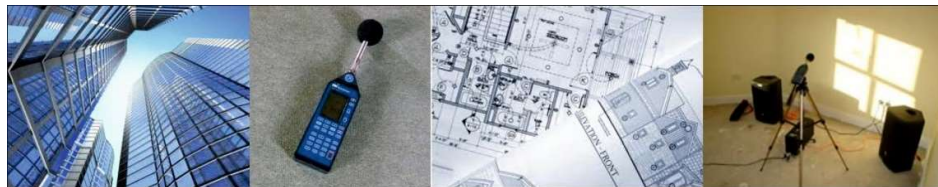


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SITE E

HAMILTON BUSINESS PARK

HEDGE END

SOUTHAMPTON

SO30 2JR

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

v.2

Client:

HARGREAVES PROPERTY

Rustington House
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Rustington
West Sussex
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22nd August 2024
Ref: M5048

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Project Reference	M5048
Issue No.	2
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1. SUMMARY

- 1.1 An assessment of environmental noise has been carried out at Site E, Hamilton Business Park, Hedge End, Southampton, where the existing building is proposed to be used for purposes within Classes B2 and/or B8 and/or E(g) of the Use Classes Order. The objective of the exercise is to confirm that noise levels associated with the proposed operation of building will not have any detrimental effect on nearby noise sensitive buildings.
- 1.2 The existing ambient noise climate around the vicinity of the application site has been established (Section 3).
- 1.3 Section 4 provides a description of the relevant national planning policies and defines the criteria which would commonly be applied to development projects of this nature.
- 1.4 An assessment of the predicted noise levels for the three main noise sources - activity noise externally, break-out noise from possible activities within the building and building services plant noise. Mindful that a specific operator of the building has yet to be confirmed, the predictions are based on worst reasonable case assumptions regarding its use, during the day and the night.
- 1.5 The initial assumptions indicated that some aspects of the uses contemplated could give rise to an adverse impact for local residents, during both day time and night time periods.
- 1.6 In order to mitigate this effect, it is therefore recommended that:
 - (i) HGV's movements and external forklift activity should be avoided between the hours of 2300 and 0700.
 - (ii) Fork lift movements during the day should be controlled, and reversing alarms in particular should be selected to reduce noise levels. White noise alarms are preferred.
 - (iii) Internal noise levels within the building should be restricted to 80 dB(A), to avoid the need for upgrading the shell of the building (in particular, doors and glazing).
- 1.7 With these measures in place, a BS4142 assessment of the emitted noise concludes that the likely activities would have a low impact, depending on the context. Furthermore, the predicted values maintain the existing ambient noise climate, and therefore would not represent any worsening of the situation currently experienced by the residential neighbours.

2. INTRODUCTION

- 2.1 An assessment of environmental noise has been undertaken at Site E, Hamilton Business Park, Hedge End.
- 2.2 The existing building is located on Manaton Way, to the north of Hamilton Business Park. The Park borders a residential area to the north, and the closest dwellings are deemed to be those on Hansen Gardens (see Figure 1 – Site Location).
- 2.3 It is understood that planning permission will be sought to allow for flexible use to encompass industrial and storage uses within Classes B8 and E of the Use Classes Order. The client would also like this to extend to B2 uses, subject to being able to do this while adhering to any noise constraints.
- 2.4 It is noted that the site was granted permission for commercial use in 1999, and it is understood that no noise complaints have been made since first use. This assessment will therefore presume that any future use of the site should not increase the existing noise climate.
- 2.5 Ian Sharland Limited has been instructed to provide a noise impact assessment to identify any potential noise effects of the reuse of the building, together with appropriate mitigation measures. The formal objectives of the exercise may therefore be summarised as follows:
 - (i) To determine the existing ambient noise climate in the vicinity of the site,
 - (ii) To propose a design criterion for limiting noise emissions from the site,
 - (iii) To predict noise generated due to activities associated with the building,
 - (iv) To assess the predicted noise levels against the design criteria, and recommend any mitigation which may be required.
- 2.6 This report details the investigations carried out in respect of each of these objectives and summarises the conclusions which have been reached.

3. SURVEY OF EXISTING NOISE LEVELS

- 3.1 The first step in this assessment is to measure and describe the existing ambient noise levels.
- 3.2 A noise survey was undertaken from Monday 29th July to Friday 2nd August 2024.
- 3.3 A Rion NL-52 Type 1 sound level meter was set up at the northeastern corner of the site (see Figure 3 – Monitoring Location).
- 3.4 The microphone was attached to an extendable light stand and set up at a height of approximately 1.5m above the ground in a free field position.
- 3.5 The equipment was configured to measure 15minute samples of the following acoustic parameters:
- L_{Aeq} The A-weighted equivalent continuous sound pressure level which, over the sample period, contains the same acoustic energy as the time-varying signal being recorded.
- L_{Amax} The A-weighted maximum sound pressure level recorded during each sample period (as measured on fast response).
- L_{A90} A statistical parameter, representing the A-weighted noise level exceeded for 90% of each sample period. This gives a measure of the underlying noise and is commonly used to describe the ambient background noise.
- 3.6 The sound level meter was calibrated before and after the survey and showed no significant variance.
- 3.7 Weather conditions throughout the survey period have been supplied by weatheronline.co.uk and are summarized within Table 3.1.

Date	Average Temperature (°C)	Rainfall (mm)	Average Wind Speed m/sec	Wind Direction
Monday 29/07	25	0.0	3.4 - 5.4	SE
Tuesday 30/07	27	0.0	1.3 - 3.6	NE
Wednesday 31/07	27	0.0	1.3 - 3.6	E
Thursday 01/08	25	0.0	1.3 - 3.6	Variable
Friday 02/08	24	0.0	1.3 - 3.6	W

Table 3.1 – Weather Conditions during survey.

- 3.8 Figure 4 shows the variation in ambient noise levels during the survey period, and Table 3.2 confirms the measured levels during each of the hourly periods.

