

WARE EASTERN TRANSFER STATION

Noise Impact Assessment & Noise Management Plan

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EXECUTIVE SUMMARY

The RPS acoustics team (RPS) has been instructed by Hertfordshire County Council (HCC) to provide an operational noise impact assessment and noise management plan in relation to Ware Eastern Transfer Station (Ware ETS).

RPS has previously provided the noise and vibration impact assessment for the Environmental Statement (ES) in relation to planning (ref. Chapter 12: Noise and Vibration – Eastern Transfer Station, November 2021), as well as a noise management plan provided as Appendix E to the original ES Noise and vibration chapter.

With proposed mitigation measures, the noise impact assessment shows that the levels of noise arising from the operation of the proposed development will not result in any moderate or major adverse impacts, at any of the identified nearby noise sensitive receptors.

The noise management plan provides guidance on noise control measurements, best available techniques (BAT), noise monitoring and complaints handling.

1 INTRODUCTION

- 1.1 The RPS acoustics team (RPS) has been instructed by Hertfordshire County Council (HCC) to provide an operational noise impact assessment and noise management plan in relation to Ware Eastern Transfer Station (Ware ETS).
- 1.2 RPS has previously provided the noise and vibration impact assessment for the Environmental Statement (ES) in relation to planning (ref. Chapter 12: Noise and Vibration – Eastern Transfer Station, November 2021), as well as a noise management plan provided as Appendix E to the noise and vibration chapter.
- 1.3 This noise impact assessment (NIA) and noise management plan (NMP) relies on information provided within the previous ES chapter and NMP, updated in line with the requirements of the Environmental Agency (EA) as outlined in the guidance in paragraphs 1.5 to 1.10 below.
- 1.4 Permitting for the site is regulated by the EA. RPS has been provided with the following correspondence with the EA outlining the requirements in relation to noise:

“Provide an updated Noise impact assessment (NIA) and Noise Management Plan, which reflect your site waste operations instead of your construction phase of the site. Your NIA must be based on BS4142:2014+A1:2019 – ‘Methods for rating and assessing industrial and commercial sound’ and a Noise and Vibration Management Plan based on the results of the NIA must be provided. This should meet the requirements of our Horizontal Guidance for Noise Part 2 – Noise Assessment and Control (<https://www.gov.uk/government/publications/environmental-permitting-h3-part-2-noise-assessment-and-control>). Also, you can follow our guidance on Noise impact assessments involving calculations or modelling and Noise management Plan (NMP) template. You should read the relevant sections of the noise and vibration management and risk assessments for your environmental permit guidance and sector specific guidance before you prepare your plan.”

Environmental Permitting Regulations and BS 4142:2014+A1:2019

- 1.5 The above is provided in accordance with Schedule 7 (4) of the Environmental permitting (England & Wales) Regulations (EPR) 2016 and article 12 of European Industrial Emissions Directive 2010/75/EU (IED) all applicants must undertake a noise risk assessment and propose technology and other techniques for preventing or, where this is not possible, reducing emissions from the installation. A summary of the key Environmental Permitting policies relating to noise, supplementary to the above, is provided below along with details of any standards referenced within this guidance.
- 1.6 Schedule 7 (4) of the Environmental Permitting Regulations (EPR) states that:
- “The regulator must exercise its functions under these Regulations for the purpose of achieving a high level of protection of the environment taken as a whole by, in particular, preventing or, where that is not practicable, reducing emissions into the air, water and land.”*
- 1.7 The EPR require that installations operate in such a way that the ‘Best Available Techniques’ (BAT) are adopted to prevent or minimise emissions and impact on the environment.
- 1.8 The NIA is required to follow the methodology provided with in BS 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’ (BS 4142:2014+A1:2019) provides a method for rating industrial and commercial sound and method for assessing resulting impacts upon people. The method is applicable to fixed plant installations, sound from industrial and manufacturing process and other associated activities. In summary, the standard provides guidance on:
- how to obtain the baseline sound data;
 - the determination of representative background sound levels;
 - calculation of the specific sound levels; and
 - the determination of rating sound levels by correcting the specific sound levels from the site and/or operations under consideration for acoustic characters, such as tonality, impulsivity and intermittency.
- 1.9 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard,

adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater the magnitude of the impact:

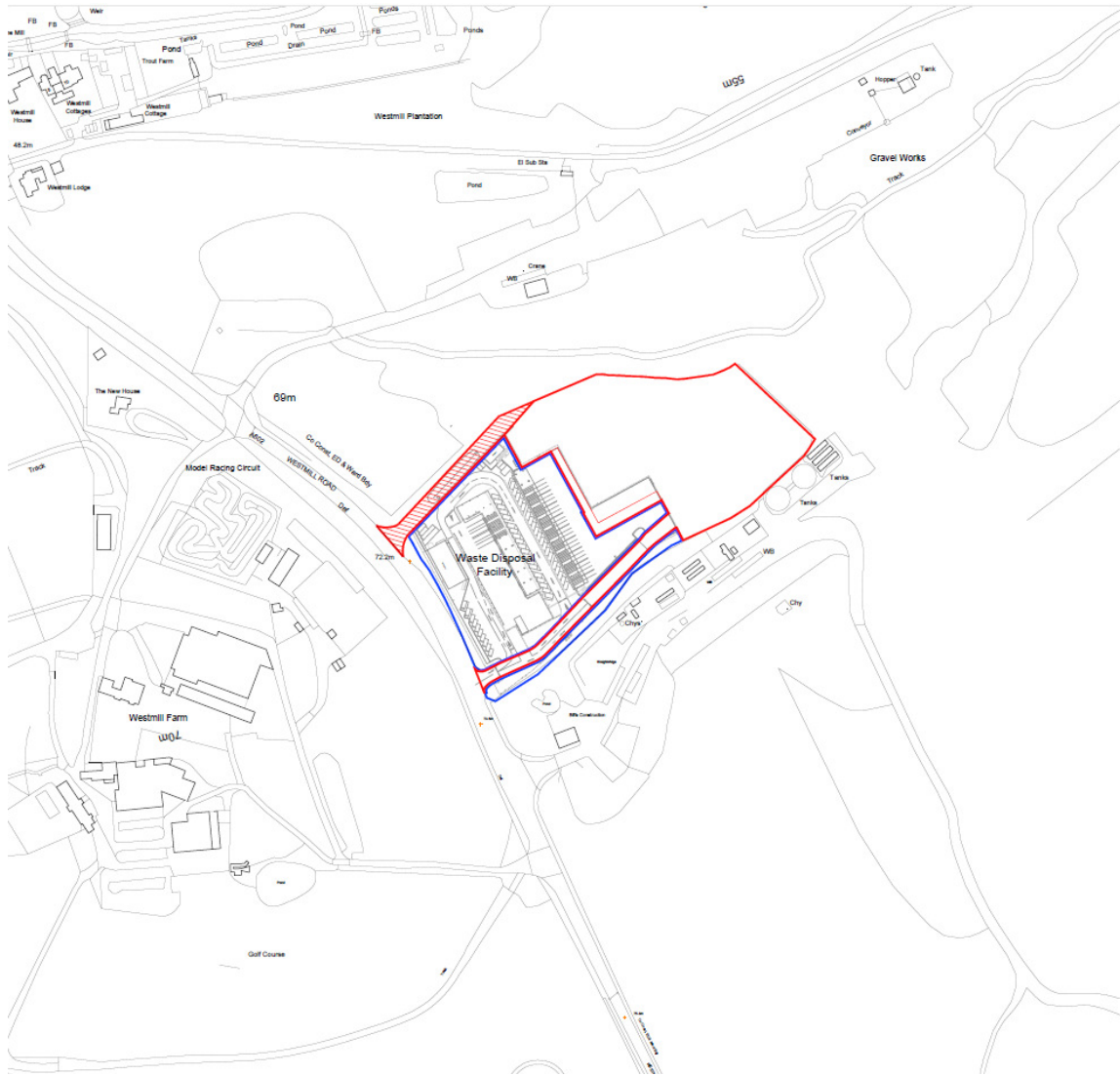
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a 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.

- 1.10 A contextual assessment of the likely impacts is then required. This, in combination with the initial objective estimated impact, is used to identify the likely impact of the sound in question.
- 1.11 RPS is a member of the Association of Noise Consultants (ANC), the representative body for acoustics consultancies, having demonstrated the necessary professional and technical competence. This report has been prepared with integrity, objectivity and honesty in accordance with the Code of Conduct of the Institute of Acoustics (IOA) and ethically, professionally and lawfully in accordance with the Code of Ethics of the ANC.
- 1.12 The technical content of this NIA has been provided by RPS personnel, all of whom are members of the IOA (the UK's professional body for those working in acoustics, noise and vibration) at various grades. Personnel and individual qualifications are provided within the Quality Management table at the start of this report. This report has been peer reviewed within the RPS team to ensure that it is technically robust and meets the requirements of our Integrated Management System.

2 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 The proposed development is located on land at A602 at Westmill, Ware, SG12 0ES on a site next to the recently developed Ware Household Waste Recycling Centre (Ware HWRC). The site is a former quarry and landfill site approximately 1.9 km northwest of Ware, Hertfordshire (national grid reference: 534182E, 215988N). A site location plan showing the redline boundary is provided in **Figure 1** below.

Figure 1 Site Plan



2.2 The proposed development Ware ETS would enable waste to be bulked up for efficient transport and provide a facility for household waste from the adjacent Ware HWRC to be transferred and stored before being transported in bulk away from the site. The facility would be designed with a capacity to receive up to 135,500 tonnes per annum (tpa).

2.3 The key components of the proposed development include the following:

- A main office comprising WCs / showers & changing facilities, kitchenette, office space, stores with separate HGV driver’s WCs and vending area;

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- Gatehouse comprising a small open office with visual inspection and access to inbound / outbound vehicles, kitchenette, store and WC;
- Parking spaces for up to ten cars;
- HGV wash bay;
- HGV / mechanical shovel fuelling station;
- Sprinkler tanks and pumphouse;
- Odour control provision;
- Two weighbridges, one for entry / one for exit; and
- Main transfer building which will have an internal clear haunch height of 8.5 m.

2.4 The main transfer station would be a steel-framed / -clad structure of warehouse-like appearance with a double pitch roof and roller shutter doors. It would have an air handling system to provide odour control, maintaining a slight negative pressure within the building to avoid release of odorous air when the transfer building doors are opened. Space is provided in front of the main transfer building for HGVs to turn.

2.5 Details on the noise generating plant / equipment will be provided in the noise impact assessment as set out in **Section 3**.

3 NOISE IMPACT ASSESSMENT

3.1 Assessment Locations

- 3.1.1 The study area is limited to the area around the application site where there is the potential for adverse noise and/or vibration effects (approximately 1 km from the application site boundary) within which the following NSRs are identified:
- NSR A: the residential receptors at Downfield Court, along Poles Lane, which lies approximately 500 m east of the site boundary;
 - NSR B: the residential receptors in the Paynes Hall/Westmill area, which lie approximately 300 m northwest of the site boundary;
 - NSR C: the single residential receptor off Westmill Road, which lie approximately 175 m west of the site boundary;
 - NSR D: Westmill Farm, which is an attraction facility that includes restaurants, a garden centre and including Three Lakes Campsite. These receptors lie approximately 100 m to 180 m to the west of the site boundary;
 - NSR E: the residential receptors along Westmill Road adjacent to the junction with A10, which lie approximately 680 m southwest of the site boundary;
 - NSR F: the Hanbury Manor Marriott Hotel & Country Club, which lies approximately 700 m east of the site boundary, and
 - NSR G: the residential receptors along Greyfriars road, to the southeast of the A10 road, which lie approximately 900 m southeast of the site boundary.

3.2 Baseline Sound Survey

- 3.2.1 A baseline sound survey was undertaken to establish the baseline conditions of the proposed site and its surrounding area. Three long-term monitors were left in the surrounding site area, between Tuesday 27th July and Wednesday 4th August at locations LT1, LT2 and LT3. Additional unattended environmental noise monitoring was undertaken at location LT2 between Wednesday 4th August and Thursday 12th August due to an equipment failure during the first week of the measurements. The survey also included attended short-term noise monitoring at locations ST1, ST2 and ST3. The noise monitoring locations are shown in **Figure 2** below.
- 3.2.2 The above noise sensitive receptors were represented during the baseline sound survey as summarised in

- 3.2.3 **Table** 3.1 below, which also summarises the representative ambient and background sound levels.
- 3.2.4 Full details of the baseline sound survey can be found in the original baseline sound survey report (ref. JAJ11387-REPT-01-R0 Baseline Environmental Noise Survey for Ware Waste Transfer Station, Ware) dated September 2021, which is attached as **Appendix A** to this report.

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Table 3.1 Noise Sensitive Receptors

| Noise Sensitive Receptors | | | Ambient Sound Level, L _{Aeq, T} (dB) | | Background Sound Levels, L _{A90, T} (dB) | |
|---------------------------|-------------------------|-------------|--|-------------------------------|--|-------------------------------|
| | | | Daytime (07:00 – 23:00) | Night-time (23:00 – 07:00) | Daytime (07:00 – 23:00) | Night-time (23:00 – 07:00) |
| Noise Sensitive Receptors | Representative Location | Week Period | | | | |
| NSR A, NSR F | LT3 | Weekdays | 51 | 34 | 42 | 26 |
| | | Saturday | 44 | 31 | 41 | 22 |
| | | Sunday | 42 | 30 | 41 | 19 |
| NSR B, NSR C, NSR D | LT2 | Weekdays | 55 | 49 | 49 | 32 |
| | | Saturday | 55 | 48 | 48 | 40 |
| | | Sunday | 55 | 48 | 49 | 31 |
| NSR E, NSR G | LT1 | Weekdays | 55 | 48 | 49 | 36 |
| | | Saturday | 50 | 44 | 45 | 29 |
| | | Sunday | 53 | 44 | 47 | 29 |

Figure 2 Baseline Sound Measurement Locations



3.3 Modelling and Results

Noise source data & noise model methodology

- 3.3.1 In order to determine the specific sound levels resulting from the operation of the proposed development, a noise model has been built using SoundPlan v8.2 noise modelling software. The model predicts noise levels under light down-wind conditions based on hemispherical propagation, atmospheric absorption, ground effects, screening and directivity based on the procedure detailed in ISO 9613-2:1996 (International Organisation for Standardisation (ISO), 1996).
- 3.3.2 The modelling of the proposed development's operational activities and associated noise emissions was based on information received by the design team until 21/09/2021. Where this information was unknown, the model has been constructed with input acoustic data based on RPS professional judgment of assessing other similar facilities to the ETS in the past. In this regard, **Impact Assessment**

Initial Assessment

- 3.3.3 An initial estimate of impact without mitigation measures has been undertaken in accordance with BS 4142:2014+A1:2019, and the results are shown in **Table 3.4**.
- 3.3.4 With regards to the operational hours, the proposed development weekday operation would be between 05:00 and 21:00 hours. The proposed development weekend operation will occur from 07:30 to 16:00 hours on Saturday and 07:30 to 12:00 hours on Sunday, and at no time on public or bank holidays.
- 3.3.5 The subjective method for determining rating penalties has been used to determine appropriate corrections for each receptor and assessment period. It is considered that the specific sound will not be characterised as intermittent, impulsive or tonal, therefore no penalties have been applied for intermittency, impulsivity or tonality. Although tonal reversing alarms of the HGVs have been modelled these will not be present at 100% of the time, therefore this is not a continuous tonal noise source and for this reason no penalty for tonality was applied. However, a correction of 3 dB has been applied for other sound characteristics as a conservative and precautionary approach.

- 3.3.7 Table 3.2 below summarises the modelling inputs used and operational hours for each plant type.
- 3.3.8 Full details on the sound power levels for the various plant items, as well as model assumptions for the main transfer building, used within the noise model can be found in the Technical Appendix 12.5 – Operational Noise Assessment Methodology and Assessment for the original ES chapter. For easy reference the appendix is attached as **Appendix B**.

Results

- 3.3.9 The predicted specific sound levels at the noise sensitive receptors have been calculated at ground floor and second floor levels, i.e., 1.5 m and 4.5 m above local ground level, respectively. The maximum predicted specific sound level per receptor has been used in the assessment. The same noise modelling techniques have been used by RPS on numerous sites in the UK and worldwide and there is a high degree of confidence in the model.
- 3.3.10 The predicted specific sound levels are given for three time periods:
- Daytime (07:00 – 21:00 hours): During this period all plant is operational with on-times as described in **Table 3.2** below;
 - Night-time (23:00 – 05:00 hours): During this period only the odour abatement system is operational with 50% on-time, and
 - Night-time (05:00 – 07:00 hours): During this period the HGVs are travelling to site, activities occur within the main transfer building but the shredder is not operational and the odour abatement system is operational and at 50% on-time.
- 3.3.11 The predicted specific sound levels are summarised in **Table 3.3** below. Details of the partial levels are provided in **Appendix B**.

3.4 Impact Assessment

Initial Assessment

- 3.4.1 An initial estimate of impact without mitigation measures has been undertaken in accordance with BS 4142:2014+A1:2019, and the results are shown in **Table 3.4**.
- 3.4.2 With regards to the operational hours, the proposed development weekday operation would be between 05:00 and 21:00 hours. The proposed development weekend operation will occur from 07:30 to 16:00 hours on Saturday and 07:30 to 12:00 hours on Sunday, and at no time on public or bank holidays.
- 3.4.3 The subjective method for determining rating penalties has been used to determine appropriate corrections for each receptor and assessment period. It is considered that the specific sound will not be characterised as intermittent, impulsive or tonal, therefore no penalties have been applied for intermittency, impulsivity or tonality. Although tonal reversing alarms of the HGVs have been modelled these will not be present at 100% of the time, therefore this is not a continuous tonal noise source and for this reason no penalty for tonality was applied. However, a correction of 3 dB has been applied for other sound characteristics as a conservative and precautionary approach.

