Finch Consulting

Engineering Confidence.

Ivanhoe Business Park
Ashby de la Zouch
Leicestershire LE65 2AB
United Kingdom

enquiries@finch-consulting.com
+44 (0) 1530 412 777

Our Ref: 2227819 /TC

Date: 13th December 2022

Penny Rickards
Rickards Farms
Kiln Cottage
Lower Ensden Road
Old Wives Lees
Canterbury
Kent, CT4 8BA

For the attention of Penny Rickards at rickardsfarms@farming.co.uk

Dear Penny

Re: Noise impact assessment for North Court Fruit Solar Farm

1. Further to your recent email correspondence, I understand that you require an independent review of the noise impact assessment submitted to support a full planning application for a solar farm that is proposed to be located at North Court, which I understand neighbours Rickards Farm.

2. You have requested that I provide my views on the submitted report in relation to the relevant planning legislation (relevant to noise/vibration) so that you can assess the impact on partnership property, farmland values and/or the operation of Rickards Farms' farming business.

3. The noise impact assessment report has been prepared by Wardell Armstrong and is dated August 2022. It has been prepared on behalf of GSI North Court Limited.

4. Having reviewed the noise impact assessment, in my opinion, the Local Planning Authority ought to refuse to grant planning permission for the development, since the submitted noise impact assessment report does not align with local and national policies on noise, and as such, the decision maker (the Local Planning Authority) will not be able to provide cogent reasoning to grant permission based on the report.

5. Apart from the issues with planning legislation, I also highlight other problematic areas of the assessment that should provide additional justification to the Local Planning Authority to reject the current planning application.

6. I provide my comments under various headings as follows:

Planning Policy

7. The submitted noise impact assessment concludes that:

   "In accordance with current planning guidance, the noise effect from the proposed development at sensitive receptors would not be significant and noise should not be a determining factor in the decision making process"

8. However, the wording used in the above sentence, uses the word *significant* which is used in Environmental Impact Assessments (a different piece of legislation), and therefore such statement does not comply with local or national policies on noise.

9. Since for this development, noise impacts have been scoped out from the Environmental Statement (see submitted scoping opinion), the Applicant still has to demonstrate that the scheme will comply with local and national policies on noise, and therefore has submitted the Wardell Armstrong noise impact assessment report, in addition to the separate submission of the Environmental Statement.

Local policy

10. In accordance with planning law, applications for planning permission should be determined against the policies of the Local Development Plan, unless material considerations indicate otherwise. The submitted noise impact assessment report is silent on this point.

11. Ashford Borough Council's Local Plan was adopted in February 2019. Relevant to the proposed solar farm is Policy ENV10 which states that:

Policy ENV10 - Renewable and Low Carbon Energy

Planning applications for proposals to generate energy from renewable and low carbon sources will be permitted provided that:

a) The development, either individually or cumulatively does not result in significant adverse impacts on the landscape, natural assets or historic assets, having special regard to nationally recognised designations and their setting, such as AONBs, Conservation Areas and Listed Buildings;

*b) The development does not generate an unacceptable level of traffic or loss of amenity to nearby residents (visual impact, **noise** [my emphasis], disturbance, odour);*

c) Provision is made for the decommissioning of the infrastructure once operation has ceased, including the restoration of the site to its previous use; and,

d) Evidence is provided to demonstrate effective engagement with the local community and local authority. A statement should be submitted alongside any planning application illustrating how the proposal complies with the criteria above and any mitigation measures necessary and be informed by a Landscape and Visual Impact Assessment.

12. Therefore, the local plan in relation to noise states that renewable energy generating developments must not result in a loss of amenity to nearby residents due to noise.

13. Residential amenity is not defined in law. In planning terms, 'amenity' is often used to refer to the quality or character of an area and elements that contribute to the overall enjoyment of an area. Residential amenity considers elements that are particularly relevant to the living conditions of a dwelling. Residential amenity has a significant and valuable impact on the way in which people use their homes. The health and well-being of residents is often directly related to the level of residential amenity occupants can enjoy. It is a duty of the planning system to support sustainable development. Sustainable development incorporates a social role which seeks to secure well designed, strong, vibrant and healthy communities.

14. The submitted noise report by Wardell Armstrong does not provide the necessary confidence to the decision maker that the development will not result in a loss of amenity to nearby residents.

