

SGN Gravesend

Noise Impact Assessment

Report Reference: J643_R01



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1 EXECUTIVE SUMMARY

An assessment of the potential noise impact due to the proposed change of use of a former gas holder site on Canal Road in Gravesend has been carried out. It is proposed to change the use of the site to provide open storage plus associated car parking.

The nearest noise-sensitive receptors are the housing on the opposite side of Canal Road which is at a distance of approximately 24m from the site boundary at the nearest point.

A long-term survey has been carried out to record existing noise levels near to the site boundary, from which the baseline noise levels at the housing are established.

Operational noise levels generated by the proposed use have been predicted, focussing on noise from activities typically associated with open storage usage and deliveries to and from the site. Estimated noise levels generated by vehicle maintenance and servicing are also included.

The calculated noise level at the nearby housing does not exceed the existing baseline noise level. The introduced noise is not expected to differ significantly in character from the noise generated by the various other industrial sites in the immediate surrounding area. It is therefore concluded that the proposed change of use is unlikely to result in significant adverse noise impacts at the residential receptors.

2 INTRODUCTION

ALN Acoustic Design has been appointed by Joseph Homes to carry out a noise impact assessment in relation to the proposed change of use of a former gas-holder site in Gravesend to provide open storage.

The site is located within an industrial area to the east of Gravesend. There is currently a vehicle scrappage yard to the north of the site, an industrial park to the south and an industrial warehouse to the east.

The nearest noise-sensitive receptors are the housing on the opposite side of Canal Road which is at a distance of approximately 24m from the western site boundary at the closest point.

This report has been prepared by Arthur Lewis-Nunes MSc, who is a corporate member of the Institute of Acoustics.

3 DEVELOPMENT PROPOSALS

It is proposed that the majority of the site area will be used for external storage on a racking system up to a height of 4m. There will also be an HGV servicing and holding zone, plus approximately 16 car parking spaces for staff and customers. For the purposes of this assessment, it is reasonable to assume the following based on common practices at similar open-storage facilities:

- HGVs will arrive and leave via the entrance on Canal Road at northwest of site and drive to holding area.
- Supplies and equipment etc. loaded / unloaded from HGVs on tail lifts and forklift trucks.
- Items moved to storage area on forklift trucks and lifted onto storage racks.
- HGV servicing and maintenance to be carried out in holding area as required.

The proposed site layout is provided in Figure 1.

