



MARO DEVELOPMENTS
MERCURY 62, CRONTON ROAD

**NOISE ASSESSMENT OF PROPOSED NEW DISTRIBUTION
UNIT, CRONTON ROAD, KNOWSLEY**

6 September 2022

AEC REPORT: P3603/R4/WJK

Acoustic & Engineering Consultants Limited
Suite 316 3rd Floor Broadstone Mill Broadstone Road Stockport SK5 7DL
Tel: 0161 449 5900 Fax: 0161 449 5901 www.aecltd.co.uk

CONTENTS

	Page
EXECUTIVE SUMMARY	3
1.0 INTRODUCTION	4
2.0 SITE DESCRIPTION AND OPERATION OF THE PROPOSED BUSINESS	4
3.0 ASSESSMENT METHODOLOGY	5
4.0 NOISE MEASUREMENTS	7
5.0 PREDICTED NOISE LEVELS	8
6.0 ASSESSMENT	10
7.0 CONCLUSIONS	12

FIGURE 1 – Site Location Showing Nearest Noise Sensitive Receivers and Noise Monitoring Locations

FIGURE 2 – Layout of Proposed Facility, Showing Noise Sensitive Receivers

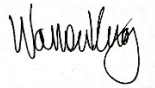
FIGURE 3 – Daytime Hourly Predicted Delivery Noise Levels, dBL_{Aeq}

FIGURE 4 – Night-time 15-minute Predicted Delivery Noise Levels, dBL_{Aeq}

APPENDIX A – Acoustic Terminology in Brief

APPENDIX B – Noise Survey Details (including measured data).

DOCUMENT STATUS

Prepared by:  Warren King BSc (Hons) MIOA

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EXECUTIVE SUMMARY

- AEC has undertaken a noise assessment of the proposed Mercury 62 Distribution Unit at Cronton Road, Knowsley, to be submitted as part of the planning application for the site in relation to noise.
- The site is situated along the A5080 Cronton Road to the east of the M62 and M57 motorway interchange, as indicated on Figure 1.
- Knowsley Metropolitan Borough Council's (KMBC) Environmental Health Department requires that the noise impact from the proposed development should be assessed in accordance with BS4142+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' and BS8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'.
- The nearest noise sensitive receivers to the proposed development are The Lodge Riding Centre on Dacre's Bridge Lane to the south, Park Villas on Cronton Road to the south-east, Woodlands Bluebell Farm to the east and Halsnead Farm the north-east along Fox's Bank Lane and Halsnead Park to the north, on the opposite side of the M62. (refer to Figures 1 and 2).
- Using previously measured noise level data, calculations have been undertaken based on both HGV deliveries and forklift truck movements. The calculations indicate that there is no adverse effect from activities at the proposed development during the daytime and night-time periods at the nearest residential properties.
- Based on an assumed worst-case 135 vehicle movements in an hour, car parking noise levels associated with the site will result in a low adverse impact as a result of noise at the worst-case affected residential receivers.

1.0 INTRODUCTION

- 1.1 Acoustic & Engineering Consultants Limited (AEC) has been appointed by Maro Developments to undertake an assessment of the potential noise levels associated with the proposed distribution centre on Cronton Road, Knowsley. The report is to be submitted as part of the planning application for the site.
- 1.2 This report identifies the anticipated potentially noisy activities associated with the development and presents the results of the background noise level survey that has been undertaken to determine the existing noise climate at the nearest noise sensitive properties. Using noise level data held on file by AEC for the various activities and traffic generation and trip rates provided by Mott MacDonald, the likely noise levels affecting the nearby properties have been calculated and assessed against relevant standards and criteria.
- 1.3 Acoustic terminology used throughout this report is described in brief in Appendix A.

2.0 SITE DESCRIPTION AND OPERATION OF THE PROPOSED BUSINESS

- 2.1 The development is located to the east of the M62 and M57 motorways interchange at Tarbock Island. The M62 runs to the north of the site and the M57 to the west as shown on the attached Figure 1.

- 2.2 The nearest noise sensitive properties are as follows:

- The Lodge Riding Centre on Dacre's Bridge Lane, approximately 140m to the south;
- Park Villas on Cronton Road, approximately 300m to the south-east of the site;
- Woodlands Bluebell Farm 1km to the east;
- Halsnead Farm 800m to the north-east along Fox's Bank Lane;
- Halsnead Park approximately 630m to the north, on the opposite side of the M62.

