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# 170 Shawcross Business Park, Dewsbury

## Noise Impact Assessment

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## Executive Summary

Crossbay II (UK) Propco 1 Limited (Crossbay) has appointed Ramboll UK (Ramboll) to carry out a noise impact assessment in support of a planning application for a proposed development at the site currently occupied by Rixonway Kitchens, Churwell Vale, Shaw Cross Business Park, Dewsbury, WF12 7RD.

This noise assessment supports a full planning application for building subdivision to create two separate units of General Industrial (B2) and Storage and Distribution (B8) Use, associated re-orientation of car parking and service yards, erection of a noise barrier and the addition of associated ancillary office space.

The assessment presented within this report considers noise emissions from the proposed development in terms of noise break-out from the existing building, mobile on-site noise sources, and loading/unloading activities. This report also sets limits for external plant serving the building as based on the requirements set out by Kirklees Council. Assessment of changes in road traffic noise due to the proposed development are not considered within this report as no significant change in traffic volume generated by the Site is expected.

The assessment concludes that the site may operate in a way which results in no significant impacts on the nearest sensitive receptors. To achieve this, an acoustic barrier is proposed to the south of the site. The site must be operated considerately with noise levels of no greater than the allowable internal noise limits in this report. Any new external plant or machinery must comply with the noise limits set by Kirklees Council. Any plant or internal activities that are likely to exceed the noise limits within this report will require the tenant to introduce further noise control measures, supported by a noise assessment which can be submitted to Local Authority.

This assessment concludes there are expected to be no or negligible impacts and no or negligible effects are expected at the closest receptors considered with the mitigation measures proposed.

## 1. Introduction and Background

### 1.1 The Site

Crossbay has appointed Ramboll UK (Ramboll) to prepare a noise impact assessment for proposed amendments to an existing warehouse/manufacturing unit (Class B2/B8 use) with associated re-orientation of car parking and service yards, erection of a noise barrier and the addition of associated ancillary office space at Shawcross Business Park, Dewsbury (the 'Site').

The location of the unit this noise impact assessment relates to is shown on Edward Architecture drawing 1111-EA-A-P001 (Oct 2023) as presented in Figure 1.

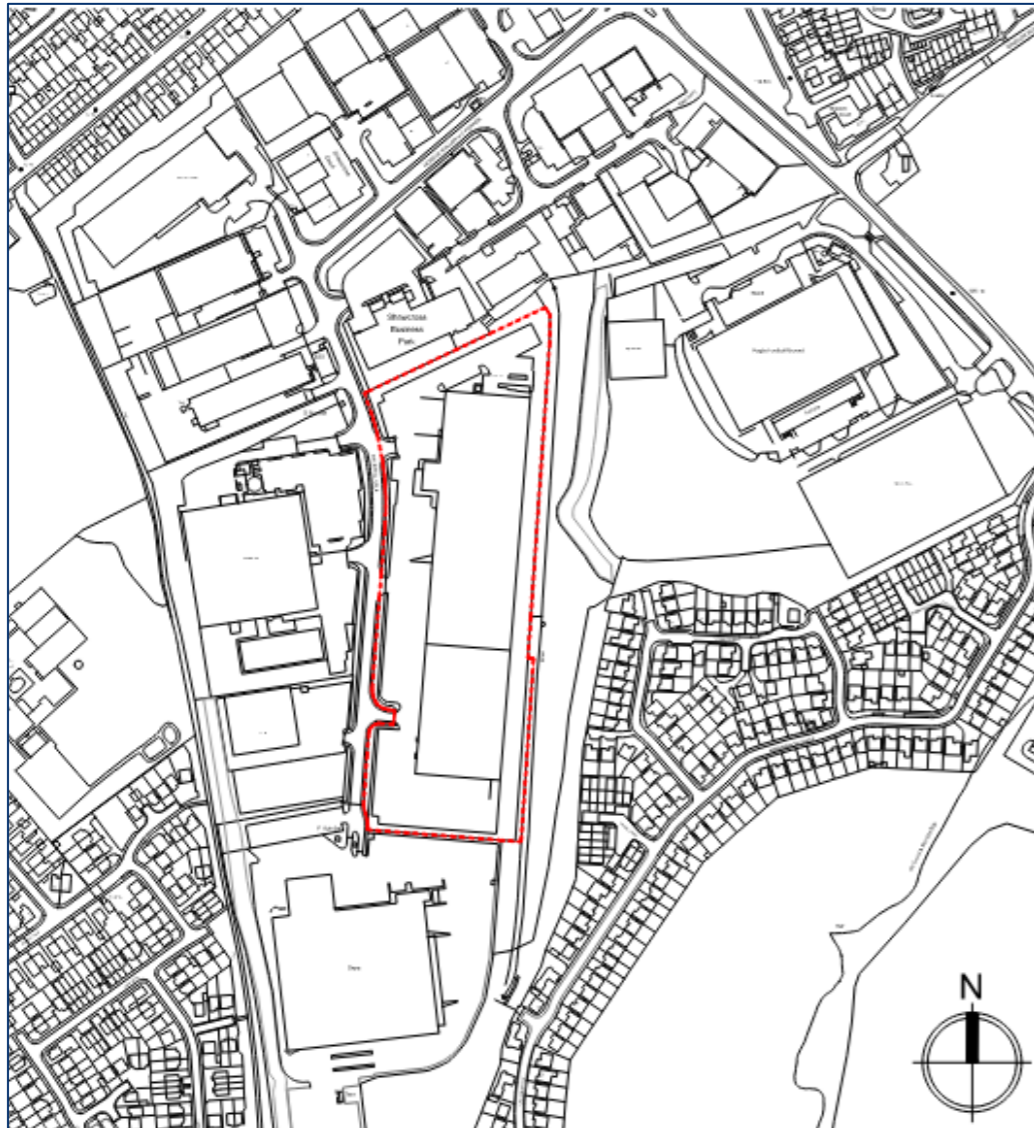


Figure 1 – Location of the existing 170 Shawcross Business Park unit

### 1.2 Purpose of this Noise Impact Assessment

The key aim of this noise impact assessment is to consider the ability of the existing unit and its associated operations to function in a way which does not result in noise impacts at the closest sensitive receptors.

