

# SHARPS REDMORE

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## Report

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### Land adjacent to Haverhill Business Park, Bumpstead

Environmental Noise Report  
– Reserved Matters

#### Prepared by

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Date 18th July 2019

Project No 1919017

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This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility whatsoever to any third party who relies upon its content, recommendations or conclusions.

## 1.0 Introduction

- 1.1 Sharps Redmore have been instructed to carry out an environmental noise assessment in relation to the development of land adjacent to Haverhill Business Park, Bumpstead. The site location is shown in Figure 1 below:

**FIGURE 1: Site Location**



- 1.2 Outline planning (OP) permission (Ref: DC/15/242/OUT) exists for development of the site for up to 46,000 sqm of floor space for uses within B1, B2 and B8 of the Use Classes Order, road side uses (petrol filling station and restaurant/s, Use Class (A3/A5), car dealerships (sui generis), builders merchants, ancillary lorry park for Business Park occupiers, together with landscaping, car and HGV parking and associated works and facilities including access. Condition 2 of OP states the following:

**Condition 2: No development shall be commenced within a phase or plot until details of the appearance, landscaping, layout, parking and scale (hereby called the ‘the reserved matters’) relating to that phase or plot have been submitted to and approved in writing by the Local Planning Authority. The development of each phase or plot shall be carried out in accordance with the approved ‘reserved matters’.**

- 1.3 In accordance with Condition 2 Reserved matters approval is being sought<sup>1</sup> for approval of reserved matters for Plots NE1, NE2 and SE 2. A layout for the buildings is shown in Appendix A.
- 1.4 A previous application, Reference DC/16/2453/RM for discharge of reserved matters at Plot SE1 as a builder’s merchant has been approved. This site has been built out and the builder’s merchants are now trading.
- 1.5 Comments have been made by Karen Cattle, Senior Public Health and Housing Officer at West Suffolk Council in relation to the current application. The comments refer to the noise assessment which was carried out by SR in relation to the OP. Due to changes to the layout and surrounding area, Ms Cattle recommends the following:

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<sup>1</sup> DC/19/1010/RM | Reserved Matters Application - Submission of details under Outline Planning Permission DC/15/2424/OUT - Matters Reserved by Condition 2 (appearance, landscaping, layout and scale) for the development of Plots NE1, NE2 and SE2 for use classes B1, B2 and B8. | Land Adj Haverhill Business Park Bumpstead Road Haverhill Suffolk-

*“The previously submitted noise assessment and predicted noise levels cannot therefore be relied upon to ensure that the proposed development will not impact on the residential properties within the vicinity of the site.*

*It is therefore recommended that the applicant is asked to confirm and agree a proposed site layout and that based on this a further noise assessment should be undertaken to assess the noise impacts during both the day and night-time from internal activities within each unit, external activities at each unit, including servicing and car parking, mechanical service plant and road traffic. Following the assessment, any noise mitigation/attenuation measures which may be required to minimise reflection and noise transmission can be determined.”*

- 1.6 Therefore the purpose of this report is to assess the impact of operation of the proposed development in line with the recommendations from Ms Cattle. Prior to carry out the assessment, SR contacted Ms Cattle to agree the extent and scope of the survey and assessment.
- 1.7 The report is structured as follows:
  - Section 2.0 – Policy and Assessment Criteria
  - Section 3.0 – Details of Environmental Survey
  - Section 4.0 – Assessment of mechanical services plant;
  - Section 5.0 – Assessment of external activity including servicing and car parking.
  - Section 6.0 – Assessment of internal activity;
  - Section 7.0 – Summary and Conclusions
- 1.8 A guide to the acoustic terminology used within the report is included in Appendix D.

## 2.0 Assessment Criteria

### National Policy

2.1 The National Planning Policy Framework (NPPF), February 2019, sets out the Government’s planning policies for England and “these policies articulate the Government’s vision of sustainable development.” In respect of noise, Paragraph 180 of the NPPF states the following:

*“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; and*
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation”.*

2.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Practice Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in the table below:

**TABLE 1: Noise Exposure Hierarchy**

| Perception                   | Examples of Outcomes   | Increasing Effect Level                   | Action                           |
|------------------------------|--|---|----------------------------------|
| Not noticeable               | No Effect  | No Observed Effect                        | No specific measures required    |
| Noticeable and not intrusive | Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.   | No Observed Adverse Effect                | No specific measures required    |
|                              |  | Lowest Observed Adverse Effect Level      |                                  |
| Noticeable and intrusive     | Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.  | Observed Adverse Effect                   | Mitigate and reduce to a minimum |
|                              |  | Significant Observed Adverse Effect Level |                                  |
| Noticeable and disruptive    | The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area. | Significant Observed Adverse Effect       | Avoid                            |
|                              |  |   |                                  |

| Perception                     | Examples of Outcomes  | Increasing Effect Level     | Action  |
|--------------------------------|---|-----------------------------|---------|
| Noticeable and very disruptive | Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory. | Unacceptable Adverse Effect | Prevent |

2.3 The NPPF and NPPG reinforce the March 2010 DEFRA publication, “Noise Policy Statement for England” (NPSE), which states three policy aims, as follows:

*“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

2.4 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

*“... all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur.”*

#### Local Policy

2.5 With regard to local policy reference is made to Policy DM2 and DM14 of the West Suffolk Joint Management Policies Document (2015). In terms of noise the policies state the following:

*Policy DM2: Proposals for all development (including changes of use, shopfronts, and display of advertisements) should, as appropriate:*

*g. taking mitigation measures into account, not affect adversely*

....

*v. the amenities of adjacent areas by reason of noise, smell, vibration, overlooking, overshadowing, loss of light, other pollution (including light pollution), or volume or type of vehicular activity generated.*

*Policy DM14: Proposals for all new developments should minimise all emissions and other forms of pollution (including light and noise pollution) and ensure no deterioration to either air or water quality. All applications for development where the existence of, or potential for creation of, pollution is suspected must contain sufficient information to enable the Planning Authority to make full assessment of potential hazards.”*

2.6 Therefore taking an overview of national policy it is clear that when considering the impact of noise one must consider the significance of any impact. The presence of an adverse impact in itself is not sufficient to refuse permission.

## Guidance

- 2.7 It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:
- i) The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014 and World Health Organisation “Guidelines for Community Noise” contain such guidelines.
  - ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.
  - iii) Another method is to compare the resultant noise level against the background noise level ( $L_{A90}$ ) of the area. This is the method employed by BS 4142:2014 to determine the impact of noise of an industrial or industrial type nature. It is best suited to the assessment of steady or pseudo-steady noise.

### **Guideline noise values**

- 2.8 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.
- 2.9 British Standard 8233:2014 is principally intended to assist in the design of new dwellings; however, the Standard does state that it may be used in the assessment of noise from new sources being brought to existing dwellings.
- 2.10 The original BS 8233 was based on the advice contained in the draft World Health Organisation document “Guidelines for Community Noise”. This document was released in final form in 2000. The World Health Organisation guidance is referenced in the NPSE.
- 2.11 The WHO advice is the most useful, comprehensive, and pertinent advice in this case, because it is not specific to the circumstances of the assessment. Instead, it provides guidance on acceptable limits in, for example, schools, dwellings and offices.
- 2.12 The WHO guideline values are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects may be considered significant (SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.
- 2.13 The WHO LOAEL guideline values are summarised in the following table.