15. It may be argued that since the local policy does not clearly align with the aims of national policy on noise, then compliance with the national policy on noise is the preferred avenue (since for instance the National Planning Policy Framework is a material consideration for planning applications). Wardell Armstrong outlines in Appendix A the national policy on noise, however, it does not use this policy in its assessment of the noise impacts associated with the development proposals. I shall provide an explanation of national policy as follows.

National Policy

Noise Policy Statement for England

16. The Noise Policy Statement for England[1] (NPSE) sets out the long-term overarching vision of Government noise policy, which is to promote good health and a good quality of life through the management of noise within the context of Government policy on sustainable development. Whilst the NPSE does not seek to change pre-existing policy, the document is intended to aid decision makers by making explicit the implicit underlying principles and aims regarding noise management and control that are to be found in existing policy documents, legislation and guidance.

17. The NPSE describes a Noise Policy Vision and three Noise Policy Aims and states that these visions and aims provide:

"the necessary clarity and direction to enable decisions to be made regarding what is an acceptable noise burden to place on society."

18. In other words, the purpose of the document is to provide guidance for the decision maker on whether or not the noise impact is an acceptable burden to bear in order to receive the economic and other benefits of the proposal.

19. Where existing policy and guidance does not provide adequate guidance then decision makers can go back to the aims of the policy statement to provide overriding guidance. The "*Noise Policy Vision*" is to "*promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development*". This long-term vision is supported by the following aims, through effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

i) avoid significant adverse impacts of health and quality of life;
ii) mitigate and minimise adverse impacts on health and quality of life; and
iii) where possible, contribute to the improvement of health and quality of life.

20. The aims of the policy differentiate between noise impacts on health (e.g. sleep disturbance, hypertension, stress etc.) and noise impacts on quality of life (e.g. amenity, enjoyment of property etc.). The aims also differentiate between 'significant adverse impacts' and 'adverse impacts'. The explanatory note to the NPSE clarifies that a significant adverse impact is deemed to have occurred if the 'Significant Observed Adverse Effect Level' (SOAEL) is exceeded. An adverse effect, on the other hand, lies between the 'Lowest Observed Adverse Effect Level' (LOAEL) and the SOAEL.

21. In assessing whether a development should be permitted, there are therefore four questions that should be answered, with reference to the principles of sustainable development, namely will the development result in:

a) a significant adverse impact to health;

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf

b) a significant adverse impact to quality of life;
c) an adverse impact to health; or
d) an adverse impact to quality of life.

22. If the answer to question a) or b) is yes, then the NPSE provides a clear guidance that the development should be viewed as being unacceptable (item i. above). If the answer to question c) or d) is yes, then the NPSE provides a clear steer that the impact should be mitigated and minimised (item ii. above).

National Planning Policy Framework

23. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The emphasis of the Framework is to allow development to proceed where it can be demonstrated to be sustainable. In relation to noise, Paragraph 185 of the Framework states:

"Planning policies and decisions should ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from the development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and
c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

Planning Practice Guidance – Noise

24. Planning Practice Guidance on Noise[2] (PPG-N) provides guidance to local planning authorities to ensure effective implementation of the planning policy set out in the NPPF. The PPG suggests that planning authorities should ensure that unavoidable noise emissions are controlled, mitigated or removed at source and establish appropriate noise limits for extraction in proximity to noise sensitive properties.

25. The PPG-N reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards and contains examples of acoustic environments commensurate with various effect levels. Paragraph 006 of the PPG-N explains that:

"The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation."

26. According to the PPG-N, factors that can influence whether noise could be of concern include:

- the source and absolute level of the noise together with the time of day it occurs;
- for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- the spectral content and the general character of the noise;
- the local topology and topography along with the existing and, where appropriate, the planned character of the area;

[2] https://www.gov.uk/guidance/noise--2

- where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;
- whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time;
- in cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur;
- where relevant, Noise Action Plans, and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations;
- the effect of noise on wildlife;
- if external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces; and
- the potential effect of a new residential development being located close to an existing business that gives rise to noise should be carefully considered. This is because existing noise levels from the business even if intermittent (for example, a live music venue) may be regarded as unacceptable by the new residents and subject to enforcement action. To help avoid such instances, appropriate mitigation should be considered, including optimising the sound insulation provided by the new development's building envelope. In the case of an established business, the policy set out in paragraph 182 of the NPPF should be followed.

