MBC

WE MAKE BUSINESS WORK

Renewable Energy Design Portfolio 2023

An Industry Leading Renewable Energy Design Studio

MBC Renewables Ltd pay close attention to both technical and commercial details to create the most accurate and aesthetically pleasing renewable energy simulation possible.

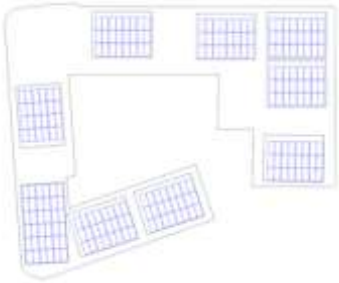
Our design experts use the latest renewable energy design software that is fully licensed and running on high performance computer hardware.

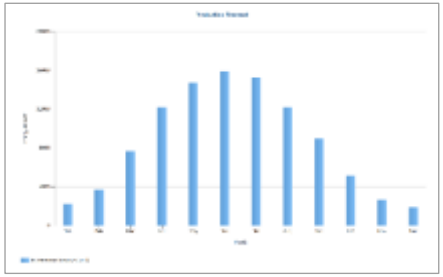
With hundreds of satisfied customers and over a decade of industry experience your project is in good hands.

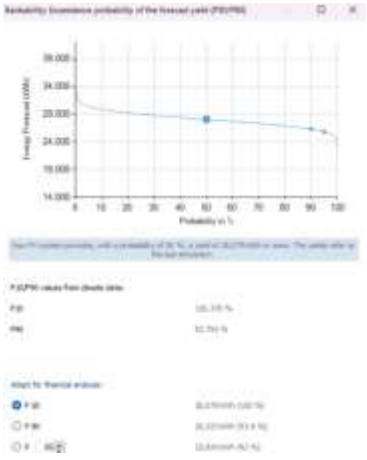
Why work with us?

- Latest in 3D design modelling software
- Solar PV, EVSE & ESS simulations
- Detailed fiscal calculations giving accurate ROI forecasts
- Integration of load profiles including annual half hourly consumption data
- Detailed and accruate shading analysis
- String inverter, MLPE and optimizer simulations
- Over a decade of experience in solar PV and renewable energy design

See examples of our recent work below...







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Residential 3D Simulations


50 m

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Commercial and Industrial 3D Simulations


N
50 m
Hayes Pl
Boots
Beauty supply store
Burger King
Fast food


200 m
150 m
100 m


150 m
100 m
50 m


N

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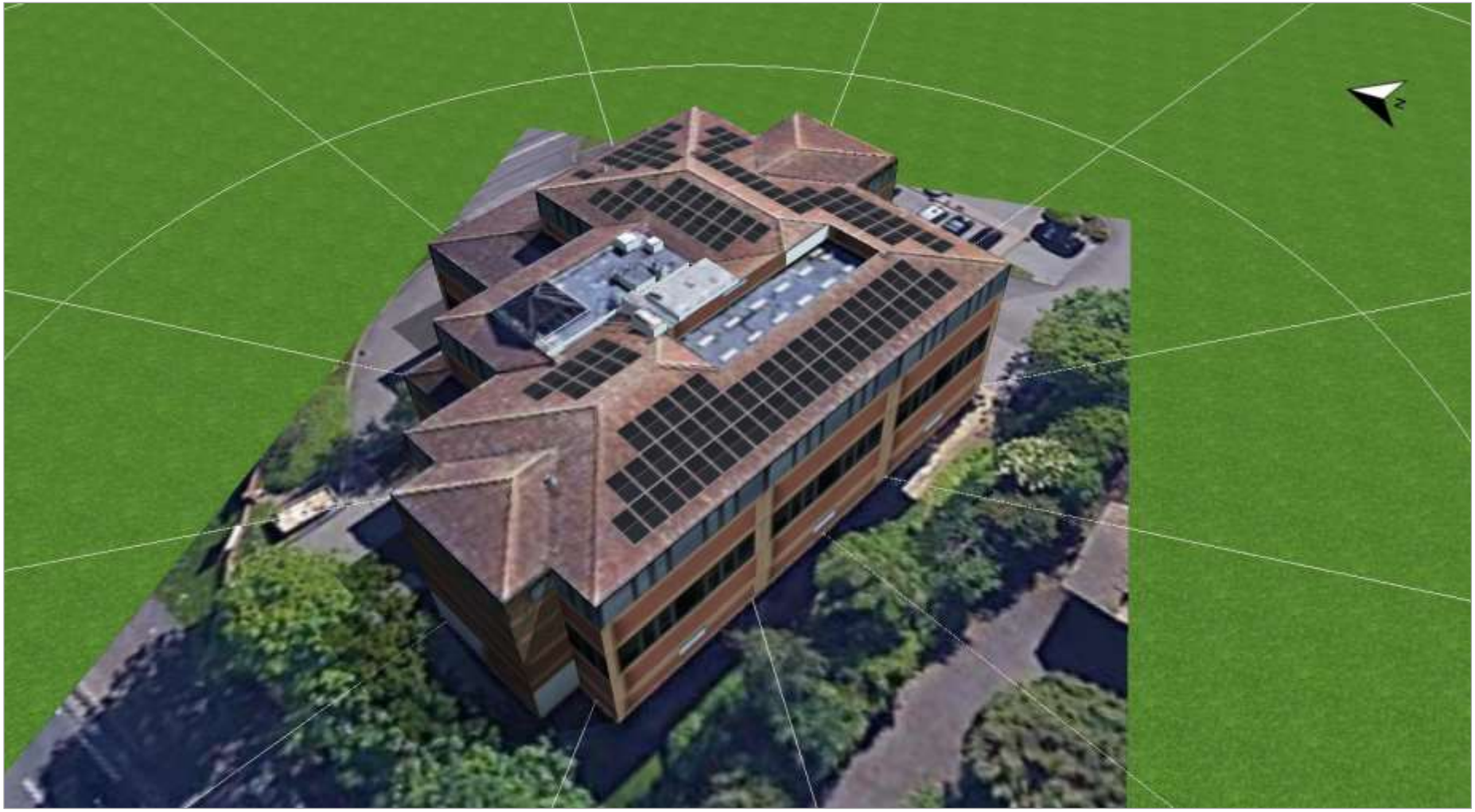
400 m
350 m
300 m
250 m
200 m
150 m
100 m


