## STOP GREEN HILL SOLAR

# RESPONSES TO ExAQ2

The ExAQ2s directed to Stop Green Hill Solar are as follows:

- Q2.1.4 about BESS imports
- Q2.1.6 about the BESS layout
- Q2.7.7 about comparisons with the Llanwern solar scheme;
- Q2.7.8 about the bat study methodology;
- Q2.12.8 about the LVIA Methodology;
- Q2.13.7 about local character variations; and
- Q2.16.10 about public access to the countryside and perceptions of safety

These are addressed in order. The author of each response is identified.

## Q2.1.4 about BESS imports

**Note this is a question directed to the Applicant**

*Importing electricity to the Battery Energy Storage System (BESS)*

*The ExA notes from the Grid Connection Statement [APP-557] that the grid connection agreement allows in addition to the export of electricity from the scheme to the National Electricity Transmission System (NETS) of 500 MW (AC) the import of up to the same figure from the NETS to be stored in the scheme's BESS. Is this agreement for importing up to 500 MW (AC) a nominal figure, or would there be circumstances where you envisage importing from the NETS up to the maximum allowance under the grid connection agreement? Could you explain why importing up to 500 MW (AC) to the BESS might be necessary?*

*Roughly what proportion of the time during operation do you envisage the scheme would be importing from the NETS rather than exporting electricity to the NETS?*

**Response by Robin Aitken:**

1. SGHS note that the ExA is querying why an import capability from the National Grid is required. This has always been a stated objective of the development project[1]. The objective is to "recharge" the BESS by a "call" (500MWe of instantaneous electrical power) from the National Grid when wholesale electricity import rates are favourable (usually at night when UK electricity demand reduces) and then to sell the power back to the National Grid when electricity export rates are favourable (usually during the day when electricity demand increases). This is known as

[1] See APP-559 Planning Statement May 2025 paragraph 2.2.154 page 26

"arbitrage trading". It will occur mainly in the winter when there is little or no solar power generation and is completely agnostic as to the source of the power being imported to recharge the BESS. At times of low wind generation in the winter it is very likely to create an extra "phantom" call on the UK dispatchable 24/7/365 natural gas turbine (Ccgt) power generators. This pure winter trading "grid services" activity has little to do with Net Zero / reducing carbon emissions and is much more about maximising the return on the BESS investment.

## Q2.1.6 about the BESS layout

**Note this is also a question directed to the Applicant**

*In the same way as overplanting is proposed for the areas of solar panels, have the areas denoted on the submitted plans to accommodate BESS at the Green Hill BESS site and at Green Hill C been sized with any thought of 'overplanting' in mind, for example if the effectiveness of the battery modules to store the electrical energy declines over time?*

**Response by Robin Aitken:**

2. The SGHS notes the ExA has a query regarding BESS area "oversizing".

3. **App-205** Option A Grendon BESS and **App-198** Green Hill C BESS show the Option A Tracking 650MWpeak[2] solar generation the Plans together show 555 + 336 battery storage containers at 3.7MWhrs capacity each[3]. This would give a total Option A BESS storage capacity of 2.035GWhrs plus 1.243GWhrs (respectively): a total 3.278GWhrs that would last for 6.5 hours at a 500MWe export rate.

4. **App-206** Option B Fixed Frame 800MWpeak[4] solar generation Grendon BESS only. Under Option B there is no BESS at the Green Hill C site which is given over to solar panels. The Grendon Option B **App-206** Plan shows 455 battery storage containers which at 3.7MWhrs capacity each (as above) would give a total Option B BESS storage capacity of 1.683GWhrs that would last for 3.4 hours at a 500MWe export rate.

5. Both Option A and Option B are very substantial battery storage (BESS) investments.

6. As a measure of comparison for relative size the DES&NZ Clean Power 2030 Action Plan (December 2024) Battery Storage (flexible) (page 95) seeks 27GW(hrs) of

[2] 500MWpeak x 1.3 times overplanted
[3] From **App-167** BESS Fire Modelling bottom, of page 16
[4] 500MWpeak x 1.6 times overplanted

dispatchable 2 hour storage and 6GW(hrs) of Long duration storage (up to 6 hours) (page 109). The Green Hill Option A proposals would represent 3.278 / 27 x 100 = 12% (of short term National Grid electricity storage requirement) and 3.278 / 6 x 100 = 54% (of long term National Grid electricity storage requirement) which would appear to place the grid in a very precarious position should any disaster befall the Green Hill Solar proposed development. This may also signal some degree of oversizing by the Applicant.

## Q2.7.7 about comparisons with the Llanwern solar scheme:

*Please outline any areas of similarity and difference between the Llanwern scheme discussed in the "Notes on Ecology aspects of Green Hill solar plans" document [REP1-218] and the proposed development.*

**Response by Dr Linda Twohey:**

7. Llanwern Solar Farm is 260 acres in area. The site was part of Gwent Levels SSSI and is understood to have been mostly neglected agricultural grazing land. The height of ground-mounted solar panels is about 2.5 – 3 metres. They are understood to be non-tracking.

