Prepared for
433 Link Development Pty Ltd
ABN: 30 626 633 369

AECOM

Project Amendment Addendum

Glint and Glare Assessment

22-Feb-2023
Kennedys Creek Solar Farm

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Project Amendment Addendum

Glint and Glare Assessment

Client: 433 Link Development Pty Ltd

ABN: 30 626 633 369

Prepared by

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1.0 Introduction

1.1 Purpose

The purpose of this addendum report is to determine whether technical assessments attached to the approved permit for Kennedys Creek Solar Farm (the Project) will require further consideration and assessment following amendments to the solar farm layout and inclusion of a new transmission line.

This is an addendum report to *Kennedys Creek Solar Farm Glint and Glare Assessment* (AECOM, 2019) (The Report).

1.2 Background to Planning Permit Application

AECOM Australia Pty Ltd (AECOM) continues to act on behalf of the Project Applicant, 433 Link Development Pty Ltd, in relation to Planning Permit Application PA1900684 (the Permit) for the Project. It is noted that AECOM previously acted on behalf of South Energy, the former owner of the Project Applicant. On 22 September 2021, ownership of the Project Applicant was transferred from South Energy to Lightsource bp. South Energy retain ownership of the subject site and therefore an interest in the Project.

The Permit was granted on 30 November 2020 and amended on 5 February 2021 in accordance with Section 71 of the *Planning and Environment Act 1987* (P&E Act), to correct a clerical error at condition 73. The Application is for the **use and development of a solar energy facility, utility installation and associated buildings and works, native vegetation removal, creation of access to a Road Zone Category 1, business identification signage, and remove, vary and create easements**.

The Project site is at the following addresses:

- Murray Road, Benalla (Lot 3 and 4 PS318659S)
- 51 Nelson Road, Benalla (Lot 6 PS627741K)
- 67 Nelson Road, Benalla (Lot 7 PS627741K)
- 127 Nelson Road, Benalla (Lot 2 PS803108)
- 284 Benalla-Yarrawonga Road, Benalla (Lot 3 PS715932M).

1.3 Project Amendments

Following changes to the concept design, an application under Section 72 of the P&E Act is being sought to amend PA1900684 (the amendment). The amendment seeks to:

- Rearrange the layout of Kennedys Creek Solar Farm to:
  - Relocate the Substation to the north-east of the site and connection to new transmission infrastructure
  - Make minor updates as a result of the above.
- Include a new transmission line from the Kennedys Creek Solar Farm to the network connection point at West Mokoan Solar Farm.

The new transmission line will further affect the following parcels of land:

- Lake Mokoan Road, Winton North (Allotment 2020 Parish of Winton PP3843)
- 368 Benalla-Yarrawonga Road, Benalla (Lot 2 PS627741)
- 370 Benalla-Yarrawonga Road, Benalla (Lot 1 PS627741)
- 82 Snowy Lane, Benalla (Lot 2 LP123365)
- Benalla-Yarrawonga Road, Benalla (Lot 1 PS717978)

- 524 Benalla-Yarrawonga Road, Benalla (Lot 6 LP206524)
- 572-616 Benalla-Yarrawonga Road, Benalla (Lot 5 LP206524; Lot 4 LP206524 Lot 3 LP206524)
- Allotment 2019 Parish of Goorambat PP2704
- Snowy Lane, Benalla road reserve.

2.0 Assessment

The Report conducted a glare potential analysis of the proposed Kennedys Creek Solar Farm based on a single axis tracking system, which is still the system that is proposed in the amended solar farm layout. Overall, the Report concluded that the original concept design and array configuration was predicted to result in glare with low to moderate potential for after image (lingering image of glare in the field of view, which can be a hazard).

Most of the solar panel locations have not changed in the updated concept design, therefore it is anticipated that the original assessments remain relevant to the new concept layout.

The following sections elaborate on how the changes to concept design may affect the conclusions and recommendations of the Report.

2.1 Relocated substation to north-east boundary

The result of the substation being relocated to the north-east boundary is that solar panels are now proposed to the southern boundary where the substation was previously located. Figure 1 depicts where more significant changes to the location of solar panels are proposed to occur, in relation to the Observation Points of the glint and glare assessment.

Observation points (OP) were chosen in areas where potential glare could impact residents or drivers. The closest OPs to where solar panels are being added are OP7 and OP28. The closest OPs to where solar panels are being removed are OP1 and OP9. These four OPs have a glare impact category of '*Glare with potential for after image*' which indicates that there is glare present with the potential to leave a temporary after-image of the glare.

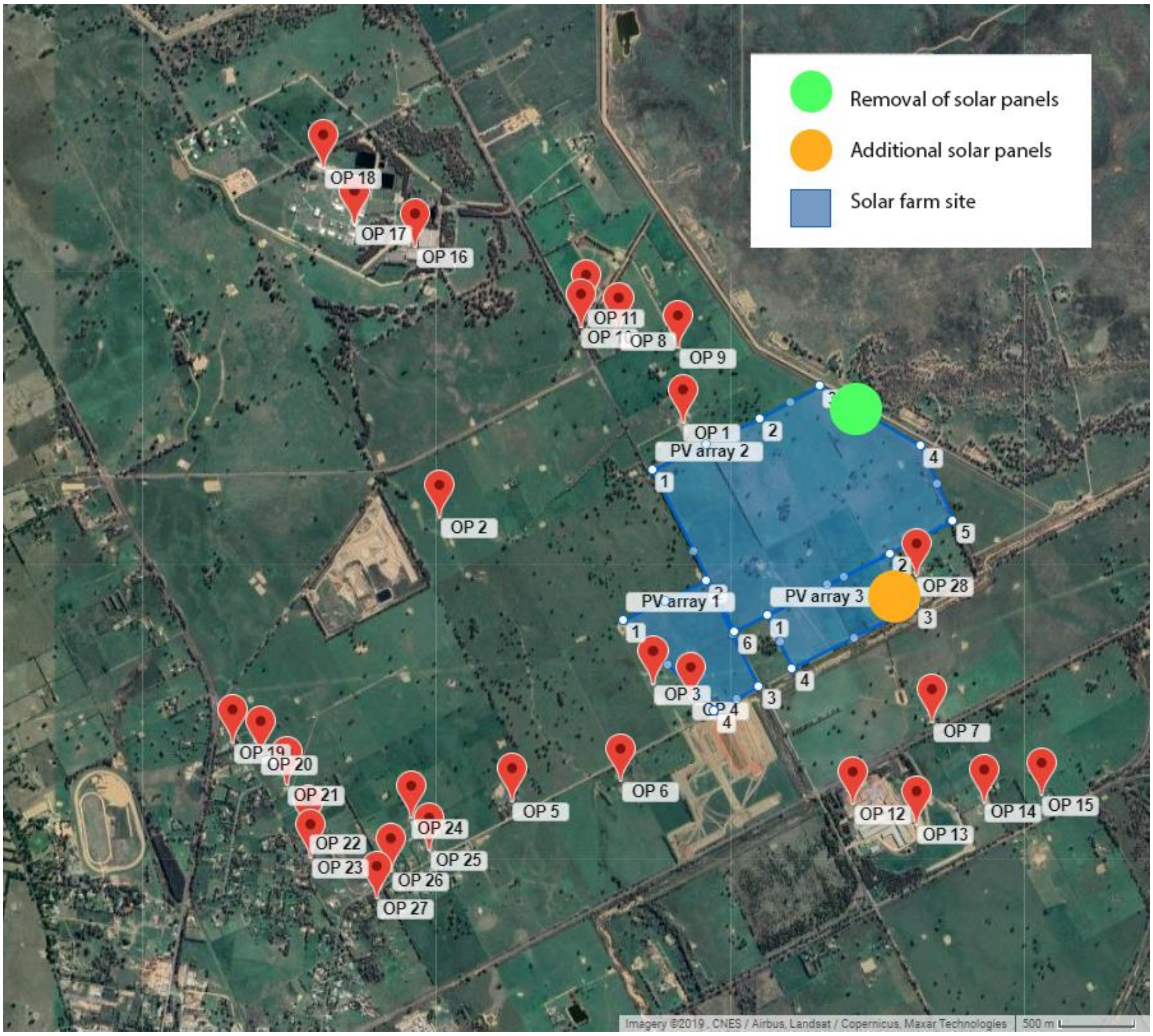

Figure 1 OP Locations and general change in solar panel layout

2.1.1 Removal of solar panels

Potential of glare may decrease in OP1 and OP9 (and in OP8, OP10 and OP11) as there will be fewer solar panels creating a hazard in these areas. The Report concluded that for this northern area additional glare mitigation is not expected to be necessary as the proposed 10-metre-wide screen planting zone proposed for the northern border would be sufficient. Recommendations for the northern area remain applicable to the updated concept design.

2.1.2 Additional solar panels

OP28 is directly east of the additional solar panels. The Report concluded that this eastern area would experience low to moderate hazard glare potential and recommended screening measures due to the lack of vegetation and other obstacles between the solar array and Boundary Road. The Landscape Plans (AECOM, 2022) and *Landscape Early Works Report* (AECOM, 2022) for the Project proposes dense 5-metre-wide screen planting along the eastern edge of the site and shade cloth/glare screens on security fencing, which will assist in mitigating the visual impacts of the additional solar panels.

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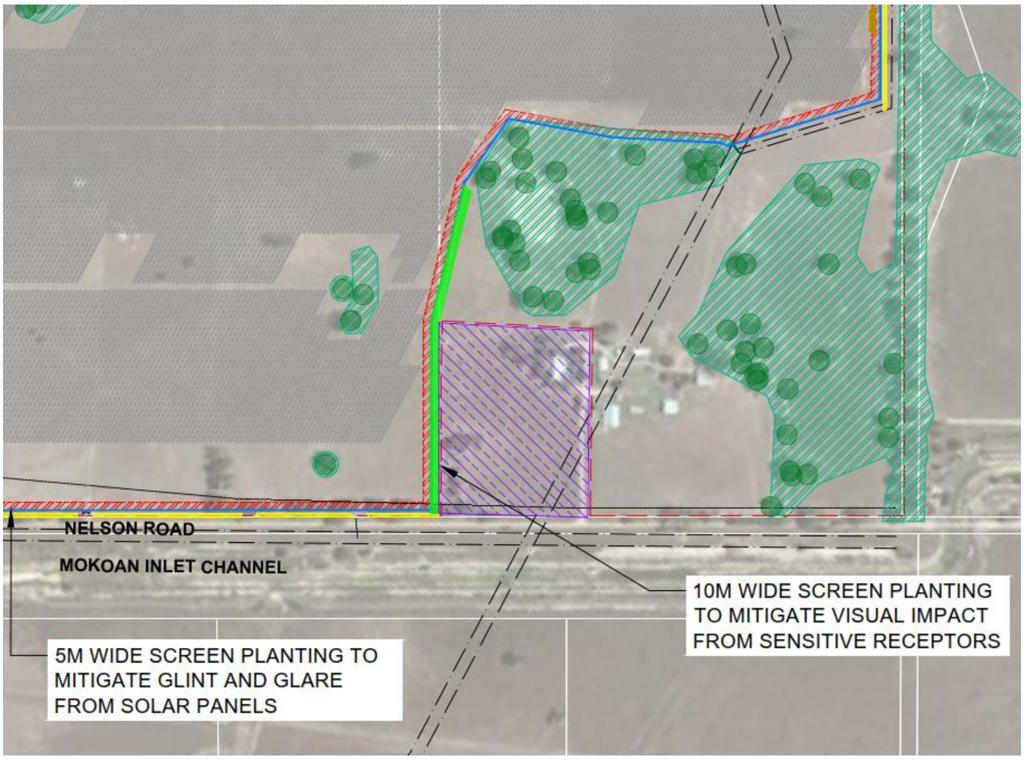

Figure 2 Extract from Landscape Plan (10m wide planting to the east and 5m wide planting to the south)

OP7 is approximately 800m south of the additional solar panels and is predicted to experience low to moderate hazard glare potential. OP12, OP13, OP14, and OP15 are between 1km to 1.5km south of the additional solar panels. The Report recommends assessing the effectiveness of existing vegetation in screening sources of glare and for additional screening measures to be implemented where there is insufficient vegetation. The Landscape Plans (AECOM, 2022) and *Landscape Early Works Report* (AECOM, 2022) propose 5-metre-wide screen planting along the southern edge of the site and shade cloth/glare screens on security fencing, which will assist in mitigating the visual impacts of the additional solar panels on uses to the south.

The additional solar panels are considered a relatively small proportion of the wider solar farm, therefore it is unlikely that they would increase the current hazard potential of 'low to moderate', particularly given the proposed vegetation and screening measures. No OP location surrounding the solar farm has the been identified as having the potential to do permanent eye damage.

2.2 New transmission line and associated minor changes

The report only considers the glint and glare impacts generated from the array configuration of the solar panels. The transmission line will not impact the conclusions and recommendations of the Report, and it is unlikely that a transmission line will result in glint and glare impacts on surrounding residents and drivers. It is noted that landscape and visual impacts of the transmission line are assessed in the updated *Landscape and Visual Impact Assessment* (AECOM, 2022).

3.0 Conclusion

The proposed amendments to the concept design and technical requirements are not substantial enough to warrant further assessment for glint and glare, particularly given the vegetation and additional screening measures that are proposed for the project. The conclusions and recommendations outlined in *Glint and Glare Assessment Kennedys Creek Solar Farm* (AECOM, 2019) remain relevant to the new concept design.

Kennedys Creek Solar Farm
433 Link Development Pty Ltd
16-Jun-2020

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Glint and Glare Assessment

Kennedys Creek Solar Farm

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Kennedys Creek Solar Farm

Client: 433 Link Development Pty Ltd

ABN: 30 626 633 369

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16-Jun-2020

Job No.: 60585632

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AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Glint and Glare Assessment
Ref	60585632
Date	16-Jun-2020
Prepared by	Sharon Zhang, Connor McLeod
Reviewed by	Aishling McLeod, Gareth Forwood, Catherine O'Neill

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	16-Aug-2019	Draft	Gareth Forwood Senior Energy - Renewable Energy	
B	05-Sep-2019	Draft	Gareth Forwood Senior Energy - Renewable Energy	
C	16-Sep-2019	Final	Aileen Waldron Principal Electrical Engineer	
D	16-Jun-2020	Final Re-issue	Angela Rozali Senior Engineer - Energy	

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1.0 Introduction

1.1 Background

AECOM Australia Pty Ltd (AECOM) has been commissioned by 433 Link Development Pty Ltd (the applicant) to provide supporting information for a planning permit application which relates to the proposed development of a photovoltaic solar farm at Benalla, Victoria. The proposed development will be called the Kennedys Creek Solar Farm (the Project). The Project is developed by South Energy through the project entity.

As part of the planning permit application a Glint and Glare assessment must be undertaken to determine the likely impact of glint and glare from the proposed development on nearby sensitive receptors and identify appropriate, feasible and reasonable mitigation strategies if required.

The objectives of this study are as follows:

- Conduct a glare potential analysis of the proposed Kennedys Creek Solar Farm based on a single axis tracking system;
- Identify potential glare impacts at nominated observation points near the Project, and;
- Recommend improvements or mitigation options available to the Client to reduce glare issues that may impact the public.

The report details the key inputs, methodology and the results of this glare assessment.

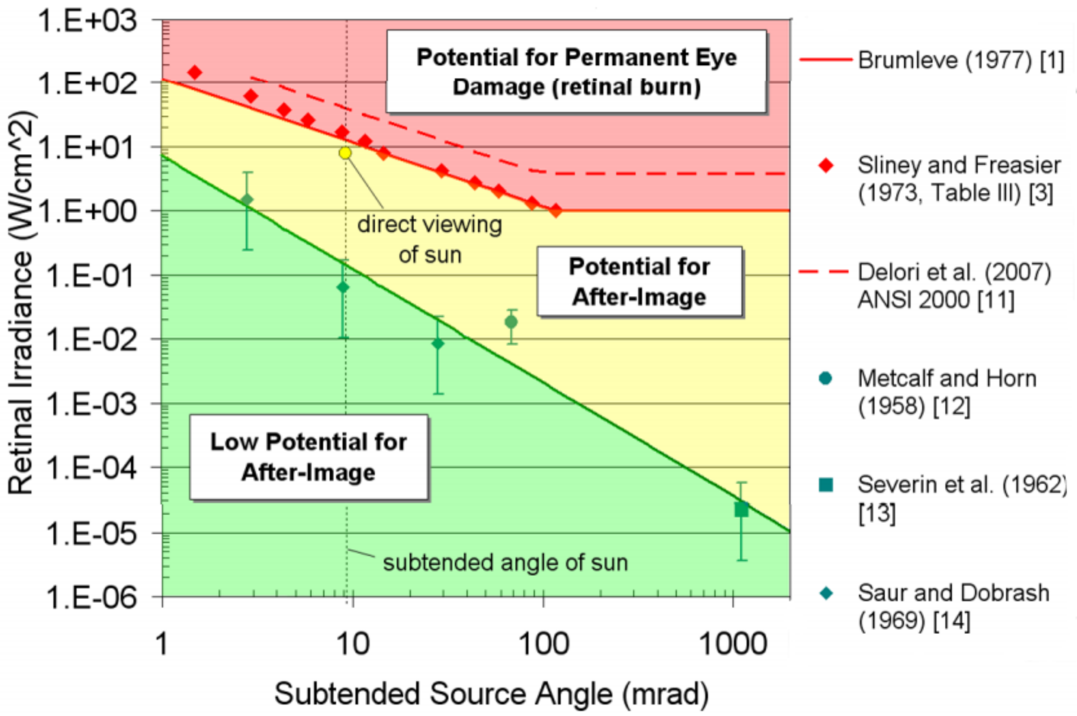
1.2 Glint and glare from solar panels

Glint and glare (referred to collectively in this report as glare) are caused by a significant contrast between a light source and background illuminance. Glare occurs over a continuous period while glint is a brief flash of light. Glint and glare can be hazardous when they affect critical operations like aviation. Aside from causing discomfort to the viewer, glare can be a source of distraction and can leave after-images in the viewer's vision.

The visual or ocular impact caused by glare is a function of the intensity of the glare source upon the retina (retinal irradiance) and the portion of a viewer's field of vision that the glare occupies (subtended source angle). This function is described in the glare hazard plot (Figure 1) which plots the risk of looking directly at the sun as a comparison.

In instances where glare is detected by the software, results of the assessment are shown graphically in the same manner.

Figure 1 Glare hazard plot illustrating ocular impact as a function of retinal irradiance and subtended source angle[1]



1.3 Civil Aviation Safety Authority requirements

The Civil Aviation Safety Regulations require that air traffic control towers are protected from glare. Through consultation with Air Services Australia (ASA) and the Civil Aviation Safety Authority (CASA), AECOM has been advised that there are no rules or regulations guiding the assessment of such glare. CASA therefore recommends that proponents of solar PV systems within or near airports follow the guidelines issued by the US Federal Aviation Administration (FAA) when making their assessments.

The FAA recommends that any proposed solar farms that are below the direct approach paths to an airport (aligned with a runway) and within a distance of around 5 nautical miles (approximately 10km) from a runway end should be referred for a specific assessment by the relevant authorities.

The FAA requires the use of Solar Glare Hazard Assessment Tool (SGHAT, currently marketed as GlareGauge) to demonstrate the impact of glare caused by PV systems proposed for installation on airports in the US[2]. CASA will typically not object to a solar farm if the glare analysis indicates that air traffic control (ATC) towers experience no glare and runway approaches experience at most “low potential for after-image” glare.

The nearest airstrip to Kennedys Creek Solar Farm is the Gliding Club of Victoria, which is located approximately 5km to the south west. As the site is located within 10km of an airport, it is necessary to assess the impact of glare on aircraft flight paths. The airstrip does not appear to have any air traffic control towers.

[1] Ho, C.K., Sims, C.A., Yellowhair, J., Bush, E. (2014), *Solar Glare Hazard Analysis Tool (SGHAT) Technical Reference Manual)*, Sandia National Laboratories and US Department of Energy.
[2] *Technical Guidance for Evaluating Selected Solar Technologies on Airports*, 2010, Federal Aviation Administration

2.0 Site Overview

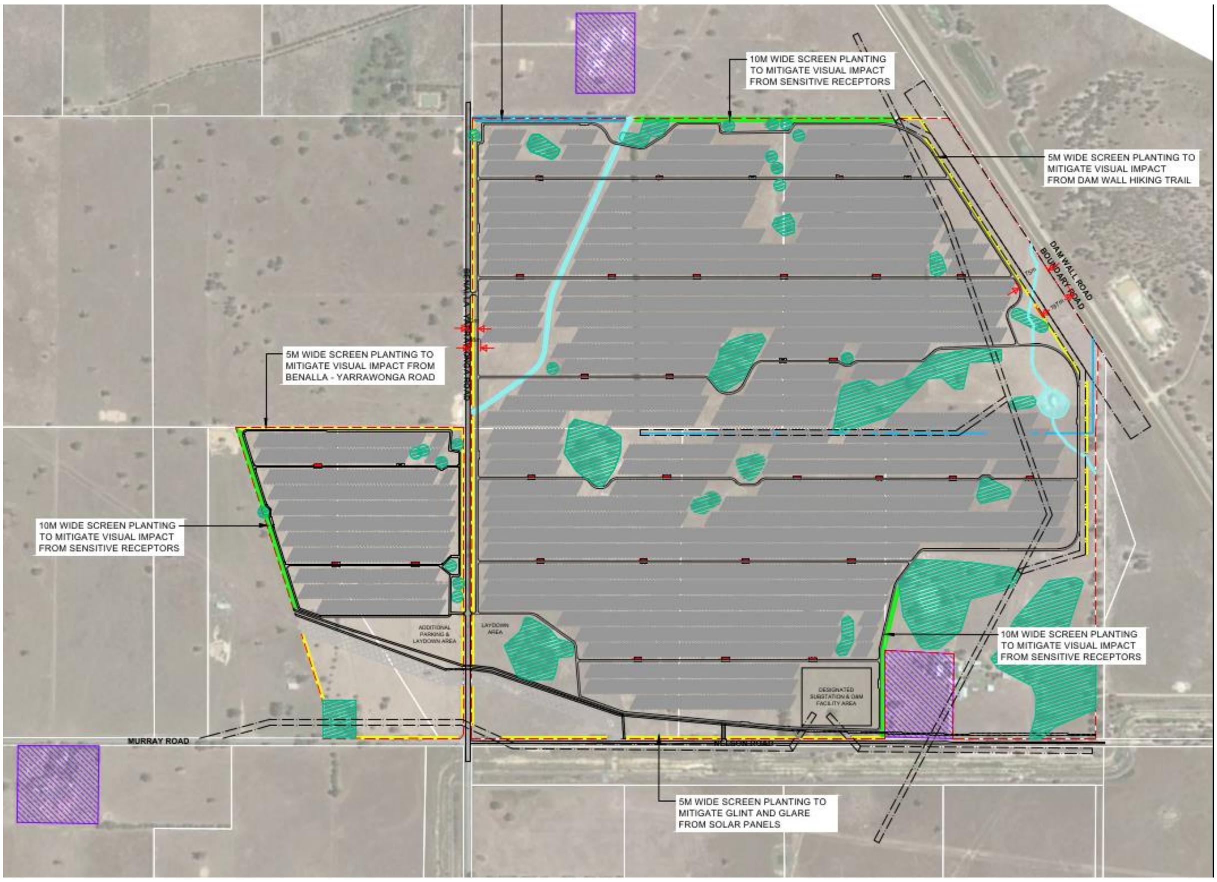
2.1 Kennedys Creek Solar Farm

The Project is located approximately 170km north east of Melbourne's CBD, within the Rural City of Benalla. The solar farm is in early development and is expected to have a network capacity of up to 115.35 megawatts (MW).

The location lies approximately 4km north east of the town centre of Benalla and is generally bound by Boundary Road to the north east, and Murray Road and Nelson Road to the south. Benalla-Yarrawonga Road bisects the site. The Site is currently being used for broadacre farming and is mostly clear of vegetation.

Figure 2 shows the proposed development area and screen planting zones along the border are indicated in green.

Figure 2 Proposed Concept Layout



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3.0 Glare Analysis Software

3.1 Overview

AECOM has used the GlareGauge software marketed by ForgeSolar to undertake this glare analysis. GlareGauge's algorithms were developed by Sandia National Laboratories in its Solar Glare Hazard Analysis Tool (SGHAT).

GlareGauge employs an interactive Google Maps interface whereby the outline of the solar array can be manually drafted. It simulates an annual sun path based on the chosen location to calculate sun positions and vectors. GlareGauge requires a number of inputs regarding the characteristics of the solar PV systems including panel orientation, tracking type, slope and height above ground.

Glare hazard is determined based on the retinal irradiance and subtended angle described in Section 1.2. Glare hazards are defined according to the potential of the glare to impact vision as defined in Table 1.

Table 1 Glare impact definitions

Colour Coding	Glare Impact Category	Definition
Not shown on glare hazard plot	No Glare Predicted	Indicates that no glare is expected at the observation points for the site configuration.
		This category is not shown on the glare hazard plot.
Not shown on glare hazard plot	Glare beyond 50 degrees from pilot line-of-site on approach	Indicates that glare is present but will not cause a safety hazard to pilots according to recent research and flight simulator testing.
		This category is not shown on the glare hazard plot.
Green	Low potential for after image	Indicates there is glare present however only a low potential for a temporary after-image (a lingering image of the glare in the field of view).
		This category is shown green on the glare hazard plot.
Yellow	Potential for after image	Indicates that there is glare present with the potential to leave a temporary after-image of the glare.
		This hazard is shown yellow on the glare hazard plot.
Red	Potential for permanent eye damage	Indicates that there is glare present with the potential for permanent eye damage if observed.
		This hazard is shown red on the glare hazard plot.

3.2 Assumptions

Glare hazard is difficult to define and is not the same for every person. It is dependent on a number of factors including reflectance parameters (light intensity, angle of reflectance etc.), the size of the glare source and the observer's distance from it, and ocular/eye parameters (pupil diameter, distance from the pupil to the retina, etc). Therefore, the following standard assumptions (default values within GlareGauge) have been made through the course of the analysis:

- The model assumes flat reflective surfaces and that light reflected by the solar panels is specular (i.e. the angle of incidence = the angle of reflection).
- The average subtended angle of the sun as viewed from earth is ~9.3 mrad or 0.5°.
- The ocular transmission coefficient accounts for radiation that is absorbed in the eye before reaching the retina. A value of 0.5 is typical[3].

[3] Solar Glare Hazard Analysis Tool (SGHAT) User's Manual v. 2H, Clifford K. Ho, Cianan A. Sims, Julius E. Yellowhair Sandia National Laboratories Updated 22/07/2015

- Diameter of the pupil – the size impacts the amount of light entering the eye and reaching the retina. The typical value is 0.002m for daylight-adjusted eyes
- Eye focal length: This value is used to determine the projected image size on the retina for a given subtended angle of the glare source. A typical value of 0.017 m is used
- The entire development site is assumed to be leased by the Client for the duration of the project, thus observation points located within the array area were not considered in the modelling
- Flight path modelling assumptions:
  - Glide slope: This value represents the angle at which aircrafts approach the runway and is taken to be 3°
  - Threshold crossing height: The height above ground of the aircraft as it crosses the threshold point, which is defined as the end of the runway at which the aircraft makes its descent

3.3 Limitations

GlareGauge has the following limitations:

- The detailed geometry of the solar panel arrays is not rigorously represented, e.g. gaps between panels, detailed variations in height of the array and support structures.
- Obstacles (e.g. trees, vegetation buffers, structures or earth) between the observation points and the solar panel arrays that may obstruct observed glare are not considered. This results in a more conservative assessment.
- Directional viewpoints from each observation point are not defined. Instead the cumulative impact of the entire solar panel array on each observation point is calculated. In specific circumstances, this may lead to an overestimation of the extent of glare at a particular observation point.
- A typical clear-day solar irradiance profile (worst-case for glare) is used. The model profile has a lower irradiance level in the mornings and evenings and a maximum at solar noon. Actual irradiance levels and profile on any given day can be affected by cloud cover and other environmental factors, however this is not considered in this model.
- ForgeSolar utilises a simplified model of backtracking. Single axis trackers track the movement of the sun as it moves east to west throughout the day. Yield is maximised, and light reflection is minimised when panels are directly normal to the sun. During times of day when the sun is outside the tracking range, it is assumed that panels instantaneously revert to a pre-determined resting angle which is defined as 0° (panels assumed to lie flat). This results in a more conservative simulation of glare from the backtracking mechanism and will result in higher incidences of glare during sunset and sunrise, when the sun is at a lower angle relative to the array.
- The modelling does not model the glare impact on all possible flight paths. Instead, a two-mile (approx. 3.2km) flight path beginning at the take-off/landing point is considered.

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4.0 GlareGauge Inputs

The sections below detail the inputs applied by AECOM for analysis in GlareGauge. All azimuth values are relative to true north and all tilt angles relative to horizontal.

4.1 PV system parameters

An overview of the input data used for the modelling of the sites of the Kennedys Creek Solar Farm is shown in Table 2. Site specific inputs are detailed in Section 4.2. The boundary of the system is based on the proposed development areas shown in Section 2.1; the coordinates can be found in the GlareGauge report attached in Appendix B. If any of the development areas expand beyond the modelled boundary, it is recommended that the glare potential be reassessed.

