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HEBBLE HOMES LIMITED

NOISE IMPACT ASSESSMENT REPORT

FORGE LANE, THORNHILL LEES, DEWSBURY

Client: Hebble Homes Limited

Report Ref: P7974-R1-V1

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APPENDICES

1 INTRODUCTION

1.1 Overview

1.1.1 By instruction from Hebble Homes Limited ('the client'), NoiseAir was commissioned to undertake a Noise Impact Assessment (NIA) for the proposed construction of 2 no. industrial/ warehouse units totalling 10,100m^2 at Forge Lane, Thornhill Lees, Dewsbury, herein referred to as the 'development site'.

1.1.2 General limitations with respect to this NIA are outlined in **Appendix A**.

1.2 Site Description

1.2.1 At the time of writing, the development site is currently a vacant plot of land in a mixed-use area near Dewsbury. Noise due to the Forge Lane and Lees Hall Road constitutes the predominant source of noise in the area.

1.2.2 The nearby industrial/commercial units on Forge Lane also contribute to the local residual noise environment for residential properties towards the west of the site.

1.2.3 The site is surrounded to the North, East, and South by a number of residential housing estates, with industrial/commercial units located to the West.

1.2.4 **Figure 1** presents a site aerial photograph of the site with respect to the local area and its context.

Figure 1: Site aerial photograph.

1.3 Development Proposals

1.3.1 A planning application is to be submitted proposing to build 2 no. industrial/ warehouse units totalling 10,100 m^2 at the site. as shown in **Figure 2**.

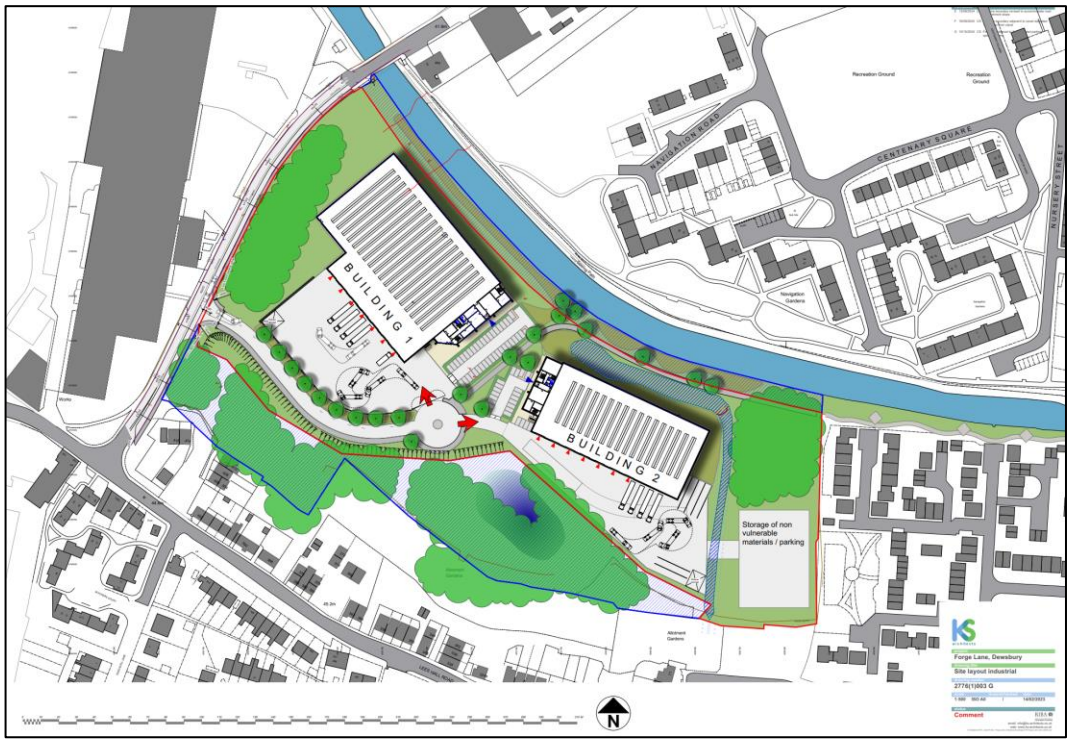

Figure 2: Site Layout

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 National Planning Policy Framework [NPPF 2023]

2.1.1 The NPPF sets out the government's planning policies for England and how they are expected to be applied. It aims to achieve sustainable development; stating that planning policies and decisions should prevent unacceptable levels of noise pollution from new and existing development while affirming that National Policy Statements form part of the national planning policy framework and should be considered in planning decisions.

2.2 Noise Policy Statement for England (NPSE)

2.2.1 The Noise Policy Statement for England (NPSE), published in March 2010, states the long-term vision of Government noise policy is to "promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development".

2.2.2 The NPSE sets out the government's overall policy on noise within the context of sustainable development. It introduces three concepts for noise management: avoid significant adverse effects; mitigate and minimise adverse effects; and where possible, contribute to improvements in health and quality of life.

2.2.3 It also establishes a hierarchy of noise management actions: avoid; reduce; remedy; mitigate; compensate.

2.2.4 The NPSE also introduces the below categories with respect to 'adverse impacts'.

'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.

LOAEL – Lowest Observed Adverse Effect Level

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

SOAEL – Significant Observed Adverse Effect Level

- This is the level above which significant adverse effects on health and quality of life occur'.

2.2.5 The NPSE states that significant adverse effects on health and quality of life should be avoided. Where the impact lies somewhere between LOAEL and SOAEL, it requires that all

reasonable steps are taken to mitigate and minimise the adverse effects of noise. In this regard, a certain degree of impact between LOAEL and SOAEL would be acceptable in terms of planning policy, provided that the impact has been mitigated and minimised by design.

2.3 Planning Practice Guidance - Noise [PPG 2019]

2.3.1 PPG 2019 provides guidance on how noise should be considered in planning decisions. It was published in 2014 and updated in 2019. The document advises on how to avoid, mitigate or minimise adverse effects of noise through good acoustic design and appropriate conditions or obligations.

2.3.2 **Table 1** summarises the noise exposure hierarchy outlined within the PPG.

Table 1: National Planning Practice Guidance Noise Exposure Hierarchy

Perception	Increasing Effect Level	Action
Not noticeable	No Observed Effect	No specific measures required
Noticeable and not intrusive	No Observed Adverse Effect	No specific measures required
Lowest Observed Effect Level		
Noticeable and intrusive	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Effect Level		
Noticeable and disruptive	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Unacceptable Adverse Effect	Prevent

2.4 Comments from the Local Authority

2.4.1 The following are comments from Kirklees Council with respect to the noise assessment to be conducted:

> *"We have considered whether the proposed development may be adversely affected by existing noise sources and whether noise from the proposed development may have an adverse impact on nearby noise sensitive receptors.*
>
> *In the absence of any further information, we anticipate that the proposed development is likely to generate noise which will have the potential to cause a loss of amenity to the occupiers of nearby noise sensitive premises. We would expect a noise impact assessment to be provided with any future application.*

The assessment should determine the likely noise that will arise from all aspects of the proposed development (including but not limited to noise from vehicle movements, fixed mechanical plant and equipment) and detail the control and mitigation measures that will be necessary to provide to prevent the amenity of nearby receptors being affected by any such noise."

2.5 Scope of Works

2.5.1 The proposed industrial/warehouse units have the potential to create adverse noise impacts on the surrounding area and nearby residents.

2.5.2 A BS 4142:2014 assessment will, therefore, be conducted to determine the baseline noise environment at the site and assess the noise impact at the nearest noise sensitive residential receptors.