**TABLE 2**

| Document   | Level              | Guidance  |
|--|--------------------|---|
| World Health Organisation<br>"Community Noise 2000"                  | $L_{AeqT} = 55$ dB | Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)          |
|  | $L_{AeqT} = 50$ dB | Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).        |
|  | $L_{AeqT} = 35$ dB | Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)           |
|  | $L_{AeqT} = 30$ dB | Sleep disturbance, night-time (indoors)   |
|  | $L_{AMAX} = 60$ dB | Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level). |
|  | $L_{AMAX} = 45$ dB | Sleep disturbance at night (Noise peaks inside bedrooms, internal level)                  |
| BS 8233:2014<br>"Sound Insulation and noise reduction for buildings" | $L_{AeqT} = 55$ dB | Upper limit for external steady noise. (Gardens and balconies).                           |
|  | $L_{AeqT} = 50$ dB | Desirable limit for external steady noise. (Gardens and balconies).                       |
|  | $L_{AeqT} = 35$ dB | Resting conditions for living rooms during the day. (Internal – steady noise)             |
|  | $L_{AeqT} = 40$ dB | Dining, dining room day. (Internal – steady noise)  |
|  | $L_{AeqT} = 35$ dB | Good resting/sleeping conditions for bedrooms, daytime (Internal – steady noise)          |
|  | $L_{Aeq} = 30$ dB  | Sleeping, bedroom night (internal – steady noise)   |

2.14 For  $L_{AeqT}$  criteria the time base (T) given in the document is 16 hours for daytime limits and 8 hours for night time limits. When assessing impact, this has the tendency to smooth out the hourly variations in noise level. As such, our calculations are carried out to a 1 hour time base, which is more stringent assessment than is given in the guidance but is reflective of the actual duration of the delivery process.

**Changes in noise level**

2.15 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dB are equivalent to a doubling of loudness. This guidance has been accepted by Inspectors, at Inquiry, to encompass changes in noise levels in the index  $L_{Aeq,T}$ , in relation to road traffic noise and therefore if of limited use in this case.

2.16 The following table shows the response to changes in noise level (known as the Semantic Scale).



**TABLE 3: Changes in noise level**

| Change in noise level $L_{AeqT}$ dB | Response             | Impact      |
|-------------------------------------|----------------------|-------------|
| <3                                  | Imperceptible        | None        |
| 3 - 5                               | Perceptible          | Slight      |
| 6 - 10                              | Up to a doubling     | Significant |
| 11 – 15                             | More than a doubling | Substantial |
| > 15                                | -                    | Severe      |

**BS 4142:2014**

2.17 As discussed, this BS described a method for rating and assessing sound of industrial and/or commercial nature according to the following summary process:

- i) Carry out a numerical assessment of the noise, taking into the character and areas of uncertainty, by comparing the noise against the existing background noise level. The greater the difference between the two, the greater the impact.
- ii) By considering the noise impact against the context in which it is placed. There are many contextual points to consider when considering an assessment of sound impact including the following:
  - The absolute level of sound;
  - The character and level of the specific sound compared to the existing noise climate;
  - The sensitivity of the receptors;
  - The time and duration that the specific sound occurs. The conclusions of assessments undertaken using alternative assessment methods, for example WHO guideline noise values or change in noise level;
  - The ability to mitigate the specific sound through various methods, for example by screening, the selection of quiet plant equipment, the use of attenuators, through the imposition of noise management plans and good practice, façade design and layout/orientation;
  - The form and scale and scale of a development. For example, does not the proposed development involve a new industrial/commercial premises or is the proposal the installation of new plant or an extension to an existing premises?

2.18 It is therefore entirely possible that whilst the numerical outcome of a BS 4142 assessment is indicative of adverse or even significant adverse impact, when the proposal is considered in context the significance of the impact is reduced to an acceptable level.

## **Methodologies Selected**

2.19 Taking into account the above comments in mind, the components of noise has been assessed as follows:

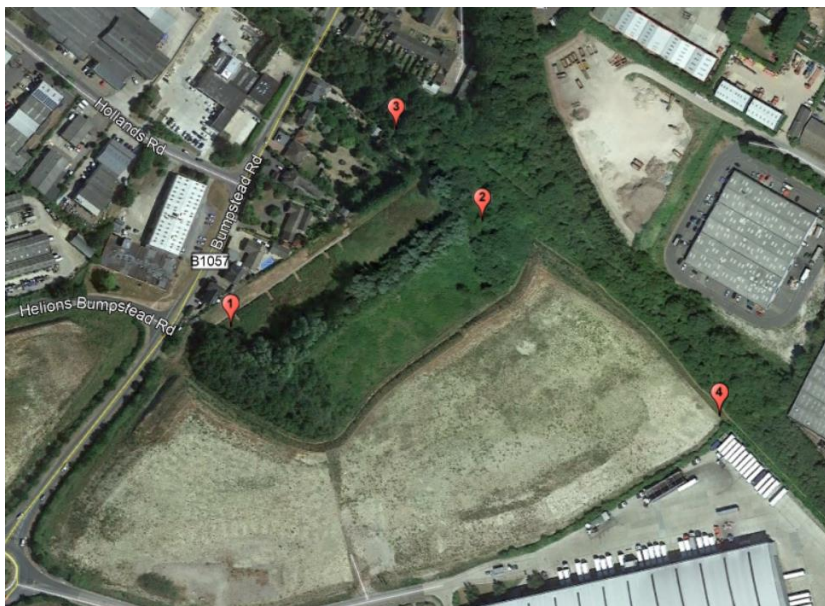
- Fixed mechanical plant – BS 4142:2014
- Internal operational activity - BS 4142: 2014
- Service Yard – BS 4142:2014/WHO Guidelines/Change in Noise Level
- Car Park Activity – WHO Guidelines

### 3.0 Survey Details

- 3.1 A noise survey was carried out between 8th and 15th July 2019 to determine the existing noise levels at the site. Prior to carrying out the survey Sharps Redmore contacted Karen Cattle at West Suffolk Council to agree the extent and scope of the survey.
- 3.2 Unattended long term measurements were carried out at two locations, NL1 and NL2, which were chosen to represent the residential properties to the north of the development in Bumpstead Road and Ashlea Road. In addition at the request of Ms Cattle, measurements were taken at two points, NL 3 and NL 4 along the footpath which runs to the north of the site.

