



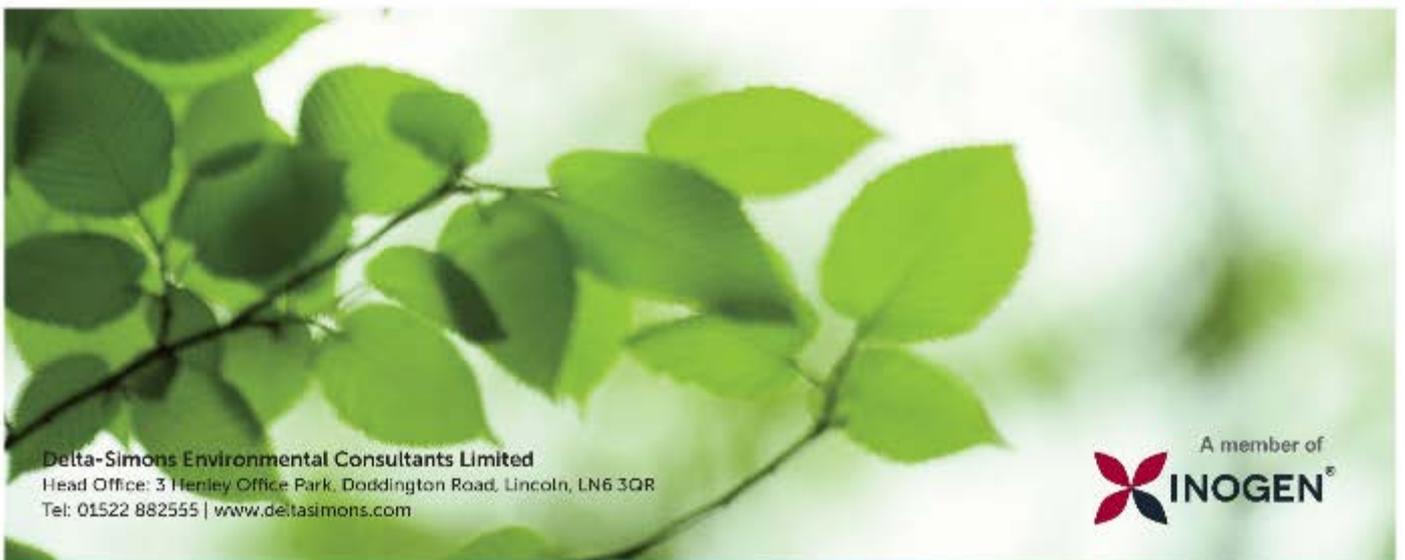
# Noise Assessment - Addendum

G-Park Bedford Industrial Estate, Wixams

Presented to **Gazeley**

Issued: July 2020

Delta-Simons Project No. 19-1495.07



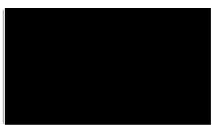
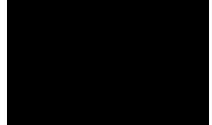
**Delta-Simons Environmental Consultants Limited**  
Head Office: 3 Herley Office Park, Doddington Road, Lincoln, LN6 3QR  
Tel: 01522 882555 | [www.deltasimons.com](http://www.deltasimons.com)



## Report Details

<b>Client</b>	Gazeley
<b>Report Title</b>	G-Park Bedford Industrial Estate
<b>Site Address</b>	Land north of Watson Road, Wixams, Bedford
<b>Project No.</b>	19-1495.07
<b>Delta-Simons Contact</b>	Evie Scott

## Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
2	Second Issue	15/07/2020	-			
				Angela Hornby Acoustic Consultant	Graham Hornby Acoustic Consultant	Simon Johnson Associate

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Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from ten locations - Lincoln, Birmingham, Bristol, Dublin, Durham, Leeds, London, Manchester, Norwich and Nottingham - we employ over 75 environmental professionals, bringing experience from across the private consultancy and public sector markets.

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## Executive Summary

<p><b>Site and Report Context</b></p>	<p>The proposed development Site has outline permission for B1/B8 use but required a revised noise impact assessment due to a proposed change in layout from that previously approved.</p> <p>A desk-top re-assessment of noise impact dated October 2019 was submitted in support of the revised layout application, based upon the findings of the original baseline survey and impact assessment approved at Outline stage (by others).</p> <p>No objections were raised by Environmental Health during consultation of the noise assessment issued on 23/01/20.</p> <p>Subsequently a public objection has been received to the revised layout plans, and Environmental Health has now raised a number of noise related queries regarding the application/noise impact assessment. This addendum report aims to answer the queries raised by the Environmental Health Officer in full and describes a recommendation for an enhanced noise mitigation scheme.</p>
<p><b>Summary</b></p>	<p>The impact assessment of the revised layout in accordance with BS4142 indicates a reduction in noise benefit from the original scheme.</p> <p>There is no justification for deviating the previously approved assessment methodology for the revised layout.</p> <p>Only existing and committed or part-constructed sensitive developments are required to be assessed in respect of the proposed layout changes.</p> <p>Noise making elements of the development are now situated on the most sensitive elevation of Unit 3, and boundary noise mitigation is required in order to maintain overnight residential amenity at the nearest noise sensitive receivers to the east of Bedford Road. Boundary mitigation is also recommended for future residents of the residential development under construction to the south west of the Site. Mitigation includes an acoustic barrier at the south eastern and south western extents of the Site boundary.</p> <p>The further enhanced noise mitigation scheme provides a significant improvement over the outline approved scheme with a low impact outcome. The acoustic barrier extends beyond the gatehouse for Unit 3. The development benefits from fully internalised unloading and loading of HGVs in the docking bays and no external mobile equipment or sound sources other than HGV movements have been assessed, accordingly. This is now fully reflected in the noise model, with all external loading activity point sources removed from the model.</p>
<p><b>Conclusions and Recommendations</b></p>	<p>No changes to the original findings of the impact assessment are found in response to the objector's report.</p> <p>The previous Delta Simons' noise impact assessment at existing and committed developments near to the Site indicates that with the mitigation scheme originally recommended, the majority of receivers would be within the NOAEL effect level threshold, however some receivers at the most upper floors of nearby houses facing Bedford Road would remain in the LOAEL effect level threshold based on external noise level. However, no external amenity space is provided at these positions and therefore this matter is not applicable. The EHO's comments have been taken into consideration and an enhanced noise mitigation scheme now proposed for the reserved matters site layout indicates that the development would result in a <b>Low Impact</b> and all properties would be within the <b>NOEL</b> effect level threshold in terms of BS4142.</p> <p>Internal noise levels at all sensitive properties assessed are shown to be adequately controlled to within the design criteria of BS 8233.</p>
<p>This is intended as a summary only. Further detail and limitations of the assessment is provided within the main body of the Report.</p>	

