OAKLANDS FARM SOLAR PARK

Applicant: Oaklands Farm Solar Ltd

Response by the Applicant on Glint and Glare Matters
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Response by Pager Power to Action Point 6(c) - Additional Explanation for REP4-011 Responses

Further to the responses in Section 9 of REP4-011:

9.4

The digital terrain model used by Pager Power is an industry standard terrain model, which provides a robust representation of the glint and glare effects. In SDDC's response (REP4-014), they said:

> *"SDDC advise that as per the submitted assessment, terrain elevation heights have been interpolated based on OS Terrain 50 DTM data. This source of data is considered to be robust. SDDC does not have any concerns in this regard."*

9.5

Pager Power considers elevated road users along motorways and dual carriageways due to the density of elevated road users along these road types. On behalf of SDDC, Mabbett undertook an independent review of Oaklands Solar Photovoltaic Glint and Glare Study [REP4-034] which concluded that:

> *"Pager Power have assessed all road receptors at a height of 1.5m. It is stated in the report that "*this height is used for modelling purposes. Small changes to this height are not significant, and views for elevated drivers are also considered in the results discussion, where appropriate*". Later in Section 6.4 it is stated that "*Whether visibility is likely for elevated drivers (applicable to dual carriageways and motorways only) – there is typically a higher density of elevated drivers (such as HGVs) along dual carriageways and motorways compared to other types of road*". Mabbett agree that this approach is reasonable."*

Based on Pager Power's methodology, impacts on horse riders are not assessed as solar reflections from solar panels are of very similar intensity to those of common outdoor reflective surfaces, which are commonly encountered by horses and riders in a rural environment. The studies that show this are presented in Appendix B of ES Appendix 14.1.

This has always been Pager Power's position (in over 1,400 assessments) and the British Horse Society has also recently stated in their 'Advice on solar farms near routes used by equestrians' document that "*reflections are unlikely to be a direct problem to horses, riders, or carriage-drivers"*.

9.7

a) Modelling the midpoint of the panel is the most robust approach to the assessment as it reduces the potential for effects to be overstated/understated by assessing the top/bottom of the panel.

   Pager Power has run cross-checks on previous examples to determine the significance of assessing the midpoint of the panel vs the top point. The cross-checks showed that the difference in modelling results is negligible in the vast majority of cases.

   This methodology was also deemed appropriate and robust by Mabbett (independently appointed by SDDC), who stated in their review:

   > *"Mabbett agree with modelling from the midpoint of the panel as opposed to the highest or lowest panel points. Modelling of the highest or lowest panel points may under- or over-predict glare at receptors. Whilst this remains a limitation for modelling of panel midpoint heights, the limitation is minimised as the potential difference between average modelled height and actual height is smaller."*

b) It represents industry best practice in our experience to undertake modelling for a single height for a dwelling receptor, and for the modelling output to represent the effects towards the first floor of the dwelling. Where high-rise buildings are located close to a site, it is appropriate to assess multiple heights due to the potential for different effects; however, this is not the case for this project. The ground floor is used by Pager Power as this is typically the main living space during daylight hours, which also represents industry best practice in our experience.

   This approach was also deemed reasonable by Mabbett (independently appointed by SDDC), who stated:

   > *"Residential dwellings were modelled at an additional height of 1.8m above ground level to simulate the typical viewing height of an observer from ground floor. It is stated in the report that "*consideration of views from upper floors are also considered in the results discussion, where appropriate*". Later in Section 6.4 it is stated that "*the ground floor is typically considered the main living space and therefore has a greater significance with respect to residential amenity*". Mabbett agree that this approach is reasonable."*

   The modelling output for the ground floor of each dwelling is then used to determine the reflecting panels towards the first floor, and a judgement of visibility is made using a combination of desk-based imagery, site photography, and a site visit.

c) Pager Power considers local roads to generally be of low sensitivity due to the low traffic densities. Pager Power acknowledges that some local roads do have a higher sensitivity in cases where, for example, the road is a vital part of the local road network and/or where the section of road is particularly challenging. In these cases, Pager Power would consider them medium sensitivity, and would assess them as if they were a major national, national or regional road.

   This was indeed the case for Coton Road, which is a local road but determined to have greater sensitivity based on the proximity to the solar panels and the potential for significant exposure to solar reflections. Coton Road was therefore assessed as a medium sensitivity receptor, and mitigation in the form of planting and netting has been proposed to obstruct views of the reflecting panels for road users along the road.

   This approach was deemed appropriate by Mabbett (independently appointed by SDDC), who confirmed:

   *"Pager Power has identified three local roads within 1km of the proposed development (an unnamed regional road, Church Street, Coton Lane, Main Street, Burton Road, and Rosliston Road). It is stated that "*technical modelling is not recommended for local roads, where traffic densities are likely to be relatively low*". Pager Power has stated that solar reflection experienced by a road user travelling along these roads will have low impact for which mitigation is not necessary. Pager Power have also acknowledged that Coton Road is determined to be a local road, however, is of importance to the local road network and as such included within the modelling assessment. This analysis is reasonable and in line with industry guidance."*

Dwelling Analysis Thresholds

Pager Power has developed its thresholds over years of experience and multiple iterations of its glint and glare guidance, the most comprehensive of guidance documents in the industry. Pager Power's guidance has been used on multiple consented solar NSIPs (Sunnica, Mallard Pass, Cottam) and by other glint and glare consultants. Mabbett (independently appointed by SDDC) also considers the approach reasonable, by stating:

"Pager Power state their key considerations for quantifying the impact significance for the assessed residential receptors. These include whether glare is predicted to be experienced in practice, and the duration of the predicted effects (relative to thresholds of 3 months per year and 60 minutes on any given day). Mabbett consider these to be reasonable considerations when evaluating impact significance."

Pager Power acknowledges that the German guidance, referred to by Ms Abbott, has lower thresholds of acceptability in terms of significance; however, it is not a like-for-like comparison as the methodology used for determining whether solar reflections count towards the glare durations is also different. The German guidance only counts the solar reflections if they do not coincide with direct sunlight (beyond 10 degrees from the solar reflection), a scenario which happens in most cases for ground-based receptors like dwellings. There will be cases where all solar reflections coincide with direct sunlight, which would not be counted under German guidance but is counted using Pager Power's methodology. The German guidance also states that: *"emission locations that are mainly located to the west or east of a photovoltaic system and are no more than about 100 m away from it are critical",* whereas Pager Power considers receptors out to 1km from the solar panels. Therefore, the German guidance approach does not necessarily present a worse case than the Pager Power methodology.

With reference to the Longfield Solar Farm application, the consultant does use these thresholds to determine a high impact towards dwellings. However, the report does not reference the German guidance as its source, and other thresholds are also used that are not specified in the guidance. The thresholds used for Longfield Solar Farm could instead have come from shadow flicker guidance, which uses these thresholds; however, the source has not been cited. When reviewing the Longfield Solar Farm glint and glare report, Pager Power acknowledged that the methodology was different but ultimately agreed with the conclusions. As noted above, the Applicant's approach is consistent with assessments undertaken on other recently made solar Orders.

Finally, it remains true that the use of Pager Power's glint and glare methodology in the UK is significantly greater than the German or other guidance, and has been repeatedly reviewed and found robust by planning authorities, stakeholders, and other independent consultants.