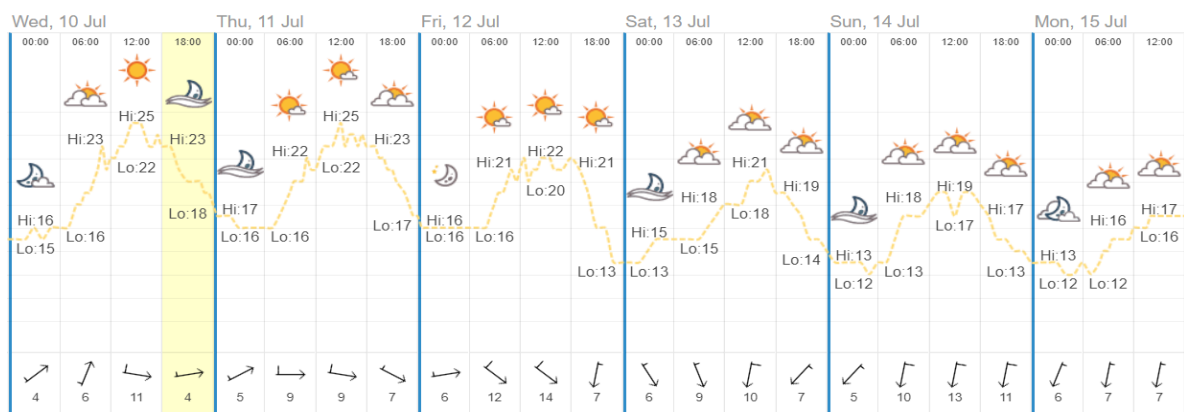
The monitoring locations are shown in Figure 2 below:

**FIGURE 2: Monitoring Locations**



- 3.3 Measurements were taken using Norsonic 118 type 1 sound level meters which were calibrated before and after the survey. The sound level meters were set up to continuously record existing noise levels at 15 minute intervals throughout the survey period with the steady noise level dB  $L_{Aeq(15min)}$ , non-steady noise level dB  $L_{Amax}$  and background noise levels dB,  $L_{A90,15min}$  were recorded at each location..
- 3.4 Weather conditions are shown in Figure 3 below but were generally dry, warm with light winds. Weather conditions were suitable for taking noise measurements.

**FIGURE 3: Weather Conditions (Source: www.timeanddate.com/weather)**



3.5 Full details of the survey results are shown in Appendix C and summarised in the Tables below:

**TABLE 4: Survey Results – NL1**

| Date    | Daytime (dB)     |                  | Night Time (dB)  |                  |                   |
|---------|------------------|------------------|------------------|------------------|-------------------|
|         | L <sub>Aeq</sub> | L <sub>A90</sub> | L <sub>Aeq</sub> | L <sub>A90</sub> | L <sub>Amax</sub> |
| 10.7.19 | 47 - 62          | 41 - 51          | 43 - 56          | 41 - 48          | 48 - 74           |
| 11.7.19 | 48 - 59          | 42 - 52          | 43 - 59          | 40 - 47          | 56 - 84           |
| 12.7.19 | 47 - 63          | 40 - 52          | 44 - 66          | 41 - 44          | 52 - 91           |
| 13.7.19 | 45 - 62          | 34 - 47          | 37 - 51          | 30 - 45          | 56 - 75           |
| 14.7.19 | 44 - 60          | 34 - 47          | 33 - 53          | 30 - 44          | 44 - 79           |
| 15.7.19 | 54 - 61          | 45 - 49          | --               | --               | --                |

**TABLE 5: Survey Results – NL2**

| Date    | Daytime (dB)     |                  | Night Time (dB)  |                  |                   |
|---------|------------------|------------------|------------------|------------------|-------------------|
|         | L <sub>Aeq</sub> | L <sub>A90</sub> | L <sub>Aeq</sub> | L <sub>A90</sub> | L <sub>Amax</sub> |
| 12.7.19 | 44 - 54          | 43 - 52          | 42 - 48          | 39 - 46          | 50 - 74           |
| 13.7.19 | 43 - 53          | 41 - 51          | 42 - 49          | 38 - 45          | 46 - 65           |
| 14.7.19 | 41 - 55          | 39 - 49          | 39 - 48          | 36 - 43          | 48 - 67           |
| 15.7.19 | 46 - 53          | 43 - 50          | --               | --               | --                |

**TABLE 6: Survey Results – NL3 and NL4 – 11th July 2019**

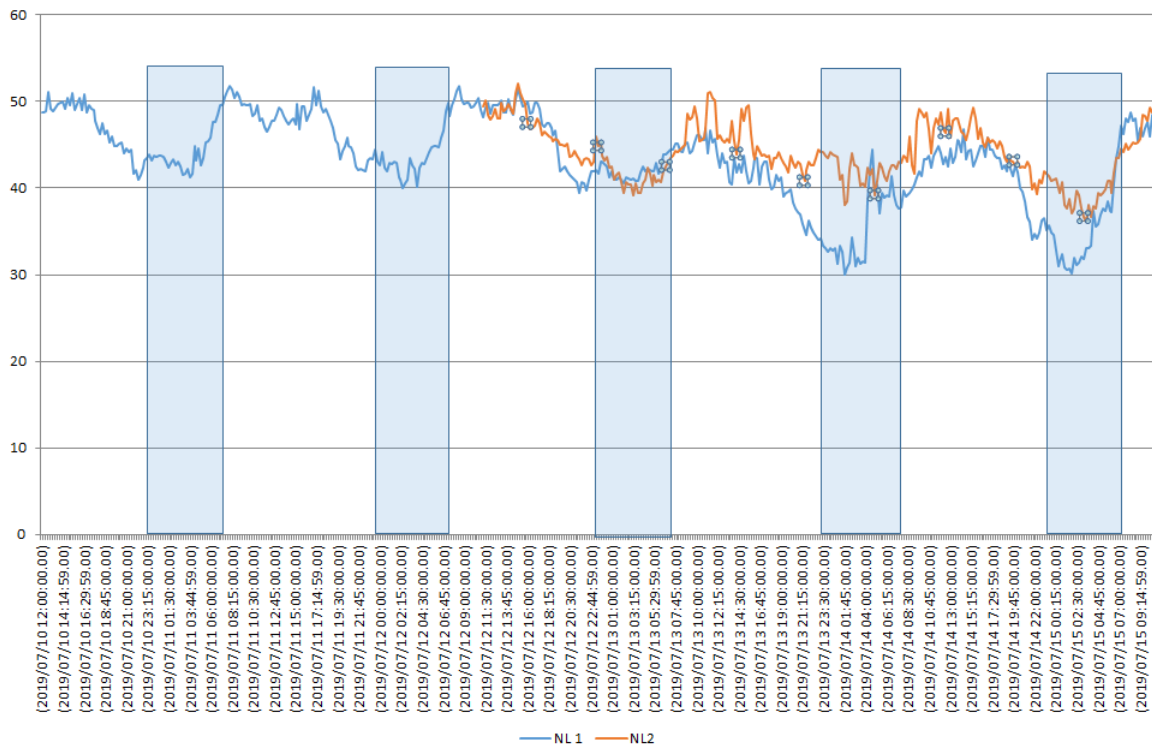
| Time  | Location | L <sub>Aeq</sub> dB | L <sub>A90</sub> dB | L <sub>Amax</sub> dB | Observations  |
|-------|----------|---------------------|---------------------|----------------------|---|
| 13:53 | 3        | 45                  | 40                  | 61                   | Distant road traffic and industrial noise noted. Occasional aircraft noise                      |
| 14:08 | 4        | 51                  | 49                  | 62                   | Industrial noise, HGV movements, Forklift truck movements and distant road traffic noise noted. |

3.6 The existing noise climate is characterised by road traffic noise, and noise from the industrial buildings in the area.

