

# Solar Panel Suitability Assessment Report

## Bluesky International Ltd.

### Location Details

Address: The Old Toy Factory, Jackson Street, Coalville, Leics, LE67 3NR  
National Grid Ref: 852426, 2477931

### 3D Model

Type of Source Data: Aerial Photography  
Date of Source Data: 06-07-2010  
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.

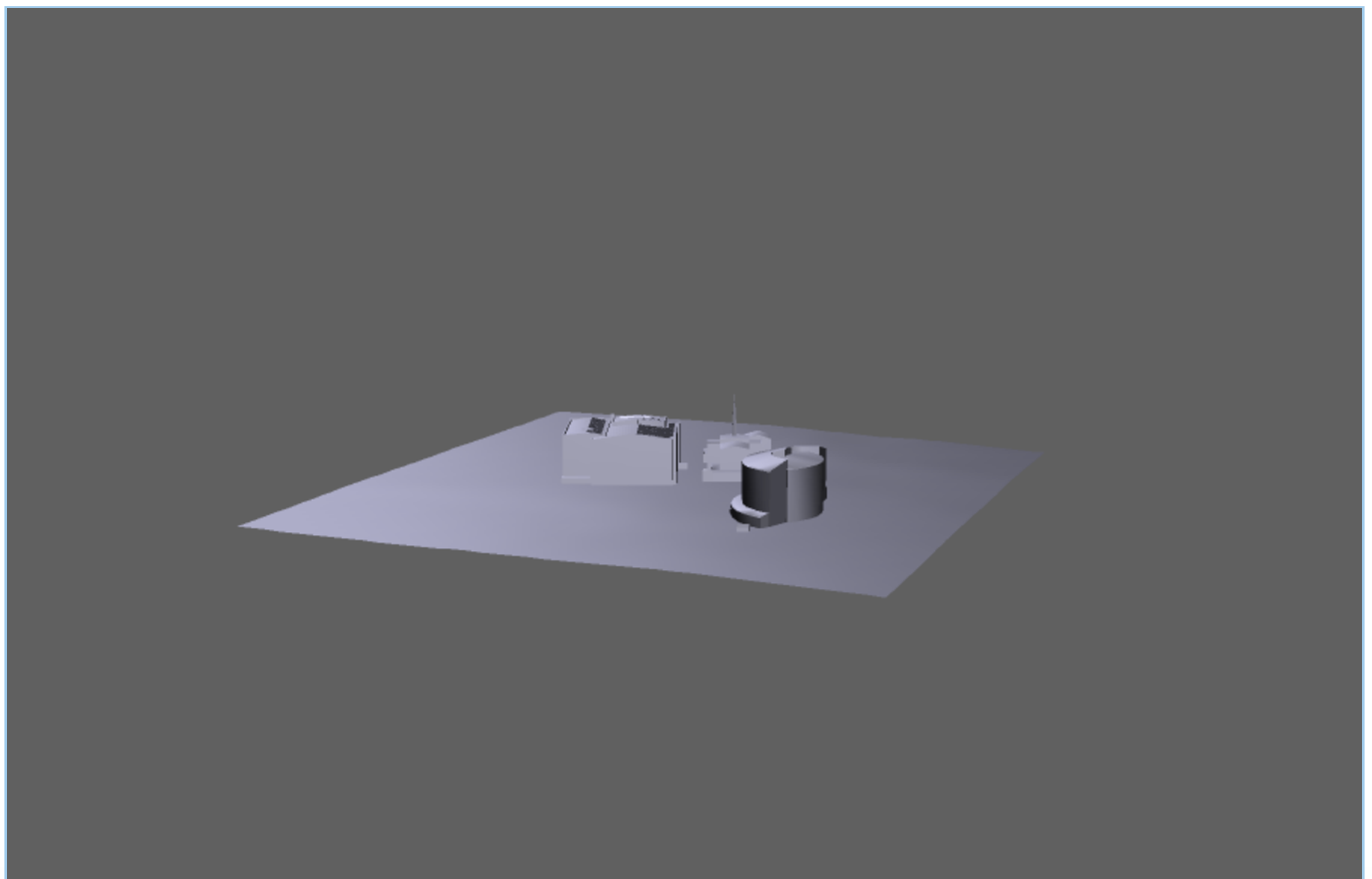


figure 1

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.