This assessment seeks to support the following:

- A full planning application for building subdivision to create two separate units of General Industrial (B2) and Storage and Distribution (B8) Use, associated re-orientation of car parking and service yards, erection of a noise barrier and the addition of associated ancillary office space.

The information in this report is based on the current scheme proposals drawn by Edward Architects, and information from the wider design team.

Appendix 1 of this report includes an acoustics glossary to assist the reading of this report.

## 2. Planning Policy Context

### 2.1 National Planning Policy Framework, 2023

For commercial development, no specific noise criteria are set out in the National Planning Policy Framework (NPPF)<sup>1</sup> or in the Noise Policy Statement for England<sup>2</sup> (NPSE) to which it refers.

NPPF states the document:

*'sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.'*

In relation to noise, the NPPF states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to, or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of noise pollution.

Paragraph 185 of the NPPF states that:

*'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...'*

To achieve these aims, the NPPF refers to the explanatory note to the NPSE.

### 2.2 Noise Policy Statement for England, 2010

The NPSE sets out the long-term vision of Government noise policy to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

The NPSE outlines the following three aims for the effective management and control of environmental, neighbour and neighbourhood noise:

- 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.

<sup>1</sup> National Planning Policy Framework (publishing.service.gov.uk)

<sup>2</sup> Department of Environment, Food and Rural Affairs, 2010. Noise Policy Statement for England.

NPSE states:

*'The application of the NPSE should mean that noise is properly taken into account at the appropriate time. In the past, the opportunity for the cost effective management of noise has often been missed because the noise implications of a particular policy, development or other activity have not been considered at an early enough stage.'*

In relation to adverse effects, NPSE provides the following acronyms and definitions:

- **NOEL** – *No Observed Effect Level*. This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- **LOAEL** – *Lowest Observed Adverse Effect Level*. This is the level above which adverse effects on health and quality of life can be detected.
- **SOAEL** – *Significant Observed Adverse Effect Level*. This is the level above which significant adverse effects on health and quality of life occur.

Noise criteria are not attributed to the adverse effect levels but are expanded on in the Government's Planning Practice Guidance<sup>3</sup> (PPG).

### 2.3 Planning Practice Guidance

PPG is a web-based resource, which includes a section on noise. This resource provides guidance on how to determine the noise impact in terms of whether a significant adverse effect is likely to occur and/or whether a good standard of amenity can be achieved.

In line with the NPSE, PPG introduces the following concepts:

- Significant observed adverse effect level (SOAEL): This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- Lowest observed adverse effect level (LOAEL): this is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- No observed adverse effect level (NOAEL): this is the level of noise exposure where noise can be heard, but does not cause any change in behaviour, attitude or other physiological response.
- No observed effect level (NOEL): this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

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

<sup>3</sup> GOV.UK. 2018. Noise. [ONLINE] Available at: <https://www.gov.uk/guidance/noise--2>. [Accessed 12 May 2020].

| Perception                                       | Examples of outcome  | Increasing effect level             | Action                           |
|--|--|-------------------------------------|----------------------------------|
| <b>No Observed Effect Level</b>                  |  |                                     |                                  |
| <b>Not noticeable</b>                            | No effect  | No Observed Effect                  | No specific measures required    |
| <b>No Observed Adverse Effect Level</b>          |  |                                     |                                  |
| <b>Noticeable and not intrusive</b>              | 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    |
| <b>Lowest Observed Adverse Effect Level</b>      |  |                                     |                                  |
| <b>Noticeable and intrusive</b>                  | 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 |
| <b>Significant Observed Adverse Effect Level</b> |  |                                     |                                  |
| <b>Noticeable and disruptive</b>                 | 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                            |
| <b>Noticeable and very disruptive</b>            | 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                          |

Table 1 – PPG noise exposure hierarchy

## 2.4 Other Guidance

### 2.4.1 British Standard 4142:2014+A1:2019 Method for rating and assessing industrial and commercial sound

BS 4142:2014+A1:2019<sup>4</sup> (BS4142) provides a method for rating industrial and commercial sound and method for assessing resulting impacts upon people. The method is applicable to fixed plant installations, sound from industrial and manufacturing process and other associated activities.

Condition 12 of the Outline Permission directly refers to BS4142 as the relevant guidance for assessing new commercial businesses within the approved masterplan.

The basis of BS4142 is a comparison between the background noise level in the vicinity of residential locations and the rating level of the noise source under consideration. The relevant parameters in this instance are as follows:

- Background Level,  $L_{A90,T}$ : defined in the Standard as 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, and quoted to the nearest whole number of decibels;
- Specific Level,  $L_{Aeq,T}$ : the equivalent continuous ‘A’ weighted sound pressure level at the assessment location due to the specific sound source under consideration, over a given time interval, T; and
- Rating Level,  $L_{Ar,T}$ : the specific sound level plus any adjustment made for the characteristic features of the noise.