Table 2 General PV system inputs for GlareGauge

Input Data	Units	Value	Comment
General Project Parameters			
Reflectivity calculations	-	Varies with incident angle	As incident angle increases, the reflectivity increases.
Reflection diffusion	-	Correlated to module surface type	Calculates the spread of the reflected beam according to the glass texturing and ARC.
Time zone	UTC	+10	VIC time zone.
Peak DNI	W/m^2	1,170	AECOM estimate.
Orientation of array	degrees	0	Rows aligned in north-south direction.
Solar panel surface material	-	Smooth glass with Anti-Reflective Coating (ARC)	As per module datasheet.
Time interval	mins	1	Model interval throughout the year.
Mounting Type	-	Single axis tracking	As per tracker datasheet
Single Axis Tracking Parameters			
Tilt of tracking axis	degrees	0	0° = Facing upwards. Panels rotate during operation according to single axis tracking operation.
Orientation of tracking axis	degrees	0	0°= Rows aligned north-south.
Offset angle of panel	degrees	0	Angle between tracking axis and panel.
Tracking Range	degrees	±60º (range of 120º)	Provided by the client
Height of panel above ground	m	2.2	The height measured from the ground to point of tracking rotation.
Backtracking[4]	-	Yes	As per tracker datasheet
Resting angle	degrees	0°	Panels assumed to revert to an angle of 0° when the sun is outside tracking range

[4] Tracking systems are designed to follow the sun across the sky, maximising the total irradiance received. However, when the sun is low on the horizon, pointing the solar panels directly towards the sun results in row-to-row shading, significantly impacting performance. Backtracking is a strategy used to eliminate row-to-row shading during these times, whereby rather than following the sun, the trackers move back to ensure no shading occurs.

4.2 Observation Point and Route Receptor Locations

We input observation points (OPs) and route receptor locations for each site into GlareGauge. These points were identified as potential areas where glare could impact the residents or drivers. Glare was assessed at each of the observation points and route receptors, assuming the observer was 1.5 m above ground which is assumed to be the typical viewing height whilst standing or driving. The route receptors also assume a view angle of 50 degrees (field of view (FOV) of observer to the left and right in the direction of travel). FAA research suggests glare outside 50-degree FOV has no impact on the receptor[5].

For the nearby airstrip, flight paths (FPs) were input into the GlareGauge software based on the runway location and direction. The modelling of glare impacts on the nearby runway considers a two-mile flight path beginning at the runway approach and extends two miles in the direction of the flight path. The pilot visibility from the cockpit is also considered, and the maximum downward viewing angle from the horizon is 30°. Similar to route receptors (RR), a 50° FOV angle is also assumed.

The OPs are shown as red markers in Figure 3. Similarly, nearby roads and railways (termed route receptors, or RR) are shown as grey lines and the flight paths (FPs) are shown as red lines, with red markers indicating the endpoints in Figure 3. A table of OP, RR and FP coordinates is provided in the GlareGauge reports in Appendix B.

[5] *Evaluation of Glare as a Hazard for General Aviation Pilots on Final Approach* (Report DOT/FAA/AM-15/12). Retrieved from: https://www.faa.gov/data_research/research/med_humanfacs/oamtechreports/2010s/media/201512.pdf

Figure 3 Location of OPs

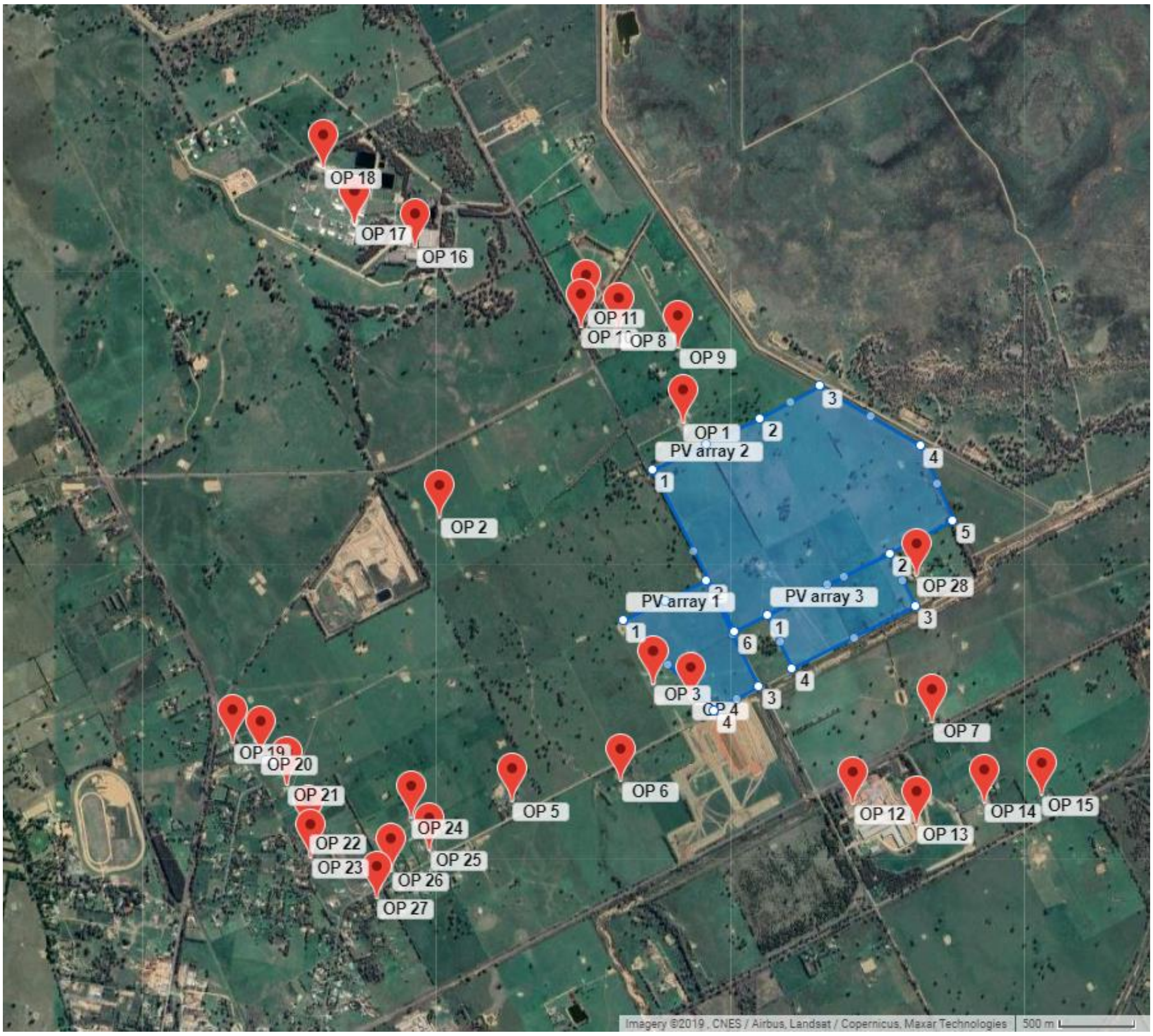

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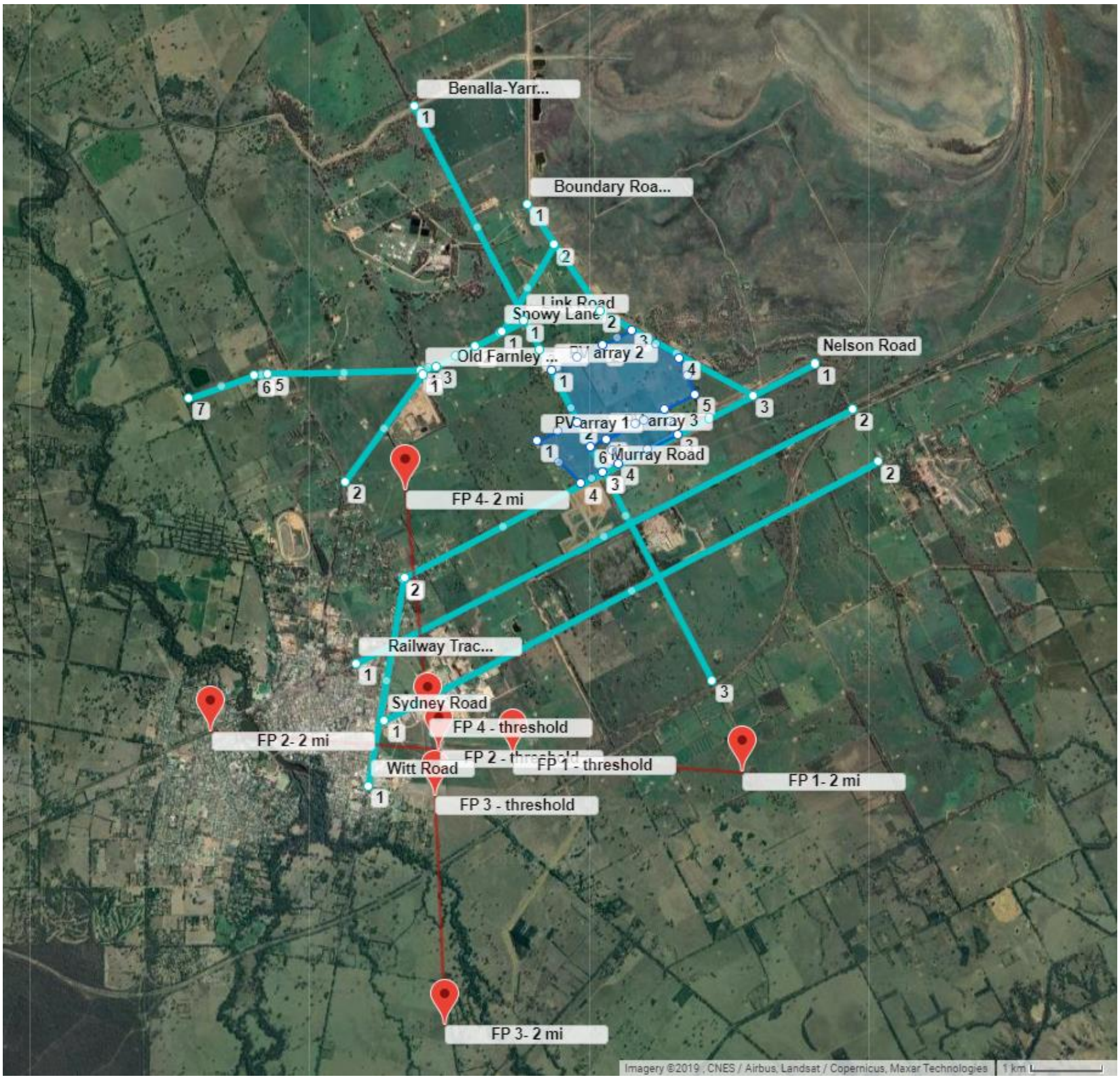
Figure 4 Location of RRs and FPs



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5.0 Results

5.1 Summary of results

An overview of the results from the glare analysis, presented as **total annual minutes of glare** for each observation point, route receptor and flight path, is provided in Table 3. Varying levels of glare were predicted for the observation points and route receptors analysed. Modelling results indicate that no glare is expected to be experienced by the FPs. The results are presented in order of highest total annual minutes of glare predicted for each OP, RR and FP to the lowest.

Table 3 Total annual minutes of glare caused by the solar array to each observation point

Observation Point/Route Receptor	Low potential for after image (min/year)	Potential for after image (min/year)	Hazard Summary	Approximate minimum distance to Site (m)
Benalla-Yarrawonga Road	4,337	46,605	**Yellow** Glare with potential for after image	Adjacent to the site
OP-28	302	9,106	**Yellow** Glare with potential for after image	135
OP-7	97	1,666	**Yellow** Glare with potential for after image	945
OP-10	0	1,690	**Yellow** Glare with potential for after image	1,065
OP-4	128	1,419	**Yellow** Glare with potential for after image	295
OP-8	0	1,524	**Yellow** Glare with potential for after image	930
OP-9	0	1,420	**Yellow** Glare with potential for after image	625
OP-3	162	1,213	**Yellow** Glare with potential for after image	262
OP-2	25	1,331	**Yellow** Glare with potential for after image	1405
OP-17	19	1,335	**Yellow** Glare with potential for after image	2,585

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Observation Point/Route Receptor	Low potential for after image (min/year)	Potential for after image (min/year)	Hazard Summary	Approximate minimum distance to Site (m)
OP-16	2	1,346	**Yellow** Glare with potential for after image	2,175
OP-11	0	1,320	**Yellow** Glare with potential for after image	1,160
OP-18	23	934	**Yellow** Glare with potential for after image	2,980
OP-1	0	830	**Yellow** Glare with potential for after image	190
OP-15	73	609	**Yellow** Glare with potential for after image	1,535
OP-5	195	219	**Yellow** Glare with potential for after image	1,410
OP-6	77	269	**Yellow** Glare with potential for after image	935
OP-14	19	289	**Yellow** Glare with potential for after image	1,380
Snowy Lane	91	188	**Yellow** Glare with potential for after image	875
OP-24	180	26	**Yellow** Glare with potential for after image	1,940
OP-25	162	44	**Yellow** Glare with potential for after image	2,005
OP-26	162	26	**Yellow** Glare with potential for after image	2,285
OP-13	1	179	**Yellow** Glare with	1,300

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Observation Point/Route Receptor	Low potential for after image (min/year)	Potential for after image (min/year)	Hazard Summary	Approximate minimum distance to Site (m)
			potential for after image	
OP-27	176	0	**Green** Low potential for temporary after image	2,480
OP-23	111	0	**Green** Low potential for temporary after image	2,630
OP-22	62	0	**Green** Low potential for temporary after image	2,540
Railway Track	0	54	**Yellow** Glare with potential for after image	800
Boundary Road	2	48	**Yellow** Glare with potential for after image	Adjacent to the site
OP-21	47	0	**Green** Low potential for temporary after image	2,495
OP-19	35	0	**Green** Low potential for temporary after image	2,745
Link Road	19	5	**Yellow** Glare with potential for after image	795
Sydney Road	24	0	**Green** Low potential for temporary after image	1,675
OP-20	19	0	**Green** Low potential for temporary after image	2,595
FP-1	0	0	No glare predicted	4,240
FP-2	0	0	No glare predicted	4,460
FP-3	0	0	No glare predicted	5,085
FP-4	0	0	No glare predicted	4,125

Observation Point/Route Receptor	Low potential for after image (min/year)	Potential for after image (min/year)	Hazard Summary	Approximate minimum distance to Site (m)
OP-12	0	0	No glare predicted	1,005
Murray Road	0	0	No glare predicted	Adjacent to the site
Nelson Road	0	0	No glare predicted	Adjacent to the site
Old Farnley Road	0	0	No glare predicted	1,800
Witt Road	0	0	No glare predicted	2,660

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6.0 Recommendations

The modelling results show that for a number of OPs and RRs, observers are predicted to experience glare with low to moderate potential for after image during various times of the day. This section summarises the results with suggestions for glare mitigation for each OP and RR that was found to experience potential glare. These recommendations should be considered during future design stages and further discussion of these findings can be found in Appendix A.

AECOM notes that the GlareGauge software is unable to account for the benefit gained from existing and proposed vegetation between the Site and the receptors expected to experience glare.

Table 4 Summary of glare mitigation strategies

Observation Point/Route Receptor	Glare Hazard	Time of Day	Existing Mitigation	Suggested Mitigation
Benalla-Yarrawonga Road	**Yellow** Glare with potential for after image	For up to 200 minutes between 4:30AM-9AM and between 3PM-8PM throughout the year	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-28	**Yellow** Glare with potential for after image	For up to 10 minutes between 4PM-8PM throughout the year	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the south east portion of the array if appropriate.
OP-7	**Yellow** Glare with potential for after image	For up to 20 minutes between 4PM-7PM from March to September	Some existing vegetation and proposed 5m wide vegetation buffer as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the southern border of the Site if appropriate.
OP-10	**Yellow** Glare with potential for after image	For up to 15 minutes between 5AM-6:30AM from January to February and from October to December	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-4	**Yellow** Glare with potential for after image	For up to 20 minutes between 6:30AM-8AM from April to August	Proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-8	**Yellow**	For up to 15 minutes between 5AM-6:30AM	Some existing vegetation and proposed 10m wide	None suggested.

Observation Point/Route Receptor	Glare Hazard	Time of Day	Existing Mitigation	Suggested Mitigation
	Glare with potential for after image	from January to February and from October to December	vegetation buffer as shown in Figure 2.	See Appendix A for further discussions.
OP-9	**Yellow** Glare with potential for after image	For up to 15 minutes between 5AM-6:30AM from January to February and from October to December	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-3	**Yellow** Glare with potential for after image	For up to 15 minutes between 6AM-8AM from March to September	Proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-2	**Yellow** Glare with potential for after image	For up to 15 minutes between 5AM-8AM from January to May and from August to November	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-17	**Yellow** Glare with potential for after image	For up to 15 minutes from 5AM-6AM from January to February and form October to December	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-16	**Yellow** Glare with potential for after image	For up to 15 minutes from 5AM-6AM from January to February and form October to December	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-11	**Yellow** Glare with potential for after image	For up to 15 minutes between 5AM-6:30AM from January to February and from October to December	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-18	**Yellow** Glare with potential for after image	For up to 15 minutes from 5AM-6AM from January to February and form October to November	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.

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Observation Point/Route Receptor	Glare Hazard	Time of Day	Existing Mitigation	Suggested Mitigation
OP-1	**Yellow** Glare with potential for after image	For up to 10 minutes between 5AM-7AM from January to May and from August to December	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-15	**Yellow** Glare with potential for after image	For up to 10 minutes from 4PM-6PM from April to August	Some existing vegetation and proposed 5m wide vegetation buffer as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the southern border of the Site if appropriate.
OP-5	**Yellow** Glare with potential for after image	For up to 10 minutes between 7AM-8AM from May to August	Proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-6	**Yellow** Glare with potential for after image	For up to 10 minutes between 7AM-8AM from May to July	Proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-14	**Yellow** Glare with potential for after image	For up to 10 minutes from 4PM-6PM from April to August	Some existing vegetation and proposed 5m wide vegetation buffer as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the southern border of the Site if appropriate.
Snowy Lane	**Yellow** Glare with potential for after image	For up to 10 minutes between 5AM-9AM and 3PM-8PM from January to March and from September to December	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-24	**Yellow** Glare with potential for after image	For up to 10 minutes between 7AM-8AM from May to August	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-25	**Yellow** Glare with potential for after image	For up to 10 minutes between 7AM-8AM from May to August	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.

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Observation Point/Route Receptor	Glare Hazard	Time of Day	Existing Mitigation	Suggested Mitigation
OP-26	**Yellow** Glare with potential for after image	For up to 10 minutes between 7AM-8AM from May to July	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-13	**Yellow** Glare with potential for after image	For up to 10 minutes between 4:30PM-5:30PM from May to July	Some existing vegetation and proposed 5m wide vegetation as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the southern border of the Site if appropriate.
OP-27	**Green** Low potential for temporary after image	For up to 10 minutes between 7AM-8AM from May to July	Existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-23	**Green** Low potential for temporary after image	For up to 5 minutes between 7AM-8AM from May to August	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
OP-22	**Green** Low potential for temporary after image	For up to 5 minutes between 6:30AM-8AM from April to May and from July to August	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
Railway Track	**Yellow** Glare with potential for after image	For up to 5 minutes between 4:30PM-7PM in March, May to July and September to October	Limited vegetation and proposed 5m wide vegetation as shown in Figure 2.	Assess the effectiveness of existing and proposed vegetation and consider additional screening vegetation or mesh screening along the southern border of the Site if appropriate.
Boundary Road	**Yellow** Glare with potential for after image	For up to 10 minutes between 6AM-7AM in March and September	Proposed 5m wide vegetation as shown in Figure 2.	Assess the effectiveness of proposed vegetation and consider planting screening vegetation or installing mesh screening along the eastern border of the Site if appropriate.
OP-21	**Green**	For up to 5 minutes between	Some existing vegetation and	None suggested.

Observation Point/Route Receptor	Glare Hazard	Time of Day	Existing Mitigation	Suggested Mitigation
	Low potential for temporary after image	6:30AM-8AM from April to May and from August to September	proposed 10m wide vegetation buffer as shown in Figure 2.	See Appendix A for further discussions.
OP-19	**Green** Low potential for temporary after image	For up to 5 minutes between 6:30AM-7:30AM from March to May and from August to September	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
Link Road	**Yellow** Glare with potential for after image	For up to 5 minutes between 6AM-7AM in March and September	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.
Sydney Road	**Green** Low potential for temporary after image	For up to 5 minutes between 6PM-7PM in March and from September to October	Existing vegetation.	None suggested. See Appendix A for further discussions.
OP-20	**Green** Low potential for temporary after image	For up to 5 minutes between 6:30AM-7:30AM from April to May and from August to September	Some existing vegetation and proposed 10m wide vegetation buffer as shown in Figure 2.	None suggested. See Appendix A for further discussions.

7.0 Conclusions

The results of the glare hazard analysis identified that for Kennedys Creek Solar Farm, glare with low to moderate potential for after image is predicted to be caused by the operation of the array configuration outlined in this report. Measures to reduce glare were discussed for OPs and RRs identified to be potentially affected by low to moderate potential hazard glare. These mitigation strategies include installing mesh screening or planting additional vegetation along the border of the solar array area. It is also recommended to further investigate the effectiveness of proposed targeted screening planting shown in Figure 2 and to consider installing mesh fencing should the proposed vegetation be insufficient in mitigating glare during the growth period.

The glare model developed for the Project assumes the solar arrays are installed as in Figure 2, and the entire development area is considered a potential glare source. The model includes conservative assumptions (i.e. a high irradiance) and does not consider any vegetation, buildings or topographical features that may exist between the solar panel arrays and the observation points.

The GlareGauge model is unable to accurately account for the backtracking operation of the tracker, where the actual glare may exceed the values reported herein during the early morning and late afternoon. The software is able to run a simplified model of backtracking, whereby the panels are modelled to revert to a pre-determined resting angle when the angle of the sun is outside of the tracking range. This resting angle was set at 0° to maintain conservativeness.

Appendix A

ADVERTISED PLAN

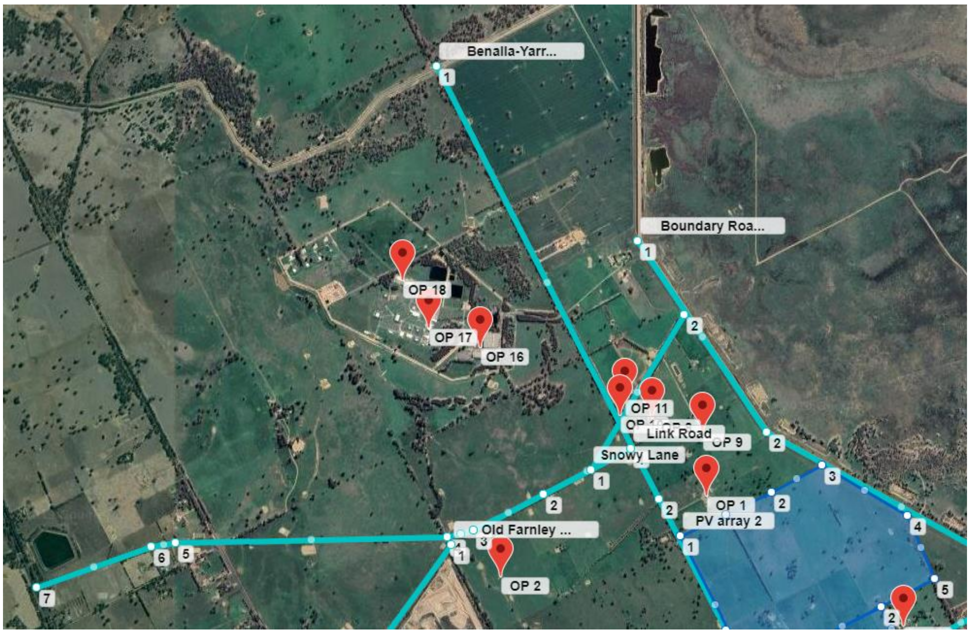
Discussion of Results

Appendix A Discussion of Results

Glare occurring to the north of Site boundary

The GlareGauge results show that OPs and RRs located to the north of the Site boundary, as shown in Figure 5, are predicted to experience low to moderate hazard glare potential. The glare is predicted to occur in the early mornings from October to March, caused by a combination of the positioning of the modules at their resting angle at sunrise due to backtracking, and period when the sunrise is at its most southern position in the horizon. As described in Section 3.3, the GlareGauge software runs a simplified model of backtracking which may overpredict the incidence of glare when backtracking is occurring. There is some existing vegetation located between the receptors and the solar array. The landscape plan shown in the concept design in Figure 2 indicates that a 10-metre-wide screen planting zone is proposed for the northern border. As the vegetation is proposed to be planted as tubestock, it is recommended to consider installing mesh screening along the northern border of the Site to mitigate potential glare during the growth period. Overall, additional glare mitigation is not expected to be necessary.

Figure 5 OPs and RRs located north of Site boundary



Glare occurring to the east of Site boundary

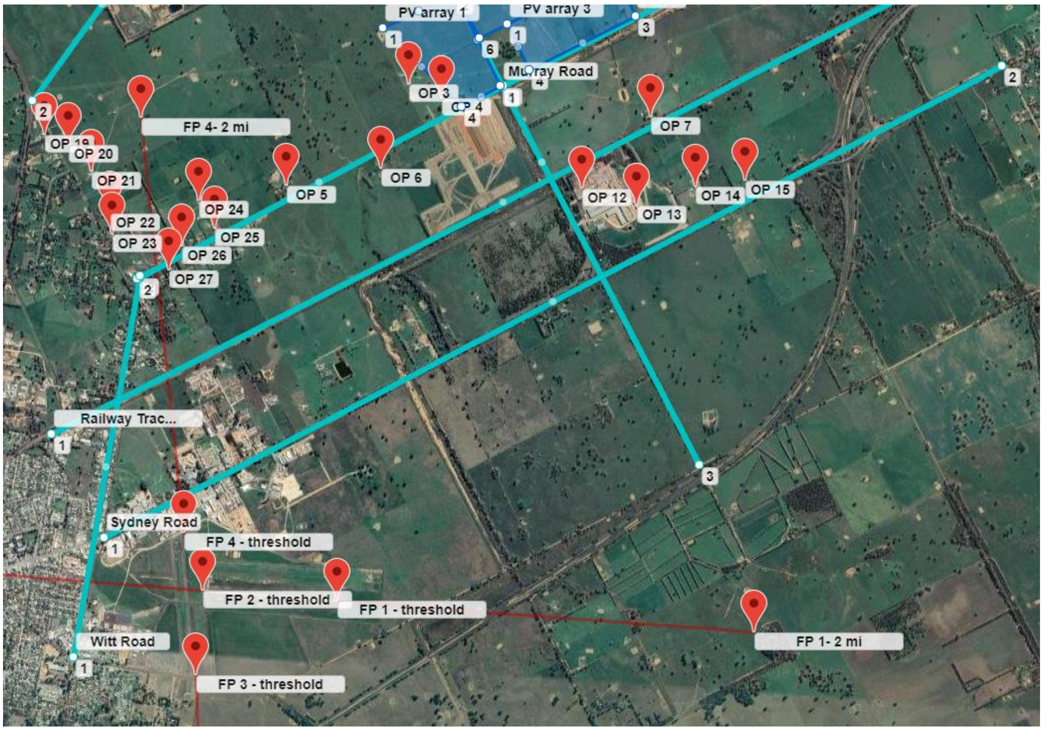
The GlareGauge results show that OP 28 and the RRs located to the east, as shown in Figure 6, of the Site boundary are predicted to experience low to moderate hazard glare potential at various times of the year in the evening when backtracking would typically occur. The landscape plan shown in the concept design in Figure 2 indicates that 10-metre and 5-metre-wide screen planting zones are proposed for the sections of the eastern border. As the vegetation is proposed to be planted as tubestock, it is recommended to consider installing mesh screening along the eastern border of the Site to mitigate potential glare during the growth period. It is recommended to assess the effectiveness of these mitigation measures and consider additional visual screening if appropriate.

Figure 6 OP 28 and RRs located west of Site boundary

Glare occurring to the south of Site boundary

The GlareGauge results show that OPs and RRs located to the south of the Site boundary, as shown in Figure 7, are predicted to experience low to moderate hazard glare potential at various times of the year in the early morning and mid to late afternoon. The landscape plan shown in the concept design in Figure 2 indicates that a 5-metre-wide screen planting zones are proposed for the sections of the southern border. It is recommended to assess the effectiveness of existing and proposed vegetation in screening sources of glare. Where the screening is insufficient to mitigate the glare, additional screening measures should be implemented. This can include planting additional vegetation or installing mesh screening along the southern border of the array.

