PPSTH32 – DA20/0016 – Assessment of Glare and Glint

Electricity Generating Works (solar farm)
157 Windmill Road, Bomen, 2650

Following the public meeting of 30 July 2020 the matter was deferred at the request of the planning panel to enable further information to be provided as follows.

> *The Panel requires submission of an independent assessment of the visual impact and potential glare impact of the proposed development.*

Council requested quotes from the applicant for the above matter to be addressed. Two quotes were received and the preferred consultant selected who has prepared and submitted the required independent assessment report detailed below:

> *Independent Review of Glint and Glare Assessment, Proposed Wagga Wagga South Solar Farm at 157 Windmill Road, Bomen, NSW 2650, prepared by Pager Power Urban & Renewables dated September, 2020.*

The full report is provided under separate attachment.

This report together with the original Council Assessment Report and the Addendum Report are presented to the Panel for final determination subject to recommended conditions contained in all three documents.

Under the Record of Deferral dated 6 August 2020 the Planning Panel raised the following specific questions. Each of these are addressed in the report and summarised below.

1. The veracity of the existing information provided by the Applicant regarding visual impact and the potential for the development to create glare impacts on the surrounding community, including commenting on the underlying assumptions.
2. Verify that the development footprint is appropriate to prevent adverse visual or glare impacts or recommend modifications to the development footprint.
3. Advise on appropriate rectification actions to mitigate potential glare generation during operations including materials, tracking options.
4. Recommend parameters to monitor the performance of the development with regard to glare impacts.

1. Veracity of Reporting

The review of the visual amenity assessment includes commentary on specific parts of the report and notes that the effects of glare during backtracking could have been explored further. The assessment includes additional modelling of the predicted glare during backtracking.

Specific comments of note regarding the original report are:-

- GlareGauge is a commonly used modelling approach within the industry and it is an appropriate choice.
- The report acknowledges the limitation around backtracking and that there could be glare during the backtracking phase. It concludes that the effect would be negligible, in part because backtracking occurs for a short duration. The report does not quantify the duration of effects, nor does it specify which receptors are potentially affected or which parts of the solar farm would potentially produce glare.
- The report concludes that the risk during construction is negligible due to the site being well screened and the fact that this phase is temporary. This conclusion seems reasonable and appropriate.
- The report concludes that there will be no cumulative glare impact due to there being no predicted glare. This is an appropriate conclusion based on the results of the modelling itself, although effects during backtracking could be explored more thoroughly.
- As noted above Pager Power noted the lack of quantitative assessment of backtracking and has therefore completed supplementary modelling to assist in determining the impacts of glare and glint.

The report notes that there are a number of alternative approaches to quantifying the impacts of significance and highlights that it is reasonable for the impacts to relate to glare and glint. The levels of significance and the need for mitigation are examined in the form of a flow-chart analysis for both road receptors and residential receptors. A 1 km buffer is identified as appropriate for glint and glare effects on ground-based receptors.

The modelling of the backtracking carried out by Pager Power included a number of different scenarios including different angles and different surfaces. The worst case scenario (case 3) shows that all arrays could produce some level of glare towards a number of the assessed receptors. All predicted glare is ‘green’ equating to a low potential for a temporary after-image, the lowest categorisation of glare intensity.

The maximum duration per day of predicted glare is in most cases less than 10 minutes and in all cases less than 20 minutes. These results represent a glare risk assuming full visibility and bright conditions, real-world factors would reduce this value. Certain scenarios indicate

(but do not prove) that glare in the evening could be eliminated if the angle of the panels during backtracking was limited. Given that the glare impacts are negligible this does not form part of the report's recommendation.

All reflecting panel areas are likely to be more than 500 metres from the respective reflecting areas. In many cases the separation distance will be greater than this. It is unlikely that all reflecting areas will be fully visible from all receptor points based on the separation distance, terrain and intervening vegetation (existing and proposed). Glare times are predominantly around sunset, such that direct sunlight is likely to coincide with reflections from the panels. Direct sunlight is likely to be the dominant source of glare in such a scenario.

The results from the additional modelling concluded that the effects would not be significant.

2. Evaluation of the Development Footprint

The additional modelling carried out as part of the independent assessment showed that each of the proposed arrays have the potential to cause some degree of glare towards some of the receptors. This impact however is not significant and amending the development footprint is therefore not recommended.

3. Rectification Measures

Rectification measures beyond the planting/landscaping that is already proposed are not judged to be a requirement because significant impacts are not predicted. No rectification measures beyond the landscaping that is already proposed have been identified. Further analysis and implementation of the solution would only be warranted if the monitoring phase identified an unforeseen impact.

There are steps that could be taken to reduce impacts further, which include restricting the backtracking in the evening to a vertical angle of no less than 5 degrees. This is described (in a footnote) as a solution that is unlikely to be required.

Changes to the panel materials are not likely to significantly mitigate the predicted glare. It is already the lowest classification of intensity and modelling of the even less reflective surfaces generally does not reduce this to zero.

Based on this commentary no additional mitigation or rectification measures are recommended or required.

4. Monitoring Impacts

The report suggests a two staged approach to monitoring that includes firstly, an initial site assessment of potential glare locations once the development is fully operational. This assessment will be secured by condition.

Secondly monitoring will occur via the reporting of concerns from surrounding residents during the first operational year of the subject development. If significant impacts are considered to have occurred additional planting may be considered. Significant impact is defined as the duration of glare per day being 60 minutes or more.

Conclusion

The matters raised by the planning panel have been fully addressed and detailed within the independent review. The findings have been summarised in this supplementary report.

The conclusions of the independent report state that *the content of the Visual Amenity Assessment in the context of glint and glare appears professional, transparent, and technically sound. However, additional steps could have been taken to address the limitation pertaining to potential glare in the backtracking phase. This limitation was duly acknowledged within the Visual Amenity Assessment but no technical work is presented in order to quantify this potential issue. Whilst the predicted effects are not nil, they would not be significant. This is in agreement with the conclusion presented in the Visual Amenity Assessment, and it is considered that the quantification of the predicted effects makes this conclusion more robust.*

Recommendations contained in the report with regard to the monitoring of significant glare from the facility during the first twelve months are noted. Two additional conditions are recommended to address both the initial site assessment and a proposed management plan as follows:-

NEW CONDITION TO BE INSERTED AS C30A

> Prior to operation of the facility a management plan that specifically addresses the monitoring of significant glare impacts must be prepared to the satisfaction of the General Manager or delegate. The plan must include the manner in which reports of significant glare are prepared and details of to whom any such reports should be provided.
>
> The management plan will be implemented for the first twelve months of operation. The plan must define significant effect and must map all affected residential receptors within 1 km of the panel areas that are the subject of this application (DA20/0016).
>
> Once approved the plan must be provided to all residential receptors identified within the plan.

NEW CONDITION TO BE INSERTED AS C34A

> Within one month of the facility becoming operational a site survey must be completed, to the satisfaction of the General Manager or delegate, to observe the incidence of glare. The report must be completed in accordance with the recommendations contained in Section 5 of the independent assessment prepared by Pager Power, dated September 2020.

UPDATE TO CONDITION C1

Additional Approved document:
Independent Review of Glint and Glare Assessment, Proposed Wagga Wagga South Solar Farm at 157 Windmill Road, Bomen, NSW 2650, prepared by Pager Power Urban & Renewables dated September, 2020.

Attachments

Attachment 1 – Copy of report prepared by Pager Power