## 4.0 Assessment of mechanical services plant

- 4.1 The choice and selection of plant will depend on the final occupier of the units and therefore the precise details of the mechanical services plant and refrigeration equipment (type and noise signature) are not known at this stage. However, the fixed plant may consist of refrigeration and condenser units, air handling units, extract fans, boilers and emergency generators.
- 4.2 With regard to the assessment of industrial noise sources BS 4142:2014 enables the resultant noise from new equipment to be compared to the existing background noise level ( $L_{A90}$ ) of an area to assess the likelihood of complaints.
- 4.3 In terms of seeking to set appropriate plant rating sound limits, the advice in BS 4142:2014 is *"The lower the rating level is relative to the measured background sound level, the less likely is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source of having a low impact, depending on context"* (clause 11 noted').
- 4.4 In determining suitable noise criteria for mechanical services plant, regard has been had to the existing background noise levels measured during the survey.
- 4.5 For the purposes of the assessment BS 4142:2014 requires that the background noise level should be representative of the particular circumstances and the period of interest. Based on Figures 3 below, the representative background noise level for the day and night time period at each monitoring location has been calculated.

**FIGURE 4: Representative Background Noise Levels**



**TABLE 7: Representative Background Levels**

| Noise level dB         |                              |
|------------------------|------------------------------|
| Daytime (0700-2300hrs) | Night Time (2300 – 0700 hrs) |
| 45 dB                  | 35 dB                        |

- 4.6 To prevent significant adverse impacts on the health and quality of life of existing noise sensitive receptors, the “rating noise level” (the predicted noise level plus any penalty for character), should not exceed the typical measured daytime and night time background noise level by more than 10 dB, and to prevent adverse harm by around 5 dB depending on context. Where the rating level does not exceed the background noise level, this is an indication of a specific sound having a low impact.
- 4.7 Hence in relation to the guidance above there is a technical case to set the plant sound limits that match the current background sound climate. This approach would result in a plant rating level of 45 dB daytime and 35 dB at night.
- 4.8 The above noise limits could be secured by a suitably worded planning condition.

## 5.0 Assessment of Internal Activities

5.1 The units will be constructed using a composite metal panel system which will provide a typical sound reduction performance of  $28 R_w$ . Based on experience of similar of B2 and B8 sites, internal noise levels within the buildings will not exceed 80 dB. This is equivalent to the lower exposure level as defined in the Control of Noise at Work Regulations and therefore can be considered a robust assessment level.

5.2 The sound pressure level ( $L_p$ ) at a distance ( $r$ ) from a façade with an average sound reduction  $R_w$  can be calculated by using the following equation.

$$L_p = L_{p\text{internal}} - (20 \log r) - 14 + 10 \log (S) - R_w$$

Where  $S$  is the surface area of the façade.

5.3 Due to the topography of the site, the residential properties at approx. 6-7m below the level of the development and will be screened from the proposed Units. Any solid structure between the receptor and source will reduce noise. As a general rule of thumb anything which breaks the line of sight will reduce noise levels by 5 dB.

5.4 The impact of noise from the units will depend on the specific use of each of the units and is not possible to carry out a detailed assessment at this stage. However based on the elevation drawings, assuming that the 50% of the service bay doors will be open and the assumptions in para.5.1 above the predicted noise levels from internal activity has been calculated as shown in Table 8 below.

**TABLE 8: Predicted noise break-out from building**

| Receptor          | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Overall |
|-------------------|--------|--------|--------|--------|---------|
| 37 Bumpstead Road | 28     | 27     | 30     | 21     | 34 dB   |
| Maryville         | 29     | 28     | 25     | 20     | 33 dB   |
| Ashlea Road       | 28     | 25     | 21     | 16     | 31 dB   |

5.5 Noise from internal activity will be below the existing representative daytime and night time background noise levels and therefore it is not considered that necessary to restrict the operating hours of then units.

5.6 The impact will depend on the operator in the Unit however as advised above the predicted noise levels is based on typical use of the Units for B1, B2 and B8, operating with 50% of the service bay doors open.

## 6.0 Noise Assessment – External Activity

- 6.1 Based on experience of similar sites the main impact from external activity will be from car park activity and servicing of the units. At this stage the operating hours of each unit are not known. It is therefore assumed that each unit will operate 24 hours a day, 7 days a week.
- 6.2 The nearest noise sensitive properties to the site are the residential properties in Bumpstead Road and Ashlea Road to the north of the site.
- 6.3 Each unit has its own dedicated car park and service area however for the purposes of the following assessment only external activity at Units 1-4 are considered, these being the nearest units to the receptors.

### Car Parking

- 6.4 Surveys of noise levels at the boundaries of similar car parks have shown that levels range from  $L_{Aeq1hr} = 43$  dB to 48 dB at a distance of 10 metres. The baseline noise value of  $L_{Aeq,1\text{ hour}} = 48$  dB is considered a robust (worse case) baseline maxima to apply to parking activities at Units 1, 2 and 3 whilst as the parking area serving Unit 4 is much smaller the lower level of 43 dB  $L_{Aeq\ 1\text{ hour}}$  is considered appropriate. Maximum noise levels from car door slams were typically 68 dB  $L_{Amax}$  at 10 metres
- 6.5 Using the baseline data above the predicted noise levels from car parking activity at the nearest noise sensitive properties in Bumpstead Road and Ashlea Road has been calculated taking into account distance attenuation from the boundary of the car park.

**TABLE 9: Predicted car park noise**

| Receptor                     | Unit 1                               |            | Unit 2       |            | Unit 3    |            | Unit 4       |            |
|------------------------------|--------------------------------------|------------|--------------|------------|-----------|------------|--------------|------------|
|                              | $L_{Aeq1hr}$                         | $L_{Amax}$ | $L_{Aeq1hr}$ | $L_{Amax}$ | $L_{Aeq}$ | $L_{Amax}$ | $L_{Aeq1hr}$ | $L_{Amax}$ |
| Mayville, Bumpstead Road     |                                      |            |              |            |           |            |              |            |
| Baseline level (10m)         | 48 dB                                | 68 dB      | 48 dB        | 68 dB      | 48 dB     | 68 dB      | 43 dB        | 68 dB      |
| Distance to nearest property | 155 m                                | 155m       | 140m         | 149m       | 100m      | 100m       | 145m         | 145m       |
| Distance correction          | -24 dB                               | -24 dB     | -23 dB       | -23 dB     | -20 dB    | -20 dB     | -23 dB       | -23 dB     |
| Predicted Level              | 24 dB                                | 45 dB      | 25 dB        | 45 dB      | 28 dB     | 48 dB      | 18 dB        | 45 dB      |
| Overall                      | 31 dB $L_{Aeq1hr}$ /48 dB $L_{Amax}$ |            |              |            |           |            |              |            |
| Receptor                     | Unit 1                               |            | Unit 2       |            | Unit 3    |            | Unit 4       |            |
|                              | $L_{Aeq1hr}$                         | $L_{Amax}$ | $L_{Aeq1hr}$ | $L_{Amax}$ | $L_{Aeq}$ | $L_{Amax}$ | $L_{Aeq1hr}$ | $L_{Amax}$ |
| Ashlea Road                  |                                      |            |              |            |           |            |              |            |
| Baseline level (10m)         | 48 dB                                | 68 dB      | 48 dB        | 68 dB      | 48 dB     | 68 dB      | 43 dB        | 68 dB      |
| Distance to nearest property | 180 m                                | 180m       | 200m         | 200m       | 270m      | 270m       | 275m         | 275m       |
| Distance correction          | -25 dB                               | -25 dB     | -26 dB       | -26 dB     | -29 dB    | -29 dB     | -29 dB       | -29 dB     |
| Predicted Level              | 23 dB                                | 43 dB      | 22 dB        | 42 dB      | 19 dB     | 39 dB      | 14 dB        | 39 dB      |
| Overall                      | 27 dB $L_{Aeq1hr}$ /43 dB $L_{Amax}$ |            |              |            |           |            |              |            |



- 6.6 The above predicted noise levels do not take into account any screening which will be provided from either the boundary treatments proposed or the topography of the site and therefore can be assumed to be worst case.
- 6.7 Predicted noise levels from car park activity at each receptor will be significantly within the daytime and night time guideline values and also will be below the existing ambient noise levels measured at both locations. Therefore it is concluded that noise from car parking will not have a significant adverse effect on the health and quality of life of nearby noise sensitive receptors.