Period		Daytime L _{Aeq} , 07.00 – 23.00	Night-Time L _{Aeq} , 23.00 – 07.00	Night-time L _{Amax} , fast
Monday 29/07	dB(A)	47.7*	45.4	63
Tuesday 30/07	dB(A)	47.2	45.9	65
Wednesday 31/07	dB(A)	47.2	44.7	62
Thursday 01/08	dB(A)	63.5 ¹	47.0	70
Friday 02/08	dB(A)	52.2*	-	-

*Part measurements

Table 3.3 – Summary of Measurements

- 3.9 The L_{Amax} levels shown in the table are the peak values based on the 90th percentile and may exclude exceptional 'one-off' events that may have occurred.
- 3.10 Table 3.4 provides a statistical analysis of the measured background noise levels across each day of the survey, offering values for the mean, modal, median and 90th percentile.

Day	Period	Mean	Modal	Median	90 th Percentile
Monday 29/07	Day	45	44	45	44
	Night	44	44	44	43
Tuesday 30/07	Day	45	44	45	44
	Night	44	43	44	43
Wednesday 31/07	Day	45	46	45	43
	Night	44	43	43	43
Thursday 01/08	Day	45	45	45	44
	Night	44	44	44	44

Table 3.4 – Summary of Background Noise Levels

- 3.11 With due consideration for the aim of obtaining the representative background noise, this project will adopt the following background noise levels:

Daytime 0700 – 2300 **44 dB(A) L_{A90}**
Nigh Time 2300 – 0700 **43 dB(A) L_{A90}**

¹ Grounds maintenance works were carried out between 09.00 – 11.30 hrs which accounts for the uplift in the ambient noise levels.

4. ASSESSMENT OF NOISE LEVELS

4.1 National Planning Policy Framework (December 2023)

- 4.1.1 The National Planning Policy Framework (NPPF) sets out the Government’s planning policies for England and how these should be applied. It provides a framework within which locally prepared plans for housing and other development can be produced.
- 4.1.2 Planning law requires that applications for planning permission be determined in accordance with the development plan unless material considerations indicate otherwise. The National Planning Policy Framework must be considered in preparing the development plan and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.
- 4.1.3 The purpose of the planning system is to contribute to the achievement of sustainable development. At an extremely high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- 4.1.4 Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):
- a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.
 - b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and
 - c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.
- 4.1.5 These objectives should be delivered through the preparation and implementation of plans and the application of the policies in this Framework; they are not criteria against which every decision can or should be judged. Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.

4.1.6 So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development.

4.1.7 Paragraph 191 of the NPPF states:

191. 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 minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life²*
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes, and nature conservation.*

4.1.8 The Framework continues:

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

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

3.1.9 This advice sets out the ‘agent of change’ principle, whereby a person or business introducing a new land use is responsible for managing the impact of that change.

² Refers here to the NPSE, discussed in Section 4.2 of this report.

4.2 National Policy Statement for England (March 2010)

- 4.2.1 The document "Noise Policy Statement for England" sets out the following vision for on-going noise policy:

"Promote good health and quality of life through the effective management of noise within the context of Government policy on sustainable development."

- 4.2.2 This vision should be achieved through the following Noise Policy Aims:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on 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".*

- 4.2.3 To achieve these objectives the Noise Policy Statement sets out three noise levels to be defined by the assessor:

- **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. Where levels lie between the LOAEL and SOAEL, the Statement requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development, as set out in the NPPF.

- **SOAEL** - Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It notes, however, that "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".

- 4.2.4 Paragraph 2.7 states that "... the application of the NPSE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a policy, development or other activity may not have been given adequate weight when assessing the noise implications".

- 4.2.5 This provides clear guidance that noise must not be considered in isolation but as part of the overall scheme, taking into account the overall sustainability and associated impacts of the proposed development; there is no benefit in reducing noise to an excessively low level if this creates or increases some other adverse impact. Similarly, it may be appropriate in some cases for noise to have an adverse impact if this is outweighed by the reduction or removal of some other adverse impact that is of greater significance to the development.
- 4.2.6 The Noise Policy Statement considers that noise levels above the SOAEL would be seen to have, by definition, significant adverse effects and would be considered unacceptable. Where the assessed noise levels fall between the LOAEL and the SOAEL noise levels, the Policy Statement 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.... This does not mean that such adverse effects cannot occur."

- 4.2.7 Where noise levels are below the LOAEL it is considered there will be no adverse effect. Once noise levels are below the NOEL there will be no observable change. An indication of the numerical definition of LOAEL may be derived from the following guidance.

4.3 Planning Practice Guide 'Noise' (July 2019)

- 4.3.1 The Ministry of Housing Communities and Local Government provided further guidance to support the NPPF. The section, Noise, published in July 2019, provides the following advice:

When is noise relevant to planning?

Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.

What are the observed effect levels?

- *Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur.*
- *Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected.*
- *No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.*

Although the word 'level' is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure. In some circumstances adverse effects are defined in terms of a combination of more than one factor such as noise exposure, the

number of occurrences of the noise in a given time period, the duration of the noise and the time of day the noise occurs.

How can it be established whether noise is likely to be a concern?

At the lowest extreme, when noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'no observed effect' level. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it. The noise may slightly affect the acoustic character of an area but not to the extent there is a change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.

As the exposure increases further, it crosses the 'lowest observed adverse effect' level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).

Increasing noise exposure will at some point cause the 'significant observed adverse effect' level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused.

At the highest extreme, noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without an ability to mitigate the effect of the noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be avoided.

- 4.3.2 The table below summarises the noise exposure hierarchy, based on the likely average response:

Perception	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
<i>Not Present</i>	<i>No Effect</i>	<i>No Observed Effect</i>	<i>No specific measures required</i>
<i>Present and not intrusive</i>	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.	<i>No Observed Adverse Effect</i>	<i>No specific measures required</i>
Lowest Observed Adverse Effect Level			
<i>Present and intrusive</i>	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.	<i>Observed Adverse Effect</i>	<i>Mitigate and reduce to a minimum</i>
Significant Observed Adverse Effect Level			
<i>Present and disruptive</i>	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	<i>Significant Observed Adverse Effect</i>	<i>Avoid</i>
<i>Present and very disruptive</i>	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.	<i>Unacceptable Adverse Effect</i>	<i>Prevent</i>

Table 4.1 – Noise Exposure Hierarchy

4.3.3 The guidance further advises:

What factors influence whether noise could be a concern?

