



PROOF OF EVIDENCE: JOSIE NIXON MSC BA(HONS) MIOA

SITE ADDRESS

LAND EAST OF MANOR TRADING ESTATE, SOUTH BENFLEET,
ESSEX SS7 4PS



APPEAL REFERENCE: APP/M1520/W/22/3310794

HEALTHY ABODE ACOUSTICS
BUILDING ACOUSTICIANS & ENVIRONMENTAL NOISE CONSULTANTS

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QUALIFICATIONS AND EXPERIENCE

- I am employed as a Senior Acoustic Consultant at Healthy Abode Ltd t/a HA Acoustics. I have over 7 years of acoustic consultancy experience and have undertaken many site investigations, written noise impact assessments to support planning applications, noise and/or vibration at work assessments, noise and vibration monitoring, sound insulation testing, and acoustic design. I have experience of carrying out noise impact assessments for proposed development of residential premises near to specific noise sources, including commercial, entertainment and industrial premises as well as road, rail and air transportation networks.
- In 2011, I graduated with a 2:1 BA(Hons) degree in Geography from Leicester University having studied Geography, with a year at Simon Fraser University, Vancouver. In 2012 I graduated with an MSc degree in Human Geography: Contemporary Space and Society from Bristol University. I worked for Oadby & Wigston Council Environmental Health department between 2012-2014 as a Warm Homes Officer. In 2015, I passed the Institute of Acoustics (Certificate of Competence in Environmental Noise Management) course and started working as a Junior Acoustic Consultant. In 2017, I studied at London South Bank University, the Institute of Acoustics (IOA) Diploma in Acoustics and Noise Control; and in 2019 obtained a second MSc, this time in Environmental and Architectural Acoustics. In 2021, I passed the IOA Certificate of Competency in Workplace Noise Risk Assessment.
- I have presented at two international conferences: the Drone Symposium in Paris 2020 and Internoise 2021 in Washington along with having two papers co-published: 'The Sound of the Drone Uprising – Aeroacoustics of Drone Blades' (2020) and 'Attack of the Drones – Exploration of Sound Power Levels Emitted and the Impact Drone's could have upon Rural Areas' (2021).
- I became an Associate Member (AMIOA) of the IOA in 2015 and have been a Member (MIOA) since 2021. I am the Early Career Group Representative for the IOA Eastern Branch and the Chairperson of the IOA Early Career Group.

1. INTRODUCTION

1.1. Scope of evidence

1.2. In November 2021 G&K Groundworks Ltd instructed Healthy Abode Ltd t/a HA Acoustics to undertake a noise impact assessment at Land East of Manor Trading Estate, South Benfleet, Essex SS7 4PS for submission as part of documentation to be provided to the Local Authority, Castle Point Borough Council in connection with a proposed mixed-use development comprising 68 residential dwellings, 1 general industrial unit, 2 storage and distribution units and a number of commercial premises (application number: 21/0532/OUT).

1.3. The site is located near to Manor Trading Estate and Benfleet Scrap, the noise from which could have the potential to affect existing noise sensitive properties nearby.

1.4. Planning permission was refused for a number of reasons, three of which related to noise. Of those, two reasons for refusal remain in issue:

2. The proposal fails to adequately identify and consider the impact of the proposed residential and commercial development on safeguarded waste disposal sites within the adjoining Manor Trading Estate, contrary to the provisions of Policy 2 of the Essex and Southend-on-Sea Waste Local Plan 2017 (WLP) and paragraph 187 of the National Planning Policy Framework.
3. The submitted Noise Constraint Survey and Facade Noise Assessments fail to adequately demonstrate a lack of adverse impact arising from the operation of sites within the Manor Trading Estate on future occupiers of the proposed commercial and residential development, contrary to paragraph 187 of the National Planning Policy Framework and Policy 2 of the Essex and Southend on Sea Waste Local Plan 2017.

1.5. My proof of evidence will address each of these outstanding reasons for refusal.

1.6. Site description

1.7. Land East of Manor Trading Estate, South Benfleet, Essex SS7 4PS (hereafter referred to as 'the site') is privately owned land, which for site investigation purposes was accessed via Manor Trading Estate. It is proposed to develop the plot of land into a mixed-use scheme comprising of; 68 residential dwellings, 1 general industrial unit, 2 storage and distribution units and a number of commercial premises. Access to the proposed residential and commercial premises will be via a new road network off Church Road to the South. Access to the proposed industrial will be via Manor Trading Estate.

- 1.8. The site located within the urban setting of South Benfleet and is situated towards the north of the town. The trading estate has predominantly residential premises bordering it. The A130 triple-carriageway was situated to the north-west of the site at approximately 925m and the A127 dual carriageway runs to the north of the site at approximately 1.3km away.
- 1.9. The site is bordered to the north by Windermere Road comprising residential properties and Woodside Cemetery, with some agricultural fields further to the north. Manor Trading Estate is situated adjacent to the east. Situated to the south of the site is Hesten Day Centre for adults with learning disabilities and The Robert Drake Primary School.
- 1.10. Manor Trading Estate is predominantly bordered by residential premises, especially to the west and south. The trading estate comprises a mixture of businesses, including storage and distribution units, vehicle services, manufacturing units, storage warehouses and offices. The soundscape of the area is therefore expected to be variable due to significant levels of commercial activity during the day, but relatively quiet in the evenings, at night and on Sundays.
- 1.11. Benfleet Scrap is the industrial premises located closest to the proposed residential development. Due to the nature of this business as a scrap metal dealer, it is considered to have the noisiest operations, with the most chance of having a potential negative impact on the proposed development. The predominant noise sources and activities at Benfleet Scrap were noted to be from the LEFORT Koloss Baler and 3 tracked long reach excavators with mechanical grabs which were noted to move the scrap metal on their site.
- 1.12. **Previous HA reports and relationship with this proof**
- 1.13. Two previous reports were produced by my former colleague Mr Jack Tunstall and were submitted in connection with planning application 21/0532/OUT, as follows:
- 1.13.1. 17 December 2021
- 1.13.2. 6 April 2022
- 1.13.2.1. Both reports found that the building facades could be attenuated to ensure that the internal habitable room noise requirements under BS8233: 2014 could be met.
- 1.13.2.2. The second report was submitted due to changes in building layout and the provision of another communal external amenity area to the north.

1.14. Mr Tunstall has since left HA Acoustics employment. For the purposes of preparing this proof, I have carried out my own additional attended and unattended noise surveys.

1.15. I have undertaken this work in order to assess the site suitability myself, so as to provide evidence. Having read the previous reports, I am of the opinion that the information contained therein is reasonable and does demonstrate that utilising the commercial building as barrier facilitates a reduced sound climate on the site. However, not being the site acoustician, report author and/or noise modeller author of the 2021 and 2022 reports, for the purposes of the inquiry I am unable to provide evidence upon the content or how the conclusions were reached. The previous surveys should therefore be disregarded for the purposes of reaching conclusions on the likely effects of noise on the proposed development.

1.16. The main purpose of this proof of evidence is to give an indication of the likely suitability of the site for development (applying BS 4142:2014+A1:2019). I will also assess the likelihood of the internal noise levels meeting BS 8233: 2014 requirements, and consider the likely noise levels in proposed external amenity areas. I will draw conclusions as to the likelihood of the proposed development prejudicing the existing operations on the Manor Trading Estate as a result of noise complaints.

2. RELEVANT POLICY AND GUIDANCE

2.1. National Planning Policy Framework (2021)

2.2. Paragraph 185 of the NPPF (2021) considers noise, stating:

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

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

2.3. The footnote to paragraph 185 refers the reader to the Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010). I address this document further below.

2.4. When the NPPF was revised in 2021 the ‘agent of change’ principle was included into the framework, making it a feature of national planning policy. The Agent of Change principle seeks to place responsibility for mitigating impacts from exiting noise-generating activities on the proposed new noise-sensitive development.

2.5. Paragraph 187 of the NPPF states: *Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been*

completed". It is important to note, however, that the focus however should be on what is the appropriate use of land, and not on the control of processes or noise emissions.

2.6. This principle seeks to protect existing businesses by mitigating the risk arising from the imposition of restrictions or the possible closure of existing businesses due to noise and other complaints from the occupiers of new developments.

2.7. Paragraph 188 states: *The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.*

2.8. Planning Practice Guidance – Noise: 2019 (Core Document: C7)

2.9. The planning practice guidance (PPG) on noise advises on how planning can manage potential noise impacts on a new development. This was published in 2014 and revised in 2019. Paragraph 4 gives guidance on what the observed effect levels are and relates to the NPSE (Core document: C5) see section 2.15 below). It should be noted that this PPG paragraph also states *"Although the word 'level' is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure."* (Core Document: C7, para 4) The effect of a noise needs to be taken into consideration with the circumstances, such as duration and time of day, and the site context.