The noise sensitive locations are identified on the attached Figure 1.

- 2.3 Based on the proposed layout of the facility, the warehouse HGV delivery bays will be located along the north façade, with car parking located to the west of the site as shown on the attached Figure 2.
- 2.4 At present, a tenant has not yet been signed up for the proposed unit, so the exact operations on the site are not known in terms of the method of deliveries (e.g. whether HGV trailers will be decoupled for unloading).
- 2.5 It has been assumed that the noise generating sources will be:
 - Noise from car parking activities;
 - Noise from HGV delivery activities;
 - Noise from mechanical services plant serving the building.
- 2.6 With regard to deliveries, this assessment assumes that the HGV's reverse onto the bay, the trailer is unloaded and then the HGV drives off with the empty trailer.
- 2.7 Consideration has also been given to the noise impact of the use of a forklift truck in the service yard.

- 2.8 As a proposed distribution centre, based on AEC's experience, it is anticipated that the internal noise levels generated would be significantly below noise levels generated from external sources. Therefore, noise breakout has not been considered further at this stage.

3.0 ASSESSMENT METHODOLOGY

- 3.1 Following previous discussions with an officer of the Knowsley Metropolitan Borough Council's (KMBC) Environmental Health Department, it was agreed that the noise impact from the proposed development should be assessed in accordance with BS4142:2014 'Method for rating and assessing industrial and commercial sound' and BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'. This has since been updated to BS4142:2014+A1:2019.

National Planning Policy Framework

- 3.2 The Current national planning policies are set out in the National Planning Policy Framework (NPPF) published by the Department for Communities and Local Government in March 2012. The planning policies relating specifically to noise were updated in July 2021 in paragraphs 174, 185 and 187 which state:

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

- a) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.*

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

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

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

- 3.3 The terms 'significant adverse' and 'adverse' above are referenced to the Noise Policy Statement for England (NPSE), published by Department for Environment, Food and Rural Affairs (DEFRA) dated March 2010. One of the main aims of this policy is also to avoid significant adverse effects on health and quality of life.

- 3.4 Further to the above, the Governments '*Planning Practice Guidance*' relating to noise (web based) dated 6 March 2014 indicates:

'Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.'

- 3.5 In addition, the guidance indicates that, whilst noise can override other planning concerns, it should not be considered in isolation from the economic, social and other environmental dimensions of any proposed development.

BS4142: 2014+A1:2019

- 3.6 BS4142+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142) provides methods for rating and assessing industrial and commercial sound by comparing the specific sound level (that directly attributable to the industrial/commercial sound) to the prevailing background sound level ($dB_{LA90,T}$) over relevant periods that the commercial/industrial activities occur.
- 3.7 It is necessary to determine the specific sound level from the industrial/commercial activities over a period of one hour during the daytime and/or 15 minutes during the night-time. The specific sound level relates to the specific commercial/industrial sound source only and has to be corrected to take account of other sound sources generally in the area, residual sound. Daytime is normally considered to be over the period 0700 to 2300 hours, and night-time 2300 to 0700 hours.

- 3.8 BS4142, in section 9, identifies that certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where present at the assessment location, such features are taken into account by adding a correction to the specific sound level to obtain the rating level. A correction should be applied if one or more of the following features occur, or are expected to be present for new or modified sound sources:

Tonality- for sound ranging from not tonal to prominently tonal a correction of 0 to 6dB should be considered.

Impulsivity- A correction of up to 9dB can be applied for sound that is highly impulsive, considering both the rapidity and overall change in sound level.

Other- Where a sound features characteristics that are neither tonal nor impulsive but are readily distinctive against the residual environment a penalty of 3dB can be applied.

Intermittency- If intermittency is distinctive against the residual environment a penalty of 3dB can be applied.

- 3.9 The significance of the potential impact is indicated by the difference between the background sound level and the rating level. Typically, the greater this difference, the greater the magnitude of the 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, depending on the context.

- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

3.10 With regard to undertaking the assessment, BS4142 indicates that the context of the sound must be taken into consideration.

