
JACKSON FAMILY HOLDINGS LTD

NOISE IMPACT ASSESSMENT REPORT

**UNIT K6, NORTHFLEET INDUSTRIAL ESTATE, LOWER
ROAD, NORTHFLEET, GRAVESEND DA11 9BL**

Client: Jackson Family Holdings Ltd

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1 INTRODUCTION

1.1 Overview

1.1.1 By instruction from Jackson Family Holdings Ltd ('the client'), NoiseAir was commissioned to undertake a noise impact assessment (NIA) in support of a change of use application proposing mixed warehouse and office use with erection of a first and second floor extension and construction of a multi-level car park.

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

1.2 Site Description & Noise Sensitive Receptors (NSRs)

1.2.1 The consented development site lies within Northfleet Industrial Estate in Gravesend.

1.2.2 The planning reference for the consented development is 20231247. The local planning authority is Gravesham Borough Council.

1.2.3 The site location and context are shown in **Figure 1** overleaf, along with the closest receptors for consideration within the assessment.

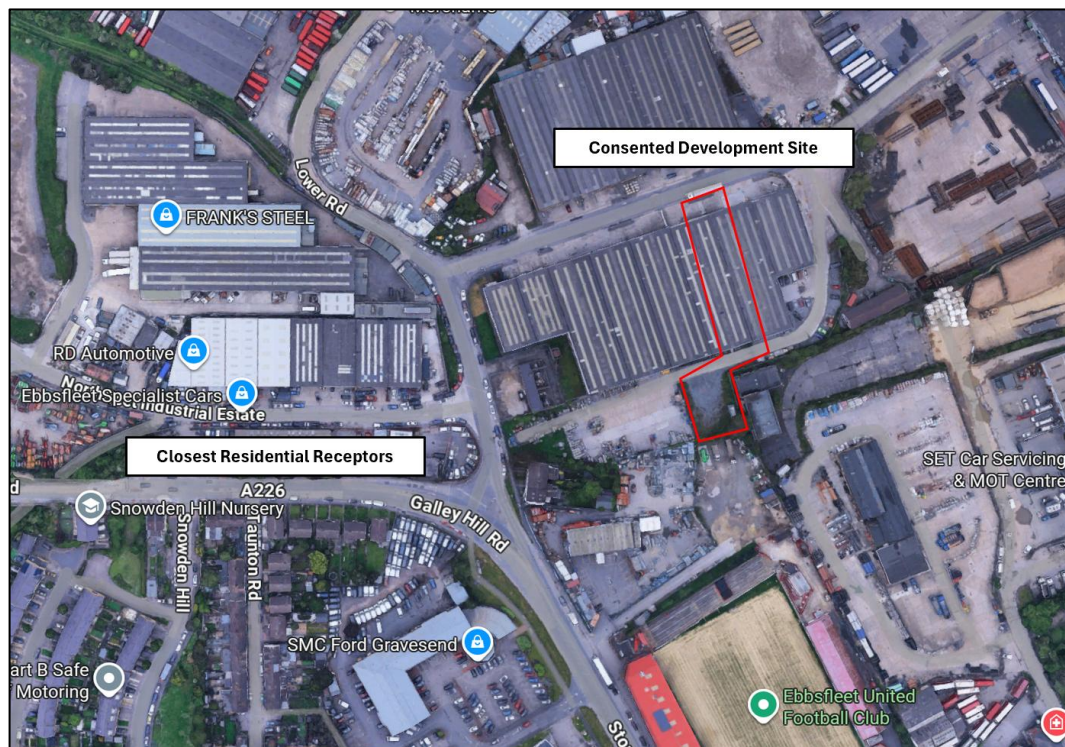


Figure 1: Site Location and Noise Sensitive Receptors

1.2.4 The closest receptors are residential dwellings located to the south-west off Galley Hill Road and surrounding local roads.