2.10. PPG provides a noise exposure hierarchy as seen in figure 2.1, which gives guidance on how to establish the effect of noise. It states that: *"Noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it."* (Core Document C7, para 5)

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

Figure 2.1 PPG Noise Exposure Hierarchy (Source Core Document: C7 Para 5)

- 2.11. When the exposure is predicted to be above the SOAEL then *“the planning process should be used to avoid this effect occurring, [...] by use of appropriate mitigation such as be altering the design and layout.”* (Core Document: C7, para 5)
- 2.12. There are numerous factors which need to be taken into account to determine if noise could be a concern and these are identified within PPG (Core Document: C7) in paragraph 6, they include the type of noise being assessed (duration, level, frequency) and how developments can be designed, considering the internal and external environment of the proposed development.
- 2.13. Paragraph 9 gives guidance on how to assess the risk of conflict between new development and existing business and quotes the ‘agent of change’ principle stating *“The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects, but can help to achieve a satisfactory living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring)”* (Core Document: C7)
- 2.14. Guidance from other acoustic standards is also signposted within paragraph 15 of PPG (core Document: C7), such as to BS8233: 2014 (core document: C8) and ProPG: 2017 (Core Document: C10) for further assistance on assessing the effects of noise.
- 2.15. **Noise Policy Statement for England: 2010** (Core Document: C5)
- 2.16. The Noise Policy Statement for England (NPSE) published 2010 applies to ‘all forms of noise, including environmental noise, neighbour noise and neighbourhood noise’ (Core Document: C5 page 3), with the exception of noise in the workplace. The NPSE sets out the Noise Policy Vision:
- 2.16.1. *“Promote good health and a good quality of life through the effective management of noise within the context of Government Policy on sustainable development”*
- 2.17. The long-term vision is supported by three aims:
- 2.17.1. *“avoid significant adverse impacts on health and quality of life;*
- 2.17.2. *Mitigate and minimise adverse impacts on health and quality of life; and*
- 2.17.3. *Where possible, contribute to the improvement of health and quality of life.”* (Core Document: C5, Para 1.7)

2.18. Paragraph 2.9 states that: *“sound only becomes noise (often defined as “unwanted sound”) when it exists in the wrong place or at the wrong time such that it causes or contributes to some harmful or otherwise unwanted effect, like annoyance or sleep disturbance. Unlike many other pollutants, noise pollution depends not just on the physical aspects of the sound itself, but also the human reaction to it. Consequently, the NPSE provides a clear description of desired outcome from the noise management of a particular situation”* Noise in the context of the NPSE includes:

2.18.1. *““environmental noise” which includes noise from transportation sources;*

2.18.2. *“neighbour noise” which includes noise from inside and outside people’s homes; and*

2.18.3. *“neighbourhood noise” which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.”* (Core document: C5 para 2.5)

2.19. The NPSE states that there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

- ‘NOEL – No Observed Effect Level, this is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise, and
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.’ (Core document: C5 para 2.20)

2.20. The NPSE extends the NOEL and LOAEL concepts of the NPPF to the concept of SOAEL - significant observed adverse effect level (Core document: C5 para 2.21). This is the level above which significant adverse effects on health and quality of life occur. Paragraph 2.24 state that *“[t]he second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur”*

2.21. The policy does not define specific noise limits for LOAEL and SOAEL. Therefore, guidance from other acoustic standards must be employed to determine suitable levels within the overall principal of the National Planning Policy Framework; such as ProPG: 2017, BS 8233: 2014, or BS4142+A1: 2019.

2.22. **Planning and Noise, Professional Practice Guidance on Planning and Noise for New Residential Development (ProPG): 2017** (Core document: C10)

- 2.23. The ProPG: Planning and Noise, Professional Practice Guidance on Planning and Noise for New Residential Development was released in 2017. ProPG: 2017 aims to consider noise in relation to the planning process and encourages good acoustic design at an early stage. The guidance aims to protect people from the harmful effects of noise. The guidance document provides recommendations and is to be taken into account with other acoustic guidance.
- 2.24. Section 2.13-2.15 of ProPG: 2017 (Core document: C10) further gives advice on proposed residential being located close to industrial or commercial noise sources and states that *“Where industrial or commercial noise is present on the site and is considered to be “dominant” [...] then regard should be had to the guidance in BS 4142: 2014”*.
- 2.25. **BS 4142: 2014 +A1: 2019** (Core document: C9)
- 2.26. BS 4142: 2014 +A1: 2019 “Methods for Rating and Assessing Industrial and Commercial Sound” presents a method for assessing the significance and possible adverse impact due to an industrial or commercial noise source, based on a comparison of the source noise levels and the background noise levels, both of which are measured or predicted at a noise sensitive receiver e.g. a residential property.
- 2.26.1. The purpose of assessing the site in relation to BS4142: 2014 +A1:2019 is to give an indication of the likely suitability of the site for development and determine the potential impact the industrial premises will have upon the proposed residential within the site context.
- 2.27. The specific noise level due to the source is determined, with a series of corrections for tonality, impulsivity, intermittency or any other unusual characteristic. This can result in a maximum total correction of +21dB being added if the new noise source demonstrates all the above characteristics. This provides a numerical figure which identifies how noticeable something may be. This numerical figure is then considered in relation to the site context and setting to determine the potential impact.
- 2.28. The significance of the new noise source and the likelihood of any adverse impact is determined in accordance with the following advice in section 11 (Core document: C9):
- “The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.*
- *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."*

2.29. **BS 8233: 2014** (Core Document: C8)

2.30. BS 8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' (Core Document: C8) has been referred to by the Local Authority in their Statement of Case in relation to if an acceptable internal environment can be achieved. BS 8233: 2014 provides references and guideline values for desirable indoor ambient noise levels for dwellings as shown in Table 2.2 below.

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

Table 2.2 BS 8233: 2014 Desirable Internal Ambient Noise Levels for Dwellings (Core Document: C8, Table 4 page 24)

2.31. The internal ambient noise levels as shown in table 2.2, have been referred to be the local authority in their statement of case and draft conditions in relation to internal noise levels and are therefore considered acceptable within this assessment.

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

2.33. BS 8233: 2014 s.7.7.3.2. states that *"for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed an upper guideline value of 55dB L_{Aeq} , which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances...in higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited"*. (Core Document: C8 para 7.7.3.2)

- 2.33.1. Although this guidance principally relates to constant noise sources, such as road traffic, the external noise criteria has been utilised here in the absence of other more suitable guidance. This guidance has been used in conjunction with BS 4142: 2014 +A1: 2019 (Core Document: C9).

3. ENVIRONMENTAL NOISE SURVEY METHODOLOGY

3.1. Attended Noise Surveys

- 3.2. The purpose of undertaking manual measurements was to obtain accurate measurements of the sound levels and characteristics of the noise sources coming from Benfleet Scrap. This information has then been utilised in noise models to predict the influence of the existing scrapyards on a number of proposed and existing noise sensitive receptors (NSR).
- 3.3. A number of existing noise sensitive receptors (NSR) have been considered to determine the potential impact of the existing scrapyards. The impact on these existing NSRs has also been considered, to determine if their noise climate is likely to vary and be influenced by the development.
- 3.4. In January 2023, I attended site and undertook attended environmental noise surveys at four measurement locations representative of different existing and proposed premises (see **Appendix A**). The attended measurement position 1 and position 4 were chosen as these are in-line with the front façade of the residential premises to be located closest to Benfleet Scrap and specifically the baler. The source noise from the baler is also predominantly emitted in this north-easterly direction. The manual measurement position 2 was chosen as the levels measured here would be representative of those received at the existing receptors, Heston Lodge (NSR1). Manual measurement 3 was chosen as it is the front façade of the proposed residential properties at the furthest block of flats in line with the direction of the noise emission from the baler.
- 3.5. The surveys were undertaken between 10:00-16:00 hours on Wednesday 11th January 2023 and between 12:30-15:00 hours on Tuesday 17th January 2023.
- 3.6. Manual measurements were undertaken over 2 periods in order to augment and validate the previous surveys and unattended data. The manual and unattended measurements have been utilised to undertake the noise impact assessment. Monitoring positions remained the same on both days of monitoring. Manual measurements were undertaken simultaneously at position 1 and 2, and position 3 and 4, with two acousticians in attendance on Tuesday 17th January 2023.
- 3.7. The sound level meter (SLM) was mounted onto a tripod approximately 1.5 metres above ground level and in free-field conditions at each position. The monitoring positions are identified on a site plan in

Appendix A. The position is considered to be representative of the ambient and background noise levels at the nearest identified NSR (either existing or proposed).

