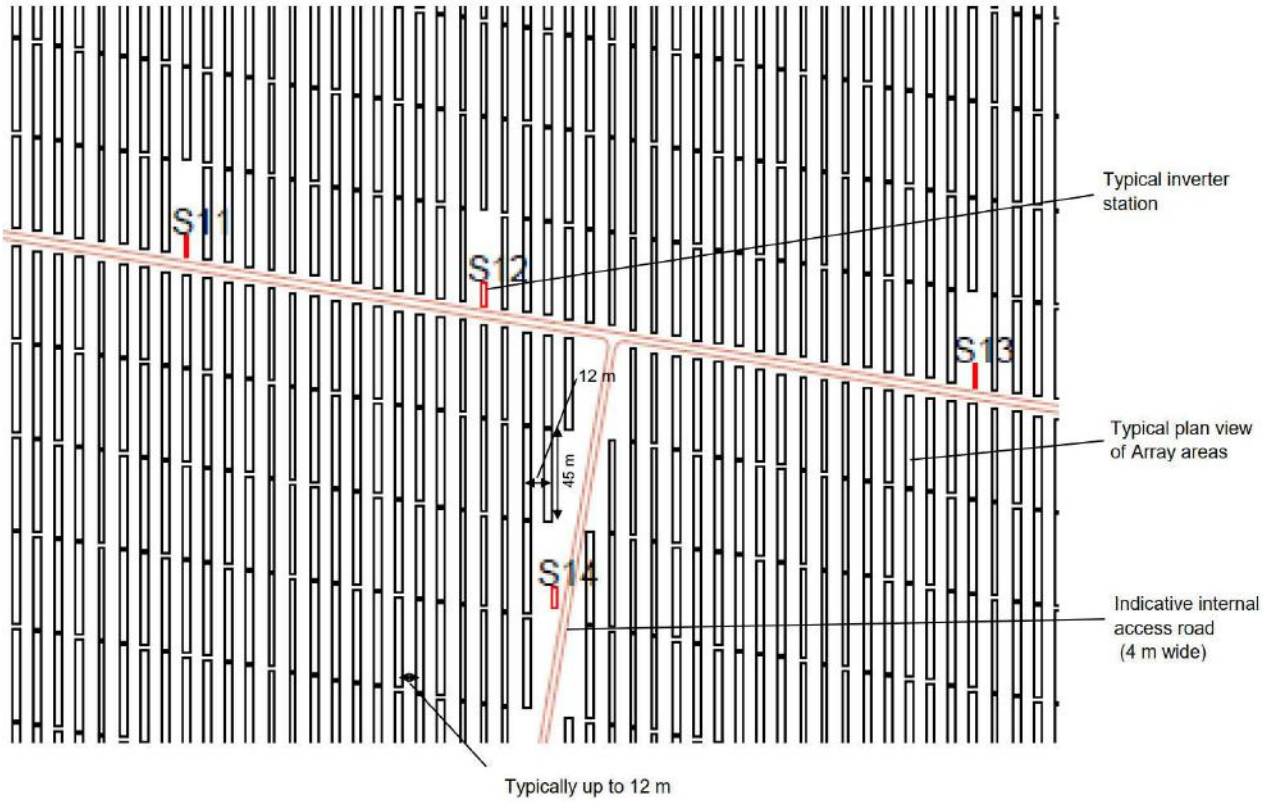


Figure 5.4: Indicative panel array and inverter layout (Source: Amended Plans Diagram 1 prepared by Ecological Australia 09 May 2019)

The largest of the proposed panel types has an overall height of 4 meters, to be conservative this assessment has been based on the larger of the two panel configurations. This configuration has also been adopted for the basis of the photomontage described further in this assessment.

5.2 Inverters

PV panels produce Direct Current (DC) electricity which would be converted to Alternating Current (AC) at a number of central inverters. Up to 60 central inverters will be located throughout the development (place together in groups of two or singularly).

Inverters are typically housed in containers or located on platforms, either singularly the size of a 20ft container, measuring approximately 6.1m (l) x 2.9m (h) x 2.5m (w), or doubly the size of a 40ft container, measuring approximately 12.2m (l) x 2.9m (h) x 2.5m (w).

Figure 5.5: Indicative Double Inverter Unit

The inverters will be visually similar to a shipping container when viewed from locations beyond the site.

5.3 Substation and Battery Storage

The onsite substation would be the point of connection to the existing 220 kV line that crosses the site. The final design specifications are subject to a grid connection agreement with AEMO and would likely contain the following items:

- One or two 220 kV transformers;
- High voltage (HV) circuit breakers and switch gear;
- Metering equipment;
- Control room;
- Battery area up to 1ha and up to 5m high situated adjacent to the substation (battery components are modular and are typically housed within shipping containers or look similar to this);
- Low Voltage (LV) power connection;
- Overhead cables connecting the substation to the existing 220 kV line;
- Parking space for service vehicles;
- Perimeter fencing; and
- Perimeter screening.

Figure 5.6 shows the indicative layout of this infrastructure.

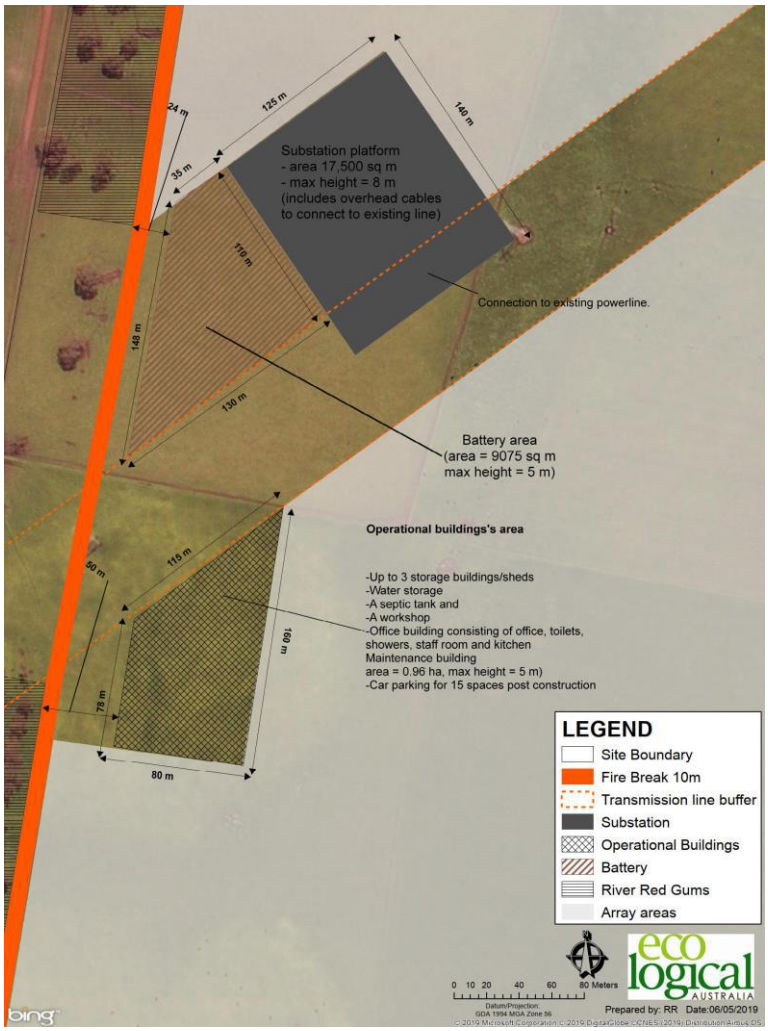


Figure 5.6: Indicative Substation layout (Source: Amended Plans Diagram 2 prepared by Ecological Australia 09 May 2019)

5.4 Site office, associated maintenance buildings and parking

South of the substation would be supporting buildings and infrastructure. The support buildings and associated parking would take up an area of approximately 0.96ha and may include the following:

- Up to 3 storage buildings/sheds;
- Water storage;
- Septic Tank;
- Workshop;
- Office building, consisting of office, toilets, showers, staff room and kitchen; and
- Maintenance building; and
- Car parking for 15 spaces post construction.

5.5 Access

The site will be accessed from Meningoort Road as indicated on the 'Indicative Layout' shown in Figure 5.1.

5.6 Access tracks

Internal tracks will be constructed of compacted gravel to an approximate depth of 150mm depending on soil conditions. Internal access tracks will be up to 4m wide with intermittent wider stretches for passing, parking and at corners. Small culverts over identified drainage lines would also be constructed.

5.7 Fencing

A 2.5 m high chainwire fence will be installed around the perimeter of the project. This fence is proposed to be located internal the Project boundary and behind the proposed landscaping screening so as to be screened from views external to the site. The proximity of the proposed fencing in relation to the landscape screening is shown in Figure 5.8. Once operational all access points will be gated.

5.8 Proposed Landscaping

The project proposes to install a 20.0 m wide band of native vegetation along the majority of the northern boundary, all of the eastern boundary with the exception of the area where the overhead transmission line enters the site and returning along part of the southern boundary where gaps in existing boundary planting exist.

Oz Trees have prepared a detailed methodology which sets out key steps and tasks for the implementation of the landscape screening proposed by the project. Key steps include:

- an initial spray out of weeds;
- deep ripping to a depth of approximately 800 – 900mm;
- fencing of the areas to be planted to limit soil compaction;
- a second spray out of weeds;
- planting selected species in either tube stock or cells;
- installing tree guards; and
- maintenance.

In addition to the installation methodology, other factors which influence a success planting outcome is the selection of sourced seed, suitability of the plant species to the soil and climate, the size of plants at installation, and the time of the year that planting is undertaken.

I have spoken with Michael Turner from Oz trees, who I understand install over 150,000 trees per year with a success rate of up to 99%. His view is that if the above methodology is implemented, the plants will be self-sustaining at the time of planting and will require little to no watering or maintenance.

This view is supported by plantings undertaken by Oz Trees at Meningoort Homestead which can be seen at various locations across the property. Figure 5.7 shows one such example of existing plantings along the Meningoort Road and to the west of the solar farm site.

Figure 5.7: Existing plantings

These plantings appear to be up to 50.0 m wide and several rows of trees and of a single species.

The amended plans prepared by Ecological show a minimum of four rows of plantings within the 20.0 wide landscape screening.

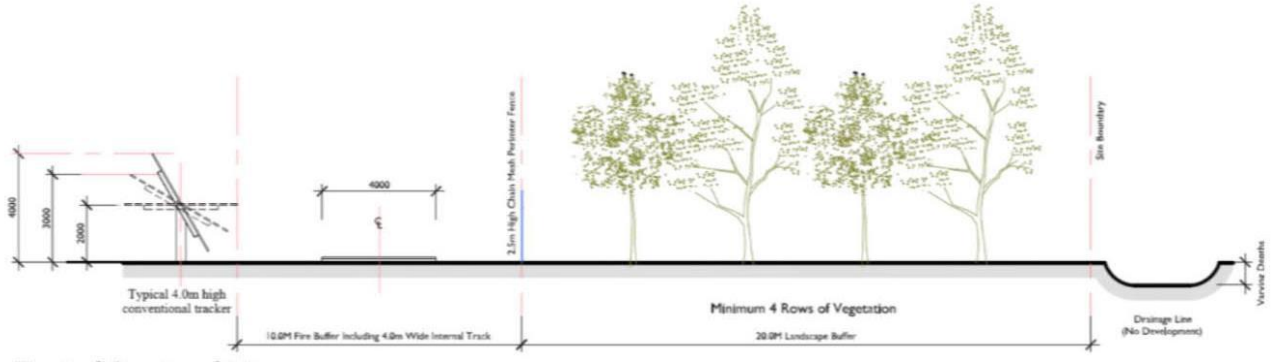


Figure 5.8: Proposed Landscaping Section Detail (Source: Amended Plans Diagram 5 prepared by Ecological Australia 09 May 2019)

Figure 5.9 below shows a recent example from northern Victoria where a 20.0 m wide landscape strip has been established with 4 rows of layered planting. This is a different climate with less rainfall and different soils, however the composition of the vegetation is structurally and visually similar to species which are found within the region of the project and many existing examples at the site.

