West Burton Solar Project

~~Draft~~ Statement of Common Ground

with West Lindsey District Council

Revision ~~B~~C

Prepared by: Lanpro Services

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West Burton

SOLAR PROJECT

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1 Introduction

1.1 Purpose of the Document

1.1.1 This Statement of Common Ground (SoCG) has been prepared as part of the proposed West Burton Solar Project Development Consent Order (the Application) made by West Burton Solar Project Ltd (the Applicant) to the Secretary of State for Energy Security & Net Zero (the Secretary of State) pursuant to the Planning Act 2008 (PA 2008).

1.1.2 This SoCG does not seek to replicate information which is available elsewhere within the Application documents. All documents are available in the deposit locations and/or the Planning Inspectorate website.

1.1.3 This SoCG has been produced to confirm to the Examining Authority (ExA) where agreement has been reached between the parties, and where agreement has not yet been reached. SoCGs are an established means in the DCO consenting process of allowing all parties to identify and focus on specific issues that may need to be addressed during the examination.

1.2 Parties to this Statement of Common Ground

1.2.1 This SoCG has been prepared by (1) West Burton Solar Project Ltd. as the Applicant and (2) West Lindsey District Council. West Lindsey District Council is a host authority for the three Sites, referred to as West Burton 1, 2, and 3, that will house the PV panels, BESS and associated development.

1.2.2 Collectively, West Burton Solar Project Ltd. and West Lindsey District Council are referred to as 'the parties'.

1.3 Terminology

1.3.1 In the tables in **Sections 3 - 5** of this SoCG:

- "Agreed" indicates where the issue has been resolved.
- "Not Agreed" indicates a final position, and
- "Under discussion" indicates where these points will be the subject of ongoing discussion wherever possible to resolve, or refine, the extent of disagreement between the parties.

1.4 Topic Referencing for All Matters

1.4.1 All matters agreed, under discussion and not agreed have been given unique references which relate to the topic matter. The referencing system is defined as follows:

Table 1.1: Topic Referencing

Topic	Unique Identifying Code
Air Quality	AIR-xx
Alternatives and Design Evolution	ALT-xx
Climate Change	CC-xx
Cultural Heritage	CUL-xx
Development Consent Oder	DCO-xx
Ecology and Biodiversity	ECO-xx
Glint and Glare	GLI-xx
Landscape and Visual Impact	LAN-xx
Noise and Vibration	NOI-xx
Other Environmental Matters	OEM-xx
Principle of Development/General	PD-xx
Socio-economics, Tourism and Recreation	STR-xx
Soils and Agriculture	SOI-xx
Transport and Access	TRA-xx

2 Record of Engagement

2.1 Summary of Consultation

2.1.1 The parties have been engaged in consultation since September 2021. Scheme. A summary of the meetings and correspondence that has taken place between West Burton Solar Project and West Lindsey District Council in relation to the Application is outlined in **Table 2.1**.

Table 2.1: Record of Engagement

Date	Form of Correspondence	Key Topics Discussed and Key Outcomes
Principle of Development		
9th September 2021	Initial Project kick off meeting	The range of topics addressed in the SoCG.
22nd September 2021	Member briefing	The range of topics addressed in the SoCG.
Since February 2022	Monthly meetings with Planning Officers.	The range of topics addressed in the SoCG.
8th June 2023	West Lindsey DC relevant representation **[RR-350]**	Policy framework and decision making Cumulative impacts Project specific impacts Mitigation Draft DCO

Date	Form of Correspondence	Key Topics Discussed and Key Outcomes
14th February 2024	Meeting with Planning Officers	To discuss outstanding Statement of Common Ground issues
Hydrology		
27/07/23	Section 42 Consultation	**Flood Risk Assessment and Drainage Strategy [APP-090]** and **ES Chapter 10: Hydrology, Flood Risk and Drainage [APP-048]**. West Lindsey District Council stated that Flood Risk Assessments (FRA) had to be undertaken and that FRA will need to maintain the predevelopment surface water regime post development.

2.1.2 It is agreed that this is an accurate record of the key meetings and consultation undertaken between (1) West Burton Solar Project Ltd. and (2) West Lindsey District Council in relation to the issues addressed in this SoCG.

3 Matters Agreed

Tables 3.1 to 3.12 below detail by topic the matters agreed with West Lindsey District Council.

3.1 Matters Agreed (Air Quality)

Table 3.1

Main Topic	Sub-topic	Details of Matters Agreed
AIR-01 Air Quality	Baseline Conditions	The baseline conditions which are detailed within Section 17.5 of **Chapter 17: Air Quality [APP-055]** are representative of the site conditions.
AIR-02 Air Quality	Methodology and Assessment	The methodology adopted within the Air Quality assessment **[APP-133** to **APP-136]** has been derived from the information obtained through consultation and engagement with stakeholders and by reviewing any relevant guidance and studies. The assessment methodology is detailed within Section 17.4 of **Chapter 17: Air Quality [APP-055]** and is considered acceptable.
AIR-03 Air Quality	Methodology and Assessment (Construction Vehicles)	As detailed within the Air Quality assessment **[APP-133** to **APP-136]** the proposed construction vehicle numbers will not exceed the relevant IAQM/EPUK thresholds e.g., 100 HGV Annual Average Daily Traffic (AADT), therefore there is no requirement for detailed construction air quality modelling and assessment has been scoped out of **Chapter 17: Air Quality [APP-055].** This approach is considered acceptable.
AIR-04 Air Quality	Methodology and Assessment (Operational Vehicles)	As detailed within the Air Quality assessment **[APP-133 to APP-136]** the proposed operational vehicle numbers will be limited and will not exceed the relevant IAQM/EPUK thresholds (e.g., 100 HGV Annual Average Daily Traffic (AADT), therefore there is no requirement for detailed air quality modelling and assessment has been scoped out of **Chapter 17: Air Quality [APP-055].** This approach is considered acceptable.
AIR-05 Air Quality	Mitigation	The proposed mitigation measures set out within Section 17.8 of **Chapter 17: Air Quality [APP-055]** are acceptable.

3.2 Matters Agreed (Climate Change)

Table 3.2

Topic	Sub-topic	Details of Matters Agreed
CC-01 Climate Change	ES Chapter 7: Baseline	Whether or not the baseline conditions detailed in Chapter 7: Climate Change of the Environmental Statement **[REP1-012]** are representative of the baseline site conditions.
CC-02 Climate Change	ES Chapter 7: Methodology	Whether or not the assessment methodology detailed in Chapter 7: Climate Change of the Environmental Statement **[REP1-012]** is considered acceptable.
CC-03 Climate Change	ES Chapter 7: Mitigation	Section 7.9 of Chapter 7: Climate Change of the Environmental Statement **[REP1-012]** has not identified the need for any additional mitigation or enhancement measures

3.3 Matters Agreed (Cultural Heritage)

Table 3.3

Main Topic	Sub-topic	Details of Matters Agreed
CUL-01 Cultural Heritage	ES Chapter 13: Baseline	Whether the baseline conditions detailed in **6.2.13 Environmental Statement - Chapter 13_Cultural Heritage [APP-051]** are representative of the baseline site and study area conditions.
CUL-02 Cultural Heritage	ES Methodology	Whether the assessment methodology detailed in **6.2.13 Environmental Statement - Chapter 13_Cultural Heritage [APP-051]** is considered acceptable.
CUL-03 Cultural Heritage	Shared Cable Corridor Route	As detailed in the **SoCG for Lincolnshire [~~EX6~~EX7/WB8.3.1_~~A~~B]**, the scope and results of works carried out to assess the potential impact on archaeological remains within the 'Shared Cable Route Corridor', proposed to be the West Burton Solar Project, Cottam Solar Project and the Gate Burton Solar Project, between Stow Park Road and the Cottam Power Station were discussed during meetings between the Applicant and LHPT, archaeological advisors for West Lindsey District Council, on 12.01.2023, 22.02.2023 and 22.03.2023. LHPT in agreement that the extent and quality of collected baseline data was sufficient to inform an appropriate mitigation strategy (WSI; ES Chapter Appendix 13.7) **[REP5-016]**. This approach is considered acceptable
CUL-04 Cultural Heritage	Shared Cable Corridor Route	Whether the construction details of the shared cable corridor detailed in **6.2.13 Environmental Statement - Chapter 13_Cultural Heritage [APP-051]** are considered acceptable.

3.4 Matters Agreed (Ecology and Biodiversity)

Table 3.4

Main Topic	Sub-topic	Details of Matters Agreed
ECO-01 Ecology and Biodiversity	Baseline	Whether the baseline conditions detailed in **6.2.9 Environmental Statement - Chapter 9_Ecology and Biodiversity [APP-047]** are representative of the baseline site conditions.
ECO-02 Ecology and Biodiversity	ES Methodology	Whether the assessment methodology detailed in **6.2.9 Environmental Statement - Chapter 9_Ecology and Biodiversity [APP-047]** is considered acceptable.
ECO-03 Ecology and Biodiversity	ES Conclusions	Whether the conclusions of the assessment detailed in **6.2.9 Environmental Statement - Chapter 9 Ecology and Biodiversity [APP-047]** are considered acceptable.
ECO-04 Ecology and Biodiversity	Cumulative Impacts	Whether the cumulative impacts detailed in **6.2.9 Environmental Statement - Chapter 9_Ecology and Biodiversity [APP-047]** are considered acceptable.

3.5 Matters Agreed (Glint and Glare)

Table 3.5

Main Topic	Sub-topic	Details of Matters Agreed
GLI-01 Glint and Glare	Methodology and Assessment	As agreed with West Lindsey District Council, the baseline conditions detailed at Section 16.5 of 6.2.16 Environmental Statement - Chapter 16_Glint and Glare [APP-054] and within Section 5 of 6.3.16.1 Environmental Statement - Appendix 16.1 Solar Photovoltaic Glint and Glare Study [APP-132] are representative of the baseline site conditions for the Scheme.
GLI-02 Glint and Glare	Baseline Conditions	The assessment methodology adopted in the Glint and Glare assessment has been agreed with West Lindsey District Council and has been derived from the information obtained through consultation with stakeholders and by reviewing any relevant guidance and studies. The assessment methodology is detailed within Section 16.4 of **6.2.16 Environmental Statement - Chapter 16_Glint and Glare [APP-054]** and within Appendix A of **6.3.16.1 Environmental Statement - Appendix 16.1 Solar Photovoltaic Glint and Glare Study [APP-132]**. The methodology used in the report has been used in other 1,000 glint and glare assessments and has been tested for NSIP solar schemes before. Therefore, it is considered to be acceptable.
GLI-03 Glint and Glare	Significance of Impacts and Mitigation Measures	No significant impacts are predicted because: Where effects are predicted to have a 'Moderate' impact or higher the Applicant has proposed mitigation in the form of screening to significantly obstruct the visibility of the reflective area; Where effects are predicted to have a 'Low' impact mitigation is not recommended. Therefore, once the proposed mitigation strategy is in place, the overall impact of the Scheme upon the nearby identified receptors is predicted to be 'Minor/Negligible Adverse', in EIA terms. Further information can be found in Section 16.8 and 16.9 of 6.2.16 Environmental Statement - Chapter 16_Glint and Glare [APP-054] and Section 7 of 6.3.16.1 Environmental Statement - Appendix 16.1 Solar Photovoltaic Glint and Glare Study [APP-132].

3.6 Matters Agreed (Landscape and Visual Impact)

Table 3.6

Main Topic	Sub-topic	Details of Matters Agreed
LAN-01 Landscape and Visual Impact	Study Area/Scope of Assessment	The existing Study Areas/Scope of Assessment set out within Section 8.5 of **6.2.8 Environmental Statement - Chapter 8_Landscape and Visual Impact Assessment [APP-046]** are sufficient to inform the assessment baseline conditions. *aside from matter 'disagreed' relating to cumulative assessment.
LAN-02 Landscape and Visual Impact	Baseline Conditions	The description of the existing baseline landscape and visual conditions set out within Section 8.5 of **6.2.8 Environmental Statement - Chapter 8_Landscape and Visual Impact Assessment [APP-046]** and **6.3.8.2 Environmental Statement - Appendix 8.2 Assessment of Potential Landscape Effects [APP-073]** and **6.3.8.3 Environmental Statement - Appendix 8.3 Assessment of Potential Visual Effects [APP-074]**, is accurate and sufficient to inform the assessment.
LAN-03 Landscape and Visual	Assessment Methodology and Significance Criteria	The assessment methodology and significance criteria set out within Section 8.4 of **6.2.8 Environmental Statement - Chapter 8_Landscape and Visual Impact Assessment [APP-046]** and **6.3.8.1 Environmental Statement - Appendix 8.1 LVIA Methodology [APP-072]**, provides an appropriate approach to assessing the potential likely significant effects on receptors and the assessment methodology has been prepared with consideration of the appropriate and relevant guidance.
LAN-04 Lighting and Glint and Glare	Glint and Glare	Please refer to the Relevant Representation received from West Lindsey District Council **[RR-350]**, and **WB8.1.2 The Applicant's Responses to Relevant Representations [REP1-050]** (WLDC-04). "Without prejudice to matters that are identified following a detailed assessment, WLDC expect the following matters to be scrutinised in detail through the examination phase: Landscape and Visual Effects (including lighting impacts and glint and glare)."

Main Topic	Sub-topic	Details of Matters Agreed
		Applicant's comments: **6.2.8 Environmental Statement - Chapter 8_Landscape and Visual Impact Assessment [APP-046]** (the 'LVIA') provides landscape mitigation that seeks to enhance the visibility of the Scheme from public vantage points including transport routes, public footpaths, permissive footpaths and green lane network. This mitigation is aimed to benefit the community as a whole as well as tourists, visiting walkers, local residents, ornithologists and cyclists. The landscape mitigation measures will seek to provide new planting to mitigation the potential impacts and effects of glint and glare, which will include new native hedgerows and tree cover, and this will also include their management and maintenance. Please refer to Table 3.7 where glint and glare is discussed in detail.

3.7 Matters Agreed (Noise and Vibration)

Table 3.7

Main Topic	Sub-topic	Details of Matters Agreed
NOI-01 Noise and Vibration	Baseline Conditions	The outcomes of the baseline noise monitoring detailed within Section 15.4 of **6.2.15 Environmental Statement - Chapter 15_Noise and Vibration [APP-053]** and **6.3.15.1 Environmental Statement - Appendix 15.1 Noise Survey Information [APP-129]** are representative of the sound levels in the vicinity of the Sites and experienced by nearby sensitive receptors. As such, the conditions described in Section 15.5 of **6.2.15 Environmental Statement Chapter 15 Noise and Vibration [APP-053]** are representative of the baseline site conditions.
NOI-02 Noise and Vibration	WLDC LIR point NV1: Information has been taken from technical guidance documents to identify thresholds levels at which negligible, minor, moderate and major impacts occur. However, the mapping of these impact threshold levels for construction noise underestimates significance.	The magnitude of effect criteria for construction noise has been mapped incorrectly (Table 15.4) in **ES Chapter 15 Noise and Vibration [APP-053],** however, the construction noise assessment has utilised the correct threshold value for significance of 65 dB and therefore the results of the assessment remain valid. Noise levels from potential construction activity associated with the Scheme were assessed in accordance with BS 5228-1:2009 + A1 2014 criteria which indicate if a significant effect is likely to occur at noise sensitive properties. Category A threshold value of 65dB is the lowest daytime LAeq,T threshold value. In addition, construction phase noise is temporary and transient and will only occur during the daytime. Furthermore, Best Practicable Means (BPM) will be implemented to reduce construction noise levels from the site, refer to **ES Appendix 15.3 Assessment of Key Effects [APP-131]**
NOI-03 Noise and Vibration	WLDC LIR point NV2: Further information is required explaining how this noise level was	As stated in paragraph 15.4.21 of the **ES Chapter 15 [APP-053],** the cable route corridor assessment has been based on fixed limits noise criteria, due to the impracticality of surveying the large area. Therefore, the threshold limit should be 70 dB for rural areas and not 65 dB as stated. The conclusion of the construction noise assessment remain

Main Topic	Sub-topic	Details of Matters Agreed
	selected as no baseline noise surveys were undertaken along the cabling route	valid as all receptors are below the 70 dB threshold except for the three receptors highlighted in the ES chapter.
NOI-04 Noise and Vibration	WLDC LIR point NV3: Detailed information on the noise survey methodology and contextual information about the survey locations is not reported.	See additional information in Appendix to this Statement of Common Ground: 784-B031437 West Burton Solar Project Response'.
NOI-05 Noise and Vibration	WLDC LIR point NV4: Graphs presenting statistical information on the measured background sound levels at the long-term monitoring sites are presented in the ES chapter (e.g. Figure 15.1). No information is provided on how the data have been interpreted to select appropriate background sound levels for the	Statistical analysis has been used to inform the selection of representative background noise levels for each nearby long term measurement position. Where a clear modal value is presented, this value has been utilised. In some cases, lower background noise levels have been selected where a significant rise in the 'number of occurrences' is presented.

Main Topic	Sub-topic	Details of Matters Agreed
	operation phase assessment.	
NOI-06 Noise and Vibration	WLDC LIR point NV5: It is noted that maps of the short-term and long-term monitoring locations are provided, however, it is unclear how the measured noise levels have been mapped to receptor locations for the impact assessment	Baseline noise results from the nearest representative noise monitoring locations were assigned to receptors in the vicinity of the noise monitoring locations, figures and results are provided within **Appendix 15.1: Noise Survey Information [APP-129].** See also, additional information in Appendix to this Statement of Common Ground: 784-B031437 West Burton Solar Project Response'
NOI-07 Noise and Vibration	WLDC LIR point NV6: The Planning Inspectorate accepted that operation phase vibration can be scoped out provided that potential sources of vibration are described in the ES chapter with details of any measures to be used to control emissions. This comment does not appear to have been addressed. The Noise and	Operational vibration was scoped out of the ES and agreed. The proposed electrical equipment will not emit significant levels of vibration and therefore, vibration levels will be imperceptible at the nearest receptors and also at the site boundary.

Main Topic	Sub-topic	Details of Matters Agreed
	Vibration ES chapter does not report any information on potential sources of operation phase vibration or include a statement confirming that there are no potential sources of vibration. Table 15.1 presents a summary of consultation comments and responses, and provides a response about construction vibration against the operation phase vibration comment from the Scoping Opinion. The construction vibration comment from the Scoping Opinion is omitted from this table.	
NOI-08 Noise and Vibration	WLDC LIR point NV7: The noise prediction methodology and outcomes reported in the ES Chapter and Appendix 15.3 (Doc. Ref.	The Applicant respectfully disagrees, **Chapter 15: Noise and Vibration [APP-053], Appendices 15.1 [APP-129]** and **15.3 [APP-131]** provide the methodologies, input data and assumptions and detail the overall impacts at receptors. It is not clear from this comment what "pertinent information" WLDC consider is missing. The Applicant would be grateful if this could be specified so a fuller answer can be provided.

Main Topic	Sub-topic	Details of Matters Agreed
	EN010132/APP/WB6.3.15.3) omit pertinent information.	
NOI-09 Noise and Vibration	WLDC LIR point NV8: Appendix 15.3 only presents results at the nearest vibration sensitive receptor. As a PPV level above 0.3 mm/s was predicted at West Burton 1, 2 and 3, further information is required to confirm how many additional properties located further away may also experience a similar impact.	In terms of vibration, the test for significance would represent a vibration level of above 1.0mm/s as stated in Section 15.4.23 of **Chapter 15: Noise and Vibration [APP-053].** None of the nearest sensitive receptors at West Burton 1, 2 and 3 are above this level and therefore vibration levels are considered not significant. Furthermore, the method of piling utilised in the calculation of vibration levels was vibratory piling, in the 'all operations' state. As stated in paragraph 15.4.6 - 15.4.7 of the ES Chapter **[APP-053]**. Although the exact method of piling is yet to be determined, it has been assumed that vibratory piling is the most likely choice for inserting the mounting structures. Table E.1 of BS 5228-2:2009+A1:2014 Part 2 describes a method for calculating the level of groundborne vibration arising from the mechanical works. The formula for vibratory piling contains a variable (sigma), which identifies the operational state. The variable can take three values; 1.3 = 'all operations', 1.2 = 'start up and run down' and 1.4 'steady state operation'. The value of 1.3 'all operations' was used in the calculation. Therefore to summarise, the method of piling was vibratory piling and the operational state was 'all operations', as described in the relevant BSI standard. It should be noted that the vibratory piling calculation predicts higher levels of vibration than the percussive piling calculation and therefore the method assumed represents the worst-case scenario.
NOI-10 Noise and Vibration	WLDC LIR point NV9: The construction traffic assessment focusses on the noise impacts resulting from additional vehicles on the road network during	On a day-to-day basis, there are not expected to be any road closures to support construction vehicles accessing the Site. There may be very temporary 'rolling' road closures to support the movement of abnormal loads. These would typically last for a matter of minutes and will be undertaken outside of the network peak hours. They will not result in significant traffic diversions.

Main Topic	Sub-topic	Details of Matters Agreed
	the construction phase. Noise impacts linked to traffic diversions as a result of temporary road closures has not been included in the assessment.	
NOI-11 Noise and Vibration	WLDC LIR point NV10: The operation phase results tables shown in Appendix 15.3.5 consistently show that the rating levels (specific sound level plus acoustic penalty) are higher at night than during the daytime (i.e. Table 15.3.11, Table 15.3.16, and Table 15.3.21). It is not clear from the Noise and Vibration chapter why the proposed development would emit more noise at night. The tabulated noise levels seem to contradict paragraph 15.7.68, which states that "the night-time noise levels are likely to be substantially lower in	Night-time rating levels are generally slightly higher than the daytime rating levels as night-time receptors are modelled at a height of 4.0m rather than 1.5m during the daytime. The nearer a receptor is to ground level, the more chance there is of direct noise being screened by the intervening topography.

Main Topic	Sub-topic	Details of Matters Agreed
	practice". Further clarification is required to confirm the level of impact.	
NOI-12 Noise and Vibration	WLDC LIR point NV11: The rationale behind the selection of the background sound levels used in Appendix 15.3.5 remains unclear in this section of the ES and can affect the stated outcomes of the assessment.	Baseline noise results from the nearest representative noise monitoring locations were assigned to receptors in the vicinity of the noise monitoring locations. These figures and results are provided within **Appendix 15.1: Noise Survey Information [APP-129].** See NOI-05 and NOI-06 above.
NOI-13 Noise and Vibration	WLDC LIR point NV12: Paragraphs 15.7.74 and 15.7.78 in the ES chapter state that the rating levels are below 35dB for West Burton 2 and West Burton 3, whereas Appendix 15.3.5 shows rating levels above 35dB (Table 15.3.16, Table 15.3.21). Further clarification is required to confirm the level of impact.	The Applicant agrees with this comment. The methodology adopted for low existing background noise levels particularly at night-time is set out in Paragraphs 15.4.36 - 15.4.40 of **Chapter 15: Noise and Vibration [APP-053].** Rating levels at some of the receptors are predicted to be above 35 dB. However, existing night-time background levels are significantly below what is considered very low (30dB), therefore the absolute noise level assessment should be considered. Where daytime existing background noise levels are above 30 dB, the background comparison assessment indicates that all receptors fall below the significant adverse effect level
NOI-14	WLDC LIR point NV13:	Acoustic louvres were modelled to provide broadband attenuation of at least 10 dB. The performance of acoustic louvres will very between manufacturers. However, a generic

Main Topic	Sub-topic	Details of Matters Agreed
Noise and Vibration	Appropriate types of noise mitigation measures are proposed to control noise emissions from the project, however, the stated performance requirement for the acoustic louvres is ambiguous. Clarification is required to confirm whether the 10dB noise reduction refers to the overall performance of the product or specific frequencies.	acoustic louvre was utilised in the noise model and a reduction of 10dB was achieved. It is considered that a 10dB reduction is readily achievable and is not considered to be a constraint regarding embedded mitigation. See also, additional information in Appendix to this Statement of Common Ground: 784-B031437 West Burton Solar Project Response' The applicant's response on the specification of the acoustic louvres provides octave band noise reduction data for an acoustic louvre provided by Wakefield Acoustics. The example louvre provided will comfortably meet the noise reduction (10dB) specified in the ES chapter, the octave band data provided confirms that the 4000Hz tone will also be reduced sufficiently. Details of construction of the louvres is provided in the technical data sheet appended to the additional information document referenced above.