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

These factors include:

- the source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day – this is because people tend to be more sensitive

to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night.

- for a new noise making source, how the noise from it relates to the existing sound environment.
- for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise.
- the spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features), and
- the local arrangement of buildings, surfaces and green infrastructure, and the extent to which it reflects or absorbs noise.

More specific factors to consider when relevant include:

- the cumulative impacts of more than one source of noise.
- whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations;
- In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.
- Noise Action Plans (where these exist), and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations should be taken into account. Defra's website has information on Noise Action Plans and Important Areas. Local authority environmental health departments will also be able to provide information about Important Areas.
- the effect of noise on wildlife. Noise can adversely affect wildlife and ecosystems. Particular consideration needs to be given to the potential effects of noisy development on international, national and locally designated sites of importance for biodiversity.
- where external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.
- some commercial developments including restaurants, hot food takeaways, night clubs and public houses can have particular impacts, not least because activities are often at their peak in the evening and late at night. Local planning authorities will wish to bear in mind not only the noise that is generated within the premises but also the noise that may be made by customers in the vicinity.

When proposed developments could include activities that would be covered by the licensing regime, local planning authorities will need to consider whether the potential for adverse noise impacts will be addressed through licensing controls (including licence conditions). Local planning authorities should not however presume that licence conditions will provide for noise management in all instances and should liaise with the licensing authority.

Are there further considerations relating to mitigating the impact of noise on residential developments?

Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling.
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects.
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5-minute walking distance).

4.3.4 The noise impact on residential developments may be partially off-set if the residents of those dwellings have access to:

- *a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling, and/or;*
- *a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or;*
- *a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings, and/or;*
- *a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minute walking distance).*

4.4 BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

4.4.1 There is much guidance on the levels of intrusive noise which would be considered acceptable within residential accommodation such as this. Typical advice is found in British Standard 8233:2014 "Guidance on Sound Insulation and Noise Reduction for buildings". Following similar guidance in the 1999 World Health Organisation report "Guidelines for Community

Noise", the Standard sets out the following limits for indoor ambient noise levels within living rooms and bedrooms of residential accommodation. This suggests:

Activity	Location	0700 - 2300	2300 - 0700
Resting	Living Room	35 dB(A) LAeq, 16 hr	-
Dining	Dining room/Area	40 dB(A) LAeq, 16 hr	-
Sleeping	Bedroom	35 dB(A) LAeq, 16 hr	30 dB(A) LAeq, 8 hr

Table 4.2 - BS8233 Indoor Guideline Values

- 4.4.2 It is usually considered that an open window will provide a reduction of some 10-15 dB(A)³. Therefore the 'good' internal standards quoted above would broadly equate to the following targets immediately outside the buildings:

Activity	Location	0700 - 2300	2300 - 0700
Resting	Living Room	48 dB(A) LAeq, 16 hr	-
Dining	Dining room/Area	53 dB(A) LAeq, 16 hr	-
Sleeping	Bedroom	48 dB(A) LAeq, 16 hr	43 dB(A) LAeq, 8 hr

Table 4.3 - BS8233 Derived Facade Guideline Values

- 4.4.3 BS8233 recognises that, where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB, and reasonable conditions will be achieved⁴.
- 4.4.4 It should be noted that the levels quoted in BS8233 are intended to reflect the acceptability of steady, continuous noise. Sources of intermittent and tonal noise may generate greater annoyance for a similar overall magnitude. Whilst BS8233 does not explicitly state a correction for those circumstances, it may be appropriate to consider that the Good and Reasonable standards would be achieved with levels which are perhaps 5 dB lower than stated in the table above.
- 4.4.5 It is also noted that BS8233 was written from a view of designing new buildings to protect occupants from existing noise sources. This does necessarily infer, however, that the acceptability of an occupant to an absolute level noise within a building will be different if the introduction of the noise source post-dates the construction of the building.

³ Reference PPG24 Planning & Noise, which adopted a mid-range value of 13 dB(A)

⁴ Note, the relaxation specified in BS8233 must be read in conjunction with parallel guidance set out in Approved Document O.

4.5 World Health Organisation Guidelines

- 4.5.1 Further advice is provided in the 1999 WHO report "Guidelines for Community Noise".
- 4.5.2 This indicates that the steady noise level in external amenity areas, such as gardens or outdoor living areas should not exceed 55 dB(A) $L_{Aeq, t}$, and should preferably be designed below 50 dB(A) $L_{Aeq, t}$.
- 4.5.3 The document also provides guidance on the impact of peak noise levels on sleeping conditions. This suggests that levels above 45 dB(A) L_{Amax} inside a bedroom would be disturbing to sleep. With windows open, this would equate to a level of approximately 58 dB(A) L_{Amax} externally.

4.6 BS 4142:2014+A1:2019: Methods for Rating & Assessing Industrial & Commercial Sound

- 4.6.1 Any formal assessment of commercial noise affecting residential properties would in all likelihood be based upon the recommendations of British Standard 4142:2014+A1:2019 "Methods for rating and assessing industrial and commercial sound".
- 4.6.2 In brief, this rating method determines "specific sound level" generated by the new plant, assessed immediately outside the residential properties most likely to be affected. For daytime (07.00 – 23.00) only operation of the new plant, this would be the equivalent continuous noise level of the new noise, evaluated over a 1-hour sampling period, its $L_{Aeq, 1hr}$. For plant operating during the night-time (23.00 – 07.00) only the reference time interval is 15 minutes.
- 4.6.3 Corrections of up to + 9 dB (A) are then made to this "specific sound level" if the new noise has certain acoustic features such as tonality, impulsivity, intermittency and any other sound characteristics, to give the "rating level".
- 4.6.4 An assessment of the impact of the specific sound level can be determined by subtracting the measured background level from the rating level and consider the following.
- a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around +5 dB 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.