2.5.3 The BS 4142:2014 document and its assessment criteria are presented below.

2.6 British Standard 4142:2014 (BS 4142:2014)

2.6.1 British Standard 4142:2014 - Methods for rating and assessing industrial and commercial sound, sets the methodology for rating and assessing sound of an industrial and commercial nature, which includes sound from fixed installations such as mechanical and electrical plant and equipment.

2.6.2 In BS 4142:2014, a noise rating is determined and compared with the existing local background sound level based on several more cumulative acoustic feature corrections to apply where appropriate. For example, if the noise includes a distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristic, then additional cumulative penalties individually ranging from 0 to 9 dB may be applied depending on the type of noise.

2.6.3 BS 4142:2014 seeks to determine a "representative" background sound level, stating that "…the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods".

2.6.4 The assessment of the impact depends upon the margin by which the rating level of the specific sound source exceeds the background sound level but also promotes a consideration of the context in which the sound occurs when making an assessment. BS 4142:2014 states that an initial estimate of the impact of the specific sound is made by

subtracting the measured background sound level from the rating level, while considering the following points:

- 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; and,
- 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.

2.6.5 Therefore, a BS 4142:2014 assessment may deduce a low impact where the specific sound level is below the background sound level.

3 ACOUSTIC SURVEY

3.1 Acoustic Survey Details

3.1.1 NoiseAir conducted unattended noise monitoring between the 9th of November 2024 and the 12th of November 2024 at the site. Noise monitoring was undertaken at the monitoring location ML1 as presented in **Figure 3.**

Figure 3: Approximate noise monitoring location.

3.1.2 The noise measurements were made using a Class 1, integrating sound level meter (SLM).

3.1.3 The acoustic equipment was calibrated to comply with Section 4.2 of BS 7445-1:2003[1], before and after the noise monitoring periods.

3.1.4 Details of the SLM and its associated field calibrations can be found in **Table 2** below.

Table 2: Summary of SLM used for survey and associated field calibration

SLM (Serial No.)	Preamp (Serial No.)	Microphone (Serial No.)	Calibrator (Serial No.)	Start Calibration	End Calibration	Drift
NOR140 (1402867)	NOR1209 (12113)	NOR1225 (38650)	SVANTEK 10818	-26.0	-26.2	0.2

3.1.5 Weather conditions were monitored throughout the survey and were considered to be favourable throughout the entire duration of the measurements.

[1] BS 7445-2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

3.2 Measured Sound Levels

3.2.1 Data shown in **Figure 4** details a level vs time graph of the recorded L_{Amax}, L_{Aeq} and L_{A90} sound level over 15-minute time periods for ML1 for the entire measurement duration.

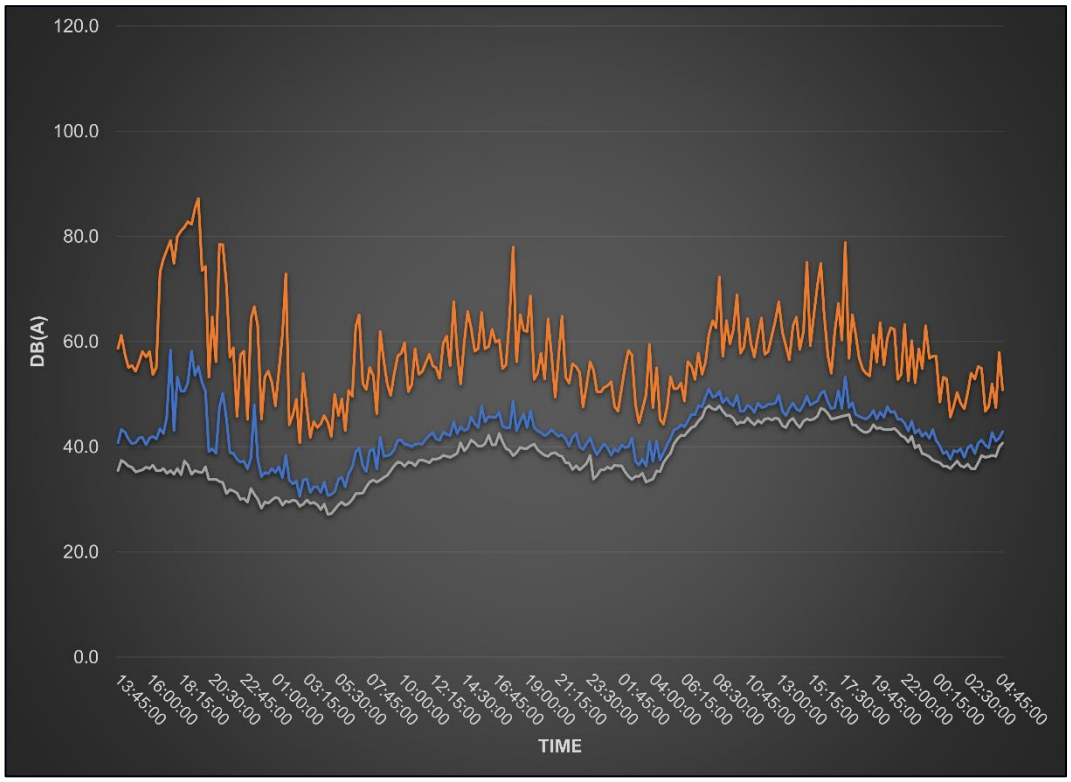

Figure 4: Level vs. time graph showing L_{Amax}, L_{Aeq} and L_{A90} sound levels – ML1

3.3 Background Sound Levels

3.3.1 A histogram showing the distribution of existing $L_{A90,T}$ sound levels at ML1 for the daytime and night-time are presented in **Figure 5** and **Figure 6** respectively.

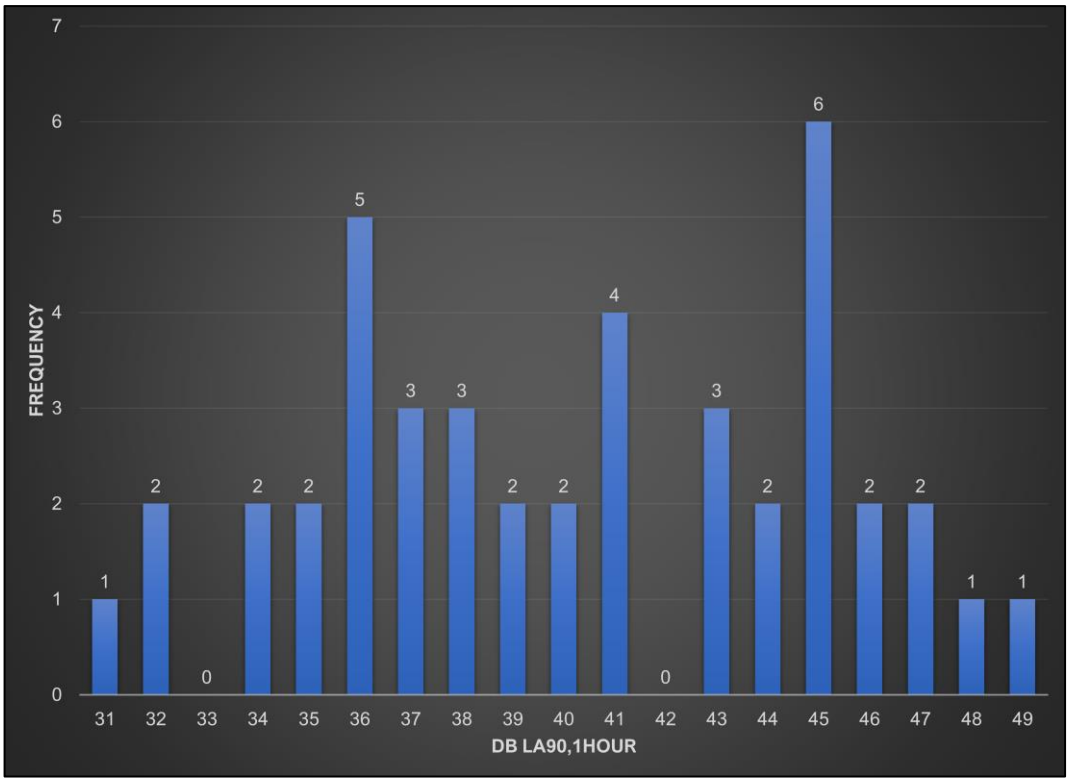

Figure 5: $L_{A90,15min}$ noise readings at ML1 - Daytime.

