



Dice
Environmental
Acoustics

University of Huddersfield Multistorey Car Park Noise Impact Assessment

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Contents

Distribution List.....	2
Quality Assurance.....	2
EXECUTIVE SUMMARY.....	4
Noise Survey.....	4
Change in Road Traffic Noise.....	4
Plant Noise Assessment.....	4
1. INTRODUCTION.....	5
1.1. Background.....	5
1.2. Limitations.....	5
1.3. Confidentiality.....	5
2. ASSESSMENT METHODOLOGY.....	6
2.1. National Planning Policy Framework.....	6
2.2. British Standard 4142:2014+A1:2019 <i>Methods for rating and assessing industrial and commercial sound</i>	9
2.3. Change in Ambient.....	10
3. SURVEYS & DATA INPUT	12
3.1. Background and Ambient Noise Survey.....	12
3.2. Road Traffic Data.....	12
3.3. Noise Sensitive Receptors (NSR's).....	12
3.4. Survey Conditions.....	13
4. NOISE IMPACT ASSESSMENT	14
4.1. Noise model.....	14
4.2. Change in Ambient Noise Assessment.....	14
4.3. Plant Noise Emission Limits (PNEL's).....	15
5. CONCLUSION	17
APPENDIX I – LIMITATIONS.....	18
APPENDIX II – GLOSSARY OF ACOUSTIC TERMINOLOGY.....	19
APPENDIX III – FIGURES.....	21
APPENDIX IV – BIBLIOGRAPHY	23

Executive Summary

Dice Environmental were commissioned by DLP Planning to undertake a Noise Impact Assessment to support a reserved matters planning application for a new Multistorey Car Park at the area of land south-east of Daphne Steele Building, Huddersfield HD1 1AD.

Noise Survey

An environmental noise survey has been completed to quantify the prevailing soundscape at the site. This comprised an unattended logging survey to capture the existing background noise levels currently present within the boundaries of the site.

Change in Road Traffic Noise

A 3D CadnaA noise model has been constructed to predict the noise impact from the proposal upon the nearest noise sensitive residents surrounding the site. The assessment has determined that the noise generated due to the increase in road traffic noise will result in a 'None/Not Significant' effect. Accordingly, no mitigation measures will be required.

Plant Noise Assessment

Noise limits have been set to apply to all externally located plant units proposed for the site. These are determined in accordance with BS4142 and apply to all plant units operating simultaneously.

1. Introduction

1.1. Background

Dice Environmental has been commissioned by DLP Planning, to provide a Noise Impact Assessment to support a planning application for a new Multistorey Car Park at the area of land south-east of Daphne Steele Building, Huddersfield HD1 1AD, to be referred to hereafter as “the site”.

The site is located in the city centre of Huddersfield and part of the land adjacent to the Daphne Steel building.

The site comprises an open area of unused land, with the Crown House building bordering to the west and surrounded by existing commercial buildings and road networks.

The proposals include for a Multistorey Car Park, with associated works including an external service yard. Specifically, the proposal includes the erection of a multi-storey car park comprising 10 storeys and a service yard housing a generator.

This assessment has been undertaken with due regard to the supplied planning layout “Oobe drawing - 6413-OOB-ZZ-00-D-L-0001” Rev P08, dated 23rd September 2026 The site layout is shown in Figure 2 of Appendix III.

1.2. Limitations

All limitations of this report are presented in Appendix I.

1.3. Confidentiality

Dice Environmental has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Dice Environmental; a charge may be levied against such approval.

2. Assessment Methodology

2.1. National Planning Policy Framework

The National Planning Policy Framework [1] states that planning policies and decisions should ensure that new development is appropriate for its location, taking into account the likely effects of pollution on health, living conditions and the natural environment. In relation to noise, development should avoid significant adverse impacts on health and quality of life, while also taking opportunities to improve the acoustic environment where possible.

The Framework states that planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities. Where existing businesses or facilities could have a significant adverse effect on new development, appropriate mitigation should be considered.

