

Intended for

Viridor

Document type

Proof of evidence

SANDY LANE RUNCORN

PROOF OF EVIDENCE NOISE

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PROOF OF EVIDENCE NOISE

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PINS CALLED IN APPLICATION REF. APP/D0650/V/21/3274427 -

PLANNING APPLICATION REF. 17/00468/FUL -

PAVILIONS, SANDY LANE, RUNCORN, WA7 4EX.

**TOWN AND COUNTRY PLANNING ACT 1990 - SECTION 77 -
REFERENCE OF APPLICATIONS TO SECRETARY OF STATE.**

**SITE ADDRESS: THE PAVILIONS, SANDY LANE, RUNCORN,
CHESHIRE, WA7 4EX.**

**DESCRIPTION OF DEVELOPMENT: PROPOSED DEMOLITION OF
PAVILIONS CLUBHOUSE FOLLOWED BY DEVELOPMENT
COMPRISING 139 DWELLINGS WITH ASSOCIATED ANCILLARY
DEVELOPMENT.**

**CALLED IN APPLICATION - PROOF OF EVIDENCE ON NOISE BY
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1. SUMMARY

- 1.1 I have reviewed the Applicant's noise studies that were submitted in support of the planning application for 139 dwellings at the site known as The Pavilions, Sandy Lane Runcorn ('Application Site'). As part of this review, I have found several significant failings in the assessment and advice which underestimates the impact of the operational Runcorn Energy Recovery Facility ("ERF") situated opposite the proposed site on Picow Farm Road. I have also reviewed Halton Borough Council ("HBC") commentary on these submissions and believe that HBC have failed to comply with their own policy in respect of noise impact in recommending approval. I have also undertaken my own site visits and measurements at and around the Application Site to inform my own assessment of the impact of the Runcorn ERF on the Application site. My key findings are:

Applicant's Noise Studies

- 1.2 The Applicant's original noise survey and assessment of impact dates from February 2017. This assessment is not included in the CD list provided to Viridor so has now been included (CD V4). I am not aware of the Applicant undertaking any further noise assessment work at the Application Site since. In the intervening period, the Mersey Gateway Crossing has opened and the flow of traffic around Runcorn has substantially altered and the traffic near the Application Site has significantly reduced. The context of the Application Site and the relative contributions of existing noise sources has changed such that I consider the basis of the Applicant's studies and recommendations are no longer valid.
- 1.3 From my observations, noise from the ERF is now dominant against the reduced ambient noise levels. The relative impact of the ERF operations at the Application Site are now far greater than assessed by the Applicant even though noise from the ERF operations is unlikely to have increased.

- 1.4 The Applicant has failed to undertake an assessment in accordance with BS4142: 2014 + A1 2019¹ (BS4142) of noise from industrial sources. This standard represents the accepted guidance on assessing noise from industrial operations affecting existing and proposed residential receptors including corrections for the character of the noise and the context of the impact at the receiver.
- 1.5 The Applicant has not quantified the level of noise from the ERF operations across the Application Site or attempted to disaggregate this from traffic and other noise sources.
- 1.6 The Applicant has ignored the context of operations from the ERF and the fact that noise from the ERF is readily audible and has distinguishing and low frequency characteristics across much of the Site.
- 1.7 Instead the Applicant has chosen to rely on an assessment of internal and external noise levels at receptors using BS8233: 2014²(BS8233).
- 1.8 BS8233, clearly states in its scope that it can only be used to assess anonymous steady state noise from transportation sources. The guideline values given reflect the nature of the noise source. Noise across the Application Site as a result of ERF operations is not anonymous and crucially now the industrial noise from the ERF dominates.
- 1.9 BS8233 makes it clear that in such circumstances BS4142 should be used to undertake an assessment.

¹ BS4142: 2014 + A1 2019 Methods for rating and assessing industrial and commercial sound. British Standards Institute

² BS8233: 2014 Guidance on sound insulation and noise reduction for buildings. British Standards Institute

1.10 The Applicant's original noise assessment in 2017 (CD V4) did not originally consider that the current planning consent for the ERF allows for HGVs serving the ERF during the night. In response to representations made by Viridor to HBC (CD V2), HBC asked for further assessment of this impact (CD C10), the Applicant's acoustician responded with an assessment that was based on data that did not include HGVs specifically associated with the ERF or the consented night time operations; did not include any source information for the ERF itself and provided a partial assessment for only some of the Site close to Picow Farm Road (CD S26).

1.11 In addition the proposed mitigation measures, as set out in the Committee Report (CD CR1), are inadequate in protecting the amenity of future residents and do not consider the on-site ERF operations.

HBC Consideration of the Proposal

1.12 In considering recommending approval of the Application, HBC has not considered the context of the noise from the ERF. Indeed in the proof of Jeff Eaton (Planning Officer for HBC), BS4142 is referenced as being considered by the Applicant and considered in determining the Application. It also states that the methodology used and the conclusions reached were robust. This is not the case as no BS4142 assessment was provided. (Proof of Jeff Eaton Planning Officer HBC, para 9.12)

1.13 On the basis of this incomplete and inaccurate assessment, HBC notes that officers and the Applicant have worked to ensure that suitable noise standards could be achieved in all plots using open windows for ventilation (CD CR1, para 6.11). This is incorrect as previous assessments relied on windows being closed to mitigate traffic noise from the A557 Weston Point Expressway.

Outcome of initial BS4142 Assessment at the Site by Ramboll Acoustics.

- 1.14 I present a preliminary BS4142 assessment based on measurements of background noise at a proxy location close to the Site and measurements of the ERF activity. When considering the impact of noise from the current ERF operations on Site at night the assessment concludes that Significant Adverse Impact is expected at locations close to the ERF.

- 1.15 In my professional opinion, this impact level is highly likely to attract complaints from new residents at the Application Site as a result of the continued operation of the ERF.

- 1.16 In contradiction to the Agent of Change Principle set out in NPPF para 187, the operation of the Runcorn ERF within its current consents and permits is likely to lead to complaints from new residents at the Site and potentially a nuisance claim. Unreasonable restrictions on the operation of the ERF can be expected as a result. However, I consider that reductions in noise emissions are expected to be very difficult to achieve given the nature of operations at the ERF site.

- 1.17 As set out in the Viridor Statement of Case, there are already wider noise concerns at receptors a significant further distance from the ERF. The Application Site is just c.80m from the tipping hall entrance and the likelihood of complaints regarding noise from the ERF operation is therefore considered high.

- 1.18 I also present an assessment of maximum noise levels resulting from HGVs accessing Runcorn ERF at night via Picow Farm Road. The outcome of this assessment is that acceptable internal noise levels cannot be achieved in proposed properties close to Picow Farm Road with windows open. This is contrary to the outcome of the assessment submitted by the Applicant which used flawed methodology in their assessment.

2. INTRODUCTION

- 2.1 This proof of evidence has been prepared by Craig Barson of Ramboll UK limited in Support of the Rule 6 Party Viridor representing the operation at the ERF.
- 2.2 This proof addresses the impact of the existing operation of the Runcorn ERF on the proposed dwellings in respect of the Called In Application for residential development comprising 139 dwellings on the Application Site ("Proposed Development").
- 2.3 Following the Case Management Conference the Inspector confirms the main issues to address including:

"....Whether the Site would provide a suitable location for residential development with reference to flood risk, noise and air quality."

This proof considers issues of noise from Runcorn ERF and other local noise sources in the vicinity of the Application Site and addresses whether the impact of noise would result in a significant effect for future residents of the Proposed Development. It also considers whether there are likely to be unreasonable restrictions placed upon the ERF as a result of introducing sensitive receptors so close to it.

- 2.4 The evidence which I have prepared and provided for this Called In Application in this written statement is true. The opinions expressed are my true and professional opinions.

3. WITNESS AND APPROACH

- 3.1 My name is Craig Barson. I have a BEng (Hons) in Electroacoustics from the University of Salford. I am a Corporate Member of the Institute of Acoustics (MIOA). I have been a Director at Ramboll UK since joining in February 2018 and I now lead the Ramboll UK acoustics team. I have over 25 years' experience in acoustic consultancy. Ramboll UK Ltd is a member of the Association of Noise Consultants (ANC).
- 3.2 Between 1999 and 2018 I was an Executive Acoustic Consultant at SRL Technical Services Ltd – one of the largest independent acoustic consultancies in the UK. My field of expertise is in building acoustic design, industrial noise and the residential and education sectors. This has included duties as expert witness in litigation where the Agent of Change principle has been relevant.
- 3.3 I have a wide ranging and practical understanding of buildings and acoustic performance and extensive experience in the control of noise egress and ingress relevant to this assessment and proof.
- 3.4 I have extensive experience of the noise from the road network in Runcorn. I am currently engaged by the Mersey Gateway Crossing Boards to evaluate the changes in noise as a result of the introduction of the crossing on the surrounding road network. This knowledge is important when considering the changes in noise on the A557 Weston Point Expressway which runs to the east of the Application Site.

4. SUMMARY OF OWN INVOLVEMENT

4.1 Ramboll Acoustics was approached by Viridor for assistance regarding Runcorn ERF in July 2021. The initial approach was to undertake a due diligence review of the Applicant's noise assessments (and updates) submitted for the Site. In late August 2021, Ramboll Acoustics was commissioned to gather data for the Runcorn ERF operation and to evaluate the likely compliance with existing planning conditions, as well as measuring baseline information of activity at the facility and for HGVs on Picow Farm Road. The assessment focused on the maximum noise levels from off-site HGV activity as it might impact the Application Site. The study was completed and reported in October 2021. In November 2021, Ramboll Acoustics was instructed to begin preparation to support a Public Inquiry for the Called In Application and undertake reviews of the Applicant's submissions for the Application Site. In December 2021, Ramboll Acoustics was instructed to undertake additional measurements and assessment to inform a preliminary BS4142 assessment at the Application Site looking at the impact of on-site ERF operations at the Application Site.

4.2 During this time Ramboll has:

- i. Undertaken a noise survey at onsite and offsite receptors around the existing Runcorn ERF operations;
- ii. Assessed the likely compliance with existing planning requirements;
- iii. Reviewed and commented on noise reports submitted on behalf of the Applicant;
- iv. Reviewed the consultation responses from HBC;
- v. Undertaken a preliminary BS4142 assessment of the impact of Runcorn ERF operations at night on selected locations within the Application Site.
- vi. Reviewed the proof of evidence provided by Jeff Eaton as Planning Officer

- 4.3 I have directly been involved in this scheme since August 2021 supervising the work undertaken. I also visited the area on the morning of 19th November 2021. My visit encompassed the Application Site, the boundary of the ERF operation and various offsite receptors. I undertook further measurements at and around the Application Site on 10th and 11th December as a basis for preparing a BS4142 assessment. I am familiar with the area around the proposed scheme.

5. SCOPE OF EVIDENCE

- 5.1 This proof of evidence deals with the impact of current ERF operations on the Proposed Development and the context of noise affecting the Application Site generally.
- 5.2 The basis of my evidence is:
- Ramboll noise survey at and around the ERF operation in August 2021;
 - Ramboll note on the observations from the survey and compliance with existing planning conditions for the ERF;
 - Site visits on 19 November 2021 to the Application Site and surrounding area;
 - Noise survey at the Application Site on 10/11 December 2021 to inform a BS4142 assessment;
 - Applicant Noise impact assessment by Spectrum Acoustics dated 01.09.17 ref RK2267/17035/Rev 1 (CD V4) ("2017 Spectrum Noise Assessment");
 - Applicant technical document by Spectrum Acoustics dated 8 January 2019 ref RK/2639/17035 responding to comments from Viridor on the original noise impact assessment; (CD S25) "Spectrum Technical Response"
 - Applicant noise impact assessment by Spectrum Acoustics dated 12.03.20 ref RK2267/17035/Rev 2 (CD S26) ("2020 Spectrum Noise Assessment");
 - Applicant's Position Statement;
 - Viridor's Statement of Case;
 - Proof of Evidence of Jeff Eaton, planning officer of HBC; and
 - HBC consultation response (CD C10, C11, C36, C38).
- 5.3 My evidence focuses on a review of the Applicant's noise studies and HBC's response to these studies. I also provide an assessment of the impact of noise from HGVs at the Site from Picow Farm Road together with a preliminary BS4142 assessment of noise impact from the night time ERF operations on new residents at the western section of the Application Site.

