Appendix C Glint and glare assessment

Corop Solar Farm

Glint and Glare Assessment

Prepared for: **Leeson Group**

Project No: **2145** Issue: **Rev C** Date: **22.07.2022**

DOCUMENT HISTORY AND STATUS

Project No: **2145**

Project Name: **Corop Solar Farm**

Issue	Status	Date of Issue	Author	Approved by
A	Draft issued for review	27.04.2022	RR	AR
B	Draft issued for review	06.07.2022	RR	AR
C	Draft issued for review	22.07.2022	RR	AR

1.0 Introduction

Moir Landscape Architects has been engaged by Corop Solar Farm Pty Ltd to assess the potential glint and glare impact of the proposed Corop Solar Farm (the Project). The Project will include construction, operation and maintenance of a 440MW DC (320MW AC) Photovoltaic (PV) system with a potential 400MW Battery Energy Storage System (BESS).

The Project is located Approximately 5 km to the Northwest of the Rushworth township and about 6 km to the South-Southwest of Stanhope, has frontages to Old Corop Road, Geodetic North Road, Bedwell Road, and Carag Road, and comprised of 13 Titles with a combined area of 1,099.68ha (Refer Figure 1). The PV system will be orientated north-south, mounted on a single axis horizontal tracking system. The overall height will be a maximum of 5 metres.

The location comprises flat cleared land with the 220 kV Shepparton Terminal Station (SHTS) to Fosterville Tee Terminal Station (FVTS) transmission line crossing the south and east boundaries in the south east corner of site. The facility will have a dedicated switching station near Old Corop Road which will be connected to the 220kV line.

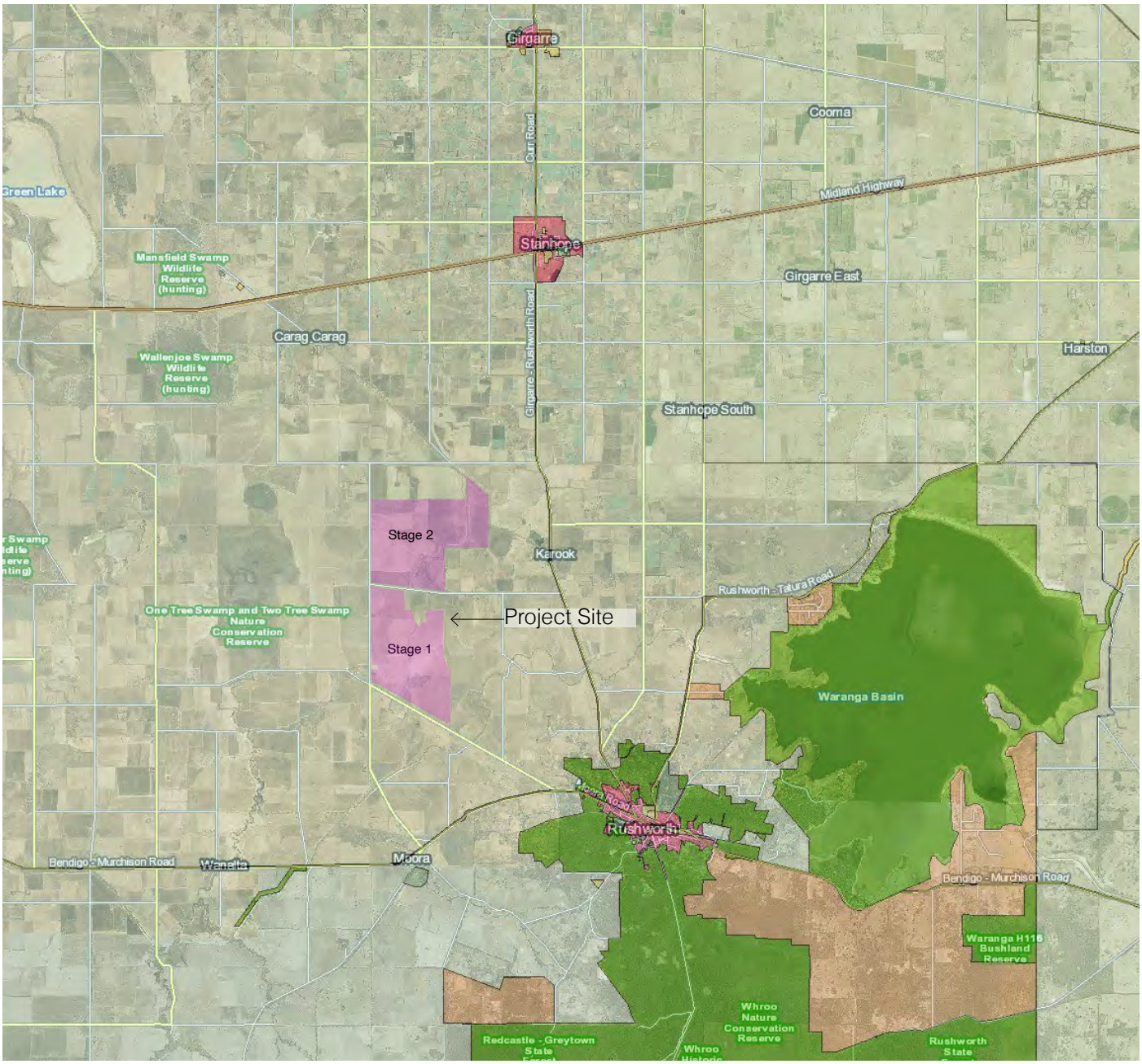


Figure 1: Project Location *(Source: VICPlan)*

2.0 Study Method

2.1 Overview of Glint and Glare

Glint is generally defined as a momentary flash of bright light while Glare can be defined as continuous source of excessive brightness proportionate to ambient lighting (FAA 2018) . The Glare analysis tool used to assess the glint and glare hazard was run at a simulation interval of one minute, based on the reflectivity of solar rays off PV modules which typically lasts for at least one minute.

Although Solar photovoltaic (PV) modules are designed to absorb as much light as possible, the glass modules and supporting frames have a tendency to generate glare. This needs to be assessed to ensure that sensitive visual receptors such as road users, surrounding rail network, nearby buildings, air traffic controllers and pilots are not impacted by the proposed development. (ForgeSolar, 2022)

2.2 Study Method

The Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories is used to evaluate glare resulting from solar farms at different receptors, based on proximity, orientation and specifications of the PV modules. This tool is recognised by the Australian Government Civil Aviation Safety Authority (CASA).

SGHAT is used to indicate the nature of glare that can be expected at each potential receptor. Glare can be broadly classified into three categories: low potential for after image, potential for after image, and potential for permanent eye damage. This is indicated by three colours:

• Green Glare: Low potential for temporary after-image

• Yellow Glare: Potential for temporary after-image

• Red Glare: Retinal burn, not expected for PV.

2.3 Glare Assessment Parameters

Glint and Glare assessment modelling for the solar farms in the SGHAT tool is based on the following factors:

- Position of the sun over time with respect to the location of the proposed solar farm.
- Tracking axis tilt, tracking axis orientation and properties of the PV modules.
- Location of sensitive receptors (receivers) from the Project including residential dwellings, Road and Rail receptors and Flight path receptors.
- Potential to screen the impact by surrounding topography.

2.4 Assumptions

The glare and glint impact is calculated utilising the geographic location, elevation, position of the sun and other vector calculations including module orientation, reflective environment and visual factors. Sun position is determined at every one (1) minute interval through out the year. Although the SGHAT is an extensive tool to understand the impacts of potential glare, it does not consider backtracking procedures in relation to the PV array tracking system, weather conditions, separation between PV modules and existing surrounding vegetation (if present) between the Project and a sensitive receiver.

Single axis tracking PV panels capable of rotating to a maximum of 60° have been considered for this analysis. The trackers are oriented north south with a maximum pitch distance of 6 metres. Due to the scope of the Project, potential visual receptors within 2000 metres of the site were considered which include nearby dwellings, sheds or outhouse buildings, rail network and road route users,

The visual impact of solar farm development depends on the scale and type of infrastructure, the prominence and topography of the site relative to the surrounding environment, and any proposed screening measures to reduce visibility of the site.

2.5 Backtracking Operations

A single axis horizontal tracking system can be configured to do a ‘backtracking’ technique, which implies that when the sun is low in the sky in the morning or evening, the tracking system can adjust the panels to maximise solar capture while minimising overshadowing.

‘ForgeSolar’ uses a simplified model of backtracking. Single-axis trackers follow the movement of the sun as it moves east to west throughout the day. Yields are maximized, and light reflection is minimised when panels are directly facing the sun. In times when the sun is not in the tracking range, we assume that the panels instantaneously revert to their resting angle of 0° (flat). Due to this, glare from the backtracking mechanism will be more conservatively simulated and at times of sunset and sunrise, when the sun is at a lower angle relative to the array, glare impacts will be more noticeable.

Variable angles of incidence of the sun relative to the panels may occur when the tracking system is performing a backtracking operation, and this variation is not yet represented by SGHAT software. However, SGHAT has a ’resting angle’ option that simulates the impression of the panels returning to a predefined angle after the maximum tilt angle has been attained. It is important to note that ‘resting angle modelling’ is not a realistic representation of how a backtracking technique would work in actuality but on the other hand, gives some idea of the potential glare consequences of shifting the PV panels away from the sun after the maximum tilt is reached.

The following parameters have been considered to simulate a typical backtracking process for the proposed development:

- A maximum tracking angle of 60° is considered to indicate a full rotational range of 120°.
- To simulate ‘backtracking’, ‘resting angle’ determined as 45°, assuming the PV modules move directly to 45° once

maximum tilt of 60° is reached and represents a worst case scenario.

- Night time angle (stowing angle after dark) of 5° is considered assuming the PV modules move directly to 5° once maximum tilt of 60° is reached and represents a worst case scenario.

3.0 Project Overview

3.1 Study Area

Surrounding conditions within the vicinity of the project can be characterised as a rural landscape which has been naturally cleared to support agricultural activities. The topography is relatively flat with an average slope of 0.7% across the site. Waranga Western Channel lie along the southeast corner of the Project. One Tree Swamp and Two Tree Swamp conservation reserve located within 2.0km of western boundary of the Project. In an investigation of the aerial imagery indicates a dense line of vegetation along the old Corop Road on southern edge of the Stage 1, and a patch of vegetation along Carag Road and Two Tree Road which border the eastern and northern boundary of the Project. This vegetation will filter views and limit potential glare impacts from the proposed solar farm infrastructure. The Site and the surrounding land has been zoned as Farming Zone (FZ). For the purposes of this assessment sensitive receptors within the 2.0 kilometre ('Study Area') have been identified. There appear to be 21 residential dwellings within 2.0 kilometre (km) radius of the Project. Few dispersed dwellings exist outside the 2.0 km radius and do not form part of this assessment.

There are no other significant features within the landscape that appear to contribute to the potential glare.

3.2 Modules and Array Layout

Each module consists of P type Mono-crystalline cell type with a 3.2mm, anti-reflection coated tempered glass set in an anodised aluminium alloy frame. There will be an estimated 1,193,000 solar panels mounted on a north/south axis to slowly track the horizontal movement of the sun from east to west. Refer **Figure 2** for PV array stages.

A single axis tracking system follows the sun's trajectory and rotates the panels across east to west. To attain optimum solar energy collection, the project modelling has utilised a maximum rotational range of 120°. The tracking tilt angle upon which the panels rotate is considered as 0.4 degrees to match the average ground slope of the development site. The panels are fixed to the tubular frame for a single axis tracking procedure. The panels will have a maximum height not exceeding 5m when facing at the highest angle east or west and a maximum of 3 meters when horizontal. The rows of modules will be spaced approximately 6m apart to ensure no shading occurs and allows for ease of access for maintenance purposes. Due to the irregular shape of the overall development footprint, the Project was divided into two (2) Stage - PV Array stage1 and PV Array stage 2 (Refer **Figure 2**).

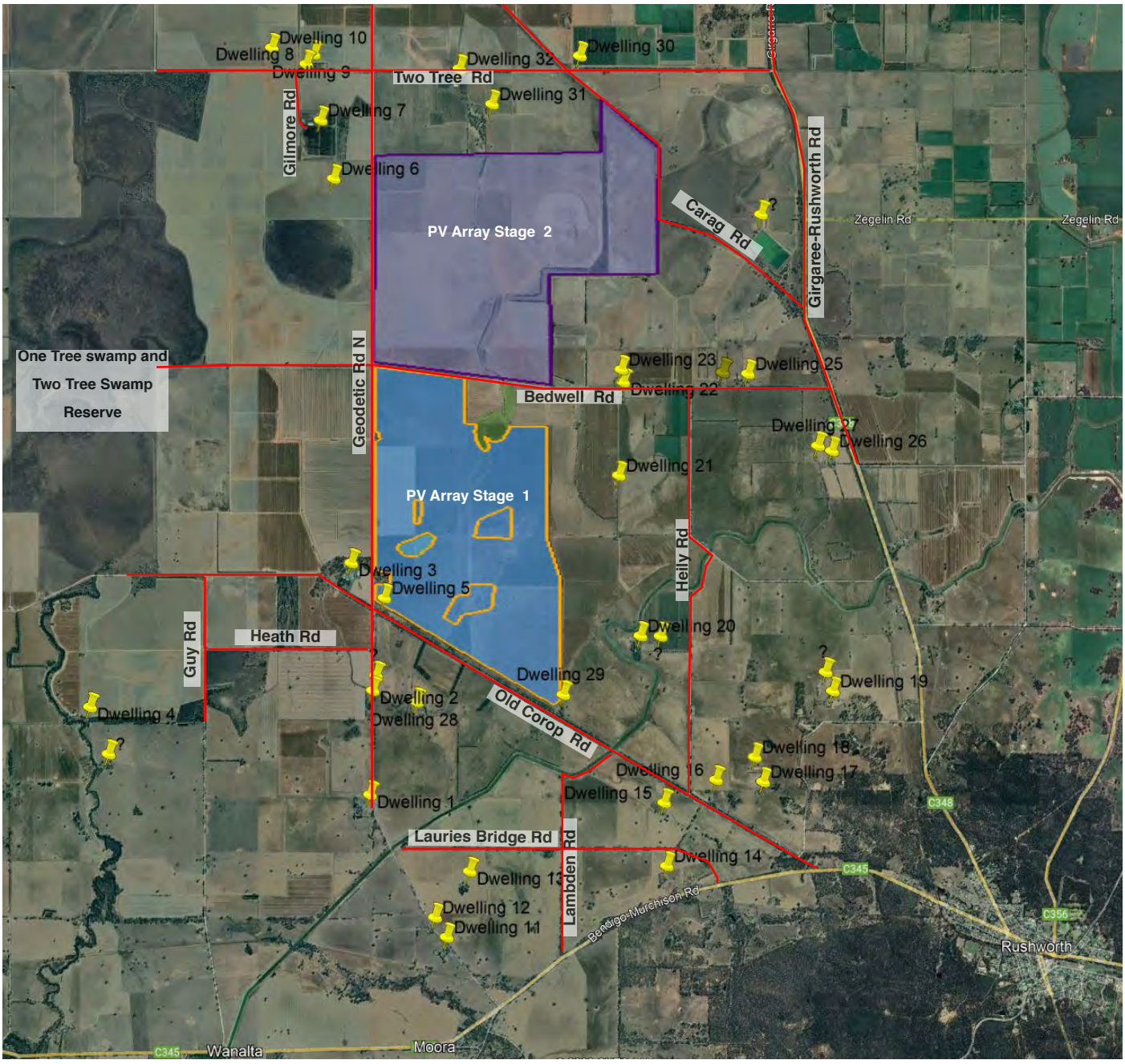


Figure 2: PV Array Stages *(Source: Google Earth)*

4.0 Modelling parameters

4.1 Panel Specifications

The Solar Panels have been assessed based on a maximum height of 5 metres above ground level.

General Solar PV system inputs:			
Input Data	**Units**	**Value**	**Comments**
Time Zone	UTC	+11	VIC time Zone
Orientation of Array	Degrees	0	Rows aligned in north-south directions
PV Surface materials	-	Smooth Glass with Anti-reflective Coating	Provided by the Client
Mounting Type	-	Single Axis Tracking	As per tracker data sheet
Single Axis Tracking Parameters			
Axis Orientation	Degrees	0	Panels orientated north south
Axis Tilt	Degrees	0.40	Elevation of tracking axis. Average ground slope is approximately 0.40 degrees (Google Earth)
Module Offset angle	Degrees	0	Facing upwards Panels rotate during operation
Max tracking angle	Degrees	±60° (Range of 120°)	Panels following the Sun
Resting angle	Degrees	0°, 45°, 5°	Panels following the Sun, to represent backtracking and after dark stowing angles
Height	Metres	5	

Table 1. Summary of modelling parameters

4.2 Eye Height

The following assumptions have been applied to assess receptors.
An average eye height of 2.4 metres has been considered to represent a truck driver's eye height (worst case scenario) (Austroads Ltd. 2021). For all dwelling receptors, an average eye height of 1.5 metres has been considered for the purposes of this assessment. Moir LA have assessed the routes with the above mentioned parameters to ensure a worst case scenario:

Eye Height for Receptors:	
- Road Receptors (Min): *Representative of eye level for commercial vehicle*	**1.8 m Above Ground Level**
- Road Receptors Max: *Representative of eye level for truck drivers*	**2.4 m Above Ground Level**
Dwelling Receptors	**1.5 m Above Ground Level**

Table 2. Parameters for receptors

5.0 Receptors

5.1 Potential Receptors

Twelve (12) route receptors, and 21 dwelling/sheds receptors (OP1 - OP21) have been identified within 2000 metres of the Project. Potential glare was assessed along these receptors which include Geodetic Road North, Old Corop Road, Carage Road, Bedwell Road, Two Tree road, Gilmore Road, Guy Road, Heath Road, Lambden Road, Lauries Bridge Road, Heily Road and Girgarre-Rushworth Road. Refer to **Figure 3.**

No airstrips or flight paths were identified within 2000 metres of the Project. Balfours Airport Direct is located in approximately 37 km north east of the Project. Shepparton Aerodrome and Mangalore Aerodrome are also located in approximately 40 km of east and south east to the Project. These flight receptors are too far to assess potential glare of the Project and therefore do not form part of this assessment. Upon further investigation through a desktop review, there do not appear to be any private airstrips in the surrounding area.

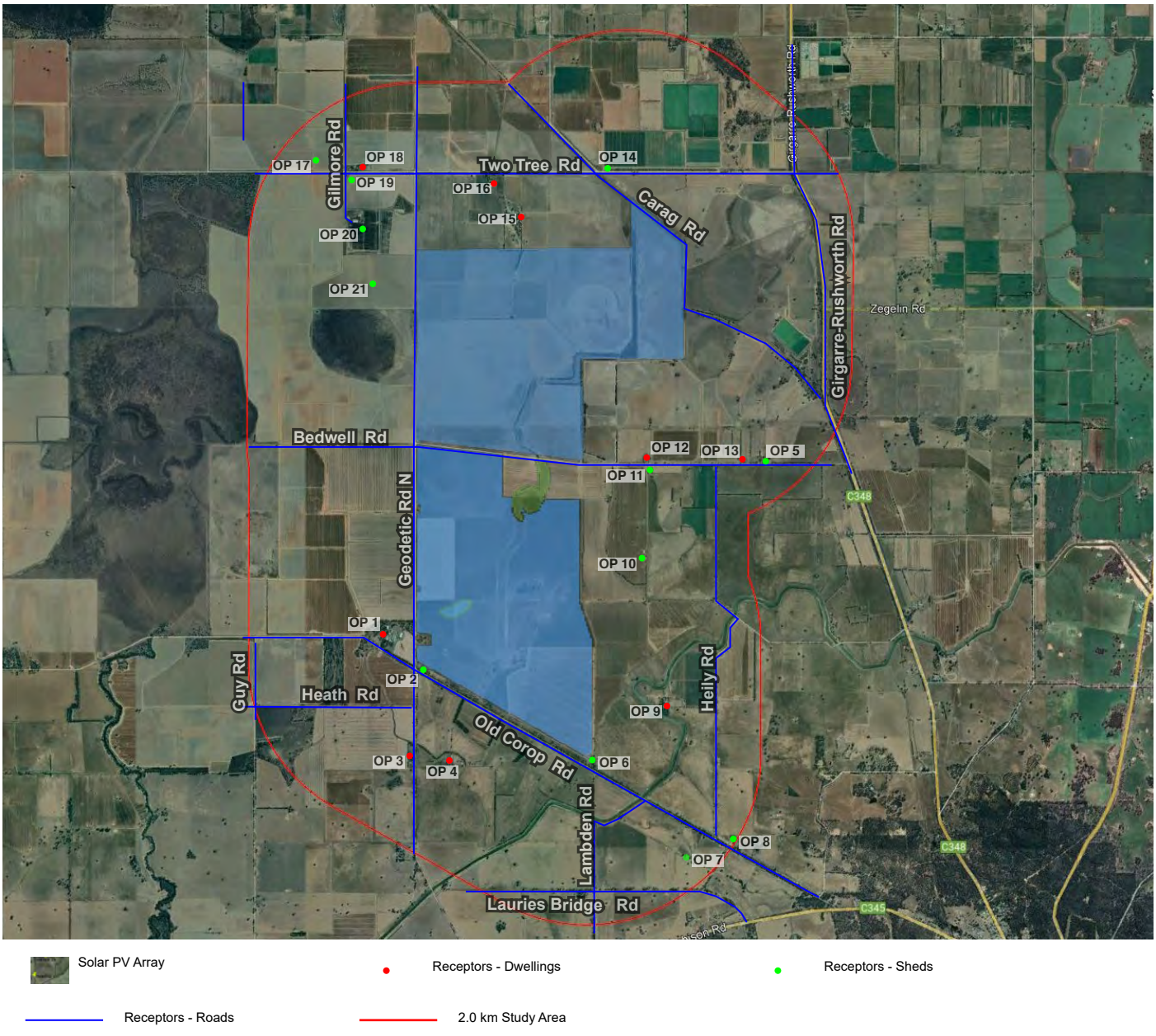


Figure 3: Locations of Receptors *(Source: Google Earth)*

6.0 Glint and Glare Assessment

6.1 Overview of Dwelling Receptors

The Glint and Glare analysis has been summarised below to indicate potential glare levels at receptors as seen in **Figure 3** (combined totals for area PV Array Stage1 and PV Array Stage 2). An overview of the glare levels and proposed mitigation measures have been provided in **Table 3**. Existing vegetation surrounding receptors and / or proposed mitigation measures will reduce the potential for glare on these dwelling receptors.

Dwelling	Location	Elevation	Distance to the nearest solar panels	Glare Analysis (April 2022)		Recommended Mitigation Measures
Dwelling Info:				**Green (Mins per year)**	**Yellow (Mins per year)**	
OP1	622 OLD COROP ROAD, N RUSHWORTH	114m	320m	**0**	**0**	Not Required.
OP2	560-344 OLD COROP ROAD, N RUSHWORTH	113m	59m	**0**	**0**	Shed - Mitigation not required
OP3	366 GEODETIC ROAD, N RUSHWORTH	121m	1002m	**0**	**0**	Not Required.
OP4	366 GEODETIC ROAD, N RUSHWORTH	116m	865m	**0**	**0**	Not Required.
OP5	BEDWELL ROAD, RUSHWORTH	111m	1565m	**0**	**4132**	Shed - Mitigation not required
OP6	60-344 OLD COROP ROAD, N RUSHWORTH	113m	54m	**0**	**0**	Shed - Mitigation not required
OP7	HOBANS LANE, N RUSHWORTH	123m	1690m	**0**	**0**	Shed - Mitigation not required
OP8	OLD COROP ROAD, N RUSHWORTH	122m	1985m	**0**	**978**	Shed - Mitigation not required
OP9	159 HEILY ROAD, RUSHWORTH	120m	865m	**0**	**5640**	Not Required. Existing vegetation surrounding the Dwelling will minimise potential glare
OP10	BEDWELL ROAD, RUSHWORTH	113m	765m	**0**	**5725**	Shed - Mitigation not required
OP11	BEDWELL ROAD, RUSHWORTH	111m	787m	**0**	**4890**	Shed - Mitigation not required
OP12	BEDWELL ROAD, RUSHWORTH	111m	743m	**0**	**5314**	Additional perimeter planting along the project boundary.
OP13	126 BEDWELL ROAD, RUSHWORTH	107m	1403m	**0**	**2177**	Additional perimeter planting along the project boundary
OP14	CARAGE ROAD, STANHOPE	105m	444m	**0**	**0**	Shed - Mitigation not required
OP15	793 TWO TREE ROAD, RUSHWORTH	108m	418m	**0**	**0**	Not Required.
OP16	813 TWO TREE ROAD, RUSHWORTH	106m	814m	**0**	**0**	Not Required.
OP17	TWO TREE ROAD, RUSHWORTH	106m	1615m	**0**	**0**	Shed - Mitigation not required
OP18	980 TWO TREE ROAD, RUSHWORTH	106m	1243m	**0**	**0**	Not Required.
OP19	TWO TREE ROAD, RUSHWORTH	108m	1206m	**0**	**0**	Shed - Mitigation not required
OP20	TWO TREE ROAD, RUSHWORTH	108m	712m	**0**	**0**	Shed - Mitigation not required
OP21	GEODETIC ROAD, N RUSHWORTH	106m	493m	**0**	**0**	Shed - Mitigation not required

Table 3: Glare mins / year for dwelling receptors

Based on the desktop assessment Seven (7) receptors (OP5, OP8, OP9, OP10, OP11, OP12 and OP13) will experience annual 'Yellow' glare from the Project. Desktop analysis of the dwellings using aerial imagery indicates OP5, OP8, OP10, and OP11 as sheds and OP9 and OP10 as dwelling receptors. Additionally, existing vegetation surrounding OP9 will help limit the potential glare experienced by the receptor from the Project. OP12 and OP13 will experience potential after images between mid September to early April from 7:00-8:45 pm from Stage 1, and only OP12 will experience potential glare from Stage 2 between mid March to early October from 5:45-7:45 pm.

The time of day glare likely to be experienced is provided for each receptor in **Appendix A**.

6.2 Overview of Route Receptors

Based on desktop assessment five (5) of the twelve (12) route receptors will experience 'Yellow' glare from the Project. **Table 4** provides an overview of the annual glare experienced along these routes. Glare impacts along these routes from combined totals for area PV Array Stage 1, and PV Array Stage 2, have been discussed in detail in **Section 8** of this report.