Figure 5.9: Example 20m wide planting strip

Figure 5.10 shows the view at right angles to the planting and in close proximity where breaks in vegetation would be more noticeable that if viewed from several hundred meters.

Figure 5.10: Example 20m wide planting strip

The fourth row of planting, which is approximately 5.0 m in height and taller than the proposed panels. Even at this close range, there are no discernible breaks in vegetation that would permit views through to the proposed solar farm.

These proposed plantings would not be dissimilar to existing landscape and wind break plantings found in many areas in proximity to the site and the immediate project boundary.

Based on the above, I believe that the prosed 20.0 m wide landscaping buffer with 4 rows of trees will be successful at screening views towards the project.

6. Methodology

The criteria for assessing visual impact are different for publicly accessible and residential viewpoints. The visual assessment is also assisted by the preparation of a photomontage of the proposed solar farm.

6.1 Public viewpoints

In assessing the visual impact of a development from the public domain the scale of effects is primarily based on the following four criteria:

- **Visibility:** The visibility of a development which can be affected by intervening topography, vegetation and buildings;
- **Distance**: The distance of the viewer from the proposed solar panels. The level of visual impact decreases as distance increases.
- **Landscape character and viewer sensitivity:** The character of the surrounding landscape, both around the site and adjacent to the viewing location, must be considered. Generally, a modified landscape is considered to have a lower sensitivity to that of a pristine or natural landscape which is considered to be highly sensitive.
- **Number of viewers**: The level of visual impact decreases where there are fewer people able to view the solar farm. Alternatively, the level of visual impact increases where views are from a vantage point that is recognisable or causes a viewer to stop along their journey.

These four criteria need to be considered in the assessment of each viewpoint. However, the ratings of each criterion are not numerically based and cannot be simply added together and averaged to arrive at an overall rating.

For example:

- If the distances to the proposed solar farm are great then even if the viewer numbers and the landscape sensitivity were high, the overall visual impact would be minor because the proposed solar panels would be barely discernible;
- If there were few viewers (i.e. few people can see the project from a publicly accessible viewpoint), then even if the project was near to a key vantage point and the landscape sensitivity was high, the overall visual impact would be low because the change in views or visual impact would be limited to few viewers; and
- If the landscape sensitivity was low due to factors such as extensive modification, a non-sensitive use or the landscape is not one that is rare or threatened, then even if the project was near the viewpoint and visible to many viewers, the overall visual impact would be low because the viewpoint is not in a landscape of such sensitivity that further change would be an unacceptable change in views.

Therefore, the assessment of the overall visual impact needs to be informed by these criteria and a balanced judgement made as to the overall visual impact.

6.2 Residential viewpoints

The assessment of visual impact from residential properties is slightly different to one undertaken from publicly accessible viewpoints.

An assessment of viewer numbers is not applicable, nor is landscape sensitivity. Sensitivity at a residential dwelling and the immediate areas of attached private open space is always rated as high. This high sensitivity recognises that people feel most strongly about the view from their house and from their outdoor living spaces.

The visibility of a solar farm and the distance between the residential location and the project are the two criteria that vary within an assessment of the visual impact from a residential property.

6.3 Scale of Effects

The scale of effects for assessing the overall visual impact of the solar farm from a publicly accessible viewpoint ranges from negligible to high visual impact.

6.3.1 Negligible visual impact

Negligible – minute level of effect that is barely discernible over ordinary day-to-day effects. The assessment of a "negligible" level of visual impact is usually based on distance. That is, the solar farm is at such a distance that, when visible in good weather, it would be a minute element in the view within a modified landscape or will be predominantly screened by intervening topography, vegetation or buildings and structures.

6.3.2 Low visual impact

Low – visual impacts are those where the project is noticeable but that will not cause significant adverse impacts. The assessment of a "low" level of visual impact will be arrived at if the rating of any one or more of the four criteria, (visibility, distance, viewer numbers and landscape sensitivity), are assessed as low.

Therefore, an additional piece of infrastructure in a landscape which is man-modified, and which already contains many examples of existing infrastructure may be rated as a low level of visual impact.

6.3.3 Medium visual impact

Medium/Moderate – visual impact may occur when several of the four assessment criteria are considered as higher than "low" or the visual effects are able to be mitigated / remedied from an initial rating of High. This will of course be moderated by the context of the existing view and the modifications within the landscape.

6.3.4 High visual impact

High or unacceptable adverse effect – extensive adverse effects that cannot be avoided, remedied or mitigated. The assessment of a "high or unacceptable adverse effect" from a publicly accessible viewpoint requires the assessment of all criteria to be high. For example, a highly sensitive landscape, viewed by many people, with the proposed solar panels in close proximity and largely visible would lead to an assessment of an unacceptable adverse effect.

6.4 Photomontage preparation

Photomontages are used within the report to show the anticipated change to the existing landscape created by the development of the solar farm.

6.4.1 Lens size and photos used within the photomontages

Photomontages typically show the changes in a 60° horizontal field of view. The 60° horizontal field of view represents the central cone of view in which symbol recognition and colour discrimination can occur. When defining vertical field of view, either 10° or 15° can represent the central field of view of human vision as shown in Figure 6.1.

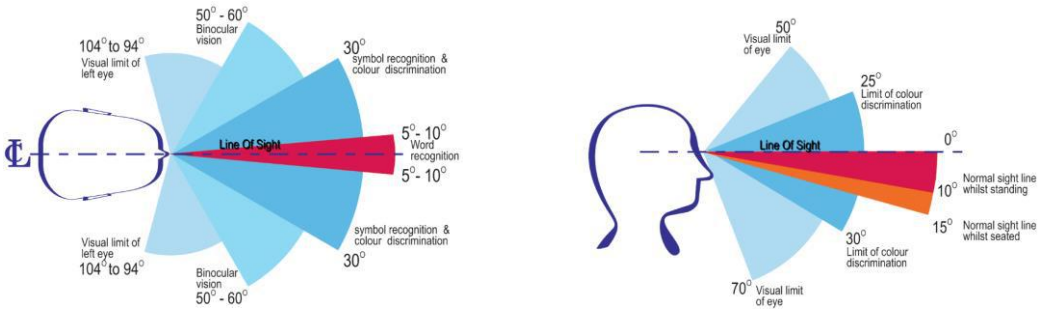


Figure 6.1: Horizontal and Vertical field of view (Human Dimension and Interior Space, Julius Panero & Martin Zellnik, Witney Library of Design,1979)

Similar data can be found in the more recent publication entitled 'The Measure of Man and Woman, Revised Edition', Henry Dreyfuss Associates, John Whiley & Sons, 2012.

The 60° horizontal field of view is important if the photomontage images represent the change in the landscape. The A3 photomontages, which are appended to this report in Appendix C, include a 60° horizontal field of view. One of the sheets within the photomontage set shows a wireframe view of the computer model to illustrate how the photomontages were derived. Vertical 'poles' within this wireframe are merely points on the landscape such as a group of trees, a corner of an existing building etc., which allow the computer model (prepared in 3D Studio Max) and the photograph to be accurately aligned. This ensures that the proposed facility is accurately located within the photograph and then the rest of the model is removed, and the tower and the proposed landscape are rendered into the image.

6.4.2 Photographs

A 70 mm lens on a Nikon D850 digital camera has a picture angle of 26.5° and a horizontal angle of view of approximately 21.3°. https://imaging.nikon.com/lineup/dslr/basics/19/01.htm.

Four photographs overlapped 1/3 to create an image approximately the same as the central cone of view of human vision, i.e. 50-60° horizontal and 15° vertical. Figure 6.2 demonstrates this theory.

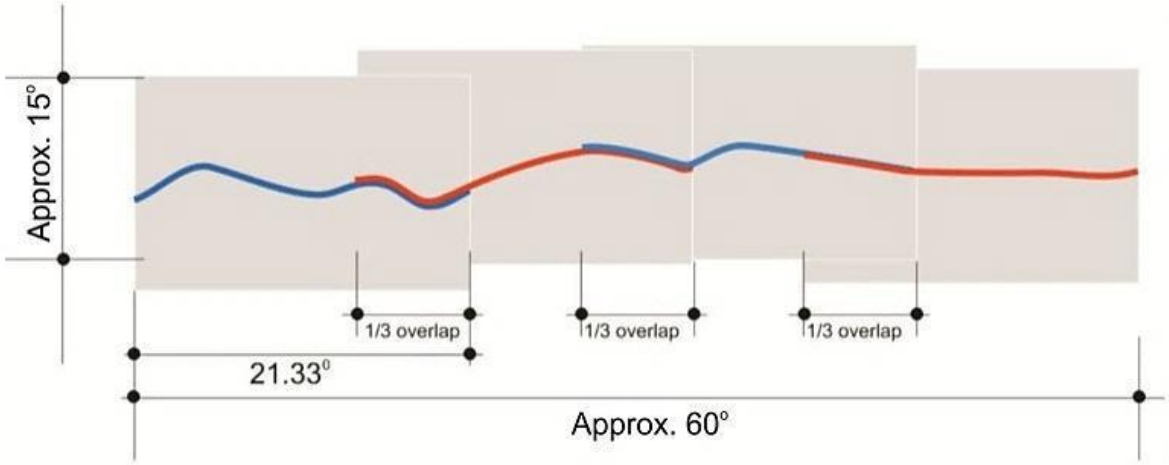


Figure 6.2: Photomontage Layout

6.4.3 Computer modelling and the wireframe model

Cadastral data as well as the proposed development are modelled within a computer program (3D Max). A virtual camera is set up in the model at the GPS coordinates for each of the photographs that are being used within the panorama.

The digital model or wireframe view is then overlaid on the photographic panorama. Known points within survey information such as topography, building locations or other infrastructure are registered into the base photographs (or other predetermined points). For technical accuracy, these points must align. This verifies the location and apparent height and scale of the proposed development.

After the background reference points have been aligned, the wireframe is removed, leaving only the proposed Solar farm facilities, which are rendered, either to match the lighting conditions at the time the photographs were taken or, more typically, to maximise their visibility by increasing their contrast against the background sky.

Photomontages are prepared with a 60° field of view, which follows the parameters of human vision. Wider panoramas are also used to indicate the full extent of the proposed Solar farm facilities where appropriate.

Panel modelling

The panel orientation described in Typical View of tracking Structure and panels in Figure 6.3 shows the individual panels being oriented in portrait format. The System Specification in the Indicative layout in Figure 5.1 which was included in the original planning permit application as a typical possible layout, describes the individual panels being orientated in landscape format. The difference in the two configurations is shown in Figure 6.3 below.