1.3 Consented Development Details and Noise Related Planning Obligations

- 1.3.1 The consented development listed on the decision notice of planning ref. 20231247 is as follows:

“Change of use of building to a mixed warehouse and office use together with erection of first and second floor extension and construction of a multi level car park, together with associated earth works and drainage”.

- 1.3.2 Condition 15 of the planning approval states:

“Condition 15: Prior to the commencement of the development hereby approved, the developer shall submit to the Local Planning Authority for its approval a scheme of noise and vibration assessment and mitigation. The vibration impact assessment shall be carried with reference to BS 6472:2008 and shall set out how the detailed design and construction of the development will ensure compliance with following requirements:

The internal vibration dose values for residential buildings shall not exceed 0.4 ms^{-1.75} during the day or 0.2 ms^{-1.75} during the night as reference in Table 1 of BS 6472:2008.

The noise assessment shall cover the impact of noise from operational activities or building services associated with the proposed development and associated piling and shall be carried out with reference to BS 4142:2014.

The report shall demonstrate potential impact on the nearest Noise Sensitive Receptors. Any works identified as require to ensure the rating noise is at least 5 dB below the LA90 background noise shall be carried out where possible, prior to the commencement of the works.”

- 1.3.3 The consented plans are shown in the figures overleaf.

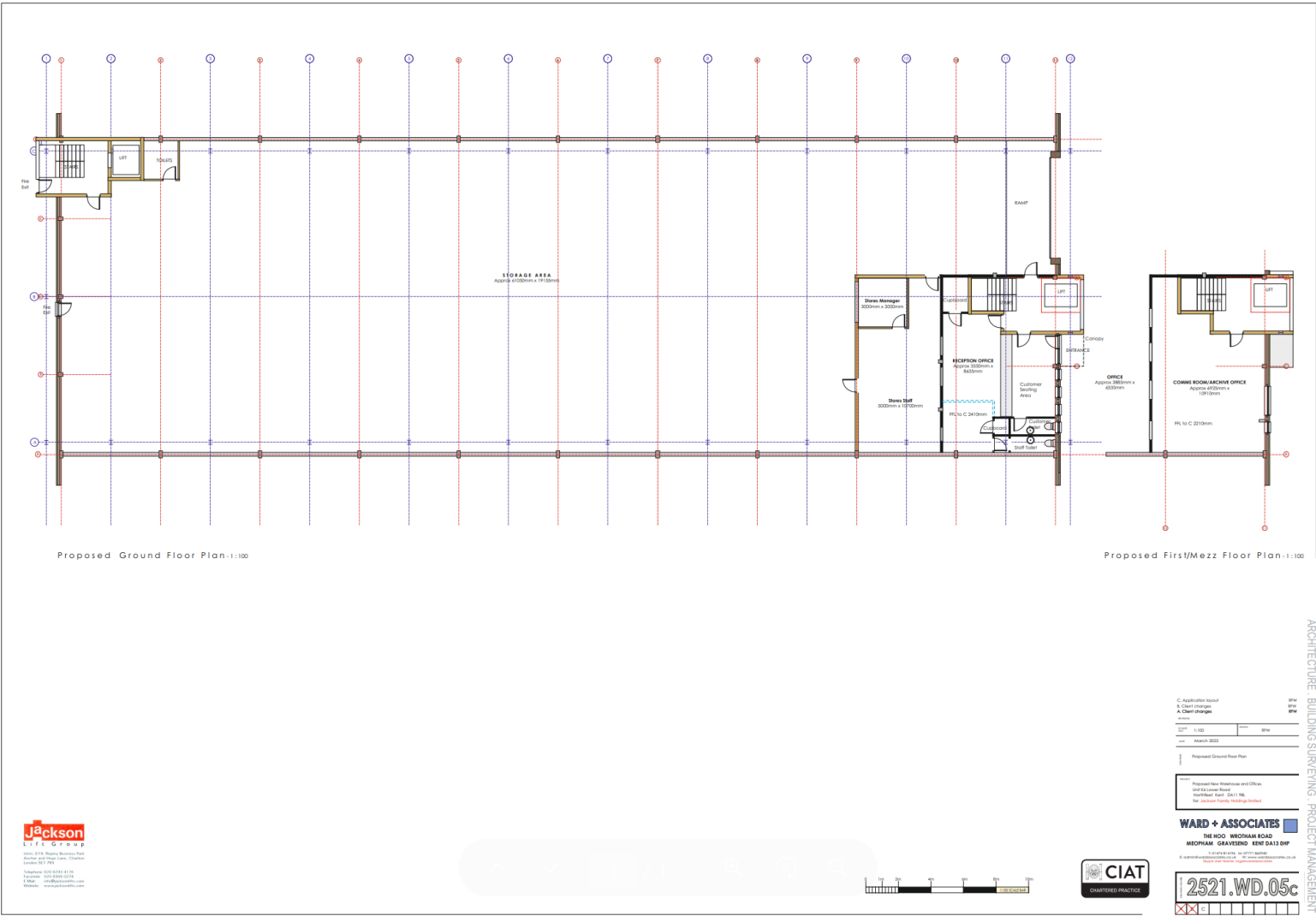


Figure 2: Consented GF Plan





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- 1.3.4 A storage warehouse with offices would not reasonably be anticipated to generate detectable levels of vibration to the closest noise sensitive receptors, and no predictive assessment can be undertaken to any acceptable degree of certainty. We would therefore clarify that this is not required.
- 1.3.5 Based on additional feedback provided to the applicant, the references to vibration appear to refer more to the construction phase (which would explain the reference to piling in the planning condition, which is outside the scope of BS 4142).
- 1.3.6 If this is the case, then noise and vibration from construction is addressed by BS 5228, rather than BS 6472 as stated in the planning condition. This is typically addressed as part of the Construction Environmental Management Plan (CEMP) provided by the contractor.
