Solar Panel Suitability Assessment Report

Bluesky International Ltd.

Location Details

Address:	The Old Toy Factory, Jackson Street, Coalville, Leics, LE67 3NR
National Grid Ref:	426852, 327694

3D Model

Type of Source Data:	Aerial Photography
Date of Source Data:	24-05-2010
Accuracy of 3D Model:	40cm (XY)

The model has been used to establish the size, pitch and aspect of all potentially suitable roofs on this building. Potential obstructions (such as trees and other buildings) were also assessed and modelled.

The 3D model including potential panel layout can be seen in figure 1.

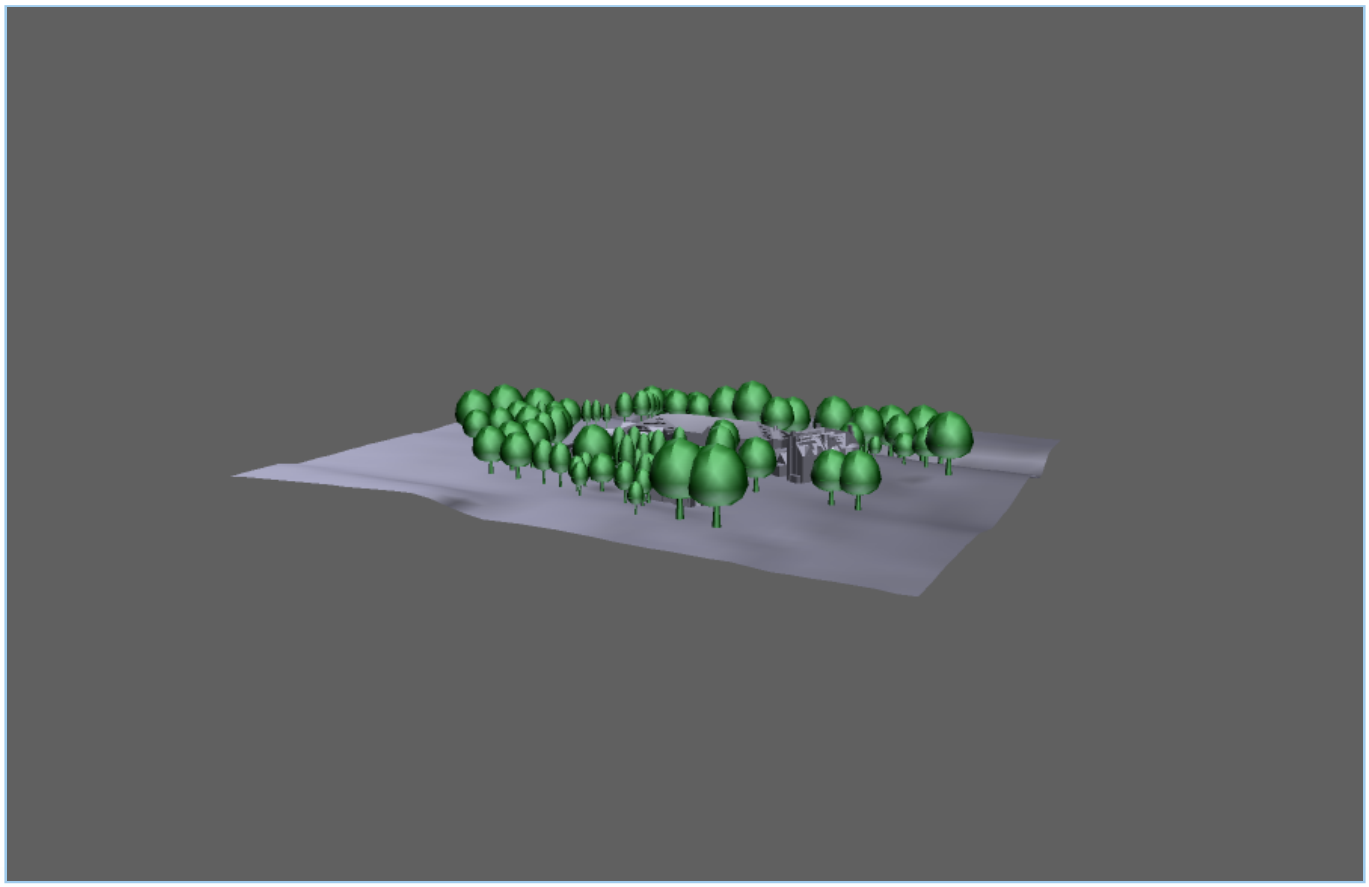

figure 1

To view this 3D view correctly please install the latest version of **Adobe Reader**

Click outside the image to continue to scroll through the report.