50 m
N


50m



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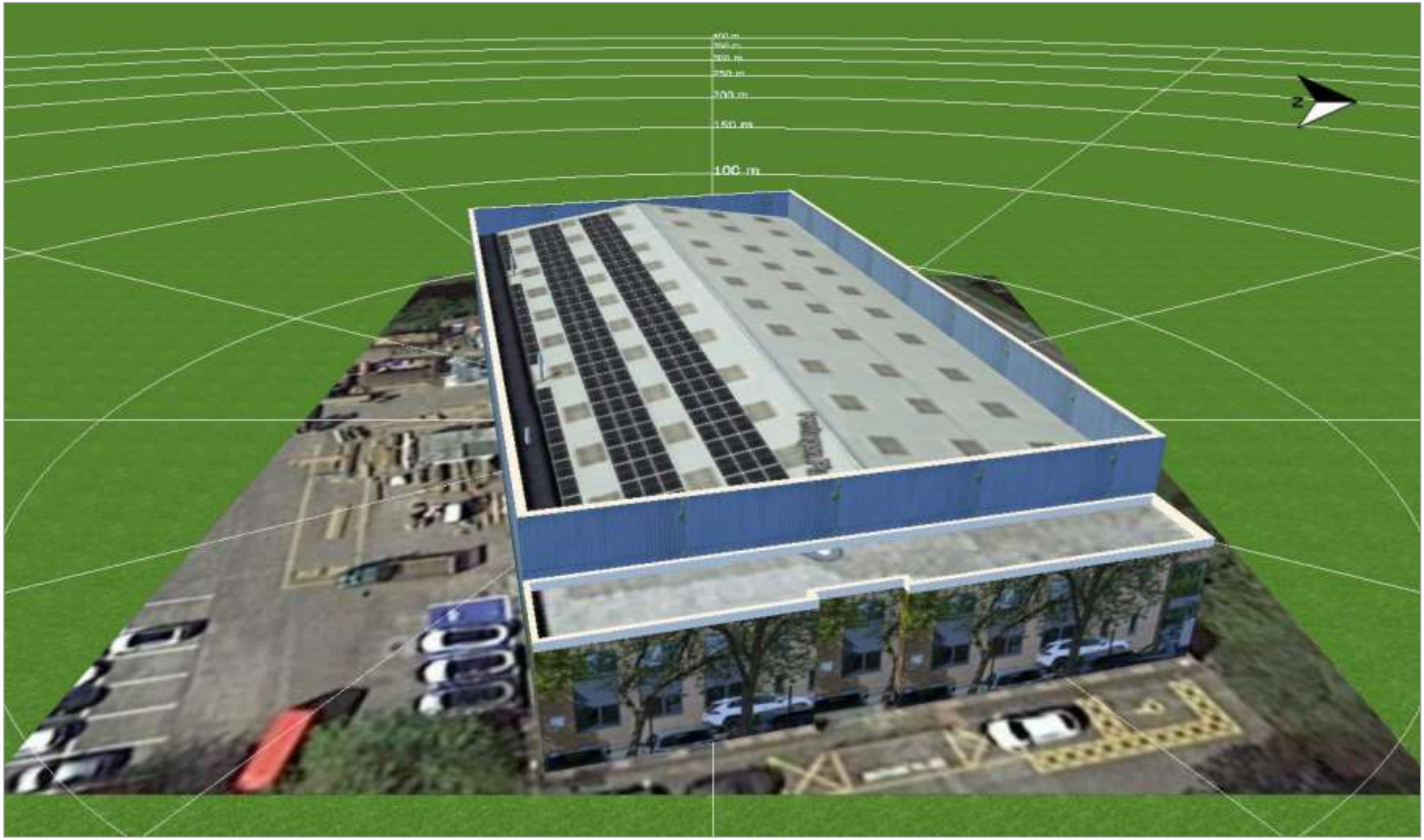
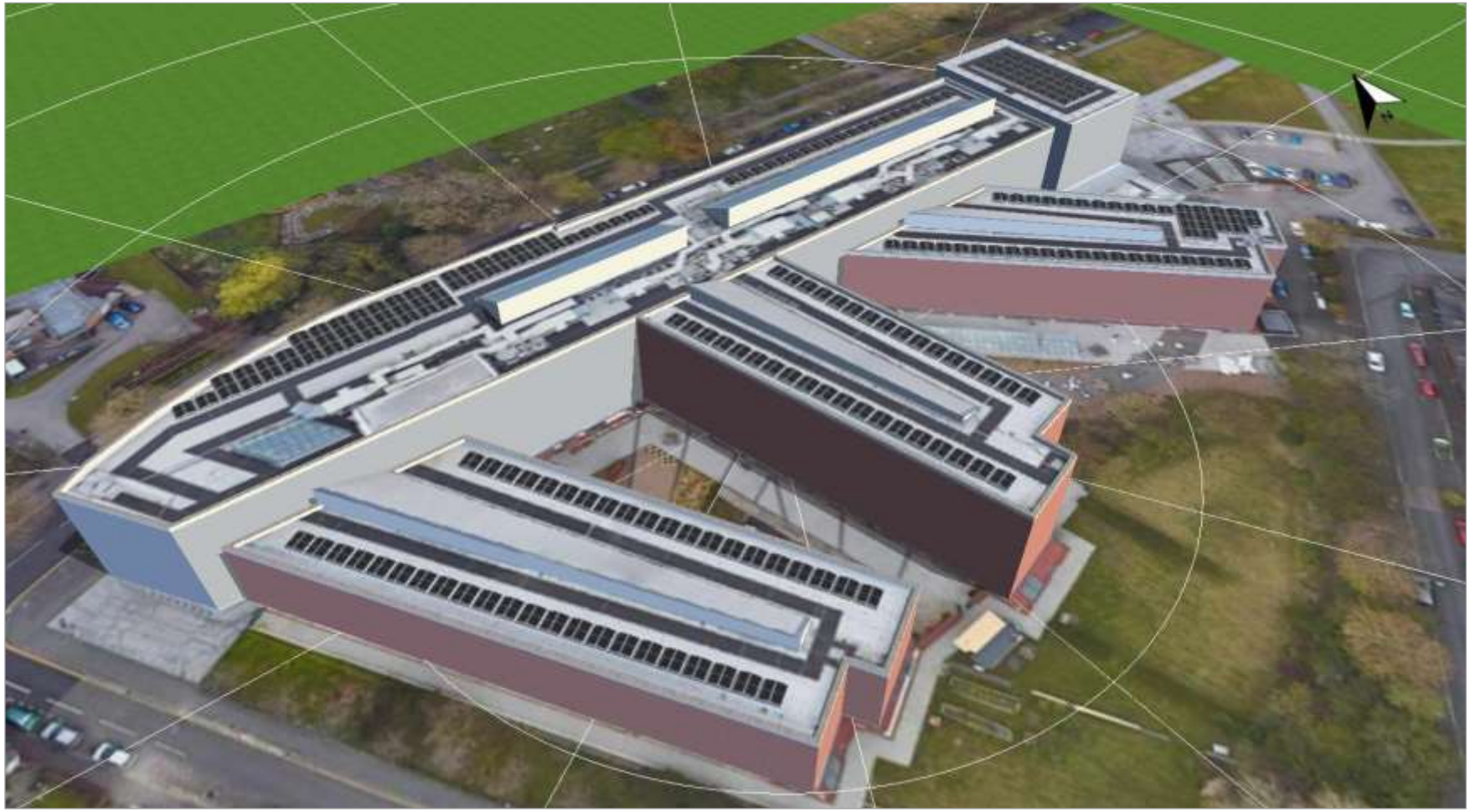
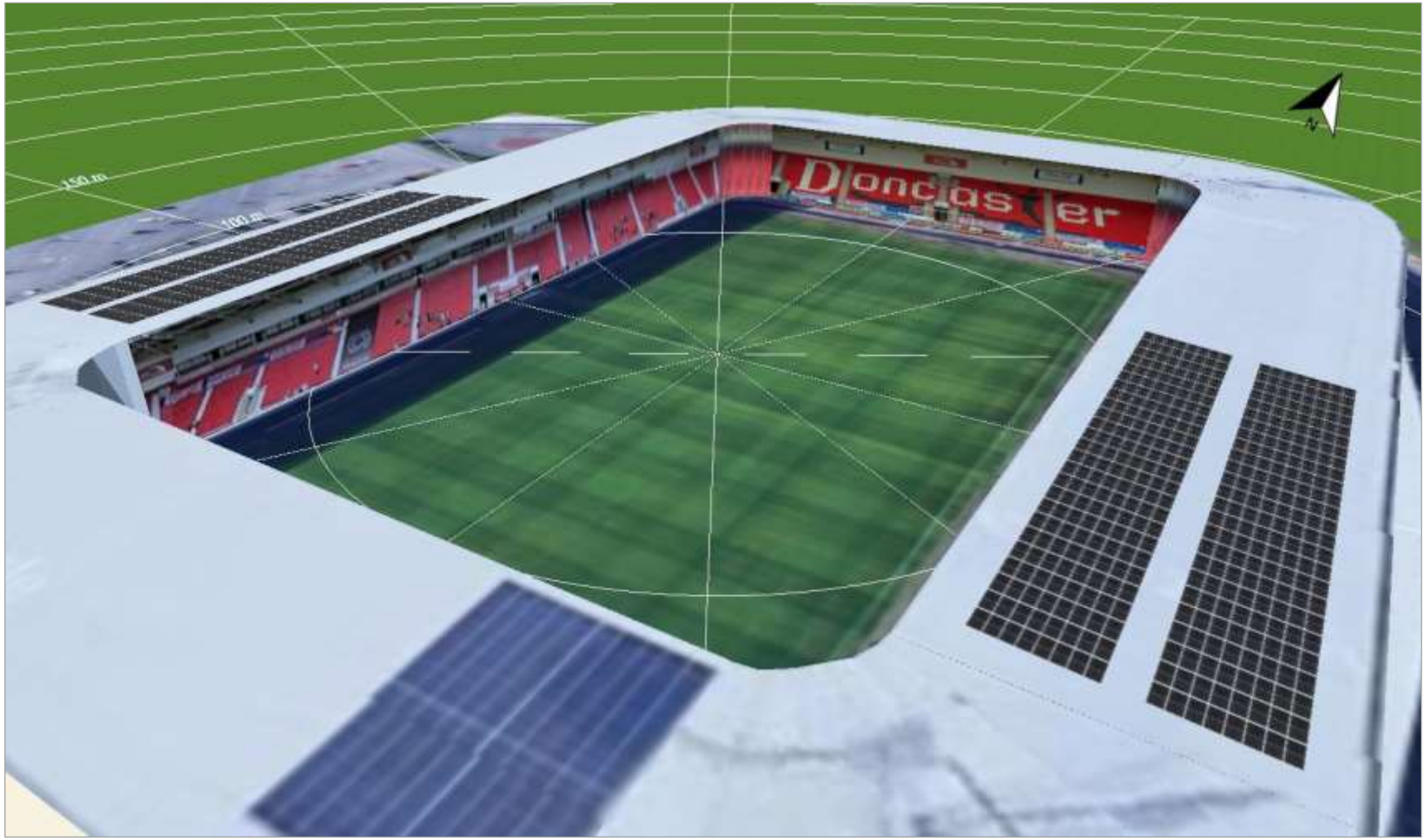





50 m


Doncaster

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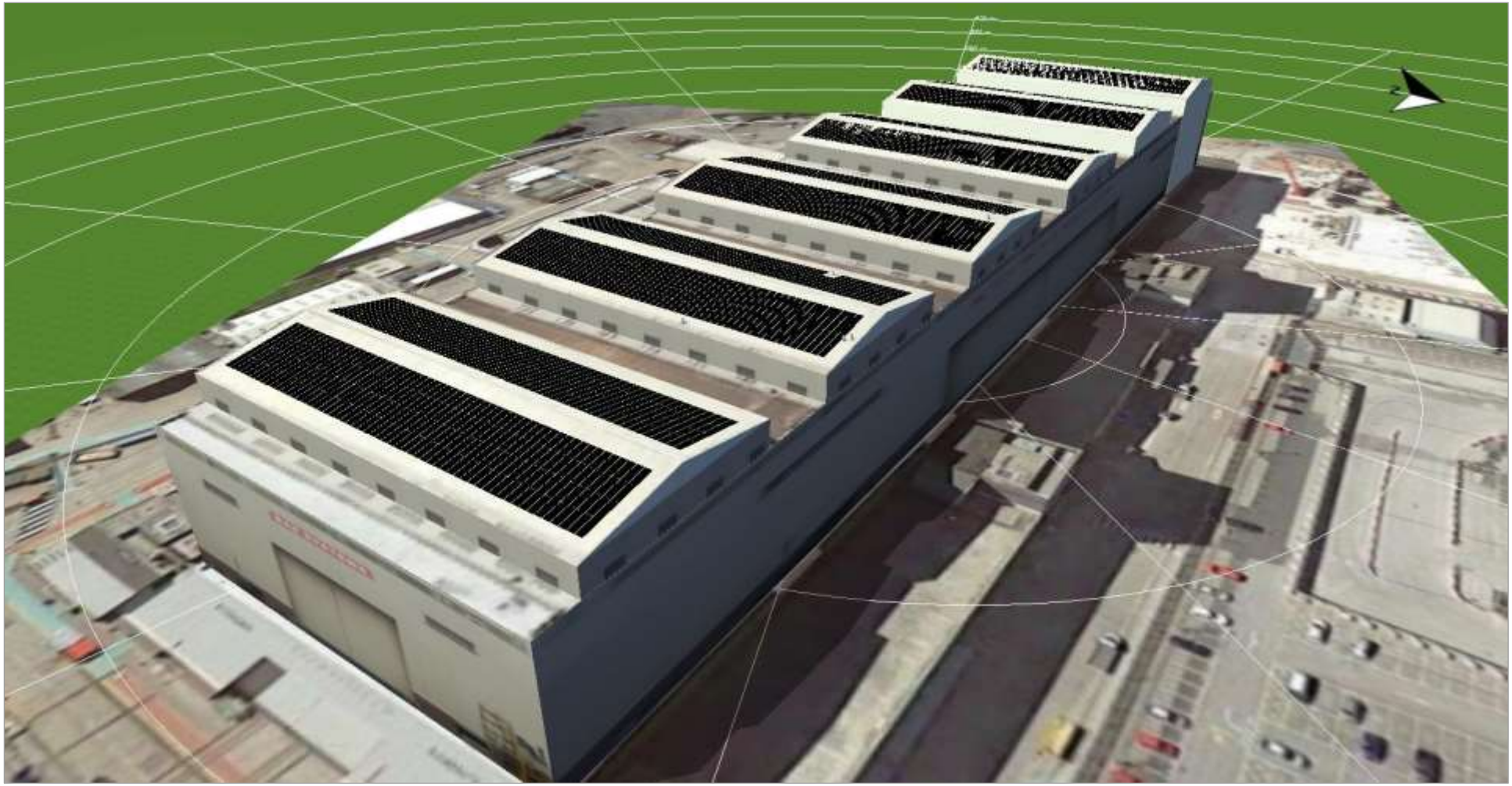