- 1.3.7 In any case, NoiseAir do not have any details of any contractor or construction plans to date that would enable any construction noise assessment at this stage.
- 1.3.8 No details of any proposed fixed plant have been provided at this stage. This report therefore identifies Rating Level limits at nearby receptors to inform further design work.
- 1.3.9 Servicing to the unit from the north can be assessed in principle to BS 4142 using typical HGV servicing noise levels and is therefore contained within this report.

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 National Planning Policy Framework [NPPF 2024]

- 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 Scope of Works

2.4.1 The appropriate methodology for assessing noise emissions from the proposed use is BS 4142:2014+A1:2019.

2.4.2 Based on the information available at the time of writing, the potential impact of HGV servicing to the unit can be assessed.

2.5 British Standard 4142:2014 (BS 4142:2014+A1:2019)

2.5.1 British Standard 4142:2014+A1:2019 - 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.

- 2.5.2 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.
- 2.5.3 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”.
- 2.5.4 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.
- 2.5.5 Therefore, a BS 4142:2014 assessment may deduce a low impact where the specific sound level is below the background sound level.

3 ACOUSTIC SURVEYS

3.1 Background Sound Level Survey

- 3.1.1 An unattended survey of background sound levels was undertaken to the rear of site.
- 3.1.2 The monitoring position is shown in **Figure 5** below. The monitoring position was free-field and selected due to the availability of secure locations to conduct a long-term unattended noise survey.
- 3.1.3 The location is anticipated to be broadly representative of the surrounding area, including the residential receptors, which are likely to be subject to higher levels of traffic noise from Galley Hill Road.



Figure 5: Noise Monitoring Location

- 3.1.4 The dominant noise source at the monitoring location was road traffic noise, and general industrial and commercial sound from the surrounding industrial estate.
- 3.1.5 The monitoring equipment consisted of a NOR140 Class 1 sound level meter (SLM) with enhanced windshield and calibrated to traceable standards.
- 3.1.6 The measurements were made in accordance with BS 7445: Part 1: 2003 'Description and measurement of environmental noise – Guide to quantities and procedures' and BS 7445: Part 2: 1991 'Description and measurement of environmental noise – Guide to the acquisition of data pertinent to land use'.

