

Noise Impact Assessment for open storage (Class B8) site use, provision of new hardstanding, and all other associated works

Open storage (Class B8), Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley



Client: NW1 IOS 3 Unit Trust

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0. SUMMARY

- 0.1. ACA Acoustics has been commissioned by NW1 IOS 3 Unit Trust to provide a noise impact assessment of a proposed development at Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley. This assessment is to be submitted in support of a planning application for the proposed use of open storage (Class B8), provision of new hardstanding, and all other associated works.
- 0.2. A sound level survey was carried out at the site between 16th and 17th February 2026. Whilst on site, ACA Acoustics' consultant considered the existing sound climate to predominantly comprise of low-level road traffic noise on distant routes along with commercial noise sources in the area.
- 0.3. An assessment of operational noise from the proposed development has been carried out in accordance with BS 4142:2014+A1:2019. This includes assessment of vehicles manoeuvring and loading goods. The assessment indicates the proposed development will result in a low likelihood of adverse impact on nearby noise sensitive properties.
- 0.4. No mechanical services equipment such as ventilation or air conditioning is proposed although a maximum permissible rating level proposed in this report will ensure noise from any new mechanical services plant, if proposed in future, will not be detrimental to the amenity of nearby occupants.
- 0.5. In conclusion, noise emissions from the proposed development will be low and result in no overall increase to the residual sound level to nearby noise-sensitive properties and it is recommended that the site is suitable for the proposed development.

1. INTRODUCTION

The client is proposing the development for the proposed use of open storage (Class B8), provision of new hardstanding, and all other associated works at Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley. An application for this proposal is to be submitted to Knowsley Metropolitan Borough Council.

ACA Acoustics have been commissioned to carry out a noise impact assessment of the proposed development and, where necessary, make recommendations for an appropriate noise mitigation scheme.

This report presents results of the assessment and recommendations for required noise control treatments.

2. ACOUSTIC CRITERIA

2.1. Local Authority Policies

The local authority has planning policies in place to ensure that developments are concious of the surrounding environment and do not cause loss of amenity to residents.

UDP ENV2 states that:

- "1. Development that will either cause an unacceptable increase in noise or vibration levels or itself be subject to unacceptable noise or vibration from an existing source will not be permitted.*
- 2. Where developments are permitted, conditions may be attached to the planning permission to ensure effective noise insulation or other required mitigation measures are carried out."*

This advises that developments must not cause, or be subject to, an unacceptable increase in noise or vibration. In some cases planning conditions may be attached to ensure that noise impacts are mitigated.

The Local Plan Policy CS19 also relates to noise, and states that:

- "CS19 2) To maintain a good standard of amenity for all existing and future occupants of land and buildings, development proposals will be required to: a) Avoid unacceptable impacts on existing residents, business occupiers, and future occupiers."*

While both of these policies emphasize the importance of ensure that impacts from proposed developments are kept to a minimum, they do not contain numerical criteria. As such it is necessary to examine other national standards and guidance for suitable guideline criteria.

2.2. National Planning Policy Framework (NPPF) and Noise Policy Statement for England (NPSE)

The National Planning Policy Framework (referred to as NPPF) sets out the Government's planning policies for England and provides guidance on how these are expected to be applied, providing a framework within which Local Authorities can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

Paragraph 187 of the NPPF states that,

"Planning policies and decisions should contribute to and enhance the natural and local environment by ... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability".

Paragraph 198 also talks specifically about noise and advises,

"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 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."*

The Government's long-term policy aims relating to noise are contained in the Noise Policy Statement for England (referred to as NPSE). Stated aims of the NPSE are:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy of sustainable development:

- Avoid significant adverse impacts on health and quality of life,*
- Mitigate and minimise adverse impacts on health and quality of life, and*
- Where possible, contribute to the improvement of health and quality of life."*

Paragraphs 2.19 to 2.24 clarify the above aims, referring to established concepts from toxicology; NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level). It also introduces a new concept relating to "significant adverse" of SOAEL (Significant Observed Adverse Effect Level), however noting,

“It is not possible to have a single objective noise-based measure that describes SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times”.

The first aim of NPPF Paragraph 198 and the second underlying 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 considering the guiding principles of sustainable development, as set out in the NPPF.