3.8 Matters Agreed (Other Environmental Matters)

Table 3.8

Main Topic	Sub-topic	Details of Matters Agreed
OEM-01 Other Environmental Matters	Major Accidents and Disasters (fire safety)	The assessment undertaken and relevant mitigation measures provided with regard to fire safety as set out in Section 21.6 of **6.2.21 Environmental Statement - Chapter 21_Other Environmental Matters [APP-059]** and as set out in **WB7.9_B Outline Battery Storage Safety Management Plan [~~EX6/WB7.9_B~~REP6-019]** have been carried out in a robust and proportionate manner and are considered acceptable. The location and scale of the BESS is suitable to address the concerns of WLDC with regard to impact on residential dwellings and publicly accessible locations. The design of the BESS is suitable to address the requirements of the Lincolnshire Fire and Rescue Service.
OEM-02 Other Environmental Matters	Telecommunications, Utilities and Television Receptors	The information provided within Section 21.3 of **6.2.21 Environmental Statement - Chapter 21_Other Environmental Matters [APP-059]** is sufficient, and the protective mitigation measures set out in **Outline Construction Environmental Management Plan [~~EX6/WB7.1_D~~REP6-021]**; **Outline Operational Environmental Management Plan [REP5-020] and Crossing Schedule [REP4-056]** are appropriate and therefore acceptable.
OEM-03 Other Environmental Matters	Major Accidents and Disasters (excluding fire safety)	The scope and methodology of the assessment undertaken throughout the ES and signposted within Section 21.6 of **6.2.21 Environmental Statement - Chapter 21_Other Environmental Matters [APP-059]** including the identification of likely significant effects and likely significant cumulative effects has been carried out in a robust and proportionate manner and is considered acceptable.

3.9 Matters Agreed (Principle of Development/General)

Table 3.9

Main Topic	Sub-topic	Details of Matters Agreed
PD-01 General	Site description	The Site description set out at ES Chapter 3: The Development Site **[APP-041]** is accurate.
PD-02 General	Planning History	The relevant planning history for the Scheme insofar as it relates to land within West Lindsey District is set out at **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D],** Appendix 1: Planning Application History Search West Burton Sites and Appendix 2: Planning Application History Search Cable Route Corridor respectively.
PD-03 General	Legislation and policy	The updated National Policy Statements were published on 22 November 2023 and designated by the Secretary of State on 17 January 2024. Section 1.6 of NPS EN-1 (November 2023) sets out the transitional provisions and states that for DCO applications submitted prior to the designation of the November 2023 NPSs (such as the Scheme), the 2011 suite of NPSs will continue to have effect and therefore the DCO application for the Scheme will be determined under s105 of the Planning Act 2008. The extent to which the updated NPS's are relevant is a matter for the relevant Secretary of State to consider within the framework of the Planning Act 2008 and with regard to the specific circumstances of each Development Consent Order application. The NPSs designated in January 2024 will be an important and relevant consideration for the Secretary of State in determining the application for the Scheme. The Scheme has been assessed against the relevant and up to date West Lindsey District Council and Lincolnshire County Council planning policies as set out within Section 6 of the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D]** noting that any references to the draft Central Lincolnshire Local Plan now mean the Central Lincolnshire Local Plan DPD (Development Plan Document) adopted 13 April 2023

PD-04 General	Need for large scale solar	The principle of the need for large scale solar projects is established in national planning policy, as detailed in Section 4 of the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D]** and the **Statement of Need [APP-320]**; The overarching need case for the deployment of low carbon energy generation infrastructure is agreed.

3.10 Matters Agreed (Socio-Economics, Tourism and Recreation)

Table 3.10

Main Topic	Sub-topic	Details of Matters Agreed
STR-01 Socio-Economics, Tourism and Recreation	Cumulative Assessment and Methodology	The cumulative assessment of socio-economic, tourism and recreation effects as set out in Section 18.10 of **6.2.18 Environmental Statement - Chapter 18 Socio Economics Tourism and Recreation [APP-056]** has been carried out in a robust and sufficiently detailed manner**.**

3.11 Matters Agreed (Soils and Agriculture)

Table 3.11

Main Topic	Sub-topic	Details of Matters Agreed
SOI-01 Soils and Agriculture	Baseline Conditions	The baseline conditions detailed at Section 19.8 of **6.2.19 Environmental Statement - Chapter 19_Soils and Agriculture [APP-057]** and within **6.3.19.1 Environmental Statement - Appendix 19.1 Agricultural Land Quality, Soil Resources and Farming Circumstances Report [APP-137]** are representative of the baseline site conditions.
SOI-03 Soils and Agriculture	Proposed Mitigation	The proposed mitigation measures set out within Section 19.10 of **6.2.19 Environmental Statement - Chapter 19_Soils and Agriculture [APP-057]** are considered acceptable. It is agreed that a Soil Management Plan secured through a DCO requirement is the appropriate mechanism to deliver mitigation.
SOI -04 Soils and Agriculture	Cumulative Impacts	The cumulative impacts detailed in Section 19.11 of **6.2.19 Environmental Statement - Chapter 19_Soils and Agriculture [APP-057]** are considered to be properly assessed.

3.12 Matters Agreed (Transport and Access)

Table 3.12

Main Topic	Sub-topic	Details of Matters Agreed
TRA-01 Transport and Access	Methodology	The methodology adopted within Section 14.4 of **6.2.14 Environmental Statement - Chapter 14_Transport and Access [APP-052]** has been derived from the information obtained through consultation and engagement with stakeholders and by reviewing relevant policy, guidance and studies and is considered acceptable.
TRA-02 Transport and Access	Baseline Assessment	The baseline conditions which are detailed in Section 14.5 of **6.2.14 Environmental Statement - Chapter 14_Transport and Access [APP-052]** are representative of the baseline site conditions.
TRA-03 Transport and Access	Mitigation	The proposed mitigation measures set out within Section 10.6 of **6.2.14 Environmental Statement - Chapter 14_Transport and Access [APP-052]** are acceptable providing they are as set out in paragraph 7.2 (point xxv) of the **Outline Construction Traffic Management Plan [REP4-036]** which states that a Joint CTMP should be implemented in the event that the construction schedules associated with this Scheme and other schemes in the area overlap.

4 Matters Under Discussion

4.1.1 There are no “matters under discussion” between the Applicant and West Lindsey District Council.

5 Matters Not Agreed

The matters which are 'Not Agreed' with West Lindsey District Council (WLDC) are as follows.

5.1 Matters Not Agreed (Alternatives and Design Evolution)

Table 5.1

Main Topic	Sub-topic	Details of Matters Not Agreed
ALT-01 Alternatives and Design Evolution	Site selection, alternatives and good design Methodology and policy compliance	**WLDC:** The application fails to accord with NPS EN-1 section 4.7. The site selection and design process has not embedded 'good design' principles from the outset, with no project board level design champion in place to drive clear design principles. No advice has been sought from any independent design professional (in particular the Design Council). The applicant has not demonstrated how the design principles have advocated and supported a projects that represents several distinct parts, that fail to relate to each other as a contiguous scheme. There has not been a clear explanation/justification, based upon a transparent methodology, as to how the submitted scheme was arrived at. There are no explanations as to why the project is fragmented into spatially separate parcels resulting is greater harmful impacts. The methodology applied in ES Chapter 5: Alternatives and Design Evolution and 6.5.3.1 Environmental Statement – Appendix 5.1 Site Selection Assessment is not appropriate or adequate. **Applicant:** The Applicant's site selection process set out within **Appendix 5.1: Site Selection Assessment [AS-004]** and within **ES Chapter 5: Alternatives and Design Evolution [APP-043]** took a

Main Topic	Sub-topic	Details of Matters Not Agreed
		sequential approach to the assessment of agricultural land seeking to find a suitable site on Grade 4, 5 and unclassified land before sites on Grade 3 land were considered. Paragraphs 2.1.23 to 2.1.31 of **ES Appendix 5.1 Site Selection Assessment [AS-004]** detail the consideration of brownfield land and roof tops and set out why these were discounted as unsuitable. The final Scheme includes only 26.24% BMV land as a result of this process and the reasons for the small amount of BMV land included are explained and justified within Table 5.9 of **ES Chapter 5: Alternatives and Design Evolution [APP-043]**. It is noted that the site selection and pre-application consultation processes led to the removal of the West Burton 4 Site from the Scheme. This significantly reduced the amount of BMV land within the Scheme from 42.3% to 26.24%. The Scheme therefore complies with the requirements of Paragraph 2.10.29 and Paragraph 2.10.31 of NPS-EN3 (November 2023). It also meets the test set out in the 2015 WMS because non-BMV land has been used as far as practicable and compelling evidence as to the need to include a small element of BMV land within the Scheme has been provided.
ALT-02 Alternatives and Design Evolution	Efficient use of land The project design and it's land-take.	**WLDC:** WLDC considers the project layout to be contrary to policy and unacceptable. This is due to the project representing poor design, resulting in the highly inefficient use of land that delivers a project that has multiple ad-hoc areas of infrastructure (included associated development such as converter stations) and construction access points, cable lengths and internal access roads. The impact is that the project exerts significant adverse impacts across a wide geographical area, affecting a wide range of communities and being experienced for a significant distance when travelling through the landscape. **Applicant:** Paragraph 2.10.17 of NPS EN-3 (November 2023) states "Along with associated infrastructure, a solar farm requires between 2 to 4 acres for each MW of output. A typical 50MW solar farm will consist of around 100,000 to 150,000 panels and cover between 125 to 200 acres. However, this

Main Topic	Sub-topic	Details of Matters Not Agreed
		will vary significantly depending on the site, with some being larger and some being smaller. This is also expected to change over time as the technology continues to evolve to become more efficient. Nevertheless, this scale of development will inevitably have impacts, particularly if sited in rural areas." Table 7.1 of **Statement of Need [APP-320]** shows a comparison of annual energy yield per hectare for different technologies, including for solar and onshore wind the range from high to low generation density per technology. The conclusion drawn from this table is that the average annual energy yield per acre of land from solar is of a comparable order of magnitude as the average annual energy yield per acre of land from onshore wind; and both are significantly higher than the average energy yield from bio-crops.

5.2 Matters Not Agreed (Air Quality)

Table 5.2

Topic	Sub-topic	Details of Matters Not Agreed
AIR-06	Control over cumulative impacts	**WLDC:** The oCEMP does not provide adequate detail to control cumulative air quality impacts. The lack of a co-ordinated approach with other projects will make control and enforcement ineffective, resulting in impact/complaint resolution being slow and difficult to identify (i.e. the party causing harm/subject of a claimed breach). **Applicant:** The Applicant respectfully disagrees that is necessary. In relation to minimising cumulative effects, measure 'xxv' in Section 7 of the **Outline Construction Traffic Management Plan [~~REP4-038~~EX7/WB6.3.14.2_E]** states: "*In the event that the construction schedules associated with this Scheme and other schemes in the area overlap (being the Cottam Solar Project, the Gate Burton Solar Project, and the Tillbridge Solar Project), a joint Construction Traffic Management Plan (Joint CTMP) could be produced. Other schemes that come forward in the area could be included as appropriate. The Joint CTMP would set out construction traffic management and control measures relevant to those areas where the construction vehicle routes for the schemes would overlap, to reduce and manage any potential cumulative effects. This is particularly relevant to the Shared Cable Route Corridor with the Cottam and Gate Burton projects. The Joint CTMP would be agreed with the relevant authorities prior to commencement of construction*" A cumulative effects assessment is available **6.2.1-6.2.23 Environmental Statement [APP-038 to APP-061, REP1-012, REP3-010]**, including air quality in

Topic	Sub-topic	Details of Matters Not Agreed
		Chapter 17 Air Quality **[APP-055]**. Cumulative effects assessments for each topic are set out in each of the ES Chapters and include the assessment of the impacts of the Scheme cumulatively with the NSIPs. Each Scheme will be seeking to minimise their own impacts and ensuring that they comply with the measures set out in their ES's and management plans which are all secured through requirements in their individual DCO's.

5.3 Matters Not Agreed (Cultural Heritage)

Table 5.3

Main Topic	Sub-topic	Details of Matters Not Agreed
CUL-05 Cultural Heritage	Impacts on Stow Park Medieval Bishop's Palace and Deer Park Scheduled Monument	**WLDC:** The impacts on the Stow Park Medieval bishop's palace and deer park is unacceptable, equating to 'substantial' harm (in agreement with the view of Historic England). The SoS has a statutory duty as the decision maker to, when deciding application for development consent which affects, or is likely to affect, a scheduled monument or its setting, to have regard to the desirability of preserving the scheduled monument or its setting. This duty relates to direct physical harm and direct and indirect impacts upon its setting. NPS EN-1 states that 'substantial harm' to Scheduled Monuments should be 'wholly exceptional' (para.5.9.28) and where substantial harm occurs the SoS should refuse consent unless it can be demonstrated that such harm, is necessary to achieve 'substantial' public benefits that outweigh the loss or harm. The proposal does not constitute 'wholly exceptional' development and there are no 'substantial public benefits' that outweigh the harm caused to the Scheduled Monument. **Applicant:** The Applicant believes that Scheme would cause less than substantial harm (at the upper end) to the significance of The medieval bishop's palace and deer park, Stow Park Scheduled Monument (NHLE 1019229), which is derived from changes to its setting through the introduction of solar panels. The Scheme would not cause direct harm to the fabric of the three separate elements that constitute the Scheduled Monument and that form the only surviving vestiges of the deer park. The significance of the Scheduled Monument is derived from its historical and archaeological

Main Topic	Sub-topic	Details of Matters Not Agreed
		interest, as attested in the list entry, vested in the below ground remains and its historic interest as the sole surviving element of a former enclosed medieval space, which is largely understood through aerial imagery and documentary sources. There would be no adverse effect to any elements of the Scheduled Monument resulting from the Scheme that would cause permanent loss, either wholly or in part, to its significance. Any harm to the significance would be through the placement of panels within the area of the former deer park and, thus, the setting of the Scheduled Monument. The agrarian landscape, the former MOD petroleum site and the railway, which bisects the Scheduled Monument, have a detrimental effect on the ability to appreciate any remaining elements of the former medieval landscape and are consequently considered to have a detrimental effect on the overall contribution made by setting to the significance of the Scheduled Monument. This is demonstrated by the Historic England Official List Entry, which excludes post-medieval and modern activity. The introduction of panels within the former deer park would not alter the legibility of the landscape and the reversible nature of the Scheme means that any harm to the setting of the Scheduled Monument would be removed following decommissioning of the Scheme. Weighed in the balance of the policy tests, the benefits of the Scheme are considered to outweigh any harm to the significance of the Scheduled Monument brought about by changes to its setting.
CUL-06 Cultural Heritage	Cumulative Impacts	Whether the cumulative impacts detailed in **6.2.13 Environmental Statement - Chapter 13_Cultural Heritage [APP-051]** are considered acceptable.

5.4 Matters Not Agreed (Draft DCO)

Table 5.4

Main Topic	Sub-topic	Details of Matters Not Agreed
DCO-01 General	Schedule 17	**WLDC:** WLDC maintains a strong objection to Schedule 17 as currently drafted. The timeframe provided for, with a deemed consent provision on the expiry of that period, is inadequate to enable a sufficient assessment of complex information for determination in the public interest. As information relating to EIA development, WLDC will be relying upon consultation responses from statutory consultees which will be challenging to receive in the proposed timeframes. It is highly likely that WLDC will receive significant amount of complex submission relating to EIA development for multiple projects. This burden will prevent challenges for the determination of each submission and will unacceptably reduce the ability of WLDC to make a considered and informed decision on matters essential to ensure the impacts of the schemes are acceptable. **Applicant:** The Applicant considers the drafting to be reasonable and acceptable, and considers that it represents an appropriate balance between providing the local authority with sufficient time to consider the application, in the context of the urgent need to deliver low carbon energy infrastructure.

5.5 Matters Not Agreed (Landscape and Visual Impact)

Table 5.5

Main Topic	Sub-topic	Details of Matters Not Agreed
LAN-05 Landscape and Visual Impacts	Assessment and overall conclusions	**WLDC:** WLDC considers the assessment erroneously applies the methodology. The adverse impact on landscape character has been understated. The project results in an extensive change to land use over a larger geographical area (as a consequence of poor project design). The introduction of alien structures within he rural landscape character will result in an urbanising effect resulting in definite and adverse impacts/changes. It appears to WLDC that the assessment has been 'sliced' into separate sections for the purpose of the assessment, resulting in the cutting down of the project into smaller elements and Landscape Character Areas. This approach affects the assessed significance of the impact on Landscape Character as a result of the whole scheme when the disparate sections are put together. The impacts on a number of character areas (in solus and cumulatively with other projects) result will affect the Regional Landscape Areas as whole, not just local. It is unclear how the applicant justifies only 'negligible' or 'minor adverse' in early years construction when impacts will be experienced over a wider area and it will take many years for mitigation to be established. It is disagreed that to have large, multiple dispersed sites across a very wide geographical area minimises impacts and results in a beneficial impact. The effect will be significant adverse landscape character impacts (changes to the existing baseline) across a very wide area that

Main Topic	Sub-topic	Details of Matters Not Agreed
		would be minimised through the adoption of good project design principles that avoid such disaggregation. The screening of the project through vegetation will not ameliorate the significant impact upon the character of the landscape and its defining fabric (large scale rural agricultural fields). The LVIA assessment has not been updated to provide an assessment of the increase of the project lifespan by 20 years (50%) and does not follow the GLVIA methodology as a consequence. WLDC disagrees with the applicant's reliance upon the screening of the development to conclude that there are 'beneficial' impacts. The project will not be whole screened across its entirety and communities will experience adverse visual impacts sequentially across a wide geographical area. WLDC disagrees with the conclusions reached in the assessment. **Applicant:** The Applicant does not consider that it is necessary to create a single contiguous site in order to provide a well-designed scheme that minimises environmental impacts. Section 6.4 of the Planning Statement shows that the Scheme has been subject to a detailed and sensitive iterative design process. This has taken account of the context and features of the land within the Order limits, nearby sensitive receptors and assets, information emerging from environmental surveys, feedback from stakeholders, and opportunities and constraints in order to develop a good design that balances the need to maximise the energy generation capacity of the Scheme, with the avoidance and mitigation of impacts, and provision of environmental and other enhancements, where practicable. **ES Chapter 5: Alternatives and Design Evolution [APP-043]** and the **Design and Access Statement [APP-314** and **APP-315]** detail how the Sites were refined following detailed ALC assessment. The **Design and Access Statement [APP-314** and **APP-315]** sets out design objectives for the Scheme and Table 4.1 sets how each of the Scheme's

Main Topic	Sub-topic	Details of Matters Not Agreed
		design objectives are addressed through the proposed design measures, and how these measures will be secured in the DCO application. In addition, the **Concept Design Parameters [REP5-094]** sets out design parameters and principles that apply across the sites. The LVIA Methodology was prepared in line with the approach advocated by the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition and was agreed with LCC at the series of workshops, as set out in in **6.3.8.4 Environmental Statement - Appendix 8.4 Consultation [APP-075].** The LVIA correctly applies the Methodology and is considered robust. The LVIA includes an assessment of landscape effects at a range of scales, including a finer grain landscape assessment that includes the Sites, Cable Routes and Substations, their immediate area and the wider landscape setting. This finer grained assessment considers individual contributors under the topics of land use, topography, communications and infrastructure, settlement, industry, commerce and leisure, public rights of way and access, Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens and Ancient Woodlands and natural designations. The assessment and evaluation of the potential impacts and effects of these individual contributors is set out within Appendix 8.2 **[APP-073]** and Appendix 8.3 **[APP-074]** of the LVIA. It is considered that although the Scheme comprises a series of independent parcels of land or Sites, they are set within an extensive agricultural landscape. With large tracts of land between each parcel, each is set apart by their associated features such as robust hedgerows, woodland and tree cover, intervening settlements and the road and rail infrastructure. The Scheme is also offset from all key receptors such as settlement edges, individual residential properties, PRoW and transport routes which further assist with its assimilation and dispersion across the landscape. The discrete parcels of land in the Scheme are placed so far apart that the Scheme would not be perceived in its entirety and the solar panels are distributed 'in and amongst' the landscape features allowing them to help assimilate into the landscape to a comfortable degree. The provision of a solar scheme with discrete parcels of land is therefore a more favourable approach than having a single large site, as it allows for a distributed and less obtrusive

Main Topic	Sub-topic	Details of Matters Not Agreed
		deployment of the solar panels. The presence of the intervening landscape also provides scope for areas of mitigation and the ability to build upon the connectivity of green infrastructure and ecology and nature conservation and retain the existing landscape pattern. Please refer to the LVIA **[APP-046]** specifically Table 8.21 which sets out the strategic approach to the landscape design parameters that have been adopted in the process of developing the environmental masterplan and associated landscape mitigation measures. These measures are particularly suited to a series of separate sites for the following reasons. **Visual Buffers in Low-Lying Areas:** The low-lying areas between the separate Sites are effective as visual buffers on a horizontal plane. This likely helps in reducing the visual impacts of the panels. **Existing Vegetation Network:** The intermediary areas between the separate Sites boast a strong network of existing vegetation providing structural benefits to the landscape. The existing vegetation also acts as a backdrop for the panels and helps them integrate, particularly in views towards the horizon. **Watercourse Integration:** The watercourses are noted as distinct features in the landscape, and careful use of scattered tree and shrub planting helps reinforce their presence in a generous open context while setting panels back. **New Planting and Green Infrastructure:** A key policy objective is the incorporation of new planting and green infrastructure in all landscape mitigation measures. The receiving landscape is designed to allow space for such green infrastructure between areas. **Open Character and Celebration of the Landscape:** The areas between the separate Sites provide open character. Whilst this may not be a requirement in all locations, the character of these areas can be celebrated, emphasizing the importance of preserving these unique landscape qualities.

Main Topic	Sub-topic	Details of Matters Not Agreed
		Buffering of Public Rights of Way: Public rights of way are buffered, maintaining accessibility while minimising the impact of the panels along these routes. **Scope for extended appreciation of the landscape:** The areas between the Sites also provide scope for extended enjoyment of the landscape in these areas either through interpretation, access or exponentially. **Retaining and Enhancing Time Depth:** The time depth within the landscape involves considering historical and cultural aspects such as the setting of settlements and the views of churches. The receiving landscape between the Sites provides scope to preserve and enhance the time depth of the landscape. Where visible from within the wider landscape, the new planting would reinforce the well layered landscape with a backdrop of wooded vegetation in places on the horizon. Both new and existing vegetation would have established and begun to mature, creating a much stronger structure to the landscape locally, retaining and enhancing the overall character of the area. Adverse visual effects are typically associated with changes to the nature of views as a consequence of elements of the infrastructure being introduced into the view. Significant adverse effects generally occur where a receptor is within close proximity to the development allowing for direct views of the array or an overall appreciation of the array locally to the receptor. The **8.2.3 Review of Likely Significant Effects at 60 Years [REP1-060]** sets out the implications of an up to 60-year operational period. The LVIA does not identify any Beneficial Visual effects associated with the Scheme during construction, operation or decommissioning at any point in time. Additionally, no cumulative beneficial visual effects are identified between the Scheme and the other Cumulative Developments. More detail is provided within **6.3.8.2 Environmental Statement - Appendix 8.2 Assessment of Potential Landscape Effects [APP-073], 6.3.8.3 Environmental Statement - Appendix 8.3**

Main Topic	Sub-topic	Details of Matters Not Agreed
		Assessment of Potential Visual Effects [APP-074] and within the **Supplementary Landscape and Visual Effects Tables [REP1-058** and **REP1-059]**.
LAN-06 Landscape and Visal Impacts	Landscape character impacts	**WLDC:** The adverse impact on landscape character has been understated. The project results in an extensive change to land use over a larger geographical area (as a consequence of poor project design). The introduction of alien structures within the rural landscape character will result in an urbanising effect resulting in definite and adverse impacts/changes. It appears to WLDC that the assessment has been 'sliced' into separate sections for the purpose of the assessment, resulting in the cutting down of the project into smaller elements and Landscape Character Areas. This approach affects the assessed significance of the impact on Landscape Character as a result of the whole scheme when the disparate sections are put together. The impacts on a number of character areas (in solus and cumulatively with other projects) result will affect the Regional Landscape Areas as whole, not just local. It is unclear how the applicant justifies only 'negligible' or 'minor adverse' in early years construction when impacts will be experienced over a wider area and it will take many years for mitigation to be established. It is disagreed that to have large, multiple dispersed sites across a very wide geographical area minimises impacts and results in a beneficial impact. The effect will be significant adverse landscape character impacts (changes to the existing baseline) across a very wide area that would be minimised through the adoption of good project design principles that avoid such disaggregation.