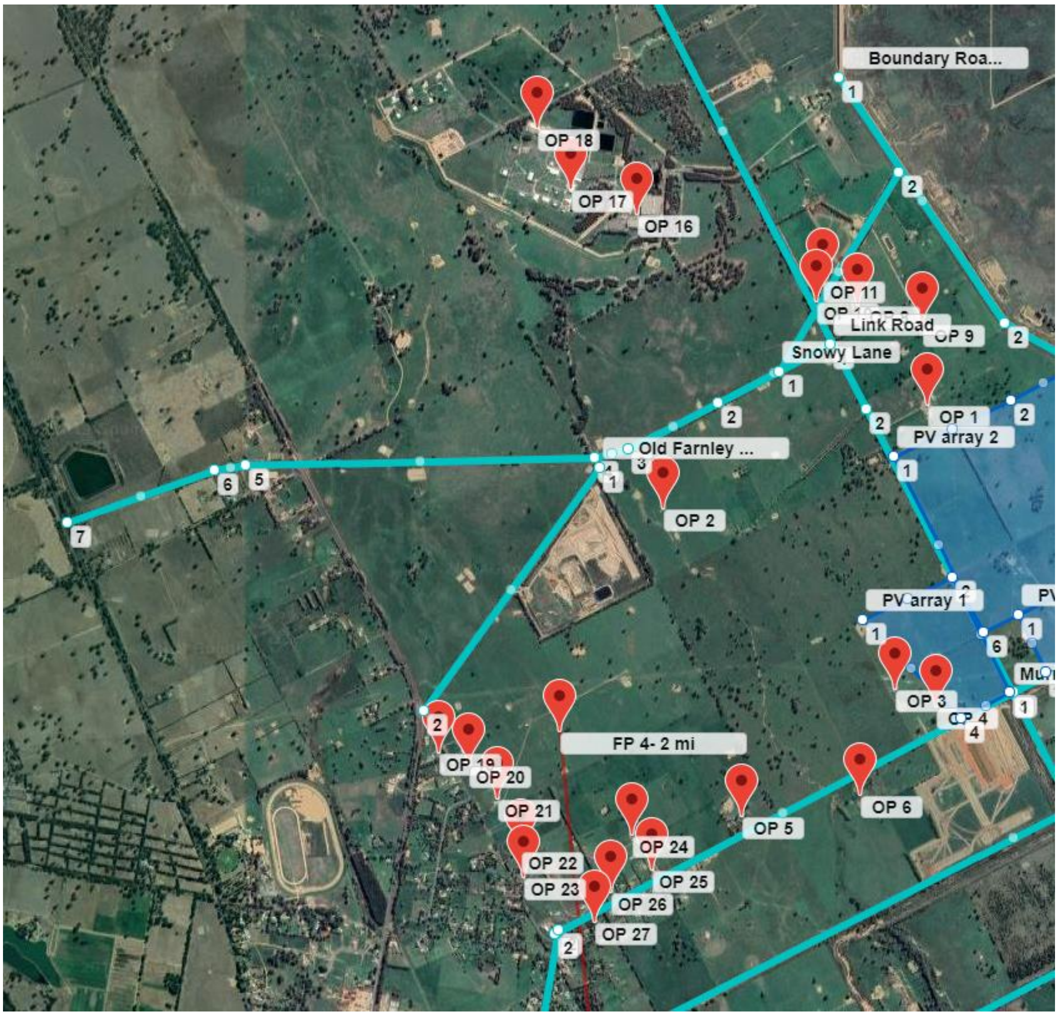
Figure 7 OPs and RRs located south of Site boundary



Glare occurring to the west of Site boundary

The GlareGauge results show that OPs and RRs located to the west of the Site boundary, as shown in Figure 8, are predicted to experience low to moderate hazard glare potential at various times of the year. The glare is predicted to occur in the early morning when backtracking would typically occur. There is some vegetation lying between the receptors and the solar array and landscape plan shown in the concept design as seen in Figure 2 indicates that 5-meter and 10-metre-wide screen planting zones are proposed for the western border. As the vegetation is proposed to be planted as tubestock, it is recommended to consider installing mesh screening along the western border of the Site to mitigate potential glare during the growth period. Overall, additional glare mitigation is not expected to be necessary.

Figure 8 OPs and RRs located west of Site boundary



Appendix B

ADVERTISED PLAN

GlareGauge Report

GlareGauge Glare Analysis Results

Site Configuration: Kennedys Creek Solar Farm

Project site configuration details and results.

Created **March 29, 2019 12:54 a.m.**
Updated **Aug. 6, 2019 10:17 p.m.**
DNI **varies** and peaks at **1,170.0 W/m^2**
Analyze every **1** minute(s)
0.5 ocular transmission coefficient
0.002 m pupil diameter
0.017 m eye focal length
9.3 mrad sun subtended angle
Timezone **UTC10**
Site Configuration ID: 26668.4699

Summary of Results Glare with potential for temporary after-image predicted

PV name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	4,492	43,765	-
PV array 2	SA tracking	SA tracking	44	15,213	-
PV array 3	SA tracking	SA tracking	2,014	14,717	-

Component Data

PV Array(s)

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Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 0.0 deg
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-36.512942	146.022259	170.37	2.20	172.57
2	-36.510597	146.028460	168.64	2.20	170.84
3	-36.516978	146.032430	167.18	2.20	169.38
4	-36.518375	146.029082	170.00	2.20	172.20

Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Name: PV array 2
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 0.0 deg
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-36.503939	146.024397	170.00	2.20	172.20
2	-36.500809	146.032476	173.42	2.20	175.62
3	-36.498877	146.037004	167.28	2.20	169.48
4	-36.502439	146.044482	168.59	2.20	170.79
5	-36.506975	146.046955	173.79	2.20	175.99
6	-36.513656	146.030658	171.18	2.20	173.38

Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Name: PV array 3
Axis tracking: Single-axis rotation
Tracking axis orientation: 0.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 0.0 deg
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.512679	146.032982	166.48	2.20	168.68
2	-36.508919	146.042187	176.24	2.20	178.44
3	-36.512093	146.044118	170.49	2.20	172.69
4	-36.515835	146.034935	170.38	2.20	172.58

2-Mile Flight Path Receptor(s)

Name: FP 1
Description:
Threshold height : 15 m
Direction: 274.3 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
Threshold	-36.552625	146.018338	173.39	15.24	188.63
2-mile point	-36.554803	146.054269	180.25	177.06	357.31

Name: FP 2
Description:
Threshold height : 15 m
Direction: 94.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
Threshold	-36.551913	146.006794	170.85	15.24	186.09
2-mile point	-36.549610	145.970875	172.00	182.77	354.77

Name: FP 3
Description:
Threshold height : 15 m
Direction: 357.5 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
Threshold	-36.557789	146.006113	174.03	15.24	189.27
2-mile point	-36.586675	146.007660	178.13	179.82	357.95

Name: FP 4
Description:
Threshold height : 15 m
Direction: 174.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
Threshold	-36.547915	146.005104	171.92	15.24	187.16
2-mile point	-36.519156	146.001394	170.58	185.27	355.85

Route Receptor(s)

Name: Benalla-Yarrawonga Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.470535	146.002893	161.96	1.50	163.46
2	-36.501308	146.022507	169.92	1.50	171.42
3	-36.543240	146.049589	177.03	1.50	178.53

Name: Boundary Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.482934	146.020685	170.77	1.50	172.27
2	-36.496545	146.032053	169.13	1.50	170.63
3	-36.507152	146.055954	172.03	1.50	173.53

Name: Link Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.497704	146.020031	165.42	1.50	166.92
2	-36.500940	146.012341	165.58	1.50	167.08
3	-36.503524	146.006168	163.21	1.50	164.71
4	-36.504004	146.003857	168.80	1.50	170.30
5	-36.504396	145.979808	164.51	1.50	166.01
6	-36.504663	145.977673	165.38	1.50	166.88
7	-36.507561	145.967524	166.62	1.50	168.12

Name: Murray Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.517008	146.032530	167.36	1.50	168.86
2	-36.530303	146.001105	171.47	1.50	172.97

Name: Nelson Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.503213	146.065819	174.49	1.50	175.99
2	-36.516952	146.032655	167.62	1.50	169.12

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Name: Old Farnley Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.504511	146.004143	171.82	1.50	173.32
2	-36.518006	145.992051	168.07	1.50	169.57

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Name: Railway Track
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.541112	145.993750	169.88	1.50	171.38
2	-36.508901	146.071684	172.76	1.50	174.26

Name: Snowy Lane
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.499215	146.016558	167.15	1.50	168.65
2	-36.488175	146.024755	168.31	1.50	169.81

Name: Sydney Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.548241	145.998243	173.00	1.50	174.50
2	-36.515559	146.075702	175.88	1.50	177.38

Name: Witt Road
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total elevation m
1	-36.556516	145.995580	174.00	1.50	175.50
2	-36.530140	146.001337	170.99	1.50	172.49

Discrete Observation Receptors

Number	Latitude deg	Longitude deg	Ground elevation m	Height above ground m	Total Elevation m
OP 1	-36.501058	146.026736	166.52	1.50	168.02
OP 2	-36.506819	146.008529	167.97	1.50	169.47
OP 3	-36.516834	146.024530	170.31	1.50	171.81
OP 4	-36.517761	146.027389	169.87	1.50	171.37
OP 5	-36.523840	146.013984	170.70	1.50	172.20
OP 6	-36.522689	146.022159	171.98	1.50	173.48
OP 7	-36.519096	146.045365	172.00	1.50	173.50
OP 8	-36.495587	146.021927	166.51	1.50	168.01
OP 9	-36.496605	146.026444	166.09	1.50	167.59
OP 10	-36.495326	146.019105	168.25	1.50	169.75
OP 11	-36.494204	146.019566	165.26	1.50	166.76
OP 12	-36.524032	146.039436	168.38	1.50	169.88
OP 13	-36.525247	146.044146	173.34	1.50	174.84
OP 14	-36.523938	146.049272	171.84	1.50	173.34
OP 15	-36.523503	146.053544	173.06	1.50	174.56
OP 16	-36.490526	146.006713	165.94	1.50	167.44
OP 17	-36.489111	146.002164	165.76	1.50	167.26
OP 18	-36.485764	145.999890	165.50	1.50	167.00
OP 19	-36.520294	145.993068	169.25	1.50	170.75
OP 20	-36.520993	145.995203	167.50	1.50	169.00
OP 21	-36.522864	145.997167	168.54	1.50	170.04
OP 22	-36.525778	145.998744	169.00	1.50	170.50
OP 23	-36.527244	145.998969	169.77	1.50	171.27
OP 24	-36.524894	146.006442	170.84	1.50	172.34
OP 25	-36.526825	146.007815	170.30	1.50	171.80
OP 26	-36.528063	146.004915	171.00	1.50	172.50
OP 27	-36.529701	146.003863	170.48	1.50	171.98
OP 28	-36.510321	146.044159	170.78	1.50	172.28

PV Array Results

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PV array 1 potential temporary after-image

Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	4	422
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	1	179
OP: OP 14	19	289
OP: OP 15	59	220
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	6
OP: OP 25	0	0
OP: OP 26	1	12
OP: OP 27	0	0
OP: OP 28	0	5
Route: Benalla-Yarrawonga Road	4337	42441
Route: Boundary Road	0	0
Route: Link Road	0	0
Route: Murray Road	0	0
Route: Nelson Road	0	0
Route: Old Farnley Road	0	0
Route: Railway Track	0	30
Route: Snowy Lane	71	161

Route: Sydney Road	0	0
Route: Witt Road	0	0

PV array 1 - Receptor (FP 1)

No glare found

PV array 1 - Receptor (FP 2)

No glare found

PV array 1 - Receptor (FP 3)

No glare found

PV array 1 - Receptor (FP 4)

No glare found

PV array 1 - OP Receptor (OP 1)

No glare found

PV array 1 - OP Receptor (OP 2)

No glare found

PV array 1 - OP Receptor (OP 3)

No glare found

PV array 1 - OP Receptor (OP 4)

No glare found

PV array 1 - OP Receptor (OP 5)

No glare found

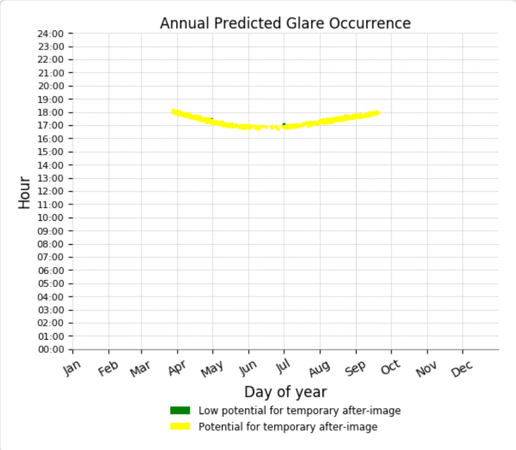
PV array 1 - OP Receptor (OP 6)

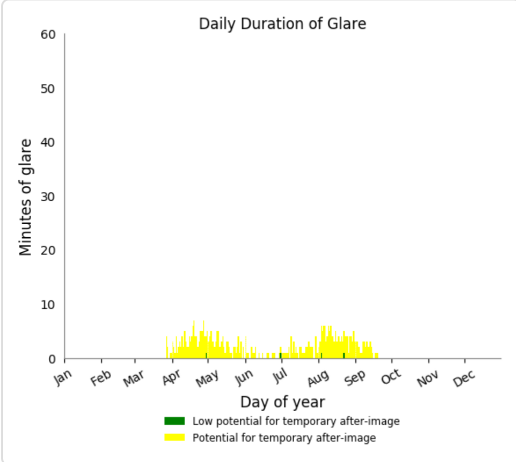
No glare found

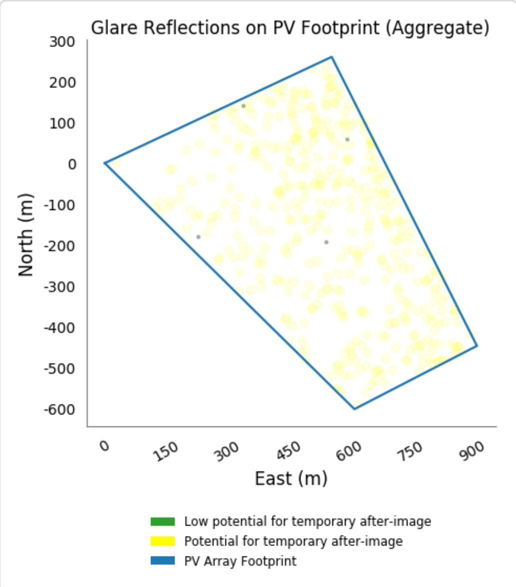
PV array 1 - OP Receptor (OP 7)

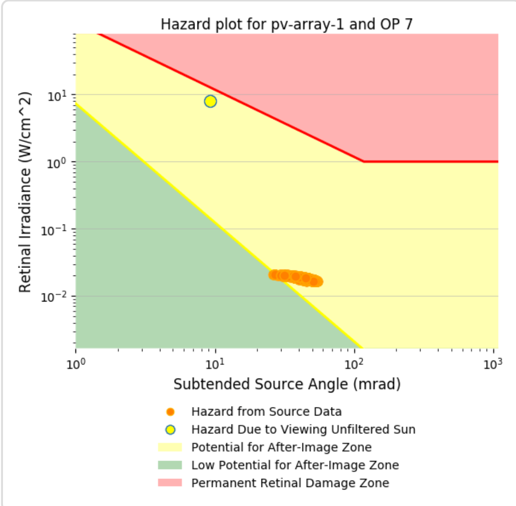
PV array is expected to produce the following glare for receptors at this location:

- 4 minutes of "green" glare with low potential to cause temporary after-image.
- 422 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 1 - OP Receptor (OP 8)

No glare found

PV array 1 - OP Receptor (OP 9)

No glare found

PV array 1 - OP Receptor (OP 10)

No glare found

PV array 1 - OP Receptor (OP 11)

No glare found

ADVERTISED PLAN

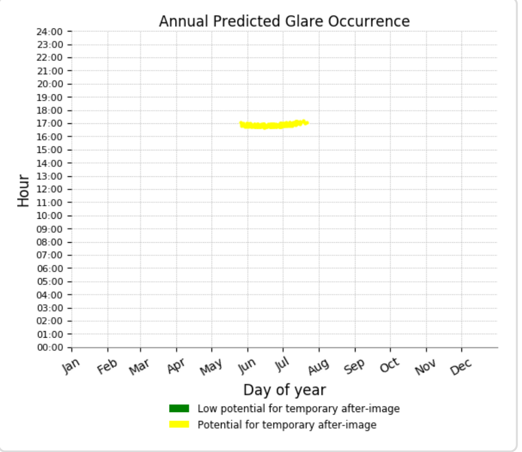
PV array 1 - OP Receptor (OP 12)

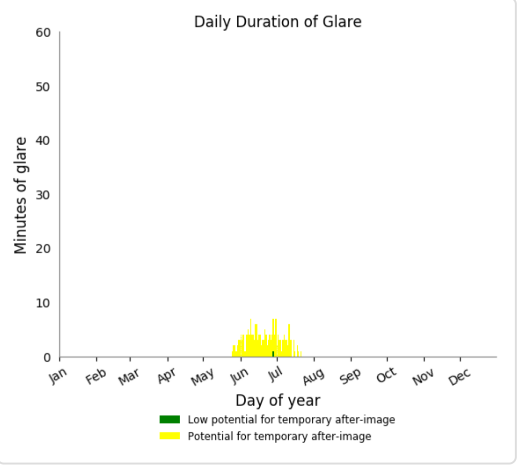
No glare found

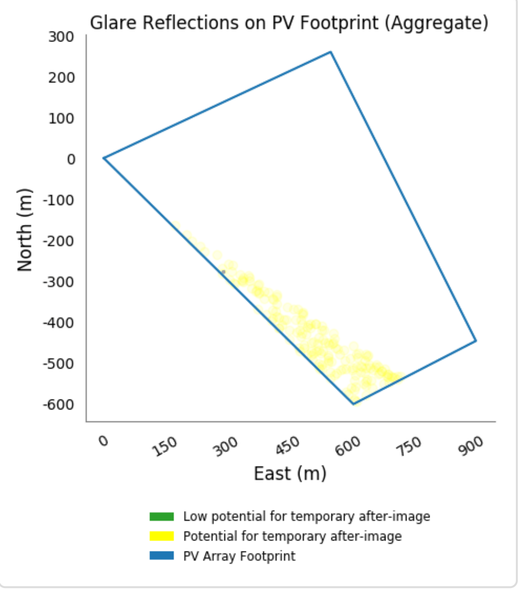
PV array 1 - OP Receptor (OP 13)

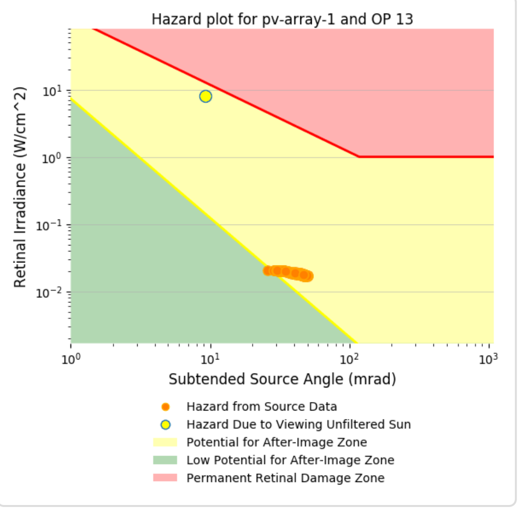
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 179 minutes of "yellow" glare with potential to cause temporary after-image.







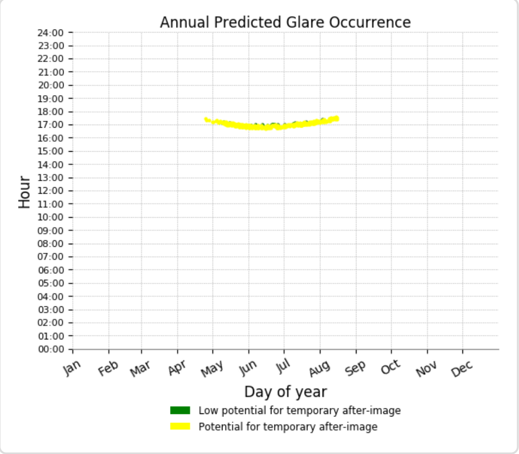


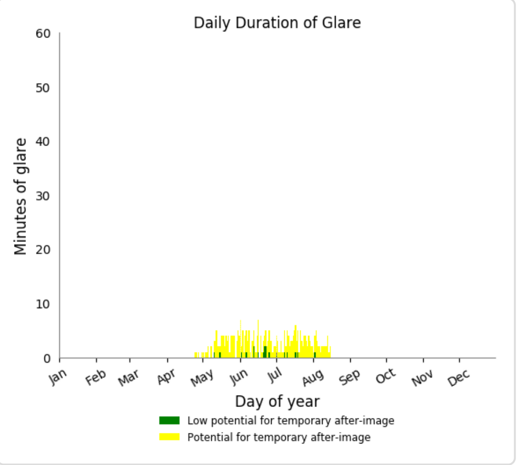
ADVERTISED PLAN

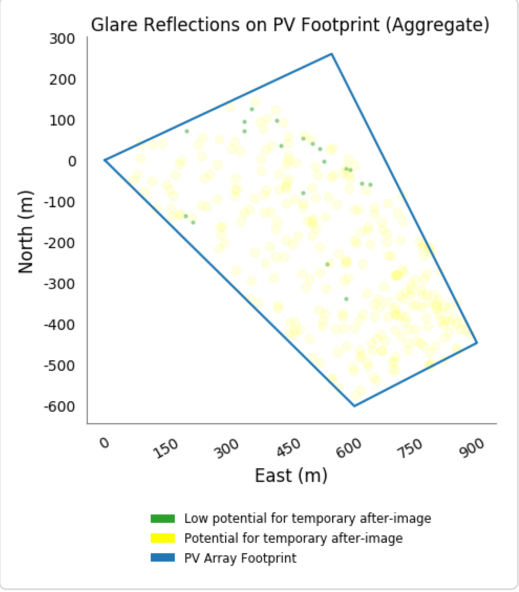
PV array 1 - OP Receptor (OP 14)

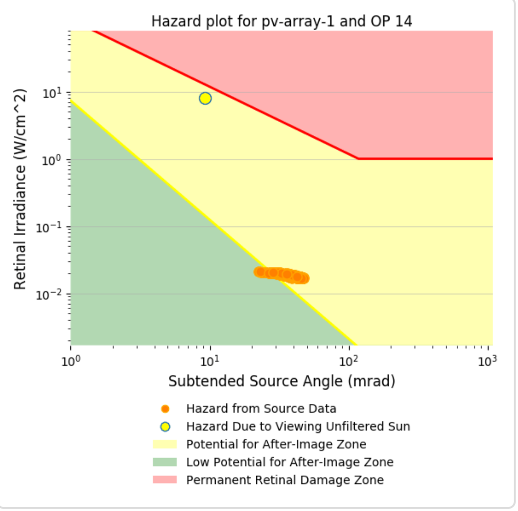
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 289 minutes of "yellow" glare with potential to cause temporary after-image.







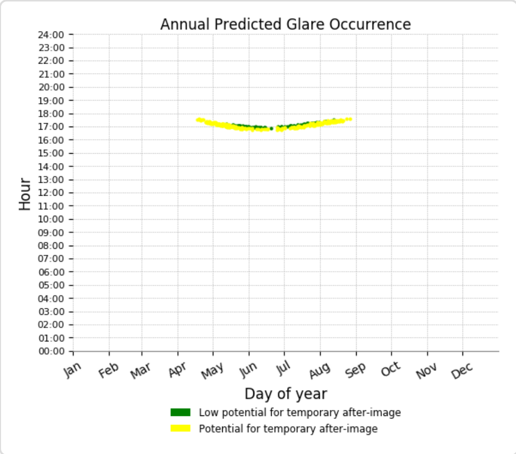


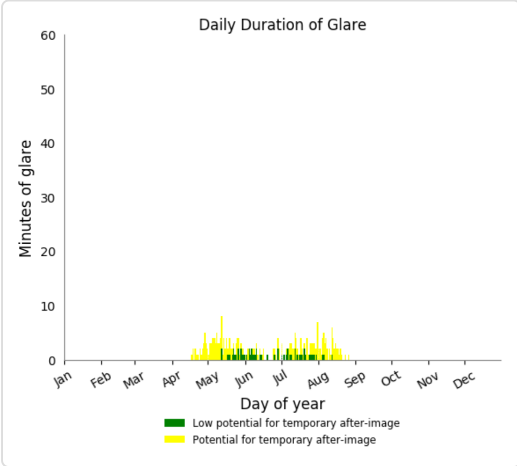
ADVERTISED PLAN

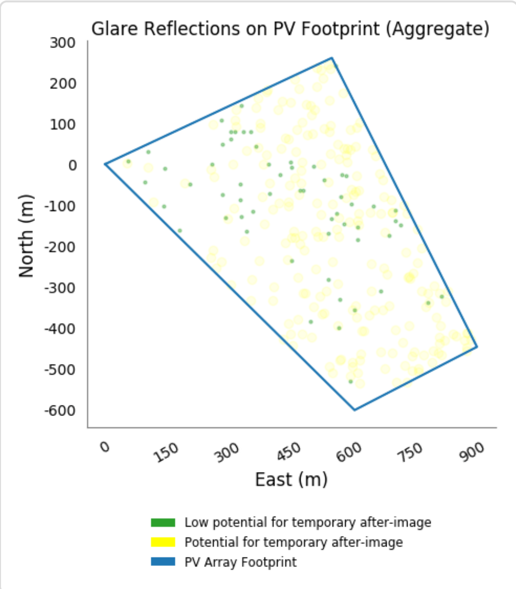
PV array 1 - OP Receptor (OP 15)

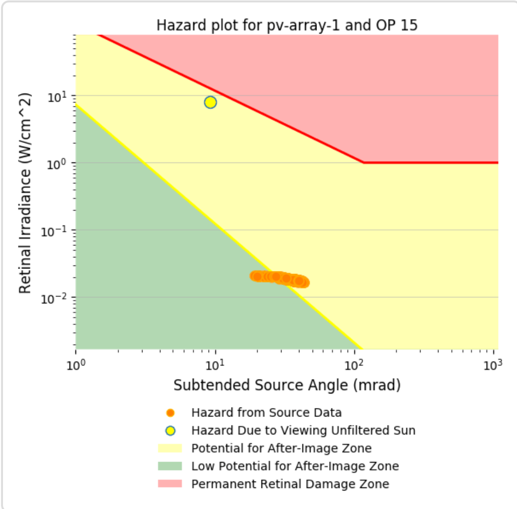
PV array is expected to produce the following glare for receptors at this location:

- 59 minutes of "green" glare with low potential to cause temporary after-image.
- 220 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 1 - OP Receptor (OP 16)

No glare found

PV array 1 - OP Receptor (OP 17)

No glare found

PV array 1 - OP Receptor (OP 18)

No glare found

PV array 1 - OP Receptor (OP 19)

No glare found

ADVERTISED PLAN

PV array 1 - OP Receptor (OP 20)

No glare found

PV array 1 - OP Receptor (OP 21)

No glare found

PV array 1 - OP Receptor (OP 22)

No glare found

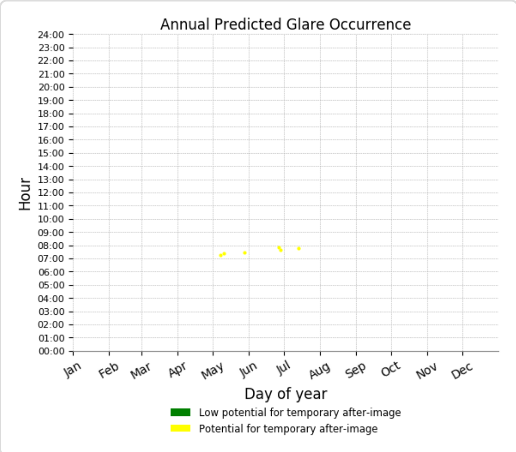
PV array 1 - OP Receptor (OP 23)

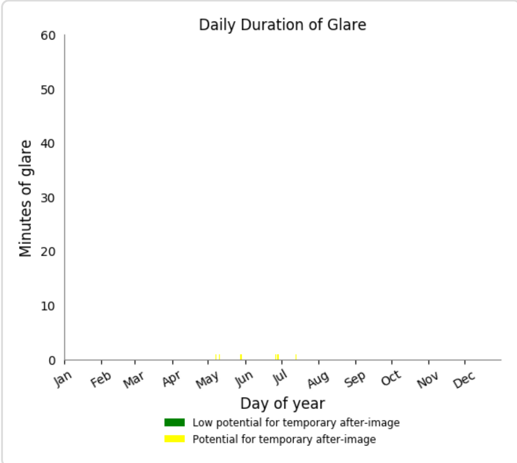
No glare found

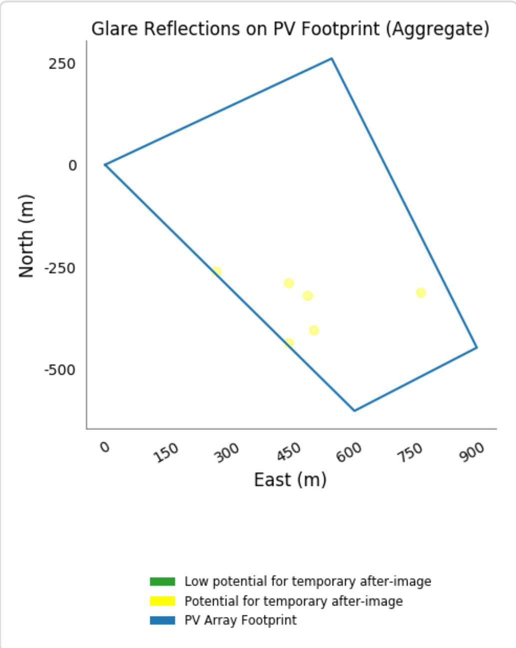
PV array 1 - OP Receptor (OP 24)

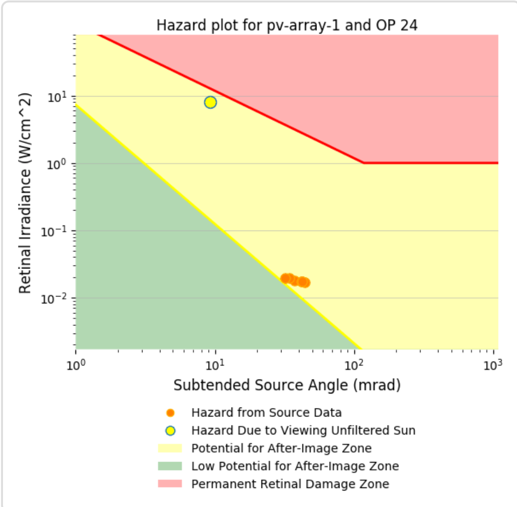
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 6 minutes of "yellow" glare with potential to cause temporary after-image.