3.8. Whilst onsite undertaking the manual measurements on the first visit (11/01/23) the noise climate fluctuated, as is the norm. However, the noise sources observed were generally considered normal to the site location. The dominant noise sources were from road traffic, the school with children playing and noise from Benfleet Scrap when operational. During the first 2.5 hours of measurements the noise climate was made up of from a mixture of these noises. The visible and audible operations from Benfleet Scrap came from the long reach tracked excavators with grab relocating scrap materials, goods trucks tipping waste, a road sweeper and an occasional impact noise from something like an impact wrench or air chisel. During the last 1.5 hours of survey, baler was operated, this was visually and audibly heard. When in operation, this became the dominant noise source.

3.9. It is understood that the baler on the scrapyard is a LEFORT Koloss from the following range TS 700 to 1450 T. The exact model is unknown. No significant abnormal noise sources were identifiable. It is considered that the measured noise levels are representative of the noise climate given the location of the measurement position.

3.10. Whilst undertaking the manual measurements on the second visit (17/01/23), the baler onsite was operational for the entire manual survey. At time of survey the baler was, therefore, the dominant noise source. Road traffic, aircraft and other noise from Benfleet Scrap with lorries tipping or the tracked grab excavators were audible.

3.11. The equipment used for the manual measurements is summarised in Table 3.1.

Equipment	Description	Quantity	Serial Number	Date
Svantek 977	Class 1 automated logging sound level meter	1	69701	11/10/2023 & 17/01/2023
ACO Pacific 7052E	Class 1 ½" microphone	1	71699	11/10/2023 & 17/01/2023
Larson Davis CAL200	Class 1 Calibrator	1	20159	11/10/2023 & 17/01/2023
Svantek 977	Class 1 automated logging sound	1	34192	17/07/2023

	level meter			
ACO Pacific 7052E	Class 1 ½" microphone	1	32452	17/01/2023
Svantek SV33A	Class 1 Calibrator	1	58815	17/01/2023

Table 3.1 Description of Equipment used for Attended Noise Survey

3.12. Ambient, background and maximum noise levels (L_{Aeq} , L_{A10} , L_{A90} and L_{AmaxF} respectively) were measured throughout the noise survey in consecutive 15-minute periods.

3.13. The noise survey and measurements were conducted, wherever possible, in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. Measurements were made generally in accordance with ISO 1996-2:2017 '*Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels*'.

3.14. On the 11/01/2023, weather conditions were noted to be:

3.14.1. At position 1 (10:45-11:45) cold (approximately 8° Celsius), dry, with clear skies (approximately <10% cloud cover) and a predominately south westerly wind (approximately <7m/s, with stronger occasional gusts).

3.14.2. At position 2 (12:00-13:00) cold (approximately 8° Celsius), dry, with clear skies (approximately 30-40% cloud cover) and a south westerly wind (approximately <7m/s). It should be noted that due to topography and vegetation this position as screened from wind gusts.

3.14.3. At position 3 (13:15-14:15) cold (approximately 9° Celsius), dry, with cloudy skies (approximately 90% cloud cover) and a predominately south westerly wind (approximately <8m/s, with stronger more regular gusts).

3.14.4. At position 4 (14:30-15:30) cold (approximately 9° Celsius), generally dry, with cloudy skies (approximately 100% cloud cover) and a south westerly wind (approximately <8m/s, with stronger regular gusts). Two periods of light precipitation (rainfall) occurred during this measurement period between 14:29-14:37 and 15:20-15:23.

3.14.4.1. The precipitation was not considered to affect the results.

3.14.4.2. Although the wind speed was higher than preferred at position 1-4, (<5m/s), the wind direction means the noise of from the scrapyard would have been blown predominantly towards the monitoring position. The weather conditions are considered typical for January and the south-west wind direction is understood to be typical of weather in the UK for 70% of the time. These conditions were maintained throughout the manual measurement period.

3.15. Due to the adverse wind conditions on the 11th January 2023, further attended monitoring was undertaken on the 17th January 2023.

3.16. On the 17/01/2023, weather conditions were noted to be:

3.16.1. At position 1 and 2 (12:30-13:30) cold (approximately 1° Celsius), dry, with frost on the ground, with clear to cloudy skies (approximately 30-50% cloud cover) and a still wind (<5m/s).

3.16.2. At position 3 and 4 (13:45-14:45) cold (approximately 1° Celsius), dry, with frost on the ground, with partially cloudy skies (approximately 50-75% cloud cover) and a still wind conditions (<5m/s).

3.17. These weather conditions were checked against and confirmed by the use of the Met Office. Although the wind speed was higher than preferred (<5m/s), the wind direction means the noise of from the scrapyard would have been blown predominantly towards the monitoring positions. The weather conditions are considered typical for January and the south-west wind direction is understood to be typical of weather in the UK for the majority of the time. These conditions were maintained throughout the whole survey period and are considered reasonable for undertaking environmental noise measurements.

3.18. **Unattended Environmental Noise Surveys**

3.19. In addition to attended monitoring, I conducted an unmanned environmental noise survey at two measurement locations (see **Appendix A**). The surveys were undertaken between 16:10 hours on Friday 20th January 2023 and 09:10 on Monday 23rd January 2023.

3.20. The unattended survey was undertaken so as to obtain accurate background levels, without the scrapyard in operation and to cross check against the results of the attended measurement data.

3.21. Ambient, background and maximum sound pressure level measurements (L_{Aeq} , L_{A90} and $L_{Amax,F}$ respectively) were measured throughout the noise survey with continuous recorded 5-minute periods.. The unattended data was measured in 5 minute periods in line with BS 8233: 2014. This data has also been utilised to ensure the internal noise criteria, as provided in BS 8233: 2014 can be met.

3.22. The sound level meter (SLM) was mounted approximately 2m above ground and positioned in free-field conditions The position was chosen to gain representative noise levels from any noise sources as well as for monitoring equipment security reasons.

3.23. The equipment used for the unattended noise survey is summarised in Table 3.2.

Equipment	Description	Quantity	Serial Number
Svantek 977	Class 1 automated logging sound level meter	1	69716
ACO Pacific 7052E	Class 1 ½" microphone	1	70766
Larson Davis LxT SE	Class 1 automated logging sound level meter	1	0004960
377BO2 microphone	Class 1 ½" microphone	1	168839
Larson Davis CAL200	Class 1 Calibrator	1	20159

Table 3.2 Description of Equipment used for Noise Survey

3.24. The noise survey and measurements were conducted, in accordance with BS7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. Measurements were made generally in accordance with ISO 1996-2:2017 '*Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels*'.

3.25. Weather conditions were noted to be:

3.25.1. During install - cold (approximately 3° Celsius), dry, with clear skies (approximately 10% cloud cover) and a still wind (<5m/s).

3.25.2. Throughout install – cold (approximately -6-5° Celsius), generally dry,(with periods of frost), with clear skies (approximately 0-40% cloud cover) and a slight wind (<5m/s).

3.25.3. During collection - cold (approximately -2° Celsius), dry, with frost on the ground, with clear skies (approximately 10% cloud cover) and a still wind (<5m/s).

3.26. These weather conditions were checked against and confirmed by the use of the Met Office. These conditions were maintained throughout the whole survey period and are considered reasonable for undertaking environmental noise measurements.

4. NOISE SURVEY RESULTS

4.1. Manual Measurement Results

4.2. The ambient and background noise levels at the measurement position as seen in **Appendix A** are provided below and have been based on an analysis of the monitoring data.

4.3. A summary of the data results is provided in Table 4.1.

	Ambient Noise Level $L_{Aeq,T}$	Maximum Noise Level $L_{Amax,F}$	Typical Background Noise Level $L_{A90,T}$
Position 1 11/1/23 11:00-12:00	58 dB	82 dB	52 dB
Position 2 11/1/23 12:15-13:15	56 dB	79 dB	51 dB
Position 3 11/1/23 13:30-14:30	60 dB	83 dB	52 dB
Position 4 11/1/23 14:45-15:45	68 dB	103 dB	63 dB
Position 1 17/1/23 12:30-13:30	66 dB	91 dB	61 dB
Position 2 17/1/23 12:30-13:30	59 dB	80 dB	55 dB
Position 3 17/1/23 13:45-14:45	62 dB	86 dB	55 dB
Position 4 17/1/23 13:45-14:45	68 dB	94 dB	60 dB

Table 4.1 Summary of noise manual measurement data

4.4. Due to the adverse weather conditions during the attended measurements on the 11th of January 2023, the acoustic calculations and assessments shall rely on the measurements undertaken on the 17th of January 2023 (highlighted in the grey box).