Table 3.2 Operational Noise Input

| Operational Noise Input Summary | |
|---|---|
| Noise Source | Description |
| Main building | <p>A wheel loader, a shredder and a fan are expected to operate within the main building of the proposed development. The wheel loader and fan are expected to operate between 05:00 and 21:00 hours, while for the shredder only daytime operation is anticipated, between 07:00 and 21:00 hours.</p> <p>Spectral noise emission information was provided by the design team for a worst-case shredder plant (VB 750 E shredder). For the wheel loader and the fan spectral noise emission information has been based on the RPS database.</p> <p>The building was modelled as 11.3-metre-high building with a slatted roof with internal reverberant sound pressure levels of 100 dB L_{pA} during daytime and 96 dBA L_{pA} during night-time, and a spectrum based on the available spectral information.</p> <p>Facades of the building modelled as a combination of standard Part L compliant CA Twin-Therm® wall system consisting of 120mm thick Therma-quilt insulation (0.35W/m²K) with an overall attenuation of 43 dB R_w and 500 mm concrete elements (min. density 2340 kg/m³). The building includes roof lights at both sides of the slatted roof which were modelled as triple glazed elements with a performance of 25 dB R_w. The front façade of the building includes 7 x fast-action doors (approximately 6 x 6 m² per door) with a performance of 20 dB R_w and 6 x louvres with an assumed performance of 10 dB R_w / D_{new} 16 dB. It is understood that all activities within the main building will be undertaken with closed fast-doors.</p> |
| 2 x Odour abatement system fan casings and fans | <p>Modelled as point sources with 100% on-time during daytime and 50% on-time during night-time:</p> <ul style="list-style-type: none"> one point source for the fan exhaust on the top of the stack at 15 metres AGL with a SWL of 106 dBA L_w, with a spectrum based on manufacturer's data (Halifax No. 43 Beaufort 'L' Backward Curved Fan). one point source for the fan casing at 1 metre AGL with a SWL of 92 dBA L_w, with a spectrum based on the RPS database. <p>It should be noted that the manufacturer's information provided above is corresponding only to the odour abatement system related to the main building. The second odour abatement system would be related to the additional ETS building and no manufacturer's information is available for this, although it is expected that this would be a quieter system compared to the one related to the main ETS building. As a worst-case approach the second odour abatement system has been modelled exactly as the main ETS building's odour abatement system.</p> |
| HGV idling vehicle | <p>Modelled as a point source at 1 metre AGL with an SWL of 91 dBA L_w, with a spectrum based on data from BS 5228-1:2008+A1:2014 (C4.5). On-time was assumed to be 30% of the time.</p> |
| HGV movements | <p>Modelled as a line source at 1 m AGL with a SWL of 104 dBA L_w, with a spectrum based on data from BS 5228-1:2008+A1:2014 (C4.4). A number of 8 HGVs was modelled to be operating between 05:00 and 07:00 hours and a number of 138 HGVs was modelled to be operating between 07:00 and 21:00 hours. It should be noted that during the weekends no HGVs will be operational between 05:00 and 07:00 hours.</p> |
| HGV with reversing tonal alarm | <p>Modelled as a point source at 1 metre AGL with an SWL of 121 dBA L_w, with a spectrum based on the RPS database.</p> |

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Table 3.3 Predicted Specific Sound Levels at Receptors (fre-field)

| Predicted Specific Sound Levels, L _s (dBA) | | | |
|--|----------------------------|-------------------------------|-----------------------------|
| Noise Sensitive Receptor | Daytime (07:00 – 23:00) | Night-time (23:00 - 05:00) | Night-time (05:00-07:00) |
| NSR A – Downfield Court | 39 | 29 | 32 |
| NSR B – Paynes Hall/Westmill area | 41 | 35 | 36 |
| NSR C – off Westmill Road | 41 | 34 | 36 |
| NSR D – Westmill Farm | 42 | 35 | 36 |
| NSR E – Westmill Road/A10 junction | 32 | 25 | 37 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 37 | 26 | 27 |
| NSR G – along Greyfriars Road | 30 | 23 | 26 |

Table 3.4 Initial BS 4142:2014+A1:2019 assessment of impact without mitigation

| Representative baseline sound levels | | | | | | | |
|--|----------|---|---|-------------------------|--------------------|--|------------------------------------|
| NSR | Day | Background Sound Level, L _{A90, T} (dB) | Residual Sound Level, L _{Aeq, T} (dB) | Specific Sound Level | Correction (dB) | Rating Level, L _{Ar, Tr} (dB) | Rating Level Difference (dB) |
| Daytime (07:00 – 21:00) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 34 | 51 | 39 | 3 | 42 | + 8 |
| | Saturday | 31 | 44 | 39 | 3 | 42 | + 11 |
| | Sunday | 30 | 42 | 39 | 3 | 42 | + 12 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 55 | 41 | 3 | 44 | - 5 |
| | Saturday | 48 | 55 | 41 | 3 | 44 | - 4 |
| | Sunday | 48 | 55 | 41 | 3 | 44 | - 4 |
| NSR C – off Westmill Road | Weekdays | 49 | 55 | 41 | 3 | 44 | - 5 |
| | Saturday | 48 | 55 | 41 | 3 | 44 | - 4 |
| | Sunday | 48 | 55 | 41 | 3 | 44 | - 4 |
| NSR D – Westmill Farm | Weekdays | 49 | 55 | 42 | 3 | 45 | - 4 |
| | Saturday | 48 | 55 | 42 | 3 | 45 | - 3 |
| | Sunday | 48 | 55 | 42 | 3 | 45 | - 3 |
| NSR E – Westmill Road/A10 junction | Weekdays | 48 | 55 | 32 | 3 | 35 | - 13 |
| | Saturday | 44 | 50 | 32 | 3 | 35 | - 9 |
| | Sunday | 44 | 53 | 32 | 3 | 35 | - 9 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 34 | 51 | 37 | 3 | 40 | + 6 |
| | Saturday | 31 | 44 | 37 | 3 | 40 | + 9 |
| | Sunday | 30 | 42 | 37 | 3 | 40 | + 10 |
| NSR G – along Greyfriars Road | Weekdays | 48 | 55 | 30 | 3 | 33 | - 15 |
| | Saturday | 44 | 50 | 30 | 3 | 33 | - 11 |
| | Sunday | 44 | 53 | 30 | 3 | 33 | - 11 |
| Night-time (05:00- 07:00) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 31 | 46 | 32 | 3 | 35 | + 4 |

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| Representative baseline sound levels | | | | | | | |
|--|----------|----|----|----|---|----|-------------|
| NSR B – Paynes Hall/Westmill area | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR C – off Westmill Road | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR D – Westmill Farm | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR E – Westmill Road/A10 junction | Weekdays | 41 | 51 | 37 | 3 | 40 | - 1 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 31 | 46 | 27 | 3 | 30 | - 1 |
| NSR G – along Greyfriars Road | Weekdays | 41 | 51 | 26 | 3 | 29 | - 12 |
| Night-time (23:00 – 05:00) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 26 | 42 | 29 | 3 | 32 | + 6 |
| | Saturday | 22 | 41 | 29 | 3 | 32 | + 10 |
| | Sunday | 19 | 41 | 29 | 3 | 32 | + 13 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 32 | 49 | 35 | 3 | 38 | + 6 |
| | Saturday | 40 | 48 | 35 | 3 | 38 | - 2 |
| | Sunday | 31 | 48 | 35 | 3 | 38 | + 7 |
| NSR C – off Westmill Road | Weekdays | 32 | 49 | 34 | 3 | 37 | + 5 |
| | Saturday | 40 | 48 | 34 | 3 | 37 | - 3 |
| | Sunday | 31 | 48 | 34 | 3 | 37 | + 6 |
| NSR D – Westmill Farm | Weekdays | 32 | 49 | 35 | 3 | 38 | + 6 |
| | Saturday | 40 | 48 | 35 | 3 | 38 | - 2 |
| | Sunday | 31 | 48 | 35 | 3 | 38 | + 7 |
| NSR E – Westmill Road/A10 junction | Weekdays | 36 | 49 | 25 | 3 | 28 | - 8 |
| | Saturday | 29 | 45 | 25 | 3 | 28 | - 1 |
| | Sunday | 29 | 47 | 25 | 3 | 28 | - 1 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 26 | 42 | 26 | 3 | 29 | + 3 |
| | Saturday | 22 | 41 | 26 | 3 | 29 | + 7 |
| | Sunday | 19 | 41 | 26 | 3 | 29 | + 10 |
| NSR G – along Greyfriars Road | Weekdays | 36 | 49 | 23 | 3 | 26 | - 10 |
| | Saturday | 29 | 45 | 23 | 3 | 26 | - 3 |
| | Sunday | 29 | 47 | 23 | 3 | 26 | - 3 |

Table Note

- 3.4.5 During daytime, the rating levels at the most affected receptors, NSR A and NSR F, are up to 12 dB and 10 dB above the background sound level, respectively. This is between 0 and 2 dB above the threshold level at which a major impact is likely. At the rest of the NSRs the predicted rating levels are between 3 dB and 15 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of major impacts at NSR A and NSR F and negligible impacts at all other NSRs, depending on the context.
- 3.4.6 During night-time (05:00-07:00 hours), the rating level at the most affected receptors, NSR A, is up to 4 dB above the background sound level. This is 4 dB above the threshold level at which a minor impact is likely. At the rest of the NSRs the predicted rating levels are between 1 dB and 12 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of minor impacts at NSR A and negligible impacts at all other NSRs, depending on the context.
- 3.4.7 During night-time (23:00-05:00 hours), the rating levels at the most affected receptors, NSR A and NSR F, are up to 13 dB and 10 dB above the background sound level, respectively. This is between 0 dB (for NSR F) and 3 dB above the threshold level at which a major impact is likely. At NSR B, NSR C and NSR D, predicted rating levels are up to 7 dB above background sound levels. This is 2 dB above the threshold level at which a moderate impact is likely. For NSR E and NSR G, predicted rating levels are between 1 dB and 8 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of major impacts at NSR A, moderate impacts at NSR B, NSR C, NSR D and NSR F and negligible impacts at NSR E and NSR G, depending on the context.

Mitigation

- 3.4.8 The following mitigation measures are proposed for the elements shown below:
- A limiting sound power level of 88 dBA L_{WA} for the odour abatement stack exhausts. This could be achieved by the provision of a silencer designed to attenuate the stack exhaust noise levels as per the provided limit. The specification of the silencer should be considered during detailed design stage.
 - A limiting sound power level of 87 dBA L_{WA} for the odour abatement fan casings. In case it is not possible to select a fan casing that meets these plant limits, acoustic lagging or a fan casing enclosure must be specified to attenuate the emitted noise levels as per the provided limit.
 - Use of acoustic louvres with a performance of at least 22 dB R_w and an opening area of 6 m² per louvre rather than traditional louvres on the front façade of the main building. It should be noted that the originally proposed cladding and roofing specification for the building cladding elements should be maintained.
 - With regards to the reversing tonal alarms of the HGV vehicles, it is recommended that broadband noise alarms are used instead of tonal noise alarms.

Fast-action doors

- 3.4.9 It should be noted that the fast-action doors of the front façade of the main building are an acoustically weak point. However, given the function of these doors and their necessity for the operation of the main building, it would be impossible to select fast-action doors that would achieve a greater performance than the performance provided within Table 1.4 of Technical Appendix 12.5 (see **Appendix B**).

Noise Barrier

- 3.4.10 The possibility of installing a noise barrier to the east part of the proposed development has also been investigated.

- 3.4.11 By implementing all the above mitigation measures to the proposed development, the noise climate at NSR A and NSR F is dominated by the HGVs movements and the noise emission from the closed fast-doors.
- 3.4.12 The installation of a 4 m barrier will not significantly benefit NSR A and NSR F. While noise from HGVs might be slightly reduced at the NSRs, the noise emissions from the fast-action doors will still dominate the noise climate of the NSRs. This is primarily because of the size (approximately 6 x 6 m²) and number (7) of the fast-action doors and by the topography of the site. The height above mean sea level (AMSL) on site is approximately 68 m whereas at NSR A it is approximately 74 m AMSL. As a result, NSR A overlooks the proposed development. and the installation of the 4 m barrier will not significantly attenuation the specific sound levels at NSR A.
- 3.4.13 For the above reasons, a noise barrier is not part of the suggested mitigation measures for the proposed development.

Assessment with Proposed Mitigation

- 3.4.14 An initial estimate of impact undertaken in accordance with BS 4142:2014+A1:2019, is shown in **Table 3.5** below for the daytime and night-time periods when the mitigation measures discussed in paragraphs 3.4.8 to 3.4.13 are implemented.
- 3.4.15 The subjective method for determining rating penalties has been used to determine appropriate corrections for each receptor and assessment period. It is considered that the specific sound will not be characterised as intermittent or impulsive, therefore no penalties have been applied for intermittency or impulsivity. As the use of tonal reversing alarms is not recommended, there is no other source of tonal noise from the proposed development. Therefore, no correction has been applied for tonal noise. However, for all receptors a correction of + 3 dB has been applied to account for the specific character of noise from the Ware ETS.
- 3.4.16 During daytime, the rating levels at the most affected receptors, NSR A and NSR F, are up to 9 dB and 8 dB above the background sound level, respectively. This is between 4 and 3 dB above the threshold level at which a moderate impact is likely. At the rest of the NSRs the predicted rating levels are between 6 dB and 18 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of moderate impacts at NSR A and NSR F and negligible impacts at all other NSRs, depending on the context.
- 3.4.17 During night-time (23:00-05:00 hours), the rating levels at all receptors are between 1 and 20 dB below background levels. The results of the initial estimate of impact during night-time (23:00-05:00 hours) are indicative of negligible impacts at all NSRs, depending on the context.
- 3.4.18 During night-time (05:00-07:00 hours), the rating levels at all receptors are between 2 dB and 26 dB below background levels. The results of the initial estimate of impact during the night-time (05:00-07:00 hours) are therefore indicative of negligible impacts at all NSRs, depending on the context.
- 3.4.19 To accord with the guidance contained within BS 4142:2014+A1:2019 and provide a thorough assessment, consideration of the context of the scenario has been undertaken. Consideration of the context is provided in terms of the assessment of the change in ambient sound due to the specific sound and the absolute noise levels.

Discussion of Context

- 3.4.20 Although the full operational hours for the site would be between 05:00 and 21:00 hours, typically, normal working hours on weekdays would be between 05:00 and 17:00 hours. However, for the purpose of identifying a reasonable worst-case case to assess, operation during the full opening hours (05:00 – 21:00) has been assumed. This is considered a worst-case approach for the daytime operational noise assessment and for this reason lower noise levels than predicted would typically occur at the NSRs during daytime period.
- 3.4.21 It should be noted that the moderate impacts identified for NSR A and NSR F during the daytime and night-time (23:00 – 05:00 hours) periods only occur during Saturdays and Sundays. During weekdays only minor impacts occur at these receptors. Typically, normal working hours for weekends would be from 07:30 to 16:00 hours on Saturday and 07:30 to 12:00 hours on Sunday. Sunday operation would typically only be undertaken, when necessary, for example to manage a backlog from a preceding bank holiday. However, for the purpose of identifying a reasonable worst-

case case to assess for EIA, operation during the full opening hours (05:00 – 21:00) has also been assumed for the weekend. This is considered a worst-case approach for the operational noise assessment during the weekends and for the above reasons lower noise levels than the predicted would typically occur at the NSRs during the weekends.

- 3.4.22 With regards to absolute sound levels, the specific sound level is significantly below the existing ambient noise level during the day and will not contribute to or cause any significant change to ambient noise levels. It is therefore considered that sound from the proposed development is unlikely to cause, or significantly contribute to, any exceedance of the World Health Organisation (WHO) criterion for the onset of annoyance during the daytime, of 55 dB LAeq. It is therefore considered that the site will not result in adverse effects to amenity during the daytime.
- 3.4.23 The level for the onset of sleep disturbance during the night-time (i.e. lowest observed adverse effect level) contained in the WHO Guidance is 45 dB LAeq (façade), equivalent to a free-field level of 42 dB LAeq. Whilst this threshold level is exceeded at most receptors, the baseline residual sound level already exceeds the WHO level at all these receptors. It is therefore considered that, whilst WHO guideline levels may be exceeded, the impact from the operation of the proposed development during the night on sleep disturbance will be minimal.
- 3.4.24 The BS 4142:2014+A1:2019 initial estimate of impact indicates that sound from the facility may result in negligible adverse to moderate adverse impacts. Taking into account the context of the scenario discussed above, it is considered appropriate to modify the BS 4142:2014+A1:2019 initial estimate of impact such that negligible to moderate impacts are reduced to negligible to minor adverse impacts.
- 3.4.25 Further details on the assessment can be found in **Appendix B**.

3.5 Uncertainty

- 3.5.1 In all assessments, it is good practice to consider uncertainty which can arise from a number of different aspects. There are degrees of uncertainty associated with: instrumentation used for surveying; measurement technique and the variables influencing the measurement results such as transmission path and weather conditions; source terms used for modelling; calculation uncertainty; assessment uncertainty; and the subjective response of residents to noise sources.
- 3.5.2 Uncertainty due to instrumentation has been significantly reduced with the introduction of more modern instrumentation and is reduced further by undertaking field calibration checks on sound level meters before and after each measurement period and that all instrumentation is within accepted laboratory calibration intervals.
- 3.5.3 Every effort has been made to reduce the uncertainty of the baseline sound level measurements. The duration of the baseline survey is considered to significantly reduce the uncertainty associated with the baseline sound levels. Based on professional judgement including substantial experience of acquiring and analysing baseline data for numerous sites in various locations, and a desk-based review of the site and surrounding area, it is considered that the baseline data acquired during the survey is typical of the area.
- 3.5.4 Calculation uncertainty and assessment uncertainty have been reduced by peer review of all baseline data, model input data, model results and assessment calculations, and by using the appropriate level of precision at each stage of the assessment calculations.
- 3.5.5 With regards to subjective response, the noise standards adopted for the assessment will have been based upon the subjective response of the majority of the population or will be based upon the most likely response of the majority of the population. This is considered to be the best that can be achieved in a population of varying subjective response which will vary dependent upon a wide range of factors.

All areas and potential consequences of uncertainty have been minimised at every stage of the assessment process. On the basis of the above, and in the context of subjective response, the effects of uncertainty on the assessment are considered minimal.

3.6 Conclusion

- 3.6.1 On the basis of the above assessment, it is concluded that levels of sound arising from the operation of the proposed development will not result in any moderate or major adverse impacts, at any of the nearby noise sensitive receptors.