BS8233: 2014

- 3.11 BS8233:2014 Guidance on sound insulation and noise reduction for buildings provides guideline values for internal ambient noise levels for dwellings. The noise level criteria recommended would generally apply to steady sources without a specific character, such as road traffic and mechanical services and should relate to noise levels in the space during normal hours of occupation. This excludes any noise produced by the occupants and their activities in residential spaces.
- 3.12 Table 4 of Section 7.7.2 of BS8233:2014 provides indoor ambient noise levels for dwellings, and is reproduced in the following Table 1.

Table 1 – Internal Noise Level Limits within Habitable Rooms

Activity	Location	Noise Limit, dB	
		Daytime 0700 – 2300h	Night-Time 2300 – 0700h
		L _{Aeq} , 16h	L _{Aeq} , 8h
Resting	Living Room	35	-
Dining	Dining Room/Area	40	-
Sleeping (daytime resting)	Bedroom	35	30

4.0 NOISE MEASUREMENTS

Background Noise Levels

- 4.1 An unattended baseline noise survey was previously undertaken by AEC from Tuesday 8th to Wednesday 9th January 2019 to include a daytime and night-time period, at a location on Dacre's Bridge Lane considered representative of the nearest noise sensitive properties to the proposed development at the Lodge Riding Centre. The location is identified as L1 on Figure 1. Additional attended noise measurements were undertaken during the daytime period on Tuesday 8th and Wednesday 9th January 2019. Short term measurements were undertaken at 4 locations representative of the nearest noise sensitive receivers to the proposed development, identified as S1 to S4 on Figure 1 to provide additional baseline noise data.
- 4.2 All measurements were undertaken in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. A full measurement procedure is presented in Appendix B and the measured data is presented in Table B1 and Graphs B1 to B3.
- 4.3 At locations L1 and S1, the dominant noise source was road traffic from the M62 and M57 motorways. At location S2, the dominant noise source was road traffic along Cronton Road. At location S3, distant road traffic from the M62 and M57 motorways was dominant. At location S4, noise from the M62 and local road traffic noise along Fox's Bank Lane was dominant.

4.4 The measured noise levels are presented in the following Table 2.

Table 2 – Measured Noise Levels

Location	Date	Period	Noise Level	
			dBL _{A90,T}	dBL _{Aeq,T}
L1 – Lodge Riding Centre	08-Jan-19	Daytime	58 (1145 to 2300h)*	60 (1145 to 2300h)*
		Night-time	50 (2300-0700h)	56 (2300-0700h)
	09-Jan-19	Daytime	58 (0700 to 1200h)*	61 (0700-1200h)*
S1 - Lodge Riding Centre	08-Jan-19	Daytime	57.8	59.5
	09-Jan-19		53.6	57.1
S2 - Park Villas	08-Jan-19	Daytime	53.4	65.9
	09-Jan-19		52.3	65.2
S3 - Halsnead Park	08-Jan-19	Daytime	49.9	53
	09-Jan-19		43.5	52.2
S4 - Fox's Bank Lane	08-Jan-19	Daytime	59.5	64.8
	09-Jan-19		58.8	63.8

*Note: shortened time period when noise monitoring equipment was installed and collected

- 4.5 The lowest background noise level measured at location L1 during the daytime periods was 52dBL_{A90,15min}. The measured background noise level for the entire daytime periods on Tuesday 8th and Wednesday 9th January was 58dBL_{A90} on each day.
- 4.6 The lowest background noise level measured at location L1 during the night-time period was 44dBL_{A90,15min}. The measured background noise level for the entire night-time period on Tuesday 8th November was 50dBL_{A90}.
- 4.7 BS41412:2014 states that a representative background noise level should be used and that the objective is not just to ascertain a lowest background sound level. However, for the purposes of this assessment, the lowest measured background noise levels have been used.
- 4.8 For the daytime noise assessment at the short-term noise measurement locations, the lowest measured background noise level has been used.

5.0 PREDICTED NOISE LEVELS

Activity Noise Levels

- 5.1 Based on noise level data measured by AEC at a number of different sites in relation to previously undertaken assessments, there are a number of activities that have been considered in the noise assessment. In addition, the potential impact of noise from the development car park has also been considered. The noise levels generated during typical HGV delivery and car park activities are presented in the following Table 3.