Potential impacts are predicted from the difference between the representative background level at a noise sensitive receptor and the rating level from the noise source considered. The standard suggests that the greater the difference, the greater the magnitude of impact.

Section 11 of BS4142 gives guidance for significance of impacts in reference to comparing rating noise levels against existing background noise levels:

- i. Typically, the greater this difference, the greater the magnitude of the impact;
- ii. A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- iii. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- iv. 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.

<sup>4</sup> British Standards Institute, 2014 and 2019. British Standard BS 4142+A1:2019: Methods for rating and assessing industrial and commercial sound. BSI.

In determining the significance of the impact, BS4142 requires a consideration of the context of the assessment i.e. the nature of the existing acoustic environment and the new noise source, and the sensitivity of the affected receptors.

In addition, Note 2 of BS4142 states:

*‘Adverse impacts may include but not be limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.’*

#### 2.4.2 Noise Characteristics and Penalties

BS4142 applies different penalties for noise sources that have an acoustic feature. These penalties are applied to the plant noise level where such features increase attention to the noise, such as tonality and intermittent operation.

BS4142 gives a guide to the level of penalty that should be applied, summarised below.

##### Tonality

- Tone just perceptible at the noise receptor: +2dB
- Tone clearly perceptible: +4dB
- Tone highly perceptible: +6dB

##### Intermittency

- Identifiable on/off conditions, readily distinctive against the residual acoustic environment: +3dB

#### 2.4.3 Acoustic penalties for this assessment

Since the current use of the site is a commercial unit and distribution hub, no acoustic characteristics penalties have been applied in the following assessment.

#### 2.4.4 Relating BS4142 to PPG Observed Adverse Effect Levels

Table 2 below aims to relate the PPG ‘Observed Adverse Effect Levels’ to the significance of impacts set out in BS4142 when comparing a noise source relative to the prevailing background noise levels.

| Noise level in relation to background noise   | Magnitude of Impact                       | Significance of Effect  |
|---|---|-------------------------|
| Predicted Rating level $L_{Ar,Tr}$ at receptor is -5dB or more below the prevailing Background level $L_{A90,T}$                        | <b>No effect (NOEL)</b>                   | Not significant         |
| Predicted Rating level $L_{Ar,Tr}$ at receptor is equal to background or up to -4.9dB below the prevailing Background level $L_{A90,T}$ | <b>Negligible (Below LOAEL)</b>           |                         |
| Predicted Rating level $L_{Ar,Tr}$ at receptor is between 0dB and +4.9 above the prevailing Background level $L_{A90,T}$                | <b>Minor (between LOAEL and SOAEL)</b>    |                         |
| Predicted Rating level $L_{Ar,Tr}$ at receptor is between +5dB and +9.9dB above the prevailing Background level $L_{A90,T}$             | <b>Moderate (between LOAEL and SOAEL)</b> | Potentially significant |
| Predicted Rating level $L_{Ar,Tr}$ at receptor is above the prevailing Background level $L_{A90,T}$ by +10 dB or more                   | <b>Major (Above SOAEL)</b>                |                         |

**Table 2 – Operational noise significance criteria**

Based on the table above, noise levels from the proposed development should be controlled to avoid any significant effects. Where practicable, it is proposed that noise emissions from the site should be no greater than existing background noise levels at the closest receptors.

### 3. Nearest Receptors

Figure 2 below shows the receptors closest to 170 Shawcross. The nearest receptors considered in the subsequent assessment are colour coded and detailed in Table 3.