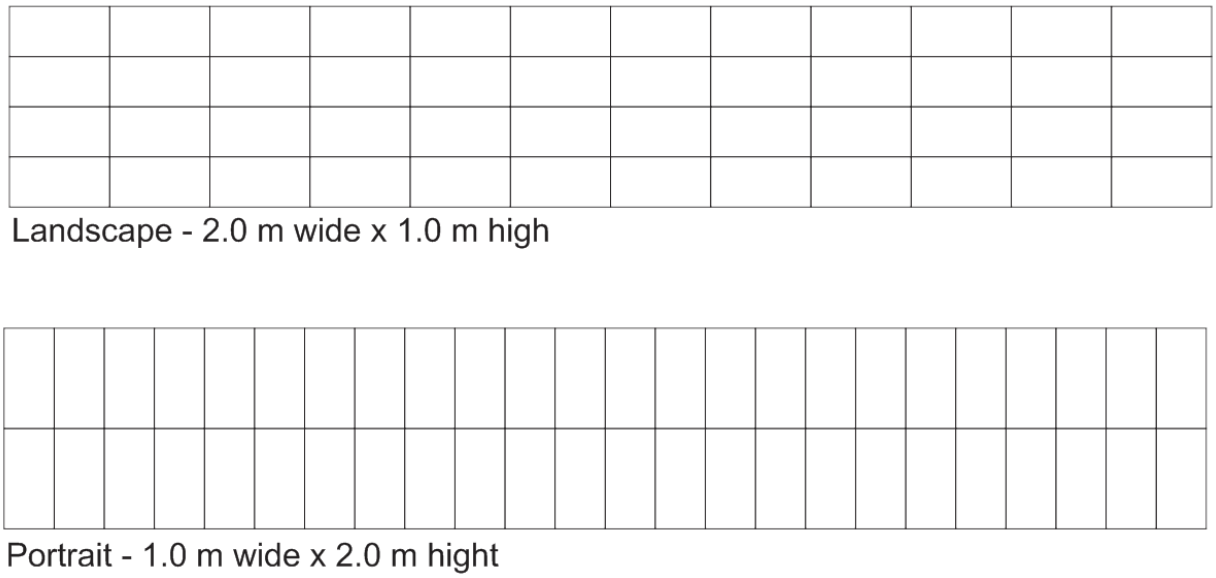


Figure 6.3: Panel alignment in photomontage

My view is that the landscape format is a more noticeable configuration and has therefore been the layout which has been used within the photomontage.

6.4.4 GPS Coordinates and distance to the solar farm

The Nikon D850 camera also records the GPS coordinates as part of the metadata. GPS coordinates are also taken based on a separate hand-held GPS and the locations from which the photographs were taken is also marked on a digital map at the location of each photograph.

6.4.5 Photomontages

One photomontage has been prepared from public viewpoint VP07. This viewpoint is indicative of the views from Darlington- Camperdown Road. This photomontage is appended to this report (Refer Appendix C for A3 size photomontages with a 60° field of view).

It is recognised that the small photographs and the A3 photomontages included within this assessment are not indicative of the actual visual impact. The A3 images, which are appended to this report (Appendix C), are clearer than the smaller images in the text.

However, to view the photomontages in a way that they appear perceptually accurate, they need to be printed and viewed on A0 sized sheets and held at arms' length. When viewed at A0 the photomontages are representative of the level of visual alteration.

6.5 Mitigation measures

Mitigation measures may also include additional landscape treatments, both around the proposed renewable energy facility and, if required, on impacted residential sites.

Potential mitigation measures, if appropriate, will be discussed after an analysis of the visual impact from each viewpoint.

7. Visual Assessment

Several objections raised concerns in relation to views and visual impact from the surrounding road network and the impact that the project might have on the character of the area.

The preceding sections have described the location of the site, the proposed height and scale of the Project components and the area available for landscape screening as relevant to views and visual impact.

This chapter will examine the visibility of the proposed solar farm from publicly accessible viewpoints.

7.1 Publicly Accessible Viewpoints

Ten viewpoints have been selected from a range of locations around the project. These locations have been chosen to represent views from locations of theoretical project visibility and from where people are likely to view the project.

In addition to providing for the types of views that are likely to be afforded to the project, the selected views also provided an understanding of the nature of visibility of the project area with regards to distance and the features of the surrounding landscape.

The location of the viewpoints in relation to the project are shown in Figure 7.1.

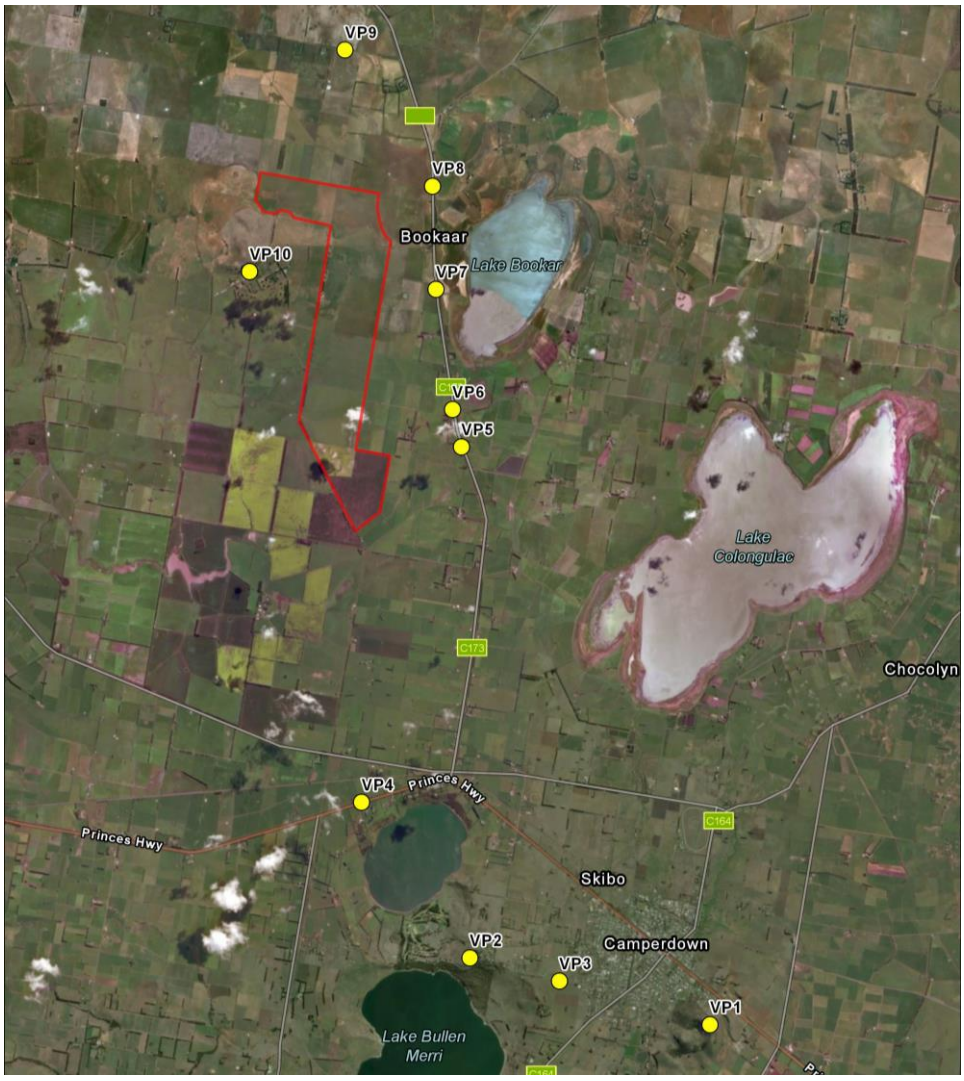


Figure 7.1 Viewpoint Map

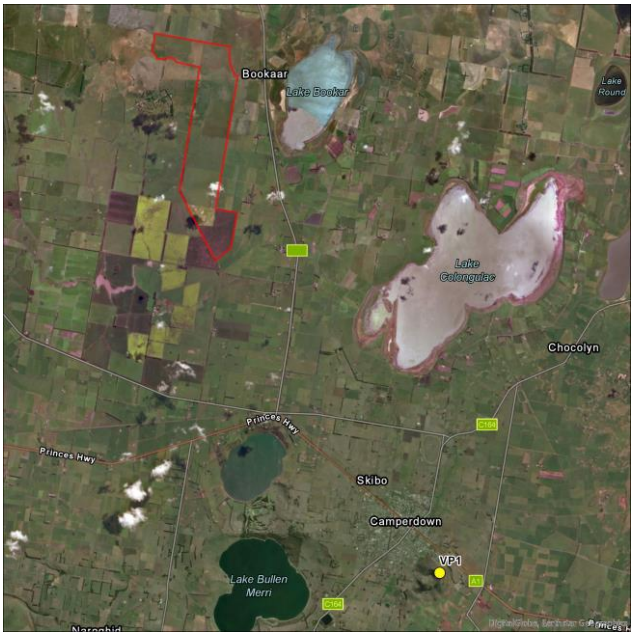
7.1.1 Viewpoint 1 – Mt Leura Lookout

Viewpoint 1 is located at the Lookout on the top of Mt Leura to the south east of the Project site.

The nearest site boundary is approximately 10km north west of this viewpoint.

This viewpoint was selected as Mt Leura was identified as a significant viewing location within the SWLA. It was also one of the few locations that was requested by Council to be considered by the original Visual Impact Assessment.

Figure 7.2 shows the view looking north west towards the project site from the lookout.



(54H 688825 E, 5764868 S)

Figure 7.2: Viewpoint 1 – View looking north east from Mt Leura Lookout

The approach to Mt Leura winds its way from Camperdown to the northern side of the mountain up the northern and eastern faces towards a carpark located to the south of the summit. There is a short walk of approximately 150-200m from the carpark to the lookout located at the summit.

From the summit there are generally 360o views which take in the vast volcanic plains that the district is renowned for. The elevated volcanic cones punctuate the otherwise flat horizon. The various lakes of which Lake Corangamite being the largest in the area visually contrast against the tapestry created by the various agricultural activities and wind breaks in the region.

On a clear day the project would be visible from parts of the walking trail located on the northern faces of Mt Leura. In these views the project is at such a distance that visually it would appear as part of the diverse agricultural landscape which changes seasonally depending on the agricultural regime.

Although the project is at a distance that for ground level views it would not discernible in views, because of the elevation of the viewing location the project would be visible. However, for the reasons outlined above the visual impact would be negligible to low over the ordinary day to day and seasonal changes of views across the landscape.

7.1.2 Viewpoint 2 – Camperdown Botanic Gardens

Viewpoint 2 is located in the Camperdown Botanic Gardens to the south of the Project site.

The nearest site boundary is approximately 7.3km north west of this viewpoint.

This viewpoint was selected as views from Lake Bullen Merri and Lake Gnotuk were identified as significant viewing locations within the SWLA. Views from the Botanic Gardens are taken from elevated locations on the eastern edge of these lakes.

Figure 7.3 shows the view looking north towards the project site.

(54H 684873 E, 5765968 S)

Figure 7.3: Viewpoint 2 – View looking north from carpark

Figure 7.3 shows the view from the edge of the Botanic Gardens carpark. Views are directed out to the west across Lake Bullen Merri and Lake Gnotuk which are recognised as significant landscape features in the Corangamite Planning Scheme.

The project is not visible and will not compete with key views towards these features from any area within the Botanic Gardens. From the carpark views to the north towards the project are screened by existing topography and vegetation.

Figure 7.4 shows the view looking north west from the picnic area in the northern section of the Botanic Gardens.

Figure 7.4: Viewpoint 2 – View looking north west from picnic area (54H 685006 E, 5766121 S)

Views to the north west towards the project from the picnic ground are filtered by existing vegetation.

There may be views towards the project from other locations within the Botanic Gardens and the nearby caravan park. Similar to the views from Mt Leura, the project would be at such a distance that it would not be a dominant element in views. The visual impact would be negligible to low over the ordinary day to day and season changes of views across the landscape.