4.5. These noise levels are considered normal to the site location. No significant abnormal noise sources were identifiable during installation or collection of the equipment. It is considered that the measured noise levels are representative given the location of the measurement position.

4.6. Subjective Comments:

4.7. Although it was observed on site and confirmed by the client that a 5m high concrete wall borders part of Benfleet scrap to the east of its boundary, the stacks of metal were observed to be higher than this, and long reach tracked grabbers were noted to be operating above the height of the wall. The 5m wall is also noted to end before the location of the baler (notably the noisiest operation on the scrapyard). The acoustic wall then continues to the northern boundary at a lower height, tapering down to approximately 2.5m.

4.8. A summary of the dominant noise sources per position is given in table 4.2, followed by further subjective comments. It is assumed operations of Benfleet Scrap were typical activities, at time of assessment.

4.9. It is understood that Benfleet Scrap are licensed to operate between 07:30 – 18:30 Monday to Friday and 07:30-17:30 on Saturdays.

	Monitoring Positions			
	Position 1	Position 2	Position 3	Position 4
Summary of dominant Noise Sources 11/1/2023	School Children Road traffic on nearby network. Noise of Scrap material handling and translocation using tracked excavators and long reach mechanical grabs.	Road sweeper audible within scrapyard. Children playing at nearest school. Road traffic. Lorry tips in scrapyard. Noise Scrap material handling and	Occasional horn/reversing beeper from Manor Trading Estate. Aircraft Road traffic including occasional sirens	Baler operational continuously for monitoring hour, fan noise dominant and slightly tonal. Tip of baler of material into machine creating a bang as material dropped into baler.

	Repetitive impact noise heard, periodically from towards front of Benfleet Scrap, something like an impact wrench or air chisel. Occasional horn/reversing beeper from Manor Trading Estate. Aircraft	translocation using tracked excavators and long reach mechanical grabs. Grabber closest appears to be loading crushed scrap into lorries. Baler switch on for a few minutes – dominant, nothing appeared to be crushed, just fans operational.	of emergency vehicles. Impact noise heard periodically from towards front of Benfleet Scrap, sounded like an impact wrench/air chisel. Scrap material handling and translocation using tracked excavators and long reach mechanical grabbers Baler switched on and began to be loaded halfway through measurement, becoming dominant background noise source.	Reversing beepers Occasional Horn Aircraft Noise from long range grabbers notable when dropping/throwing material from pile to pile, but engines, etc not audible over baler.
Summary of dominant noise sources 17/01/2023	Scrap material handling and translocation using tracked	Scrap material handling and translocation using tracked	Scrap material handling and translocation using tracked	Occasional horn/reversing beeper from

	excavators and long reach mechanical grabs	excavators and long reach mechanical grabbers.	excavators and long reach mechanical grabbers.	Manor Trading Estate.
	Baler operational: fan noise dominant along with intermittent bang as the baler tipped material into machine.	Baler operational: fan noise and tip of material.	Baler operational: fan noise and tip of material.	Baler operational: fan noise dominant along with intermittent bang as the baler tipped material into machine.
	Lorry tips.	Birdsong.	Birdsong.	Lorry tips.
			Occasional Horn	Aircraft.
				Horns intermittently on Manor Trading Estate.
				Distance hammer thud from Manor trading estate, audible when fans of baler quietened.

Table 4.2 Summary of subjective comments of the manual measurements

4.10. Unattended Results:

4.11. A summary of the calculated ambient, maximum and typical background long-term results can be found in table 4.3. The time histories can be found in **Appendix B** of the unattended survey results, which were undertaken between 16:10 on Friday 20th January 2023 and 09:10 hours on Monday 23rd January 2023.

	Measured Sound Pressure Level		
	Ambient Noise Level, $L_{Aeq,T}$	Maximum Noise Level, $L_{Max,F}$	Background Noise Level, $L_{A90,T}$
Position 1			
Licensed Hours Monday – Friday 07:30-18:30, Saturday 07:30-17:30	68 dB	97 dB	63 dB
Daytime Hour After Operations Monday 18:30-19:30 & Saturday 17:30-18:30	53 dB	59 dB	50 dB
Daytime (all) 07:00-23:00	63 dB	101 dB* 97dB	49 dB
Night-time (all) 23:00-07:00	48 dB	71 dB	42 dB
Position 2			
Licensed Hours Monday – Friday 07:30-18:30, Saturday 07:30-17:30	60 dB	88 dB	53 dB
Daytime Hour After Operations Monday 18:30-19:30 & Saturday 17:30-18:30	52 dB	61 dB	52 dB
Daytime (all) 07:00-23:00	56 dB	97 dB**	41 dB
Night-time (all) 23:00-07:00	48 dB	69 dB	50 dB

Table 4.3 Summary of unattended measurement data

*Anomaly result at 18:50 on Sunday, second highest max level result also recorded. Anomaly possibly due to wildlife next to Microphone, etc.

**Note: This highest L_{Max} level was recorded during the daytime hours but outside of Benfleet Scraps operational hours and thus not caused by Benfleet Scrap operations.

4.12. The results have been broken into different time periods for further analysis. The licensed hours have been calculated to allow a cross check and validation of the manual measurement results. In order to determine the typical background for the site when Benfleet Scrap is not in operation:

4.12.1. The typical level has been calculated from the hour after operations are licensed to cease. (Friday 18:30-19:30 & Saturday 17:30-18:30).

4.12.2. The day and night time levels have been calculated in order for the achievement of internal noise levels to be assessed.

4.13. The typical background has been calculated, from the hour after Benfleet Scrap is licensed to on Friday 18:30-19:30 and Saturday 17:30-18:30, at 50 dB $L_{A90,T}$ at position 1 and 52 dB $L_{A90,T}$ at position 2.

4.13.1. For robustness, the lowest of the two typical measured positions will be utilised. The typical 50dB $L_{A90,T}$ level will be utilised as the typical background onsite when the scrapyards are not in operation. It is also likely that the other industrial/commercial units on the Manor Trading Estate were operating at this time. It is understood that Hesten Daycare Centre and The Robert Drake Primary School do not operate in the evening time period.

4.13.2. The typical background is taken from Friday 18:30-19:30 and Saturday 17:30-18:30, as Benfleet Scrap operations did not completely cease for any hour-long period during attended measurements. Therefore the hour immediately after the cessation of Benfleet Scrap's licensed activities is considered most representative of typical sound levels affecting the site during the daytime period without noise from Benfleet Scrap. Utilising the hour after the licensed period, provides a robust assessment as many other noise sources (Hesten Lodge, the school, manor trading estate) which makes up the site context are understood to not be in operation or have a reduced level of operation. The histograms for typical background levels are displayed in **Appendix C**.

4.14. The L_{max} level has been recorded in the unattended and manual measurements to determine the maximum value the sound pressure reached during the measurement period, these are often instantaneous levels and have been utilised in the subjective assessment. BS 8233: 2014 (Core document: C8) does not provide specific guidance on night time $L_{Amax,F}$ criteria, however it is regularly still considered by local authorities for internal noise levels in bedrooms as seen in BS 8233: 1999, where it states that for suitable sleeping conditions, 45dB $L_{Amax,F}$ should not be exceeded by more than 10-15 times a night within a bedroom. The 10th not normally exceeded (NNE) L_{max} has been calculated for position 1 (the monitoring position closest to the nearest residential facades to Benfleet Scrap) at 58dB measured between 23:00 and 07:00 hours. This $L_{Amax,F}$ noise level then needs to be reduced to 45dB internally to comply with the night-time internal noise level, as seen in the window calculations (**Appendix E**).

4.14.1. The measured L_{Amax} night-time levels are not attributed to Benfleet Scrap, as the site is not in operation during the night-time period.

4.14.2. The highest daytime L_{Amax} level for position 1 was recorded on a Sunday, which is outside of the operational hours for Benfleet Scrap. This highest L_{Amax} level for position 2 was recorded

during the daytime hours but outside of Benfleet Scraps operational hours and thus not caused by Benfleet Scrap operations. It should also be noted that the measured L_{max} levels may not have been caused by Benfleet Scrap or other operators on Manor Trading Estates. The source of these maximum levels cannot be determined, as the survey was unattended.

4.15. Characteristic Penalties

4.16. The following penalty additions have been added to the operations of the scrapyard.

4.16.1. A penalty addition has not been added to the site operations for intermittency, or any other noise characteristics. This is due to the plant being on when assessed for the entirety of the 1-hour measurement.

4.16.2. Penalty additions have also been added for impulsivity due to the audible 'clanging' of metal, when the metal was tipped into the machine, or relocated onsite.

4.16.3. A penalty has been applied for tonality as a slight tonal hum could be heard from the noise sources. The tonality was only just perceptible, so +2dB penalties has been incorporation.