Main Topic	Sub-topic	Details of Matters Not Agreed
		The screening of the project through vegetation will not ameliorate the significant impact upon the character of the landscape and its defining fabric (large scale rural agricultural fields). **Applicant:** See response to LAN-05 above.
LAN-07 Landscape and Visal Impacts	Assessment conclusions	**WLDC:** It is disagreed that to have large, multiple dispersed sites across a very wide geographical area minimises impacts and results in a beneficial impact. The effect will be significant adverse landscape character impacts (changes to the existing baseline) across a very wide area that would be minimised through the adoption of good project design principles that avoid such disaggregation. The dispersal of several large solar sites across the landscape will have a significant visual effect for receptors experiencing the wider landscape (i.e. travelling through it). It increases the number of receptors affected and significantly increases the ZTV, capturing a wider scope of harmful impacts. **Applicant:** Whilst intrinsically connected, LVIA involves the separate assessment of effects on landscape (landscape character, landscape fabric) and effects on the visual resource (views experienced by people) The West Burton Solar Project is considered to lead to adverse and neutral landscape effects during Construction and Year 1 phases of the Scheme, but by Year 15, following establishment of the proposed mitigation and landscape enhancement planting, effects on certain receptors

Main Topic	Sub-topic	Details of Matters Not Agreed
		are considered beneficial, but only ever at most, minor. No Significant (adverse or beneficial) In-Combination effects are identified. Beneficial Landscape effects are derived from the significant amount of landscaping provided by the environmental masterplan. This new landscaping has been designed to build upon and positively respond to the aims and management guidelines of the Regional and Local Landscape Character Assessments. For example, the planting of large blocks of woodland have been avoided, instead native woodland shelter belts and individual trees have been utilised to support the existing character of this area. Please refer to the LVIA **[APP-046]** specifically Table 8.21 which sets out the strategic approach to the landscape design parameters that have been adopted in the process of developing the environmental masterplan and associated landscape mitigation measures. These measures are particularly suited to a series of separate sites for the following reasons. **Visual Buffers in Low-Lying Areas:** The low-lying areas between the separate Sites are effective as visual buffers on a horizontal plane. This likely helps in reducing the visual impacts of the panels. **Existing Vegetation Network:** The intermediary areas between the separate Sites boast a strong network of existing vegetation providing structural benefits to the landscape. The existing vegetation also acts as a backdrop for the panels and helps them integrate, particularly in views towards the horizon. **Watercourse Integration:** The watercourses are noted as distinct features in the landscape, and careful use of scattered tree and shrub planting helps reinforce their presence in a generous open context while setting panels back. **New Planting and Green Infrastructure:** A key policy objective is the incorporation of new planting and green infrastructure in all landscape mitigation measures. The receiving landscape is designed to allow space for such green infrastructure between areas.

Main Topic	Sub-topic	Details of Matters Not Agreed
		Open Character and Celebration of the Landscape: The areas between the separate Sites provide open character. Whilst this may not be a requirement in all locations, the character of these areas can be celebrated, emphasizing the importance of preserving these unique landscape qualities. **Buffering of Public Rights of Way:** Public rights of way are buffered, maintaining accessibility while minimising the impact of the panels along these routes. **Scope for extended appreciation of the landscape:** The areas between the Sites also provide scope for extended enjoyment of the landscape in these areas either through interpretation, access or exponentially. **Retaining and Enhancing Time Depth:** The time depth within the landscape involves considering historical and cultural aspects such as the setting of settlements and the views of churches. The receiving landscape between the Sites provides scope to preserve and enhance the time depth of the landscape. Where visible from within the wider landscape, the new planting would reinforce the well layered landscape with a backdrop of wooded vegetation in places on the horizon. Both new and existing vegetation would have established and begun to mature, creating a much stronger structure to the landscape locally, retaining and enhancing the overall character of the area. Adverse visual effects are typically associated with changes to the nature of views as a consequence of elements of the infrastructure being introduced into the view. Significant adverse effects generally occur where a receptor is within close proximity to the development allowing for direct views of the array or an overall appreciation of the array locally to the receptor. It is considered that although the Scheme comprises a series of independent parcels of land or Sites, they are set within an extensive agricultural landscape. With large tracts of land between each parcel, each is set apart by their associated features such as robust hedgerows, woodland and tree cover, intervening settlements and the road and rail infrastructure. The Scheme is also

Main Topic	Sub-topic	Details of Matters Not Agreed
		offset from all key receptors such as settlement edges, individual residential properties, PRoW and transport routes which further assist with its assimilation and dispersion across the landscape. The discrete parcels of land in the Scheme are placed so far apart that the Scheme would not be perceived in its entirety and the solar panels are distributed 'in and amongst' the landscape features allowing them to help assimilate into the landscape to a comfortable degree. The provision of a solar scheme with discrete parcels of land is therefore a more favourable approach than having a single large site, as it allows for a distributed and less obtrusive deployment of the solar panels. The presence of the intervening landscape also provides scope for areas of mitigation and the ability to build upon the connectivity of green infrastructure and ecology and nature conservation and retain the existing landscape pattern.
LAN-08 Landscape and Visual Impacts	In combination with other projects.	**WLDC:** The cumulative impacts of West Burton Solar Project with Gate Burton Energy Park, Cottam Solar Project and Tillbridge Solar Project are a key concern for WLDC. The scale of the projects, in isolation as well as cumulatively, will give rise to significant environmental impacts that will require scrutiny and assessment by WLDC and should be a key focus of the examination phase. The cumulative impacts of West Burton Solar Project with Gate Burton Energy Park and Cottam Solar Project are of particular importance as these projects have been examined concurrently under the PA2008 and decision making will be similar (i.e. all three projects could be considered for determination at the same time or in close timescales_. It is therefore essential that consistent information and evidence is presented at all three examinations to enable a fair and consistent recommendation (and decision) to be made. Tillbridge Solar Project is expected to be submitted in Q2 2024 , with more detailed project information becoming public prior to the Cottam Solar Park being determined, including its 'acceptance' for examination. WLCDs view is that all current environmental information must be before a decision maker at the point a decision is made and the emergence of the Tillbridge Solar Project should be accounted for in cumulative assessments.

Main Topic	Sub-topic	Details of Matters Not Agreed
		Cumulative impacts of concern will relate to construction, operational and decommissioning impacts across a range of matters including, *inter alia,* landscape and visual effects, land use (loss of agricultural land), public access and recreation, noise, traffic and transport, cultural heritage and ecology. WLDC maintain significant concerns regarding the approach to cumulative assessment. The concern relates not to outcomes of the applied methodology of assessing the scenarios of cumulative projects together being constructed either all at the same time or in sequence, but that there is no assessment of the potential combinations between the projects. WLDC considers it essential that the combinations of each cumulative project are understood and assessed so that that ExA and the Secretary of State can reach sound conclusion on NSIPs that are all being examined at the same time and situated in the same locality. At present, the only cumulative scenario that can be considered for the purpose of decision making is one where all projects are consented. There is no assessment of how each combination of projects perform (e.g. 2 projects together) WLDC are concerned that, if all DCO applications are considered individually without proper regard to the cumulative impacts and/or only in a scenario where all cumulative projects are consented, they may all be considered acceptable as isolated schemes, but with no consideration of whether there is a 'tipping point' from acceptability into unacceptability. This approach to decision making is flawed as it would allow projects to progress that could have unacceptable cumulative impacts with each other. WLDC's strong view is that, in order for the decision maker to have adequate information before them to make a sound decision, a cumulative assessment that addresses the following combinations should be provided as a minimum: • West Burton + Gate Burton • West Burton + Cottam

Main Topic	Sub-topic	Details of Matters Not Agreed
		• West Burton + Tillbridge • West Burton + Gate Burton + Cottam • West Burton + Gate Burton + Tillbridge • West Burton + Cottam + Tillbridge • West Burton + Gate Burton + Cottam + Tillbridge Unless such assessments are carried out, there is no ability for the decision maker to determine whether a combination of two projects could be acceptable cumulatively; they could only consider the total cumulative impacts of all projects that form the assessment. Should the cumulative impacts of all projects be concluded to be unacceptable, WLDC is unclear about how the decision maker determines which project(s) influence that unacceptable conclusion the greatest. WLDC are therefore concerned about whether the decision maker is able to conclude a single DCO application is unacceptable based upon its cumulative impacts and, if the cumulative situation was concluded to be unacceptable, the current assessment does not allow for a decision where two of the project are considered to be acceptable. The reasoning behind WLDC's concern is triggered by the overlapping nature of cumulative projects, where by each ExA is assessing the single project in front of them only, but that none of the application are consented, and may be determined at the same time by the Secretary of State. WLDC reiterated its request for an assessment of various combinations of projects to be carried out and not just a reliance upon a 'worst case' assessment of all projects taken together. WLDCs position is that, in the event that all three of the current projects in examination (West Burton, Gate Burton and Cottam) are determined at the same time by the Secretary of State, the environmental information provided only allows for three decision options to be made: i. To grant consent for a single project only; or

Main Topic	Sub-topic	Details of Matters Not Agreed
		ii. To grant consent for all three projects; or iii. To refuse consent for all three projects. WLDC have consistently requested that the cumulative assessments for all projects assess the various combinations between them. Such an assessment would allow the decision maker, in the event that they find all three projects unacceptable, to consider whether two projects could be granted. The cumulative assessment for the West Burton Solar Project has not properly considered and explained its conclusions for the 60 year lifespan for Gate Burton, Cottam and west Burton cumulatively. There is no proper reassessment to explain how the additional 20 year lifespan proposed mid-examination for Cottam and West Burton has been dealt with, including what weight has been given to an additional 20 years period. Based upon the current approach, such a decision is unable to be made due to the lack of environmental assessment to demonstrate the comparative impacts between each combination to allow a reasoned judgement to be made. WLDC maintain objections to the cumulative assessment. **Applicant:** The Applicant is confident that the implications of the Scheme lifetime being up to a maximum of 60 years is suitably set out in **WB6.2.23_B Summary of Significant Effects Revision B [REP3-010]** and **8.2.3 Review of Likely Significant Effects at 60 Years [REP1-060]**. The methodology for how each topic has comparatively assessed the likely significant effects of a 40-year Scheme versus a 60-year Scheme are explained in **[REP1-060]**. As noted in the Applicant's response to agenda item 3b in **Written Summary of the Applicant's Oral Submissions & Responses at Issue Specific Hearing 2 [REP4-067]**, the Applicant confirmed that Chapter 2 of the ES **[APP-040]** sets out the Rochdale Envelope approach and how

Main Topic	Sub-topic	Details of Matters Not Agreed
		the Applicant has complied with PINS Advice Note 9. The assessment is a reasonable worst case assessed based on information available, and foreseeable circumstances, rather than the absolute worst case that is theoretically possible. Article 5(1) of the **WB3.1_~~G~~H Draft Development Consent Order Revision ~~G [EX6~~H [EX7/WB3.1_~~G~~H]** permits the Applicant to maintain the 'authorised development' Article 5(3) does not permit the carrying out of works that are likely to give rise to any materially new or materially different effects that have not been assessed in the environmental statement.

5.6 Matters Not Agreed (Noise and Vibration)

Table 5.6

Main Topic	Sub-topic	Details of Matters Not Agreed
NOI-15 Noise and Vibration	Whether the effects of noise and vibration detailed in Chapter 15: Noise and Vibration of the Environmental Statement [APP-053] and Appendix 15.3 [APP-131] from the construction and operational phases of the Scheme do not result in a significant impact and are acceptable	WLDC: WLDC consider that whilst the outcomes of the EIA process are agreed, negative impacts as a consequence of noise and vibration will still be experienced. Even though below the EIA threshold of 'significant', the impacts must still be weighed as a negative in the planning balance. WLDC would have wished to see more details on the following provided: • The co-ordinated management of noise and vibration (including dust) • Operational phase vibration effects have not been assessed despite being referenced in the Scoping Opinion. • No night-time construction is assessed – please clarify that no working will occur at night-time and explain how the cable construction that intersects the railway will be carried out during day-time hours. • Clarify the piling methodology to be used (is a percussive method to be used and will it be operated with a steady-state or start-up/run down conditions). • Please provide further details on the sound sources considered in the operational phase assessment. • Provide details of uncertainties in the assessment as required by BS4142. • Provide further details on the proposed acoustic louvres required to mitigate impacts. **Applicant:** *'The co-ordinated management of noise and vibration (including dust)'*

Main Topic	Sub-topic	Details of Matters Not Agreed
		The **WB7.1_D Outline Construction Environmental Management Plan Revision D [~~EX6/WB7.1_D~~REP6-021]** considers noise, vibration and dust. '*Operational phase vibration effects have not been assessed despite being referenced in the Scoping Opinion'*. Operational vibration was scoped out of the ES and agreed. The proposed electrical equipment will not emit significant levels of vibration and therefore, vibration levels will be imperceptible at the nearest receptors and also at the site boundary. *'No night-time construction is assessed – please clarify that no working will occur at night-time and explain how the cable construction that intersects the railway will be carried out during day-time hours*.' As set out in the **WB7.1_D Outline Construction Environmental Management Plan Revision D [~~EX6/WB7.1_D~~REP6-021]** paragraph 2.4.1, night time working may be required for cable construction works in public highways or HDD activities. Table 3.6 details a hierarchy of mitigation measures that will be employed to minimise disruption. *'Clarify the piling methodology to be used (is a percussive method to be used and will it be operated with a steady-state or start-up/run down conditions).'* Vibratory piling has been assumed in the noise and vibration chapter as stated in Section 15.4 of **Chapter 15: Noise and vibration [APP-053]** *'Please provide further details on the sound sources considered in the operational phase assessment'* Operational noise associated with the Scheme results in moderate/minor residual adverse impact and is therefore not considered significant for the purposes of the EIA Regulations, as discussed in Section 15.7 of **Chapter 15: Noise and Vibration [APP–053].** *'Provide details of uncertainties in the assessment as required by BS4142.'*

Main Topic	Sub-topic	Details of Matters Not Agreed
		BS4142:2014+A1:2019 is relevant to operational noise. Section 15.4 of Noise and Vibration Environmental Statement (ES) chapter **[APP-053]** refers to, and applies guidance other than BS4142:2014+A1:2019, see, for example, paragraphs 15.4.34 and 15.4.39, which apply the Noise Policy Statement for England, Planning Practice Guidance – Noise and Association of Noise Consultants (ANC) Technical Note on BS 4142:2014+A1:2019. Paragraph 15.11.3 notes that alternative guidance has been used to assess noise impacts, being absolute noise levels created by the Scheme. Accordingly, the Applicant has not limited its assessment to BS4142:2014+A1:2019. re-iterates that Chapter 15: Noise and Vibration of the Environmental Statement **[APP-053]** concludes that, with the implementation of mitigation, no likely significant adverse effects are anticipated resulting from noise during the construction, operation and maintenance, and decommissioning of the Scheme. All assessments have been undertaken with plant operating at 100% capacity and therefore representing the worst-case scenario. In reality, noise levels as a result of the Scheme will generally be lower than those predicted. Noise impact has been assessed in accordance with current British Standards. *'Provide further details on the proposed acoustic louvres required to mitigate impacts.'* Acoustic louvres were modelled to provide broadband attenuation of at least 10 dB. The performance of acoustic louvres will very between manufacturers. However, a generic acoustic louvre was utilised in the noise model and a reduction of 10dB was achieved. It is considered that a 10dB reduction is readily achievable and is not considered to be a constraint regarding embedded mitigation. See also, additional information in Appendix A to this Statement of Common Ground: 784-B031437 West Burton Solar Project Response' The applicant's response on the specification of the acoustic louvres provides octave band noise reduction data for an acoustic louvre provided by Wakefield Acoustics. The example louvre

Main Topic	Sub-topic	Details of Matters Not Agreed
		provided will comfortably meet the noise reduction (10dB) specified in the ES chapter, the octave band data provided confirms that the 4000Hz tone will also be reduced sufficiently. Details of construction of the louvres is provided in the technical data sheet appended to the additional information document referenced above.

5.7 Matters Not Agreed (Principle of Development/General)

Table 5.7

Topic	Sub-topic	Details of Matters Not Agreed
PD-05 Principle of development	Policy compliance Compliance with NPS EN-1 and EN-3, and the adopted development plan.	**WLDC:** Deems the scheme to fail to accord with the National Policy Statements EN-1 and EN-3, and fails to accord with the adopted Central Lincolnshire Local Plan 2023. The key matters of non-compliance are: • Project site selection, design and non-efficient use of land. • Substantial harm to the Stow Park medieval bishop's palace and deer park • Landscape visual effects • Landscape character effects • Insufficient information to ensure the co-ordination of construction impacts where two or more of the nearby NSIP applications. • Insufficient assessment of the impact of the project (in solus and cumulatively with other projects) on the wider impact of the loss of agricultural activity on the wider agricultural sector and supply chain. • Lack of guaranteed 'availability' of land for the production of food. **Applicant:** The **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D]** has been revised to align with the latest national policy position. Appendix 3 of the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D]** sets out the modifications to the November 2023 NPSs and outlines the Scheme's compliance to these revisions.

Topic	Sub-topic	Details of Matters Not Agreed
		Section 1 of Appendix 4 of the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~CD]** sets out the accordance of the Schem to the Central Lincolnshire Local Plan 2023.
PD-06 Principle of development	Project Components Whether the siting of the individual project components, as set out in the draft Development Consent Order (dDCO) **[~~EX6~~EX7/WB3.1_~~G~~H]** and Design and Access Statement **[APP-314** to **APP-315]**, is acceptable.	**WLDC** WLDC considers the project layout to be contrary to policy and unacceptable. This is due to the project representing poor design, resulting in the highly inefficient use of land that delivers a project that has multiple ad-hoc areas of infrastructure (included associated development such as converter stations) and construction access points, cable lengths and internal access roads. The impacts are that the project exerts significant adverse impacts across a wide geographical area, affecting a wide range of communities and being experienced for a significant distance when travelling through the landscape. **Applicant** The Applicant considers the project layout to be acceptable and has provided responses in relation to West Lindsey DC's comments on siting, design and layout at 2.2 of **Applicant Responses to Local Impact Reports [REP3-037]** and at WLDC-11-WLDC-19 of **Applicant's Responses to Written Representations Part 1 [REP3-034]**.
PD-07 Principle of development	Decision making / Cumulative Assessment General approach to assessment – methodology & implications for decision making	**WLDC:** WLDC considers the scope of the EIA should include an assessment of the various scenarios that could occur through a scenario of more than one, but fewer than all of the projects assessed on a cumulative basis. In the event that all three of the current projects in examination (West Burton, Gate Burton and Cottam are determined at the same time by the Secretary of State, WLDC contend that, due to the approach taken to the cumulative assessment, the

Topic	Sub-topic	Details of Matters Not Agreed
		environmental information provided only allows the Secretary of State as decision maker to consider three decision options to be made: i. To grant consent for a single project only; or ii. To grant consent for all three projects; or iii. To refuse consent for all three projects. **Applicant:** The Applicant disagrees with WDLC's position. There is no need to cumulatively assess the various potential combination of projects as the Applicant has assessed the worst case. In the event that the Secretary of State considers that the cumulative significant effects of all three projects is not acceptable in the planning balance, they can request further information during the decision making period to establish whether the cumulative significant effects of only two of the projects would be acceptable. In any event, the Applicant's position is that the benefits of the Scheme outweigh the significant cumulative effects identified. The approach taken to the cumulative assessment is set out in the **Environmental Statement [APP-038-APP-061; REP1-012; REP3-010; ~~EX6/WB6.5_B~~REP6-011]**, **Report on the Interrelationships with other NSIP's Revision D [~~EX6/WB8.1.9_D~~REP6-015]** the **Technical Note on Cumulative Effects of Additional Scheme Revision ~~A [REP5-030~~B [EX7/WB8.2.5_B]**.
PD-08 Principle of development	Cumulative Assessment The methodology and conclusions across NSIP applications;	**WLDC:** WLDC considers the JRI to be a helpful summary of reported assessment but serves no useful planning purpose beyond that. It cannot be relied upon as a control document or a mechanism to deliver mitigation.

Topic	Sub-topic	Details of Matters Not Agreed
	The role of the Joint Report on Interrelationships as an assessment.	There are no binding commitments to co-operate with other developers. The JRI demonstrates that variance in cumulative assessment conclusions, highlighting the unreliability of preferring one assessment over another. No attempt has been made to explain the variations. To simple conclude the differences are due to 'professional judgement' is unacceptable and required more detailed reasoning and justification. Due to the absence of a cumulative assessment there remains inadequate environmental information upon which to make a sound decision on the likely cumulative impacts with other projects awaiting determination and/or due to be submitted shortly. **Applicant:** The Applicant has responded to WLDC's Written Representation **[REP1A-004]** at Section 2.4 of **WB8.1.17 Response to Written Representations at Deadline 1 Part 1 [REP3-034]**. The Applicant reiterates its position that the assessment of cumulative effects in the **Environmental Statement [APP-039 to APP-061, REP1-012, REP3-010]**, provides a sufficient level of detail to satisfy EIA Regulations 2017 Schedule 3 paragraph 1(b) and paragraph 4.2.3 of the recently adopted NPS EN-1 (Nov 2023). The Applicant is also confident that the approach is consistent with the provisions set out in NPS EN-1 (2011) as referred to by the ExA. The Applicant's approach has been to assess the worst-case scenario of all NSIPs within the assessment area coming forward, and as such, to provide additional assessment of each combination of schemes would serve no additional purpose to the Secretary of State for determining the likely significant cumulative effects of any combination of cumulative NSIP schemes. As such, the Applicant does not intend to provide this additional assessment as requested by WLDC.

Topic	Sub-topic	Details of Matters Not Agreed
PD-09 Principle of Development	Increase in lifespan from 40 to 60 years (proposed during examination) Assessment of the increase in 50% lifespan in the ES	**WLDC:** It is not accepted that the assessed impacts will remain unchanged with an increase in lifespan of 20 years to a total of 60 years. The applicant has not carried out an adequate assessment of the likely impact of the extension of the project lifespan of 20 years. It is noted that the ES chapter 23 has been updated, but the table that forms that chapter neither carried out an assessment and its function is to summarise the topic specific ES chapters which has equally not been updated. The ES chapters, particularly chapter 8 LVIA, does not provide an explanation of how the judgements of have been reached. Such an approach fails to follow the GLVIA methodology, particularly in terms how the assessor has treated the assessment of the duration of affects, and what weight is given to reversibility of effects over an period in excess of half a century. WLDC maintains concerns regarding the likely failure rate of panels (beyond a typical 25 year warranty) and BESS infrastructure, particularly during the additional 20 year lifespan now being sought by the applicant following the submission of the application. The applicant states that the increase in the lifespan would result in an increase in the amount of the project panel requiring replacement to 24% of the overall project. This could equate to around 100Ha of the project being subject to replacement (re-construction) which would constitute an NSIP-scale project in its own right. This replacement activity is likely to give rise to significant environmental effects (especially as the frequency and extent of the replacement is unknown), particularly in relation to traffic, noise, air quality and waste. Should all projects currently in the planning system be consented and require the same ratio of 'replacement' and at similar times in the operational cycle of the projects, the impacts on the environment could be significant and adverse. This scenario has not been adequately assessed or communicated within the application documents (both the ES in reporting likely significant environmental

Topic	Sub-topic	Details of Matters Not Agreed
		impacts and in the Planning Statement in taking them into account in the planning balance). **Applicant:** The Applicant is confident that the implications of the Scheme lifetime being up to a maximum of 60 years is suitably set out in **WB6.2.23_B Summary of Significant Effects Revision B [REP3-010]** and **8.2.3 Review of Likely Significant Effects at 60 Years [REP1-060]**. The methodology for how each topic has comparatively assessed the likely significant effects of a 40-year Scheme versus a 60-year Scheme are explained in **[REP1-060]**. As noted in the Applicant's response to agenda item 3b in Written Summary of the **Applicant's Oral Submissions & Responses at Issue Specific Hearing 2 [REP4-067]**, the Applicant confirmed that Chapter 2 of the ES **[APP-040]** sets out the Rochdale Envelope approach and how the Applicant has complied with PINS Advice Note 9. The assessment is a reasonable worst case assessed based on information available, and foreseeable circumstances, rather than the absolute worst case that is theoretically possible. Article 5(1) of the **WB3.1_~~G~~H Draft Development Consent Order Revision ~~G~~ [~~EX6~~H [EX7/WB3.1_~~G~~H]** permits the Applicant to maintain the 'authorised development' Article 5(3) does not permit the carrying out of works that are likely to give rise to any materially new or materially different effects that have not been assessed in the environmental statement. The Applicant understand that the "24% replacement figure" referred to by WLDC is derived from the anticipated panel failure (and therefore replacement rate) of 0.4% per annum over a 60 year operational lifetime of the Scheme. The Applicant furthermore refers to Part 2, paragraph 5(3) of the **draft DCO [~~EX6/WB3.1_G~~REP6-004]** which sets out that in regard to maintaining the proposed

Topic	Sub-topic	Details of Matters Not Agreed
		development, the draft DCO "does not authorise the carrying out of any works which are likely to give rise to any materially new or materially different effects that have not been assessed in the environmental statement." Failure to comply would therefore constitute a breach of the DCO which is automatically a criminal offence and thus the Applicant is confident that this will be complied with.