# Analysis

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



figure 2

Vertical aerial photography, date: 06-07-2010

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.

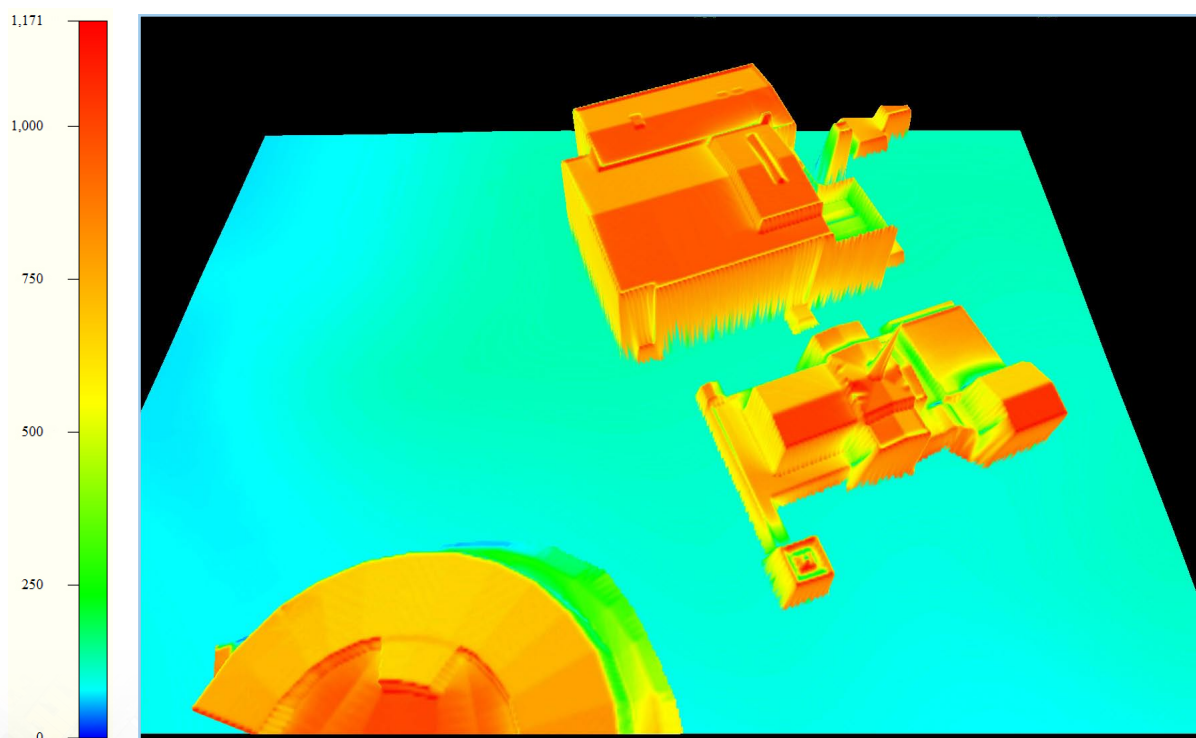


figure 3

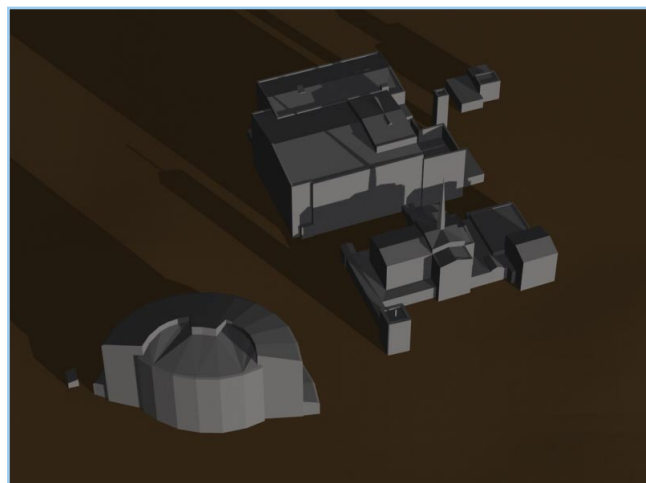
Model showing the relative amount of solar energy received