The Planning Practice Guidance – Noise [2] provides further guidance on the assessment of noise and states that, when preparing local or neighbourhood plans or taking decisions about new development, consideration should be given to:

- Whether or not significant adverse effect is occurring or is likely to occur;
- Whether or not adverse effect is occurring or is 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 [3], this includes identifying whether the effect of the noise exposure, including the impact during the construction phase where applicable, is or would be above or below the Significant Observed Adverse Effect Level (SOAEL) and Lowest Observed Adverse Effect Level (LOAEL) for the given situation.

The Observed Effect Levels are as follows:

- Significant Observed Adverse Effect Level (SOAEL): This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest Observed Adverse Effect Level (LOAEL): This is the level of noise exposure above which adverse effects on health and quality of life can be detected;
- No Observed Adverse Effect Level (NOAEL): This is the level of noise exposure at which the noise is noticeable but has no effect at all on health or quality of life;
- No Observed Effect Level (NOEL): This is the level of noise exposure below which noise is not audible.

Table 1 summarises the noise exposure hierarchy, based on the likely average response.

Table 1: Noise exposure hierarchy

Perception	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, e.g., regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable adverse effect	Prevent

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;
 - 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.
 - 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;
 - If 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; and
- For relevant commercial developments, consideration should be given to potential noise impacts associated with activities occurring within premises and from customers in the vicinity, particularly where activities are likely to be concentrated during the evening or late at night.

2.2. British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*

BS4142 [6] describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes
- Sound from fixed installations which comprise mechanical and electrical plant and equipment
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial site.

The procedure detailed in the standard compares the measured or predicted noise level, 'the specific noise level', from any of the above detailed noise sources with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is typical.

The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- Daytime (07:00-23:00): 1 hr; and,
- Night-time (23:00-07:00): 15 minutes.

There are a number of 'penalties' which can be attributed to the specific sound level depending upon the 'acoustic features' of the sound under investigation as follows. These penalties vary in their weighting depending upon the severity of the acoustic feature, as follows:

Tonality

- +2 dB: where the tonality is just perceptible
- +4 dB: where the tonality is clearly perceptible
- +6 dB: where the tonality is highly perceptible

Impulsivity

- +3 dB: where the impulsivity is just perceptible
- +6 dB: where the impulsivity is clearly perceptible
- +9 dB: where the impulsivity is highly perceptible

Intermittency

- +3 dB: where the intermittency is readily distinctive against the acoustic environment

In addition to the above acoustic features, there is a penalty for 'other sound characteristics' of +3 dB where a sound exhibits characteristics that are neither tonal nor impulsive, though are readily distinctive against the acoustic environment.

BS4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background noise level can yield the following commentary:

- Typically, the higher the rating level is above the background sound level, the greater the magnitude of impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

With the above in mind, it is common that a Local Planning Authority will specify their own criteria for the rating level relative to the background sound level and, where this is the case, this criterion usually takes precedence over a simple comparison of the rating level against the background sound level.

BS4142 includes the following text in relation to areas with low and very low noise levels:

Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

2.3. Change in Ambient

The Institute of Acoustics and Institute of Environmental Management and Assessment [7] have produced a guidance document of Noise Impact Assessment which provide examples of how change in ambient noise levels can be assessed.

Table 2: Summary of Change in Ambient Noise Level

Noise Change (dB)	Category
≤ 2.9	Negligible
3.0-4.9	Minor
5.0-9.9	Moderate
≥ 10 dB	Major

3. SURVEYS & DATA INPUT

3.1. Background and Ambient Noise Survey

Dice has conducted a background and ambient noise survey in order to measure the level of noise currently present across the site. The noise survey took place over the following period:

- 13:35 28th May 2026 to 12:35 1st June 2026.

The following noise measurement position was chosen:

- Noise Measurement Position 1 (NMP1): A background and ambient noise survey was undertaken within the boundary of the development. The microphone was situated approximately 1.5m from the ground and in free field conditions.

A summary of the measured sound pressure levels is presented in Table 3.