5.4 In my Proof of Evidence I refer to two sites:

- i. 'The Application Site': The site which relates to the Called In Application; and
- ii. The Runcorn ERF which is an existing joint venture comprising INOVYN and Viridor Energy Limited ("Viridor"). Viridor is a Rule 6 Party to this Called In Application.

6. PLANNING POLICY BACKGROUND

6.1 The following section summarises the national and local planning policies and guidance considered as part of the Called In Application relevant to my evidence.

6.2 **National Planning Policy Framework, 2021 (CD P1)**

6.3 The National Planning Policy Framework (NPPF)³ (Ministry of Housing, Communities and Local Government, 2019) updated in 2021 in England outlines the Government's planning policies and requirements for the planning system. The NPPF forms a material consideration in planning decisions .

6.4 Regarding noise, paragraph 174 of the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution.

6.5 Paragraph 185 of the NPPF states *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the Site or the wider area to impacts that could arise from the development. In doing so they should:*

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

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;"

³ Department for Communities and Local Government, 2012. Notional Planning Policy Framework, HMSO

- 6.6 To achieve these aims the NPPF refers to the Noise Policy Statement for England 2010.
- 6.7 Paragraph 187 of the NPPF states that *"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). 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."*
- 6.8 **Noise Policy Statement for England, 2010 (Appendix B)**
- 6.9 The NPSE⁴ sets out the long-term vision of Government noise policy: to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.
- 6.10 The NPSE outlines three aims for the effective management and control of environmental, neighbour and neighbourhood noise:
- "Avoid significant adverse impacts on health and quality of life;*
- Mitigate and minimise adverse impacts on health and quality of life; and*
- Where possible, contribute to the improvement of health and quality of life."*

⁴ Department of Environment, Food and Rural Affairs, 2010. Noise Policy Statement for England.

6.11 The NPSE guidance states that it is not possible to have a single objective noise-based measure that defines a 'Significant Observed Adverse Effect Level (SOAEL)' that is applicable to all sources of noise, in all situations, and that not having specific SOAEL values in the NPSE, provides the necessary policy flexibility until further evidence and suitable guidance is available.

6.12 The guidance defines two concepts applied to noise impacts. These are:

NOAEL – No Observed Adverse Effect Level, which is defined as:

"This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise."

LOAEL – Lowest Observed Adverse Effect Level, which is defined as:

"This is the level above which adverse effects on health and quality of life can be detected."

6.13 **Planning Practice Guidance, 2019 Appendix B**

6.14 In March 2014 (updated for 2019), the Department for Communities and Local Government (DCLG) released its Planning Practice Guidance (PPG) web-based resource to support the NPPF⁵ for noise. The guidance advises that local planning authorities, when determining noise impacts, should consider:

*"Whether or not a significant adverse effect is occurring or likely to occur;
Whether or not an adverse effect is occurring or likely to occur; and
Whether or not a good standard of amenity can be achieved."*

6.15 The PPG introduced the additional concepts of SOAEL (Significant Observed Adverse Effect Level), and UAEL (Unacceptable Adverse Effect Level). Full details of the PPG on effects are provided in Table 6.1.

⁵ <http://webarchive.nationalarchives.gov.uk/20140724121321/http://planningguidance.planningportal.gov.uk/blog/guidance/noise/noise-guidance/>

Table 6.1: PPG Guidance

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

- 6.16 Factors to be considered in determining whether noise is a concern include the absolute noise level of the source, the existing ambient noise climate, time of day, frequency of occurrence, duration, character of the noise and cumulative impacts (006 Reference ID: 30-006-20190722).
- 6.17 The NPPG does not advocate specific standards that should be used to assessment noise but refers to other points of reference that may assist. These include BS8233: 2014 and ProPG: Planning & Noise (May 2017)
- 6.18 **ProPG: Planning & Noise - Professional Practice Guidance on Planning & Noise – New Residential Development (May 2017) Appendix B**
- 6.19 ProPG⁶ sets out a staged approach to provide practitioners (including EHO's) with guidance on a recommended approach to the management of noise within the planning system in England with specific regard to residential development. It recognises that noise is a material consideration in the planning process and key aspect of sustainable development.
- 6.20 Stage 1 is an initial noise risk assessment of the proposed development site with Stage 2 being systematic consideration of 4 key elements:
- Element 1 – demonstrating a “Good Acoustic Design Process”;
 - Element 2 – observing internal “Noise Level Guidelines”;
 - Element 3 – undertaking an “External Amenity Area Noise Assessment”;
 - Element 4 – consideration of “Other Relevant Issues”

⁶ ProPg: Planning and Noise “Professional Practice Guidance on Planning and Noise: New Residential Development” May 2017, IOA, ANC, CIEH

6.21 The scope of the guidance is restricted to sites that are exposed predominantly to noise from transportation sources. But for the Stage 1 risk assessment it states:

"The key concerns regarding new residential development near existing industrial and/or commercial land uses are:

- The future occupants of the new noise sensitive development may be subject to adverse effects of noise, and*
- The existing industrial and/or commercial business may become subject to complaints from future occupants of the new noise sensitive development and at risk of having to modify operations and/or incur additional costs."*

6.22 Where industrial noise is dominant it goes on to say:

"Where industrial or commercial noise is present on the site and is considered to be dominant" (i.e. where the impact would be rated as adverse or greater (subject to context) if a BS4142:2014 assessment was to be carried out), then the risk assessment should not be applied to the industrial or commercial noise component and regard should be had to the guidance in BS4142:2014."

6.23 For Stage 2, element 2 "Internal Noise Levels" ProPG references BS8233:2014 Noise level guidelines for steady state external noise sources but notes:

"To be clear, where industrial and/or commercial noise is present on the site and is considered to be "dominant" (i.e. where the impact would be rated as adverse or greater (subject to context)) then this is outside the scope of this ProPG and regard should be had to the guidance in BS4142:2014."

- 6.24 For Element 3 External Amenity Area noise, ProPG again refers to BS8233 guidance on suitable level, where the dominant source is transportation sources. Where sites are exposed to Industrial and/or commercial noise, ProPG states:

"Where external amenity areas are exposed to "dominant" industrial and/or commercial noise, the impact of the noise should be assessed in accordance with BS4142:2014 over the time period that the amenity area is likely to be used."

6.25 **The Environmental Protection Act, 1990 (as amended)**

- 6.26 Section 79 of the Environmental Protection Act 1990 (EPA)⁷ provides that a number of matters, including noise, may amount to statutory nuisances. Under the provisions of the Environmental Protection Act, the local authority is required to inspect its area periodically to detect any nuisance and, where a complaint of a statutory nuisance is made by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint.

6.27 **Local Policy**

Halton Unitary Development Plan (2005) (CD POL3)

6.28 **BE1 (2) d - General requirements for development (CD POL06)**

"It must be compatible with existing and proposed surrounding uses....."

⁷ Secretary of State, 1990. The Environmental Protection Act, HMSO.

6.29 **Policy PR7 Development near to established pollution sources (CD POL3, page 129)**

"Development near to existing sources of pollution will not be permitted if it is likely that those existing sources of pollution will have an unacceptable effect on the proposed development (as defined in Policies PR1, 4, 5, 6 13 and 14) and it is considered to be in the public interest that the interests of the existing sources of pollution should prevail over those of the proposed development.

Exceptions may be permitted where the Applicant submits satisfactory proposals to substantially mitigate the effects of existing sources of pollution on the development proposal."

6.30 **PR8 - Noise Sensitive Developments (CD POL18)**

"Development that is sensitive to noise will not be permitted near to transportation facilities such as Liverpool Airport, roads or railways unless steps are taken to substantially mitigate the effects of the noise nuisance upon the proposed development."

Halton Delivery and Allocations Local Plan (Draft)

6.31 **HE7 – Pollution and Nuisance (Proposed) (CD POL39, page 157)**

6.32 Policy HE7 considers at point 1 that an appropriate impact assessment should accompany an application where noise is a key consideration.

6.33 At Point 4, HE 7 discusses obligations in line with the principal of Agent of Change.

1. Where applications for development identify risks that would negatively impacting on the quality of the environment through:
 - a. air pollution;
 - b. noise nuisance;
 - c. odour nuisance;
 - d. light pollution and nuisance;
 - e. land and soil contamination;
 - f. water pollution; and
 - g. other forms of pollution and nuisance,
 must be accompanied by an appropriate impact assessment and, where necessary, demonstrate that mitigation measures have been incorporated through a mitigation scheme.
2. Where risks for pollution and nuisance are identified, planning permission will be granted for development providing:
 - a. The level of air borne pollutants caused by the proposed development does not exceed statutory guidelines, unless appropriate mitigation measures are agreed.
 - b. Noise nuisance is not likely to cause a significant increase in ambient noise levels for either day or night time conditions.
4. Development near to existing sources of pollution or nuisance will not be permitted if it is likely that those existing sources of pollution will have an unacceptable impact on the proposed development and it is considered to be in the public interests that the existing sources of pollution should prevail over the proposed development. Exceptions may be permitted where the applicant submits satisfactory proposals to substantially mitigate the effects of existing sources of pollution on the development proposals.

6.34 **Other Relevant Guidance**

6.35 In addition to the above, consideration has been given to the following Guidance. Extracts from this guidance are included at Appendix B of my proof.

6.36 **BS 4142:2014 + A1 2019 – 'Methods for rating and assessing industrial and commercial sound'**

6.37 BS4142 provides a means or rating impact from commercial or industrial sources. The scope is specifically for the following:

"a) sound from industrial and manufacturing processes;

b) sound from fixed installations which comprise mechanical and electrical plant and equipment;c) sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and

d) sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.”

6.38 The standard is not intended to be applied to the rating and assessment of sound from:

*"a) recreational activities, including all forms of motorsport;
b) music and other entertainment;
c) shooting grounds;
d) construction and demolition;
e) domestic animals;
f) people;
g) public address systems for speech; and
h) other sources falling within the scopes of other standards or guidance.”*

6.39 In the context of noise impact from Runcorn ERF operations, this standard should be used to assess external plant and equipment and loading and unloading activities including that from the rail head and on site vehicle movements.

6.40 The assessment method considers the characteristics of the sound, such as tonality, impulsivity and intermittency. Corrections are applied to the specific noise source to account for these characteristics to obtain the 'rating' noise level, where noise generated is tonal (up to 6 dB), intermittent or impulsive (up to 9 dB), or otherwise 'readily distinctive against the residual acoustic environment' (up to 3 dB).

6.41 BS4142:2014+A1 2019, defines the relevant parameters as follows:

- Specific noise level $L_{Aeq,T}$: The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source(s) over a given reference time interval;

- Background level, $L_{A90,T}$: The 'A' weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T;
- Rating level, $L_{Ar,Tr}$: The equivalent continuous 'A' weighted sound pressure level of the item of plant or process considered (specific sound level), plus relevant adjustments made for any tonal, intermittent, or impulsive characteristic features of the noise (as specified in BS4142:2014+A1 2019) which are discernible over the existing noise climate at the receptor.

6.42 Based on guidance from BS4142:2014+A1 2019, the rating level from the specific operation is compared with to the Background Noise level at the assessment location and the following magnitude of impacts apply

- Typically, the greater the difference, the greater the magnitude of impact.
- A difference of around +10dB or more is likely to be an indication of significant adverse impact, depending on context.
- A difference of around + 5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating levels relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

6.43 BS4142 notes that adverse impacts may include but not be limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

6.44 BS4142 is concerned with impact, whereas NPPG concerned with effect. Nevertheless, where it is established, with due regard to context, that a Significant Adverse Impact is expected, this is likely to lead to a SOAEL in accordance with NPPG.

6.45 It is noted at Section 8.4 of BS4142:

"8.4 Existing specific sound source(s) operating continuously

Measure the background sound at a location which is not subject to the specific sound and where the residual sound is considered to be comparable to that of the assessment location. Justification for considering this should be reported."

6.46 **BS 8233:2014⁸ – 'Guidance on sound insulation and noise reduction for buildings'**

6.47 BS8233 gives guidance on suitable internal noise levels for steady state anonymous external transport only noise sources. It is desirable that the internal ambient noise level does not exceed the guideline values given below.

⁸ British Standards Institution, 2014. BS 8233 2014 Guidance on sound insulation and noise reduction for buildings, BSI.

Table 4 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

- 6.48 On the matter of industrial noise BS8233:2014 clearly states that an assessment to BS4142 should be applied in such circumstances

BRITISH STANDARD

BS 8233:2014

6.5.2 Assessment of industrial noise

Where industrial noise affects residential or mixed residential areas, the methods for rating the noise in BS 4142 should be applied. BS 4142 describes methods for determining, at the outside of a building:

- noise levels from factories, industrial premises or fixed installations, or sources of an industrial nature in commercial premises; and
- background noise level.