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# 1 Introduction

## 1.1 Appointment

- 1.1.1 Delta-Simons, working with our approved technical specialist, was instructed by Gazeley (the 'Client') to undertake the noise impact assessment report for the proposed revised Site layout for a reserved matters application for a storage and distribution development.
- 1.1.2 The Delta-Simons' noise assessment report reference 19-1495.03 dated October 2019 was submitted to Bedford Borough Council (BBC) in support of the planning application, reference 19/02724/MAR.
- 1.1.3 Following submission of noise assessment report reference 19-1495.03 dated October 2019, a response of "no objections" were initially received from the Environmental Health department of BBC during planning consultation in January 2020.
- 1.1.4 Since this time, a public objection has been submitted to the Local Planning Authority which includes a number of acoustical queries regarding the October 2019 assessment. As a result, the Environmental Health response has now been changed to "objection" with a number of queries being raised. The EHO response is reproduced in full at **Appendix C**.
- 1.1.5 Delta-Simons have been further appointed to provide an addendum response to the EHO's queries, and these are dealt with in turn in the **Section 2**. A further telephone conference with the EHO and project team was held on Monday 13<sup>th</sup> July 2020 during which an agreement was made to demonstrate a further reduction at the nearest receptors during the night time period was achieved with a upper BS4142 outcome of Rating over Background not exceeding +4. The enhanced mitigation scheme is presented in **Section 3** and **Appendix E**.
- 1.1.6 The standard limitations associated with this assessment are presented in **Appendix A**.
- 1.1.7 A glossary of terms used in this report is provided in **Appendix B**.

## 2 Response to EHO memo

### 2.1 Introduction

- 2.1.1 The Planning Consultation Memo dated 02/07/2020 was provided to Planning by Environmental Health and acknowledges that the Site already has outline permission for the development, and that the current application is one of reserved matters.
- 2.1.2 It is summarised that the justification for the change in the Environmental Health response is largely two-fold and has been led by the written objection by a neighbouring land owner.
- 2.1.3 It is understood that whilst the land previously had residential development approval, the scheme was never built out and this permission has since lapsed and the land is not currently considered to be a sensitive receptor and was not included as such in either the Outline noise assessment, or the subsequent reserved matters assessment.
- 2.1.4 It is understood that since the reserved matters application for the detailed layout to be assessed a new planning application to develop the land immediately adjacent the southern boundary, known as North End Farm (19/02289/MAF), has received a further application to BBC for residential development but this remains undecided by the planning authority and is not therefore applicable as a sensitive receptor at this time.
- 2.1.5 This fact is acknowledged by the EHO in their memo, stating "Following discussion with Planning Officer for the application I am of the opinion that I am unable to consider the impact of the application upon the southern site as the previous permission has lapsed."
- 2.1.6 However, the EHO continues that the wider matters raised by the objector are valid and requests a response from Delta-Simons to confirm that the proposed development will not result in harm to local amenity via noise.
- 2.1.7 Each point raised in the EHO's memo have been addressed in the original order, repeated below.

### 2.2 Matters raised

- 2.2.1 The key matters raised in the EHO's memo are summarised in bullets, with the associated response following each matter:
- ▲ No feature corrections have been used as part of the A&C (sic) assessment
  - ▲ HGV alarms are not considered nor are their intermittency or tonality
  - ▲ The report states that there will be an impact of +4 daytime and +11 dB night time which would be a significant adverse impact
  - ▲ The extrapolation for noise reduction through distance to receptors has been set at giving a level of 48dB rather than the level considered by the objector of 61dB.
- 2.2.2 It is not clear why these matters were not initially raised by Environmental Health either at the time of the outline application, or at the time of submission of the detailed design, given the report remains unchanged since its original submission.
- 2.2.3 These matters are dealt with individually in the sections below.
- 1) No feature corrections have been used as part of the A&C (sic) assessment**
- 2.2.4 In providing a scope of works to the Client, a copy of the previously approved Air and Acoustic Consultants Ltd (AAC) noise assessment for the outline scheme was provided as a point of reference to establish the change in impact assessment between the outline and reserved matters schemes.
- 2.2.5 In order to provide a directly comparable outcome for the Client to evaluate between the likely impact of the two schemes the same assessment approach and methodology adopted by AAC was applied in good faith. In the AAC Report, which was part of the approval for the outline consent, no acoustic feature corrections were applied.

2.2.6 The outline decision gives the scheme approval in principle i.e. that the development would be acceptable, with appropriate mitigation measures included. As no specific noise impact concerns were raised at the time of the Outline approval, or during the planning consultation by Environmental Health, it would seem inappropriate to now require a different assessment approach or methodology to be applied when presenting a revision of the layout. However, it is still proposed that the previous mitigation measures remain appropriate in securing suitable control of residential amenity to nearby receptors.

## **2) HGV alarms are not considered nor are their intermittency or tonality**

2.2.7 Whilst it is not possible for Delta-Simons to provide a response on behalf of another consultant for an already approved scheme, our acoustics specialist has been in contact with the author of the original noise assessment in order to provide a full and balanced response to the matter. A copy of the correspondence is provided in **Appendix D**.

2.2.8 The AAC response following contact by MZA confirm that the library data used in the assessment includes the use of audible reversing alarms as part of the HGV reversing parameter presented.

2.2.9 As the scheme design incorporates all unloading/loading of HGVs to be undertaken within sealed docking bays on the southern elevation, there is no other obvious source of intermittent or tonal sound to consider within the BS4142 assessment.

2.2.10 Furthermore, when considering that the adjacent Site to the south of Watson Road is already operating as a similar light industrial/warehouse based operation with loading facilities, and certainly the frequent arrival and departure of HGVs, the context of the application Site is no different to the noise character already present in the area.

2.2.11 The sound propagation contours presented in the Delta-Simons assessment clearly indicate that with mitigation, the typical emission from the Site within the most sensitive 15-minute night time assessment period would be within acceptable parameters at the nearest sensitive receptor, assuming an open window for ventilation at first floor (4m) and second floor (6.5m) representative heights, in accordance with BS8233. An external assessment for BS4142 is only relevant to the presence of potential receptors which in the absence of balconies, would be at ground floor, which is indeed the case of the nearest residential properties highlighted within the WSP acoustics review on behalf of the objector.

2.2.12 Furthermore, it should be noted that whilst there is no need to consider the vacant land to the south of the Site to be sensitive due to the lapse in planning approval for residential use on the land, the objector/neighbouring landowner, would already be committed to providing mitigation measures at the boundary to protect any future residents from sound from the existing industrial operations south of Watson Road, based on the WSP noise impact assessment undertaken for that site in 2007, and as such, the proposed boundary mitigation measures for the Site are deemed appropriate.

2.2.13 Indeed, it is not a particularly different scenario considered by the WSP report in 2007, whereby HGV unloading / loading activities were assessed, and a boundary acoustic fence proposed as mitigation.