5.8 Matters Not Agreed (Socio-Economics, Tourism and Recreation)

Table 5.8

Main Topic	Sub-topic	Details of Matters Not Agreed
STR-02 Socio-Economics, Tourism and Recreation	Assessment of likely significant effects Impacts on tourism.	**WLDC:** Considers that the project will have a significant negative impact on the local tourism sector, causing damage to its image and recovery. WLDC consider there is a lack of detail and clarity around the in-solus and cumulative assessment with regard to accommodation particularly. WLDC considers the assessment shows that there are insufficient accommodation space in the Local Impact Area during construction, but with limited consequential assessment of the implications of this lack of accommodation. **Applicant:** The assessment of accommodation impacts was based on the Visit England Accommodation Stock Audit 2016, room occupancy rates for England in 2019, and Business Register and Employment Survey Data up to 2019. Data for 2020 and 2021 were not used due to the impact of the COVID -19 pandemic, whilst full year data for 2022 was not available at the time the assessment was published. The assessment of accommodation need is based on a worst-case scenario of 35.8% of the workforce for the Scheme requiring temporary accommodation within the Local Impact Area. The Applicant concurs that there is not sufficient accommodation stock for construction employment to be accommodated without displacement of visitors. The Applicant has therefore assessed the consequential loss of visitor spending as a result of this displacement on the tourism and visitor employment and economic sector. The Applicant has also considered the knock -on consequences of reduction in the desirability of the Local Impact Area for visitors as a

Main Topic	Sub-topic	Details of Matters Not Agreed
		result of the Scheme. The assessment does not determine any significant adverse effects to the tourism and visitor economic sector when assessed in-solus, but does identify a peak cumulative medium-term temporary moderate adverse effect during construction. This is a significant effect, however the Applicant does not consider that this will have significant long-term effects during the operational lifetime of the cumulatively assessed Schemes. The assessment of losses to the agricultural sector identifies a worst-case scenario over the lifetime of each project. As the in -solus and cumulative assessment has not anticipated any significant adverse impacts, a broader assessment of impacts upon the agricultural supply chain was not considered to be proportionate as no additional significant effects are anticipated at any stage of the assessed lifetime of the Scheme. The Applicant considers that it is a reasonable assumption for a similar level of agricultural employment to be reintroduced at the point the Scheme is restored to agricultural use. This is based on the assumption that the current level of employment needed to work the land for agriculture is not likely to be substantially different in the future. Furthermore, the Applicant seeks to reiterate that the farm businesses that are landowners for the Scheme area also have land beyond the Order Limits which will continue to be in agricultural use, and there are some (even if limited) opportunities for some level of continues agricultural (grazing) use on the Sites themselves. Even considering changes to business ownership, or changes to land ownership, the Applicant does not consider that at the end of the Scheme agricultural management of the land would have to be re-established instantaneously or from scratch, and would instead come about as a result of the Scheme land being re-integrated with neighbouring active agricultural activities.
STR-03 Socio-Economics, Tourism and Recreation	Assessment of likely significant effects Impacts on agricultural	**WLDC:** WLDC comment there is no assessment of the wider impacts on the supply-chain within the agricultural sector.

Main Topic	Sub-topic	Details of Matters Not Agreed
	economy and employment.	WLDC considers that an assumption that the agricultural sector and jobs will simply re-establish post-decommissioning is false. **Applicant:** The Applicant has assessed the level of impact on the agricultural economy and employment sector and the assumptions made in its determination of effects both in solus and cumulatively, and at the point of decommissioning and restoration of the land to agricultural use as set out in **Chapter 18 Socio Economics, Tourism and Recreation [APP-056]**. The cumulative assessment of losses to the agricultural sector identifies a total of 38 FTE agricultural jobs lost as a result of the cumulatively assessed projects set out in paragraph 18.10.10 of **Chapter 18 Socio Economics, Tourism and Recreation [APP-056]**. These are determined to be worst-case scenario job losses over the lifetime of each project. This is determined to be a long-term (albeit reversable) moderate-minor adverse and is therefore not significant in EIA terms. The projected economic impact of a loss of 38 FTE jobs in this sector is approximately £1.9million gross value added (GVA) per annum. This is equivalent to a long-term minor adverse effect. Again, this is not significant in EIA terms. The Applicant has not concluded any significant adverse effects to the agricultural economy or employment sector at any point during the Scheme's lifetime in-solus or when assessed cumulatively. As such, it is not considered that there is material harm to this economic sector or that there are substantive barriers to agricultural employment recommencing following the restoration of the land after the Scheme is decommissioned.
STR-04	Health Impact Assessment	**WLDC:** In order to comply with development plan policies, a Health Impact Report should have been submitted with the application.

Main Topic	Sub-topic	Details of Matters Not Agreed
Socio-Economics, Tourism and Recreation		The report is separate to the EIA, as its purpose goes beyond the scope of simply identifying 'likely significant' impacts, to the identification of all potential impact. A HIA would allow the assessor to be more qualitative in its assessment and seek to identify impacts that, although may not be 'significant' in EIA terms, will still be adverse impacts that every effort should be made to mitigate and taken into the overall planning balance. **Applicant:** The "Health Impact Assessment for Planning Applications: Guidance Note" April 2023, is primarily to support policy S54 of the Central Lincolnshire Local Plan (2023) which states the requirements for a Health Impact Assessment for any development over 5 ha in area. Whilst the Applicant understands the Scheme is able to beneficially contribute towards the general themes of health and wellbeing the policy is written to achieve, this policy has not been considered by the Applicant as the policy is aimed almost entirely at TCPA planning applications and requirements at that scale. As the Scheme is an NSIP, the scoping for a HIA is to be determined by PINS. In the **EIA Scoping Opinion [APP-063]**, the Applicant's approach to assessing health and wellbeing impacts was agreed with no requirement made for a separate HIA to be undertaken. The Applicant has submitted **ES Addendum 21.1: Human Health and Wellbeing Effects [REP4-077]** which provides a collation of human health and wellbeing impacts as assessed in the ES, and provides greater detail on non-significant human health and wellbeing effects and how these were identified and mitigated in respect of the technical chapters in the ES to which they pertain. This notwithstanding, the Applicant also wishes to note that whilst we were aware of policy S54 as emerging policy during the submission of the DCO Application, the Central Lincolnshire Local Plan (2023) was not formally adopted until after the DCO Application had been submitted to PINS.

Main Topic	Sub-topic	Details of Matters Not Agreed
STR-05 Socio-Economics, Tourism and Recreation	EIA scope and methodology Cumulative Assessment outcomes	**WLDC:** WLDC consider that the cumulative impacts of projects will have an unacceptable significant negative impact on tourism and socio-economics (agricultural sector). Lack of clarity in the assessment as to what the impacts with other projects will be. **Applicant:** The assessment of cumulative impacts on the tourism sector have been identified on the basis of impacts on visitor accommodation, due to displacement by inbound construction workers requiring temporary accommodation, and subsequent reduction in visitor and tourism spending in the Local Impact Area as a result. The assessment identifies a peak cumulative medium-term temporary moderate adverse effect during construction. Whilst this is a significant effect, it is temporary, and the Applicant believes that the harm to this sector is outweighed by beneficial effects to other sectors as a result of the cumulative construction of the assessed Schemes. Impacts on the tourism sector during the operational lifetime of the cumulatively assessed schemes have been assessed based on professional judgement of the likely impact on desirability of the area for visitors based on impacts on tourism and recreational receptors, and the size of the area directly impacted by the cumulatively assessed Schemes in the Local Impact Area. The assessment of losses to the agricultural sector identifies a worst-case scenario over the lifetime of each project. As the in -solus and cumulative assessment has not anticipated any significant adverse impacts, a broader assessment of impacts upon the agricultural supply chain was not considered to be proportionate as no additional significant effects are anticipated at any stage of the assessed lifetime of the Scheme. The Applicant considers that it is a reasonable assumption for a similar level of agricultural employment to be reintroduced at the point the Scheme is restored to agricultural use. This is based on the assumption that the current level of employment needed to work the land for

Main Topic	Sub-topic	Details of Matters Not Agreed
		agriculture is not likely to be substantially different in the future. Furthermore, the Applicant seeks to reiterate that the farm businesses that are landowners for the Scheme area also have land beyond the Order Limits which will continue to be in agricultural use, and there are some (even if limited) opportunities for some level of continues agricultural (grazing) use on the Sites themselves. Even considering changes to business ownership, or changes to land ownership, the Applicant does not consider that at the end of the Scheme agricultural management of the land would have to be re-established instantaneously or from scratch, and would instead come about as a result of the Scheme land being re-integrated with neighbouring active agricultural activities.
STR-06 Socio-Economics, Tourism and Recreation	Mitigation and enhancement measures Displacement of construction workers.	**WLDC:** Consider clarity is required on likely displacement of construction workers (in solus and cumulatively). Clarification on the implications of a wider displacement of workers upon other technical assessments in the ES (e.g. traffic and transport). WLDC consider lack of mitigation through control documents/management plans to demonstrate how construction activity will be managed (in solus and cumulatively). **Applicant:** The Applicant has set out in paragraphs 18.7.7-8 of **Chapter 18 Socio Economics, Tourism and Recreation [APP-056]** that assumptions surrounding displacement of construction workers has been made in reference to 'ready reckoners' from the Homes & Communities Agency (HCA) Additionality Guide 2014. Due to the flexibility of the labour market in the construction industry, the level of displacement is assumed to be low, and there is therefore an anticipated displacement factor of 25%. In solus, this is set out in Table 18.10, which demonstrates that a 296 FTE construction workforce will displace 74 FTE existing construction jobs, of which 47 FTE jobs are anticipated to be displaced within the Local Impact Area.

Main Topic	Sub-topic	Details of Matters Not Agreed
		The same proportion has been applied cumulatively to generate the 'net construction employment' anticipated for the cumulative assessed schemes in Table 18.25. The Applicant is confident that the mitigation measured as set out in the **Outline Construction Management Plan [~~EX6/WB7.1_D~~REP6-021]** and **Outline Skills, Supply Chain and Employment Plan [~~EX6/WB7.10_B~~REP6-027]** provide suitable mitigation and enhancement measures for socio-economic impacts during construction.

5.9 Matters Not Agreed (Soils and Agriculture)

Table 5.9

Main Topic	Sub-topic	Details of Matters Not Agreed
SOI-05 Soils and Agriculture	'Availability' of land for the production of food The proposal does not enable land to be available for the production of food during operation	**WLDC:** WLDC wishes to draw attention to footnote 62 of the NPPF published in December 2023, which states that "The availability of agricultural land used for food production should be considered alongside other policies in this Framework, when deciding what sites are most appropriate for development." Footnote 62 should be read in conjunction with paragraph 2.10.11 of NPS EN-3 which states that "The Powering Up Britain: Energy Security Plan states that government seeks large scale ground-mounted solar deployment across the UK, looking for development mainly on brownfield, industrial and low and medium grade agricultural land. It sets out that solar and farming can be complimentary and through shared us of land and encourages deployment of solar technology that delivers environmental benefits, with consideration for ongoing food production or environmental improvement." A key link between the two policy requirements is that applicants must demonstrate that the extent to which agricultural land used for food production will be 'available' in the event solar farm development is implemented. Demonstrating 'availability' is essential to meeting the policy expectation of such projects that, at the very least, demonstrate a 'consideration' for ongoing food production. Demonstrating 'availability' goes beyond simply stating that such activities 'could' occur alongside a proposed solar farm development. The policy test is not a theoretical consideration, but a practical one that requires application to genuinely seek to accommodate agricultural activity for food production alongside operational solar farms. It is clear from the application documents that no efforts have been and no mechanisms are in place to allow the land within the order limits to be used for the production of food. The

Main Topic	Sub-topic	Details of Matters Not Agreed
		applicant states that the land 'could' be used for such purposes, but such comments do not demonstrate any genuine commitment to delivering co-use and therefore carry no weight whatsoever. In order to demonstrate compliance with the NPPF and NPS EN-3, the applicant is required to demonstrate that they have considered the areas of land where duel-use 'can' be achieved and to identify mechanisms to enable these deemed compatible uses to co-exist. The applicant has provided no information on whether they have investigated whether there is interest in the agricultural sector to operate alongside the solar farm, and there is no mechanism in the dDCO that requires them to make any such efforts should consent be granted. The applicant states that impacts upon ongoing agricultural operations have been minimised through the use of appropriate design solutions (Planning Statement, Appendix D, p.66), however this is clearly not the case as no attempts have been made to facilitate and enable agricultural operations within the significant areas that host solar panels. The applicants case for causing such harm over a significantly wide area, is that the scale of the project (and subsequent loss of a significant area of agricultural land for the production of food) is underpinned by it being "required in order to provide the 480MW of electricity generation allowed via the grid connection offer from the National Grid.." (Planning Statement, Appendix D, p.28). This reveals the fundamental flaw in the design approach taken by the applicant to the project as a whole and their justification for its significant adverse impacts. The capacity of the connection offer provided by the National Grid is not a design parameter that must be achieved. It has no weight on the design of an energy generating station project (of any technology). It is merely an indication of the capacity available. It is for each project to then be designed based upon a clear set of design objectives, criteria and constraints to deliver a project that demonstrates that impacts have been genuinely minimised. It is these impacts that define the acceptability of a scheme, not the capacity of a grid connection offer.

Main Topic	Sub-topic	Details of Matters Not Agreed
		It is therefore wholly apparent that the applicant has failed to make any genuine attempts to make land within the Order Limits available for the production of food. As proposed, the dDCO does not require the applicant to make any such efforts. The application must therefore be determined on the basis that no land is being made available for food production and no attempts to do so have been made by the applicant. **Applicant:** Footnote 62 of the NPPF states that "The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development". Footnote 62 of the NPPF should be read in the context of NPS EN-3 (November 2023) which recognises that solar farms may be located on agricultural land where necessary (Paragraph 2.10.29). As set out in **WB6.3.5.1 ES Appendix 5.1 Site Selection Assessment [AS-004]**, selection of the Site accounted for agricultural land classification. Paragraph 3.3.30 states that the Scheme maximises the utilisation of low grade, non best and most versatile (BMV) agricultural land with 73.76% of the land being classified as non BMV land. The land required for the Scheme has been demonstrated within **WB6.3.5.1 ES Appendix 5.1 Site Selection Assessment [AS-004]** to perform better than 3 of the assessed Potential Development Areas (PDAs) and equal to the remaining one following the site selection process. Consequently, it has been concluded that there are no obviously more suitable locations for the Scheme within the Search Area. The Applicant has no further additional comments to add regarding the National Planning Policy Framework (NPPF) December 2023 beyond what has already been stated in section 5.5 of the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D].** The Applicant considers that the changes do not change the compliance of the Scheme with the NPPF as assessed in the **Planning Statement [~~EX6~~EX7/WB7.5_~~C~~D].**

5.10 Matters Not Agreed (Transport and Access)

Table 5.10

Main Topic	Sub-topic	Details of Matters Not Agreed
TRA-04 Transport and Access	Cumulative effects	**WLDC:** WLDC consider the design and layout of the project results in multiple access points and the use of more highways to construct and operate the project. The access points are a consequent of the scheme's design and layout, which WLDC considers unacceptable. The benefits of the project could be delivered with fewer such impacts had a better designed project been promoted. The current oCTMP does not provide sufficient detail to demonstrate how construction traffic will be co-ordinated and managed in the event two or more projects are being constructed concurrently. Until an approach to co-ordination is proposed the design and layout of the project results in multiple access points and the use of more highways to construct and operate the project. The access points are a consequent of the scheme's design and layout, which WLDC considers unacceptable. The benefits of the project could be delivered with fewer such impacts had a better designed project been promoted. WLDC consider the current oCTMP does not provide sufficient detail to demonstrate how construction traffic will be co-ordinated and managed in the event two or more projects are being constructed concurrently. Until an approach to co-ordination is proposed which also enables consideration of how to minimise cumulative traffic impacts further, the negative impact of traffic upon the amenity of communities remain unacceptable.

Main Topic	Sub-topic	Details of Matters Not Agreed
		Applicant: As set out in paragraph 7.2 (point xxv) of the **Outline Construction Traffic Management Plan Revision ~~D [REP4-038~~E [EX7/WB6.3.14.2_E]**, a Joint CTMP could be implemented in the event that the construction schedules associated with this Scheme and other schemes in the area overlap. Other Schemes that come forward in the area could be included as appropriate. This is also committed to in the **Joint Report on Interrelationships [~~EX6/WB8.1.9_D~~REP6-015]** between the West Burton, Cottam, Gate Burton and Tillbridge Schemes.

6 Signatories

6.1.1 The above SoCG is agreed between West Burton Solar Project Ltd. (the Applicant) and West Lindsey District Council as specified below.

Duly authorised for and on behalf of **West Burton Solar Project Ltd.**

Name:	Eve Browning
Job Title:	Head of Projects UK
Date:	07/05/2024
Signature:	[redacted]

Duly authorised for and on behalf of **West Lindsey District Council**

Name:	Russell Clarkson
Job Title:	Development Management Team Manager
Date:	07/05/2024
Sign	[redacted]

Appendix A West Burton Solar Project Noise Response

784-B031437 **13th March 2024**

This Noise Comments Response should be read in conjunction with the Statement of Common Ground between the Applicant and West Lindsey District Council. It provides additional information to address the comments made by the Council in its Local Impact Report [REP1A-006]. The Council's comments have been added as "Under Discussion Items within the SoCG".

Tetra Tech Responses in Blue

WLDC Comment WLDC 14.1.1.5

"*It is noted that maps of the short-term and long-term monitoring locations are provided, however, it is unclear how the measured noise levels have been mapped to receptor locations for the impact assessment.* "

Tetra Tech Response WLDC 14.1.1.5

Table 1 below summarises the receptors assessed in the ES chapter and the corresponding monitoring location utilised to provide the existing baseline noise level for West Burton 1.

West Burton 1

Table 1: Assessed Location and Corresponding Monitoring Location – West Burton 1

Location	Monitoring Location
R01	LT1
R02	LT1
R03	LT1
R04	LT1
R05	LT1
R06	LT2
R07	LT2
R08	LT2
R09	LT3
R10	LT3

A description of the monitoring locations for West Burton 1 are presented in Table 2 below.

Table 2: Noise Monitoring Locations – West Burton 1

Ref	Description
LT1	Western boundary of the site
LT2	North of the site, adjacent A1500
LT3	South of the site, adjacent Carlton Lane

The dominant noise sources found in the area include road traffic noise from Broxholme Lane and Carlton Lane.

West Burton 2

Table 3 below summarises the receptors assessed in the ES chapter and the corresponding monitoring location utilised to provide the existing baseline noise level for West Burton 2.

Table 3: Assessed Location and Corresponding Monitoring Location – West Burton 2

Location	Monitoring Location
R01	LT1
R02	LT1
R03	LT2
R04	LT2
R05	LT2
R06	LT2
R07	LT2
R08	LT2
R09	LT2
R10	LT2
R11	LT2
R12	LT1 from WB1
R13	LT1 from WB1
R14	LT1 from WB1
R15	LT1 from WB1
R16	LT4
R17	LT4
R18	LT4
R19	LT4
R20	LT3
R21	LT3

A description of the monitoring locations for West Burton 2 are presented in Table 4 below.

Table 4: Noise Monitoring Locations – West Burton 2

Ref	Description
LT1	North-western boundary of the site
LT2	North-eastern boundary of the site
LT3	South-western boundary of the site
LT4	South of the site, to rear of properties on Sturton Road

The dominant noise sources found in the area include road traffic noise from Broxholme Lane, Cowdale Lane and Sturton Road.

West Burton 3

Table 5 below summarises the receptors assessed in the ES chapter and the corresponding monitoring location utilised to provide the existing baseline noise level for West Burton 3.

Table 5: Assessed Location and Corresponding Monitoring Location – West Burton 3

Location	Monitoring Location
R01	LT1
R02	LT1
R03	LT1
R04	LT1
R05	LT1
R06	LT4
R07	LT3
R08	LT3
R09	LT4
R10	LT4
R11	LT4
R12	LT4
R13	LT3
R14	LT3
R15	LT3
R16	LT3
R17	LT3
R18	LT2
R19	LT2
R20	LT2
R21	LT2
R22	LT2
R23	LT1
R24	LT1

A description of the monitoring locations for West Burton 3 are presented in Table 6 below.

Table 6: Noise Monitoring Locations – West Burton 3

Ref	Description
LT1	Positioned on the Southwest corner of the redline boundary to cover Brampton
LT2	Just off Stow Park Road in the North-western corner of the field located to the East of Spafford close
LT3	On the field boundary adjacent to the railway track North of Cowdale Lane
LT4	Just off Till Bridge Lane on the North Easterly field boundary to the East of Stow Park Road Junction

The ambient noise climate was dominated by Road Traffic Noise throughout the Day, Evening and Night measurements. The main sources of the noise were; Station Road, High Street, Stow Park Lane and Till Bridge Lane.

WLDC Comment NOI-14

"Appropriate types of noise mitigation measures are proposed to control noise emissions from the project, however, the stated performance requirement for the acoustic louvres is ambiguous. Clarification is required to confirm whether the 10dB noise reduction refers to the overall performance of the product or specific frequencies."

Tetra Tech Response NOI-14

Table 10 below presents the typical acoustic performance of an acoustic louvre taken from Wakefield Acoustics Technical data sheet, which can be found appended below.

Table 7: Typical Acoustic Louvre Performance

Louvre	Sound Reduction R_w (dB)	Sound Reduction (dB) at Octave Band Centre Frequency Hz							
		63	125	250	500	1000	2000	4000	8000
WA-ACL-300SB	18	6	6	9	13	20	20	16	15

The following comments were made by WLDC in relation to the Cottam Solar Project. Although the comments have not been put forward in relation to the West Burton project, the applicant has provided responses relating to the West Burton project.

WLDC Comment 1

"*WLDC's maintained concern is that, despite the potential for night-time working, the impacts have not been assessed. The ES relies upon the use of best most practicable means (as defined in Section 72 of the Control of Pollution Act 1974) to minimise noise and vibration effects outside of the assessed hours of work (night-time working). This results in there being no assessment of the likely significant effects that may occur and these impacts are not before the decision maker to take into the planning balance. Due to the potential cumulative situation, receptors may experience these effects from multiple sources (projects and their respective activities) which could give rise to impacts on residential amenity that should be given due weight in the planning balance. The Applicant is acknowledging that noise and vibration impacts during the night-time are likely to occur and that they have not been assessed. Although the Applicant relies upon BS 5228-1:2009 as it is applied in Table 3.6 of the Outline Construction Environmental Management Plan (Rev C) (oCEMP), the 'Potential Impact' only relates to the practical activity and does not provide any assessed impact on receptors in terms of significance. It therefore remains that the impacts of acknowledged night-time working have not been assessed. The oCEMP provides some practical remedy, but is based upon un-assessed impacts and is imprecise as a controlling measure (mitigation).* "

Tetra Tech Response 1

Some works activities may need to occur out of the core working hours/times due to activities requiring to be undertaken continuously (such as horizontal direction drilling (HDD) and cable jointing). Noise mitigation measures are set out within Table 3.6 of the C7.1_D Outline Construction Environmental Management Plan [REP4-042]. These measures include prior notification to be provided to the Local Planning Authority where work outside core hours is necessary.

Furthermore, Table 3.6 of the C7.1_D Outline Construction Environmental Management Plan [REP4-042] will be updated for Deadline 4 to provide additional controls over night-time working; namely a hierarchy of mitigation measures similar to those agreed within the outline Construction Environmental Management Plan for the Gate Burton Solar Project (see EN010131/[REP5-023]) as outlined below.

As requirements and locations for Cable construction activities will not be finalised until contractor is appointed, a hierarchy of mitigation measures is listed below:

a) Where practicable, avoid cable construction works within 500m of residential receptors.
b) Where cable construction activities need to occur within 500m of sensitive receptors, the option for open-cut cable laying will be explored as an alternative to HDD.
c) The potential use of quieter equipment will be explored by the principal contractor.
d) Depending on location, plant and timing of works, noise matting will be installed on Heras fencing around the HDD site boundary to screen receptors from noise emissions. This mitigation could provide 10 dB of attenuation when the noise screen completely hides the sources from the receiver.
e) If any night-time cable construction activities result in noise at nearby sensitive receptors that is predicted to exceed the night-time level of 45 dB $L_{Aeq,T}$, acoustic fencing would be used to screen the affected receptor from HDD noise and reduce noise levels to below 45 dB.

It should be noted that predicted construction noise levels for the cable route have been based on excavating ground and installation of ducts, which, is considered to emit a higher overall noise level than HDD activities. Therefore, when HDD activities are being undertaken, the noise assessment will over-estimate the noise emission.