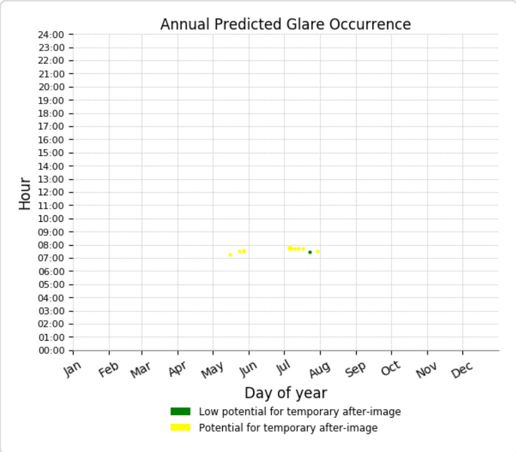
PV array 1 - OP Receptor (OP 25)

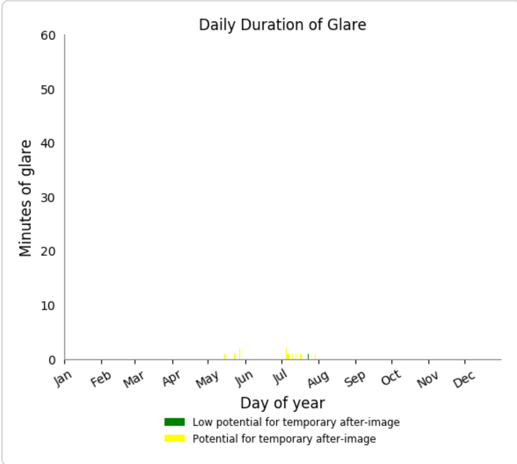
No glare found

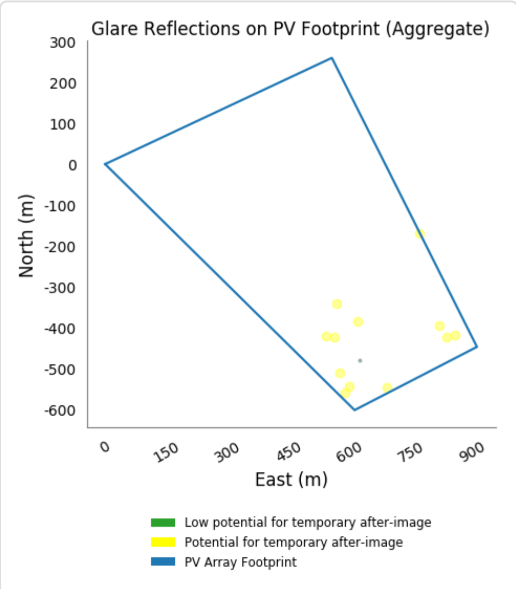
PV array 1 - OP Receptor (OP 26)

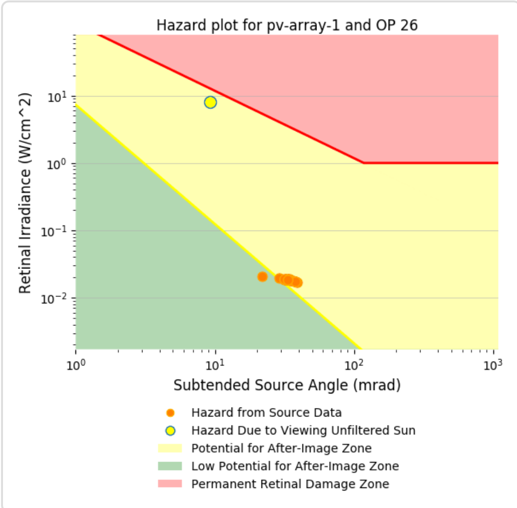
PV array is expected to produce the following glare for receptors at this location:

- 1 minutes of "green" glare with low potential to cause temporary after-image.
- 12 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 1 - OP Receptor (OP 27)

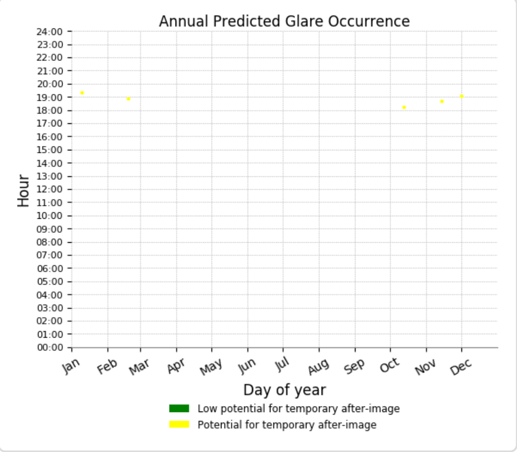
No glare found

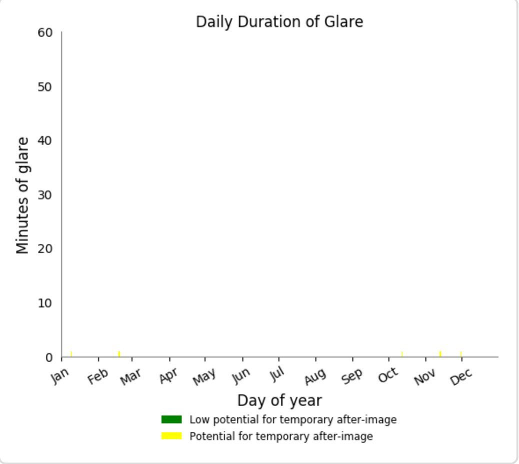
ADVERTISED PLAN

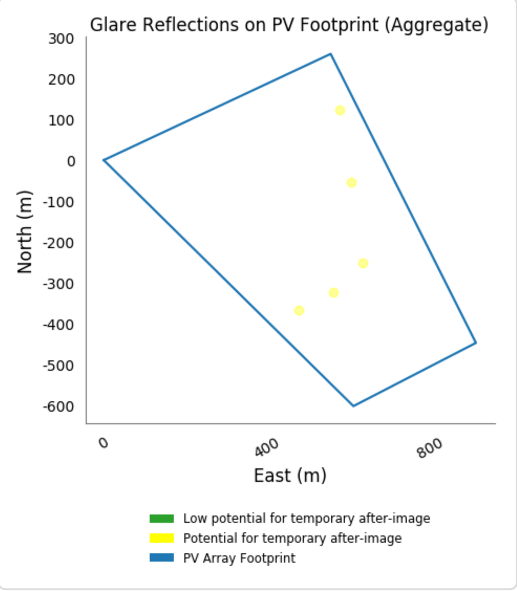
PV array 1 - OP Receptor (OP 28)

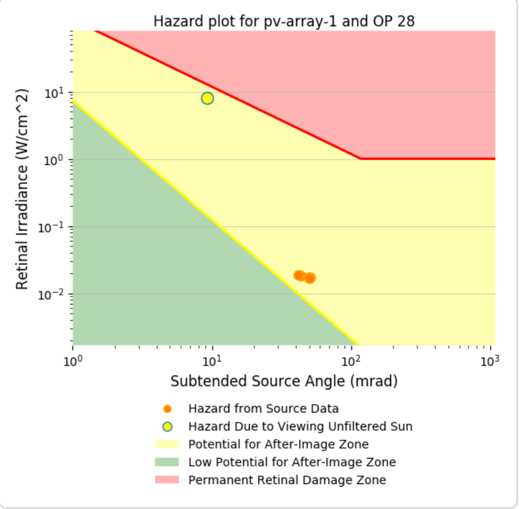
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 5 minutes of "yellow" glare with potential to cause temporary after-image.







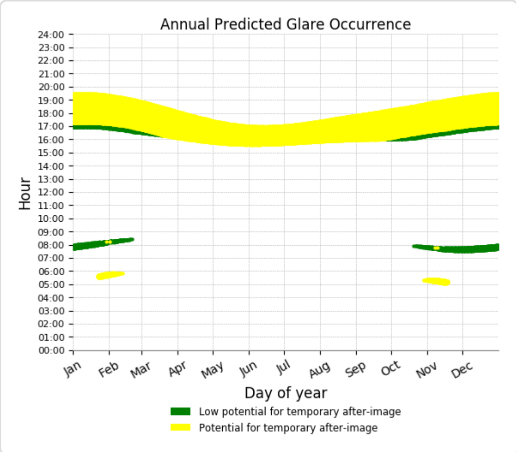


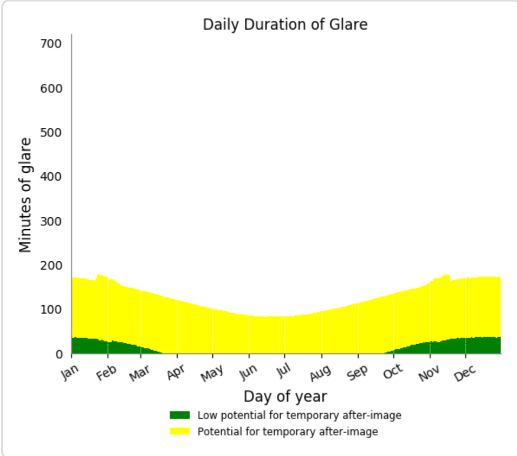
ADVERTISED PLAN

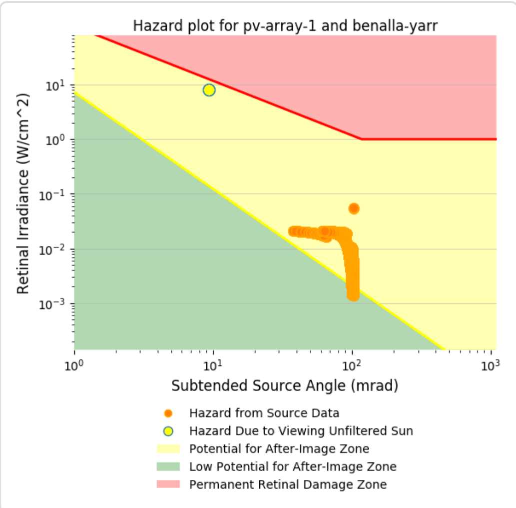
PV array 1 - Route Receptor (Benalla-Yarrawonga Road)

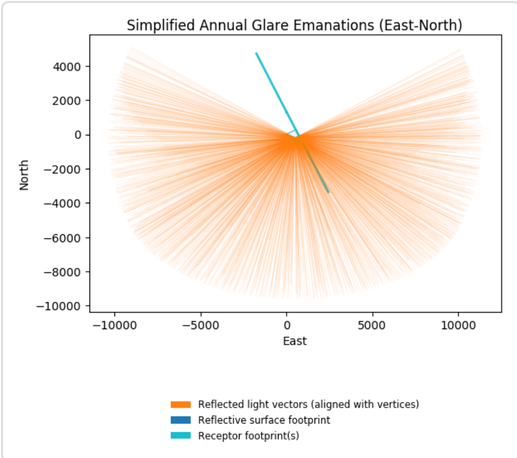
PV array is expected to produce the following glare for receptors at this location:

- 4,337 minutes of "green" glare with low potential to cause temporary after-image.
- 42,441 minutes of "yellow" glare with potential to cause temporary after-image.









Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

PV array 1 - Route Receptor (Boundary Road)

No glare found

PV array 1 - Route Receptor (Link Road)

No glare found

PV array 1 - Route Receptor (Murray Road)

No glare found

PV array 1 - Route Receptor (Nelson Road)

No glare found

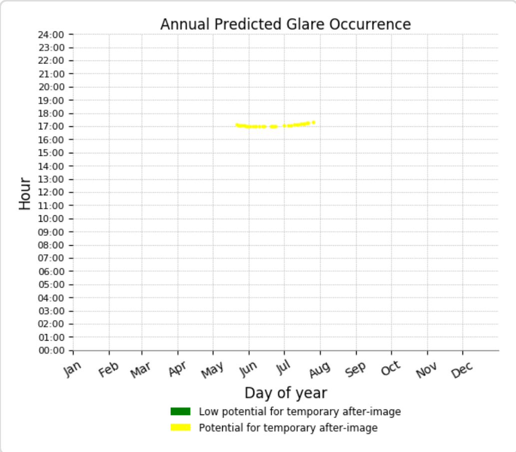
PV array 1 - Route Receptor (Old Farnley Road)

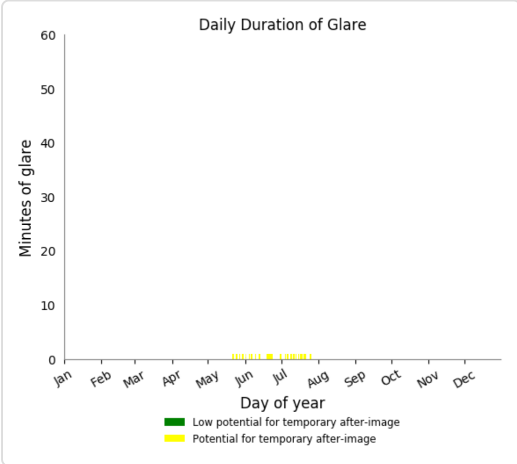
No glare found

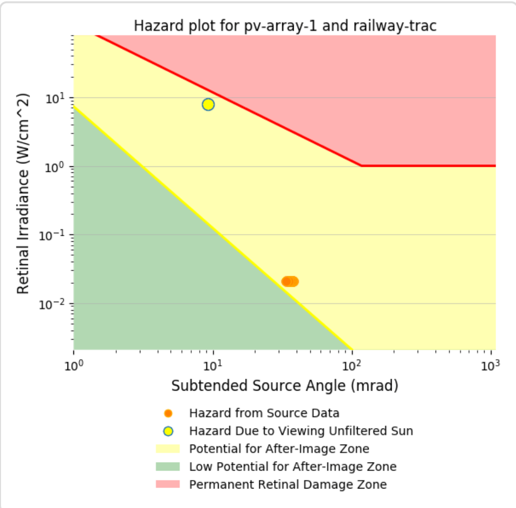
PV array 1 - Route Receptor (Railway Track)

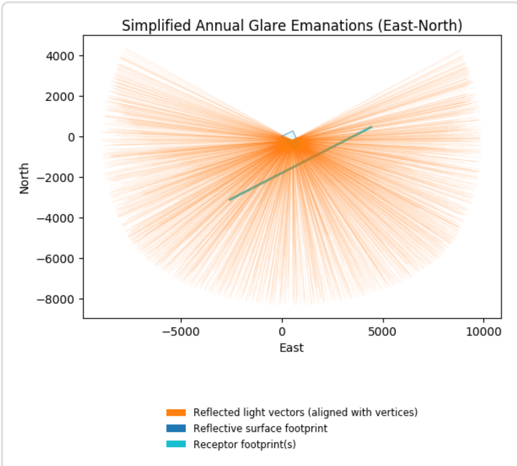
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 30 minutes of "yellow" glare with potential to cause temporary after-image.









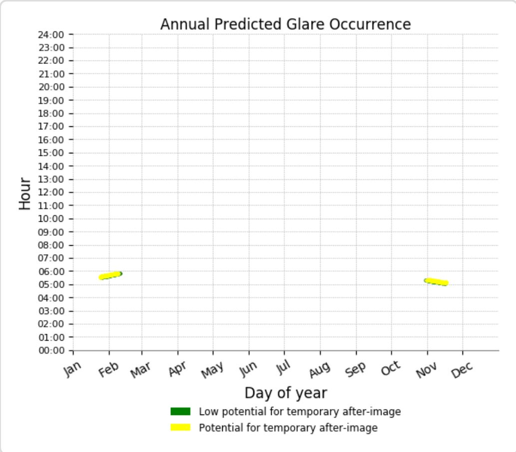
Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

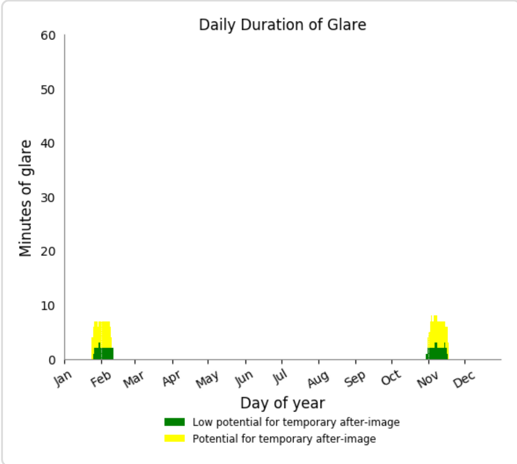
ADVERTISED PLAN

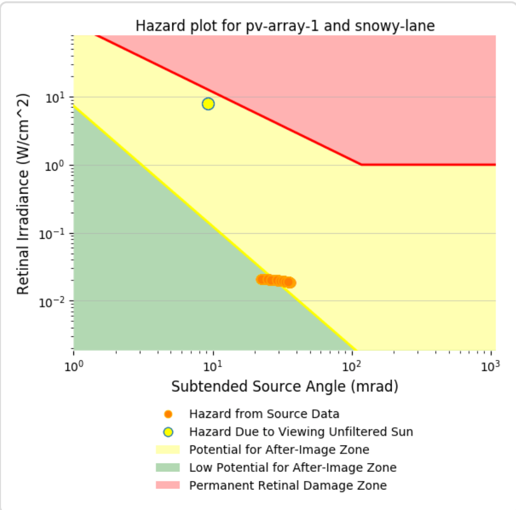
PV array 1 - Route Receptor (Snowy Lane)

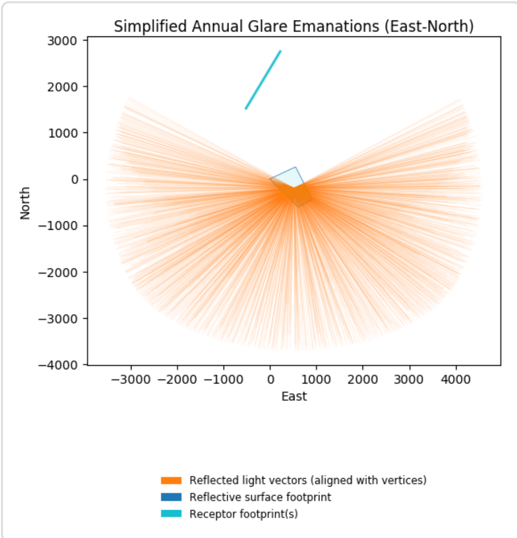
PV array is expected to produce the following glare for receptors at this location:

- 71 minutes of "green" glare with low potential to cause temporary after-image.
- 161 minutes of "yellow" glare with potential to cause temporary after-image.









re vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

PV array 1 - Route Receptor (Sydney Road)

No glare found

PV array 1 - Route Receptor (Witt Road)

No glare found

ADVERTISED PLAN

PV array 2 potential temporary after-image

Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0
OP: OP 1	0	830
OP: OP 2	0	1309
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	259
OP: OP 8	0	1524
OP: OP 9	0	1420
OP: OP 10	0	1690
OP: OP 11	0	1320
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	120
OP: OP 16	2	1346
OP: OP 17	19	1335
OP: OP 18	23	934
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	410
Route: Benalla-Yarrawonga Road	0	2716
Route: Boundary Road	0	0
Route: Link Road	0	0
Route: Murray Road	0	0
Route: Nelson Road	0	0
Route: Old Farnley Road	0	0
Route: Railway Track	0	0
Route: Snowy Lane	0	0
Route: Sydney Road	0	0
Route: Witt Road	0	0

PV array 2 - Receptor (FP 1)

No glare found

PV array 2 - Receptor (FP 2)

No glare found

ADVERTISED PLAN

PV array 2 - Receptor (FP 3)

No glare found

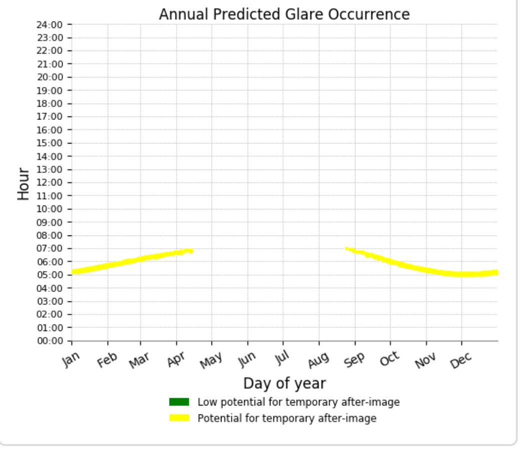
PV array 2 - Receptor (FP 4)

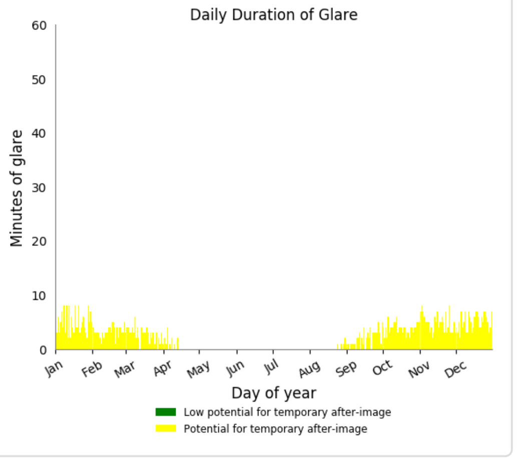
No glare found

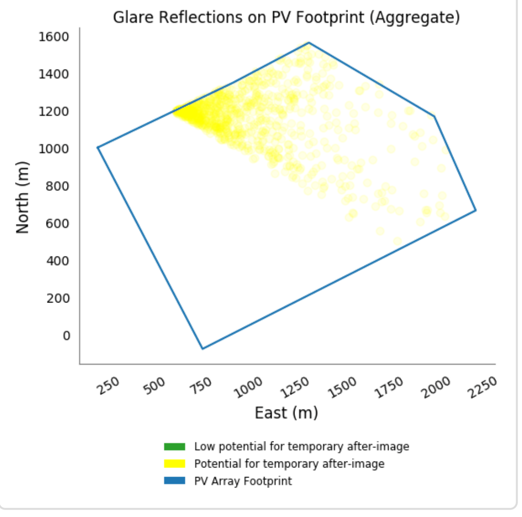
PV array 2 - OP Receptor (OP 1)

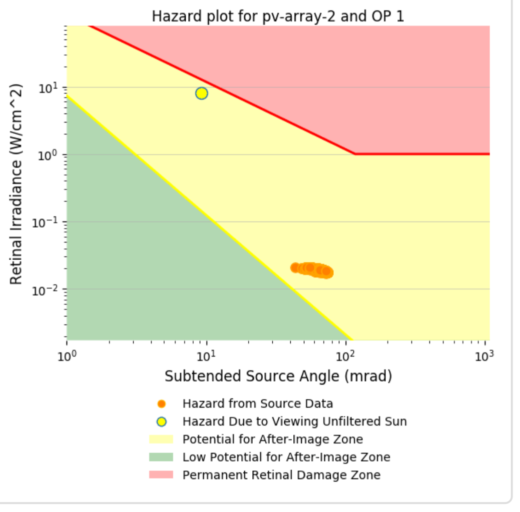
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 830 minutes of "yellow" glare with potential to cause temporary after-image.





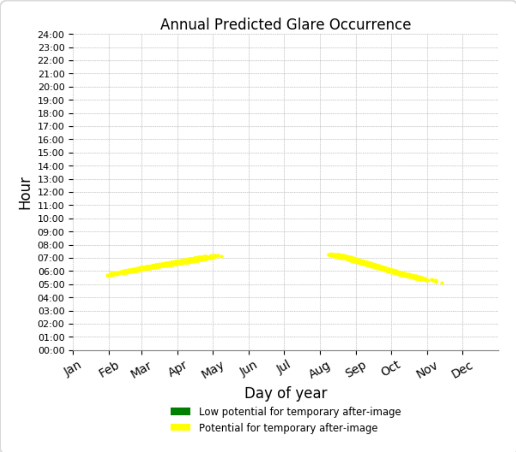


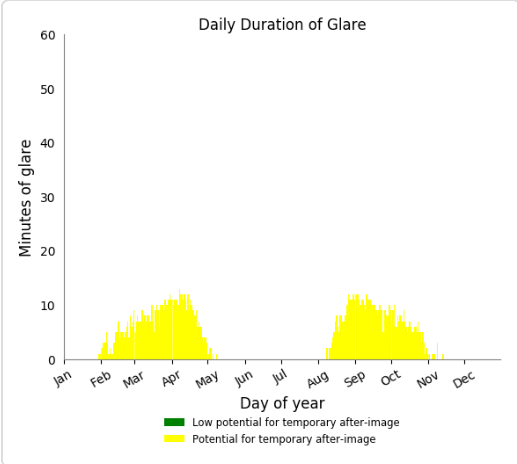


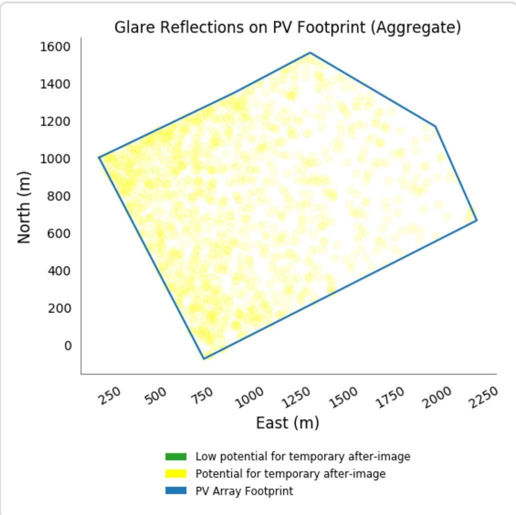
PV array 2 - OP Receptor (OP 2)

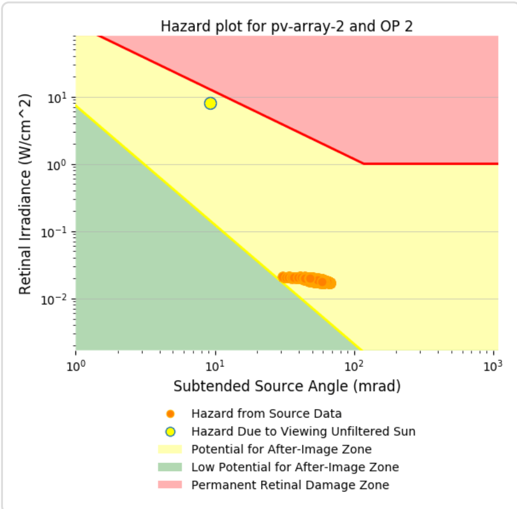
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,309 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 2 - OP Receptor (OP 3)

No glare found

PV array 2 - OP Receptor (OP 4)

No glare found

PV array 2 - OP Receptor (OP 5)

No glare found

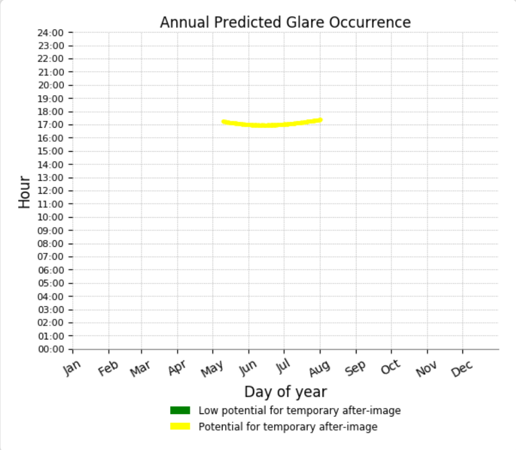
PV array 2 - OP Receptor (OP 6)

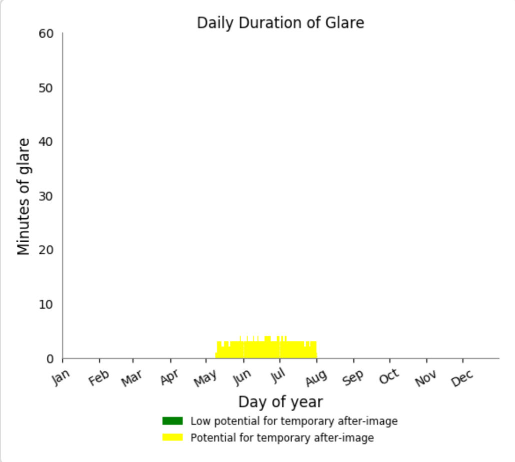
No glare found

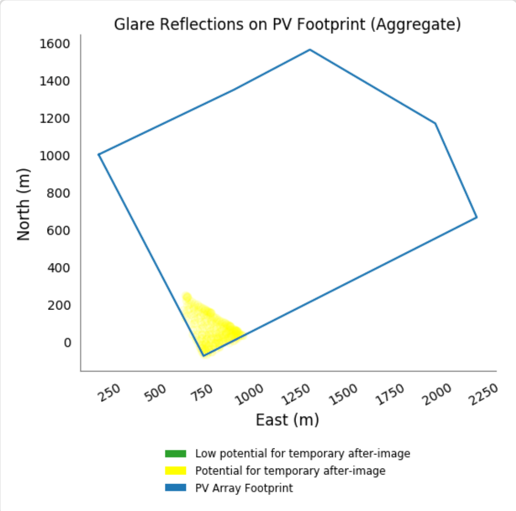
PV array 2 - OP Receptor (OP 7)

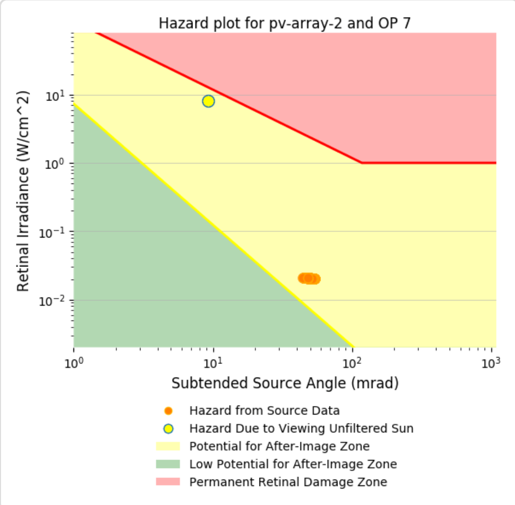
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 259 minutes of "yellow" glare with potential to cause temporary after-image.