8. Green Hill Solar is almost 3,000 acres in area, mostly on productive arable agricultural land. The type PV panels has yet to be decided, but it is anticipated panels would be 4.5 metres in height and probably tracking.

9. The adverse effects on ecology in the post-construction monitoring report on Llanwern Solar Farm include marked increases in levels of toxic pollutants, decimation of bat populations, and the compaction of soil and lack of vegetation growth under panels.

***Toxic pollutants:***

10. The Applicant in REP2.048 states that:

> *'Regular inspections and maintenance of battery storage systems and solar panels will be routinely undertaken to identify any signs of potential leakage, wear, or faults. This ensures early detection and rectification of issues, thereby minimising operational risks. Additionally, solar panels will undergo routine cleaning using water only, to prevent environmental contamination and maintain optimal performance.'* [5]

[5] The Applicant's Responses to Written Representations at Deadline 1 (REP2.048), Table 7.12: Ground Conditions, Reference GRO-001, page 375.

11. This is an acknowledgement that problems could arise from the solar panels themselves. But there is no evidence in the post-construction monitoring of Llanwern Solar Farm that the contamination was due to faulty solar panels.

12. The onus is on the Applicant to demonstrate that there would NOT be any such issues, not for Stop Green Hill Solar to prove that there would be.

***Decimation of bat populations***

13. This is what was found in post-construction monitoring at Llanwern: it is not speculation. Please also see answer below to Q2.7.8.

***Compaction of soil and lack of vegetation growth under the panels***

14. The proposed Green Hill Solar development is on a much larger scale than the already developed Llanwern scheme. The proposed panels are considerably larger and probably tracking. It would be a reasonable assumption, although unproven, that the ground mountings would need deeper piling, with larger and heavier equipment required to achieve this, and the panels themselves would potentially be heavier particularly including equipment to allow tracking. So the likelihood of soil compaction in the area of solar panels is probably significant.

15. As far as lack of vegetation growing under the panels is concerned, the Applicant states in REP2.050 that:

> *"Recommendations for the creation and management of habitats within the solar arrays is based on the findings of extensive long-term monitoring of active solar arrays by the Applicant's ecologist, providing a degree of confidence that the proposals are reasonable and practicable."*[6]

16. However, there is no evidential basis for this claim The only potentially comparable solar farm on this scale already constructed is Cleve Hill, North Kent, which became operational as recently as summer 2025. There cannot have been any long-term monitoring of any scheme similar in scale to the current proposal.

17. Again, the onus is on the Applicant to demonstrate that their proposed development WILL NOT have these adverse effects.

18. In conclusion, the information provided by Stop Green Hill Solar is not about comparing, we're simply showing that the construction of solar developments can lead to significant direct and indirect adverse effects as evidenced by Llanwern.

[6] The Applicant's Responses to Deadline 1 Submissions (REP2.050), Reference SGHS-055: Notes on Ecology Aspects – Dr Linda Twohey, page 113

## Q2.7.8 about the Bat Study Methodology:

19. *Please provide any comments you wish to make in response to the applicant's comments on the methodology of the bat populations study (at SGHS-005, Pages 232-3 of the applicant's Responses to Written Representations at Deadline 1 [REP2-048])?*

**Response by Dr Linda Twohey:**

20. The applicant is critical of the study bat activity and solar installations undertaken by Bristol University. This study will have been peer reviewed by expert ecologists in order to have been accepted for publication in an established journal. Therefore, it will have undergone thorough scrutiny of the methodology employed[7].

21. As far as I can establish, the height used by the ecologists (working for the Applicant) for their static detectors was 2 metres (as opposed to the 1.27 metres in the above research). They do not state this directly in their ES document on Bat Surveys[8], but they reference the method to the Bat Conservation Trust Good Practice Guidelines which recommend this height. As I am not an ecologist, I am unable to comment directly on any effect of having detectors at different heights for the efficiency of collecting data.

22. However, the Applicant in REP2.048[9], and also identically in REP2.050[10], uses the fact that 1.27 metre height might be too low in the centre of the fields with solar panels, called 'open habitats' in the study, compared to 'boundary habitats'. The Applicant stresses that they will be creating better boundary habitats for bats along the sides of fields with solar PV. But the results in Table 1 of the paper, even if the results for the centre field detectors are discounted completely (because the detectors within panels might be unable to pick up bat activity at a different height), show that there are very marked reductions in bat activity for 6 out of 8 species along the boundary habitats where the height of the detectors and surroundings are equivalent, and so cannot be said to influence the comparison between the results. And for other species, there was no significant difference between activity in the centre of solar and non-solar PV fields. If the height of the detectors led to reduced detection in the centre of PV panel fields, it presumably would apply to all species.

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7 The full reference is *Tinsley E, Froidevaux JSP, Zsebok S, Szabadi KL, Jones G. Renewable energies and biodiversity: Impact of ground-mounted solar photovoltaic sites on bat activity. Journal of Applied Ecology, 2023; 60(9), 1752-1762*. It is available to Open Access.