WARE EASTERN TRANSFER STATION

Table 3.5 BS 4142:2014+A1:2019 assessment of impact with mitigation

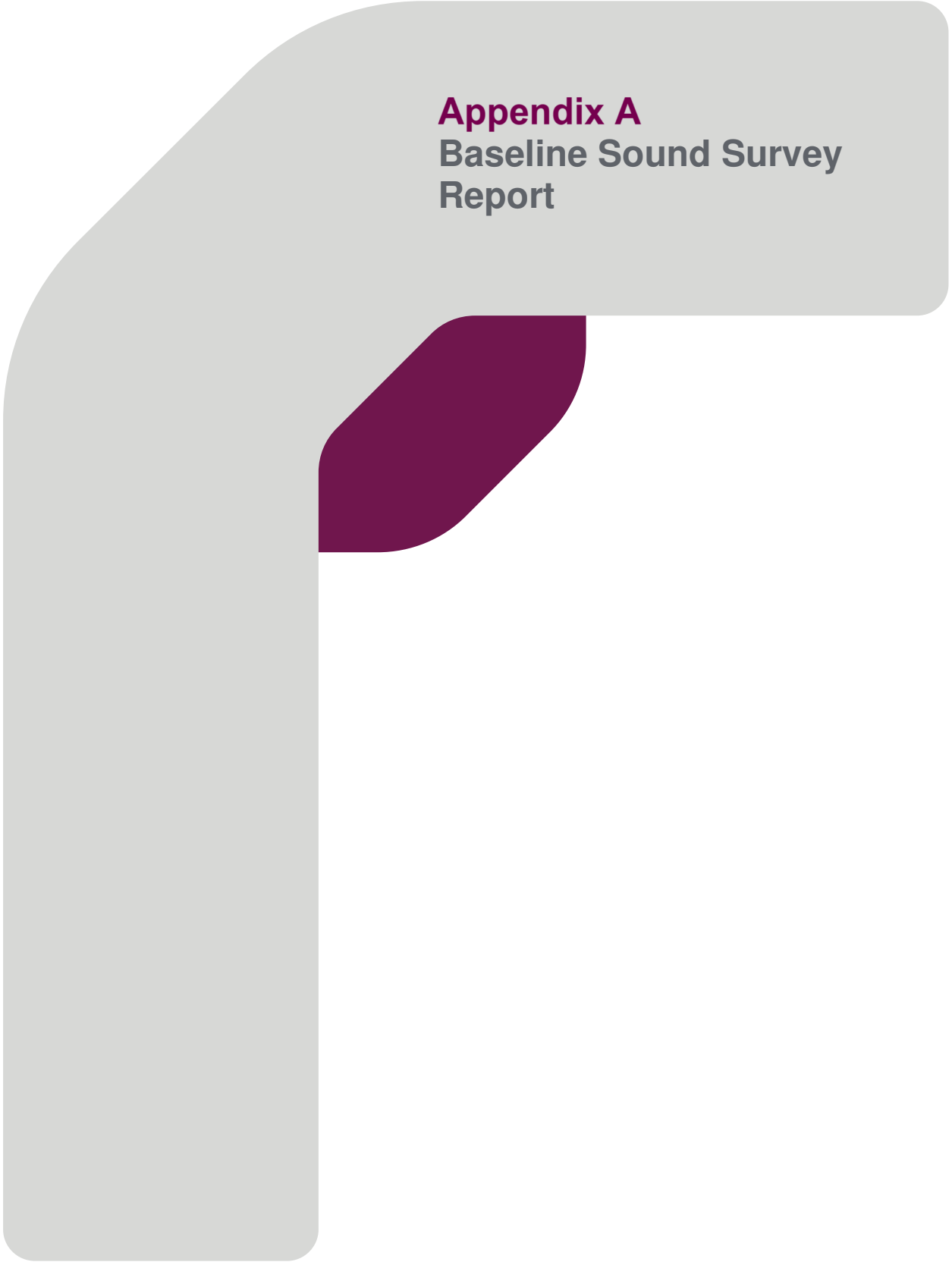
| Representative baseline sound levels | | | | | | | |
|---|------------|--|--|-----------------------------|------------------------|--|-------------------------------------|
| NSR | Day | Background Sound Level, L_{A90, T} (dB) | Residual Sound Level, L_{Aeq, T} (dB) | Specific Sound Level | Correction (dB) | Rating Level, L_{Ar, Tr} (dB) | Rating Level Difference (dB) |
| Daytime (07:00 – 21:00) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 34 | 51 | 36 | 3 | 39 | + 5 |
| | Saturday | 31 | 44 | 36 | 3 | 39 | + 8 |
| | Sunday | 30 | 42 | 36 | 3 | 39 | + 9 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 55 | 36 | 3 | 39 | - 10 |
| | Saturday | 48 | 55 | 36 | 3 | 39 | - 9 |
| | Sunday | 48 | 55 | 36 | 3 | 39 | - 9 |
| NSR C – off Westmill Road | Weekdays | 49 | 55 | 37 | 3 | 40 | - 9 |
| | Saturday | 48 | 55 | 37 | 3 | 40 | - 8 |
| | Sunday | 48 | 55 | 37 | 3 | 40 | - 8 |
| NSR D – Westmill Farm | Weekdays | 49 | 55 | 39 | 3 | 42 | - 7 |
| | Saturday | 48 | 55 | 39 | 3 | 42 | - 6 |
| | Sunday | 48 | 55 | 39 | 3 | 42 | - 6 |
| NSR E – Westmill Road/A10 junction | Weekdays | 48 | 55 | 28 | 3 | 31 | - 17 |
| | Saturday | 44 | 50 | 28 | 3 | 31 | - 13 |
| | Sunday | 44 | 53 | 28 | 3 | 31 | - 13 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 34 | 51 | 35 | 3 | 38 | + 4 |
| | Saturday | 31 | 44 | 35 | 3 | 38 | + 7 |
| | Sunday | 30 | 42 | 35 | 3 | 38 | + 8 |
| NSR G – along Greyfriars Road | Weekdays | 48 | 55 | 27 | 3 | 30 | - 18 |
| | Saturday | 44 | 50 | 27 | 3 | 30 | - 14 |
| | Sunday | 44 | 53 | 27 | 3 | 30 | - 14 |
| Night-time (05:00- 07:00) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 31 | 46 | 27 | 3 | 30 | - 1 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 42 | 52 | 28 | 3 | 31 | - 11 |
| NSR C – off Westmill Road | Weekdays | 42 | 52 | 28 | 3 | 31 | - 11 |
| NSR D – Westmill Farm | Weekdays | 42 | 52 | 30 | 3 | 33 | - 9 |
| NSR E – Westmill Road/A10 junction | Weekdays | 41 | 51 | 19 | 3 | 22 | - 19 |
| NSR F – Hanbury Manor | Weekdays | 31 | 46 | 25 | 3 | 28 | - 3 |

WARE EASTERN TRANSFER STATION

| Representative baseline sound levels | | | | | | | |
|---|-----------------------------------|----|----|----|---|----|-------------|
| Marriott Hotel & Country Club | | | | | | | |
| NSR G – along Greyfriars Road | Weekdays | 41 | 51 | 18 | 3 | 21 | - 20 |
| | Night-time (23:00 – 05:00) | | | | | | |
| NSR A – Downfield Court | Weekdays | 26 | 42 | 14 | 3 | 17 | - 9 |
| | Saturday | 22 | 41 | 14 | 3 | 17 | - 5 |
| | Sunday | 19 | 41 | 14 | 3 | 17 | - 2 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 32 | 49 | 17 | 3 | 20 | - 12 |
| | Saturday | 40 | 48 | 17 | 3 | 20 | - 20 |
| | Sunday | 31 | 48 | 17 | 3 | 20 | - 11 |
| NSR C – off Westmill Road | Weekdays | 32 | 49 | 18 | 3 | 21 | - 11 |
| | Saturday | 40 | 48 | 18 | 3 | 21 | - 19 |
| | Sunday | 31 | 48 | 18 | 3 | 21 | - 10 |
| NSR D – Westmill Farm | Weekdays | 32 | 49 | 17 | 3 | 20 | - 12 |
| | Saturday | 40 | 48 | 17 | 3 | 20 | - 20 |
| | Sunday | 31 | 48 | 17 | 3 | 20 | - 11 |
| NSR E – Westmill Road/A10 junction | Weekdays | 36 | 49 | 7 | 3 | 10 | - 26 |
| | Saturday | 29 | 45 | 7 | 3 | 10 | - 19 |
| | Sunday | 29 | 47 | 7 | 3 | 10 | - 19 |
| NSR F – Hanbury Manor | Weekdays | 26 | 42 | 8 | 3 | 11 | - 15 |
| | Saturday | 22 | 41 | 8 | 3 | 11 | - 11 |
| Marriott Hotel & Country Club | Sunday | 19 | 41 | 8 | 3 | 11 | - 8 |
| NSR G – along Greyfriars Road | Weekdays | 36 | 49 | 7 | 3 | 10 | - 26 |
| | Saturday | 29 | 45 | 7 | 3 | 10 | - 19 |
| | Sunday | 29 | 47 | 7 | 3 | 10 | - 19 |

4 NOISE MANAGEMENT PLAN

- 4.1 The purpose of the Environmental Noise Management Plan (ENMP) is to facilitate and assist the process of ongoing environmental management of issues relating to the emission of noise from the Ware Eastern Transfer Station (Ware ETS).
- 4.2 Where relevant, the ENMP is intended as a basic procedure to be adopted by the Ware ETS personnel, including any other companies operating within the ETS and ETS's operator, which is Hertfordshire County Council (HCC).
- 4.3 The objectives of the ENMP are to:
- provide guidance to facilitate the management of environmental issues relating to the emission of noise from the facility;
 - monitor and understand the noise levels from the facility as measured in the community; and
 - provide procedures for community liaison and handling any noise related complaints in relation to the facility.
- 4.4 An ENMP (ref. 11387j-REPT-02-R2) dated December 2021 was provided with the original application. It is attached for ease as **Appendix C**.
- 4.5 The ENMP is supported by a noise impact assessment for noise and vibration, which has been provided previously by RPS in the original ES chapter and Technical Appendix 12.5 to support the planning application for the proposed facility, and which have been provided in **Section 3** above.

A large graphic element consisting of a light grey rounded rectangle with a dark purple rounded rectangle overlapping its bottom-left corner. The text 'Appendix A Baseline Sound Survey Report' is positioned in the upper right area of the grey shape.

Appendix A
Baseline Sound Survey
Report

Baseline Environmental Noise Survey for Ware Waste Transfer Station, Ware

For Balfour Beatty PLC

| Quality Management | | | |
|----------------------------------|---|-----------------------------------|---------------------|
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| Date of Issue | 31/08/2021 | Report Number | JAJ11387–REPT–01–R0 |

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| 1 | 09/09/2021 | | Update according to comments | |

| QA of Data processing, Calculations and/or Models | | | |
|---|---|-------------------------------------|------------|
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Figure 2.1 Noise Sensitive Receptors

Figure 2.2 Proposed Development

Figure 3.1 Noise Measurement Locations

1 Introduction

- 1.1 The Acoustics Team of RPS (RPS) has been commissioned by Balfour Beatty Plc to undertake a noise impact assessment for a proposed new waste transfer station located in Ware, Hertfordshire on the land adjacent to the approved household and waste recycling centre in Ware.
- 1.2 The Land adjacent to the A602, Westmill Road, Ware is owned by Hertfordshire County Council (HCC) and has previously been identified as a suitable location for provision of a waste transfer station. The land is a disused landfill site (Ware Landfill) and part of the site is being used to deliver the Ware HWRC site.
- 1.3 A desktop study has been undertaken to identify the nearest noise sensitive receptors at the proposed development.
- 1.4 Consultation has been undertaken with the local planning authority (both HCC and East Herts District Council (EHDC)) to agree the noise monitoring and assessment methodology for the proposed development.
- 1.5 An environmental noise survey was undertaken at locations representative of the nearest noise sensitive receptors at the vicinity of the site to establish the baseline conditions on and around the site and the representative background noise levels at the nearest noise sensitive receptors.
- 1.6 This report presents the identified nearest noise sensitive receptors as agreed with the local planning authority, the results of the baseline environmental noise survey and the representative background noise levels at the nearest noise sensitive receptors.

2 Site Description

2.1 The proposed development is bounded by the existing Ware recycling centre site directly to the west, by the Brazier Landfill Site, Ware Quarry site to the north and by the Biffa Westmill Landfill Site to the south.

Noise Sensitive Receptors

2.2 The identified nearest noise sensitive receptors (NSRs) at the vicinity of the proposed development are:

- **NSR A:** the residential receptors at Downfield Court, which lie approximately 500 m west of the site boundary;
- **NSR B:** the residential receptors along Westmill Road, which lie approximately 310 m northwest of the site boundary;
- **NSR C:** the residential receptors off Westmill Road, which lie approximately 250 m northwest of the site boundary;
- **NSR D:** Westmill Farm, which is an attraction facility that includes restaurants, a garden centre and a camping/caravan site. These receptors lie approximately 220 m to 300 m to the west of the site boundary;
- **NSR E:** the residential receptors along Westmill Road, which lie approximately 680 m southwest of the site boundary;
- **NSR F:** the Hanbury Manor Marriott Hotel & Country Club, which lies approximately 700 m west of the site boundary, and
- **NSR G:** the residential receptors along Greyfriars road, to the southeast of the A10 road, which lie approximately 900 m southeast of the site boundary.

2.3 The approximate site location and the identified NSRs can be seen in Figure 2.1.



Figure 2.1 Noise Sensitive Receptors

Proposed Development Description

- 2.4 The proposed waste transfer station will be capable of receiving residual waste, clinical waste, organic waste and recyclable material predominantly from East Herts District Council and Broxbourne Borough Council and is required to be capable of handling circa 100,000 tonnes per annum.
- 2.5 The main noise source within the proposed development will be plant operating within the main proposed building of the facility, vehicles manoeuvring, the noise of waste being off-loaded, moved and reloaded to be moved off site.
- 2.6 Figure 2.2 below shows the approximate site location (red line boundary) in relation to the existing HWRC site.



Figure 2.2 Proposed Development

Operational hours

- 2.7 The facility will operate Monday to Friday 7.30 AM to 6.00 PM, Saturday 7.30 AM to 4.00 PM and Sunday 7.30 AM to Noon and accept waste within these hours from waste collection vehicles operated by local authorities.

3 Baseline Environmental Noise Survey

Noise Sensitive Receptors

- 3.1 An environmental baseline sound survey was undertaken to establish the baseline conditions of the proposed site and its surrounding area. Three long-term monitors were left in the surrounding site area, between Tuesday 27th July and Wednesday 4th August at locations LT1, LT2 and LT3. Additional unattended environmental noise monitoring was undertaken at location LT2 between Wednesday 4th August and Thursday 12th August due to an equipment failure during the first week of the measurements. The survey also included attended short-term noise monitoring at locations ST1, ST2 and ST3. The noise monitoring locations are shown in Figure 3.1.



Figure 3.1 Noise Measurement Locations

Monitoring Locations

- 3.2 Survey location LT1 was located on the fence line of the field aside the entrance road to the southern section of the Brazier site, off Westmill road. 90 m south west of Westmill road, 6.5 m southeast of kerb of entrance road. The microphone was set up 1.5 m above ground level (AGL), with an environmental windshield, a wind logger and rain gauge.
- 3.3 Survey location LT2 was located on the northern corner of the Westmill farm Campsite, near the northernmost brick building there, 11.5 m west of the northwest corner of said building, 42 m south west of the centre of Westmill road. The microphone was set up 1.5 m above ground level (AGL), with an environmental windshield.
- 3.4 Survey location LT3 was located in the garden of 1 Downfield court, which is on the northeast corner of the court, 3.5 m south of northern wall, 4 m east of western wall. The microphone was set up 1.5 m above ground level (AGL), with an environmental windshield.
- 3.5 Survey location ST1 was located just off Wheatsheaf Drive, in the small car park area between 21 and 22 Wheatsheaf Drive, 7 m east and west of the western and eastern fences of these properties, 8 m north west of centre of Wheatsheaf Drive, 42 m south east of edge of A10. The microphone was set up 1.5 m above ground level (AGL).
- 3.6 Survey location ST2 was located at the Ware Waste site, on the area set aside for the new transfer station, 15 m north east of the northernmost building on site / site offices 16 m north east of the concreted area behind the skips where waste is processed, 7 m south east of the northernmost section of the concrete berm surrounding this area of ground. The microphone was set up 1.5 m above ground level (AGL).
- 3.7 Survey location ST3 was located by the entrance to the Ware Waste site, 8.5 m east of kerb of Westmill road, 9 m north west of kerb of entrance road 50 m south east of the 'Reuse Centre'. The microphone was set up 1.5 m above ground level (AGL).

Instrumentation

- 3.8 Details of the instrumentation used during the survey are provided in Table 3.1 below. Calibration certificates of the equipment are available upon request. Calibration of the equipment was carried out before and after measurements with no significant drift ($< \pm 0.2$ dB) observed.

Table 3.1 Baseline Sound Survey Instrumentation

| Measurement Location | Make/Model | Serial Number | Calibration Ref/ Calibration Start/ Calibration End | Last Calibration Date |
|----------------------|------------|-----------------|---|-----------------------|
| LT1 | Rion NL52 | #165 / 998563 | 94.0 / 94.1 / 94.0 dB | 16/03/2020 |
| LT2 | Rion NL52 | #166 / 998566 | 94.0 / 94.2 / 93.9 dB | 16/03/2020 |
| LT3 | Rion NL52 | #167 / 998567 | 94.0 / 93.9 / 94.0 dB | 16/03/2020 |
| ST1 | Rion NL52 | #127 / 164424 | 94.0 / 93.9 / 93.9 dB | 16/06/2021 |
| ST2 | Rion NL52 | #127 / 164424 | 94.0 / 93.9 / 93.9 dB | 16/06/2021 |
| ST3 | Rion NL52 | #127 / 164424 | 94.0 / 93.9 / 93.9 dB | 16/06/2021 |
| Calibrator | Rion NC72 | #014 / 00110118 | n/a | 19/11/2020 |

Observations

- 3.9 At location LT1, at the time of deploying the survey, the main noise source was road traffic from the A10 to the south east and to a lesser degree from the A602 to the north/northeast. A loud, broadband hum from the residual traffic noise on the A10 as well as individual car pass-bys on the A602 were audible. Other audible sounds included infrequent sheep sounds in the field directly adjacent to the monitor, some operational noise from the Brazier / Biffa site to the south west including diggers, lorries, large earth moving equipment and occasional HGVs enter / exit site on the access road of the location. On collection a similar sound environment was observed.
- 3.10 At location LT2, at the time of deploying the survey, the main and dominant sound was road traffic noise from Westmill Road to the northeast including HGVs. Other audible sounds included birdsong from the immediate flora, a broadband hum of residual traffic to the south and some sounds from the campsite to the west, mainly people talking, laughing etc. On collection a similar sound environment was observed.
- 3.11 At location LT3 on deployment it was quieter than the other two locations, with most of the noise coming from the gardener(s) in the gardens of the surrounding properties as well as the landscapers on the golf course to the north, west and south. Machinery sounds from these activities included lawn mowers, leaf blowers, a loud small engine noise. Other audible sounds included infrequent road traffic sounds coming from all directions, birdsong, wind noise and some unknown plant to the north (sounds like a lawnmower or similar). On collection similar a sound environment was observed.
- 3.12 At location ST1 the main and dominant sound was heavy, fast moving and constant road traffic on the A10 to the north/northwest. Other audible sounds included a broadband hum of residual traffic sounds to the northwest, south and east, birdsong, occasional car pass-bys by on Wheatsheaf Drive to the south, a plane flying overhead, a high pitch engine and some wind noise.
- 3.13 A location ST2 the loudest and dominant noise is the JCB / digger plant operating in the area directly adjacent to the east. The digger was moving materials into / out of and around the various

skips in the Ware Waste facility, so some metal-on-metal crashing sounds were audible from this activity as well as from the reversing broadband alarm of the plant. Other audible sounds included wind in the vegetation, road traffic sound from Westmill road to the west / southwest, individual car pass bys, potential digger movements on the site to the north emitting infrequent low-mid pitched miscellaneous engine rumble and some high-pitched alarm. When the JCB is switched off, a broadband hum from the residual traffic noise is audible from Westmill Road.

- 3.14 At location ST3 the main and dominant sound was the fast moving, heavy road traffic on Westmill Road to the west. Other audible sounds included occasional cars entering and leaving the facility, however their engines are hard to hear over the road traffic. In the absence of road traffic on Westmill Road there is a broadband hum from the residual road traffic sounds to the north and south.

Weather Conditions

- 3.15 A wind monitor and rain gauge were also set up alongside the noise monitor at location LT1, to properly quantify the weather conditions throughout the survey. Overall, there were no periods of wind or rain that would affect the validity of results.
- 3.16 At LT1 on deployment it was 20°C, 70% relative humidity, 0.6 m/s wind from the north, 8 oktas of cloud. At LT1 on collection it was 25°C, 42% relative humidity, 0.6 m/s wind from the south, 3 oktas of cloud.
- 3.17 At LT2 on deployment it was 23°C, 65% relative humidity, 0.6 m/s wind from the north, 7 oktas of cloud. At LT2 on collection it was 21°C, 65% relative humidity, 0.8 m/s wind from the north, 2 oktas of cloud.
- 3.18 At LT3 on deployment it was 27°C, 90% relative humidity, 0.5 m/s wind from the north, 5 oktas of cloud. At LT3 on collection it was 26°C, 37% relative humidity, no wind (probably shielded), 6 oktas of cloud.
- 3.19 At ST1 it was 24°C, 60% relative humidity, 0.4m/s wind from the north, 8 oktas of cloud.
- 3.20 At ST2 it was 24°C, 60% relative humidity, 0.7m/s wind from the north east, 7 oktas of cloud.
- 3.21 At ST3 it was 26°C, 57% relative humidity, 0.6m/s wind from the north west, 6 oktas of cloud.

Noise Measurements Results

- 3.22 The results from the long-term noise monitoring are summarized in Table 3.2. As a worst-case approach, the 25th percentile of the background noise levels is considered in this assessment. An entire time history graph for locations LT1 to LT3 is provided in Figure A.1 to Figure A.3 at the end of this document.