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Analysis

The building and its immediate environment can be seen in the aerial photo in figure 2.

North

figure 2 Vertical aerial photography, date: 24-05-2010

Advanced modelling techniques, taking several parameters into account, including size, aspect, pitch and obstructors, were used to estimate the amount of solar energy received by each roof during an entire year. This can be seen visually in figure 3.

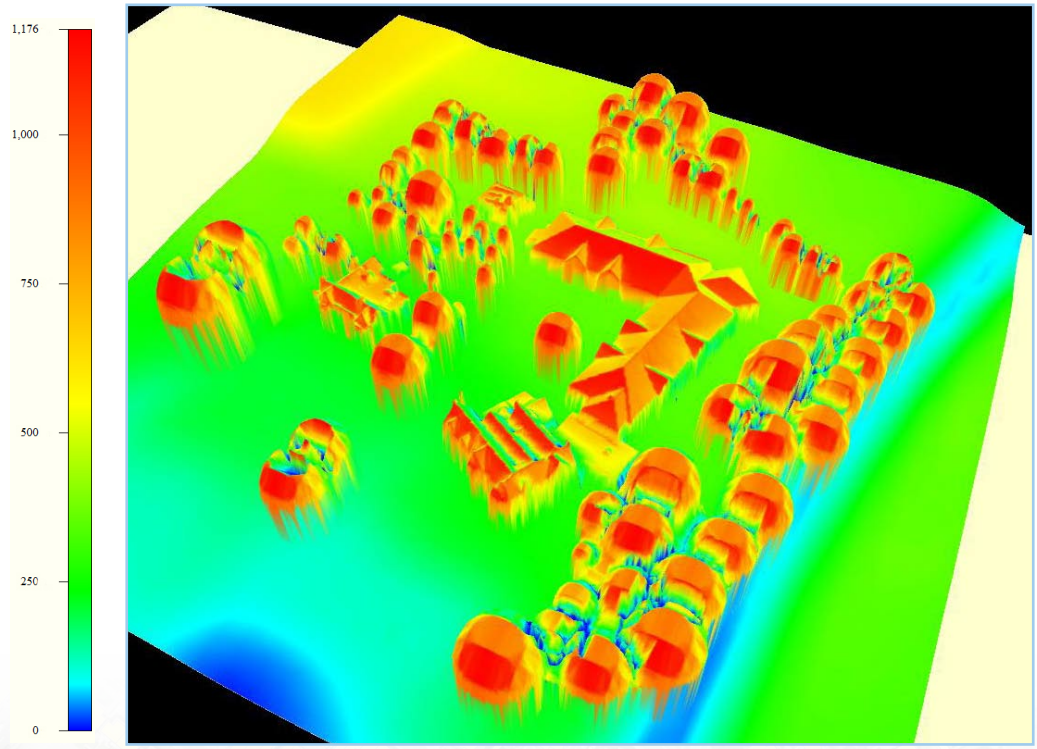

figure 3 Model showing the relative amount of solar energy received

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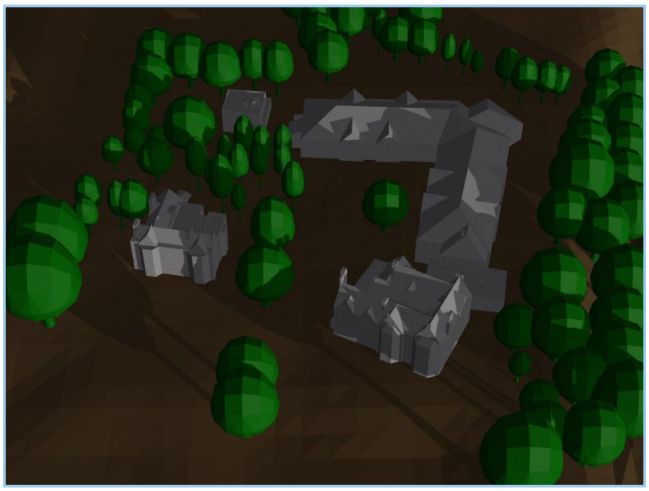
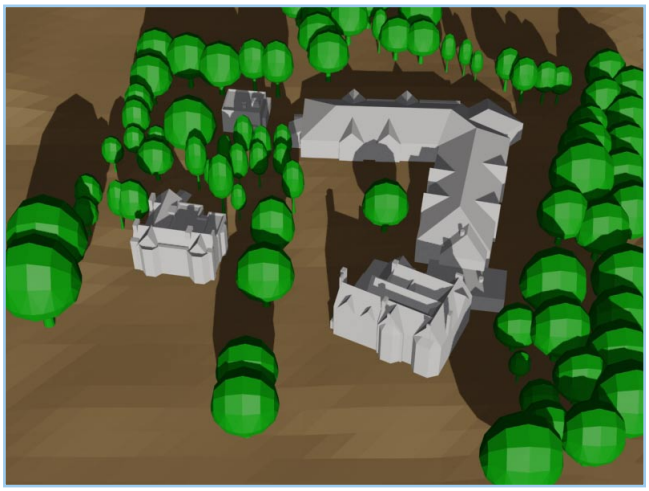
Shadow Analysis

As the model is geographically located it can be modelled for shading by using advanced techniques and specialist software that models the position of the sun and resulting shadows. The images here are for four days of the year, three times throughout the day.

