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ACOUSTIC CONSULTANTS

NOISE IMPACT ASSESSMENT REPORT

MCGOVERN PARK EV HUB, 315-384 WEST END ROAD, RUISLIP

REPORT REFERENCE NO. J006373-9740-JW-01

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Issue	Date	Author	Remark	Status
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This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.

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1.0 SUMMARY

At the request of Entrust Professional Services Ltd, Philip Dunbavin Acoustics has conducted an environmental noise survey and assessment of the noise egress from the proposed EV Hub at McGovern Park, 315-384 West End Road, Ruislip, HA4 6QX. We have been informed the EV Hub development will operate on a 24 hour basis.

A noise survey has been conducted at the nearest noise sensitive properties to the proposed development. The results of the survey have been used to assess the background sound at the nearest noise sensitive receptors and specify appropriate noise limits for the new plant and equipment.

The Assessment has been undertaken following the guidance contained within BS4142:2014 – 'Methods for rating and assessing industrial and commercial sound'.

The proposed development will comprise of 3 no. EV chargers, 1no. substations and associated 6no. car parking spaces. We have estimated the likely noise levels generated by the development and using this data we have calculated the expected noise level at the nearest noise sensitive receiver. It needs to be ensured that the selected unit does not exceed the sound power levels utilised in the table above and as such noise emissions from substation unit selected should be reviewed to confirm they are still acceptable.

The results of these calculations have indicated that during the day the rating level generated is 41dB L_{Ar} at the nearest noise sensitive property and the typical background sound was measured at 51dB L_{A90}. In addition, the results of these calculations have indicated that during the night the rating level generated is 40dB L_{Ar} at the nearest noise sensitive property and the typical background sound was measured at 50dB L_{A90}.

It is noted that the recommendations within BS4142:2014 indicate that the following:

"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."

In accordance with the requirements of The National Planning Policy Framework (NPPF) and the Noise Policy Statement for England (NPSE) indicates that planning policies should 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. In addition the NPSE indicates 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. However the NPSE indicates that this does not mean that such adverse effects cannot occur.

As the assessment has indicated that the rating level is -13 dB below the daytime background sound level and -12 dB below the night-time background sound level, in accordance with BS4142:2014 an initial assessment estimate impact would indicate that the specific sound will be significantly below a level that is considered to be an adverse impact and will have a low impact.

Therefore based upon the estimated noise emissions provided within this report we would consider that the noise emissions from the new development would not result in any adverse impact on the surrounding residential receivers.

2.0 INTRODUCTION

The proposed EV Hub is to be located at McGovern Park, 315-384 West End Road, Ruislip, HA4 6QX.

The immediate local area consists of an existing car park on McGovern Park, a motor workshop to the north, suburban residential areas, and West End Road to the west. The closest noise sensitive receptors are understood to be dwellings located to the south at Masson Lane and to the west on West End Road.

The proposed site boundary showing the location of the site and surrounding local area including the closest residential receivers are shown in Figure 1 below.

Figure 1. Proposed Site Location with Nearest Residential Receivers

3.0 ASSESSMENT CRITERIA

3.1 London Borough of Hillingdon's (LBH) Local Plan

The Hillingdon Local Plan Part 1 adopted in November 2012, Policy EM8 and 'Strategic Policies' represents the local authority's interpretation of the national planning policy and the strategic objectives for noise are outlines in Section 8 – 'Core policies – Environmental improvement'. This states:

'SO10: improve and protect air and water quality, reduce adverse impacts from noise including the safeguarding of quiet areas and reduce the impacts of contaminated land.'

The local plan does not provide any further guidance on the objective limits or specific criteria by which the adverse impact can be determined.

3.2 National Planning Policy Framework (NPPF)

National Planning Policy is guided by the National Planning Policy Framework (NPPF) updated in 7th February 2025. With regard to Noise the Framework states the following;

Planning policies and decisions should contribute to and enhance the natural and local environment by:

- *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.*

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:

- *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;*

- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.*

The terms '*significant adverse*' and '*adverse*' impacts are defined in the explanatory notes of the 'Noise Policy Statement for England (NPSE) which states;

There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:

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.

Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

The notes also offer an explanation of the term 'adverse impacts' as follows;

… refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

Although no specific noise limits for LOAEL and SOAEL have been defined, in 2014 the UK Government published a planning practice guidance document for noise which indicates where these limits fall with relation to the perception of noise, updated in July 2019. A summary is reproduced in Section 4.2 below, and the full document is published at https://www.gov.uk/guidance/noise--2. It is considered that guidance from other acoustic standards may be employed to determine suitable levels within the overall principal of the National Planning Policy Framework.

3.3 BS4142:2014+A1:2019

The effect of plant noise emissions on the nearest noise sensitive residences can be assessed in accordance with BS4142:2014 – '*Methods for rating and assessing industrial and commercial sound*'.

The standard describes a method of determining the level of a noise of commercial or industrial nature, together with procedures for assessing the impact of such a noise outside nearby noise sensitive areas.

The standard provides a procedure for comparing the noise from commercial sources with background noise levels in the absence of the commercial noise and determining the likely impact of the noise on noise sensitive areas.

In accordance with BS 4142 the background noise level is the typical A-weighted sound pressure level at the assessment position that is exceeded for 90% of a given time interval (L_{A90}). The specific noise level is the equivalent continuous (L_{Aeq}) sound pressure level at the assessment position produced by the noise source over a given time interval.

Certain acoustic features can increase the impact over that expected from a simple comparison between the specific noise level and the background level. Where such features are present, these are considered by adding corrections to the specific noise level.

The corrections are applied based on whether the following features occur, or are expected to be present. The correction values can either be determined subjectively, or by various objective measurement procedures.

- The noise contains a distinguishable, discrete, continuous tone (whine, hiss, screech, hum, etc.). 0 – 6 dB penalty
- The noise contains distinct impulses (bangs, clicks, clatters, or thumps).
- 0 – 9 dB penalty.
- The noise is irregular enough to attract attention. 0 – 3 dB penalty.
- Other features. 0 – 3 dB penalty.

From the addition of the above penalties where appropriate the rating level is established, this being the value that is compared with the background noise.

According to BS 4142 an initial estimate of the impact is given for a rating level of:

- 10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.
- 5 dB(A) above the background is an indication of an adverse impact, depending on the context.
- where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

The above initial assessment may then be modified depending on the context to take into account;

- The absolute level of the sound.
- The character and level of the residual sound compared to the character and level of the specific sound.
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:
    1. Façade insulation treatment
    2. Ventilation and / or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
    3. Acoustic screening

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

British Standard 8233:2014, *Guidance on Sound Insulation and noise reduction for buildings*, gives guidance on internal noise levels within dwellings, flats and rooms in residential use when unoccupied. The following criteria are for Living and Dining Rooms for daytime use and Bedrooms for night time.

Table 1. BS8233 recommended indoor ambient noise levels

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 $L_{Aeq,16hour}$	–
Dining	Dining room/area	40 $L_{Aeq,16hour}$	–
Sleeping (daytime resting)	Bedrooms	35 $L_{Aeq,16hour}$	30 $L_{Aeq,8hour}$

It should however be stressed that the above criterion relates to steady noise, in this case from road traffic etc., excluding unusual noise events departing from the typical noise character of the area.

3.5 WHO Guidelines for Community Noise

In 1999, the WHO (World Health Organisation) published Guidelines for Community Noise, stating the following internal noise levels are applicable to dwellings.

Table 2. WHO Guidelines for Community Noise criteria

Specific Environment	Critical Health Effect(s)	L_{Aeq} dB	Time Base (hours)*
Outdoor living area	Serious annoyance, daytime and evening	55	16
	Moderate annoyance, daytime and evening	50	16
Outside Bedrooms	Sleep disturbance, window open (outdoor values) night time	45	8

* Typically taken to be daytime/evening - 07:00 – 23:00 hours, and night time 23:00 – 07:00 hours.