NOTE: Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

- 4.6.5 It is likely that the Local Authority would seek to avoid marginal situations at the planning stage and may try to ensure a positive likelihood that no complaints would be forthcoming. As such, they might recommend a noise target which limits the Rating Noise Level to a maximum which is as low as 5 - 10 dB(A) below the minimum background level currently experienced.
- 4.6.6 However, there are limitations to BS4142 if noise levels are very low, and in such circumstances, it may not be necessary to follow the normal guidance in order to achieve this aim. Indeed, within the Scope of the Standard, it is stated:

"The method is not suitable for assessing the noise measured inside buildings or when the background and rating noise levels are both very low.

Note: for the purpose of this Standard, background noise levels below about 30 dB and rating noise level below about 35 dB are considered to be very low."

4.7 Eastleigh Borough Local Plan 2016 - 2036

- 4.7.1 The Borough is subject to various types of pollution, in particular air pollution from traffic, noise from major roads and the airport, and land contamination from industrial activity and the tipping of waste.

Policy DM8, Pollution

1. *Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:
 - a. air pollution (including odours or particulate emissions),
 - b. pollution of surface, underground, coastal waters or other watercourses,
 - c. noise or vibration,
 - d. light intrusion, both generally and with respect to the South Downs National Park's status as an International Dark Night Skies reserve, or
 - e. land contamination.*
2. *Development susceptible to particular forms of pollution will not be permitted:
 - a. where it will be adversely affected by such pollution, unless measures can be taken that adequately mitigate the polluting effects; or
 - b. where it would inhibit existing economic or other activities giving rise to acceptable polluting effects.*
3. *Where a development site is known or suspected to be contaminated, before the site is developed the Borough Council will require the contamination to be remediated to a standard where as a minimum it cannot be defined as 'contaminated land' under Part IIA of the Environmental Protection Act 1990.*

- 4.7.2 The Local Plan recognises that the adverse effects of exposure to excessive noise and vibration on health and quality of life are well documented and recognised as a material planning consideration. The Council supports the approach of the Noise Policy Statement for England in relation to the effective control of noise within the context of sustainable development. Any proposals likely to generate noise (including demolition and construction noise) will be expected to take account of the impact of this on any noise sensitive population, including those using recreational areas. Similarly, in assessing proposals for noise sensitive development, the Council will expect the developer to take into account existing noise levels and foreseeable changes to these. In doing so, developers must avoid significant adverse noise impacts to residential amenities. Development proposals should ensure that they mitigate and minimise adverse noise impacts and, where possible, contribute to the improvement of health and quality of life. Where necessary, the Council will require a noise assessment which will be expected to:

- identify all significant sources of noise,
- assess the likely short and long-term impacts of noise generated or exposure to noise, and
- propose noise protection measures.

Wherever possible, developments should use site and building layout and design to manage levels of noise on development sites. Where acceptable internal noise levels cannot be met with open windows, alternative ventilation will be required. Where the development site is affected by air pollution in addition to noise, early consideration of the location of air ventilation inlets is recommended.

5. PREDICTED ACTIVITY NOISE LEVELS

- 5.1 This section of the report will provide predictions of noise emanating from activities associated with the new building, and will assess them against the criterion set out in section 4 of this report.
- 5.2 Noise levels will be predicted and assessed at the nearest noise sensitive receptors (NSR), namely those on Hansen Gardens to the north of the site.

External Vehicle Noise

- 5.3 The noise associated with this activity will be HGV vehicles arriving, reversing into unloading bays and vehicles departing. There will also be staff vehicles accessing the car park on the west side of the building.
- 5.4 Whilst the operator of the new building is yet to be determined, the assessment has considered a worst reasonable case regarding external activity within a B2/B8 yard. This has been informed by information supplied by DTA Transport Planning Consultants.
- 5.5 In order to provide a reasonable prediction, it will be taken that the typical vehicle movements within the yard during the day (0700 – 2300) will be in the order of 8 cars / vans and 1 HGV arriving and departing within any 1hr period. Overnight, the equivalent volume would be taken as 2 cars / vans and 1 HGV within any 15min period during the period 23.00 – 07.00hrs.
- 5.6 Additionally, there may noise arising from forklift trucks moving in the yard, serving the HGV in the loading dock.
- 5.7 Data from previous projects shows that an indicative noise level for a HGV to drive in, reverse and park was c.71 dB(A) measured over a period of 54secs and 5m away from the vehicle. Similarly, for the same vehicle to drive away from the loading bay and out of site was c.67 dB(A) over an 11sec period and 7m away.
- 5.8 For this project, the average distance from a lorry entering site and parking in the yard to the NSR is approximately 30m.
- 5.9 Table 5.1 provides predictions of noise at the NSR, based on the noise levels stated within Para 5.7, the distance correction of 30m from source to receiver (taken as a point source), the manoeuvring times stated within Para 5.7 and the movements described in Paras. 5.5 above.

HGV MOVEMENTS				
DAYTIME		Arrivals	Departures	
Movements in 1hr		1	1	
L _{Aeq} of movement	dB	71	67	
Duration of movement	secs	54	11	
L _{AX} of movement	dB	88	77	
Total L _{AX} for all movement in period	dB	88	77	
Distance of original measurement	m	4	7	
Distance to NSR	m	30	30	
Distance Correction	dB	-17	-12	
Barrier Correction	dB	0	0	
Time Correction to 1 hr	dB	-36	-36	Combined Level
Predicted L_{Aeq,1hr} at 1m from NSR	dB	36	30	37
NIGHT-TIME		Arrivals	Departures	
Movements in 15mins		1	1	
L _{Aeq} of movement	dB	71	67	
Duration of movement	secs	54	11	
L _{AX} of movement	dB	88	77	
Total L _{AX} for all movement in period	dB	88	77	
Distance of original measurement	m	4	7	
Distance to NSR	m	30	30	
Distance Correction	dB	-17	-12	
Barrier Correction	dB	0	0	
Time Correction to 15mins	dB	-30	-30	Combined Level
Predicted L_{Aeq,15mins} at 1m from NSR	dB	41	35	42