Receptor	Approximate Distance to the Project:	Elevation:	Potential Glare (Minutes per year):		Existing screening factors:	Mitigation Recommendations
			Green	Yellow		
BEDWELL ROAD	30m	Avg. 106 m	0	5314	Existing vegetation along parts of the receptors will screen the glare of the solar panels.	Screen planting along the southern edge of the Stage 2 and North/ north-eastern of the stage 1 of the Project
CARAG ROAD	25m	Avg. 107 m	0	2177	Existing vegetation along the receptors will screen the glare of the solar panels.	Screen planting along the eastern edge of the Stage 2 and North/ north-eastern of the stage 1of the Project
GEODETIC ROAD NORTH	20m	Avg. 108 m	0	0	Existing vegetation along the receptors will screen the glare of the solar panels.	Not required
GILMORE ROAD	936m	Avg. 106 m	0	0	Existing vegetation along the receptors will screen the glare of the solar panels.	Not required
GIRGARRE-RUSHWORTH ROAD	1631m	Avg. 107 m	0	713	Existing vegetation along the receptors will screen the glare of the solar panels.	Screen planting along the eastern edge of the Stage 2 of the Project
GUY ROAD	1933m	Avg. 109 m	0	0	Existing vegetation along the receptors will screen the glare of the solar panels.	Not required
HEATH ROAD	1134m	Avg. 110 m	0	0	Existing vegetation along the receptors may screen the glare of the solar panels.	Not required
HEILY ROAD	1475m	Avg. 115 m	0	6140	Existing vegetation along the receptors may screen the glare of the solar panels.	Screen planting along the eastern and south-ern edges of the Project
LAMBDEN ROAD	831m	Avg. 117 m	0	0	Existing vegetation along the receptors may screen the glare of the solar panels.	Not required
LAURIES BRIDGE ROAD	1600m	Avg. 125 m	0	0	Existing vegetation along the receptors may screen the glare of the solar panels.	Not required
OLD COROP ROAD	80m	Avg. 117 m	0	1235	Existing vegetation along the receptors may screen the glare of the solar panels.	Screen planting along the south-eastern and southern edges of the Project
TWO TREE ROAD	301m	Avg. 104 m	0	0	Existing vegetation along the receptors may screen the glare of the solar panels.	Not required

Table 4: Glare mins / year for route receptors

7.0 Summary and Recommendations

7.1 Summary of Results

Potential 'Yellow' glare will be experienced at dwellings to the east and southeast of the Project. Desktop assessment identified seven (7) Dwelling receptors that will experience glare from the Project. Most of the locations have either existing vegetation surrounding the receptors or are at some distance from the receptors. OP5 and OP9 have surrounding vegetation that will help reduce potential glare from the Project. Mitigation measures recommended for dwelling receptor - OP8, OP10, OP11, OP12 and OP13 in **Table 3** , will help reduce glare impacts at these locations. Five (5) of the twelve (12) route receptors experience potential glare from the Project. However, existing vegetation along the routs and supplementary planting along the southeastern boundary will assist in reducing glare impacts.

Heily Road to the southeast, and Bedwell Road passing from the middle of the project will experience the low to moderate impact from the Project. Mitigation measures recommended along the eastern and southern boundary of stage 2 and northern and eastern boundary of the stage 1 will aid in reducing the glare impacts further.

Detailed discussion of results along the five (5) receptor routes (Bedwell Road, Carage Road, Girgarre-Rushworth Road, Heily Road, and Old Corop Road) has been considered in **Section 8** of this Project.

8.0 Discussion of Results

The results of the SGHAT modelling identified potential glare for five (5) of the route receptors. No glare was recorded along Geodetic Road North, Gilmore Road, Guy Road, Heath Road, Lambden Road, Lauries Bridge Road and Two Tree Road. Sections along Girgarre-Rushworth Road, old Corop Road and Carage Road were predicted to experience low potential for an after image. Heily Road and Bedwell Road were the only routes determined to experience a low to moderate potential for after image. Detailed analysis for each PV Area has been outlined in the following sections of the report

8.1 Overview of PV Array Stage 01 Route Receptors - Heily Road

One of the receptor route to experience potential glare from the PV Array stage 01 area of the Project is Heily Road (see **Figure 4**). The area of potential 'Yellow Glare' is distributed over approximately 865 metres in length along Heily Road. Assuming a travel speed of 80 kilometers per hour this results in approximately 40 seconds of 'Yellow Glare'. Additionally, the analysis of the glare results indicates 'Yellow Glare' is likely to be experienced between 05:45 -08:30 pm everyday. See **Figure 9**.

Screen planting along the eastern boundary is an effective form of mitigation which will reduce opportunities to view the Project and therefore limit glare along this stretch of Heily Road.

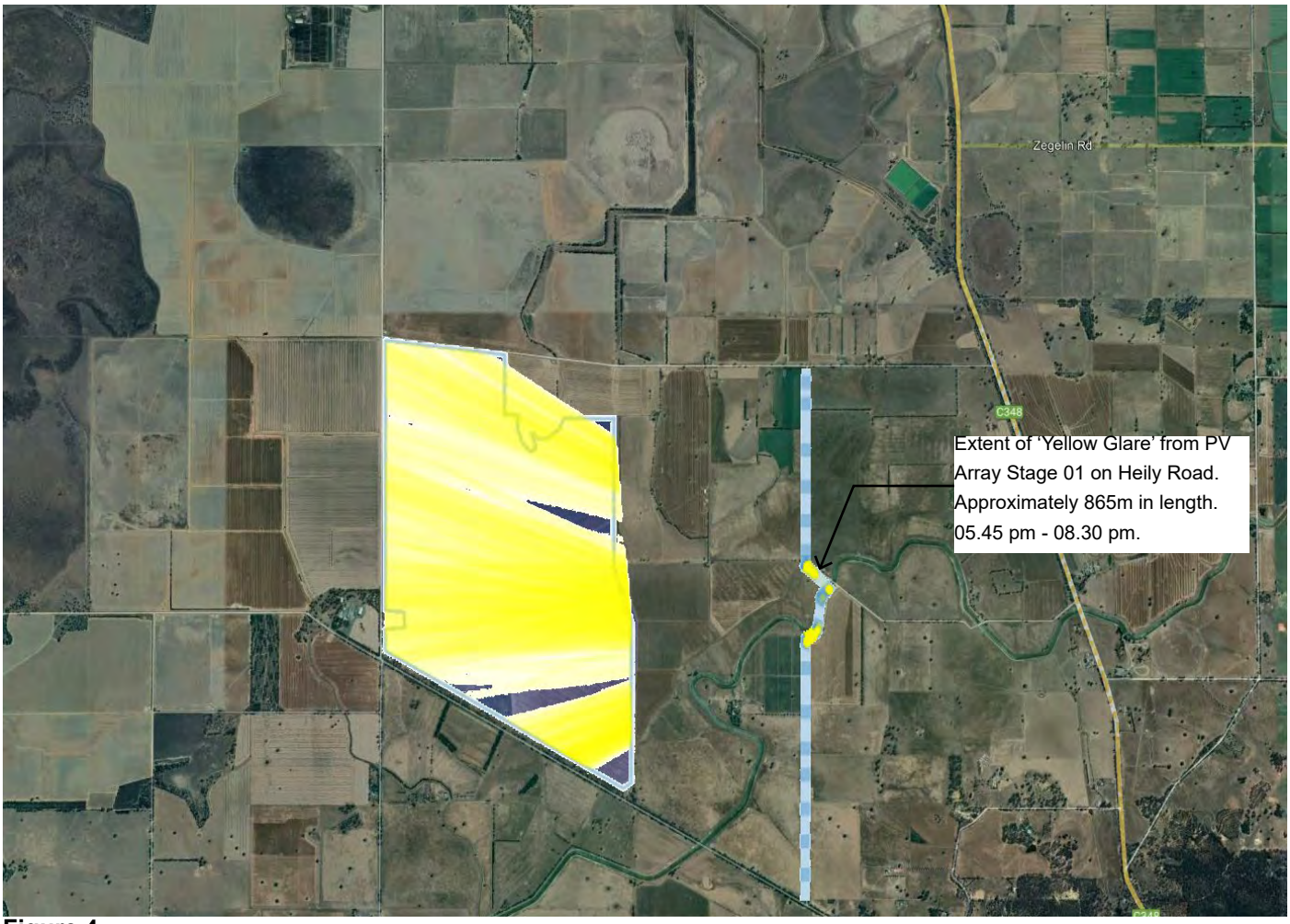


Figure 4.
Indicative location of potential 'Yellow Glare' on Heily Road caused by PV Array Stage 01
Note: Based on an assumed average driver eye height of 2.4m (representing the worst case scenario) and does not take into account existing and proposed screen planting.

8.2 Overview of PV Array Stage 02 Route Receptors - Heily Road

One of the routes with potential to experience glare from the PV Array Stage 02 area of the Project is Heily Road (see **Figure 5**). The area of potential 'Yellow Glare' is approximately 326 metres in length along Heily Road. Assuming a travel speed of 80 kilometers per hour this results is approximately 15 seconds of potential exposure to 'Yellow Glare' resulting from PV Array Stage 02.

Additionally, the analysis of the glare results indicates 'Yellow Glare' is likely to be experienced between 05:45 - 06:30 pm from mid May to Late July. See **Figure 10**.

Screen planting along the south western boundary may prove as an effective form of mitigation which will reduce opportunities to view the Project and therefore limit any impact from glare along Heily Road.

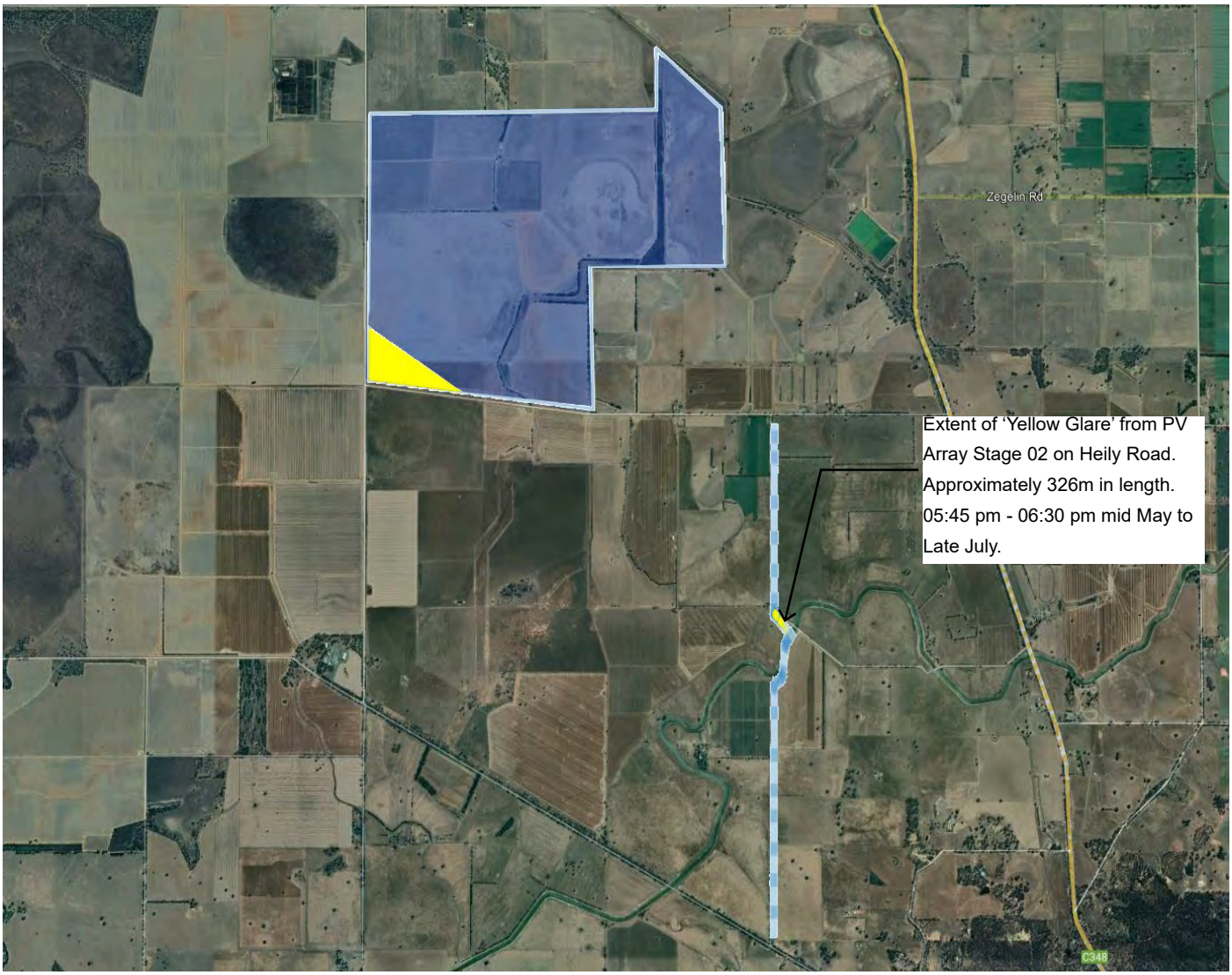


Figure 5.
Indicative location of potential 'Yellow Glare' on Heily Road caused by PV Array Stage 02
Note: Based on an assumed average driver eye height of 2.4m (representing the worst case scenario) and does not take into account existing and proposed screen planting.

8.3 Overview of PV Array Stage 01 Route Receptors - Bedwell Road

The other route with potential to experience glare from the PV Array Stage 01 area of the Project is Bedwell Road (see **Figure 6**). The area of potential 'Yellow Glare' is distributed over approximately 2490 metres in length along Bedwell Road. Assuming a travel speed of 80 kilometers per hour this results is approximately 112 seconds of potential exposure to 'Yellow Glare' resulting from PV Array Stage 01.

Additionally, the analysis of glare results indicates 'Yellow Glare' is likely to be experienced between 06:40 pm - 08:50 pm from early September to early April. See **Figure 11**.

Screen planting along the north and north eastern boundary will potentially reduce opportunities to view the Project and therefore any minimise potential glare impacts along Bedwell Road.

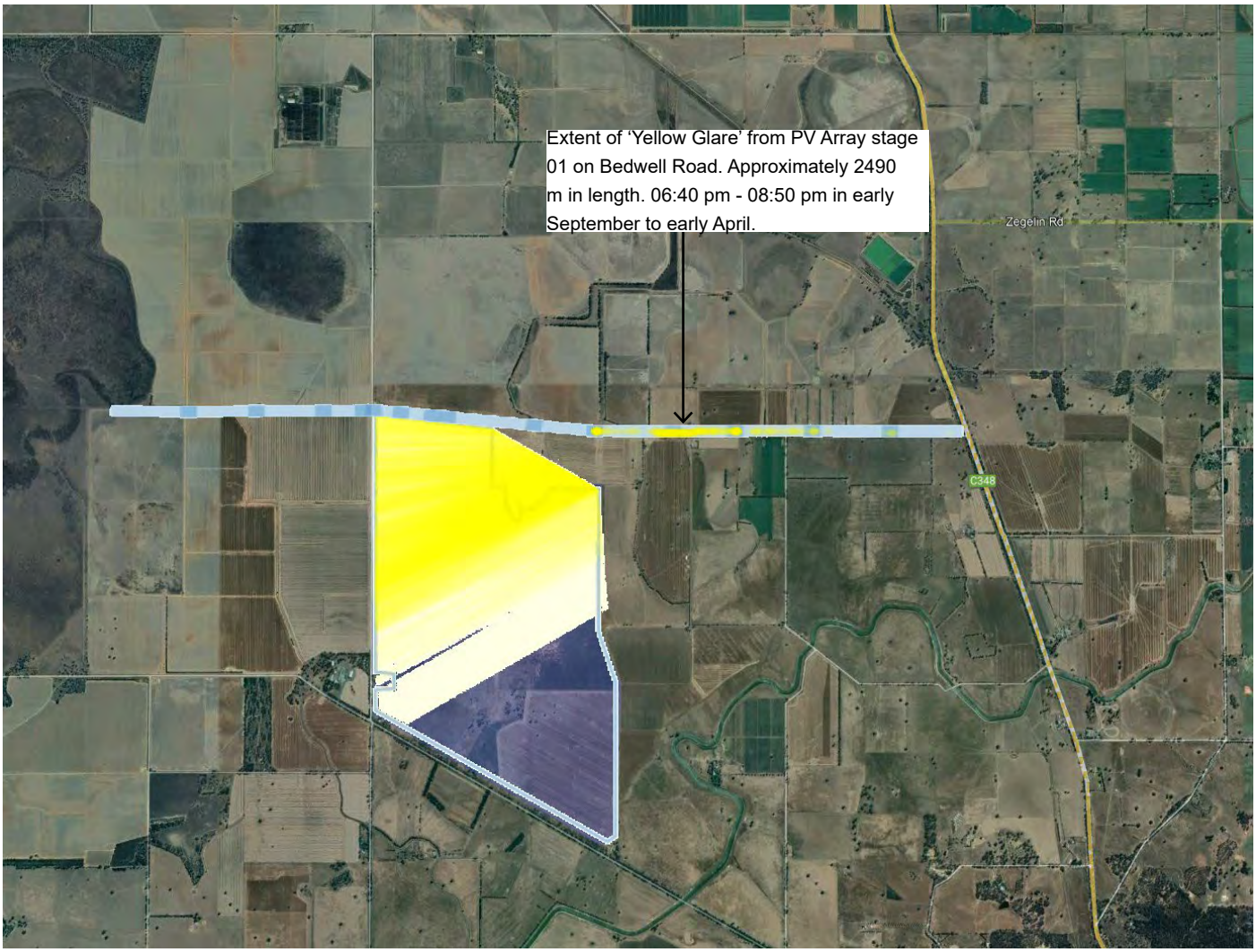


Figure 6.
Indicative location of potential 'Yellow Glare' on Bedwell Road caused by PV Array Stage 01.
Note: Based on an assumed average driver eye height of 2.4m (representing the worst case scenario) and does not take into account existing and proposed screen planting.

8.4 Overview of PV Array Stage 02 Route Receptors - Bedwell Road

Potential glare from the PV Array Stage 02 area of the Project is also experienced along Bedwell Road (see **Figure 7**). The area of potential 'Yellow Glare' experienced is distributed over approximately 896 metres in length along Bedwell Road. Assuming a travel speed of 80 kilometers per hour potential exposure to 'Yellow Glare' resulting from PV Array 04 is approximately 40 seconds.

Additionally, further analysis indicates 'Yellow Glare' is likely to be experienced between 05:45pm - 07:30pm from late March to late September. See **Figure 12**.

Screen planting along the south and south eastern boundary of the Project may prove effective in reducing views of the Project and therefore limit any glare impacts along Bedwell Road.

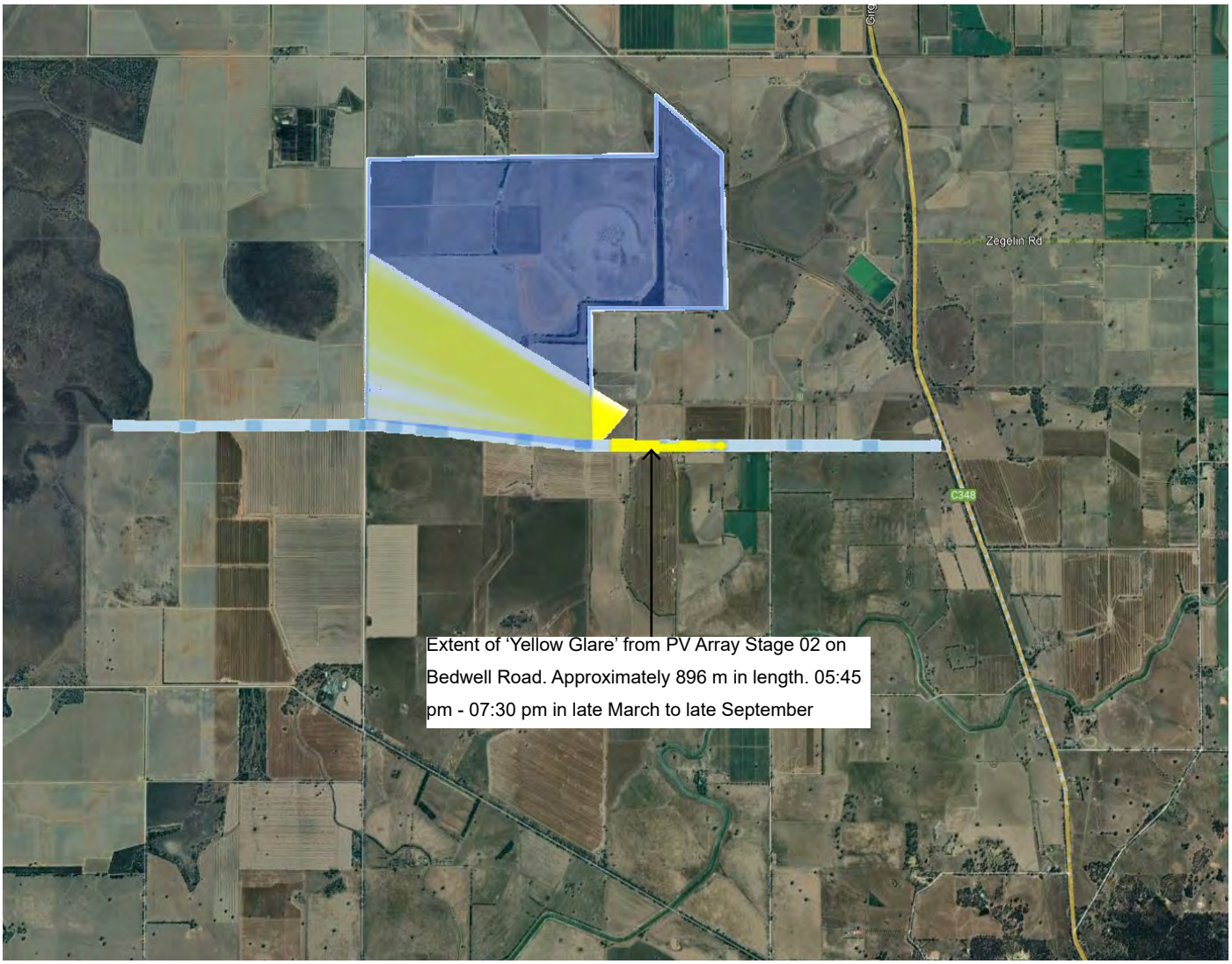


Figure 7.
Indicative location of potential 'Yellow Glare' on Bedwell Road caused by PV Array Stage 02
Note: Based on an assumed average driver eye height of 2.4m (representing the worst case scenario) and does not take into account existing and proposed screen planting.

8.5 Overview of PV Array Stage 01 Route Receptors - Carag Road

Potential glare along Carag Road is minimal and will experienced at the intersection of Carag Road and Girgarre-Rushworth Road (see **Figure 8**). The area of potential 'Yellow Glare' experienced is distributed over approximately 90 metres in length along Carag Road towards the intersection. Assuming a travel speed of 40 kilometers per hour potential exposure to 'Yellow Glare' resulting from PV Array Stage 01 is approximately 8 seconds.

Additionally, further analysis indicates 'Yellow Glare' is likely to be experienced between 07:00 pm - 08:45 pm from October to early March. See **Figure 13**.

Existing vegetation along Carag Road leading to the intersection with Girgarre - Rushworth Road will limit potential glare experienced at this location. PV Array Stage 02 has very low impact along Carag Road therefore has been excluded from a detailed analysis.

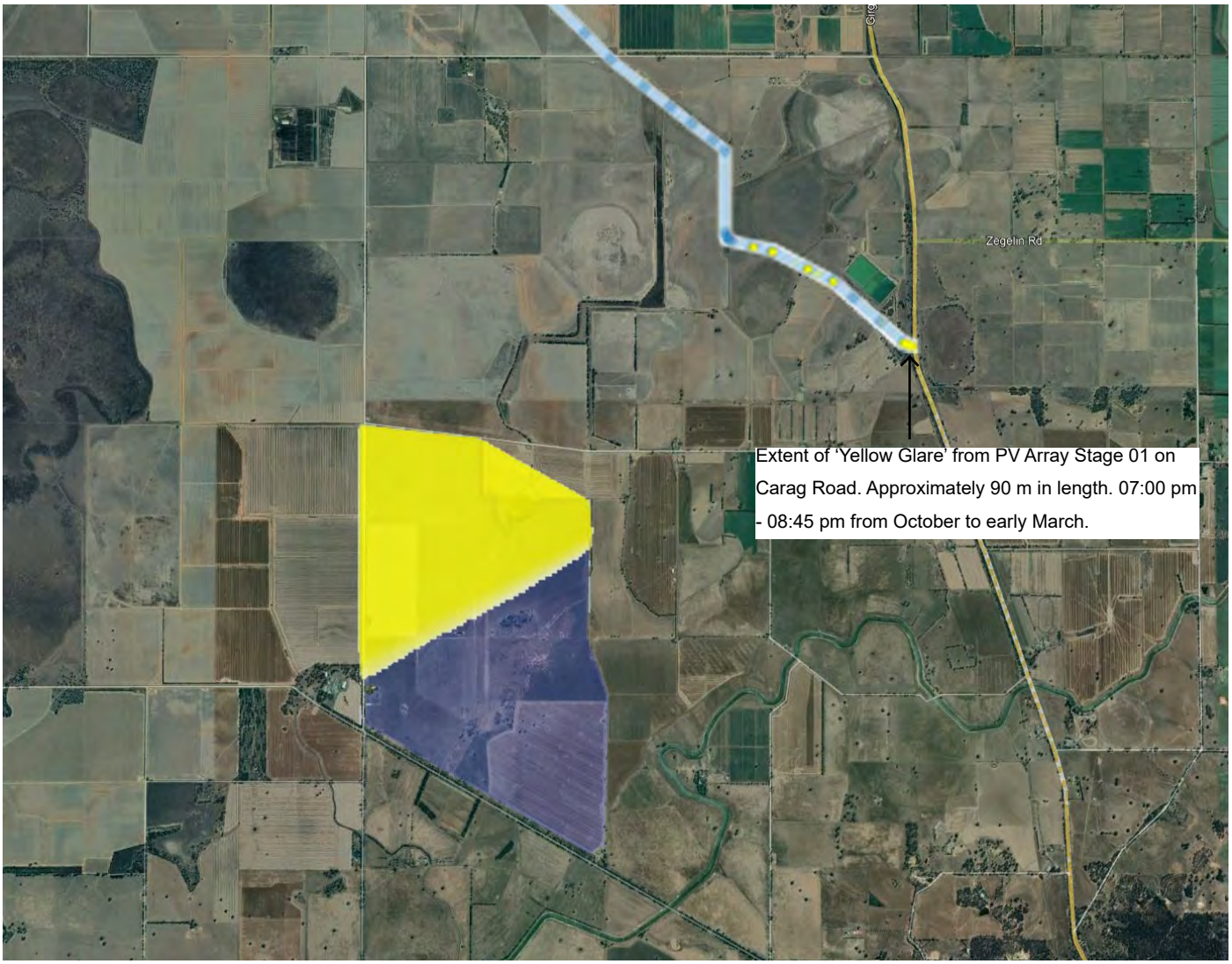
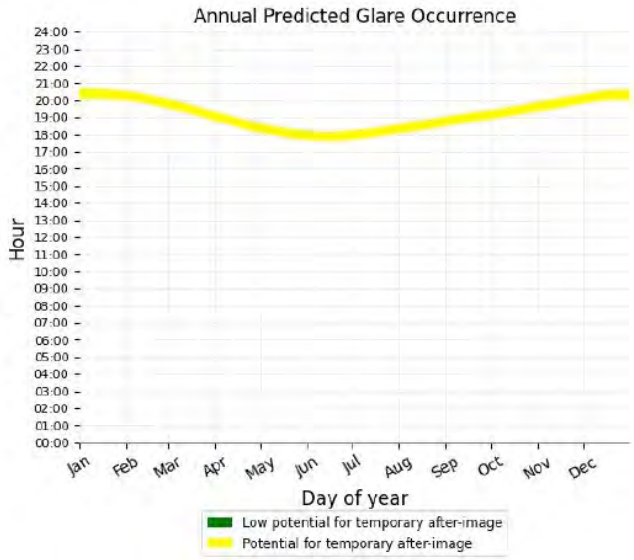


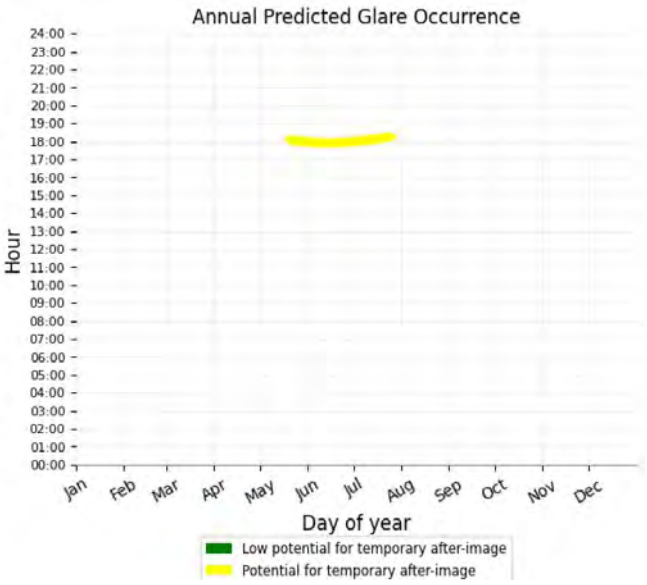
Figure 8.
Indicative location of potential 'Yellow Glare' on Carag Road caused by PV Array Stage 01
Note: Based on an assumed average driver eye height of 2.4m (representing the worst case scenario) and does not take into account existing and proposed screen planting.