	Intermittency	Impulsivity	Tonality	Any other Noise Characteristics
Penalties Added to Benfleet Scrap operation	0*	+6	+2	0

*The baler running continuously in one hour period within acoustic calculations.

Table 4.4 – Penalties applied to Benfleet Scrapyard

5. CREATION OF NOISE MODEL AND OUTPUTS

5.1. Noise modelling has been undertaken using SoundPLAN Essential 5.1 to assess the noise impact from the scrapyard, which was the dominant noise source audible whilst I was onsite and to determine the levels at the proposed development façade and external amenity areas.

5.2. Noise Modelling Input

5.3. The noise model takes into account local topography, distance attenuation and screening provision of existing and/or proposed features (e.g. noise barriers/extension of a building). The height of existing adjacent buildings have been estimated through the use of the on-site survey and site photographs and included within the model. The nearby buildings are low level, typically 1-2 storeys. Therefore, noise modelling emission levels are considered representative for each storey.

5.4. The proposed building height as shown on the illustrative masterplan have been input at 2-storeys for the majority of the proposed residential premises with the exception of 1 block which is 3 storeys (9m high). The industrial units have been input at 6m in height. The commercial/business units acting as the acoustic barrier have been input at 12m in height.

5.5. Based on manual measurement levels the predicted noise emissions from the site have been determined by inputting a noise emission sound power level for the baler and long-reach tracked excavators. The sound power level has been inputted as point sources, as shown in **Appendix D**. For the long-reach excavators, the point source has been inputted in the locations they were predominantly noted to be operating, as observed during my site visits. In order to account for the directivity of source of the balers motors and body of the machine. The body of machine has been input into the model as a 4m building, with point source on the side at 3m. The baler is the dominant noise source when in operation and remains in-situ.

5.6. Penalty corrections were applied in-line with BS4142: 2014 +A19: 2019. More information on the penalties included are in section 4.15. **Appendix D5-D8** have had the operations from the scrapyard corrected for on/off time in line with their Monday-Friday licensed operational hours.

5.7. The sound spectra used for the baler and excavators are as stated in BS5228-1:2009+A1:2014. The levels were then amplified to match the attended measurement results.

5.8. The equipment referenced from BS5228-1:2009+A1:2014 are as follows:

5.8.1. Appendix C8.1 - Baler 392Kw

5.8.2. Appendix C8.10 – Tracked Excavator 96Kw

5.9. Noise Modelling Assumptions

5.10. In interpolating the sound levels across the site we have made the following assumptions:

- The total sound level recorded only stems from the noise sources present in the scrapyards.
- The noise source within the metal recycling facility is assumed to be in operation for 100% of the maximum daily licenced hours (07:30 – 18:30).
- Source height for the excavators is 2 metres and 3 metres for the baler.
- Receiver heights are set at 1.5 metres height for the existing identical to the manual measurement height. Receiver heights for the proposed receptors have been set to ground and first floor levels.
- Receiver points are 1 metre from the building façade.
- No transmission of sound through the barrier.
- No transmission under the barrier.
- Calculations with an acoustic building barrier installed at 12 metres to the rear of the proposed offices and an acoustic barrier (fence) of 2.4 metres height between the proposed industrial and residential buildings.
- Where stated, modelling includes the BS 4142: 2014 +A1: 2019 characteristic penalties as identified in table 6.1.

5.11. Noise Model Outputs

5.12. Receiver positions representative of the existing noise sensitive receptors and proposed noise sensitive receptors have been identified. The impact of the scrapyards with and without the penalty characteristics have then been predicted (reference to noise models can be found in 5.15).

5.13. The unattended data has been utilised to assess the predicted impact against the typical background level taken from the hour after scrap yard operations ceased (Monday 18:30-19:30 & Saturday 17:30-18:30).

5.14. The lowest contour level on the noise maps has been set to the typical calculated background levels (as seen in **Appendix D**).

5.15. Reference to Noise Models

5.16. The operations have then been modelled to illustrate the noise level contours over distance and topography effects to the NSR's. The noise models provided give the specific levels as a point and provide a noise map showing the contours of the predicted noise emission levels across the site.

5.17. The noise models can be found in **Appendix D** and shows the layout of the predicted sound transmission from the scrapyard currently and with the proposed development:

- Appendix D1 – Points Map of Existing Measured Site Conditions (no penalties included)
- Appendix D2 – Noise Map Existing Measured Site Conditions (no penalties included)
- Appendix D3 – Points Map Existing Measured Site Conditions incorporating 8dB penalties
- Appendix D4 – Noise Map Existing Measured Site Conditions incorporating 8dB penalties
- Appendix D5 – Points Map Proposed Mixed-use Scheme Predicted Noise Climate, (no penalties added)
- Appendix D6 – Noise Map Proposed Mixed-use Scheme Predicted Noise Climate, (no Penalties added) Site Conditions, (no penalties included)
- Appendix D7 – Points Map Proposed Mixed-use Scheme Predicted Noise Climate Incorporating 8dB Penalties
- Appendix D8 – Noise Map Mixed-use Scheme Predicted Noise Climate Incorporating 8dB penalties

6. REASON FOR REFUSAL 3: IMPACT OF NOISE FROM MANOR TRADING ESTATE ON PROPOSED COMMERCIAL AND RESIDENTIAL DEVELOPMENT

6.1. Site Suitability

6.2. The suitability of this site for a mixed-use scheme of residential, commercial/business and industrial units has been assessed in accordance with BS 4142:2014+A1:2019 (Core Document: C9).

6.3. The site is located in an urban area, close to major infrastructure and good transport links, which can be desirable for residents and commercial occupiers.

6.4. Although ProPG: 2017 (section 1.3) guidance *“is restricted to the consideration of new residential development that will be exposed predominantly to airborne noise from transport sources”* (Core document: C10), the concept for good acoustic design can and should be applied to attenuate noise sources other than Road Traffic, in line with NPPF: 2021.

6.5. The site has been acoustically designed so that the proposed commercial business units, provide screening from existing Manor Trading Estate operations, specifically Benfleet Scrap. These commercial/business units will provide a 12m high barrier, breaking line of sight, so as to significantly reduce noise from the Manor Trading Estate. This will not eliminate the noise associated with Benfleet Scrap & Manor Trading estate, but shall help to reduce levels, minimising and mitigating the adverse impacts on the receptors.

6.6. Noise Impact Assessment of Existing Receptors: existing situation

6.7. The impact on two existing NSR's has been considered with and without the proposed development.

6.8. NSR1 has been considered as Hesten Day Centre for adults with learning disabilities. This is situated to the south of the site. The nearest façade is approximately 47m from the boundary of the scrapyards. NSR2 has been considered as a residential premises located to the east of the site off Keswick Road, with its external amenity at approximately 159m from Benfleet Scrap boundary and nearest façade approximately 186m.

6.9. NSR1 and NSR2 have direct line of site to the scrapyard boundary.

6.10. Detailed calculations to predict the noise level from the scrapyard at the existing NSR's are given in **Appendix D3**. The rating noise level at NSR1 is 65 dB $L_{A,r,Tr}$ and 15dB(A) above the assessed background noise level (50 dB $L_{A90,T}$), and at NSR2 is 64-65 dB $L_{A,r,Tr}$ and 14-15 dB(A) above the assessed background noise level (50 dB $L_{A90,T}$).

6.11. **Noise Impact Assessment of Existing Receptors: with Proposed Development.**

6.12. The proposed development is to be located between the existing scrapyard and NSR's, including the 12m high building barrier acoustically designed to mitigate noise from the scrapyard at the receptors. The impact of the scrapyard on the existing receptors with the proposed building barrier has therefore been assessed. The penalty additions as identified in table 6.2 have been included within the calculations. The acoustic calculations can be found in **Appendix D7-D8**.

6.13. With the proposed development in situ, the predicted rating noise level at NSR1 is 58 dB $L_{A,r,Tr}$ and 8 dB(A) above the assessed background noise level (50 dB $L_{A90,T}$), and at NSR2 is 53-54dB $L_{A,r,Tr}$ and 3-4dB(A) above the assessed background noise level (50 dB $L_{A90,T}$).

6.13.1. It is important to note that this represents a significant noise reduction and improved soundscape for the existing noise sensitive receptors.

6.14. **Noise Impact Assessment of Proposed Receptors**

6.15. In order to determine potential impact of the scrapyard on the proposed residential receptors, manual measurements were undertaken at three points representing the facades closest to the scrapyard as shown on the illustrative masterplan. The impact of the scrapyard has been compared to assessed background noise level and includes mitigation from the proposed building barrier at NSR3-5. Calculations of the noise impact at the proposed residential receptor can be found in **Appendix D7-D8**. The penalty additions as shown in table 5.3 have been included within the calculations.