## **3) The report states that there will be an impact of +4 daytime and +11dB night time which would be a significant adverse impact.**

2.2.14 The original DS assessment does indicate a significant adverse impact before consideration of mitigation, and therefore provides a recommendation for appropriate and sufficient mitigation in the form of a 3.5 m high barrier at the western to southern Site boundary around Unit 1, and a 4 m high barrier at the southern to eastern boundary providing protection from Units 2 and 3, as indicated in Appendix D, Figure 3 of the original report and excerpted below for ease of reference, with the 2 no. noise barrier positions and extent clearly indicated in cyan:



- 2.2.15 The +4dB daytime and +11dB night-time BS4142 ratings referenced are those present on the Site before mitigation was applied. Post-mitigation, the focus of the mitigation was in terms of achieving suitable internal noise levels within dwellings in line with BS8233:2014.
- 2.2.16 The model includes for HGV arrival/departures, reversing, unloading and start up activities within the yard area, based upon the transport consultant's forecast for HGV movements in the Peak PM hour. It has since been confirmed that the model required updating, as loading/unloading is confirmed to occur within the 'sealed' docking bays and as such these sources can be removed from the model.
- 2.2.17 For absolute clarification, the predicted sound levels and assessment outcomes for night time at the nearest property to Unit 3 (R3 - Brooklands Avenue) based on the assumptions at the time of the original DS assessment are tabulated for direct comparison below.

**Table 1: Summary of noise impact prediction at nearest receptor (R3)**

Receiver Height above Ground	Without Barriers		With Barriers	
	Specific Level $L_{Aeq,15mins}$	BS4142 Rating	Specific Level $L_{Aeq,15mins}$	BS4142 Rating
1.5	48	+10	43	+5
4.0	49	+11	45	+7
6.5	49	+11	45	+7

- 2.2.18 Again, it should be noted that for the majority of properties near to the application Site there is no external amenity space to assess within the provisions of BS4142 during the night time period, however, outcomes are retained for full comparison with the previous AAC report.
- 2.2.19 The specific values in the table above may also be used to consider a more useful comparison to the likely internal sound levels against BS8233 criteria for bedrooms, which is clearer demonstration of impact during the night time as this is typically where receptors would be during these hours. This is the approach taken by Delta-Simons in the October 2019 assessment report.
- 2.2.20 From the table above, it is clear that mitigated sound levels, at the nearest noise sensitive premise to the Site would be up to 45dB  $L_{Aeq,T}$ . Allowing for a 15 dB reduction through an open window, the internal sound level of a upper floor bedroom overlooking the Site would be 30dB  $L_{Aeq,T}$ , and as such within the guidance criteria for restful sleep conditions. 4) The extrapolation for noise reduction through distance to receptors has been set at giving a level of 48dB rather than the level considered by the objector of 61dB.
- 2.2.21 Though not specifically mentioned in the EHO's memo, with reference to the WSP review, it is assumed that the final element of concern relates to  $L_{Amax}$  sound levels, not  $L_{Aeq,T}$  sound levels.
- 2.2.22 The Delta-Simons report lacks an explicit assessment of the  $L_{Amax}$  assessment outcomes for night time.
- 2.2.23 For clarification, a single point source has been added to represent the  $L_{Amax}$  source at the centre of the activity zone for each at Unit 2 and Unit 3 (with the height of the source set at 1m above ground) in the noise model. The resultant  $L_{AFMax}$  noise levels are presented in a grid format at both 1.5m above ground level to assess ground floor noise levels at the residential receptors, and again at 4m above ground level (to consider likely noise emissions at first floor windows, as described above. Grid maps are presented in **Appendix E**. Note that the grid noise maps for the  $L_{Amax}$  sound levels, are presented with the enhanced mitigations scheme discussed in further detail in Section 3.
- 2.2.24 It can be seen in all cases the predicted  $L_{AFMax}$  are well below 60dB contour which means that internally they will be below 45dB when a partially open window is assumed, which is in line with the recommendations in BS8233:2014 / World Health Organisation.
- 2.2.25 The CADNA noise model outputs for the  $L_{Amax}$  parameter are presented in **Appendix E** and confirm that with the proposed enhanced boundary mitigation measures, the  $L_{Amax}$  sound component would be acceptable and that assumptions regarding propagation over distance in the AAC and DS reports are accurate.

## 3 Enhanced Mitigation Scheme

### 3.1 Introduction

- 3.1.1 Despite the reserved matters application impact assessment demonstrating levels already below that of the approved outline scheme at the nearest receptor (R3), during a teleconference with the EHO and project team on Monday 13<sup>th</sup> July 2020 the EHO continued to raise concerns about the assessment outcomes presented in **Table 1**.
- 3.1.2 The noise model was considered to represent an absolute worst case, with the maximum likely number of HGV arrivals/departures during the 15 minute night time assessment period, being included, along with an allowance for unloading and loading sound sources associated with each HGV.
- 3.1.3 It was discussed with the project team what options were available to reduce the noise impact further whilst still providing a realistic and unconstrained model of proposed overnight operations, particularly at Unit 3 which is closest to the nearest receptors.
- 3.1.4 The noise model has been revised as follows:
- ▲ All loading point sources have been removed from the noise model as these are now considered to be unrepresentative of the proposed operations, where all loading and unloading operations will occur within 'sealed' docking bays.
  - ▲ The boundary noise barrier has been moved inwards of the red line boundary to provide closer protection of the inbound HGVs on the service road to Unit 3.
  - ▲ The barrier providing protection from HGV movements in/out of Unit 3 has been extended in length beyond the gatehouse.
- 3.1.5 The numbers of HGV movements considered in the model at night remains at 1 HGV per 15-minute assessment period, including arrival, and manoeuvring in the service yard, based on the assumptions for HGV movements in the original DS report.
- 3.1.6 With these measures, the height of the acoustic barrier is found to provide the required level of acoustic performance at 4m above ground.
- 3.1.7 The noise model arrangement is included in **Appendix F** for reference.

### 3.2 Results

- 3.2.1 The outcome of the enhanced noise mitigation scheme now proposed are summarised for Receptor 3 for the night time period in **Table 2**. The full revised outputs at all receptors at all heights above ground are presented in **Appendix F**.

**Table 2: Summary of Overnight Noise Impact Prediction at Nearest Receptor (R3)**

Receiver Height above Ground	Original Mitigation Scheme		Enhanced Mitigation Scheme	
	Specific Level L <sub>Aeq,15mins</sub>	BS4142 Rating	Specific Level L <sub>Aeq,15mins</sub>	BS4142 Rating
1.5	43	+5	40	+2
4.0	45	+7	41	+3
6.5	45	+7	42	+4

- 3.2.2 It is considered that this scheme now fully meets the LPA's expectations in terms of noise impact at existing nearby residential premises.

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## 4 Summary and Conclusions

- 4.1.1 Delta-Simons, working with our approved technical specialist, was instructed by Gazeley (the 'Client') to undertake a noise impact assessment of a revised building arrangement for the proposed warehouse and distribution development on land north of Watson Road, Wixams.
- 4.1.2 The assessment outcomes indicate that noise from HGV arrivals and delivery yard activities are higher as a result of the re-configuration of the Site, and physical noise control measures are required in order to minimise the impact at the nearest noise sensitive premises, particularly those at Brooklands Avenue (R3) to the east of the Site.
- 4.1.3 With the recommended noise mitigation measures at the boundary, and the operational controls including fully internalised loading/unloading activity, the proposed development of land to the north of Watson Road is demonstrated to be acceptable in terms of noise impact at the nearest noise sensitive receptors, and meets all the LPA requirements with respect to noise.