Table 3: Summary of measured background sound levels

Date Range	Period	Ambient sound level $L_{Aeq,T}$, dB	Background sound level $L_{A90,T}$, dB	
			Range	Typical*
28 May 26 – 1 Jun. 26	Daytime (07:00-23:00)	54	37-61	41
	Night time (23:00-07:00)	46	36-44	41

*Based on modal values occurring within each stated time period

3.2. Road Traffic Data

The following road traffic data has been provided by the transport consultant for the base year, future year without the development and future year with the development.

Table 4: Traffic Data

Road	Annual Average Weekly Traffic		
	Base Year (2026)	Future Year Without Development (2031)	Future Year With Development (2031)
Leeds Road	11589	12156	13212
Lower Fitzwilliam Street	13471	14005	14015
St Andrews Road	2036	2134	2887
A62 Southgate	24643	25858	29697
Old Leeds Road	3543	3704	5893

3.3. Noise Sensitive Receptors (NSR's)

The nearest noise sensitive receptors have been identified within the surrounding area and are shown in Figure 1 below.

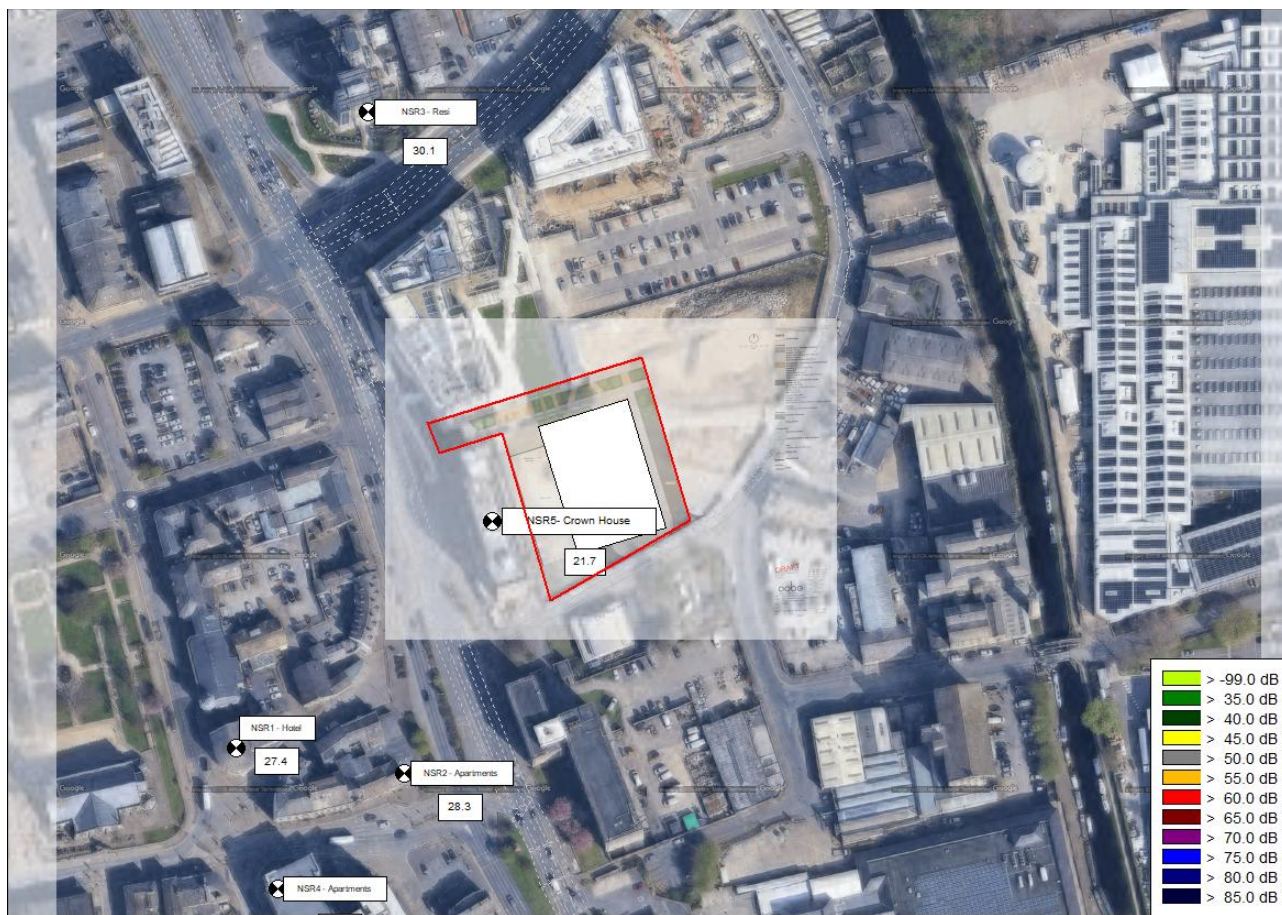


Figure 1: Noise Sensitive Receptors (NSR's)

3.4. Survey Conditions

The weather conditions during the noise survey was conducive towards the measurement of environmental noise being fine and dry with wind speeds below 5 m/s.

The noise survey was completed using the following noise measurement equipment.

Table 5: Noise Measurement Equipment

Position	Description	Manufacturer & Type	Serial No.	Calibration Expiry
NMP1	Sound Level Meter	01dB Solo	65211	9 Dec. 27
	Pre-amplifier	01dB-Metravib Pre21S	15766	
	Microphone	01dB MCE 212	181856	
	Calibrator	01dB-Stell Cal21	34113643 (2011)	8 Dec. 26

The sound level meter was field-calibrated on site prior to and after the measurements were taken. No significant drift was witnessed.

4. Noise Impact Assessment

4.1. Noise model

In order to accurately assess noise propagation across and from the site, a 3D noise model has been constructed using the modelling software CadnaA. The following assumptions, inputs and considerations have been included in the model:

- Terrain data taken from DEFRA Data Services Platform [8];
- Planning layout drawing as described in Section 1;
- Existing buildings that provide shielding from any of the noise sources;