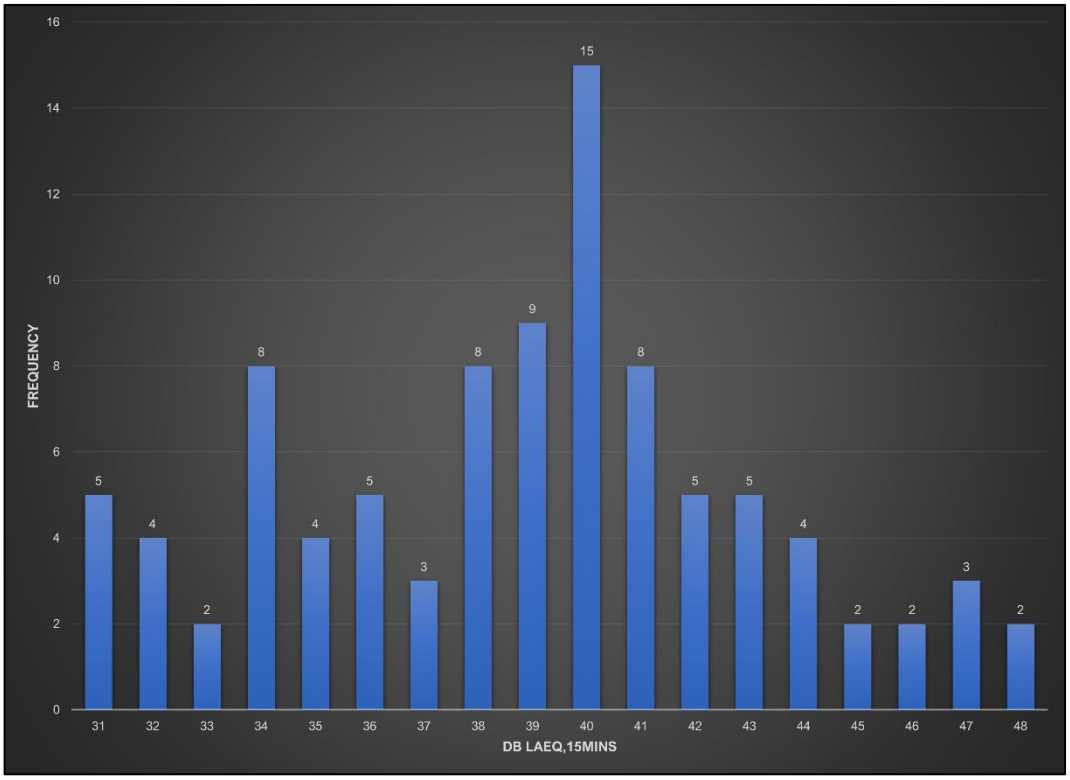

Figure 6: $L_{A90,15min}$ noise readings at ML1 – Night-time.

3.3.2 For ML1, L_{A90} background sound levels of 36 dB(A) and 34 dB(A) are considered typical for daytime and night-time periods respectively.

4 3D SOUND MODEL

4.1 Overview

4.1.1 A 3D sound model has been constructed in SoundPLAN™ to calculate the predicted sound pressure levels at selected potential receiver facades. The model uses the calculation method from ISO 9613-2:1996[2] to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings.

4.1.2 At the time of writing there are no specific plans for the use of the proposed industrial/ commercial units. Therefore, the model has been created using the assumptions outlined below.

4.1.3 The model assumes an internal reverberant level within the warehouses of 80 dB and a wall construction of Kingspan Panels (AWP/60 + no lining) as shown below in **Figure 7**.

Wall	Panel and Lining	Octave Band Sound Reduction Index R								R_w	C_{tr}	Surface Weight Kg/m²
		63	125	250	500	1k	2k	4k	8k			
1W	AWP/60 + no lining	15	16	19	23	26	22	39	–	25	-3	18
2W	AWP/60 + F	12	19	32	42	50	52	60	–	43	-10	30
3W	AWP/60 + W15	14	17	31	40	48	46	56	–	41	-10	28
4W	AWP/60 + W15 + F	17	24	37	45	52	54	64	–	47	-9	40
5W	AWP/60 + P + W12	16	22	37	45	51	50	63	–	46	-10	41
6W	AWP/60 + P + W12	18	23	35	44	49	50	61	–	45	-8	41
7W	AWP/60 + I + P + W	18	24	37	48	53	55	63	–	48	-10	4
8W	KS1000 RW/40 + I + L	13	14	29	38	40	45	55	–	38	-9	20
9W	KS1000 RW/40 + I + L	12	16	30	40	44	51	64	–	40	-9	20
10W	AWP/70 + no lining	20	15	17	23	18	25	40	46	24	-4	12.5

Figure 7: Kingspan Panels Octave Band Sound Reduction Index (R) and Weighted Sound Reduction Index (R_w)

4.1.4 The model uses measurements obtained by noise air for typical HGV operation when idling, driving, and loading. These measurements are listed below in **Table 3**.

Table 3: Predicted Receptor Noise Levels	
Description	**$L_{Aeq,T}$ (dB(A))**
Loading bay 1 m from entrance	77.9
HGV idling at 1 m	76.8
HGV passing at 1 m*	72.4
*HGV passing at c. 7 miles per hour.	

[2] ISO9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"

4.1.5 Based on the measurements above, two models have been created to assess unmitigated and mitigated scenarios respectively:

Scenario 1 (Unmitigated)

4.1.6 This scenario presents a conservative assessment of the noise impact from the proposed development. An overview of scenario 1 is presented in **Table 4**.

Table 4: Scenario 1 Overview	
Noise Sources	
Day	**Night**
Loading bays	Loading bays (reduced to half)
HGVs idling	-
HGVs driving on site	
Noise breakout from industrial/commercial units with Kingspan AWP/60 panels	Noise breakout from industrial/commercial units with Kingspan AWP/60 panels (-3 dB on-time correction)

The night-time model includes reduced number of active loading bays as well as on-time corrections to better represent the noise impact during night-time hours when it is likely that the site will be operational but with reduced activity.

Scenario 2

4.1.7 This presents a mitigated scenario with a number of noise sources reduced and removed in accordance with the recommendations proposed in Section 6. An overview of scenario 2 is presented in **Table 5**.