Table 3 – Summary of External Measured Data for Typical Development Activities at 10m

Activity	Noise Level at 10m, dB		
	L _A E	L _A eq, 5min	L _A max
HGV Starting Up	79	-	72
Trailer Coupling/Uncoupling	78	-	87
HGV Pass by*	81	-	72
HGV Manoeuvring	85	-	72
HGV Idling	-	63	-
Unloading/Loading in Docking Bay**	-	63	81
Electric Fork Lift External	-	65	77
Broadband Reversing Alarm	-	70	-
Car Door Slamming	-	-	78
Car Arriving	61	-	62
Car Departing	67	-	62
Car Manoeuvring	77	-	62

* Measured on a site with a 20mph speed limit.

** The measured noise level of loading/unloading a single vehicle was taken with continuous activity over a five-minute period.

Delivery Noise

5.2 The assessment is based on the following HGV delivery process and activities:

- HGV arrives at site and enters via the south-eastern entrance on Cronton Road;
- HGV turns into the service yard and manoeuvres into position to reverse onto the HGV loading bay, travelling at no greater than 10mph (and any bay could be used during the night-time and the daytime);
- HGV is unloaded / loaded;
- HGV engine is switched off during the loading process;
- HGV drives off the site via the same route.

5.3 The delivery numbers used in the assessment at this stage are based on the trip rates and traffic generation provided by Mott MacDonald for the worst-case daytime (1900 to 2000h) and night-time (0600 to 0700h) peak hour as follows:

- 79 in an hour during the daytime arriving or departing from site as a result of the development. In addition, it has been assumed that a further 10 lorries on site would be manoeuvring into or out of a loading bay and 10 would be loading or unloading;
- Based on the worst-case hourly HGV movements (56 between 0600 and 0700h), there would be 14 HGV movements in a 15-minute period during the night-time (2300 to 0700h). In addition, it has been assumed that 2 HGV's would be unloading and 1 HGV would be manoeuvring into or out of a loading bay.

- 5.4 In addition to the above, it is assumed that one electric forklift would operate for 30 minutes per hour during the daytime period and continuously during the 15-minute night-time assessment period.

Car Park Noise

- 5.5 With reference to car parking, noise levels have been assessed according to the worst-case peak hour (0600 to 0700h) in terms of the traffic generation provided by Mott MacDonald for 135 vehicle movements as a result of the development.

6.0 ASSESSMENT

Predicted Noise Levels

- 6.1 With reference to the above operations and noise levels presented in Table 3, noise levels affecting the nearest noise sensitive locations identified on Figure 1 have been predicted using CadnaA noise mapping software which predicts environmental noise levels in accordance with the guidance in ISO 9613-2:1996 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'.
- 6.2 The predicted noise levels are shown in the following Table 4 and presented on Figures 3 and 4, which identify the noise levels over the daytime and night-time periods. The daytime noise levels are shown at ground floor level (Figure 3) and night-time noise levels at first floor level (Figure 4).

Table 4 – Predicted Daytime and Night-time Noise Levels

Receptor	Source	Predicted Noise Level	
		Daytime 0700- 2300h (dBL _{Aeq,1hr})	Night-Time 2300-0700h (dBL _{Aeq,15min})
Lodge Riding Centre	HGV Activities	38	37
	Car Park	-	7
Park Villas	HGV Activities	46	43
	Car Park	-	16
Woodlands Bluebell Farm	HGV Activities	34	33
	Car Park	-	14
Halsnead Farm	HGV Activities	36	36
	Car Park	-	17
Halsnead Park	HGV Activities	37	37
	Car Park	-	20

BS4142 Sound Character Penalty

- 6.3 For the purposes of this assessment, it is assumed that noise from the distribution unit features characteristics that would be distinctive against the residual environment and it can be considered as an introduction of a new noise source in the area. Therefore, a correction of 3dB has been applied to the specific sound level.

BS4142 Rating Level

- 6.4 The following Table 5 shows the predicted sound level from HGV activities in addition to background and rating level for the daytime and night-time periods. The difference between the rating level and background noise levels has also been provided.

Table 5 – BS4142 Assessment

Location	Period	Specific Sound Level LAeq,15mins (dB)	Background Sound Level (LA90,T)	Correction	Rating Level	Excess of Rating Level Over Background	Significance of Impact
L1 - Lodge Riding Centre	Daytime	38	52	+3	41	-11	Indication of a low impact, depending on the context
	Night-time	37	44	+3	40	-4	Indication of a low impact, depending on the context
S2 - Park Villas	Daytime	46	52	+3	49	-3	Indication of a low impact, depending on the context
S3 - Halsnead Park	Daytime	37	44	+3	40	-4	Indication of a low impact, depending on the context
S4 - Halsnead Farm	Daytime	36	59	+3	39	-20	Indication of a low impact, depending on the context

- 6.5 At the nearest noise sensitive property at location L1, the assessment indicates a difference of -11dB and -4dB between the background noise level and the rating level providing an indication of a low impact depending on the context for the daytime and night-time periods respectively.