As neither the NPPF nor NPSE includes any numerical criteria, it is necessary to consider guidance provided in other documents to determine suitable limits that would define the LOAEL on an individual basis.

2.3. Planning Practice Guidance – Noise (PPG-N)

Related to the NPSE and the NPPF, The Department for Communities and Local Government has published additional guidance and clarifications within the Planning Practice Guidance – Noise (PPG-N), available at <https://www.gov.uk/guidance/noise--2>.

Paragraph 003 of the PPG advises that:

“Plan-making and decision making need to take account of the acoustic environment and in doing so consider:

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

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure ... is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.”

This guidance is like that set out in the NPPF and NPSE, however, Paragraph 005 of the PPG-N provides outline guidance of the definition of “significant adverse” and “adverse” effects. A copy of the table appended to Paragraph 005 is repeated below.

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 1 - Noise exposure hierarchy, taken from Planning Practice Guidance – Noise

Although this table provides descriptions of definitions for the NOEL, LOAEL and SOAEL, as with the NPPF and NPSE there are no numerical values provided.

2.4. British Standard BS 4142:2014+A1:2019

The scope of BS 4142:2014+A1:2019 advises that:

“This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature... to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident”.

BS 4142:2014+A1:2019 is commonly used to assess the potential for loss of amenity due to noise from the commercial or industrial development and is considered appropriate for this application.

The assessment method of BS 4142:2014+A1:2019 corrects the specific sound level from the source under investigation to account for characteristics that could make the sound more obtrusive to obtain a rating level. This rating level is compared against the prevailing background noise outside the noise-sensitive property. Section 11 provides a commentary of the assessment results and advises that:

- a) *Typically the greater this difference [between the rating level and background sound level], the greater the magnitude of the impact;*
- b) *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;*
- c) *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context;*
- d) *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.*

Section 11 of BS 4142:2014+A1:2019 provides an indication of when a development will result in a significant adverse or adverse impact, allowing comparison with guidance in the NPPF, NPSE, and PPG-N. However, it is important to note that the Standard is clear that this initial assessment conclusion is dependent on the context of the development, which may materially alter the assessment result.

3. REVIEW OF SITE LOCATION & DEVELOPMENT PROPOSALS

The development site is at Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley. The surrounding area is to other industrial units, with the nearest residential properties nominally 500 metres away to the East.

The application the proposed use of open storage (Class B8), provision of new hardstanding, and all other associated works. The site will include the use of electric forklifts. The site will be in use over a potential 24-hour period, 7 days a week. ACA Acoustics understand that at most 18 loading events per hour (or 5 in a 15-minute period overnight) may occur, albeit this is very much a worst case scenario.

Access to the site by HGVs will be from the eastern access via Faraday Road, or from the South via Alchemy Way.

The proposed site location plan drawing, provided by the client is included in Figure 2 below.



Figure 2: Proposed site location plan

4. SOUND LEVEL SURVEY

To assess the impact of the proposed development on nearby residential premises a survey has been conducted to establish existing background sound levels in the vicinity. Details of the sound level survey carried out by ACA Acoustics are provided below.

A single monitoring position to the West of the site has been used for the survey. This position was on the vacant land to the west of the development site. This position is farther removed from the nearby road than nearby residential properties and as such backgrounds from road traffic will be slightly lower than those at the residential properties, resulting in a more robust assessment.

Sound levels in the vicinity of the sound level survey are dominated by road traffic activity from the nearby dual-carriageway A5207. In addition, sound from nearby commercial uses were also subjectively audible, including some third-party loading activity and mechanical plant.

A marked-up aerial photo showing the survey, development, and nearby receptor positions, is included in Figure 3 below.