- 6.49 On the subject of noise with character, BS8233 states at 7.7.1:

"Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate."

- 6.50 There are several footnotes which add context to the guideline values. These are produced below:

"NOTE 2 The levels shown in Table 4 are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port with high levels of traffic at certain times of the night, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the levels recommended in Table 4."

NOTE 3 These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year's Eve."

NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or

$L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values.

NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.

If applicable, any room should have adequate ventilation (e.g. trickle ventilators should be open) during assessment.

NOTE 6 Attention is drawn to the Building Regulations [30, 31, 32].

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

- 6.51 BS8233 gives guidance on external amenity. The premise of this guidance is external amenity primarily affected by noise from transportation sources.

7.7.3.2 Design criteria for external noise

For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

6.52 **WHO Guidelines for Community Health, 1999⁹ and 2018¹⁰**

6.53 WHO guidelines from 1999 indicate threshold values for impact of noise on health and in particular disruption of sleep. The 2018 noise guidelines focus more on long terms health effects from noise so complement the 1999 guidance in respect of the impact on sleep. Guideline values are provided in respect of disturbance to sleep disturbance which are largely reinforced by BS8233:2014 namely 8 hour average night-time values in bedrooms of 30dB L_{Aeq}.

6.54 The impact of events that regularly exceed 45dB L_{Amax} is introduced as a guideline value above which sleep is disrupted when events occur more than 10 – 15 times per night. This guideline value was used in previous iterations of BS8233 (1999).

6.55 **Application of standards**

6.56 Based on the scope of the standards reference above, the following table indicates what noise sources should be assessed to what standards and other considerations for the Application Site.

Type of noise impact to the Application Site.	Appropriate standard for assessment of effect level	Other considerations to inform the significance of the impact
Internal noise levels in habitable rooms in the proposed development from all road traffic on local roads	BS8233: 2014, to address the steady state anonymous traffic noise using the guideline values	Reference to WHO guidelines on maximum noise events caused by individual events. Particularly relevant to maximum noise from HGV movements on Picow Farm Road.

⁹ World Health Organisation. 1999. Guidelines for Community Noise. Geneva. WHO.

¹⁰ World Health Organisation, 2018. Environmental Noise Guidelines for the European Region.

External noise levels in amenity areas of the proposed development from all road traffic on local roads	BS8233: 2014	Consideration of whether this would be classed as a noisy urban area adjacent to a strategic road network where higher levels may be acceptable
On-site ERF operations including onsite vehicle and train movements and use of the Gantry cranes.	BS4142: 2014 + A1 2019 to address outdoor sound levels to assess the likely effects of sound on people who might be insider or outside a dwelling	The context of the Application Site and how noise affects it is important. Consideration as to whether noise from industry is part of the noise environment and can be classed in the same way as traffic noise or not. The absolute level of noise outside and inside dwellings can be compared to the levels given in BS8233 for steady anonymous noise sources but lower limits are appropriate for noise of any specific character (BS8233 Section 7.7.1)

7. SANDY LANE RUNCORN APPLICATION SITE BACKGROUND

7.1 Location



Figure 1

7.2 The Called In Application is a proposed residential development for 139 homes. CD P01 indicates the proposed layout and red line boundary to the Site. The approximate red line boundary is shown above with the ERF to the immediate west.

7.3 Description of noise sources affecting the Application Site

7.4 The Application Site is located around c.50m from the existing rail siding and c.80m from the tipping hall entrance for the ERF to the west of the Site. This is closer than any existing residential receptors.

- 7.5 Picow Farm Road provides access to the ERF and INOVYN chemical manufacturing work via Barlow Way as well as providing access to the A557 Weston Point Expressway to the north. HGVs access and leave the ERF to the north of Barlow Way. HGVs are not permitted to leave Barlow Way and travel south.

- 7.6 The A557 Weston Point Expressway is located to the east of the Application Site and provides access for local traffic to and from the surrounding residential and industrial areas. The A557 Weston Point Expressway no longer serves as the major route for vehicles wishing to cross the river Mersey and Manchester Ship Canal between Runcorn and Widnes. This purpose is now mostly served by the Mersey Gateway Crossing. This opened in late 2017. The A557 Weston Point Expressway provides access to the Silver Jubilee Bridge which is restricted to local traffic.

- 7.7 From my own observations, there is very little traffic on the A557 during the day with even less at night.

- 7.8 To north of the Application Site is an INOVYN caustic soda loading deport. HGVs were observed to be entering and leaving this facility during daytime hours only and no significant noise was observed.

- 7.9 Further to the north is Halton Fabrications. LGV movements to and from this facility were observed but there no noticeable impact on the Application Site.

- 7.10 To the west of the Application Site adjacent to Picow Farm, there is a pipeline operated by INOVYN. There is gas venting on this pipeline at regular intervals along its length. This was observed to operate during the day and night. Noise from this source was not significant at the western boundary of the Application Site.

7.11 Noise from the ERF is clearly audible across the Application Site during the night and day. In my opinion the noise is dominant – particularly so during the night. Noise from ERF activities that are audible include but are not limited to.

- i. Tipping hall activities.
- ii. Screeching from inside tipping hall (conveyor noise).
- iii. Low frequency rumble from around the boiler house.
- iv. Air Cooled Condensor (ACC) noise more towards the south eastern boundary of the Site.
- v. Noise breakout from louvres on turbine hall.
- vi. Crane on the rail head screeching.
- vii. HGV noise around the rail head and queueing to get in the tipping hall.
- viii. Container impact noise.
- ix. Noise from Diesel Freight trains pulling away.

7.12 **Noise objection**

7.13 Viridor raised objections to the Proposed Development during the application stages in respect of the potential noise impact from the ERF on the new residents (CD V1 – V2). Viridor also submitted written representations after the application was called in (CD V3).

Group Claim

7.14 As highlighted in the written representations referred to above, the ERF has been the subject of complaints and is now defending a group claim brought against it for nuisance (including on the basis of noise and odour). This claim is robustly contested by Viridor. However, this demonstrates the prospect of future complaints being brought against it by new residents who would be living closer to potential sources of noise at the ERF than those who are involved in the group claim.

- 7.15 Viridor is of the opinion that there are very real prospects of potential future residents at the Application Site being placed in a location by the Proposed Development where there would be complaints of unacceptable noise impacts. Flawed evidence was presented on noise to support the original planning Application and the impacts were significantly underestimated. It is highly likely that the location of residential development at the Application Site will result in complaints and may lead to a claim in nuisance. This could prejudice the efficient operation of the ERF and its evolving operations and/or lead to requests for unreasonable restrictions or even halting such operations.
- 7.16 In this proof, I will be considering whether this concern is well founded and if indeed complaints are likely.
- 7.17 **Description of Runcorn ERF Operation**
- 7.18 On 16th September 2008, the Secretary of State was deemed to grant planning permission (reference 01.08.10.04/8C) in respect of an Energy from Waste combined heat and power generating station (the 'EfW facility') on land at Runcorn, Cheshire nearby INEOS ChlorVinyl's manufacturing works.
- 7.19 The ERF generates up to 564 GWh of electricity, enough to power the operations at the Viridor ERF and the equivalent to power around 150,000+ homes. In addition, it generates 51 MW of heat for exclusive use by the nearby INOVYN chemical manufacturing site.
- 7.20 The ERF is a Combined Heat & Power ('CHP') plant. It treats up to 1.1million tonnes of fuel each year. Fuel burned at the facility is primarily refuse derived fuel (RDF) and digestate produced from the Mechanical and Biological Treatment (MBT) of Municipal Solid Waste (MSW) but it also includes some appropriately treated commercial and industrial (C&I) waste and biomass. All waste material for processing received at the facility is non-hazardous.

- 7.21 Phase 1 of the ERF facility was completed on 18 January 2015. Phase 2 of Runcorn EfW was also subsequently fully operational by 2016, taking capacity to 850,000 tonnes. Following approval for a further increase in fuel imports, the ERF can now operate to its approved capacity of 1.1million tonnes by 2019.
- 7.22 Fuel entering the ERF by HGV enters the site via Picow Farm Road (immediately to the west of the Application Site) and vehicles entering the site must turn right into the site and HGVs leaving the site must turn left out of the site thus avoiding residential properties to the south. These HGVs enter via a weighbridge and access the ERF's tipping hall in the south east corner of the building.
- 7.23 The facility also benefits from rail access. Waste arrives at the site in international intermodal containers where they are lifted via a crane mechanism onto a flatbed HGV where then they enter the tipping hall via the same entrance.

8. REVIEW OF APPLICANT'S SUBMISSIONS TO SUPPORT PLANNING AND HBC RESPONSE

- 8.1 The Applicant appointed Spectrum Acoustics to undertake a noise and vibration assessment at the proposed development Site in 2017 (CD V4). There are two additional documents in the core document list. CD S25 is technical note by Spectrum Acoustics dated 8th January 2019. CD S26 is the Planning Noise Assessment dated March 2020.
- 8.2 The original Planning Noise and Vibration assessment from 2017 as submitted with the original Application is also considered here as the survey and Site context observations date from this time. This is also the only document that purports to assess impact of noise on the entire Application Site (CD V4). This was not included in the CD list but has now been added by Viridor (CD V4).
- 8.3 I review each of these documents in chronological order.

Planning Noise and Vibration Assessment ref RK2267/17035/Rev 1 dated 1/9/2017 (CD V4) ("2017 Spectrum Noise Assessment")

- 8.4 This document supported the original planning application at the Application Site. I note in Section 2, Site Description and Proposals the following:

"Bounding the site to the site (sic) to the east is the A557 Weston Point Expressway, a busy dual(sic)-carriageway road linking Runcorn to Widnes"

- 8.5 Whilst this description was entirely accurate at the time of the noise survey in 2017, the A557 is no longer the busy road linking Runcorn and Widnes. The opening of the Mersey Gateway Crossing in late 2017 now forms the main route for traffic wishing to cross the Mersey and Manchester Ship Canal between Runcorn and Widnes. The Silver Jubilee Bridge (SJB), is now only accessible for local traffic and the A557 now mainly provides access for local industry and Runcorn residents. As a broad estimate, the traffic flow on the A557 that passes the Application Site is now less than 10% of the value in 2017. Consequently the noise from vehicle traffic is very drastically reduced and the context and impact of the ERF operation more significant at the Application Site than assessed in 2017.
- 8.6 During my noise surveys at night, I noted the limited traffic on the A557 Weston Point Expressway past the Application Site. Traffic counts are included as part of the BS4142 assessment in Appendix C.
- 8.7 At the time of the application being submitted in 2017, the Mersey Gateway Crossing was under construction, the impact of the change in road traffic was known and quantified in the Environmental Statement. The 2017 Spectrum Noise Assessment made no attempt to quantify the change in noise levels at the Site and resulting change in context.

8.8 At section 3.1.3 of the 2017 Spectrum Noise Assessment, the author discusses the Planning Practice Guidance-Noise (PPG) noting the Local Planning Authority's obligations.

Of relevance to this scheme, it advises that *"Noise needs to be considered when ...new developments would be sensitive to the prevailing acoustic environment."* Whilst it does advise that noise can override other planning concerns, it states that as with the NPSE and the NPPF it does not expect noise to be considered in isolation from other economic, social and environmental dimensions of a proposed development.

It asks an LPA to consider

- *whether or not a significant impact is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur;*
- *whether or not a good standard of amenity can be achieved.*

This includes identifying whether the noise exposure is above or below SOAEL or LOAEL.

The PPG talks about "impact" and "effect". This is an important part of the context discussion, as a noise may have a significant impact for brief period of time, but because the impact is only brief, the overall "effect" is not significant, as it does not materially affect behaviour.

8.9 I discuss the level of noise from the ERF operation in Appendix C of my proof, but I note at this point that the ERF operation is a 24 hour 365 day per year operation. This is an important consideration when establishing the context of the effect of operations at the Application Site.

8.10 Also at section 3.1.3, the 2017 Spectrum Noise Assessment report discusses the definition of a SOAEL under PPG as follows:

- Significant observed adverse effect: Noise causes a material change in behaviour and attitude (eg avoiding certain activities during periods of intrusion, or having to keep windows closed most of the time because of the noise where there is no alternative ventilation), potential for difficulty getting back to sleep, quality of life diminished. This correlates to a SOAEL as defined by the NPSE and should be avoided.
- Unacceptable adverse effect: Extensive and regular changes in behaviour and/or an inability to mitigate effects, leading to psychological stress and physiological effects (eg regular sleep deprivation, medically definable harm). This, the PPG advises, should be prevented.