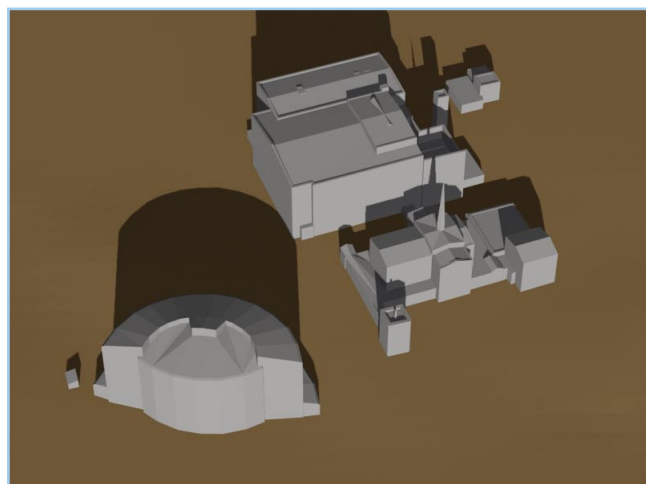
# Shadow Analysis

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.

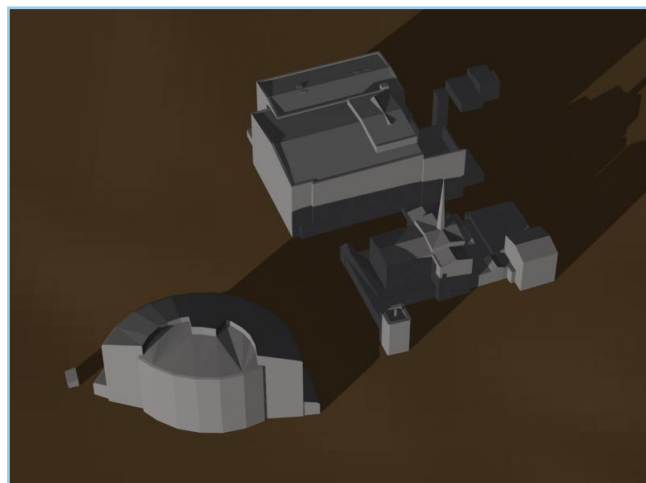
## Quarter 1



January 2011 - 09:00

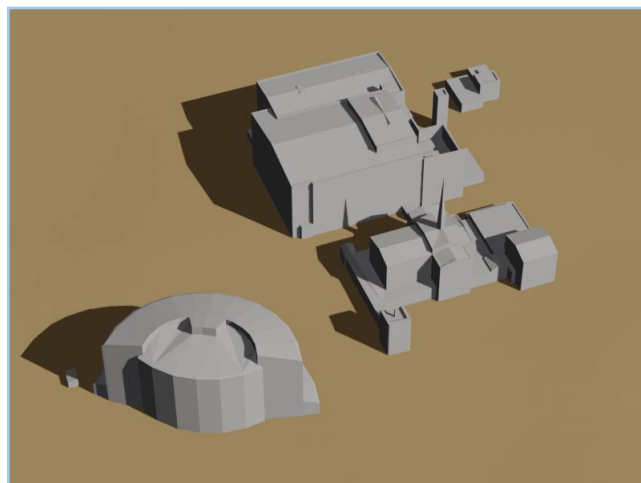


January 2011 - 12:00

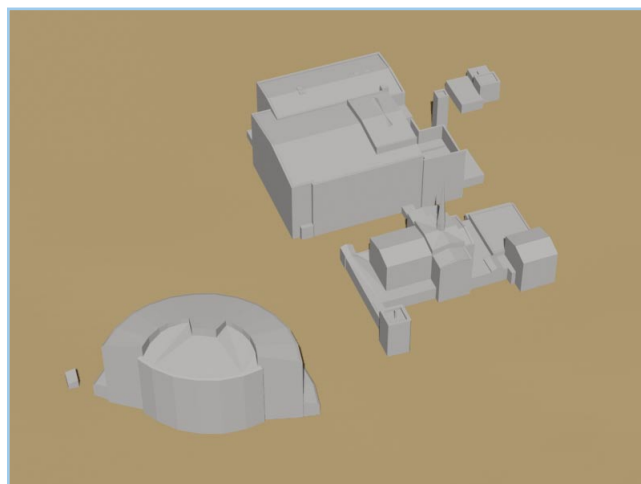


January 2011 - 15:00

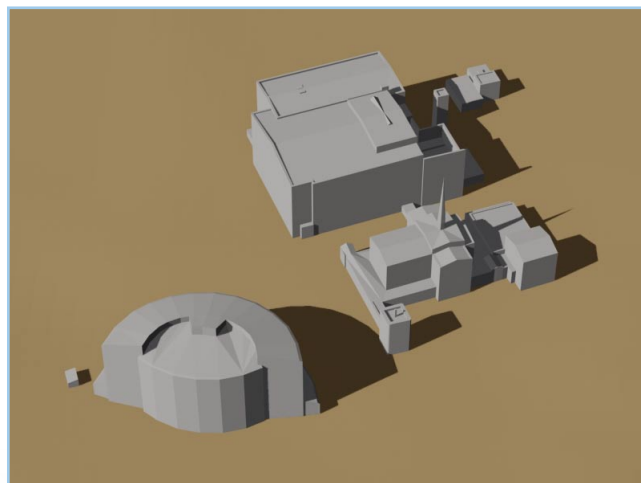
## Quarter 2



April 2011 - 09:00



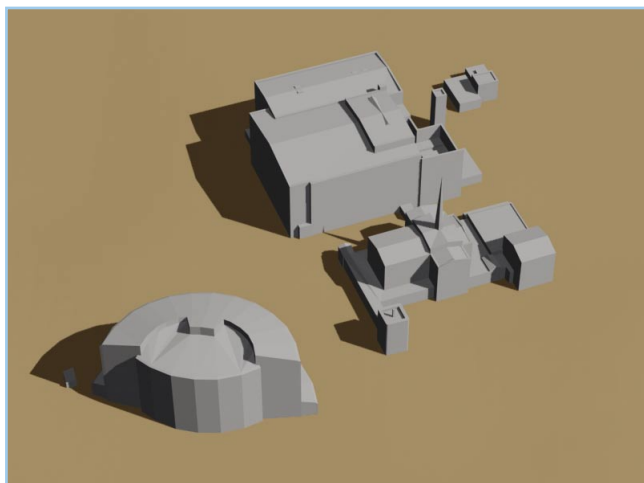
April 2011 - 12:00



April 2011 - 15:00

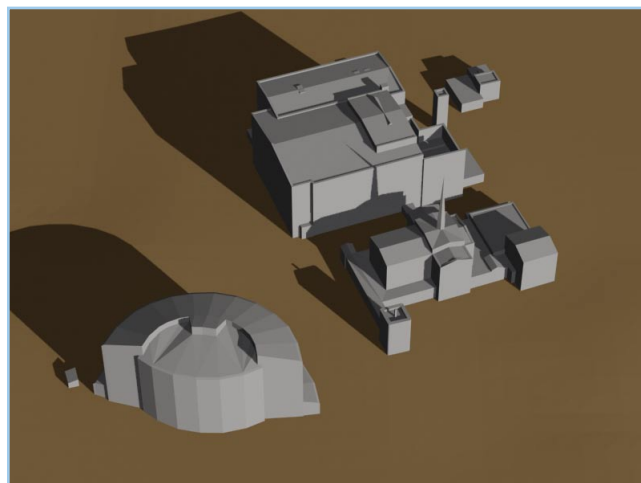
# Shadow Analysis

**Quarter 3**

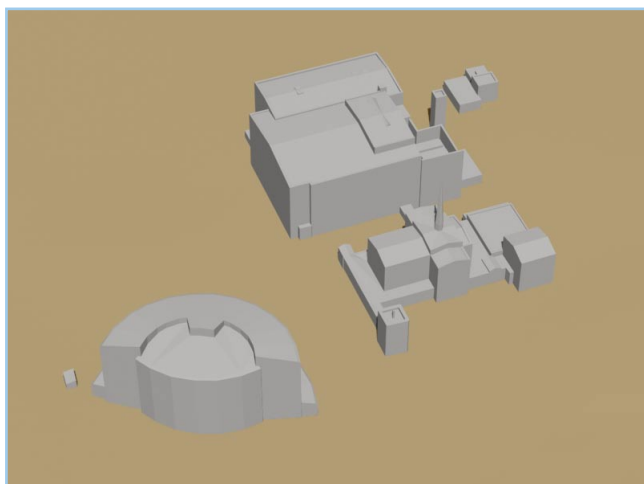


July 2011 - 09:00

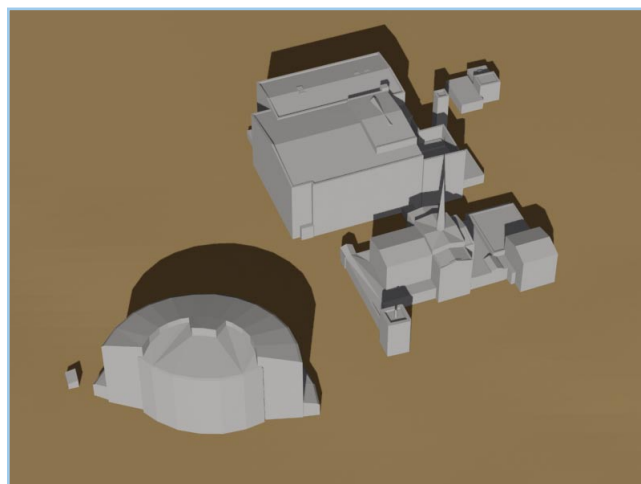