7.1.3 Viewpoint 3 – Park Lane

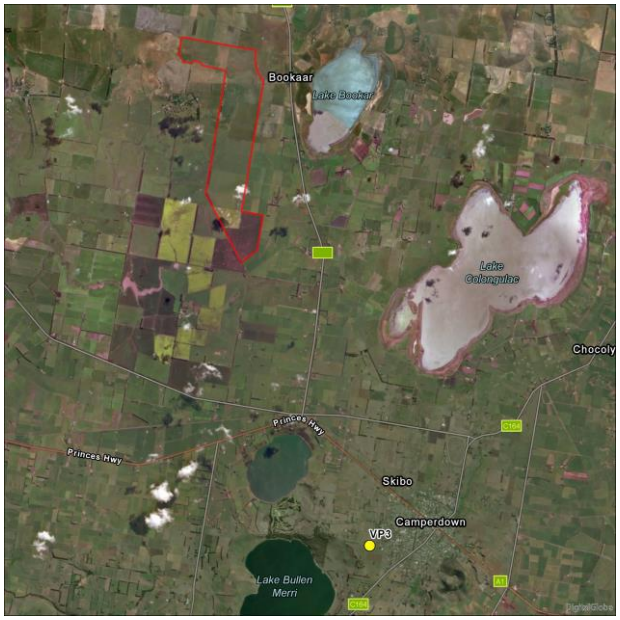
Viewpoint 3 is located on Park Lane approximately 500m west of Bowen Street to the south of the Project site.

The nearest site boundary is approximately 8.1km north west of this viewpoint.

This viewpoint was selected as representative of views from roads to the south east of Camperdown that have views to the north and towards the project site.

This location is at a lower elevation to the views from Mt Leura and Camperdown Botanic Gardens but more elevated than views from within the town.

Figure 7.5 shows the view looking north west towards the project site.



(54H 686347 E, 5765584 S)

Figure 7.5: Viewpoint 3 – View looking north west from Park Lane

Although this viewpoint is still elevated, it is lower than the views from Mt Leura and Camperdown Botanic Gardens described in the preceding views.

At this lower viewing angle, the wind break and shelterbelt plantings that define the property boundaries across the landscape, mesh together to limit views of the clear open paddocks and landscapes at lower elevations and within the plains, even for the nearby paddocks between this viewing location and the project.

At a distance of 8.1km the solar farm may be visible but will not be a dominant element in the view. Further, the proposed landscaping would further assist to filter or screen views of the project over time.

For these reasons, the visual impact is negligible.

7.1.4 Viewpoint 4 – Princes Highway

Viewpoint 4 is located on the Princes Highway approximately 700m east of Sandys Lane to the south of the Project site.

The nearest site boundary is approximately 4.5km north of this viewpoint.

This viewpoint was selected as representative of views from the Princes Highway that runs to the north of Camperdown.

Figure 7.6 shows the view looking north towards the project site.

(54H 683093 E, 5768524 S)

Figure 7.6: Viewpoint 4 – View looking north from Princes Highway

The existing site and the area of the proposed project is not visible due to the distance, low viewing angle and existing vegetation found in the landscape between the Princes Highway and the site.

There will be no views and therefore no visual impact of the project from this and any other locations observed along this section of the Princes Highway.

7.1.5 Viewpoint 5 – Darlington-Camperdown Road #1

Viewpoint 5 is located on Darlington-Camperdown Road approximately 380m north of Hinkleys Road to the east of the Project site.

The nearest site boundary is approximately 1.2km south west of this viewpoint.

This viewpoint was selected as it represents views from Darlington-Camperdown Road while heading north towards Darlington.

Figure 7.7 shows the view looking west towards the project site.

(54H 684735 E, 5774369 S)

Figure 7.7: Viewpoint 5 – View looking west from Darlington-Camperdown Road

Existing vegetation will filter or screening views to the southern section of the project which is approximately 1.2km to the west. A break in existing vegetation will permit views to the northern section, which from this location would be approximately 2km.

The Darlington-Camperdown Road is the main road between Darlington and Camperdown, due to a combination of the overall distance to the project, screening afforded by existing vegetation and the speed of the road being 100km/hr the visual impact prior to the establishment of landscape screening would be low. Overtime, the proposed 20m wide landscape planting, located along the entire eastern boundary will screen all views to the project which would reduce the visual impact to Negligible-Nil.

7.1.6 Viewpoint 6 – Darlington-Camperdown Road #2

Viewpoint 6 located on Darlington-Camperdown Road approximately 1.0km north of Hinkleys Road to the east of the Project site

The nearest site boundary is approximately 1.3km south west of this viewpoint.

This viewpoint was selected because of the relatively open nature of views to the project from the Darlington-Camperdown Road.

Figure 7.8 shows the view looking west towards the project site.

(54H 684589 E, 5774982 S)

Figure 7.8: Viewpoint 6 – View looking west from Darlington-Camperdown Road

Even though there are potentially open views to the project, from this location along the Darlington-Camperdown Road the views will be oblique and relatively short in duration due to the presence of existing vegetation between the site and the Darlington-Camperdown Road.

It is also clear that the project does not reside in any key or prominent views of vistas to the landscapes that are protected by the planning scheme, nor recognized within the SWLA.

It is recognized that these images within the report as small, however an important point of reference in all views is the high voltage transmission towers which bisect the site.

Similar to the previous viewing location, due to a combination of the overall distance to the project, screening afforded by existing vegetation and the speed of the road being 100km/hr the visual impact prior to the establishment of landscape screening would be low. Overtime, the proposed 20m wide landscape planting, located along the entire eastern boundary will screen all views to the project which would reduce the visual impact to Negligible-Nil.

7.1.7 Viewpoint 7 – Darlington-Camperdown Road #3

Viewpoint 7 is located on Darlington-Camperdown Road approximately 2.7km south of E Hill Road to the east of the Project site

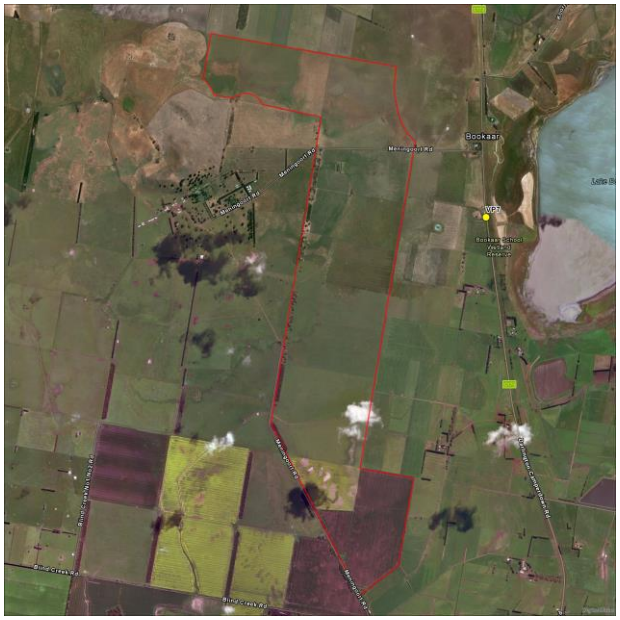
The nearest site boundary is approximately 870m west of this viewpoint.

This viewpoint was selected as it is one of the more open views towards the project from Darlington-Camperdown Road.

It also allows for views to the proposed substation located midway along the western boundary through a break in the indicative panel layout.

For these reasons, I have selected this location from which to prepare a photomontage of the Project. A larger A3 version of the photomontage has been included in the Appendices (Appendix C). It is emphasised that a larger A0 print showing the 60-degree field of view, should be relied upon to determine the likely visibility of the Project in this view.

Figure 7.9 shows the view looking west towards the project site.



(54H 684317 E, 5776955 S)

Figure 7.9: Viewpoint 7 – existing view looking west from Darlington-Camperdown Road

Although this figure demonstrates the potential for clear open views towards the project, it also demonstrates the potential screening provided by the proposed landscape as evidenced by existing vegetation seen to the left and right of the image.

Figure 7.10 shows a photomontage of the same view.

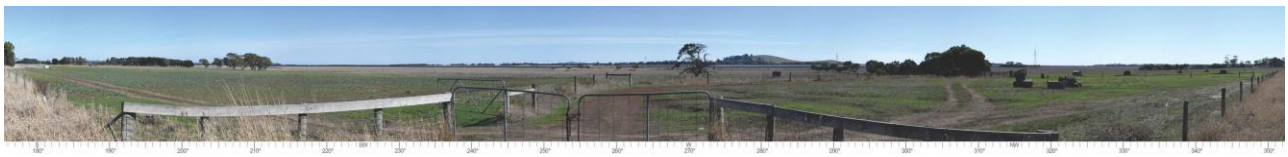


Figure 7.10: Viewpoint 7 – Photomontage (without proposed vegetation)

The photomontage shows that at this distance the panels would sit low in the otherwise flat landscape and would not be a visually dominant feature or element in these views.

Figure 7.11 shows an enlargement of the photomontage. This view does not show the proposed vegetation.

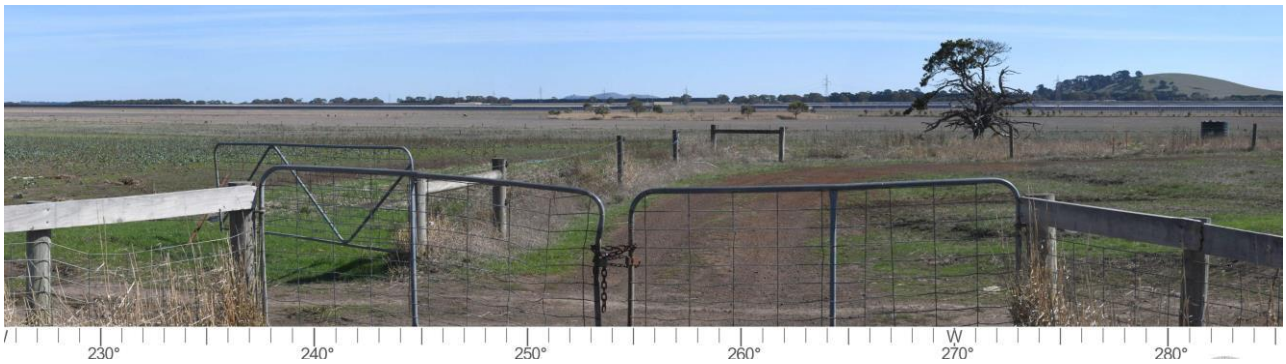


Figure 7.11: Viewpoint 7 – Photomontage enlargement (without proposed vegetation)

Figure 7.11 also includes the substation located mid-way along the western boundary, the largest feature being the substation which would connect the project to the existing overhead powerline which bisects the site. Even before landscape screening, it is clear that the project and its key elements will not be dominant features in views, nor will they compete with views to the elevated hill to the west of the Meningoort Homestead.

For these reasons, the visual impact is considered to be Low.

Overtime, the proposed 20m wide landscape planting, located along the entire eastern boundary will screen all views to the project which would reduce the visual impact to Negligible-Nil.

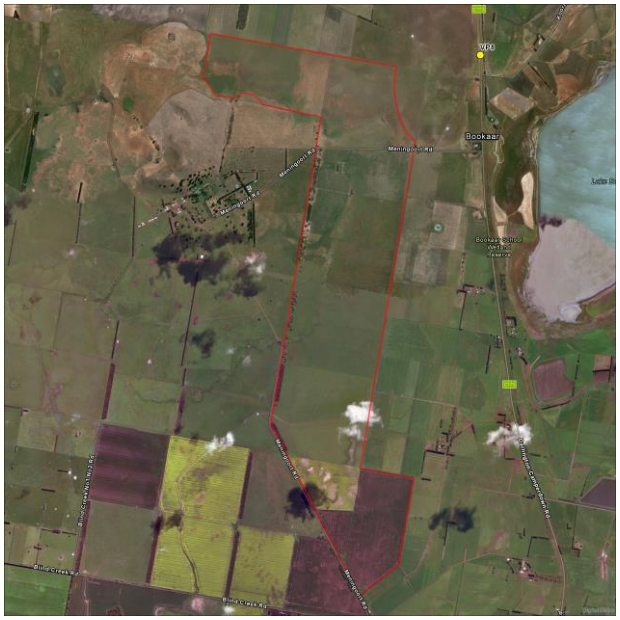
7.1.8 Viewpoint 8 – Darlington-Camperdown Road #4

Viewpoint 8 is located on Darlington-Camperdown Road approximately 1.0km south of E Hill Road to the east of the Project site

The nearest site boundary is approximately 580m south west of this viewpoint.