It is of note that the examples given in the PPG relate to changes of behaviour, changes to quality of life and changes in the character of an area. In the case of this development, residents would be moving into an existing situation, so behaviours would not change, as no pattern of behaviour is already established.

This is reflected formally in paragraph 007 of the PPG. This paragraph helps the LPA consider the balance between planning and statutory nuisance (Environmental Protection Act 1990). It states that *"When assessing whether a statutory nuisance exists, local authorities will consider a number of relevant factors including the noise level, its duration, how often it occurs, the time of day or night that it occurs and the 'character of the locality'. The factors influencing the 'character of the locality' may include long-established sources of noise in the vicinity, for example church bells, industrial premises, music premises or public houses'."*

8.11 Whilst noting that there would be no change in behaviour as the noise is existing, the LPA has to also consider many other factors such as the time of day or night that noise occurs. It would be expected that they would consider the existing operation of the ERF and any history of noise impact resulting in complaints.

8.12 As highlighted in the written representations by Viridor to the Called In Application, the ERF has been the subject of complaints and is now defending a group claim brought against it for nuisance (including on the basis of noise and odour). This claim is robustly contested by Viridor. The complaints originate from residences that are much further from the ERF, and should be considered in judging the balance between planning and nuisance.

8.13 Section 3.2 of the 2017 Spectrum Noise Assessment discusses the criteria for the assessment. Section 3.2.1 correctly identifies BS4142: 2014 (now with + A1 2019 amendments).

3.2.1 BS 4142:2014 Methods for rating and assessing industrial and commercial sound

BS 4142 provides a method for rating and assessing sound of an industrial nature, and is applicable when assessing sound at new dwellings. It uses the outdoor sound level to assess the likely effects on people who may be inside or outside a dwelling. The standard is not intended to be applied to the assessment of indoor sound levels.

8.14 I agree with the authors statement at 3.2.1 of the report. BS4142 is the applicable standard for assessing industrial noise and its impact on new dwellings. It is correct in that its application is outside dwellings, but the effect on people is relevant to both external amenity and internal conditions. However the applicant's acoustician did not undertake a BS4142 assessment at the Application Site.

8.15 An important point of note is that the level of impact is based on the difference between the specific noise from the industrial operation and the prevailing background noise level without the industrial operations. This difference will be the same outside and inside a dwelling as the building fabric will attenuate both background and source noise by the same amount.

- 8.16 I agree that any assessment of sound in accordance with BS4142 should also consider the absolute level of sound inside and outside a dwelling with reference to other standard and guidance such as WHO Guidelines for Community Noise(WHO) and BS8233. However, reference to these additional standards should support the BS4142 assessment to assist with context and establish the significance of the impact. They do not replace the BS4142 assessment. Reference to alternative standards such as BS8233 that give recommended limits for noise inside and outside dwellings should also consider the scope of such limits. For example WHO and BS8233 are usually used for anonymous continuous steady noise sources from transportation sources.
- 8.17 At Section 3.2.3 the 2017 Spectrum Noise Assessment discusses the use of BS8233 with regards to noise level limits inside and outside dwellings. I agree that this is the appropriate standard for assessing noise from transportation sources that are anonymous in nature and emanate from outside the Runcorn ERF site. The noise limits are not appropriate for other noise sources and it noted that more stringent limits might be appropriate. Indeed at section 7.7.1 BS8233 states:

7.7.1 Dwelling houses, flats and rooms in residential use (when unoccupied)

This subclause applies to external noise as it affects the internal acoustic environment from sources without a specific character, previously termed "anonymous noise". Occupants are usually more tolerant of noise without a specific character than, for example, that from neighbours which can trigger complex emotional reactions. For simplicity, only noise without character is considered in Table 4. For dwellings, the main considerations are:

- a) for bedrooms, the acoustic effect on sleep; and
- b) for other rooms, the acoustic effect on resting, listening and communicating.

NOTE Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate.

- 8.18 At section 3.2.3 of the 2017 Spectrum Noise Assessment, in relation to external noise levels, I again note that the guideline values are for steady anonymous noise from transportation sources. If the dominant noise source does not fall into this category, the limits given are not appropriate.

Applicant's Noise Measurements

- 8.19 Section 4 of the report discusses the noise measurements on Site. For the reasons given in Section 8.5 of my proof, the measurements of noise at the Site in 2017 are no longer considered valid and relevant. Commentary in Section 4.3.1 of the report is now invalid as it describes the dominance of road traffic noise across the Site from the A557 Weston Point Expressway.
- 8.20 At section 4.3.1 the 2017 Spectrum Noise Assessment describes the sources of noise affecting the Application Site during the day and night. Although the context of the Application Site has changed due to the reduction in traffic noise level from the A557 Weston Point Expressway, from my own observations, I agree with the following notes regarding audible sources of noise associated with the ERF operation

"....sources include continuous plant noise, noise associated with the gantry crane, very slow moving locomotives, occasional reversing alarms, occasional discharges of pressurised air and squeaking metal"

- 8.21 I also note additional characteristics in my assessment of impact in Appendix C for night time operations and that during the day there is significant levels of impact noise from containers being offloaded at the rail head.

- 8.22 During the night time, the report incorrectly states that the ERF is not permitted to receive deliveries. This is corrected in later correspondence (CD S25) reviewed at section 8.57 of my proof. The author describes noise from Runcorn ERF at night as being continuous in nature without tonal characteristics, but has character that is otherwise distinctive. I fundamentally disagree with the tonal characteristics statement. My assessment at Appendix C identifies significant low frequency noise affecting the Site.
- 8.23 It is noted that at no point does the 2017 Spectrum Noise Assessment attempt to comment on the relative contributions of road traffic and ERF noise across the Site.
- 8.24 I also note that the change in Application Site context now means that the relative contribution that is ERF noise is likely to have increased even if ERF emissions have remained the same. This is due to the significantly reduced level of road traffic noise from the A557 Weston Point Expressway to the east of the Site.

Applicant's Assessment

- 8.25 At section 5.1, the 2017 Spectrum Noise Assessment starts the assessment by correctly referencing BS4142.

5.1 BS 4142:2014

During the daytime, ambient noise levels across the site are dominated by road traffic movements. Noise associated with the nearby industrial uses is audible, though not significant. During the night-time, road traffic movements reduce and noise associated with the nearby industrial uses control the background sound levels.

Normally for a development of this nature, a BS 4142:2014 *Methods for rating and assessing industrial and commercial sound* assessment should be carried out. However, it is not possible to carry out a robust assessment of industrial sound in accordance with BS 4142:2014 here. This is because the noise levels from the industrial processes are a long established part of the character of the area, nor can the processes be stopped for a period of time for measurement purposes.

In instances where existing specific noise sources operate continuously, section 8.4 of BS 4142:2014 states that background sound levels should be measured at a location which is not subject to the specific sound and where the residual sound is considered to be comparable to that of the assessment location. However, as the industrial sites are very large, there are no suitable locations in the vicinity of the proposed development site which satisfy this alternative method.

Therefore, a representative background sound level cannot be determined, as the specific industrial noise is included in the existing background sound levels. Consequently, a robust assessment in accordance with BS 4142:2014 cannot be completed.

- 8.26 The description of noise levels at the Application Site is now incorrect. I agree that at night, noise from industry forms the background noise level at the Application Site. During the day this is also the case.
- 8.27 I note the difficulties in determining the background noise levels at the Application Site given the continuous nature of the ERF and other industrial operations. However, there is no evidence to support the assertion that a suitable proxy location could not be found away from the ERF operation but at similar distance from the road network and other local noise sources. Section 8.4 of BS4142 clearly advocates this approach.
- 8.28 I consider that to dismiss any kind of BS4142 assessment, is incorrect. The ERF noise is dominant across the Site during the night and day and has clear potential to cause significant impact. Whilst all attempts to minimise uncertainty in measuring a background noise level at a suitable proxy location should be taken, any such uncertainty in the assessment would be less than the uncertainty in determining impact on the Application Site without any regard to the context of the industrial noise affecting it. In effect, this is what the Applicant's noise assessment has done by not completing a BS4142 assessment.
- 8.29 In proceeding with an assessment on this basis the Applicant ignores the context of the ERF operation on the Application Site and essentially treats this as anonymous noise without any character. Notwithstanding the changes in the Site context as a result or reduced vehicle traffic, this is and was fundamentally flawed.

Applicant's BS8233: 2014 and WHO guideline assessments

Internal noise levels

- 8.30 Section 5.2 of the 2017 Spectrum Noise Assessment deals with internal noise. Notwithstanding the fact that the Application Site noise levels have changed and previous commentary on the suitability of the noise limits to anything other than anonymous noise from traffic sources. The 2017 Spectrum Noise Assessment targets the “reasonable” standards in BS8233. The Applicant’s acoustician proposes a 5dB relaxation on the guideline values in BS8233 which are, in themselves, only valid for steady state anonymous noise from traffic noise sources. I note that the 2017 Spectrum Noise Assessment confirms that the ERF noise is dominant at the Site at night, with which I agree.
- 8.31 It is therefore not appropriate to use BS8233 to assess the effect level, or to suggest that more relaxed guideline values are appropriate as the noise source affecting the Application Site is industrial noise with significant character.
- 8.32 I note from the survey notes that there were no HGVs delivering to the ERF during the night time noise surveys. Therefore the measured ambient and maximum noise levels assessed do not include the impact of the consented operation at the ERF which can accept road bound deliveries 24 hours per day.
- 8.33 The values in Table 4 of the report at Section 5.2.1 are not correct for the current Site conditions and do not include consented operations.
- 8.34 It is noted at Section 5.2.1 of the 2017 Spectrum Noise Assessment uses closed windows and assumes the PIV system provides adequate levels of ventilation. This does not align with HBC comments on the Application or the proof of evidence from the planning officer.
- 8.35 In my experience such systems cater for the minimum fresh air ventilation requirements in Part F of Building Regulations. This background ventilation needs to be supplemented with opening windows to provide purge ventilation for smells and also rapid ventilation to help control overheating in warm summer months

8.36 At section 5.2.1, the 2017 Spectrum Noise Assessment describes the basis of the calculations of internal noise level. It is stated

"The calculations take into account the character of the noise, as this include octave band noise levels"

8.37 I consider that this is misleading. The character of external noise can be determined by frequency content, but also temporal variation with time and the difference between specific element of the noise and the underlying background. Octave band analysis is a broad tool to account for the levels of noise at different frequencies across the audible spectrum from low frequencies (31.5Hz) to high frequencies (8KHz) in 9 bands. Doing calculations in octave bands indicates broadly what the noise consists of spectrally, but addresses none of this character, nor does it seek to mitigate any distinguishing features. Indeed it is very difficult to identify tonality when just considering octave band information.

8.38 A BS4142 assessment would address each aspect of the character of the noise with suitable corrections applied to the assessment to fully account for the context of the noise at the Applications Site. However, no BS4142 assessment has been provided.

Applicant's assessment of noise levels in outdoor spaces.

8.39 At Section 5.2.2, of the 2017 Spectrum Noise Assessment the Applicant's acoustician assesses noise in outdoor spaces. Notwithstanding my comments on noise levels changing across the Site, the guidance in BS8233 for external spaces relates to anonymous noise from transportation sources. For plots close to the ERF, the ERF noise now dominates, particularly in the late evening. As such BS8233 is inappropriate for assessing amenity and BS4142 should be used to assess the impact of noise from industry.

8.40 I note also that the 2017 Spectrum Noise Assessment mentions the use of 1.8m high close boarded timber fences to gardens across the Site to help mitigate noise levels. I understand the spirit of this advice and the recommendation for a minimum mass per unit area of 10kg/m² is that the fence is solid without gaps so as to form an effective acoustic barrier. I note that in the core document list plans (CD P16), shows the detail for the 1.8m high close boarded fence, but this is shown as having 25mm gaps between vertical slats. Acoustically this fence type would provide little or no acoustic benefit.

8.41 I also note that the Application Site is not flat but the representation in the Applicant's noise modelling appears to show the Site as flat – at least until the embankment nearest the A557 Weston Point Expressway, The level of screening from sources of noise associate with the ERF changes with location and height. For example, the east of the Application Site is elevated and noise from the Air Cooled Condensers (ACCs) associated with the ERF are audible.

