**EIA Quality Mark Case Study**

### Hendai Solar Farm, Gelligaer, Caerphilly, Wales

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<th>Key Issues –</th>
<th>Purpose of the project</th>
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<td>Solar photovoltaic (PV) is a reliable and inherently sustainable technology. It is a major element of the Government’s commitment to tackle climate change. A PV plant needs to be designed so as to provide the maximum energy output with the minimum environmental impact. The key issues associated with this project were as follows:</td>
<td>Solar Securities Ltd is proposing to develop a solar photovoltaic (PV) power plant rated at approximately 13.8MW(p). PV panels silently convert sunlight to electrical energy, generating direct current (DC) that is then converted to alternating current (AC) to be used by the electricity grid. PV technology is commercially proven and large multi-megawatt generating plants have been operating since the 1990s.</td>
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<td><strong>Glint and Glare:</strong> - Information on potential glint and glare effects created by the plant was requested by the Local Planning Authority, but no formal assessment framework for these issues exists.</td>
<td><strong>Description of the project</strong> The site is located on agricultural land north-west of the village of Gelligaer, a location which was selected due to the substantial levels of solar radiation found in South Wales compared with elsewhere in the UK. The construction of the plant is expected to take approximately 2-3 months with minimal disruption, and following completion will comprise 57,408 solar panels, ancillary equipment and a substation. The plant would generate green electricity for its 35 year estimated project life after which it would be decommissioned and all traces of the plant removed from the site.</td>
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<td><strong>Landscape:</strong> - The site lies within a Special Landscape Area and a Historic Landscape. Traditional screening methods are often unsuitable for PV plants due to potential shading effects.</td>
<td><strong>Land Use:</strong> - Development of the plant will result in a small loss of agricultural land currently used for grazing sheep and cattle during the construction process. Once built sheep will be reintroduced but cattle will be unsuitable on the site. Some of these issues can often be avoided through the identification of alternative sites. However the number of suitable sites for PV plants is extremely limited as solar PV is highly constrained by the requirement to be close to a suitable grid connection point.</td>
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*Image: Solar panels and landscape view.*
Lessons learnt
This project emphasises the importance of the iterative nature of EIA and why environmental issues should be taken into consideration as early as possible in the development process. The design of the site evolved over an extended period from its first conception to the final layout submitted in the planning application. Numerous iterations of panel layouts and infrastructure design have been considered and the final design has been selected to preserve the ecological diversity of the site, to fit as sympathetically as possible into the landscape and to maximise the panel efficiency and energy generation.

The EIA identified that the common screening method of continuous planting along either side of the footpath would not only potentially be detrimental to the productivity of the PV plant, but would be uncharacteristic with the scattered vegetation pattern of the surrounding area. The site was purposefully located on land that was already well contained by topography and existing vegetation cover. This demonstrates how the most popular mitigation measures are not always the most suitable, and measures should always be tailored to the individual site.

As there is no established framework for the assessment of glint and glare, the closest available guidelines were identified and consulted (BRE guidelines on Glare and Dazzle). The Glint and Glare ES chapter contained clear descriptions and supporting figures, ensuring that the methodology employed was clear. It can also be used to inform future assessments.

Although the consideration of alternative sites was not feasible, alternative infrastructure options could still be explored. The largest plants are based either on fixed solar panels or tracker systems. Solar Securities will use a fixed system as they are widely available, have a low environmental impact and can easily be removed from the site. Following construction of the panels the groundcover will be reinstated to its original condition to enhance the biodiversity on the site and to allow for the grazing of livestock around the solar panels. The frames do not require concrete foundations, and as such no evidence of the foundations will remain once the plant is decommissioned.

There were several concerns about the size of the site, and in light of this the total area included in the project was significantly reduced from 60.3ha to approximately 28.7ha. Well planned and early public consultation allowed these concerns to be addressed within the design prior to EIA and planning application submission. As the reduction occurred relatively late in the process many of the technical assessments had used the original, larger site boundary. However this simply served to ensure a thorough assessment of the new site and surrounding area.

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