WHO guidelines state, 'To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}.'

4.0 SURVEY DETAILS

4.1 Survey times

The ambient noise measurements were made between 18:09 hours 22nd July 2026 – 11:59 hours 23rd July 2026, with all measurements being made and partially attended by Jamie Wilson of PDA Ltd.

4.2 Equipment Used

Throughout the survey, measurements were undertaken using 1 x NTi XL2 sound level meter. The meter is a precision grade Class 1 sound level meter (as per BS EN 61672-1: 2002). The meter was set to A-weighted, fast response and 15-minute intervals. The meters were calibrated directly before any measurement took place and immediately afterwards and no significant drift was observed.

4.3 Weather

22nd July – 23rd July 2026

Temperature: 14°C - 28°C
Wind Speed: 0-1 m/s
Wind Direction: Variable
Precipitation: No precipitation

5.0 MEASUREMENT POSITIONS & PROCEDURE

Measurements were undertaken at one measurement position at the site. The microphone was mounted 1.5m above ground and at least 3.5m from any reflecting surface. A range of statistical noise indicators was measured, including L_{Aeq} and L_{A90}.

The measurement location is highlighted within the following figure:

Figure 2. Survey Measurement Locations

5.1 Noise Sources

Subjectively the noise climate at the survey location mainly consisted of road traffic from West End Road and vehicle movements on the existing McGovern Park car park.

5.2 Measured Results

For the purpose of the assessment, the results presented in the table below are considered to be the representative periods for the developments worst-case daytime operation (19:00 - 23:00 hours) and night-time operation (00:00 – 03:00 hours). A full history of noise survey results in given Appendix A. The levels presented in the tables have been rounded to the nearest decibel. The L_{Aeq} levels are the logarithmic average of all the measured noise levels. The L_{A90} levels have been shown as a minimum to maximum range.

Table 3. Summary of environmental noise measurements

Date	Time Period (hh:mm)	$L_{Aeq,T}$ (dB)	Range of $L_{A90,15mins}$ (dB) Values
22/07/2026	Day (19:00 – 23:00)	55	50 – 54
23/07/2026	Night (00:00 – 03:00)	54	44 – 53

5.3 Derivation of Background Sound

In accordance with the requirements of BS4142 the determination of background is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during relevant time periods. Within BS4142 is states the following:

> *"8.1.4 The monitoring duration should reflect the range of background sound levels for the period being assessed. In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.*
>
> *NOTE 1 To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."*

The following Figures present the results charts for the statistical analysis of both day and night-time periods (given in Table 3) in order to establish a typical background sound level respectively.