- A reflection order of 2 has been used in all calculations;
- Building heights are as supplied by the client; and
- Noise levels generated using ISO 9613-1 [9] and ISO 9613-2 [10] as incorporated into CadnaA software.

4.2. Change in Ambient Noise Assessment

Upon completion of the development, it is anticipated that the local road traffic noise levels will change as a result of the development-generated vehicle movements. It is therefore appropriate to consider the potential impacts that may arise.

The results of the Transport Assessment undertaken by Dice Consulting Engineers have been used as the basis for the road traffic noise assessment. The two-way figures for each scenario have been input into CadnaA noise modelling software to determine the resultant noise level.

The worst-case noise sensitive receptors have been determined to be NSR5 situated to the west of the development and NSR3 situated to the north of Leeds Road.

The table below compares the difference in future traffic flow without the development and with the development.

Table 6: Traffic Flow Assessment

Road	Affected NSR	Predicted Noise Level at Receptor Future Year Without Development $L_{A10,18hr}$ (dB)	Predicted Noise Level at Receptor Future Year with Development $L_{A10,18hr}$ (dB)	Combined Noise Level	Change in Noise Level +/- (dB)	Corresponding Magnitude of Impact
Leeds Road	NSR3	68.8	69.1	72.0	2.9	None/Not Significant
L Fitzwilliam Street	NSR3	41.2	41.7	44.5	2.8	None/Not Significant
St Andrews Road	NSR3	28.8	30.1	32.5	2.4	None/Not Significant
A62 Southgate	NSR5	71.7	74.0	75.8	1.8	None/Not Significant
Old Leeds Road	NSR2	54.5	59.6	60.8	1.2	None/Not Significant

The above assessment has determined a result of 'None/Not Significant' impact upon the nearest noise sensitive properties due to the change in road traffic.

4.3. Plant Noise Emission Limits (PNEL's)

Consideration should be given to potential noise arising from the proposed plant associated with the development, such as extraction fans upon the existing noise sensitive dwellings. Table 7 illustrates the calculation of plant rating level limits for the daytime and night-time periods based on BS4142 [6]. These limits apply to all plant units operating simultaneously.