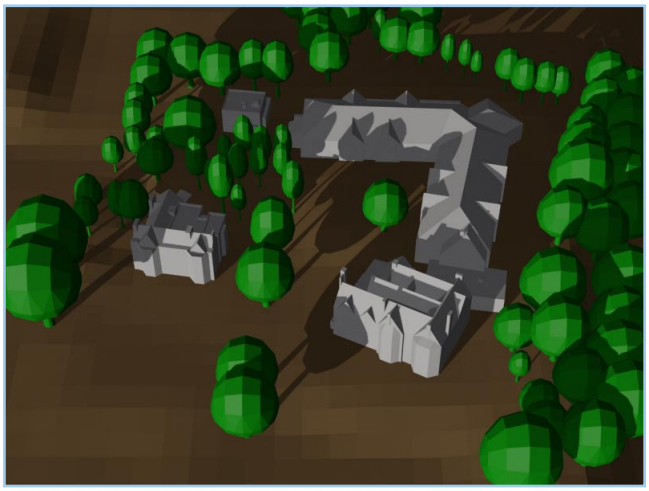
Quarter 1



January 2011 - 09:00

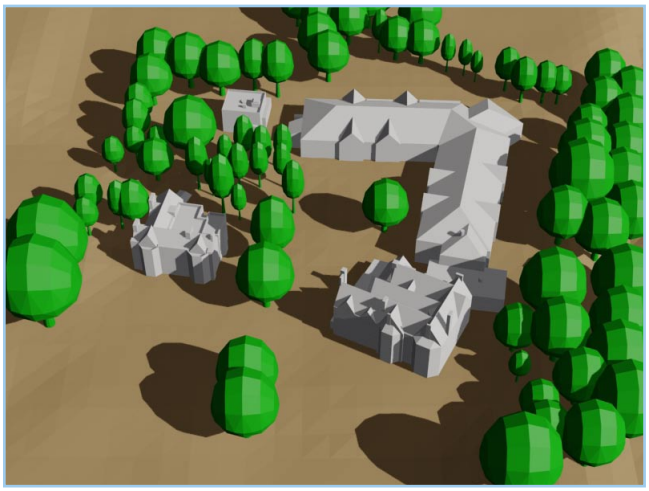


January 2011 - 12:00

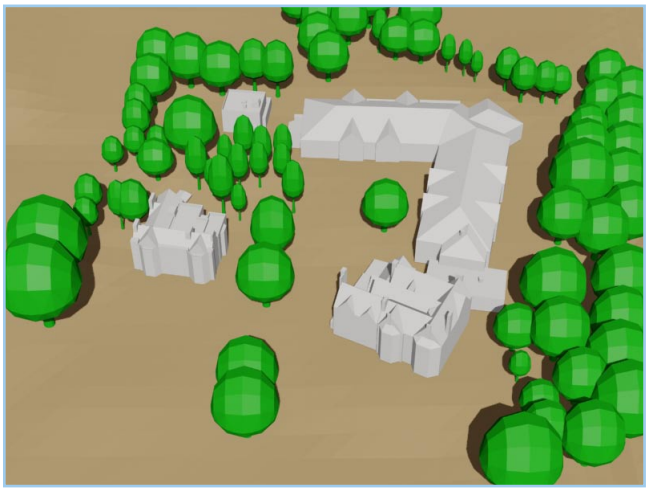


January 2011 - 15:00

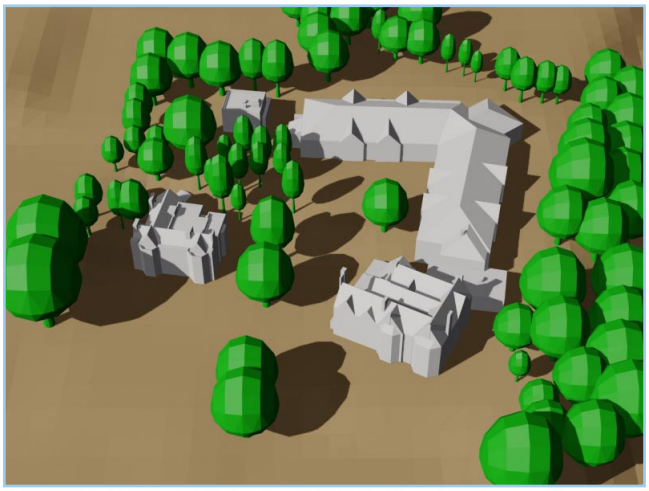