27. The PPG-N provides a relationship between various perceptions of noise, effect level and required action in accordance with the NPPF. This is reproduced in the table below.

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Present	No Effect	No Observed Effect	No specific measures required
Present and not Intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and Disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very Disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

28. The PPG-N describes sound that is not noticeable to be at levels below the 'No Observed Effect Level' (NOEL). It describes exposures that are noticeable but not to the extent there is a perceived change in quality of life as below the LOAEL and need no mitigation. The audibility of sound from a development is not, in itself, a criterion to judge noise effects that is commensurate with national planning policy.

29. The PPG-N suggests that noise exposures above the LOAEL cause small changes in behaviour. **Examples** [my emphasis] of noise exposures above the LOAEL provided in the PPG-N include:

- having to turn up the volume on the television;
- needing to speak more loudly to be heard;

- where there is no alternative ventilation, closing windows for some of the time because of the noise; or a potential for some reported sleep disturbance.

30. In line with the NPPF and NPSE, the PPG-N states that consideration needs to be given to mitigating and minimising effects above the LOAEL but taking account of the economic and social benefits being derived from the activity causing the noise.

31. The PPG-N suggests that noise exposures above the SOAEL cause material changes in behaviour. Examples of noise exposures above the SOAEL provided in the PPG-N are:

- where there is no alternative ventilation, keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present; and/or
- there is a potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep.

32. In line with the NPPF and NPSE, the PPG-N states that effects above the SOAEL should be avoided and that, whilst the economic and social benefits being derived from the activity causing the noise must be taken into account, such exposures are undesirable.

33. The PPG-N suggests that a noise impact may be partially offset if the residents of affected dwellings have access to a relatively quiet part of their dwelling, private external amenity area and/or external public or private amenity space nearby.

Conclusions on planning policy

34. Based on the above explanation of planning policy, Wardell Armstrong's conclusions are not in line with current planning guidance. The noise impact assessment report, fails to assess whether the proposals will result in a loss of amenity to nearby residents (as per the local plan), has failed to inform the decision maker on whether the development will result in a significant adverse impact to health and quality of life, and has failed to state whether the development proposals will or will not result in an adverse impact to health and quality of life (national policy on noise).

35. As such, and since the NPPF is a material consideration for planning applications, the decision maker at the Local Planning Authority is not aware, on the basis of the report, on how to deal with the issue of noise in the balancing exercise, since the noise impact assessment does not answer important questions as per planning legislation. The decision maker is left unaware on whether the noise impacts associated with the development are such that the application should be refused, or whether mitigation measures can be implemented to reduce the noise impacts in line with the policy. In addition, if mitigation measures are required, the decision maker is left unaware on what the could be are so that a decision can be made on whether such measures are reasonable or not.

36. As per paragraph 002[3] in the PPG-N, noise can override other planning concerns[4].

Full Planning Application

37. I understand that the planning application for the Solar Farm has reference PA/2022/2415 (and can be assessed at the website of the local authority). Based on the information for the application type, this is a Full planning application.

[3] Reference ID: 30-002-20190722
[4] although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern.

38. As per the planning portal, a full planning application is required "*when making detailed proposals for developments"* and such applications *"can be made when all the details are known and the development is already considered viable".*

39. However, the noise impact assessment includes various statements akin to an outline rather than a full planning application.

40. For instance:

1. Paragraph 1.14 "The solar panels **may** be fitted with tracker technology". Wardell Armstrong states that "*the use of tracker technology is very unlikely to have any impact on the noise from the development so this was not considered in the assessment*". Yet the decision maker may be interested to note that in the scoping opinion for the West Burton Solar Project[5] it was stated that "*Scoping Report section 4.2 identifies that the type of panel to be used is not yet determined and tracking panels may be used. Should this type of panel be used, the ES should assess the potential for significant noise effects on ecological and human receptors during operation*". It should be pointed out to the decision maker, that noise impacts have in fact being scoped out of the Environmental Statement for this development.