## Appendix A - Limitations

### Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

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## Appendix B - Glossary

### Acoustics and Noise

Acoustics is the branch of physics concerned with the properties of sound, including ultrasound, infrasound and vibration. A scientist or engineer who works in the field of acoustics is an acoustician or acoustic engineer.

Sound can be measured by a sound level meter or other measuring system. Noise is related to a human response, and is routinely described as unwanted sound, or sound that is considered undesirable or disruptive.<sup>1</sup> Care has been taken in this document to use the most relevant of these terms (whereby 'sound' is used predominantly); however, in most reference documents, and, indeed, generally, 'sound' and 'noise' are used interchangeably. Consequently, just because the term 'noise' is used doesn't necessarily mean a negative effect exists or will occur, and the context of the accompanying text should be taken into account.

Human hearing is 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 sound in a manner that approximates the response of the human ear, a weighting mechanism is used, which reduces the importance of lower and higher frequencies in a similar manner to human hearing.

The weighting mechanism that best corresponds to the response of the human ear (though not necessarily perfectly) is the 'A'-weighting scale. This is widely used for environmental sound measurement, and the levels are denoted as dBA, dB(A) or  $L_{Aeq}$ ,  $L_{A90}$  etc. according to the metric being measured or determined (see the Definitions over leaf).

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 increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. Where other changes occur (associated with the change in sound level), such as additional vehicle movements on a road, which can be seen, then these may result in changes in sound level being more noticeable than they might otherwise be.

Further to such visual clues, and any other non-acoustical factors that affect people's response (such personal characteristics, and social, residential or environmental factors), the subjective response to a sound is dependent not only upon the sound pressure level and component frequencies, but also its intermittency. Consequently, various metrics have been developed to try and correlate people's attitudes to different sounds with the sound level and its fluctuations. The metrics used in this document, as per the relevant guidance, are defined overleaf.

**Table B1: definition of metrics used in this report**

Metric	Description
<b>Airborne Sound</b>	Sound that reaches the point of interest by propagation through air.
<b>Ambient Sound</b>	Sound from all sources at any given time, from both near and far. Usually measured in terms of $L_{Aeq}$ .
<b>A-Weighting</b>	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.

<sup>1</sup> Taken from the Foreword to BS 4142:2014 *Methods for rating and assessing industrial and commercial sound*.

Metric	Description
<b>Background Sound Level</b>	The A-weighted sound pressure level that can be considered the baseline in the absence of any noise from a specific source of sound under assessment. Measured in terms of $L_{A90, T}$ .
<b>Calibration</b>	The measurement system/ chain should be periodically calibrated, within a laboratory, against traceable calibration instrumentation, to either National Standards or as UKAS-Accredited, as required. The calibration of the system should also be checked in the field using a portable calibrator before and after each short-term measurements, and periodically for longer term monitoring.
<b>Class 1</b>	The Class of a sound level meter describes its accuracy as defined by the relevant international standards – Class 1 is more accurate than Class 2. The older standard IEC 60651 referred to the grade as "Type", whereas the new standard IEC 61672 refers to it as the "Class". The most accurate meters used in the field (as opposed to a laboratory) are Class 1, as required by BS 4142:2014, for example.
<b>Decibel</b>	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds ( $s_1$ and $s_2$ ) is given by $20 \log_{10} (s_1/s_2)$ . 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 20 Pa.
<b>Fast time Weighting (F)</b>	Averaging time used in sound level meters. Defined in BS EN 61672-2:2013 Electroacoustics. Sound level meters. Pattern evaluation tests.
<b>Free-field / Façade</b>	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 m away.
<b>IoA</b>	The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration. It was formed in 1974 from the amalgamation of the Acoustics Group of the Institute of Physics and the British Acoustical Society (a daughter society of the Institution of Mechanical Engineers). It is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels. All our consultants/ engineers are individual Members.
<b><math>L_{AF90, T}</math></b>	The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time fast time-weighting (F). Generally used to describe the 'background' sound conditions.
<b><math>L_{AFmax}</math></b>	The maximum A-weighted sound pressure level during a given time period. $L_{max}$ is sometimes used for the assessment of occasional loud sounds, which may have little effect on the overall $L_{eq}$ noise level, but could still affect the sound environment. Unless described otherwise, it is measured using the fast time-weighting (F).
<b><math>L_{eq, T}</math></b>	A sound level index called the equivalent continuous sound 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. Where the value is A-

Metric	Description
	weighted, is will be presented 'LAeq,T' or 'dBA Leq,T', otherwise is should be an un-weighted (or linear) value.
<b>L<sub>p</sub></b>	See Sound Pressure Level.
<b>Noise</b>	Related to human response to sound. Unwanted sound, or sound that is considered undesirable or disruptive.
<b>Octave Band</b>	Frequency ranges in which the upper limit of each band is twice the lower limit. Octave bands are identified by their geometric mean frequency, or centre frequency.
<b>Line Source</b>	An idealised way of modelling a sound source, consisting of a uniform, flat plane.
<b>Point Source</b>	An idealised way of modelling a sound source, consisting of an infinitesimally small point, radiating sound equally in all dimensions
<b>Sound Level Metrics</b>	Sound levels usually fluctuate over time, so it is often necessary to consider an average or statistical sound level. This can be done in several ways, so a number of different metrics have been defined, according to how the averaging or statistics are carried out.
<b>Sound Power</b>	In a specified frequency band, the rate at which acoustic energy is radiated from a source. In general, the rate of flow of sound energy, whether from a source, through an area, or into an absorber.
<b>Sound Power Level</b>	Of airborne sound, ten times the common logarithm of the ratio of the sound power under consideration of the standard reference power of 1 pW. Expressed in decibels.
<b>Sound Pressure</b>	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
<b>Sound Pressure Level</b>	The sound level is the sound pressure relative to a standard reference pressure of 20 Pa (20x10 <sup>-6</sup> Pascals) on a decibel scale.
<b>Specific Sound</b>	The sound source being assessed in a BS 4142:2014 assessment.
<b>UKAS</b>	United Kingdom Accreditation Service, recognised by government to assess organisations that provide certification, testing, inspection and calibration services against internationally agreed standards.

## Appendix C – Environmental Health Memo

### PLANNING CONSULTATION MEMO

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**TO:** Planning  
**FROM:** Environmental Health  
**SITE:** Land North of Watson road Wilstead  
**APPL. No:** 19/02724/MAR  
**OUR REF:**  
**DATE:** 02/07/2020

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#### COMMENTS:

Thank you for consulting with Environmental Health with regard to the application for the proposed development of industrial units at the above site.

The proposed development of the site is for the development of land for 3 industrial units. To the south of the site is land that at this time has no permission for residential development but has previously held that permission before it lapsed. To the east of the site on the other side of the main road are residential premises.

The application for the site is one for reserved matters over already permitted outline permission. The Outline permission did not seek to define the positioning and orientation of the units and just showed indicative layouts to show that the proposed use was possible.