Table 3.2 Long-Term Noise Measurement Results

| Measurement Location | Daytime (07:00-23:00) | | Night-time (23:00-07:00) | |
|----------------------|------------------------------|--|-----------------------------|--|
| | Average $L_{Aeq,16hr}$ (dB)* | 25 th percentile $L_{A90,15min}$ (dB)** | Average $L_{Aeq,8hr}$ (dB)* | 25 th percentile $L_{A90,15min}$ (dB)** |
| LT1 (weekdays) | 55 | 48 | 49 | 36 |
| LT1 Saturday | 50 | 44 | 45 | 29 |
| LT1 Sunday | 53 | 44 | 47 | 29 |
| LT2 (weekdays) | 55 | 49 | 49 | 32 |
| LT2 Saturday | 55 | 48 | 48 | 40 |
| LT2 Sunday | 55 | 48 | 49 | 31 |
| LT3 (weekdays) | 51 | 34 | 42 | 26 |
| LT3 Saturday | 44 | 31 | 41 | 22 |
| LT3 Sunday | 42 | 30 | 41 | 19 |

Notes:
 All values have been rounded to the nearest whole number, where 0.5 is rounded up.
 * logarithmic average.
 ** 25th percentile $L_{A90,15min}$ (dB): A-weighted L_{90} sound pressure level which is exceeded for 25 % of the measurement time .

3.23 The results from the short-term noise monitoring are summarized in Table 3.3.

Table 3.3 Short-Term Noise Measurement Results

| Measurement Location | Date / Time | $L_{Aeq,15 minutes}$ (dB)* | $L_{A90,15min}$ (dB) |
|----------------------|------------------|----------------------------|----------------------|
| ST1 | 27/07/2021 13:55 | 53 | 48 |
| ST1 | 27/07/2021 14:10 | 54 | 51 |
| ST2 | 27/07/2021 15:44 | 59 | 51 |
| ST2 | 27/07/2021 15:59 | 53 | 50 |
| ST3 | 27/07/2021 16:18 | 67 | 61 |
| ST3 | 27/07/2021 16:33 | 67 | 60 |

Notes:
 All values have been rounded to the nearest whole number, where 0.5 is rounded up.

Representative Ambient and Background Sound Levels

3.24 The representative ambient and background sound levels at the identified noise sensitive receptors are presented in Table 3.4 below.

Table 3.4 Summary of Background and Ambient Sound Levels (free-field)

| Noise sensitive receptor | Representative location | Week period | Ambient sound level, dB L _{Aeq, T} | | Background sound levels, dB L _{A90, T} | |
|--------------------------|-------------------------|-------------|---|------------|---|------------|
| | | | Daytime | Night-time | Daytime | Night-time |
| NSR A, NSR F | LT3 | Weekdays | 51 | 34 | 42 | 26 |
| | | Saturday | 44 | 31 | 41 | 22 |
| | | Sunday | 42 | 30 | 41 | 19 |
| NSR B, NSR C, NSR D | LT2 | Weekdays | 55 | 49 | 49 | 32 |
| | | Saturday | 55 | 48 | 48 | 40 |
| | | Sunday | 55 | 48 | 49 | 31 |
| NSR E, NSR G | LT1 | Weekdays | 55 | 48 | 49 | 36 |
| | | Saturday | 50 | 44 | 45 | 29 |
| | | Sunday | 53 | 44 | 47 | 29 |

4 Summary and Conclusions

- 4.1 RPS Group was commissioned by Balfour Beatty Plc to undertake a noise impact assessment for a proposed new waste transfer station located in Ware, Hertfordshire on the land adjacent to the approved household and waste recycling centre in Ware.
- 4.2 A desktop study was undertaken to identify the nearest noise sensitive receptors at the proposed development.
- 4.3 Consultation was undertaken with the local planning authority to agree the noise monitoring methodology for the proposed development.
- 4.4 An environmental noise survey was undertaken at locations representative of the nearest noise sensitive receptors to establish the baseline conditions on and around the site and the representative background noise levels at the nearest noise sensitive receptors.

Figures

Baseline Environmental Noise Survey For Ware Waste Transfer Station, Ware

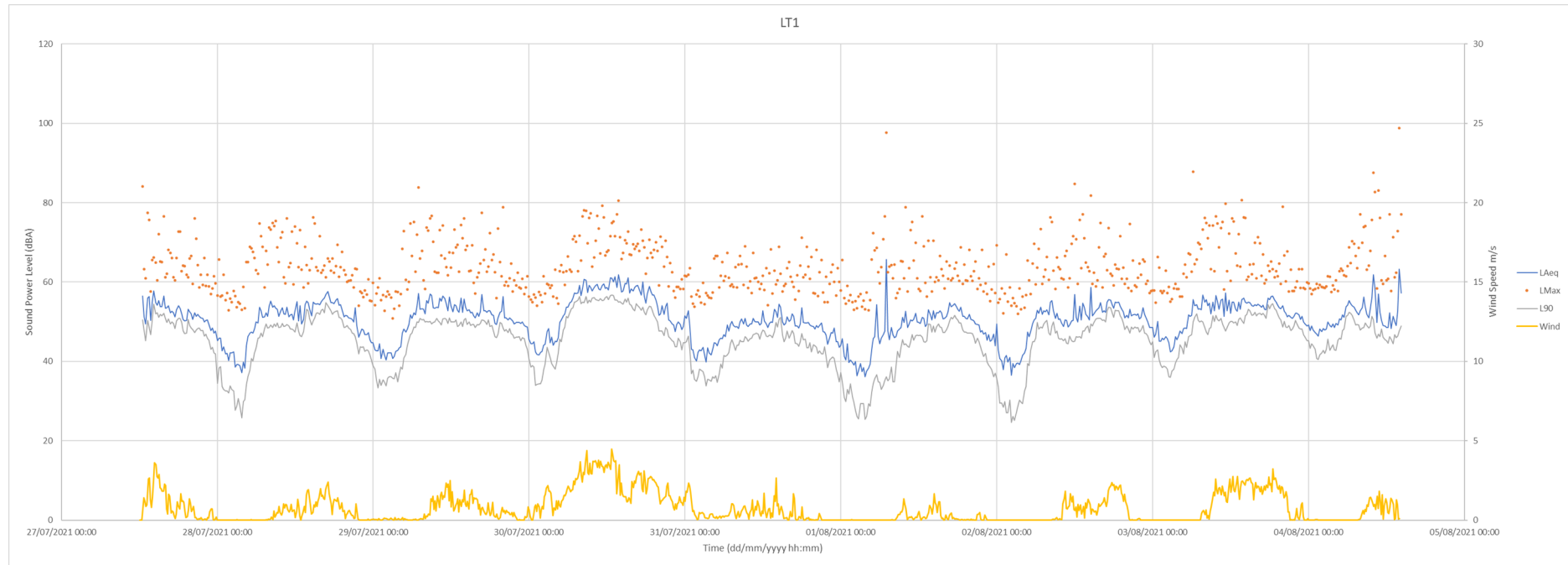


Figure A1 Noise Monitoring Time History Location LT1

Baseline Environmental Noise Survey For Ware Waste Transfer Station, Ware

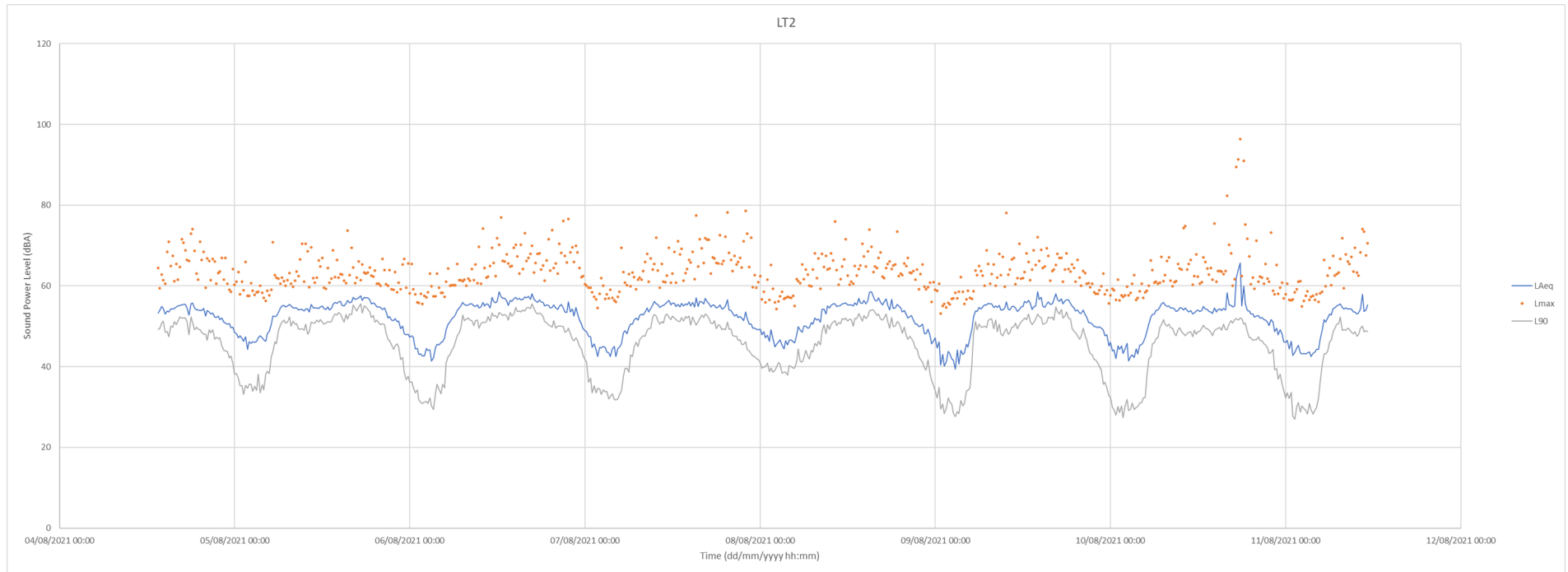


Figure A2 Noise Monitoring Time History Location LT2

Baseline Environmental Noise Survey For Ware Waste Transfer Station, Ware

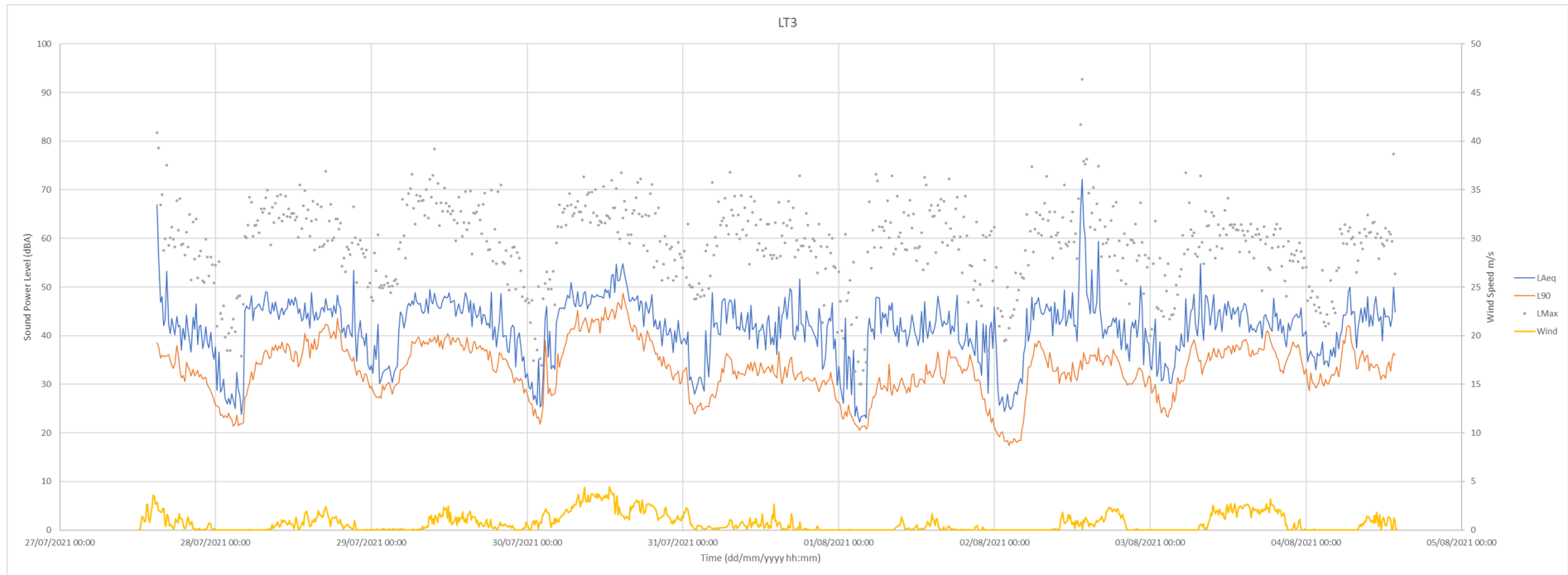


Figure A3: Noise Monitoring Time History Location LT

Baseline Environmental Noise Survey For Ware Waste Transfer Station, Ware

Appendix B
Technical Appendix 12.5 -
Operational Noise
Assessment Methodology
and Results

Technical Appendix 12.5

Operational Noise Assessment Methodology and Results

Operational Noise Assessment Methodology and Results

For Balfour Beatty PLC

| Quality Management | | | |
|----------------------------------|---|--------------------------------|---------------------|
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| QA of Data processing, Calculations and/or Models | | | |
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1 Calculations and Modelling

Noise source data & noise model methodology

- 1.1 In order to determine the specific sound levels resulting from the operation of the proposed development, a noise model has been built using SoundPlan v8.2 noise modelling software. The model predicts noise levels under light down-wind conditions based on hemispherical propagation, atmospheric absorption, ground effects, screening and directivity based on the procedure detailed in ISO 9613-2:1996 (International Organisation for Standardisation (ISO), 1996).

Description of sound sources

- 1.2 The modelling of the proposed development’s operational activities and associated noise emissions was based on information received by the design team until 21/09/2021. Where this information was unknown, the model has been constructed with input acoustic data based on RPS professional judgment of assessing other similar facilities to the ETS in the past. In this regard, Table 1.1 below summarises the modelling inputs used and operational hours for each plant type.

Table 1.1: Operational Noise Inputs

| Noise Source | Description |
|---------------|--|
| Main building | <p>A wheel loader, a shredder and a fan are expected to operate within the main building of the proposed development. The wheel loader and fan are expected to operate between 05:00 and 21:00 hours, while for the shredder only daytime operation is anticipated, between 07:00 and 21:00 hours.</p> <p>Spectral noise emission information was provided by the design team for a worst-case shredder plant (VB 750 E shredder). For the wheel loader and the fan spectral noise emission information has been based on the RPS database.</p> <p>The building was modelled as 11.3-metre-high building with a slatted roof with internal reverberant sound pressure levels of 100 dB L_{pA} during daytime and 96 dBA L_{pA} during night-time, and a spectrum based on the available spectral information.</p> <p>Facades of the building modelled as a combination of standard Part L compliant CA Twin-Therm® wall system consisting of 120mm thick Therma-quilt insulation (0.35W/m²K) with an overall attenuation of 43 dB R_w and 500 mm concrete elements (min. density 2340 kg/m³). The building includes roof lights at both sides of the slatted roof which were modelled as triple glazed elements with a performance of 25 dB R_w. The front façade of the building includes 7 x fast-action doors (approximately 6 x 6 m² per door) with a performance of 20 dB R_w and 6 x</p> |

| | |
|---|--|
| | <p>louvres with an assumed performance of 10 dB R_w / D_{new} 16 dB. It is understood that all activities within the main building will be undertaken with closed fast-doors.</p> |
| 2 x Odour abatement system fan casings and fans | <p>Modelled as point sources with 100% on-time during daytime and 50% on-time during night-time:</p> <ul style="list-style-type: none"> • one point source for the fan exhaust on the top of the stack at 15 metres AGL with a SWL of 106 dBA L_w, with a spectrum based on manufacturer's data (Halifax No. 43 Beaufort 'L' Backward Curved Fan). • one point source for the fan casing at 1 metre AGL with a SWL of 92 dBA L_w, with a spectrum based on the RPS database. <p>It should be noted that the manufacturer's information provided above is corresponding only to the odour abatement system related to the main building. The second odour abatement system would be related to the additional ETS building and no manufacturer's information is available for this, although it is expected that this would be a quieter system compared to the one related to the main ETS building. As a worst-case approach the second odour abatement system has been modelled exactly as the main ETS building's odour abatement system.</p> |
| HGV idling vehicle | <p>Modelled as a point source at 1 metre AGL with an SWL of 91 dBA L_w, with a spectrum based on data from BS 5228-1:2008+A1:2014 (C4.5). On-time was assumed to be 30% of the time.</p> |
| HGV movements | <p>Modelled as a line source at 1 m AGL with a SWL of 104 dBA L_w, with a spectrum based on data from BS 5228-1:2008+A1:2014 (C4.4). A number of 8 HGVs was modelled to be operating between 05:00 and 07:00 hours and a number of 138 HGVs was modelled to be operating between 07:00 and 21:00 hours. It should be noted that during the weekends no HGVs will be operational between 05:00 and 07:00 hours.</p> |
| HGV with reversing tonal alarm | <p>Modelled as a point source at 1 metre AGL with an SWL of 121 dBA L_w, with a spectrum based on the RPS database.</p> |

1.3 Details on the sound power levels for various plant items used within the noise model are presented in Table 1.2 to Table 1.4.

1.4 For the calculation of the total sound pressure level (reverberant plus direct level) within the main building the sound power levels of the plant within the main building shown in Table 1.2, were used.

Table 1.2: Noise model inputs for individual noise generating plant items – octave bands

| Source | Number | Height above ground (m) | Overall sound power level (dBA) | Linear octave band sound power levels (dB) | | | | | | | | | Comments |
|---|--------|-------------------------|---------------------------------|--|-------|--------|--------|--------|-------|-------|-------|-------|--|
| | | | | 31.5 Hz | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz | |
| HGV movements | 1 | 1 m | 103.5 dBA | 110 | 104 | 103 | 102 | 96 | 96 | 92 | 83 | 110 | |
| Odour abatement system – stack noise emission | 2 | 15 m | 106.3 dBA | 113 | 110 | 106 | 103 | 101 | 98 | 94 | 90 | 113 | A stack directivity was assumed for the noise sources. |
| Fan casing | 2 | 1 m | 92.3 dBA | 99 | 96 | 92 | 89 | 87 | 84 | 80 | 76 | 99 | |
| HGV idling | 1 | 1 m | 90.9 dBA | 101 | 92 | 83 | 83 | 88 | 84 | 78 | 71 | 101 | |
| 950K Wheel Loader within Main Building | 1 | N/A | 107 dBA | 97 | 104 | 103 | 99 | 99 | 102 | 99 | 97 | 97 | |
| VB 750 E Shredder within Main Building | 1 | N/A | 108.8 dBA | 82 | 92 | 99 | 108 | 103 | 102 | 96 | 89 | 82 | |
| fan within Main Building | 1 | N/A | 95.1 dBA | 66 | 83 | 88 | 95 | 90 | 86 | 80 | 68 | 66 | |

Table 1.3: Noise model inputs for individual noise generating plant items – one-third octave bands

| Source | Number | Height above ground (m) | Overall sound power level (dBA) | 12.5Hz | 16Hz | 20Hz | 25Hz | 31Hz | 40Hz | 50Hz | 63Hz | 80Hz | 100Hz | 125Hz | 160Hz | 200Hz | 250Hz | 315Hz | 400Hz | 500Hz | 630Hz | 800Hz | 1kHz | 1.25kHz | 1.6kHz | 2kHz | 2.5kHz | 3.15kHz | 4kHz | 5kHz | 6.3kHz | 8kHz | 10kHz | 12.5kHz | 16kHz |
|--------|--------|-------------------------|---------------------------------|--------------------------------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|---------|--------|------|--------|---------|------|------|--------|------|-------|---------|-------|
| | | | | HGV with reversing tonal alarm | 1 | 1 m | 121 | 23 | 25 | 28 | 38 | 57 | 58 | 77 | 77 | 91 | 98 | 84 | 95 | 103 | 93 | 92 | 94 | 101 | 101 | 100 | 114 | 120 | 100 | 101 | 100 | 96 | 95 | 97 | 93 |

Table 1.4: Noise model inputs for main building – octave bands

| Source | Number | Overall sound pressure level (dBA) | 31.5Hz | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1k Hz | 2k Hz | 4k Hz | 8k Hz |
|----------------------------|--------|------------------------------------|--------|-------|--------|--------|--------|-------|-------|-------|-------|
| Main Building – daytime | 1 | 99.9 | 86 | 94 | 94 | 97 | 94 | 94 | 90 | 86 | 86 |
| Main Building – night-time | 1 | 96.1 | 86 | 93 | 92 | 89 | 88 | 91 | 88 | 86 | 86 |

Table 1.5: Sound Reduction Indices of Transmissive Elements of the Main Building

| Transmissive Element | Number | Rw (dB) | 63Hz | 125H | 250H | 500H | 1kH | 2kH | 4kH | 8kH |
|--|--------|---------|------|------|------|------|-----|-----|-----|-----|
| | r | (dB) | Z | Z | Z | Z | Z | Z | Z | Z |
| Rooflights (12.4 m ² per element) | 28 | 25 dB | 4 | 13 | 14 | 20 | 30 | 40 | 32 | 25 |
| Fast action doors | 7 | 20 dB | 5 | 10 | 10 | 20 | 20 | 20 | 20 | 20 |
| Louvres with a louvre opening area of 3 m ² | 6 | 10 dB | 5 | 4 | 5 | 6 | 9 | 13 | 14 | 13 |
| 500 mm concrete (min.2340 kg/m ³) | N/A | 72 dB | 51 | 55 | 62 | 69 | 73 | 78 | 82 | 60 |

1.5 In addition, the following generic assumptions have been incorporated into the noise model:

- the topography of the site and the surrounding area has been obtained from site surveyed topographical data and Ordnance Survey (OS) open data (Terrain 50);
- the effect of screening from solid structures (buildings) has been incorporated into the modelling process by importing OS Open Data ‘Buildings’ shape file data into the model and including existing buildings; and
- the ground type in the model has been generally set to semi-hard (G=0.6), although the ground type of the proposed development area and adjacent HWRC site have been set to hard (G=0).