6.16. NSR3 has been set to the front western façade of the nearest proposed residential block located closest to the scrapyard at approximately 58m. NSR4 has been set to the center of the proposed curved residential premises to the far east of the site, located approximately 80m from the scrapyard. NSR5 is located to the north of the site in the centre of the proposed residential here. This is approximately 80m from the scrapyard.

- 6.17. As discussed earlier the introduction of 12m high commercial building acting as a barrier will assist on reducing noise levels associated with Benfleet Scrap & Manor Trading estate and help to minimise and mitigate the adverse impacts on the receptors.
- 6.18. The rating noise level at NSR3 is 59-60dB $L_{A,r,Tr}$ and 9-10dB(A) above the assessed background noise level (50 dB $L_{A90,T}$), at NSR4 is 52dB $L_{A,r,Tr}$ and 2dB(A) above the assessed background noise level (50 dB $L_{A90,T}$) and at NSR5 is 58dB $L_{A,r,Tr}$ and 8dB(A) above the assessed background noise level (50 dB $L_{A90,T}$). In order to determine the level of impact this will provide, the site context needs to be considered.
- 6.19. It is important to note that in the context of this area, the proposed residential premises will benefit from a mitigated noise impact below that which is currently experienced by the majority of residents nearby (whose amenity will also be improved) as seen in section 6.6 and 6.11.
- 6.20. As stated in BS4142: 2014 +A1: 2019 (Core Document C9) *“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.”*
- 6.21. **Site Context**
- 6.22. This scheme has sought to mitigate and reduce to a minimum potential adverse impacts resulting from existing noise on the new development.
- 6.23. When assessing under BS4142: 2014 (core Document: C9), consideration should be given to the context of the site. In order to determine the impact of the neighbouring operations on the proposed residential. The context of the soundscape is dictated by the local setting.
- 6.24. It is often the case, that towns are formed from a mixture of commercial, industrial, entertainment establishments located close to residential dwellings and they co-exist on the most part peacefully. The proposal is for a mixed-use scheme and the existing setting dictates the context of the soundscape.
- 6.25. The proposed development is within an urban setting with a number of amenities close by which contribute to the ambient and background noise levels, future occupiers would thus anticipate a level of noise associated with these desirable amenities (for example the school, places of employment and good road network) as well as noise associated with the adjacent commercial and industrial premises.

- 6.26. Currently, the site forms a buffer zone protection between the scrapyard and existing NSR's. The proposal is to replace this buffer zone with a physical barrier (12m building barrier) which by mass and breaking-line-of-sight, will provide greater attenuation. As identified within this report an added benefit in the noise climate/soundscape can be seen to the existing receptors. Principally, the physical barrier will provide an improvement to the noise climate of the proposed residential, which will be more beneficial than when compared to what the existing receptors currently have. Where the impact needs to be modified due to context, the following factors should be considered *"The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as: i) facade insulation treatment; ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and iii) acoustic screening"* (Core Document: C9, sub para 3). The proposed building barrier provides acoustic screening. The internal design measures are further discussed in section 6.34.
- 6.27. Noise management decisions should be made within the wider context and 'alongside other relevant issues and not to be considered in isolation' as directed in the NPSE: 2012.
- 6.28. The assessment is undertaken at the most affected existing residential windows. The impact on all other nearby residential windows will be lower due to screening and distance attenuation.
- 6.29. During detailed design stage further measures could be undertaken to help mitigate the impact on the internal receptors such as orientating dwellings within the block so that the most sensitive habitable rooms (bedrooms, living rooms) are located on the façade furthest away from Benfleet Scrap and less sensitive rooms; hallways, kitchens, cloakrooms, landings and bathrooms, are located on the façade closest to Benfleet Scrap. Alternatively, where possible habitable rooms with dual aspect windows could also be provided.
- 6.30. As the rating level of the specific sound source exceeds the background, the context in which the sound occurs has been considered and an 'adverse impact' considered to occur under BS 4142: 2014.
- 6.31. As the operation of the existing businesses (mainly Benfleet Scrap as seen from the manual measurements) could have significant impact on the proposed mixed-use scheme, acoustic design has been given to the layout and location of the proposed development, incorporating a building barrier and providing quieter community external amenity areas.

6.32. When considering the context of the site and predicted soundscape a LOAEL can be considered on the site (NPPF & NPSE (Core Document:C5)). This is due to the likelihood that the noise will be present and audible but not disruptive on the development .There is no *“potential for [night-time] sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep”* (Core Document: C7, Para 5) on the proposed development because Benfleet Scrap is not operational after 18:30 Monday to Friday, or after 17:30 on Saturdays. It is also unlikely that *“noise will causes a material change in behaviour, attitude or other physiological response”* (Core Document: C7, Para 5), and is therefore not considered a SOAEL. Considering the guidance provided in the PPG Noise exposure hierarchy, where a LOAEL is present, then action needs to be undertaken to *‘mitigate and reduce levels to a minimum’* (Core Document:C7).

6.33. Further mitigation to reduce the effect to a minimum is considered by mitigating the internal noise environment and external amenity.

6.34. Residential receptors: Internal noise environment

6.35. The appeal proposal is for an outline scheme, and detailed design will be considered at later reserved matter stage. Therefore, the analysis in this proof is provided to demonstrate that a design solution is feasible at the site for the purposes of outline consent. The local authority have referred to internal noise levels needing to meet requirements of BS 8233 (Core Document: C8) within their statement of case/draft conditions and so those standards shall be utilised here.

6.36. Sound reduction performance calculations have been undertaken to determine the internal noise levels and performance of the glazed and non-glazed elements in line with BS 8233: 2014 (Core Document: C8). The specification has been adopted to achieve the night-time level (23:00 – 07:00 hours) for bedrooms, 30dB $L_{Aeq\ 8hour}$ and for the daytime (07:00 – 23:00) for living rooms, 35dB $L_{Aeq\ 16hour}$. Values of the night-time period have been also applied to the calculated sound reduction index of the glazed element to confirm the limit of 45 $L_{Amax,F}$, is also achieved for single events during the night.

6.37. At the outline planning stage, it is often the case that architectural internal layouts have not been produced therefore the following assumptions have been made:

- The façade construction is proposed to be of brick and block.
- **Bedroom dimensions:**
 - Dimensions = 3.5m x 3m x 2.4m

- Volume = 25.2m³
- External façade = 15.6m²
- Glazing = 6m²
- **Living Room dimensions:**
 - Dimensions = 4m x 3.5m x 2.4m
 - Volume = 33.6m³
 - External façade = 18m²
 - Glazing = 8m²
- The reference reverberation time of 0.5 second is utilised, as stated in BS8233: 2014 and assumes that the dwelling shall have carpeted, fully furnished, occupied bedroom(s).

6.38. This assessment utilises the unattended noise monitoring data from position 1 to ensure the required internal levels can be met at the proposed residential closest to the scrapyards. The unattended monitoring position is representative of the proposed closest residential receptor facades.

6.39. Window performance calculations (**Appendix E**) indicate based on monitoring data, façade materials, predicted room sizes and volumes, a minimum of 38dB Rw noise reduction is required for all window elements of the proposed residential closest to Manor Trading Estate. Further glazing calculations should be undertaken at acoustic design stage, taking into account the room layouts. Note: lower performing glazing may be suitable to the proposed development further away. Window performance calculations have been based on the measured L_{Aeq} and L_{Amax,NNE} noise levels as recommended by BS 8233:2014 (Core Document: C8).

6.40. It is understood that full details regarding a ventilation strategy are not available. ProPG (Core document: C10) para 2.33 states *“that the acoustic performance of the building envelope will be reduced in the event windows are opened for ventilation or cooling purposes, typically reducing the insulation to no more than 10 to 15 dB(A)”*. Considering the predicted noise levels at NSR4 and NSR5 (as seen in **Appendix D5**) then reducing levels by 10-15 dB would enable internal levels to be acceptable. Levels at NSR3 (see **Appendix D5**) are predicted to just exceed BS8233: 2014 (core document: C8) internal noise levels when taking into account a 10-15dB reduction for an openable window.

6.40.1. It should be noted that Note 7 of this guidance also states: *“Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the*

internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved” (Core document: C8).