Table 5: Scenario 2 Overview	
Noise Sources	
Day	**Night**
Loading bays	Loading bays (reduced to half)
HGVs driving on site at reduced speed	
Noise breakout from industrial/commercial units with Kingspan AWP/60 + F panels	Noise breakout from industrial/commercial units with Kingspan AWP/60 + F panels (-3 dB on-time correction)

4.1.8 HGVs idling have been removed and noise breakout from industrial/commercial activity from the buildings has been reduced by using the Kingspan AWP/60 + F panels.

4.2 3D Sound Model – Scenario 1 (Unmitigated)

4.2.1 A noise contour plot illustrating the propagation of the sound from source to receptor for daytime and night-time periods are given in **Figure 8** and **Figure 9** respectively.

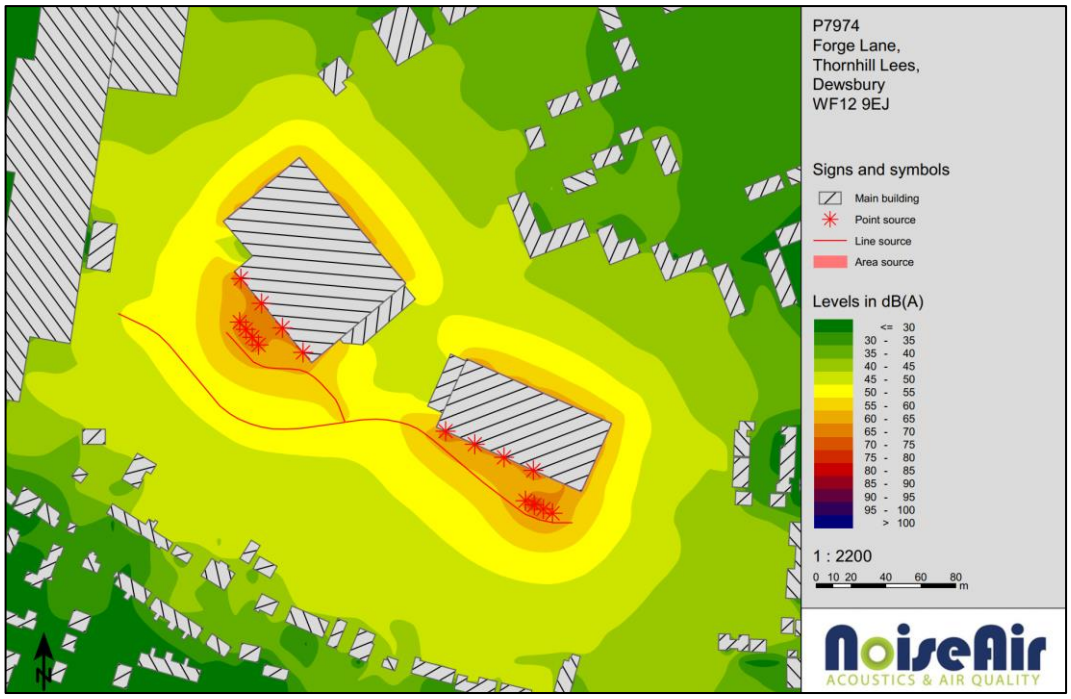

Figure 8: Noise contour plot (Daytime)

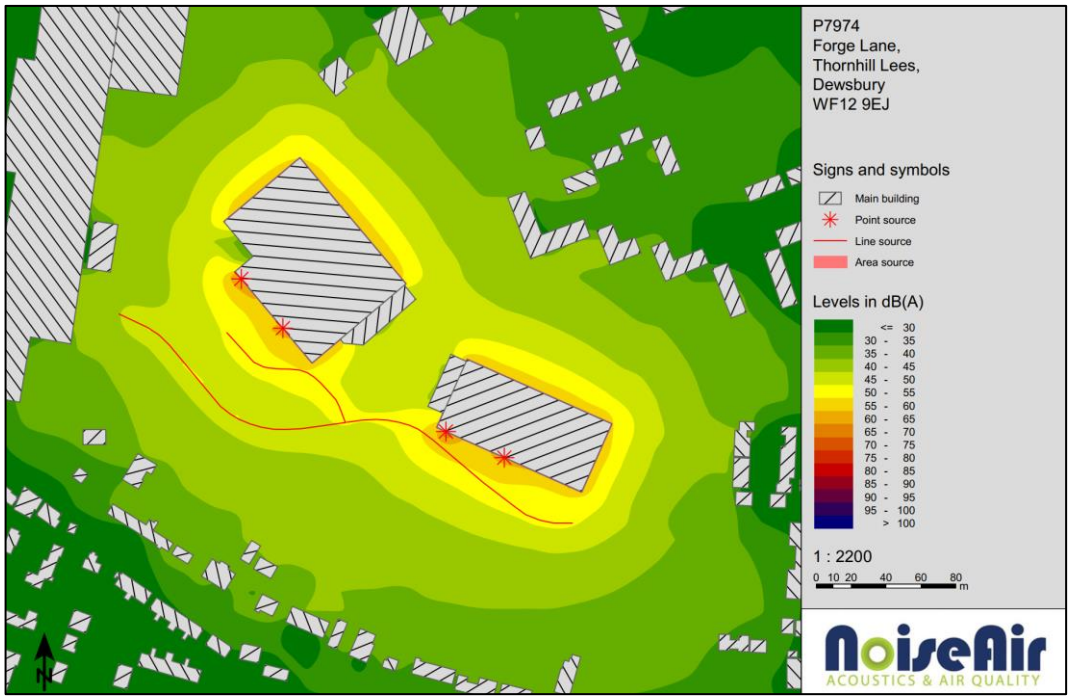

Figure 9: Noise contour plot (Night-time)

4.2.2 Receptor locations used in the noise model with calculated façade and outdoor levels are presented below in **Figure 10** and **Figure 11** for daytime and night-time periods respectively**.**