3.1.7 The SLM was calibrated before and after the measurements and found to have negligible drift (0.4 dB).

3.1.8 Details of the SLM and 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 (1402826)	NOR1209 (12739)	NOR1225 (96123)	BK4231 (2699086)	-26.4	-26.8	0.4 dB

3.1.9 The monitoring results are summarised in **Table 3** and shown graphically in **Chart 1**.

Table 3: Summary of Noise Monitoring Results at ML1			
Time Period Monitored	Measured Noise Level		
	$L_{Aeq,16hour/8hour}$ (dB)	Mode $L_{AF90,15min}$ (dB)	$L_{AFmax,15min}$ Range (dB)
Wed 01/04/2026 14:00 - Wed 01/04/2026 23:00	52.5	40	50-87
Wed 01/04/2026 23:00 - Thu 02/04/2026 07:00	44.5	39	44-72
Thu 02/04/2026 07:00 - Thu 02/04/2026 23:00	52.4	45	55-89
Thu 02/04/2026 23:00 - Fri 03/04/2026 07:00	50.0	42	50-82
Fri 03/04/2026 07:00 - Fri 03/04/2026 23:00	50.7	48	54-77
Fri 03/04/2026 23:00 - Sat 04/04/2026 07:00	45.0	40	44-83
Sat 04/04/2026 07:00 - Sat 04/04/2026 23:00	50.1	47	56-70
Sat 04/04/2026 23:00 - Sun 05/04/2026 07:00	51.3	41	50-84
Sun 05/04/2026 07:00 - Sun 05/04/2026 23:00	47.5	40	50-72
Sun 05/04/2026 23:00 - Mon 06/04/2026 07:00	42.7	38	42-65
Mon 06/04/2026 07:00 - Mon 06/04/2026 23:00	49.2	41	48-80
Mon 06/04/2026 23:00 - Tue 07/04/2026 07:00	48.8	41	49-70
Tue 07/04/2026 07:00 - Tue 07/04/2026 23:00	56.8	45	51-88
Tue 07/04/2026 23:00 - Wed 08/04/2026 07:00	51.1	45	51-89
Wed 08/04/2026 07:00 - Wed 08/04/2026 23:00	54.5	44	56-88
Wed 08/04/2026 23:00 - Thu 09/04/2026 07:00	48.2	42	49-69
Thu 09/04/2026 07:00 - Thu 09/04/2026 13:15	55.4	46	59-85