The main noted difference between the permitted outline permission's indicative layout and the proposed layout in the reserved matters is the orientation of the buildings, specifically the building closest to the residential premises to the east and the area previously permitted for residential to the south. There was also an acoustic buffer at the outline stage that was not at the reserved matters stage.

The Council has received an objection to the application from the proposed Development to the south of the site stating that the reserved application should be refused due to the potential for harm to the amenity of those living in both the developers on proposed site and the existing residential premises to the east.

The objection considered the three noise reports that have been undertaken as part of the applications for development on site and raised concerns over their findings.

The concerns raised with regard to the acoustic reports fell into two broad categories. Concern over the impact of the proposed development on the objector's clients desire to use their land for residential development and that the previous reports and especially the most recent report failed to adequately the impact of the proposed development on existing residential premises.

Following discussion with the Planning Officer for the application I am of the opinion that I am unable to consider the impact of the application upon the southern site as the previous permission has lapsed. However the concerns in relation to existing premises are valid.

The noise reports make a variety of assumptions in their assessments that I do not agree with.

- No feature corrections have been used as part of the A&C assessment
- HGV alarms are not considered nor are their intermittency or tonality
- The report states that there will be an impact of +4 day time and +11dB night time which would be a significant adverse impact
- The extrapolation for noise reduction through distance to receptors has been set at giving a level of 48dB rather than the level considered by the objector of 61dB.

As can be seen from above there remain significant questions as to the potential for the development as proposed to harm amenity to the area via noise. For this reason I must advise objection at this time.

**Recommendation:**

objection

## Appendix D – Sound Source Data

### Angela Hornby

**From:** David Sutton <david@airandacoustics.co.uk>  
**Sent:** 06 July 2020 14:13  
**To:** Graham Hornby  
**Subject:** RE: G-Park Wixhams

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Hi Graham, While waiting for my agenda item to come up I have had a quick look at the data. To be honest the table in the report is taken straight out of my spreadsheet and while I haven't stated that it includes reversing beepers all my monitored HGV would include reversing alarms unless specified as white noise alarms, so the short answer is yes it does.

I hope that this helps  
 Many Thanks  
 David

**From:** Graham Hornby <GHornby@MZAconsult.co.uk>  
**Sent:** 06 July 2020 13:26  
**To:** David Sutton <david@airandacoustics.co.uk>  
**Subject:** G-Park Wixhams

Hi David

Thanks for your time earlier.

As discussed we are trying to respond to a query raised by a third party to the reserved matters application for the industrial unit development that your report was used for at outline stage.

Specifically we are seeking to confirm whether the source data presented in your table 6.2 (extracted below) includes reversing alarms for the HGV's;

Activity	Sound Power Levels Lw (dB) in each octave band								
	16Hz	31.5Hz	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz
HGV Reverse	110	110	101	94	94	91	94	95	84
HGV Start-up & Pull away	108	107	107	101	98	97	97	94	87
HGV Load	93	95	90	89	90	89	86	83	79
HGV LAmx	115	116	113	106	107	108	108	107	102

**Table 6.2 HGV Source Terms Used in the Model**

Your report reference is 100267\_001.

I understand you are about to enter a meeting at 13:30 but may be able to look at this later this afternoon, which would be greatly appreciated as the third party objection has been raised at final seconds!!!

Thanks in advance

Graham

**Graham Hornby**  
Director

**MZA** ACOUSTICS

Platform, New Station St  
Leeds, LS1 4JB  
M: +44 (0)7887 059711  
T: +44 (0)161 274 9509  
[ghornby@mzaconsult.co.uk](mailto:ghornby@mzaconsult.co.uk)  
[www.mza-acoustics.co.uk](http://www.mza-acoustics.co.uk)