05:45 pm - 08:30 pm everyday

Figure 9. PV Array Stage 01 Time of Day - Heily Road

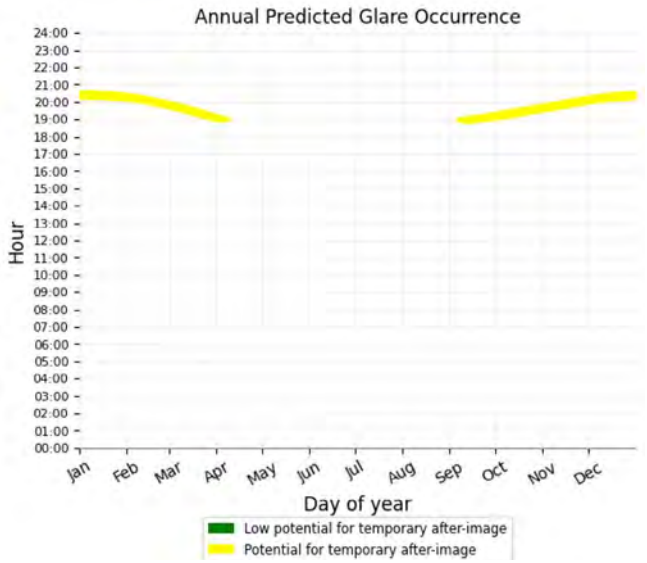
Time and day of year the PV Array Stage 01 area is likely to cause glare along Heily Road



05:45 pm - 06:30 pm Mid May - Late July

Figure 10. PV Array 02 Time of Day - Heily Road

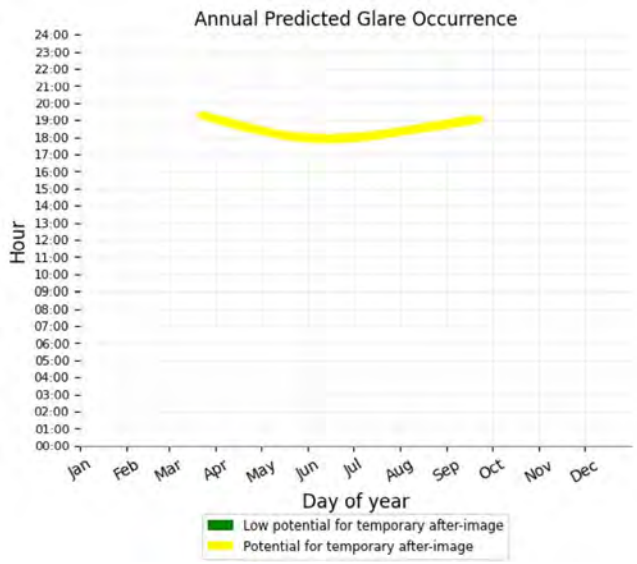
Time and day of year the PV Array Stage 02 area is likely to cause glare along Heily Road



06:40pm - 08:50 pm Early September - Early April

Figure 11. PV Array Stage 01 Time of Day - Bedwell Road

Time and day of year the PV Array Stage 01 area is likely to cause glare along Bedwell Road



05:45 pm - 07:30 pm Mid March - Mid September

Figure 12. PV Array Stage 02 Time of Day - Bedwell Road

Time and day of year the PV Array Stage 02 area is likely to cause glare along Bedwell Road

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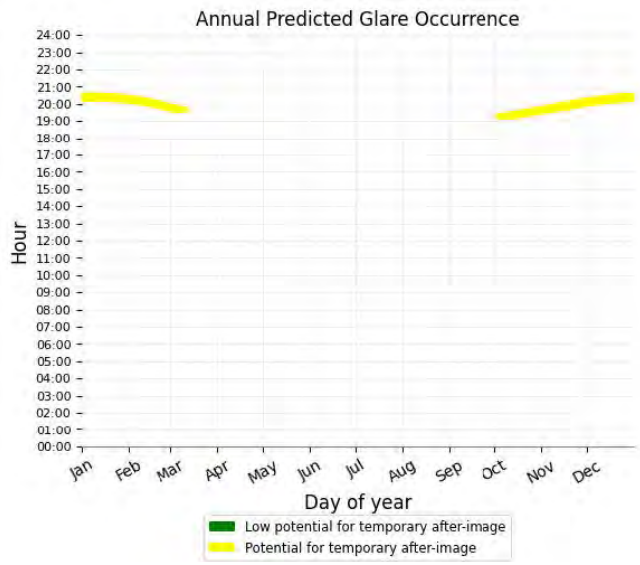


07:00 pm - 08:45 pm October - Early March

Figure 13. PV Array Stage 01 Time of Day - Carag Road

Time and day of year the PV Array Stage 01 area is likely to cause glare along Carag Road

8.6 Summary of Assessment

8.6.1 Overview of results

An overview of the results suggests under normal operation of the solar farm, potential glare was experienced along Heily Road, Bedwell Road, Carage Road, Old Corop Road and Girgarre-Rushworth Road which lies south and east of the Project. Heily Road and Bedwell Road were indicated to experience the highest potential for an after image whereas Carage Road, Old Corop Road and Girgarre - Rushworth Road were identified as having low glare impacts. Seven (7) other routes were identified as experiencing no glare.

Heily Road and Bedwell Road are local minor road with occasional traffic, used as access by properties along this road further east of the Project. Additional planting along Bedwell road and along the eastern boundary of the Project will limit the potential glare experienced along Heily Road and Carage Road. Existing vegetation along Old Corop Road and Girgarre-Rushworth Road will minimise potential glare experienced from the Project.

Various resting angles have been tested for backtracking and the resting angle does not change the outcomes of this assessment.

9.0 Mitigation Measures

An overview of potential glare experienced by dwelling and other receptors including receptor routes, public viewing locations and sheds within the 2 kilometre 'Study Area' along with recommendations for where proposed planting buffer around the SPV areas would be beneficial to reduce glare have been discussed in **Section 6** of this report. See **Figure 14** and **Appendix B**.

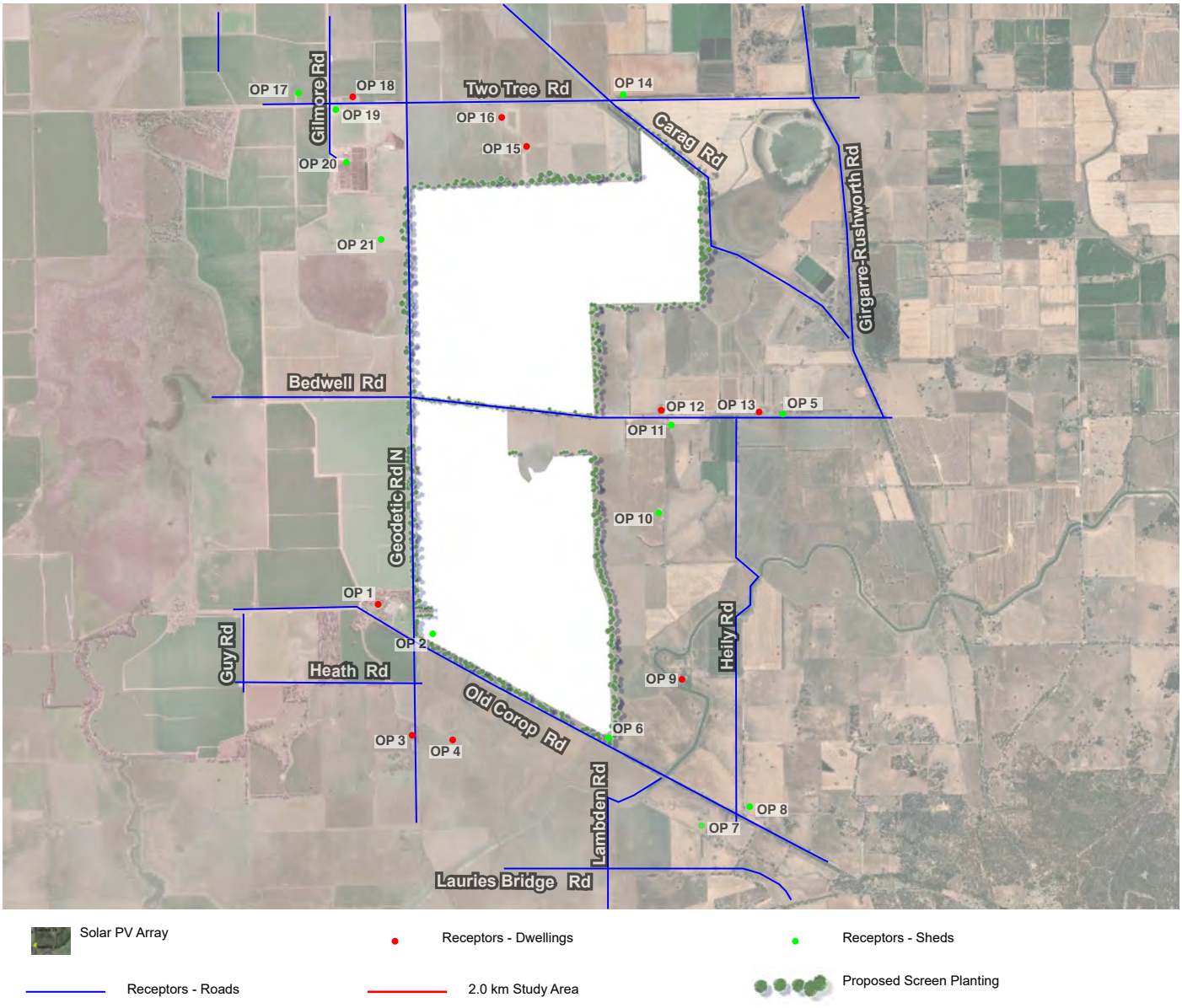


Figure 14: Mitigation Plan *(Source: Google Earth)*

10.0 Conclusion

The purpose of this report was to identify potential glint and glare impacts from the proposed Corop Solar Farm on the surrounding receptors routes within 2000 metres of the Project. Modelling was conducted along receptor routes and nearby dwellings receptors including out buildings or sheds identified within the Study Area. A desktop review indicated no flight paths or airstrips within 2000 metres of the Project. Based on the assumptions and aforementioned parameters in this report, low to moderate potential occurs to experience after image along Heily Road everyday at approximately 5:45pm-8.30pm from Stage 1, and between mid May to late July at approximately 05:45pm to 06:30pm from stage 2. There is also low to moderate potential after image glare along the Bedwell Road between early September to early April at approximately 6:40pm to 8:50pm from Stage 1, between mid March to mid September at approximately 5:45pm to 7:30pm from Stage 2 and Carage Road between October to early March at approximately 7:00pm to 8:45pm from Stage 2 .

Mitigation methods suggested in **Section 6** of this report will help reduce the potential glare impacts along the affected routes and dwellings. Potential glare at the dwelling receptor OP9 and OP13 will occur everyday between 5.30pm to 8:30pm, and between mid September to early April from 7:00-8:45 pm annually from Stage 1.

No potential glint or glare was identified at a resting angle of 5°,and 45° to simulate backtracking operations when the PV modules reverted to a night time stowing angle after dark.

REFERENCES

Austroads Ltd. 2021, Guide to Road Design Part 3: Geometric Design, AGRD03-16, Austroads Ltd., Sydney, NSW.

Australian Rail Track Corporation Limited 2010, Signal Sighting and Position, ESC-04-01, Australian Rail Track Corporation Limited, Sydney.

Transport Asset Standards Authority 2020, Minimum Operating Standards for Rolling Stock – General Interface Requirements, T HR RS 00100 ST, Transport NSW, Sydney.

ForgeSolar n.d., www.forgesolar.com, viewed 27 April 2022, <https://www.forgesolar.com/help/#glare>.

APPENDIX A:
ForgeSolar SGHAT Outputs

Updated: 19th April 2022

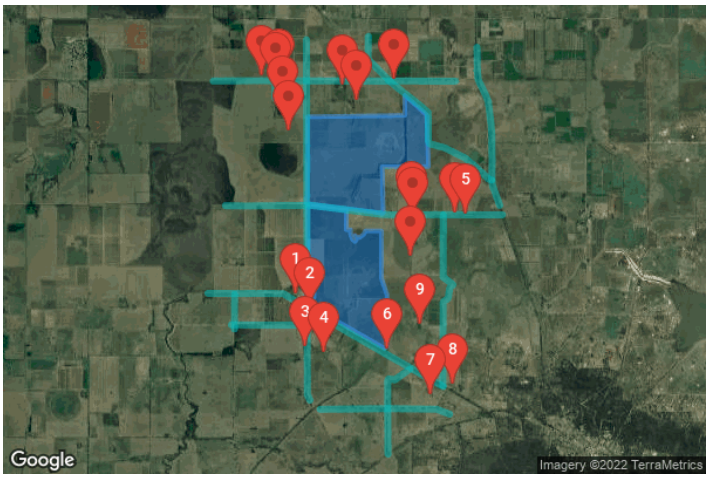
FORGESOLAR GLARE ANALYSIS

Project: **2145 COROP SOLAR FARM**
2145 COROP SOLAR FARM

Site configuration: **2145 COROP SOLAR FARM**

Client: NGH

Created 22 Mar, 2022
Updated 19 Apr, 2022
Time-step 1 minute
Timezone offset UTC11
Site ID 66537.11749
Category 100 MW to 1 GW
DNI peaks at 1,000.0 W/m^2
Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
Methodology V2



Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array Stage 1	SA tracking	SA tracking	0	0.0	31,823	530.4	-
PV array Stage 2	SA tracking	SA tracking	0	0.0	11,478	191.3	-

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Bedwell Road	0	0.0	5,314	88.6
Carag Road	0	0.0	2,177	36.3
Geodetic Road North	0	0.0	0	0.0
Gilmore Road	0	0.0	0	0.0
Girgarre-Rushworth Road	0	0.0	713	11.9
Guy Road	0	0.0	0	0.0
Heath Road	0	0.0	0	0.0
Heily Road	0	0.0	6,140	102.3
Lambden Rd	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Lauries Bridge Rd	0	0.0	0	0.0
Old Corop Road	0	0.0	1,235	20.6
Two Tree Road	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	4,132	68.9
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	978	16.3
OP 9	0	0.0	5,640	94.0
OP 10	0	0.0	5,725	95.4
OP 11	0	0.0	4,890	81.5
OP 12	0	0.0	4,534	75.6
OP 13	0	0.0	1,823	30.4
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0

Component Data

PV Arrays

Name: PV array Stage 1
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.534250	144.953772	106.95	5.00	111.95
2	-36.534228	144.949117	105.30	5.00	110.30
3	-36.535019	144.948625	105.21	5.00	110.21
4	-36.535739	144.947519	105.13	5.00	110.13
5	-36.535753	144.946664	105.81	5.00	110.81
6	-36.535308	144.946056	105.92	5.00	110.92
7	-36.536358	144.946439	105.71	5.00	110.71
8	-36.536750	144.946008	106.00	5.00	111.00
9	-36.536122	144.945189	105.00	5.00	110.00
10	-36.535022	144.944714	107.60	5.00	112.60
11	-36.533986	144.944722	105.76	5.00	110.76
12	-36.533961	144.943478	105.55	5.00	110.55
13	-36.529475	144.943503	104.93	5.00	109.93
14	-36.528408	144.932242	106.42	5.00	111.42
15	-36.548575	144.932228	108.93	5.00	113.93
16	-36.548719	144.933997	106.96	5.00	111.96
17	-36.549878	144.934047	108.75	5.00	113.75
18	-36.549972	144.932200	111.59	5.00	116.59
19	-36.551575	144.932219	112.89	5.00	117.89
20	-36.561875	144.954667	112.47	5.00	117.47
21	-36.561453	144.955433	110.44	5.00	115.44
22	-36.549322	144.955428	108.73	5.00	113.73
23	-36.545375	144.953781	105.92	5.00	110.92

Name: PV array Stage 2
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 0.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.527853	144.931953	106.44	5.00	111.44
2	-36.530083	144.954333	106.91	5.00	111.91
3	-36.519117	144.954039	105.17	5.00	110.17
4	-36.519097	144.967569	104.74	5.00	109.74
5	-36.506931	144.967064	105.05	5.00	110.05
6	-36.502372	144.960611	104.97	5.00	109.97
7	-36.507069	144.960667	104.12	5.00	109.12
8	-36.507383	144.932131	104.95	5.00	109.95

Route Receptors

Name: Bedwell Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.530457	144.989246	107.03	2.40	109.43
2	-36.530474	144.982947	106.20	2.40	108.60
3	-36.530396	144.975403	107.00	2.40	109.40
4	-36.530422	144.967893	105.00	2.40	107.40
5	-36.530469	144.961911	110.14	2.40	112.54
6	-36.530400	144.954283	107.00	2.40	109.40
7	-36.529805	144.948414	105.17	2.40	107.57
8	-36.528914	144.940030	104.76	2.40	107.16
9	-36.528767	144.938493	106.76	2.40	109.16
10	-36.528439	144.935476	106.00	2.40	108.40
11	-36.528194	144.932847	106.94	2.40	109.34
12	-36.528233	144.931801	106.21	2.40	108.61
13	-36.528264	144.927961	104.69	2.40	107.09
14	-36.528298	144.921461	107.67	2.40	110.07
15	-36.528376	144.914900	106.12	2.40	108.52
16	-36.528302	144.908077	106.12	2.40	108.52

Name: Carag Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.488462	144.949933	105.67	2.40	108.07
2	-36.493839	144.949851	105.00	2.40	107.40
3	-36.496849	144.953585	104.61	2.40	107.01
4	-36.498970	144.956135	105.52	2.40	107.92
5	-36.501171	144.959471	104.85	2.40	107.25
6	-36.502802	144.962077	106.39	2.40	108.79
7	-36.504156	144.964185	105.39	2.40	107.79
8	-36.505527	144.966261	106.98	2.40	109.38
9	-36.506370	144.967482	105.19	2.40	107.59
10	-36.513118	144.967540	106.98	2.40	109.38
11	-36.513437	144.967685	106.72	2.40	109.12
12	-36.513661	144.967846	106.36	2.40	108.76
13	-36.513790	144.968120	105.94	2.40	108.34
14	-36.514239	144.970314	107.32	2.40	109.72
15	-36.514648	144.972213	106.31	2.40	108.71
16	-36.516075	144.975765	106.75	2.40	109.15
17	-36.517076	144.978289	105.85	2.40	108.25
18	-36.518422	144.980227	106.19	2.40	108.59
19	-36.520366	144.982947	110.03	2.40	112.43
20	-36.522060	144.985283	109.28	2.40	111.68
21	-36.522280	144.986138	109.00	2.40	111.40

Name: Geodetic Road North
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.574043	144.932848	119.62	2.40	122.02
2	-36.572819	144.932097	122.62	2.40	125.02
3	-36.559963	144.932011	114.74	2.40	117.14
4	-36.542087	144.932011	107.39	2.40	109.79
5	-36.531605	144.931974	104.52	2.40	106.92
6	-36.527070	144.931904	106.01	2.40	108.41
7	-36.508338	144.931880	104.96	2.40	107.36
8	-36.489259	144.931792	105.26	2.40	107.66

Name: Gilmore Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.503334	144.922958	107.06	2.40	109.46
2	-36.502855	144.922631	106.11	2.40	108.51
3	-36.489171	144.922556	104.93	2.40	107.33

Name: Girgarre-Rushworth Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.528233	144.988447	105.92	2.40	108.32
2	-36.524060	144.986544	108.85	2.40	111.25
3	-36.523319	144.986308	112.04	2.40	114.44
4	-36.522060	144.986147	109.00	2.40	111.40
5	-36.517775	144.986243	106.86	2.40	109.26
6	-36.514282	144.986147	107.61	2.40	110.01
7	-36.511592	144.986147	108.61	2.40	111.01
8	-36.509333	144.985932	104.13	2.40	106.53
9	-36.505792	144.985395	105.29	2.40	107.69
10	-36.503826	144.985116	105.95	2.40	108.35
11	-36.502274	144.984344	105.54	2.40	107.94
12	-36.499255	144.982499	107.19	2.40	109.59
13	-36.498496	144.982091	108.05	2.40	110.45
14	-36.496064	144.981876	106.83	2.40	109.23
15	-36.491044	144.981769	111.83	2.40	114.23

Name: Guy Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.549111	144.910770	108.50	2.40	110.90
2	-36.551990	144.910727	107.69	2.40	110.09
3	-36.555661	144.910727	110.49	2.40	112.89
4	-36.557298	144.910705	108.48	2.40	110.88

Name: Heath Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.556402	144.931798	116.21	2.40	118.61
2	-36.556419	144.925855	111.50	2.40	113.90
3	-36.556419	144.919889	111.26	2.40	113.66
4	-36.556385	144.914911	108.37	2.40	110.77
5	-36.556333	144.909826	109.00	2.40	111.40

Name: Heily Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570578	144.971758	124.03	2.40	126.43
2	-36.569026	144.971801	121.52	2.40	123.92
3	-36.566459	144.971769	120.00	2.40	122.40
4	-36.563951	144.971801	123.05	2.40	125.45
5	-36.561331	144.971812	116.94	2.40	119.34
6	-36.559272	144.971823	116.15	2.40	118.55
7	-36.556462	144.971844	121.25	2.40	123.65
8	-36.553075	144.971876	117.68	2.40	120.08
9	-36.551093	144.971855	113.73	2.40	116.13
10	-36.550830	144.971989	113.76	2.40	116.16
11	-36.550379	144.972961	114.83	2.40	117.23
12	-36.550161	144.973235	115.54	2.40	117.94
13	-36.549797	144.973409	115.34	2.40	117.74
14	-36.547737	144.973790	115.31	2.40	117.71
15	-36.547590	144.973862	115.15	2.40	117.55
16	-36.547388	144.974115	115.00	2.40	117.40
17	-36.546924	144.974741	115.24	2.40	117.64
18	-36.545670	144.972823	110.48	2.40	112.88
19	-36.545250	144.972066	110.33	2.40	112.73
20	-36.545103	144.971857	110.90	2.40	113.30
21	-36.544862	144.971852	110.96	2.40	113.36
22	-36.544017	144.971871	110.09	2.40	112.49
23	-36.541685	144.971881	110.12	2.40	112.52
24	-36.539054	144.971878	109.43	2.40	111.83
25	-36.536226	144.971889	107.74	2.40	110.14
26	-36.532628	144.971895	106.81	2.40	109.21
27	-36.530977	144.971889	107.00	2.40	109.40
28	-36.530456	144.971916	106.34	2.40	108.74

Name: Lambden Rd
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.566703	144.962191	114.37	2.40	116.77
2	-36.569271	144.957685	114.06	2.40	116.46
3	-36.569047	144.955861	116.39	2.40	118.79
4	-36.569477	144.955625	116.80	2.40	119.20
5	-36.574621	144.955611	126.53	2.40	128.93
6	-36.579894	144.955654	133.53	2.40	135.93
7	-36.586751	144.955697	131.07	2.40	133.47

Name: Lauries Bridge Rd
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.576207	144.935820	118.88	2.40	121.28
2	-36.576035	144.955690	126.90	2.40	129.30
3	-36.576190	144.969959	124.99	2.40	127.39
4	-36.577344	144.973778	126.63	2.40	129.03

Name: Old Corop Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570846	144.971936	124.22	2.40	126.62
2	-36.566469	144.962248	114.54	2.40	116.94
3	-36.563918	144.956648	114.35	2.40	116.75
4	-36.561605	144.951686	113.23	2.40	115.63
5	-36.558856	144.945645	108.40	2.40	110.80
6	-36.555968	144.939637	110.36	2.40	112.76
7	-36.552099	144.931280	115.31	2.40	117.71
8	-36.549005	144.925068	112.11	2.40	114.51
9	-36.548953	144.918233	108.00	2.40	110.40
10	-36.548994	144.910610	108.32	2.40	110.72
11	-36.548934	144.902949	110.62	2.40	113.02