8 APP-089

9 REP2.048, page 232

10 REP2.050, page 115

23. Green Hill Solar's ecologists discovered very rich populations of bats on all sites, and they concluded in the Bat Survey Summary of Appendix 9.6 in the GHS ES, that:

> *'The overall bat assemblage score for the Survey Area falls between 17 and 26, indicating an assemblage of between Regional to National importance'.*

24. In total, across all the Green Hill solar sites, 47% of bats recorded were Common Pipistrelle and 42% Soprano Pipistrelle. In this research study, at the boundary habitats, Common pipistrelle call sequences were reduced by more than a third, and Soprano Pipistrelle call sequences by more than two-thirds. So the main populations of bats across the proposed development are likely to be very significantly adversely affected by the presence of fields with solar PV.

25. It is also worth noting that this study's data was collected in 2019 and 2020, on much smaller solar farm developments. The effects when translated to far larger continuous cover with taller and potential tracking panels is not likely to be less significant.

26. However, as before, the onus is on the Applicant to show that the effects on bat populations shown is this study are NOT relevant to their proposed development.

## Q2.13.7 about local character variations:

*Paragraph S.13 of Stop Green Hill Solar's Landscape and Related Matters Statement [REP-194] and [REP1-195] and the Local Impact Reports [REP1-169, REP1-171 and REP1-175] mention the need to consider the local variations in landscape character given the site is over such a wide area. Do the applicant, the Councils and Stop Green Hill Solar consider that a suitable level of consideration has been given to local landscape character baseline variations on which the assessments have been based upon?*

**Response by Carly Tinkler:**

27. SGHS does not consider that a suitable level of consideration has been given to local landscape character baseline variations on which the assessments have been based upon.

28. For further information about the variations, and the implications of them not having been factored into the assessment, see SGHS's Landscape and Related Matters Statement paras. 3.1.14 – 3.1.64[11].

[11] **REP-195**

## Q2.12.8 about the LVIA Methodology:

*The Councils appear to be content with the methodology used for the LVIA and landscape assessments and are satisfied that they follow GLVIA3. However, in SGHS's submission REP1-194 and REP1-195, it is considered that the applicant's LVIA method and process have errors and flawed assumptions have been made (paragraph S.11 onwards). Does the applicant's response to these concerns in SGHS-28 [REP2-048] satisfactorily address these issues?*

**Response by Carly Tinkler:**

29. SGHS does **not** consider that the applicant's response to these concerns in the Applicant's responses to Written Representations at Deadline 1 [REP2-048] satisfactorily address these issues.

30. Please see SGHS's comments on REP2-048 *SGHS Comments on Applicant's Responses to Written Representations at Deadline 1* for Deadline 3*. The full technical reasons for the concerns are set out in **REP1-195**.

## Q2.16.10 about public access to the countryside and perceptions of safety:

*Stop Green Hill Solar's Landscape and Related Matters Statement [REP1-195] raises concerns regarding public safety when using fenced paths through the proposed development. The green lane off Newland Road north of Walgrave which would pass between solar panels is given as an example. Paragraph 8.39 of the document submits that the application would create an inescapable corridor along an existing path that was previously open to the wider countryside. It is submitted that the current route provides anyone using it who may feel under threat with numerous options for escape and means of drawing attention in the event of an emergency. Please explain what these are, and how they would change if the proposed development received consent.*

**Response by Dr Linda Twohey:**

31. At present, as one walks along the Green Lane, there are two main options for escape. Firstly, there are wide entrances to each field on either side – some have gates, mostly they are not secured and can be opened, all would be relatively easy to climb over, and some there is space to walk around the posts on one or both sides. Secondly, there are some gaps in the hedgerows, more obvious in winter, where it would be possible to get through. Once in any of the fields to the east, these are all open arable, and many connect easily through to the Kettering Road.

On the west side, there is only one field's width to Newland Road, and all fields have field gates on the Newland Road as well.

32. If the proposed development received consent, as far as I can determine from the Illustrative Layout Plan for Green Hill A, GH 6.4.4.1, APP – 193, these opportunities for escape would be affected in several ways.

33. Firstly, sight lines along the Green Lane will be shortened by the much higher vegetation on either side – this will both actually decrease any warning view but will also significantly increase the perception of the potential for danger. At present, there are mostly wide open views along and across the local countryside, particularly in winter, as must have been appreciated by the Inspectors on their ASI.

34. Secondly, there would be no potential for escaping through gaps in the hedgerows, as these will have been reinforced, and new higher planting growing to around 4.5 metres.

35. Thirdly, it is unclear whether it will still be possible to use the field gate access, but even if this is possible, once through any of the gates, there will be a continuous fence along and between the fields, with options for escaping very limited to the far edges of only the fields at either end of the east side, i.e. AF18 and AF28, and on the west side, at the far ends around fields AF29 and AF17, but also in the middle perhaps, between fields AF14 and AF15.

36. Therefore it is clear that the easy options of escape and running across fields will no longer be available. It is not only the logical potential for increased risk that is the problem, it is the perception of increased risk which is even more powerful.