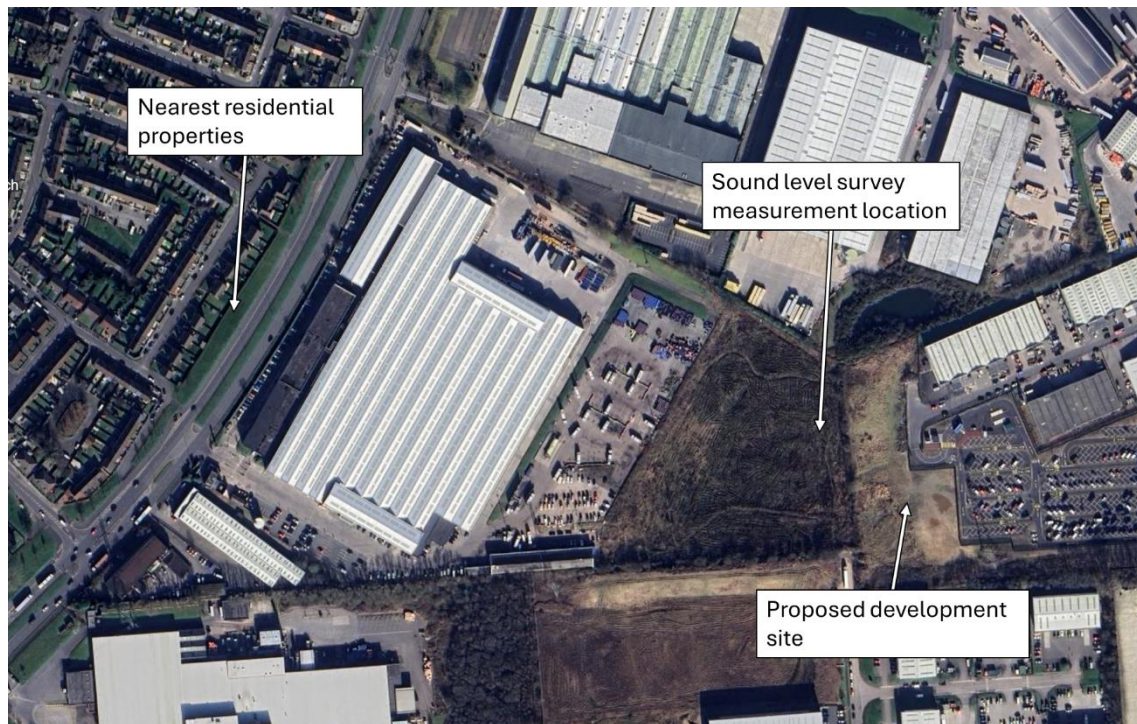


Figure 3: Sound level survey measurement position (available at www.google.com/maps)

The survey was carried out over nominally a 24-hour period between 16th – 17th February 2026. The survey was conducted typically following procedures set out in BS 4142:2014+A1:2019. The following equipment was used during the survey; the sound level meter was calibrated before the survey and checked after with no deviation noted.

Equipment	Serial Number
Rion Class 1 sound level meter type NL-52 complete with weatherproof and lockable outdoor environmental kit	01052664
Svantek calibrator type SV33B. Compliant to IEC 60942-1:2003	83826

Table 1: Equipment used for the sound level survey

While setting up the sound level survey weather conditions were noted as being cool, calm, and slightly damp ground conditions. Weather conditions were monitored on www.worldweatheronline.com and the weather conditions remained within appropriate values for the duration of the survey.

Results of the survey are shown in Figure 4 below.