Contd. overleaf

CARS AND VANS				
DAYTIME		Arrivals	Departures	
Movements in 1hr		8	8	
L _{Aeq} of movement	dB	56	56	
Duration of movement	secs	25	25	
L _{AX} of movement	dB	70	70	
Total L _{AX} for all movement in period	dB	79	79	
Distance of original measurement	m	7	7	
Typ. Distance to NSR	m	30	30	
Distance Correction	dB	-12	-12	
Barrier Correction	dB	0	0	
Time Correction to 1 hr	dB	-36	-36	Combined Level
Predicted L_{Aeq,1hr} at 1m from NSR	dB	31	31	34
NIGHT-TIME		Arrivals	Departures	
Movements in 15mins		2	2	
L _{Aeq} of movement	dB	56	56	
Duration of movement	secs	25	25	
L _{AX} of movement	dB	70	70	
Total L _{AX} for all movement in period	dB	73	73	
Distance of original measurement	m	7	7	
Typ. Distance to NSR	m	30	30	
Distance Correction	dB	-12	-12	
Barrier Correction	dB	0	0	
Time Correction to 15mins	dB	-30	-30	Combined Level
Predicted L_{Aeq,15mins} at 1m from NSR	dB	31	31	34

Table 5.1 – Predicted Noise Levels dB(A) in Service Yard from HGV's, vans and cars.

5.10 The final use of the building is not yet determined, but it is likely that there will be a degree of unloading / loading within the yard using forklift trucks.

5.11 The prediction of noise from Fork Lift tucks (Table 5.2) is based on the following details:

- (i) Reference noise of continuous fork lift activity (by survey) is a level of 67 dB(A)
L_{Aeq}, 120s, at a distance of 5m.
- (ii) Distance from loading area to houses is 30m.
- (iii) Assessment is based on the forklifts operating for 25% of the time, day and night.

		Day Time	Day Time
Reference Noise Level $L_{Aeq, 120s}$	dB	67	67
BS4142 Reference Period, T_r	sec	3600	900
Expected duration of use within Reference Period	sec	900	225
Correction for % movement time [$10\log(\text{time on/reference time})$]	dB	-6	-6
Measurement distance	m	5	5
Distance from yard to houses	m	30	30
Correction for Distance	dB	-16	-16
Predicted $L_{Aeq, tr}$	dB	45	45

Table 5.2 – Predicted Noise Levels dB(A) from Forklifts in Service Yard

Building Break-Out Noise

- 5.12 Given the unconfirmed nature of activity within the building, this report will initially adopt a reference internal noise level of 85 dB(A). This represents the 'upper exposure action value' of the Noise At Work Regulations 2021, beyond which hearing protection would be mandatory for all staff.
- 5.13 The building has been constructed generally as an inner skin of 140mm blockwork with external insulated cladding panels. On the higher sections, there are areas where the construction is simply the cladding panels, with no blockwork behind. There are also windows, doors and roller shutter doors puncturing the facades. The roof is an insulated cladding panel.
- 5.14 Table 5.3 shows the predicted break-out noise level at the NSR. For clarity, the distance correction has been taken from the centre of the façade to the centre of the NSR, and the sound reduction (R_w) has been calculated as a composite partition based on all of the individual elements of the façade.

Frequency	Hz	63	125	250	500	1000	2000	4000	8000	dB(A)
Internal Noise Level LAeq	dB	80	80	81	84	80	75	73	72	85
South Elevation 1 (R_w)	dB	-17	-20	-25	-28	-24	-29	-44	-48	
Area correction, 332m ²	dB	25	25	25	25	25	25	25	25	
Distance correction, 65m	dB	-36	-36	-36	-36	-36	-36	-36	-36	
Directivity	dB	-14	-14	-14	-14	-14	-14	-14	-14	
Attenuation due to line of sight	dB	-13	-20	-22	-22	-22	-22	-22	-22	
Net SPL from walls	dB	25	15	9	9	9	-1	-18	-23	12

East Elevation 2 (R_w)	dB	-17	-19	-22	-27	-32	-29	-30	-30	
Area correction, 286.7m ²	dB	25	25	25	25	25	25	25	25	
Distance correction, 30m	dB	-30	-30	-30	-30	-30	-30	-30	-30	
Directivity	dB	-14	-14	-14	-14	-14	-14	-14	-14	
Attenuation due to line of sight	dB	0	-1	-3	-4	-4	-4	-4	-4	
Net SPL from walls	dB	44	41	37	34	25	23	20	19	35

North Elevation 3 (R_w)	dB	-32	-32	-29	-37	-44	-51	-45	-58	
Area correction, 332m ²	dB	25	25	25	25	25	25	25	25	
Distance correction, 21m	dB	-26	-26	-26	-26	-26	-26	-26	-26	
Directivity	dB	-14	-14	-14	-14	-14	-14	-14	-14	
Attenuation due to line of sight	dB	0	0	0	0	0	0	0	0	
Net SPL from walls	dB	33	32	36	32	21	9	13	-1	32

West Elevation 4 (R_w)	dB	-19	-22	-27	-30	-26	-31	-48	-50	
Area correction, 286.7m ²	dB	25	25	25	25	25	25	25	25	
Distance correction, 40m	dB	-32	-32	-32	-32	-32	-32	-32	-32	
Directivity	dB	-14	-14	-14	-14	-14	-14	-14	-14	
Attenuation due to line of sight	dB	0	0	0	0	0	0	0	0	
Net SPL from walls	dB	39	36	32	32	32	22	3	1	35

COMBINED NOISE LEVEL	dB	46	42	40	38	33	26	21	19	39
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Table 5.3 – Calculation of Building Break-out Noise

Building Services Plant Noise

- 5.15 It is understood that there is likely to be some building services plant associated with a new building use. The exact details are unknown at this stage, however, and all such equipment will be designed as the development progresses.
- 5.16 The representative background noise levels, L_{A90} , for this project are 44 dB(A) for the daytime and 43 dB(A) for the night-time.
- 5.17 Mindful of the potential contributions from other activities inside and out, it is recommended that noise from the plant is designed to a level at least 10 dB below the existing noise climate. These targets may be summarised as follows:

Noise from any new building services plant shall be limited to the following Rating Noise Levels, when assessed at 1m from the facade of nearest residential receptors:

07.00 – 23.00hrs	34 dB(A) $L_{Aeq,1hr}$
23.00 – 07.00hrs	33 dB(A) $L_{Aeq,15mins}$

6. ASSESSMENT & RECOMMENDATIONS

- 6.1 Section 5 of this report has provided the predicted daytime and night-time noise levels associated with the main noise sources. These are summarized in Table 6.1.