#### Servicing Activity

- 6.8 The main sources of noise from external activity will be noise from service yard activity; vehicles manoeuvring, unloading, use of fork lift trucks, movements of trailers and car park noise.
- 6.9 In terms of noise the following assessment it has been assumed that the units will be used as warehouse distribution units (B8) operating 24 hours a days. This will ensure a robust assessment as service yard activity from a B8 use will likely generate higher noise levels than either B1 or B2 use. The proposed site plan, drawing number 6502-700, incorporates acoustic barriers around the service yard area to Unit 3 which extends along the northern boundary of the access to Unit 4, these being the units closest to the residential properties in Bumpstead Road.
- 6.10 Noise levels of the different components of service activity have been measured at similar B8 units where vehicles are unloaded/loaded using fork lift trucks or via a level dock loading system. Typical noise levels from servicing activity are shown in Table below:

**TABLE 10: Service Yard Noise at 10 metres.**

| Delivery Activity         | Event Noise Level (at 10 metres) |                         |                 |                         |                 |                         | Overall<br>L <sub>Amax</sub> dB |
|---------------------------|----------------------------------|-------------------------|-----------------|-------------------------|-----------------|-------------------------|---------------------------------|
|                           | Arrival                          |                         | Unloading       |                         | Departure       |                         |                                 |
|                           | Duration (mins)                  | L <sub>Aeq T</sub> (dB) | Duration (mins) | L <sub>Aeq T</sub> (dB) | Duration (mins) | L <sub>Aeq T</sub> (dB) |                                 |
| Level Access <sup>1</sup> | 2                                | 69                      | 40              | 66                      | 0.5             | 67                      | 75-79                           |
| Level Dock                | 2                                | 69                      | 30              | 58                      | 0.5             | 67                      | 75-79                           |

<sup>1</sup>Inlcudes unloading of goods with fork-lift trucks

- 6.11 Using the above data the predicted noise levels from service yard activity at 37 Bumpstead Road, Mayville, Bumpstead Road and the residential properties in Ashlea Road has been calculated. Screening losses are based on screening provided by the buildings and the acoustic fence which is proposed around the units 3 and 4 and the topography of the area. For the purposes of the assessment the number of vehicle movements each hour is based on the number of loading bays as shown on the indicative plan. For the night time period (2300 – 0700 hours) it has been assumed 50 % of the bays will be used. The results of the calculations are shown in Appendix C and summarised in the tables below.

**TABLE 11: Predicted noise levels – Service activity**

| Receptor          | Daytime<br>(0700 – 2300hrs) | Night time<br>(2300 – 0700 hrs)            |                   |
|-------------------|-----------------------------|--|-------------------|
|                   | L <sub>Aeq1hr</sub>         | L <sub>Aeq1hr</sub> /L <sub>Aeq15min</sub> | L <sub>Amax</sub> |
| 37 Bumpstead Road | 40 dB                       | 40/42 dB                                   | 48 dB             |
| Maryville         | 40 dB                       | 39/42 dB                                   | 47 dB             |
| Ashlea Road       | 37 dB                       | 36/38 dB                                   | 46 dB             |

6.12 Using the above calculations an assessment of delivery activity noise levels using the methodology in BS 4142:2014. For the purposes of the assessment a 3dB feature correction for impulsivity during has been applied:

**TABLE 12 – BS 4142:2014 Assessment Results**

| Location          | Period     | Rating Level | Background Noise Level | Difference |
|-------------------|------------|--------------|------------------------|------------|
| 37 Bumpstead Road | Daytime    | 43 dB        | 45 dB                  | -2 dB      |
|                   | Night time | 45 dB        | 35 dB                  | +10 dB     |
| Maryville         | Daytime    | 43 dB        | 45 dB                  | -2 dB      |
|                   | Night time | 45 dB        | 35 dB                  | +10 dB     |
| Ashlea Road       | Daytime    | 40 dB        | 45 dB                  | -5 dB      |
|                   | Night time | 39 dB        | 35 dB                  | +4 dB      |

<sup>1</sup>Subject to context

6.13 The guidance in BS 4142:2014, Section 11, states:

- “a) Typically, the greater this difference, the greater the magnitude of the impact.*
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- d) 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. 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”.*

6.14 As explained in section 2.0 of this report, Section 11 of BS 4142:2014 explains *“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.”*

6.15 The first is how the predicted delivery activity noise levels compare to the WHO guideline noise values. Taking into account the screening provided around the noise levels are below both the daytime and night time WHO Guideline Values.

- 6.16 The second contextual consideration is the level and character of the existing noise climate. Noise levels will be below the existing ambient noise levels measured during the survey and therefore the overall change in noise levels will be less than 3 dB. Such a change will be imperceptible to local residents.
- 6.17 With regard to character of the sound the area is surrounded by industrial units and as such noise from unloading or goods and HGV movements will not be out of character with the existing noise climate. At night of primary concern are maximum noise levels as goods are being unloaded. As shown in Table 11 above, predicted maximum noise levels will be significantly be between 46 – 48 dB, this will be significantly below the WHO Guideline Values.
- 6.18 The final contextual consideration is the mitigation measures that are available to reduce the noise impact. As required by Condition 15 of the OP audible alarms shall be fitted with broadband (white noise) alarms and alarms/broadband (white noise reversing alarms respectively. This will reduce the subjective impact of noise from delivery activity and reduce the effect on adjacent residential properties.
- 6.19 Further measures can be included to reduce the noise impact from delivery activity, including the use of electrical hook-ups should refrigeration vehicles use the site and if required additional screening around the service yards to Units 1 and 2. This will depend on the final operator of the Units.
- 6.20 Based on the above it is concluded that noise from external activity will not cause significant adverse impact to local residents in line with the national policy aims of the NPPF and Noise Policy Statement for England. Further mitigation measures are available to reduce the noise impact should this be required. This will depend on the final operator of the unit and could be controlled by a suitably worded planning condition. A suggested planning condition is shown below:

*No phase of the development shall be occupied until a Management Plan for that phase, including hours of operation, hours of deliveries, full details of loading/unloading arrangements and any noise mitigation measures have been submitted to and approved in within by the Local Planning Authority. The Management Plan shall be implemented in full on occupation of each phase and complied with thereafter unless otherwise agreed in writing with the Local Planning Authority*










## **7.0 Conclusions and Recommendations**

- 7.1 Sharps Redmore have been instructed to carry out a noise assessment for an application to discharge reserved matters application in relation to the proposed development off Bumpstead Road, Haverhill.
- 7.2 Prior to carrying out the assessment SR contacted the Environmental Health Department at West Suffolk Council to agree the methodology and scope of the assessment. The comments made by Karen Cattle have been taken into account.
- 7.3 Based on experience of similar sites the main noise sources of the development have been identified as follows:
- Noise from fixed plant;
  - Noise from internal activity;
  - Noise from external activity
- 7.4 The noise levels from the proposed development have been calculated at the nearest noise sensitive receptors.
- 7.5 It is shown that noise from the Units, including external servicing, will not cause impact to existing noise sensitive properties and it is concluded that there is no reason to restrict the operating hours of the unit.
- 7.6 Noise from fixed plant will be controlled by planning condition not to exceed the existing background noise levels.
- 7.7 It is concluded that based on typical use of the Units as B1, B2 and B8 the site can operate 24 hours a day, 7 days a week without causing significant impact on the health and life of local residents in accordance with the national policy aims contained within the NPPF. This is dependent on the occupier of the Units and a condition is proposed which will require details of the proposed servicing, hours of operation are confirmed prior to the occupation of each unit.