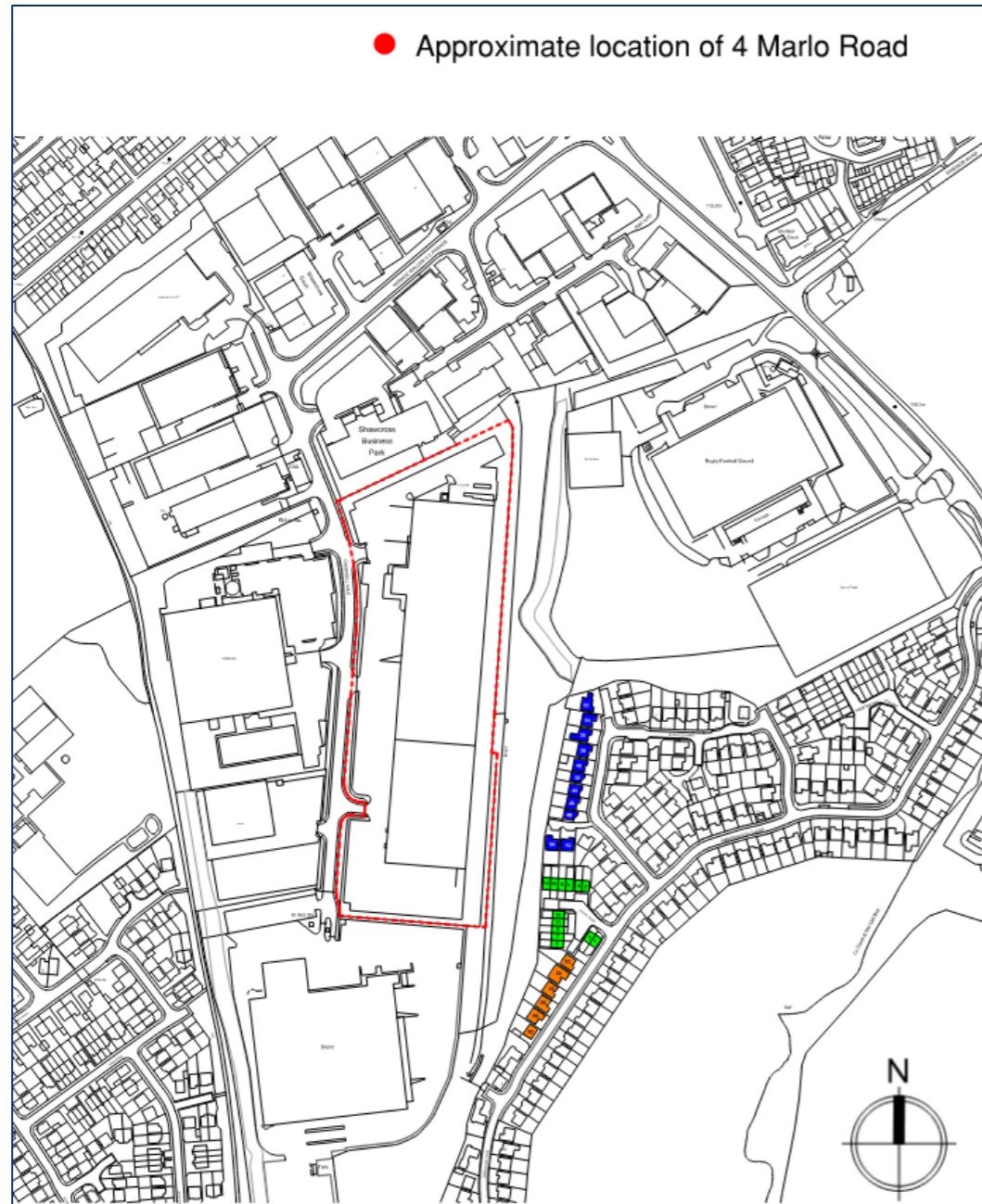


Figure 2: Approximate red line boundary showing location of closest receptors

| Receptor |                                   |
|----------|-----------------------------------|
|          | <p>Cedar Court (1 to 15)</p>      |
|          | <p>Amberwood Chase (52 to 66)</p> |
|          | <p>Rosewood Drive (32 to 52)</p>  |
|          | <p>4 Marlo Road</p>               |

Table 3 –Street Names for receptors closest to 17 Shawcross Business Park

## 4. Existing Noise Levels

### 4.1 Noise survey

The housing estate to the east of the Site was approved around ten years ago, and these properties have since been occupied for several years. Planning permissions for these properties was granted under the following application references, as informed by the Kirklees Council in the pre-application letter.

Land Adj to Dewsbury Rams RLFC, Owl Lane, Dewsbury (residential development to the east)

- 2014/90780: Erection of 206 dwellings, formation of community and sports facilities comprising floodlit practice rugby pitch, 2 floodlit multi use games areas, public open space, footways/cycleways, car parking and associated landscaping (Relocation of MUGA's) – Granted
- 2015/90201: Variation condition 3 (plans) on previous permission 2014/90780 for erection of 206 dwellings, formation of community and sports facilities comprising floodlit practice rugby pitch, 2 floodlit multi use games areas, public open space, footways/cycleways, car parking and associated landscaping for phase 1 of the development (64 dwellings) – Granted
- 2016/93543: Erection of 4 dwellings – Granted

An Environmental Statement (ES) for the housing estate was prepared by ID Planning in 2014 as part of application 2014/90780, and including a chapter relating to noise and vibration. The assessments within the ES were based on the results of an extensive baseline noise survey that captured the average, background, and maximum noise levels during periods representative of when the Rixonway Kitchens site was operational, prior to submission of the above application.

Figure 3 below shows the noise monitoring locations used for the 2014 baseline noise survey, with the then Rixonway Kitchens site highlighted in cyan.