Name: Two Tree Road
Path type: Two-way
Observer view angle: 50.0°

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.498969	144.904491	105.28	2.40	107.68
2	-36.498890	144.918200	107.01	2.40	109.41
3	-36.498937	144.932895	106.47	2.40	108.87
4	-36.498943	144.939885	105.00	2.40	107.40
5	-36.498935	144.946591	104.87	2.40	107.27
6	-36.498978	144.954058	104.84	2.40	107.24
7	-36.498935	144.960637	107.43	2.40	109.83
8	-36.499004	144.968362	105.27	2.40	107.67
9	-36.499014	144.975430	107.64	2.40	110.04

Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-36.548964	144.928722	113.79	1.50
OP 2	2	-36.552436	144.932892	113.35	1.50
OP 3	3	-36.561631	144.931436	121.39	1.50
OP 4	4	-36.562748	144.936967	116.48	1.50
OP 5	5	-36.530194	144.978633	110.57	1.50
OP 6	6	-36.562022	144.955406	112.79	1.50
OP 7	7	-36.572725	144.968097	123.44	1.50
OP 8	8	-36.570442	144.974625	121.66	1.50
OP 9	9	-36.556186	144.965103	119.67	1.50
OP 10	10	-36.540286	144.962389	112.51	1.50
OP 11	11	-36.531025	144.962936	111.00	1.50
OP 12	12	-36.529783	144.962575	110.61	1.50
OP 13	13	-36.530069	144.975461	106.81	1.50
OP 14	14	-36.498658	144.957447	105.36	1.50
OP 15	15	-36.503447	144.946417	108.00	1.50
OP 16	16	-36.499939	144.942322	105.56	1.50
OP 17	17	-36.498517	144.923989	105.85	1.50
OP 18	18	-36.499486	144.923053	106.24	1.50
OP 19	19	-36.505053	144.924864	107.58	1.50
OP 20	20	-36.497847	144.918714	107.56	1.50
OP 21	21	-36.510839	144.926494	105.50	1.50

Glare Analysis Results

Summary of Results

Glare with potential for temporary after-image predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
PV array Stage 1	SA tracking	SA tracking	0	0.0	31,823	530.4	-
PV array Stage 2	SA tracking	SA tracking	0	0.0	11,478	191.3	-

Total annual glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Bedwell Road	0	0.0	5,314	88.6
Carag Road	0	0.0	2,177	36.3
Geodetic Road North	0	0.0	0	0.0
Gilmore Road	0	0.0	0	0.0
Girgarre-Rushworth Road	0	0.0	713	11.9
Guy Road	0	0.0	0	0.0
Heath Road	0	0.0	0	0.0
Heily Road	0	0.0	6,140	102.3
Lambden Rd	0	0.0	0	0.0
Lauries Bridge Rd	0	0.0	0	0.0
Old Corop Road	0	0.0	1,235	20.6
Two Tree Road	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 5	0	0.0	4,132	68.9
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	978	16.3
OP 9	0	0.0	5,640	94.0
OP 10	0	0.0	5,725	95.4
OP 11	0	0.0	4,890	81.5
OP 12	0	0.0	4,534	75.6
OP 13	0	0.0	1,823	30.4
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0

PV: PV array Stage 1 potential temporary after-image

Receptor results ordered by category of glare

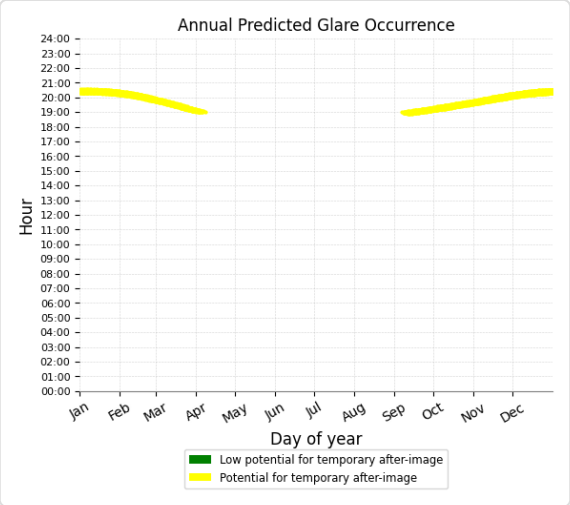
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Bedwell Road	0	0.0	2,930	48.8
Carag Road	0	0.0	2,163	36.0
Heily Road	0	0.0	5,302	88.4
Old Corop Road	0	0.0	411	6.8
Geodetic Road North	0	0.0	0	0.0
Gilmore Road	0	0.0	0	0.0
Girgarre-Rushworth Road	0	0.0	0	0.0
Guy Road	0	0.0	0	0.0
Heath Road	0	0.0	0	0.0
Lambden Rd	0	0.0	0	0.0
Lauries Bridge Rd	0	0.0	0	0.0
Two Tree Road	0	0.0	0	0.0
OP 5	0	0.0	2,660	44.3
OP 8	0	0.0	978	16.3
OP 9	0	0.0	5,640	94.0
OP 10	0	0.0	4,823	80.4
OP 11	0	0.0	2,743	45.7
OP 12	0	0.0	2,350	39.2
OP 13	0	0.0	1,823	30.4
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0

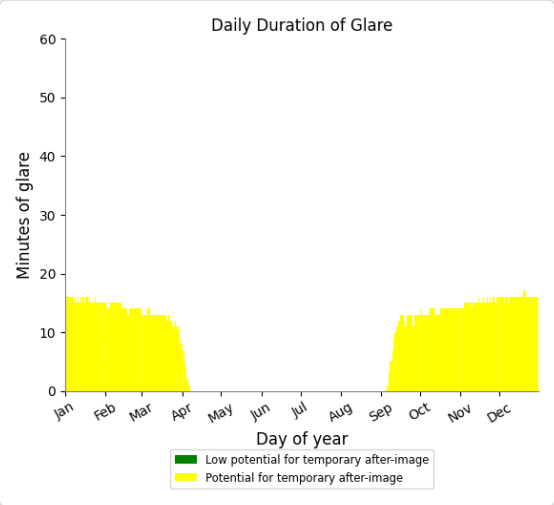
PV array Stage 1 and Bedwell Road

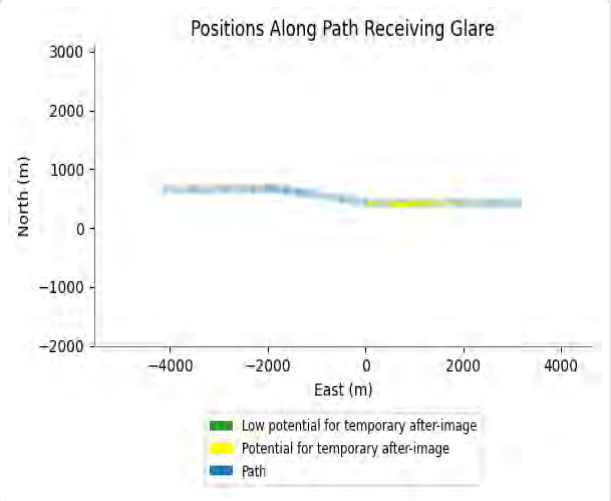
Receptor type: Route

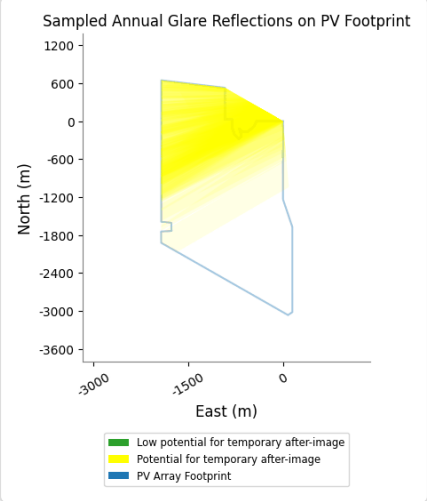
2,930 minutes of yellow glare

0 minutes of green glare







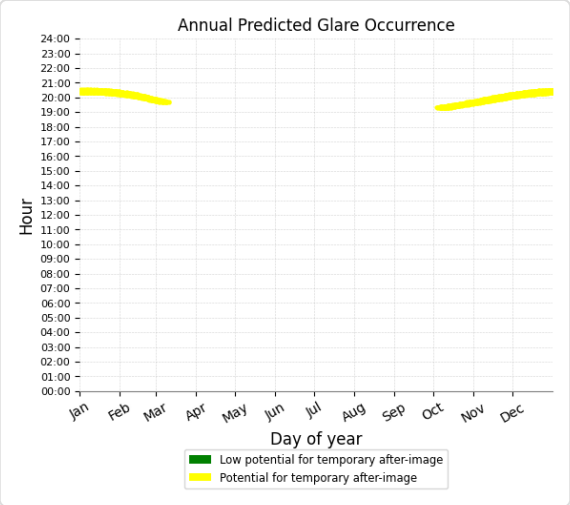


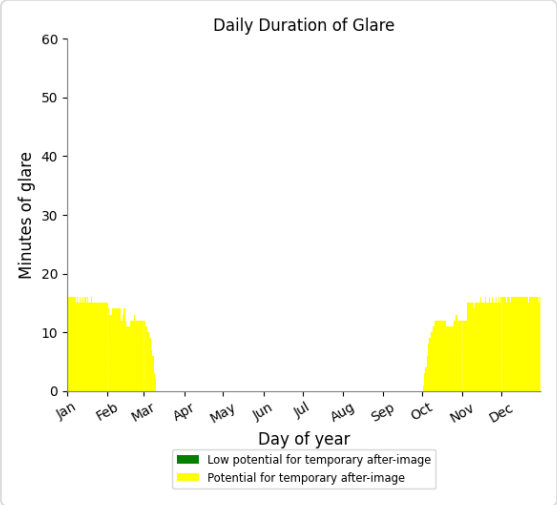
PV array Stage 1 and Carag Road

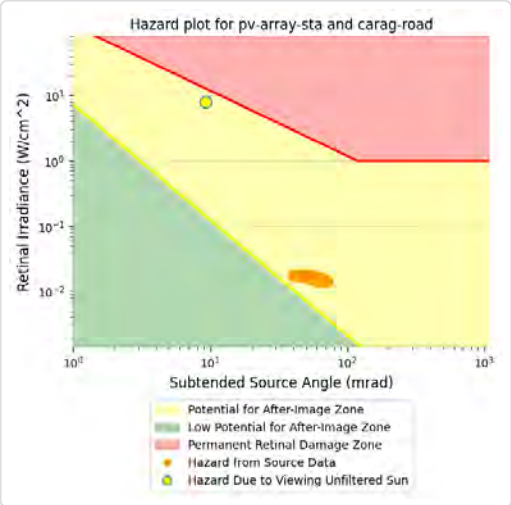
Receptor type: Route

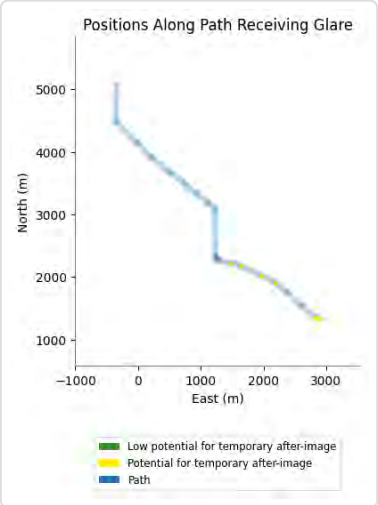
2,163 minutes of yellow glare

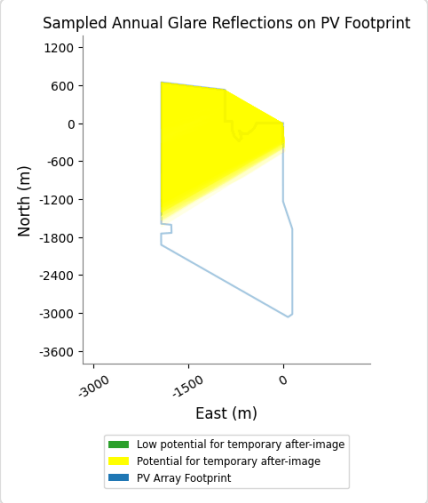
0 minutes of green glare









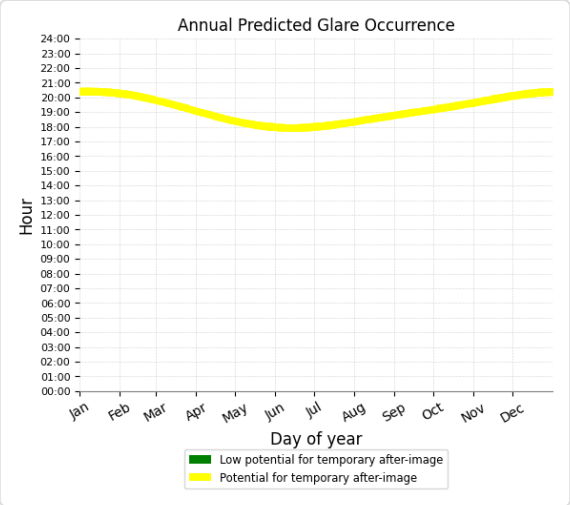


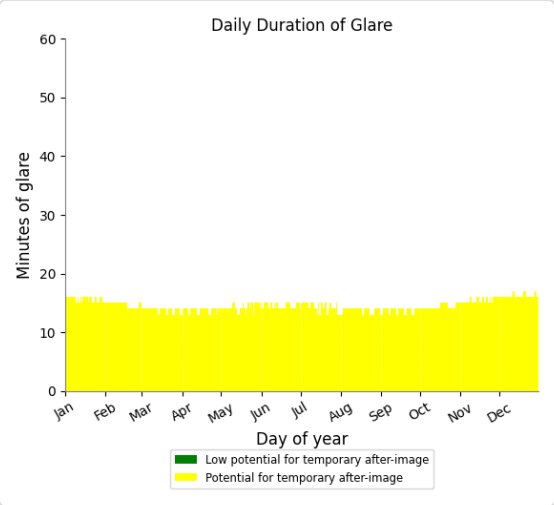
PV array Stage 1 and Heily Road

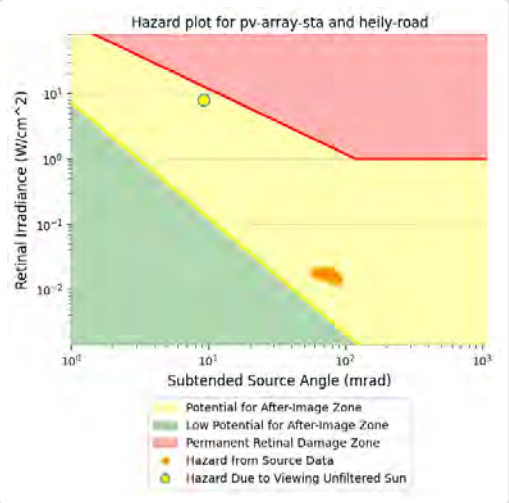
Receptor type: Route

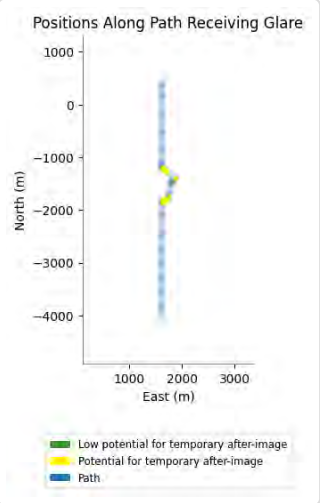
5,302 minutes of yellow glare

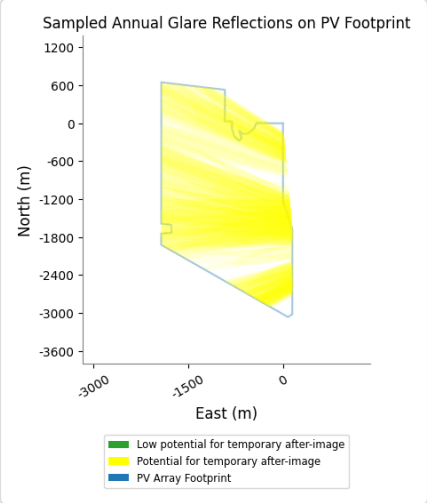
0 minutes of green glare









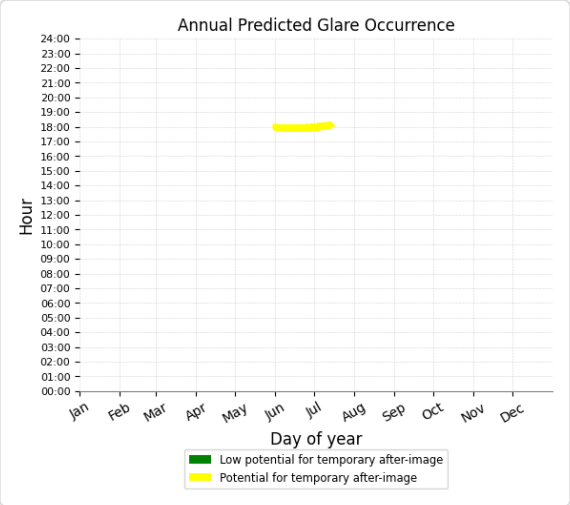


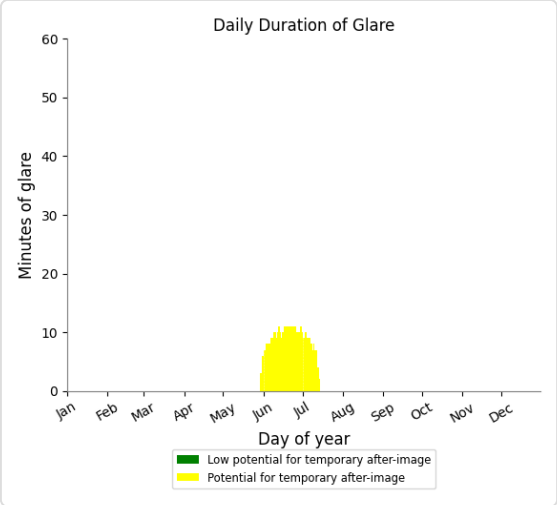
PV array Stage 1 and Old Corop Road

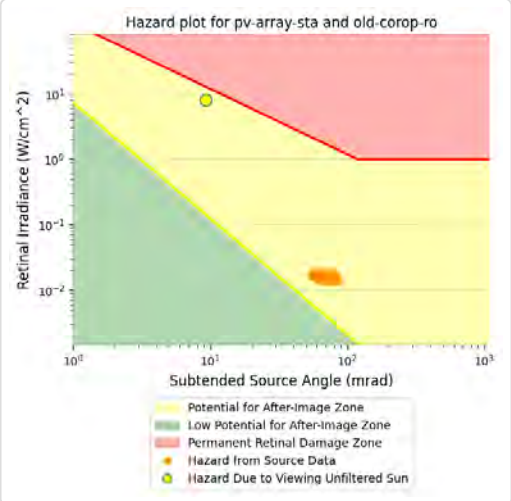
Receptor type: Route

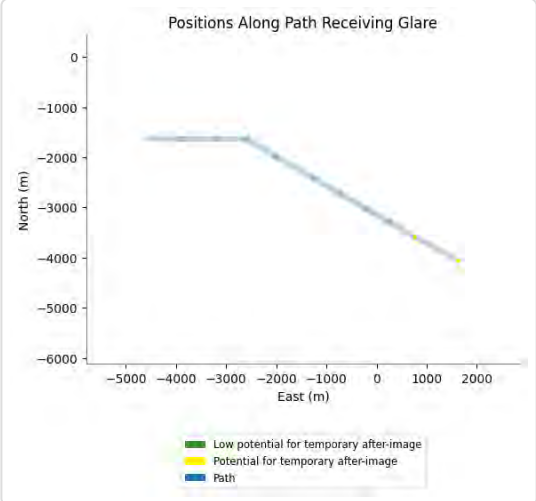
411 minutes of yellow glare

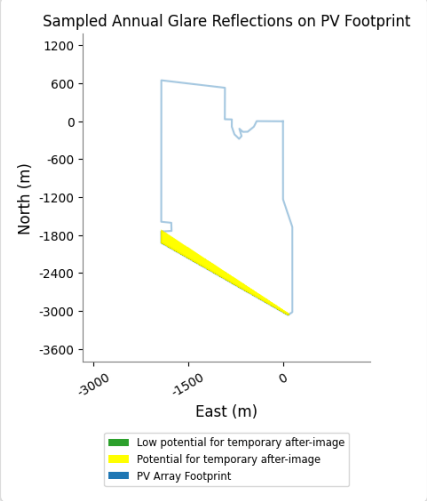
0 minutes of green glare











PV array Stage 1 and Geodetic Road North

Receptor type: Route
No glare found

PV array Stage 1 and Gilmore Road

Receptor type: Route
No glare found

PV array Stage 1 and Girgarre-Rushworth Road

Receptor type: Route
No glare found

PV array Stage 1 and Guy Road

Receptor type: Route
No glare found

PV array Stage 1 and Heath Road

Receptor type: Route
No glare found

PV array Stage 1 and Lambden Rd

Receptor type: Route
No glare found

PV array Stage 1 and Lauries Bridge Rd

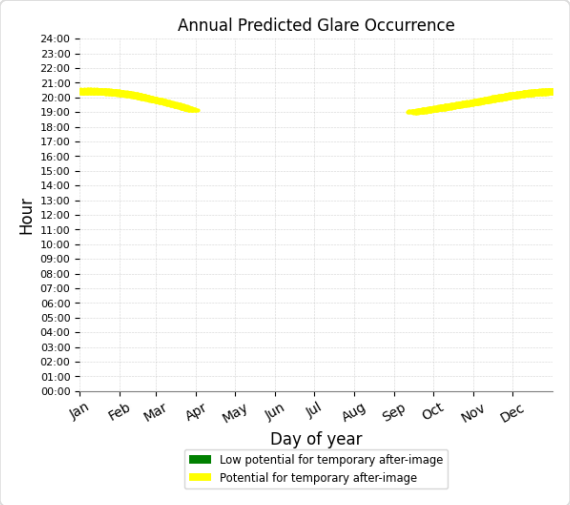
Receptor type: Route
No glare found

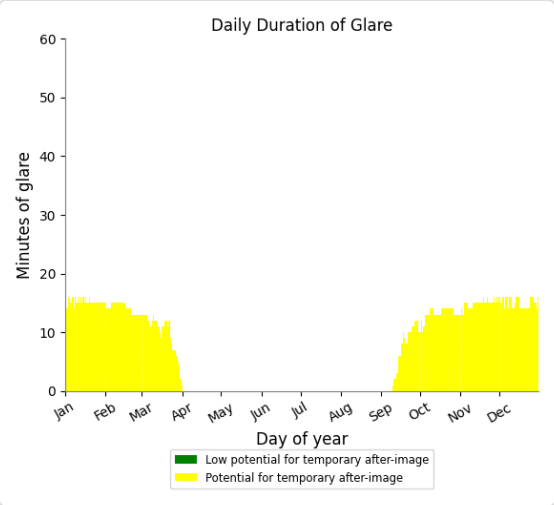
PV array Stage 1 and Two Tree Road

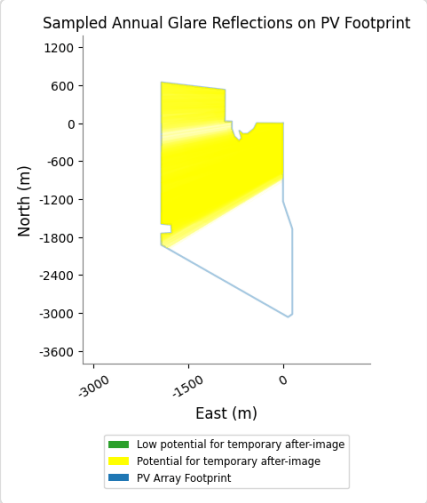
Receptor type: Route
No glare found

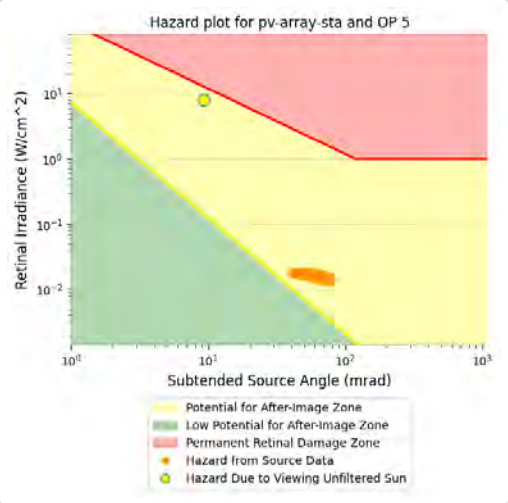
PV array Stage 1 and OP 5

Receptor type: Observation Point
2,660 minutes of yellow glare
0 minutes of green glare



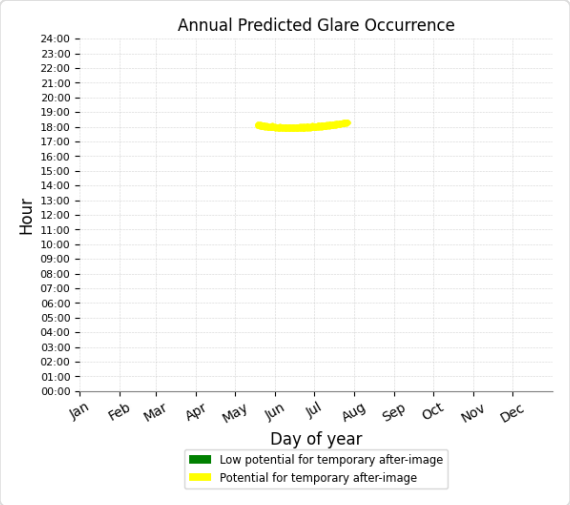


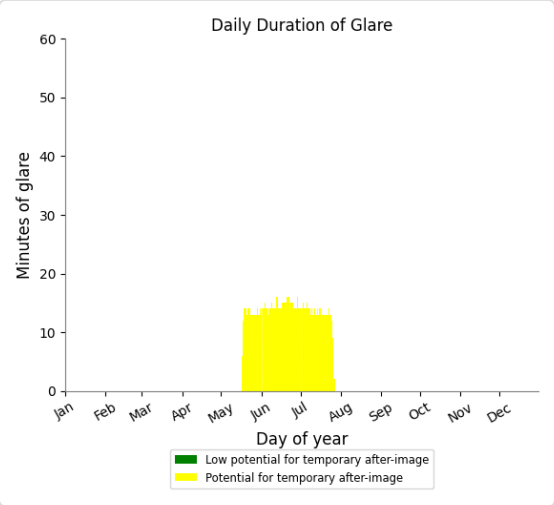


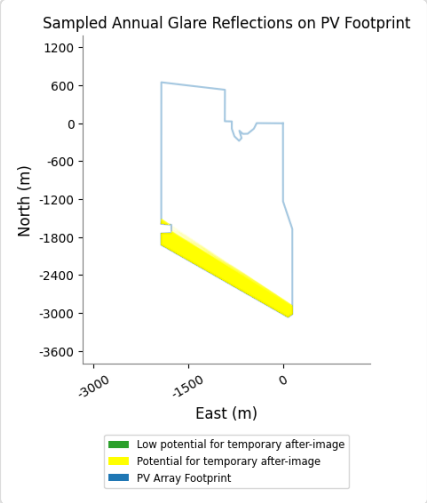


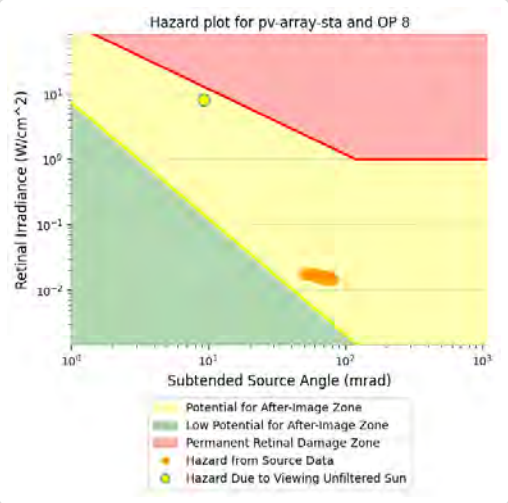
PV array Stage 1 and OP 8

Receptor type: Observation Point
978 minutes of yellow glare
0 minutes of green glare