## **APPENDIX A**

### **PROPOSED LAYOUT**

Key to External Finishes.  
 To be read in conjunction with drawings of BEA Landscape & Nolan Associates Engineers

-  Planting as BEA Landscape design
-  Concrete Service Yard
-  Tarmac - Roadway
-  Tarmac - Footpath
-  Tarmac - Adoptable
-  Block Paviers Impermeable
-  Block Paviers Permeable
-  Fencing to service yards - 2.4m high paladin ppc black with matching gates.
-  Acoustic Fencing 4m high close boarded treated timber with overall density > 15kg/m<sup>2</sup>

Schedule of Areas - GIA

| Unit               | Office GF           | Office FF             | Warehouse   | Total       |
|--------------------|---------------------|-----------------------|-------------|-------------|
| Unit 1             | 64 sq.m.            | 296 sq.m.             | 5,664 sq.m. | 6,024 sq.m. |
| Unit 2             | 64 sq.m.            | 152 sq.m.             | 3,820 sq.m. | 4,036 sq.m. |
| Unit 3             | 64 sq.m.            | 228 sq.m.             | 4,476 sq.m. | 4,768 sq.m. |
| Unit 4             | 80 sq.m.            | 1,054 sq.m.           | 1,134 sq.m. | 2,268 sq.m. |
| Unit 5             | 64 sq.m.            | 210 sq.m.             | 4,136 sq.m. | 4,410 sq.m. |
| <b>Total Build</b> | <b>20,362 sq.m.</b> | <b>219,160 sq.ft.</b> |             |             |
| Site Area          | 5.60 hectare        | 13.85 acres           |             |             |
| Density            | 36.3%               | Nett 37.3%            |             |             |

Parking Space / Floor Area Ratios:

| Unit   | 194 spaces = 1space / 29 sqm including 4 disabled parking bays 20 bicycles & 3 motorcycles |
|--------|--|
| Unit 2 | 175 spaces = 1space / 30 sqm including 3 disabled parking bays 10 bicycles & 6 motorcycles |
| Unit 3 | 150 spaces = 1space / 29 sqm including 4 disabled parking bays 10 bicycles & 8 motorcycles |
| Unit 4 | 40 spaces = 1space / 28 sqm including 2 disabled parking bays 10 bicycles & 4 motorcycles  |
| Unit 5 | 138 spaces = 1space / 40 sqm including 4 disabled parking bays 10 bicycles & 4 motorcycles |

| no. | date     | revision   | by |
|-----|----------|--|----|
| B   | 04.07.19 | Footpath adjusted to unit 4. Waste stores & parking ratios added | TW |
| A   | 01.07.19 | Layout adjusted following meeting with highways officer          | TW |

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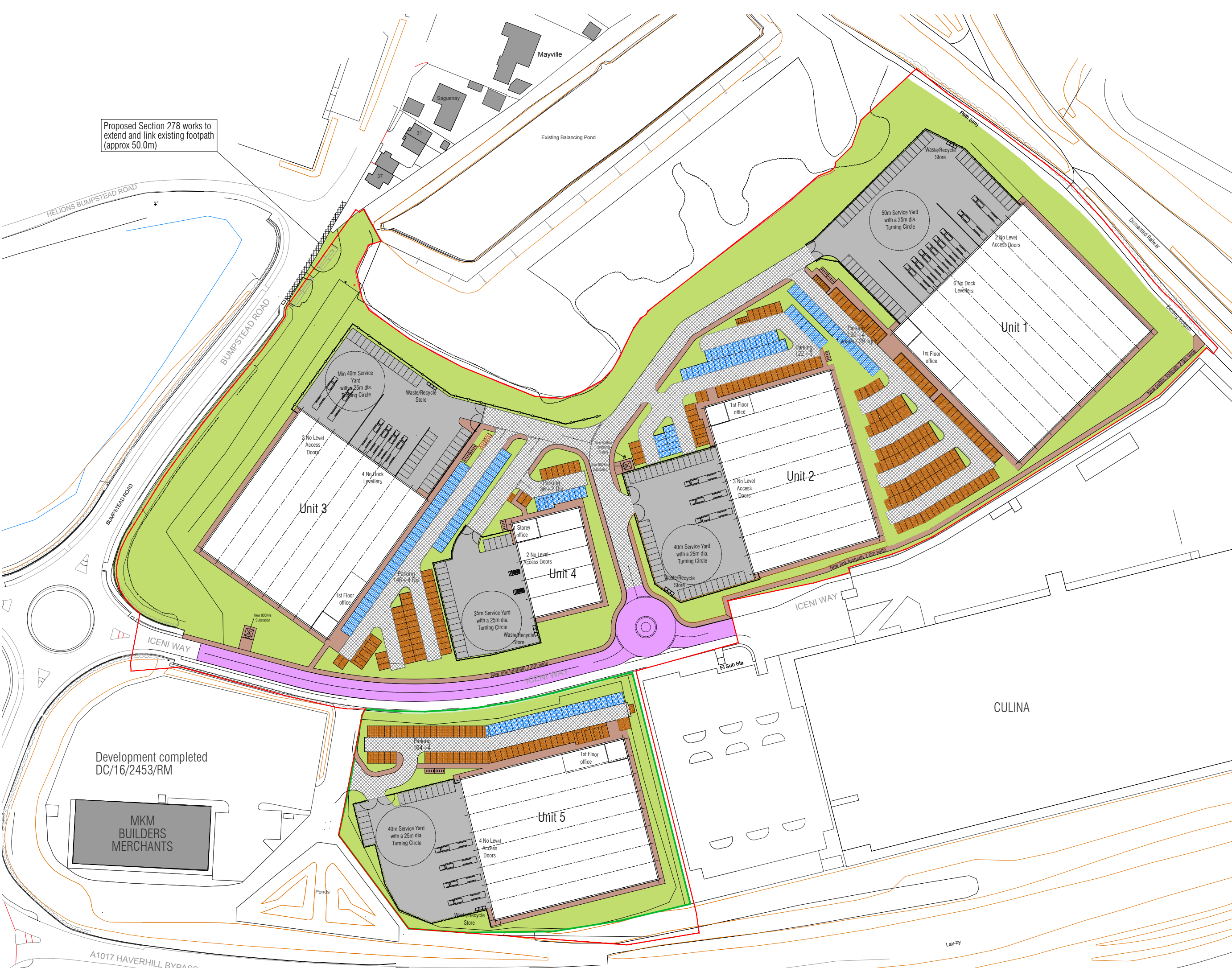
**TREBOR DEVELOPMENTS**

project  
**Haverhill Business Park**  
 Icen Way  
 Haverhill, Suffolk  
 CB9 7FD