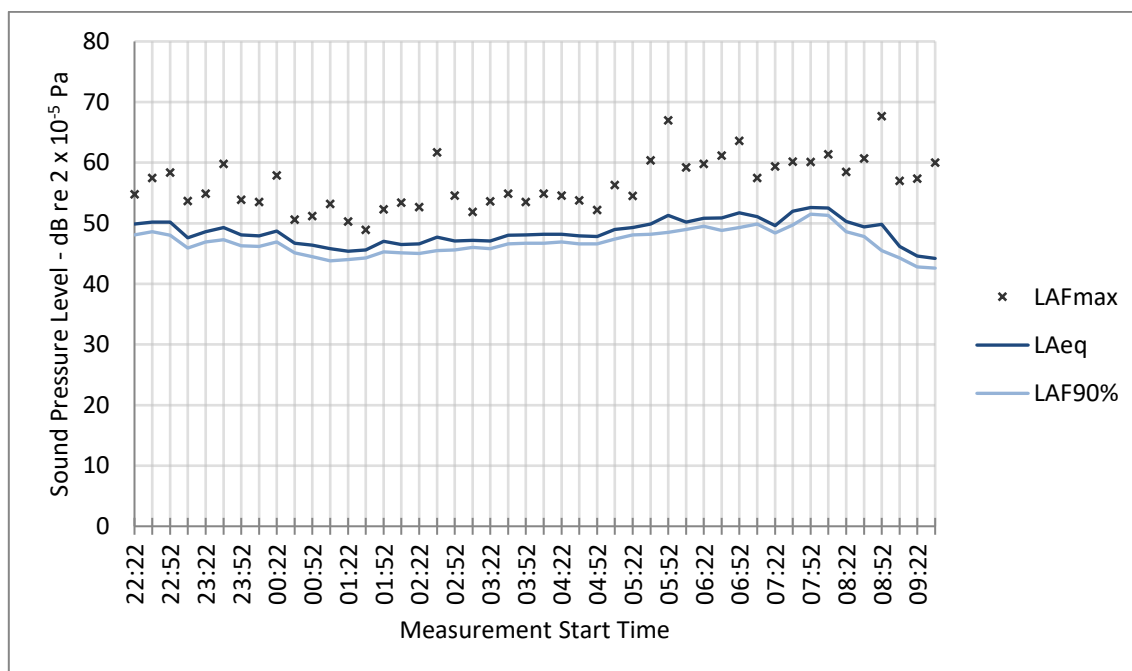


Figure 4 - Sound level survey results at the measurement position

In accordance with BS 4142:2014+A1:2019, the prevailing background sound level is not necessarily taken to be the lowest recorded values, but rather the level that best represents the typical background sound level in the area over a defined period. A statistical analysis of the measured background sound levels has been carried out, generally following suggested guidance contained in Section 8 of the Standard. Distribution of the measured LA90 sound levels during the daytime and night-time operating times of loading and unloading are shown in Figure 5 and Figure 6.

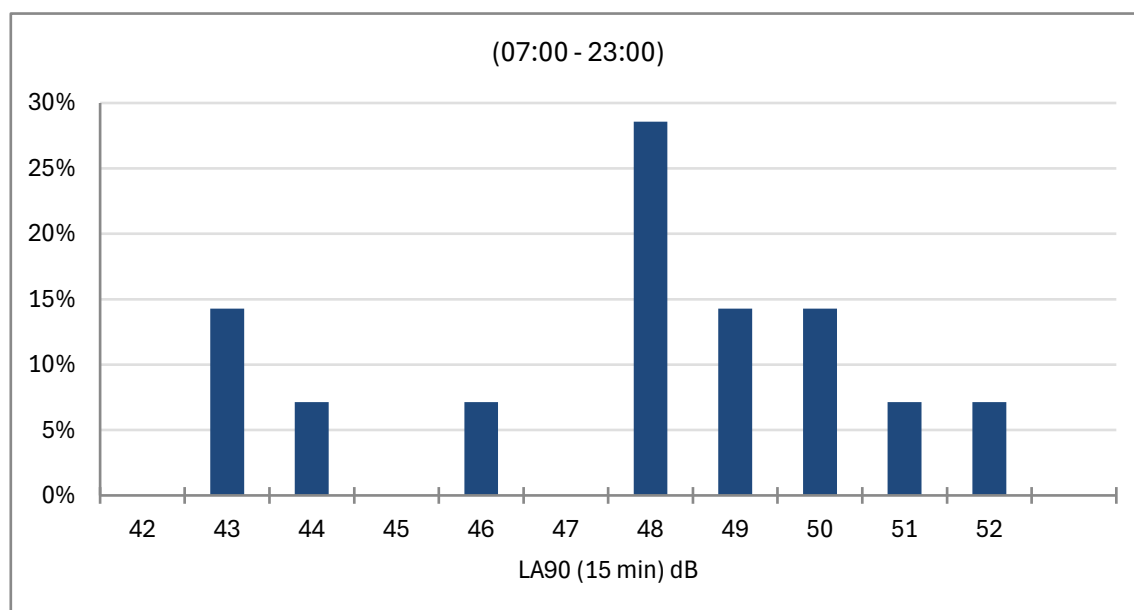


Figure 5: Statistical analysis of measured LA90 sound levels during daytime hours