**Quarter 4**



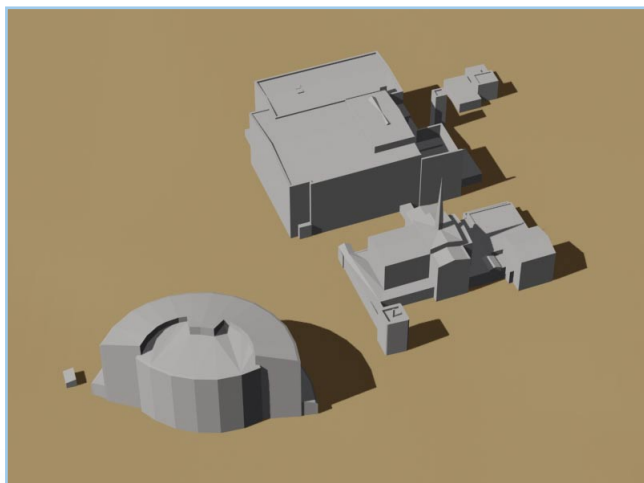
October 2011 - 09:00



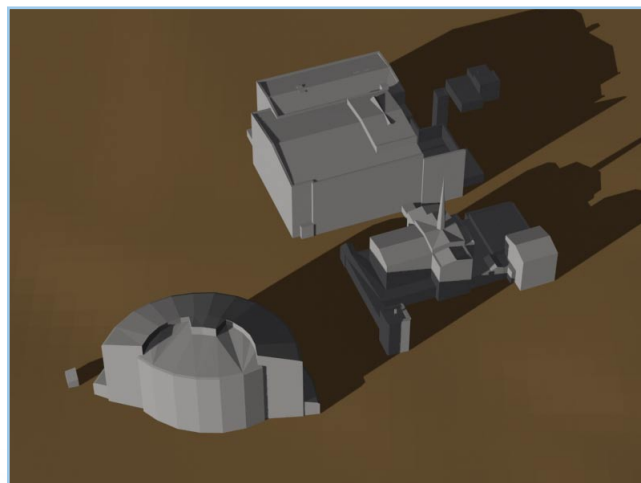
July 2011 - 12:00



October 2011 - 12:00



July 2011 - 15:00



October 2011 - 15:00



# 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.

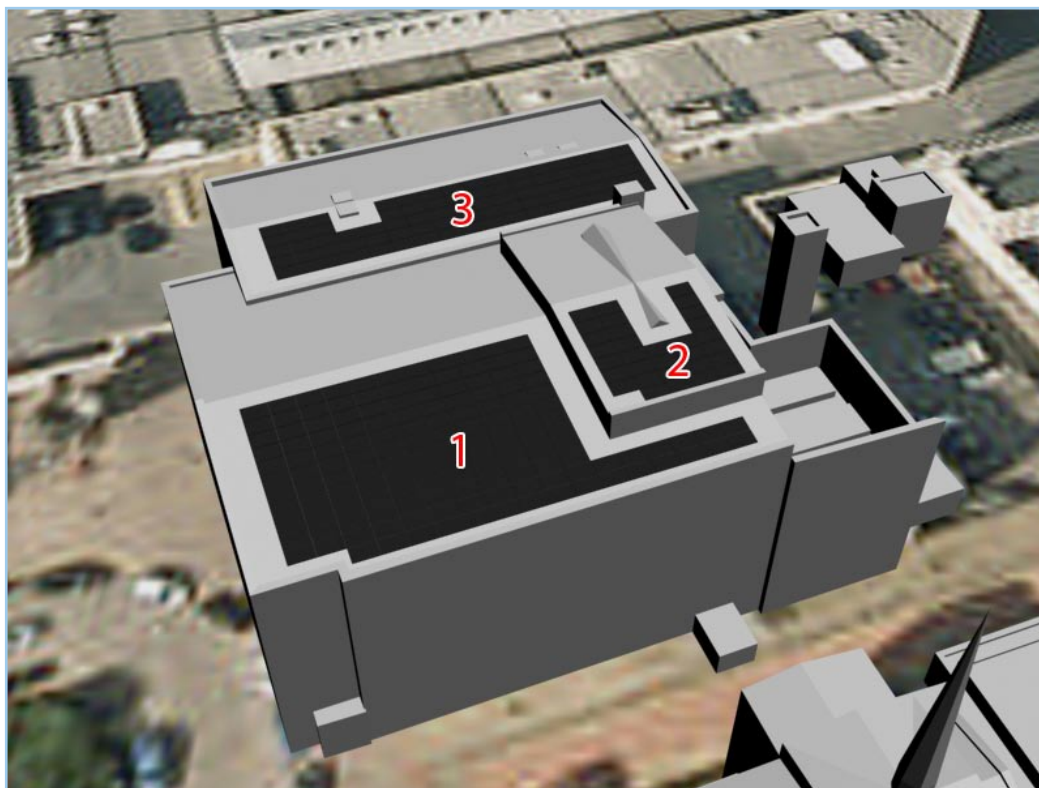


figure 4

3D model showing suitable roofs

Roof	Area (m <sup>2</sup> )	Pitch (°)	Aspect (°)	Shading	Panels	Irradiation (KWh/m <sup>2</sup> )	System Size (KWh)	Yield (KWh/year)	Feed in Tariff	System Cost	Annual Carbon Benefit
1	233.8	8.4	158	Church Spire To South	144	998	33.12	26,443	£8,700	£115,920	11.371t CO <sub>2</sub>
2	51.96	5.5	158	Church Spire To South	32	1,002	7.36	5,900	£2,230	£27,778	2.541t CO <sub>2</sub>
3	131.51	5.1	158	Building To South	81	1,010	18.63	15,053	£4,952	£65,205	6.471t CO <sub>2</sub>
					<b>257</b>	<b>1,003</b>	<b>59.11</b>	<b>47,445</b>	<b>£15,610</b>	<b>£206,885</b>	<b>20.39t CO<sub>2</sub></b>
Feed in Tariff over 25 years									<b>£467,802</b>		

**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<sub>2</sub> saving in tonnes per annum

Estimates based on solar panels of the following size

Panel Dimensions (mm)		Panel Size (W)
<b>X</b> 1640	<b>Y</b> 990	230

## Disclaimer

Bluesky International Limited makes no representations or warranties of any kind, express or implied, about the completeness, reliability, accuracy, suitability with respect to information, products, services, graphics or images contained in this report for any purpose. The details contained in this report are for information purposes only. Any reliance you place on such information is therefore strictly at your own risk.

In no event will Bluesky International Limited be liable for any loss or damage including, without limitation, indirect or consequential loss or damage, or any loss or damage whatsoever arising from loss of profits arising out of, or in connection with, the use of this report.