Table 7: Plant noise limits

Period	Representative background level $L_{A90,T}$ (dB)	Plant rating level $L_{Ar,Tr}$ (dB)
Day (07:00-23:00)	41	41
Night (23:00-07:00)	41	41

It should be noted that the emission limit is a rating level which can include for a range of penalties or 'acoustic feature corrections' as detailed in BS4142 and as such the actual measured or calculated sound pressure level outside the closest habitable window could be up to 18dB lower than the rating level values presented here.

At this stage in the design there is no information available regarding the proposed plant units to be installed at the site, so it has not been possible to carry out a full plant noise assessment. Once selections have been made, an assessment should be carried out to ensure that the limits can be met.

Once this is done, it is considered that the likelihood of adverse comment arising as a result of noise from the plant will be low and that the NOAEL will be achieved, which would be barely noticeable and not intrusive, resulting in the following:

Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.

5. CONCLUSION

Dice Environmental were commissioned by DLP Planning to undertake a Noise Impact Assessment to support a planning application for a new Multistorey Car Park at the area of land south-east of Daphne Steele Building, Huddersfield HD1 1AD.

An environmental noise survey has been completed to quantify the prevailing soundscape at the site. This comprised an unattended logging survey to capture the existing background noise levels currently present within the boundaries of the site.

The change in ambient assessment has determined that the increase in vehicle movements due to the operation of the development will result in a 'None/Not Significant' impact at the nearest noise sensitive properties.

Noise limits have been set to apply to all externally located plant units proposed for the site. These are determined in accordance with BS4142 and apply to all plant units operating simultaneously.

Appendix I – Limitations

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Dice Environmental and the Client as indicated in Section 1.2.
2. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
3. Dice Environmental cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by Dice Environmental is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by Dice Environmental in this connection without their explicit written agreement there to by Dice Environmental.
4. Where a noise survey is required to inform the assessment, Dice Environmental will endeavour to ensure that all noise measurements taken are robust, representative and reliable in order to inform an accurate noise impact assessment. Where limitations or constraints exist which prevent a suitable noise survey being completed, Dice Environmental will take all reasonable steps to make the client fully aware of any such limitations or constraints with a view to achieving the best possible outcome for the client. Where additional sound surveys are required, over and above those specified in our scope of works, then Dice Environmental reserves the right to charge additional fees.
5. Where mitigation measures are specified in our report, it should be noted that these measures are relative to a specific sound source, both in terms of the measured sound pressure level and the character of the source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, Dice Environmental cannot be held responsible for any subsequent variations in the proposed mitigation performance.

Appendix II – Glossary of Acoustic Terminology

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character, and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsivity may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the Table A1.

Table A1: Typical Sound Pressure Levels

Sound Pressure Level dB(A)	Location/Example
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside factory
100-110	Burglar alarm at 1m away
110-130	Jet aircraft on take off
140	Threshold of pain

Table A2: Terminology

Descriptor	Explanation
Ambient Noise	Encompassing sound, at a given place, being usually a composite of sounds from many sources near and far.
C_{tr}	Sound insulation performance spectrum adaptation term that accounts for the A-weighted urban traffic noise spectrum.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (20 μ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with the 'A' frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$D_{n,e,w}$	Weighted element normalized level difference. A single-number quantity that describes the sound insulation of ventilators.
$L_{Aeq, T}$	A-weighted, equivalent continuous sound pressure level. L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' time-weighting response.
$L_{Ar,Tr}$	Sound rating level. The A-weighted L_{eq} sound level of an industrial noise during a specified time period, adjusted for tonal character and impulsivity.
L_{10} & L_{90}	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.
Free-Field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, this is measured outside and away from buildings.
Fast	A time-weighting used in the root mean square section of a sound level meter with a 125-millisecond time constant.
Pink Noise Spectrum	Noise whose power spectral density is inversely proportional to frequency.
Residual Noise	The ambient sound remaining when the specific sound is suppressed.
R_w	Weighted Sound Reduction Index. A single number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies, based on laboratory measurements.
Slow	A time-weighting used in the root mean square section of a sound level meter with a 1000-millisecond time constant.
Specific Noise	Noise from the sound source under investigation as defined in BS4142, method for rating industrial noise affecting mixed residential and industrial areas.