8.42 **HBC EHO Response to 2017 Spectrum Noise Assessment (CD C36)**

8.43 CD C36 records the EHO's response to the 2017 Spectrum Noise Assessment of which key elements are noted below.

8.44 Under comments of the operation stage of the development it is stated:

"In relation to the energy from waste Site the acoustic consultant has stated that the methodology contained within BS4141:2016[sic], the standard for rating industrial noise, has not be applied as the energy from waste facility operates continually and a true background level could not be measured in a suitable location. We have accepted that this is the case and that the consultant has utilised the noise internal noise levels outlined in BS8233:2016[sic]."

"In section 5.2 of the noise report the consultant states that the noise levels in the centre of the Site would 'be expected' to be lower and would 'reduce even further...as the houses would provide screening from one another'. This assertion has not been corroborated by any data. Should the Applicant wish to rely on this point to limit the mitigation required across the site then further data should be provided to demonstrate that the site layout will have a material impact on noise levels across the site, taking into account topography.

...

Section 5.2 also states that internal noise levels on the eastern side of the site, adjacent the EFW would exceed the BS8233:2014 night time levels with windows open. The suggestion is that the level can only be met with bedroom windows shut and that this is the means of attenuation that should be employed (accompanied by suitable levels of ventilation). No alternative form of attenuation (noise barriers, bunding, orientation of the site etc) appears to have been given consideration.

Section 5.2.2 of the acoustic consultant's report suggests the use of 1.8m barriers at the garden boundaries where the WHO guideline levels are not expected to be met. The report goes on to state that 'it is expected that noise levels in the vast majority of gardens across the site would be lower than the LAEQ (16 hour) 55dB guideline'. Again there is no detail added to this statement, which lacks any objectivity. I would ask that the Applicant provide the necessary evidence to corroborate this statement and demonstrate that where the guideline level cannot be met without an acoustic fence, then the fence will provide adequate attenuation."

- 8.45 In my opinion, the HBC EHO should have insisted that an appropriate assessment was undertaken in line with BS4142. In not doing so, the character and context of the ERF operations affecting the Site has been ignored.

- 8.46 It is also clear that even then, closed windows would be required to some of the Site in order meet acceptable internal noise levels set out in the Applicant's 2017 Spectrum Noise Assessment, still ignoring the context of the noise source.
- 8.47 I note the request for noise modelling to demonstrate noise levels in external amenity areas can be achieved.
- 8.48 **Summary of findings**
- 8.49 In my opinion, the 2017 Spectrum Noise Assessment is no longer a valid representation of noise affecting the Application Site due to changes in road traffic flow on the A557. The standards used to assess noise levels inside dwellings and in external amenity areas are incorrect as the guideline values do not account for the character of the dominant noise across the Site from ERF operations. A BS4142 assessment should have been undertaken to establish the level of impact affecting dwellings across the Application Site. The assessment provided completely ignores the context of the Site and the adjacent ERF operation and is therefore fundamentally flawed.
- 8.50 In accepting a methodology that did not include a BS4142 assessment, HBC have allowed specific noise from the operation of Runcorn ERF to be assessed as anonymous noise from general traffic sources. I set out in my proof at Section 9 and Appendix C, a BS4142 assessment that demonstrates that Significant Adverse Impact is to be expected from the operation of the ERF on the proposed dwellings.
- 8.51 The HBC EHO acknowledges at this time that closed windows are required to mitigate noise to the guideline limits for anonymous sources set out in BS8233.

Sandy Lane Noise and Vibration Assessment Technical Response
(CD S25) ("Spectrum Technical Response")

8.52 The Applicant produced a further technical document in response to Viridor's review of the report ("Spectrum Technical Response") and a memo issued to HBC on 27 November 2017.

8.53 I note at Section 1 of the Spectrum Technical Response, that the Applicant now understands that whilst railhead activities and associated loaded and unloading does not take place at night, HGVs are still permitted to access the site 24 hours a day from Picow Farm Road, exiting north from the Viridor site entrance.

8.54 In terms of the 2017 Spectrum Noise Assessment, it is noted at section 1:

"Whilst on-site during the night-time, there were no HGV movements either within the site, or to and from the site, though it is accepted that HGV deliveries to and from the site could take place at night"

8.55 In making this acknowledgment, any further assessments should have been made on the basis of HGV movements serving the ERF on Picow Farm Road at night.

8.56 In respect of the lack of a BS4142 assessment to accompany the Application, the consultant reiterates on page 2 of the Spectrum Technical Response that no suitable proxy location was available to measure background noise levels in the absence of the ERF operation. The EHO from HBC was consulted regarding the omission of a BS4142 assessment and the response is in C36 which states:

"In relation to the energy from waste site the acoustic consultant has stated that the methodology contained within BS4141:2016 (sic), the standard for rating industrial noise, has not be applied as the energy from waste facility operates continually and a true background level could not be measured in a suitable location. We have accepted

that this is the case and that the consultant has utilised the noise internal noise levels outlined in BS8233:2016(sic)."

8.57 I disagree that a suitable proxy location could not be found and in Appendix C of my proof I provide measurements and assessment at a suitable proxy location with justification for its use along with an assessment of any uncertainty. This has allowed preliminary BS4142 assessment to be undertaken which is summarised at Section 9 of my proof.

8.58 I believe it was incorrect for the EHO to accept that no assessment to BS4142 was required given the context of the Application Site and the proximity to the Runcorn ERF facility with proposed properties just c.80m from the tipping hall entrance. Given subsequent changes in the context of the Application Site, with noise from the A557 Weston Point Expressway reducing significantly, the prominence of the noise from ERF operations is increased.

8.59 In my opinion, more should have been done to assess the impact in accordance with BS4142, with suitable information to support the uncertainty level for of the assessment.

8.60 The Spectrum Technical Response goes on to talk about NPPF Paragraph 182 (now 187):

- New development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). 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.

Although the Viridor site would not have a significant noise impact on the proposed development, mitigation measures were set out in the report RK2267/17035 that would adequately protect residents. Furthermore, the mitigation measures provide sufficient headroom to allow for increases in ambient noise levels as a result of increased activity from the nearby uses if they wish to expand. More information on this is provided below.

- 8.61 I agree that as a matter of national policy. Existing businesses, particularly the strategically important operation of Runcorn ERF, should not have unreasonable restrictions placed on them as a result of development permitted after they were established. However, the Applicant's method of addressing this issue is by mitigating noise to levels inside and outside dwelling that do not consider the character of the noise from the ERF and treat it no differently to anonymous noise. Treating noise from all sources in the same way is not appropriate and does not adequately protect residents inside or outside their dwellings day or night. The Applicant and HBC have not appropriately considered the context.
- 8.62 The primary method for assessing the impact, as set out in the Applicant original report is BS4142, yet no assessment is provided. In my BS4142 assessment at Appendix C, I demonstrate the likely outcome of such an assessment would indicate significant adverse impact resulting in a high probability of complaints.

- 8.63 On page 3 of the Spectrum Technical Response, the Applicant's acoustician then goes on to talk about the level of mitigation applied and its effectiveness **with windows closed** (as per the application).
- 8.64 However, I note that the maximum noise level assessment set out in the 2017 Spectrum Noise Assessment for HGV traffic on Picow Farm Road was based on the noise survey which crucially did not record any HGVs visiting the ERF at night, despite HGVs being permitted to visit the ERF in accordance with the ERF consent. The survey was also conducted within the Site boundary which has concrete fence panels along Picow Farm Road at least 1.2m in height and affording some protection to road noise. The resultant maximum noise levels calculated are incorrect. I set out my assessment of the impact of HGVs serving the ERF at night in Section 10. The Applicant's consultant goes on to say that HGV operations at night would not be out character with the existing noise climate in an industrial area. However, they concluded in their 2017 Spectrum Noise Assessment that there were very limited traffic movements for HGVs at night on Picow Farm Road. My own observations at that there are very infrequent vehicle movements of any type on Picow Farm Road at night or on any other roads, including the A557 Weston Point Expressway.
- 8.65 The Applicant's consultant again refers in Table 1 to BS8233 noise level limits as being applicable. This is not the case where the noise contains significant character which has the potential for greater disturbance. BS8233 noise limits are based on steady state noise from transportation sources.

2020 Spectrum Noise Assessment (CD S26)

- 8.66 The 2020 Spectrum Noise Assessment represents the final version of the planning support document in relation to noise, aimed at addressing residual concerns from HBC EHO. It is based on earlier versions which I have commented on but with some key differences as I note below.

- 8.67 BS4142 is removed from the assessment criteria section. I have set out elsewhere in my proof why I believe this is not appropriate.

- 8.68 No further noise measurements at the Site have been undertaken by the Applicant since the original survey in 2017. It appears that the Site has not been revisited to determine any change in context resulting from the reduced traffic on the A557.

- 8.69 At the bottom of page 8, the author acknowledges the change in road traffic levels on the A557 Weston Point Expressway due to the opening of the Mersey Gateway Crossing. It mentions that noise levels at the eastern end of the Site would be lower. I agree with this but also that noise levels across the Site are lower – particularly at night.

- 8.70 Section 5 presents as assessment of the noise impact at individual building facades based on noise modelling calibrated to the results of the 2017 noise survey. I have already commented on why these are no longer valid. Further, this is provided only for dwellings close to and facing Pico Farm Road with windows open. There is no assessment of impact with windows open across the Application Site.

- 8.71 Whilst there is a depiction of a noise model in Appendix C of the 2020 Spectrum Noise Assessment, there is limited modelling output to verify the numbers provided in Table 4 and 5. It is noted from the depiction in Appendix C of the report that topographical information does not appear to have been included as requested by HBC EHO.

- 8.72 I also note that the noise contours at page 37 of the 2020 Spectrum Noise Assessment for night-time impact seem to assume all noise to the western boundary originates from Pico Farm Road. There would seem to be no impact from the ERF factored into the model. I consider that this is fundamentally incorrect as the night-time noise climate is dominated by the ERF operations which include noise sources at varying heights and distance from the proposed development. By not including these sources in the model, the level of noise, benefit of mitigation and propagation of noise across the Site and not accurately reflected in the noise model.
- 8.73 I also note at page 37 that a 2m acoustic barrier is proposed. 2017 measurements on Site would have included the circa 1.2m solid concrete barrier that exists to the Western Site boundary. Therefore measurements of road traffic at the time would have benefited from the existing barrier. I believe Applicant's acoustician has taken the measurements with this benefit and then applied the full benefit for a new 2m barrier in its place. Therefore the added benefits of the slightly higher barrier are overstated – even for road traffic.
- 8.74 For the reasons already stated, the modelling and output reflected on Page 37 of the 2020 Spectrum Noise Assessment cannot be relied upon as an accurate assessment of the night time noise climate or the expected impact on the Application Site.
- 8.75 Table 4 and 5 relate to the "relaxed" criteria from BS8233 and assume 15dB attenuation for an open window. Attenuation through open windows is complex subject. ProPG acknowledges that the attenuation is typically between 10 and 15dB for an open window. I note the Applicant's acoustician has assumed the upper end of this range and I consider that 13 dB would be more appropriate.

8.76 It is also noted from the previous reports that there were no HGVs on Picow Farm road serving the ERF during the night-time noise surveys. Therefore any modelling calibrated to these levels is an underestimate of the potential impact of the consented ERF operations which include HGV access 24 hours a day.

8.77 In particular, the assessment of maximum noise levels in Table 5 is significantly underestimated. In Section 10 of my proof, I have set out my assessment and modelling of the impact of maximum noise levels events based on measurements of the HGVs on Picow Farm Road serving the ERF. This shows that levels in BS8233 will be exceeded in spite of the proposed mitigation.

8.78 The 2020 Spectrum Noise Assessment states at the end of 6.1:

"...given the limited number of occasions during the year when windows would need to be open during the daytime and night time periods to mitigate overheating, the overall impact would be low"

8.79 I fundamentally disagree with this comment. The ability of residents to open windows for added ventilation is not just restricted to summer or when there is peak overheating demand. It is not uncommon, in the absence of an alternative ventilation provision, to use open windows for a number of months of the year. Ultimately, there is no alternative provision for rapid ventilation or cooling in the Applicant's design and so residents are able open their windows at any time they want.

Appendix C comments

8.80 In my assessment in Section 10, I demonstrate that using maximum noise levels measured during the daytime for HGVs serving the ERF, internal maximum noise levels cannot achieve suitable internal levels at night with windows open.