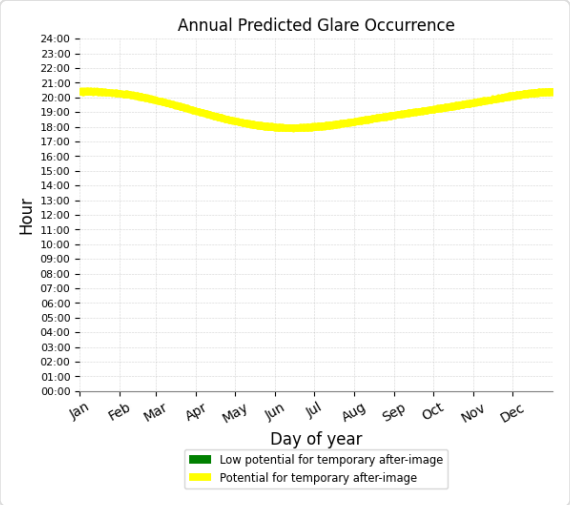


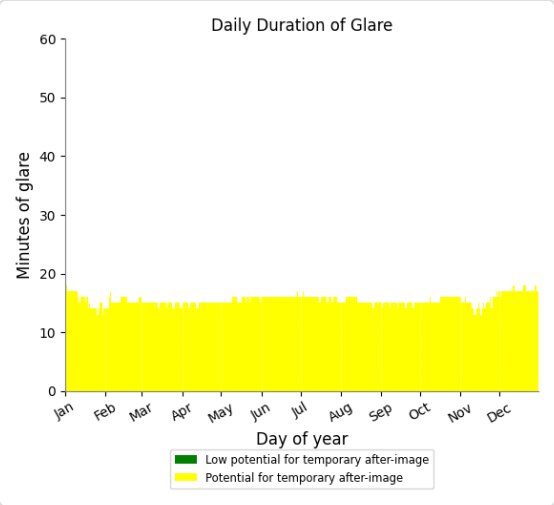


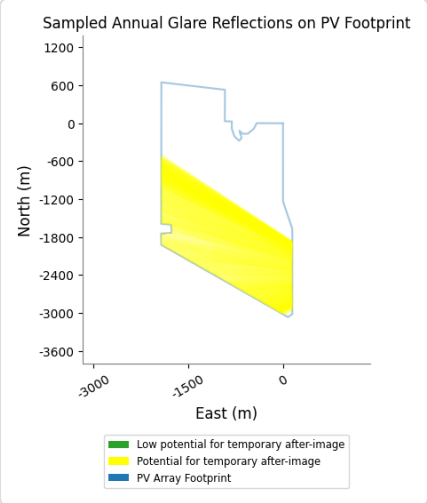


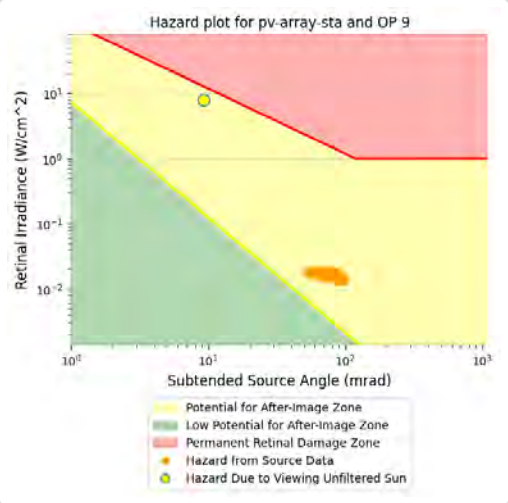
PV array Stage 1 and OP 9

Receptor type: Observation Point
5,640 minutes of yellow glare
0 minutes of green glare



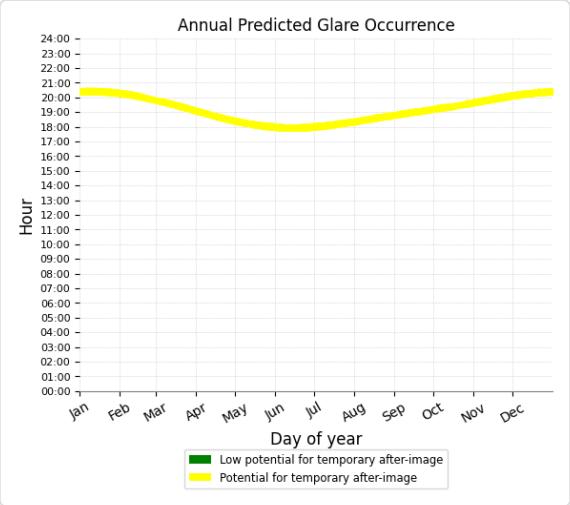


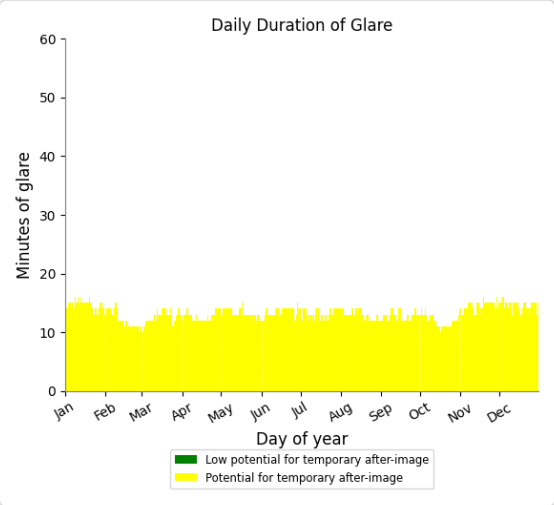


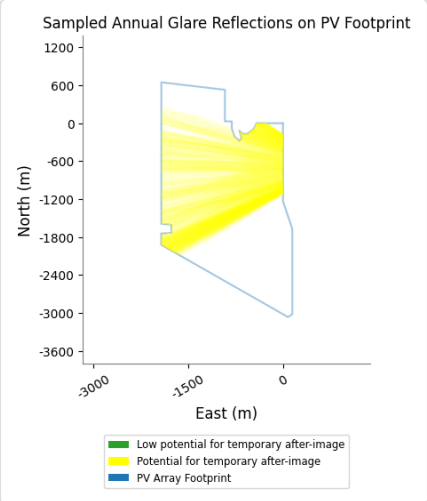


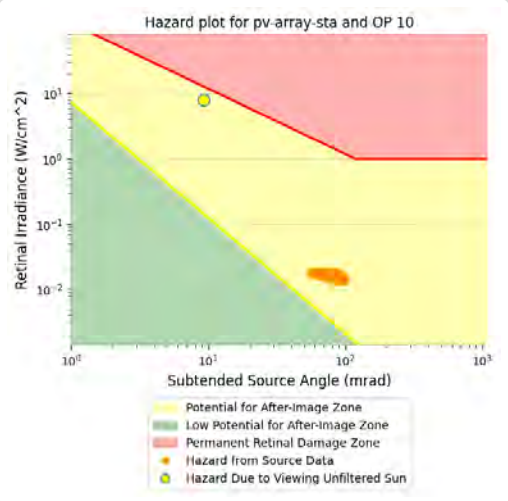
PV array Stage 1 and OP 10

Receptor type: Observation Point
4,823 minutes of yellow glare
0 minutes of green glare



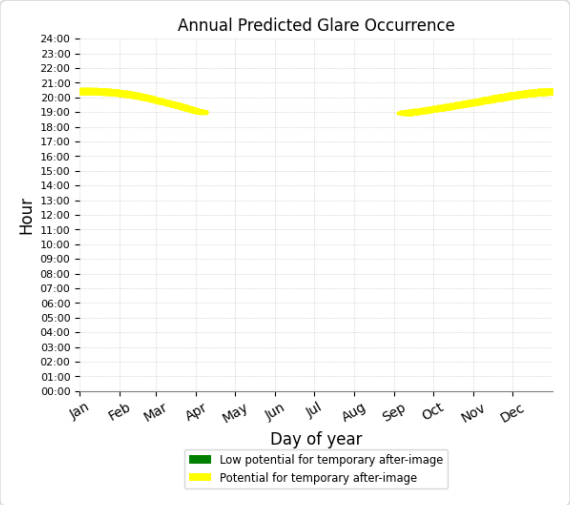


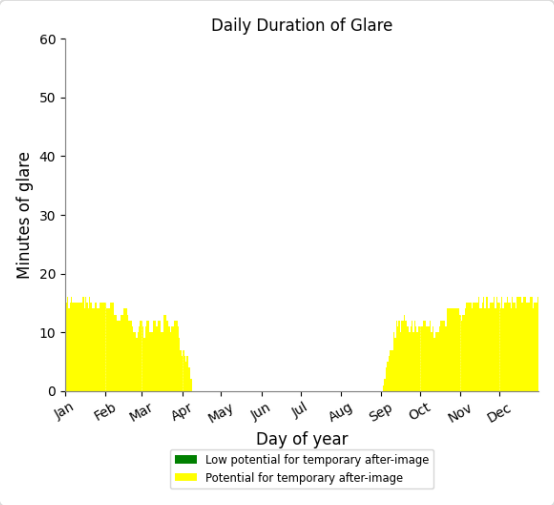


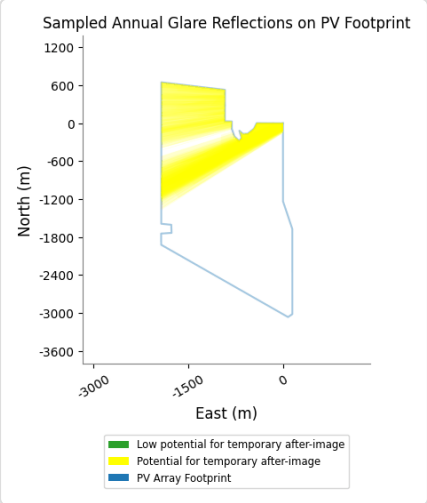


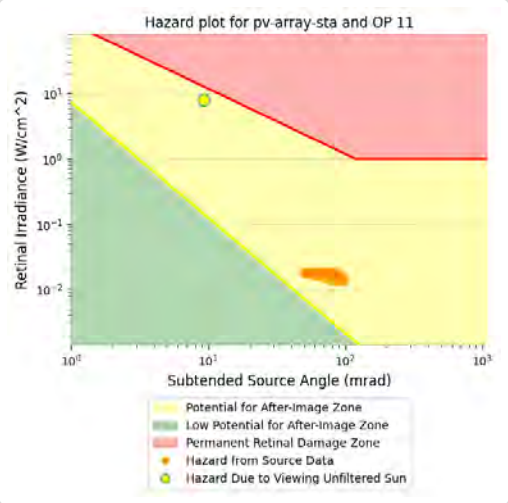
PV array Stage 1 and OP 11

Receptor type: Observation Point
2,743 minutes of yellow glare
0 minutes of green glare



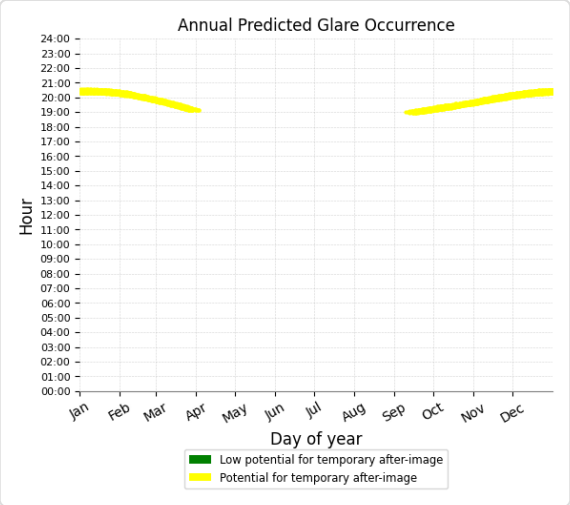


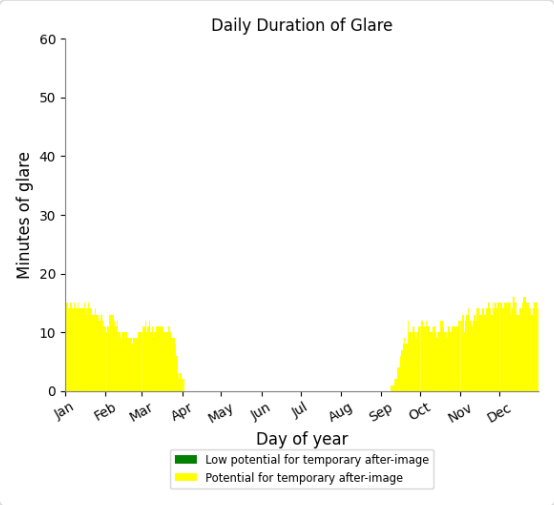


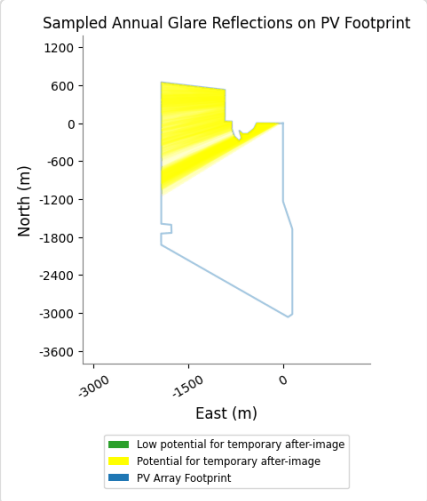


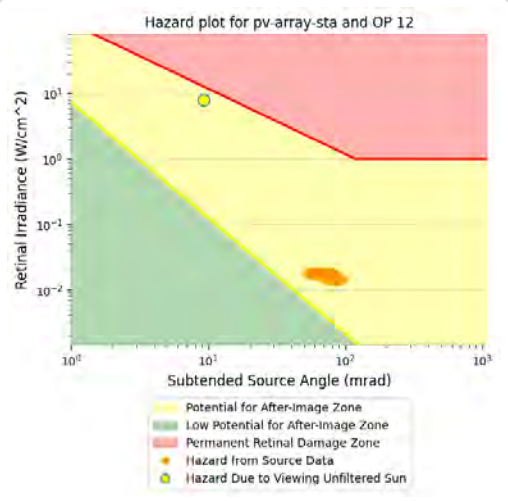
PV array Stage 1 and OP 12

Receptor type: Observation Point
2,350 minutes of yellow glare
0 minutes of green glare



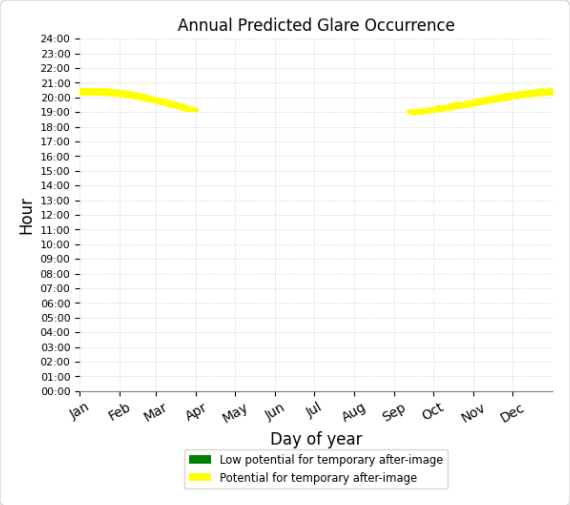


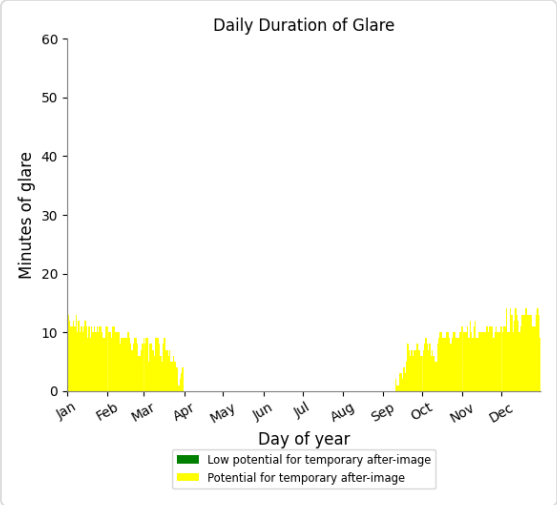


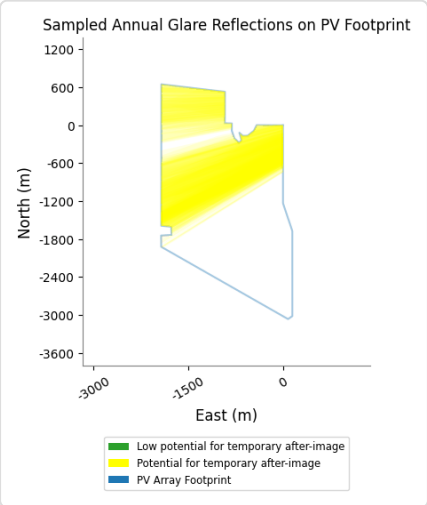


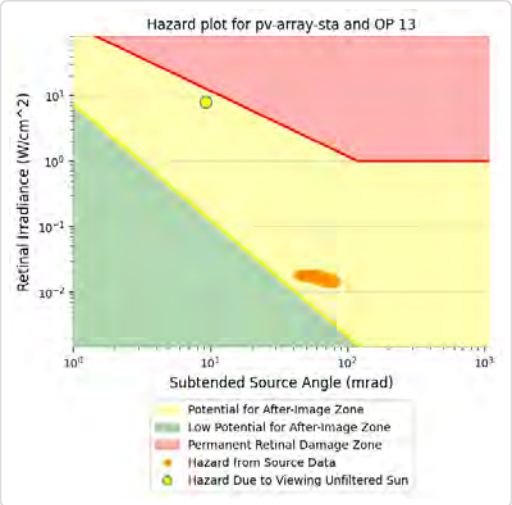
PV array Stage 1 and OP 13

Receptor type: Observation Point
1,823 minutes of yellow glare
0 minutes of green glare









PV array Stage 1 and OP 1

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 2

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 3

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 4

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 6

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 7

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 14

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 15

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 16

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 17

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 18

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 19

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 20

Receptor type: Observation Point
No glare found

PV array Stage 1 and OP 21

Receptor type: Observation Point
No glare found

PV: PV array Stage 2 potential temporary after-image

Receptor results ordered by category of glare

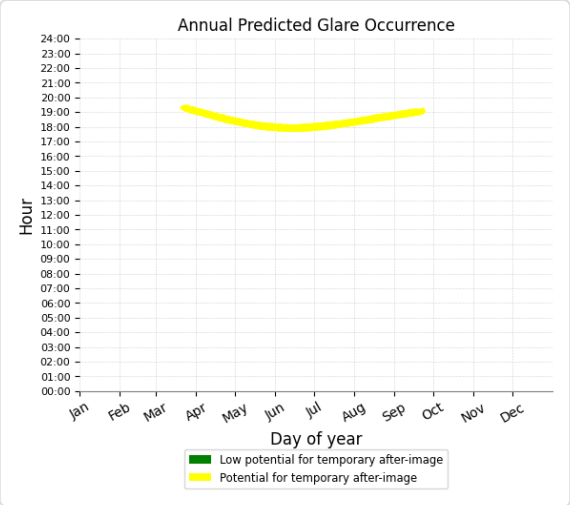
Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Bedwell Road	0	0.0	2,384	39.7
Carag Road	0	0.0	14	0.2
Girgarre-Rushworth Road	0	0.0	713	11.9
Heily Road	0	0.0	838	14.0
Old Corop Road	0	0.0	824	13.7
Geodetic Road North	0	0.0	0	0.0
Gilmore Road	0	0.0	0	0.0
Guy Road	0	0.0	0	0.0
Heath Road	0	0.0	0	0.0
Lambden Rd	0	0.0	0	0.0
Lauries Bridge Rd	0	0.0	0	0.0
Two Tree Road	0	0.0	0	0.0
OP 5	0	0.0	1,472	24.5
OP 10	0	0.0	902	15.0
OP 11	0	0.0	2,147	35.8
OP 12	0	0.0	2,184	36.4
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0
OP 6	0	0.0	0	0.0
OP 7	0	0.0	0	0.0
OP 8	0	0.0	0	0.0
OP 9	0	0.0	0	0.0
OP 13	0	0.0	0	0.0
OP 14	0	0.0	0	0.0
OP 15	0	0.0	0	0.0
OP 16	0	0.0	0	0.0
OP 17	0	0.0	0	0.0
OP 18	0	0.0	0	0.0
OP 19	0	0.0	0	0.0
OP 20	0	0.0	0	0.0
OP 21	0	0.0	0	0.0