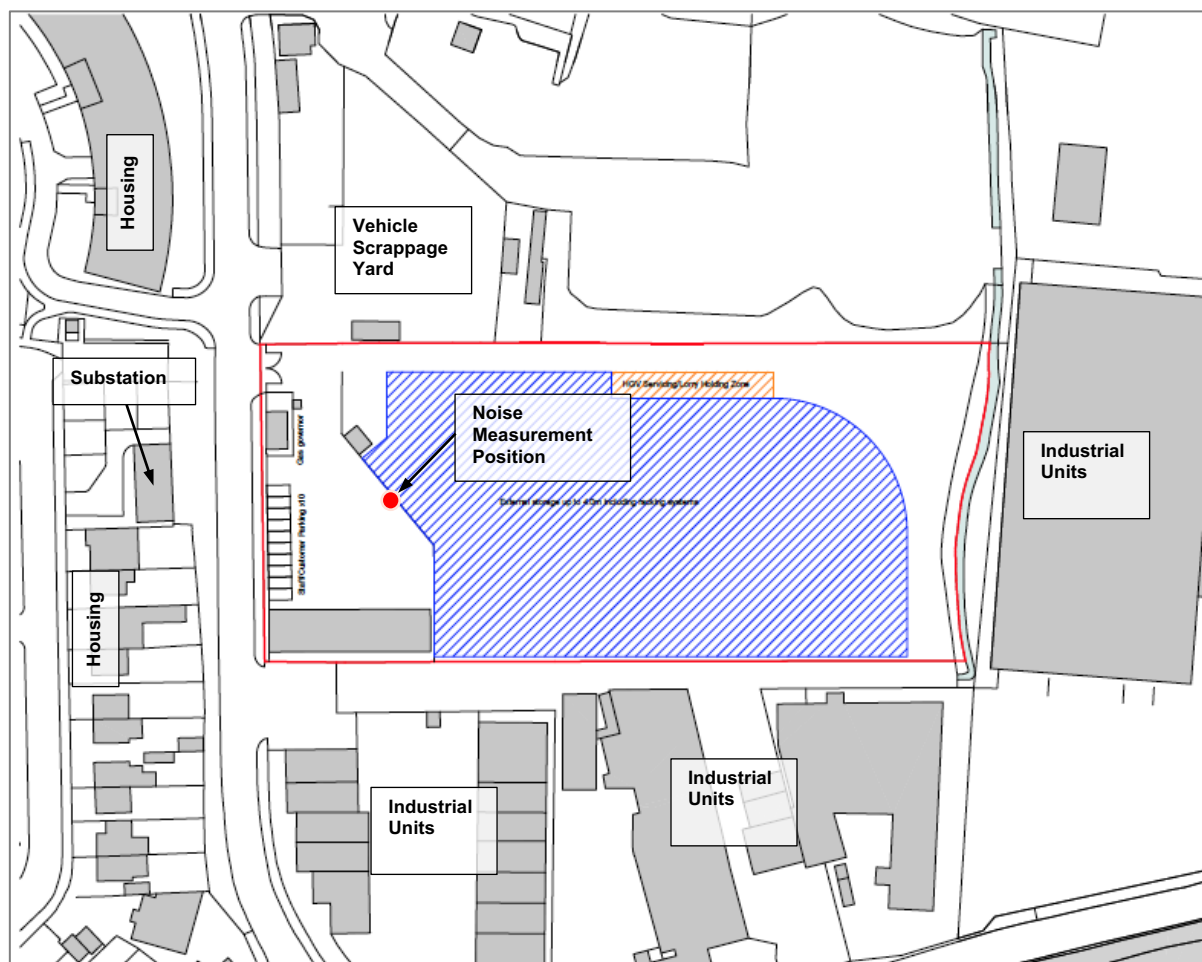


Figure 1: Proposed site layout

4 LEGISLATION, PLANNING POLICY & GUIDANCE

4.1 National Planning Policy Framework

At a national level, government policy in relation to noise sensitive development is set out in the National Planning Policy Framework (NPPF). This document provides a number of broad guiding principles for noise policies which are reproduced below:

174. 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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

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

- a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;

...

187. 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.

NPPF does not itself prescribe any particular assessment methodology or criteria to assess noise impact, but refers to the Noise Policy Statement for England.

4.2 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) sets out the overarching policy on noise management in England. NPSE sets out three main aims in the context of environmental, neighbour and neighbourhood noise:

- 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.

Reference is made in the NPSE to the concepts from the field of toxicology of the “No Observed Effect Level” (NOEL) and “Lowest Observed Adverse Effect Level” (LOAEL) which can be applied to the assessment of noise impact.

NPSE also introduces the “Significant Observed Adverse Effect Level” (SOAEL), which is described as being “the level above which significant adverse effects on health and quality of life occur”. NPSE does not provide a quantitative definition of SOAEL and recognises that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question.

4.3 Planning Practice Guidance

The Planning Practice Guidance for noise, issued by the Department for Levelling Up, Housing and Communities (formerly the Ministry for Housing, Communities and Local Government), expands on the NPPF and NPSE. It states:

Local planning authorities' plan-making and decision taking should 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.*

It provides examples of behavioural outcomes associated with particular effect levels, including the onset of the SOAEL.

4.4 Gravesend Local Plan (2014)

Policy CS19: *Development and Design Principles* of the Gravesend Local Plan sets out various requirements for new development, including that it be located, designed and constructed to “avoid adverse environmental impacts from pollution, including noise, air, odour and light pollution, and land contamination”.

4.5 IEMA Guidelines for Environmental Noise Impact Assessment (2014)

The Institute of Environmental Management and Assessment (IEMA) ‘Guidelines for Environmental Noise Impact Assessment’ outlines an approach to carrying out noise impact assessments which is applicable to “all development proposals where noise effects are likely to occur”.

It provides a method of assessing the significance of changes in ambient noise level caused by new or modified noise sources. An example of the effect descriptors which could be applied is provided in Table 7-12 of the IEMA guidelines. Table 1 below reproduces the guidance in relation to sensitive and highly sensitive receptors which is considered to be appropriate for determining the effects of any increase in noise level due to the proposed change of use.