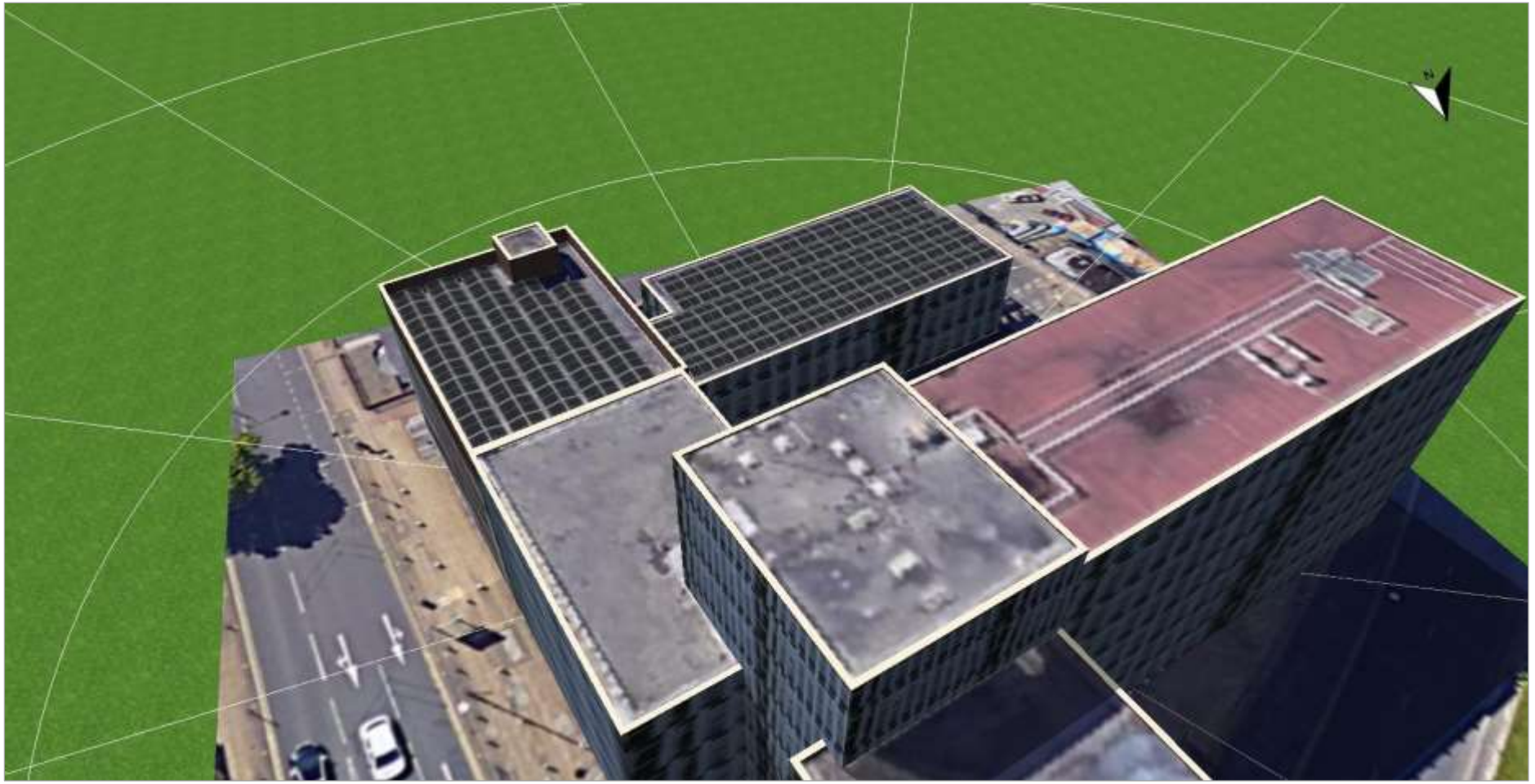

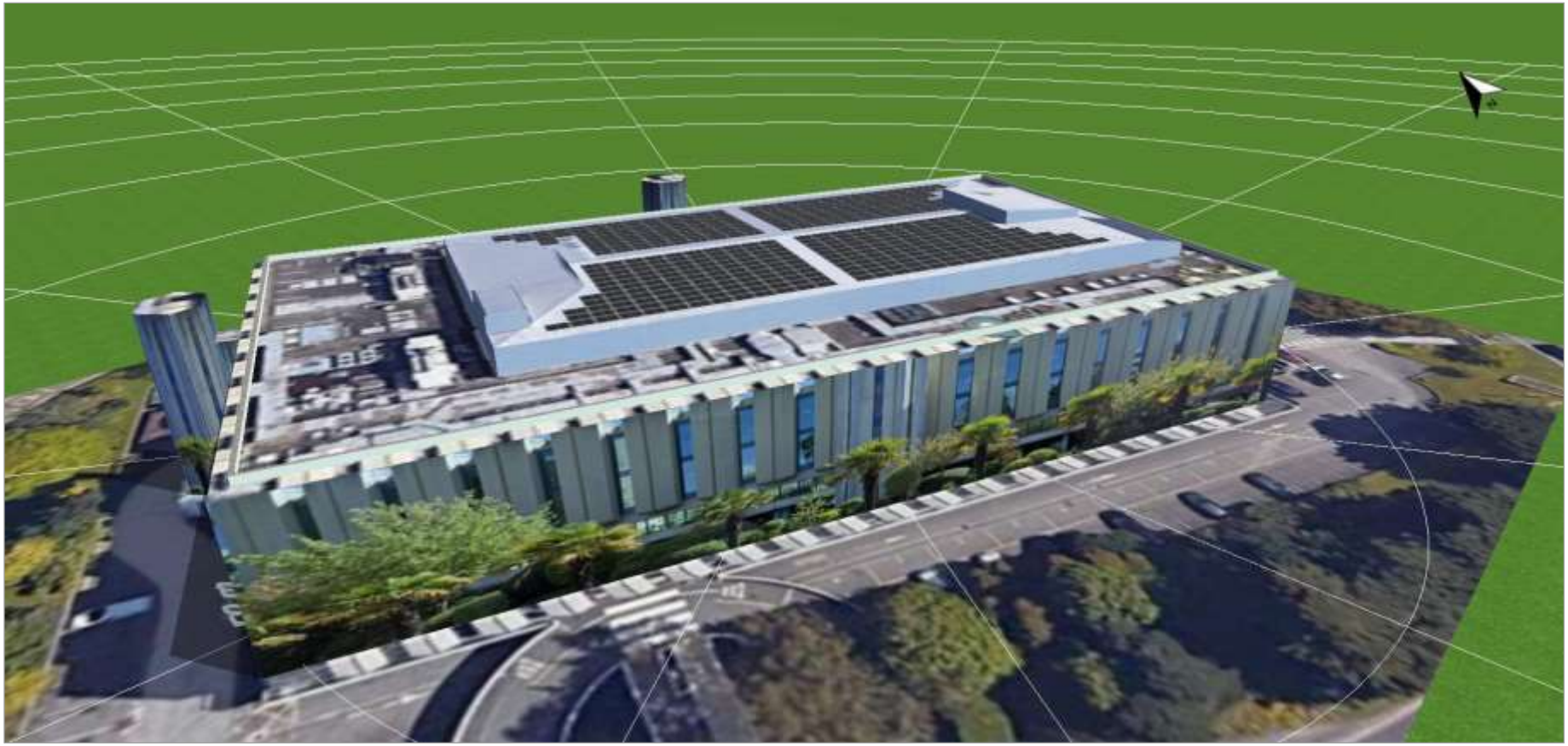

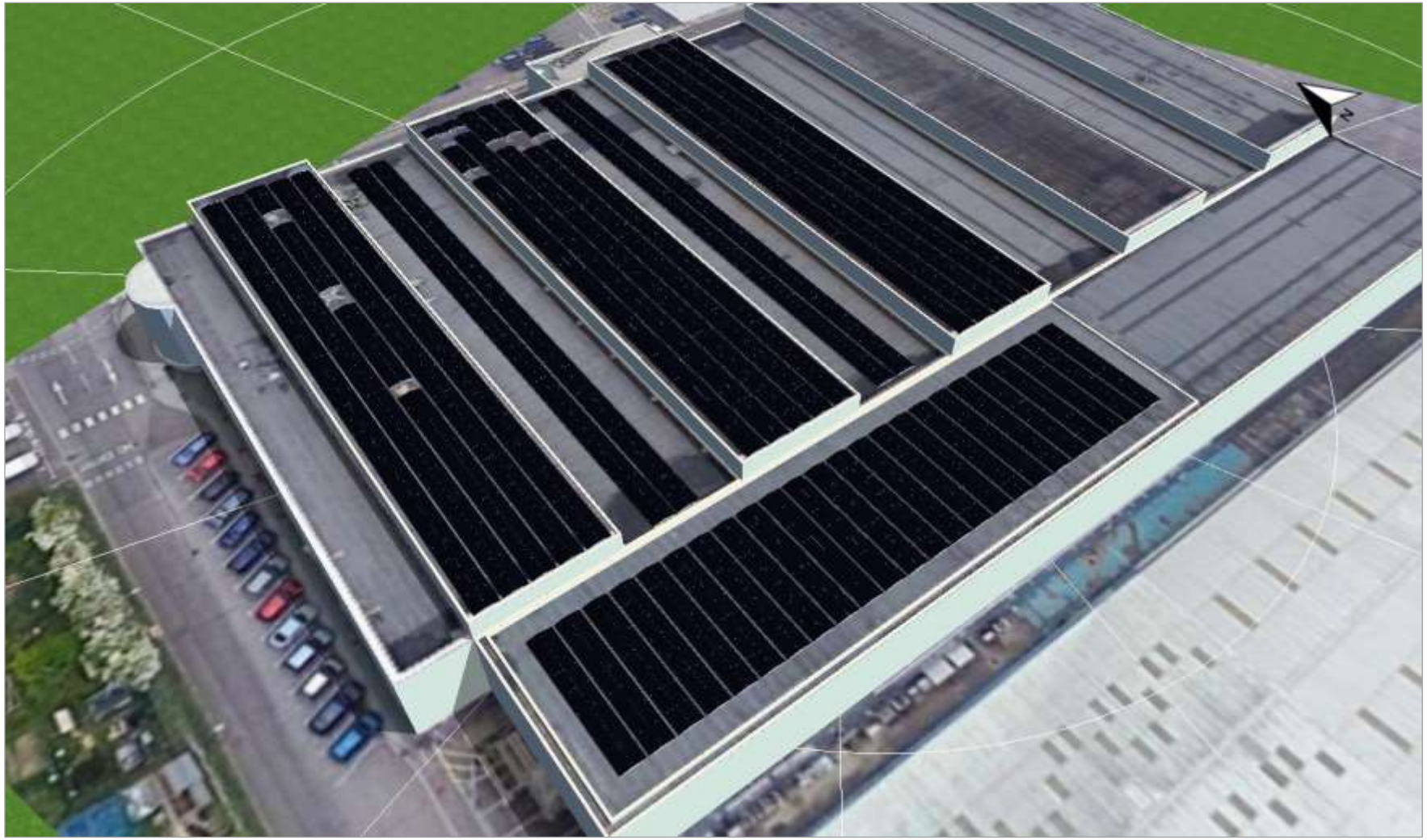

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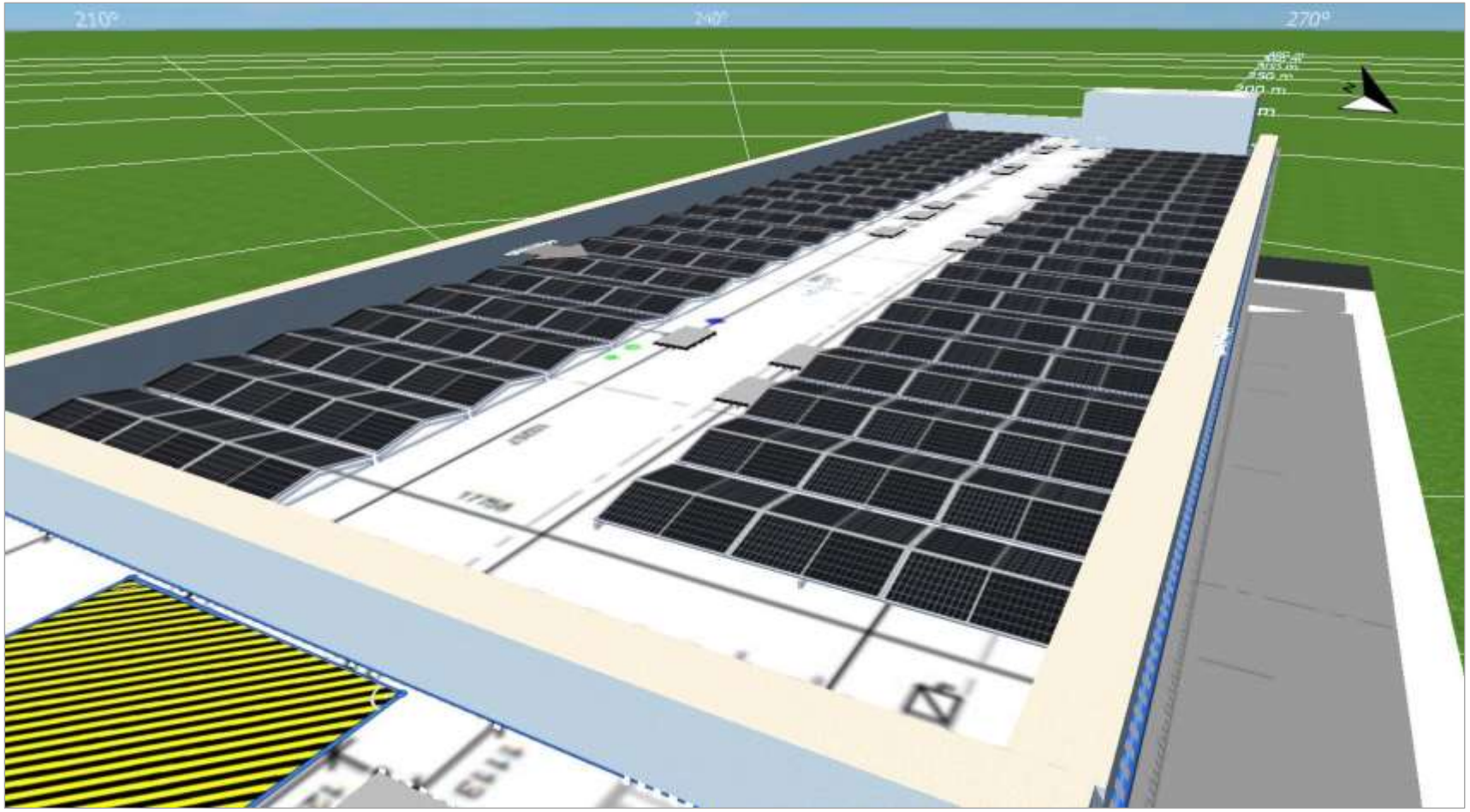
3D New Build Property Simulation


LV CABLE & COMMS
DUCTS


100 m
RISER MAIN - 108 P
3x36panel (or 6x18
Arranged E-W or
3X11.7kW = 3
Array split to
each with
to give ba
inverter
RISER C - 3
1x36panel
Arranged
1X11.7
108