2. Paragraph 4.2.3 "*The accuracy of the noise model is limited by the lack of data regarding the proposed equipment, operations of the site and the assumptions made about them*". Since clearly from this statement, the noise impact assessment is not undertaken to support a full planning application, but rather an outline application, then why is it that Wardell Armstrong, does not follow the common approach for such applications, where a reasonable **worst case** scenario is assessed and presented to the decision maker?

3. Paragraph 4.2.4 "*the indicative locations of the proposed equipment has been provided by the client, however, this may change at the detailed design stage".* However, Figure 2 in the report is titled "*Proposed noise sources -relocated for mitigation*". Since Wardell Armstrong is saying that its client provided indicative locations for the proposed equipment, did the client relocate the various noise sources for mitigation (i.e. for a lesser noise impact to nearby residents), or did the client provide other locations, and then the locations in Figure 2 is what Wardell Armstrong believes the locations should be in order to reduce the noise impacts to nearby residents? Therefore, even though this is a full planning application, meaning that noise sources are identifiable, not just in relation to their noise output but also their location, the noise impact assessment suggests that upon granting of planning permission (during the detailed design stage), the location of the various noise sources may not be as per the assessment (as per the noise model) and thus the impacts will be different (higher?). Placing inverters/transformers in around 9-10 clusters as per the noise model may not be the most economical solution for the client, who may decide for an alternative approach where the equipment is more spread out (and thus increasing the noise impacts). Clearly, the Local Planning Authority should not grant planning permission for a full planning application, when such statements exist in the noise impact assessment report.

Acoustic characteristics

41. It is the case that some of the hardware used at a solar facility is noiseless (like the solar panels) however others produce broadband sound with significant tonality. Tonal sound is generally more annoying compared to broadband sound, and hence why the BS4142 assessment

[5] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010132/EN010132-000012-EN010132%20-%20Scoping%20Opinion.pdf

includes rating penalties for tonality (as well as intermittency and impulsivity). Wardell Armstrong deals with the issue of tonality when it says in paragraph 5.2.2 that "*the inverters and transformers should include a vibration dampener system for critical frequencies which eliminates tonality*". Is Wardell Armstrong providing instructions to its client, to procure equipment with such embedded mitigation, or is this an instruction/advice to the decision maker, to include a condition to ensure that such mitigation measures are indeed incorporated?

42. The solar panels (also called PV modules) produce direct current (DC) electrical power which is good when storing energy within a DC battery (and note batteries are proposed for this scheme, see Table 4 in Wardell Armstrong's report). However, in order to transfer this electrical power to the local grid, the DC power must be converted to alternating-current (AC) power. This conversion process is done by an "Inverter". The process of converting DC into AC power requires very fast switches which change the polarity (or direction of electrical flow). Since AC power cycles 50 times per second (or 50 hertz), the switches must activate twice per electrical cycle. This process produces tonal sound at twice electrical line frequency (100 hertz) and its harmonics (200, 300, 400 hertz and higher). The transformers in the solar facility are used to step-up the voltage for easier transmission into the local electrical grid. There are three sources of noise from within the transformer: (1) core noise, (2) coil noise, and (3) fan noise. The core and coil noise are caused by electromagnetic forces which occur two times for every cycle of AC power. Like the inverters, this results in 120 hertz primary sound source, along with harmonics as noted above. The third source of sound is a cooling fan(s) mounted outside the transformer and usually directed across the fins of a heat sink. While the cooling fans can be the most significant source of overall broadband A-weighted sound, it is almost always the pure-tone transformer noise and not the broadband fan noise that is objectionable. Therefore, fan noise is unimportant if human response to transformer noise is the only concern.

43. While quiet transformers and inverters do exist, due to premium cost, it is generally not a specification point the solar facility designers are willing to consider. Therefore, the second line of noise control would be noise barriers and/or propriety made enclosures with cooling systems.

44. However, Wardell Armstrong go on to say in paragraph 5.2.2 that "*our previous experience and site visits at sites of similar nature and capacity, have shown that if any tones are present at all, they would be at very low sound levels, and only perceived in proximity (within approximately 10m to 25m of the equipment). The nearest inverter or transformer is approximately 90 m from a receptor for this site*". Firstly, since Wardell Armstrong is unaware of the equipment that its client will procure in the future, how can it be certain of the noise output of these units? Since Wardell Armstrong admitted in its report, that the distance of 90 m is indicative (see paragraph 4.2.4), how is it certain that its client will not place such equipment in the future at a distance of 10m to 25m from a noise sensitive receptor?