- 6.6 For the daytime period, the assessment indicates a low impact depending on the context at all other locations.

- 5.1 In addition to the assessment of noise levels, BS4142 indicates that the context of the sound must be taken into consideration. The proposed development site is located close to a number of major roads and existing noise levels are dominated by road traffic noise. Therefore, it can be considered that the introduction of additional traffic would not be out of character for this location.

- 6.7 In terms of assessment uncertainty, there are small tolerances relating to all sound measurements including the existing background sound measurements. The predicted noise levels used in the assessment are based on the trip rates and traffic generation provided by Mott MacDonald for the worst-case peak hours. The assumptions made in this report are considered to be conservative and a 3dB rating correction has been applied to allow for a distinctive acoustic feature against the residual environment. This is considered onerous as the predicted noise levels are significantly below the background noise level.

- 6.8 In addition to the above comparison between the background sound and specific sound level and in accordance with BS4142, the absolute noise level has been considered. The predicted noise levels from external operations have been assessed against the guidance provided in the WHO Guidelines for Community Noise and BS8233:2014 which provide acceptable internal and external night-time noise levels. The following Table 6 shows the predicted internal and external noise levels at the nearest noise sensitive property, assuming that a partially open window provides 15dB attenuation from outside to inside.

Table 6 – Predicted internal noise levels – Night-time period

Location	Night-time Predicted Rating Sound Level	Sound reduction external to internal (dB)	Night-time predicted Internal noise level (dBA)
L1 - Lodge Riding Centre	37	15	22

- 6.9 The above Table 6 demonstrates that the internal noise levels as a result of the proposed development do not exceed the recommended indoor ambient noise levels in bedrooms at night of 30dB.
- 6.10 The predicted noise levels from car parking activities shown in Table 4 indicate that there would be no noise impact at noise sensitive properties.

7.0 CONCLUSIONS

- 7.1 AEC has been appointed by Maro Developments to prepare a noise assessment in relation to the proposed Distribution Centre at Cronton Road, Knowsley.
- 7.2 A baseline noise survey was undertaken by AEC from Tuesday 8th to Wednesday 9th January 2019 to include a daytime and night-time period at the nearest noise sensitive property. The surveys identified that the surrounding areas are subject to relatively high noise levels due to the surrounding roads and motorways.
- 7.3 A BS4142:2014 assessment has been carried out to assess the noise impact of activities on the proposed development site. Predicted noise levels have also been assessed against the guidance provided in the WHO Guidelines for Community Noise and BS8233:2014 which provide acceptable internal and external night-time noise levels.
- 7.4 The noise assessment indicates that there is no significant adverse effect from activities at the proposed development during the daytime and night-time periods.

FIGURE 1 – Site Location Showing Nearest Noise Sensitive Receivers and Noise Monitoring Locations