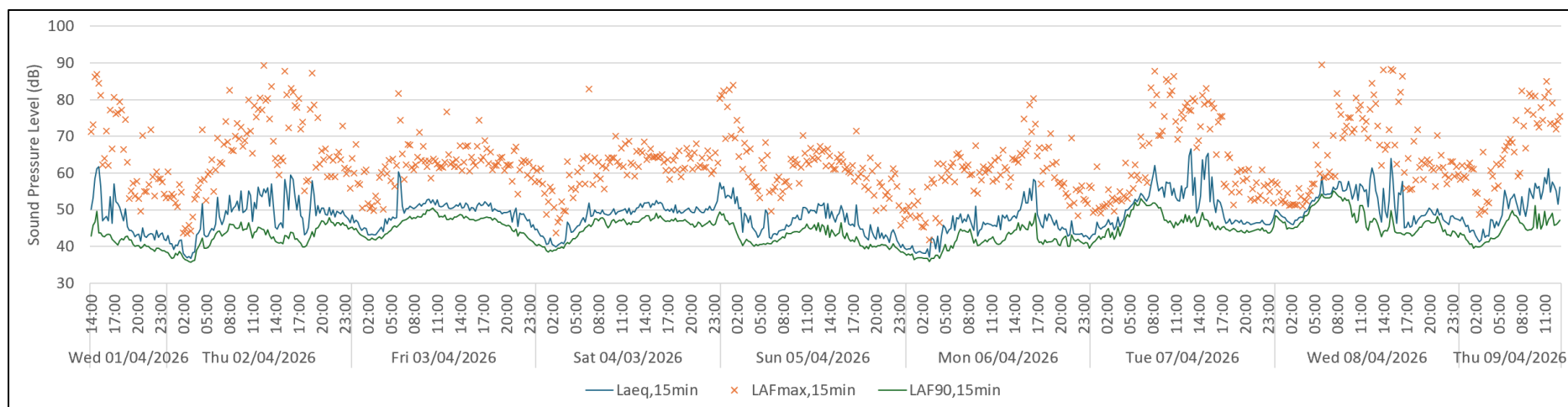


Chart 1: Noise Monitoring Results at ML1

3.2 Determination of Typical Background Sound Levels

3.2.1 Assessments will be undertaken based on the worst-case day (07:00-23:00) and night (23:00-07:00) periods during the survey, which are:

- **Daytime:** Sun 05/04/2026 07:00 – Sun 05/04/2026 23:00
- **Night-time:** Sun 05/04/2026 23:00 – Mon 06/04/2026 07:00

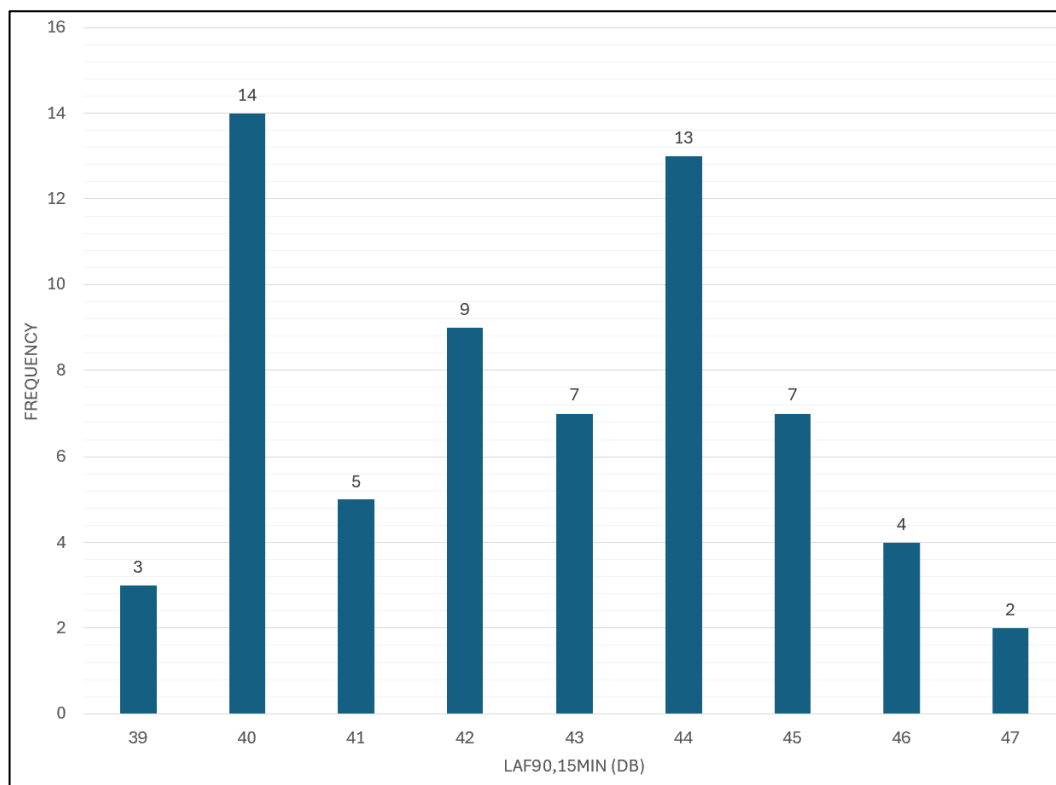


Chart 2: Statistical Analysis of Daytime Background Sound Levels at ML1 between Sun 05/04/2026 07:00 – Sun 05/04/2026 23:00