- 6.41. Acoustic trickle vents are available that would work with the combined window specification to enable BS 8233: 2014 internal noise levels to be met, as seen from **Appendix E**. Should passive ventilation in the form of acoustic trickle vents be chosen then the unit will need to afford a minimum acoustic attenuation performance of $49 D_{N,E,w}$. Windows should still remain openable to allow for purge ventilation of VOCs, generated during activities such as repainting, occupiers’ choice and for fire Means of Escape requirements.
- 6.42. The ventilation strategy will need to meet the requirements of Building Regulations Approved Document F. Further ventilation calculations should be undertaken at acoustic design stage, taking into account the room layouts.
- 6.43. **Proposed Residential Receptors: External Amenity**
- 6.44. The suitability of the residential external amenity is further assessed in with the external amenity guidance given in BS 8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings’ (core document: C8) along with considering the impact as seen in BS 4142: 2014 +A1: 2019 (core document: C9).
- 6.45. BS 8233: 2014 states that *‘for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed $50dB L_{Aeq,T}$ with an upper guideline value of $55dB L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances...in higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited’* (Core document: C8, para 7.7.3.2).
- 6.46. Utilising noise modelling, it is predicted that the external amenity areas will meet BS 8233: 2014 guidance levels, with the proposed scheme incorporating the building barrier.

- 6.47. The site design enables the majority of the properties external amenities to be located on the sides furthest away from Manor Trading Estate. The residential dwellings will provide further screening, helping to improve the soundscape within external amenity gardens.
- 6.48. **Appendix D5** shows the predicted external amenity levels across the site, with no penalties included, to enable assessment against BS 8233: 2014. The 12m high building barrier is predicted to sufficiently attenuate noise from the scrap yard and adjacent Manor Trading Estate to reduce noise levels to between 44-50dB which is below the desirable noise criteria in BS 8233: 2014 (Core Document C8).
- 6.49. ProPG: 2017 (Core Document C10, element 3, 3(v)) states: *“Where, despite following a good acoustic design process, significant adverse noise impacts remain on any private external amenity space (e.g. garden or balcony) then that impact may be partially offset if the residents are provided, through the design of the development or the planning process, with access to:*
- *A relatively quiet facade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or*
 - *A relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or ProPG Planning & Noise: New Residential Development May 2017 2. Recommended Approach for New Residential Development 18 large open balcony in a different, protected, location); and/or*
 - *A relatively quiet, protected, nearby, external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or*
 - *A relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minute walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations.”*
- 6.50. It is understood that areas of public open space have been incorporated into the scheme, to provide a *“relatively quiet, protected, publicly accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5-minute walking distance)”* (Core Document C10, element 3, 3(v)). Two external amenity areas on the site have been identified to off-set the potential adverse noise impact on the enjoyment of the private external amenity. The first is situated to the north-east and the noise levels from Benfleet Scrap are predicted to be below 50 dB (see **Appendix D6**) for this communal external amenity area.

- 6.51. The second external amenity area is located to the south of the site shown on the masterplan layout. The noise levels from Benfleet Scrap are predicted to be below 50 dB (see **Appendix D6**) for this southern communal external amenity area. The communal external amenity areas are predicted to meet the requirements under BS 8233: 2014.
- 6.52. Corrections for characteristic penalties should not be included when assessing the external amenity under BS 8233: 2014, however they do should be considered under BS 4142: 2014 +A1: 2019 when considering the site suitability. The first external amenity with penalty characteristic applied is predicted to be in the 53-56 dB contour, as seen in **Appendix D8**. The second external amenity area is predicted to be in the 50-53 dB and 53-56 dB contour, as seen in **Appendix D8**, including character penalties.
- 6.53. Therefore when considering the rating noise level on the community external amenity areas, these are to be considered as a 'low to adverse impact'. It should be noted that with the building barrier in situ the penalty characteristics are likely to reduce due to attenuation, screening and masking, therefore the impact is likely to reduce on residents utilising the external amenity. Especially with the southern communal external amenity where road noise, is likely to become the dominant noise source.
- 6.54. It can also be noted from the time history of the unattended data in **Appendix B** that noise levels outside of the scrapyard significantly reduce, such as in the early evenings, and Sundays, which is when most residential occupiers are likely to use the external amenity areas. External amenity users during these periods are more likely to be subjected to noise from more constant noise sources, such as road traffic, as Benfleet Scrap is not licensed to operate in these hours.
- 6.55. It is important to note that the proposed external amenity will benefit from a mitigated noise impact below that which is currently experienced by the majority of residents nearby (whose amenity will also be improved).
- 6.56. **Commercial receptors from Manor Trading Estate**
- 6.57. The operators for the proposed industrial /commercial units have not yet identified as the planning application is currently at outline planning stage. It is identified that there will be 3x Class E (Commercial, Business and Service) units, 1x B2 (General Industrial) unit and 2x B8 (Storage and Distribution) units. The class of these units means the future occupier use is unlikely to create levels

that exceed those that are already on the Manor Trading Estate. Once uses have been established and at detailed design stage, then further acoustic calculations can be undertaken to establish any impact on the existing NSR's and Businesses within Manor Trading Estate and provide mitigation. Any plant noise, for example air conditioning units, can be mitigated with good acoustic design.

6.58. An acoustic barrier 2.4m in height is proposed between the proposed residential premises and industrial unit as seen on the noise models of the proposed scheme.

6.59. BS 8233: 2014 (core Document C8) para 7.3 states: “[f]or each space there might be a range of noise levels that are considered acceptable. The designer should select a level appropriate for the particular circumstances. In noise-making workshops, etc., the activity noise is dominant and so the internal ambient noise level is not critical. In most other situations internal ambient noise is important.”

6.60. For outline planning appeal, it has been assumed that the units within the 12m high building barrier, will be open-plan offices as the internal levels for this are the most stringent as seen in table 6.1.

Table 2 Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important

Objective	Typical situations	Design range $L_{Aeq,T}$ dB
Typical noise levels for acoustic privacy in shared spaces	Restaurant	40 – 55
	Open plan office	45 – 50
	Night club, public house	40 – 45
	Ballroom, banqueting hall	35 – 40
	Living room	35 – 40

NOTE See Noise control in building services [28] and [BS EN ISO 3382](#)

Table 6.1 BS 8233: 2014 Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important (Core Document: C8, Table 4 page 24)

6.61. By calculation utilising the sound power modelled baler level of 122dB (L_w) and requiring an internal level $L_{Aeq,T}$ of 45-50dB (L_p), indicates that a minimum level difference of 61dB is required by the external facade in order to meet the internal noise desirable guideline for open plan offices as stated in BS 8233:2014.

6.62. BS 8233: 2014 (Core document: C8) Table E.1A – laboratory airborne sound insulation of walls and partitions evidences achieving a level difference of 61dB from external to internal is possible and

provides the following example construction of a design that would achieve in excess of 60dB+ attenuation.

60+	a) Two separate frames of metal 48 mm "C" studs 600 mm centres, clad both sides with a double layer 15 mm plasterboard, joints filled and perimeters sealed. Minimum overall width of 200 mm. Mineral fibre within cavity. Approximate mass per unit area 55 kg/m ² .
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Table 6.2 - E.1A – laboratory airborne sound insulation of walls (Source BS 8233: 2014 Core Document: C8)

6.63. Further calculations will need to be undertaken at detailed design stage, once future use and layout are known. Alternative construction methods might also be suitable. Glazing should not be located on the rear façade as this is unlikely to provide sufficient noise attenuation.

6.64. Through good acoustic design it is possible to locate non-noise-sensitive areas, such as hallways, storerooms and stairwells, to the rear of the proposed commercial so as to further shield the occupants internally at detailed design stage.

6.65. It is believed sufficient noise attenuation could be provided by the building façade to ensure internal requirements as seen under BS 8233: 2014 (core document: C8) are met.

6.66. Typically noise emissions from proposed Class E units are typical of noise heard within an urban location.

6.50. Conclusions

6.51. In conclusion, a low to adverse impact may be noted numerically within the BS 4142: 2014 +A1:2019 (Core Document: C9) calculations, but in order to determine the impact the numerical data needs to be considered within the site context, as also seen from within the NPPF: 2021, NPSE: 2012 (core document: C5), ProPG: 2017 (core document: C10). NSR1 and NSR2 along with other existing premises will benefit from an enhanced soundscape, with a reduction in the impact of noise from Benfleet Scrap by the introduction of the building barrier. The proposed residential receptors (NSR3-5) are predicted to have a better noise environment, than the existing premises (NSR1-2) currently do, due to the proposed layout and architectural design. The rating levels are predicted to be below the existing NSR's external amenity. Areas of communal external amenity will also be provided that are further shielded from Benfleet Scrap.

- 6.52. The internal noise levels for the proposed residential receptors can be designed so as to meet the internal noise requirements of BS 8233: 2014 (Core Document C8).
- 6.53. The internal noise levels for the proposed commercial receptors can be designed so as to meet the internal noise requirements of BS 8233: 2014 (Core Document C8), once the use of the units within the building barrier have been identified.