WLDC Comment 2

"*The matter raised by WLDC relates to information about sound sources considered in the operation phase. This is to enable confirmation of the scope of the assessment and the assumptions applied in the noise modelling. The Applicant's response is to refer to paras. 15.7.63-15.7.70 of ES Chapter 15, however the information sought is not addressed in those paragraphs. To provide more clarity, WLDC seeks confirmation on the following:*

• The number of conversion units, transformers and inverters proposed by the project,

• Clarification on whether the values presented for transformers and inverters include the sound insulation of the conversion unit housing and louvre,

• Supporting evidence that the 'typical' frequency spectra applied to the conversion units, transformers and inverters are appropriate in absence of manufacturers' data (paragraphs 15.7.55, 15.7.58, 15.7.60),

• Clarification that the data presented in Tables 15.25, 15.26 and 15.27 represent the equipment at full capacity.

• The operation phase results tables shown in Appendix 15.3.5 consistently show that the rating levels (specific sound level plus acoustic penalty) are higher at night than during the daytime (i.e. Table

15.3.11, Table 15.3.16, and Table 15.3.21). It is not clear from the Noise and Vibration chapter why the proposed development would emit more noise at night. The tabulated noise levels seem to contradict paragraph 15.7.68, which states that "the night-time noise levels are likely to be substantially lower in practice". Further clarification is required to confirm the level of impact.

• The rationale behind the selection of the background sound levels used in Appendix 15.3.5 remains unclear in this section of the ES and can affect the stated outcomes of the assessment. Paragraphs 15.7.74 and 15.7.78 in the ES chapter state that the rating levels are below 35dB for West Burton 2 and West Burton 3, whereas Appendix 15.3.5 shows rating levels above 35dB (Table 15.3.16, Table 15.3.21). Further clarification is required to confirm the level of impact."

Tetra Tech Response 2

Table 9 below presents the assessed number of plant items across the Schemes.

Table 8: Number of Plant Items

Scheme	Plant item		
	Conversion Units	Transformers	Battery Inverters
West Burton 1	13	3	0
West Burton 2	32	2	0
West Burton 3	53	4	18

The manufacturers sound power level for the conversion units has been assumed to include the conversion unit housing and ventilation louvres.

The frequency spectra applied to the single value sound levels for each item type can be found in the reports supplied by the applicant in the appendix below.

All proposed plant has been assessed operating at full capacity.

The final two points were addressed in the response to the Local Impact Report.

End of Document

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Appendices

INDUSTRIAL NOISE REDUCTION LTD
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[redacted]

Reference: INR/2893C.

Date: May/2019.

Report.

Subject: Noise Survey at Madingley Road Substation, Cambridge.

Noise survey of the substation, prior to a major redevelopment.

Client: UK Power Networks plc.

Prepared by: Richard Redwood C.Eng. MSc. MIOA.
Acoustic Consultant.
Industrial Noise Reduction Ltd.

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[redacted]

Report reference: INR/RR/2893C.
Client: UK Power Networks plc.
Subject: Noise levels at Madingley Road Substation, Cambridge.
Date: May/2019.

1.0 Introduction and Summary.

This report describes a noise survey of the Substation at Madingley Road, Cambridge. The aim was to make a record of the current noise levels prior to an extensive redevelopment of the substation. The sound level measurements were carried out on the 24th/April/2019.

Madingley Road is a main route to and from the City centre. The substation site is set back from the road, on the outskirts of the city, and not far from the M11 motorway. Noise from road traffic was very noticeable all around the site, with L90 (near minimum) levels of around 55dBA in the daytime and 45dBA at the end of the evening (10-30pm).

The substation site is a roughly rectangular compound with a steel paling fence at the boundary. It contains two identical modern transformers which are housed within very substantial brick enclosures. The transformers emit small humming sounds, as is normal, but the hum is very well contained by the enclosures and was not audible outside them. The mean sound level inside the enclosures is practically the same for the two transformers at around 59dBA, and I estimate the sound power level for them is about 70dBA (each). When the attenuation of the enclosure is taken into account, the effective sound power level of each transformer is about 50dBA: a very low figure.

I understand that the demand upon the substation is rising, and it is intended to replace the two transformers with two new ones of higher rating, and located differently. The manufacturer has given a figure for the sound power level of these as 'less than or equal to 86dBA'. The actual sound power level may be lower than the guaranteed maximum, of course, but it appears these transformers could be much noisier than the existing ones are.

The area around the substation site is mostly not residential in nature, but there is a pair of semi detached houses close to the boundary, called Merton Hall Farm Cottages. My calculations indicate that the existing transformers are inaudible at the facade of the Cottages, but the new ones will be clearly audible. If we take the sound power level of each transformer to be 86dBA, they will give a sound level of about 50dBA at the facade, and the sound will be strongly tonal. When this situation is rated using the method of BS4142:2014, the conclusion is that there is a 'significant adverse impact' at night.

In view of the above, I suggest that a provision should be made for the new transformers to be fitted with acoustic enclosures (as the present ones are). Enclosures made from an acoustic panel system should give a reduction in the range 15-20dBA, and this would eliminate the 'adverse impact' mentioned above. I estimate a pair of such enclosures would cost about £80,000, installed: an additional cost for fitting lighting inside them should be added to this.

2.0 Site description.

Madingley Road runs roughly East-West and is a main route from the M11 motorway to the city centre. The substation site is set back on the South side of the road, on the outskirts of the city and only about 650 metres from the motorway. The area around the substation is mainly occupied by departments of the University, but there are two houses very close by, called Merton Hall Farm Cottages, and some more, further away, on the North side of Madingley Road. The substation and the cottages, actually semi-detached houses, are shown in the satellite image of Figure 1 and in the photographs in Figure 2.

The substation layout is shown in Figures 3 and 4. The site has steel paling fences at the boundaries and contains two transformers, two switch rooms and some smaller items. The transformers are the same: they are modern units made by Brush Transformers in 2003, rated at 11/18/24MVA. Both are contained in very solidly constructed brick enclosures, and each has a free-standing radiator outside the enclosure. The transformers emit humming sounds, as is normal, but this sound is very well contained by the enclosures: I could not hear it at all outside them. There are no other significant sound sources in the substation.

It is now intended to replace both transformers with new ones, in new positions: I understand this is in response to increased demand. The locations for these are shown in Figure 2, it may be seen that they are closer to Merton Hall Farm Cottages than the existing ones are.

Madingley Road and the motorway were both very busy on the day of the survey, and traffic noise was very evident all around the substation. There was also some major building works going on at two sites: one is a development of houses and flats on the North side of Madingley Road, immediately opposite the substation, the other in the green area belonging to the University Department of Veterinary Medicine, on the South side of Madingley Road about 100 metres to the East. Both sites were busy on the day of the survey, with large cranes being used to position materials and so-on.

3.0 Sound level readings.

Two sound level meters were used for the survey, a Rion NA-27 and a Svantek SVAN971. The Rion meter was hand held, and used to take 'spot' readings in and around the site. The Svan meter was used as a data logger, to record the varying level of the background noise. Both meters are calibrated annually in our in-house facility, most recently on the 11th/January/2019.

3.1 Weather.

The day of the survey was mild to warm and intermittently sunny, with practically no breeze: more or less ideal conditions for the survey.

3.2 Readings using the Rion meter.

The Rion meter is a Real Time 1/3 Octave Integrating Sound Analyser (meter), type NA-27, which was checked before and after the survey using a Rion calibrator type NC-74. The meter was hand-held for the survey and a windshield was used throughout. The Rion meter is able to take several measurements at once, and to store the results. At each measuring point, readings of Leq, L90, L50 and L10, expressed as dBA, dBC and one-third octave bands, were stored.

3.2 Readings using the Rion meter (Continued).

The survey was carried out on Wednesday the 24th/April/2019 in two sessions in the afternoon and evening. The humming sound of the transformers was obvious inside the enclosures: the readings in them were taken for durations of about 15 seconds and the meter was moved in a circular path so as to average out the spatial variation that commonly occurs with transformer noise (it is often possible to get a variation of 10dB or more in the 100Hz band reading by moving the meter by a foot or two). This method is sometimes referred to as the 'Acoustician's Tai Chi': the result presented is the Leq value. The hum was not audible outside the enclosures, but the same Tai Chi technique was used for the readings there.

For the readings taken outside the substation, the meter was held still and for a duration of five minutes (each), to give a measure of the varying level of background noise in the area. Two positions were used for these measurements, one at the substation gate, the other in the road leading to the Department of Veterinary Medicine: this latter was chosen to be at about the same distance from Madingley Road as the rear facade of Merton Hall Cottages is.

3.3 Logging readings using the Svan meter.

The Svantek SVAN971 is a third octave sound level meter, analyser and data logger, which was checked before and after the survey using the Rion calibrator. It was set up on a tripod near the Eastern boundary of the site, as close as possible to Merton Hall Farm Cottages. The meter was set to log the sound level at this position, from 3-02pm to 3-36pm. Transformer hum was entirely inaudible at this position: the record from the meter gives a 'picture' of the varying levels of traffic related noise.

4.0 Results and discussion.

4.1 Transformer sound levels.

The sound levels measured inside and outside the transformer enclosures are shown in Figure 4, and some typical third octave spectra are in Figure 5A. It may be seen that the sound levels inside the enclosures are much the same for the two transformers: the averages of them are 58dBA/68dBC for T1 and 60dBA/67dBC for T2. It may also be seen that the spectra have prominent tones at 100Hz and a number of low multiples of 100Hz. In the readings taken immediately outside the enclosures none of these tones are visible in the spectrum, as may be seen in the example in Figure 5A. As has been said, transformer hum was not audible anywhere outside the enclosures.

4.2 Background sound levels.

Background sound level readings taken outside the substation are shown in Figure 2, typical spectra in Figure 5B, and the trace from the Svan meter in Figure 6. The readings reflect the generally high levels of background noise in the area, coming mostly from road traffic. At positions close to Madingley Road, the sound level 'peaks' each time a vehicle passes: further away from it the peaks are smaller but the general 'traffic hum' remains. On the basis of these results, I suggest that conservative (meaning low) values for the background sound level at the rear facades of Merton hall Farm Cottages are 50dBA in the daytime and 40dBA at midnight.

5.0 Calculations and assessment.

5.1 The existing transformers.

I have used the sound levels measured inside the transformer enclosures to estimate their sound power levels and then the sound level that they would produce at the facades of Merton Hall Cottages, and the results are as follows. (Since the sound levels for the two transformers are almost the same, I have averaged them and taken them as being equal).

Sound power level of one transformer (inside enclosure):	70dBA/79dBC
Sound power level of one transformer outside enclosure:	50dBA/60dBC
Estimated sound level at Cottages, from two transformers:	11dBA/21dBC
For comparison background level at facade, at midnight:	40dBA/50dBC

I have compared the transformer sound power level with others from our database. I find that these units are quieter than the average for modern transformers of similar rating, and modern transformers are generally quieter than old ones (dating, say from the 1960's). In sum, these are quiet transformers contained in very effective enclosures.

It is also clear that the transformer-related sound level at the Cottages facade is far lower than the lowest value for background noise. When this situation is rated using the method of BS4142, the conclusion is that there is (absolutely) no 'adverse impact' from transformer noise.

5.2 The proposed new transformers.

The new transformers are rated at 20/30MVA, and the manufacturer's guaranteed figure for their sound power level is 86dBA (each). It may be seen that this is significantly higher than the figures for the existing transformers, above. Since no figure for sound power level as dBC is given, I have estimated a value based on experience of other units, and calculated the sound level from two transformers at the facade of Merton Hall Farm Cottages, as follows.

Sound power level of one new transformer (maximum):	86dBA/96dBC
Estimated sound level at Cottages, from two transformers:	50dBA/60dBC
For comparison background level at facade, at midnight:	40dBA/50dBC

It may be seen that the estimated sound level is now higher than the background level at night, and the sound will also contain significant tones at 100Hz and its multiples.

5.3 Assessment (for the new transformers).

British Standard BS4142:2014 'Methods for rating industrial and commercial sounds' is the most widely used method for rating sounds affecting residences. The Standard was updated in 2014: a brief summary of it is given in an appendix herewith. The essence of the rating method is to compare the 'specific sound level' outside the residential facade with the background sound level that would exist in its absence. BS4142 uses sound levels measured as dBA (not dBC or third octave bands), and I have used the value calculated above, 50dBA near the facade, for the rating calculation below.

Level at facade of flats.	Daytime	Midnight
Transformer specific sound level:	50dBA	50dBA
Correction for tonal content:	+4dBA	+6dBA
Rating level:	54dBA	56dBA
Background level:	50dBA	40dBA
Rating over background:	+4dBA	+16dBA
Conclusion:	Significant adverse impact at night	

5.4 Noise control for the new transformers.

It is common practice for transformers to be housed in acoustic enclosures, and these normally give a reduction of 15 - 20dBA (coming from the same reduction in the level of the tone at 100Hz). Where the transformer has a free standing radiator, as the new ones at Madingley Road will do, it is normal to enclose the transformer, leaving the radiator outside. Once the enclosure is in place, it is generally found that a small amount of sound (hum) is still coming from the radiator, and this limits the overall performance that is achievable (to 15 - 20dBA).

An acoustic enclosure for one of these transformers would have dimensions approximately 5.8m x 6.0m x 3.5m high, standing on the bund wall. I estimate the cost for a pair of them would be about £80,000, installed. There would be additional costs for the fitting of lighting etc inside it.

Appendix.

BS4142:2014 'Methods for rating and assessing industrial and commercial sounds'

Industrial noise affecting housing is covered by the Environmental Protection Act 1990, which is administered by the Local Authority. There is a British Standard that the Authority may use to assess any given case: this is BS 4142:2014 'Methods for rating and assessing industrial and commercial sounds'. This Standard has recently replaced its predecessor, dated 1997. In essence the method consists of comparing the 'industrial' noise level measured outside the houses with the background level which would exist in the absence of the industrial noise. The greater the difference between the two, the greater the 'adverse impact' of the noise is judged to be.

In the context of the Standard, the 'noise level at the houses' is the **specific noise level** that is attributable to the industrial operation in question. If this noise has an irritating feature such as tonality or repeated impulses, a number of penalties, ranging from 3dBA upwards, may be added to the specific level before making the comparison: this adjusted level is called the **rated noise level**. The **background noise level** is always lower at night than by day, so if the noise continues through the night the Standard automatically sets a stricter criterion than applies if it does not.

BS4142 uses two ways of representing noise levels, L90 and Leq, as follows.

L90 is the level which is exceeded for 90% of the time and thus represents more or less the lowest level one is likely to measure, given that the actual level varies all the time. In the standard, L90 is used to define the background noise level, the view being that this measure will eliminate events such as occasional passing traffic, so that a 'true' figure for background level will be recorded.

Leq is a kind of average of the actual varying levels, and in BS4142 it is used as the measure of the specific noise level. Because of the way the average is taken, the Leq figure is in fact weighted somewhat towards the higher end of the range of actual levels. It is intended that the Leq should be a measure of how annoying or disturbing the noise is.

At the end of the calculations, the method produces a number referred to as **rating over background**, being the difference between the rated noise level and the background noise level: the greater the difference, the greater the **adverse impact** of the noise is judged to be. A difference **+10dBA** is described as a **likely to be an indication of a significant adverse impact**. **+5dBA** and **+0dBA** are described as having an **adverse impact** or **little impact**, depending on context. The Standard emphasises the importance of context, when considering the result from this numerical procedure.

It is, perhaps, worth pointing out that if the noise level is constant, as is often the case for transformers, then L90 and Leq are equal. Transformer noise always has a strong tone at 100Hz (not 50Hz) and usually has tones at multiples of 100Hz. A strong tone at 100Hz does not always show up well in a dBA measurement, since the A weighting emphasises contributions at higher frequencies. For this reason, I generally record dBC, as well as dBA, but note that the legislation and Standards are based on dBA values (only).

Figure 1. Satellite image.

Figure 2. Photographs.

Top: The two transformer houses, with radiators outside them. The Unite office building is behind them.
Bottom: Merton Hall Farm Cottages, viewed from near the transformer bay.

Reading	Time	Leq	L90
130	15-30	56/70/54	54/67/51
131	16-10	67/75/59	57/73/55
132	22-32	65/68/53	43/54/39
133	22-39	55/61/48	45/53/38

XX/YY = dBA/dBC/dB(100Hz).
Readings taken over five minutes.
Transformer hum was not audible at any of the readings positions.
Sounds were from road traffic and crane movements in afternoon.
◎ Shows the position of the Svan meter.

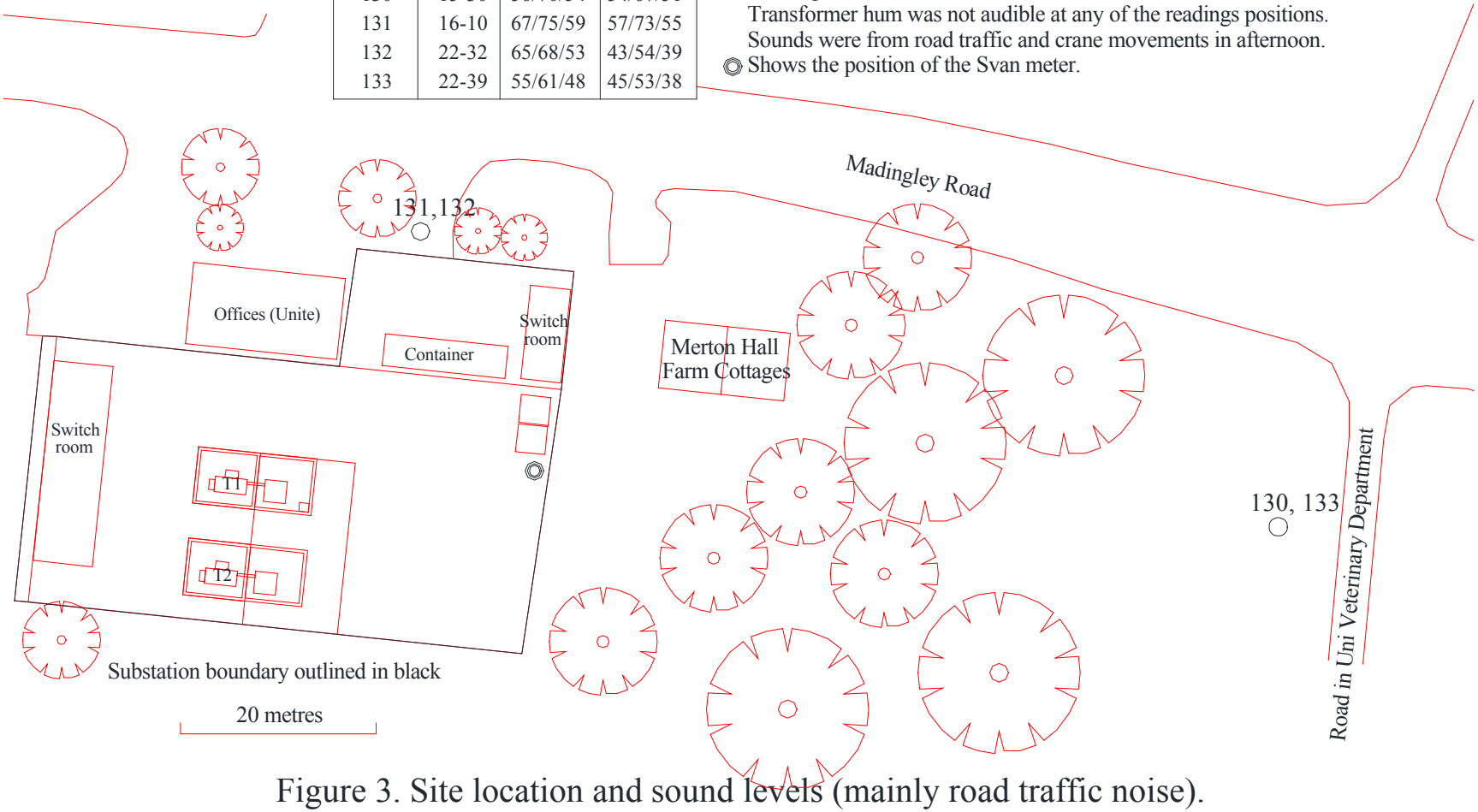
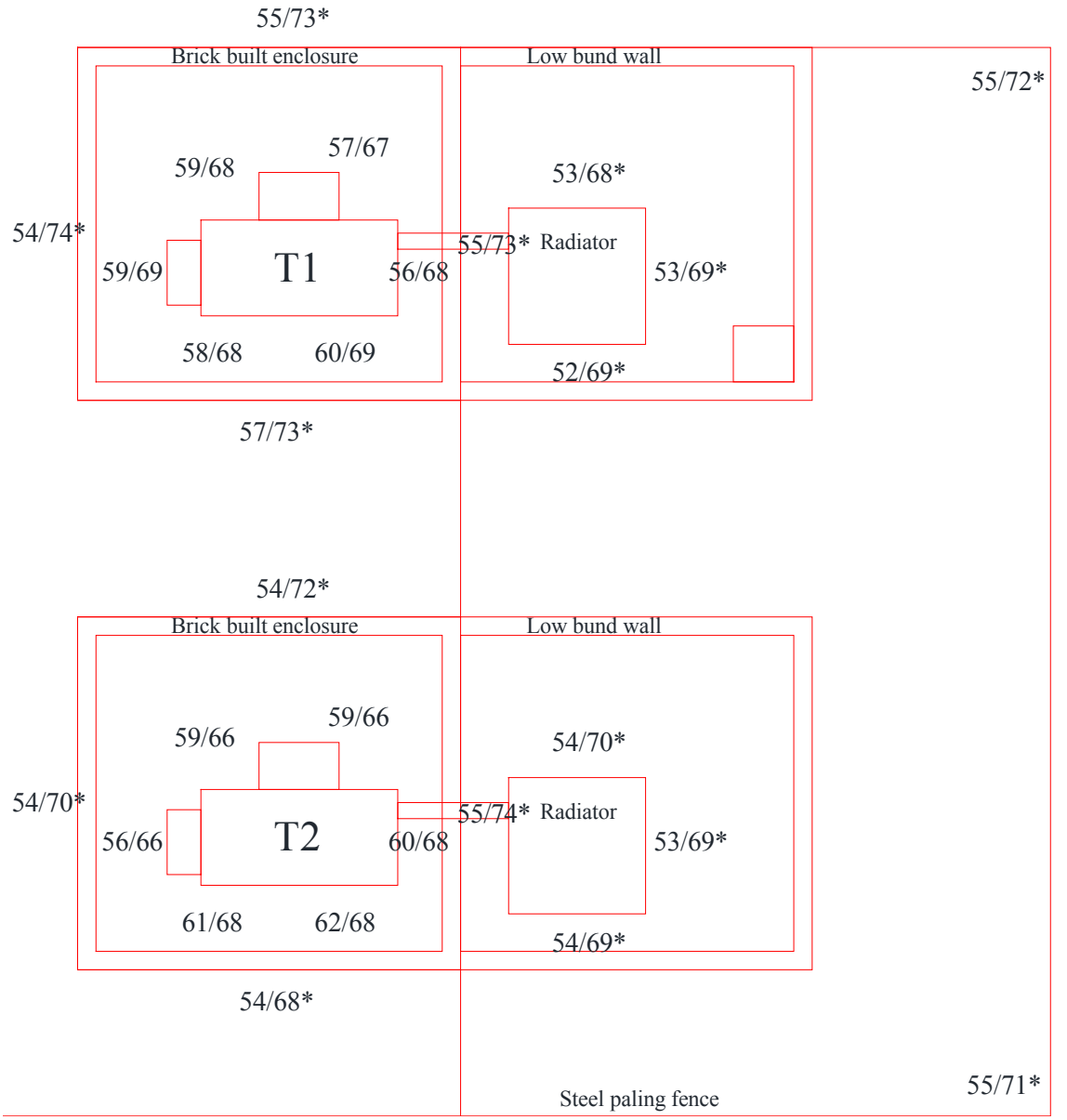


Figure 3. Site location and sound levels (mainly road traffic noise).



XX/YY = Sound level, Leq, dBA/dBC.
Readings were taken over about 15 seconds each, using 'Tai Chi' technique.
Asterisk indicates there are no transformer related tones in the spectrum.

Figure 4. Sound levels around the transformers.