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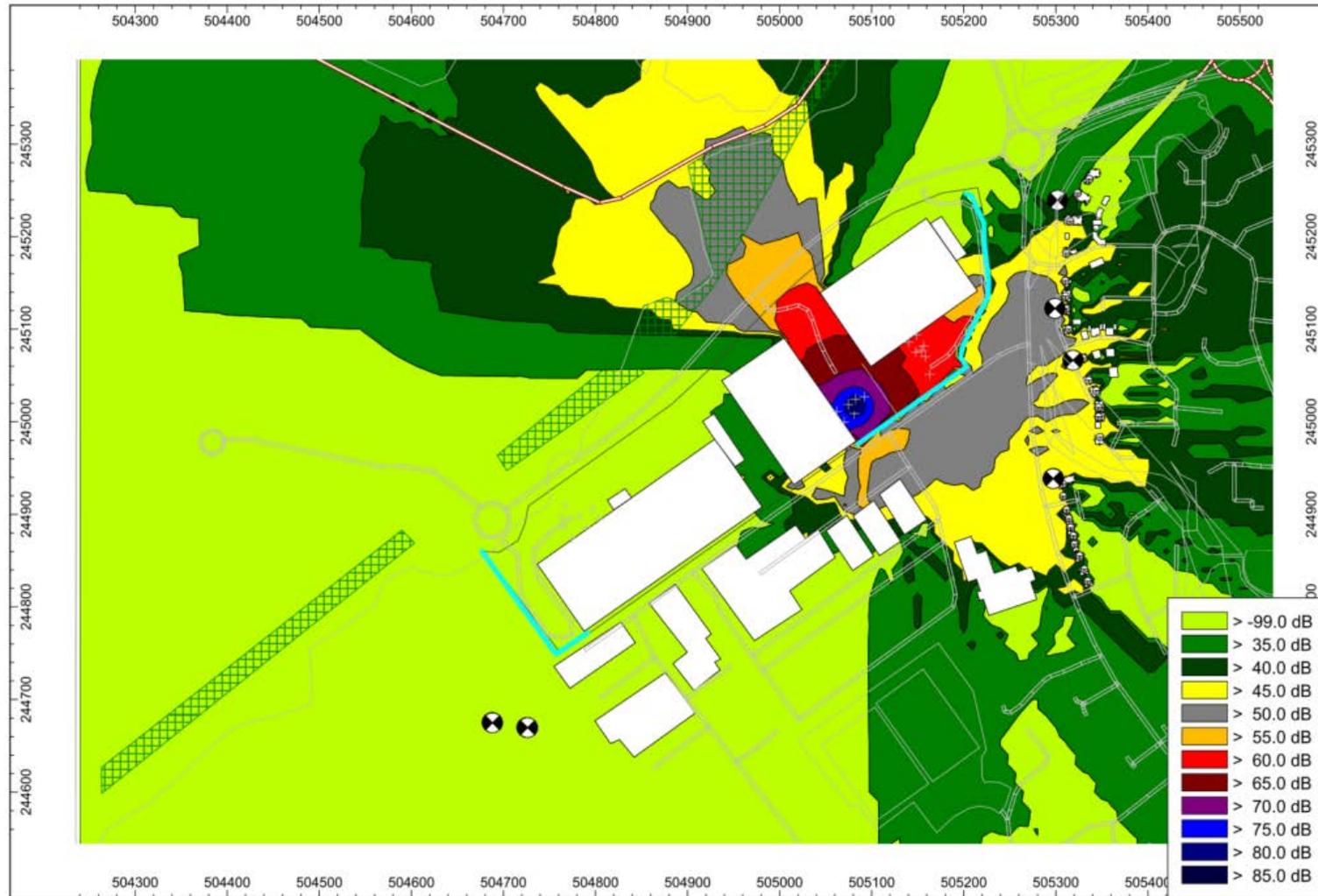
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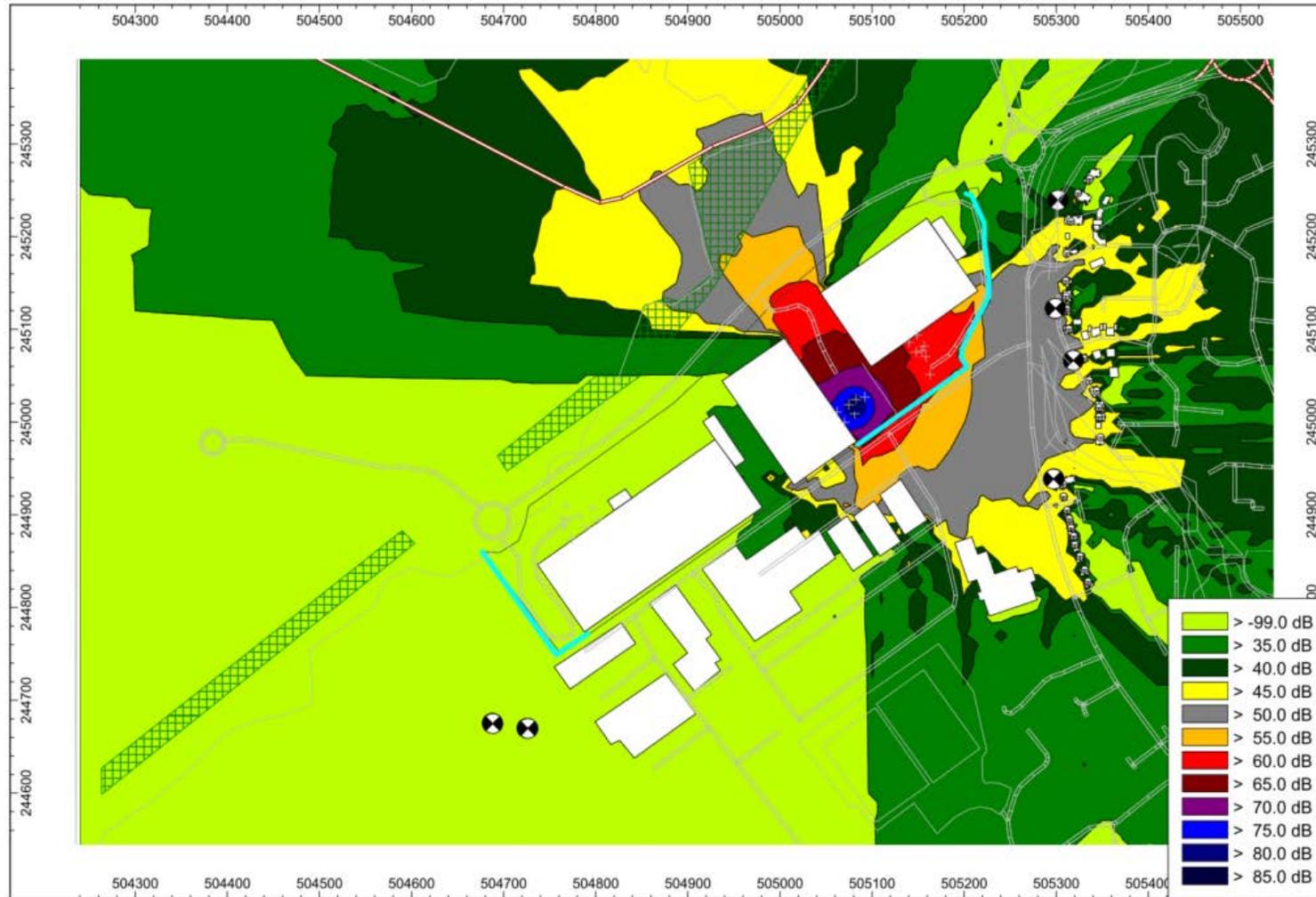
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## Appendix E – $L_{Amax}$ Grid Noise Maps