7. REASON FOR REFUSAL 2: IMPACT OF PROPOSED DEVELOPMENT ON SAFEGUARDED WASTE SITES

- 7.1. The 'Agent of change' principle as seen in paragraph 187 of the NPPF has been introduced to protect existing businesses, commercial and industrial units
- 7.2. As seen under PPG para 9 (Core Document: C7) the mitigation being proposed under the agent of change principle needs to be clearly defined. The proposed layout has been designed to provide distance between the most noise sensitive receptors and includes a purpose built building barrier, providing mitigation from the existing industrial premises, specifically Benfleet Scrap. Further mitigation of noise insulation of the buildings, has also been considered and shown to be able to achieve requirements, as seen in section 6.
- 7.3. As previously noted, it is likely that with the building barrier in situ the audibility of specific characteristics, such as tonality, impulsivity are likely to change and become less noticeable in the new environment, therefore reducing the impact or any 'annoyance' factor and thus reducing the likelihood of complaints.
- 7.4. As per the previous discussion, an acceptable acoustic environment can be achieved on the site. Although the rating level of the specific sound source exceeds the background sound level, the context in which the sound occurs has also been considered and only an 'adverse impact' considered to occur under BS 4142: 2014. It has been illustrated that the external facades of the residential and commercial properties can be designed at detailed design stage to ensure the internal requirements under BS 8233: 2014 (Core Document; C8) can be met. Therefore although a LOAEL can be seen, noise impact can be mitigated so as to provide an acceptable noise environment and thus it is unlikely that there will be a risk of complaints which will prejudice the operation of Benfleet Scrap.
- 7.5. Through assessing the site suitability for mixed-use development, it has been identified that the future soundscape with the proposed development will improve the existing receptors environment and that the proposed environment shall be better than currently exists.
- 7.6. Within the UK there are few sites that are not subjected to noise. Residential occupiers under a flight path would be expected to audibly experience a degree of aircraft noise, so too would a resident

located in a rural area likely to be subjected to agricultural noise. In both examples, it is unlikely the majority of occupiers would consider the noise disruptive as the source is part of the site context. Applying the same consideration to future occupiers on this site, there is a reduced likelihood of complaint from the scrapyard, or the school or nearby roads as these are known and anticipated noise sources. There is justification to this statement, as the majority of local residents have not had cause to raise formal complaint about noise stemming from Benfleet Scrap.

7.7. The following information has been received from the local authority in relation to existing noise complaints:

- 1.7.2015 – complaint of dust
- 13.3.2017 – complaint of rubbish and dust
- 1.11.2018 – complaint of late noisy works
- 1.5.2019 – complaint of late noisy works
- 25.6.2019 – complaint of out of hours noisy works
- 11.2.2019 – noise complaint
- 22.8.2019 – noise complaint
- 29.8.2019 – noise complaint
- 30.8.2019 – noise complaint
- 17.10.2019 – noise complaint
- 25.3.2020 – complaint of late noisy works
- 13.5.2020 – complaint of early noisy works
- 23.7.2020 – noise complaint
- 26.8.2021 – complaint of early noise
- 6.9.2021 – noise complaint

Figure 7.1: Source: 27/01/2022 Castle Point BC to Smart Planning

7.7.1. The location of the complaints are noted to be in all directions from Benfleet Scrap as seen from map in Appendix F which was provided by the Local Authority. The closest residential complaint is located approximately 200m away. The complainant addresses tend to be sporadic in location and occurrence, inferring that the cause of these complaints on Benfleet Scrap are not repetitive or from a stationary source on their yard. It appears from the provided information from Benfleet Scrap that these are one off instances and therefore it is unlikely that any action against Benfleet Scrap from the local authority would occur.

7.7.2. It is understood that 6 out of 13 of the received complaints are in response to Benfleet Scrap operating outside of their permitted licensed hours. The Environment Agency metal permit

limits permitted hours of operation (07:30-18:30 Monday – Friday and 07:30-17:30 Saturdays), therefore complaints of early and late working may indicate site operation which is in breach of the permit and this would be a matter for enforcement by the Environment Agency. It is important to note that the likely impact of noise should be assessed against what Benfleet Scrap are licensed to do as seen in paragraph 188 of the NPPF.

7.7.3. It should also be noted that from the provided information by the Local Authority, that there has been no complaints in the last 16 months from Benfleet Scrap.

7.7.4. No information has been provided that suggests a statutory nuisance has occurred or that any enforcement action has previously been undertaken.

7.8. It should also be noted that the scheme is one of mixed use including commercial, such as offices, to be constructed, along with the residential premises. This will introduce alternative noise sources, such as road traffic, pedestrians, residential noise, which will continue to mask the noise emissions from Benfleet Scrap and alter the existing noise climate.

8. UNCERTAINTY

- 8.1. The levels of uncertainty in the data and calculations are considered to be low given the robust exercise undertaken in noise monitoring and the confidence in the statistical analysis.
- 8.2. All measurements taken on-site by instrumentation are subject to a margin of uncertainty. This is relatively small, with a sound level meter manufacturer's margin of uncertainty at ± 1.1 dB. It is due to the tolerances associated with the Class 1 sound level meter and calibrator equipment used to measure background.
- 8.3. The meter and calibrator used have a traceable laboratory calibration and were field calibrated before and after the measurements.
- 8.4. Detailed calculations and resultant noise levels at the residential location are considered to be confidently predicted.
- 8.5. Uncertainties associated with the noise model using SoundPLAN Essential 5.1 are as follows;
- 8.5.1. Topographical map data, used to establish the digital ground model, was acquired from an external source
 - 8.5.2. Building heights and building floor heights have been estimated. Receptor positions at buildings have been estimated for ground floor and first floor levels to be best representative of noise sensitive receiver positions.
- 8.6. Uncertainty in the calculated impact has been reduced by the use of a well-established calculation method.

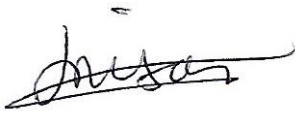
9. CONCLUSION & SUMMARY OF PROOF

- 9.1. I provide evidence in relation to acoustic matters at this on behalf of G&K Groundworks Ltd. G&K Groundworks submitted a planning application for the mixed use scheme comprising 68 residential dwellings, 1 general industrial unit, 2 storage and distribution units and commercial premises at Land East of Manor Trading Estate, South Benfleet, Essex SS7 4PS. Castle Point Borough Council, the Local Planning Authority, refused planning permission for the application (Reference 21/0532/OUT. This proof is undertaken as part of the planning appeal, to address reasons for refusal.
- 9.2. On the 11th and 17th of January 2023, I undertook manual measurements at four positions, representative of the nearest noise sensitive receptors. An unattended survey was also undertaken at two positions between the 20th - 23rd of January 2023. Within my proof I have measured and compared existing noise levels at the site to relevant standards and guidance.
- 9.3. The representative time-averaged ambient and night-time maximum noise levels from the unattended survey have been calculated at:
- Position 1: 63dB L_{Aeq} daytime and 48dB L_{Aeq} night-time.
 - Position 2: 56dB L_{Aeq} daytime and 48dB L_{Aeq} night-time.
- 9.4. The typical background noise level has been calculated at 50dB $L_{A90,T}$ at position 1 and 52dB $L_{A90,T}$ at position 2.
- 9.5. I have undertaken noise model calculations using all available details and plans provided by the client and from manual measurement data. I have undertaken the assessment in line with, but not limited to, the following guidance: NPPF: 2021, NPSE: 2012, PPG-noise, ProPG: 2017, BS 4142: 2014 +A1: 2019, BS 8233: 2014
- 9.6. I have demonstrated that the noise impact of the scrapyard upon the existing NSR's are predicted to have an improved noise climate once the proposed commercial premises are constructed.
- 9.7. I have established that with the provision of the proposed good acoustic design and building barrier the noise impact from Benfleet Scrap on the proposed receptors is predicted to be a "low impact"

when considering the site context. The predicted rating level on the proposed residential is lower than the existing impact on the existing residential premises and the current scheme shows good acoustic mitigation.

- 9.8. I have established that the requirements for internal noise levels (commercial and residential) and external amenity levels are achievable.
- 9.9. Finally, I have demonstrated that Castle Point Borough Council second and third reason for refusal, which relates to the impact of noise from Manor Trading Estate on the proposed development and the impact of proposed development on safeguard waste sites are unfounded. Considering the results of the noise survey, the illustrative layouts and the calculations, the predicted resultant noise levels are predicted to meet appropriate and reasonable guidance and the relevant noise criteria.
- 9.10. The evidence which I have prepared and provide in my proof has been prepared and is given in accordance with the guidance of my professional institution. I confirm that the opinions expressed are my true and professional opinions.

Signed:



Dated: 31st January 2023



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