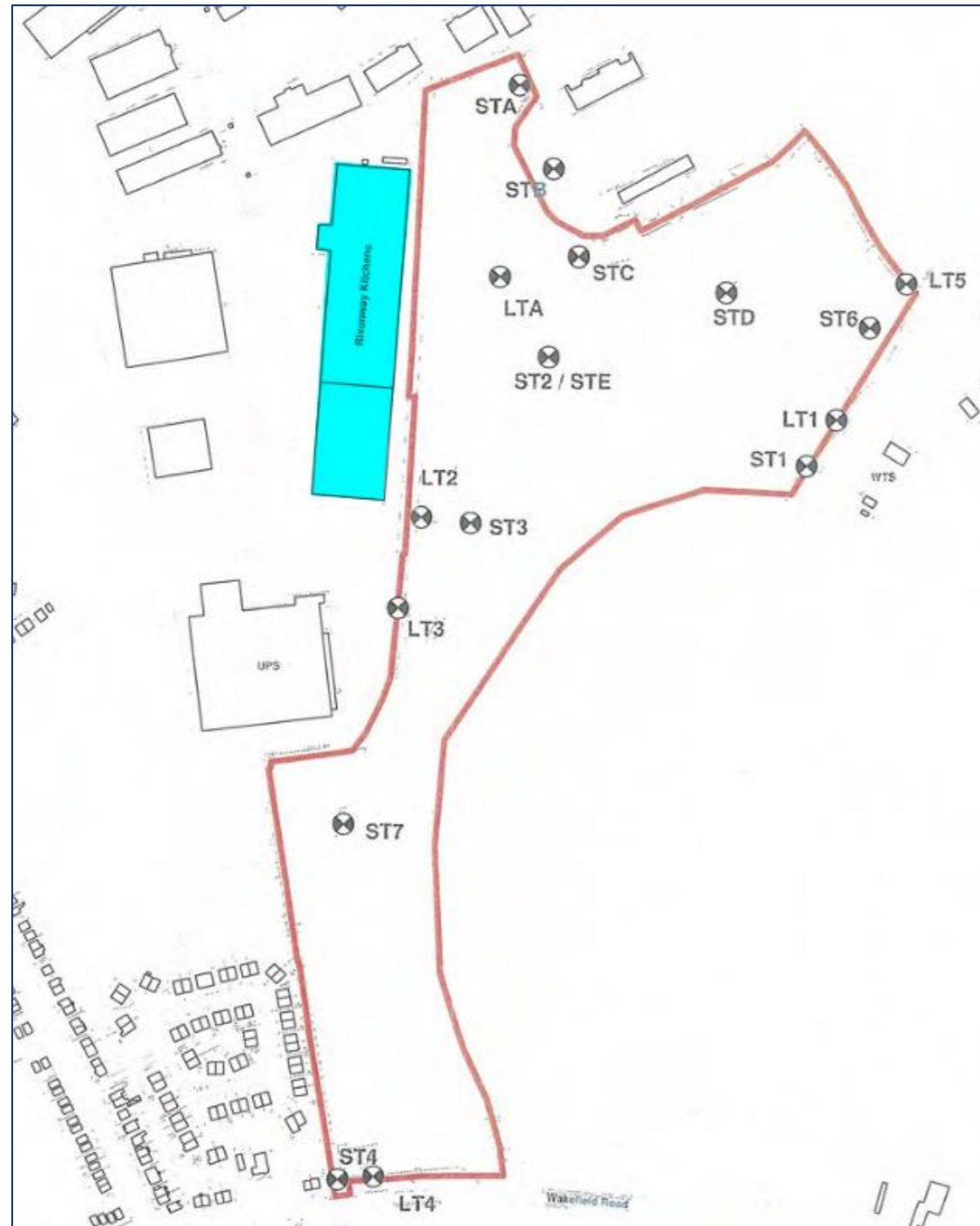


Figure 3 – Noise Monitoring Locations from 2014 survey

In chapter 9 of the Environmental Statement, noise levels are summarised for each of the measurement locations shown on Figure 3. In the absence of a graph or granular details to identify how noise levels change over the period of each day it is assumed the average ( $L_{Aeq}$  and  $L_{A90}$ ) parameters are an average of the data acquired during the relevant day and night-time periods observed.

The data from the ES are reproduced below for locations LT2, LT3, and ST3 which are representative of houses near to the Site.

| Location | Period, hh:mm      | Duration | Average $L_{Aeq}$ | Highest $L_{Amax}$ | Average $L_{A90}$ |
|----------|--------------------|----------|-------------------|--------------------|-------------------|
| LT2      | Day<br>0700-2300   | 63 hours | 45                | 81                 | 37                |
|          | Night<br>2300-0700 | 32 hours | 39                | 72                 | 33                |
| LT3      | Day<br>0700-2300   | 93 hours | 46                | 81                 | 39                |
|          | Night<br>2300-0700 | 48 hours | 44                | 73                 | 36                |
| ST3      | 1155               | 15 mins  | 46                | 73                 | 41                |
|          | 1210               | 15 mins  | 47                | 60                 | 43                |
|          | 2054               | 15 mins  | 44                | 58                 | 42                |
|          | 2352               | 15 mins  | 42                | 60                 | 39                |

Table 4 – Noise survey results from 2014 Environmental Statement

#### 4.2 Agreeing the Methodology with Kirklees Council Environmental Health

In October 2023, Ramboll discussed the existing noise survey data with Mr Mohammed Nasim of Kirklees Council Environmental Health.

During an online meeting with Mr Nasim, the 2014 noise data was reviewed. It was agreed that the data shows that daytime ambient noise levels,  $dB L_{Aeq,T}$ , were consistently around 45 dB in 2014, considered the noise monitoring results at locations LT2, LT3, and ST3, representing the closest dwellings to 170 Shawcross, and the nearby UPS site.

At night, noise levels are marginally lower at around 42 to 44  $dB L_{Aeq,8hour}$ .

The noise chapter of the ES identifies that the attenuation of a partially open window could be 12dB, and as a result identifies properties where suitable internal noise limits may be exceeded if ventilated solely using open windows. These properties are shown on Figure 9.9 of the ES Chapter, identifying where an alternative means of ventilation is required to achieve suitable internal noise limits.

In the meeting it was agreed that the existing ambient noise levels as defined in the ES Chapter are a suitable basis for assessment, since a present-day survey would not be representative of the operating conditions experienced up until recently. By controlling noise breakout from the Site to no more than these ambient noise levels are considered back-to-back with the Chapter and the basis of embedded mitigation allowed for at the nearest properties.

The introduction of a barrier to the southern service yard was discussed but it was agreed that this was to be determined through a robust noise impact assessment, to identify such additional mitigation is necessary.