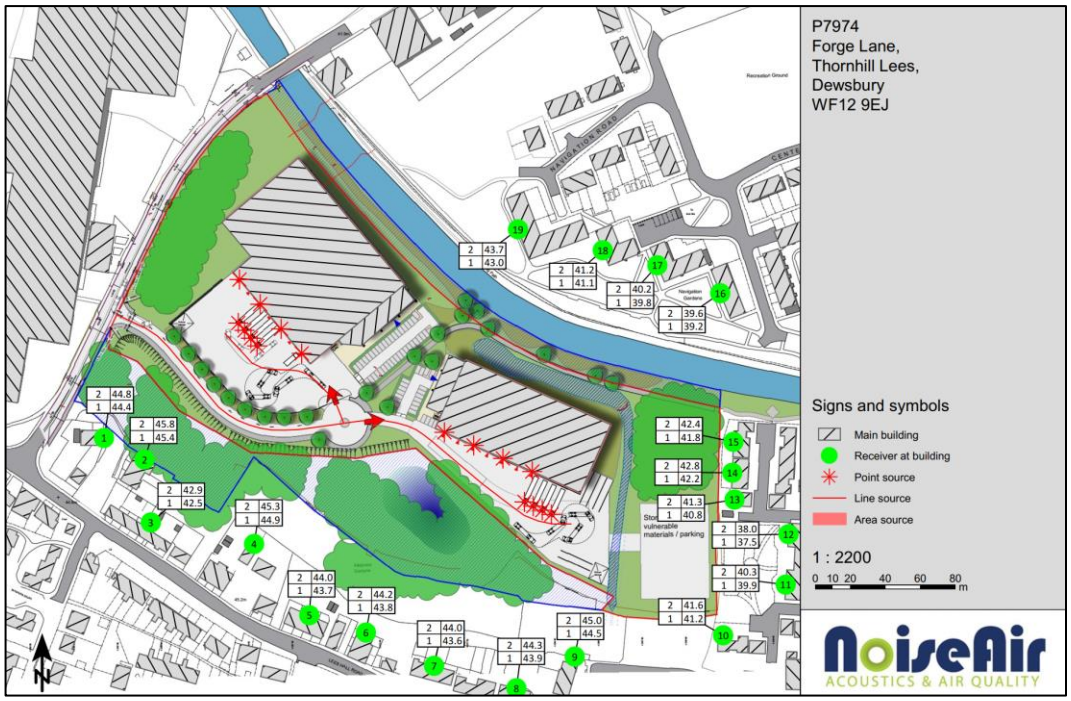

Figure 10*: Illustration of the 3D sound model Receptor Locations (Daytime)*

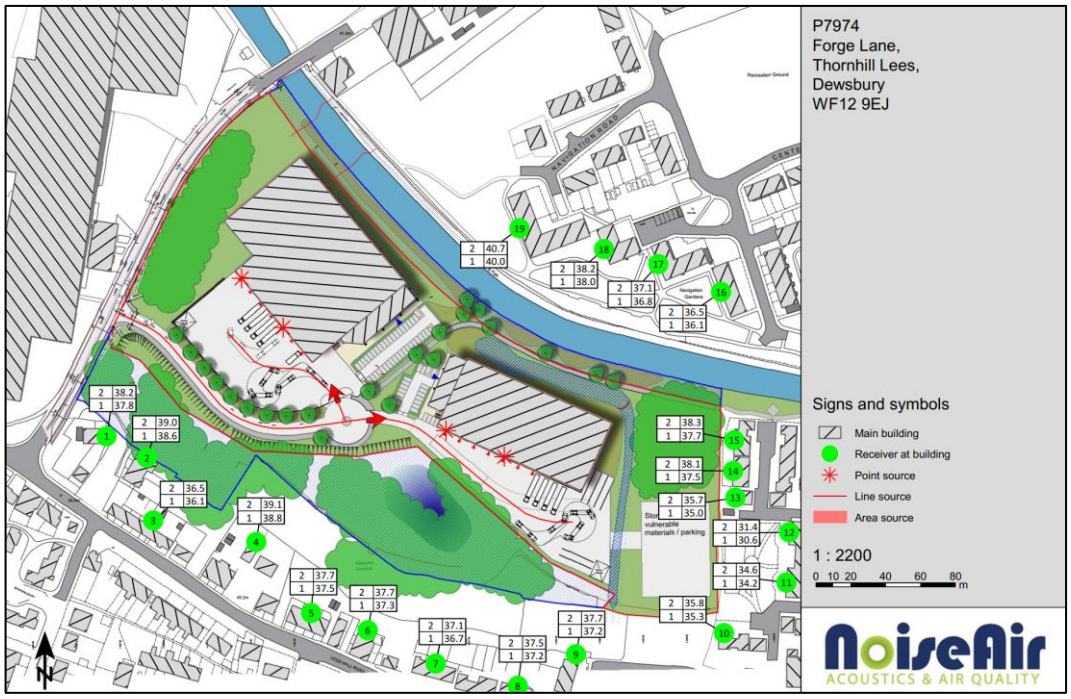

Figure 11*: Illustration of the 3D sound model Receptor Locations (Night-time)*

4.2.3 **Table 6** details the predicted noise levels as calculated at the nearby noise sensitive receptors.

Table 6: Predicted Receptor Noise Levels			
Receptor Number	**Floor**	**dB $L_{Aeq,T}$**	
		Daytime	**Night-time**
1	GF	44.4	37.8
	1.FL	44.8	38.2
2	GF	45.4	38.6
	1.FL	45.8	39
3	GF	42.5	36.1
	1.FL	42.9	36.5
4	GF	44.9	38.8
	1.FL	45.3	39.1
5	GF	43.7	37.5
	1.FL	44	37.7
6	GF	43.8	37.3
	1.FL	44.2	37.7
7	GF	43.6	36.7
	1.FL	44	37.1
8	GF	43.9	37.2
	1.FL	44.3	37.5
9	GF	44.5	37.2
	1.FL	45	37.7
10	GF	41.2	35.3
	1.FL	41.6	35.8
11	GF	39.9	34.2
	1.FL	40.3	34.6
12	GF	37.5	30.6
	1.FL	38	31.4
13	GF	40.8	35
	1.FL	41.3	35.7
14	GF	42.2	37.5
	1.FL	42.8	38.1
15	GF	41.8	37.7
	1.FL	42.4	38.3

Table 6: Predicted Receptor Noise Levels			
Receptor Number	Floor	dB $L_{Aeq,T}$	
		Daytime	Night-time
16	GF	39.2	36.1
	1.FL	39.6	36.5
17	GF	39.8	36.8
	1.FL	40.2	37.1
18	GF	41.1	38
	1.FL	41.2	38.2
19	GF	43	40
	1.FL	43.7	40.7

4.3 3D Sound Model – Scenario 2 (Mitigated)

4.3.1 A noise contour plot illustrating the propagation of the sound from source to receptor for daytime and night-time periods are given in **Figure 8** and **Figure 9** respectively.

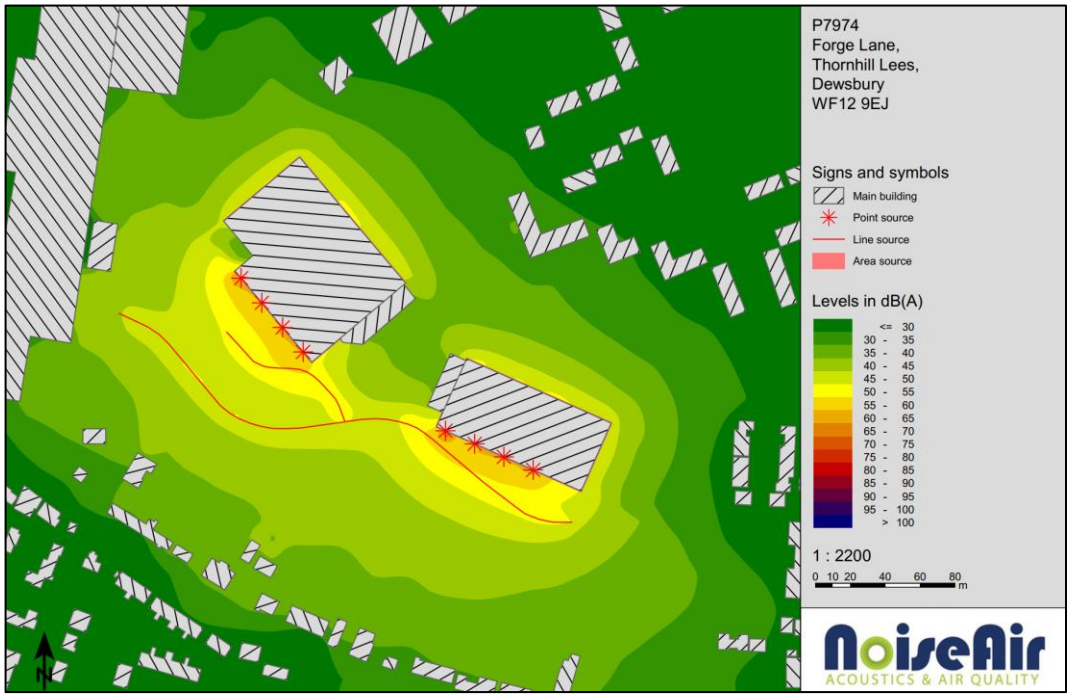

Figure 12: Noise contour plot (Daytime - Mitigated)