Outdoor impact

8.81 The assessment provided is largely unaltered from that given previously. A barrier adjacent to Picow Farm road of 2m in height is proposed (in place of the existing concrete barrier). Reducing noise levels in garden relies on 1.8m close boarded fencing (noting that the planning drawing CD P16 submitted with the Application does not show a suitable design for this)

8.82 Section 7 of the 2020 Spectrum Noise Assessment concludes as follows:

A noise mitigation strategy has been developed, using the results of the computer based noise prediction model which considers the level, duration and character to the noise impacting on the proposed development, as well as the noise insulation and noise control requirements for the proposed plots. The mitigation scheme that has been proposed and specified satisfies the internal and external noise level requirements in accordance with BS 8233:2014 and WHO Guidelines for Community Noise. Furthermore, the proposed mitigation scheme would provide sufficient headroom to allow for increases in night-time activity along Picow Farm Road associated with the Runcom Energy from Waste site. Therefore, noise levels across the site would be acceptable, with the proposed mitigation measures in place.

8.83 I disagree with the conclusion for the following reasons

- The noise prediction model does not consider the character of the noise at all. It has a basic level of octave band information from the survey. The statement is misleading to the reader.
- The noise model does not appear to have any noise sources associated with the ERF facility. It is agreed that this is a significant noise source at the Site at night. With reduced traffic levels on the A557 Weston Point Expressway, this is now also the case during the day as well.
- A BS4142 assessment has not been undertaken at the Site using a suitable proxy location for measurement of background noise. Such an assessment would fully consider the characteristics of the noise along with suitable corrections (penalties) for elements more likely to cause disturbance to future residents.
- The noise model does not appear to contain accurate topography for the Site that impacts the propagation of noise. This would have an impact on the effectiveness of the mitigation proposed at the time.

- The input data for the model appears to rely on noise measurements at night from 2017, when there were no HGV movements to the ERF, although HGVs are permitted to do so in accordance with the ERF's planning permission.
- The proposed mitigation scheme was assessed with closed windows for some of the Site during the previous Application and with open windows in this document but only for properties facing Picow Farm Road only.
- It has not been demonstrated that acceptable internal noise levels from road traffic can be achieved in all areas of the Application Site at all times with windows open.
- It has not been demonstrated that acceptable noise levels in amenity spaces can be achieved and where such amenity spaces are impacted by noise from the ERF, the incorrect standard has been used to assess the level of impact.

Halton Borough Council EHO's Response (CD C10)

8.84 Core Document CD C10 provides an updated response from the EHO following further discussions with the Applicant's acoustician. This would appear to refer to an earlier version of the report rather than the 2020 version.

8.85 It is noted at paragraph 3 that *'The local authority has approved plans where the standard cannot be reached and accepted enhanced glazing and trickle vents where the noise source is the wider transport network.'*

8.86 It is unclear to me as to the precise meaning of this comment, but I take this to mean that assessment is to be based on closed windows to meet acceptable standards of noise from transportations sources. The EHO goes on to say:

"The main source of noise identified across the site was the volume of noise from the expressway to the north of the site. It is reasonable to assume that the noise levels recorded for the original noise report present an over-prediction of future noise from the expressway as the new Mersey Gateway is now open and the majority of traffic crossing the Mersey from the M56 to the south and the M62 to the north will no longer pass by the Pavilions site. Given this over-prediction I am satisfied that boundary mitigation is not required across the site to reduce noise levels."

8.87 The main noise source is not the A557 Weston Point Expressway now, due to the decrease in road traffic levels, which will increase the impact of the ERF. It is not clear what is meant by *'I am satisfied that boundary mitigation is not required across the site to reduce noise levels'* as the latest noise report still proposes a barrier on the eastern boundary (based on previous road traffic noise levels) but no further assessment has been provided to demonstrate that a barrier is not required. It should be noted that the barrier proposed in the latest assessment was not capable of achieving the guidelines set out by HBC.

8.88 In a further response dated 15 April 2020 (CD C11), the EHO states:

"...a further noise report which indicates that the standards can now be achieved with the windows open both daytime and night time in all the units across the site, even in the event that the waste incinerator commences night time deliveries."

I have assessed the methodology and rationale (BS4142 & BS8233) submitted by the noise consultant and I am satisfied that it is appropriately applied and that the conclusions are robust."

8.89 In my opinion, these statements are not correct. No BS4142 assessment was provided and the outcome of a BS4142 assessment was not considered. Section 8.83 above sets out why there is no complete assessment of the Site where suitable noise levels inside dwellings have been demonstrated using open windows. A partial assessment was completed for properties facing Picow Farm Road but I set out in Section 8.83 why this assessment was incorrect. I have set out my own assessment to BS4142 in Section 9 my proof which concludes Significant Adverse Impact and an assessment of HGV traffic on Picow Farm Road in Section 10 which concludes that suitable standard will not be achieved. The conclusions reached by HBC the were not, in my opinion, robust and the proposed mitigation does not consider noise the operations inside the ERF site boundary.

8.90 In a further response from the EHO dated 3 September 2020 (CD C38), they note:

'Council officers and the developer have worked to ensure that dwellings comply with the WHO guidelines and BS8223 (broadly the same standards) across the site, with windows open. This has involved some reorientation of proposed dwellings and the installation of a noise barrier adjacent Barlow's Way. On the basis of this information, which the objectors have not referenced Officers are satisfied'.

- 8.91 This statement is not correct and is not demonstrated by the 2020 Spectrum Noise Assessment. Compliance relies on closed windows. The assessment with windows open is only relevant to overheating and the consultant states that this would happen on a limited number of occasions in the year. The conclusions from notes summarised in this email appear to suggest that HBC believes that windows can be opened at all times (or are at least not caveated for overheating). However, my assessment in Section 10 shows that the internal maximum noise level guidelines are expected to be exceeded, even with the proposed western Site boundary barrier in place, and windows open.
- 8.92 In summary, these notes do not adequately explain how the earlier concerns of the EHO have been addressed. The latest noise impact assessment does not evidence this either, and my recent assessment at Section 10 shows the limited additional assessment (in the 2020 Spectrum Noise Assessment) in respect of addressing these concerns is not sufficient.

9. BS 4142 ASSESSMENT OF IMPACT OF RUNCORN ERF OPERATIONS ON THE APPLICATION SITE

- 9.1 In Appendix C, I provide the results of a preliminary BS4142 assessment I have undertaken at one of the nearest proposed plots in the Application Site. A summary of my findings is set out below.
- 9.2 From my observations of ERF operations and measurements of background noise level during representative periods, noise emissions from the ERF operation at night are likely significantly exceed the residual and background sound environment at the assessment location representative of plot 61 of the Proposed Development. The observed night time operations had no HGV movements to or from site, no activity at the rail head or gantry cranes and the tipping hall doors remained shut.
- 9.3 The observed noise emissions contain significant low frequency content that is subjectively likely to be highly disturbing as well as other characteristics that are readily distinguishable against the background sound level. This was not mentioned in the Applicant's noise assessments.
- 9.4 A BS4142 assessment shows that the rating noise level is 13dB in excess of the background noise level determined at a proxy location in accordance with the methodology described in BS4142. According to Section 11 of BS4142 **Significant Adverse Impact** is expected.
- 9.5 The context of the Application Site including characteristics of the noise and the proposed mitigation have all been considered and, in my opinion, there is no reason to modify this expected level of impact.

- 9.6 Elements of the Application Site to the northern end are likely to be exposed to more specific noise from the ERF operations than were measured to support this preliminary assessment – particularly at low frequency.

- 9.7 The ERF has consent to receive deliveries during the night via HGVs that access via Picow Farm Road. The additional impact of this operation, within the ERF site boundary, has not been assessed, but will increase the specific noise level and the overall impact as will the opening of the tipping hall doors to accept these deliveries.

- 9.8 Overall this assessment represents a “best case” and conservative assessment of the level of impact that can be expected at night. In reality, the level of impact is likely to increase once night-time operations commence.

- 9.9 In my opinion, the Significant Adverse Impact identified in my BS4142 assessment results in Significant Adverse Effects or SOAELs. In accordance NPPG, such effects should be avoided.

- 9.10 The proposed mitigation for the Site does not adequately mitigate noise impact from the existing ERF contrary to Section 4 of local Policy HE7 and Policy PR7

10. ASSESSMENT OF OFFSITE VEHICLE MOVEMENTS ON PICOW FARM ROAD

10.1 HGV noise on Picow Farm Road has been assessed by Ramboll as previously, the Environmental Health Officer at HBC, had raised concerns of HGV noise in relation to report the 2017 Spectrum Acoustic Consultants noise assessment report (CD V4), which was originally submitted to inform the application for the Proposed Development. It is my opinion that the 2020 Spectrum Acoustic Consultants assessment (CD S26) did not adequately address these concerns regarding HGV noise and therefore, an assessment is provided here to determine the potential impact on the proposed residential development.

Noise survey

10.2 An attended noise survey was completed on and around the Runcorn ERF site between 11:10-15:12 on Tuesday 24 August 2021.

10.3 The following equipment was used:

- Brüel and Kjær 2250 Sound Level Meter S/N 2600458
- Brüel and Kjær Type 4231 S/N 2095314

10.4 The weather conditions were:

- Dry, 19-22°C
- Overcast
- Wind speeds up to 2.0 m/s (measured) in variable direction.

10.5 Measurements were taken at a height of 1.5m above local ground level, and under free-field conditions (>3.5m away from reflecting surfaces, other than ground). Measurements were taken over 5-minute periods with the measured data logged in 100ms intervals.

10.6 The sound level meter was calibrated before and after the measurements. No significant drift was recorded in the calibration (+/- 0.02dB).

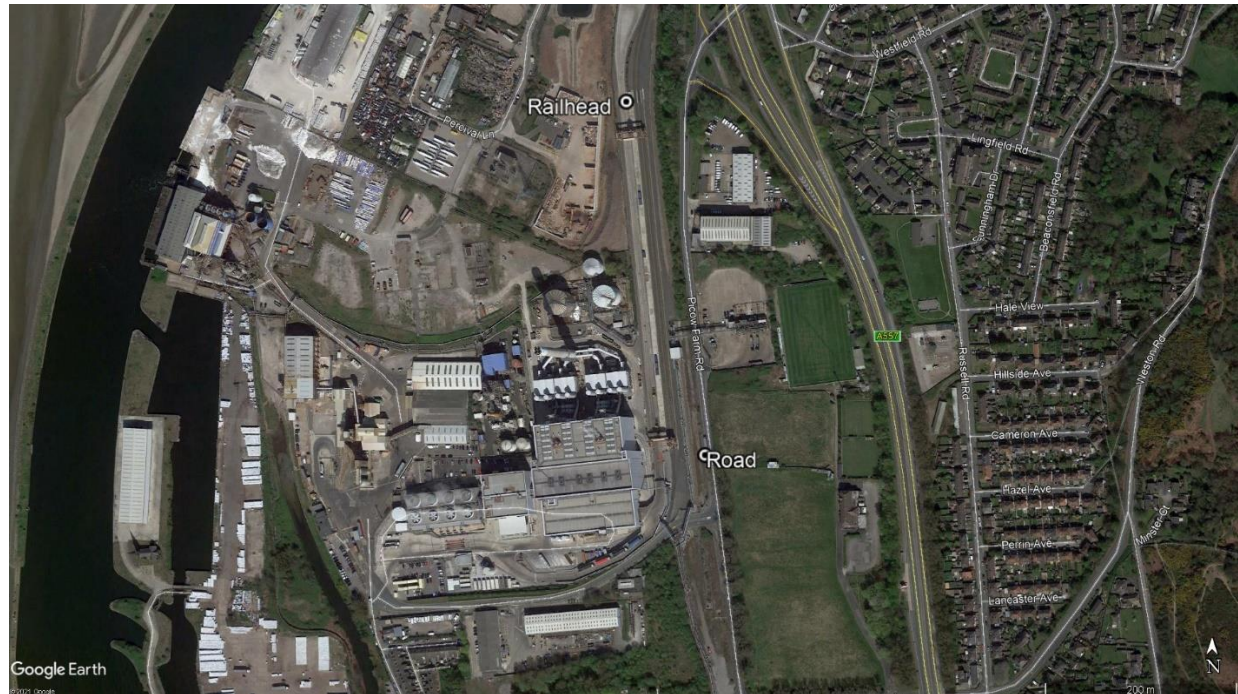
10.7 The measurement positions pertinent to this technical note were:

- Adjacent to the eastern ERF site boundary, on the footpath of Picow Farm Road (see Figure 1).