Change in noise level (dBA)	Effect Description
> 10	Very Substantial
> 5	Substantial
3 – 4.9	Moderate
< 2.9	None / Not Significant

Table 1: Effects of changes in noise level

The guidelines advise that it is also necessary to consider, in qualitative terms, what might be the effect of any differences between the future and existing situations in either the type of noise source, the nature of the change or any the following other factors:

- Averaging period
- Time of day
- Nature of the noise source (intermittency, etc.)
- Frequency of occurrence
- Spectral characteristics
- Absolute level of the noise indicator
- Influence of the noise indicator used.

5 NOISE SURVEY

A noise survey was carried out at the site to establish the existing environmental sound levels in the vicinity.

5.1 Methodology

A weather-protected microphone was connected to a Class 1 sound level meter via an extension cable and mounted on a tripod set back from the eastern site boundary (see Figure 1). Further details of the instrumentation used are provided in Appendix B. The sound level meter was set up to monitor noise continuously, logging data at consecutive 5-minute intervals.

The survey was conducted between Tuesday 12th and Friday 15th March 2024.

There were several periods of light rain during the survey period and wind speeds were generally light.

5.2 Survey Results

The noise survey data has been used to derive representative noise levels as set out in Table 2 below. The ‘typical’ L_{AFmax} and L_{AF90} levels are based on the modal levels measured in the survey.

Detailed noise survey results are presented in Appendix C.

	Day (07:00 – 23:00)	Night (23:00 – 07:00)
L_{AFmax} maxima (typical)	68 dB	68 dB
$L_{Aeq,T}$ average	56 dB	51 dB
L_{AF90} background (typical)	46 dB	39 dB

Table 2: Noise survey results

5.3 Observations

The dominant noise source at the start and end of the survey period was observed to be regular vehicle traffic on Canal Road which included a significant number of HGVs. There was more limited noise being generated at the vehicle scrappage yard to the north or industrial units to the south. However, it is reasonable to expect that these are sources of higher levels of noise at other times.

The nearest residential properties to the site are closer to the road than the noise survey position (which was selected in part on account of security considerations). It is therefore likely that these receptors experience higher levels of vehicle noise than was measured by the survey. However, as a robust and worst-case approach, the assessment will assume that the noise survey results set out in Table 2 are representative of the baseline noise levels at the receptors.

6 SITE OPERATIONS

6.1 Noise Level Calculations

As a basis for this assessment, it is assumed that typical operations would involve an HGV arriving at the site and manoeuvring into the holding area, items being unloaded (or loaded) before being moved to a location in the storage area and lifted onto a storage rack by a forklift truck. It is also assumed that some maintenance / servicing of HGVs may take place on site.

Representative noise levels (based on previous measurement data) for activities that may reasonably be expected to occur at the site are provided below in Table 3. These are indicative only and it not necessarily the case that all of these activities will occur at the site.

Source	Noise Level	Contributions
HGV loading / unloading	66 dB $L_{Aeq,T}$ at 10m	vehicle doors being opened and closed, pallets, boxes, trolleys etc. lifted on and off the back of vehicles
Forklift truck	72 dB $L_{Aeq,T}$ at 10m	diesel engines, electric motors and reverse alarms
Vehicle Servicing	80 dB $L_{Aeq,T}$ at 10m	air compressor, hammering, welding, washer, radio

Table 3: Assumed source noise levels

The large majority of the storage area is at least 60m from the nearest housing. For the purposes of the assessment, it is assumed that forklift truck operations are carried out at a distance of 60m from the housing.

The HGV servicing and holding area is a distance of 100m from the nearest housing. It is assumed that loading / unloading takes place at this position.

A 25% 'on-time' is assumed for HGV loading / unloading and forklift truck operations based on observations at similar facilities.

Calculations have been carried out to predict the resultant noise level at the properties on Canal Road. The source noise levels are corrected to account for distance attenuation and on-time, and then combined to calculate an overall noise exposure level. See Table 4.

It is important to note that there is often significant variability in working practices, equipment, weights of goods etc. As such, the calculated noise levels presented can only give an approximation of the levels that may occur.

Source	Loading / Unloading	Forklift Operations	Vehicle Maintenance
Source Level (at 10 m)	66 dB $L_{Aeq,T}$	72 dB $L_{Aeq,T}$	80 dB $L_{Aeq,T}$
On-time correction	- 6 dB (25% on time)	- 6 dB (25% on time)	- 6 dB (25% on time)
Distance correction	- 20 dB (100 m)	- 16 dB (60 m)	- 20 dB (100 m)
Specific Sound Level	40 dB $L_{Aeq,1hr}$	50 dB $L_{Aeq,1hr}$	54 dB $L_{Aeq,1hr}$
Receptor Noise Level	56 dB $L_{Aeq,1hr}$		

Table 4: Noise level calculations

6.2 Noise Assessment

The predicted noise level from site operations (56dB $L_{Aeq,1hr}$) is similar to the assumed daytime baseline noise level (56dB $L_{Aeq,07:00-23:00}$). This suggests that the proposed use may lead to an increase in ambient noise at the nearest residential receptors of up to 3dB.