This viewpoint was selected as it represents a clear open view from Darlington-Camperdown Road when heading south from Darlington. This view is also the point where the project boundary is the closest to Darlington-Camperdown Road.

Figure 7.12 shows the view looking south west towards the project site.



(54H 684256 E, 5778656 S)

Figure 7.12: Viewpoint 8 – View looking south west from Darlington-Camperdown Road

Even though there are potentially open views to the project, from this location along the Darlington-Camperdown Road these views will be oblique and relatively short in duration.

It is also clear that the project does not reside in any key or prominent views of vistas to the landscapes that are protected by the planning scheme, nor recognized within the SWLA.

The proposed project elements will sit low in the landscape and will not detract from views to the elevated hill to the west of the Meningoort Homestead.

For these reasons, the visual impact would be assessed as low. Overtime, the proposed 20m wide landscape planting, located along the entire eastern boundary will screen all views to the project which would reduce the visual impact to Negligible-Nil.

7.1.9 Viewpoint 9 – Kilnoorat Road

Viewpoint 9 is located on Kilnoorat Road approximately 930m west of Darlington-Camperdown Road to the north of the Project site.

The nearest site boundary is approximately 2.2km south of this viewpoint.

This viewpoint was selected as it is representative of views from local roads to the north of the project.

Figure 7.13 shows the view looking south towards the project site.

(54H 682820 E, 5780892 S)

Figure 7.13: Viewpoint 9 – View looking south from Kilnoorat Road

Even though there are potentially open views to the project, from this location along Kilnoorat Road, this is a local road with few users.

It is clear from the image above that the project does not reside in any key or prominent views of vistas to the landscapes that are protected by the planning scheme, nor recognized within the SWLA, nor does it detract from views to the elevated hill to the west of the Meningoort Homestead.

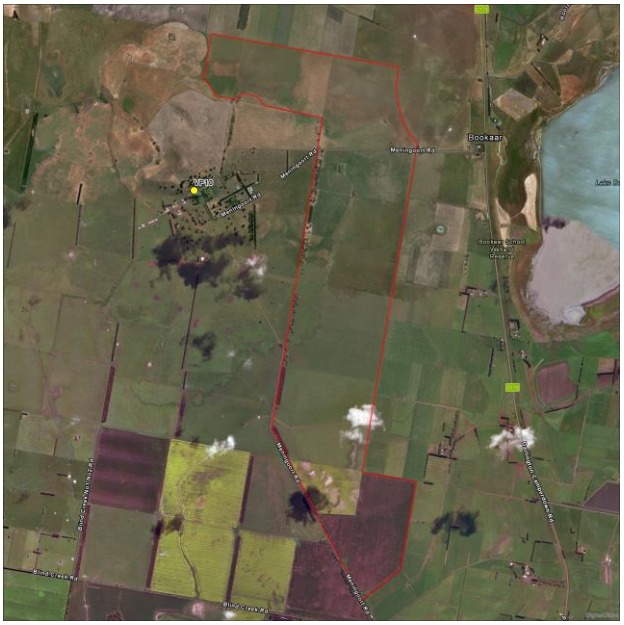
For these reasons, the visual impact would be assessed as low. Overtime, the proposed 20m wide landscape planting, located along the northern boundary will screen all views to the project which would reduce the visual impact to Negligible-Nil.

7.1.10 Viewpoint 10 – Meningoort Homestead

Viewpoint 10 is from the Meningoort Homestead which is the host landowner of the Project. This viewpoint has been included not for the purposes of views or visual impact as they are privately held views and the residents are directly associated with the project. Rather, the inclusion of this section explores the concerns raised within objector statements for the impact to the heritage significance of the homestead and the change in views as documented by the Eugene Von Guerard painting dated 1861.

The nearest project boundary is approximately 1.2km east of this viewpoint. This view is approximately 1.5 times the distance of that shown in the photomontage prepared for Darlington-Camperdown Road.

Figure 7.14 shows the view looking south east towards the project site from a location that this proximal to the location captured in the Eugene Von Guerard painting.



(54H 681250 E, 5777252 S)

Figure 7.14: Viewpoint 10 – View over the top of the homestead

The Figure 7.15 shows an enlargement of this view which focuses on the approximate area capture by the Eugene Von Guerard Painting. Figure 7.16 shows the Eugene Von Guerard painting.

Figure 7.15: Viewpoint 10 – View over the top of the homestead

Figure 7.16: Painting of the homestead – Eugene Von Guerard (Source: Scottish Migrants and the Western District article by Ben WIlkie)

Overtime, the view in which the original painting has evolved and matured in several ways. This includes the expansion of the original homestead from its original modest proportions to include several new wings, out buildings and verandas. The fabric of the building has also been modified from the original painting from corrugated iron roofing to slate tiles and replacement/cladding of the original redbrick chimneys to split face bluestone and the introduction of more modern features such as skylights in the western lean-to.

Further, the original landscape plantings which comprises of young trees within the painting and cottage gardens have matured to include the many mature and exotic trees within proximity to the dwelling and the native trees within the nearby paddocks and property boundaries. This vegetation screens views towards the elevated features including Mt Leura and the hill on which the Camperdown Botanic Gardens are now located.

The feature that has remained is the existing driveway central to both views and the elevated volcanic cones in the distance. The Project will not impact in any meaningful way on the scene and setting captured within the Eugene Von Guerard painting as it will sit low in the landscape, filtered by existing vegetation around the homestead and will not block views towards the key elevated features of Mt Leura. Further, it must also be recognised that this location is within a privately held property, that is seldom open to the public.

7.2 Residential dwellings

Several objections to the project raised concerns regarding views and visual amenity from nearby residential dwellings. These dwellings are predominantly located to the south and east of the Project. The nearest of these dwellings, not associated with the Project is approximately 450 m to the south east of the nearest project boundary.

Landscape screening is an accepted measure to reduce visual impacts of a project for a range of projects where a predicted visual impact from sensitive receptors such as residential dwellings would be greater than moderate.

The recent VCAT decision for the Glenrowan Solar Farm concluded that landscape screening can reduce visual impacts from sensitive residential viewing locations where a high level of visual impact prior to the establishment of landscape screening was predicted.

Similar to the Bookaar Solar Farm, the Glenrowan Solar Farm also proposed 4.0 m high solar panels, an on-site substation, PCUs and maintenance facilities. The landscape buffer in this instance was 5.0 m wide, not 20 m as proposed by this project.

For the Glenrowan Solar Farm there were several nearby residential dwellings were a high level of visual impact was predicted. This high visual impact was due in part to the:

- dwellings sharing an immediate boundary with the proposed solar farm,
- the close proximity of the dwellings to the project; and
- limited to no intervening vegetation, topography and buildings that would filter views to the project.

Condition 9 (e) of the permit for the Glenrowan Solar Farm required that for dwellings that were assessed as having a high level of visual impact prior to landscape mitigation being effective….50% of the landscape screen planting be installed as established trees to 2 metres in height, for a length of 100 metres. This was to achieve immediate visual screening of the renewable energy facility when viewed from the affected dwellings. The nearest dwelling to the Glenrowan Solar Farm was less 70 m from a project boundary and perimeter fence, and approximately 200 m from the nearest solar panel. The nearest dwelling to the proposed Bookaar Solar Farm is approximately 450 m.

The photomontage shown at Viewpoint 7 of this report and included in the Appendices shows that existing vegetation established along fence lines or property boundaries will be effective at filtering or screening views to the Project. This vegetation is often contained within a fenced reserve less than 5.0 m in width and in a single row. This vegetation has also been established without any requirement for landscape management, or prescriptive care and maintenance program typically required by a permit condition for landscape.

The preceding analysis of views from the surrounding areas demonstrates that landscape plantings are effective and can be established within the site boundary, sufficient to mitigate sensitive views such as those from nearby residential dwellings to the east and south of the project.

The Project proposes to install a 20.0 m wide landscape strip around the perimeter of the project and in the areas where there is the potential for views towards the project from nearby residential dwellings. There are also several examples of vegetation within the project site that are similar to the proposed plantings. These examples demonstrate the effectiveness of vegetation growth in the area and its ability to screen sensitive views.

Further, the preceding analysis and report have identified that 4 rows of vegetation will be effective in this area as demonstrated by the many plantings in close proximity to the site that are similar to the landscape buffer.

There were no locations observed where the proposed landscape screening comprising 4 rows of planted vegetation would not be effective at filtering or screening sensitive views towards the project should this be required.

For these reasons, I am of the view that the visual impact from nearby residential dwellings can be effectively managed by the project and there are no further locations where I would recommend additional planting be installed. In addition to this, many of the dwellings observed while on site, appeared to include screening and vegetation between the dwelling and the project and were at distances where the Project would not be visually dominant.

8. Conclusion

Although the project has a large footprint, the proposed solar panels will form a small element in views from the area surrounding the project. While there would be a change to views, the visual impact would be minor for even the most sensitive of viewers.

8.1 Views from the elevated locations

On a clear day the project may be visible from parts of the walking trail located on the northern faces of Mt Leura and locations in and around the Camperdown Botanic Gardens. In these views the project is at such a distance that visually it would appear as part of the diverse agricultural landscape which changes seasonally depending on the agricultural regime.

8.2 Views from the road network

Darlington-Camperdown Road is the only major road in proximity to the Project which is approximately 580 m at it nearest point. The photomontage demonstrates that even in clear open views, the proposed solar panels would not be dominant features in these views, nor would they detract from key views to features such as the elevated volcanic cones and the various lakes dispersed across the district.

Overtime the project would be completely screened from views by the proposed landscape plantings around the perimeter of the site.

8.3 Impact on the heritage precincts

Several Objections raised concerns regarding the impact of change to the original scene captured in the Eugene Von Guerard Painting which captures the view over the original Meningoort Homestead.

Overtime, this original view has evolved and matured to include the expansion of the original homestead, a change in the building fabric from corrugated iron roofing to slate tiles and cladding of the original redbrick chimneys to split face bluestone.

The original landscape plantings, which at the time of the painting captured young trees and cottage gardens, which have now matured to include the many mature and exotic trees within proximity to the dwelling and the native trees within the nearby paddocks and property boundaries. The latter screening and filtering views to much of the project area.

From a visual impact perspective, the Project will not:

- bring about an un-acceptable visual outcome in terms of the Planning Policy Framework, including the Municipal Strategic Statement and local planning policy;
- result in an unacceptable level of visual change in the context of the altered view from the location where the Eugene Von Guerard painting was captured. This is due in part to the already modified view, and the vegetation which has matured between the time of the painting and now;
- cause unacceptable landscape and visual impacts within the local area and from key viewpoints;
- degrade the of natural beauty of the area;
- appear as a blight on the natural landscape contrary to both local and state planning policies;
- diminish the cultural heritage and landscape values of the areas as shown in Eugene Von Guerard painting of Meningoort;
- impact on amenity of area and surrounding environment;
- result in a net recruitment of canopy vegetation brought about by the proposed boundary plantings;
- Impact in any appreciable way on the rolling green pastures, crater lakes and mountains; and
- destroy the existing landscape amenity of the area due to its size.

The photomontage has demonstrated that the panels which have been modelled at four meters in height, sit low within the landscape and will not be visually prominent. This is due to the low-lying nature of the site and the low profile of the panels which mould to the contours of the land and the subject site. Further, the distance for any sensitive receptors or key views is at such a distance that the panels will not be a dominant feature in the view.