PREDICTED FAÇADE NOISE LEVELS, dB(A)		
Noise Source	Daytime L _{Aeq,1hr}	Night-time L _{Aeq,15mins}
Noise from HGV activities	37	42
Noise from Cars and Vans	34	34
Noise from Forklift Trucks	45	45
Break-out Noise from Building	39	39
Noise from Building Services Plant	34	33
Overall Combined Noise Level	47	48

Table 6.1 – Summary of Predicted Noise Levels, dB(A).

- 6.2 In respect of any BS4142 assessment, the measured noise level is corrected, where appropriate, to reflect the particular audibility of a noise. The corrections relate to:

Tonality – corrections between 0 and + 6dB can be made depending on whether there is no subjective tonality to the noise, or whether tonality is just, clearly or highly perceptible.

Concern has been expressed that reversing beepers on forklift trucks and HGVs may give rise to tonality. In this development, it may be necessary to condition tenants to use non-tonal reversing alarm, such as white noise alarms. These use broadband frequencies, giving greater directional information to the ear (and hence improved safety implications).

Impulsivity – corrections between 0 and +9dB can be made depending on if a sound is highly impulsive. This correction is targeted more towards noise associated with explosions rather than intermittent, short term increases in the noise level.

On a new scheme such as this, it should be possible to smooth surfaces for vehicle movements, and to manage operations in a fashion that minimised any impacts in the process.

Intermittency – This correction is applied when the sound has a clear on/off condition, suggesting sudden and significant steps in the noise level from one steady condition to another.

6.3 In the round (and with controls over reversing alarms), it is suggested that a 3 dB correction might reasonably be applied, to reflect the fact that the noise from the site could be distinguished against the pre-existing acoustic climate.

6.4 On that basis, a BS4142 assessment would be as follows:

		Day Time	Night-time
Specific noise level, $L_{Aeq,Tr}$	dB	47	48
BS4142 Corrections	dB	+3	+3
Rating Level, $L_{Ar,tr}$	dB	50	51
Assessed Background Noise Level, L_{A90}	dB	44	43
Excess of Rating over Background	dB	+6	+8

Table 6.2 – BS 4142 Assessment

6.5 BS4142 would therefore indicate the potential use as producing an adverse impact, depending on context.

6.6 In order to mitigate this effect, and provide comfort that any noise emissions would have a low impact, the following measures are recommended:

- (i) HGV's movements and external forklift activity should be avoided between the hours of 2300 and 0700.
- (ii) Fork lift movements during the day should be controlled, and reversing alarms in particular should be selected to reduce noise levels. White noise alarms are preferred. If these are set to the requisite '10 dB above ambient' in this location, a reduction of some 5 – 10 dB from the initial calculations (with bleeper) should be practical.
- (iii) Internal noise levels within the building should be restricted to 80 dB(A), to avoid the need for upgrading the shell of the building (in particular, doors and glazing).

6.7 With such measures in place, the individual contributions of the various noise sources would be as follows:

PREDICTED FAÇADE NOISE LEVELS, dB(A)		
Noise Source	Daytime $L_{Aeq,1hr}$	Night-time $L_{Aeq,15mins}$
Noise from HGV activities	37	0
Noise from Cars and Vans	34	34
Noise from Forklift Trucks	35	0
Break-out Noise from Building	34	34
Noise from Building Services Plant	34	33
Overall Combined Noise Level	41	38

Table 6.3 – Summary of Predicted Noise Levels, dB(A), with Mitigation

6.8 The resulting assessment to BS4142 would then be:

		Day Time	Night-time
Specific noise level, $L_{Aeq,Tr}$	dB	41	38
BS4142 Corrections	dB	+3	+3
Rating Level, $L_{Ar,tr}$	dB	44	41
Assessed Background Noise Level, L_{A90}	dB	44	43
Excess of Rating over Background	dB	0	-2

Table 6.4 – BS 4142 Assessment, with Mitigation

6.9 With a maximum excess of 0 dB, the standard would suggest that the use of the building would have less than ‘a low impact, depending on context’. It would be said that the context here would be of residential properties which are already adjacent to a large commercial estate, with existing warehousing operations in the immediate vicinity. The development does not, therefore, represent a material change in the nature of the local environment.

Key:

- Application Boundary
- To be demolished

Proposed Area Schedule

	GF	FF	TOTAL
DEAL	574sqm	168sqm	1142sqm/12252sqft
GIA	925sqm	162sqm	1088sqm/11711sqft

Total proposed parking spaces: 25

Notes:

- Surveying: Due to be based on survey drawing by Interact Survey, Ref: 24/004, Dated: June 2024.
- None Discretionary: This drawing is subject to further coordination and should be read in conjunction with all relevant architectural, engineering and specialist information.

Scale: 1:200

North Arrow: N

Site Plan Details:

- UNIT 1 GF WAREHOUSE FF OFFICE
- Removal of existing 30m Telecommunications Mast Tower
- Existing fencing/boundary treatment to be retained
- Existing condensers
- Existing plant / service
- Proposed new covered cycle storage for 500 spaces, refer to drawing 7/500 for more details
- Removal of ramped access and provision of new level entrance
- Existing fencing/boundary treatment to be retained
- ESS
- Mast
- HAMILTON WAY
- HANSEN GDNS
- 6000
- 27700
- 62400