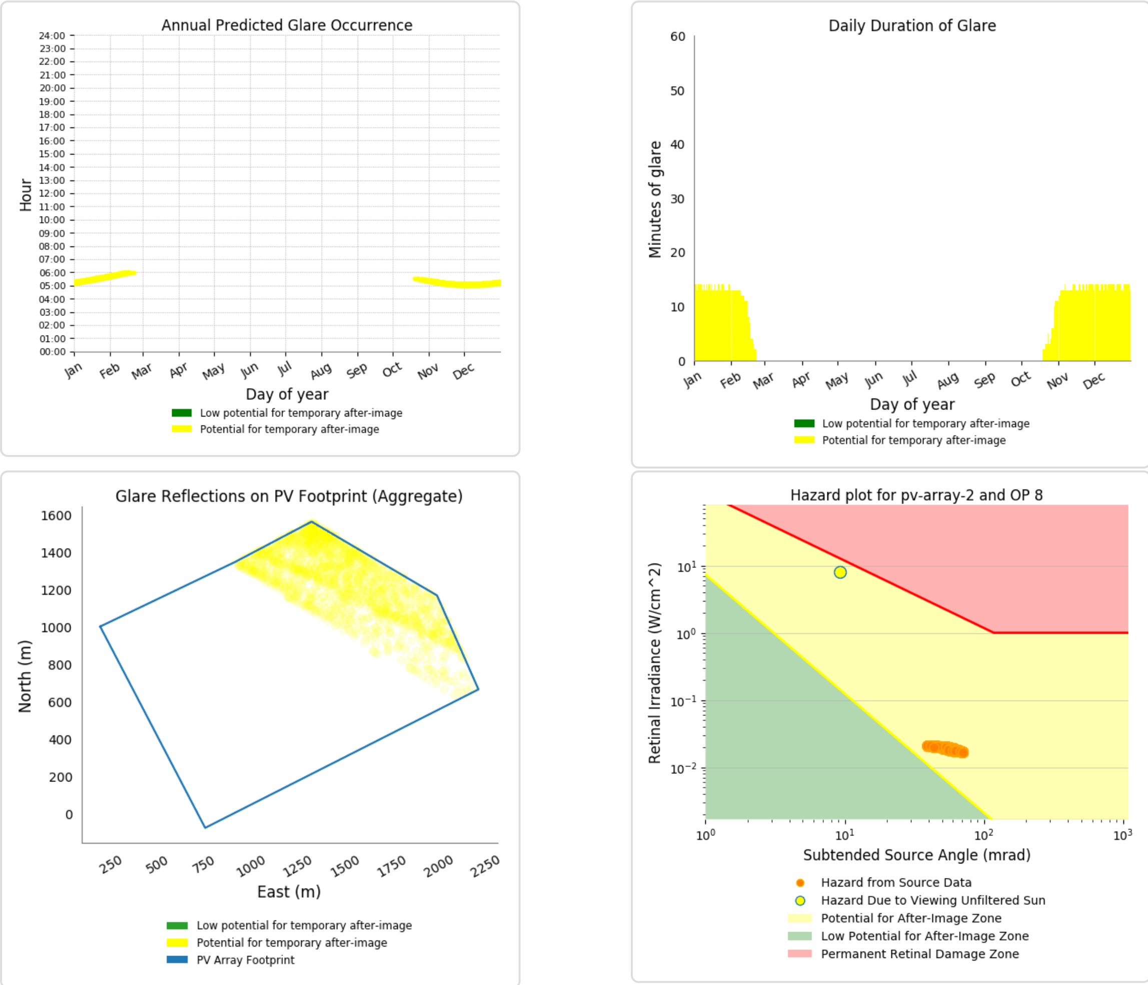


ADVERTISED PLAN

PV array 2 - OP Receptor (OP 8)

PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,524 minutes of "yellow" glare with potential to cause temporary after-image.

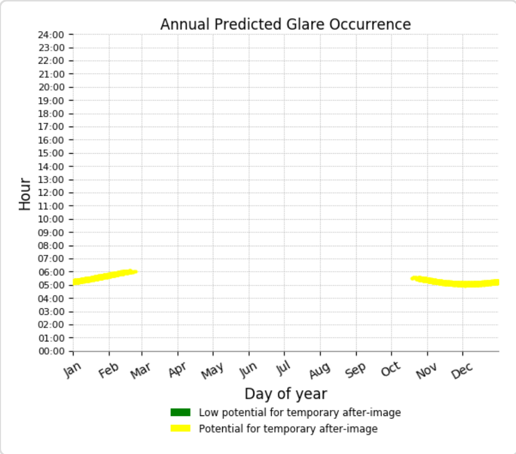


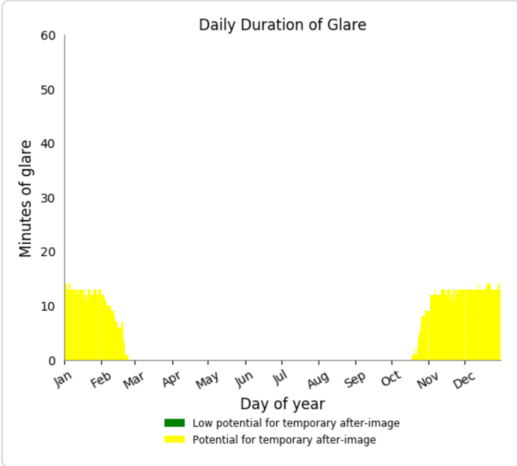
ADVERTISED PLAN

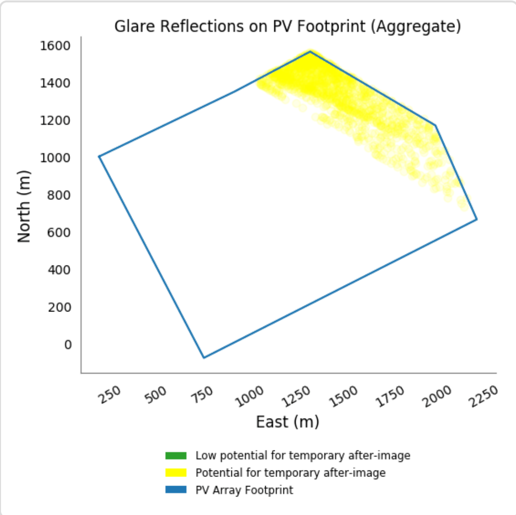
PV array 2 - OP Receptor (OP 9)

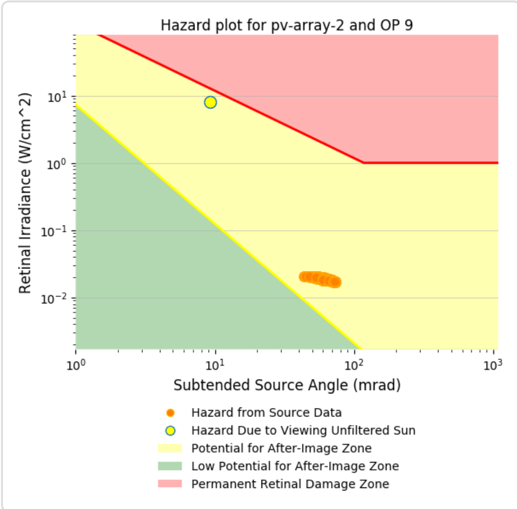
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,420 minutes of "yellow" glare with potential to cause temporary after-image.







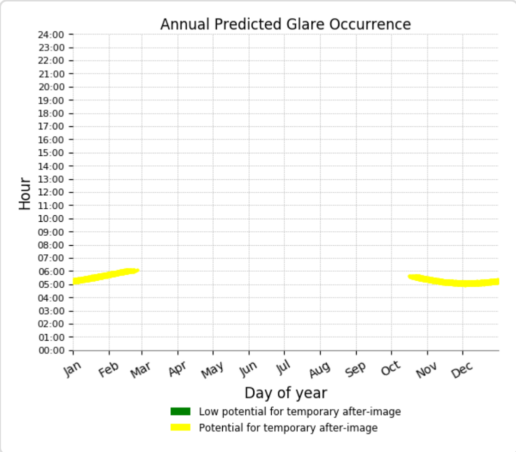


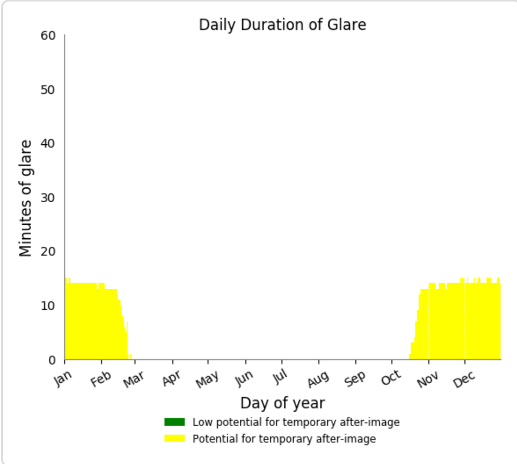
ADVERTISED PLAN

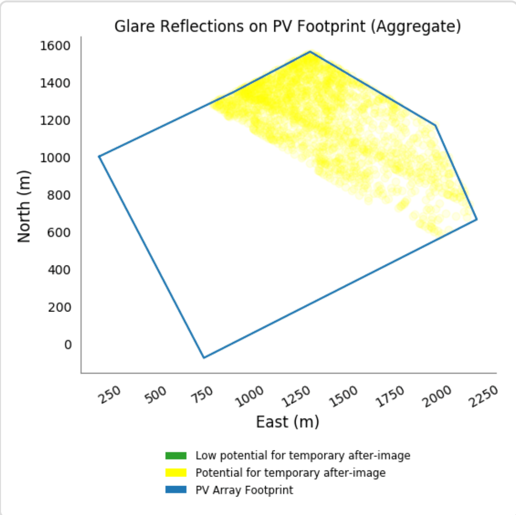
PV array 2 - OP Receptor (OP 10)

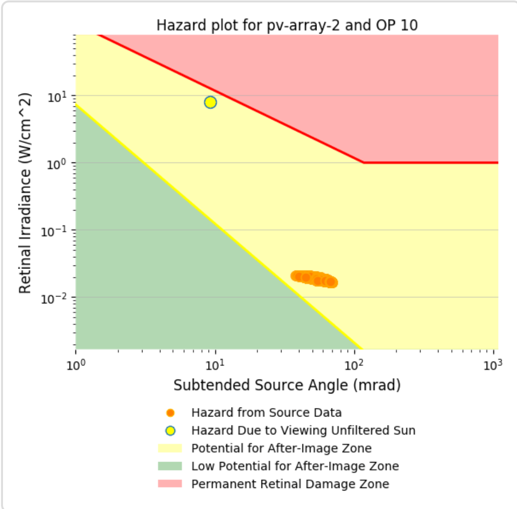
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,690 minutes of "yellow" glare with potential to cause temporary after-image.





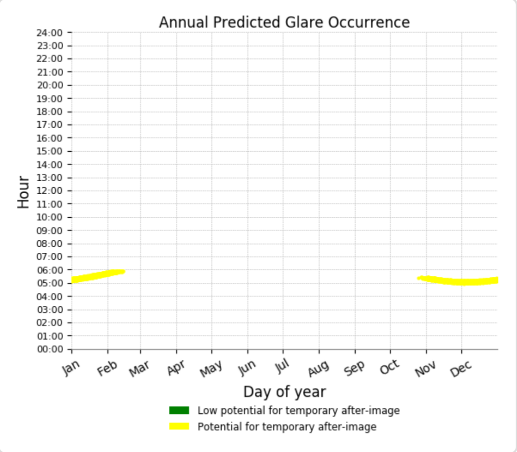


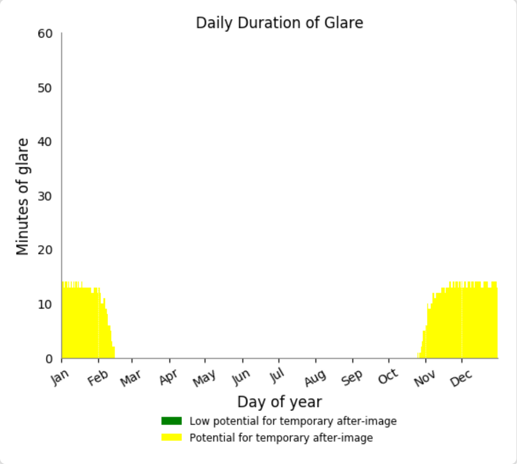


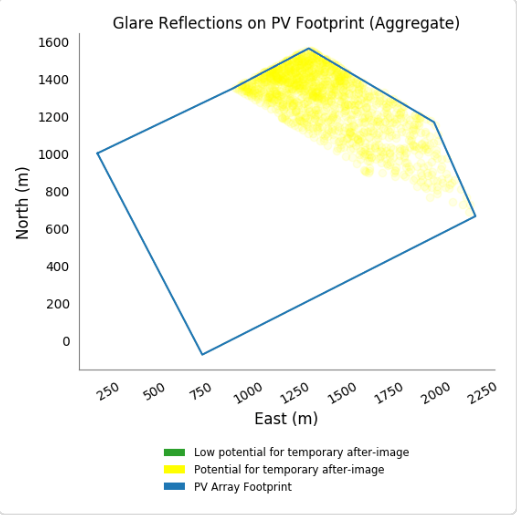
PV array 2 - OP Receptor (OP 11)

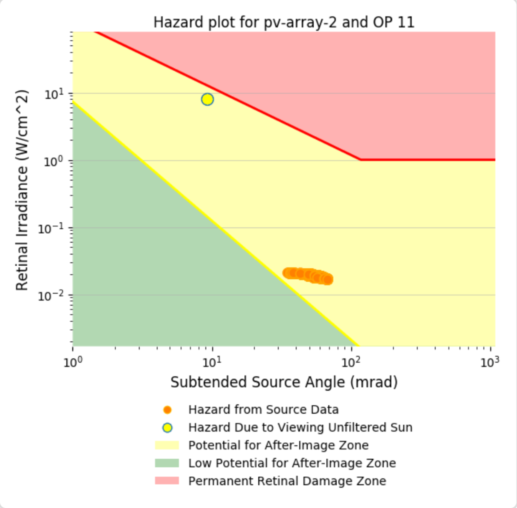
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,320 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 2 - OP Receptor (OP 12)

No glare found

PV array 2 - OP Receptor (OP 13)

No glare found

PV array 2 - OP Receptor (OP 14)

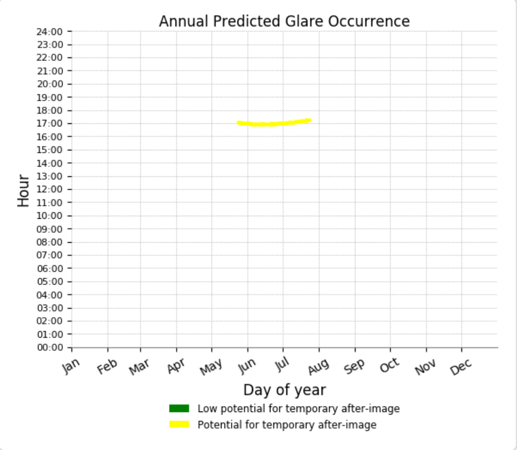
No glare found

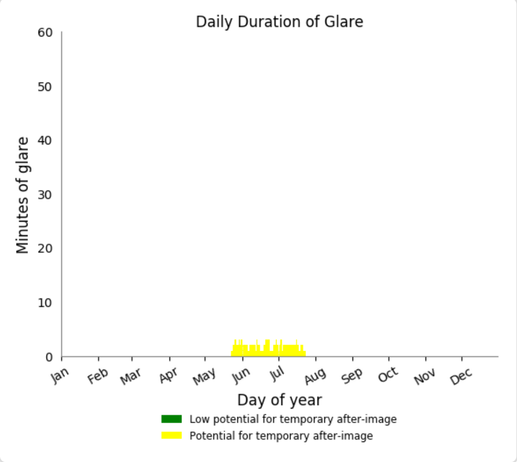
ADVERTISED PLAN

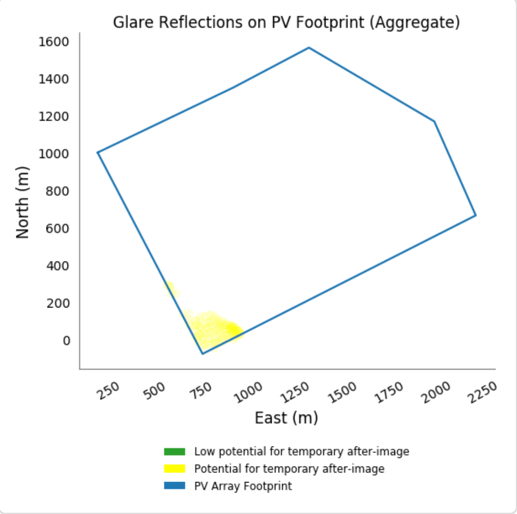
PV array 2 - OP Receptor (OP 15)

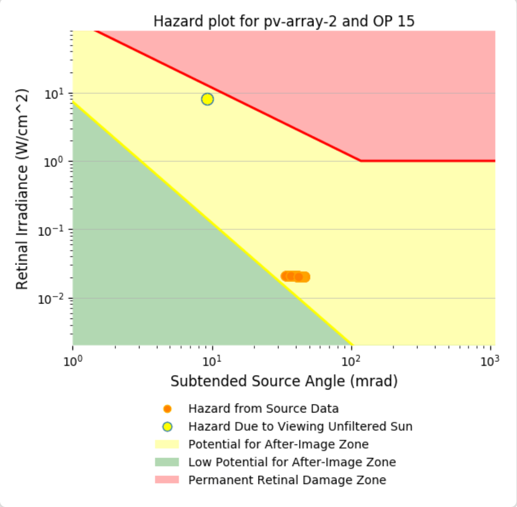
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 120 minutes of "yellow" glare with potential to cause temporary after-image.







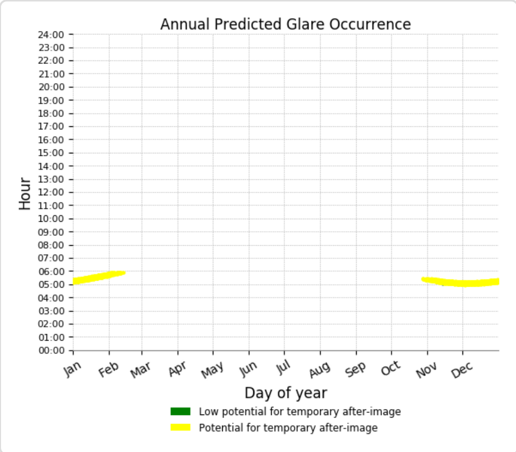


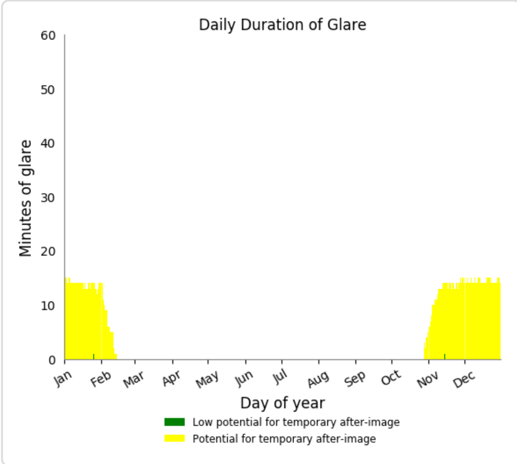
ADVERTISED PLAN

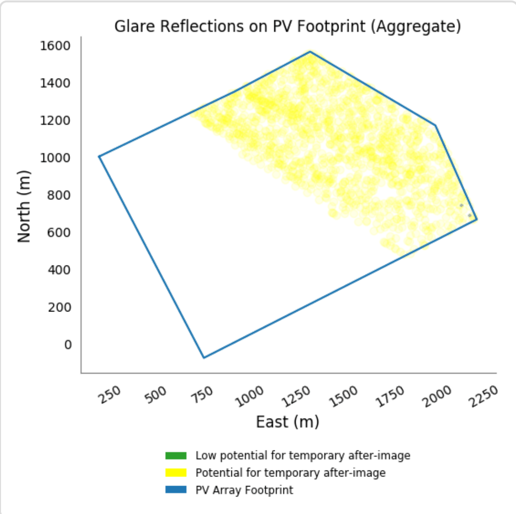
PV array 2 - OP Receptor (OP 16)

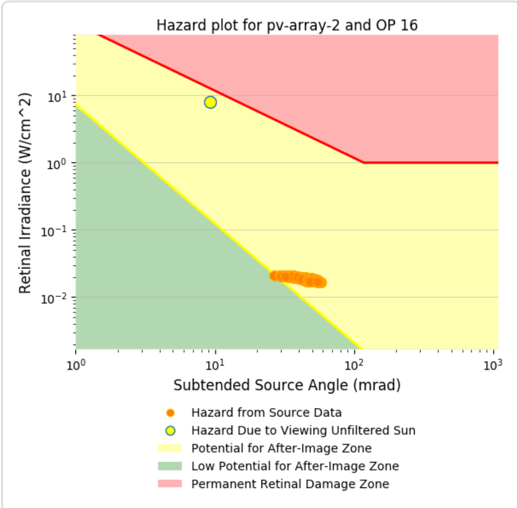
PV array is expected to produce the following glare for receptors at this location:

- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 1,346 minutes of "yellow" glare with potential to cause temporary after-image.







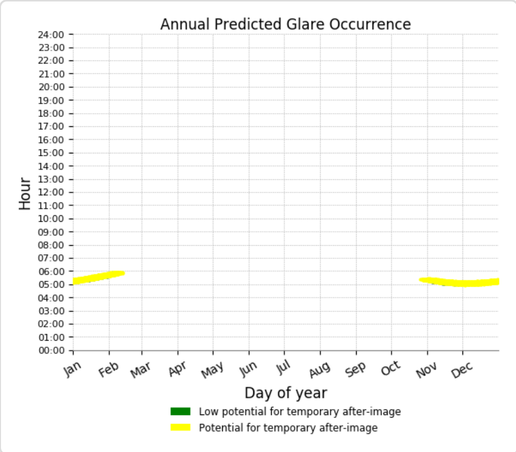


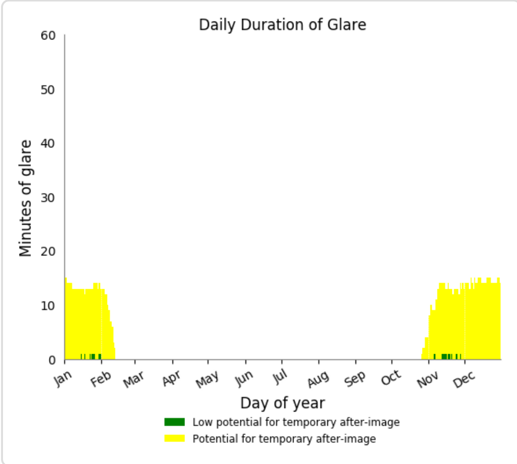
ADVERTISED PLAN

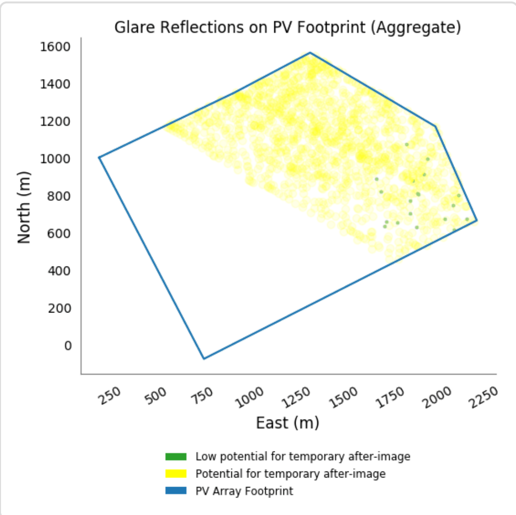
PV array 2 - OP Receptor (OP 17)

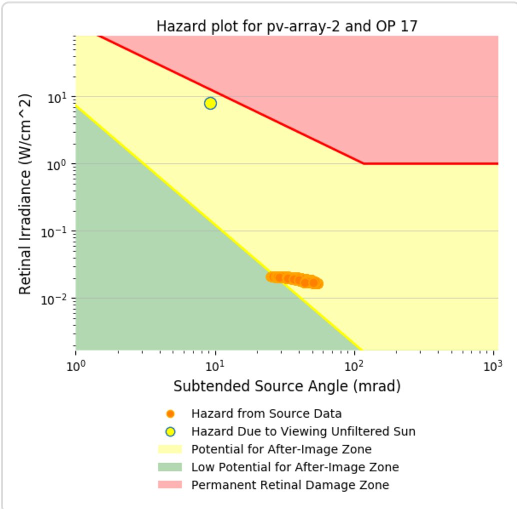
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 1,335 minutes of "yellow" glare with potential to cause temporary after-image.







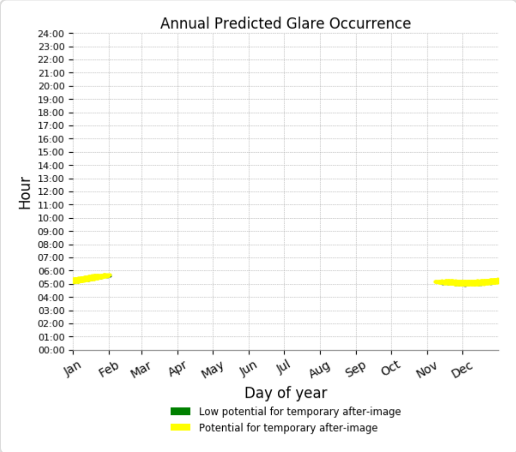


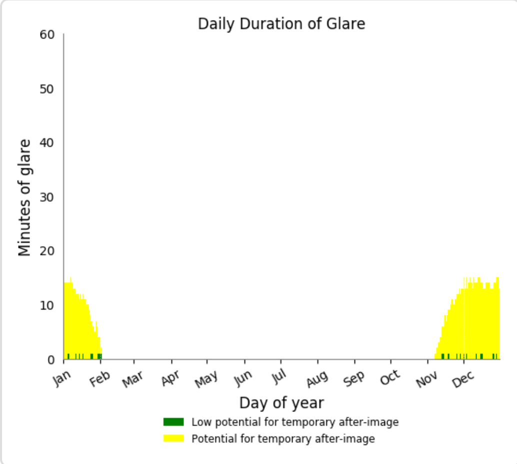
ADVERTISED PLAN

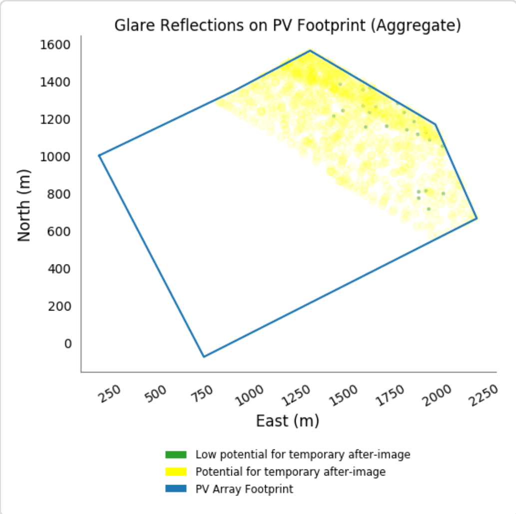
PV array 2 - OP Receptor (OP 18)

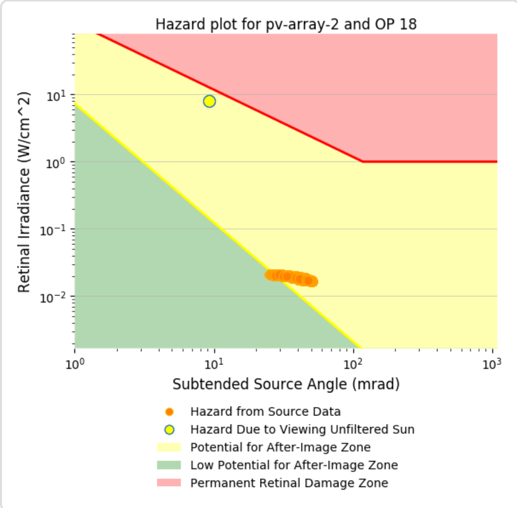
PV array is expected to produce the following glare for receptors at this location:

- 23 minutes of "green" glare with low potential to cause temporary after-image.
- 934 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 2 - OP Receptor (OP 19)

No glare found

PV array 2 - OP Receptor (OP 20)

No glare found

PV array 2 - OP Receptor (OP 21)

No glare found

PV array 2 - OP Receptor (OP 22)

No glare found

ADVERTISED PLAN

PV array 2 - OP Receptor (OP 23)

No glare found

PV array 2 - OP Receptor (OP 24)

No glare found

PV array 2 - OP Receptor (OP 25)

No glare found

PV array 2 - OP Receptor (OP 26)

No glare found

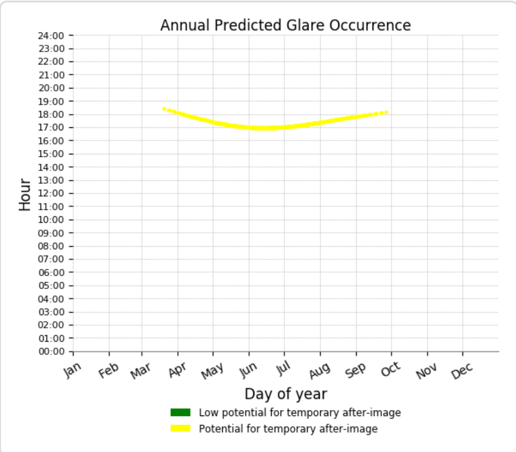
PV array 2 - OP Receptor (OP 27)

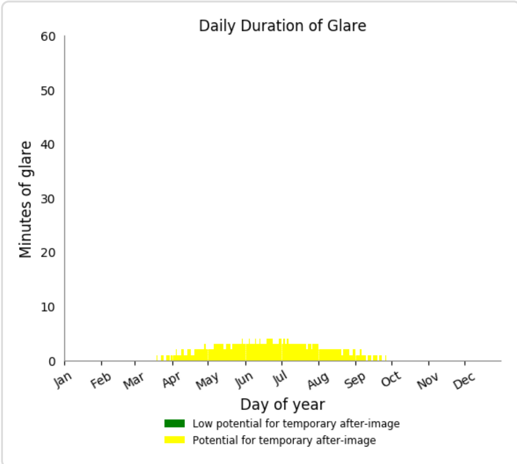
No glare found

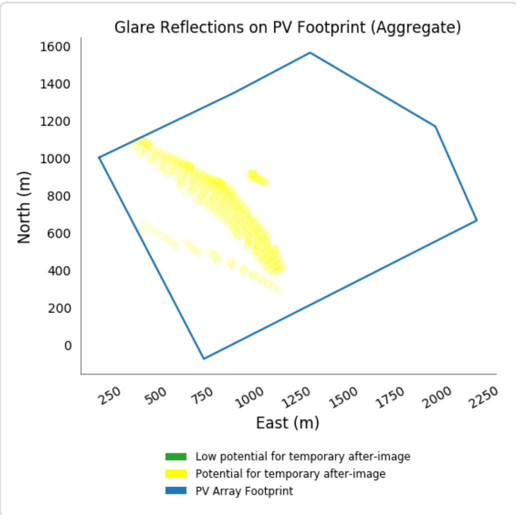
PV array 2 - OP Receptor (OP 28)

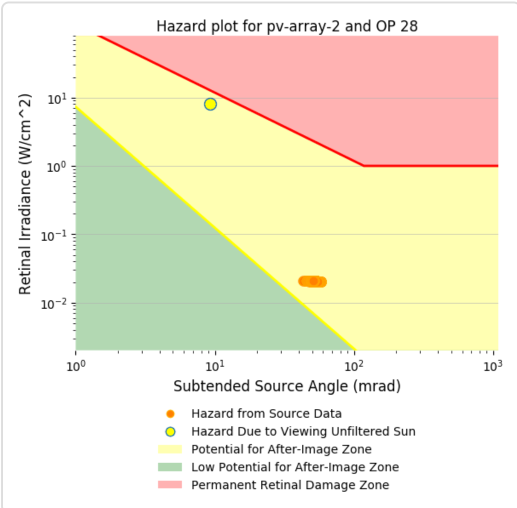
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 410 minutes of "yellow" glare with potential to cause temporary after-image.