I see no reasons from a landscape and visual impact perspective that should preclude the project from being granted a permit. This position is supported by the following conclusions derived from the observations and conclusion reached in the preceding analysis.

I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance, which I regard as relevant, have to my knowledge been withheld from the Tribunal.

Appendix A. Hayden Burge CV

Hayden Burge

PRINCIPAL LANDSCAPE ARCHITECT

Hayden has over 20 years' experience in Landscape Architecture, Visual Impact Assessment, Master Planning, Rehabilitation and Landscape Construction across Australia. Hayden's project experience and background brings depth, creativity and practical solutions to a variety of projects.

Stakeholder and user groups are demanding more from our clients than a "fit for purpose" project. Hayden has responded to this by developing a specialisation in projects that require innovative solutions and strategies to navigate a broad range of social, environmental and legislative complexities for projects in the built environment. Hayden is a critical thinker who enjoys the challenge of developing beneficial project outcomes to help our clients overcome the increasing and ever-changing demands from stakeholders and user groups, ensuring an outcome that is more than "fit for purpose" while minimising exposure to cost, time and legislation.

Hayden quickly develops an understanding of key project design issues to develop practical solutions for project delivery. His knowledge of planning, environmental and land use legislation will assist to predict amenity concerns and to develop design and mitigation solutions.

Prior to joining Jacobs, Hayden was ERM's APAC lead for Landscape and Visual Assessment. Hayden regularly appears before appellant bodies and independent planning panels as an expert witness in, visual impact assessment and landscape architecture.

Areas of Expertise

- Landscape Architecture
- Master planning
- Urban Design
- Visual Impact Assessment
- Rehabilitation.

Relevant Project Experience

Expert Evidence

Client: Multiple

Scope/Description: Provision of expert evidence statements for planning panels and tribunals

Responsibility: Hayden has delivered Landscape Architectural, Urban Design and Visual Impact Assessments expert evidence for a range of projects including:

- Glenrowan Solar Farm, January 2019
- Tivendale Road, Officer, June 2018
- Sunbury South Precinct Structure Plan, Oct 2017
- Ryan Corner and Hawkesdale Wind Farm, Aug 2017
- Berrybank Wind Farm, Nov 2017
- Wangaratta Solar Farm, Nov 2017
- Carlton Housing Precincts-Development Plan, Dec 2006
- Former Rusden Campus, Blackburn, March, 2007

EDUCATION/QUALIFICATIONS

Bapp.Sci Landscape Architecture and Urban Design, RMIT, 2000

REGISTRATIONS/ CERTIFICATIONS

Registered Landscape Architect, AILA

MEMBERSHIPS AND AFFILIATIONS

VPELA

LANGUAGES

English

PUBLICATIONS

- Visual Assessment for Renewables – MAV Planning Conference, May 2018
- Mining as a scar on the landscape – ACG Global Mine Closure Conference, Brisbane 2012
- Visual Impact Assessment – Presentation to the Victorian Planning and Environmental Law Association, 2010.

Hayden Burge
PRINCIPAL LANDSCAPE ARCHITECT

- Wallace Avenue Toorak, July, 2007.
- Queens Road, South Melbourne, August, 2007
- Serpells Road, Templestowe, July 2008

Wangaratta Solar Project

Client: Country Wide Energy

Title: Wangaratta Solar Farm

Start/End Dates: 2017

Scope/Description: Hayden undertook a peer review of the proposed Wangaratta Solar Farm Project, prior to providing expert visual advice at a Ministerial Call In convened specifically for the project. The project was supported by the independent planning panel and is now in advanced planning.

Glenrowan Solar Project

Client: ESCO Pacific

Title: Glenrowan Solar Farm

Start/End Dates: 2016– 2019

Scope/Description: Hayden prepared the Landscape and Visual Impact Assessment for the proposed Glenrowan Solar Farm in North East Victoria. Further, Hayden prepared expert evidence regarding landscape and visual impacts of the project in 2019. The project received a planning permit.

Winton Solar Farm

Client: FRV

Title: Winton Solar Farm

Start/End Dates: 2017

Scope/Description: Hayden prepared the Landscape and Visual Impact Assessment for the Winton Solar Farm in North East Victoria. The project received a planning permit and is now in advanced design development.

Dundonnell Wind Farm

Client: Newen/Trustpower/Tilt

Title: Dundonnell Wind Farm

Start/End Dates: 2010 –2018

Scope/Description: Hayden was involved in the preparation of the Landscape and Visual Impact Assessment of the then proposed Dundonnell Wind Farm which formed part of the original Environmental Effects Statement (EES). Hayden's role has continued with the project to provide advice and supporting documentation for the recently approved turbine height increase and to assist with various permit conditions relevant to landscape and visual impact.

Lal Lal Wind Farm

Client: West Wind/ Macquarie Capital/ Lal Lal Wind Farms

Title: Lal Lal Wind Farm

Start/End Dates: 2008 – 2018

Hayden Burge
PRINCIPAL LANDSCAPE ARCHITECT

Scope/Description: Hayden was involved in the preparation of the original Landscape and Visual Impact Assessment of the proposed Lal Lal Wind Farm. Hayden role in the Lal Lal Wind Farm continued in 2017 by providing advice on permit implications relating to landscape through the transaction phase as well as delivering the landscape strategy for key stakeholders.

Moorabool Wind Farm

Client: Gold Wind

Title: Moorabool Wind Farm, Turbine height increase

Start/End Dates: 2016– 2018

Scope/Description: Hayden prepared the Landscape and Visual Impact Assessment of a proposed turbine height increase for the approved Moorabool Wind Farm.

Ryan Corner and Hawkesdale Wind Farms

Client: GPG Pty Ltd

Title: Ryan Corner and Hawkesdale Wind Farms

Start/End Dates: 2009 – 2017

Scope/Description: Hayden was involved in the preparation of the Landscape and Visual Impact Assessment for the proposed Ryan Corner and Hawkesdale Wind Farm's in Western Victoria. Hayden's role continued with the project's to provide advice, supporting documentation and expert testimony for the recently approved turbine height increases for both projects.

Gullen Range Wind Farm

Client: Epuron / Goldwind

Title: Gullen Range Wind Farm

Start/End Dates: 2009 – 2015

Scope/Description: Hayden's involvement in the Gullen Range Wind Farm includes the preparation of the Landscape and Visual Impact Assessment, Stakeholder Engagement, Community Consultation. Following completion of construction, Hayden was retained to prepare a consistency review for to be provided to the NSW State Government.

Berry Bank Wind Farm

Client: GPG

Title: Berrybank Wind Farm

Start/End Dates: 2017

Scope/Description: Hayden provided advice, supporting documentation and expert testimony for the recently approved turbine height increases for Berrybank Wind Farm and grid connecting infrastructure.

Appendix B. Instructions

Contact: Edward Mahony
Direct line: 03 9691 0228
Email: emahony@besthooper.com.au
Principal: John Cicero
Our Ref: JDC:EJM:181273

22 February 2019

Jacobs
Attention: Mr Hayden Burge
Principal Landscape Architect
Floor 11, 452 Flinders Street
MELBOURNE VIC 3000

By email only: hayden.burge@jacobs.com

Dear Hayden,

520 Meningoort Road, Lots 51 & 52 and Res 1 on LP4677, Bookaar VIC 3260

We act for the Permit Applicant/Applicant for Review, Bookaar Renewables Pty Ltd, in relation to the above matter, which relates to a renewable energy facility and associated works.

Our client wishes to retain you to review the application and should you be in a position to support it, to prepare an expert evidence statement at the hearing of this matter. Your brief is to undertake a peer review of the analysis undertaken by PagerPower as submitted with the application and to address the landscape and visual impact merits of the proposal.

Your witness statement is due for circulation by 27 May 2019, however we request a copy of same by **13 May 2019.**

The compulsory conference and hearing dates/locations have been confirmed. You are not required to attend the compulsory conference. At this stage, you will need to be available for the following dates to provide oral evidence:-

- **24-27 June 2019,** and
- **1-2 July 2019**

We will have a clearer idea of the exact timing that you are required to give evidence closer to the hearing.

We request that you carefully review each of the conditions, included in the Council Officer report contained within your brief, and provide your comment on the conditions relating to your respective area of expertise by **8 March 2019**. This will assist us in preparing for the compulsory conference.

The brief includes a presentation from the client that gives an understanding of the practical nature of the application. You are to assume that the solar panels used are the panels with a 4m high maximum tilt.

Our client will be directly responsible for your fees, therefore please ensure your fee proposal is sent directly to the client. Our client's details are as follows:

Bookaar Renewables Pty Ltd
Contact: Jane Ross and Richard Seymour
44 Quayle Street, Sandy Bay, TAS 7005
J.Ross@infinergy.co.uk / R.Seymour@infinergy.co.uk
0418 632 727 / +64 22 033 1587

We enclose an electronic brief of documents for your review. Please advise if you require any further information to complete your evidence statement.

Yours faithfully
BEST HOOPER

John Cicero
Principal

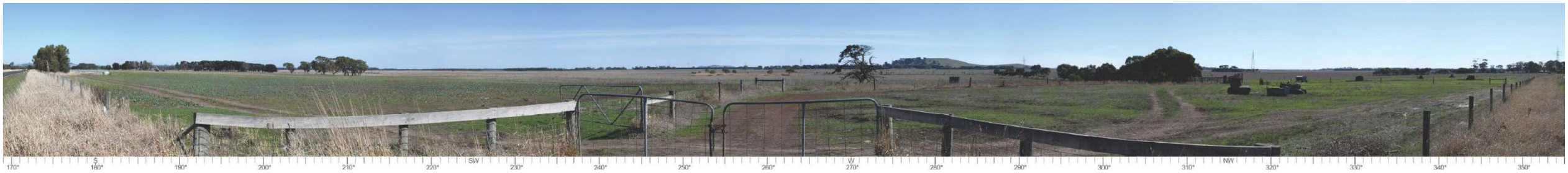
Enc.