FIGURE 2: PROPOSED FLOOR PLAN

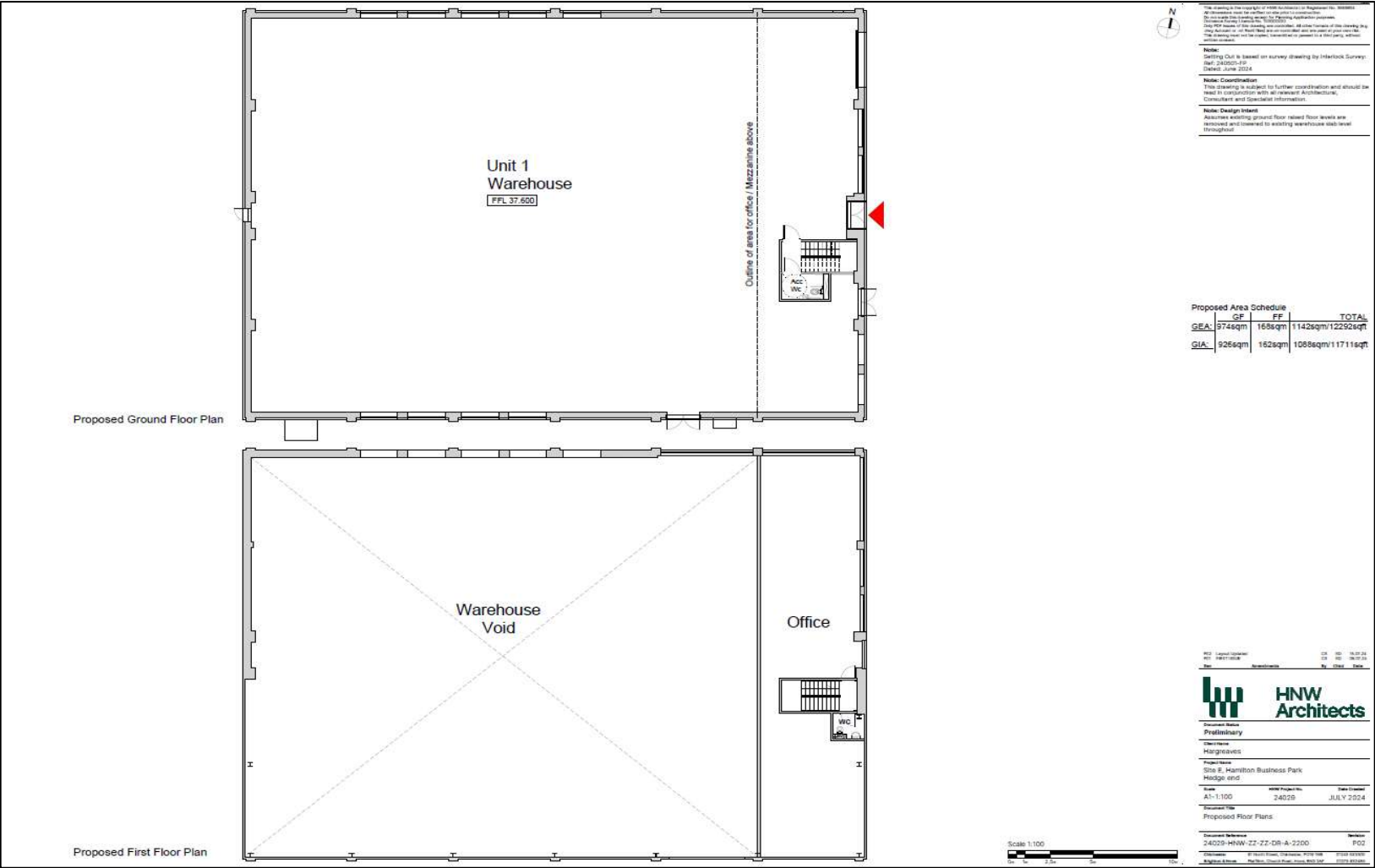


FIGURE 3: MONITORING LOCATION

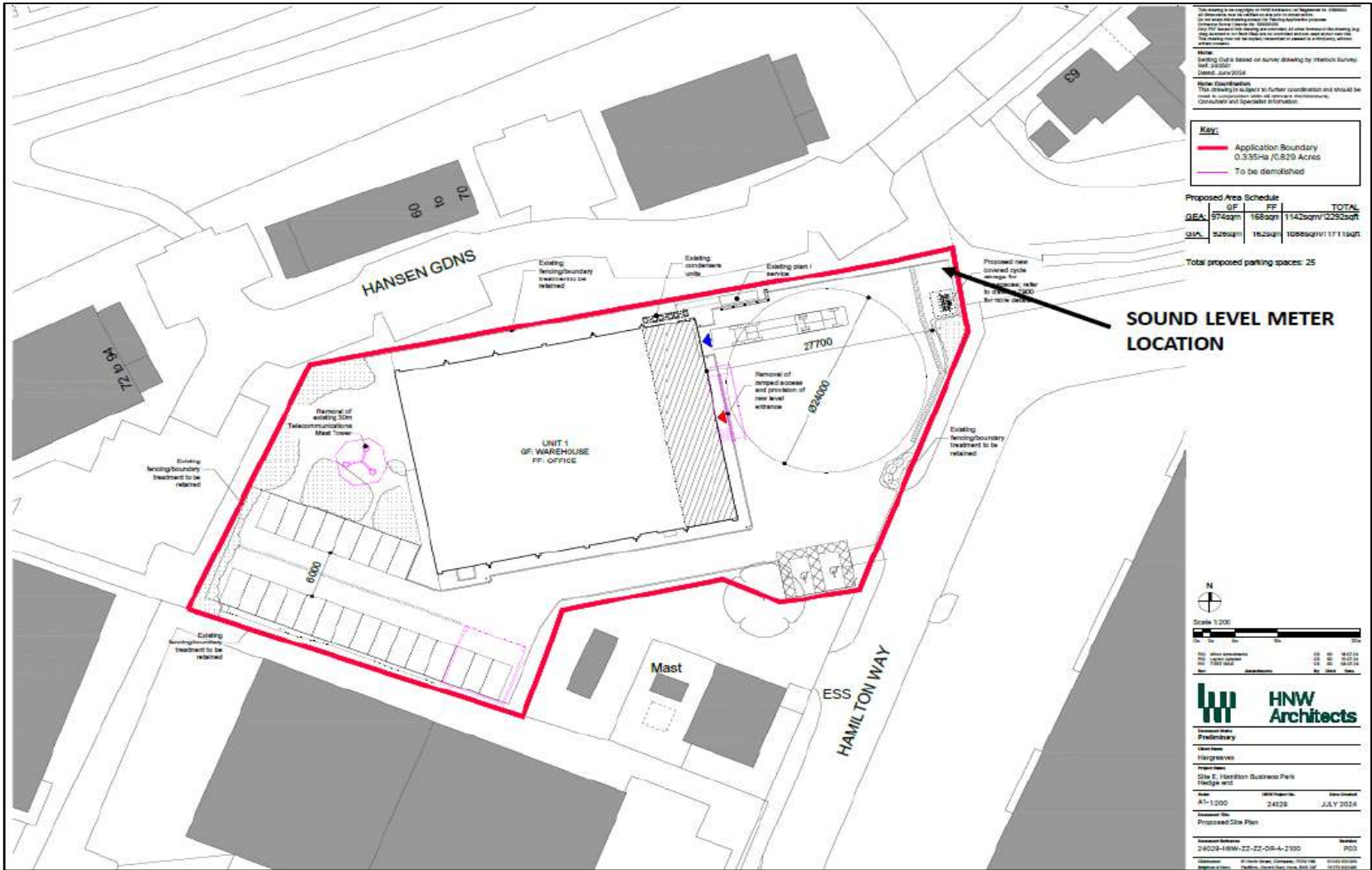
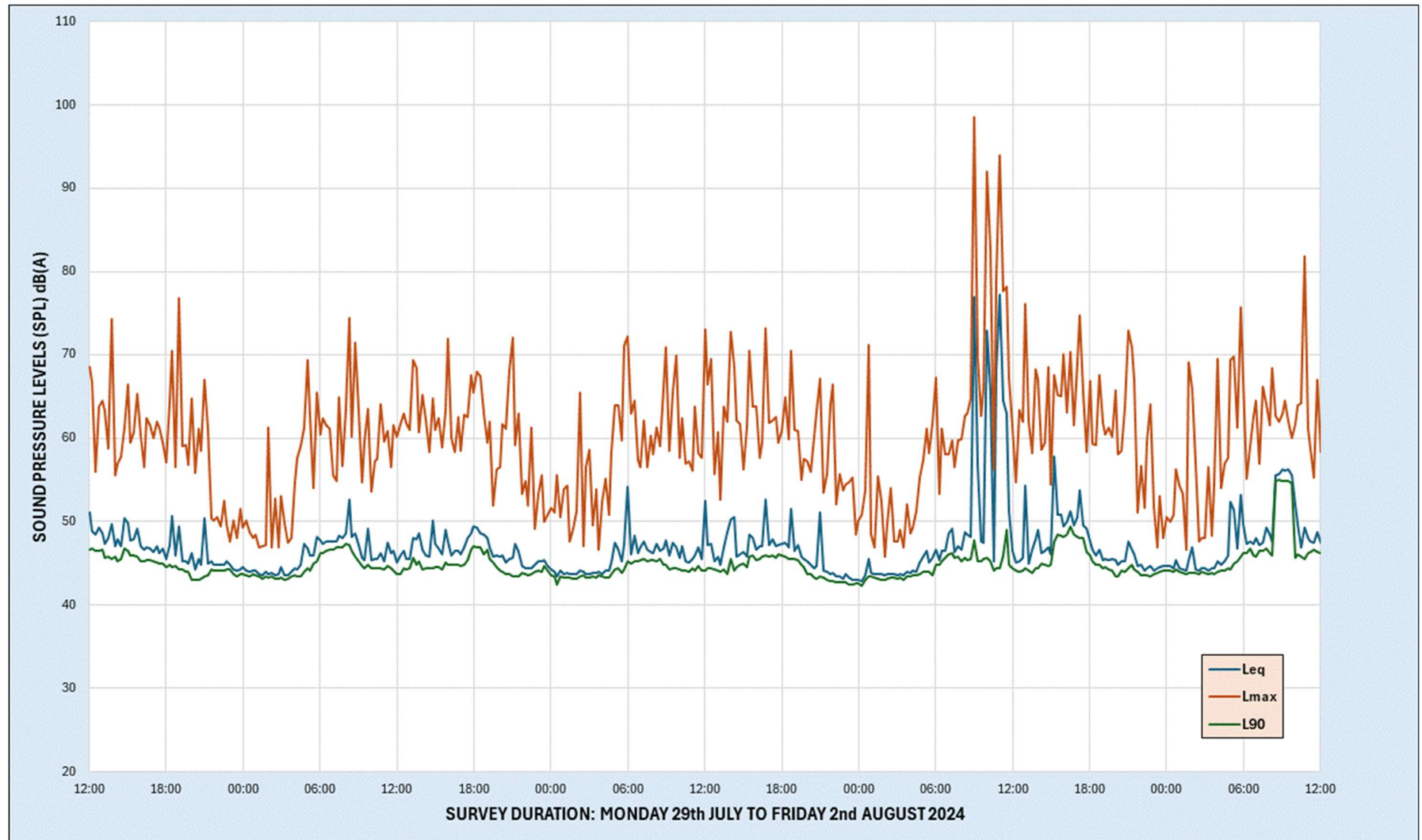


FIGURE 4: VARIATION OF AMBIENT NOISE LEVELS



APPENDIX I: TERMINOLOGY RELATING TO NOISE

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level	The sound level is the sound pressure relative to a standard reference pressure of 20μPa (20x10 ⁻⁶ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by $20 \log_{10} (s1 / s2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A scale, which considers the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Leq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Lmax,T	A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L90,T	A noise level index. The noise level exceeded for 90% of the time over the period T. L90 can be considered to be the "average minimum" noise level and is often used to describe the background noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m.
Façade Noise Level	At 1m in front of a large sound reflecting object such as a façade.
Fast/Slow Time Weighting	Averaging times used in sound level meters.
Octave Band	Range of frequencies whose upper limit is twice the lower limit.
Rw	Single number quantity that characterises the airborne sound insulating properties of a material or building element over a range of frequencies.