Figure 3. Statistical analysis of typical background sound level – Daytime

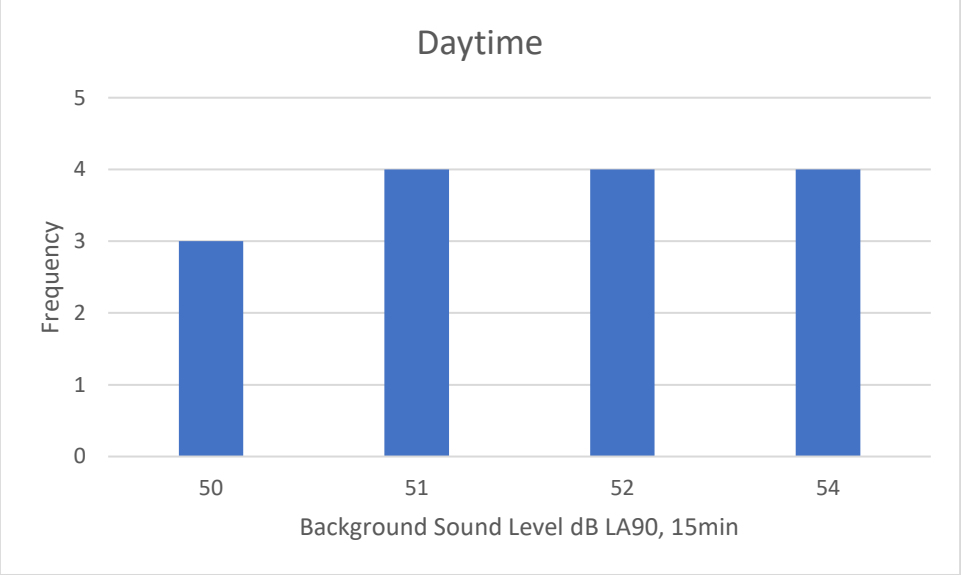
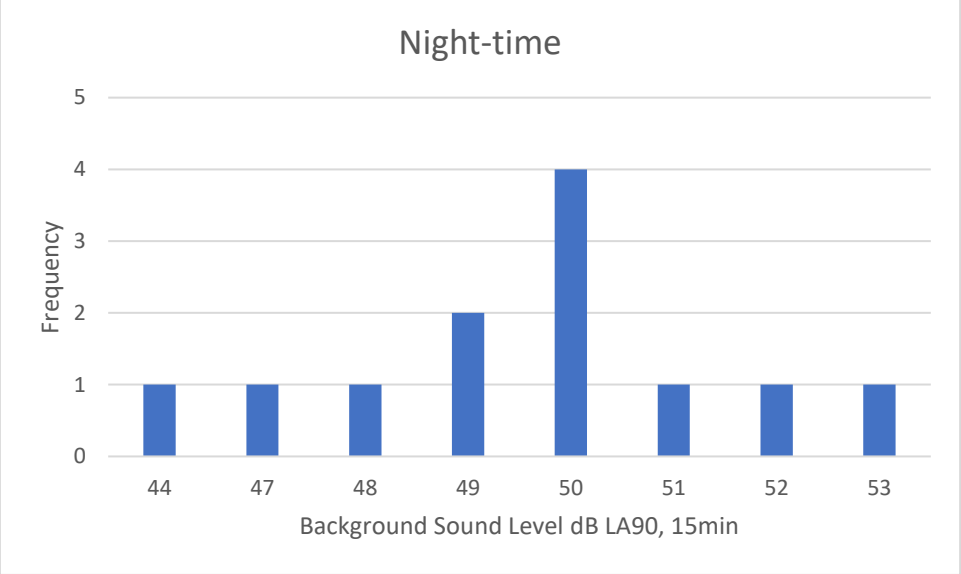


Figure 4. Statistical analysis of typical background sound level – Night-time



It has been determined that representative background sound levels at each of the measurement positions are as follows:

Table 4. Summary of Representative Background Sound Levels

Representative Daytime Background Sound Level L_{A90} (dB)	Representative Night-time Background Sound Level L_{A90} (dB)
51	50

6.0 SPECIFIC NOISE LEVEL CALCULATION

It should be noted that our assessment of the proposed noise generation of this scheme has been based upon the following site layout.

Figure 5. Proposed Site Layout

6.1 Alpitronic HYC300 charger

It is our understanding that there is to be 3 no. Alpitronic HYC300 chargers associated with the development. We have been provided with manufacturers data (ref: '*hyc300_product-brief_v2-1_en*') which states a sound pressure level of 65 dB(A) at 1m at full charging. We have converted this into a sound power level calculated to be 73 dB(A) and applied a reference noise spectrum for a similar unit which is summarised in the table below. We have assumed this noise level for both day and night-time periods, however manufacturers data states that the unit has an option to set parameters for 'Silent Mode'.

Table 5. Noise level spectra for Alpitronic HYC300 charger

Element	Sound Power Level dB, Octave Band Centre Frequency Hz								dBA
	63	125	250	500	1k	2k	4k	8k	
Alpitronic HYC300 charger	83	78	72	67	62	61	66	67	**73**

6.2 Package Substation

It is our understanding that there is to be 1 no. substation associated with the development. We have been provided with manufacturers noise data, therefore based on a similar small sized substation transformer we have assumed a sound power level of 54 dBA and applied a reference noise spectrum which is summarised in the table below. We have assumed this noise level for both day and night-time periods.