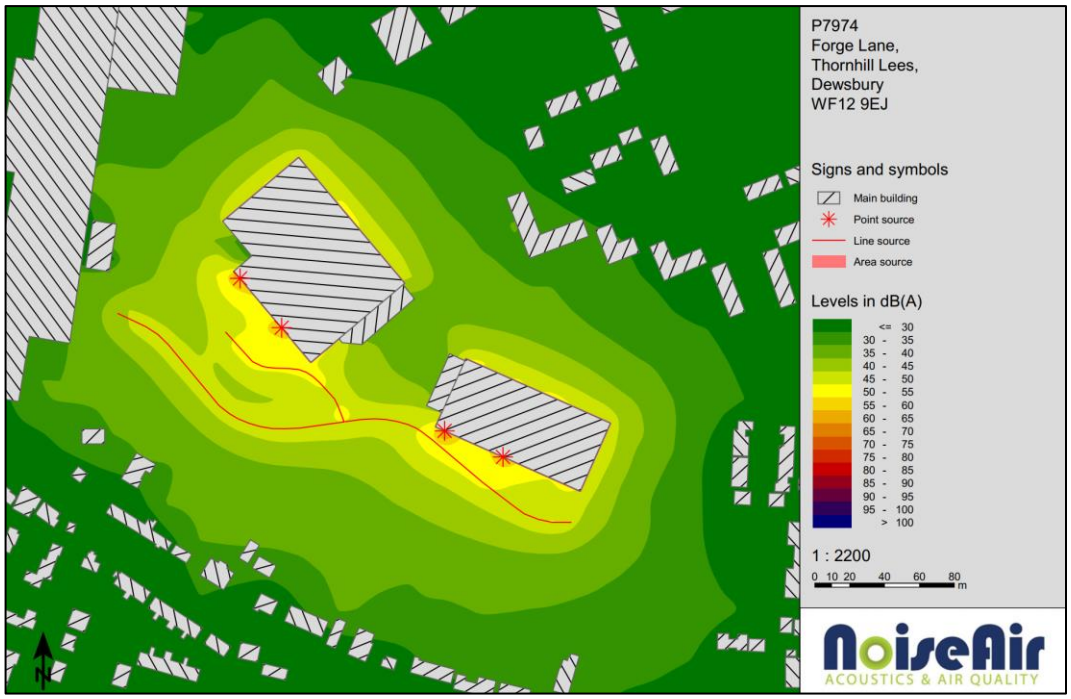

Figure 13: Noise contour plot (Night-time - Mitigated)

4.3.2 Receptor locations used in the noise model with calculated façade and outdoor levels are presented below in **Figure 10** and **Figure 11** for daytime and night-time periods respectively**.**

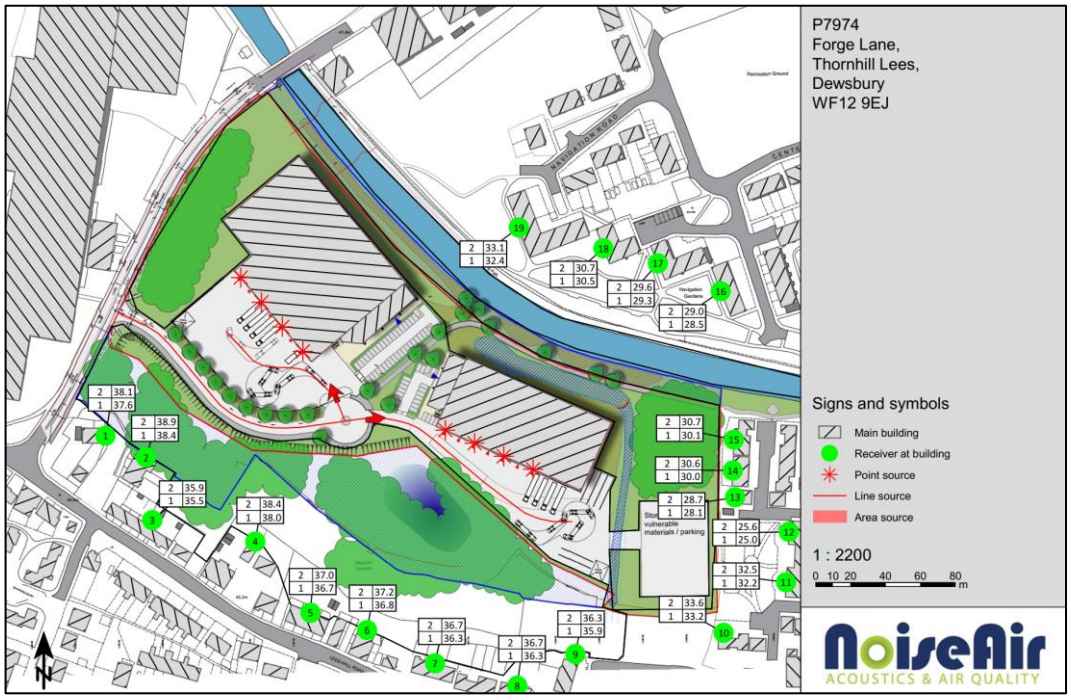

Figure 14*:* Illustration of the 3D sound model Receptor Locations (Daytime – Mitigated)

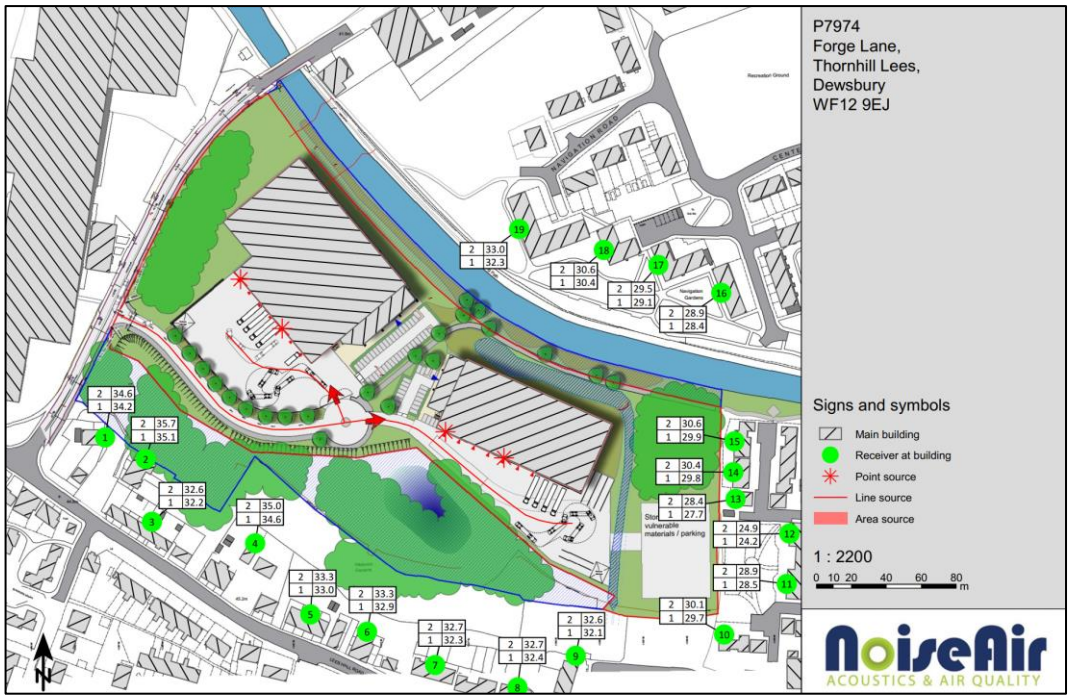

Figure 15*:* Illustration of the 3D sound model Receptor Locations (Night-time - Mitigated)

4.3.3 **Table 6** details the predicted noise levels as calculated at the nearby noise sensitive receptors.