2 Results

- 2.1 The predicted specific sound levels at the identified worst affected noise sensitive receptors (NSRs), as described in Volume 3, Chapter 12: Noise and Vibration, due to the operation of ETS are provided in Table 2.1 below.
- 2.2 Specific sound levels have been calculated at ground floor and second floor levels, 1.5 m and 4.5 m above local ground level, respectively. The maximum predicted specific sound level per receptor has been used in the assessment. The same noise modelling techniques have been used by RPS on numerous sites in the UK and worldwide and there is a high degree of confidence in the model.
- 2.3 The predicted specific sound levels are given for three time periods:
- Daytime (07:00 – 21:00 hours): During this period all plant is operational with on-times as described in Table 1.1;
 - Night-time (23:00 – 05:00 hours): During this period only the odour abatement system is operational with 50% on-time, and
 - Night-time (05:00 – 07:00 hours): During this period the HGVs are travelling to site, activities occur within the main building but the shredder is not operational and the odour abatement system is operational and at 50% on-time.

Table 2.1: Predicted Specific Sound Levels at Receptors (free-field)

| Noise sensitive receptor | Predicted Specific Sound level L_s dB(A) | | |
|------------------------------------|--|-----------------------------|-----------------------------|
| | Daytime (07:00-21:00) | Night-time (23:00-05:00) | Night-time (05:00-07:00) |
| NSR A – Downfield Court | 39 | 29 | 32 |
| NSR B – Paynes Hall/Westmill area | 41 | 35 | 36 |
| NSR C – off Westmill Road | 41 | 34 | 36 |
| NSR D – Westmill Farm | 42 | 35 | 36 |
| NSR E – Westmill Road/A10 junction | 32 | 25 | 37 |

Operational Noise Assessment Methodology And Results

| Noise sensitive receptor | Predicted Specific Sound level L _s dB(A) | | |
|---|---|-----------------------------|-----------------------------|
| | Daytime (07:00-21:00) | Night-time (23:00-05:00) | Night-time (05:00-07:00) |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 37 | 26 | 27 |
| NSR G – along Greyfriars Road | 30 | 23 | 26 |

- 2.4 The results indicating the partial sound pressure level contribution from each individual source of noise from the proposed development to the receptors listed above is presented in Table 2.2.
- 2.5 The predicted sound pressure levels indicate that for the NSRs located to the west and northwest of the proposed development, i.e., NSR B, NSR C and NSR D, the noise climate will be dominated by HGV movements, noise emitted for the odour abatement systems on top of the stacks and noise emitted from the main building of ETS (facades and rooflights). For the NSRs located to the east of the proposed development, i.e., NSR A and NSR F, the noise climate will be dominated by noise emitted for the odour abatement systems on top of the stacks, by HGV movements, by the noise emitted from the closed doors and the louvres of the main building of ETS, by the tonal reversing alarm and noise emitted from the main building of ETS (facades and rooflights). For the rest of the NSRs to the south of the proposed development, i.e., NSR E and NSR G, the noise climate will be dominated by the HGV movements and noise emitted for the odour abatement systems on top of the stacks.
- 2.6 Operational noise contours are provided in Figure 12.1 to Figure 12.3 of Volume 3, Chapter 12: Noise and Vibration.

Table 2.2: Partial Sound Pressure Levels from Each Noise Source at the NSRs – Daytime Operation

| Noise sensitive receptor | NSR A – Downfield Court | NSR B – Paynes Hall/Westmill area | NSR C – off Westmill Road | NSR D – Westmill Farm | NSR E – Westmill Road/A10 junction | NSR F – Hanbury Manor Marriott Hotel & Country Club | NSR G – along Greyfriars Road |
|--|-------------------------|-----------------------------------|---------------------------|-----------------------|------------------------------------|---|-------------------------------|
| HGV Movements | 30 | 33 | 32 | 38 | 24 | 28 | 20 |
| Odour abatement emission on top of stack | 30 | 38 | 37 | 36 | 26 | 27 | 23 |

Operational Noise Assessment Methodology And Results

| Noise sensitive receptor | NSR A – Downfield Court | NSR B – Paynes Hall/Westmill area | NSR C – off Westmill Road | NSR D – Westmill Farm | NSR E – Westmill Road/A10 junction | NSR F – Hanbury Manor Marriott Hotel & Country Club | NSR G – along Greysfriars Road |
|--|-------------------------|-----------------------------------|---------------------------|-----------------------|------------------------------------|---|--------------------------------|
| Odour abatement emission on top of stack | 31 | 32 | 32 | 36 | 27 | 27 | 26 |
| Waste Transfer Building -Roof 01 | 13 | 20 | 22 | 22 | 12 | 11 | 9 |
| Waste Transfer Building - windows | 11 | 18 | 19 | 22 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 11 | 18 | 19 | 22 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 12 | 19 | 20 | 21 | 11 | 11 | 7 |
| Waste Transfer Building - windows | 12 | 18 | 19 | 21 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 12 | 19 | 20 | 21 | 11 | 11 | 7 |
| Waste Transfer Building - windows | 12 | 19 | 19 | 21 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 12 | 18 | 19 | 21 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 12 | 19 | 19 | 20 | 11 | 10 | 7 |
| Waste Transfer Building - windows | 12 | 19 | 21 | 20 | 11 | 11 | 7 |
| Waste Transfer Building - Facade 01 | 2 | 5 | 10 | 20 | 10 | 8 | 7 |
| Waste Transfer Building - windows | 12 | 20 | 20 | 19 | 11 | 11 | 7 |
| Waste Transfer Building - windows | 12 | 20 | 21 | 19 | 11 | 11 | 7 |
| Waste Transfer Building - windows | 12 | 20 | 22 | 19 | 11 | 11 | 7 |

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| Noise sensitive receptor | NSR A – Downfield Court | NSR B – Paynes Hall/Westmill area | NSR C – off Westmill Road | NSR D – Westmill Farm | NSR E – Westmill Road/A10 junction | NSR F – Hanbury Manor Marriott Hotel & Country Club | NSR G – along Greyfriars Road |
|-------------------------------------|-------------------------|-----------------------------------|---------------------------|-----------------------|------------------------------------|---|-------------------------------|
| Waste Transfer Building - windows | 12 | 19 | 21 | 19 | 11 | 11 | 7 |
| Waste Transfer Building - windows | 12 | 20 | 22 | 19 | 11 | 11 | 7 |
| Waste Transfer Building -Roof 02 | 14 | 19 | 19 | 19 | 12 | 12 | 10 |
| Waste Transfer Building - windows | 13 | 16 | 17 | 19 | 11 | 11 | 9 |
| Waste Transfer Building - windows | 13 | 16 | 17 | 19 | 10 | 12 | 9 |
| Waste Transfer Building - Facade 04 | 2 | 17 | 20 | 19 | 10 | -1 | -5 |
| Waste Transfer Building - windows | 13 | 16 | 15 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 16 | 16 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 17 | 16 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 16 | 16 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 16 | 15 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 16 | 16 | 17 | 10 | 12 | 9 |
| Waste Transfer Building - windows | 13 | 17 | 17 | 15 | 10 | 11 | 9 |
| Waste Transfer Building - windows | 12 | 18 | 17 | 15 | 10 | 11 | 9 |
| Waste Transfer Building - windows | 12 | 19 | 18 | 15 | 10 | 11 | 9 |

Operational Noise Assessment Methodology And Results

| Noise sensitive receptor | NSR A – Downfield Court | NSR B – Paynes Hall/Westmill area | NSR C – off Westmill Road | NSR D – Westmill Farm | NSR E – Westmill Road/A10 junction | NSR F – Hanbury Manor Marriott Hotel & Country Club | NSR G – along Greyfriars Road |
|-----------------------------------|-------------------------|-----------------------------------|---------------------------|-----------------------|------------------------------------|---|-------------------------------|
| Waste Transfer Building - windows | 13 | 17 | 16 | 15 | 10 | 11 | 9 |
| Waste Transfer Building - windows | 12 | 17 | 17 | 15 | 10 | 11 | 9 |
| Waste Transfer Building - windows | 12 | 18 | 18 | 15 | 10 | 11 | 9 |
| Waste Transfer Building -door 1 | 25 | 12 | 12 | 14 | 12 | 22 | 6 |
| Waste Transfer Building -door 1 | 25 | 20 | 12 | 13 | 4 | 24 | 9 |
| Waste Transfer Building -door 1 | 25 | 18 | 12 | 13 | 4 | 24 | 10 |
| Waste Transfer Building -door 1 | 25 | 12 | 12 | 13 | 4 | 23 | 12 |
| Waste Transfer Building -louvre | 25 | 12 | 11 | 13 | 3 | 24 | 4 |
| Waste Transfer Building -door 1 | 25 | 12 | 13 | 12 | 4 | 23 | 13 |
| Waste Transfer Building -door 1 | 25 | 13 | 13 | 12 | 4 | 24 | 14 |
| Waste Transfer Building -door 1 | 25 | 13 | 14 | 12 | 3 | 24 | 14 |
| Waste Transfer Building -louvre | 25 | 11 | 11 | 12 | 3 | 23 | 10 |
| Waste Transfer Building -louvre | 24 | 17 | 11 | 12 | 3 | 24 | 7 |
| Waste Transfer Building -louvre | 24 | 11 | 11 | 12 | 3 | 24 | 8 |
| HGV reversing alarm -tonal | 23 | 9 | 10 | 12 | 4 | 24 | 2 |
| Waste Transfer Building -louvre | 25 | 12 | 12 | 11 | 3 | 23 | 11 |
| fan casing | 21 | 20 | 24 | 10 | 2 | 6 | -2 |

Operational Noise Assessment Methodology And Results

| Noise sensitive receptor | NSR A – Downfield Court | NSR B – Paynes Hall/Westmill area | NSR C – off Westmill Road | NSR D – Westmill Farm | NSR E – Westmill Road/A10 junction | NSR F – Hanbury Manor Marriott Hotel & Country Club | NSR G – along Greyfriars Road |
|---------------------------------------|-------------------------|-----------------------------------|---------------------------|-----------------------|------------------------------------|---|-------------------------------|
| fan casing | 6 | 8 | 8 | 10 | 1 | 3 | 13 |
| Waste Transfer Building - Facade 03 | 5 | 18 | 19 | 8 | -2 | 1 | -5 |
| Waste Transfer Building -Front facade | 12 | 8 | 8 | 7 | 0 | 9 | 7 |
| HGV idling | 13 | 10 | 4 | 5 | -2 | 14 | -4 |
| Waste Transfer Building - concrete | -40 | -33 | -29 | -11 | -24 | -29 | -29 |
| Waste Transfer Building - concrete | -35 | -16 | -13 | -12 | -19 | -37 | -41 |
| Waste Transfer Building - concrete | -36 | -20 | -22 | -33 | -41 | -39 | -44 |

Assessment

- 2.7 An initial estimate of impact undertaken in accordance with BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (British Standards Institution (BSI), 2019), is shown in for the daytime and night-time periods in Table 2.3.
- 2.8 With regards to the operational hours, the proposed development weekday operation would be between 05:00 and 21:00 hours. The proposed development weekend operation will occur from 07:30 to 16:00 hours on Saturday and 07:30 to 12:00 hours on Sunday, and at no time on public or bank holidays.
- 2.9 The subjective method for determining rating penalties has been used to determine appropriate corrections for each receptor and assessment period. It is considered that the specific sound will not be characterised as intermittent, impulsive or tonal, therefore no penalties have been applied for intermittency, impulsivity or tonality. Although tonal reversing alarms of the HGVs have been modelled these will not be present at 100% of the time, therefore this is not a continuous tonal noise source and for this reason no penalty for tonality was applied.

Table 2.3: BS 4142:2014+A1:2019 assessment of impact without mitigation

| NSR | Day | Representative baseline sound levels | | Specific sound level (dB L _s) | Rating penalty (dB) | Rating level (dB L _{Ar,Tr}) | Rating level difference (dB) |
|--------------------------------------|----------|--------------------------------------|-----------------------------------|---|---------------------|---------------------------------------|------------------------------|
| | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | | | | |
| Daytime (07:00 – 21:00 hours) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 34 | 51 | 39 | 3 | 42 | + 8 |
| | Saturday | 31 | 44 | 39 | 3 | 42 | + 11 |
| | Sunday | 30 | 42 | 39 | 3 | 42 | + 12 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 55 | 41 | 3 | 44 | - 5 |
| | Saturday | 48 | 55 | 41 | 3 | 44 | - 4 |
| | Sunday | 48 | 55 | 41 | 3 | 44 | - 4 |
| NSR C – off Westmill Road | Weekdays | 49 | 55 | 41 | 3 | 44 | - 5 |
| | Saturday | 48 | 55 | 41 | 3 | 44 | - 4 |
| | Sunday | 48 | 55 | 41 | 3 | 44 | - 4 |
| NSR D – Westmill Farm | Weekdays | 49 | 55 | 42 | 3 | 45 | - 4 |
| | Saturday | 48 | 55 | 42 | 3 | 45 | - 3 |
| | Sunday | 48 | 55 | 42 | 3 | 45 | - 3 |
| NSR E – Westmill Road/A10 junction | Weekdays | 48 | 55 | 32 | 3 | 35 | - 13 |
| | Saturday | 44 | 50 | 32 | 3 | 35 | - 9 |
| | Sunday | 44 | 53 | 32 | 3 | 35 | - 9 |
| NSR F – Hanbury | Weekdays | 34 | 51 | 37 | 3 | 40 | + 6 |

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| NSR | Day | Representative baseline sound levels | | Specific sound level (dB L _s) | Rating penalty (dB) | Rating level (dB L _{Ar,Tr}) | Rating level difference (dB) |
|---|----------|--------------------------------------|-----------------------------------|---|---------------------|---------------------------------------|------------------------------|
| | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | | | | |
| Manor Marriott Hotel & Country Club | Saturday | 31 | 44 | 37 | 3 | 40 | + 9 |
| | Sunday | 30 | 42 | 37 | 3 | 40 | + 10 |
| NSR G – along Greyfriars Road | Weekdays | 48 | 55 | 30 | 3 | 33 | - 15 |
| | Saturday | 44 | 50 | 30 | 3 | 33 | - 11 |
| | Sunday | 44 | 53 | 30 | 3 | 33 | - 11 |
| Night-time (05:00 – 07:00 hours) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 31 | 46 | 32 | 3 | 35 | + 4 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR C – off Westmill Road | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR D – Westmill Farm | Weekdays | 42 | 52 | 36 | 3 | 39 | - 3 |
| NSR E – Westmill Road/A10 junction | Weekdays | 41 | 51 | 37 | 3 | 40 | - 1 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 31 | 46 | 27 | 3 | 30 | - 1 |
| NSR G – along Greyfriars Road | Weekdays | 41 | 51 | 26 | 3 | 29 | - 12 |
| Night-time (23:00 – 05:00 hours) | | | | | | | |

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| NSR | Day | Representative baseline sound levels | | Specific sound level (dB L _s) | Rating penalty (dB) | Rating level (dB L _{Ar,Tr}) | Rating level difference (dB) |
|---|----------|--------------------------------------|-----------------------------------|---|---------------------|---------------------------------------|------------------------------|
| | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | | | | |
| NSR A – Downfield Court | Weekdays | 26 | 42 | 29 | 3 | 32 | + 6 |
| | Saturday | 22 | 41 | 29 | 3 | 32 | + 10 |
| | Sunday | 19 | 41 | 29 | 3 | 32 | + 13 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 32 | 49 | 35 | 3 | 38 | + 6 |
| | Saturday | 40 | 48 | 35 | 3 | 38 | - 2 |
| | Sunday | 31 | 48 | 35 | 3 | 38 | + 7 |
| NSR C – off Westmill Road | Weekdays | 32 | 49 | 34 | 3 | 37 | + 5 |
| | Saturday | 40 | 48 | 34 | 3 | 37 | - 3 |
| | Sunday | 31 | 48 | 34 | 3 | 37 | + 6 |
| NSR D – Westmill Farm | Weekdays | 32 | 49 | 35 | 3 | 38 | + 6 |
| | Saturday | 40 | 48 | 35 | 3 | 38 | - 2 |
| | Sunday | 31 | 48 | 35 | 3 | 38 | + 7 |
| NSR E – Westmill Road/A10 junction | Weekdays | 36 | 49 | 25 | 3 | 28 | - 8 |
| | Saturday | 29 | 45 | 25 | 3 | 28 | - 1 |
| | Sunday | 29 | 47 | 25 | 3 | 28 | - 1 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 26 | 42 | 26 | 3 | 29 | + 3 |
| | Saturday | 22 | 41 | 26 | 3 | 29 | + 7 |
| | Sunday | 19 | 41 | 26 | 3 | 29 | + 10 |

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| NSR | Day | Representative baseline sound levels | | Specific sound level (dB L _s) | Rating penalty (dB) | Rating level (dB L _{Ar,Tr}) | Rating level difference (dB) |
|-------------------------------|----------|--------------------------------------|-----------------------------------|---|---------------------|---------------------------------------|------------------------------|
| | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | | | | |
| NSR G – along Greyfriars Road | Weekdays | 36 | 49 | 23 | 3 | 26 | - 10 |
| | Saturday | 29 | 45 | 23 | 3 | 26 | - 3 |
| | Sunday | 29 | 47 | 23 | 3 | 26 | - 3 |

2.10 The results of the initial estimate of impact in Table 2.3 are described in the following paragraphs.

2.11 During daytime, the rating levels at the most affected receptors, NSR A and NSR F, are up to 12 dB and 10 dB above the background sound level, respectively. This is between 0 and 2 dB above the threshold level at which a major impact is likely. At the rest of the NSRs the predicted rating levels are between 3 dB and 15 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of major impacts at NSR A and NSR F and negligible impacts at all other NSRs, depending on the context.