Table 6. Noise level spectra for substation transformer

Element	Sound Power Level dB, Octave Band Centre Frequency Hz								dBA
	63	125	250	500	1k	2k	4k	8k	
Substation Transformer	60	60	50	39	27	22	18	17	**54**

It needs to be ensured that the selected unit does not exceed the sound power levels utilised in the table above and as such noise emissions from substation unit selected should be reviewed to confirm they are still acceptable.

6.3 Car Parking

In addition to the proposed chargers and substation the site layout indicates 6no. car parking spaces associated with the development. In order to predict noise levels from the proposed parking bays, in addition to the chargers and substation, SoundPLAN has been utilised to assess 6 no. bay movements every 1 no. hour during the daytime and 3 no. bay movements during the night-time. The calculated noise levels are based upon the 'RLS-19 · RLS-90 - Bavarian Parking Area Noise Study' which accounts for real world measurements of sound level, vehicle movements, surfacing and typical use of parking area.

7.0 NOISE IMPACT ASSESSMENT

7.1 Noise Propagation Calculations

A 3-dimensional noise model has been created using SoundPLAN noise modelling software. The software uses the method of ISO 9613:2024 'Acoustics – attenuation of sound during propagation outdoors – general method of calculation' and takes into account geometric spreading, ground effects, air attenuation, barrier attenuation and reflections. Terrain and elevation is taken from Google Earth data.

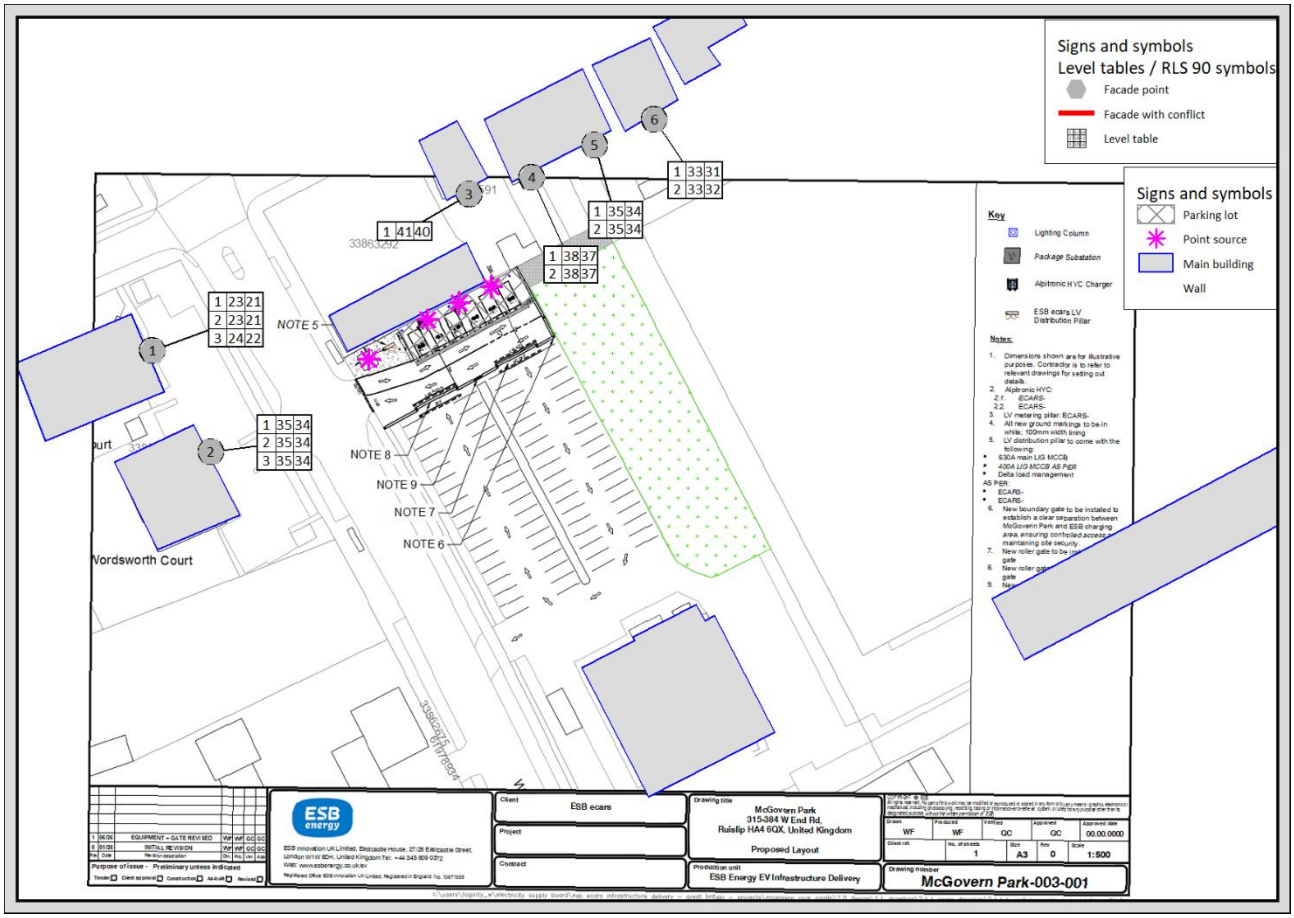
The model is based upon the 'McGovern Park-003-001' provided by ESB Energy. A ground absorption coefficient of 1 has been used representative of the intervening ground between the proposed site and the receivers of which is predominantly soft ground (i.e. grassland) with roads modelled as 0 for hard ground. For the development site the ground absorption is set to 0.5 for mixed ground.