210°
240°
270°

Ground Mounted & Solar Carport 3D Simulations


N

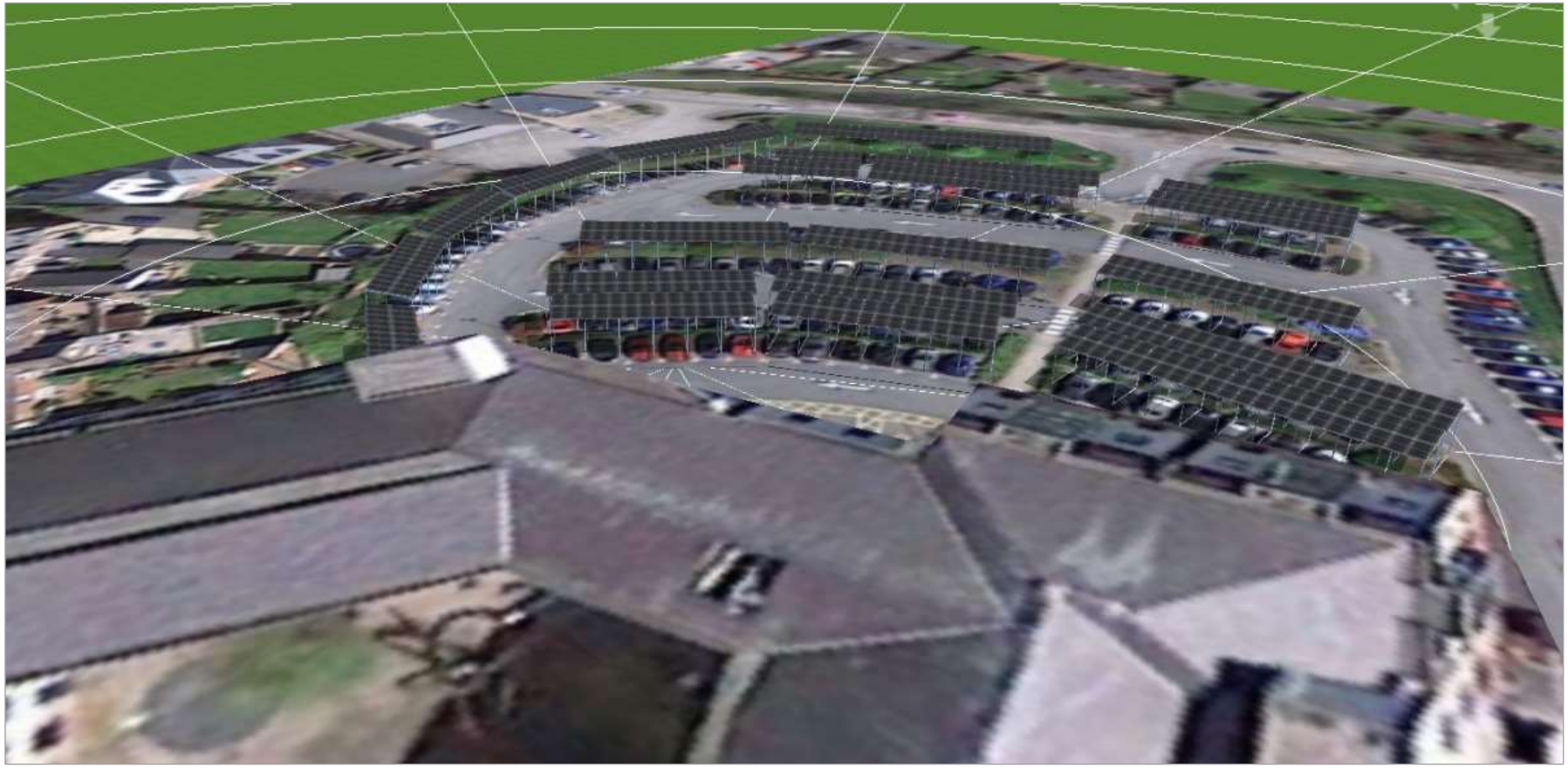

250 m
200 m
150 m
100 m
50 m


50 m
N


50 m
N


100 m


50 m



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