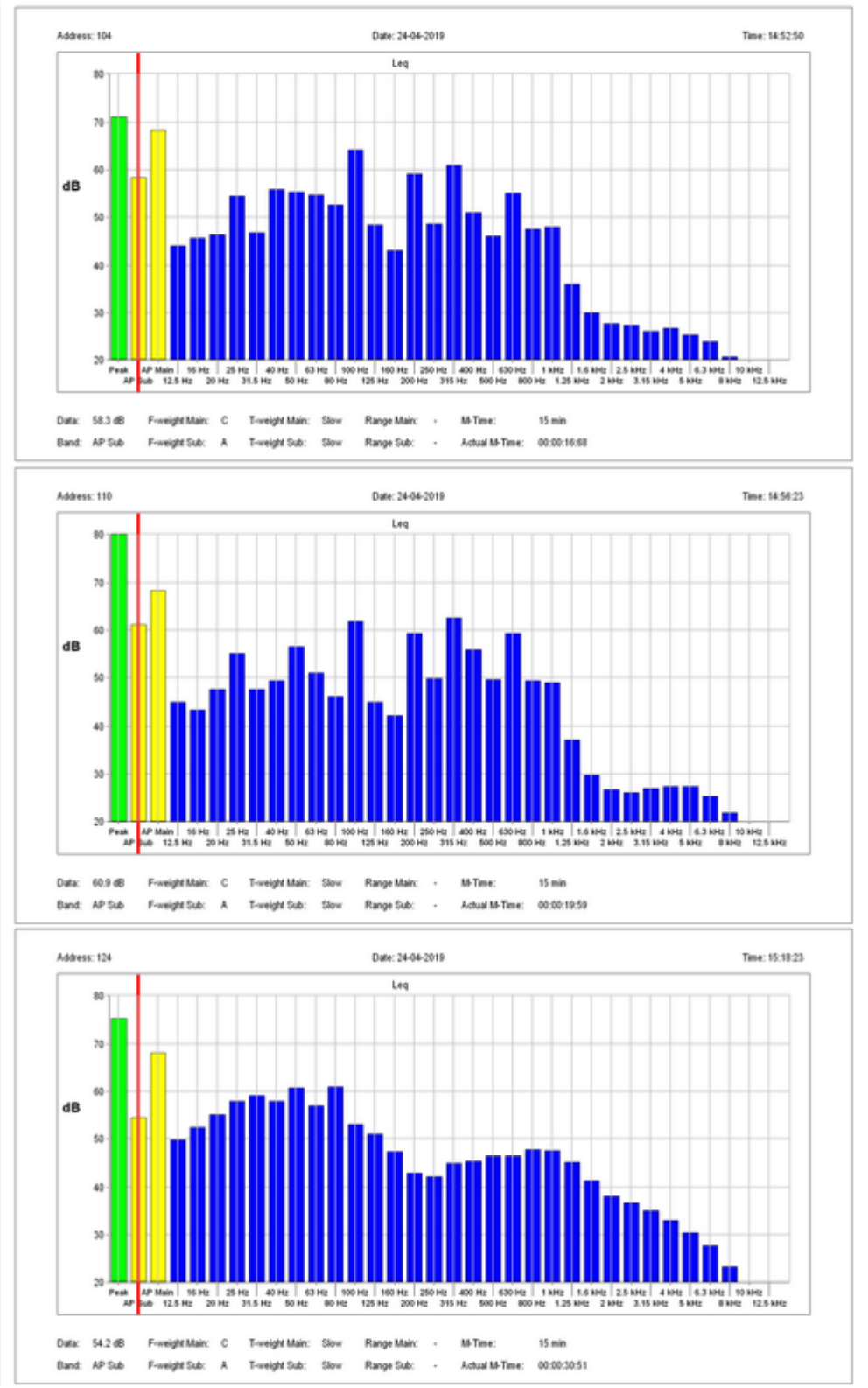


Figure 5A. Typical sound level readings. The red marker is dBA.
Top, middle: Inside T1 and T2 enclosures.
Bottom: Outside T2 (furthest position from Madingley Road: no transformer tones).

Figure 5B. Background sound levels in Dept of Vet. Med. The red marker is dBA
Top: Leq ('average') level at 5-30pm.
Middle and bottom: Leq and L90 ('near minimum') levels at 10-40pm.

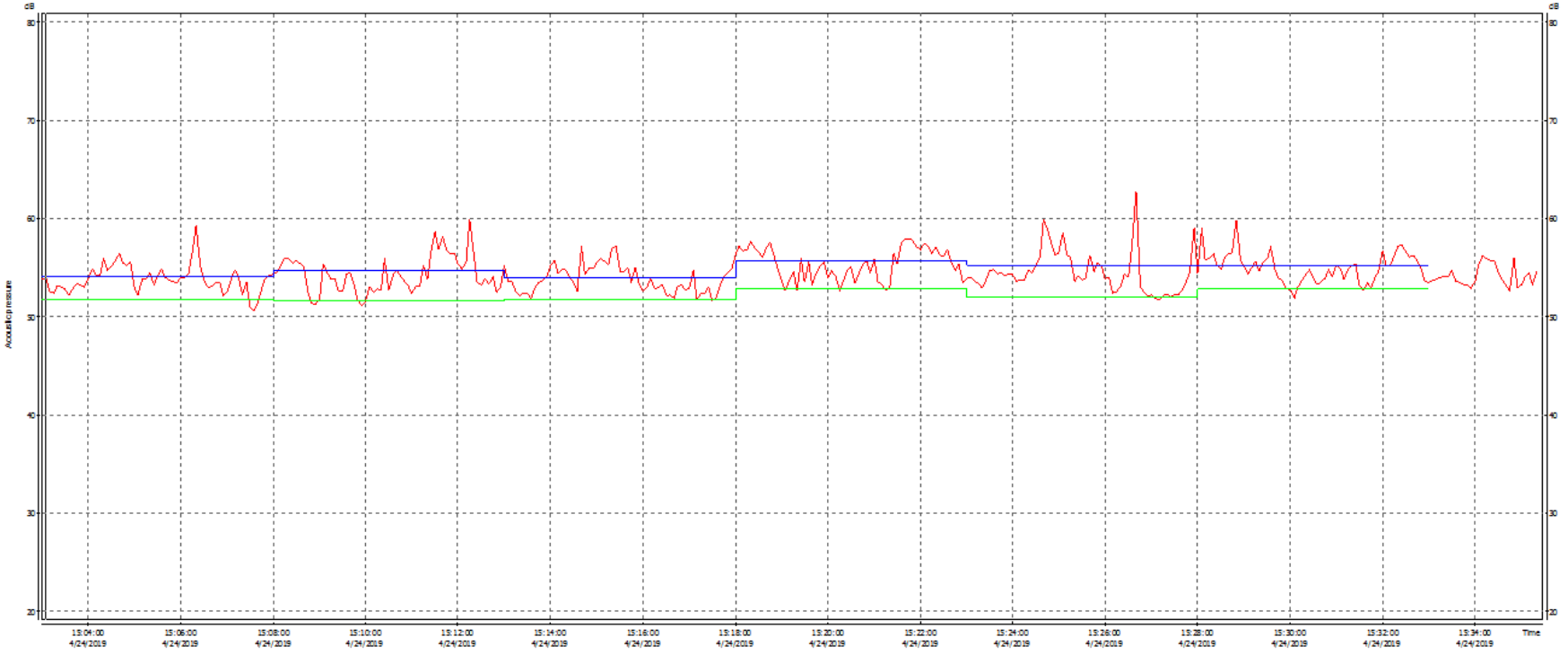


Figure 6. Results from the Svantek data logging sound meter. The record runs from 3-03pm to 3-35pm on the 24th/April/2019. The red trace is Leq, dBA, in five-second samples: essentially this is the instantaneous sound level. It may be seen that the level varies in a narrow range between about 50dBA and 60dBA. The blue trace is Leq, dBA, in five minute sections, giving a figure for the 'average' level in each period, and the green one is L90, dBA, which is close to the minimum observed in each period. It may be seen that Leq was generally around 55dBA and L90 around 53dBA. These levels relate to the steady hum of road traffic throughout the area, both on Madingley Road and the M11. The meter position is quite distant from Madingley Road and quite well shielded by buildings, so that individual vehicle passes are not much louder than the general hum. Note: transformer hum was not audible at this position.

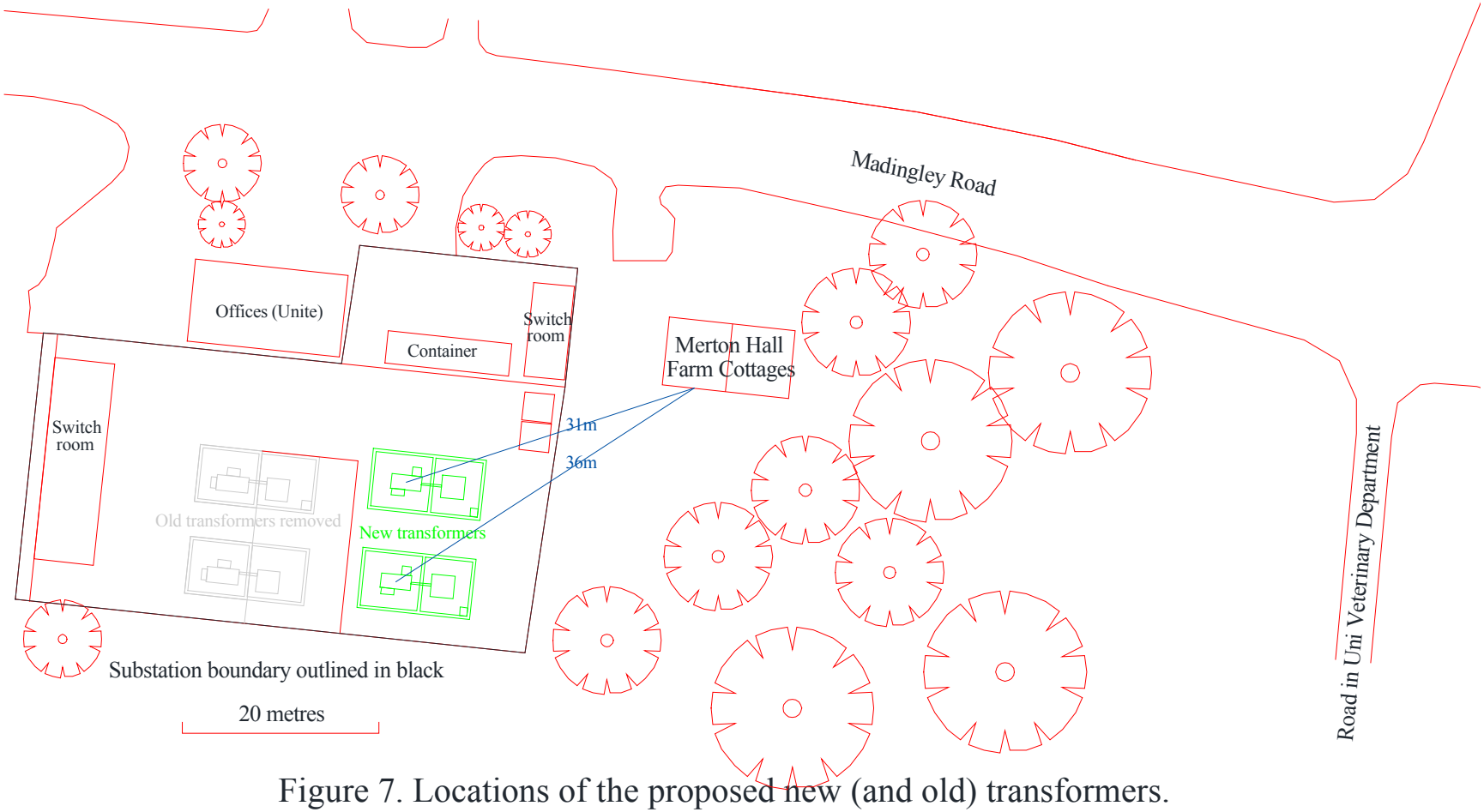


Figure 7. Locations of the proposed new (and old) transformers.

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TECHNICAL REPORT

EUSTON SOLAR FARM

Environmental noise assessment

Adrian James Acoustics Document Control Sheet

Report prepared for:	Island Green Power UK Unit 21.2 Coda Studios 189 Munster Road London SW6 6AW
Filename:	12461 Report 1.docx

QA Control

Rev	Date	Author	Checked by	Approved by
-	14 December 2020	Martyn Broom AMIOA and Mat Tuora MIOA	Gary Percival MIOA	Gary Percival MIOA
A	17 December 2020	Mat Tuora MIOA	Gary Percival MIOA	Gary Percival MIOA

Revision History

Rev	Details
A	Minor adjustments to section 6.6.2 and minor typo corrections

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This report was completed by Adrian James Acoustics Ltd on the basis of a defined programme of work and terms and conditions agreed with the Client. The report has been prepared with all reasonable skill, care and diligence within the terms of the Contract with the Client and taking into account the project objectives, the agreed scope of works, prevailing site conditions and the degree of manpower and resources allocated to the project. Recommendations in this report are for acoustics purposes only, and it is the responsibility of the Project Manager or Architect to ensure that all other requirements are met including (but not limited to) structure, fire and Building Controls.

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1 INTRODUCTION

1.1 Background

We have been appointed by Island Green Power UK to assess the potential environmental noise impact of a proposed solar farm in Euston, Suffolk. The site is situated just north of RAF Honnington on land owned by Euston Estate & Farms.

This report considers the potential environmental noise levels that would be generated by plant and activities associated with the proposed solar farm, and provides an assessment of the impact of noise on the nearest residences.

1.2 Structure of this report

The structure of this report is as follows:

- Section 2 describes relevant planning policy
- Section 3 describes the relevant technical guidance;
- Section 4 describes the site proposals
- Section 5 sets out the methodology and findings of our sound measurements;
- Section 6 presents the results of the BS 4142 assessment;
- Section 7 discusses the construction noise;
- Section 8 sets out our conclusions.
- An explanation of technical terms used in this report is given in Appendix A.
- Appendix B sets out the sound measurement systems and calibration details.

1.3 Source information

The report is based on the following information provided by Lanpro and Island Green Power UK.

Document No.	Revision	Title
-	11-12-2020	Layout
I.17.050.1401.00028	-	Noise test report evaluation of noise emission per activity: solar tracker motors.
SC4xxx-UP-910:LE2019	-	Measurement at 4600 kVA, 1350 V DC U0N modulation 100% fan load
White Paper BU-LS--001	-	White Paper BU-LS-001: Sunny Central UP
SCS1900-2900-DS-en-15		Sunny central storage 1900 / 2200 / 2475 / 2900

Table 1 – Details of drawings and design information used to inform assessment

2 PLANNING POLICY

2.1 National Planning Policy Framework

The latest version of the National Planning Policy Framework (NPPF) was released in February 2019 and was last updated in June 2019.

The NPPF does not set out quantitative criteria for noise affecting proposed developments, but in paragraph 170 states that planning policies and decisions should actively contribute to the enhancement of the natural and local environment by:

> *"preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability."*

According to paragraph 180, planning policies and decisions should also ensure new development is appropriate for its location, particularly considering the likely effects on health and living conditions. Planning policy and decision makers should aim to:

> *"mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life".*

The *'agent of change principle'* has been part of the NPPF since the July 2018 revision. This principle means that a person or business (i.e. the agent) introducing a new land use is responsible for managing the impact of that change. Paragraph 182 states:

> *"Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."*

The NPPF also promotes *"good design"* (including good acoustic design) as a means of ensuring that development creates high quality, sustainable buildings, and places. Paragraph 124 states that *"good design is a key aspect of sustainable development.*

2.2 Local Planning Policy

Local environment and development planning policy are the remit of West Suffolk Council (WSC). The WSC Joint Development Management Policies Document (JDMPD) was adopted in February 2015 as part of the WSC's Forest Heath and St Edmundsbury councils Local Plan. Policy DM2 within the JDMPD states that:

> *"Proposals for all development (including changes of use, shopfronts, and the display of advertisements) should, as appropriate take mitigation measures into account that do not affect adversely the amenities of adjacent areas by reason of noise, smell, vibration, overlooking, overshadowing, loss of light, other pollution (including light pollution), or volume or type of vehicular activity generated.*

The intention of this assessment is consequently to determine whether the proposed development would be likely to comply with the requirement of Policy DM2.

2.3 Discussion with West Suffolk Council

We contacted Karen See, an environmental health officer at WSC who has confirmed that an assessment in accordance with BS 4142:2014+A:2019 would be suitable for this site. Details of this British Standard are provided in Section 3.1.

Karen See also stated that a baseline survey to establish the noise climate of the area must follow the guidelines in BS 7445-1:2003 and report L_{Aeq}, L_{A90}, L_{A10} and L_{AFmax} noise indicators. Details of this British Standard are provided in Section 3.2.

Ms See also stated that she expected that the outcomes of any noise impact assessment would also be required to consider the low frequency noise impact on the nearest residential receptors, both during construction and operation. In the absence of any quantitative low frequency criteria in BS 4142:2014+A:2019, Ms See suggested using the limits of set out in low frequency noise guidance note NANR45 . Details of the NANR45 guidance and associated assessment criteria are provided in Section 3.3.

3 ASSESSMENT METHODOLOGY AND CRITERIA

3.1 BS 4142:2014+A1:2019

3.1.1 Introduction

British Standard 4142:2014+A1:2019 *'Methods for rating and assessing industrial and commercial sound'* (BS 4142) describes appropriate technical methodology for the rating and assessment of sound of an industrial and/or commercial nature.

Sound of an industrial and/or commercial nature includes industrial and manufacturing processes, fixed mechanical and electrical plant installations, the unloading of goods and materials at industrial and/or commercial premises and sound from mobile plant that is an inherent part of the overall sound from industrial and/or commercial premises.

BS 4142 is applicable for the purposes of:

- Investigating complaints;
- Assessing sound from proposed, new, modified or additional source(s) of sound from an industrial and/or commercial nature; and
- Assessing sound at proposed new dwellings or premises used for residential purposes.

BS 4142 is not intended to be applied to the rating and/or assessment of sound from recreational activities (including motorsport), music and other forms of entertainment, shooting grounds, construction/demolition, domestic animals, people, public address systems and any other sources falling within the scope of other standards/guidance.

3.1.2 Summary of BS 4142 assessment methodology

The BS 4142 assessment methodology can be summarised as follows:

1. Determine the background sound level (dB $L_{A90,T}$) at the nearest noise sensitive receptor(s) of interest.
2. Determine the specific sound level of the source under assessment (dB $L_{Aeq,T}$) (T = 1 hour for day or 15 minutes at night) at the receptor location(s).
3. Apply a rating level acoustic feature correction if the sound source has tonal, impulsive, intermittent or other characteristics which attract attention.
4. Compare the rating level (dB $L_{Ar,Tr}$) with the background sound level; typically, the greater this difference, the greater the magnitude of impact.

Differences of around +10 dB are likely to be an indication of significant adverse impact, depending upon the context; a difference of +5 dB is likely to be an indication of adverse impact, depending upon the context. Where the rating level (dB $L_{Ar,Tr}$) does not exceed the background sound level ($L_{A90,T}$) at the nearest receptor of interest, the indication is that the specific sound source will have a low impact, depending upon the context.

Note: Adverse impacts include but are not limited to sleep disturbance. Not all adverse impacts will lead to complaints and not all complaints are proof of an adverse impact.

3.1.3 Acoustic features

Certain acoustic features (which include tonality impulsivity and/or intermittence) can also increase the significance of impact. Where such features are present a *"character correction"* should be added to the specific sound level to obtain the rating level.

The recommended BS 4142 character corrections are presented in Table 2.

Characteristic	Perceptibility		
	Just Perceptible	**Clearly Perceptible**	**Highly Perceptible**
Tonality	+2 dB	+4 dB	+6 dB
Impulsivity	+3 dB	+6 dB	+9 dB
Intermittency	0	+3 dB	+3 dB
Other	0	+3 dB	+3 dB

Table 2 – Details of drawings and design information used to inform assessment

BS4142:2014 describes suitable subjective methods for assessing character features, plus additional objective (one-third octave and reference) methods for tonality.

3.1.4 Uncertainty

The BS 4142 methodology also requires that the level of uncertainty in the technical data and/or calculations is reported. Where uncertainty could affect the conclusion, reasonable, practicable steps should be taken to reduce uncertainty. If appropriate, the level and potential effects of any identified uncertainty should also be reported.

3.2 BS 7445-1:2003

BS 7445-1:2003 *'Description and measurement of environmental noise*' (BS 7445) sets out guidance for environmental noise surveys and brings many of these principles together. It describes common parameters, recommendations for instrumentation, appropriate measurement technique, and the information to be recorded.

BS 7445 does not set out any specific guidance of values which noise levels should achieve, but rather noise parameters and terminology, the requirements for calculating the noise descriptors and a list of information to be recorded during a noise survey.

3.3 NANR 45

There is no established guidance specifically intended for assessing the potential effects of noise from electrical equipment on new residential development.

However, it is recognised that low-frequency noise from electrical equipment (including solar farms) requires consideration when near to new or existing dwellings, and for this purpose reference is often made to guidance note NANR 45.

Guidance note NANR 45: *'Proposed criteria for the assessment of low frequency noise disturbance'* was produced in 2005 by the University of Salford and was mainly devised to assist in investigating complaints of low-frequency noise (LFN) from substations and to provide appropriate technical methodology and criteria for doing so.

However, NANR 45 provides a reference criterion curve for use in assessing LFN and this is often used to identify where such noise exists that could result in complaints, particularly where a new electrical installation is proposed close to existing residents.

The NANR 45 reference curve is set out in Table 3 in all 1/3 octave-band frequencies between 10 Hz and 160 Hz. While the lower end of this range is generally outside the range of normal human hearing, this represents the range of potential LFN occurrence.

Frequency, Hz	**10**	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
dB L_{eq}	92	87	83	74	64	56	49	43	42	40	38	36	34

Table 3 – NANR 45 reference curve values

The NANR 45 criterion curve is also plotted in graphical form, reproduced in Figure 1.

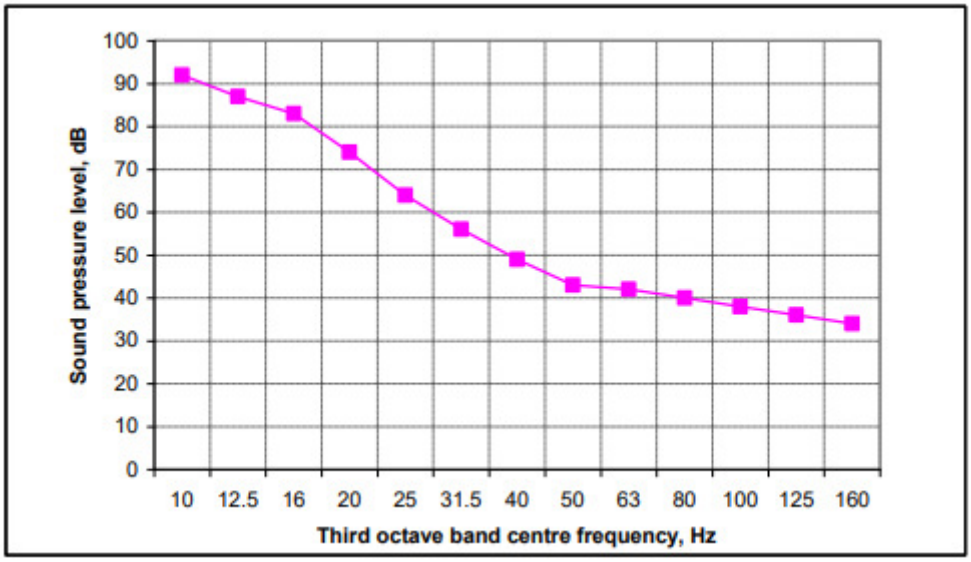


Figure 1 – NANR 45 criterion curve for assessment of low frequency noise

Low frequency noise from electrical equipment should ideally not exceed these criteria in any single 1/3 octave-band between 10 Hz and 160 Hz.

4 DESCRIPTION OF SITE AND PROPOSALS

4.1 Description of site and proposals

The proposed site of the new solar farm is in Euston, Suffolk. It is surrounded by existing agricultural land and outdoor activity centre involving activities such as ATV hire and clay shooting. The site is located approximately 330m from the nearest existing house to the west and 450m from the nearest existing house to the north-east.

The roads around the site are mostly minor roads and tracks used by farm vehicles. The A134 is located approximately 1 km to the east and is a single carriageway road with a speed limit of 60 mph. RAF Honnington is located approximately 90 m south of the site. It is our understanding that RAF Honnington is the RAF Regiment depot and is not a principal flying base. We understand that some flights do occasionally take off and land at the base, but this is for specialist training exercises which are infrequent.

The site boundaries and agricultural nature of the surrounding area are clearly shown in Figure 2 below.

Figure 2 – Annotated aerial photograph/plan of site and surroundings © Google 2020

4.2 Development proposals and new sound sources

4.2.1 Fixed plant installations

Based upon discussions with Island Green Power UK we understand that the following items of fixed plant would be the only equipment serving the proposed solar farm which would generate potentially significant noise emissions:

- 12 x Sunny Central 4600 kVA, 1350 v DC U0N Inverters;
- 10 x Sunny Central battery storage units (either models 1900 / 2200 / 2475 / 2900);
- A 132 kV substation;
- Soltec tracker installed with each solar panel array;

4.2.2 Proposed site layout

The proposed site layout is shown in Figure 3 along with the proposed locations of the main noise-generating plant on the site.