FIGURE 2 – Layout of Proposed Facility Showing Noise Sensitive Receivers



Map data @2022 Google United Kingdom

Figure 3 – Daytime Hourly Predicted Delivery Noise Levels, dBL_{Aeq}

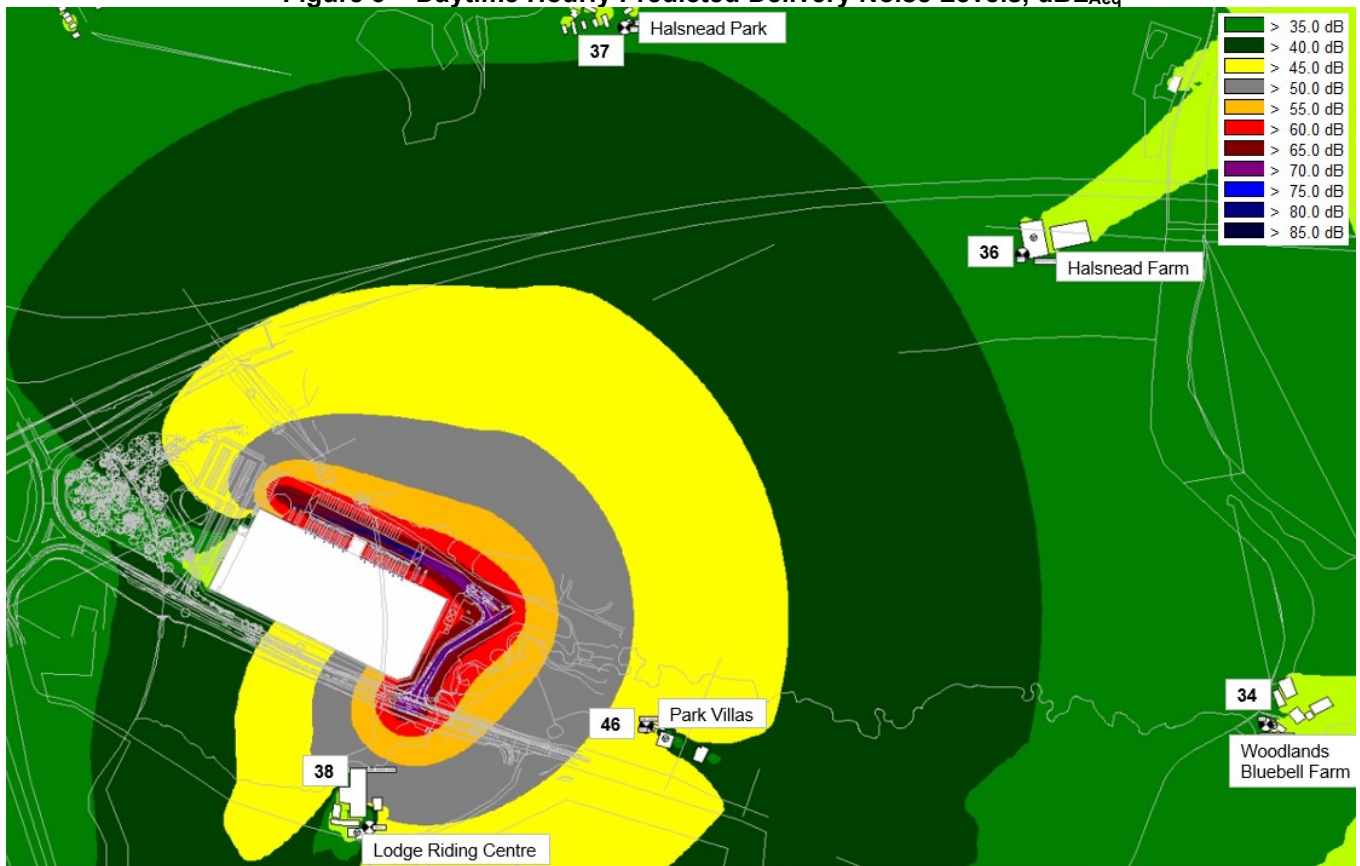
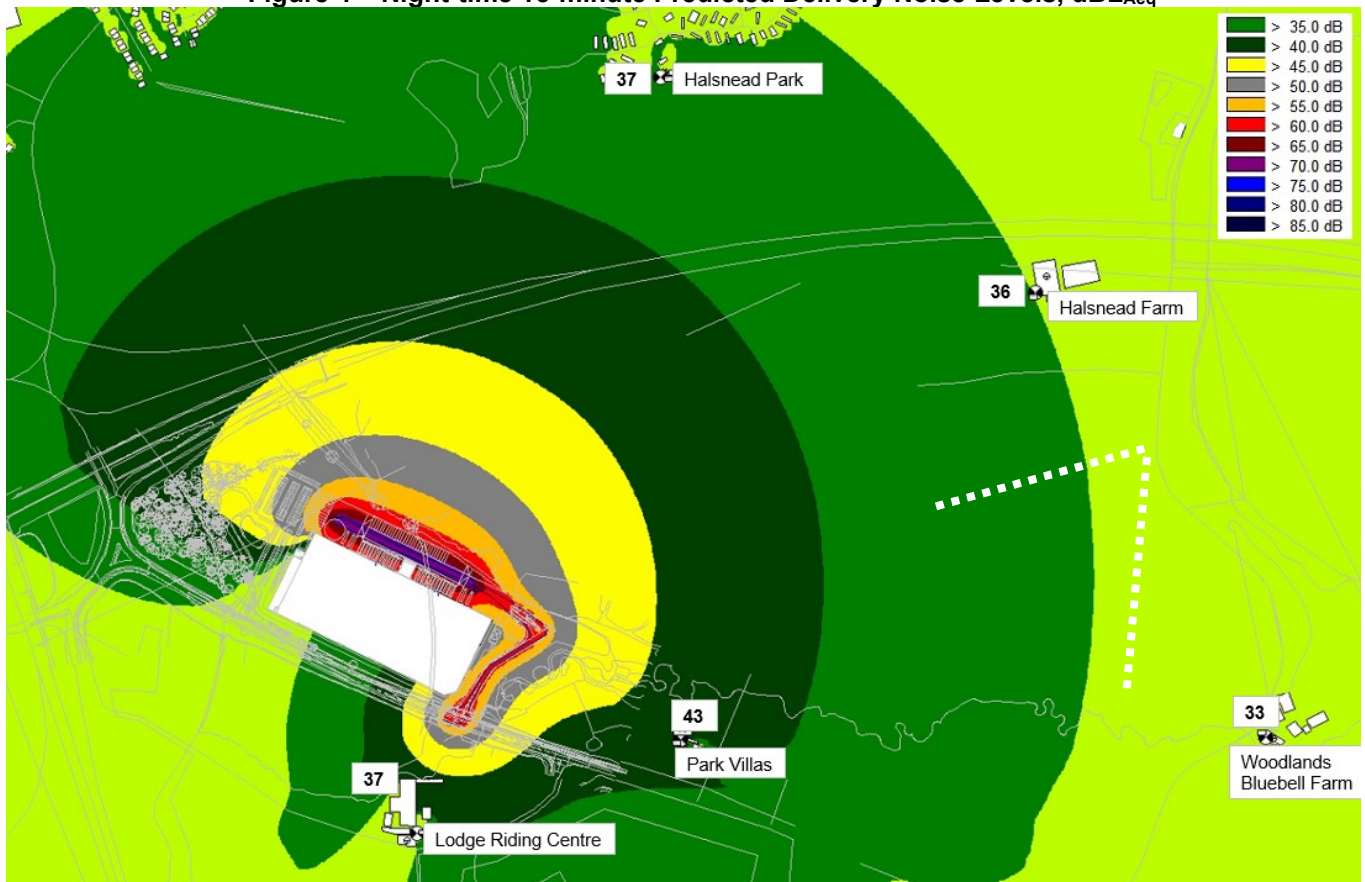


