



# 2945 - Tararua

## Existing shelterbelts-mitigation - roads only - 2P

Client: Solar Bay

Created Aug 15, 2023  
Updated Aug 15, 2023  
Time-step 1 minute  
Timezone offset UTC12  
Minimum sun altitude 0.0 deg  
Site ID 97614.12086

Project type Advanced  
Project status: active  
Category 10 MW to 100 MW



### Misc. Analysis Settings

DNI: varies (1,000.0 W/m<sup>2</sup> peak)  
Ocular transmission coefficient: 0.5  
Pupil diameter: 0.002 m  
Eye focal length: 0.017 m  
Sun subtended angle: 9.3 mrad

PV Analysis Methodology: Version 2  
Enhanced subtended angle calculation: On

### Summary of Results No glare predicted!

<b>PV Name</b>	<b>Tilt</b>	<b>Orientation</b>	<b>"Green" Glare</b>	<b>"Yellow" Glare</b>	<b>Energy Produced</b>
	<b>deg</b>	<b>deg</b>	<b>min</b>	<b>min</b>	<b>kWh</b>
SAT Array East	SA tracking	SA tracking	0	0	-
SAT Array West	SA tracking	SA tracking	0	0	-

## Component Data

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PV Array(s)

Total PV footprint area: 829,652 m<sup>2</sup>

Name: SAT Array East  
 Footprint area: 375,139 m<sup>2</sup>  
 Axis tracking: Single-axis rotation  
 Backtracking: Shade-slope  
 Tracking axis orientation: 0.0 deg  
 Maximum tracking angle: 55.0 deg  
 Resting angle: 0.0 deg  
 Ground Coverage Ratio: 0.404  
 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	-40.523131	175.748672	157.00	2.40	159.40
2	-40.521914	175.749605	154.00	2.40	156.40
3	-40.521488	175.750568	153.00	2.40	155.40
4	-40.521159	175.750142	152.00	2.40	154.40
5	-40.520645	175.750533	151.00	2.40	153.40
6	-40.519854	175.751129	150.00	2.40	152.40
7	-40.519198	175.751628	148.00	2.40	150.40
8	-40.518333	175.752266	147.00	2.40	149.40
9	-40.517389	175.753038	146.00	2.40	148.40
10	-40.517662	175.753580	146.00	2.40	148.40
11	-40.517964	175.754197	146.00	2.40	148.40
12	-40.518659	175.753564	147.00	2.40	149.40
13	-40.518953	175.754079	147.00	2.40	149.40
14	-40.519357	175.755013	148.00	2.40	150.40
15	-40.519055	175.755345	147.00	2.40	149.40
16	-40.518745	175.755627	147.00	2.40	149.40
17	-40.519126	175.756308	147.00	2.40	149.40
18	-40.519540	175.757072	147.60	2.40	150.00
19	-40.520034	175.756627	148.00	2.40	150.40
20	-40.520658	175.756053	149.00	2.40	151.40
21	-40.521188	175.755549	150.00	2.40	152.40
22	-40.521624	175.756439	150.00	2.40	152.40
23	-40.522146	175.757587	150.00	2.40	152.40
24	-40.523155	175.756874	151.00	2.40	153.40
25	-40.524022	175.756225	152.60	2.40	155.00
26	-40.524986	175.755533	153.80	2.40	156.20
27	-40.525995	175.754760	154.10	2.40	156.50
28	-40.525482	175.753671	155.00	2.40	157.40
29	-40.524776	175.752164	155.90	2.40	158.30
30	-40.524160	175.750855	156.00	2.40	158.40
31	-40.523685	175.749841	157.00	2.40	159.40

**Name:** SAT Array West  
**Footprint area:** 454,514 m<sup>2</sup>  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 0.0 deg  
**Maximum tracking angle:** 55.0 deg  
**Resting angle:** 0.0 deg  
**Ground Coverage Ratio:** 0.404  
  