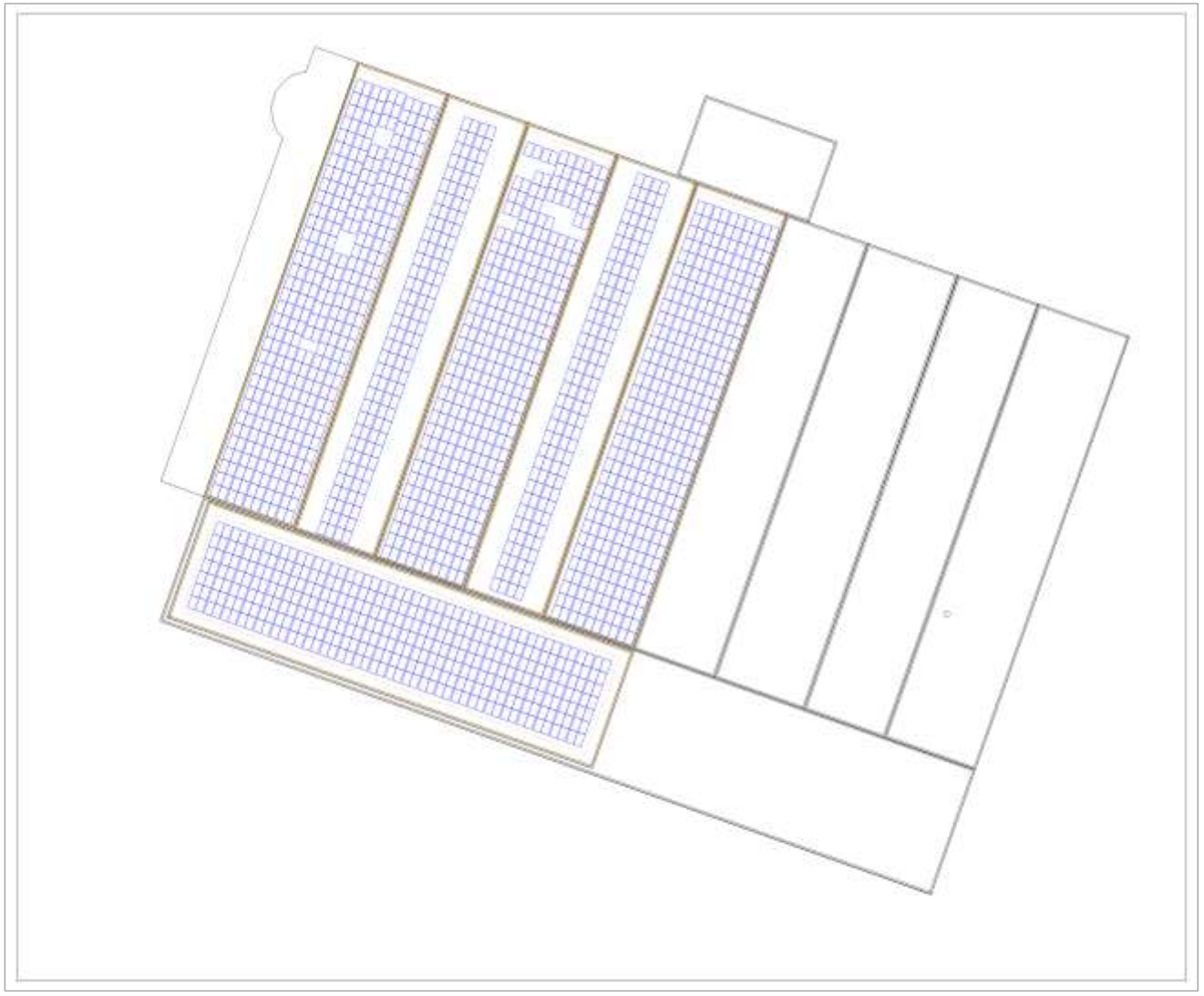
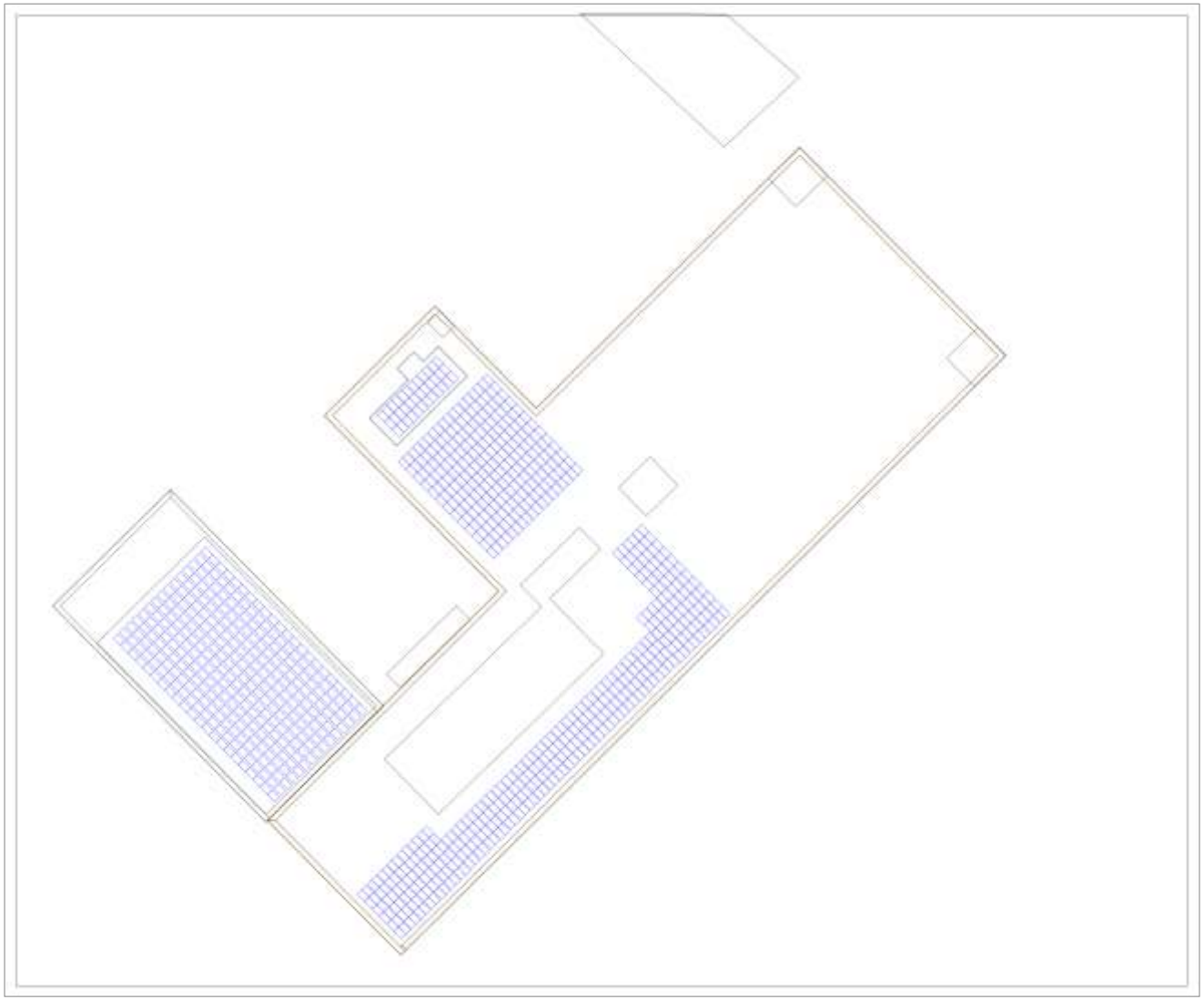
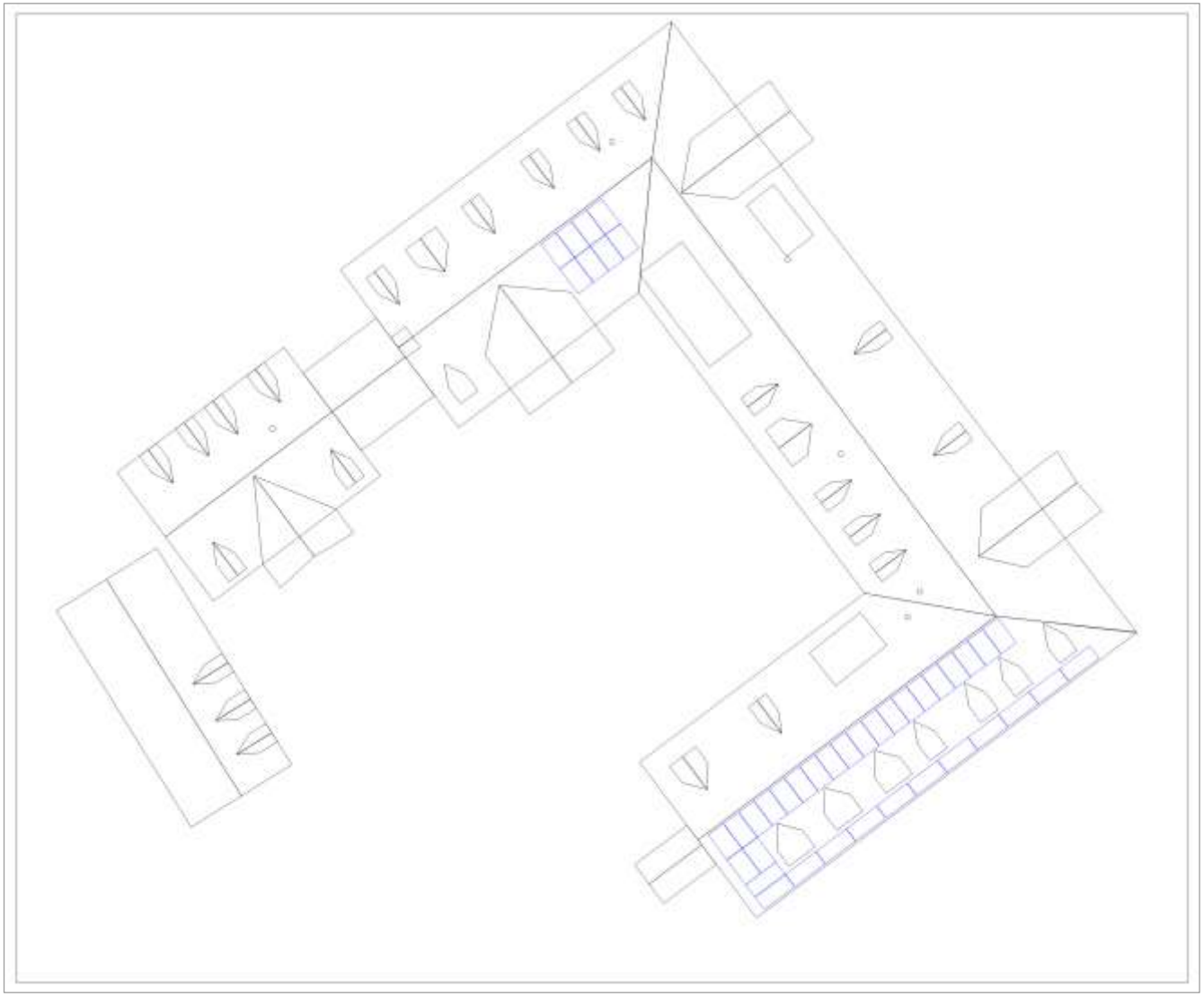
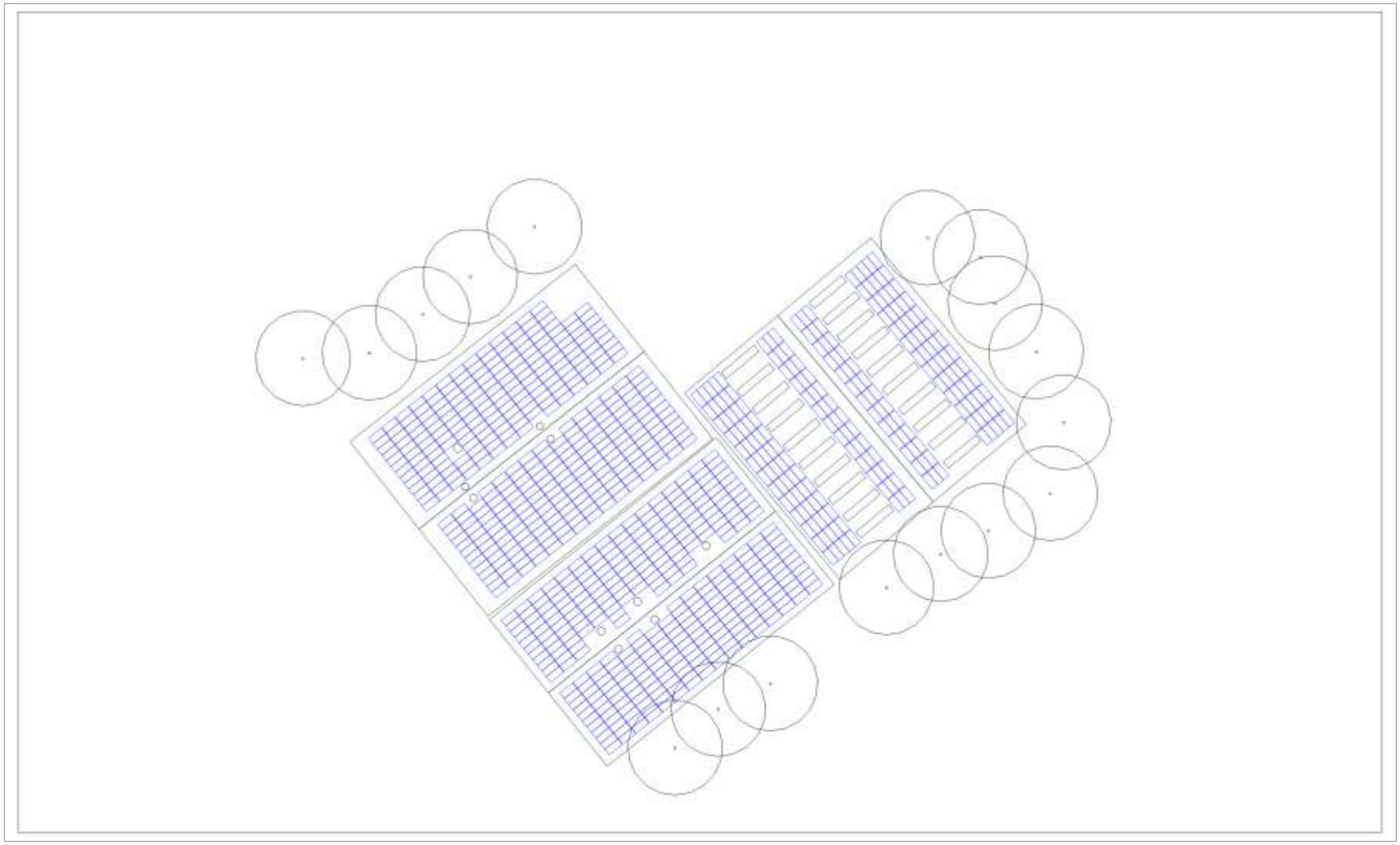
Line Drawings