Appendix C. Photomontage

VIEWPOINT 7 – Darlington-Camperdown Road #3

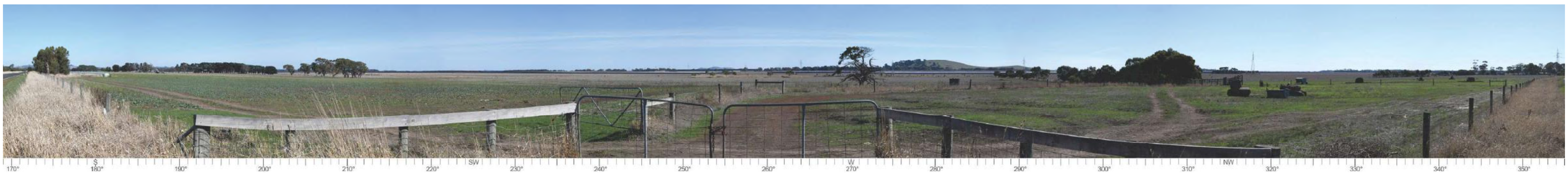
View looking south to north

(GPS 54 H, 684317 m E, 5776955 m S)



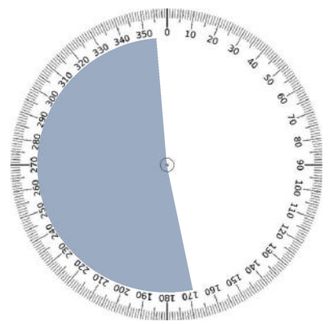
Existing view

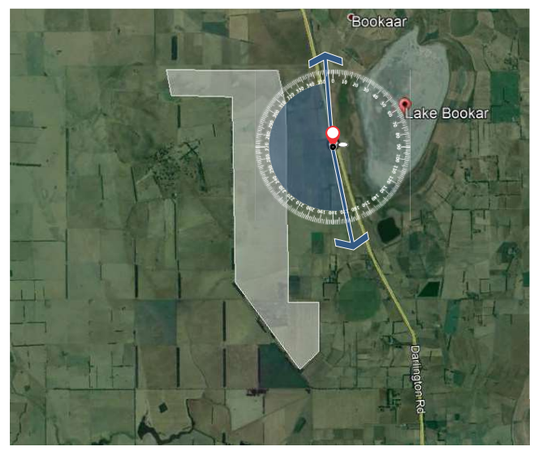
See Sheet 2 *See Sheet 3* *See Sheet 4*



Photomontage

See Sheet 2 *See Sheet 3* *See Sheet 4*





Distance to Project: Approximately 870m west

Viewpoint location and orientation

Viewpoint Map

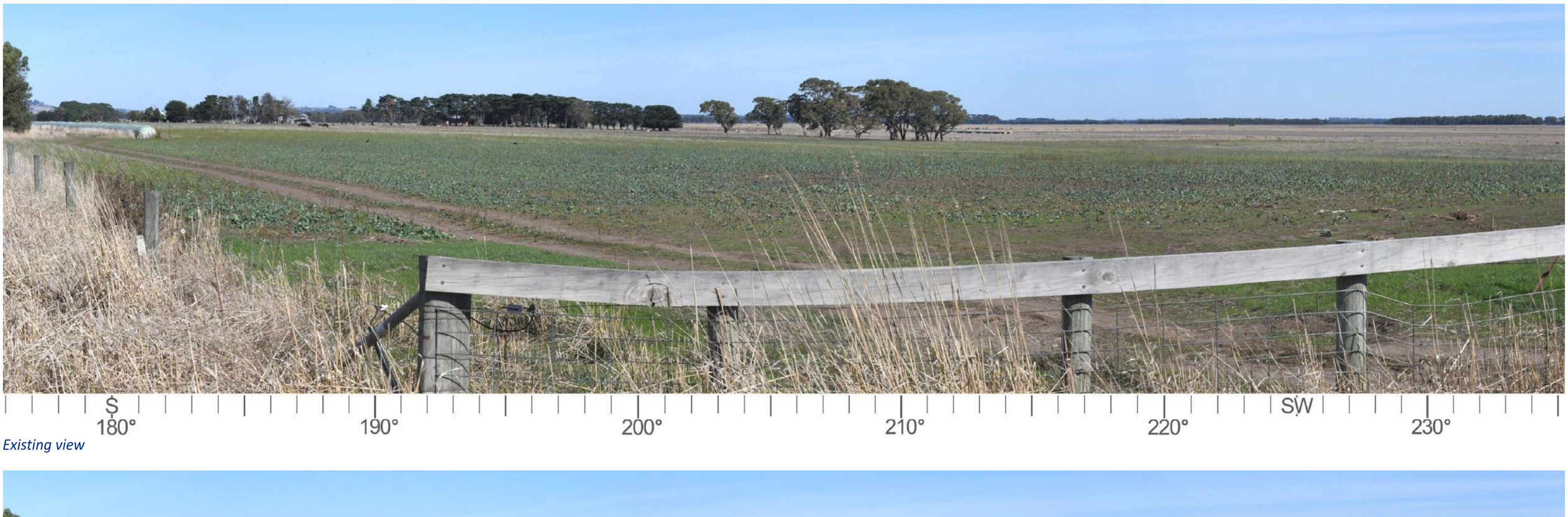
JACOBS

Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 1/5 DATE: 27/05/2019

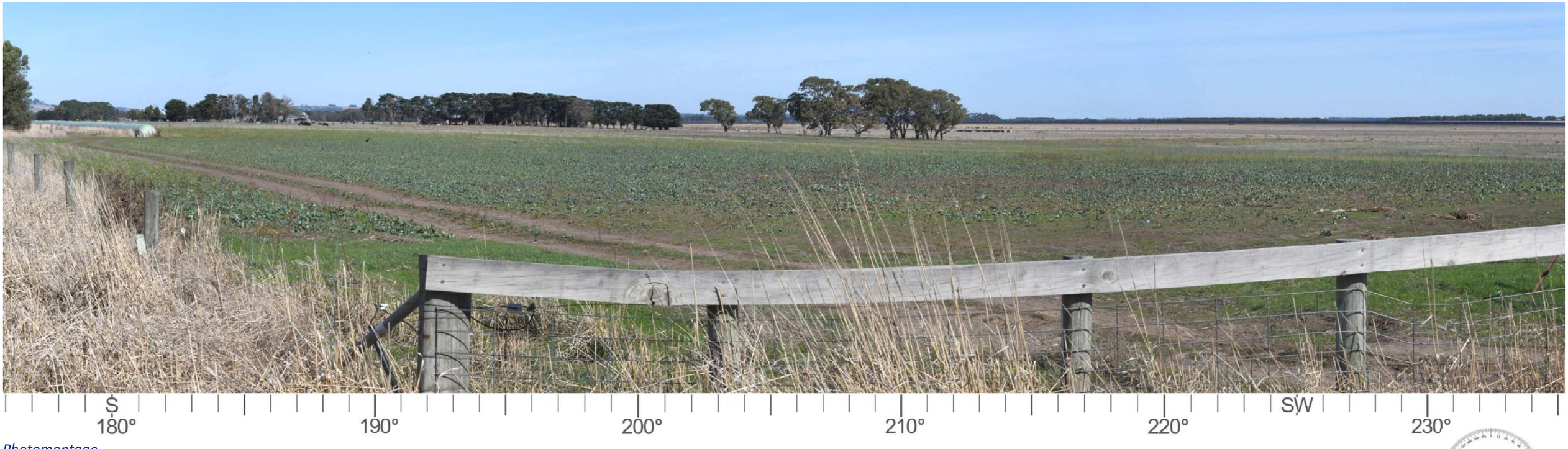
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south to south west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

JACOBS

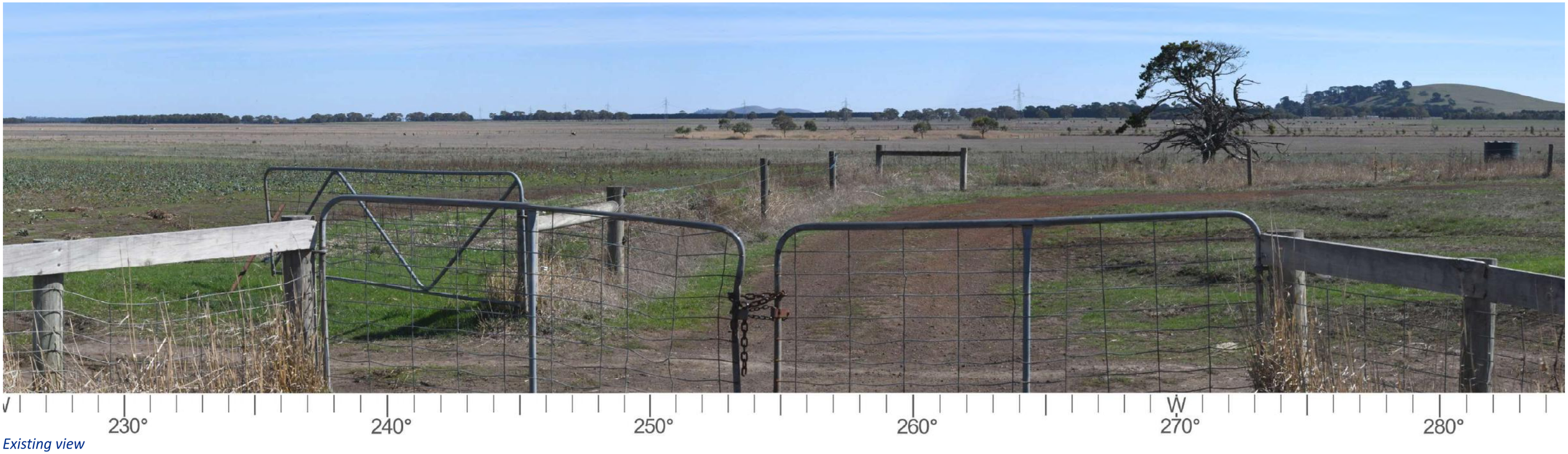
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 2/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

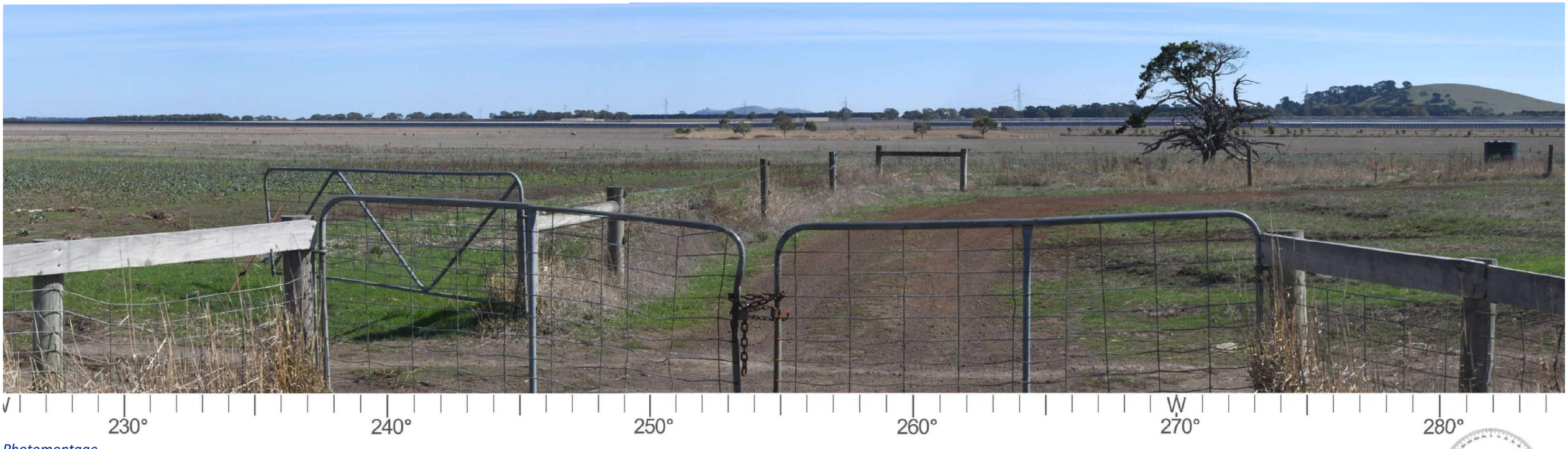
VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking south west to west

(GPS 54 H, 684317 m E, 5776955 m S)