Quarter 2



April 2011 - 09:00



April 2011 - 12:00



April 2011 - 15:00

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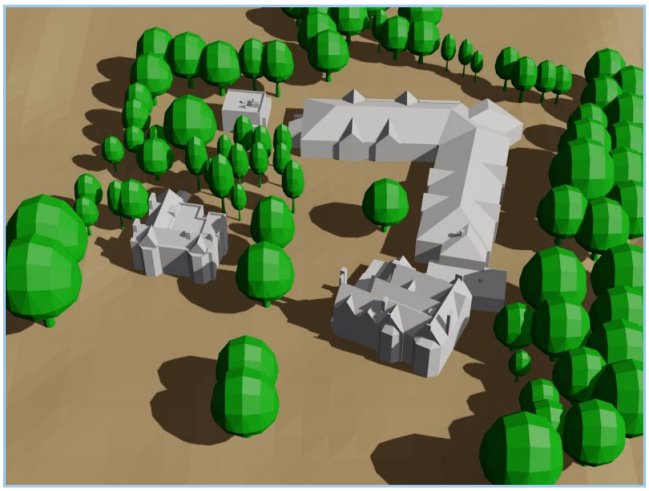
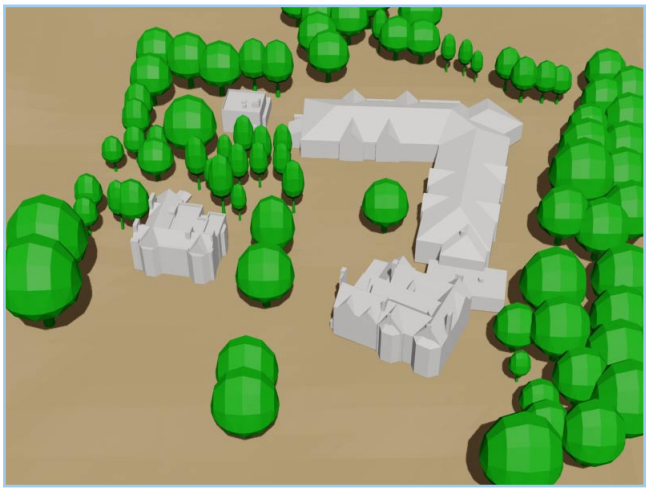
Shadow Analysis