Appendix III – Figures

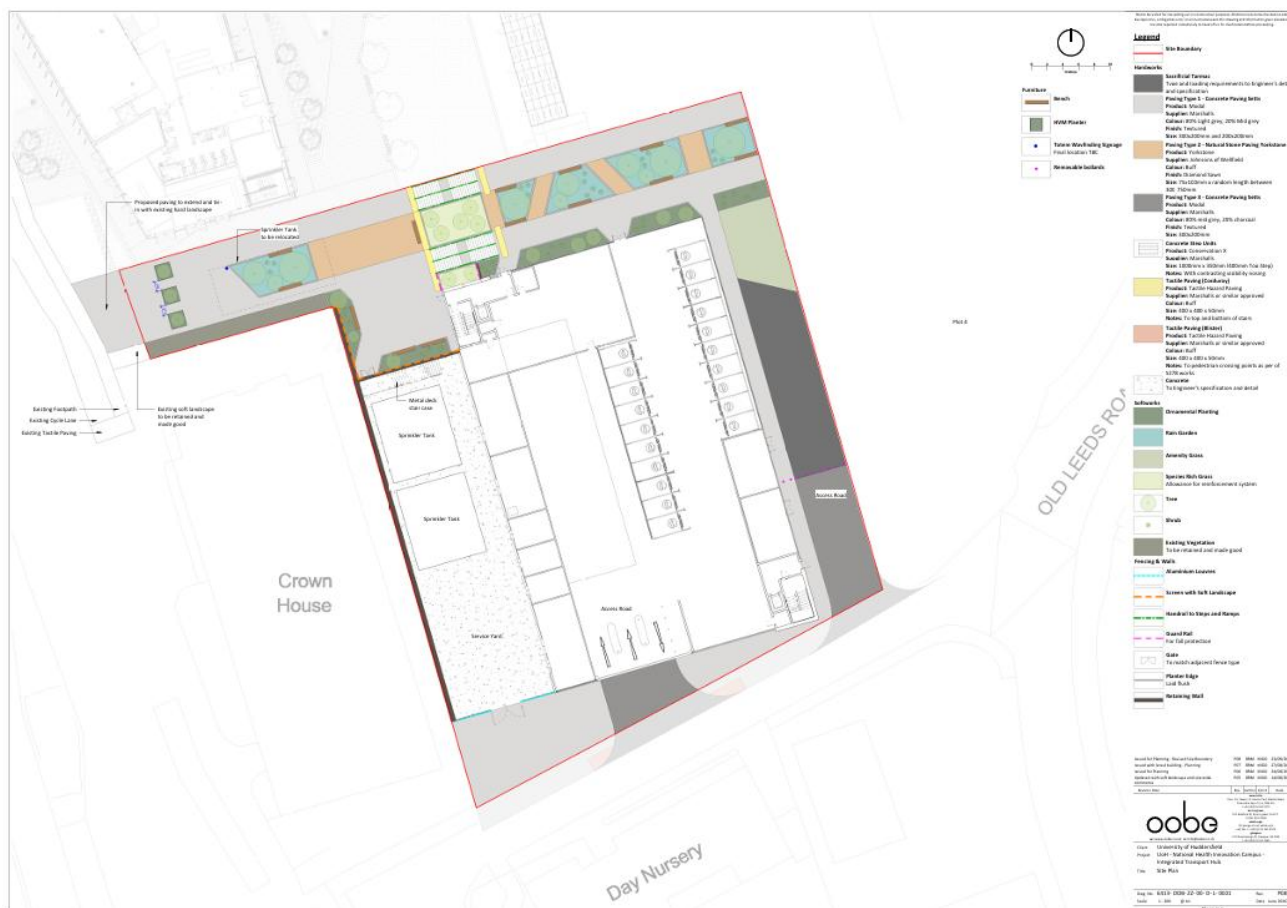


Figure 2: Proposed Site Layout



Figure 1: Noise Measurement Position

Appendix IV – Bibliography

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