HEMA guidance indicates that a change in level of 3dB just hits the threshold for having a moderate impact (a change of 2.9dB or less would in general be considered to have no effect).

The proposed open-storage use would occur in the context of a largely industrial area. The introduced noise is assumed to be similar in character to noise generated by the neighbouring sites and would not be particularly distinct from the prevailing environment in the vicinity of the receptors.

Noise generated by individual events (which would typically be quantified using the L_{AFmax} noise indicator) is expected to be significantly lower than the L_{AFmax} noise level at the receptors from passing vehicles on Canal Road due to the effects of distance attenuation on noise generated in the areas in which most of the site activity will occur.

It is therefore considered that the proposed usage is unlikely to have a significant adverse noise impact.

7 VEHICLE ARRIVALS / DEPARTURES

The anticipated number of deliveries to the site is currently unknown therefore it is not possible to calculate the overall level of noise that would be generated. As noted previously, Canal Road already experiences a significant volume of HGV (and car) traffic with vehicles regularly passing the site and housing opposite on their way to and from the numerous industrial and storage sites which lie to the east. It is inferred from the noise survey data that the typical resultant noise level is approximately 68dB L_{AFmax} .

It is unlikely that the number of additional vehicles providing deliveries to the site would be more than a small proportion of the number of vehicles which currently use Canal Road. The noise maxima level from individual vehicles entering / leaving the site and passing the housing on Canal Road is unlikely to be any greater than the noise generated by other passing vehicles. A small increase in vehicles on Canal Road would have a negligible effect on the overall noise level at the housing (approximately a 1 decibel increase). This can be expected to have a negligible impact.

APPENDIX A - SUMMARY OF ACOUSTIC TERMINOLOGY

SOUND PRESSURE LEVEL, SPL or L_P (decibels, dB)

A measure of the instantaneous sound pressure at a point in space. The threshold of hearing occurs at approximately $L_P=0$ dB (which corresponds to a reference sound pressure of $20\mu\text{Pa}$).

$$L_P(\text{dB})=20.\log_{10}(\text{Sound Pressure (Pa)}/20\mu\text{Pa})$$

A-WEIGHTED SOUND PRESSURE LEVEL, L_A (dBA)

A-weighted sound pressure level values are frequency-weighted in a way that approximates the frequency response of the human ear and allows sound levels to be expressed as a single figure value.

Alternative frequency-weightings are C-weighting and Z-weighting.

EQUIVALENT CONTINUOUS A-WEIGHTED SPL, $L_{Aeq,T}$ (dBA)

Energy average of the A-weighted sound pressure level over a time period, T. The level of a notional continuous sound that would deliver the same A-weighted sound energy as the actual fluctuating sound over the course of the defined time period, T.

MAXIMUM A-WEIGHTED SPL, L_{AFMax} (dBA)

Maximum A-weighted sound pressure level measured with fast time weighting.

BACKGROUND NOISE LEVEL, $L_{A90,T}$

The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval ,T, measured using time weighting.

APPENDIX B - NOISE MONITORING EQUIPMENT DETAILS

The measurements were made with an NTi XL2 acoustic analyser, using a GRAS weather protection kit. This equipment complies with BS EN IEC 61672 class 1. The meter used a NTi MC230 free-field response microphone and NTi MA220 microphone pre-amplifier.

The calibration of the sound level meter was checked at the beginning and end of measurements with a Larson David CAL200 sound calibrator, complying with BS EN IEC 60942 class 1. No significant calibration deviation occurred.

The table below lists the serial numbers and last calibration dates of the equipment used.

Description	Serial No.	Calibration Date
NTi XL2 Sound Level Meter	A2A-16249-E0	08/09/2023
NTi MC230A Condenser Microphone	A17342	08/09/2023
NTi MA220 Pre-Amplifier	8450	08/09/2023
Larson David CAL200 Sound Calibrator	16795	08/09/2023

APPENDIX C - NOISE SURVEY RESULTS