Figure 4 – Night-time 15-minute Predicted Delivery Noise Levels, dB_{LAeq}



APPENDIX A - Acoustic Terminology in Brief

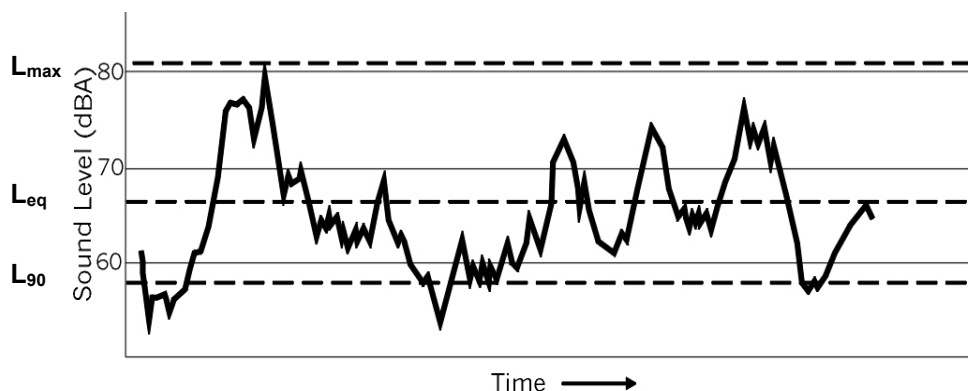
Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discrete frequency - a 'pure tone' - most noise is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The *dBA* weighting emphasises or reduces the importance of certain frequencies within the audible range.

Noise Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the noise.

The figure below shows an example of sound level varying with time. Because of this time variation the same period of noise can be described by several different levels. The most common of these are described below.