**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	-40.521784	175.749185	154.00	2.40	156.40



2	-40.522361	175.748739	155.70	2.40	158.10
3	-40.523179	175.748136	157.20	2.40	159.60
4	-40.523727	175.747712	158.70	2.40	161.10
5	-40.524043	175.747488	159.00	2.40	161.40
6	-40.524343	175.747245	159.00	2.40	161.40
7	-40.524017	175.746564	160.00	2.40	162.40
8	-40.523723	175.745985	160.00	2.40	162.40
9	-40.523633	175.745840	160.00	2.40	162.40
10	-40.524241	175.745244	160.00	2.40	162.40
11	-40.524791	175.744735	161.00	2.40	163.40
12	-40.524985	175.745113	161.00	2.40	163.40
13	-40.525305	175.745778	160.00	2.40	162.40
14	-40.525560	175.746352	160.00	2.40	162.40
15	-40.525996	175.746038	160.00	2.40	162.40
16	-40.526791	175.745443	160.00	2.40	162.40
17	-40.527483	175.744912	161.00	2.40	163.40
18	-40.528100	175.744451	161.00	2.40	163.40
19	-40.529542	175.743423	163.00	2.40	165.40
20	-40.529164	175.742624	163.00	2.40	165.40
21	-40.528802	175.741902	163.00	2.40	165.40
22	-40.528441	175.741127	164.00	2.40	166.40
23	-40.527980	175.740135	163.00	2.40	165.40
24	-40.527487	175.739124	163.00	2.40	165.40
25	-40.527095	175.738265	162.00	2.40	164.40
26	-40.526687	175.737420	161.00	2.40	163.40
27	-40.525436	175.738721	160.00	2.40	162.40
28	-40.524746	175.739419	160.00	2.40	162.40
29	-40.524017	175.740223	160.00	2.40	162.40
30	-40.523405	175.740835	159.00	2.40	161.40
31	-40.522728	175.741511	157.00	2.40	159.40
32	-40.522125	175.742101	157.00	2.40	159.40
33	-40.521749	175.742519	157.00	2.40	159.40
34	-40.521668	175.743421	158.70	2.40	161.10
35	-40.521439	175.744054	157.00	2.40	159.40
36	-40.521439	175.744762	156.00	2.40	158.40
37	-40.521260	175.745631	155.00	2.40	157.40
38	-40.520942	175.746103	154.00	2.40	156.40
39	-40.520449	175.746763	152.40	2.40	154.80
40	-40.520864	175.747658	153.00	2.40	155.40
41	-40.521350	175.748667	153.60	2.40	156.00

Route Receptor(s)

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



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-40.532089	175.741029	166.00	1.80	167.80
2	-40.530972	175.742230	164.00	1.80	165.80
3	-40.530083	175.743175	163.00	1.80	164.80
4	-40.529427	175.743797	162.00	1.80	163.80
5	-40.528477	175.744462	161.00	1.80	162.80
6	-40.527351	175.745272	160.00	1.80	161.80
7	-40.526634	175.745792	160.00	1.80	161.80
8	-40.525847	175.746393	160.00	1.80	161.80
9	-40.525068	175.746994	159.20	1.80	161.00
10	-40.524008	175.747799	159.00	1.80	160.80
11	-40.523143	175.748437	157.00	1.80	158.80
12	-40.522365	175.749027	155.00	1.80	156.80
13	-40.521305	175.749820	153.00	1.80	154.80
14	-40.520319	175.750565	151.00	1.80	152.80
15	-40.519425	175.751204	149.00	1.80	150.80
16	-40.518516	175.751912	147.00	1.80	148.80
17	-40.516640	175.753296	145.00	1.80	146.80
18	-40.515645	175.754031	144.00	1.80	145.80
19	-40.514813	175.754669	143.00	1.80	144.80
20	-40.514259	175.755055	142.00	1.80	143.80

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



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	m	m	m
1	-40.522049	175.762475	147.00	1.80	148.80
2	-40.521413	175.761724	147.00	1.80	148.80
3	-40.520956	175.761166	147.00	1.80	148.80
4	-40.520597	175.760715	147.00	1.80	148.80
5	-40.520336	175.760243	147.00	1.80	148.80
6	-40.520141	175.759170	147.00	1.80	148.80
7	-40.519978	175.758377	147.40	1.80	149.20
8	-40.519668	175.757626	147.40	1.80	149.20
9	-40.519146	175.756767	147.00	1.80	148.80
10	-40.518477	175.755523	147.00	1.80	148.80
11	-40.518085	175.754922	146.00	1.80	147.80
12	-40.517645	175.754064	146.00	1.80	147.80
13	-40.517319	175.753463	145.80	1.80	147.60
14	-40.517090	175.752969	145.00	1.80	146.80