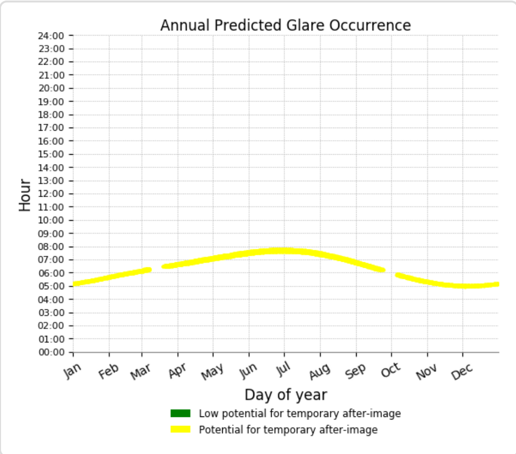


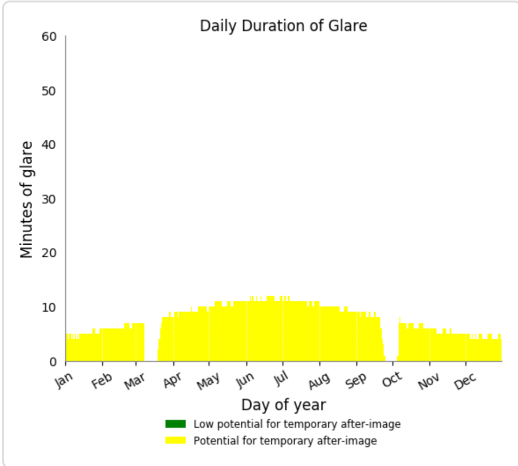
ADVERTISED PLAN

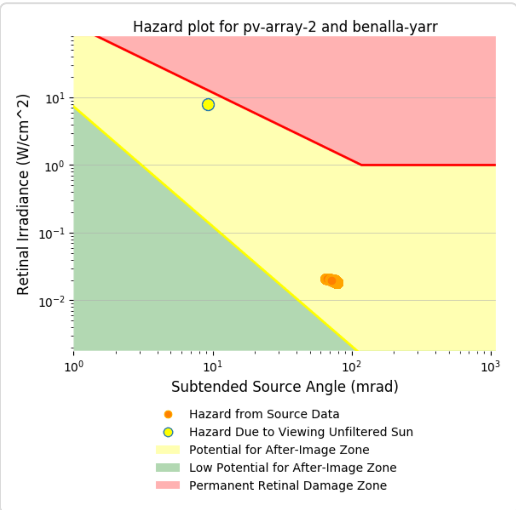
PV array 2 - Route Receptor (Benalla-Yarrawonga Road)

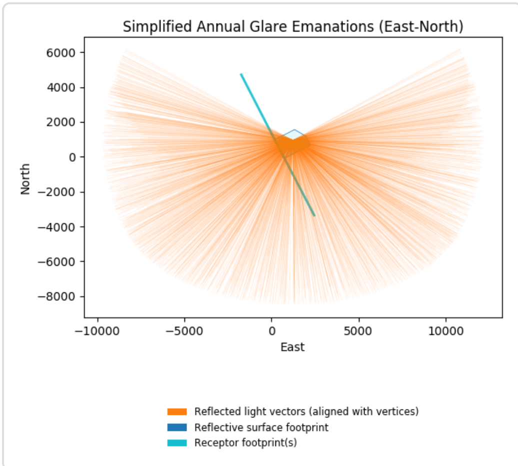
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,716 minutes of "yellow" glare with potential to cause temporary after-image.









Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

PV array 2 - Route Receptor (Boundary Road)

No glare found

PV array 2 - Route Receptor (Link Road)

No glare found

PV array 2 - Route Receptor (Murray Road)

No glare found

PV array 2 - Route Receptor (Nelson Road)

No glare found

ADVERTISED PLAN

PV array 2 - Route Receptor (Old Farnley Road)

No glare found

PV array 2 - Route Receptor (Railway Track)

No glare found

PV array 2 - Route Receptor (Snowy Lane)

No glare found

PV array 2 - Route Receptor (Sydney Road)

No glare found

PV array 2 - Route Receptor (Witt Road)

No glare found

ADVERTISED PLAN

PV array 3 potential temporary after-image

Warning: This PV array encompasses a large surface area. This may reduce the accuracy of certain calculations if receptors are near the array. These calculations utilize the PV footprint centroid, rather than the glare-spot location, due to analysis method limitations. Additional analyses of array sub-sections may provide more information on expected glare. (Note that the subtended source angle is limited by the footprint surface area.)

Component	Green glare (min)	Yellow glare (min)
FP: FP 1	0	0
FP: FP 2	0	0
FP: FP 3	0	0
FP: FP 4	0	0
OP: OP 1	0	0
OP: OP 2	25	22
OP: OP 3	162	1213
OP: OP 4	128	1419
OP: OP 5	195	219
OP: OP 6	77	269
OP: OP 7	93	985
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	14	269
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	35	0
OP: OP 20	19	0
OP: OP 21	47	0
OP: OP 22	62	0
OP: OP 23	111	0
OP: OP 24	180	20
OP: OP 25	162	44
OP: OP 26	161	14
OP: OP 27	176	0
OP: OP 28	302	8691
Route: Benalla-Yarrawonga Road	0	1448
Route: Boundary Road	2	48
Route: Link Road	19	5
Route: Murray Road	0	0
Route: Nelson Road	0	0
Route: Old Farnley Road	0	0
Route: Railway Track	0	24
Route: Snowy Lane	20	27
Route: Sydney Road	24	0
Route: Witt Road	0	0

PV array 3 - Receptor (FP 1)

No glare found

PV array 3 - Receptor (FP 2)

No glare found

PV array 3 - Receptor (FP 3)

No glare found

ADVERTISED PLAN

PV array 3 - Receptor (FP 4)

No glare found

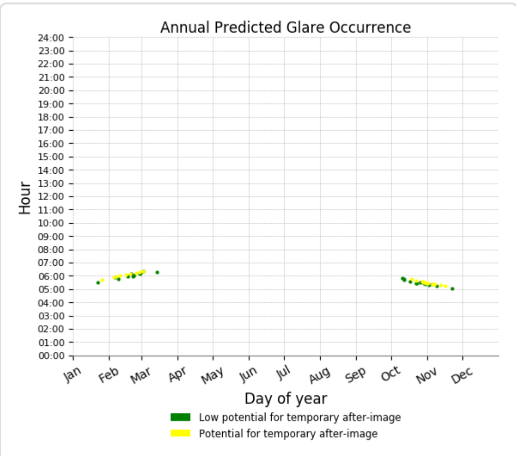
PV array 3 - OP Receptor (OP 1)

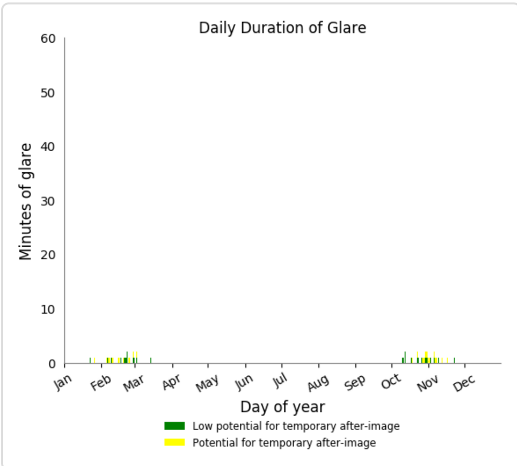
No glare found

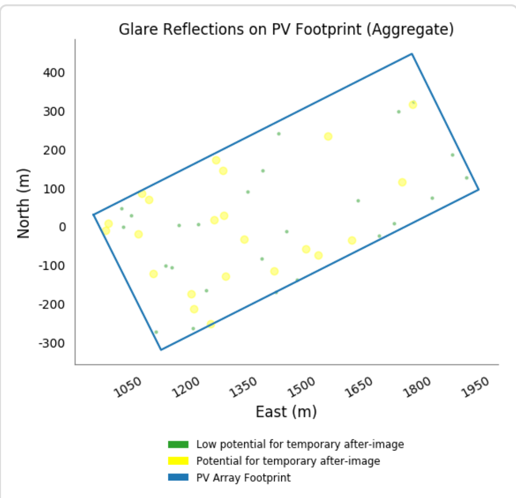
PV array 3 - OP Receptor (OP 2)

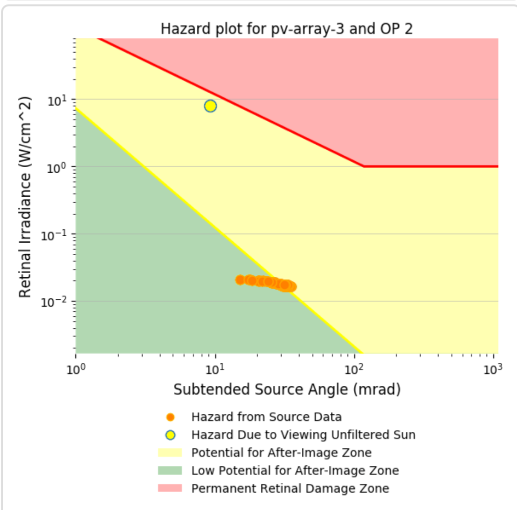
PV array is expected to produce the following glare for receptors at this location:

- 25 minutes of "green" glare with low potential to cause temporary after-image.
- 22 minutes of "yellow" glare with potential to cause temporary after-image.





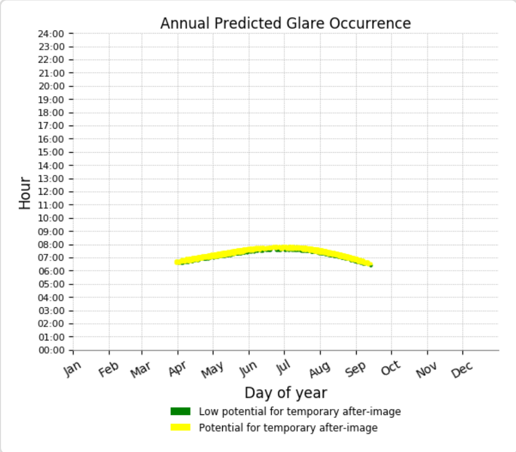


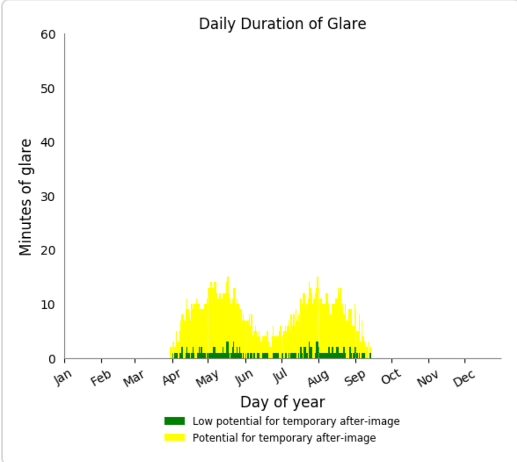


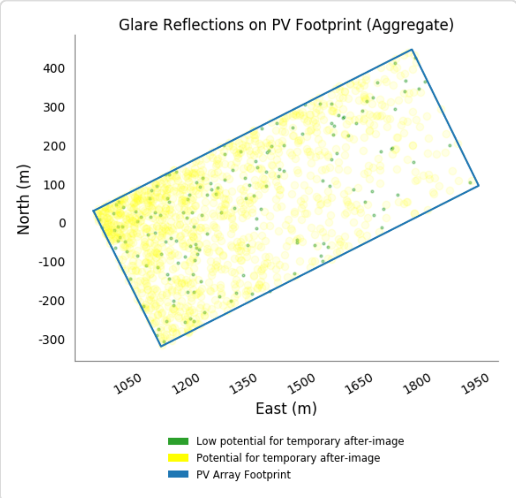
PV array 3 - OP Receptor (OP 3)

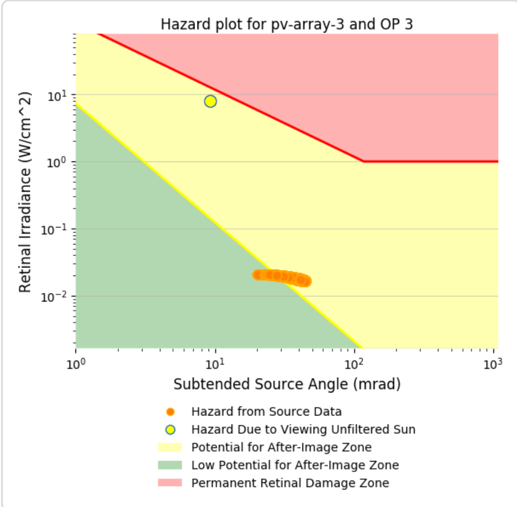
PV array is expected to produce the following glare for receptors at this location:

- 162 minutes of "green" glare with low potential to cause temporary after-image.
- 1,213 minutes of "yellow" glare with potential to cause temporary after-image.







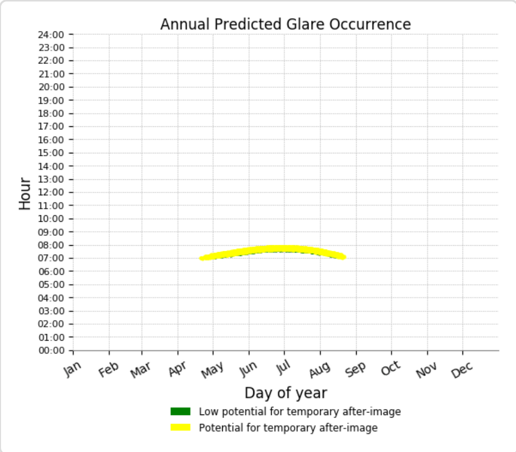


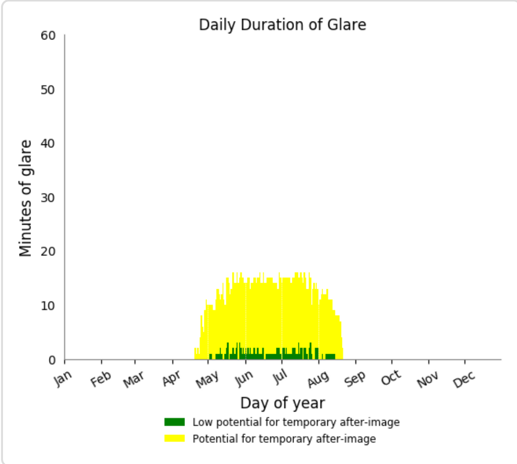
ADVERTISED PLAN

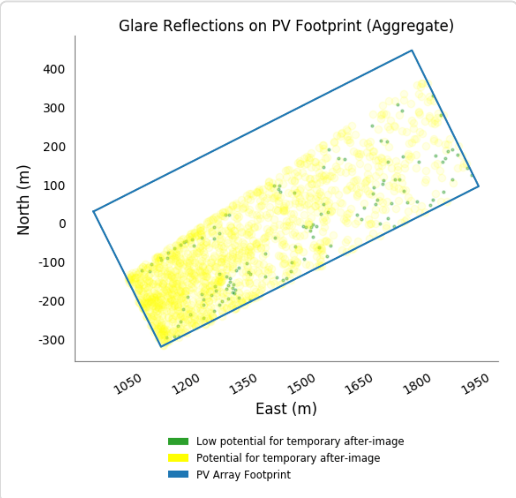
PV array 3 - OP Receptor (OP 4)

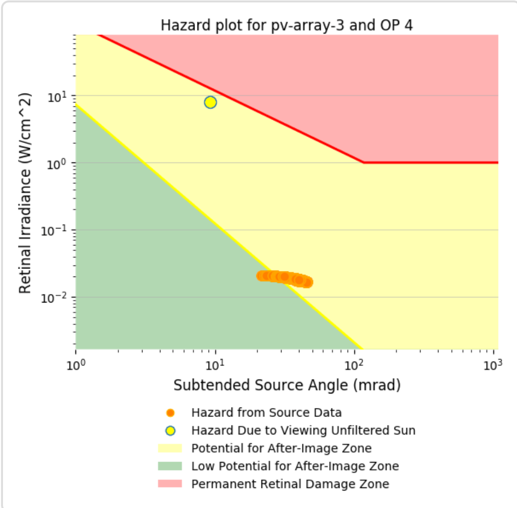
PV array is expected to produce the following glare for receptors at this location:

- 128 minutes of "green" glare with low potential to cause temporary after-image.
- 1,419 minutes of "yellow" glare with potential to cause temporary after-image.







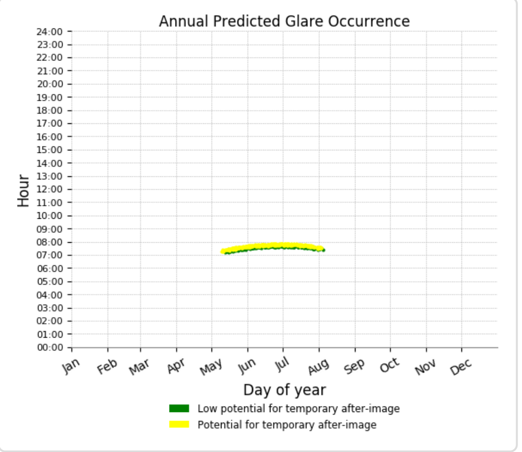


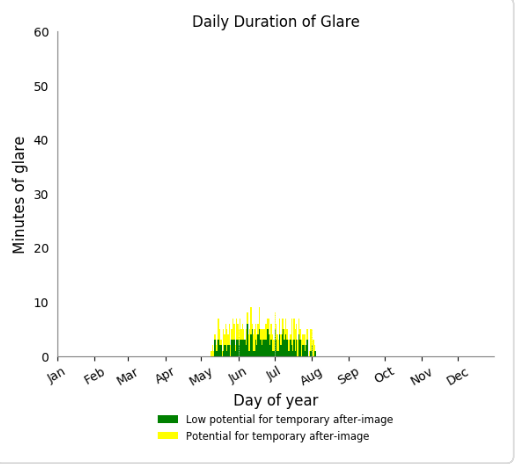
ADVERTISED PLAN

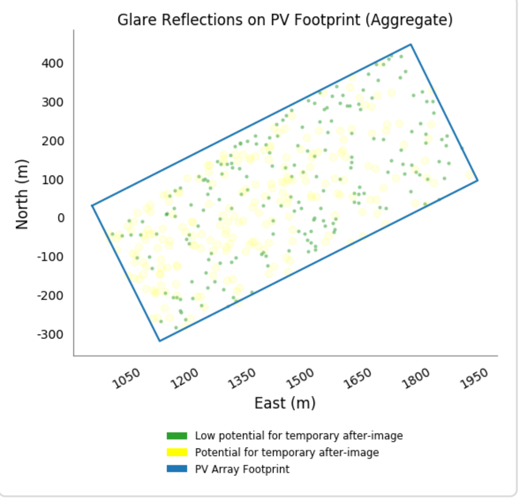
PV array 3 - OP Receptor (OP 5)

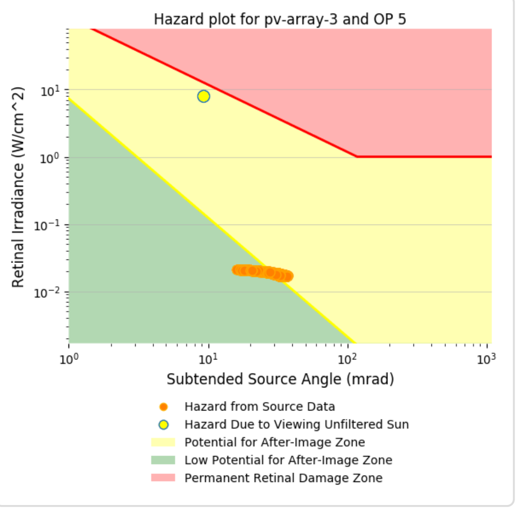
PV array is expected to produce the following glare for receptors at this location:

- 195 minutes of "green" glare with low potential to cause temporary after-image.
- 219 minutes of "yellow" glare with potential to cause temporary after-image.







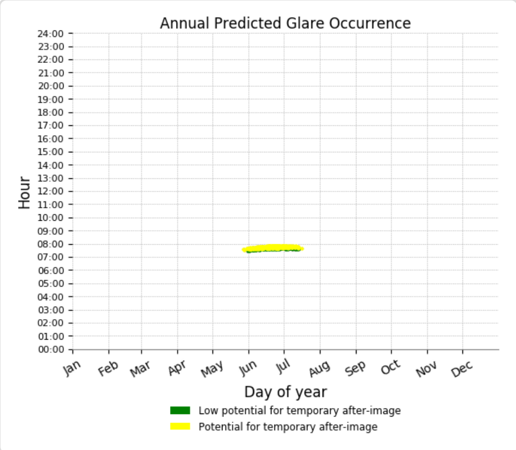


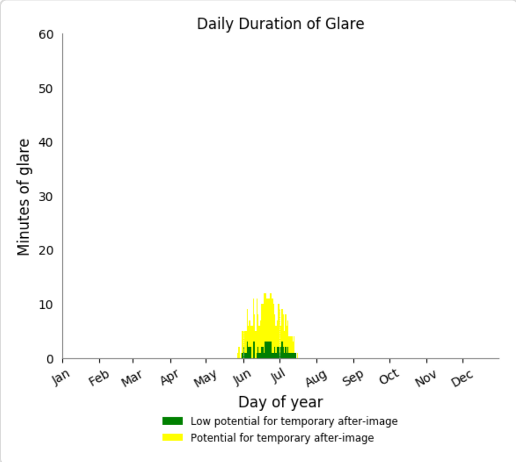
ADVERTISED PLAN

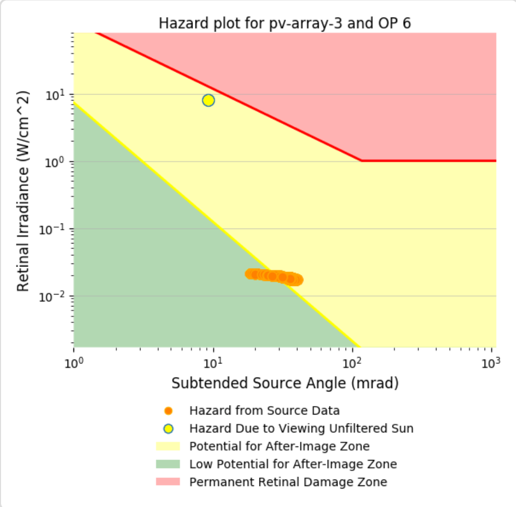
PV array 3 - OP Receptor (OP 6)

PV array is expected to produce the following glare for receptors at this location:

- 77 minutes of "green" glare with low potential to cause temporary after-image.
- 269 minutes of "yellow" glare with potential to cause temporary after-image.





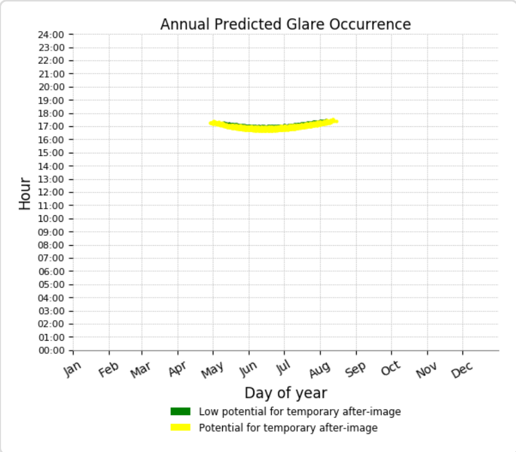


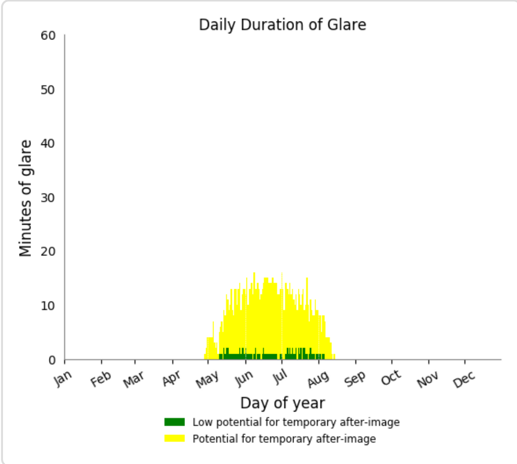
ADVERTISED PLAN

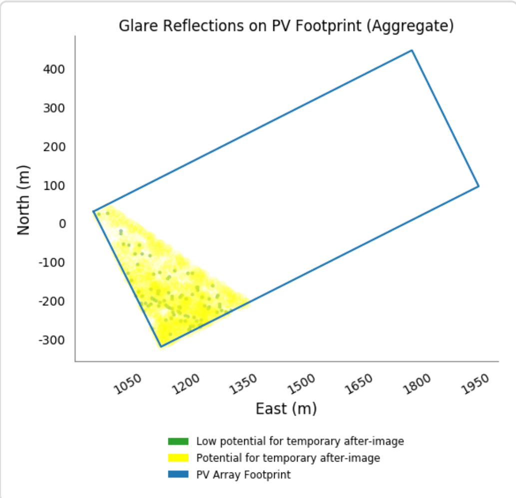
PV array 3 - OP Receptor (OP 7)

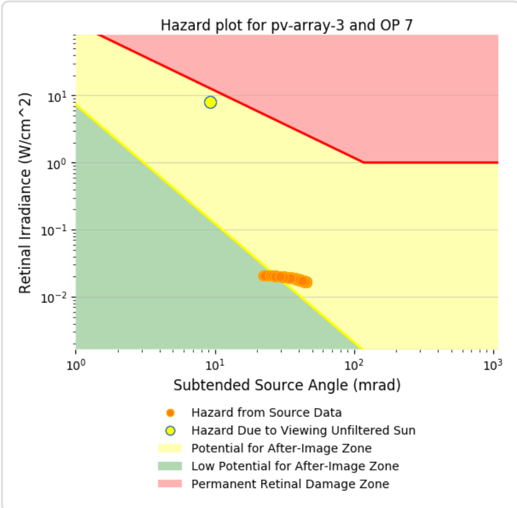
PV array is expected to produce the following glare for receptors at this location:

- 93 minutes of "green" glare with low potential to cause temporary after-image.
- 985 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 3 - OP Receptor (OP 8)

No glare found

PV array 3 - OP Receptor (OP 9)

No glare found

PV array 3 - OP Receptor (OP 10)

No glare found

PV array 3 - OP Receptor (OP 11)

No glare found

ADVERTISED PLAN

PV array 3 - OP Receptor (OP 12)

No glare found

PV array 3 - OP Receptor (OP 13)

No glare found

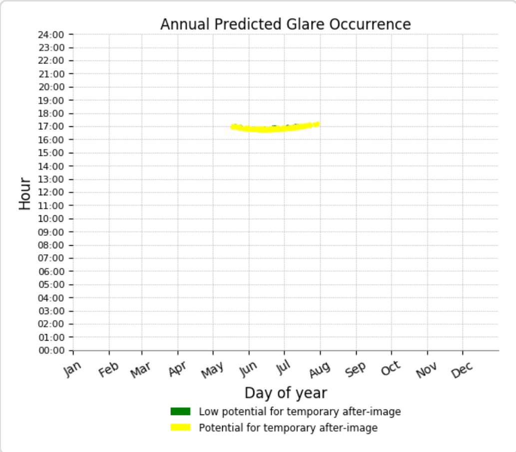
PV array 3 - OP Receptor (OP 14)