The charger units have been modelled as a point sources at a height of 2m above ground level. The substation has been modelled as a point sources at a height of 1m above ground level. The parking bays have been modelled as an area source at a height of 0.5m above ground level.

The SoundPLAN model would suggest the following noise levels calculated at the closest noise sensitive receivers. For other receivers further away a lower noise level would be experienced due to greater distance attenuation provided. Noise levels are calculated at 1.5m for the ground floor level and an additional 3m for the first floor where applicable.

Please note that we have assumed all of the noise generating units discussed in Section 6.1 – 6.2 to be operating simultaneously and at their respective noise levels during both day and night-time periods. However we have assumed that as a worst case scenario there will be 6 no. vehicles using the parking bay during the daytime and 3 no. vehicles using the parking bay during the night-time.

Figure 6. SoundPLAN model representation



Based upon the above calculation the worst case noise level will be 41dB(A) at the nearest residential receivers during the daytime and 40 dB(A) night-time.

7.2 Initial BS4142 Assessment

Please refer to the table below which details the results of the modelling calculation described above and compared these levels with the Background Sound Level derived within Section 5.3.

Table 7. Comparison of proposed operations with background sound levels L_{A90} (worst-case receiver)

Receiver no.	Location	Predicted Specific Sound Level $L_{Aeq,T}$ (dB) Day/Night	Rating Level L_{Ar} (dB) Day/Night[1]	Representative Background $L_{A90(15\text{-}min)}$ (dB) Day/Night	Difference between Rating Level and Background (dB) Day/Night
3	Masson Avenue	41/40	41/40	51/50	-10/-10

Notes:

1 Note that no character corrections have been added within the assessment, as most modern plant units, etc. do not display tonality.

It is noted that BS4142 indicates the following:

10 dB(A) or more above the background is an indication of significant adverse impact, depending on the context.

5 dB(A) above the background is an indication of an adverse impact, depending on the context.

Where the rating level does not exceed the background level, this is an indication of the specific sound source having a low impact, depending on the context.

As the assessment has indicated that the rating level is -10 dB below the daytime background sound level and -10 dB below the night-time background sound level, in accordance with BS4142:2014 an initial assessment estimate impact would indicate that the specific sound will be significantly below a level that is considered to be an adverse impact and will have a low impact.