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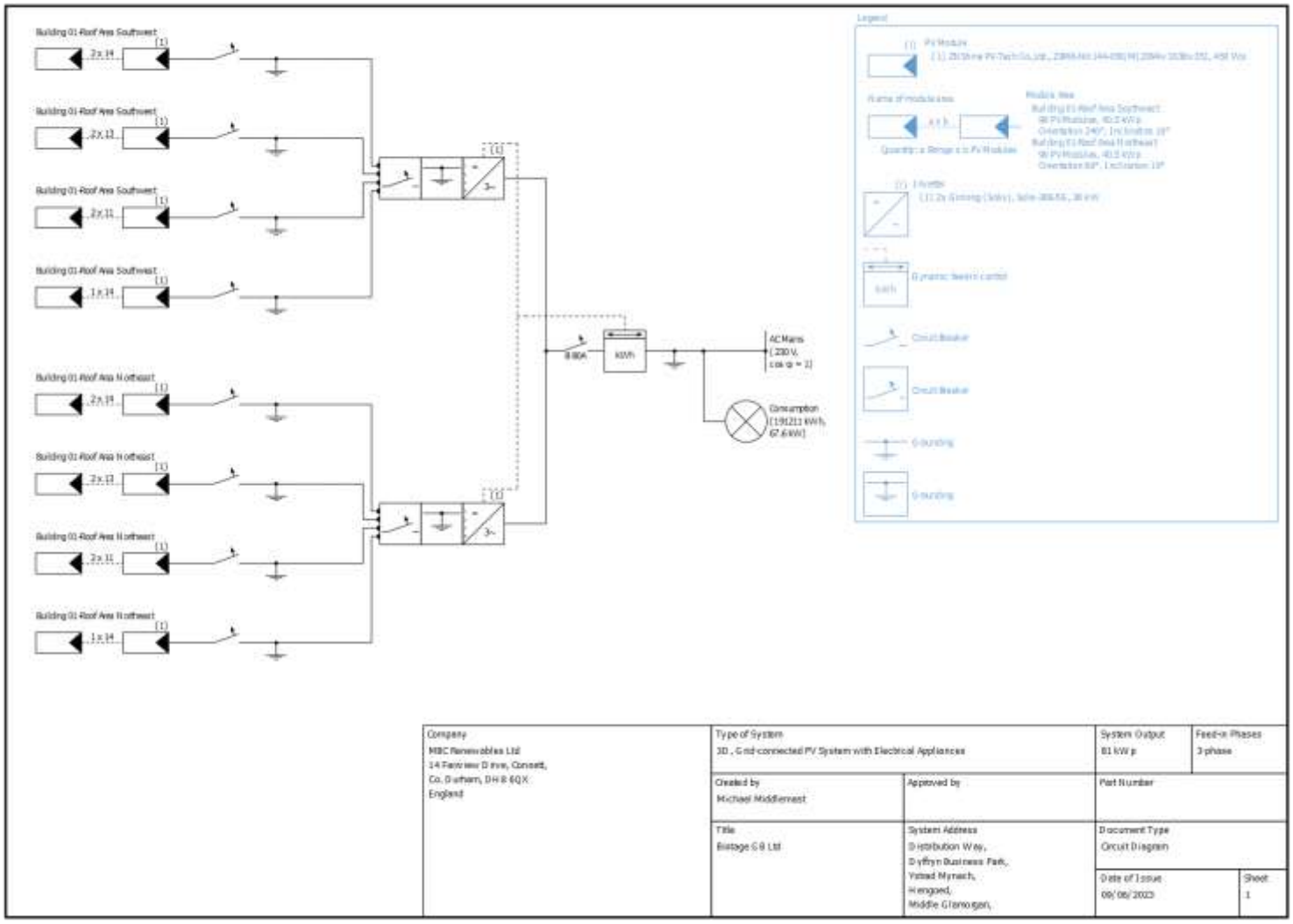
Schematics & Technical Documentation


Building 01 Roof Area Southwest
2 x 14
Building 01 Roof Area Southwest
2 x 11
Building 01 Roof Area Southwest
2 x 11
Building 01 Roof Area Southwest
1 x 14
Building 01 Roof Area Northeast
2 x 14
Building 01 Roof Area Northeast
2 x 13
Building 01 Roof Area Northeast
2 x 11
Building 01 Roof Area Northeast
1 x 14
[1]
3~
kWh
AC Mains
(230 V,
cos φ = 1)
Consumption
(191211 kWh,
67.6 kW)
Legend
PV Module
Dynamic Reactive Control
Circuit Breaker
Circuit Breaker
Grounding
Grounding
Company
MBC Renewables Ltd
14 Fairview Drive, Consett,
Co. Durham, DH8 6QX
England
Type of System
3D , Grid-connected PV System with Electrical Appliances
System Output
81 kW p
Feed-in Phases
3 phase
Created by
Michael Middlemast
Approved by
Part Number
Title
Bistage G 8 Ltd
System Address
Distribution Way,
Dyffryn Business Park,
Ystrad Mynach,
Hengoed,
Middle Glamorgan,
Document Type
Circuit Diagram
Date of Issue
09/08/2023
Sheet
1