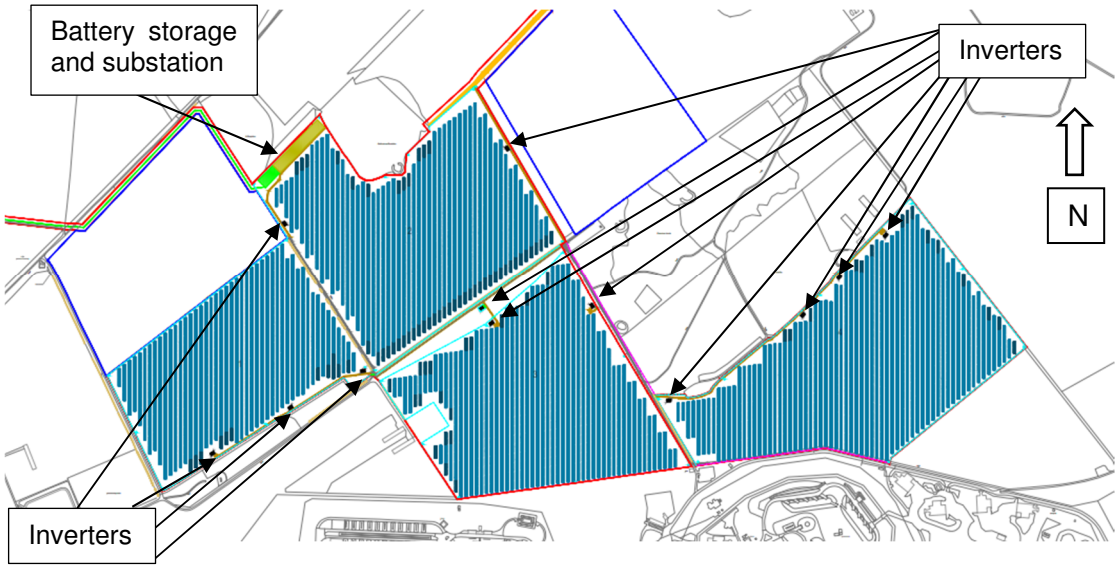


Figure 3 – Site layout plan

5 SOUND MEASUREMENTS

5.1 Introduction

We attended the site at approximately 17:00hrs on 11 September 2020 and installed unattended noise monitoring equipment to measure prevailing noise levels in the area for a week, returning at approximately 17:00hrs on 18 September 2020 to collect the equipment. Measurements were taken 1.5m above ground, at 15-minute intervals and recorded L_{F90}, L_{F10}, L_{Fmax} and L_{eq} noise levels in 1/3 octave-bands. Measurements were logged at 0.1 second resolution which allowed us to post process the data to obtain representative 1-hour daytime and 15-minute night-time background sound levels.

Prior to undertaking measurements, we walked around the site close to the nearest dwellings and noted any significant variations in noise. The noise climate was judged as being relatively constant around the site, although background sound levels were slightly higher towards the west of the site due to being closer to the A134. Average and maximum levels were slightly higher towards the east due to Euston Estate activity.

5.2 Measurement locations

As noise levels were relatively consistent around the site, we chose to measure on the eastern most and the western most boundaries. We expect both these positions to be representative of the noise-sensitive receptors in the vicinity of these boundaries. Both of our measurement positions are shown in Figure 4.

Figure 4 – Annotated aerial photograph of initial measurement positions © Google 2020

5.3 Sound measurement systems

5.3.1 Details of sound measurement systems

Details of the sound measurement systems used are presented in Table 4.

5.3.2 Operational calibration test

The measurement systems were calibrated before and after use using the reference calibrator described in Appendix B. The results of the test are presented in Table 4.

Instrument	Calibrator reference level (dB)	Level before (dB)	Level after (dB)	Calibration drift (+/- dB)
NTi Audio XL2 A2A-04410-D2	93.7	93.6	93.6	0
NTi Audio XL2 A2A-08643-E0	114.0	114.1	114.1	0

Table 4 – Details of operational calibration test

5.4 Weather conditions

During our survey we measured wind speeds and temperatures using a weather station located close to measurement position 1. Generally, wind speeds were low during our survey and did not typically exceed 5 m/s. However, the highest measured wind speed during our survey was 6.7 m/s. This is not ideal and periods where wind speeds measured exceeded 5 m/s were therefore excluded from our analysis.

Over the duration of our survey we measured temperatures between 9℃ and 29℃, with the lowest temperatures being measured at night and the highest during the day.

5.5 Subjective impressions

The western boundary was slightly quieter with road traffic on the A134 judged as the main noise source during the day. At the eastern boundary, the site was slightly noisier as it is on the Euston Estate, which is a working farm. When on-site to setup our unattended equipment farm vehicle movements were noted as being clearly audible.

5.6 Measurement results

A summary of our daytime and night-time survey measurements are as follows:

Location and period	L_{AF90}, (1 hours for day) (15 mins for night)	L_{AF10}, (1 hours for day) (15 mins for night)	L_{AFMax}, (1 hours for day) (15 mins for night)	L_{Aeq}, (1 hours for day) (15 mins for night)
Position 1 Daytime	26 dB – 45 dB	32 dB – 56 dB	50 dB – 83 dB	32 dB – 56 dB
Position 1 Night-time	23 dB – 44 dB	29 dB – 54 dB	36 dB – 75 dB	28 dB – 50 dB
Position 2 Daytime	22 dB – 47 dB	28 dB – 64 dB	43 dB – 88 dB	26 dB – 62 dB
Position 2 Night-time	21 dB – 43 dB	23 dB – 53 dB	31 dB – 73 dB	22 dB – 50 dB

Table 5 - Summary of noise levels

6 BS 4142 ASSESSMENT

6.1 Background sound level

We have reviewed the measurements for daytime and night-time background sound levels at 1-hour and 15-minute intervals respectively.

Histograms for each position and period are shown in Figure 5, Figure 6, Figure 7 and Figure 8 below.

Figure 5 - Histogram of daytime L_{AF90} at position 1

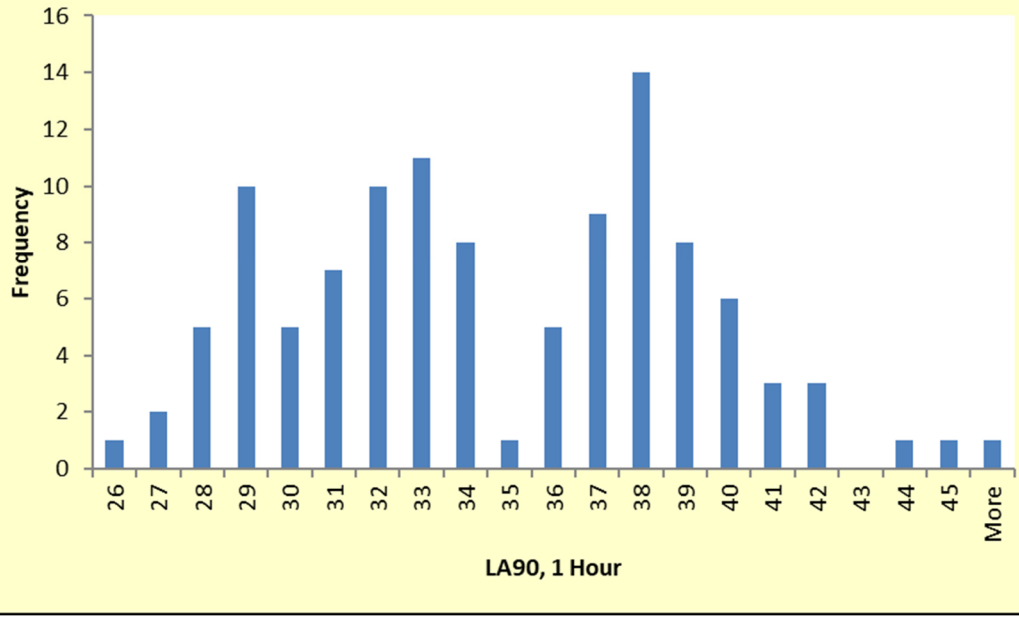


Figure 6 - Histogram of night-time L_{AF90} at position 1

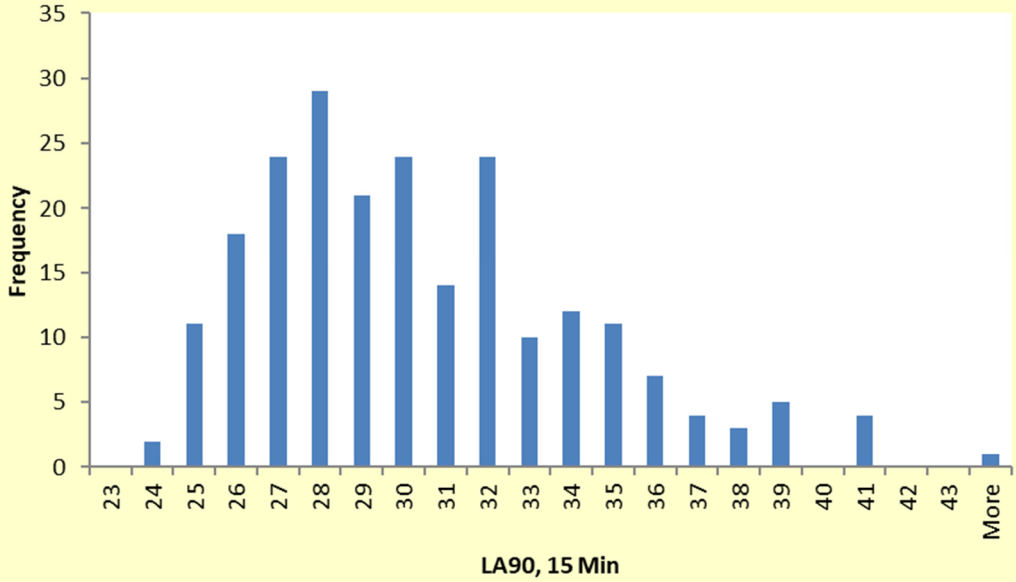


Figure 7 - Histogram of daytime L_{AF90} at position 2

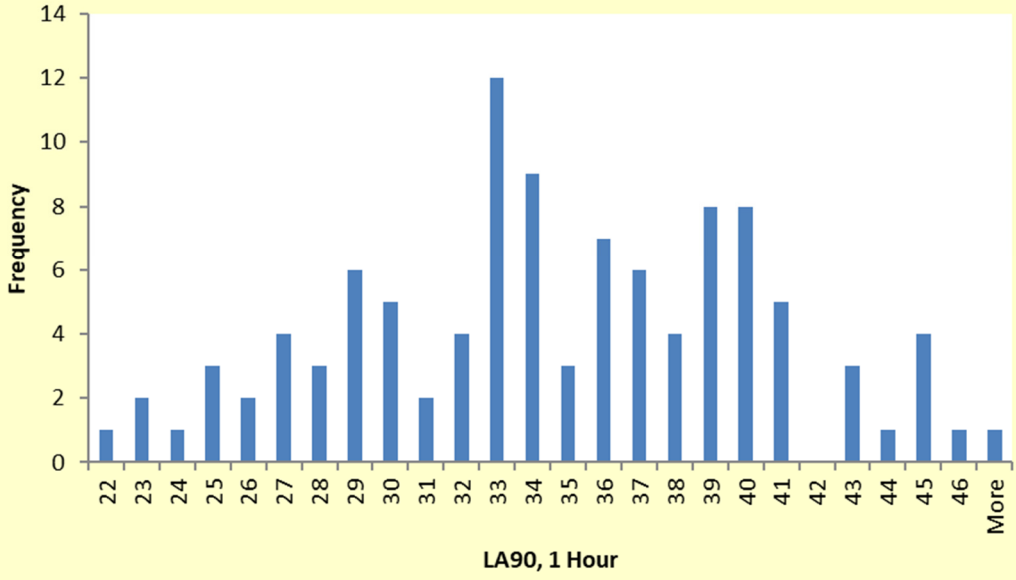
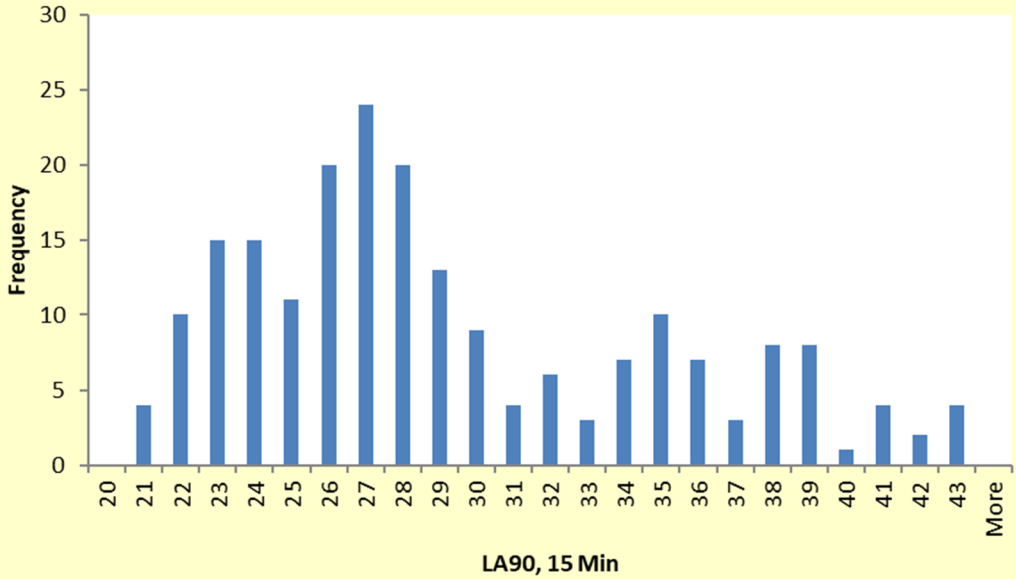


Figure 8 - Histogram of night-time L_{AF90} at position 2



We have, therefore, used the following background noise levels for the purposes of our assessment.

Location and period	LAF90
Position 1 Daytime	33
Position 1 Night-time	28
Position 2 Daytime	33
Position 2 Night-time	27

Table 6 – Background levels used for our assessment

6.2 Specific sound level

We have based our calculations of the specific sound levels that would be generated by the equipment on manufacturer's data for each unit as described in Section 4.2.1.

For the inverters we were provided with 1/3 octave spectrum data. For all other units we were only provided with single figure A-weighted sound pressure or sound power level data. Both our client and we contacted the manufacturers to query if 1/1 octave or 1/3 octave data is available. We understand our client has had confirmation that this type of data is not available, but we received no reply from the manufacturer.

In any case, the BS 4142 methodology is based on assessing the overall A-weighted sound level, and only requires consideration of spectral content with regard to tonality.

The NANR 45 guidance does, however, require third-octave band data to assess the impact of low frequency noise. Without this data it will not be possible to fully assess predicted noise emissions against the NANR 45 guidance and we have therefore set the LFN criteria which any new plant should comply with before being installed on site.

A summary of the noise levels used for our model are shown below:

Source	Data
Sunny Central 4600 kVA, 1350 v DC U0N Inverters	Third octave manufactures data shown in Figure 9
Sunny Central battery storage units (either models 1900 / 2200 / 2475 / 2900)	Battery unit <64.7 dB L_{Aeq} at 10 meters
132 kV substation	91 dB L_{WA}
Soltec tracker	50.1 dB L_{Aeq} at 1 metre from the tracker

Table 7 – Manufacture's data used for our assessment

Third octave band center frequency [Hz]	Sound - Power- level LwA [dBA/pW] 2475 kW
31,5 Hz	24,73
40 Hz	46,84
50 Hz	50,95
63 Hz	53,64
80 Hz	58,81
100 Hz	61,6
125 Hz	64,22
160 Hz	70,35
200 Hz	66,93
250 Hz	72,07
315 Hz	76,77
400 Hz	81,06
500 Hz	77,65
630 Hz	77,05
800 Hz	76,08
1 kHz	78,84
1,25 kHz	76,69
1,6 kHz	76,08
2 kHz	76,33
2,5 kHz	74,96
3,15 kHz	78,95
4 kHz	85,67
5 kHz	69,19
6,3 kHz	70,93
8 kHz	81,02
10 kHz	68,81
A	**90,77**
Z	95,76

Figure 9 - Manufacturer data for inverters

We created a computer model of the site using CadnaA software by DataKustik Gmbh. CadnaA allows us to predict cumulative noise emissions and propagation from the site and determine noise levels at the dwellings, taking account the topography of the site.

For our model we have used contour information provided by Contour Map Creator to account for the general changes in topography over the whole site.

The software can be accessed from https://contourmapcreator.urgr8.ch/.

The model assumes relatively soft (hence acoustically absorbent) ground between the sources and the receiver.

A 2D view of the topography and noise sources in the model is shown in Figure **10**.

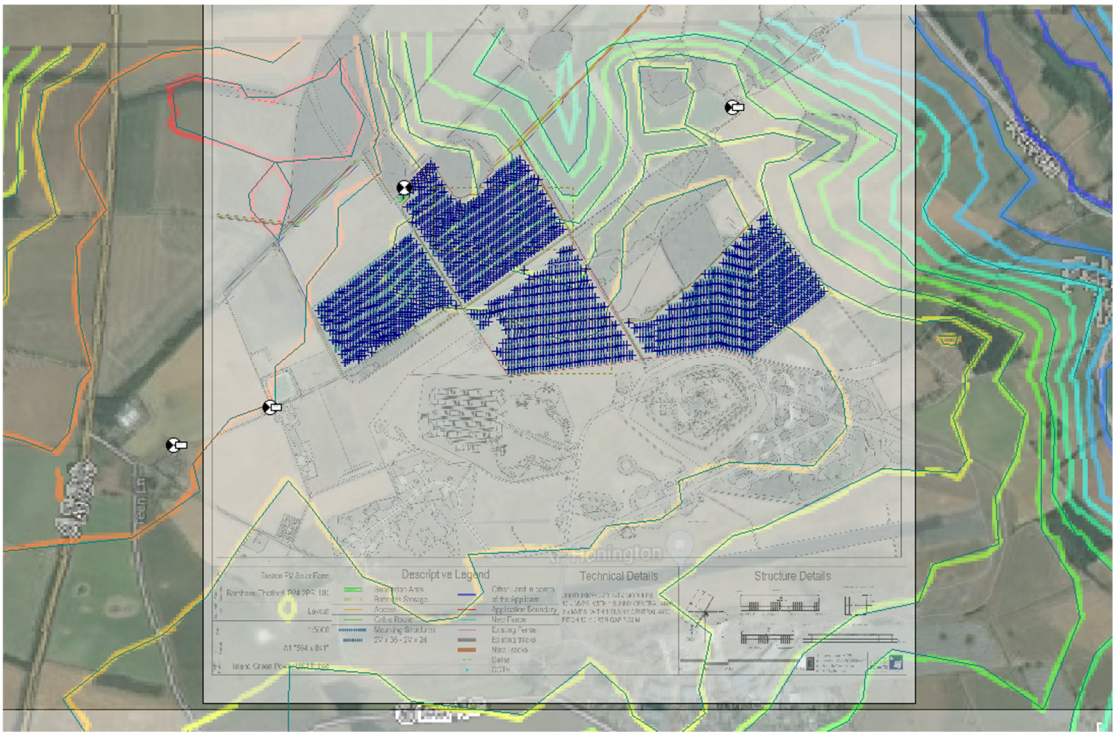


Figure 10 **– 2D view from CadnaA model**

Figure 8 shows the calculated specific noise levels at each assessment location

Source	Calculated noise level at property
Eastern property (Ground Floor)	
Batteries	29 dB(A)
Inverters	21 dB(A)
Substation	7 dB(A)
Trackers	12 dB(A)
Eastern property (First Floor)	
Batteries	34 dB(A)
Inverters	24 dB(A)
Substation	12 dB(A)
Trackers	16 dB(A)
Western property (Ground Floor)	
Batteries	28 dB(A)
Inverters	20 dB(A)
Substation	3 dB(A)
Trackers	12 dB(A)
Western property (First Floor)	
Batteries	32 dB(A)
Inverters	22 dB(A)
Substation	8 dB(A)
Trackers	15 dB(A)

Table 8 – Calculated BS 4142 Rating Levels

6.3 Rating levels

For the purposes of our calculations we have assumed that all inverters, battery storage and the substation units would operate constantly and simultaneously.

We understand that the trackers operate intermittently throughout the day as they guide the solar panels to follow the sun from east to west. At the end of the day they operate for a slightly longer period of time to position themselves for the following day. This can take several minutes. The tracker units do not operate during the night.

The absolute levels calculated in our model show that noise form the trackers is likely to be well below the background levels. We would therefore not expect these to be perceived as intermittent, and have therefore not applied a feature correction in accordance with BS 4142. We have assumed that over the course of the daytime assessment period (i.e. 1 hour), the trackers will move for no more the 15 minutes. This is likely to be worst-case.

Review of the 1/3 octave spectrum for the inverters indicates that tones are present at 4 kHz and 8 kHz when assessed against the BS 4142 objective 1/3 octave method. The absolute levels are likely to be below the background and we would therefore expect any noise from these units to generally be just perceptible. We have therefore included a +2 dB feature correction in accordance with BS 4142.

In our experience substations can produce tonal sound at low frequencies, particularly around 50 Hz and 63 Hz. The extent of any tonality is unknown as 1/3 octave-band data was unavailable. We assumed a +2 dB penalty for tonality on the basis that the absolute a-weighted level is well below background and we would therefore expect any tonality to either be inaudible or just perceptible. This may be overly cautious, but without review of more detailed data this is considered a robust worst-case.

We understand that noise associated with the battery storage unit is from cooling fans, which we would not expect to be tonal, providing that they are correctly maintained.

For our assessment we have predicted the noise impact at both ground floor and first floor of the nearest residential properties.

The resulting rating levels for each individual noise source are as follows:

Source	Calculated noise level at property	Estimated on time in assessment period (1 hour day, 15 min night)	Character corrections	Operational period	Rating level
Eastern property (Ground Floor)					
Batteries	29	100%	0	Day and Night	29
Inverters	21	100%	2	Day and Night	23
Substation	7	100%	2	Day and Night	9
Trackers	12	25%	0	Day	6
Eastern property (First Floor)					
Batteries	34	100%	0	Day and Night	34
Inverters	24	100%	2	Day and Night	26
Substation	12	100%	2	Day and Night	14
Trackers	16	25%	0	Day	10
Western property (Ground Floor)					
Batteries	28	100%	0	Day and Night	28
Inverters	20	100%	2	Day and Night	22
Substation	3	100%	2	Day and Night	5
Trackers	12	25%	0	Day	6
Western property (First Floor)					
Batteries	32	100%	0	Day and Night	32
Inverters	22	100%	2	Day and Night	24
Substation	8	100%	2	Day and Night	10
Trackers	15	25%	0	Day	9

Table 9 – Calculated BS 4142 Rating Levels

6.4 Assessment of impacts

The impact of the specific sound source can initially be estimated by subtracting the representative sound level from the rating level. Typically, the greater this difference, the greater the magnitude of impact (depending on context).

The results of the BS 4142 assessment are presented in Table 10.

Assessment Period	Combined rating level dB $L_{Ar,Tr}$	Background sound level dB $L_{AF90,T}$	Excess rating level over background
Eastern property (Ground Floor)			
Daytime 07:00-23:00hrs	29 dB (A)	33 dB (A)	- 4 dB
Night-time 23:00-07:00hrs	29 dB (A)	28 dB (A)	+ 1 dB
Eastern property (First Floor)			
Daytime 07:00-23:00hrs	33 dB (A)	33 dB (A)	0 dB
Night-time 23:00-07:00hrs	33 dB (A)	28 dB (A)	+ 5 dB
Western property (Ground Floor)			
Daytime 07:00-23:00hrs	30 dB (A)	33 dB (A)	- 3 dB
Night-time 23:00-07:00hrs	30 dB (A)	27 dB (A)	+ 3 dB
Western property (First Floor)			
Daytime 07:00-23:00hrs	34 dB (A)	33 dB (A)	+ 1 dB
Night-time 23:00-07:00hrs	34 dB (A)	27 dB (A)	+ 7 dB

Table 10 – Summary of BS 4142 assessment results

In accordance with BS 4142, the initial assessment indicates there is a low likelihood of adverse impact during the day as a result of the proposed development, because predicted rating levels would not exceed the representative background sound levels.

At night, predicted rating levels at ground floor level would indicate a low likelihood of adverse impact. At first floor level, the rating levels would exceed background sound levels, but only in one case (at the western property) would the rating level exceed the threshold at which BS 4142 indicates that adverse impacts can start to occur.

The absolute noise levels predicted at both receptors are relatively low. In this case it is the fact that the background noise levels are also very low at night which means that rating levels could exceed the BS 4142 threshold of adverse impact in one instance. The assessment results should therefore be considered in this context.