2.12 During night-time (05:00-07:00 hours), the rating level at the most affected receptors, NSR A, is up to 4 dB above the background sound level. This is 4 dB above the threshold level at which a minor impact is likely. At the rest of the NSRs the predicted rating levels are between 1 dB and 12 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of minor impacts at NSR A and negligible impacts at all other NSRs, depending on the context.

2.13 During night-time (23:00-05:00 hours), the rating levels at the most affected receptors, NSR A and NSR F, are up to 13 dB and 10 dB above the background sound level, respectively. This is between 0 dB (for NSR F) and 3 dB above the threshold level at which a major impact is likely. At NSR B, NSR C and NSR D, predicted rating levels are up to 7 dB above background sound levels. This is 2 dB above the threshold level at which a moderate impact is likely. For NSR E and NSR G, predicted rating levels are between 1 dB and 8 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of major impacts at NSR A, moderate impacts at NSR B, NSR C, NSR D and NSR F and negligible impacts at NSR E and NSR G, depending on the context.

2.14 To accord with the guidance contained within BS 4142:2014+A1:2019 and to provide a robust assessment, consideration of the context of the scenario has been undertaken. Consideration of

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the context is provided in terms of assessment of the change in ambient sound due to the specific sound and the absolute noise levels as addressed further on in this section.

Noise change and absolute noise level assessment

2.15 The ambient sound levels, with and without the proposed development in operation, are shown in Table 2.4. For steady sources of a similar character, a 3 dB change is generally taken as the minimum change which is perceptible to most people.

Table 2.4: Ambient Noise Level Change Assessment

| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|--------------------------------------|----------|--|---|---------------------------|-------------|
| Daytime (07:00 – 23:00 hours) | | | | | |
| NSR A – Downfield Court | Weekdays | 51 | 39 | 51 | 0 |
| | Saturday | 44 | 39 | 45 | + 1 |
| | Sunday | 42 | 39 | 44 | + 2 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 55 | 41 | 55 | 0 |
| | Saturday | 55 | 41 | 55 | 0 |
| | Sunday | 55 | 41 | 55 | 0 |
| NSR C – off Westmill Road | Weekdays | 55 | 41 | 55 | 0 |
| | Saturday | 55 | 41 | 55 | 0 |
| | Sunday | 55 | 41 | 55 | 0 |
| NSR D – Westmill Farm | Weekdays | 55 | 42 | 55 | 0 |
| | Saturday | 55 | 42 | 55 | 0 |
| | Sunday | 55 | 42 | 55 | 0 |

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| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|---|----------|--|---|---------------------------|-------------|
| NSR E – Westmill Road/A10 junction | Weekdays | 55 | 32 | 55 | 0 |
| | Saturday | 50 | 32 | 50 | 0 |
| | Sunday | 53 | 32 | 53 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 51 | 37 | 51 | 0 |
| | Saturday | 44 | 37 | 45 | + 1 |
| | Sunday | 42 | 37 | 43 | + 1 |
| NSR G – along Greyfriars Road | Weekdays | 55 | 30 | 55 | 0 |
| | Saturday | 50 | 30 | 50 | 0 |
| | Sunday | 53 | 30 | 53 | 0 |
| Night-time (05:00 - 07:00 hours) | | | | | |
| NSR A – Downfield Court | Weekdays | 46 | 32 | 46 | 0 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 52 | 36 | 52 | 0 |
| NSR C – off Westmill Road | Weekdays | 52 | 36 | 52 | 0 |
| NSR D – Westmill Farm | Weekdays | 52 | 36 | 52 | 0 |
| NSR E – Westmill Road/A10 junction | Weekdays | 51 | 37 | 51 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 46 | 27 | 46 | 0 |
| NSR G – along Greyfriars Road | Weekdays | 51 | 26 | 51 | 0 |
| Night-time (23:00 – 05:00 hours) | | | | | |

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| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|---|----------|--|---|---------------------------|-------------|
| NSR A – Downfield Court | Weekdays | 42 | 29 | 42 | 0 |
| | Saturday | 41 | 29 | 41 | 0 |
| | Sunday | 41 | 29 | 41 | 0 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 35 | 49 | 0 |
| | Saturday | 48 | 35 | 48 | 0 |
| | Sunday | 48 | 35 | 48 | 0 |
| NSR C – off Westmill Road | Weekdays | 49 | 34 | 49 | 0 |
| | Saturday | 48 | 34 | 48 | 0 |
| | Sunday | 48 | 34 | 48 | 0 |
| NSR D – Westmill Farm | Weekdays | 49 | 35 | 49 | 0 |
| | Saturday | 48 | 35 | 48 | 0 |
| | Sunday | 48 | 35 | 48 | 0 |
| NSR E – Westmill Road/A10 junction | Weekdays | 49 | 25 | 49 | 0 |
| | Saturday | 45 | 25 | 45 | 0 |
| | Sunday | 47 | 25 | 47 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 42 | 26 | 42 | 0 |
| | Saturday | 41 | 26 | 41 | 0 |
| | Sunday | 41 | 26 | 41 | 0 |

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| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|-------------------------------|----------|--|---|---------------------------|-------------|
| NSR G – along Greyfriars Road | Weekdays | 49 | 23 | 49 | 0 |
| | Saturday | 45 | 23 | 45 | 0 |
| | Sunday | 47 | 23 | 47 | 0 |

2.16 A maximum increase of up to 2 dB and up to 1 dB above baseline residual sound levels is predicted during the daytime periods at NSR A and NSR F, respectively, as a result of the operation of the proposed development. These noise changes are below the threshold of sound perception normally applied. During night-time there are no changes in the baseline residual sound levels at NSR A and NSR F.

2.17 At all other receptors there are no changes in the baseline residual sound levels.

Mitigation

Overview and Consultation

2.18 The noise changes shown in Table 2.4 indicate that the operational noise levels from the proposed development would be barely noticeable at the NSRs, however the outcome of the BS 4142:2014+A1:2019 assessment indicates the potential for moderate to major impacts at NSR A and NSR F and negligible to moderate impacts at the rest of the NSRs.

2.19 The baseline survey results presented in Technical Appendix 12.2 show that the background noise levels that were measured, especially for NSR A and NSR F, were quite low which is not unexpected, given the rural/remote location of the receptors. Particularly the measured background noise levels at NSR A were between 30 dB (on Sunday) and 34 dB (on weekdays) L_{A90} during daytime and between 19 (on Sunday) and 26 dB (on weekdays) L_{A90} during night-time. These measurements are also representative of the noise levels at NSR F.

2.20 The initial requirement from the Senior Technical Officer (EHO) of the Environmental Health Department at East Herts District Council (EHDC) with regards to assessing noise from new industrial facilities stated that any new specific sound source should have a rating level at least -10 dB below the existing background level at the nearest noise-sensitive locations, inclusive of

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any corrections / penalties for any acoustically distinguishing characteristics as per BS 4142:2014+A1:2019. For multiple sound sources this should, as far as is practicable, include as many / all sound sources operating together.

2.21 With reference to Section 11 of BS4142:2014+A1:2019 and given the low background noise levels measured at the NSRs, the following approach has been agreed with the EHO: in this instance, in accordance with BS4142:2014+A1:2019, this assessment would consider the absolute values and the context, i.e., the changes in the ambient noise levels. The EHO acknowledged that a +1 dB increase on the existing ambient sound level would be a barely noticeable difference at the NSRs. He has also requested to see some commentary on the types of proposed mitigation measures e.g., acoustic screening via noise barriers, that were considered. In case these have been discounted, the EHO requested to see an explanation for this. Although he acknowledged that the use of noise barriers is not always practicable, he requested to see an explanation of the site-specific constraints that may prevent this.

Proposed Mitigation Measures

2.22 Based on the above, mitigation measures have been implemented for the proposed development to ensure that the predicted specific sound levels are mitigated as far as practically possible at the NSRs.

2.23 The following mitigation measures are proposed for the elements shown below:

- A limiting sound power level of 88 dBA L_{WA} for the odour abatement stack exhausts. This could be achieved by the provision of a silencer designed to attenuate the stack exhaust noise levels as per the provided limit. The specification of the silencer should be considered during detailed design stage.
- A limiting sound power level of 87 dBA L_{WA} for the odour abatement fan casings. In case it is not possible to select a fan casing that meets these plant limits, acoustic lagging or a fan casing enclosure must be specified to attenuate the emitted noise levels as per the provided limit.
- Use of acoustic louvres with a performance of at least 22 dB R_w and an opening area of 6m² per louvre rather than traditional louvres on the front façade of the main building. It should be noted that the originally proposed cladding and roofing specification for the building cladding elements as specified in Table 1.4 should be maintained.
- With regards to the reversing tonal alarms of the HGV vehicles, it is recommended that broadband noise alarms are used instead of tonal noise alarms.

Fast-action doors

2.24 It should be noted that the fast-action doors of the front façade of the main building are an acoustically weak point. However, given the function of these doors and their necessity for the operation of the main building, it would be impossible to select fast-action doors that would achieve a greater performance than the performance provided within Table 1.4.

Noise Barrier

2.25 The possibility of installing a noise barrier to the east part of the proposed development has also been investigated.

2.26 By implementing all the above mitigation measures to the proposed development, the noise climate at NSR A and NSR F is dominated by the HGVs movements and the noise emission from the closed fast-doors.

2.27 The installation of a 4 m barrier will not significantly benefit NSR A and NSR F. While noise from HGVs might be slightly reduced at the NSRs, the noise emissions from the fast-action doors will still dominate the noise climate of the NSRs. This is primarily because of the size (approximately 6 x 6 m²) and number (7) of the fast-action doors and by the topography of the site. The height above mean sea level (AMSL) on site is approximately 68 m whereas at NSR A it is approximately 74 m AMSL. As a result, NSR A overlooks the proposed development and the installation of the 4 m barrier will not significantly attenuation the specific sound levels at NSR A.

2.28 For the above reasons, a noise barrier is not part of the suggested mitigation measures for the proposed development.

Assessment with Proposed Mitigation

2.29 An initial estimate of impact undertaken in accordance with BS 4142:2014+A1:2019, is shown in Table 2.5 for the daytime and night-time periods when the mitigation measures discussed in paragraph 2.23 are implemented. The specific sound levels at the NSRs when the mitigation measures are implemented are also shown in Table 2.5.

2.30 The subjective method for determining rating penalties has been used to determine appropriate corrections for each receptor and assessment period. It is considered that the specific sound will not be characterised as intermittent or impulsive, therefore no penalties have been applied for intermittency or impulsivity. As the use of tonal reversing alarms is not recommended, there is no other source of tonal noise from the proposed development. Therefore, no penalty has been

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applied for tonal noise. For all receptors a penalty of + 3 dB was applied to account for the specific character of noise from the ETS.

Table 2.5: BS 4142:2014+A1:2019 Assessment of Impact with Mitigation

| NSR | Day | Representative baseline sound levels | | Specific sound level (dB L _s) | Rating penalty (dB) | Rating level (dB L _{Ar,Tr}) | Rating level difference (dB) |
|--------------------------------------|----------|--------------------------------------|-----------------------------------|---|---------------------|---------------------------------------|------------------------------|
| | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | | | | |
| Daytime (07:00 – 21:00 hours) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 34 | 51 | 36 | 3 | 39 | + 5 |
| | Saturday | 31 | 44 | 36 | 3 | 39 | + 8 |
| | Sunday | 30 | 42 | 36 | 3 | 39 | + 9 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 55 | 36 | 3 | 39 | - 10 |
| | Saturday | 48 | 55 | 36 | 3 | 39 | - 9 |
| | Sunday | 48 | 55 | 36 | 3 | 39 | - 9 |
| NSR C – off Westmill Road | Weekdays | 49 | 55 | 37 | 3 | 40 | - 9 |
| | Saturday | 48 | 55 | 37 | 3 | 40 | - 8 |
| | Sunday | 48 | 55 | 37 | 3 | 40 | - 8 |
| NSR D – Westmill Farm | Weekdays | 49 | 55 | 39 | 3 | 42 | - 7 |
| | Saturday | 48 | 55 | 39 | 3 | 42 | - 6 |
| | Sunday | 48 | 55 | 39 | 3 | 42 | - 6 |
| NSR E – Westmill Road/A10 junction | Weekdays | 48 | 55 | 28 | 3 | 31 | - 17 |
| | Saturday | 44 | 50 | 28 | 3 | 31 | - 13 |
| | Sunday | 44 | 53 | 28 | 3 | 31 | - 13 |

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| | | | | | | | |
|---|----------|----|----|----|---|----|------|
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 34 | 51 | 35 | 3 | 38 | + 4 |
| | Saturday | 31 | 44 | 35 | 3 | 38 | + 7 |
| | Sunday | 30 | 42 | 35 | 3 | 38 | + 8 |
| NSR G – along Greyfriars Road | Weekdays | 48 | 55 | 27 | 3 | 30 | - 18 |
| | Saturday | 44 | 50 | 27 | 3 | 30 | - 14 |
| | Sunday | 44 | 53 | 27 | 3 | 30 | - 14 |
| Night-time (05:00 – 07:00 hours) | | | | | | | |
| NSR A – Downfield Court | Weekdays | 31 | 46 | 27 | 3 | 30 | - 1 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 42 | 52 | 28 | 3 | 31 | - 11 |
| NSR C – off Westmill Road | Weekdays | 42 | 52 | 28 | 3 | 31 | - 11 |
| NSR D – Westmill Farm | Weekdays | 42 | 52 | 30 | 3 | 33 | - 9 |
| NSR E – Westmill Road/A10 junction | Weekdays | 41 | 51 | 19 | 3 | 22 | - 19 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 31 | 46 | 25 | 3 | 28 | - 3 |
| NSR G – along Greyfriars Road | Weekdays | 41 | 51 | 18 | 3 | 21 | - 20 |
| Night-time (23:00 – 05:00 hours) | | | | | | | |
| | Weekdays | 26 | 42 | 14 | 3 | 17 | - 9 |

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| | | | | | | | |
|---|----------|----|----|----|---|----|-------------|
| NSR A – Downfield Court | Saturday | 22 | 41 | 14 | 3 | 17 | - 5 |
| | Sunday | 19 | 41 | 14 | 3 | 17 | - 2 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 32 | 49 | 17 | 3 | 20 | - 12 |
| | Saturday | 40 | 48 | 17 | 3 | 20 | - 20 |
| | Sunday | 31 | 48 | 17 | 3 | 20 | - 11 |
| NSR C – off Westmill Road | Weekdays | 32 | 49 | 18 | 3 | 21 | - 11 |
| | Saturday | 40 | 48 | 18 | 3 | 21 | - 19 |
| | Sunday | 31 | 48 | 18 | 3 | 21 | - 10 |
| NSR D – Westmill Farm | Weekdays | 32 | 49 | 17 | 3 | 20 | - 12 |
| | Saturday | 40 | 48 | 17 | 3 | 20 | - 20 |
| | Sunday | 31 | 48 | 17 | 3 | 20 | - 11 |
| NSR E – Westmill Road/A10 junction | Weekdays | 36 | 49 | 7 | 3 | 10 | - 26 |
| | Saturday | 29 | 45 | 7 | 3 | 10 | - 19 |
| | Sunday | 29 | 47 | 7 | 3 | 10 | - 19 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 26 | 42 | 8 | 3 | 11 | - 15 |
| | Saturday | 22 | 41 | 8 | 3 | 11 | - 11 |
| | Sunday | 19 | 41 | 8 | 3 | 11 | - 8 |
| NSR G – along Greyfriars Road | Weekdays | 36 | 49 | 7 | 3 | 10 | - 26 |
| | Saturday | 29 | 45 | 7 | 3 | 10 | - 19 |
| | Sunday | 29 | 47 | 7 | 3 | 10 | - 19 |

- 2.31 The results of the initial estimate of impact when mitigation measures are considered are described in the following paragraphs.
- 2.32 During daytime, the rating levels at the most affected receptors, NSR A and NSR F, are up to 9 dB and 8 dB above the background sound level, respectively. This is between 4 and 3 dB above the threshold level at which a moderate impact is likely. At the rest of the NSRs the predicted rating levels are between 6 dB and 18 dB below background levels. The results of the initial estimate of impact during the daytime are therefore indicative of moderate impacts at NSR A and NSR F and negligible impacts at all other NSRs, depending on the context.
- 2.33 During night-time (23:00-05:00 hours), the rating levels at all receptors are between 1 and 20 dB below background levels. The results of the initial estimate of impact during night-time (23:00-05:00 hours) are indicative of negligible impacts at all NSRs, depending on the context.
- 2.34 During night-time (05:00-07:00 hours), the rating levels at all receptors are between 2 dB and 26 dB below background levels. The results of the initial estimate of impact during the night-time (05:00-07:00 hours) are therefore indicative of negligible impacts at all NSRs, depending on the context.
- 2.35 To accord with the guidance contained within BS 4142:2014+A1:2019 and provide a thorough assessment, consideration of the context of the scenario has been undertaken. Consideration of the context is provided in terms of the assessment of the change in ambient sound due to the specific sound and the absolute noise levels as addressed further on in this section.

Discussion of Context

Operational Hours

- 2.36 Although the full operational hours for the site would be between 05:00 and 21:00 hours, typically, normal working hours on weekdays would be between 05:00 and 17:00 hours. However, for the purpose of identifying a reasonable worst-case case to assess, operation during the full opening hours (05:00 – 21:00) has been assumed. This is considered a worst-case approach for the daytime operational noise assessment and for this reason lower noise levels than predicted would typically occur at the NSRs during daytime period.
- 2.37 It should be noted that the moderate impacts identified for NSR A and NSR F during the daytime and night-time (23:00 – 05:00 hours) periods only occur during Saturdays and Sundays. During weekdays only minor impacts occur at these receptors. Typically, normal working hours for weekends would be from 07:30 to 16:00 hours on Saturday and 07:30 to 12:00 hours on Sunday.

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Sunday operation would typically only be undertaken when necessary, for example to manage a backlog from a preceding bank holiday. However, for the purpose of identifying a reasonable worst-case case to assess for EIA, operation during the full opening hours (05:00 – 21:00) has also been assumed for the weekend. This is considered a worst-case approach for the operational noise assessment during the weekends and for the above reasons lower noise levels than the predicted would typically occur at the NSRs during the weekends.

Plant Noise Emission Levels

2.38 At this stage the available information on the plant that will finally be selected for the proposed development is limited. For this reason, the assessment was based in worst-case noise emission levels for all the plant included in the noise model.

Noise change and absolute noise level assessment

2.39 The ambient sound levels, with and without the proposed development in operation, are shown in Table 2.6. For steady sources of a similar character, a 3 dB change is generally taken as the minimum change which is perceptible to most people.