Table 7: Predicted Receptor Noise Levels

Receptor Number	Floor	dB $L_{Aeq,T}$	
		Daytime	Night-time
1	GF	37.6	34.2
	1.FL	38.1	34.6
2	GF	38.4	35.1
	1.FL	38.9	35.7
3	GF	35.5	32.2
	1.FL	35.9	32.6
4	GF	38	34.6
	1.FL	38.4	35
5	GF	36.7	33
	1.FL	37	33.3
6	GF	36.8	32.9
	1.FL	37.2	33.3
7	GF	36.3	32.3

Table 7: Predicted Receptor Noise Levels			
Receptor Number	**Floor**	**dB $L_{Aeq,T}$**	
		Daytime	**Night-time**
	1.FL	36.7	32.7
8	GF	36.3	32.4
	1.FL	36.7	32.7
9	GF	35.9	32.1
	1.FL	36.3	32.6
10	GF	33.2	29.7
	1.FL	33.6	30.1
11	GF	32.2	28.5
	1.FL	32.5	28.9
12	GF	25	24.2
	1.FL	25.6	24.9
13	GF	28.1	27.7
	1.FL	28.7	28.4
14	GF	30	29.8
	1.FL	30.6	30.4
15	GF	30.1	29.9
	1.FL	30.7	30.6
16	GF	28.5	28.4
	1.FL	29	28.9
17	GF	29.3	29.1
	1.FL	29.6	29.5
18	GF	30.5	30.4
	1.FL	30.7	30.6
19	GF	32.4	32.3
	1.FL	33.1	33

5 BS 4142:2014 ASSESSMENT

5.1 Overview

5.1.1 A BS 4142:2014 assessment has been undertaken considering noise breakout from the site with respect to nearby residents in the surrounding area.

5.2 Specific Sound Level

5.2.1 The worst-case specific sound levels which have been adopted for the subsequent assessment are outlined in **Table 8** below.

Table 8: BS 4142:2014 Specific Sound Levels at the Worst Affected Noise Sensitive Receptors

Quantity	Scenario 1 (Unmitigated)		Scenario 2 (Mitigated)	
	Daytime	Night-time	Daytime	Night-time
Specific Sound Level	46	39	39	36

5.3 Background Sound Level

5.3.1 For ML1, L_{A90} background sound levels of 36 dB(A) and 34 dB(A) have been adopted for daytime and night-time periods respectively.

5.4 Character Corrections

5.4.1 The following character corrections have been applied based on known characteristics of the sound produced by HGVs and industrial activity:

- **Tonality**: No correction for impulsivity has been applied.
- **Intermittency**: a +3 dB correction has been applied for Intermittency.
- **Impulsivity**: No correction for impulsivity has been applied.

5.4.2 It has been reasoned that the residual background noise levels will provide a significant level of masking for the tonal elements produced by sources at the site. Therefore, no correction for tonality has been applied.

5.5 Initial Assessment

5.5.1 The BS 4142:2014 initial assessment for the calculated noise breakout levels for all noise sources is presented in **Table 9** overleaf.

Table 9: BS 4142:2014 Assessment to Determine the Likelihood of Adverse Impacts on the Worst Affected Noise Sensitive Receptors				
Quantity	**Scenario 1 (Unmitigated)**		**Scenario 2 (Mitigated)**	
	Daytime	**Night-time**	**Daytime**	**Night-time**
Specific Sound Level	46	39	39	36
Acoustic Feature Correction	+3			
Rating Level	49	42	42	39
Background Sound Level dB L_{A90}	36	34	36	34
Excess of Rating Level over Background Sound Level	**+13**	**+8**	**+6**	**+5**
Initial Indication of Potential Impact	**Significant Adverse Impact**	**Adverse Impact**		

5.6 BS 4142:2014 Assessment and Context

5.6.1 As per **Table 9**, the excess of the rating level over the background sound level for the worst-affected receiver is +13 dB during the daytime and +8 dB during the night-time. A '**significant adverse**' and '**adverse**' noise impact can therefore be expected at nearby residential receivers during daytime and night-tie periods respectively.

5.6.2 Due to the significant excess of the rating level over the background sound level, it is reasoned that mitigation will be necessary to reduce the impact of the proposed industrial/commercial units.

5.6.3 Recommendations to reduce/mitigate the sound to nearby residential receivers are outlined in Section 6 of this report. Such mitigation measures will likely reduce the excess of the rating level over the background sound level to +6 dB and + 5 dB during daytime and night-time hours respectively, as long as good noise management is adopted.

5.6.4 BS 4142:2014 states that:

> *"A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context."*

5.6.5 Although the rating levels are considered to be marginally elevated above the background sound levels during the day and night-time, it is important to consider a number of contextual considerations which form an important aspect of the assessment.

5.6.6 There is an existing industrial/commercial unit on Forge Lane which contributes to the existing residual environment at the receptors where specific sound levels are elevated. As

such industry already exists nearby, the introduction of the proposed development will not establish a new noise in the area reducing the perceived impacts somewhat.

5.6.7 The worst-case specific sound level at night is 36 dB(A) (scenario 2 assuming mitigation in place). This is not considered to be 'loud' in absolute terms and is likely to be masked heavily by the residual soundscape despite the inherent character present in the noise.

5.6.8 Furthermore, it is considered that the attenuation provided by a slightly open window will reduce noise levels internally by such a degree as to likely be considered inaudible in a habitable room for a reasonable person.

5.6.9 It is acknowledged within the national planning guidance that it is not always possible to minimise all noise emissions from sources to inaudible. The first priority of the NPSE is to avoid significant adverse effects on health and quality of life. Where noise impact falls between LOAEL and SOAEL, it requires all reasonable steps to be taken to mitigate and minimise the adverse effects of noise but does not expect this requirement to mean that such adverse effects cannot occur.

5.6.10 The assessment therefore indicates that a **low impact** is likely during the daytime, however, it is acknowledged that **adverse impacts** may occur during the night where noise has a particular set of characteristics.

5.7 Uncertainty

5.7.1 Uncertainty of measurements can have a significant effect on the outcome and findings of an assessment and therefore such constraints are documented and discussed below.

5.7.2 At the time of writing, NoiseAir has not been supplied with any plans or proposals for the intended use of the industrial/commercial units.

5.7.3 Using professional judgement, a large number of assumptions have therefore been made to provide a general view of the noise impact of such a development on the surrounding area.

5.7.4 Therefore, there is a relatively high level of uncertainty for the outcomes presented in this report.

5.7.5 The SLM used was a Norsonic Class 1 SLM's, it is generally recognised that Class 1 SLM's offer an uncertainty of ±1.0 dB. The instrumentation used for the survey has been calibrated by UKAS approved laboratories.

5.7.6 The sound levels measured (which include busier and quieter periods) are considered typical for the area.

5.7.7 Wind speeds during the survey visits were typically less than 5 ms^{-1} and the effect of wind generated noise is not considered to have a significant impact on this assessment.

5.7.8 It is therefore considered that, in this instance, the uncertainty of the measurements are not likely to have any influence on the outcome of the assessment.