Figure 1: Road measurement position



Figure 2: Measurement positions



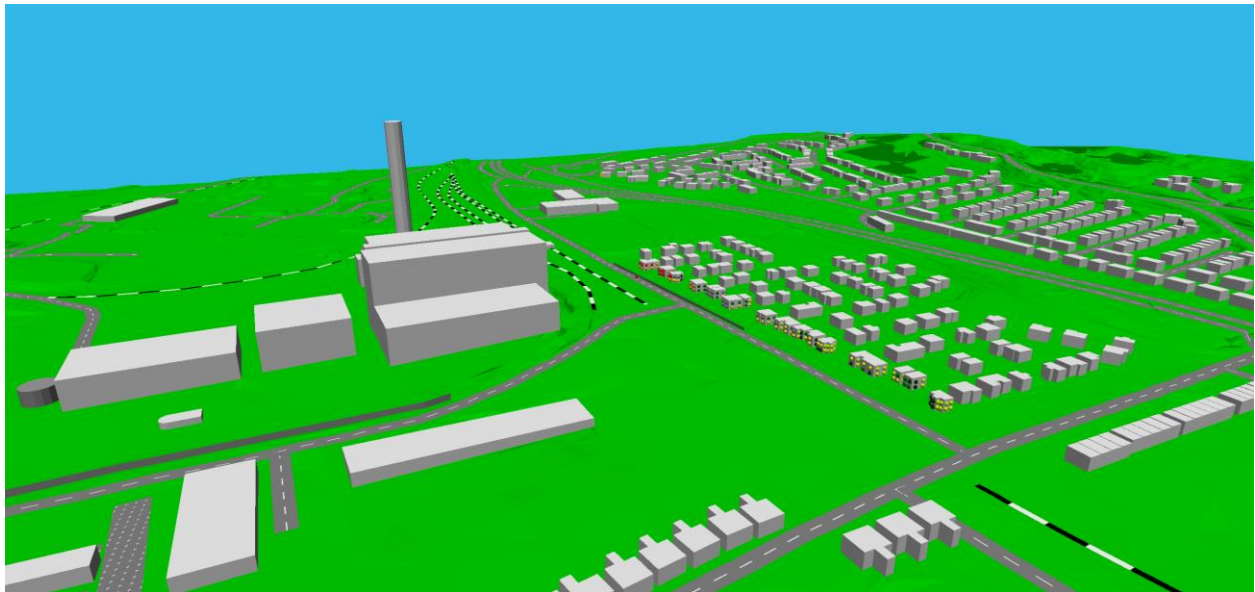
10.8 The noise sources measured on the footpath of Picow Farm Road were:

- Operating noise from the ERF (hissing and squeaking).
- Passing cars.
- Passing site HGVs.
- Crane operation.
- Site HGVs at the site entrance and entering the Tipping Hall.

10.9 The noise from the ERF (without HGVs) was dictating the background noise levels at the position on the footpath of Picow Farm Road. The measured background noise levels were typically 54 dB L_{A90} . The sound had hissing and squeaking characteristics which were distinguishable against the background noise climate.

- 10.10 The typical noise levels measured from passing HGVs on Picow Farm Road were **77-83 dB L_{AFmax}**, measured at approximately 5.5m from the noise source. This level is sufficiently higher than the background to enable a representative measurement. This level was measured in the absence of any intervening screening.
- 10.11 These noise sources have been input to an Industry Standard CADNA A noise prediction model.
- 10.12 An excerpt of the noise prediction model is shown in Figure 3. The model includes the topography of the Site and surrounding area, the key buildings of the ERF site, and the locations of the proposed dwellings at the land off Sandy Lane.

Figure 3: Noise prediction model



- 10.13 The measured maximum noise level spectra for the HGVs were input to the model.
- 10.14 The HGV noise sources were modelled at a height of 1m and as point source.

- 10.15 The measurement positions were input to the model (at 1.5m height above local ground level), and the noise emission levels were calibrated to the measured L_{AFmax} levels.

Assessment

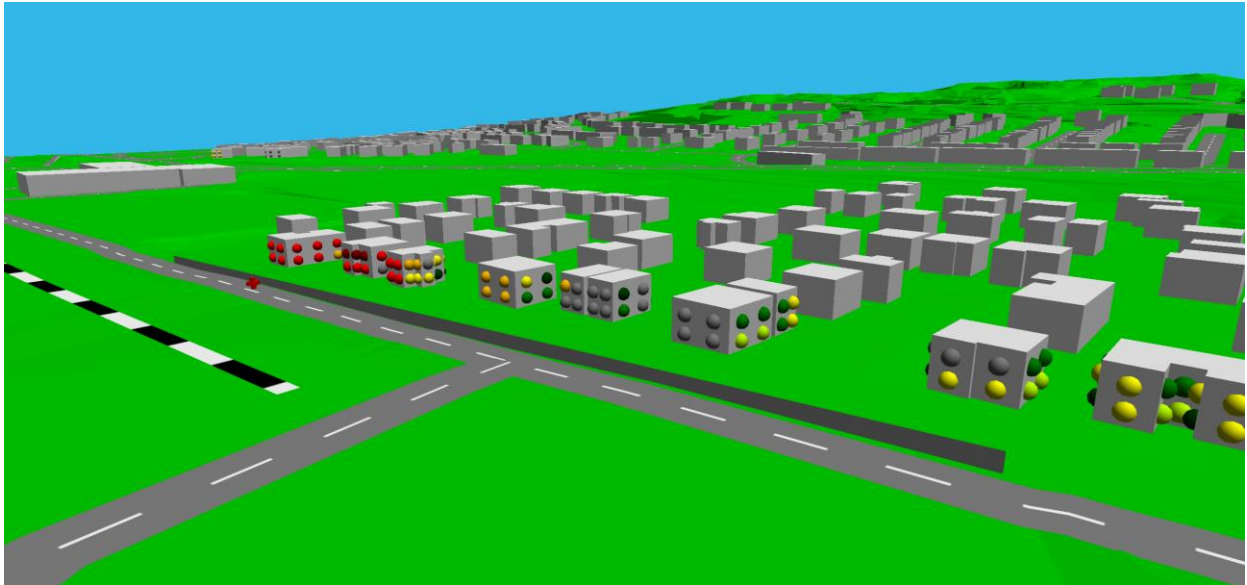
- 10.16 As part of the mitigation for the Proposed Development, a 2m acoustic barrier has been allowed for along Picow Farm Road. It is noted that this replaces a circa 1.2m high barrier that is currently in place and was in place during the Applicant's noise survey. I have predicted noise levels to 4m above ground level at the nearest residential dwellings, to represent first floor height. Table 1 details the predicted maximum noise levels at the residential dwellings, with and without the proposed 2m acoustic barrier.

Table 1: Noise model results

Noise source	Plot	Highest predicted maximum noise level dB L_{AFmax} (without 2m acoustic barrier)	Highest predicted maximum noise level dB L_{AFmax} (with 2m acoustic barrier)	Predicted barrier attenuation dB
HGV on Picow Farm Road	67	72	65	-5*

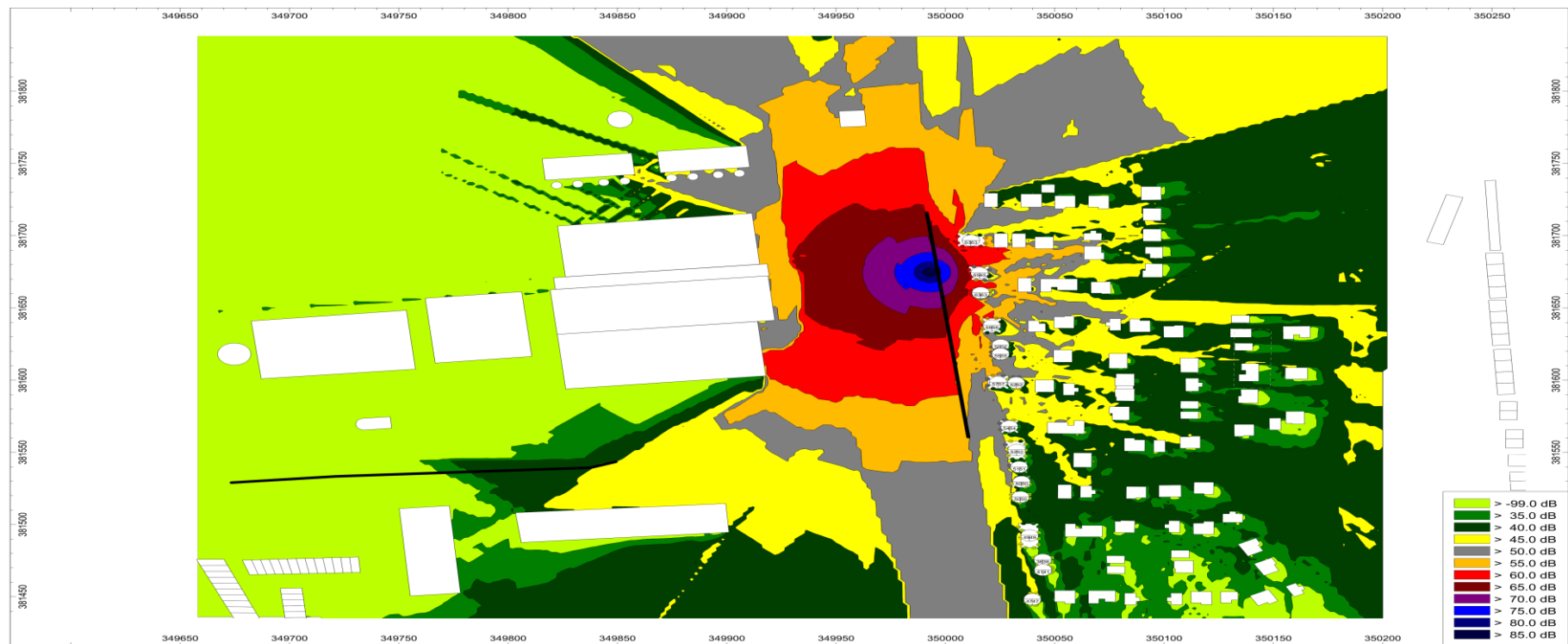
*Note that the barrier performance reduces to -3 dB if the HGV noise is modelled at 1.5m height. 1.5m is more typical of HGVs with elevated exhaust stacks that visit the ERF.

Figure 4: Noise predictions to dwellings from a HGV on Picow Farm Road, with 2m acoustic barrier



- 10.17 With the 2m acoustic barrier in place, the maximum noise levels from HGVs on Picow Farm Road are predicted to be 65 dB L_{AFmax} at first floor level. The predicted maximum noise level would apply whether the operations are conducted during daytime or night-time periods.
- 10.18 Noise contour plots to show the predicted maximum noise levels from a passing HGV on Picow Farm Road are shown in Figure 5.

Figure 5: Picow Farm Road HGV maximum noise levels dB L_AF_{max}



11. COMPARISON OF RAMBOLL MODELLING RESULTS TO THE APPLICANT'S MAXIMUM NOISE LEVEL ASSESSMENT (CD S26)

- 11.1 Based on my modelled noise levels in Section 10 above, the maximum noise level (due to HGVs on Picow Farm Road) at the façades of plots 81 and 67 of the Proposed Development is up to 65 dB L_{AFmax} (with the 2m acoustic barrier in place). This level is 9 dB and 12 dB above the predicted maximum noise levels at the façades of plots 81 and 67 of the 2020 Spectrum Acoustic Consultants assessment, respectively in (CD S26).
- 11.2 In my opinion the Applicant's underestimation of the maximum noise level is due to the use of night time noise data which did not include HGVs accessing the ERF and also the double counting of any benefit from the existing concrete barriers along Picow Farm Road.
- 11.3 It is my professional opinion that the attenuation of external noise levels through an open window is typically -12 to -13 dB. Based on a maximum noise level at the façade of 65 dB L_{AFmax} and -12 to -13 dB attenuation through an open window, I predict that the maximum noise levels inside bedrooms is 52-53 dB L_{AFmax} . These predicted levels are 7-8 dB above the guideline criterion of 45 dB L_{AFmax} inside bedrooms from WHO Guidelines.
- 11.4 It should also be noted that the proposed extent of the 2m acoustic barrier will not provide screening of HGV noise levels to all dwellings fronting Picow Farm Road. The HGVs access the ERF site by travelling north to south on Picow Farm Road, before turning right on to Barlow Way. When leaving the site, the HGVs turn left out of Barlow Way and travel north on Picow Farm Road. Therefore, as HGVs travel in each direction, the HGV noise will be able to pass around the northern end of the proposed barrier (see Figure 7).