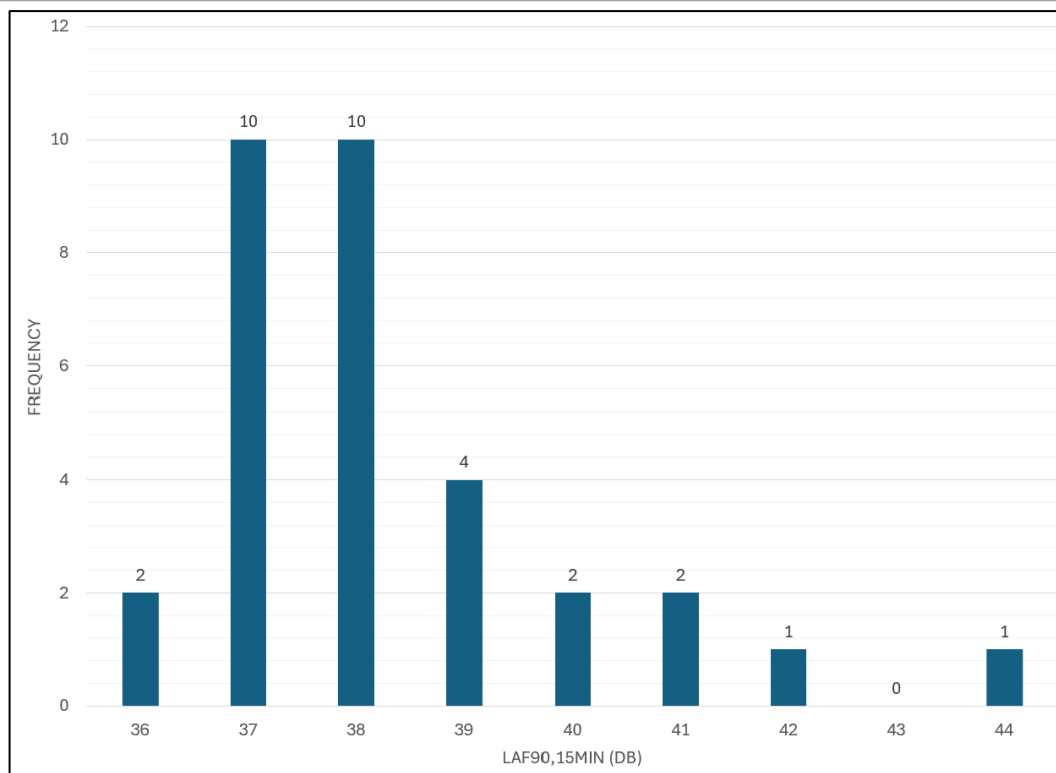


Chart 3: Statistical Analysis of Night-time Background Sound Levels at ML1 between Sun 05/04/2026 23:00 – Mon 06/04/2026 07:00

- 3.2.2 For both the daytime and night-time periods, the mode $L_{AF90,15min}$ values of 45 dB and 42 dB respectively, appear to be typical throughout the monitoring periods.
- 3.2.3 For the daytime, 40 dB appears to be typical, while during the night-time, 37 dB appears to be typical.
- 3.2.4 These are conservative selections based on the Sunday of the noise survey when activity in the area would have been reduced.

4 NOISE IMPACT ASSESSMENT

4.1 3D Noise Model – Proposed Logistics and Production Buildings

4.1.1 A 3D noise model has been created in SoundPLAN™ to calculate indicative noise levels from HGV servicing to the site. The model uses the calculation method from ISO 9613-2:1996¹ to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings.

4.1.2 The noise modelling is based past measurements of HGV servicing. The sound power levels used are detailed in **Table 4** below.