Finally, it was agreed that a maximum operating limit for internal noise would be set out in the acoustics report to avoid any tenants potentially undertaking commercial processes with high internal noise levels. For example, presses or machine cutting processes. Mr Nasim identified that future tenants should satisfy themselves that the unit is suitable for their future operations and business activities prior to agreeing to lease of either unit. Therefore, identifying the internal operating noise limit will assist in such decision making.

### 4.3 Noise Limits

Based on the above, the following noise limits are proposed:

#### 4.3.1 Noise limits for new external plant and/or equipment

As outlined previously, Kirklees Council state the following requirement in relation to new plant and/or equipment:

*‘The combined noise from any fixed mechanical services and external plant and equipment shall be effectively controlled so that the combined rating level of noise from all such equipment does not exceed the background sound level at any time. “Rating level” and “background sound level” are as defined in BS 4142:2014 + A1:2019.’*

Therefore, the following noise limits apply to noise from fixed mechanical services and external plant:

| Description   | Day<br>07:00 to 23:00    | Night<br>23:00 to 07:00  |
|---|--------------------------|--------------------------|
| Existing background noise level at dwellings east of the Site (from 2014 survey)  | 38 dB L <sub>A90</sub>   | 35 dB L <sub>A90</sub>   |
| Cumulative `rating level`* limit for new plant and/or equipment   | 38 dB L <sub>Ar,Tr</sub> | 35 dB L <sub>Ar,Tr</sub> |
| * Applies to the expected specific sound level from new plant and machinery plus the acoustic character corrections, if required, and determined in accordance with BS 4142:2014+A1:2019. |                          |                          |

Table 5 – Limits on noise from new plant or equipment

#### 4.3.2 Operational noise limits

Industrial noise emissions from the site would also include noise from vehicle movements in the service yard and process noise break-out through the building envelope.

Table 5 below identifies the noise limits for site operations. This noise limit applies to the noise levels breaking out from either unit to the nearest properties including on-site vehicular movement in the service yards.

| Description   | Day<br>07:00 to 23:00  | Night<br>23:00 to 07:00 |
|---|------------------------|-------------------------|
| Site operations noise limit (breakout, on-site traffic) | 45 dB L <sub>Aeq</sub> | 43 dB L <sub>Aeq</sub>  |

Table 6 – Site operation noise limits

## 5. Noise Modelling and Assumptions

### 5.1 Noise modelling procedure

A 3D computer noise model has been prepared to calculate noise emissions from the building, including on site noise sources such as vehicular movements and loading/unloading at bay doors. Although the building is to be sub-divided the model is based on noise emissions from a single building for simplicity. The allowable internal noise levels developed using the model apply to both units.

Daytime and night-time specific sound levels are predicted in terms of the 1 hour equivalent continuous sound pressure level, dB  $L_{Aeq,1hour}$ , for a worst-case daytime hour and a worst-case night-time hour. These sound levels are predicted at a height of 4 m above ground at the nearest sensitive properties as per the locations detailed in Figure 2, representing first-floor windows.

The noise predictions within the model have been undertaken in accordance with *ISO 9613-2:1996 - Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*.

The surrounding ground to the unit is generally hard and reflective, with softer ground in between the unit and receptors. A reflection coefficient of 0.2 is used in the model for the warehouse footprint and remaining business park, and a reflection coefficient of 1.0 is used for the areas of soft ground between the development and sensitive receptors (0 = fully reflective, 1 = fully absorptive).

The height of the warehouse is based on the Architect's drawings and houses are modelled at 8 m.

The order of reflections in the model is set to 2. All buildings are inputted as fully reflective surfaces.

The noise emissions from loading activities and HGVs were modelling as point sources at a height of 1.0 m above ground level.

All topography is based on information provided by the wider project team or based on LIDAR data from the Government's website.

The location of the proposed noise barrier, which is 3m in height and has a mass of 10g/m<sup>2</sup> is shown below.

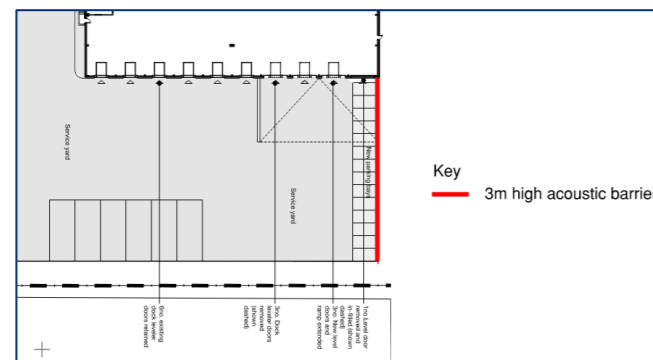


Figure 6 – Location of 3m high acoustic barrier

### 5.2 Noise sources

Once occupied the unit(s) have the potential to generate noise impacts on the nearest sensitive receptors from various noise sources within the building and by mobile noise sources in the service yard. This section identifies each noise source modelled and the data used in the subsequent noise model.

### 5.3 Noise breakout from the warehouse building

Internal noise levels within existing similar B2/B8 units have been measured by Ramboll elsewhere within the UK for similar projects. Internal activities included moving items around the unit, conveyor belts, and general warehouse activities.