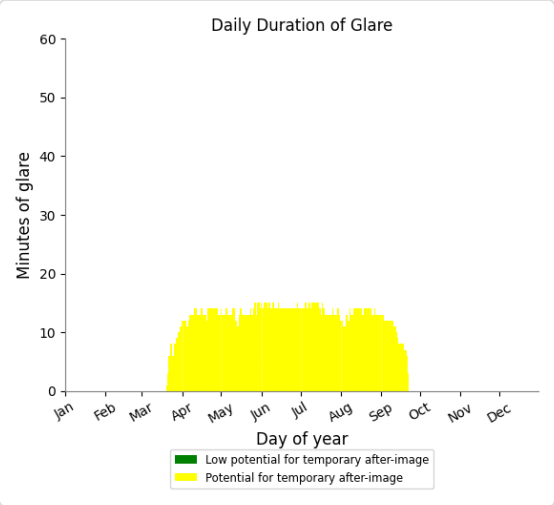
PV array Stage 2 and Bedwell Road

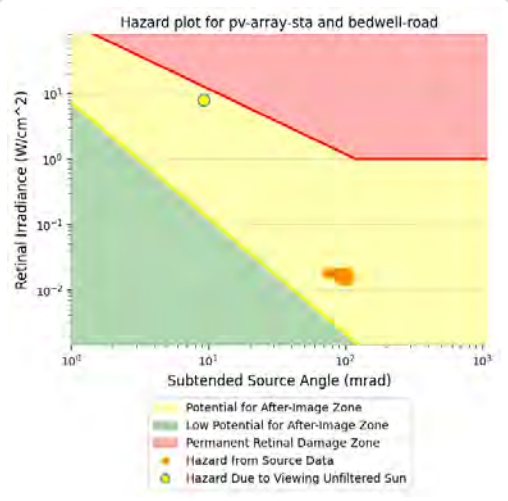
Receptor type: Route

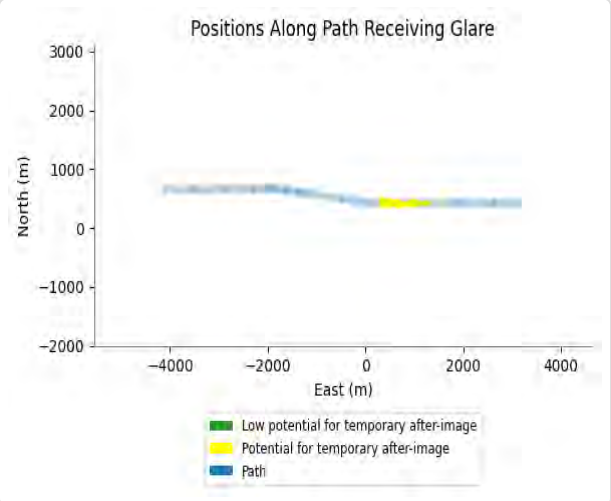
2,384 minutes of yellow glare

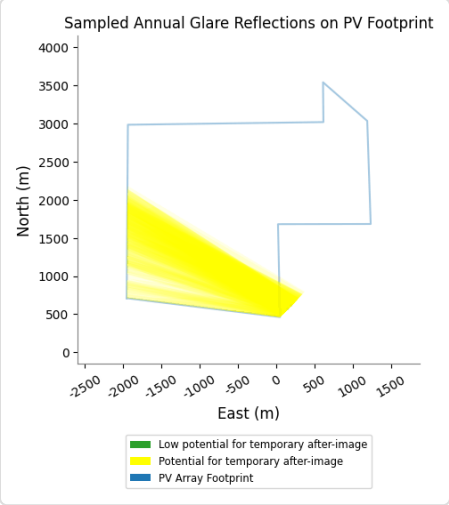
0 minutes of green glare









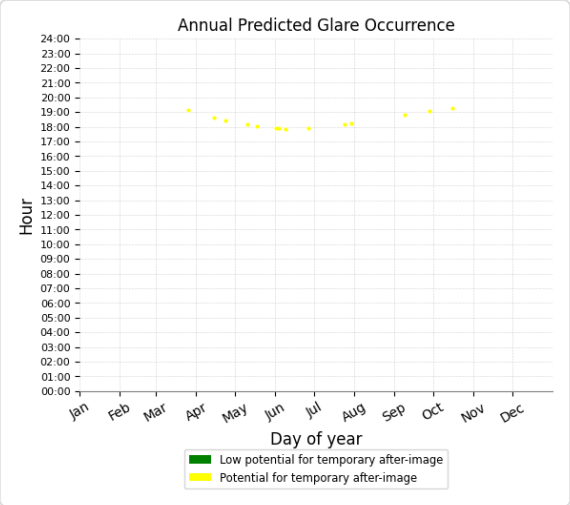


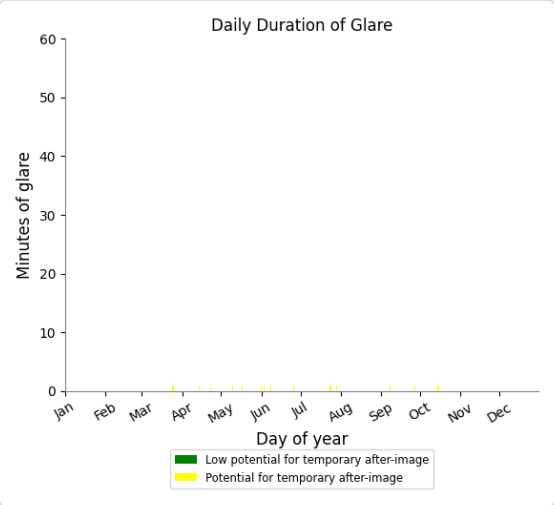
PV array Stage 2 and Carag Road

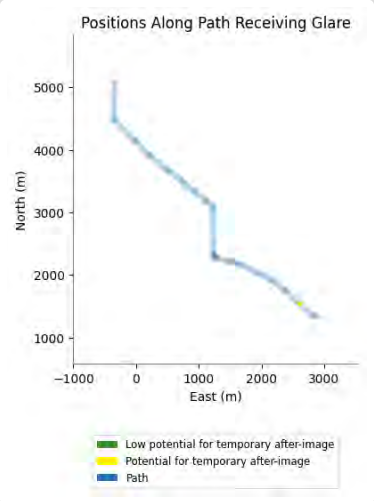
Receptor type: Route

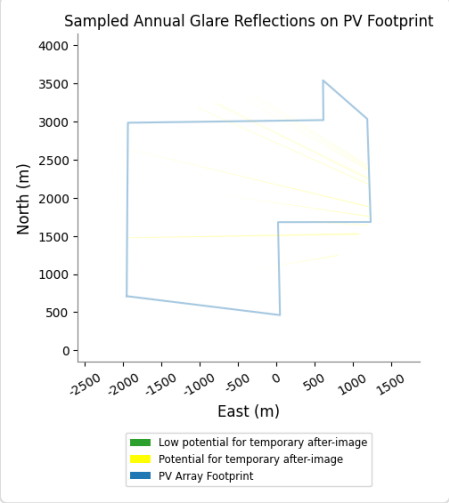
14 minutes of yellow glare

0 minutes of green glare







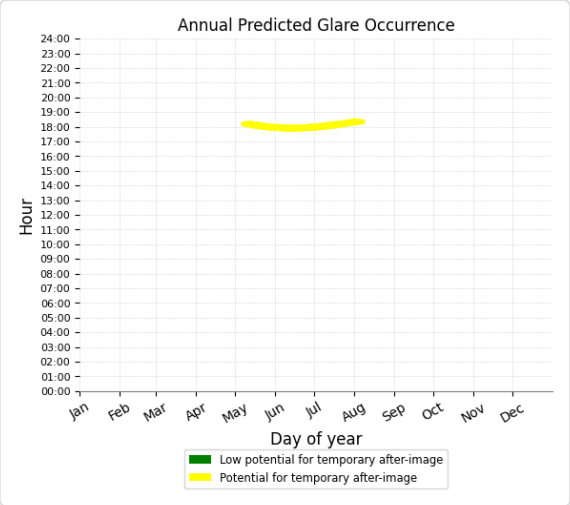


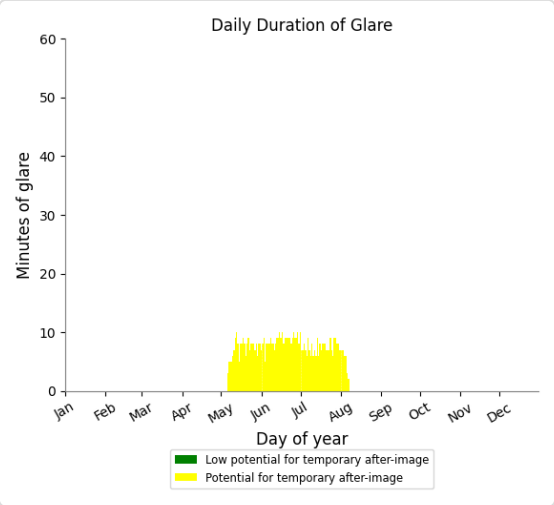
PV array Stage 2 and Girgarre-Rushworth Road

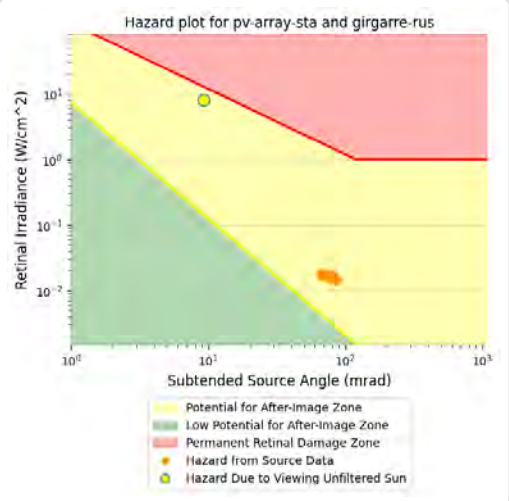
Receptor type: Route

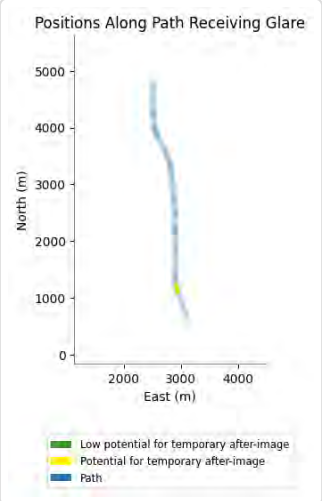
713 minutes of yellow glare

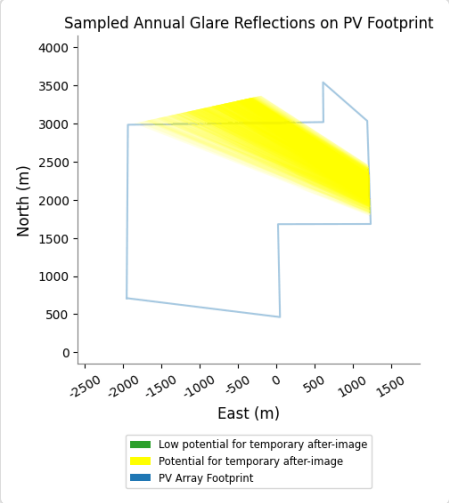
0 minutes of green glare









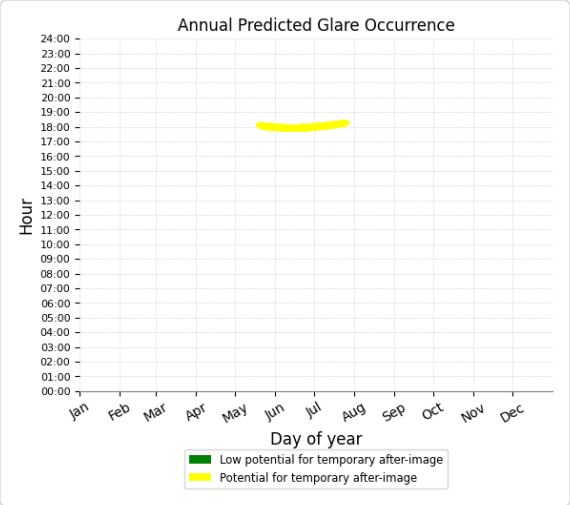


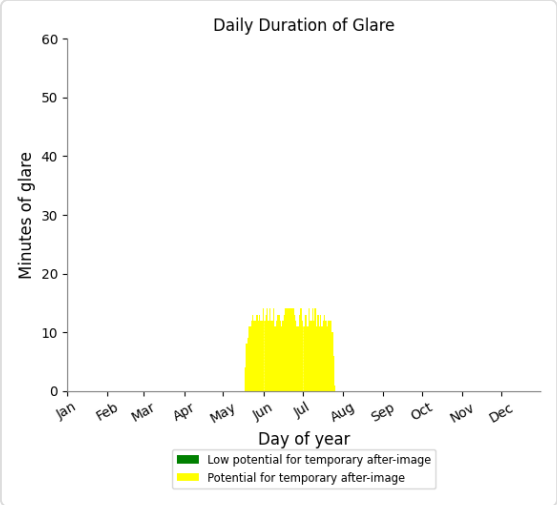
PV array Stage 2 and Heily Road

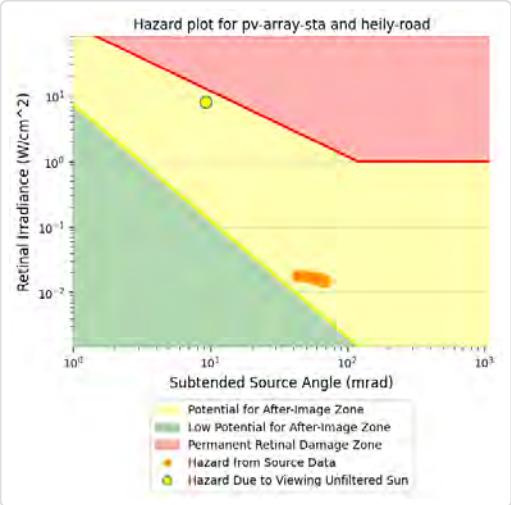
Receptor type: Route

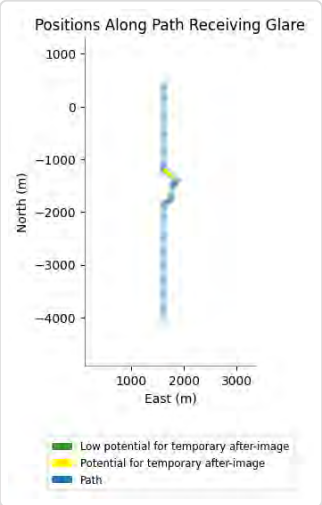
838 minutes of yellow glare

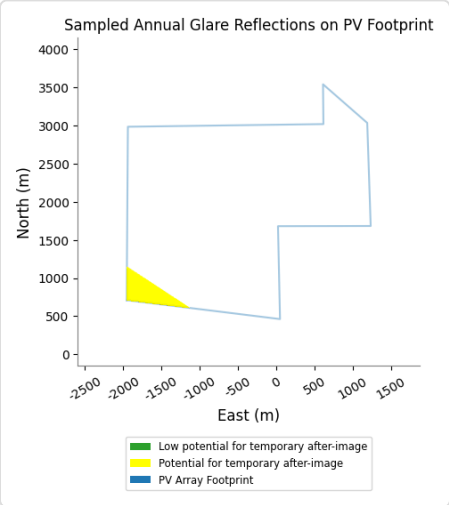
0 minutes of green glare









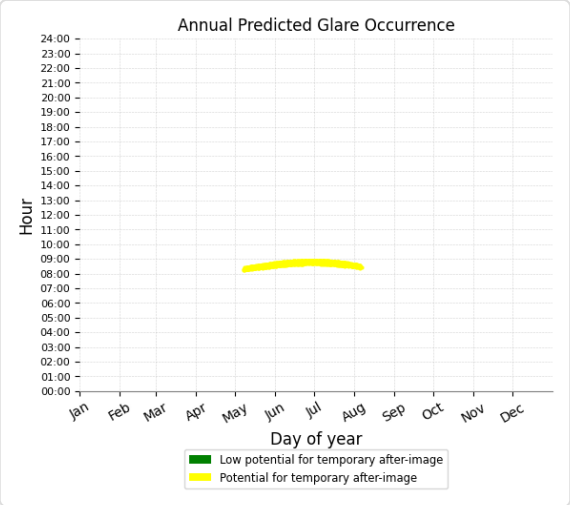


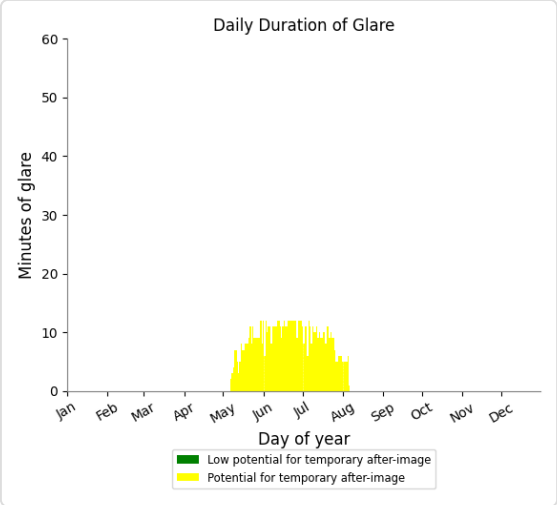
PV array Stage 2 and Old Corop Road

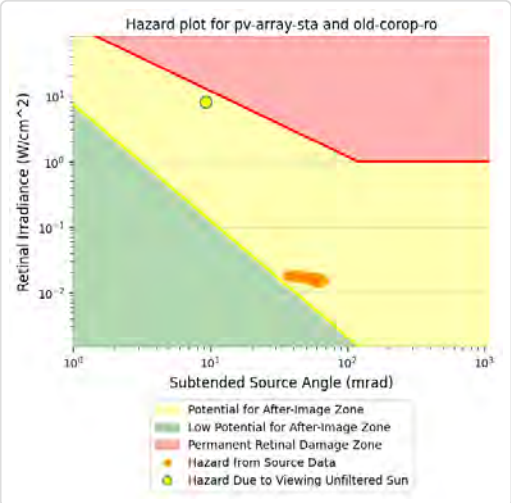
Receptor type: Route

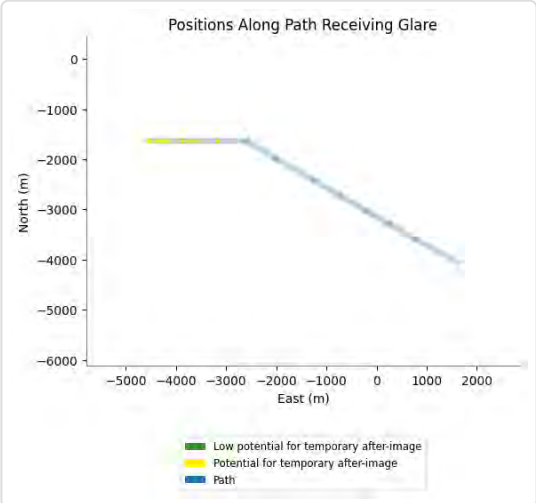
824 minutes of yellow glare

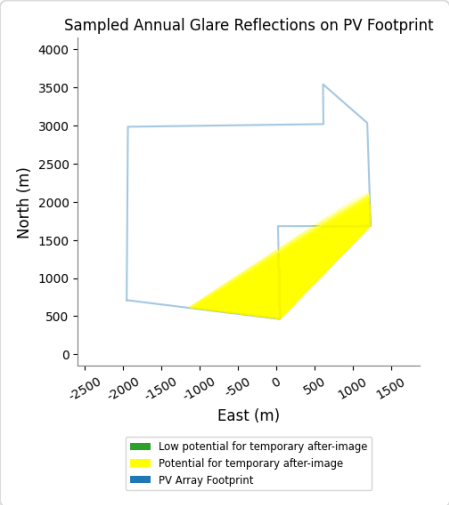
0 minutes of green glare











PV array Stage 2 and Geodetic Road North

Receptor type: Route
No glare found

PV array Stage 2 and Gilmore Road

Receptor type: Route
No glare found

PV array Stage 2 and Guy Road

Receptor type: Route
No glare found

PV array Stage 2 and Heath Road

Receptor type: Route
No glare found

PV array Stage 2 and Lambden Rd

Receptor type: Route
No glare found

PV array Stage 2 and Lauries Bridge Rd

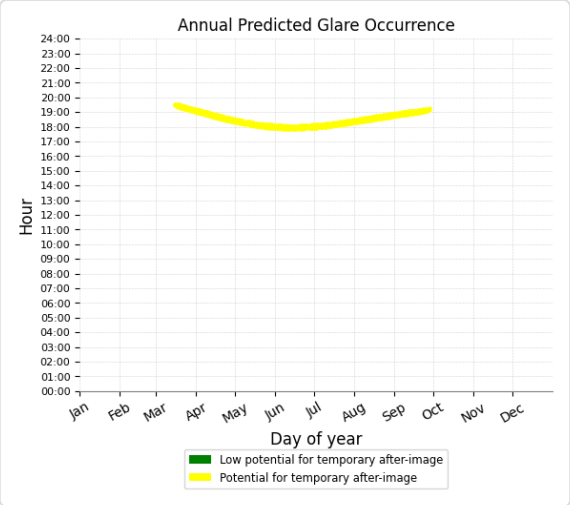
Receptor type: Route
No glare found

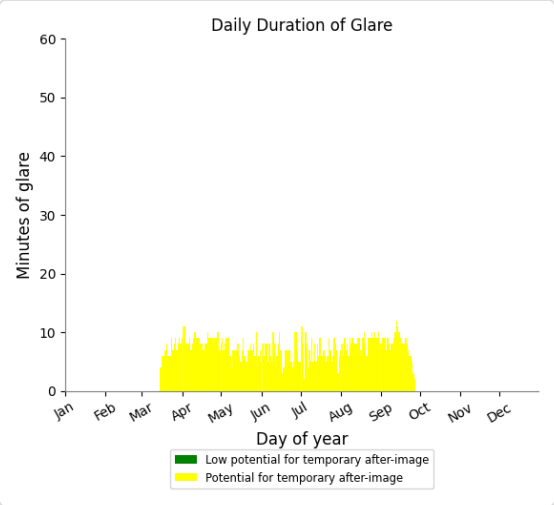
PV array Stage 2 and Two Tree Road

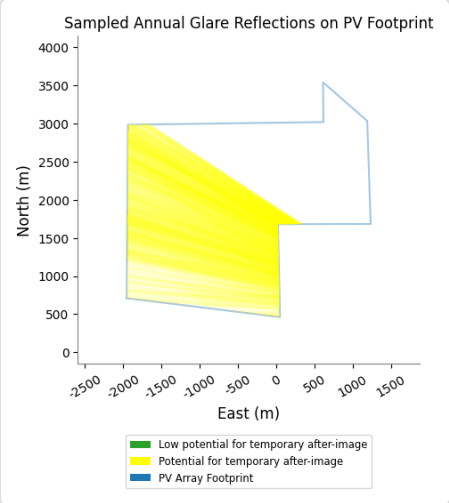
Receptor type: Route
No glare found

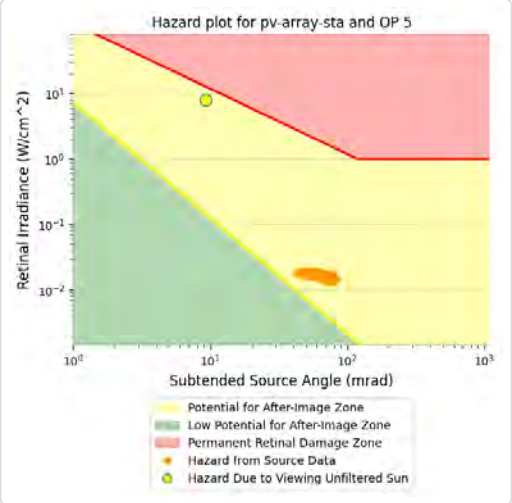
PV array Stage 2 and OP 5

Receptor type: Observation Point
1,472 minutes of yellow glare
0 minutes of green glare



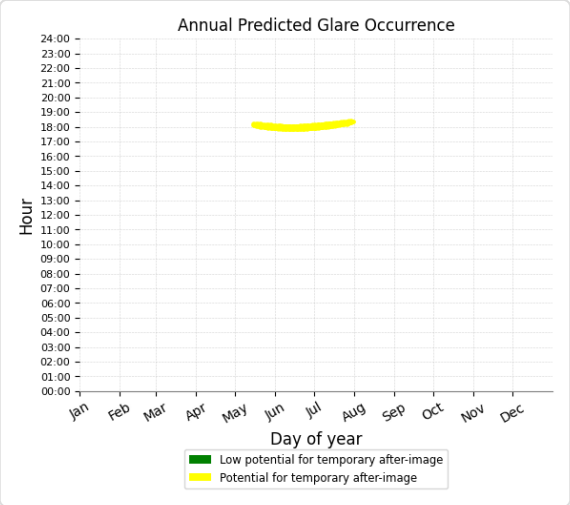


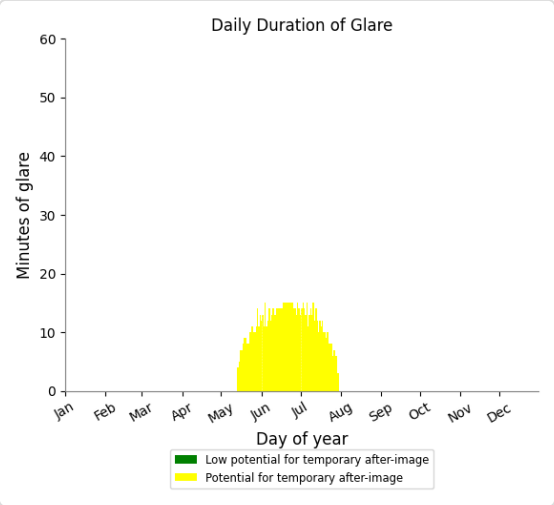


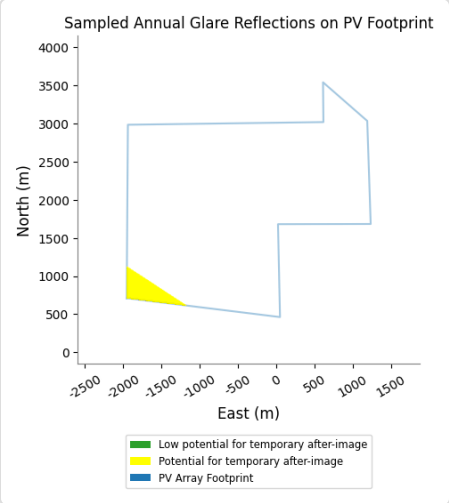


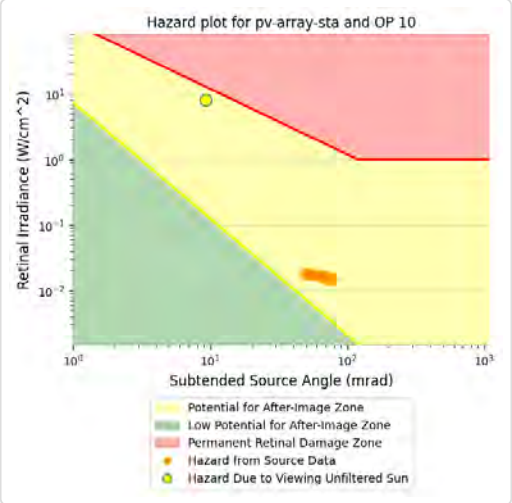
PV array Stage 2 and OP 10

Receptor type: Observation Point
902 minutes of yellow glare
0 minutes of green glare



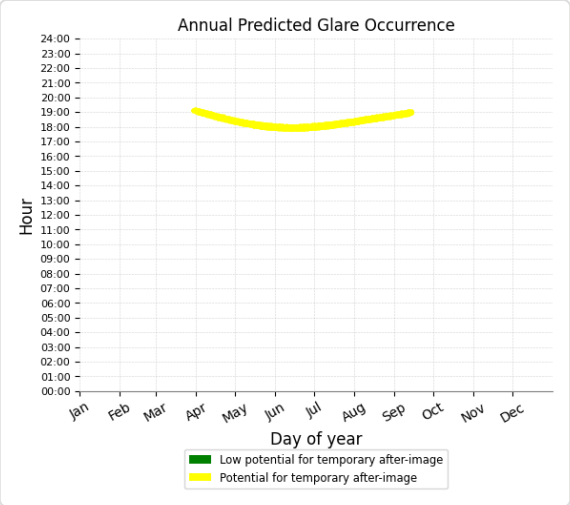


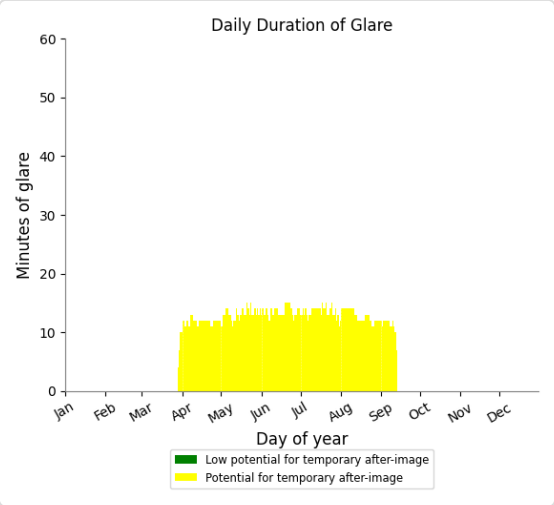


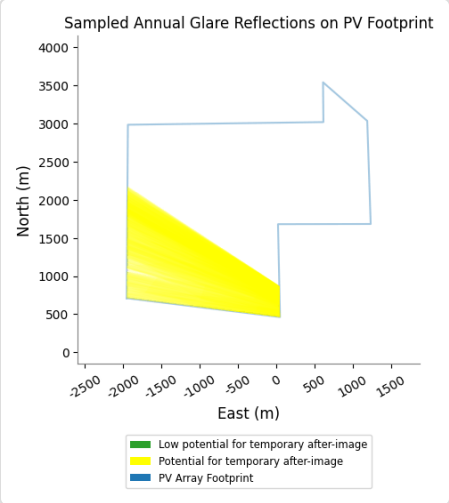


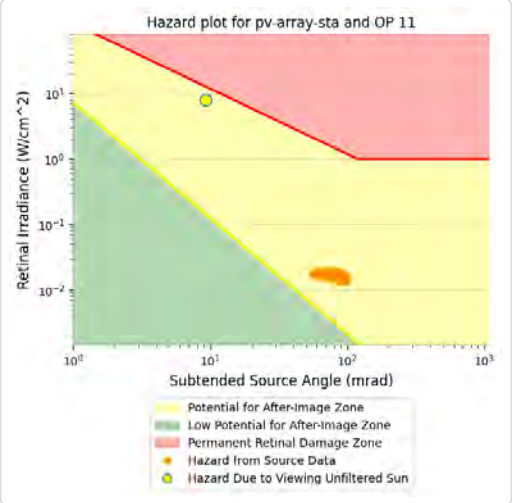
PV array Stage 2 and OP 11

Receptor type: Observation Point
2,147 minutes of yellow glare
0 minutes of green glare