Site Plan  
 With additional B2 Parking

| scale   | 1:500@A0 | drawn | TW         |
|---------|----------|-------|------------|
| checked | AS       | date  | 25/06/2019 |

no.  
**6502-700 B**  
 FOR INFORMATION



Proposed Section 278 works to extend and link existing footpath (approx 50.0m)

Development completed DC/16/2453/RM

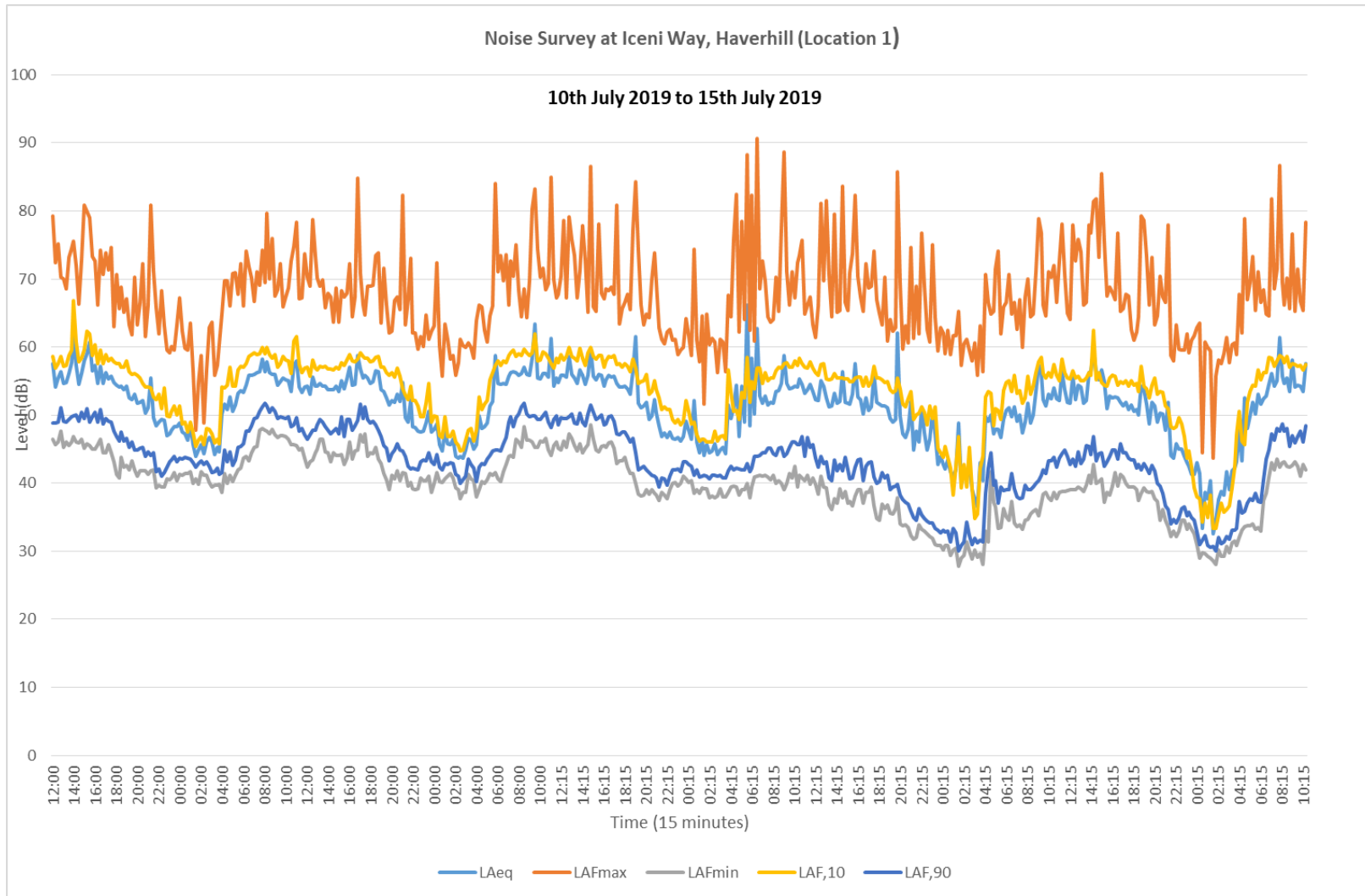
**MKM BUILDERS MERCHANTS**

A1017 HAVERHILL BYPASS

## **APPENDIX B**

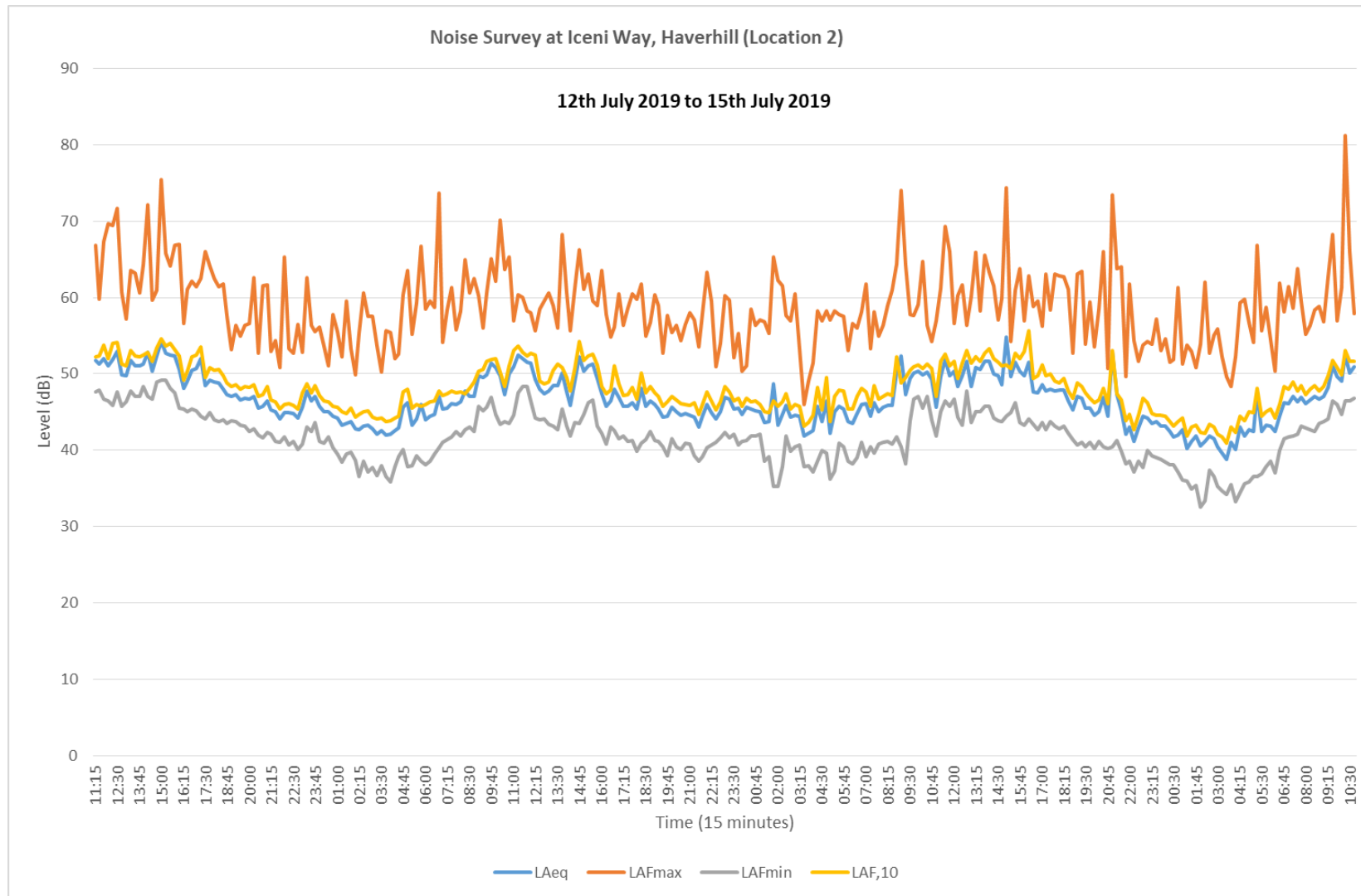
### **SURVEY DETAILS**

# Appendix B1: Survey Results NL 1





## Appendix B2: Survey Results NL 2



## **APPENDIX C**

### **CALCULATIONS**

### Servicing Calculations

| Receptor          | Unit      | Type of loading bay | Correction for number of units Day/night | Day time (0700 – 2300) | Night time (2300 -0700)                    |   |
|-------------------|-----------|---------------------|--|------------------------|--|---|
|                   |           |                     |  | L <sub>Aeq1hr</sub>    | L <sub>Aeq1hr</sub> /L <sub>Aeq15min</sub> | L <sub>Amax</sub><br><small>(arrival&amp;departure/unloading)</small> |
| 37 Bumpstead Road | 1         | Level Access        | +3/0dB                                   | 33 dB                  | 32/34 dB                                   | 42/46 dB  |
|                   |           | Dock Level          | +8/+5dB                                  | 32 dB                  | 31/34 dB                                   | 42/46 dB  |
|                   | 2         | Level Access        | +5dB/+3dB                                | 37 dB                  | 37/39 dB                                   | 43/48 dB  |
|                   |           | Dock Level          | +6/+3 dB                                 | 28 dB                  | 26/31 dB                                   | 42/44 dB  |
|                   | 4         | Level Access        | +3/0 dB                                  | 24 dB                  | 22/29 dB                                   | 36/40 dB  |
|                   |           | <b>Overall</b>      |  | <b>40 dB</b>           | <b>40/42 dB</b>                            | <b>48 dB</b>  |
|                   | Maryville | 1                   | Level Access                             | +3/0dB                 | 34 dB                                      | 33/36 dB  |
| Dock Level        |           |                     | +8/+5dB                                  | 33 dB                  | 32/36 dB                                   | 44/47 dB  |
| 2                 |           | Level Access        | +5dB/+3dB                                | 36 dB                  | 35/38 dB                                   | 43/47 dB  |
|                   |           | Dock Level          | +6/+3 dB                                 | 25 dB                  | 23/27 dB                                   | 37/40 dB  |
| 3                 |           | Level Access        | +3/0 dB                                  | 28 dB                  | 26/28 dB                                   | 37/40 dB  |
|                   |           | Dock Level          | +6/+3 dB                                 | 25 dB                  | 23/27 dB                                   | 37/40 dB  |
| 4                 |           | Level Access        | +3/0 dB                                  | 28 dB                  | 26/28 dB                                   | 34/38 dB  |
| <b>Overall</b>    |           | <b>40 dB</b>        | <b>39/42 dB</b>                          | <b>47 dB</b>           |  |   |
| Ashlea Road       | 1         | Level Access        | +3/0dB                                   | 33 dB                  | 32/34 dB                                   | 43/46 dB  |