The BS 4142 methodology also only considers external sound levels, whereas at night it is usually internal noise levels that are most relevant, particularly at first floor level. Even with bedroom windows open the predicted rating levels would be at least 10 dB below the typical internal limit of 30 dB $L_{Aeq,2300\text{-}0700hrs}$ recommended in BS 8223:2014, ProPG: Planning and noise and the WHO *'Guidelines for community noise'*.

Considering the above context, it is, in our view, unlikely that a 2 dB exceedance of the BS 4142 threshold of adverse impact is likely to unreasonably affect acoustic amenity, particularly given that this would only occur at first floor level at one residential property. The predicted rating levels at all other times/locations would not exceed the threshold, and in many cases, they would indicate a low impact – particularly during the day.

6.5 NANR 45

As discussed in Section 2.3 the Council have requested that any low frequency noise is assessed against NANR 45.

We have only been provided with 1/3 octave band data for the inverter units and can therefore only qualitatively assess predicted noise levels from these units. Based on a review of the data we can confirm that they are unlikely to exceed the NANR45 criteria.

Given that low frequency noise is relatively difficult to attenuate it will be important to ensure that cumulative LFN from all equipment does not exceed the following noise levels at the boundary of the either property. This can be secured by condition, if necessary.

Frequency, Hz	**10**	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
dB L_{eq}	92	87	83	74	64	56	49	43	42	40	38	36	34

Table 11 **– NANR 45 reference curve values**

6.6 Uncertainty

BS 4142 recommends that any significant uncertainties are reported, potential effects highlighted and, where practicable, reasonable steps taken to reduce the effects.

6.6.1 Uncertainty of measured values

The survey was undertaken during the COVID19 lockdown in a period where the government's *'transport use statistics'* estimate approximately 93 - 107 % of vehicles are using UK roads as reported in https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic.

Our measurements are likely to be representative given these relatively minor changes in traffic flow compared to the *'typical'* situation.

6.6.2 Uncertainty in calculations

Plant noise data was provided by the manufacturer. We have no reason to believe that this is inaccurate. We have made assumptions of the tonality associated with the units as detailed in Section 6.3, which we expect to represent a robust assessment.

We recommend that if any alternative equipment is proposed it should be confirmed to not exceed the noise levels provided to us for this assessment.

7 CONSTRUCTION NOISE

It is not possible to carry out a detailed assessment of construction noise, as the construction proposals are not yet sufficiently development.

However, most construction noise impacts can usually be mitigated by limiting the construction hours and requiring contractors to adopt *'Best Practical Means'* in terms of construction noise mitigation, such as those set out in BS 5228-1:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites. Noise'*.

Appropriate construction hours and noise mitigation can be secured through planning conditions, if required. Conditions typically require that a Construction Management Plan (CMP) is submitted to and approved by the Local Planning Authority which would contain details of the construction hours and the measures to control noise emissions.

We understand that the majority of the work involves the use of telehandlers which are used to mobilise equipment on to site. There will be some excavation work which we understand may involve the use of either piles or screw piles for the substation and inverter bases. The exact method(s) would be confirmed prior to construction.

We would expect the closest receptors identified in this report to be the worst effected receptors for both noise and vibration. It will be important to plan construction activities so as to minimise noise impacts. Good communication with the owners/occupiers of these properties will also be important to minimise impacts from noisy activity.

8 CONCLUSIONS

- Island Green Power UK are proposing to construct a new solar farm near to Euston in Suffolk. The solar farm would require the installation of solar panels, inverters, storage batteries and a substation, all of which would produce noise.
- Predicted noise levels from the proposed equipment were rated and assessed in accordance with BS 4142. During the day the rating levels indicate a low likelihood of adverse impact. However, at night the rating level at first floor level would exceed the BS 4142 threshold of adverse impact at one residential property.
- In the context that absolute noise levels produced by the equipment would be relatively low, and that internal noise levels (with windows open) would be well below the limits normally adopted for general acoustic amenity, we consider that the noise would not unreasonably impact the residents of this property.
- 1/3 octave-band data was not available for all of the proposed equipment. Such data was provided for the inverters and we assessed these values against the NANR 45 criteria, which indicated that LFN from inverters would be acceptable.
- We have not been able to quantitatively assess the construction noise impact of the development because construction proposals are not fully developed. However, we expect that construction noise can be adequately controlled with sensible working hours and *'Best Practical Means'* in terms of noise mitigation. Both can be secured using planning conditions, if considered necessary.
- In our view this provides sufficient evidence that the proposed development would not adversely affect local acoustic amenity and also that it would meet the requirements of WSC Policy DM 2.

APPENDIX A TECHNICAL TERMS AND UNITS RELEVANT TO THIS REPORT

Acoustic environment - Sound from all sources as modified by the environment

Ambient sound level, LA = $L_{Aeq,T}$ - Totally encompassing sound, usually composed of many sources. Comprises the residual sound and specific sound when present.

Background sound level, $L_{A90,T}$ - A weighted SPL exceeded by the residual sound for 90% of the a given time interval, T and rounded to the nearest whole dB.

Measurement time interval, T_m - Total time over which measurements are taken. May be the sum of multiple non-contiguous, short-term intervals

Rating level, $L_{Ar,Tr}$ - Specific sound level plus adjustment for characteristic features

Reference time interval, T_r - Specified interval over which the specific sound level is determined, i.e. 1h during the day (0700-2300) and 15mins at night (2300-0700).

Residual sound level, $L_r = L_{Aeq,T}$ - Ambient sound remaining when specific sound source does not contribute

Specific sound level, $L_s = L_{Aeq,Tr}$ - Level produced by specific sound source over reference time interval, Tr. Can also be calculated and/or predicted.

Sound Pressure Level (L_p or SPL) - This is a function of the source and its surroundings and is a measure in decibels of the total instantaneous sound pressure at a point in space. The SPL can vary both in time and in frequency. Different measurement parameters are therefore required to describe the time variation and frequency content of a given sound. These are described below.

Frequency - This refers to the number of complete pressure fluctuations or cycles that occur in one second. Frequency is measured in Hertz (Hz). The rumble of thunder has a low frequency, while a whistle has a high frequency. The sensitivity of the ear varies over the frequency range and is most sensitive between 1KHz and 5KHz.

Octave and One-Third Octave Bands - The human ear is sensitive to sound over a frequency range of approximately 20 Hz to 20,000 Hz and is more sensitive to medium and high frequencies than to low frequencies. To define the frequency content of a sound, the spectrum is divided into frequency bands, the most common of which are octave bands. Each band is referred to by its centre frequency, and the centre frequency of each band is twice that of the band below it. Where it is necessary for a more detailed analysis octave bands may be divided into one-third octave bands.

'**A' Weighting** - The sensitivity of the human ear varies with frequency, some frequencies sound louder than others. The 'A'-weighting curve represents the non-linear frequency response of the human ear and is incorporated in an electronic filter used in sound level meters. Measurements using an 'A'-weighting filter makes the meter more sensitive to the middle range of frequencies, which approximates to the response of the ear and the subjective loudness of the sound. Sound level measurements using 'A'-weighting will include the subscript A, e.g. dB(A).

Statistical Analysis - These figures are normally expressed as LN, where L is the sound pressure level in dB and N is the percentage of the measurement period. The LN figure represents the sound level that is exceeded for that percentage of the measurement period. L_{90} is commonly used to give an indication of the background level or the lowest level during the measurement period.

APPENDIX B MEASUREMENT SYSTEMS AND CALIBRATION

Job reference and title:	12461 Euston Solar Farm
Measurement location:	See Section 5.2 of this report
Measurement date(s):	11 September 2020 - 18 September 2020

Measuring equipment used:

Equipment description / serial number	Type number	Manufacturer	Date of calibration expiration	Calibration certificate number
Precision sound level meter serial no. A2A-04410-D2	XL2	NTi Audio	21/08/2021	32657
Microphone serial no. A16324	MC230	NTi Audio	21/08/2021	32656
Microphone pre-amplifier serial no. 5309	MA220	Neutrik	21/08/2021	32657
Microphone calibrator serial no. 042951	GA607	Castle Group	21/08/2021	U32655
Calibration level Ref: 93.7 dB Before: 93.6 dB After: 93.6 dB @ 1 kHz				
Precision sound level meter serial no. A2A-08643-E0	XL2-TA	NTi Audio	12/11/2022	36281
Microphone serial no. 9185	MC230	NTi Audio	12/11/2022	36280
Microphone pre-amplifier serial no. 3489	MA220	Neutrik	12/11/2022	36281
Microphone calibrator serial no. 25993	NOR-1251	Norsonic	12/11/2022	36279
Calibration level Ref: 114.0 dB Before: 114.1 dB After: 114.1 dB @ 1 kHz				

Persons in charge of measurements:	Martyn Broom AMIOA
Measurement parameters	1/3 octave band $L_{A90,T}$, $L_{A10,T}$, $L_{Amax,T}$, $L_{Aeq,T}$

Acoustic Louvres

Product and Technical Data

WAKEFIELDACOUSTICS
NOISE CONTROL TECHNOLOGY

INDUSTRIAL & ENVIRONMENTAL NOISE CONTROL SOLUTIONS WORLDWIDE

Wakefield Acoustics specialises in the design and fabrication of a wide range of noise control technologies. Since our formation in 1980, the company has developed a range of solutions for both industrial and commercial applications.

Acoustic louvres are commonly used as air intake paths for air intake and exhausts to plant rooms, and as environmental screens or barriers. Whilst providing noise reduction, acoustic louvres also provide a visual barrier for equipment located at the rear.

Products are fabricated in our modern 40,000 sq. ft. facility in West Yorkshire, and we are accredited to ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007, hence ensuring our products are fabricated to the highest levels of quality, with health and safety and environmental compliance being at the heart of our operations.

Wakefield Acoustics has the capability to undertake projects of all sizes from single louvre modules, to full turnkey packages involving large complex louvre banks or screens complete with associated support structures.

PRODUCT DESCRIPTION

Standard single bank acoustic louvres are available in depths of 150mm and 300mm, with high-performance chevron style louvres also available at an overall thickness of 300mm and 600mm. Non-standard louvre depths can also be accommodated to suit specific applications.
Louvres can be manufactured from a variety of materials including pre-galvanised sheet steel, pre-coated / coloured steel, stainless steel or aluminium. The robust outer casing is formed with fixing holes to allow connection to the builderswork or steelwork opening.

Contained within the casing are a series of horizontally mounted blades set at a standard pitch of 150mm, filled with a dense mineral fibre acoustic insulation. Blades are formed with an integral rain lip to improve weather protection. The acoustic insulation material is odourless, rot proof, non-hygroscopic, does not sustain vermin and will not encourage the growth of fungi, mould or bacteria. Where products are installed in an external application, or subject to high levels of moisture, the acoustic media can be further wrapped in an acoustically transparent polyester film. For mechanical protection, the media is faced with a layer of perforated steel.

ACOUSTIC PERFORMANCE

To ensure a quality installation, and to guarantee a noise reduction solution, our range of acoustic louvres has been independently tested at Salford University to BS EN ISO 10140-2:2010


Acoustic Louvre Installation


Acoustic Louvre Testing

OPTIONS

Louvres can be supplied with a variety of manufacture options to suit specific requirements:

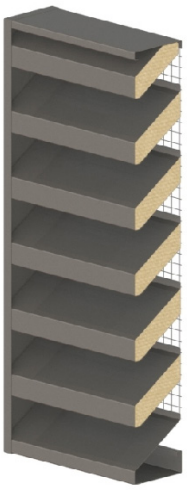
- **Birdguard** – formed from welded mesh fitted to the rear of the louvre module. As a standard, the guard would be securely mounted to the louvre cassette, though can be removable where required
- **External flashing** (normally supplied loose) – folded sheet metal facing 'flange' / flashing to provide masking of an aperture around the perimeter of the louvre. Flashing finished to suit main louvre
- **Mounting frames / secondary support steelwork** – a variety of support frames are available where building facades are unable to support the imposed weight of an acoustic louvre
- **Finish** – Self finish, Powder coat, pre-coated steel options available
- **Doors** – Louvred doorsets are manufactured with louvre cartridges mounted into a steel hollow section framework for stability and integrity. Standard doorsets are supplied with a peripheral frame for fitting into a builderswork opening, complete with butt hinges, a D-handle and deadlock with internal thumbturn
- **Industrial/Heavy Duty** – to suit demanding industrial applications louvre modules can be fabricated as full welded units for increased durability
- **Penthouse** - Pentouse louvres supplied with integral support steel framework, corner flashings and pitched roof. Depending upon size penthouse arrangements can be supplied in a single factory assembled section for ease of installation

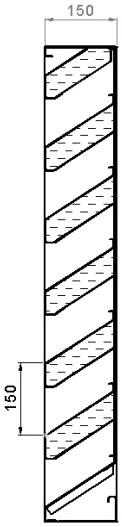
Louvre Type WA-ACL-150SB

150mm deep single bank louvre

Specification: Single bank acoustic louvre 150mm deep, manufactured with horizontally mounted blades on a 150mm pitch, housed in an outer casing.

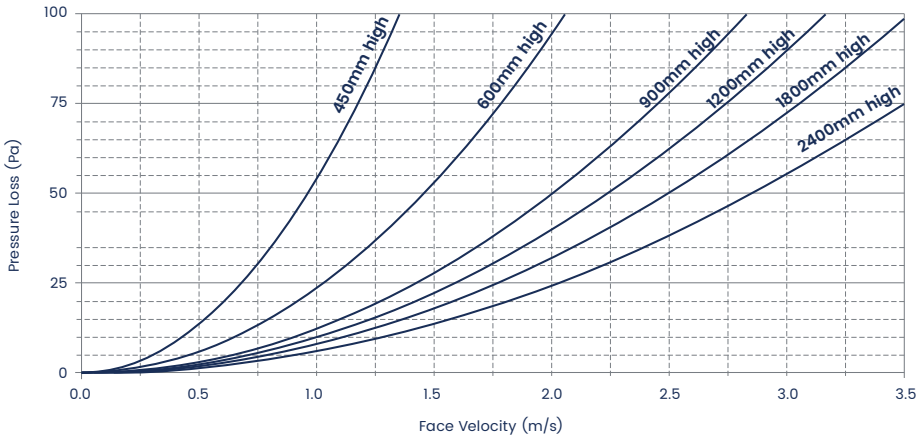
Louvre supplied with birdguard and polyester powder paint finish to a standard RAL / BS colour





Louvre			Sound Reduction (dB) at Octave Band Centre Frequency (Hz)							
Depth	**Style**	**Product Code**	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
150mm	Single Bank	WA-ACL-150SB	4	4	6	8	10	11	11	10

Pressure Loss Details



Pressure loss correction factors based upon installation conditions are given below:

Fresh air intake, ducted to rear	+0%
Exhaust air to atmosphere, ducted to rear	+10%
Non-ducted	+50%

Weight	Height	Free Area
56kg/m2 Approx	450	33%
	600	38%
	900	42%
	1200	44%
	1500	46%
	1800	46%
	2100	46%
	2400	47%

Options Available

- + Birdguard (BG)
- + Powder Coat finish (PC)
- + Pre-coated steel (CS)
- + Externally Flanged (F)
- + Support Frame (SF)

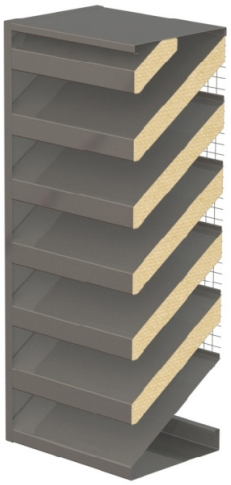
Coding Example: WA-ACL-150-SB/BG/PC/F

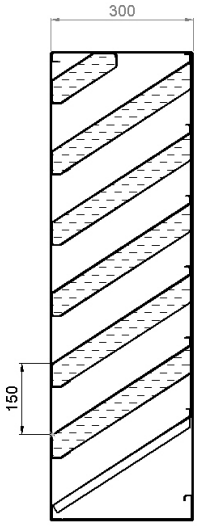
Louvre Type WA-ACL-300SB

300mm deep single bank louvre

Specification: Single bank acoustic louvre 300mm deep, manufactured with horizontally mounted blades on a 150mm pitch, housed in an outer casing.

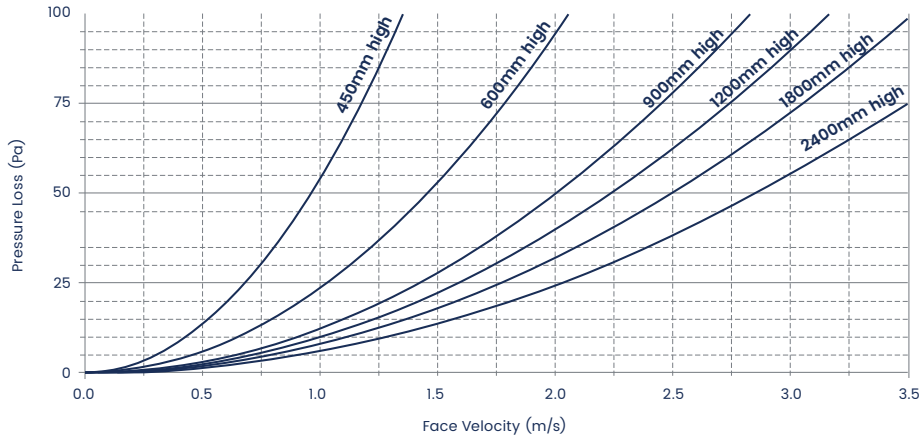
Louvre supplied with birdguard and polyester powder paint finish to a standard RAL / BS colour





Louvre			Sound Reduction (dB) at Octave Band Centre Frequency (Hz)							
Depth	**Style**	**Product Code**	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
300mm	Single Bank	WA-ACL-300SB	6	6	9	13	20	20	16	15

Pressure Loss Details



Pressure loss correction factors based upon installation conditions are given below:

Fresh air intake, ducted to rear	+0%
Exhaust air to atmosphere, ducted to rear	+10%
Non-ducted	+50%

Weight	Height	Free Area
56kg/m2 Approx	450	33%
	600	38%
	900	42%
	1200	44%
	1500	46%
	1800	46%
	2100	46%
	2400	47%

Options Available

- + Birdguard (BG)
- + Powder Coat finish (PC)
- + Pre-coated steel (CS)
- + Externally Flanged (F)
- + Support Frame (SF)

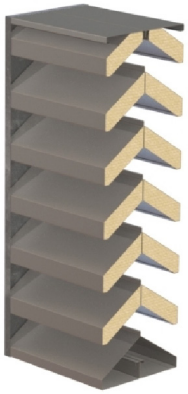
Coding Example: WA-ACL-300-SB/BG/PC/F

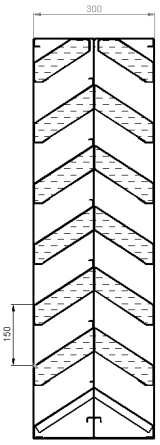
Louvre Type WA-ACL-300DB

300mm deep chevron style louvre

Specification: Double bank acoustic louvre formed from 2 x 150 louvre modules fitted back-to-back. Louvre manufactured with horizontally mounted blades on a 150mm pitch, housed in an outer casing.

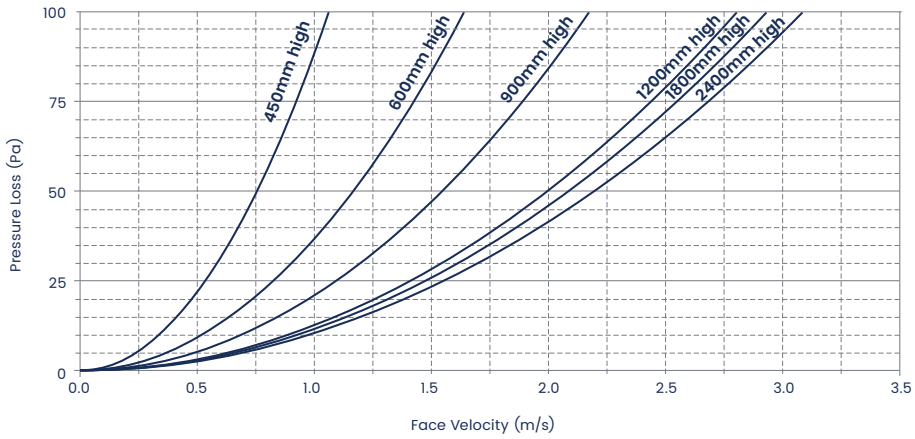
Louvre supplied with birdguard and polyester powder paint finish to a standard RAL / BS colour





Louvre			Sound Reduction (dB) at Octave Band Centre Frequency (Hz)							
Depth	**Style**	**Product Code**	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
300mm	Chevron Double Bank	WA-ACL-300DB	5	6	8	12	19	19	20	18

Pressure Loss Details



Pressure loss correction factors based upon installation conditions are given below:

Fresh air intake, ducted to rear	+0%
Exhaust air to atmosphere, ducted to rear	+10%
Non-ducted	+50%

Weight	Height	Free Area
72kg/m² Approx	450	33%
	600	38%
	900	42%
	1200	44%
	1500	45%
	1800	46%
	2100	46%

Options Available

- + Birdguard (BG)
- + Powder Coat finish (PC)
- + Pre-coated steel (CS)
- + Externally Flanged (F)
- + Support Frame (SF)

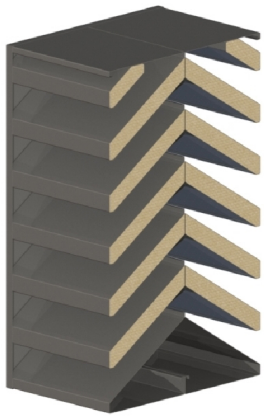
Coding Example: WA-ACL-300-DB/BG/PC/F

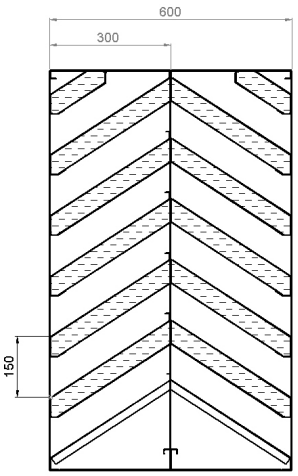
Louvre Type WA-ACL-600DB

600mm deep chevron style louvre

Specification: Double bank acoustic louvre formed from 2 x 300 louvre modules fitted back-to-back. Louvre manufactured with horizontally mounted blades on a 150mm pitch, housed in an outer casing.

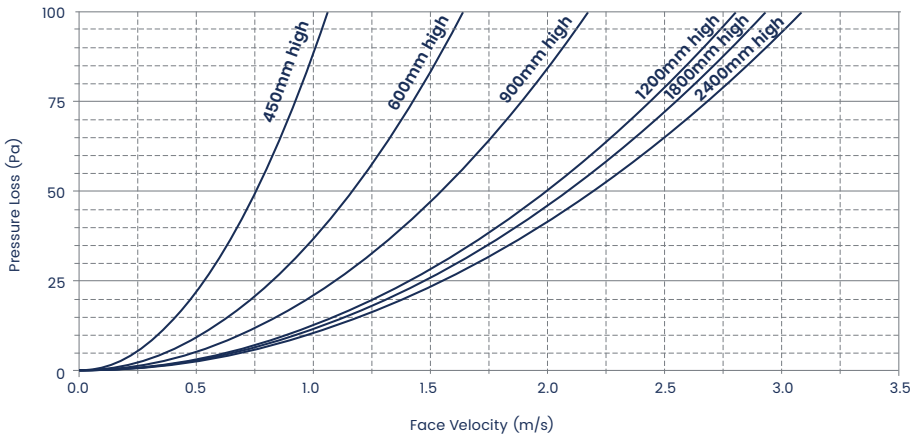
Louvre supplied with birdguard and polyester powder paint finish to a standard RAL / BS colour





Louvre			Sound Reduction (dB) at Octave Band Centre Frequency (Hz)							
Depth	**Style**	**Product Code**	**63Hz**	**125Hz**	**250Hz**	**500Hz**	**1kHz**	**2kHz**	**4kHz**	**8kHz**
600mm	Chevron Double Bank	WA-ACL-600DB	7	8	12	21	28	30	28	27

Pressure Loss Details



Pressure loss correction factors based upon installation conditions are given below:

Fresh air intake, ducted to rear	+0%
Exhaust air to atmosphere, ducted to rear	+10%
Non-ducted	+50%

Weight	Height	Free Area
112kg/m² Approx	450	33%
	600	38%
	900	42%
	1200	44%
	1500	45%
	1800	46%
	2100	46%

Options Available

- + Birdguard (BG)
- + Powder Coat finish (PC)
- + Pre-coated steel (CS)
- + Externally Flanged (F)
- + Support Frame (SF)

Coding Example: WA-ASL-600-DB/BG/PC/F

WAKEFIELDACOUSTICS
NOISE CONTROL TECHNOLOGY

Flush Mills, Westgate, Heckmondwike, WF16 0EN

[redacted]