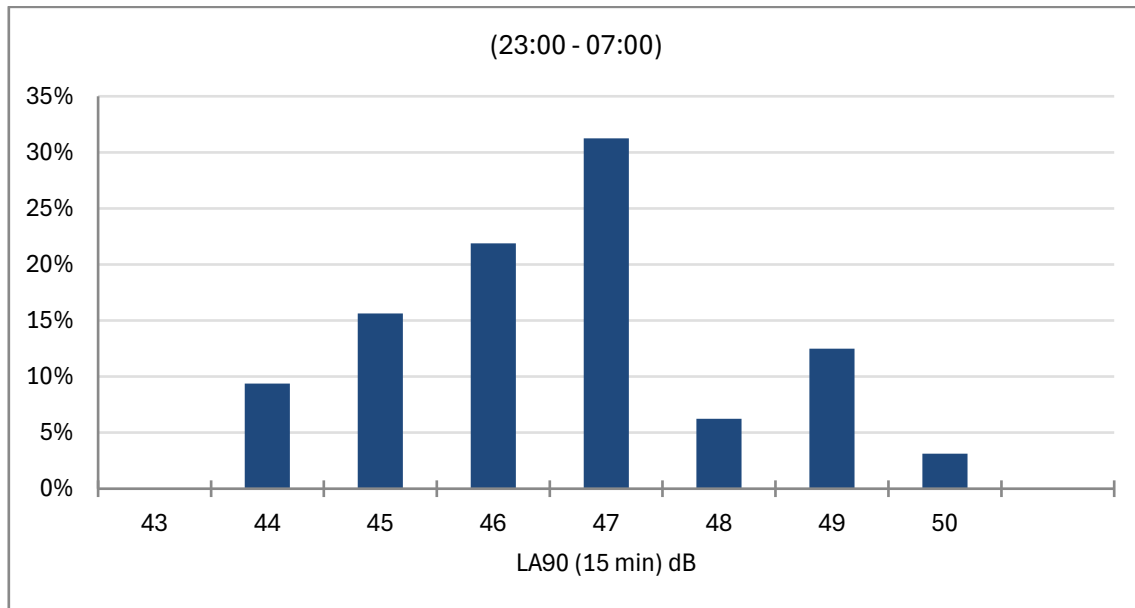


Figure 6: Statistical analysis of measured LA90 sound levels during nighttime hours

Figure 5 and Figure 6 confirm that there is a clear peak in measured LA90 sound levels at 48dB during the day and 47dB overnight. In accordance with the guidance in the British Standard these are taken to be the representative background sound level.

Confirmation of the background sound level used for the receptor location is shown in the table below.

Receptor Location	Time period	Residual Sound Level	Representative Background Sound Level
MP1	07:00 - 23:00	LAeq 50dB	LA90 48dB
MP1	23:00 – 07:00	LAeq 48dB	LA90 47dB

Table 2: Representative background sound levels used

5. ASSESSMENT OF PROPOSED B8 OPEN STORAGE USE

5.1. Source Sound Levels Used Within the Assessment

Whereas other uses, such as Class B2, would have the potential for high operational sound levels, internal sound levels of a Class B8 storage facility are likely to be limited to electric forklift truck movements and noise associated with loading/unloading materials.

The dominant sound source associated with the development will be from vehicles accessing the property and associated loading/unloading. It should be noted that in accordance with BS 4142, noise from vehicles travelling on public roads is not classed as industrial/commercial noise and therefore does not form part of this assessment.

To calculate noise emissions from vehicles manoeuvring and unloading/unloading it is necessary to establish what the typical source sound level will be from these activities. The following data has been measured during a previous survey at a similar site.

Activity	L _{Aeq}
HGV arriving and manoeuvring, measured at 1m	L _{Aeq, 1-min} 79dB
HGV loading/unloading and a forklift truck, measured at 1m	L _{Aeq, 30-min} 75dB

Table 3: Typical source sound levels from vehicle movements and loading/unloading

ACA Acoustics have been advised that a very worst-case scenario may see up to 18 vehicle loading events over a 1-hour period. ACA Acoustics have used this as a worst case assessment such that the acoustic model has been based on 5 HGV movements and loading events per 15-minute period - the reference assessment period proposed in BS 4142:2014+A1:2019 during night-time hours. This operational frequency has been advised as a worst-case scenario by the client.

Calculation of the source sound level at one metre from the source over the reference time period is included below. Assessment of the sound level to the receptors is included in Sections 5.2 and 5.3.