- 11.5 Where maximum HGV noise passes around the 2m acoustic barrier, the maximum noise level predicted at the façade location of plot 81 is 69 dB L_{AFmax} . Based on a maximum noise level at the façade of 69 dB L_{AFmax} and -12 to -13 dB attenuation through an open window, I predict that the maximum noise levels inside bedrooms is 56-57 dB L_{AFmax} . These predicted levels are 11-12 dB above the guideline criterion of 45 dB L_{AFmax} inside bedrooms.
- 11.6 It should also be noted that where the HGV noise passes around the proposed 2m acoustic barrier, a greater number of dwellings will be exposed to the high maximum noise levels from HGVs, as can be seen in Figure 6.
- 11.7 The assessment provided in the 2020 Spectrum Noise Assessment does not consider that the proposed extent of the 2m acoustic barrier will not be sufficient to screen each of the dwellings from the HGV maximum noise levels.

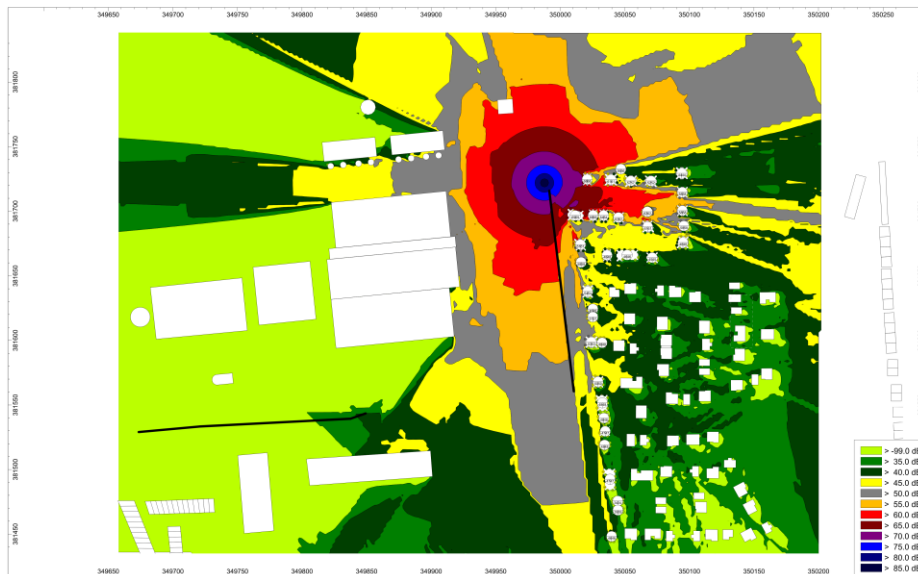


Figure 6: Picow Farm Road HGV maximum noise levels passing around the proposed 2m acoustic barrier

- 11.8 Therefore noise from HGVs serving the ERF on Picow Farm Road will be above guideline requirements that could lead to sleep disturbance during the night time period.
- 11.9 The proposed mitigation is inadequate in protecting the amenity of residents of the new development as it does not meet the BS8233 requirements for maximum noise in bedrooms at night.
- 11.10 These maximum levels would be apparent when windows are open. This was the basis of the EHO removing their objection to the scheme and HBC recommendation for approval.
- 11.11 HBC Planning Officer, Jeff Eaton, in his proof states:
- 9.12 The methodology and rationale set out in the Noise Assessment (BS4142 & BS8233) submitted are appropriately applied and that the conclusions made are robust.
- 9.13 The latest site layout demonstrates that the relevant noise standards can now be achieved with the windows open both daytime and night time in all the units across the site, even in the event that the Energy from Waste facility to the west of the site commences night time deliveries which its planning permission would allow for.
- 11.12 Regarding 9.12 of this proof, BS 4142 has not been applied as the consultant stated that background noise levels could not be measured in the absence of the ERF so this is incorrect. For the reasons set out in my proof at para 8.87, the assessment conclusions are not robust. The Applicant's assessment has not considered the context of the impact and characteristics of the noise from the ERF operations.

- 11.13 Paragraph 9.13 is incorrect as this states '*that the relevant noise standards can now be achieved with the windows open both daytime and night time in all units across the site*'. This is incorrect as the original assessments (CD S25 and the 2017 assessment CD V4) use closed windows and alternate means of background ventilation to achieve the internal noise criteria. The only assessment with open windows is partial, and relates to limited properties on Picow Farm Road. In addition, I believe this assessment to be incorrect and I have provided calculations to show that even in these limited locations, suitable standards cannot be achieved.
- 11.14 Unless windows are to be prevented from opening, residents always have the option to sleep with windows open and the potential for adverse impact remains.
- 11.15 I therefore consider that HBC request for assessment of Runcorn ERF HGV movements has not been complied with as the HGV movements have not been adequately assessed. I consider that the reports that have been submitted to inform the Called In Application cannot be relied upon.

12. CONCLUSIONS

- 12.1 It is my professional opinion that the noise impact assessments undertaken for the Application Site between 2017 and 2020 are now invalid and inappropriate due to changes in road traffic levels on A557 Weston Point Expressway.
- 12.2 It is my professional opinion that the context of the noise from ERF operations and how this impacts the Application Site has not been considered. A BS4142 assessment should have been undertaken by the Applicant as this is the accepted methodology for considering the impact of industry on new residential receptors as set out in ProPG.
- 12.3 I have undertaken a preliminary BS4142 assessment relevant to properties close to the ERF at the west of the Application Site. This conservative assessment demonstrates Significant Adverse Impact due to both the level and character of the noise from ERF operations.
- 12.4 It is my professional opinion that HBC did not adequately consider the context of the Site in respect of the ERF operations in considering the application. Further submissions by the Applicant did not, in my opinion, adequately address the concerns from the EHO. The proof of evidence submitted by Jeff Eaton as planning officer HBC incorrectly states that BS4142 methodology and rationale was considered.
- 12.5 The assessments which I have conducted (pursuant to BS4142 and BS8233) demonstrate that residents in the proposed new houses will be subjected to significant adverse and therefore unacceptable noise impacts as a result of the operation of the ERF and the HGV traffic.

- 12.6 The mitigation proposed by the Applicant fails to address any noise associated with onsite ERF activities
- 12.7 Further, the mitigation proposed does not adequately reduce maximum noise levels for HGVs serving the facility at night – as consented. Noise levels inside bedrooms with windows open will exceed the guideline values in BS8233 by significant margin resulting in significant effect and potential for sleep disturbance. The Applicant's scheme was recommended for approval on the basis that acceptable noise levels could be achieved with windows open with the proposed mitigation.
- 12.8 Impact from the current consented operation of the ERF will result in in a SOAEL at night which in accordance with NPPG should be avoided.
- 12.9 The noise impact which will be suffered by new residents means that the proposal is contrary to local plan policies PR7 and BE1(2)(d). It is also contrary to paragraphs 170 and 185 of the NPPF.
- 12.10 Further, I consider that the significant adverse noise effects are highly likely to lead to residents making complaints and potentially bringing a claim in nuisance against the ERF. This is likely, in turn, to lead to unreasonable restrictions being placed upon the ERF. As such, the Called In Application is not consistent with UDP policy PR7 or NPPF para 187.

APPENDIX A

GLOSSARY OF ACOUSTIC TERMS

A.1 DECIBEL

The ratio of sound pressures which we can hear is a ratio of 10^6 (one million:one). For convenience, therefore, a logarithmic measurement scale is used. The resulting parameter is called the 'sound pressure level' (L_p) and the associated measurement unit is the decibel (dB). As the decibel is a logarithmic ratio, the laws of logarithmic addition and subtraction apply.

A.2 A-WEIGHTED DECIBEL

The unit generally used for measuring environmental, traffic or industrial noise is the A-weighted sound pressure level in decibels, denoted dB(A). An A-weighting network can be built into a sound level measuring instrument such that sound levels in dB(A) can be read directly from a meter. The weighting is based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. It is worth noting that an increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise, and a change of 2 to 3 dB is subjectively barely perceptible.

A.3 EQUIVALENT CONTINUOUS SOUND LEVEL

Another index for assessment for overall noise exposure is the equivalent continuous sound level, L_{eq} . This is a notional steady level which would, over a given period of time, deliver the same sound energy as the actual time-varying sound over the same period. Hence fluctuating levels can be described in terms of a single figure level.

A.4 FREQUENCY

The rate of repetition of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to cycles per second. A thousand hertz is often denoted kHz, e.g. $2 \text{ kHz} = 2000 \text{ Hz}$. Human hearing ranges approximately from 20 Hz to 20 kHz. For design purposes, the octave bands between 63 Hz to 8 kHz are generally used. The most commonly used frequency bands are octave bands, in which the mid frequency of each band is

twice that of the band below it. For more detailed analysis, each octave band may be split into three one-third octave bands or in some cases, narrow frequency bands.

A.5 MAXIMUM NOISE LEVEL

The maximum noise level identified during a measurement period. Experimental data has shown that the human ear does not generally register the full loudness of transient sound events of less than 125 ms in duration. Fast time weighting has an exponential time constant of 125 ms which reflects the ear's response. The maximum level measured with fast time weighting is denoted as $L_{A\text{Max},f}$. Slow time weighting (S) with an exponential time constant of 1s is used to allow more accurate estimation of the average sound level on a visual display.

Impulse (I) time weighting has a fast rise (35ms) and a slow decay and is intended to mimic the ear's response to impulsive sounds.

A.6 NOISE RATING, NR

Noise ratings are used as a single figure criterion for specifying services noise in buildings. Each noise rating value has an associated spectrum of defined values in each third or octave frequency band. To determine the noise rating of a room the measured spectrum is compared to a set of noise rating curves. The highest NR curve that crosses any single frequency band of the measurement determines the noise rating for the room. The single figure noise rating is read at the 1 kHz band.

A.7 REVERBERATION TIME

The time, in seconds, taken for a sound within a space to decay by 60 dB after the sound source has stopped.

A.8 SOUND LEVEL DIFFERENCE (D)

The sound insulation required between two spaces may be determined by the sound level difference needed between them. A single figure descriptor which characterises a range of frequencies, the

weighted sound level difference, D_w , is sometimes used (see BS EN ISO 717-1). This parameter is not adjusted to reference conditions.

The standardized level difference, D_{nT} , is a measure of the difference in sound level between two rooms, in a given frequency band, where the reverberation time in the receiving room has been normalised to 0.5 s. This parameter measures all transmission paths, including flanking paths.

The weighted standardized level difference, $D_{nT,w}$, is a measure of the difference in sound level between two rooms, which characterises a range of frequencies and is normalised to a reference reverberation time.

A.9 SOUND REDUCTION INDEX (R)

The sound reduction index (or transmission loss) of a building element is a measure of the loss of sound through the material, i.e. its attenuation properties. It is a property of the component, unlike the sound level difference which is affected by the common area between the rooms and the acoustic of the receiving room. The weighted sound reduction index, R_w , is a single figure description of sound reduction index characterising a range of frequencies, which is defined in BS EN ISO 717-1: 1997. The R_w is calculated from measurements in an acoustic laboratory. Sound insulation ratings derived from site (which are invariably lower than the laboratory figures) are referred to as the R'_w ratings.

Noise Level dB(A)	Example
130	Threshold of pain
120	Jet aircraft take-off at 100 m
110	Chain saw at 1 m
100	Inside disco
90	Heavy lorries at 5 m

80	Kerbside of busy street
70	Loud radio (in typical domestic room)
60	Office or restaurant
50	Domestic fan heater at 1m
40	Living room
30	Ventilation Noise in Theatre
20	Remote countryside on still night
10	Sound insulated test chamber
0	Threshold of hearing

A.10 STATISTICAL NOISE LEVELS

For levels of noise that vary widely with time, for example road traffic noise, it is necessary to employ an index which allows for this variation. The L_{10} , the level exceeded for ten per cent of the time period under consideration, has historically been adopted in the UK for the assessment of road traffic noise. The L_{90} , the level exceeded for ninety per cent of the time, has been adopted to represent the background noise level. The L_1 , the level exceeded for one per cent of the time, is representative of the maximum levels recorded during the sample period. A weighted statistical noise levels are denoted $L_{A10, dB}$ L_{A90} etc. The reference time period (T) is normally included, e.g. $dB L_{A10, 5min}$ or $dB L_{A90, 8hr}$.