

⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,550.8	
	POA Irradiance	2,091.3	34.9%
	Shaded Irradiance	2,032.9	-2.8%
	Irradiance after Reflection	1,991.3	-2.0%
	Irradiance after Soiling	1,951.5	-2.0%
	<b>Total Collector Irradiance</b>	<b>1,951.5</b>	<b>0.0%</b>
Energy (kWh)	Nameplate	9,679,980.4	
	Output at Irradiance Levels	9,646,617.8	-0.3%
	Output at Cell Temperature Derate	9,368,734.6	-2.9%
	Output After Mismatch	9,018,949.3	-3.7%
	Optimal DC Output	8,920,374.7	-1.1%
	Constrained DC Output	8,762,578.7	-1.8%
	Inverter Output	8,450,478.0	-3.6%
	<b>Energy to Grid</b>	<b>8,408,226.0</b>	<b>-0.5%</b>
Temperature Metrics			
	Avg. Operating Ambient Temp		16.3 °C
	Avg. Operating Cell Temp		26.4 °C
Simulation Metrics			
	Operating Hours		4565
	Solved Hours		4565

☁ Condition Set												
Description	Condition Set 1											
Weather Dataset	TMY, 10km Grid, meteornorm (meteornorm)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Temperature Model Parameters	Rack Type	a	b	Temperature Delta								
	Fixed Tilt	-3.56	-0.075	3°C								
	Flush Mount	-2.81	-0.0455	0°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
	2	2	2	2	2	2	2	2	2	2	2	2
Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Trackers	Maximum Angle								Backtracking			
	60°								Enabled			
Module Characterizations	Module						Uploaded By		Characterization			
	TSM-DE20-600W (Trina Solar)						HelioScope		Spec Sheet Characterization, PAN			
Component Characterizations	Device		Uploaded By					Characterization				

📦 Components		
Component	Name	Count
Inverters	SG750MX (Sungrow)	5 (3.75 MW)
Strings	10 AWG (Copper)	385 (56,672.2 m)
Module	Trina Solar, TSM-DE20-600W (600W)	8,268 (4.96 MW)

🔌 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	15-22	Along Racking

🏠 Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1 (copy)	Single-axis Trackers (N/S)	Portrait (Vertical)	15°	0°	6.0 m	1x1	8,268	8,268	4.96 MW

📍 Detailed Layout



## Solar carpark (29kW) Cowes Transit Centre, Cowes Transit Centre/Church St, Cowes VIC

### Report

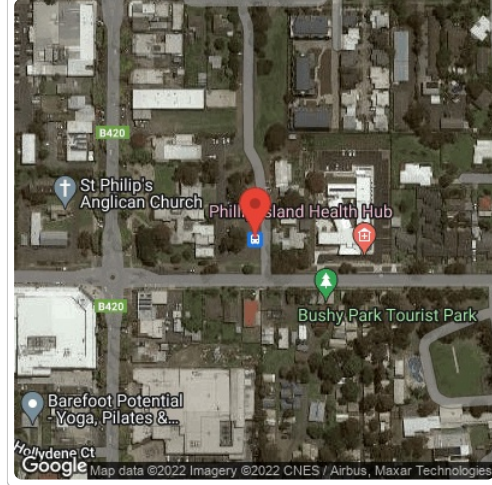
Project Name	Cowes Transit Centre
Project Address	Cowes Transit Centre/Church St, Cowes VIC
Prepared By	Middleton Group roger.brown@middletongroup.com.au



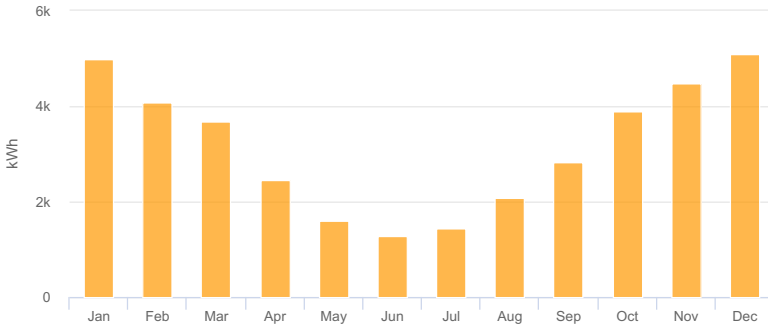
### System Metrics

Design	Solar carpark (29kW)
Module DC Nameplate	28.8 kW
Inverter AC Nameplate	25.0 kW Load Ratio: 1.15
Annual Production	37.88 MWh
Performance Ratio	84.8%
kWh/kWp	1,315.4
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)
Simulator Version	26c513b886-2f17bc8804-b418a4e336-5b608c73c1