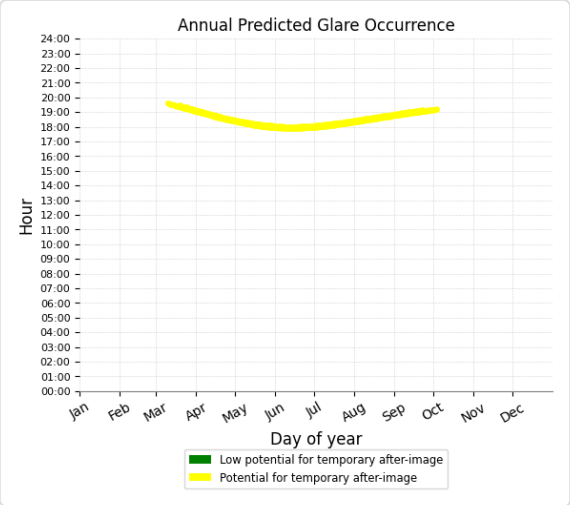


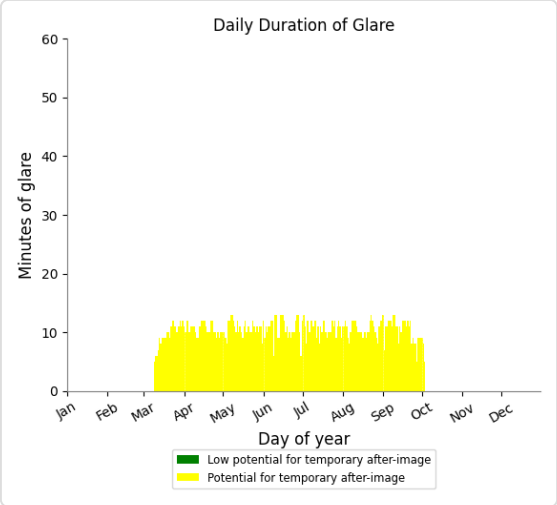


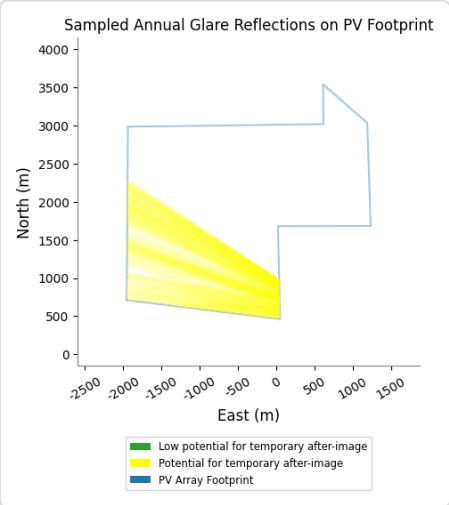


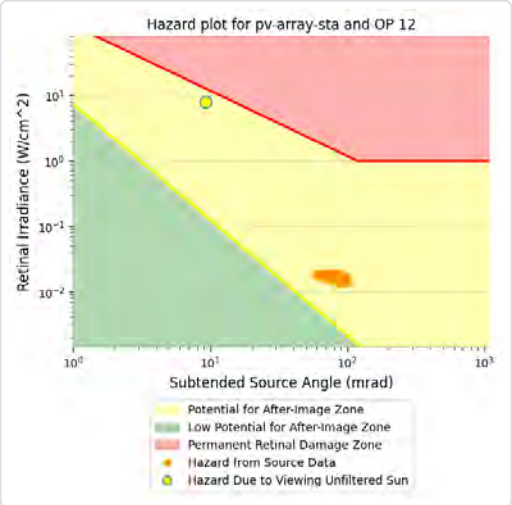
PV array Stage 2 and OP 12

Receptor type: Observation Point
2,184 minutes of yellow glare
0 minutes of green glare









PV array Stage 2 and OP 1

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 2

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 3

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 4

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 6

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 7

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 8

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 9

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 13

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 14

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 15

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 16

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 17

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 18

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 19

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 20

Receptor type: Observation Point
No glare found

PV array Stage 2 and OP 21

Receptor type: Observation Point
No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FORGESOLAR GLARE ANALYSIS

Project: **2145 COROP SOLAR FARM**
2145 COROP SOLAR FARM

Site configuration: **2145 COROP SOLAR FARM-temp-2**
Analysis conducted by David Moir (itsupport@moirla.com.au) at 06:28 on 13 Apr, 2022.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

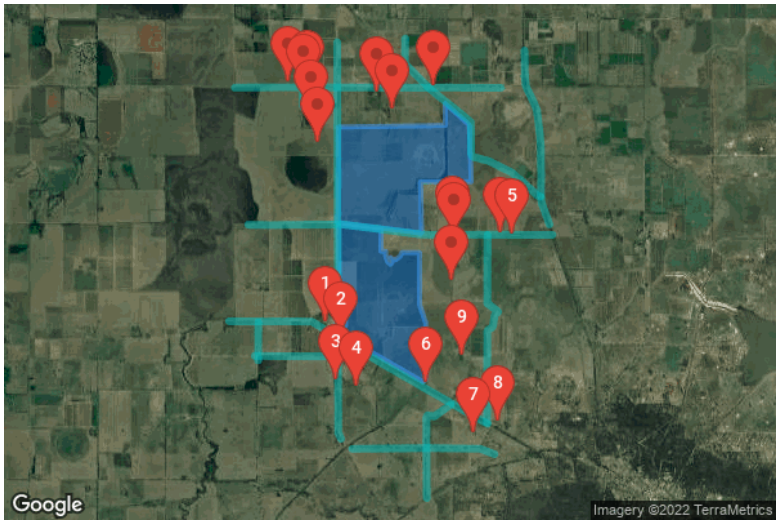
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

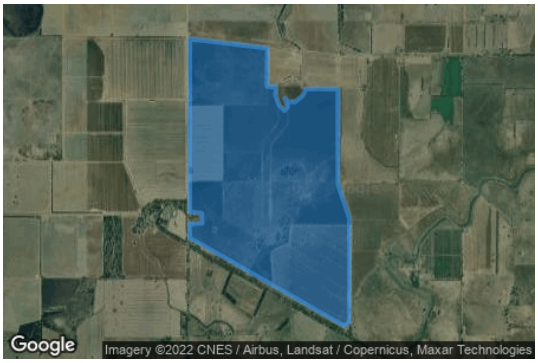
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 67511.11749
Methodology: V2



PV Array(s)

Name: PV array Stage 1
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.534250	144.953772	106.95	5.00	111.95
2	-36.534228	144.949117	105.30	5.00	110.30
3	-36.535019	144.948625	105.21	5.00	110.21
4	-36.535739	144.947519	105.13	5.00	110.13
5	-36.535753	144.946664	105.81	5.00	110.81
6	-36.535308	144.946056	105.92	5.00	110.92
7	-36.536358	144.946439	105.71	5.00	110.71
8	-36.536750	144.946008	106.00	5.00	111.00
9	-36.536122	144.945189	105.00	5.00	110.00
10	-36.535022	144.944714	107.60	5.00	112.60
11	-36.533986	144.944722	105.76	5.00	110.76
12	-36.533961	144.943478	105.55	5.00	110.55
13	-36.529475	144.943503	104.93	5.00	109.93
14	-36.528408	144.932242	106.42	5.00	111.42
15	-36.548575	144.932228	108.93	5.00	113.93
16	-36.548719	144.933997	106.96	5.00	111.96
17	-36.549878	144.934047	108.75	5.00	113.75
18	-36.549972	144.932200	111.59	5.00	116.59
19	-36.551575	144.932219	112.89	5.00	117.89
20	-36.561875	144.954667	112.47	5.00	117.47
21	-36.561453	144.955433	110.44	5.00	115.44
22	-36.549322	144.955428	108.73	5.00	113.73
23	-36.545375	144.953781	105.92	5.00	110.92

Name: PV array Stage 2
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 5.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.527853	144.931953	106.44	5.00	111.44
2	-36.530083	144.954333	106.91	5.00	111.91
3	-36.519117	144.954039	105.17	5.00	110.17
4	-36.519097	144.967569	104.74	5.00	109.74
5	-36.506931	144.967064	105.05	5.00	110.05
6	-36.502372	144.960611	104.97	5.00	109.97
7	-36.507069	144.960667	104.12	5.00	109.12
8	-36.507383	144.932131	104.95	5.00	109.95

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-36.548964	144.928722	113.79	1.50
OP 2	2	-36.552436	144.932892	113.35	1.50
OP 3	3	-36.561631	144.931436	121.39	1.50
OP 4	4	-36.562748	144.936967	116.48	1.50
OP 5	5	-36.530194	144.978633	110.57	1.50
OP 6	6	-36.562022	144.955406	112.79	1.50
OP 7	7	-36.572725	144.968097	123.44	1.50
OP 8	8	-36.570442	144.974625	121.66	1.50
OP 9	9	-36.556186	144.965103	119.67	1.50
OP 10	10	-36.540286	144.962389	112.51	1.50
OP 11	11	-36.531025	144.962936	111.00	1.50
OP 12	12	-36.529783	144.962575	110.61	1.50
OP 13	13	-36.530069	144.975461	106.81	1.50
OP 14	14	-36.498658	144.957447	105.36	1.50
OP 15	15	-36.503447	144.946417	108.00	1.50
OP 16	16	-36.499939	144.942322	105.56	1.50
OP 17	17	-36.498517	144.923989	105.85	1.50
OP 18	18	-36.499486	144.923053	106.24	1.50
OP 19	19	-36.505053	144.924864	107.58	1.50
OP 20	20	-36.497847	144.918714	107.56	1.50
OP 21	21	-36.510839	144.926494	105.50	1.50

Route Receptor(s)

Name: Bedwell Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.530457	144.989246	107.03	2.40	109.43
2	-36.530474	144.982947	106.20	2.40	108.60
3	-36.530396	144.975403	107.00	2.40	109.40
4	-36.530422	144.967893	105.00	2.40	107.40
5	-36.530469	144.961911	110.14	2.40	112.54
6	-36.530400	144.954283	107.00	2.40	109.40
7	-36.529805	144.948414	105.17	2.40	107.57
8	-36.528914	144.940030	104.76	2.40	107.16
9	-36.528767	144.938493	106.76	2.40	109.16
10	-36.528439	144.935476	106.00	2.40	108.40
11	-36.528194	144.932847	106.94	2.40	109.34
12	-36.528233	144.931801	106.21	2.40	108.61
13	-36.528264	144.927961	104.69	2.40	107.09
14	-36.528298	144.921461	107.67	2.40	110.07
15	-36.528376	144.914900	106.12	2.40	108.52
16	-36.528302	144.908077	106.12	2.40	108.52

Name: Carag Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.488462	144.949933	105.67	2.40	108.07
2	-36.493839	144.949851	105.00	2.40	107.40
3	-36.496849	144.953585	104.61	2.40	107.01
4	-36.498970	144.956135	105.52	2.40	107.92
5	-36.501171	144.959471	104.85	2.40	107.25
6	-36.502802	144.962077	106.39	2.40	108.79
7	-36.504156	144.964185	105.39	2.40	107.79
8	-36.505527	144.966261	106.98	2.40	109.38
9	-36.506370	144.967482	105.19	2.40	107.59
10	-36.513118	144.967540	106.98	2.40	109.38
11	-36.513437	144.967685	106.72	2.40	109.12
12	-36.513661	144.967846	106.36	2.40	108.76
13	-36.513790	144.968120	105.94	2.40	108.34
14	-36.514239	144.970314	107.32	2.40	109.72
15	-36.514648	144.972213	106.31	2.40	108.71
16	-36.516075	144.975765	106.75	2.40	109.15
17	-36.517076	144.978289	105.85	2.40	108.25
18	-36.518422	144.980227	106.19	2.40	108.59
19	-36.520366	144.982947	110.03	2.40	112.43
20	-36.522060	144.985283	109.28	2.40	111.68
21	-36.522280	144.986138	109.00	2.40	111.40

Name: Geodetic Road North
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.574043	144.932848	119.62	2.40	122.02
2	-36.572819	144.932097	122.62	2.40	125.02
3	-36.559963	144.932011	114.74	2.40	117.14
4	-36.542087	144.932011	107.39	2.40	109.79
5	-36.531605	144.931974	104.52	2.40	106.92
6	-36.527070	144.931904	106.01	2.40	108.41
7	-36.508338	144.931880	104.96	2.40	107.36
8	-36.489259	144.931792	105.26	2.40	107.66

Name: Gilmore Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.503334	144.922958	107.06	2.40	109.46
2	-36.502855	144.922631	106.11	2.40	108.51
3	-36.489171	144.922556	104.93	2.40	107.33

Name: Girgarre-Rushworth Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.528233	144.988447	105.92	2.40	108.32
2	-36.524060	144.986544	108.85	2.40	111.25
3	-36.523319	144.986308	112.04	2.40	114.44
4	-36.522060	144.986147	109.00	2.40	111.40
5	-36.517775	144.986243	106.86	2.40	109.26
6	-36.514282	144.986147	107.61	2.40	110.01
7	-36.511592	144.986147	108.61	2.40	111.01
8	-36.509333	144.985932	104.13	2.40	106.53
9	-36.505792	144.985395	105.29	2.40	107.69
10	-36.503826	144.985116	105.95	2.40	108.35
11	-36.502274	144.984344	105.54	2.40	107.94
12	-36.499255	144.982499	107.19	2.40	109.59
13	-36.498496	144.982091	108.05	2.40	110.45
14	-36.496064	144.981876	106.83	2.40	109.23
15	-36.491044	144.981769	111.83	2.40	114.23

Name: Guy Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.549111	144.910770	108.50	2.40	110.90
2	-36.551990	144.910727	107.69	2.40	110.09
3	-36.555661	144.910727	110.49	2.40	112.89
4	-36.557298	144.910705	108.48	2.40	110.88

Name: Heath Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.556402	144.931798	116.21	2.40	118.61
2	-36.556419	144.925855	111.50	2.40	113.90
3	-36.556419	144.919889	111.26	2.40	113.66
4	-36.556385	144.914911	108.37	2.40	110.77
5	-36.556333	144.909826	109.00	2.40	111.40

Name: Heily Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570578	144.971758	124.03	2.40	126.43
2	-36.569026	144.971801	121.52	2.40	123.92
3	-36.566459	144.971769	120.00	2.40	122.40
4	-36.563951	144.971801	123.05	2.40	125.45
5	-36.561331	144.971812	116.94	2.40	119.34
6	-36.559272	144.971823	116.15	2.40	118.55
7	-36.556462	144.971844	121.25	2.40	123.65
8	-36.553075	144.971876	117.68	2.40	120.08
9	-36.551093	144.971855	113.73	2.40	116.13
10	-36.550830	144.971989	113.76	2.40	116.16
11	-36.550379	144.972961	114.83	2.40	117.23
12	-36.550161	144.973235	115.54	2.40	117.94
13	-36.549797	144.973409	115.34	2.40	117.74
14	-36.547737	144.973790	115.31	2.40	117.71
15	-36.547590	144.973862	115.15	2.40	117.55
16	-36.547388	144.974115	115.00	2.40	117.40
17	-36.546924	144.974741	115.24	2.40	117.64
18	-36.545670	144.972823	110.48	2.40	112.88
19	-36.545250	144.972066	110.33	2.40	112.73
20	-36.545103	144.971857	110.90	2.40	113.30
21	-36.544862	144.971852	110.96	2.40	113.36
22	-36.544017	144.971871	110.09	2.40	112.49
23	-36.541685	144.971881	110.12	2.40	112.52
24	-36.539054	144.971878	109.43	2.40	111.83
25	-36.536226	144.971889	107.74	2.40	110.14
26	-36.532628	144.971895	106.81	2.40	109.21
27	-36.530977	144.971889	107.00	2.40	109.40
28	-36.530456	144.971916	106.34	2.40	108.74

Name: Lambden Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.566703	144.962191	114.37	2.40	116.77
2	-36.569271	144.957685	114.06	2.40	116.46
3	-36.569047	144.955861	116.39	2.40	118.79
4	-36.569477	144.955625	116.80	2.40	119.20
5	-36.574621	144.955611	126.53	2.40	128.93
6	-36.579894	144.955654	133.53	2.40	135.93
7	-36.586751	144.955697	131.07	2.40	133.47

Name: Lauries Bridge Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.576207	144.935820	118.88	2.40	121.28
2	-36.576035	144.955690	126.90	2.40	129.30
3	-36.576190	144.969959	124.99	2.40	127.39
4	-36.577344	144.973778	126.63	2.40	129.03

Name: Old Corop Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570846	144.971936	124.22	2.40	126.62
2	-36.566469	144.962248	114.54	2.40	116.94
3	-36.563918	144.956648	114.35	2.40	116.75
4	-36.561605	144.951686	113.23	2.40	115.63
5	-36.558856	144.945645	108.40	2.40	110.80
6	-36.555968	144.939637	110.36	2.40	112.76
7	-36.552099	144.931280	115.31	2.40	117.71
8	-36.549005	144.925068	112.11	2.40	114.51
9	-36.548953	144.918233	108.00	2.40	110.40
10	-36.548994	144.910610	108.32	2.40	110.72
11	-36.548934	144.902949	110.62	2.40	113.02

Name: Two Tree Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.498969	144.904491	105.28	2.40	107.68
2	-36.498890	144.918200	107.01	2.40	109.41
3	-36.498937	144.932895	106.47	2.40	108.87
4	-36.498943	144.939885	105.00	2.40	107.40
5	-36.498935	144.946591	104.87	2.40	107.27
6	-36.498978	144.954058	104.84	2.40	107.24
7	-36.498935	144.960637	107.43	2.40	109.83
8	-36.499004	144.968362	105.27	2.40	107.67
9	-36.499014	144.975430	107.64	2.40	110.04

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array Stage 1	SA tracking	SA tracking	0	0	-
PV array Stage 2	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Results for: PV array Stage 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array Stage 2

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare

0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

FORGESOLAR GLARE ANALYSIS

Project: **2145 COROP SOLAR FARM**
2145 COROP SOLAR FARM

Site configuration: **2145 COROP SOLAR FARM**
Analysis conducted by David Moir (itsupport@moirla.com.au) at 06:39 on 13 Apr, 2022.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

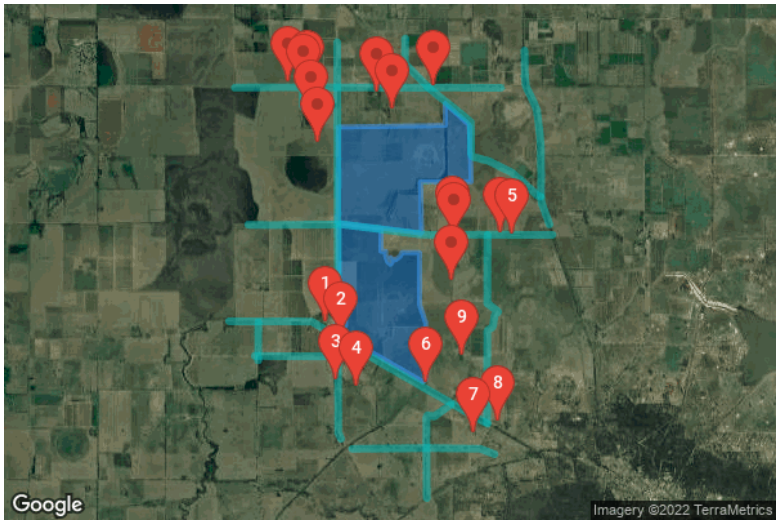
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

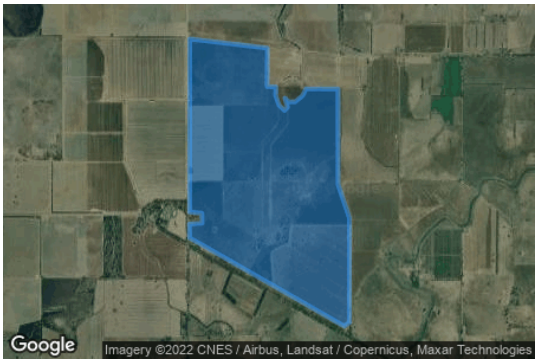
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 66537.11749
Methodology: V2



PV Array(s)

Name: PV array Stage 1
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 22.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.534250	144.953772	106.95	5.00	111.95
2	-36.534228	144.949117	105.30	5.00	110.30
3	-36.535019	144.948625	105.21	5.00	110.21
4	-36.535739	144.947519	105.13	5.00	110.13
5	-36.535753	144.946664	105.81	5.00	110.81
6	-36.535308	144.946056	105.92	5.00	110.92
7	-36.536358	144.946439	105.71	5.00	110.71
8	-36.536750	144.946008	106.00	5.00	111.00
9	-36.536122	144.945189	105.00	5.00	110.00
10	-36.535022	144.944714	107.60	5.00	112.60
11	-36.533986	144.944722	105.76	5.00	110.76
12	-36.533961	144.943478	105.55	5.00	110.55
13	-36.529475	144.943503	104.93	5.00	109.93
14	-36.528408	144.932242	106.42	5.00	111.42
15	-36.548575	144.932228	108.93	5.00	113.93
16	-36.548719	144.933997	106.96	5.00	111.96
17	-36.549878	144.934047	108.75	5.00	113.75
18	-36.549972	144.932200	111.59	5.00	116.59
19	-36.551575	144.932219	112.89	5.00	117.89
20	-36.561875	144.954667	112.47	5.00	117.47
21	-36.561453	144.955433	110.44	5.00	115.44
22	-36.549322	144.955428	108.73	5.00	113.73
23	-36.545375	144.953781	105.92	5.00	110.92

Name: PV array Stage 2
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 22.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.527853	144.931953	106.44	5.00	111.44
2	-36.530083	144.954333	106.91	5.00	111.91
3	-36.519117	144.954039	105.17	5.00	110.17
4	-36.519097	144.967569	104.74	5.00	109.74
5	-36.506931	144.967064	105.05	5.00	110.05
6	-36.502372	144.960611	104.97	5.00	109.97
7	-36.507069	144.960667	104.12	5.00	109.12
8	-36.507383	144.932131	104.95	5.00	109.95

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-36.548964	144.928722	113.79	1.50
OP 2	2	-36.552436	144.932892	113.35	1.50
OP 3	3	-36.561631	144.931436	121.39	1.50
OP 4	4	-36.562748	144.936967	116.48	1.50
OP 5	5	-36.530194	144.978633	110.57	1.50
OP 6	6	-36.562022	144.955406	112.79	1.50
OP 7	7	-36.572725	144.968097	123.44	1.50
OP 8	8	-36.570442	144.974625	121.66	1.50
OP 9	9	-36.556186	144.965103	119.67	1.50
OP 10	10	-36.540286	144.962389	112.51	1.50
OP 11	11	-36.531025	144.962936	111.00	1.50
OP 12	12	-36.529783	144.962575	110.61	1.50
OP 13	13	-36.530069	144.975461	106.81	1.50
OP 14	14	-36.498658	144.957447	105.36	1.50
OP 15	15	-36.503447	144.946417	108.00	1.50
OP 16	16	-36.499939	144.942322	105.56	1.50
OP 17	17	-36.498517	144.923989	105.85	1.50
OP 18	18	-36.499486	144.923053	106.24	1.50
OP 19	19	-36.505053	144.924864	107.58	1.50
OP 20	20	-36.497847	144.918714	107.56	1.50
OP 21	21	-36.510839	144.926494	105.50	1.50

Route Receptor(s)

Name: Bedwell Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.530457	144.989246	107.03	2.40	109.43
2	-36.530474	144.982947	106.20	2.40	108.60
3	-36.530396	144.975403	107.00	2.40	109.40
4	-36.530422	144.967893	105.00	2.40	107.40
5	-36.530469	144.961911	110.14	2.40	112.54
6	-36.530400	144.954283	107.00	2.40	109.40
7	-36.529805	144.948414	105.17	2.40	107.57
8	-36.528914	144.940030	104.76	2.40	107.16
9	-36.528767	144.938493	106.76	2.40	109.16
10	-36.528439	144.935476	106.00	2.40	108.40
11	-36.528194	144.932847	106.94	2.40	109.34
12	-36.528233	144.931801	106.21	2.40	108.61
13	-36.528264	144.927961	104.69	2.40	107.09
14	-36.528298	144.921461	107.67	2.40	110.07
15	-36.528376	144.914900	106.12	2.40	108.52
16	-36.528302	144.908077	106.12	2.40	108.52

Name: Carag Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.488462	144.949933	105.67	2.40	108.07
2	-36.493839	144.949851	105.00	2.40	107.40
3	-36.496849	144.953585	104.61	2.40	107.01
4	-36.498970	144.956135	105.52	2.40	107.92
5	-36.501171	144.959471	104.85	2.40	107.25
6	-36.502802	144.962077	106.39	2.40	108.79
7	-36.504156	144.964185	105.39	2.40	107.79
8	-36.505527	144.966261	106.98	2.40	109.38
9	-36.506370	144.967482	105.19	2.40	107.59
10	-36.513118	144.967540	106.98	2.40	109.38
11	-36.513437	144.967685	106.72	2.40	109.12
12	-36.513661	144.967846	106.36	2.40	108.76
13	-36.513790	144.968120	105.94	2.40	108.34
14	-36.514239	144.970314	107.32	2.40	109.72
15	-36.514648	144.972213	106.31	2.40	108.71
16	-36.516075	144.975765	106.75	2.40	109.15
17	-36.517076	144.978289	105.85	2.40	108.25
18	-36.518422	144.980227	106.19	2.40	108.59
19	-36.520366	144.982947	110.03	2.40	112.43
20	-36.522060	144.985283	109.28	2.40	111.68
21	-36.522280	144.986138	109.00	2.40	111.40

Name: Geodetic Road North
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.574043	144.932848	119.62	2.40	122.02
2	-36.572819	144.932097	122.62	2.40	125.02
3	-36.559963	144.932011	114.74	2.40	117.14
4	-36.542087	144.932011	107.39	2.40	109.79
5	-36.531605	144.931974	104.52	2.40	106.92
6	-36.527070	144.931904	106.01	2.40	108.41
7	-36.508338	144.931880	104.96	2.40	107.36
8	-36.489259	144.931792	105.26	2.40	107.66

Name: Gilmore Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.503334	144.922958	107.06	2.40	109.46
2	-36.502855	144.922631	106.11	2.40	108.51
3	-36.489171	144.922556	104.93	2.40	107.33

