The Planning Inspectorate
Crown Buildings
Cathays Park
Cardiff
CF10 3NQ

09th February 2021

Dear Sir/Madam,

DNS/3245065 - Blackberry Lane Solar Park

Clarification has been requested by PINS Wales regarding the consideration of the potential for glint and glare effects as a result of the proposed Blackberry Lane Solar Park. Further detail has been requested regarding the assessment which was undertaken to determine any potential impacts and the basis on which any impacts are not considered to be significant.

The potential impacts of glint and glare are not referred to within the EIA Scoping Direction received from PINS Wales dated 11th March 2020. Reference is made to glint and glare within the pre-application advice which was received from PINS dated 25th March 2020. Within the pre-application response, under the heading of 'non-statutory supporting documents', it is suggested that it may be helpful to provide 'proportionate information on any possible harm due to glint and glare'.

A detailed glint and glare assessment is provided within the Non-EIA Technical Assessments Document (DRN BL005).

Scoping Justification

Glint and glare effects were scoped out of the EIA due to the localised and short duration of such effects and the resultant limited potential impacts upon potentially sensitive receptors, as explained further below.

The reflection of the sun from solar panels occurs as either diffuse reflection where the light is reflected at many angles (scattered), or, as specular reflection where the light is reflected at a single angle. The diffuse reflection gives solar panels their general appearance and perceived colour. The potential visual impacts of solar panels are considered within the Landscape and Visual Impact Assessment.

The effects of specular reflection can be experienced in two ways. The first is as a momentary flash or 'pin prick' of reflected light, often referred to as Glint. The second is a

more prolonged reflection over a greater area of panels which is sometimes referred to as Glare. The potential impacts of both effects are considered within this assessment. Both of these effects are a result of specular reflection and are hereafter referred to collectively as Glint.

Location

Glint effects from solar panels can only occur if a receptor is directly in view of the reflected light. This means that any effects experienced are highly directional and localised to a particular receptor or group of receptors at any given moment. When views of the site are blocked by intervening topography, vegetation or buildings, glint effects will not be experienced. Similarly, in reality, if cloud cover blocks the sunlight from reaching the panels then glint effects will be significantly reduced, however due to the transitory nature of clouds and variable nature of the screening provided, the potential effects of cloud cover are not considered further within the assessment (DRN: BL005).

Extent

When light strikes a surface it is either absorbed, transmitted or reflected depending upon the frequency of the light and the nature of the surface. If atoms within the material have the same vibrational frequency as the light striking them then the light will be absorbed. If they do not then the light will either be transmitted (as would generally be the case for a transparent material) or reflected (as would be the case for an opaque material).

Solar Panels work by allowing particles of light (photons) to strike atoms within the panel, releasing electrons and creating a flow of electricity. Solar Panels are therefore designed to capture as much light as possible, maximising their efficiency. To achieve this they are designed to minimise the amount of light which is reflected from the panel surface. The panel surface comprises glass which is used to encapsulate and protect the solar cells. The glass used is special glass with a low iron content which increases the amount of light which passes through it (transmitted to the solar cells). The amount of light available to cause glint and glare effects is therefore reduced and is equal to less than that reflected from ordinary glass.

As a result of the above, any glint effects experienced beyond 5km from the site boundary would be likely viewed as a pin prick of light within a much larger vista, limiting the spatial zone of any potential significant impacts.

Timing and Duration

As explained further in the Non-EIA Technical Assessments: Appendix A: Section 1.2, the principles which apply to the reflection of light and the location of the sun relative to North limit the period over which glint effects are experienced. In general terms this means that potential glint effects are only possible between mid-March and late-September in any given year. Furthermore, as determined via the computational modelling, the potentially sensitive receptors near to the proposed Blackberry Lane Solar Park would only experience glint on select days during this period and for no more than 12 minutes (in many cases less than 4 minutes) on any one day in the very early hours of the morning; and only if an individual has a direct line of sight to the panels creating the glint effects at that time.

It should also be noted that all of the receptors which were identified as having the potential to experience glint effects, benefit from existing screening which will eliminate or reduce any glint effects from those predicted.

Assessment Methodology

Although not included within the EIA, the assessment methodology used to determine the above potential effects and impacts is considered to be proportionate and thorough.

The assessment comprises 3 stages which are detailed further within Non-EIA Technical Assessments: Appendix A: Section 2.

Stage 1: Receptor Selection
A study area of 5km was selected, because although the site may be visible beyond this distance at some locations, it is considered that glint effects beyond this distance would appear over such a small part of the overall view that they would be negligible.

Receptor points were selected which were considered to be representative of sensitive receptors within 5km of the proposed Solar Park site. The Zone of Theoretical Visibility (ZTV) was used to identify areas with potential views of the site. Four types of sensitive receptor were considered; residential, road users, footpaths and cultural heritage, and representative points for each were identified along with Viewpoint locations identified in the LVIA.

In total, 290 receptor points were selected for analysis in relation to the proposed Blackberry Lane Solar Park.

Stage 2: Quantitative Assessment
A computational model is used to determine potential glint effects at each receptor.
The model relies upon the following site and development specific parameters:

- Latitude and Longitude
- Topography of the site
- Proposed panel height
- Proposed panel angle
- Receptor location in relation to the site
- Receptor elevation

The model determines the period over which glint may occur throughout the year and identifies any receptors which cannot technically experience glint due to their location relative to the site.

For each receptor point which may experience glint the model output provides the following information:

- - Which days in a year glint effects may be experienced;
- - What time of the day glint may occur; and
- - How long glint effects may occur on any one day (in minutes).

Stage 3: Qualitative Assessment

It is important to note that the model does not take into account the screening benefits of any existing on and off-site vegetation and buildings. In addition, the model does not take into the micro topography surrounding the site which may screen parts of the site from receptors. Therefore, once the model has identified which of the selected receptors may experience glint effects, a qualitative assessment is completed for each receptor. The qualitative assessment is completed via reference to the landscape and visual impact assessment for the site, and other publicly available information, to determine the presence of intervening vegetation, buildings and micro topography and the extent to which these screen each receptor from the site. All receptors identified as potentially experiencing glint are included within the assessment report with the additional detail of the qualitative assessment also presented. This avoids any underestimate of potential impacts but allows the existing screening benefits to be taken into account.

In summary, the potential glint and glare effects of the proposed Blackberry Lane Solar Park were scoped out of the EIA for the following reasons:

- the well-contained spatial extent of any potential glint and glare effects;
- the limited period of the year over which such effects might occur;
- the directional nature of any effects and the need for a direct line of sight;
- the short duration of the predicted effects; and
- the low number of receptors potentially affected.

Furthermore, when the above factors are taken into consideration alongside the time of day when glint effects may be experienced at any one receptor, and the transitory nature of the views from many of the receptor point locations, it was concluded that the impact of any glint effects would not be significant.

If PINS Wales would like any additional information, please do not hesitate to contact me.

Yours sincerely

Charlotte Peacock

[redacted]

Development Manager
Wessex Solar Power Ltd