Table 7 below presents the spectrum used within the noise model as a basis of noise breakout.

| Overall, dB $L_{Aeq}$ | Indoor sound pressure level limit, dB @ octave band centre frequency |     |     |     |    |    |    |    |
|-----------------------|--|-----|-----|-----|----|----|----|----|
|                       | 63   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| 80                    | 82   | 80  | 80  | 80  | 75 | 70 | 70 | 65 |

Table 7 – Noise levels for a typical B2/B8 unit

#### 5.3.1 Building fabric

The elevations for the unit are shown on Edward Architecture drawing *1111-EA-A-P006 - Proposed Roof Plan, Elevations and Section A\_A*. This shows the proportion of masonry and cladding used in the construction of the building envelope. The construction of the eastern elevation is mostly cladding.

Cladding panels are understood to be a standard insulated panel type such as Kingspan, with the roof constructed in a similar way and including polycarbonate rooflights (approx. 10% of roof area). Loading doors are an insulated sectional panel type.

All other building elements such as pedestrian doors are understood to be solid core or steel doors which will be well fitting and generally maintain the acoustic performance of the main envelope when closed.

Table 8 below identifies the main components for the building envelope and typical acoustic performances based on test data from manufacturers of these products. Since the eastern elevation is mostly cladding, the building has been modelled as cladding panels rather than a composite of masonry and cladding.

| Description                             | Overall, dB R <sub>w</sub> | Sound reduction, R, dB @ octave band centre frequency |     |     |     |    |    |     |     |
|---|----------------------------|---|-----|-----|-----|----|----|-----|-----|
|   |                            | 63  | 125 | 250 | 500 | 1k | 2k | 4k  | 8k  |
| Insulated cladding panel                | 25                         | 20  | 18  | 20  | 24  | 20 | 29 | 39  | 47  |
| Triple skin roof light                  | 24                         | 11  | 15  | 19  | 21  | 19 | 25 | >35 | >35 |
| Insulated sectional panel door (Closed) | 31                         | 11*   | 23  | 25  | 25  | 30 | 43 | >40 | >40 |

Table 8 – Sound insulation of building envelope main constructions as used in the noise model

\* estimated

Note – The above sound insulation performance are considered basic provisions

5.3.2 On site mobile noise sources

Crossbay has provided details of the predicted number of vehicles on site during various times of the day and night.

It is expected that:

Up to 10 HGVs could access the service yards to Unit A and Unit B during any single one-hour period during the day.

Up to 5 HGVs could access the service yards to Unit A and Unit B during any single one-hour period at night.

Figures 4 and 5 below show the assumed routes to the loading bay doors for Unit A and Unit B. An 'X' is shown at assumed loading bay in use during the day and night-time scenarios considered. The number of HGVs on each route corresponds to the number of bays accessed.