Existing view



Photomontage

JACOBS

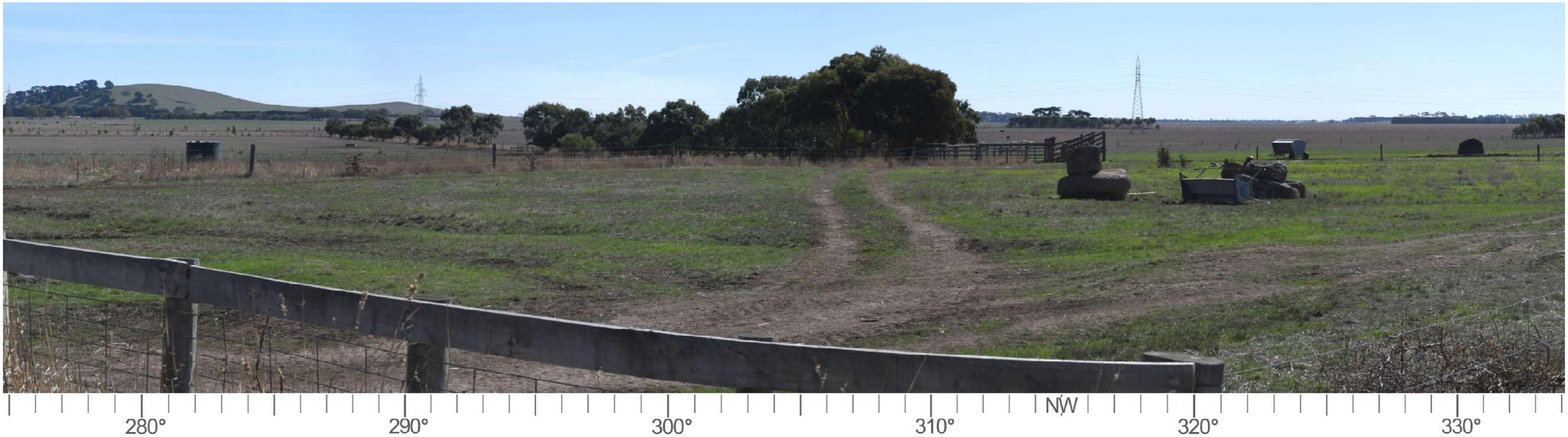
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 3/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

VIEWPOINT 7 – Darlington-Camperdown Road #3

60 Degree view looking west to north west

(GPS 54 H, 684317 m E, 5776955 m S)



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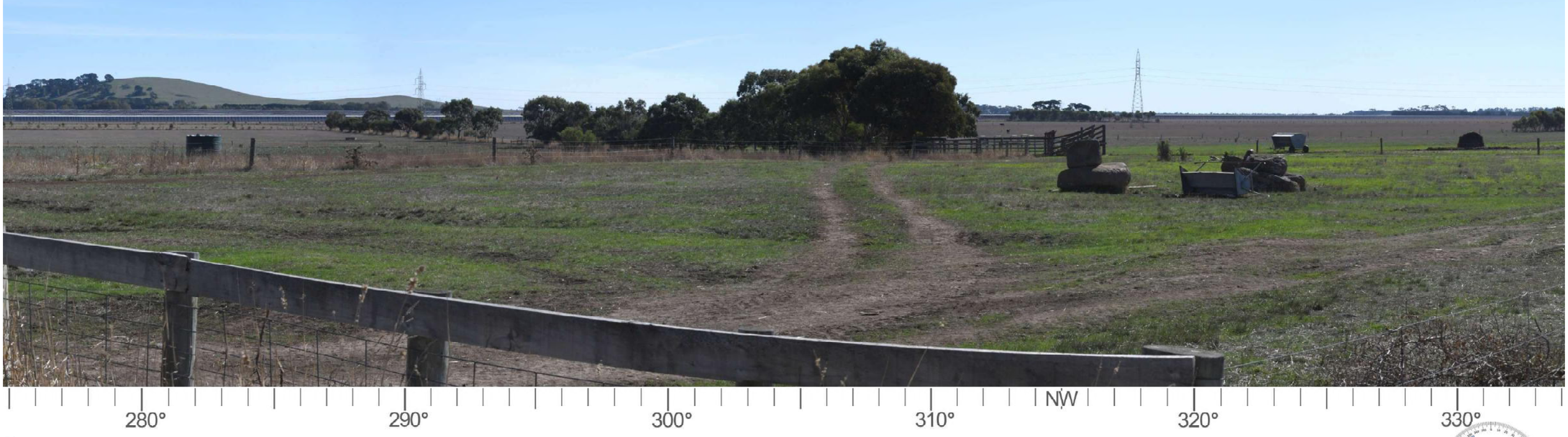


Photomontage

JACOBS

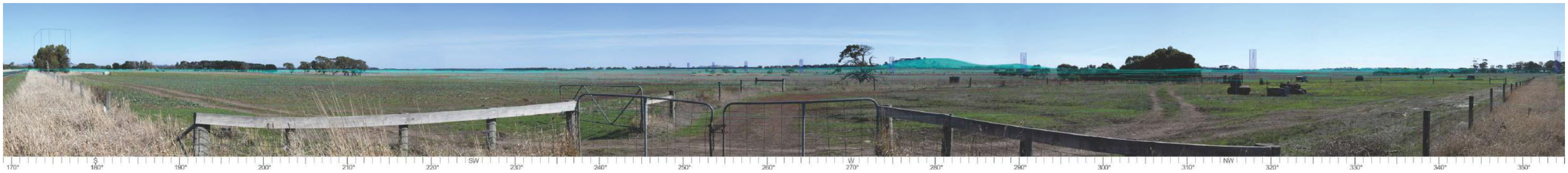
Bookar Solar Farm: VP 7 – Darlington-Camperdown Road #3
COORDINATES: GPS 54H 684317 m E, 5776955 m S
PREPARED BY: HB
SHEET: 4/5 DATE: 27/05/2019

Distance to Project: Approximately 870m west

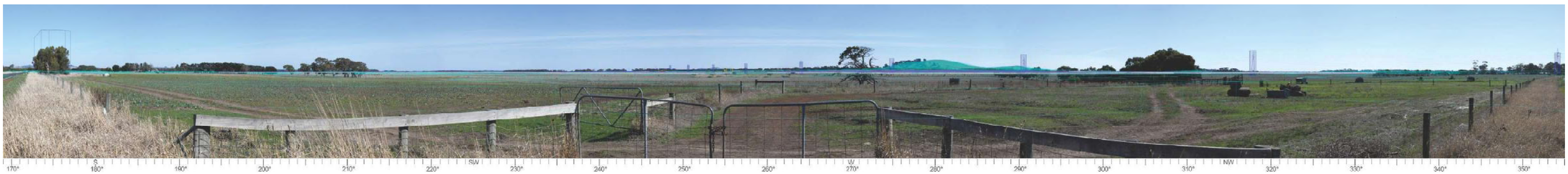
VIEWPOINT 7 – Darlington-Camperdown Road #3

Wireframe view looking south to north

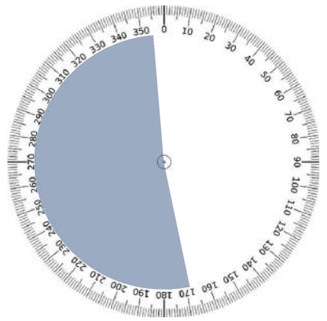
(GPS 54 H, 684317 m E, 5776955 m S)

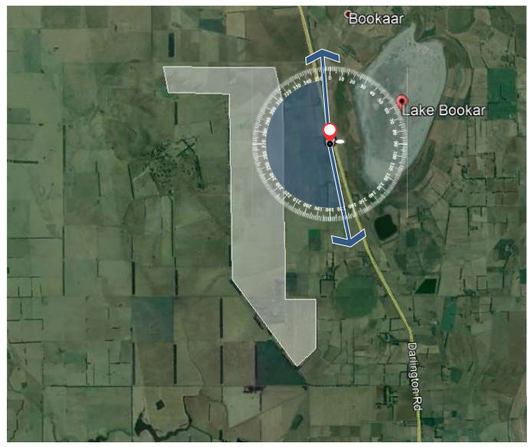


Existing wireframe view



Wireframe view





Distance to Project: Approximately 870m west

Viewpoint location and orientation

Viewpoint Map

Appendix D. Oz Trees screen planting detail

From: Michael Turner

Company: Oz Trees Colac Pty Ltd

To: Richard Seymour

Of: Infinergy Pacific Ltd

Hi Richard,

Further to your enquiry regarding the proposed Solar Farm, we provide the following details and proposed steps to complete the tree screening component of the project.

We have as a company provided our tree planting services to property owners in the Bookaar area including the property that is proposed for the Solar Farm. In our experience this area is particularly good for growing trees and some pretty good growth rates have been achieved when the correct preparation and follow up maintenance has been carried out. It is particularly important to plant the correct trees into the different soil types that normally occur when planting over a large area as proposed.

Site Visit:

We have the knowledge to predict what the soil changes will be, from visiting the site prior to preparation, and normally tweak the final break down once the soil has been worked up, this allows a clear understanding of the soil profile and its changes.

Spraying:

To achieve the fastest growth rates, we would recommend the site be pre-sprayed in the Spring prior to planting to remove weed growth and grass root matter to allow for the best soil shattering when ripped and for a good tilth in the mounded soil.

Autumn spraying prior to mounding is essential to reduce the weed seed bed and to aid in the final soil preparation.

Land Preparation:

Ripping and Mounding of the soil would take place 3-4 weeks after spraying. A ripping depth of approximately 800mm would be achieved using our Large winged ripper for maximum shattering of the soil profile to allow for fast root movement through the soil, in the same process a soil mound will be produced over the rip line giving a large soil mass for the trees to establish in.

A final pass with our Rotary Bed Former will break down any large clods and flatten the top of the mound providing the perfect bed to maximise plant performance.

Fencing:

Once soil preparation is complete the planting site would require fencing to prevent cattle or sheep entering the site to compact the site or shift the chemical from the top of the mound.

Spraying:

Pre-plant spraying of residual herbicide would be applied once a green shoot appears, normally around 3 weeks prior to planting this will provide a shield that will kill germinating weed seeds for up to 7 months.

Planting:

Tree planting would take place Late Autumn Early Spring, this is the best time to plant in this area as you don't want the young seedlings sitting in the cold wet conditions during the first winter.

Guarding:

1 litre Milk cartons would be applied at the point of planting to protect from the weather and from vermin such as Hares, Birds and Rabbits.

Maintenance:

Following the initial planting the plantations may need some replanting to replace any losses from the elements and vermin damage, we aim for approximately 90% strike over the summer months and follow up with a maintenance run in Autumn to re-plant losses and fix up any destroyed guards.

Spraying:

Follow up spraying is essential for the continued speed of growth of the trees, the elimination of weed and grass competition until the trees have occupied the planted area and have reached canopy cover is critical.

Spraying: 1st Autumn after planting

Autumn spraying of the whole tree area with a mix of Chemicals to kill all weed and Grass

Replanting;

Replant any losses and repair damaged guards.

Spraying: 2nd Autumn after planting

Autumn the following year the final spray of all weeds and grasses.

No re-plants or guard repair would be required if all the above process is followed and no sheep or cattle have invaded the planted area.

Good fences are very important and consideration for both sheep and cattle is important.

Project complete!

Taking into consideration that neighbouring properties will need to have their views of the Solar farm softened, we propose that the following species and design be considered for the project (depending on soil type).

A minimum of 7 rows (20m) will give the required cover over the life of the project, less rows may lead to an insufficient cover when trees reach maturity. Considering that the estimated height of the project will be between 2-4 metres and views will be mainly from passing vehicles it would be best to focus on small to medium height trees with a smaller % of taller species.

Suggested Species: Taken from a species list from a plantation planted in 2008 at a site near the proposed Solar Farm.

Eucalyptus maculata **Spotted Gum**

Eucalyptus ovata **Swamp Gum**

Eucalyptus camaldulensis **Red Gum**

Eucalyptus viminalis **Manna Gum**

Eucalyptus Leucoxylon **Pink Flowering Yellow Gum**

Acacia implexa **Light Wood**

Acacia melanoxylon **Black Wood**

Melaleuca ericifolia **Swamp Paperbark**

Melaleuca decussata **Totem Poles**

Banksia marginata **Honeysuckle**

Casuarina glauca **Bulloak** proposed site.

Note. This species list would alter for heavy soil types.

Below are some photos of the above plantation 24 month after planting & at 5 years

As you can see by the above photos if all the steps are followed correctly quite quick growth rates can be achieved.

I am available for a site visit if required or if you require any more information please give me a call.

Regards.

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