### Project Location

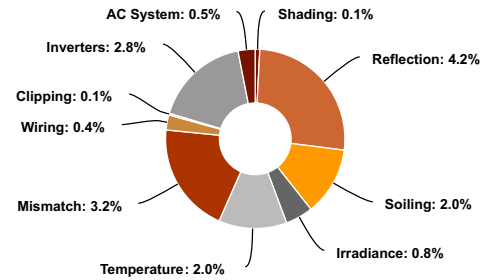


### Monthly Production



Month	GHI (kWh/m <sup>2</sup> )	POA (kWh/m <sup>2</sup> )	Shaded (kWh/m <sup>2</sup> )	Nameplate (kWh)	Grid (kWh)
January	205.2	205.2	205.1	5,591.3	4,976.0
February	168.3	168.3	168.2	4,567.7	4,085.9
March	150.8	150.8	150.6	4,075.5	3,671.4
April	100.2	100.2	100.0	2,679.9	2,447.8
May	65.8	65.8	65.6	1,736.1	1,594.7
June	53.1	53.1	52.8	1,385.7	1,282.0
July	59.6	59.6	59.3	1,561.3	1,447.8
August	84.2	84.2	84.0	2,243.0	2,074.6
September	114.4	114.4	114.3	3,074.9	2,828.6
October	157.3	157.3	157.2	4,268.6	3,899.5
November	182.8	182.8	182.7	4,969.0	4,472.5
December	209.0	209.0	208.9	5,690.9	5,101.9

### Sources of System Loss



⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m <sup>2</sup> )	Annual Global Horizontal Irradiance	1,550.8	
	POA Irradiance	1,550.8	0.0%
	Shaded Irradiance	1,548.7	-0.1%
	Irradiance after Reflection	1,482.9	-4.2%
	Irradiance after Soiling	1,453.3	-2.0%
	<b>Total Collector Irradiance</b>	<b>1,453.3</b>	<b>0.0%</b>
Energy (kWh)	Nameplate	41,843.9	
	Output at Irradiance Levels	41,508.0	-0.8%
	Output at Cell Temperature Derate	40,681.2	-2.0%
	Output After Mismatch	39,363.3	-3.2%
	Optimal DC Output	39,190.4	-0.4%
	Constrained DC Output	39,170.4	-0.1%
	Inverter Output	38,073.1	-2.8%
	<b>Energy to Grid</b>	<b>37,882.7</b>	<b>-0.5%</b>
Temperature Metrics			
	Avg. Operating Ambient Temp		16.3 °C
	Avg. Operating Cell Temp		23.8 °C
Simulation Metrics			
	Operating Hours		4565
	Solved Hours		4565

☁ Condition Set												
Description	Condition Set 1											
Weather Dataset	TMY, 10km Grid, meteonorm (meteonorm)											
Solar Angle Location	Meteo Lat/Lng											
Transposition Model	Perez Model											
Temperature Model	Sandia Model											
Temperature Model Parameters	Rack Type	a	b	Temperature Delta								
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	Flush Mount	-2.81	-0.0455	0°C								
Soiling (%)	J	F	M	A	M	J	J	A	S	O	N	D
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Irradiation Variance	5%											
Cell Temperature Spread	4° C											
Module Binning Range	-2.5% to 2.5%											
AC System Derate	0.50%											
Trackers	Maximum Angle									Backtracking		
	60°									Enabled		
Module Characterizations	Module						Uploaded By		Characterization			
	TSM-DE20-600 (Trina Solar)						HelioScope		Spec Sheet Characterization, PAN			
Component Characterizations	Device		Uploaded By					Characterization				

📦 Components		
Component	Name	Count
Inverters	SG25CX-SA (Sungrow)	1 (25.0 kW)
Strings	10 AWG (Copper)	2 (36.0 m)
Module	Trina Solar, TSM-DE20-600 (600W)	48 (28.8 kW)

🔌 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	6-25	Along Racking

🏠 Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Solar carpark	Carport	Landscape (Horizontal)	0°	0°	0.0 m	2x1	24	48	28.8 kW