Table 4: HGV Sound Power Level in Noise Model									
Noise Source	<i>L_w</i> Sound power level in centre frequency (dB)								
	63	125	250	500	1000	2000	4000	8000	dBA
HGV Activity including reverse alarm	91	78	83	83	93	75	69	65	93

4.1.3 The noise model was inclusive of the topography of the application site and surrounding area, though the topography was noted to be generally flat and unlikely to have a significant influence on any modelling results. The model assumed hard, reflective ground ($GA = 0.2$) in line with the general ground cover at the site and calculated results to three orders of reflection.

4.1.4 The highest predicted noise level in the modelling is 34 dB L_{Aeq} . This is based on 100% operation and is not inclusive of any on-time corrections with regards to BS 4142 daytime and night-time reference periods.

¹ ISO9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"



Figure 6: HGV Modelling – 1.5 m Grid Height



Figure 7: HGV Modelling – 4.0 m Grid Height

4.2 BS 4142:2014 Assessment – HGV Servicing

- 4.2.1 A BS 4142:2014 assessment to NSR1 has been undertaken with respect to the noise levels presented in Section 4.1.

Specific Sound Level

- 4.2.2 The predicted sound level as presented in Section 4.1 of this report is 34 dB L_{Aeq} .
- 4.2.3 The reference assessment periods are one hour for the daytime and fifteen minutes for the night-time as per BS 4142:2014.
- 4.2.4 For the daytime, a typical 'on-time' of 40 minutes is assumed. This would mean that continuous noise could occur for 66.6% of the time within a daytime one-hour assessment, and 100% of the time in a night-time fifteen-minute assessment.
- 4.2.5 The on-time correction for the daytime is applied by:

$$L_{Aeq,T} = 10 \log \left(\frac{t_1 \times 10^{\frac{L_1}{10}}}{T} \right)$$

Where t_1 = the on-time in seconds, L_1 = the pre-correction noise level and T = the reference period in seconds

- 4.2.6 The Specific Sound Levels for assessment are therefore:

- **Daytime:** 32 dB $L_{Aeq,1hour}$
- **Night-time:** 34 dB $L_{Aeq,15min}$

Background Sound Level

- 4.2.7 Typical Background Sound Levels at NSR1 have been determined in Section 3.2 of this report and are as follows:

- Daytime – 40 dB $L_{AF90,15min}$
- Night-time – 37 dB $L_{AF90,15min}$

Character Corrections

- 4.2.8 Character Corrections applied to the Specific Sound Level are outlined below.
- **Tonality:** +2 dB has been applied as reverse alarms may be perceptible as a distant sound at receptors.
 - **Intermittency:** No correction has been applied, as intermittency is not the primary feature of HGV deliveries that could cause complaint.
 - **Impulsivity:** +6 dB has been applied for impulsive character from loading/unloading activities.
- 4.2.9 The total Character Correction penalties are therefore 8 dB.

Initial Assessments

- 4.2.10 The BS 4142:2014 initial assessments are presented in the tables below. These are initial results only subject to consideration of context and uncertainty.

Table 5: BS 4142:2014 Initial Assessments		
Modelling Scenario	Predicted $L_{Aeq,1hour}$ Sound Level dB	
	Daytime	Night-time
$L_{Aeq,T}$ Specific Noise Level (dB)	32	34
Character Corrections (dB)	+8	+8
Rating Level (dB)	40	42
Typical $L_{AF90,15min}$ Background Sound Level (dB)	40	37
Excess of Rating Level over Background Sound Level	0	+5
Initial Estimate of Impact (subject to context)	Low Impact	Adverse Impact