It should be noted however that that in accordance with BS4142:2014 this initial impact will need to be modified to account for context of the site. This is further discussed within Section 8.0.

8.0 DISCUSSION OF RESULTS

The BS4142 initial estimate is described within Section 7.2; however it should also be noted that BS4142 indicates that this initial estimate of impact needs to be modified for context. With reference to the context BS4142 indicates that the significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. BS4142 indicates that pertinent factors that could modify context would include: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; the sensitivity of the receptor and whether dwellings or other premises used for residential purpose already incorporate design measurements that secure good internal and/or outdoor acoustic conditions.

With reference to context, we would comment as follows:

- The absolute noise level associated with the scheme are more than 10 dB below the existing ambient noise climate and will therefore not significantly increase the existing the L_{Aeq} levels across site.

- The absolute noise level associated with the scheme does not exceed the guidance levels described within WHO Guidelines for Community Noise 1999.

- The site is located within an area that includes a vehicle motor shop. It is therefore likely that the noise level generated by the proposed scheme will not be out of character with the existing noise climate.

- The site is located within an existing car park and adjacent to the busy West End Road (A4180), therefore vehicular traffic noise will not be out of character with the existing noise climate.

Based upon the above context I would consider that the overall impact for the development does not require modifying and an overall ‘low’ impact is predicted.

It is noted that the NPPF requires that significant adverse impacts due to a new development should be avoided and other adverse impact should be mitigated and reduced to a minimum. Based upon the above assessment it is concluded that the sound levels arising from the operations of the proposed development will not result in an adverse impact and will therefore comply with the requirements of the NPPF.

9.0 UNCERTAINTY

BS4142 indicates that an assessment of noise impact should consider uncertainty within the assessment. This uncertainty can arise from: uncertainty in measurements; uncertainty in sound emission and sound power level; and uncertainty in calculation method.

9.1 Uncertainty in Measurements

It is noted that the instrumentation used for the assessment conform to Class 1 accuracy in accordance with IEC 61672. In addition, the instrumentation has been calibrated to national standards and were field calibrated at the time of the measurements. The measurements were undertaken adjacent to the nearest residential receiver.

We would therefore consider that the effect of uncertainty on the measurement of background sound would be minimal.

9.2 Uncertainty in Sound Power Levels

In some cases the sound power levels of proposed sources have been estimated, therefore it needs to be ensured that the selected units do not exceed the sound power levels utilised in the report and as such noise emissions from units selected should be reviewed to confirm they are still acceptable.

If the above is adhered to, we would consider that uncertainty is unlikely to affect the outcome of the assessment.

9.3 Uncertainty in Calculation Method

It is noted that the calculations have been undertaken utilising a known prediction method and have utilised the standard ISO 9613. In addition calculations have been undertaken utilising commercial prediction software. We would therefore consider that this would minimise uncertainty in the assessment.