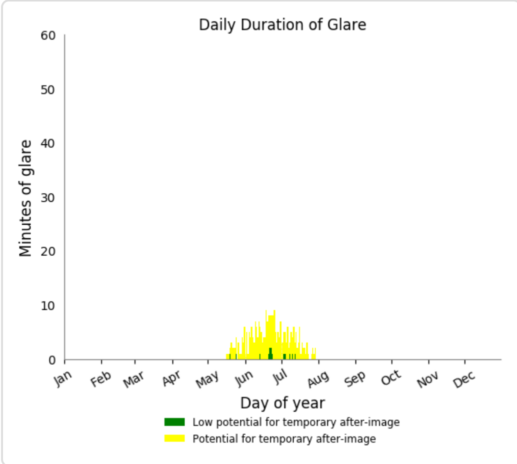
No glare found

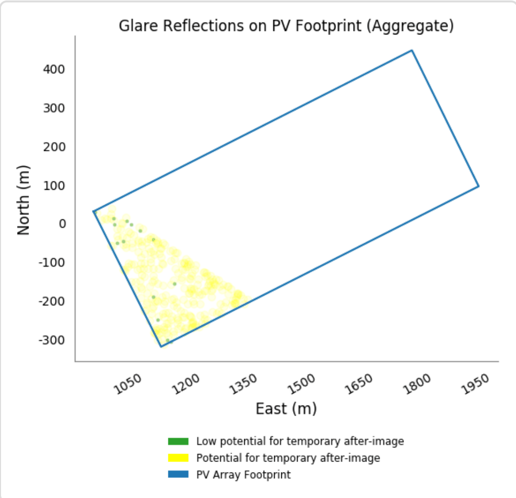
PV array 3 - OP Receptor (OP 15)

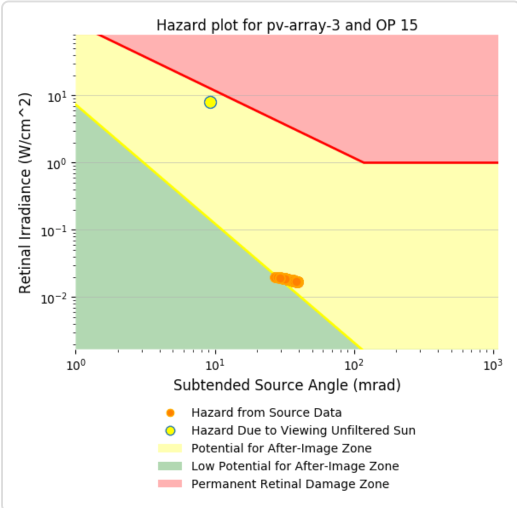
PV array is expected to produce the following glare for receptors at this location:

- 14 minutes of "green" glare with low potential to cause temporary after-image.
- 269 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 3 - OP Receptor (OP 16)

No glare found

PV array 3 - OP Receptor (OP 17)

No glare found

PV array 3 - OP Receptor (OP 18)

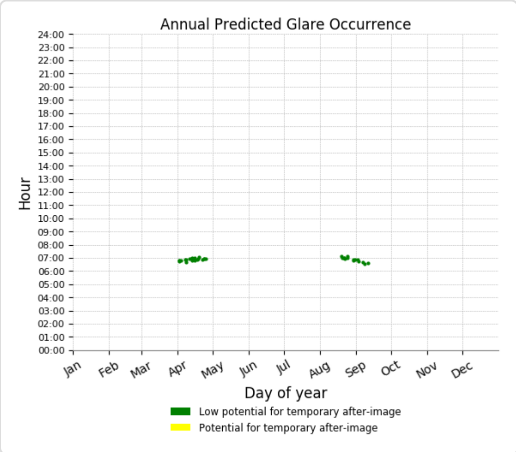
No glare found

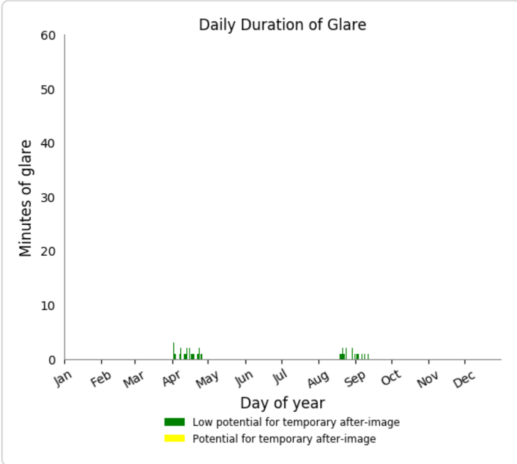
ADVERTISED PLAN

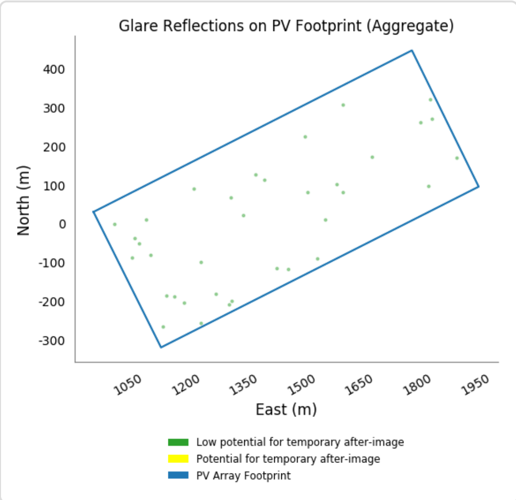
PV array 3 - OP Receptor (OP 19)

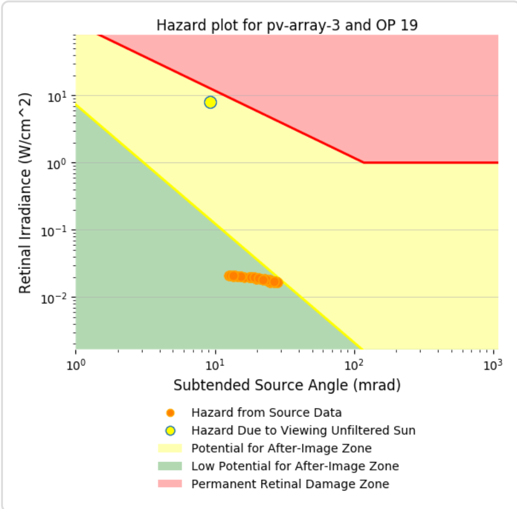
PV array is expected to produce the following glare for receptors at this location:

- 35 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







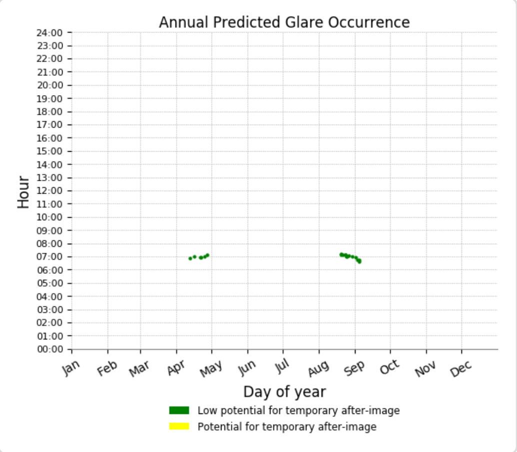


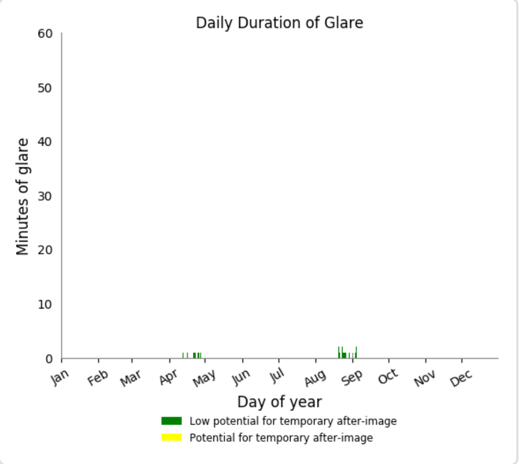
ADVERTISED PLAN

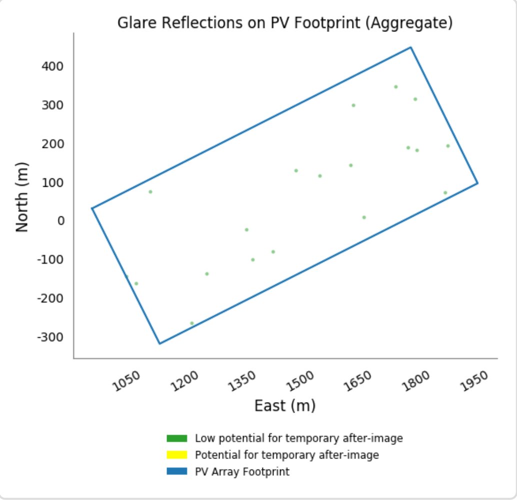
PV array 3 - OP Receptor (OP 20)

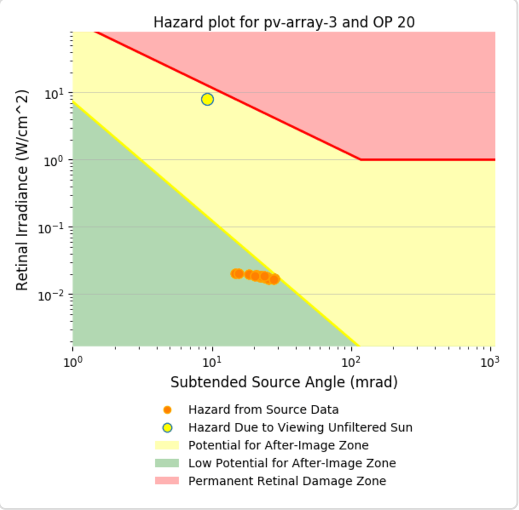
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







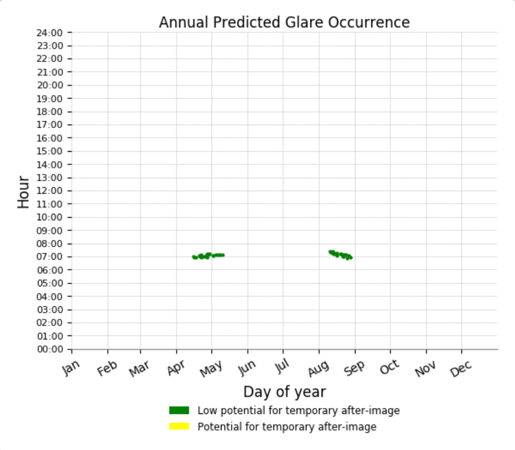


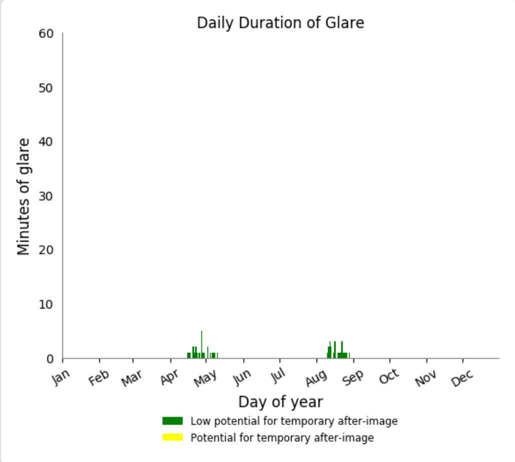
ADVERTISED PLAN

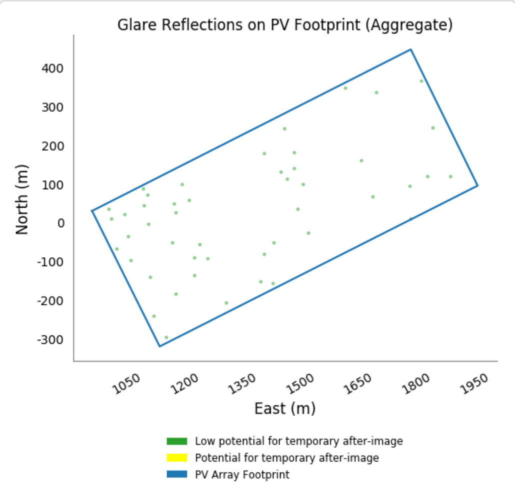
PV array 3 - OP Receptor (OP 21)

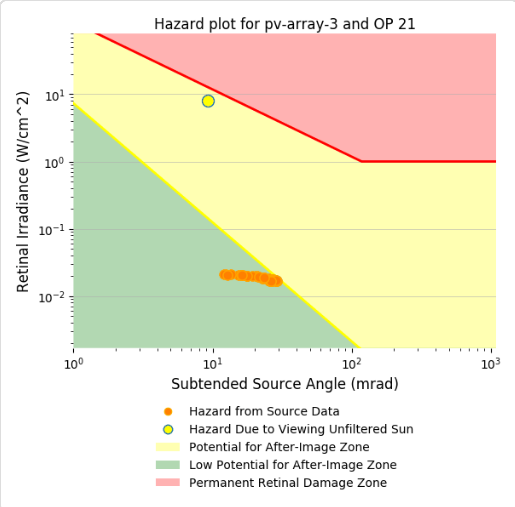
PV array is expected to produce the following glare for receptors at this location:

- 47 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







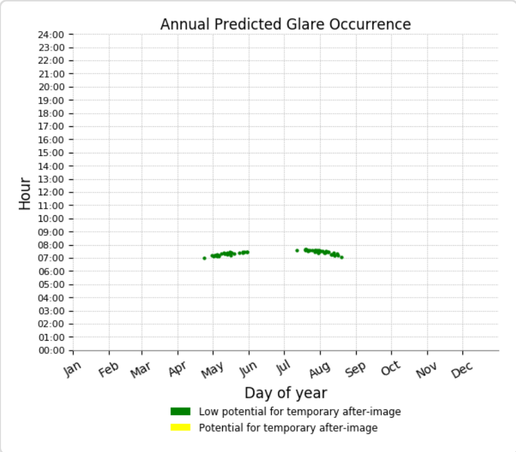


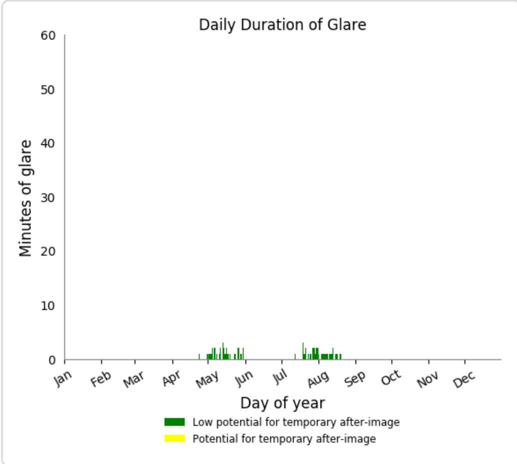
ADVERTISED PLAN

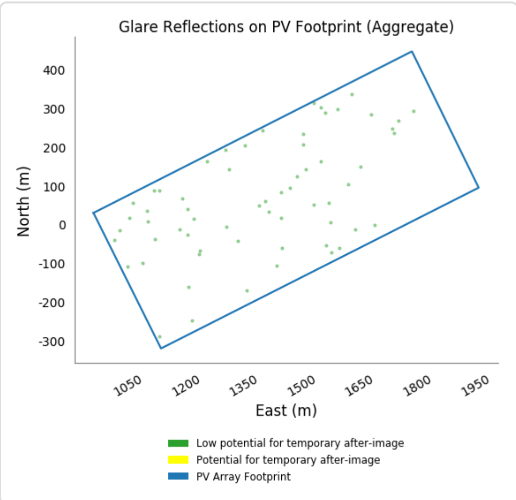
PV array 3 - OP Receptor (OP 22)

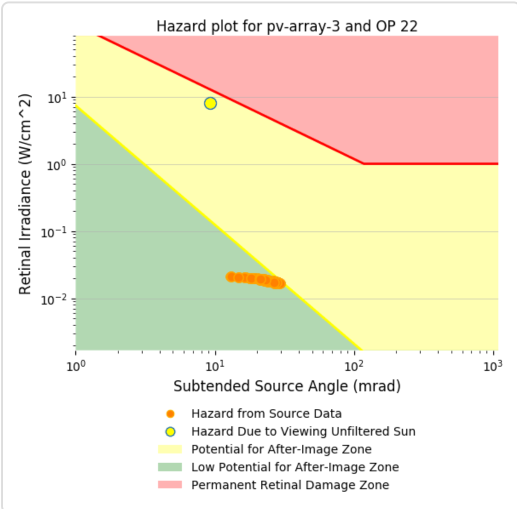
PV array is expected to produce the following glare for receptors at this location:

- 62 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







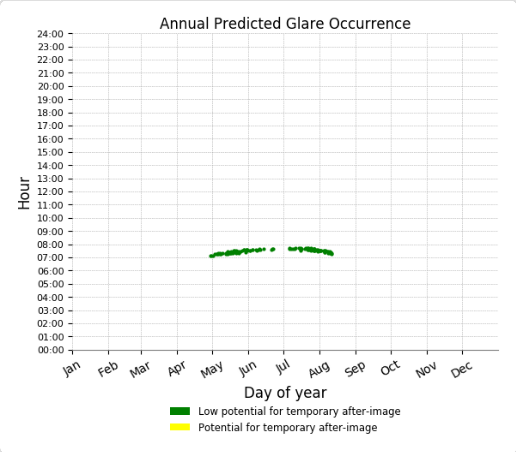


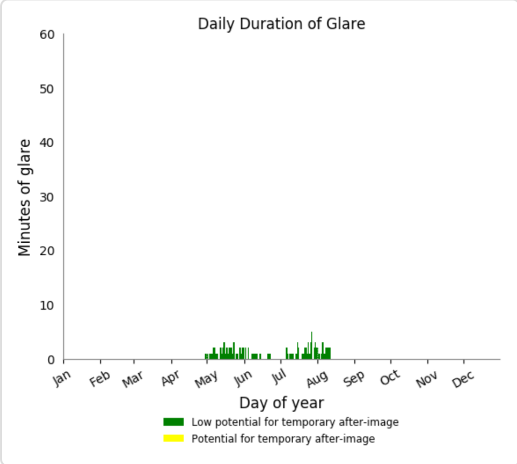
ADVERTISED PLAN

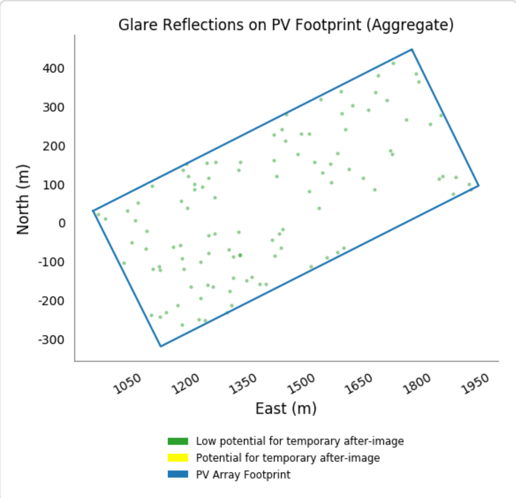
PV array 3 - OP Receptor (OP 23)

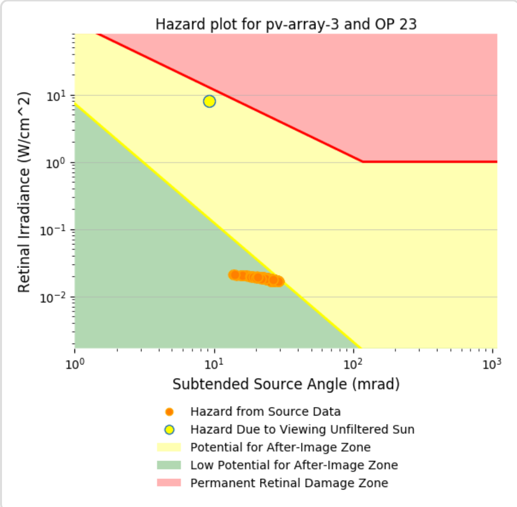
PV array is expected to produce the following glare for receptors at this location:

- 111 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







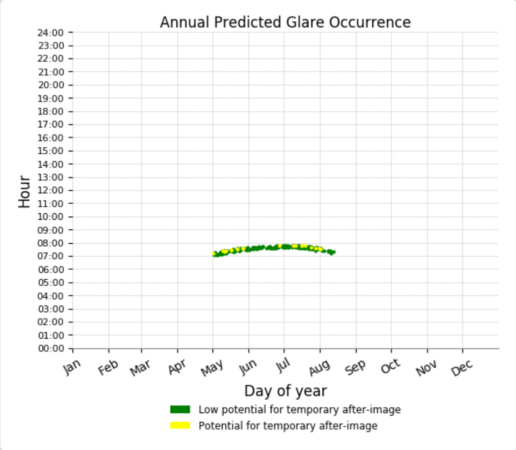


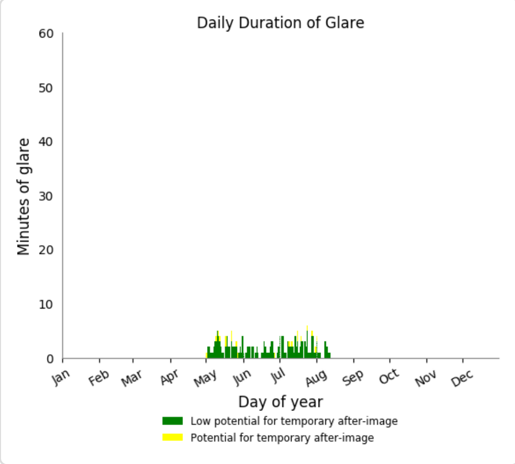
ADVERTISED PLAN

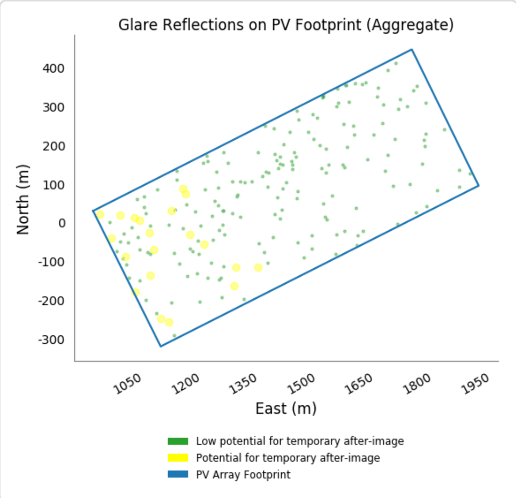
PV array 3 - OP Receptor (OP 24)

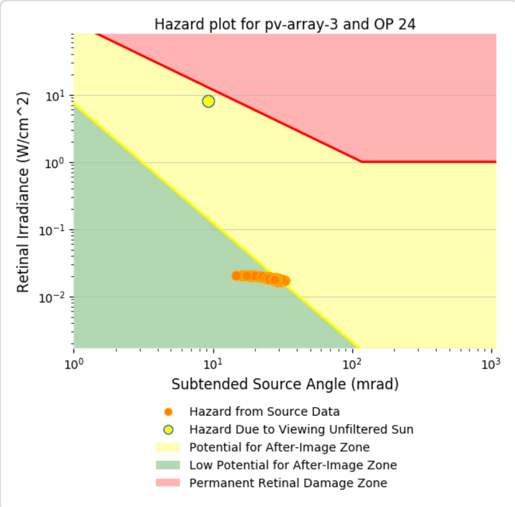
PV array is expected to produce the following glare for receptors at this location:

- 180 minutes of "green" glare with low potential to cause temporary after-image.
- 20 minutes of "yellow" glare with potential to cause temporary after-image.







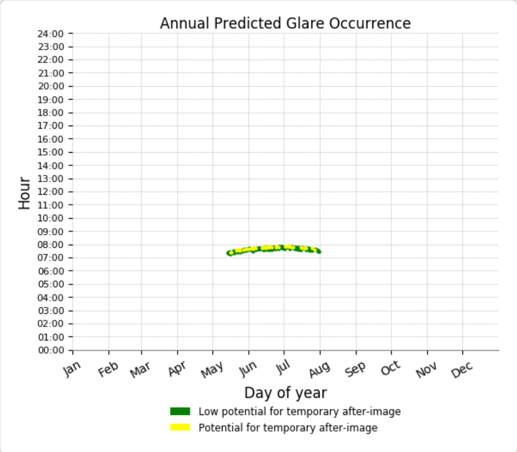


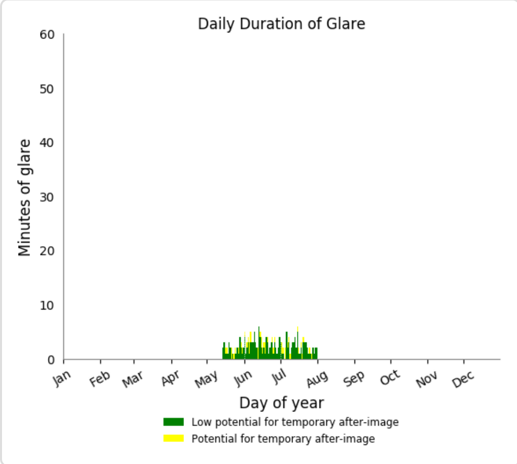
ADVERTISED PLAN

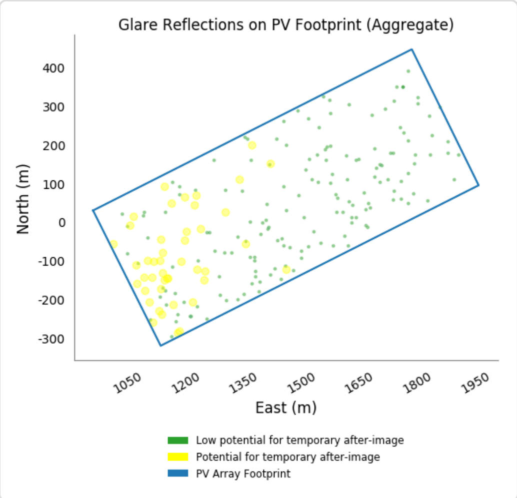
PV array 3 - OP Receptor (OP 25)

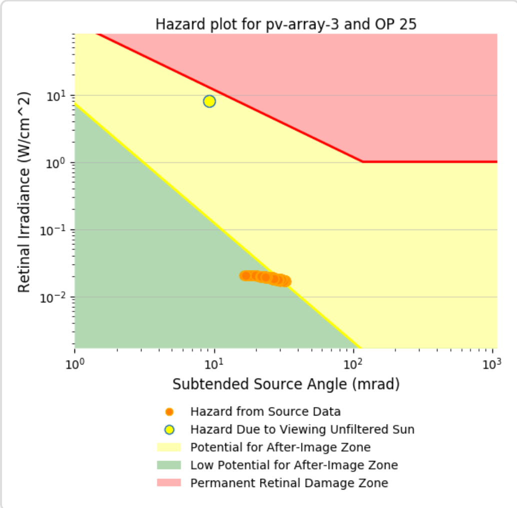
PV array is expected to produce the following glare for receptors at this location:

- 162 minutes of "green" glare with low potential to cause temporary after-image.
- 44 minutes of "yellow" glare with potential to cause temporary after-image.







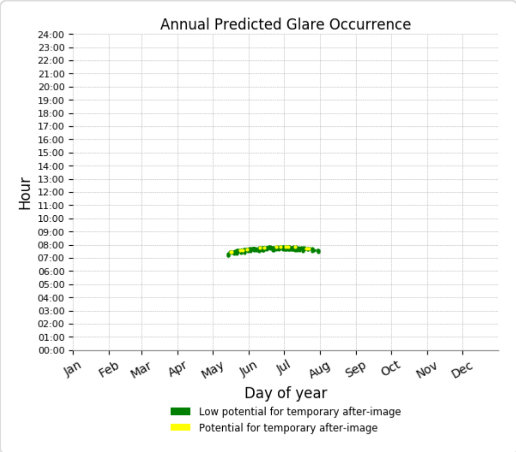


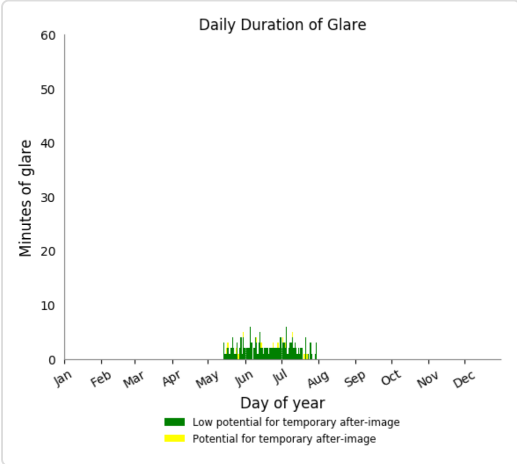
ADVERTISED PLAN

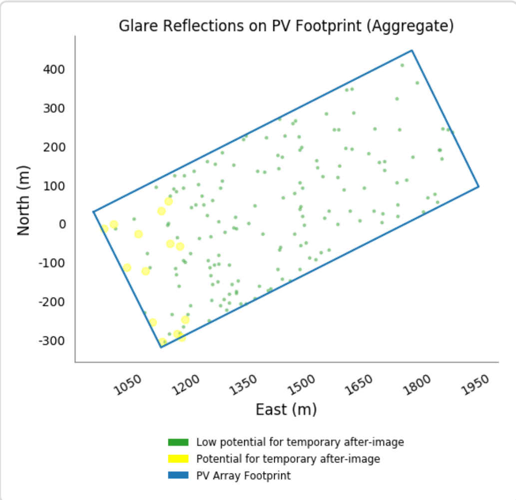
PV array 3 - OP Receptor (OP 26)

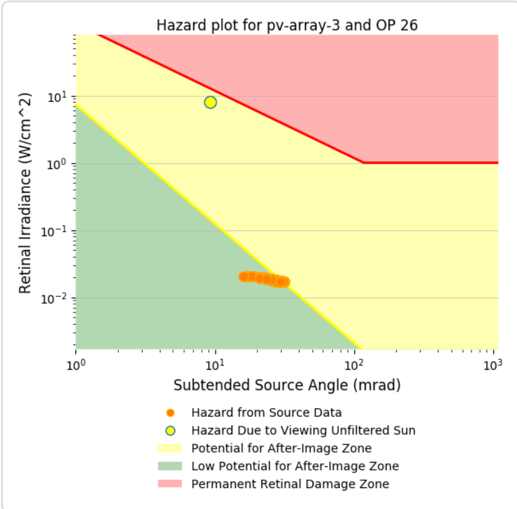
PV array is expected to produce the following glare for receptors at this location:

- 161 minutes of "green" glare with low potential to cause temporary after-image.
- 14 minutes of "yellow" glare with potential to cause temporary after-image.