|                   |           | Dock Level          | +8/+5dB                                  | 32 dB                  | 31/35 dB                                   | 43/46 dB  |
|                   | 2         | Level Access        | +5dB/+3dB                                | 25 dB                  | 25/25 dB                                   | 30/34 dB  |
|                   |           | Dock Level          | +6/+3 dB                                 | 19 dB                  | 17/21 dB                                   | 31/35 dB  |
|                   | 3         | Level Access        | +3/0 dB                                  | 22 dB                  | 20/23 dB                                   | 31/35 dB  |
|                   |           | Dock Level          | +6/+3 dB                                 | 19 dB                  | 17/21 dB                                   | 31/35 dB  |
|                   | 4         | Level Access        | +3/0 dB                                  | 27 dB                  | 24/26 dB                                   | 34/38 dB  |
| <b>Overall</b>    |           | <b>37 dB</b>        | <b>36/38 dB</b>                          | <b>46 dB</b>           |  |   |

## **APPENDIX D**

### **ACOUSTIC TERMINOLOGY**

## **Appendix D: Guide to Acoustic Terminology**

### Ambient noise:

The totally encompassing sound in a given situation at a given time. Most often described in terms of the index  $L_{AeqT}$ .

### Atmospheric absorption:

The excess acoustic attenuation, over and above that caused by distance attenuation, due to the interaction of an acoustic wave with air molecules.

### A-weighting:

A frequency weighting which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Units may be denoted as dB(A) or as sound pressure levels  $L_{pA}$  in dB. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound.

### Background noise:

See  $L_{A90}$ .

### Correction (for characteristic features of noise source):

A 5 dB penalty applied to the specific noise level if the noise being assessed “contains a distinguishable, discrete continuous note”, contains “distinct impulses”, or is “irregular enough to attract attention” (ref BS 4142:1997).

### Decibel (dB):

A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20  $\mu$ Pa, the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is only perceptible under controlled conditions.

### Façade noise level:

The noise level adjacent to the façade of a building, usually at a distance of 1 metre.

### Free-field noise level:

The noise level away from the façade of a building or other structure.

### Hertz (Hz):

Unit of frequency, equal to one cycle per second. Frequency is related to the pitch of a sound.

- $L_{A10T}$  : The A weighted level of noise exceeded for 10% of the specified measurement period, T. It gives an indication of the upper limit of fluctuating noise such as that from road traffic.  $L_{A10,18hr}$  is the arithmetic average of the 18 hourly  $L_{A10,1hr}$  values from 0600 hrs to 2400 hrs.
- $L_{A90T}$  : The A weighted noise level exceeded for 90% of the specified time period, T. In BS 4142:1997 it is used to define background noise level.
- $L_{AeqT}$  : The equivalent continuous sound level - the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period, T. This period is taken to be 16 hours (0700 hrs to 2300 hrs) and 8 hours (2300 to 0700 hrs) to describe day and night, in PPG 24  $L_{AeqT}$  is used to describe many types of noise and can be measured directly with an integrating sound level meter.
- SEL or  $L_{AE}$  : The sound exposure level is the A-weighted sound energy produced by a discrete noise event averaged over one second, no matter how long the event actually took. This allows for comparisons to be made between different noise events which occur for different lengths of time.