Planning Conditions

45. As per government advice[6] "*when used properly, conditions can enhance the quality of development and enable development to proceed where it would otherwise have been necessary to refuse planning permission, by mitigating the adverse effects. The objectives of planning are best served when the power to attach conditions to a planning permission is exercised in a way that is clearly seen to be fair, reasonable and practicable. It is important to ensure that conditions are tailored to tackle specific problems, rather than standardised or used to impose broad unnecessary controls*".

46. In my opinion, based on the supplied noise impact assessment, planning conditions will fail to satisfy the 6 tests (in the NPPF), where each of them need to be satisfied for each condition which an authority intends to apply. Paragraph 55 of the National Planning Policy Framework makes clear that planning conditions should be kept to a minimum, and only used where they satisfy the following tests:

[6] Paragraph: 001 Reference ID: 21a-001-20140306 - https://www.gov.uk/guidance/use-of-planning-conditions

- necessary;
- relevant to planning;
- relevant to the development to be permitted;
- enforceable;
- precise; and
- reasonable in all other respects.

47. In my opinion, based on the quality of the noise impact assessment put forward to support the planning application, the decision maker should not even entertain the possibility of granting planning permission with conditions. Firstly, this is generally against planning policy, as there may be adverse impacts of such a significance that must be prevented, so planning permission should be refused outright. Since the supplied noise impact assessment has not assessed the impacts in accordance with policy, the decision maker is not aware from the report whether the noise impacts will be such that outright refusal is in order, or where mitigation measures can be put forward (or even at a level where permission ought to be granted without any conditions).

Construction noise

48. Wardell Armstrong do not assess the likely noise impacts due to the construction of the solar farm (and sometimes piling is used to erect the supports for the panels) or due to the decommissioning of the farm. The environmental statement provides a qualitative assessment, and no assessment in relation to national policy is presented therein (i.e. identification of LOAEL, SOAEL etc). It should be noted that the PPG N states in paragraph 003[7] that noise impact must be determined in line with the Explanatory note of the noise policy statement for England, this would include identifying whether the overall effect of the noise exposure (**including the impact during the construction phase wherever applicable** [my emphasis]) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

Impact at other receptors

49. The PPG-N in paragraph 006[8] states that "*noise can adversely affect wildlife and ecosystems. Particular consideration needs to be given to the potential effects of noisy development on international, national and locally designated sites of importance for biodiversity*".

Overheating

50. In the submitted report Wardell Armstrong assesses internal noise levels at residential receptors and it assumes that "*an open window provides approximately 13 dB of attenuation*". I recognise this figure from within the Association of Noise Consultant's Acoustics, Ventilation and Overheating Guide published in January 2020. However, such level difference would be commensurate with whole house ventilation, rather than for comfort cooling purposes to overcome an overheated habitable room. In response to the new Building Regulations on overheating the Association of Noise Consultants issued in July 2022 a guide to "*Demonstrating Compliance with the Noise Requirements of Approved Document O*". In Table 1 in this guidance, it is stated that for a moderate risk location (which I understand the residential premises around the proposed solar farm are in), the outside to inside level difference will be 9 dB. In other words, on a warm night, residents may open a bedroom window far more than for typical background ventilation, and therefore internal noise levels will increase. Therefore, the submitted report does not assess the impacts during a potential overheating situation, and the above evidence would suggest that such a condition would result in a 4 dB (at least) increase of the impacts identified in Wardell Armstrong's report during non-overheating scenarios.

[7] Reference ID: 30-003-20190722
[8] Reference ID: 30-006-20190722

Mitigation measures

51. Wardell Armstrong states in paragraph 5.6.3 of the submitted report that "*no mitigation measures are required for the proposed development*". However, as I have already noted, the report is contradictory on the issue of mitigation measures since Figure 2 refers to relocated noise sources as "*mitigation*", and also Wardell Armstrong specifies that some of the equipment **should** [my emphasis] include a vibration dampener system.

Yours sincerely

T Chinelis BSc (Hons) PgDip MIOA CEng MIMechE
Senior Consultant