Example of Sound Level Varying With Time

- $L_{Aeq,T}$** The equivalent continuous (A-weighted) sound level. May be thought of as the "average" sound level over a given time, *T*. It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises and can be considered as the "ambient" noise level.
- L_{A90}** The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value used to describe the "background" noise.
- L_{Amax}** The maximum (A-weighted) sound level during a measurement period.
- Free-field Level** This refers to the sound level measured outside, away from reflecting surfaces.
- L_{AE}** The A-weighted sound exposure level is the equivalent noise level of an event as if the event was of one-second duration and allows the overall average, L_{Aeq} , level to be determined over different time periods for a number of events. L_{AE} is a mathematical unit which cannot easily be described in terms of perception.
- R_w** Single number rating used to describe the airborne sound insulation properties of a material or building element over the frequency range of typically 100-3150Hz.

APPENDIX B – Noise Survey Details

Date & Time of Survey:	Attended Daytime: Tuesday 8 January 2019, 1100 to 1330h. Wednesday 9 January 2019, 1215 to 1340h.					
	Unattended: Tuesday 8 January 2019, 1145h to Wednesday 9 January 2019, 1200h.					
Personnel:	Warren King (AEC).					
Equipment Used:	Attended: Cirrus CR:171B Real Time Analyser (AEC Kit 3)					
	Unattended: Cirrus CR:171B Real Time Analyser (AEC Kit 5)					
Calibration:	The sound level analysers, which conform to BS EN 61672-1: 2003 ' <i>Electro acoustics – sound level meters - Part 1 Specifications</i> ' for Class 1 Type Z meters, were in calibration and check calibrated before and after the measurement periods using a Brüel & Kjær type 4231 (94dB) calibrator. There was no significant drift of calibration. Calibration certificates are available on request.					
Weather Conditions:	Attended and Unattended:					
	Day	Period	Wet/Dry	Temp	Wind Direction	Cloud Cover
	08/01/19	Day	Dry	8°C	Northerly	5%
	09/01/19	Day	Dry	5°C	Northerly	5%
Measurement Locations:	Attended: Measurements were undertaken at 4 locations around the development site. Identified as S1 to S4 on Figure 1 and described below. S1 – Lodge Riding School, Dacres Bridge Lane, 2.5m from centre of carriageway S2 – Park Villas, Cronton Road, 16m from centre of carriageway S3 – Main Drive, Halsnead Park S4 – Halsnead Farm, Fox's Bank Lane, 8m from centre of carriageway					
	Unattended: The microphone was connected via an extension cable at a location representative of the nearest noise sensitive property on Dacres Bridge Lane, identified as L1 on Figure 1.					
Measurement Details:	Attended: Measurements were undertaken over various periods in terms of and L_{eq} , L_{90} , L_{max} .					
	Unattended: Measurements were logged continuously over 1s for post processing and assessment. The locations were selected to represent the closest noise sensitive properties to the proposed plant.					
Façade Free-Field:	Attended: S1 to S4 - free-field					
	Unattended: Free field					
Measured Data:	Full results for the attended measurements are given in Table B1 and Graphs B1 to B3. Full octave band centre frequency data was obtained for all measurements.					

TABLE B1 – Attended Measured Noise Levels

Location	Date	Time	Period	Noise Level		Comments
				dBL _{A90} , 15min	dBL _{Aeq} , 15min	
S1 - Lodge Riding Centre	08/01/2019	11:06	Daytime	57.8	59.5	Motorway traffic dominant. Engine running at Riding School. Hammering on site at Riding School.
	09/01/2019	13:23		53.6	57.1	Motorway traffic dominant.
S2 - Park Villas	08/01/2019	11:57	Daytime	53.4	65.9	Road traffic along Cronton Road dominant. Distant motorway traffic also audible.
	09/01/2019	12:15		52.3	65.2	Road traffic along Cronton Road dominant. Distant motorway traffic also audible contributing 52-53dB.
S3 - Halsnead Park	08/01/2019	12:34	Daytime	49.9	53	Distant road traffic dominant, occasional local road traffic. Dog barking.
	09/01/2019	13:00		43.5	52.2	Low level motorway noise. Occasional local road traffic.
S4 - Fox's Bank Lane	08/01/2019	13:16	Daytime	59.5	64.8	Local road traffic and motorway traffic dominant.
	09/01/2019	12:35		58.8	63.8	Local road traffic and motorway traffic dominant. Motorway traffic contributing 59-60dB. Machinery on farm audible at times.