MBC Renewables Ltd
Registered in England No: 14109542
michael@middlemast.com
Tel: 07784 150 054

Desk Top Structural Roof Appraisal Information Request Form

Client Details

Company Name:	
Company Ref/Project No:	

Property Location

Install Address Line 1			
Install Address Line 2			
Install Address Line 3			
Install Postcode:			
Nearest City/Town	Choose an item.		
Distance to the Sea **(km)** https://www.doogal.co.uk/DistanceToSea.php	**(km)**		
Height Above Sea Level **(m)** https://www.freemaptools.com/elevation-finder.htm	**(m)**		

(Please use these links and provide the required information)

Property Type

3 Storey Semi/Det/Terr		Barn			
2 Storey Semi/Det/Terrace		Warehouse			
Bungalow		Industrial Unit			
Garage		School			
		Other (Please specify)			
Approx. Age of the Property (Years)					

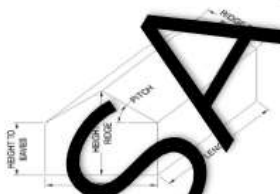
Property Information

Roof Type:	Pitched		Mono			Flat	
	Curved		Hipped				

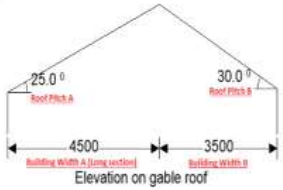
Property Size:	Building Length		Height to Eaves	**(m)**
See Ref A	Building Width		Height to Ridge	**(m)**
	Roof Pitch	**(Deg)**	Parapet Height (Flat roofs only)	**(m)**
	Distance to the nearest Building	**(m)**	Height of nearest obstruction. (E.g. Higher Building o Tree)	**(m)** **Approx.**

Where a building ridge line d... through the middle of the building we would ask that you refer to Ref B and complete the sec... below

Roof Pitch A	**(Deg)**	Roof Pitch B	**(Deg)**
Building Half Width A	**(m)**	Building Half Width B	**(m)**



Ref: A



Elevation on gable roof

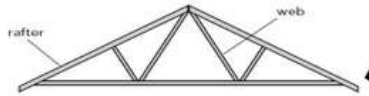
Ref: B

Roof Information

Roof Construction	1.	Tile/Slate, Battens, Felt,	2.	Trapezoidal Sheet,	3.	Corrugated Metal Sheets,	
		Trusses/Rafters.		Insulation, Trusses/Rafter.		Trusses/Rafter.	
	3.	Cement Fibre/Asbestos Sheets, Trusses/Rafters.	4.	(FLAT) Felt/Bitumen, Sarking, Truss/Roof Joists.	5.	(FLAT) Trapezoidal Sheets, Truss/Roof Joist	
	6.	Other: (Please specify)					

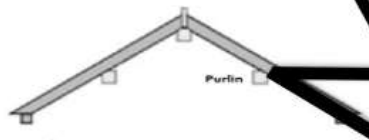
Trussed Roof Member Sizes

Rafter Size:	Width	(mm)	Depth	(mm)	Length	(mm)
Web Size:	Width	(mm)	Depth	(mm)	Length	(mm)
Bottom Chord	Width	(mm)	Depth	(mm)	Length	(mm)
Truss Spacing		(mm)				



Purlin Roof Member Sizes

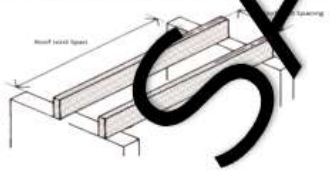
Purlin Size:	Width	(mm)	Depth	(mm)	Length	(mm)
Rafter Size:	Width	(mm)	Depth	(mm)	Length	(mm)



Flat Roof Member Sizes

Roof Joist Size:	Width	(mm)	Depth	(mm)	Length	(mm)
	Span	(mm)	Span Between Intermediate Supports			(mm)

Please note that in order to complete the ... roof su...ys all roof make-up information is required.



SAMPLE
SAMPLE

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System Details

Panel Details						
Panel Make & Model						
STC Isc (@1000W/m2 25C)						
STC Voc (@1000W/m2 25C)						
String Details						
Number of panels per string						
Expected Voc of String						
Are strings paralleled?						
Expected Isc of String	@250W/m2		@500W/m2		@750W/m2	
Connection type	Connector	*MC4, Tyco, etc*	Probes		Other	
Environmental Details						
Is there moisture on the array?						
Is it cloudy?						
Are the modules dirty? Please rate 1-5 If 3 or above please include photos	1 2 3 4 5					
Connection Details						
String Cable Direct						
At DC Isolator						
In Combiner Box						
String Box						
Mounting System						
Type of Array						
Roof Fixing Method						
Roof Sheet						
Panels fixed on long or short side?			Long		Short	
Panels fixed within the manufacturers fixing zones?						
Any signs of distress?						

Test Instruments	Seaward	Insulation Tester
Make, Model		
Serial Number		
Testing Function		
Last Calibration Date		

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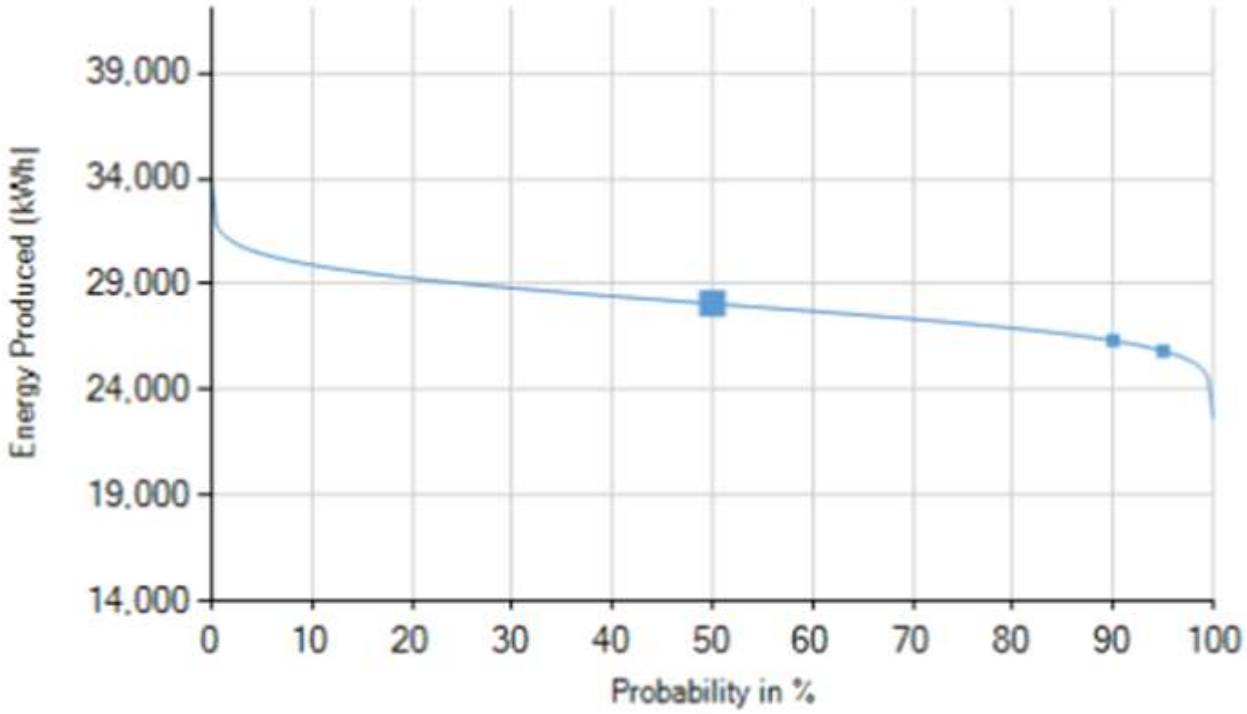
INVERTER 1
String Test Results and Related Equipment

Inverter Make / Model:				Images Taken:		
Inverter Serial Number:						
AC Isolation Switch Rating (A/V)						
Supply Circuit Breaker (Ig Setting)	Type		Rating (A)		D Rating (V)		Capacity (kA)	
	1	2	3	4	5	6
String No (from string layout)						
No modules in string						
Seaward Record No.						
Measured V_{oc}						
Measured I_{sc}						
Irradiance						
Insulation Tests						
Test Voltage (V)						
Riso (MΩ)						
Measured Voltage to Earth						
	7	8	9	10	11	12
String No (from string layout)						
No modules in string						
Seaward Record No.						
Measured V_{oc}						
Measured I_{sc}						
Irradiance						
Insulation Tests						
Test Voltage (V)						
Riso (MΩ)						
Measured Voltage to Earth						
	13	14	15	16	17	18
String No (from string layout)						
No modules in string						
Seaward Record No.						
Measured V_{oc}						
Measured I_{sc}						
Irradiance						
Insulation Tests						
Test Voltage (V)						
Riso (MΩ)						
Measured Voltage to Earth						

SAMPLE

Fiscal & CO2 Modelling

Bankability: Exceedance probability of the forecast yield (P50/P90)



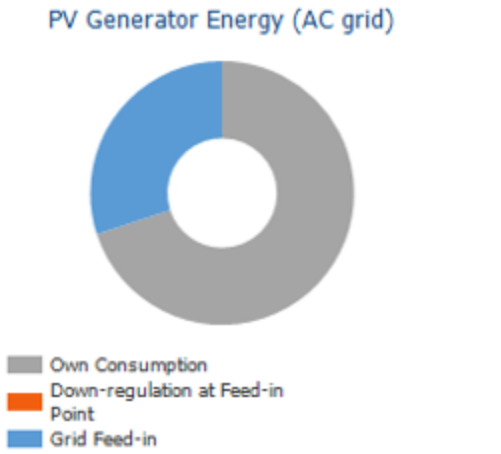
P10/P90 values from climate data:

P10	106.379 %
P90	93.793 %

Adopt for financial analysis:

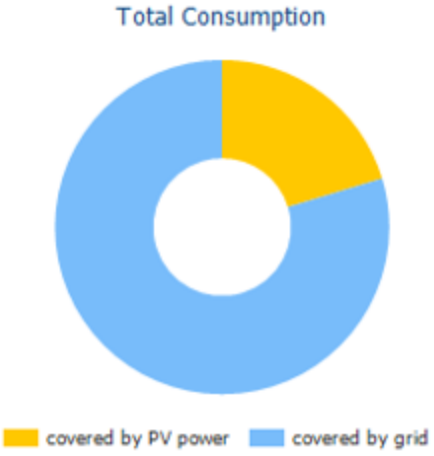
(●) P 50	28,079 kWh (100 %)
( ) P 90	26,333 kWh (93.8 %)
( ) P 95	25,844 kWh (92 %)

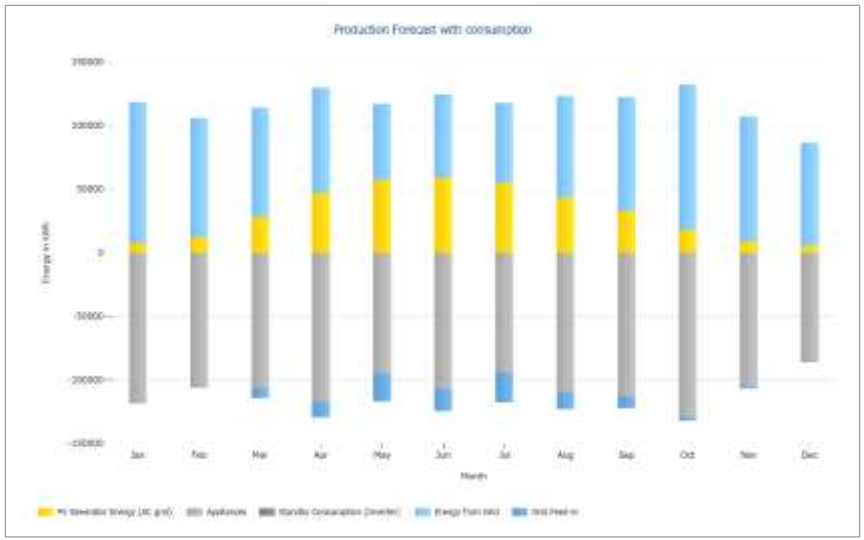
PV Generator Output	450.34	kWp
Spec. Annual Yield	828.93	kWh/kWp
Performance Ratio (PR)	86.01	%
Yield Reduction due to Shading	0.6	%/Year
PV Generator Energy (AC grid)	373,426	kWh/Year
Own Consumption	261,165	kWh/Year
Down-regulation at Feed-in Point	0	kWh/Year
Grid Feed-in	112,262	kWh/Year
Own Power Consumption	69.9	%
CO_2 Emissions avoided	175,450	kg / year

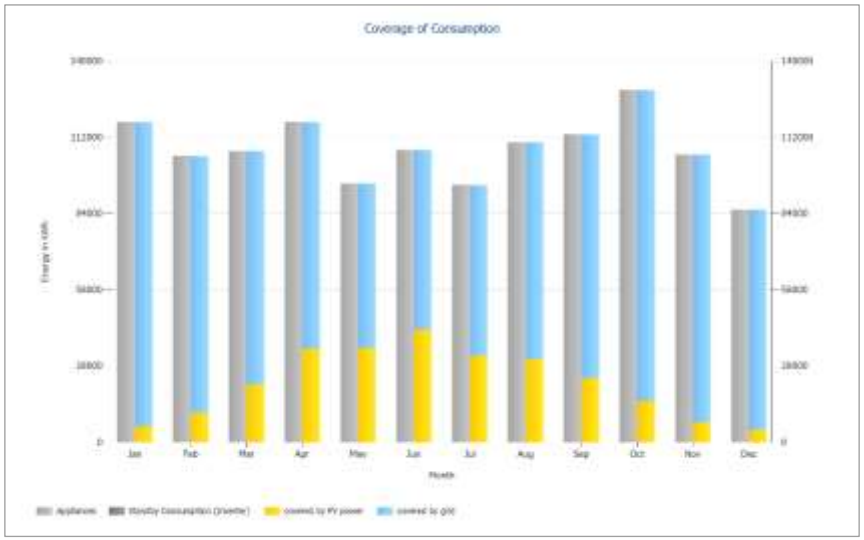


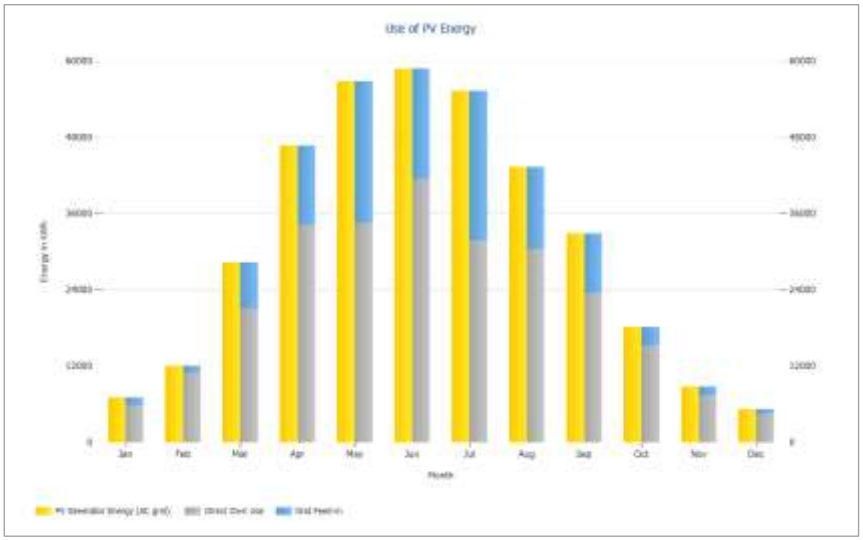
Appliances

Appliances	1,286,565	kWh/Year
Standby Consumption (Inverter)	128	kWh/Year
Total Consumption	1,286,693	kWh/Year
covered by PV power	261,165	kWh/Year
covered by grid	1,025,528	kWh/Year
Solar Fraction	20.3	%




Production Forecast with consumption
Energy in kWh
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Coverage of Consumption
Energy in kWh
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Use of PV Energy
Energy in kWh
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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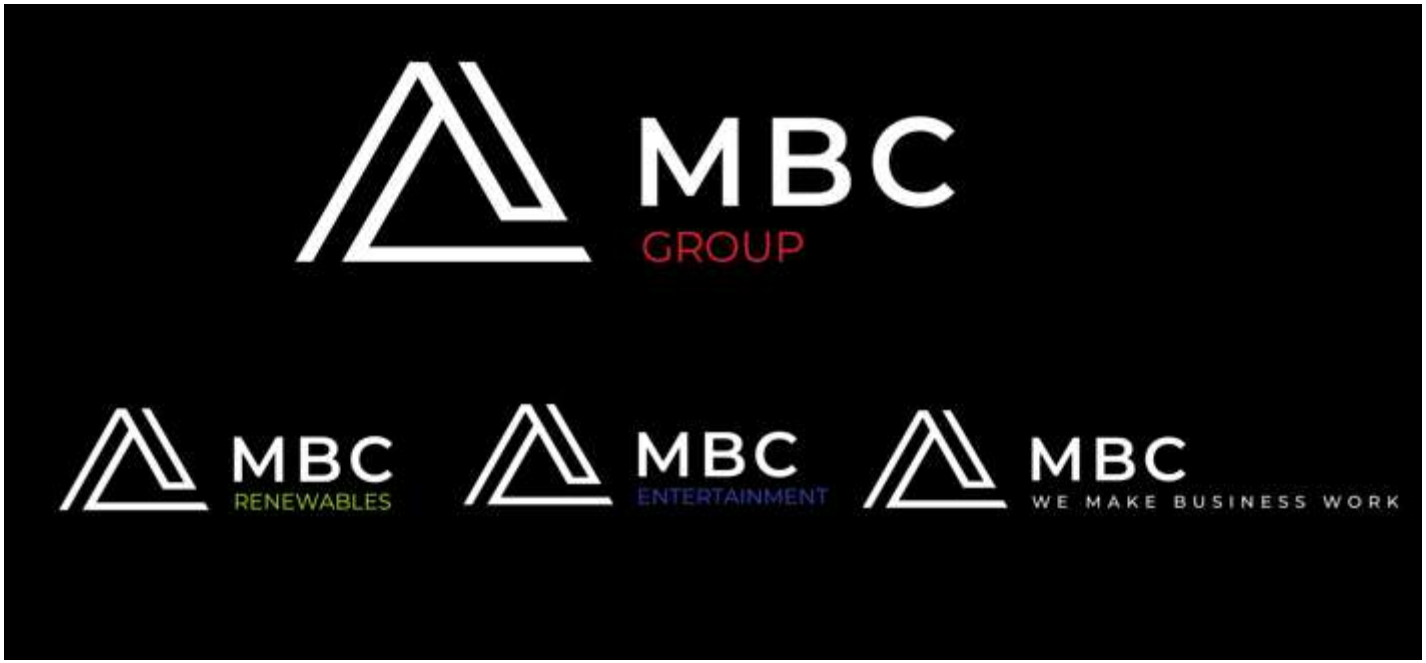

CALIFORNIA SOLAR + STORAGE ASSOCIATION
MEMBER

Solar Energy UK

CPD
MEMBER
The CPD Certification Service

REGISTERED PROVIDER
NABCEP
PHOTOVOLTAIC ASSOCIATE

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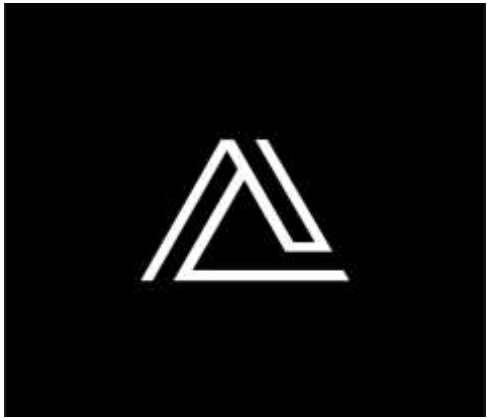

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