Name: Girgarre-Rushworth Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.528233	144.988447	105.92	2.40	108.32
2	-36.524060	144.986544	108.85	2.40	111.25
3	-36.523319	144.986308	112.04	2.40	114.44
4	-36.522060	144.986147	109.00	2.40	111.40
5	-36.517775	144.986243	106.86	2.40	109.26
6	-36.514282	144.986147	107.61	2.40	110.01
7	-36.511592	144.986147	108.61	2.40	111.01
8	-36.509333	144.985932	104.13	2.40	106.53
9	-36.505792	144.985395	105.29	2.40	107.69
10	-36.503826	144.985116	105.95	2.40	108.35
11	-36.502274	144.984344	105.54	2.40	107.94
12	-36.499255	144.982499	107.19	2.40	109.59
13	-36.498496	144.982091	108.05	2.40	110.45
14	-36.496064	144.981876	106.83	2.40	109.23
15	-36.491044	144.981769	111.83	2.40	114.23

Name: Guy Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.549111	144.910770	108.50	2.40	110.90
2	-36.551990	144.910727	107.69	2.40	110.09
3	-36.555661	144.910727	110.49	2.40	112.89
4	-36.557298	144.910705	108.48	2.40	110.88

Name: Heath Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.556402	144.931798	116.21	2.40	118.61
2	-36.556419	144.925855	111.50	2.40	113.90
3	-36.556419	144.919889	111.26	2.40	113.66
4	-36.556385	144.914911	108.37	2.40	110.77
5	-36.556333	144.909826	109.00	2.40	111.40

Name: Heily Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570578	144.971758	124.03	2.40	126.43
2	-36.569026	144.971801	121.52	2.40	123.92
3	-36.566459	144.971769	120.00	2.40	122.40
4	-36.563951	144.971801	123.05	2.40	125.45
5	-36.561331	144.971812	116.94	2.40	119.34
6	-36.559272	144.971823	116.15	2.40	118.55
7	-36.556462	144.971844	121.25	2.40	123.65
8	-36.553075	144.971876	117.68	2.40	120.08
9	-36.551093	144.971855	113.73	2.40	116.13
10	-36.550830	144.971989	113.76	2.40	116.16
11	-36.550379	144.972961	114.83	2.40	117.23
12	-36.550161	144.973235	115.54	2.40	117.94
13	-36.549797	144.973409	115.34	2.40	117.74
14	-36.547737	144.973790	115.31	2.40	117.71
15	-36.547590	144.973862	115.15	2.40	117.55
16	-36.547388	144.974115	115.00	2.40	117.40
17	-36.546924	144.974741	115.24	2.40	117.64
18	-36.545670	144.972823	110.48	2.40	112.88
19	-36.545250	144.972066	110.33	2.40	112.73
20	-36.545103	144.971857	110.90	2.40	113.30
21	-36.544862	144.971852	110.96	2.40	113.36
22	-36.544017	144.971871	110.09	2.40	112.49
23	-36.541685	144.971881	110.12	2.40	112.52
24	-36.539054	144.971878	109.43	2.40	111.83
25	-36.536226	144.971889	107.74	2.40	110.14
26	-36.532628	144.971895	106.81	2.40	109.21
27	-36.530977	144.971889	107.00	2.40	109.40
28	-36.530456	144.971916	106.34	2.40	108.74

Name: Lambden Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.566703	144.962191	114.37	2.40	116.77
2	-36.569271	144.957685	114.06	2.40	116.46
3	-36.569047	144.955861	116.39	2.40	118.79
4	-36.569477	144.955625	116.80	2.40	119.20
5	-36.574621	144.955611	126.53	2.40	128.93
6	-36.579894	144.955654	133.53	2.40	135.93
7	-36.586751	144.955697	131.07	2.40	133.47

Name: Lauries Bridge Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.576207	144.935820	118.88	2.40	121.28
2	-36.576035	144.955690	126.90	2.40	129.30
3	-36.576190	144.969959	124.99	2.40	127.39
4	-36.577344	144.973778	126.63	2.40	129.03

Name: Old Corop Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570846	144.971936	124.22	2.40	126.62
2	-36.566469	144.962248	114.54	2.40	116.94
3	-36.563918	144.956648	114.35	2.40	116.75
4	-36.561605	144.951686	113.23	2.40	115.63
5	-36.558856	144.945645	108.40	2.40	110.80
6	-36.555968	144.939637	110.36	2.40	112.76
7	-36.552099	144.931280	115.31	2.40	117.71
8	-36.549005	144.925068	112.11	2.40	114.51
9	-36.548953	144.918233	108.00	2.40	110.40
10	-36.548994	144.910610	108.32	2.40	110.72
11	-36.548934	144.902949	110.62	2.40	113.02

Name: Two Tree Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.498969	144.904491	105.28	2.40	107.68
2	-36.498890	144.918200	107.01	2.40	109.41
3	-36.498937	144.932895	106.47	2.40	108.87
4	-36.498943	144.939885	105.00	2.40	107.40
5	-36.498935	144.946591	104.87	2.40	107.27
6	-36.498978	144.954058	104.84	2.40	107.24
7	-36.498935	144.960637	107.43	2.40	109.83
8	-36.499004	144.968362	105.27	2.40	107.67
9	-36.499014	144.975430	107.64	2.40	110.04

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array Stage 1	SA tracking	SA tracking	0	0	-
PV array Stage 2	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Results for: PV array Stage 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array Stage 2

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare

0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

FORGESOLAR GLARE ANALYSIS

Project: **2145 COROP SOLAR FARM**
2145 COROP SOLAR FARM

Site configuration: **2145 COROP SOLAR FARM**
Analysis conducted by David Moir (itsupport@moirla.com.au) at 06:44 on 13 Apr, 2022.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

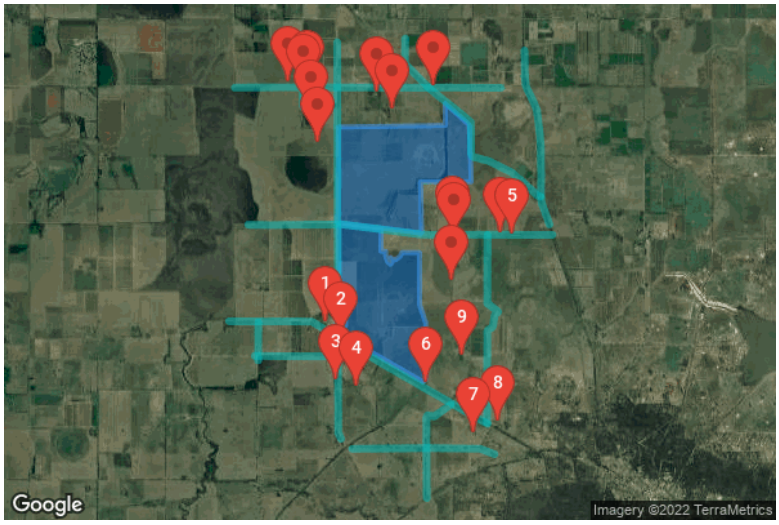
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

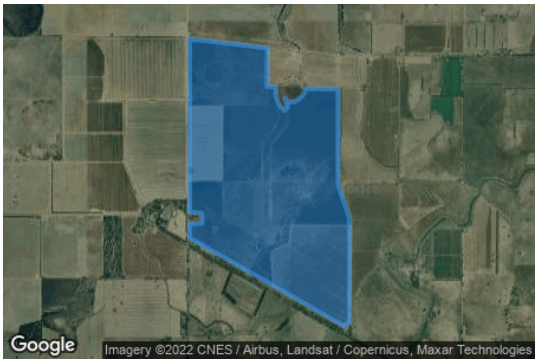
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 66537.11749
Methodology: V2



PV Array(s)

Name: PV array Stage 1
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 45.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.534250	144.953772	106.95	5.00	111.95
2	-36.534228	144.949117	105.30	5.00	110.30
3	-36.535019	144.948625	105.21	5.00	110.21
4	-36.535739	144.947519	105.13	5.00	110.13
5	-36.535753	144.946664	105.81	5.00	110.81
6	-36.535308	144.946056	105.92	5.00	110.92
7	-36.536358	144.946439	105.71	5.00	110.71
8	-36.536750	144.946008	106.00	5.00	111.00
9	-36.536122	144.945189	105.00	5.00	110.00
10	-36.535022	144.944714	107.60	5.00	112.60
11	-36.533986	144.944722	105.76	5.00	110.76
12	-36.533961	144.943478	105.55	5.00	110.55
13	-36.529475	144.943503	104.93	5.00	109.93
14	-36.528408	144.932242	106.42	5.00	111.42
15	-36.548575	144.932228	108.93	5.00	113.93
16	-36.548719	144.933997	106.96	5.00	111.96
17	-36.549878	144.934047	108.75	5.00	113.75
18	-36.549972	144.932200	111.59	5.00	116.59
19	-36.551575	144.932219	112.89	5.00	117.89
20	-36.561875	144.954667	112.47	5.00	117.47
21	-36.561453	144.955433	110.44	5.00	115.44
22	-36.549322	144.955428	108.73	5.00	113.73
23	-36.545375	144.953781	105.92	5.00	110.92

Name: PV array Stage 2
Axis tracking: Single-axis rotation
Backtracking: Instant
Tracking axis orientation: 0.0°
Tracking axis tilt: 0.4°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 45.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.527853	144.931953	106.44	5.00	111.44
2	-36.530083	144.954333	106.91	5.00	111.91
3	-36.519117	144.954039	105.17	5.00	110.17
4	-36.519097	144.967569	104.74	5.00	109.74
5	-36.506931	144.967064	105.05	5.00	110.05
6	-36.502372	144.960611	104.97	5.00	109.97
7	-36.507069	144.960667	104.12	5.00	109.12
8	-36.507383	144.932131	104.95	5.00	109.95

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (m)	Height (m)
OP 1	1	-36.548964	144.928722	113.79	1.50
OP 2	2	-36.552436	144.932892	113.35	1.50
OP 3	3	-36.561631	144.931436	121.39	1.50
OP 4	4	-36.562748	144.936967	116.48	1.50
OP 5	5	-36.530194	144.978633	110.57	1.50
OP 6	6	-36.562022	144.955406	112.79	1.50
OP 7	7	-36.572725	144.968097	123.44	1.50
OP 8	8	-36.570442	144.974625	121.66	1.50
OP 9	9	-36.556186	144.965103	119.67	1.50
OP 10	10	-36.540286	144.962389	112.51	1.50
OP 11	11	-36.531025	144.962936	111.00	1.50
OP 12	12	-36.529783	144.962575	110.61	1.50
OP 13	13	-36.530069	144.975461	106.81	1.50
OP 14	14	-36.498658	144.957447	105.36	1.50
OP 15	15	-36.503447	144.946417	108.00	1.50
OP 16	16	-36.499939	144.942322	105.56	1.50
OP 17	17	-36.498517	144.923989	105.85	1.50
OP 18	18	-36.499486	144.923053	106.24	1.50
OP 19	19	-36.505053	144.924864	107.58	1.50
OP 20	20	-36.497847	144.918714	107.56	1.50
OP 21	21	-36.510839	144.926494	105.50	1.50

Route Receptor(s)

Name: Bedwell Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.530457	144.989246	107.03	2.40	109.43
2	-36.530474	144.982947	106.20	2.40	108.60
3	-36.530396	144.975403	107.00	2.40	109.40
4	-36.530422	144.967893	105.00	2.40	107.40
5	-36.530469	144.961911	110.14	2.40	112.54
6	-36.530400	144.954283	107.00	2.40	109.40
7	-36.529805	144.948414	105.17	2.40	107.57
8	-36.528914	144.940030	104.76	2.40	107.16
9	-36.528767	144.938493	106.76	2.40	109.16
10	-36.528439	144.935476	106.00	2.40	108.40
11	-36.528194	144.932847	106.94	2.40	109.34
12	-36.528233	144.931801	106.21	2.40	108.61
13	-36.528264	144.927961	104.69	2.40	107.09
14	-36.528298	144.921461	107.67	2.40	110.07
15	-36.528376	144.914900	106.12	2.40	108.52
16	-36.528302	144.908077	106.12	2.40	108.52

Name: Carag Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.488462	144.949933	105.67	2.40	108.07
2	-36.493839	144.949851	105.00	2.40	107.40
3	-36.496849	144.953585	104.61	2.40	107.01
4	-36.498970	144.956135	105.52	2.40	107.92
5	-36.501171	144.959471	104.85	2.40	107.25
6	-36.502802	144.962077	106.39	2.40	108.79
7	-36.504156	144.964185	105.39	2.40	107.79
8	-36.505527	144.966261	106.98	2.40	109.38
9	-36.506370	144.967482	105.19	2.40	107.59
10	-36.513118	144.967540	106.98	2.40	109.38
11	-36.513437	144.967685	106.72	2.40	109.12
12	-36.513661	144.967846	106.36	2.40	108.76
13	-36.513790	144.968120	105.94	2.40	108.34
14	-36.514239	144.970314	107.32	2.40	109.72
15	-36.514648	144.972213	106.31	2.40	108.71
16	-36.516075	144.975765	106.75	2.40	109.15
17	-36.517076	144.978289	105.85	2.40	108.25
18	-36.518422	144.980227	106.19	2.40	108.59
19	-36.520366	144.982947	110.03	2.40	112.43
20	-36.522060	144.985283	109.28	2.40	111.68
21	-36.522280	144.986138	109.00	2.40	111.40

Name: Geodetic Road North
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.574043	144.932848	119.62	2.40	122.02
2	-36.572819	144.932097	122.62	2.40	125.02
3	-36.559963	144.932011	114.74	2.40	117.14
4	-36.542087	144.932011	107.39	2.40	109.79
5	-36.531605	144.931974	104.52	2.40	106.92
6	-36.527070	144.931904	106.01	2.40	108.41
7	-36.508338	144.931880	104.96	2.40	107.36
8	-36.489259	144.931792	105.26	2.40	107.66

Name: Gilmore Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.503334	144.922958	107.06	2.40	109.46
2	-36.502855	144.922631	106.11	2.40	108.51
3	-36.489171	144.922556	104.93	2.40	107.33

Name: Girgarre-Rushworth Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.528233	144.988447	105.92	2.40	108.32
2	-36.524060	144.986544	108.85	2.40	111.25
3	-36.523319	144.986308	112.04	2.40	114.44
4	-36.522060	144.986147	109.00	2.40	111.40
5	-36.517775	144.986243	106.86	2.40	109.26
6	-36.514282	144.986147	107.61	2.40	110.01
7	-36.511592	144.986147	108.61	2.40	111.01
8	-36.509333	144.985932	104.13	2.40	106.53
9	-36.505792	144.985395	105.29	2.40	107.69
10	-36.503826	144.985116	105.95	2.40	108.35
11	-36.502274	144.984344	105.54	2.40	107.94
12	-36.499255	144.982499	107.19	2.40	109.59
13	-36.498496	144.982091	108.05	2.40	110.45
14	-36.496064	144.981876	106.83	2.40	109.23
15	-36.491044	144.981769	111.83	2.40	114.23

Name: Guy Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.549111	144.910770	108.50	2.40	110.90
2	-36.551990	144.910727	107.69	2.40	110.09
3	-36.555661	144.910727	110.49	2.40	112.89
4	-36.557298	144.910705	108.48	2.40	110.88

Name: Heath Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.556402	144.931798	116.21	2.40	118.61
2	-36.556419	144.925855	111.50	2.40	113.90
3	-36.556419	144.919889	111.26	2.40	113.66
4	-36.556385	144.914911	108.37	2.40	110.77
5	-36.556333	144.909826	109.00	2.40	111.40

Name: Heily Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570578	144.971758	124.03	2.40	126.43
2	-36.569026	144.971801	121.52	2.40	123.92
3	-36.566459	144.971769	120.00	2.40	122.40
4	-36.563951	144.971801	123.05	2.40	125.45
5	-36.561331	144.971812	116.94	2.40	119.34
6	-36.559272	144.971823	116.15	2.40	118.55
7	-36.556462	144.971844	121.25	2.40	123.65
8	-36.553075	144.971876	117.68	2.40	120.08
9	-36.551093	144.971855	113.73	2.40	116.13
10	-36.550830	144.971989	113.76	2.40	116.16
11	-36.550379	144.972961	114.83	2.40	117.23
12	-36.550161	144.973235	115.54	2.40	117.94
13	-36.549797	144.973409	115.34	2.40	117.74
14	-36.547737	144.973790	115.31	2.40	117.71
15	-36.547590	144.973862	115.15	2.40	117.55
16	-36.547388	144.974115	115.00	2.40	117.40
17	-36.546924	144.974741	115.24	2.40	117.64
18	-36.545670	144.972823	110.48	2.40	112.88
19	-36.545250	144.972066	110.33	2.40	112.73
20	-36.545103	144.971857	110.90	2.40	113.30
21	-36.544862	144.971852	110.96	2.40	113.36
22	-36.544017	144.971871	110.09	2.40	112.49
23	-36.541685	144.971881	110.12	2.40	112.52
24	-36.539054	144.971878	109.43	2.40	111.83
25	-36.536226	144.971889	107.74	2.40	110.14
26	-36.532628	144.971895	106.81	2.40	109.21
27	-36.530977	144.971889	107.00	2.40	109.40
28	-36.530456	144.971916	106.34	2.40	108.74

Name: Lambden Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.566703	144.962191	114.37	2.40	116.77
2	-36.569271	144.957685	114.06	2.40	116.46
3	-36.569047	144.955861	116.39	2.40	118.79
4	-36.569477	144.955625	116.80	2.40	119.20
5	-36.574621	144.955611	126.53	2.40	128.93
6	-36.579894	144.955654	133.53	2.40	135.93
7	-36.586751	144.955697	131.07	2.40	133.47

Name: Lauries Bridge Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.576207	144.935820	118.88	2.40	121.28
2	-36.576035	144.955690	126.90	2.40	129.30
3	-36.576190	144.969959	124.99	2.40	127.39
4	-36.577344	144.973778	126.63	2.40	129.03

Name: Old Corop Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.570846	144.971936	124.22	2.40	126.62
2	-36.566469	144.962248	114.54	2.40	116.94
3	-36.563918	144.956648	114.35	2.40	116.75
4	-36.561605	144.951686	113.23	2.40	115.63
5	-36.558856	144.945645	108.40	2.40	110.80
6	-36.555968	144.939637	110.36	2.40	112.76
7	-36.552099	144.931280	115.31	2.40	117.71
8	-36.549005	144.925068	112.11	2.40	114.51
9	-36.548953	144.918233	108.00	2.40	110.40
10	-36.548994	144.910610	108.32	2.40	110.72
11	-36.548934	144.902949	110.62	2.40	113.02

Name: Two Tree Road
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (m)	Height above ground (m)	Total elevation (m)
1	-36.498969	144.904491	105.28	2.40	107.68
2	-36.498890	144.918200	107.01	2.40	109.41
3	-36.498937	144.932895	106.47	2.40	108.87
4	-36.498943	144.939885	105.00	2.40	107.40
5	-36.498935	144.946591	104.87	2.40	107.27
6	-36.498978	144.954058	104.84	2.40	107.24
7	-36.498935	144.960637	107.43	2.40	109.83
8	-36.499004	144.968362	105.27	2.40	107.67
9	-36.499014	144.975430	107.64	2.40	110.04

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array Stage 1	SA tracking	SA tracking	0	0	-
PV array Stage 2	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Results for: PV array Stage 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array Stage 2

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 12	0	0
OP 13	0	0
OP 14	0	0
OP 15	0	0
OP 16	0	0
OP 17	0	0
OP 18	0	0
OP 19	0	0
OP 20	0	0
OP 21	0	0
Bedwell Road	0	0
Carag Road	0	0
Geodetic Road North	0	0
Gilmore Road	0	0
Girgarre-Rushworth Road	0	0
Guy Road	0	0
Heath Road	0	0
Heily Road	0	0
Lambden Rd	0	0
Lauries Bridge Rd	0	0
Old Corop Road	0	0
Two Tree Road	0	0

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 12

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 13

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 14

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: OP 15

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 16

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 17

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 18

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 19

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 20

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 21

0 minutes of yellow glare
0 minutes of green glare

Route: Bedwell Road

0 minutes of yellow glare
0 minutes of green glare

Route: Carag Road

0 minutes of yellow glare
0 minutes of green glare

Route: Geodetic Road North

0 minutes of yellow glare
0 minutes of green glare

Route: Gilmore Road

0 minutes of yellow glare
0 minutes of green glare

Route: Girgarre-Rushworth Road

0 minutes of yellow glare
0 minutes of green glare

Route: Guy Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heath Road

0 minutes of yellow glare
0 minutes of green glare

Route: Heily Road

0 minutes of yellow glare
0 minutes of green glare

Route: Lambden Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Lauries Bridge Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Old Corop Road

0 minutes of yellow glare
0 minutes of green glare

Route: Two Tree Road

0 minutes of yellow glare

0 minutes of green glare

Assumptions

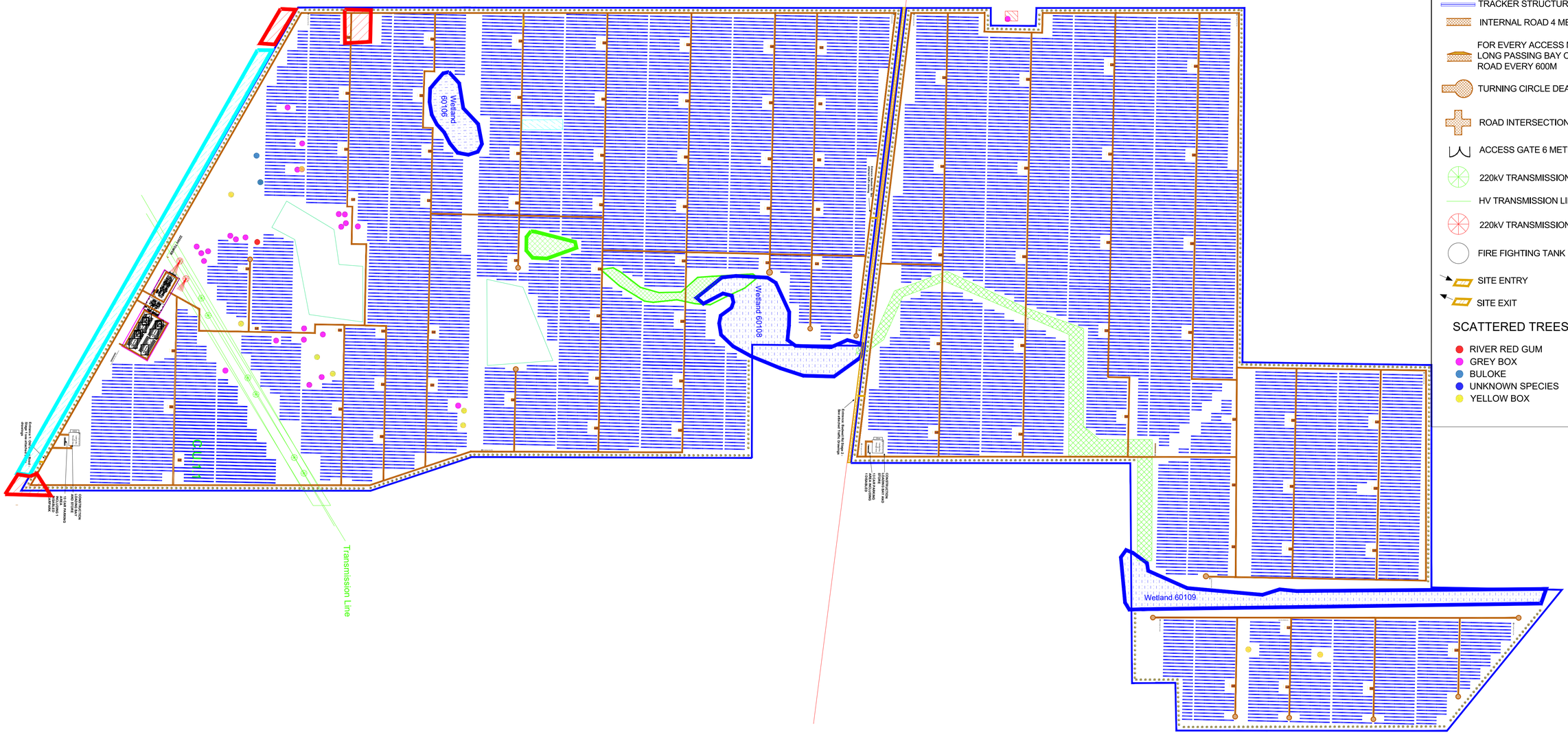
"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

APPENDIX B:
Corop Solar Farm Layout

Ptovided by Leeson Group

STAGE 1

STAGE 2



LEGEND

- REGROWTH AREA
- REVEGETATION AREA
- CULTURAL HERITAGE SENSITIVITY
- WETLAND
- DRAINAGE EXISTING
- NO GO AREA
- PROPOSED BOUNDARIES AND FENCE
- VEGETATION PLANTING BUFFER
- CONVERSION UNIT
- TRACKER STRUCTURE
- INTERNAL ROAD 4 METRES WIDE
- FOR EVERY ACCESS MUST BE 2OM MIN LONG PASSING BAY ON PERIMETER ROAD EVERY 600M
- TURNING CIRCLE DEAD-ENDS ROUTE
- ROAD INTERSECTIONS
- ACCESS GATE 6 METRE OPENING
- 220kV TRANSMISSION TOWER
- HV TRANSMISSION LINE
- 220kV TRANSMISSION TOWER NEW
- FIRE FIGHTING TANK
- SITE ENTRY
- SITE EXIT

SCATTERED TREES

- RIVER RED GUM
- GREY BOX
- BULOKE
- UNKNOWN SPECIES
- YELLOW BOX

N

REV.	DATE	DESCRIPTION	DES.	DRW.	APR.
E	13/07/2022	UPDATED LEGEND	FP	FP	PL
D	17/05/2022	UPDATED BESS AND CFA	PL	PL	DT
C	22/09/2020	REVISED STAGE 2 LAYOUT	OK	OK	PL
B	25/02/2020	REVISED SETBACKS	OK	OK	PL
A	11/09/2019	PLANNING PERMIT APPLICATION	OK	OK	PL

PROJECT TITLE :
COROP SOLAR FARM

PROJECT LOCATION :
344 OLD COROP ROAD RUSHWORTH 3612

DRAWING TITLE :
SOLAR FARM LAYOUT OVERVIEW

JOB NO: COR-001 SCALE: 1:4000

DRAWING NO.:
CSF-001-004

SHEET: 1 of 1 SIZE: A1

COROP SOLAR FARM PTY LTD 1 / 141 MCEWAN RD HEIDELBERG WEST 308