Table 2.6: Ambient Noise Level Change Assessment with Mitigation

| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|--------------------------------------|----------|--|---|---------------------------|-------------|
| Daytime (07:00 – 21:00 hours) | | | | | |
| NSR A – Downfield Court | Weekdays | 51 | 36 | 51 | 0 |
| | Saturday | 44 | 36 | 45 | + 1 |
| | Sunday | 42 | 36 | 43 | + 1 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 55 | 36 | 55 | 0 |
| | Saturday | 55 | 36 | 55 | 0 |
| | Sunday | 55 | 36 | 55 | 0 |
| NSR C – off Westmill Road | Weekdays | 55 | 37 | 55 | 0 |

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| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|---|----------|--|---|---------------------------|-------------|
| | Saturday | 55 | 37 | 55 | 0 |
| | Sunday | 55 | 37 | 55 | 0 |
| NSR D – Westmill Farm | Weekdays | 55 | 39 | 55 | 0 |
| | Saturday | 55 | 39 | 55 | 0 |
| | Sunday | 55 | 39 | 55 | 0 |
| NSR E – Westmill Road/A10 junction | Weekdays | 55 | 28 | 55 | 0 |
| | Saturday | 50 | 28 | 50 | 0 |
| | Sunday | 53 | 28 | 53 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 51 | 35 | 51 | 0 |
| | Saturday | 44 | 35 | 44 | 0 |
| | Sunday | 42 | 35 | 43 | + 1 |
| NSR G – along Greyfriars Road | Weekdays | 55 | 27 | 55 | 0 |
| | Saturday | 50 | 27 | 50 | 0 |
| | Sunday | 53 | 27 | 53 | 0 |
| Night-time (05:00 - 07:00 hours) | | | | | |
| NSR A – Downfield Court | Weekdays | 46 | 27 | 46 | 0 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 52 | 28 | 52 | 0 |
| NSR C – off Westmill Road | Weekdays | 52 | 28 | 52 | 0 |

Operational Noise Assessment Methodology And Results

| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|---|----------|--|---|---------------------------|-------------|
| NSR D – Westmill Farm | Weekdays | 52 | 30 | 52 | 0 |
| NSR E – Westmill Road/A10 junction | Weekdays | 51 | 19 | 51 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 46 | 25 | 46 | 0 |
| NSR G – along Greyfriars Road | Weekdays | 51 | 18 | 51 | 0 |
| Night-time (23:00 – 05:00 hours) | | | | | |
| NSR A – Downfield Court | Weekdays | 42 | 14 | 42 | 0 |
| | Saturday | 41 | 14 | 41 | 0 |
| | Sunday | 41 | 14 | 41 | 0 |
| NSR B – Paynes Hall/Westmill area | Weekdays | 49 | 17 | 49 | 0 |
| | Saturday | 48 | 17 | 48 | 0 |
| | Sunday | 48 | 17 | 48 | 0 |
| NSR C – off Westmill Road | Weekdays | 49 | 18 | 49 | 0 |
| | Saturday | 48 | 18 | 48 | 0 |
| | Sunday | 48 | 18 | 48 | 0 |
| NSR D – Westmill Farm | Weekdays | 49 | 17 | 49 | 0 |
| | Saturday | 48 | 17 | 48 | 0 |
| | Sunday | 48 | 17 | 48 | 0 |
| NSR E – Westmill Road/A10 junction | Weekdays | 49 | 7 | 49 | 0 |

Operational Noise Assessment Methodology And Results

| NSR | Day | Baseline Residual Sound Level (dB L _{Aeq,T}) | Specific sound level (dB L _s) | Combined Sound Level (dB) | Change (dB) |
|---|----------|--|---|---------------------------|-------------|
| | Saturday | 45 | 7 | 45 | 0 |
| | Sunday | 47 | 7 | 47 | 0 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | Weekdays | 42 | 8 | 42 | 0 |
| | Saturday | 41 | 8 | 41 | 0 |
| | Sunday | 41 | 8 | 41 | 0 |
| NSR G – along Greyfriars Road | Weekdays | 49 | 7 | 49 | 0 |
| | Saturday | 45 | 7 | 45 | 0 |
| | Sunday | 47 | 7 | 47 | 0 |

2.40 A maximum increase of up to 1 dB above baseline residual sound levels is predicted during the daytime periods at both NSR A and NSR F, respectively, as a result of the operation of the proposed development. These noise changes are below the threshold of sound perception. It should be noted that this increase occurs only during Saturdays and Sundays at NSR A and only during Sundays at NSR F.

2.41 At all other receptors there are no changes in the baseline residual sound levels.

2.42 With regards to absolute sound levels presented in Table 2.6 above, the specific sound level is significantly below the existing ambient noise level during the day and will not contribute to or cause any significant change to ambient noise levels. It is therefore considered that sound from the proposed development is unlikely to cause, or significantly contribute to, any exceedance of the World Health Organisation (WHO) criterion for the onset of annoyance during the daytime, of 55 dB L_{Aeq}. It is therefore considered that the site will not result in adverse effects to amenity during the daytime.

2.43 The level for the onset of sleep disturbance during the night-time (i.e. lowest observed adverse effect level) contained in the WHO Guidance is 45 dB L_{Aeq} (façade), equivalent to a free-field

Operational Noise Assessment Methodology And Results

level of 42 dB L_{Aeq} . Whilst this threshold level is exceeded at most receptors, the baseline residual sound level already exceeds the WHO level at all these receptors. It is therefore considered that, whilst WHO guideline levels may be exceeded, the impact from the operation of the proposed development during the night on sleep disturbance will be minimal.

- 2.44 The BS 4142:2014+A1:2019 initial estimate of impact indicates that sound from the facility may result in negligible adverse to moderate adverse impacts. Taking into account the context of the scenario discussed above, it is considered appropriate to modify the BS 4142:2014+A1:2019 initial estimate of impact such that negligible to moderate impacts are reduced to negligible to minor adverse impacts.
- 2.45 On the basis of the above, it is concluded that levels of sound arising from the operation of the proposed development will not result in any moderate or major adverse impacts, at any of the nearby NSRs. Sound arising from the operation of the proposed development is therefore acceptable in accordance with the relevant British Standards, national and local planning policy.

Pumphouse Operation Assessment

- 2.46 It is understood that a pumphouse is also proposed for the development.
- 2.47 The pumphouse will only operate occasionally either in case of an emergency e.g., fire, or for testing purposes. For these reasons this plant is assessed as an emergency plant.
- 2.48 Following discussions with the EHO it has been agreed that as there are no specific requirements for emergency plant testing, any plant for emergency use should be designed to achieve 10 dB above the background sound level as a maximum measured at 1 m from the façade of the nearest noise sensitive receptors, during testing. This is specified on the basis that the plant will be tested infrequently during the day and only for short periods of time.
- 2.49 It should be noted that 2 pumps are proposed to be located within the pumphouse. The pumps will be tested on a weekly basis and the testing would last for 20 minutes for each pump.
- 2.50 Based on the above, the plant noise emission limits were set for the emergency plant during testing as shown in Table 2.7.

Table 2.7: Plant Noise Emission Criteria for Emergency Plant

| NSR | Daytime (07:00-23:00) | Plant Noise Emission Criteria for Total Emergency Plant at the NSRs | Plant Noise Emission Criteria per Pump at the NSRs |
|--------------|---|---|--|
| | 25 th percentile $L_{A90,15min}$ (dB)* | | |
| NSR E, NSR G | 48 | 58 | 55 |

Operational Noise Assessment Methodology And Results

| NSR | Daytime (07:00-23:00) | Plant Noise Emission Criteria for Total Emergency Plant at the NSRs | Plant Noise Emission Criteria per Pump at the NSRs |
|---------------------|--|---|--|
| | 25 th percentile L _{A90,15min} (dB)* | | |
| NSR B, NSR C, NSR D | 49 | 59 | 56 |
| NSR A, NSR F | 34 | 44 | 41 |

* 25th percentile L_{A90,15min} (dB): A-weighted L₉₀ sound pressure level which is exceeded for 25 % of the measurement time .

2.51 At this stage there is no available information on the exact type of pump that will be selected for the proposed development. However, a noise model scenario has been built to assess the noise emission levels from the proposed pumps based on spectral information on a similar plant item from the RPS database.

2.52 Assuming that one pump at a time is being tested during a weekday for 20 minutes and based on the spectral data given in Table 2.8 for a typical pump, the specific noise levels at the NSRs are given in Table 2.9.

2.53 Table 2.9 shows that the testing of a typical pump results in specific noise levels that are below the requirements for emergency noise plant at all NSRs by 50 to 38 dB. Therefore, no change impacts are predicted at all NSRs.

Table 2.8: Noise model inputs for pumps – octave bands

| Source | Number | Overall sound power level (dBA) | 31.5Hz | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz |
|--------|--------|---------------------------------|--------|------|-------|-------|-------|------|------|------|------|
| pump | 1 | 99.9 | 86 | 94 | 94 | 97 | 94 | 94 | 90 | 86 | 86 |

Table 2.9: Predicted Specific Sound Levels from Pump at Receptors (free-field)

| Noise sensitive receptor | Predicted Specific Sound level L _s dB(A) | Plant Noise Emission Criteria for Total Emergency Plant at the NSRs | Difference |
|--------------------------|---|---|------------|
| | Daytime (07:00-21:00) | | |
| NSR A – Downfield Court | 2 | 44 | -42 |

Operational Noise Assessment Methodology And Results

| Noise sensitive receptor | Predicted Specific Sound level L _s dB(A) | Plant Noise Emission Criteria for Total Emergency Plant at the NSRs | Difference |
|---|---|---|------------|
| | Daytime (07:00-21:00) | | |
| NSR B – Paynes Hall/Westmill area | 16 | 59 | -43 |
| NSR C – off Westmill Road | 9 | 59 | -50 |
| NSR D – Westmill Farm | 21 | 59 | -38 |
| NSR E – Westmill Road/A10 junction | 15 | 58 | -43 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 1 | 44 | -43 |
| NSR G – along Greyfriars Road | 11 | 58 | -47 |

A large graphic element consisting of a light grey rounded rectangle with a dark purple rounded rectangle nested inside it, positioned in the upper right quadrant of the page.

Appendix C **Environmental Noise** **Management Plan**

Ware Eastern Transfer Station - Environmental Noise Management Plan

For Hertfordshire County Council

| Quality Management | | | |
|--|---|----------------------------------|------------|
| Prepared by | Christina Ioannidou MSc Eng Acoustics, MIOA | Senior Consultant - Acoustics | 13/12/2021 |
| Reviewed, checked & authorised by | Lise W. Tjellesen, MSc Eng Acoustics, MIOA | 13/12/2021 | 06/12/2021 |
| Report Number | JAJ11387-REPT-02-R2 | | 13/12/2021 |

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|------------------|------------|--------|-----------------------------------|----------|
| Rev | Date | Status | Reason for revision | Comments |
| 0 | 30/11/2021 | Draft | - | - |
| 1 | 06/12/2021 | Draft | Updating based on client comments | |
| 2 | 13/12/2021 | Fina; | Updating based on client comments | |

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Appendix A: HCC – Complaints Handling and Communications

1 Scope

- 1.1 The purpose of this Environmental Noise Management Plan (ENMP) is to facilitate and assist the process of ongoing environmental management of issues relating to the emission of noise from the Eastern Transfer Station (ETS) in Ware.
- 1.2 Where relevant, the ENMP is intended as a basic procedure to be adopted by the ETS personnel, including any other companies operating within the ETS and ETS's operator, which is Hertfordshire County Council (HCC).
- 1.3 The objectives of the ENMP are to:
- provide guidance to facilitate the management of environmental issues relating to the emission of noise from the facility;
 - monitor and understand the noise levels from the facility as measured in the community; and
 - provide procedures for community liaison and handling any noise related complaints in relation to the facility.
- 1.4 This ENMP is supported by a noise impact assessment for noise and vibration (see Appendix D of the permit application), which has been provided previously by RPS to support the planning application for the proposed facility.

2 Referenced Standards and Publications

- 2.1 This section contains a summary of relevant legislation with reference to appropriate standards, publications and guidance which are referenced within the legislation or environmental noise management procedures.

Environmental Permitting Regulations

- 2.2 The Environmental Permitting (England and Wales) Regulations 2016 (EPR) designate the Environment Agency (EA) as the 'Regulator' responsible for enforcing the regime. As part of its role as regulator, the EA is responsible for producing guidance for use in enforcing the EPR. However, such guidance has not yet been produced and, in the interim period, it is understood that the existing guidance documents for the old IPPC regime may continue to be used.
- 2.3 The Regulations require that installations should be operated in such a way that all appropriate preventative measures are taken against pollution, in particular with the application Best Available Techniques (BAT). BAT includes both the technology used and the way in which the installation is designed, built, operated and decommissioned.

Noise and vibration management: environmental permits (NVMEP)

- 2.4 The Environment Agency, Scottish Environment Protection Agency (SEPA), Natural Resources Wales and Northern Ireland Environment Agency have produced a guidance¹ on environmental permits to help holders and potential holders of permits apply for, vary, and comply with their permits.
- 2.5 For permits in England the guidance contained within "Risk assessments for your environmental permit" is applicable. The guidance was published on 1 February 2016 (last update in March 2021) and it replaces H3 guidance.
- 2.6 For any particular case, the environment agencies have to decide whether or not a proposed facility is causing (or are likely to cause) unacceptable noise pollution, even if appropriate measures are used. It is the applicant's responsibility to avoid significant pollution and to demonstrate that BAT

¹ A website link to the guidance is given here: <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits>

or other appropriate measures are used to prevent, or where that is not practicable, to minimise the noise impact.

2.7 The scope and level of detail in a noise management plan (NMP) should be enough to show that noise emissions are efficiently managed from a facility. All NMPs should, as a minimum, include:

- a clear statement that the applicant understands and accepts their responsibilities for controlling noise impact, and that they will regularly review the effectiveness of their NMP;
- a commitment that either the applicant, or their contractors or subcontractors, will make sure that any noise control equipment is designed, operated and maintained appropriately so it controls noise effectively at all times;
- a risk assessment of noise problems from normal and abnormal situations, including worst case scenarios due to, for example, weather, temperature, breakdowns and accidents;
- details of the appropriate controls (both physical and management) needed to manage the identified risks;
- confirmation of the level of monitoring that should be in place;
- details of the actions the applicant will take, contingencies, and responsibilities, when problems arise (it is particularly important that the applicant includes expected actions resulting from exceptional circumstances or where serious pollution may occur);
- confirmation of the procedures in place to consider reducing or stopping operations to avoid serious noise pollution, and
- a procedure for engaging with neighbours to minimise their concerns and respond to complaints.

British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

2.8 BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the 'specific sound'² from the proposed development) at residential NSRs. The specific sound level may then be corrected for the character of the sound (e.g. perceptibility of tones and/or impulses), if appropriate, and it is then termed the 'rating level', whether or not a rating penalty is applied. The 'residual sound' is defined as the ambient sound remaining at the a

² equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .

assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

2.9 The specific sound levels should be determined separately in terms of the $L_{Aeq,T}$ index over a period of 1-hour during the daytime and 15-minutes during the night-time. For the purposes of the Standard, daytime is typically between 07:00 and 23:00 hours, and night-time is typically between 23:00 and 07:00 hours.

2.10 With regards to the character correction, paragraph 9.2 of BS 4142:2014+A1:2019 states:

“Consider the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention.”

2.11 The commentary to paragraph 9.2 of BS 4142:2014+A1:2019 suggests the following subjective methods for the determination of the rating penalty for tonal, impulsive and/or intermittent specific sounds:

Tonality

For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a rating penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

Impulsivity

A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.

Intermittency

When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. ... If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

Other sound characteristics

Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.”

- 2.12 BS 4142:2014+A1:2019 requires that the background sound levels³ adopted for the assessment be representative for the period being assessed. The Standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-minute intervals, which can be contiguous or disaggregated. However, the Standard states that there is no 'single' background sound level that can be derived from such measurements.
- 2.13 It is particularly difficult to determine what is 'representative' of the night-time period is because it can be subject to a wide variation in background sound level between the shoulder night periods. The accompanying note to paragraph 8.1.4 states that:
- "A representative level should account for the range of background sounds levels and should not automatically be assumed to be either the minimum or modal value."*
- 2.14 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater is the magnitude of the impact:
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
 - The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a 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.
- 2.15 The significance of the effect of the noise in should be determined on the basis of the initial estimate of impact significance from the BS 4142:2014+A1:2019 assessment with reference to the context of the sound.

World Health Organisation Guidance

- 2.16 In 2009, a report was published presenting the conclusions of a World Health Organisation (WHO) working group responsible for preparing guidelines for exposure to noise during sleep entitled "Night Noise Guidelines for Europe" (WHO-NNG). The document can be seen as an extension to the original 1999 WHO Guidelines for Community Noise. Various effects are described including

³ A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.

biological effects, sleep quality, and well-being. The document gives threshold levels for observed effects expressed in terms of L_{max} , inside and L_{night} , outside. The L_{night} is a year-long average night-time noise level, not taking into account the façade effect of a building. In an exposed population a noise exposure of 40 dB L_{night} , outside is stated as equivalent to the "lowest observed adverse effect level" for night noise. Above this level, adverse health effects observed are self-reported sleep disturbance, environmental insomnia and increased use of somnifacient drugs and sedatives. Above 55 dB L_{night} , outside cardiovascular effects (such as hypertension and ischaemic heart disease) begin to become the major public health concern. Threshold levels for waking in the night, and / or too early in the morning are given as 42 dB L_{Amax} , inside. Lower thresholds are given that may change sleep structure.

- 2.17 It is relevant to note that, taking into account typical night to night variations in noise levels that will often occur due to meteorological effects and the effects of a façade, the night noise guidelines are similar to those previously given in the 1999 WHO report (an external façade noise level of 45 dB L_{Aeq}), although defined using different metrics.
- 2.18 The major concern in Europe is with respect to noise from transportation systems, and most of the studies on which these guidelines are based relate to this type of noise source. There can be no certainty that the same effects will be observed from noise of an industrial nature, but in the absence of any more detailed information some credence should be attached to the WHO guidance when assessing industrial noise as well.

International Standards Organisation (ISO) 9613-2:1996 'Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation'

- 2.19 ISO 9613 includes a method that is used for modelling environmental noise. The ISO 9613 methodology uses correction terms, applied to the source term level, for various factors affecting the propagation of noise from the source, to calculate a sound pressure level under meteorological conditions favourable to propagation (i.e. light downwind). The standard includes terms for geometrical divergence, atmospheric absorption, ground effects, reflections and screening due to obstacles.

ISO 1996-2:2017 ‘Acoustics — Description, measurement and assessment of environmental noise — Part 2: Determination of sound pressure levels’

- 2.20 Annex C of ISO 1996-2 "Determination of sound pressure levels " contains an objective method for assessing the audibility of tones in noise. The aim of the method is to assess the prominence of tones in the same way as listeners do on the average. The method is based on the psychoacoustic concept of critical bands, and the extent to which noise within that band can mask the audibility of a tone.
- 2.21 The method produces an adjustment value K_t which is to be added to the L_{Aeq} to give the tone corrected rating level for that interval.
- 2.22 The presence of an adjustment value indicates an audible tone. Under BS 4142:2014+A1:2019, this would indicate an up to + 6 dB rating level character penalty, as the standard does not contain a sliding scale.

British Standard (BS) 5228:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites’

- 2.23 BS 5228 is a code of practice for the control of noise and vibration emissions from construction sites. It also includes a method for calculating noise from these sites. The standard is cited in the Noise and vibration management: environmental permits.

3 Summary of Noise Impact Assessment and BAT Measures

Normal Operation – Appropriate Physical and Management Noise Controls

- 3.1 A noise impact assessment (NIA) has been carried out for the ETS and is provided within Appendix D of the permit application. The results of the noise assessment carried out for the ETS development during normal operation can be summarised as follows:
- the BS 4142:2014+A1:2019 assessment indicated that with the implementation of mitigation measures, noise from operation of the ETS will result in, at worst, a negligible to minor impact at the most-affected receptor (NSR A);
 - operational noise from the ETS will be well below the noise standards contained in WHO guidelines for avoidance of annoyance during the daytime;
 - ambient noise levels will not significantly increase at the residential receptors during the operational hours of the EST. Therefore, ambient noise levels are unlikely to yield any adverse impacts, and
 - changes in road traffic flows will not lead to significant increase in noise at residential receptors, therefore, traffic noise levels are unlikely to yield any adverse impacts.
- 3.2 The key findings listed above have been used to inform the BAT measures that would be employed at the site.
- 3.3 Table 3.1 provides a summary of the noise sensitive receptors (NSRs), the NSRs' background and residual noise levels and predicted specific noise levels at the NSRs during the operational hours of the ETS facility (daytime/night-time). The NSRs locations can be seen on the site plan in Figure 1.
- 3.4 Table 4.2 provides a summary of the noise sources included in the noise assessment, and their contribution to the overall emission prior to the adoption of mitigation/BAT measures.