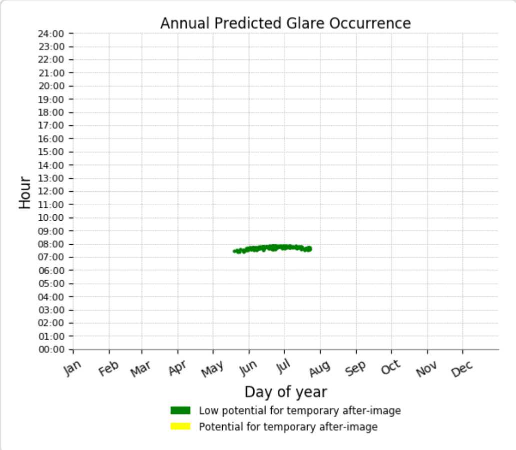


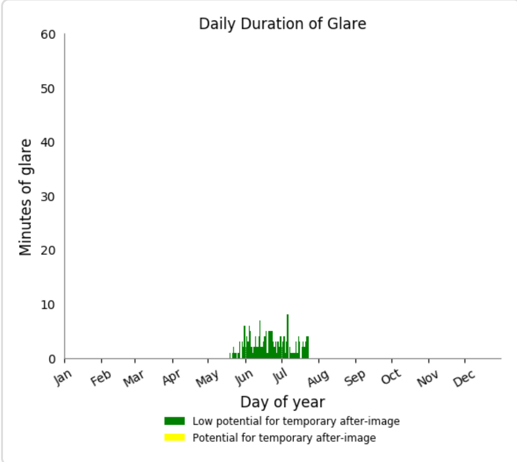
ADVERTISED PLAN

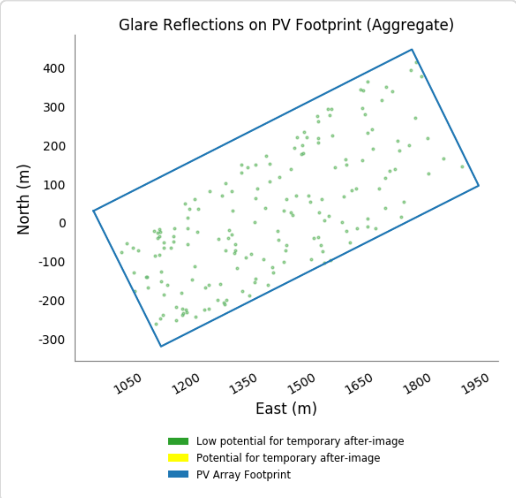
PV array 3 - OP Receptor (OP 27)

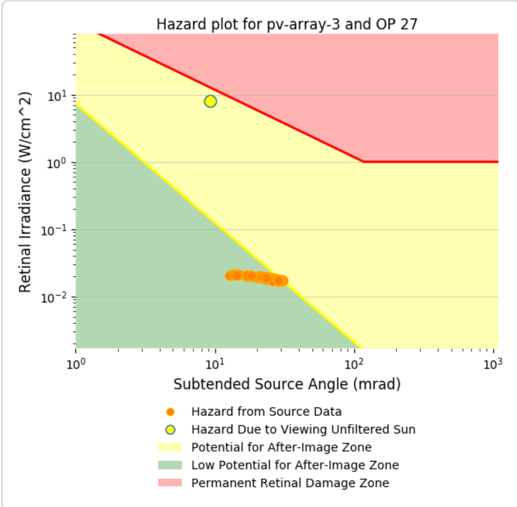
PV array is expected to produce the following glare for receptors at this location:

- 176 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.







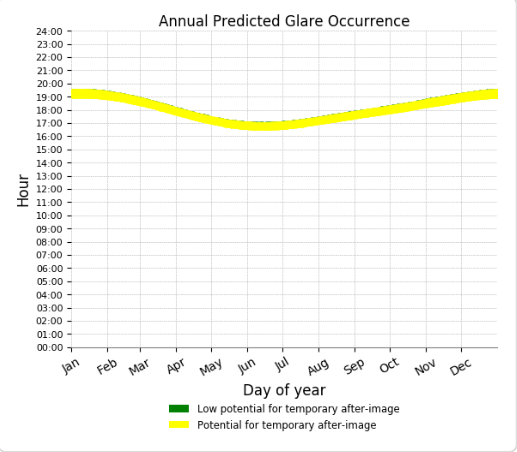


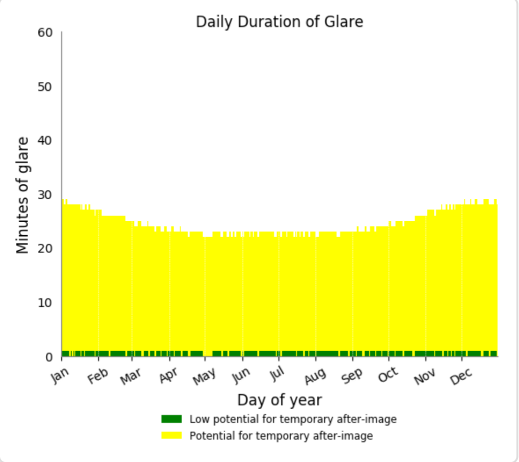
ADVERTISED PLAN

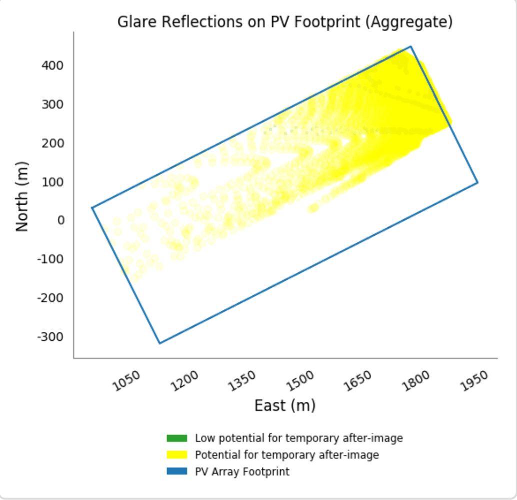
PV array 3 - OP Receptor (OP 28)

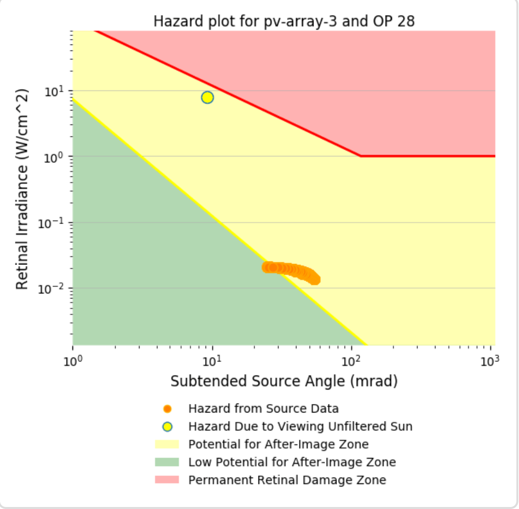
PV array is expected to produce the following glare for receptors at this location:

- 302 minutes of "green" glare with low potential to cause temporary after-image.
- 8,691 minutes of "yellow" glare with potential to cause temporary after-image.







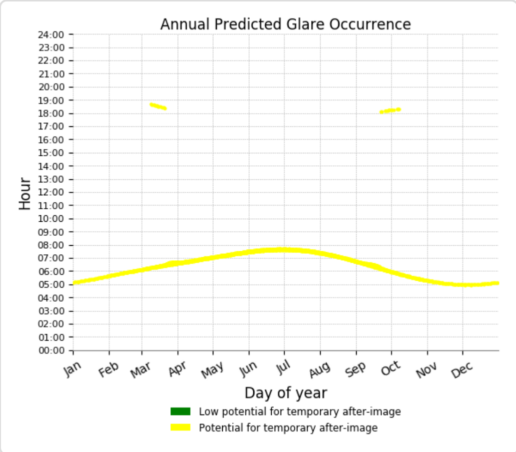


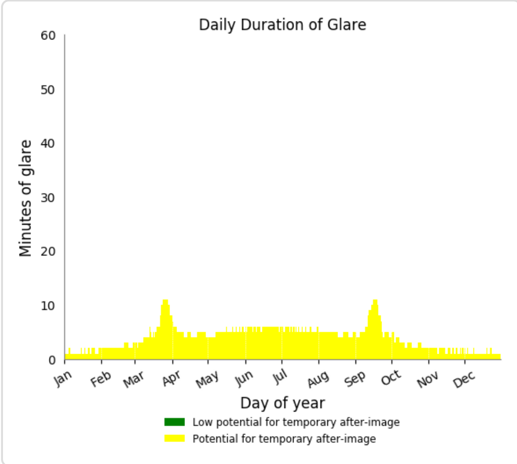
ADVERTISED PLAN

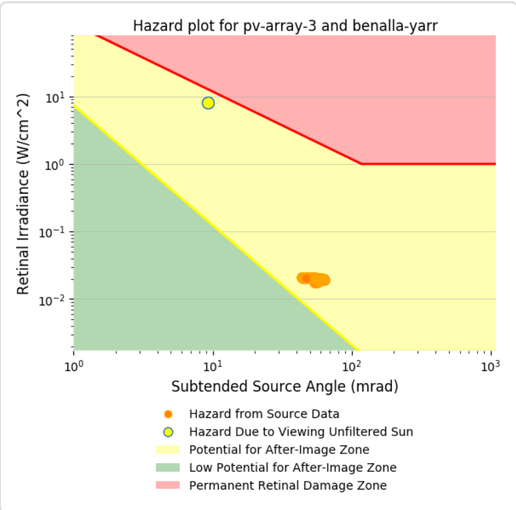
PV array 3 - Route Receptor (Benalla-Yarrawonga Road)

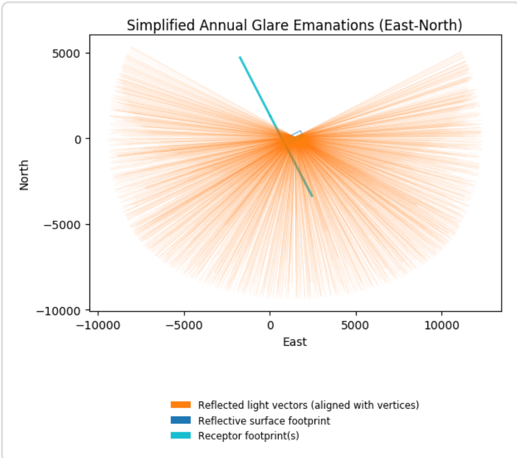
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,448 minutes of "yellow" glare with potential to cause temporary after-image.







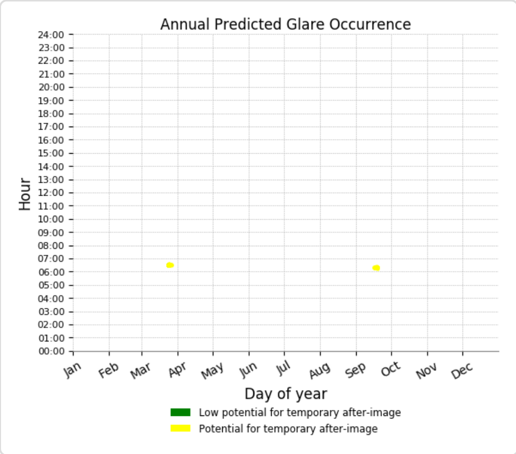


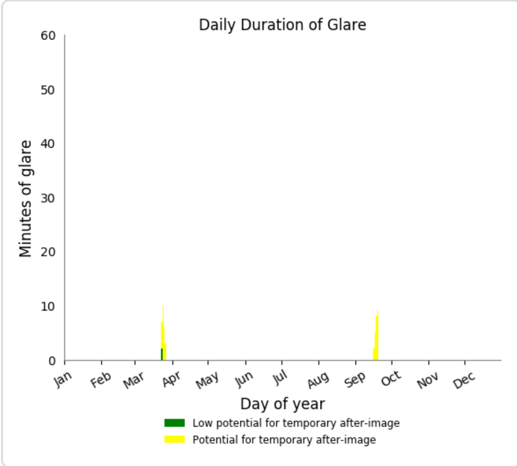
Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

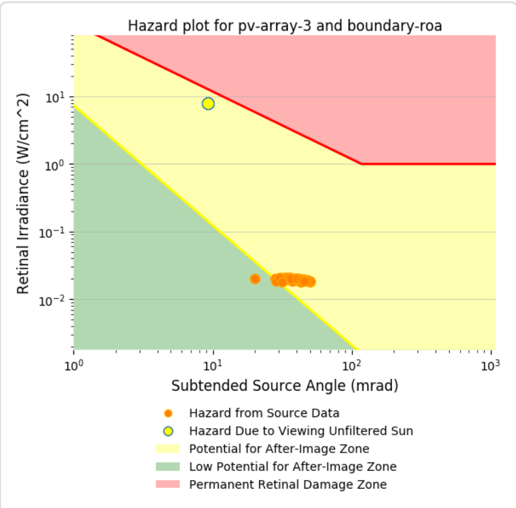
PV array 3 - Route Receptor (Boundary Road)

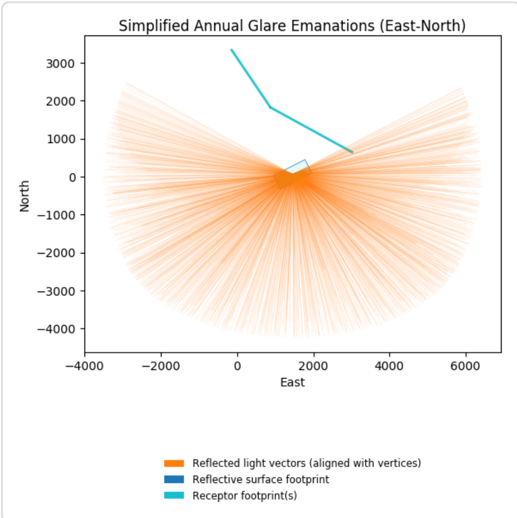
PV array is expected to produce the following glare for receptors at this location:

- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 48 minutes of "yellow" glare with potential to cause temporary after-image.









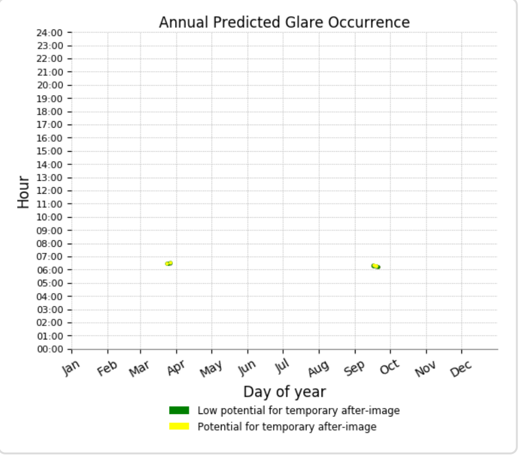
re vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

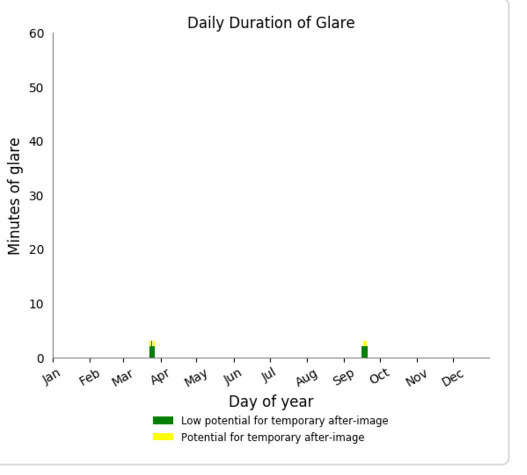
ADVERTISED PLAN

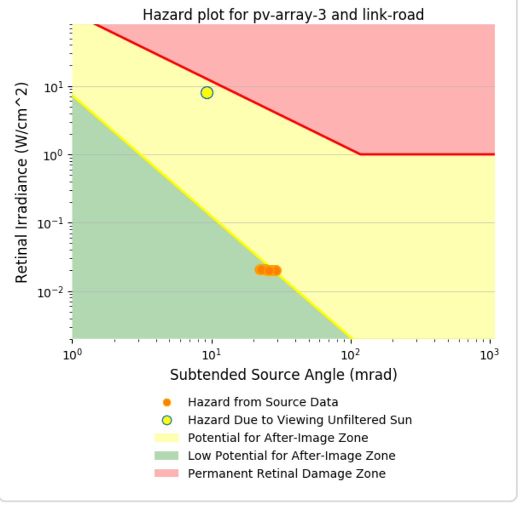
PV array 3 - Route Receptor (Link Road)

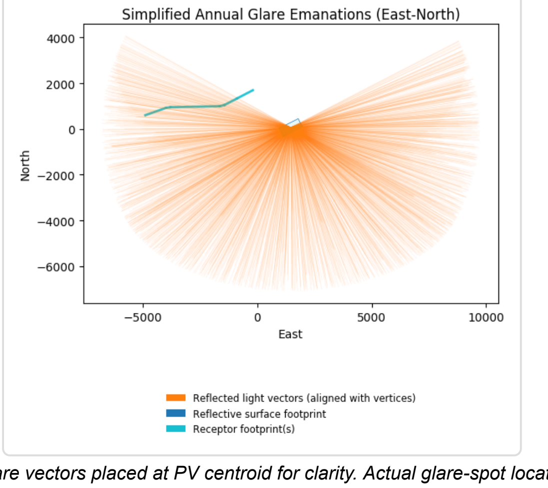
PV array is expected to produce the following glare for receptors at this location:

- 19 minutes of "green" glare with low potential to cause temporary after-image.
- 5 minutes of "yellow" glare with potential to cause temporary after-image.









Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

PV array 3 - Route Receptor (Murray Road)

No glare found

PV array 3 - Route Receptor (Nelson Road)

No glare found

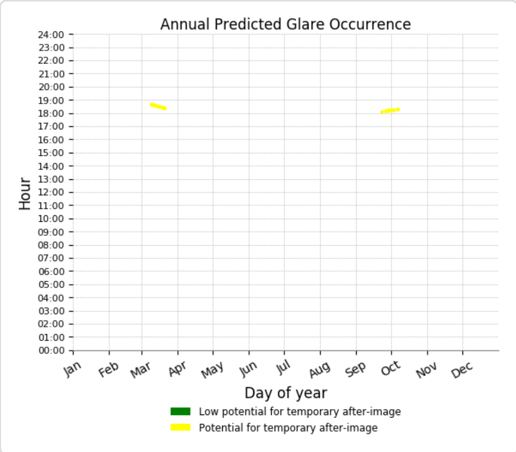
PV array 3 - Route Receptor (Old Farnley Road)

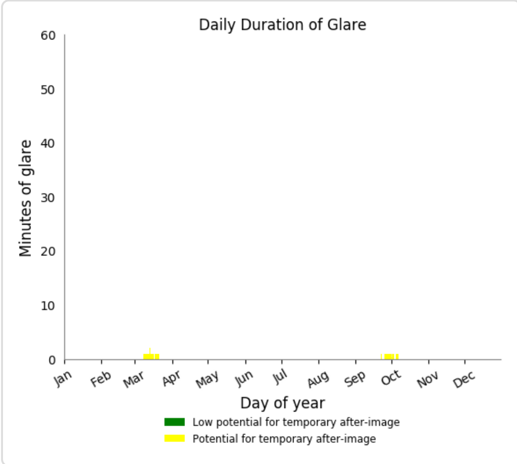
No glare found

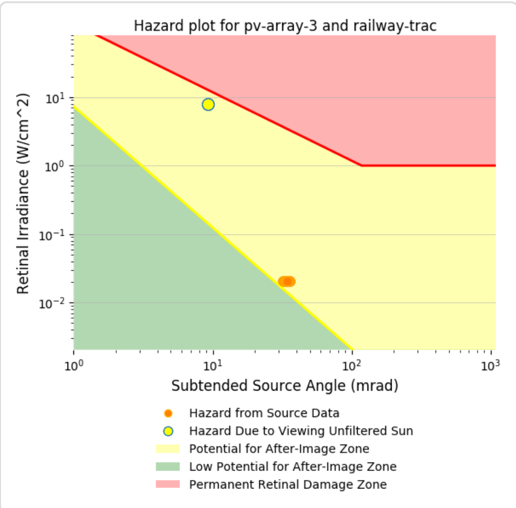
PV array 3 - Route Receptor (Railway Track)

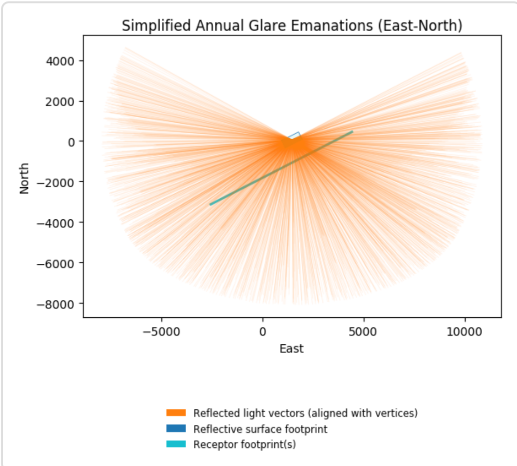
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 24 minutes of "yellow" glare with potential to cause temporary after-image.









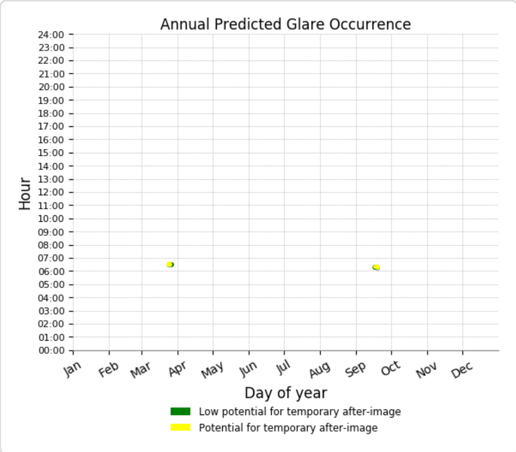
Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

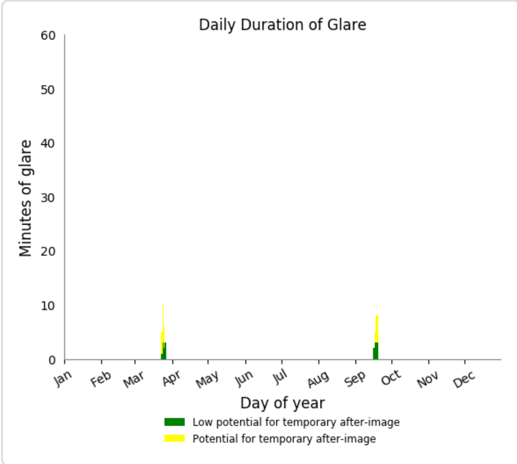
ADVERTISED PLAN

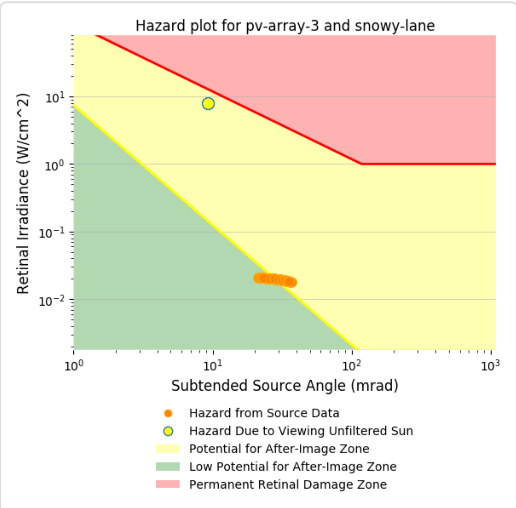
PV array 3 - Route Receptor (Snowy Lane)

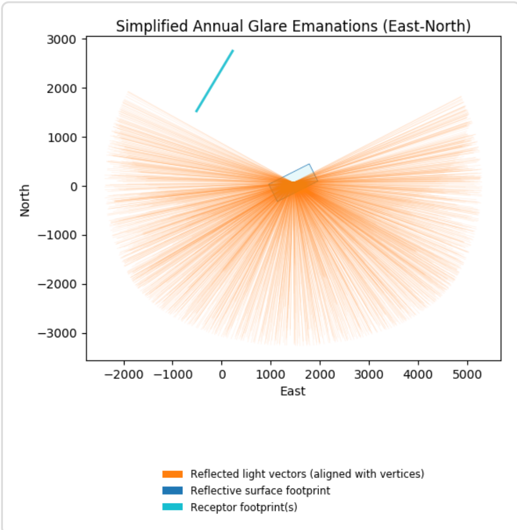
PV array is expected to produce the following glare for receptors at this location:

- 20 minutes of "green" glare with low potential to cause temporary after-image.
- 27 minutes of "yellow" glare with potential to cause temporary after-image.









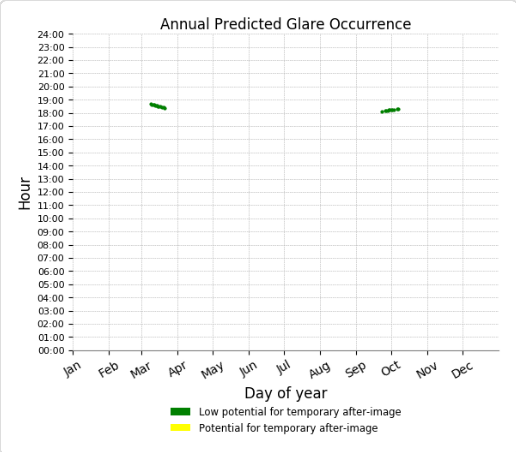
re vectors placed at PV centroid for clarity. Actual glare-spot locations vary.

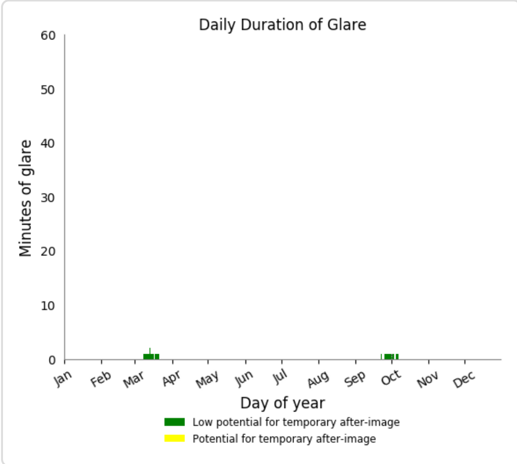
ADVERTISED PLAN

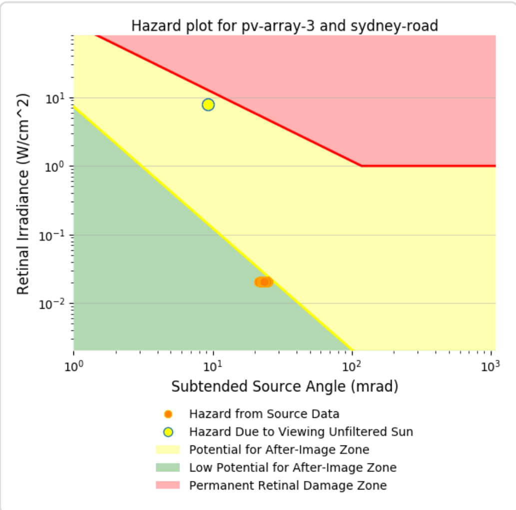
PV array 3 - Route Receptor (Sydney Road)

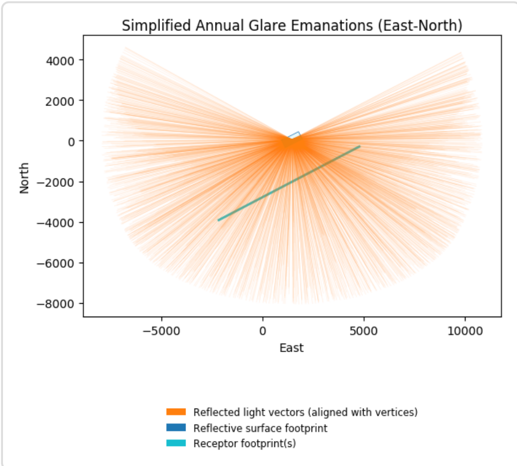
PV array is expected to produce the following glare for receptors at this location:

- 24 minutes of "green" glare with low potential to cause temporary after-image.
- 0 minutes of "yellow" glare with potential to cause temporary after-image.









Glare vectors placed at PV centroid for clarity. Actual glare-spot location vary.

PV array 3 - Route Receptor (Witt Road)

No glare found

ADVERTISED PLAN

Assumptions

- 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.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- Several 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.
- 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.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- 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.
- Refer to the **Help page** for assumptions and limitations not listed here.