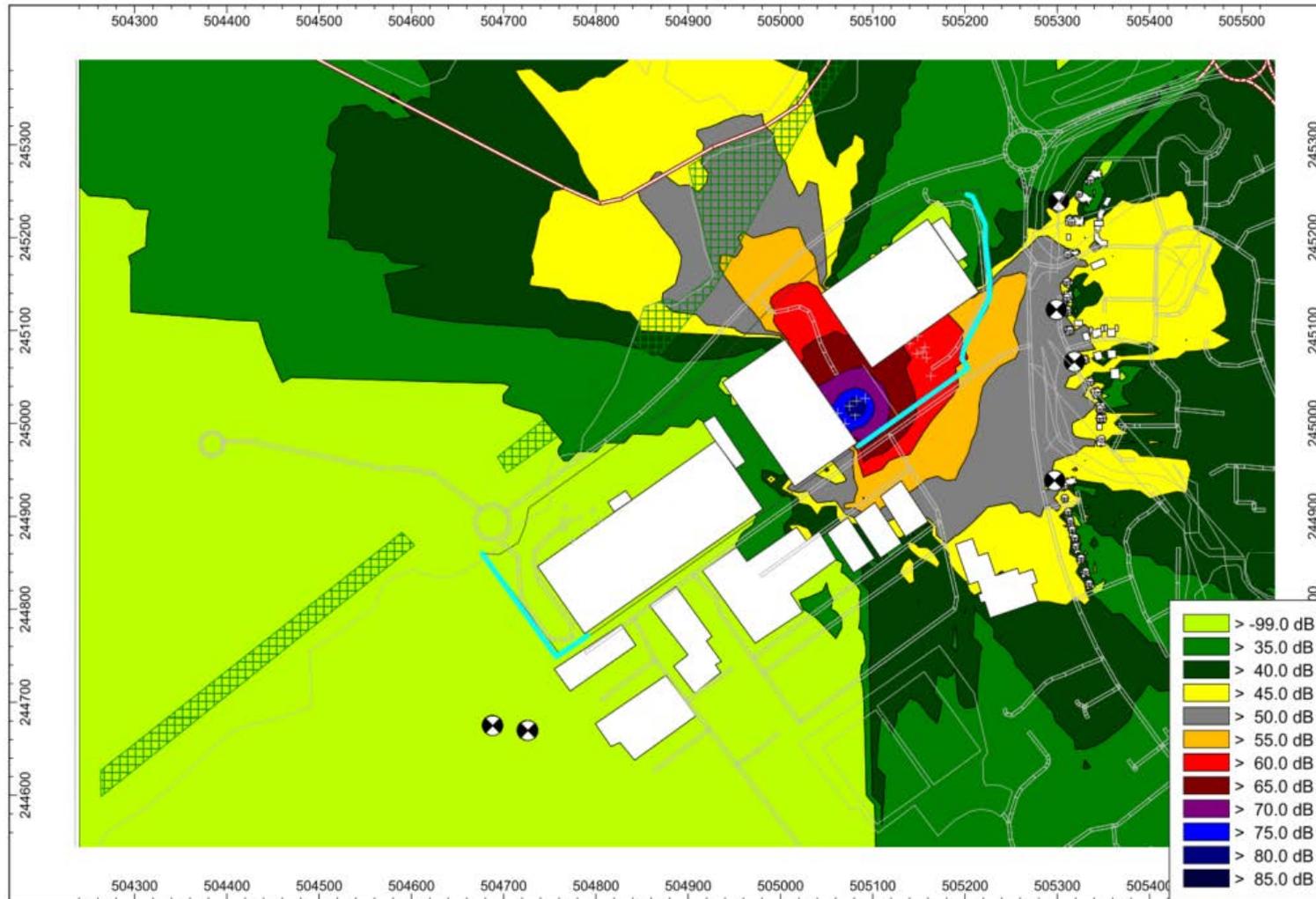
Unit 2 – 1.5m above ground



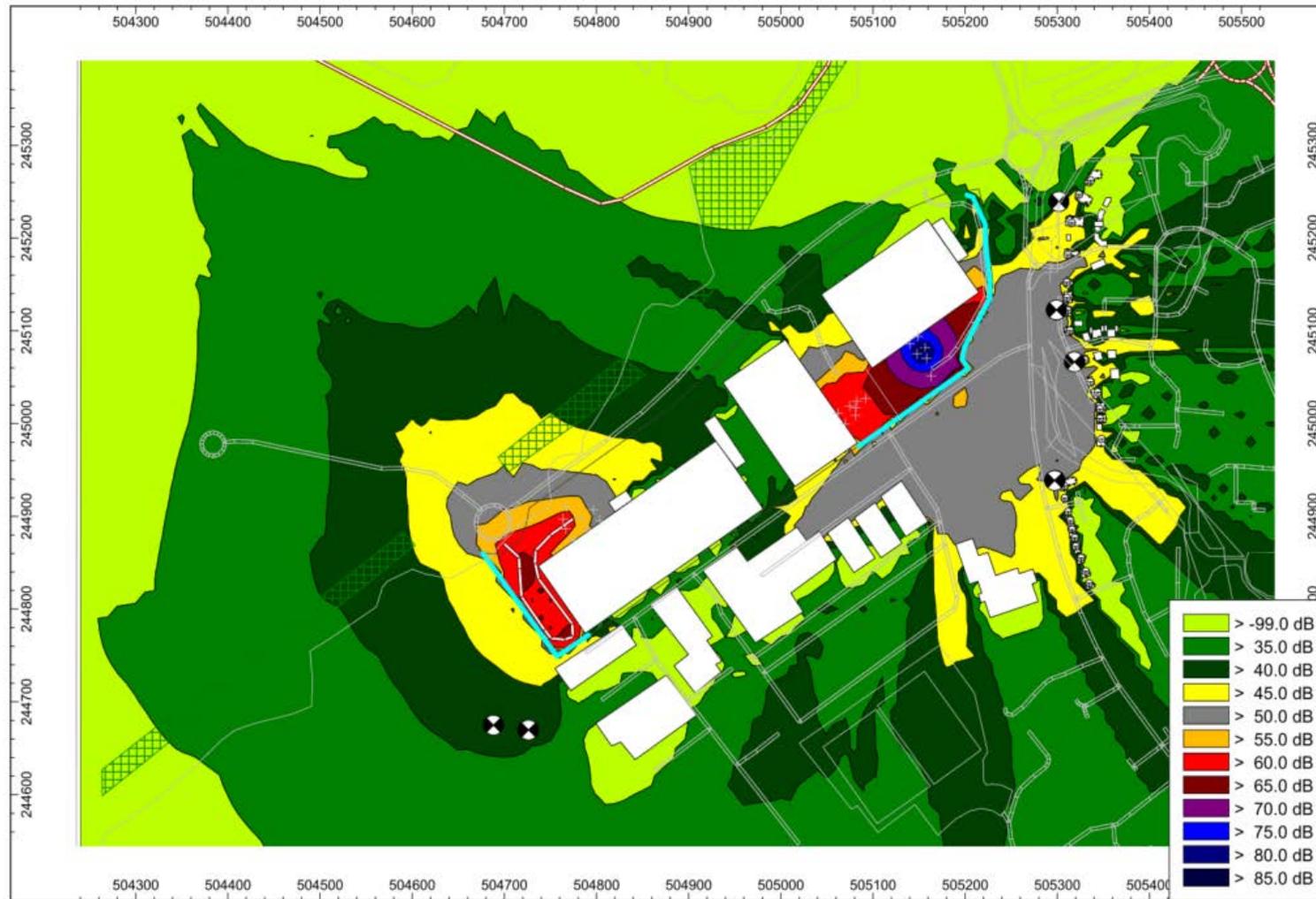
Unit 2 - 4m above ground



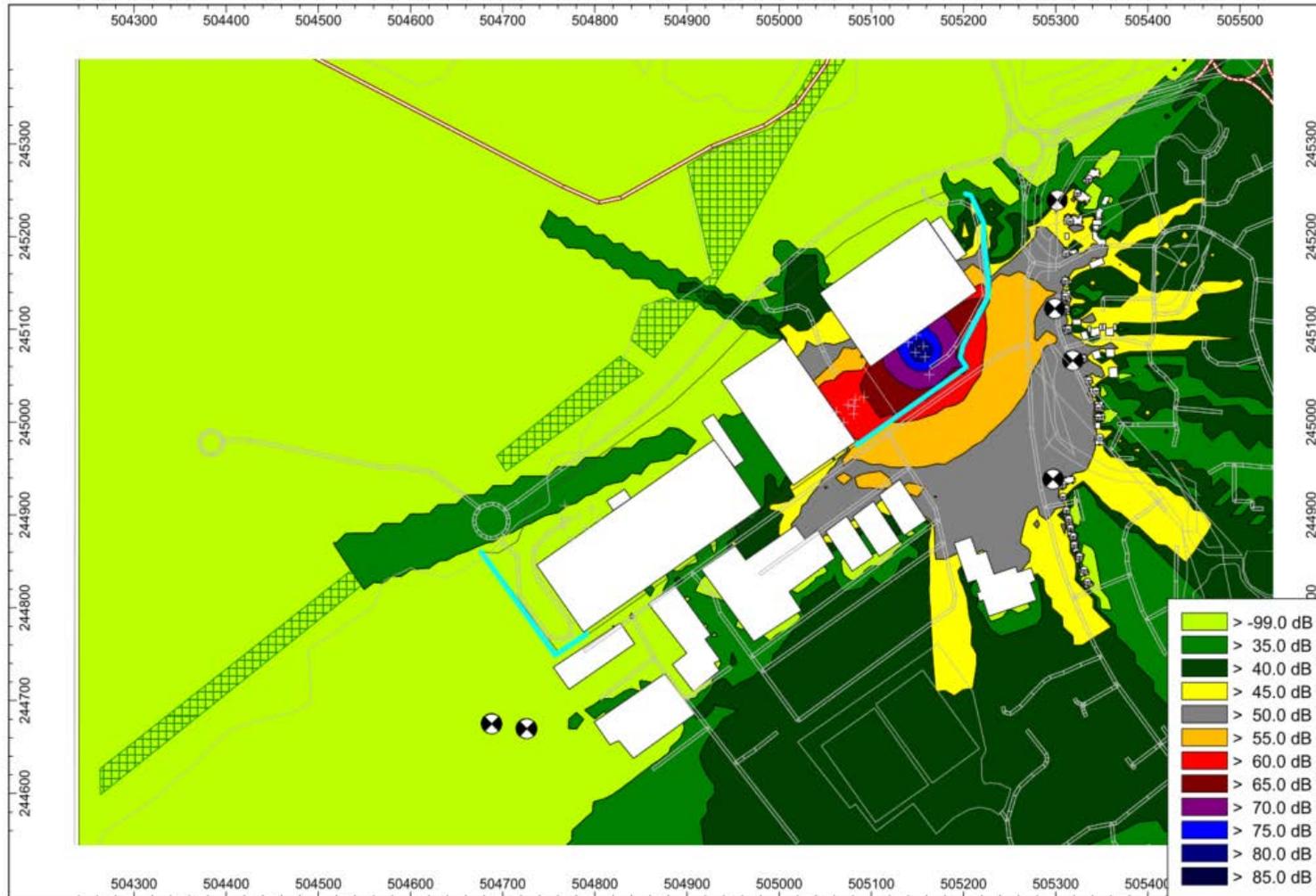
Unit 2 – 6.5m above ground



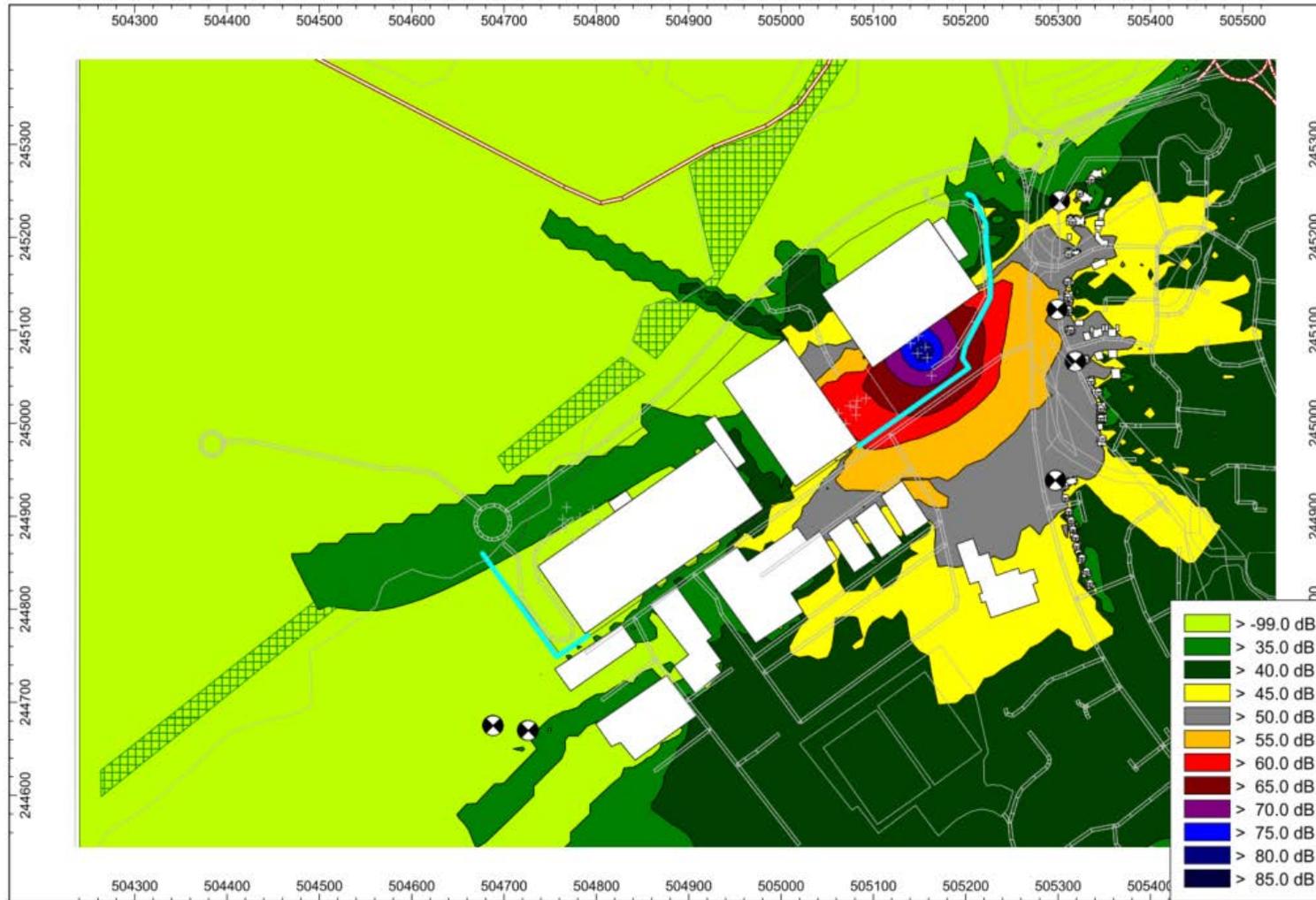
Unit 3 – 1.5m above ground



Unit 3 – 4m above ground



Unit 3 – 6.5m above ground



## Appendix F – Enhanced Mitigation Scheme Outcomes

### Noise model outputs

The following noise contour outputs and results table correspond to the updated noise modelling undertaken following the meeting with the EHO on Monday 13<sup>th</sup> July 2020. The full summary of noise impact outcomes is presented in the following Table.

**Table F.1 – Summary BS4142 Overnight Assessment Outcomes with Enhanced Mitigation Scheme**

Receptor ID	Representative Receptor Assessment Height Above Ground (m)	Specific Level $L_{Aeq,15mins}$	BS4142 Rating
1	1.5	33	-5
	4.0	35	-3
	6.5	35	-3
2	1.5	35	-3
	4.0	36	-2
	6.5	37	-1
3	1.5	40	+2
	4.0	41	+3
	6.5	42	+4
4	1.5	37	-1
	4.0	38	+/- 0
	6.5	39	+1
5	1.5	35	-3
	4.0	36	-2
	6.5	37	-1
6	1.5	37	-1
	4.0	38	+/- 0
	6.5	39	+1
7	1.5	36	-2
	4.0	38	+/- 0
	6.5	40	+2

**L<sub>Aeq,15min</sub> Grid Noise Map at 1.5m above ground with Enhanced Mitigation Scheme**



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