Table 3.1 Background, Residual and Specific Noise Levels at the NSRs

| NSR | Distance to Site Boundary (m) | Day | Representative baseline sound levels | | Specific sound level (dB L _s) |
|---|-------------------------------|----------|--------------------------------------|-----------------------------------|---|
| | | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | |
| Daytime (07:00 – 21:00 hours) | | | | | |
| NSR A – Downfield Court | 500 m | Weekdays | 34 | 51 | 36 |
| | | Saturday | 31 | 44 | 36 |
| | | Sunday | 30 | 42 | 36 |
| NSR B – Paynes Hall/Westmill area | 300 m | Weekdays | 49 | 55 | 36 |
| | | Saturday | 48 | 55 | 36 |
| | | Sunday | 48 | 55 | 36 |
| NSR C – off Westmill Road | 175 m | Weekdays | 49 | 55 | 37 |
| | | Saturday | 48 | 55 | 37 |
| | | Sunday | 48 | 55 | 37 |
| NSR D – Westmill Farm | 100 m | Weekdays | 49 | 55 | 39 |
| | | Saturday | 48 | 55 | 39 |
| | | Sunday | 48 | 55 | 39 |
| NSR E – Westmill Road/A10 junction | 680 m | Weekdays | 48 | 55 | 28 |
| | | Saturday | 44 | 50 | 28 |
| | | Sunday | 44 | 53 | 28 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 700 m | Weekdays | 34 | 51 | 35 |
| | | Saturday | 31 | 44 | 35 |
| | | Sunday | 30 | 42 | 35 |
| NSR G – along Greyfriars Road | 900 m | Weekdays | 48 | 55 | 27 |
| | | Saturday | 44 | 50 | 27 |
| | | Sunday | 44 | 53 | 27 |
| Night-time (05:00 – 07:00 hours) | | | | | |
| NSR A – Downfield Court | 500 m | Weekdays | 31 | 46 | 27 |
| NSR B – Paynes Hall/Westmill area | 300 m | Weekdays | 42 | 52 | 28 |
| NSR C – off Westmill Road | 175 m | Weekdays | 42 | 52 | 28 |
| NSR D – Westmill Farm | 100 m | Weekdays | 42 | 52 | 30 |
| NSR E – Westmill Road/A10 junction | 680 m | Weekdays | 41 | 51 | 19 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 700 m | Weekdays | 31 | 46 | 25 |
| NSR G – along Greyfriars Road | 900 m | Weekdays | 41 | 51 | 18 |
| Night-time (23:00 – 05:00 hours) | | | | | |
| NSR A – Downfield Court | 500 m | Weekdays | 26 | 42 | 14 |
| | | Saturday | 22 | 41 | 14 |
| | | Sunday | 19 | 41 | 14 |

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| NSR | Distance to Site Boundary (m) | Day | Representative baseline sound levels | | Specific sound level (dB L _s) |
|---|-------------------------------|----------|--------------------------------------|-----------------------------------|---|
| | | | Background (dB L _{A90,T}) | Residual dB (L _{Aeq,T}) | |
| NSR B – Paynes Hall/Westmill area | 300 m | Weekdays | 32 | 49 | 17 |
| | | Saturday | 40 | 48 | 17 |
| | | Sunday | 31 | 48 | 17 |
| NSR C – off Westmill Road | 175 m | Weekdays | 32 | 49 | 18 |
| | | Saturday | 40 | 48 | 18 |
| | | Sunday | 31 | 48 | 18 |
| NSR D – Westmill Farm | 100 m | Weekdays | 32 | 49 | 17 |
| | | Saturday | 40 | 48 | 17 |
| | | Sunday | 31 | 48 | 17 |
| NSR E – Westmill Road/A10 junction | 680 m | Weekdays | 36 | 49 | 7 |
| | | Saturday | 29 | 45 | 7 |
| | | Sunday | 29 | 47 | 7 |
| NSR F – Hanbury Manor Marriott Hotel & Country Club | 700 m | Weekdays | 26 | 42 | 8 |
| | | Saturday | 22 | 41 | 8 |
| | | Sunday | 19 | 41 | 8 |
| NSR G – along Greyfriars Road | 900 m | Weekdays | 36 | 49 | 7 |
| | | Saturday | 29 | 45 | 7 |
| | | Sunday | 29 | 47 | 7 |

Table 3.2 Noise Sources

| Noise Source | Source Ref | Nature of Noise or Vibration | Contribution to Overall Emission |
|-----------------------------|------------|---|----------------------------------|
| HGV Movements / Idling HGVs | A | Noise emissions from HGVs travelling to/from the site and from idling HGVs on the ETS site | High |
| Odour abatement system | B | Noise emissions from the odour abatement system exhaust on top of the stacks and fan casing emissions on ground level | High |
| Main ETS Building | C | Noise emissions from activities occurring within the main ETS building. The plant operating within the building includes a wheel loader, a shredder and a fan. The wheel loader and fan are expected to operate between 05:00 and 21:00 hours, while for the shredder only daytime operation is anticipated, between 07:00 and 21:00 hours. Noise from the building is emitted through the façades, roof, rooflights, fast-action doors and louvres of the building. | High |

3.5 Table 4.3 provides a summary of the BAT measures implemented to each item of plant. These are the appropriate physical and management noise controls required during the ETS operational hours to minimise noise emissions at all NSRs listed in Table 3.1.

Table 3.3 Demonstration of BAT

| Source Ref | Are abatement and actions taken to prevent or minimise emissions BAT? | Actions to be taken to meet BAT and timescales |
|-------------|---|---|
| A | <p>With regards to the reversing tonal alarms of the HGV vehicles, it is recommended that broadband noise alarms are fitted to the HGVs instead of tonal noise alarms.</p> <p>Vehicles will follow site access route and will be subject to a speed limit of 20 mph.</p> | By procurement of equipment and on-going management |
| B | <p>The sound power level of the exhaust of each odour abatement system should not exceed 88 dBA L_{wA}. This could be achieved by the provision of a silencer designed to attenuate the stack exhaust noise levels as per the provided limit. The specification of the silencer should be considered during detailed design stage.</p> <p>The sound power level of the fan casing of each odour abatement system should not exceed 87 dBA L_{wA}. In case it is not possible to select a fan casing that meets these plant limits, acoustic lagging or a fan casing enclosure must be specified to attenuate the emitted noise levels as per the provided limit.</p> | By design, procurement of equipment and on-going management |
| C | <p>Use of acoustic louvres with a performance of at least 22 dB R_w and an opening area of 6 m² per louvre rather than traditional louvres on the front façade of the main building. It should be noted that the proposed cladding and roofing specification for the building cladding elements as should be at least as the specification described within the noise impact assessment report (see Appendix D of the permit application):</p> <p><i>“Facades of the building: [...] a combination of standard Part L compliant CA Twin-Therm® wall system consisting of 120mm thick Therma-quilt insulation (0.35W/m²K) with an overall attenuation of 43 dB R_w and 500 mm concrete elements (min. density 2340 kg/m³).</i></p> <p><i>[...] roof lights at both sides of the slatted roof: [...] triple glazed elements with a performance of 25 dB R_w.”</i></p> <p>The 7 x fast-action doors at the front façade of the ETS building should remain closed when activities are being undertaken within the building.</p> <p>For the plant operating within the main ETS building, the wheel loader and fan should operate between 05:00 and 21:00 hours, while for the shredder should operate only during daytime, between 07:00 and 21:00 hours.</p> | By design, procurement of equipment and on-going management |
| All sources | <p>Activity only within the defined area of the site and within the operational hours described below:</p> <p>The ETS will operate between 05:00 and 21:00 hours Monday to Friday, between 07:30 and 16:00 hours on Saturday and between 07:30 and 12:00 hours on Sunday.</p> | On-going management |

Abnormal Operation

- 3.6 Abnormal operation could occur in the event of emergency situations, maintenance, breakdowns, weather anomalies etc.
- 3.7 It should be noted that there is an emergency pumphouse plant within ETS. The pumphouse, which includes 2 pumps, will only operate occasionally either in case of an emergency e.g., fire, or for testing purposes.
- 3.8 HCC will commit to emergency plant testing occurring infrequently during the daytime and only for short periods of time.
- 3.9 In case maintenance of the operational plant is required to be undertaken on site, depending on the nature and duration of the maintenance activity, a noise impact assessment of this activity should be undertaken.
- 3.10 During breakdowns/accidents some plant items normally operating on site are not expected to be operational. Therefore, in those cases lower than normal plant emissions limits are anticipated.
- 3.11 In relation to weather anomalies, a temperature inversion⁴ may occur and in this case the noise emissions from ETS might be heard in further distances from the site than normal. It should be noted that the results of the noise impact assessment have shown that with the implementation of mitigation measures, noise from operation of the ETS will result in, at worst, a negligible to minor impact at the most-affected receptor (NSR A). Temperature inversion is more likely to occur during the night-time when the site is not fully operational (night-time operation will only occur between 05:00 and 07:00 hours). Therefore, no adverse impacts are anticipated to occur due to weather anomalies.
- 3.12 No abnormal conditions are anticipated in relation to operational road traffic as HCC will commit to the following HGV numbers travelling to/from the ETS site: 8 HGVs between 05:00 and 07:00 hours, 138 HGVs between 07:00 and 21:00 hours and no HGVs between 05:00 and 07:00 hours on weekends. As such, no adverse impacts are predicted at the NSRs due to operational road traffic from ETS.

⁴ During this phenomenon temperature is increasing with increasing height and therefore, the speed of sound also increases with height. This means that for a sound wave traveling close to the ground, the part of the wave closest to the ground is traveling the slowest, and the part of the wave farthest above the ground is traveling the fastest. As a result, the sound wave changes direction and bends downwards. Temperature inversions most often happen at night after the sun sets when the ground cools off quickly, while the air above the ground remains warm.

4 Management Controls

4.1 This section of the NMP provides information on:

- Responsibilities.
- Community liaison.

Roles and Responsibilities

4.2 HCC, which is the site manager and site operator for ETS, is committing to ensure that any noise control measures, as discussed in detail under Section 3 and Table 3.3 are delivered.

4.3 It is HCC's overall responsibility to ensure that:

- The procurement of new plant is in accordance with the limiting sound power levels shown in Table 3.3.
- Any noise control measures are implemented as described in Table 3.3.
- The vehicles accessing the site are following the site access route and the relevant speed limit as shown in Table 3.3.
- A maximum number of 8 HGVs between 05:00 and 07:00 hours, 138 HGVs between 07:00 and 21:00 hours will be travelling to/leaving from the ETS site and no HGVs will be travelling to/from site between 05:00 and 07:00 hours on weekends.
- For the HGVs operating on the ETS site no reversing tonal alarms will be fitted to the vehicles. Broadband noise alarms will be fitted instead.
- All elements (e.g. louvres, building cladding, silencers, etc.) specified in Table 3.3 will be specified during detailed design stage to meet the specifications shown in Table 3.3.
- Any activities will be undertaken within the defined site area and will be undertaken only during the operational hours of ETS.

4.4 Given the operational activities that are expected to occur within ETS (detailed in Section 3) no serious noise pollution is anticipated as a result of the operation of ETS under normal or abnormal conditions. Therefore, it is not considered necessary for HCC to commit to reducing or stopping operations to avoid serious noise pollution.

4.5 The Environment Agency (EA) is currently the responsible regulatory authority for noise including the regulation of noise through the environmental permit.

Community Liaison

- 4.6 It is recognised that frequent and open communication of environmental noise matters to the community is an important aspect of noise management. This section details how HCC intends to communicate such matters to the local community, which will largely be accomplished through liaison with the stakeholders and residents. It also contains details of HCC's complaints procedure. In addition to containing details about the notification of complaints to the relevant authority, it provides procedures to ensure that relevant action is taken after a complaint is received.
- 4.7 In case of occasions when elevated noise levels are required above those generally permitted, the EA will be informed in advance of any planned events taking place on the facility with potential to cause elevated noise levels. These will also be indicated on site notices to inform local residents.
- 4.8 As discussed in Section 3, no adverse impacts are expected to occur due to the ETS operation under normal or abnormal circumstances. However, in the event of verified complaints about environmental noise, related to normal or abnormal ETS operation, these will be dealt with through the Complaints Handling Procedure of HCC which are provided within Appendix A. If deemed necessary, a noise assessment will be undertaken to investigate source and implement noise attenuation/control measures to ensure noise levels are not exceeding the criteria set within the NIA report.
- 4.9 The EA will be provided with details of any complaints received regarding environmental matters (including noise) and the remedial action taken within two weeks of receiving the complaint if it has not been possible to resolve the issue in the interim.
- 4.10 The roles and responsibilities with respect to the environmental noise procedures at the ETS are summarised in the following table (Table 2.1).

5 Noise Monitoring

- 5.1 It is proposed to undertake post-commissioning noise monitoring at the closest noise sensitive receptors to the ETS. Measurements will comprise a combination of attended and unattended monitoring. It is proposed to undertake the surveys within two months of the completion of the commissioning of the facility, i.e., two months from the issue of the new permit. Noise measurements will be conducted by a suitably trained and competent person (e.g. a member of the Institute of Acoustics and/or with a certificate of competence in environmental noise measurement).
- 5.2 One unattended monitor will be deployed on the site boundary to log noise parameters at fifteen-minute intervals for a period of approximately one week.
- 5.3 Attended monitoring will be carried out concurrently at locations representative of the NSRs identified in Table 3.1. Two 15-minute measurements will be carried out at each location during each of the following periods:
- Daytime (07:00 to 21:00 hours)
 - Night-time (05:00 to 07:00 hours)
- 5.4 For noise measurements to be considered valid, the average wind speed would be no greater than 5 m/s when measured near ground level at the noise measurement location. Measurements would not be carried out during periods of heavy rainfall.
- 5.5 Measurements should comply with the requirements of BS 4142:2014+A1:2019. To ensure that tonal noise is not normally prominent under any operational condition, the ISO 1996-2:2007 methodology shall be used.
- 5.6 Unattended measurements will log overall A-weighted L_{eq} , L_{90} , L_{10} , and $L_{max,F}$ sound pressure levels. In addition to the above, the attended measurements will log unweighted octave band L_{eq} and L_{90} sound pressure levels.
- 5.7 The survey results will be presented in a short technical report to be prepared following the completion the survey. The report shall include, as a minimum:
- details of the measurement equipment;
 - copies of the calibration certificates;
 - the overall L_{Aeq} , L_{Amax} , L_{A10} and L_{A90} sound pressure level measurements;
 - the octave band L_{eq} and L_{90} sound pressure level measurements;
 - narrowband sound pressure level measurements and assessment according to ISO 1996-2:2017 Annex C;

- a log of audible events;
- the local weather conditions for the duration of the survey, including the prevailing wind speed and direction;
- details of the operational conditions on the facility and any notable operating conditions on other nearby sites;
- BS 4142:2014+A1:2019 assessment; and
- analysis of measurement uncertainty.

5.8 For the BS 4142:2014+A1:2019 assessment, the baseline background sound levels as detailed in Table 3.1 would be used. These have been determined from measurements for the facility and prior to construction of the facility, made by RPS as presented in the NIA, given in Appendix D of the permit application. The background sound level should be taken from the nearest location in the table to the location being assessed.

5.9 Additional noise monitoring will be carried out at the request of the EA.

6 Review and Update of Noise Management Procedures

- 6.1 This section defines the frequency of review for the ENMP and details the procedure for review of the document.
- 6.2 The ENMP will be reviewed once every year by HCC and any recommendations for changes will then be agreed with the EA and include consultation with HCC.
- 6.3 Any recommendations for changes to the ENMP will be circulated to the above bodies for consideration prior to the review.
- 6.4 This ENMP shall also be reviewed on an ad hoc basis following any significant changes in operating procedures, legislation or the environmental permitting regime.

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Figures



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Notes

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Project: Ware Eastern Transfer Station - Environmental Noise Management Plan

Job Ref: JAJ11387

File location:

Date: 11/11/2021

Rev: 0

Drawn: CI

Checked:

Figure 1: Noise Sensitive Receptors

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Appendices

Appendix A: HCC – Complaints Handling and Communications

- B.1 In the event that a noise complaint is received, it is important that complaints are properly and systematically dealt with and acted upon.
- B.2 This appendix of the ENMP describes:
- How Ware ETS will respond to any noise complaint;
 - How Ware ETS will investigate any noise complaints, take the appropriate steps and actions, and keep stakeholders informed; and
 - How Ware ETS will communicate to appropriate bodies routinely and in response to any incidents or planned maintenance.
 - Complaint Registration
- B.3 In the event of a complaint complainants can complain:
- By telling a member of staff. This may be a member of staff who has been involved in providing the service directly to the customer or their line manager
 - By going online and completing the form at www.hertfordshire.gov.uk/complaints
 - By telephoning 0300 123 4047 or by emailing contact@hertfordshire.gov.uk.
- B.4 The customer service manager can also be contacted directly using the following details:
- Allison Short (Customer Services Manager)
Environment and Infrastructure Department
CHN115
1st Floor North West Block, County Hall, Pegs Lane, Hertford SG13 8DN
 - Telephone: 01992 555211
 - Email: environment.customerservices@hertfordshire.gov.uk
- B.5 Complaints will be acknowledged within three working days of receiving it. The complainant will be told who is going to be looking into it and when they should receive a response. This is usually within 10 working days although sometimes longer may be needed. The complainant will be told if this is the case and how long it will take to give a response.

Investigation of Noise Complaints

- B.6 A manager will look into the complaint and will provide a response. This can be by letter or email or, if preferred, a telephone call.

- B.7 This part of the procedure is called stage 1. If the complainant is not happy with the outcome, a request can be made to consider the complaint at stage 2. In some serious cases, the complaint may be referred to stage 2 immediately.

Further investigation of the complaint

- B.8 Requests for complaints to go to stage two should be made in writing to the customer services manager using the contact details shown in paragraph 7.22 above, no later than 28 working days after you receive the Stage 1 response. An acknowledgement will be received within 3 working days of receipt that the complaint is being investigated further.
- B.9 The Customer Services Manager will offer to meet with the complainant to discuss the complaint.
- B.10 The Customer Services Manager will also meet members of staff who have been involved and anyone else who has relevant information about the complaint.
- B.11 A report will be produced by the Customer Services Manager and sent to the Director of Environment and Infrastructure. The report will say whether the complaint has been upheld (in whole or in part) or not. It will contain recommendations for action to put things right if the complaint has been upheld. The Director of Environment and Infrastructure will write to the complainant to say whether he agrees with the report and recommendations and what action will be taken.
- B.12 Stage 2 will be completed within 25 working days of receipt of the request that the complaint go to stage 2. If for any reason this is not possible, the Customer Services Manager will contact the complainant within that period to explain the reason for the delay and inform them when Stage 2 will be completed.
- B.13 If the complainant is not satisfied with the outcome of Stage 2 they can ask the Local Government and Social Care Ombudsman to investigate. The Ombudsman is completely independent of the Council. Complainants can contact the Ombudsman's advice line on 0300 061 0614; or submit their complaint online at the website www.lgo.org.uk.