BS 4142:2014 Context, Uncertainty and Outcome

- 4.2.11 The initial estimates of impact estimate a Low Impact for the daytime and an Adverse Impact for the night-time.
- 4.2.12 The context is one of continued industrial use within a previously established commercial unit within a wider industrial estate. There is uncertainty in the background sound level, which is likely situated at a location that is more screened from road traffic noise than the residential receptors, meaning that actual outcomes are likely to be more favourable than the estimates presented above.
- 4.2.13 The broader results of the survey indicate that higher typical background sound levels occur at ML1 during the daytime, such as 45 dB and 48 dB, which would result in more favourable assessment outcomes.
- 4.2.14 Based on conservative estimates, HGV servicing during the daytime would likely be categorised as LOAEL with reference to PPG:2017 and would therefore be acceptable. Servicing during the night-time would be dependent on the hours proposed.
- 4.2.15 If night-time servicing is proposed we would recommend that any future occupier employs best practicable means to reduce unnecessary noise from deliveries. The form that this

takes will depend on the nature of the business occupying the site, however measures may include:

- Appointing a member of staff responsible for receiving and handling any complaints (a complaint log may be appropriate);
- Switching HGV engines off during deliveries where possible and practical;
- Switching off reverse alarms where possible (and safe);
- Encouraging drivers to turn down cab radios before arriving at the site if necessary;
- Reducing unnecessary shouting in loading bay areas, particularly during the night-time.

4.2.16 Condition 15 specifies that the Rating Level should be 5 dB below the Background Sound Level. This is not a criterion of the standard and the Low Impact during daytime hours identified is compliant with national policy (e.g. PPG:2017, NPSE and the NPPF).

4.2.17 However, with the background monitoring location being at a location generally screened from road traffic noise, it is likely that servicing would be compliant with this requirement during daytime hours.

4.3 Plant Noise – Design Limits

4.3.1 The typical night-time Background Sound Level surveyed is 37 dB $L_{AF90,15min}$.

4.3.2 We would recommend that cumulative plant noise emissions, considered as a Rating Level inclusive of Character Corrections, are designed to not exceed 32 dB at the closest residential dwelling.

4.3.3 The resultant noise limits for plant at source would be dependent on how many plant items are proposed and where they are sited. Upon receipt of this information, NoiseAir will be able to provide further information.

5 CONCLUSIONS

5.1 Overview

- 5.1.1 By instruction from Jackson Family Holdings Ltd (the client'), NoiseAir was commissioned to undertake a noise impact assessment to assess potential noise from a consented development covering office and warehouse use.
- 5.1.2 Noise measurements were taken of existing Background Sound Levels at the site. These were used to assess HGV servicing at the site. These may also be used for future assessment of any fixed plant proposed by prospective occupiers/operators if required.
- 5.1.3 Noise levels from an indicative HGV delivery to the site have been predicted within noise modelling software to undertake an indicative BS 4142:2014 assessment relating to potential noise impact on nearby residential dwellings.

5.2 Conclusions

- 5.2.1 The assessment indicated that HGV servicing would likely pose a BS 4142 Low Impact during the daytime. During the night-time, additional management controls may be required. The principle of HGV servicing at the site is acceptable, as demonstrated by the surrounding site context and site history as an established industrial estate. However, the occupier should make all reasonable efforts to minimise noise.
- 5.2.2 Initial Rating Level limits for fixed plant have been identified. Assessment of any fixed plant would be required by Condition 15 and should be undertaken when the information becomes available.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Jackson Family Holdings Ltd 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 Jackson Family Holdings Ltd 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.

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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. <i>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.</i>
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. <i>NOTE: The ambient sound comprises the residual sound and the specific sound when present.</i>
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 <i>NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.</i>
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. <i>NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.</i>
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 (m ²), 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. <i>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.</i>
Free-field level	Sound pressure level away from reflecting surfaces. <i>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.</i>

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. <i>NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.</i>
Measurement time interval, T_m (BS 4142:2014)	Total time over which measurements are taken. <i>NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.</i>
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. <i>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.</i>
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. <i>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.</i>
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,T_r}	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. <i>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.</i>
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, $L_s = L_{Aeq,T_r}$ (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. <i>NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.</i>
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. <i>NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.</i>
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. <i>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).</i>
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)
$L_{Aeq,T}$	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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