A vehicle is expected to take around 1 minute to travel to the storage location. Therefore, the calculated 15- minute L_{Aeq} value for the vehicle movements at one metre from the noise source is:

Source	Time Correction	Sound level at 1 meter from the source over 15 minute period
HGVs Manoeuvring	5 Journeys, each taking 60 seconds, over 15 minute (900 second) assessment period $10 \times \log_{10} \left(\frac{60 \times 5}{900} \right) = -5$	79 – 5 = 74dBA
HGVs Loading	5 loading events, each taking 15 minutes, over 15 minute assessment period $10 \times \log_{10} \left(\frac{15 \times 5}{15} \right) = +7$	75 + 7 = 82dBA

Calculations of these source sound levels to the receptor locations are included below.

5.2. 3D Noise Map Model

To calculate sound levels that would be experienced at the façade of the nearby dwellings, a computer calculation model has been set up using iNoise proprietary noise mapping software, based on the calculation procedures of ISO 9613-1/2 standards and the associated ISO 17534 quality standard to determine the reduction of sound around the development property.

The following data and assumptions have been included within the computer model:

- The computer model uses the source sound levels detailed within this report.
- The assessment assumes moderate downwind propagation from the source to all receptors.
- The sound reflection coefficient from existing buildings is assumed to be 0.8, equating to traditional buildings with windows, small additions, or bays.

Below is a printout of the 3D noise map model showing cumulative sound levels from both HGVs manoeuvring and loading activity.

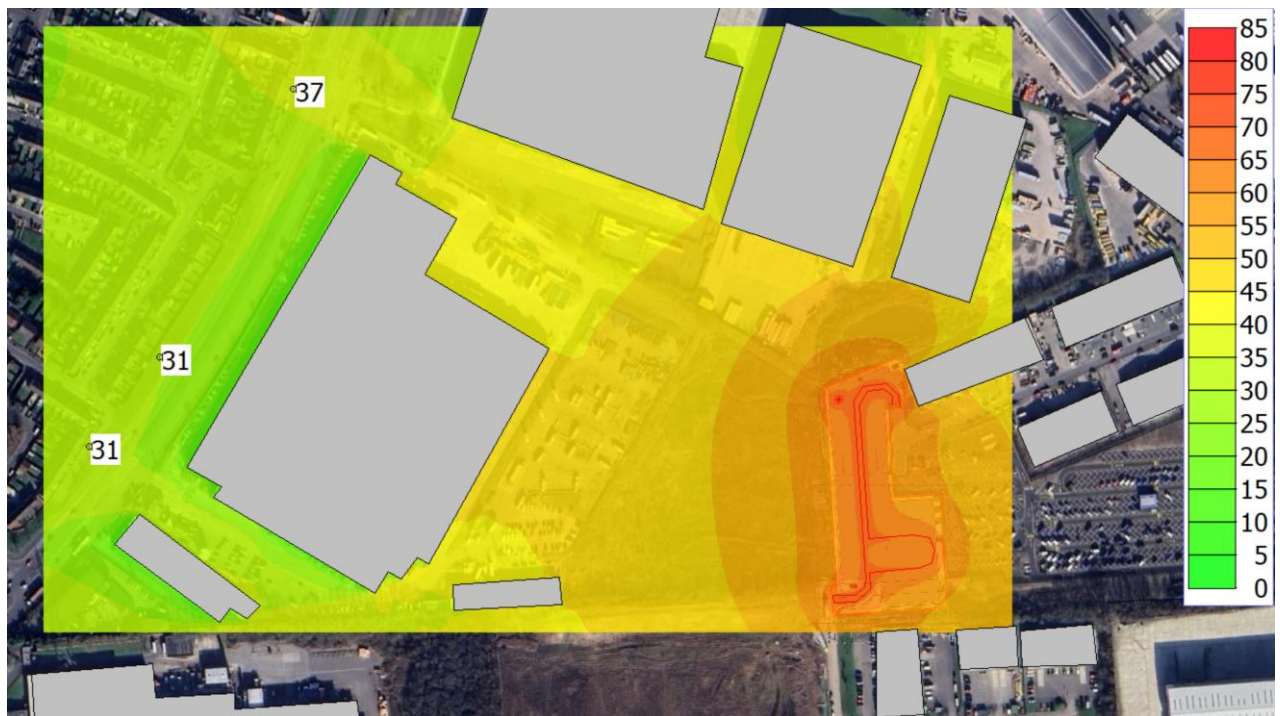


Figure 7: Noise map printout

Summary results from the individual sources are shown in Table 4 below

Description	Calculated sound level
Loading sound levels	LAeq 27dBA
Vehicle movement sound levels	LAeq 36dBA
Cumulative sound levels	LAeq 37dBA