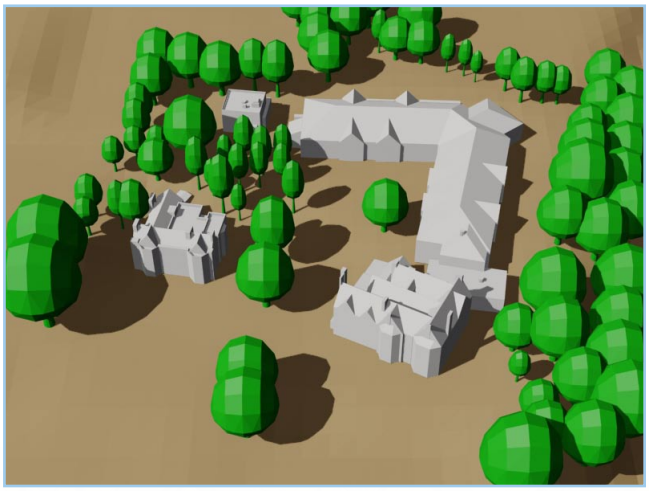
Quarter 3



July 2011 - 09:00

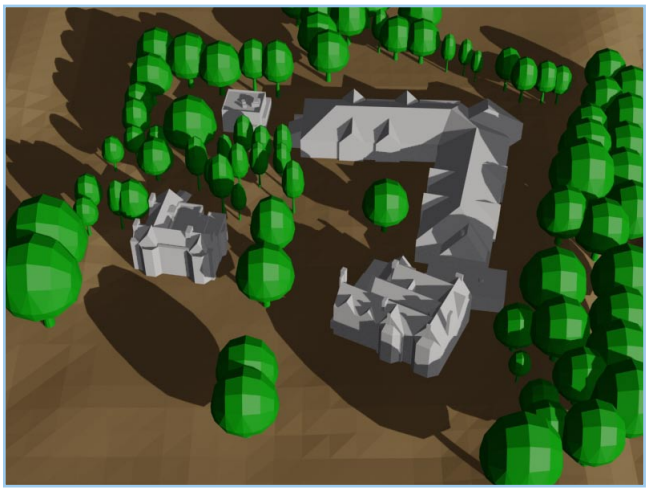


July 2011 - 12:00

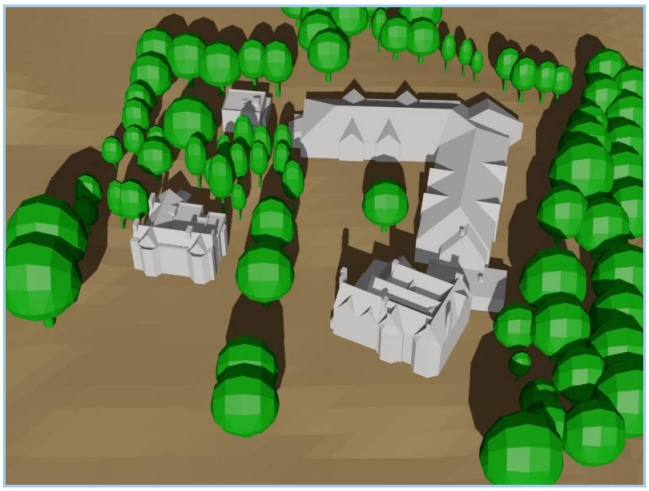


July 2011 - 15:00

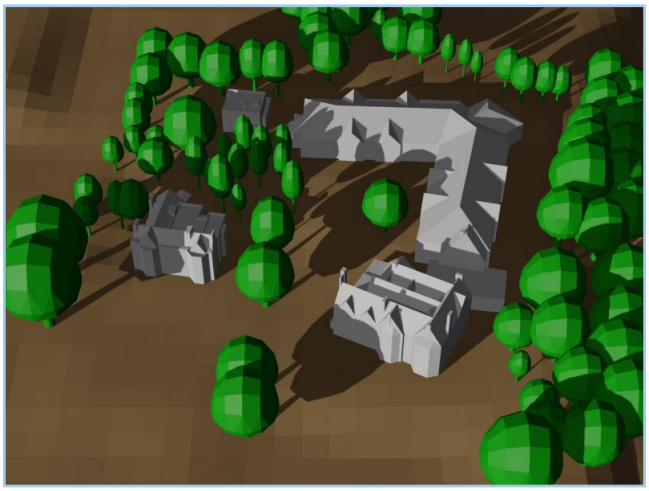
Quarter 4



October 2011 - 09:00



October 2011 - 12:00



October 2011 - 15:00

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Results

Figure 4 shows the 3D model of the building for analysis and interpretation. The roofs determined as suitable have been numbered for reference purposes. All other roofs have been determined as unsuitable for solar panels.

figure 4 3D model showing suitable roofs

Roof	Area (m^2)	Pitch (°)	Aspect (°)	Shading	Panels	Irradiation (KWh/m^2)	System Size (KWh)	Yield (KWh/year)	Feed in Tariff	System Cost	Annual Carbon Benefit
1	16.24	55	190	Trees	10	1010	2.30	1858	£805	£13,349	0.81t CO_2
2	12.99	43	100	Trees	8	765	1.84	1126	£488	£11,599	0.481t CO_2
3	11.37	0	0	Trees	7	929	1.61	1197	£518	£10,663	0.51t CO_2
4	34.10	21	273	Trees	21	716	4.83	2767	£1,046	£21,304	1.191t CO_2
5	118.52	21	183	Trees	73	1113	16.79	14950	£4,918	£58,765	6.431t CO_2
6	14.61	22	145	Trees	9	1008	2.07	1669	£723	£12,492	0.721t CO_2
7	107.16	27	100	Trees	66	814	15.18	9885	£3,252	£53,130	4.251t CO_2
8	12.99	21	192	Trees	8	1105	1.84	1627	£704	£11,599	0.71t CO_2
9	8.12	22	192	Trees	5	1054	1.15	970	£420	£8,626	0.421t CO_2
10	16.24	56	208	Trees & Buildings	10	1037	2.30	1908	£826	£13,349	0.82t CO_2
11	11.37	54	208	Trees & Buildings	7	1013	1.61	1305	£565	£10,663	0.56t CO_2