Obstruction Components

Name: Obstruction 1  
Upper edge height: 4.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.517741	175.752624	146,00
2	-40.517398	175.752889	146,00
3	-40.517431	175.752962	146,00
4	-40.517359	175.753021	146,00
5	-40.517651	175.753616	146,00
6	-40.517946	175.754212	146,00

Name: Obstruction 10  
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.517712	175.752594	146,00
2	-40.518510	175.751972	147,00
3	-40.519319	175.751371	149,00



Name: Obstruction 2  
Upper edge height: 4.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.518719	175.755639	147.00
2	-40.519094	175.756328	147.00
3	-40.519519	175.757100	147.20

Name: Obstruction 3  
Upper edge height: 4.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.519365	175.751373	149.00
2	-40.520279	175.750713	150.90
3	-40.521184	175.750042	152.00
4	-40.521461	175.750396	153.00
5	-40.521885	175.749479	154.00
6	-40.522501	175.749018	155.70
7	-40.523141	175.748573	157.00
8	-40.523892	175.750123	156.40
9	-40.525135	175.752762	155.00
10	-40.526053	175.754709	154.80

Name: Obstruction 4  
Upper edge height: 4.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.520925	175.747897	153.00
2	-40.521139	175.748313	153.00
3	-40.521353	175.748729	153.00
4	-40.521757	175.749238	154.00
5	-40.522399	175.748749	156.00
6	-40.523047	175.748273	157.00
7	-40.523728	175.747762	158.70
8	-40.524389	175.747264	159.00
9	-40.524069	175.746591	160.00
10	-40.523688	175.745843	160.00

Name: Obstruction 5  
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.524781	175.744788	161.00
2	-40.525166	175.745600	160.00
3	-40.525552	175.746413	160.00
4	-40.527572	175.744919	161.00
5	-40.528562	175.744188	161.70
6	-40.529592	175.743414	163.00
7	-40.528854	175.741885	163.00
8	-40.528157	175.740378	163.90
9	-40.526722	175.737353	161.00

Name: Obstruction 6  
Upper edge height: 8.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.529083	175.757262	155.00
2	-40.526696	175.756456	155.00
3	-40.528317	175.755683	156.00
4	-40.527947	175.754882	156.00
5	-40.527560	175.754081	156.00
6	-40.527187	175.753297	156.00
7	-40.526798	175.752491	156.00
8	-40.526405	175.751690	156.00
9	-40.526033	175.750895	157.00

Name: Obstruction 7  
Upper edge height: 10.0 m



Vertex	Latitude	Longitude	Ground elevation
	deg	deg	m
1	-40.524484	175.747558	159.00
2	-40.524745	175.748079	159.00
3	-40.525006	175.748631	158.00

Name: Obstruction 8  
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.516380	175.749299	145.00
2	-40.516804	175.748526	146.00
3	-40.517130	175.747764	146.00
4	-40.517505	175.747260	146.00
5	-40.517929	175.747046	147.00

Name: Obstruction 9  
Upper edge height: 10.0 m



Vertex	Latitude deg	Longitude deg	Ground elevation m
1	-40.522574	175.737690	165.20
2	-40.522937	175.737523	163.30
3	-40.523267	175.737083	164.10

## Summary of PV Glare Analysis

*PV configuration and total predicted glare*

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
SAT Array East	SA tracking	SA tracking	0	0	-	-
SAT Array West	SA tracking	SA tracking	0	0	-	-

## PV & Receptor Analysis Results

*Results for each PV array and receptor*

### SAT Array East no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Mangamaire Road	0	0
Route: Tutaekara Road	0	0

*No glare found*

### SAT Array West no glare found

Component	Green glare (min)	Yellow glare (min)
Route: Mangamaire Road	0	0
Route: Tutaekara Road	0	0

*No glare found*

## Assumptions

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- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not automatically 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.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- 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.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.