Table 4: Summary sound level results at receptors

5.3. Assessment of Loading Activity

An assessment of the calculated specific sound levels to determine the rating level of loading activity in accordance with BS 4142:2014+A1:2019 has been carried out. Assessment at the more sensitive night-time period has been carried out. The assessment outcome during the daytime period would be less onerous and therefore where the assessment indicates low likelihood of adverse impact at night, then a similar outcome will be achieved for the daytime assessment.

Description	Night time assessment	Relevant Clause	Commentary
Specific sound level to ground floor windows	LAeq 37dB	7.3.6	Calculated level.
Background sound level	LA90 47dB	8.2	Measured existing background during night period. Refer Table 2.
Assessment is made during the night-time. The reference time interval is 15 minutes.		7.2	
On-time correction	0dB	7.3.15	Calculated specific sound level includes correction for operating time over 15 minute period, as Equation 4 of BS 4142. Refer Section 5 above.
Acoustic feature correction	0dB	9.2	The proposed sources – vehicles and loading/unloading will be significantly lower than the measured background sound level and so no correction is applicable

Rating level	LAr 37dB	9.2	
Excess of rating level over background sound level	-10dB	11	Assessment indicates the development will have a low likelihood of adverse impact

Table 5: BS 4142:2014+A1:2019 Assessment

5.4. Context of the BS 4142:2014+A1:2019 Assessment

BS 4142:2014+A1:2019 requires an assessment to consider the context of a development, rather than simply adhere to numerical figures. The context of the assessment is a planning application for a new B8 use class facility. The site is surrounded by other commercial and industrial uses, with nearest noise sensitive properties a significant distance away, and also with no line of sight. The likelihood of adverse impact is potentially reduced in this context.

Considering the calculated numerical value of the specific sound, allowing a reduction through partially open windows of 15dBA, as recommended in BS 8233:2014, sound levels inside the neighbouring dwellings due to the proposed new equipment will be approximately 22dBA (37dBA-15dBA). This is well below guideline levels for sleeping in bedrooms of LAeq 30dB, set out in BS 8233:2014 and is further confirmation that sound levels from potential B8 use should not be detrimental to the amenity of any noise-sensitive receptors in the vicinity.

Sound levels from loading and unloading indicate a low level of adverse impact and meets the requirements of the local authority.

6. NOISE FROM MECHANICAL SERVICES EQUIPMENT

No mechanical services equipment such as ventilation or air conditioning is required or proposed.

Notwithstanding this, based on criteria discussed in Section 2.4, it is recommended that the cumulative rating level for any future desired equipment, operating together, should not exceed the measured background sound levels at the most affected noise-sensitive receptor of LA90 47dB, as shown in Table 2, when measured at 1m from the window of the property.

Should mechanical services equipment be required for the units in future, ACA Acoustics would undertake an acoustic assessment based on the design of plant and equipment to confirm compliance with the above criteria and, where necessary, provide specification for suitable noise mitigation measures.

7. CONCLUSION

A planning application is to be submitted to Knowsley Metropolitan Borough Council for the proposed use of open storage (Class B8), provision of new hardstanding, and all other associated works to be installed at Land to the West of Faraday Road and East of Alchemy Way, Knowsley Industrial Park, Kirkby, Knowsley.

ACA Acoustics have undertaken sound level surveys in the vicinity and assessment of noise from use of the proposed development.

Sound levels from use of the new Class B8 use have been assessed, including sound levels from vehicles accessing site, and loading activity. Sound levels have been assessed in accordance with BS 4142:2014+A1:2019 and BS 8233:2014 accordingly and will result in a low impact to nearby noise-sensitive properties.

In addition, ACA Acoustics have considered noise from any future mechanical services equipment and maximum permissible criteria proposed.

It is the author's opinion the proposed development will not be detrimental to the amenity of nearby residential occupants and complies with the requirements of the NPPF, NPSE, and PPG-N.