10.0 CONCLUSION

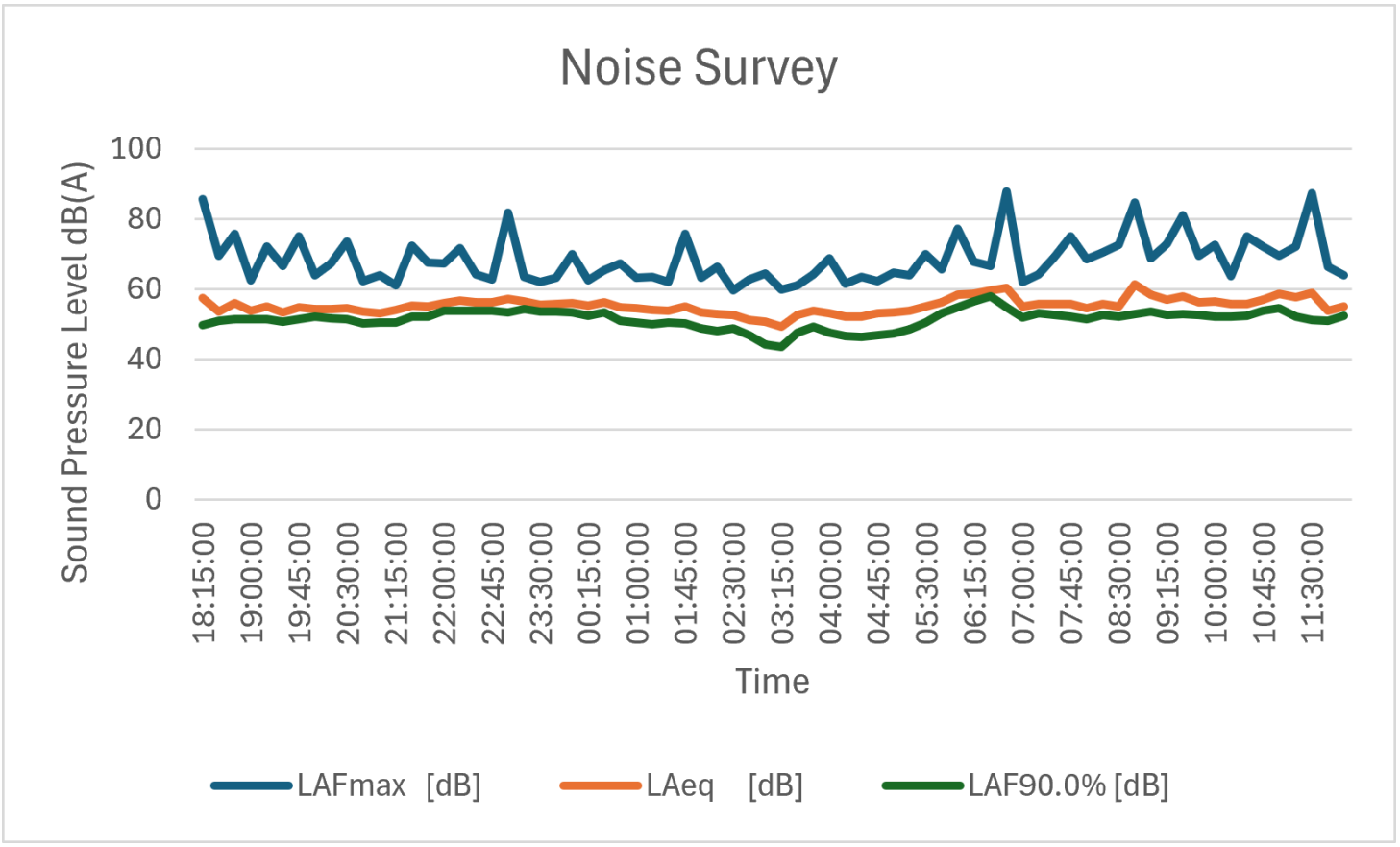
At the request of Entrust Professional Services Ltd, Philip Dunbavin Acoustics has conducted an environmental noise survey and assessment of the noise egress of the proposed EV Hub at McGovern Park, 315-384 West End Road, Ruislip, HA4 6QX.

An assessment of the noise emissions from the proposed units has been undertaken and compared with the guidelines contained within BS4142:2014 “Methods for rating and assessing industrial and commercial sound” WHO Guidelines for Community Noise and BS8233:2014 “Guidance on sound insulation and noise reduction for buildings”.

The assessment indicates that the development will not result in an adverse impact at the nearest noise sensitive receivers in accordance with the recommendation described within BS4142:2014. This is therefore an indication that the proposed scheme is in accordance with the National Planning Policy Framework.

APPENDIX A – NOISE SURVEY FULL RESULTS

Figure 7. Noise Survey History



APPENDIX B – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB L_{Aeq}. Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq}. It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB L_{An}. It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max}, dB L_{Amax}, etc. It can also be expressed in terms of frequency analysis.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq}, L_{90}, L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.