12	9.74	52	208	Trees & Buildings	6	1061	1.38	1171	£507	£9,676	0.5t CO_2
13	8.12	44	208	Trees & Buildings	5	1065	1.15	980	£424	£8,626	0.42t CO_2
					235	**976.15**	**54.05**	**41412**	**£13,625**	**£189,175**	**18.15t CO_2**
								Feed in Tariff over 25 years	**£418,272**		

Estimates based on solar panels of the following size

Panel Dimensions (mm)		Panel Size (W)
X 1640	**Y** 990	230

Roof: Roof number as shown in figure 4

Area: Area of usable roof in square metres

Pitch: Pitch of roof in degrees

Aspect: Orientation of roof in degrees (north = 0 and south = 180)

Shading: A guide to objects that may obscure some direct sunlight on the roof at some part of the day at some time during the year. These potential obstructions have not been taken into account when calculating the irradiation values.

Panels: Potential number of solar panels that could be fitted to the roof

Irradiation: Average irradiation received per sq m over an entire year

Yield: Productivity of the solar panels including a system loss of 20%

Feed in Tariff: This estimated figure using the current applicable FiT rate is for year one and takes into account loss of efficiency over time

System Cost: Estimate cost of a solar PV system, including installation, based on market averages. The actual cost of installing a system may vary significantly from this figure

Annual Carbon Benefit: CO_2 saving in tonnes per annum

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