6 RECOMMENDATIONS

6.1 Noise Emissions from HGVs

6.1.1 Noise emissions from HGV loading, movement, and idling are likely to constitute the primary noise sources at the development site.

6.1.2 In order to reduce noise emissions from HGVs at the site, we recommend the following restrictions be implemented as part of a suitably worded planning condition:

- Speed limit of 7 mph be introduced for HGVs at the site; and,
- Restriction of HGVs idling with engines on whilst at the site.

6.2 Noise Emissions from Industrial/Commercial Use Buildings

6.2.1 Noise emissions from the industrial/commercial activities within the buildings can be mitigated by installing wall panels with an acceptable sound reduction index.

6.2.2 The wall construction should meet the criteria set out in **Table 10**.

Table 10: Summary of Building Element - Typical Examples

Element Type	Acoustic Performance	Typical Example
Wall	33 dB R_w+C_{tr}	Kingspan AWP/60 + F

6.2.3 This is likely to reduce the noise breakout to an acceptable level based on typical noise emissions for such industrial/commercial sites.

6.3 Recommended Plant Noise Limits

6.3.1 We recommend that any mechanical plant is assessed in accordance with BS 4142:2014+A1:2019. Given that mechanical plant is not readily present in the local area, any mechanical plant to be installed at the development site may present as an adverse impact when assessed in accordance with BS 4142:2014+A1:2019. We would, therefore, recommend that the rated noise level target should be set at 5 dB(A) below the measured background sound level.

6.3.2 Background sound levels of 36 dB and 34 dB $L_{A90,1hour}$ / $L_{A90,15mins}$ for the daytime and night-time respectively have been selected.

6.3.3 Mechanical plant typically has acoustic character in the form of tonal elements, however, as it has been explained in Section 5 above, the residual background noise levels will provide a

significant level of masking for the tonal elements produced by sources at the site. Therefore, no correction for tonality has been applied.

6.3.4 We therefore recommend that any mechanical plant is designed to not exceed 29 dB(A) at 1 m from the noise source during the night-time hours or 31 dB(A) at 1 m from the noise source during the daytime hours.

6.3.5 We recommend that the plant noise limits are included within a suitably worded planning condition for later discharge by the local authority.

6.4 Noise Management Plan

6.4.1 We recommend that a noise management plan (NMP) is introduced and approved by the local authority. The NMP should be a live document which can be updated over time as appropriate.

6.4.2 The NMP should make an appropriate person (manager or similar) responsible for ensuring that all noise emissions from the development site during the operational phase are appropriately managed.

6.4.3 All staff and personnel at the development site during the operational phase should be subject to an induction where the management of noise related issues is clearly set out and outlined, this process should be recorded and the items covered should be outlined within the noise NMP.

6.4.4 The NMP should outline the operational hours of the site. It should also detail and outline noise management techniques for dealing with elevated noise from idling HGVs. It is recommended that HGVs be prohibited from leaving their engines on whilst loading, unloading, or otherwise idling at the development site.

6.4.5 In addition, they should be responsible for enforcing and maintaining the 7-mph speed limit as discussed above.

6.4.6 It is also recommended that any forklift trucks at the site must be electric powered, and reversing beacons should be white noise type.

6.4.7 The management of noise emissions from the main buildings/storage units should also be included within the NMP and approaches to ensure that the doors to the buildings are efficiently managed such that any noise emissions are maintained at a minimum.

6.4.8 The NMP should also outline an appropriate noise complaints procedure. The noise complaints procedure should include the logging of complaints and all relevant information, such as time, date, location and nature of complaint. All complaints should be appropriately investigated initially by the operator and any mitigating approaches should also be logged and implemented as soon as practically possible. We recommend that any complainants are contacted (if after the event) within a maximum of 24 hours, appropriate details taken and the complainant should be advised that a formal response will be provided within a target time of one week where possible. If the complaint occurs at the time of the event, a suitable person (manager) should be dispatched immediately to collect appropriate first hand information which should be logged.

6.4.9 In the event of repeat complaints or where no resolution can be reached, external professional acoustic consultants should be employed for a suitable investigation and subsequent advice.

6.4.10 All complaints should be logged with as much information as possible, including information on responses and timescales and should be made available to the local authority upon request.

6.5 Future Work

6.5.1 At the time of writing, NoiseAir has not been supplied with any plans or proposals for the intended use of the industrial/commercial units.

6.5.2 Due to a lack of substantial information, it is not possible to provide a detailed and accurate assessment of noise emissions from the site.

6.5.3 Any conclusions/recommendations mentioned in this report will not be fully representative or applicable to the future operations at the site.

6.5.4 It is recommenced that once plans are finalised, a new noise impact assessment is carried out which takes these plans into consideration to provide a more comprehensive and detailed assessment.

7 CONCLUSIONS

7.1 Overview

7.1.1 By instruction from Hebble Homes Limited, NoiseAir was commissioned to undertake a Noise Impact Assessment for the proposed construction of 2 no. industrial/ warehouse units totalling 10,100m^2 at Forge Lane, Thornhill Lees, Dewsbury.

7.2 Conclusions

7.2.1 A BS 4142:2014 assessment has been undertaken considering noise breakout from the site with respect to residents in the locality. The initial assessment indicates that during the excess of rating level above the existing background sound level was +13 dB and +8 dB during daytime and night-time periods respectively.

7.2.2 The initial assessment therefore indicates that the impact will likely be '**significant adverse'** and **'adverse'** at the nearest NSRs during daytime and night-time periods respectively.

7.2.3 Recommendations have been suggested to reduce the noise outbreak from the site. A noise management plan should also be implemented to aid in the management and mitigation of noise from the site.

7.2.4 Should the recommendations be followed, it is likely that the impact can be reduced to **'adverse'**, which may be acceptable in the context of the local area.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Hebble Homes Limited and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Hebble Homes Limited and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by NoiseAir Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

Where / if estimates and projects are made within this report, are made based on reasonable assumptions as of the date of this report, such statements however by their very nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. NoiseAir Limited specifically does not guarantee or warrant any estimates or projects contained in this report.

DISCLAIMER- This report was prepared by NoiseAir Limited. The material in it contains NoiseAir Limited best judgment in light of the information available at the time of preparation of this report. Any use which a third party makes of this report, or any reliance on, or decisions based on it are the responsibility of such third parties. NoiseAir Limited accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

APPENDIX B - GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. *NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.*
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. *NOTE: The ambient sound comprises the residual sound and the specific sound when present.*
Ambient sound level, $L_a = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T *NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.*
Background sound	Underlying level of sound over a period, *T*, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS 4142:2014)	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.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) to provide a weighting against low frequency performance. *NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.*
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS 4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m2), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. *NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.*
Free-field level	Sound pressure level away from reflecting surfaces. *NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e., not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.*

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. *NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.*
Measurement time interval, T_m (BS 4142:2014)	Total time over which measurements are taken. *NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.*
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. *NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.*
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for *N*% of a specified time interval.
Reference time interval, T_r (BS 4142:2014)	Specified interval over which the specific sound level is determined. *NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.*
Residual sound (BS 4142:2014)	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level, $L_r = L_{Aeq,T}$ (BS 4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
Rating level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. *NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.*
Reverberation time, *T*	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, *L*AE	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, *D*	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, *p*	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, *R*	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,Tr}$ (BS 4142:2014)	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.
Specific sound source (BS 4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. *NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.*
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. *NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.*
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. *NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).*
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L'_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,Tr}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$LAeq,T$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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