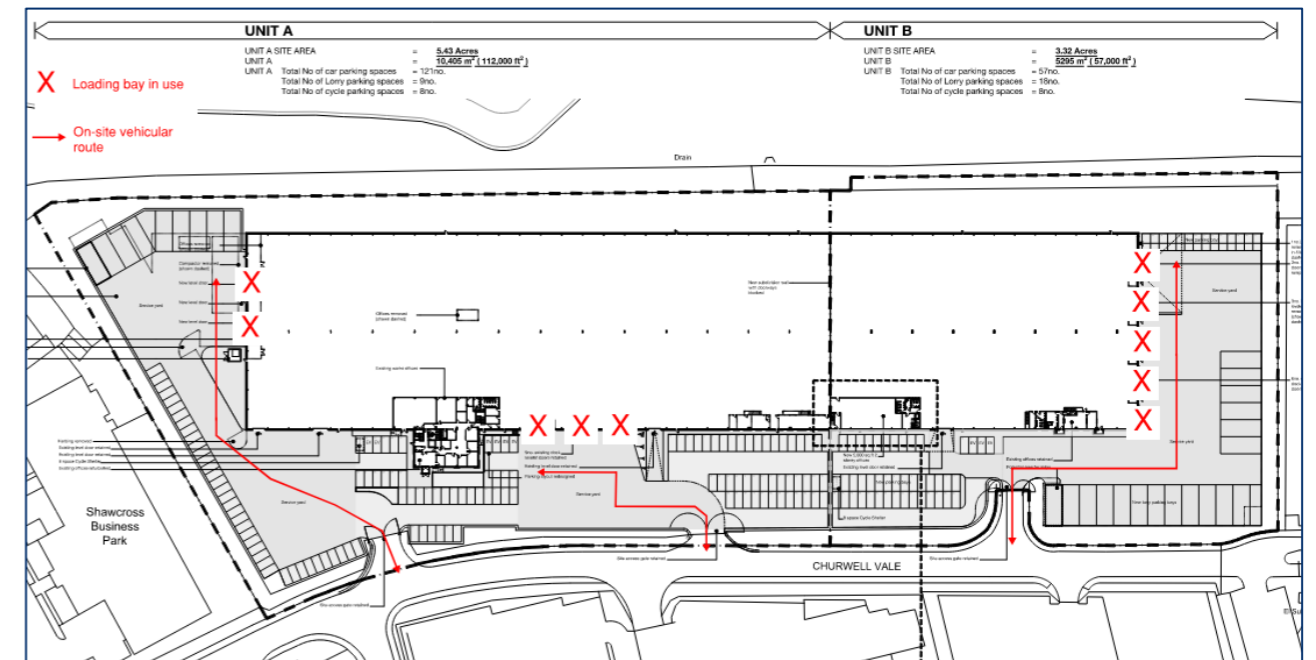


Figure 4– Daytime route and assumed location of typical loading activities

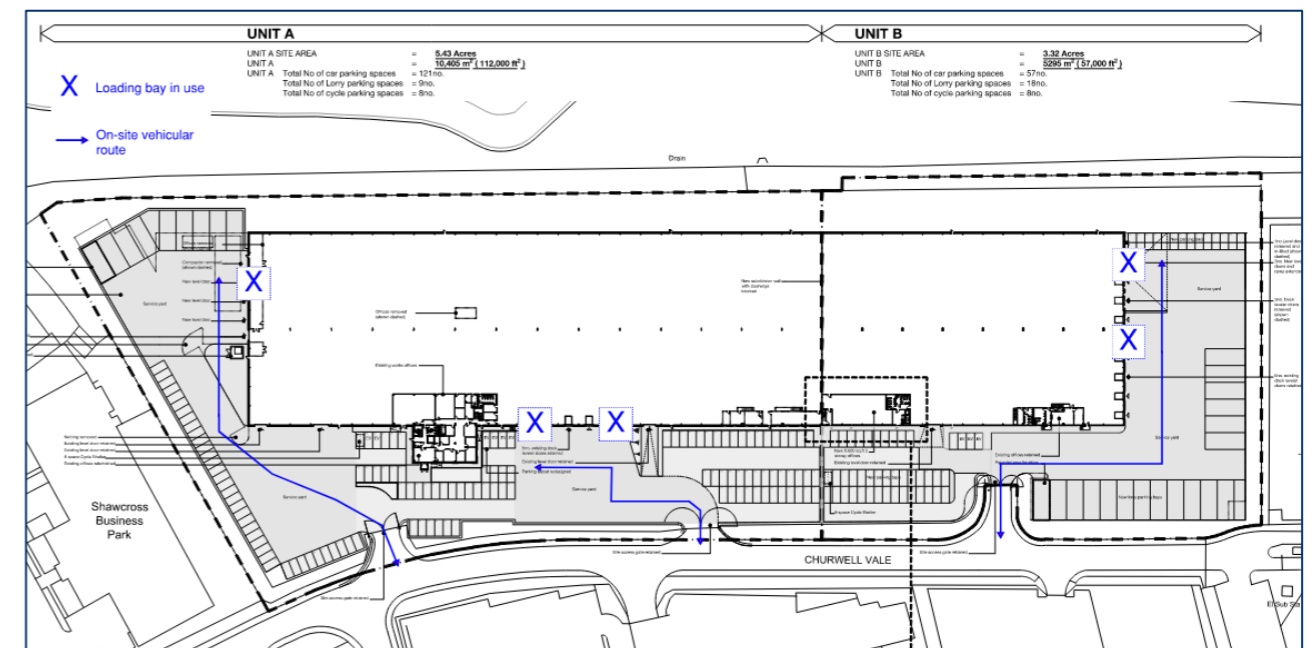


Figure 5– Night-time route and assumed location of typical loading activities

To assess the impact of HGVs on site, Ramboll has used archive data as presented in Table 9 below, which is input as a moving point source along the routes shown in the above figures. For each scenario considered, the HGV would enter the site and load/unload at a bay, then exit site using the same route.

| Area/Plant Item | Noise level                        | Reference  |
|-----------------|------------------------------------|--|
| On site HGV     | 99 dB $L_{WA}$ moving point source | Measurement at an existing site, representative of HGV moving up to 9mph on site. Measurement taken at 1.5m above hard ground, and 5m from the HGV noise source. |

Table 9 – Sound power levels for onsite HGVs

### 5.3.3 Loading and unloading activities

Ramboll has measured noise levels associated with loading and unloading activities at other sites within the UK as well as referred to online resources for similar source noise levels.

Table 10 below identifies typical noise levels associated with loading and unloading activities. Based on observations of previous commercial businesses, these types of activities would be activity based for around 50% of the time.

| Activity                         | Noise level, dB $L_{Aeq}$ |
|----------------------------------|---------------------------|
| Unloading/loading @ 10m from HGV | 65                        |

Table 10 – Noise levels for typical loading and unloading activities

To provide a robust assessment, the daytime and night-time models assume 10 loading bay/doors may be in use concurrently at any time during the day, and 5 in use at night. The nearest bay to the properties to the east has been assumed in use for both day and night models to represent worst case.

The noise model assumes the noise source is localised at the bay/door and rear of the HGV. Since the HGV trailer bodies back up to or partially into the building, the model includes the trailer bodies as would be expected.

## 6. Assessment

### 6.1 Noise levels from onsite operations

#### 6.1.1 Day and Night-time Scenarios

Day and night scenarios have been modelled as per Table 11 below, with the predicted noise levels shown in Table 12 and graphically on the noise contours presented in Appendix 2:

|   |   |
|---|---|
| <p><b>Daytime</b><br/>Any single hour period between 07:00 to 23:00</p> | <p><b>Model inputs</b></p> <ul style="list-style-type: none"> <li>Internal noise levels of 80 dBA</li> <li>10 HGV arriving</li> <li>10 HGVs departing</li> <li>HGVs loading/unloading at 10 bays</li> </ul> |
| <p><b>Night</b><br/>Any single hour period between 23:00 to 07:00</p>   | <p><b>Model inputs</b></p> <ul style="list-style-type: none"> <li>Internal noise levels of 80 dBA</li> <li>5 HGV arriving</li> <li>5 HGVs departing</li> <li>HGVs loading/unloading at 10 bays</li> </ul>   |

Table 11 – Model inputs for day and night models

### 6.1.2 Day and Night-time Scenarios

The day and night, scenarios have been re-modelled with the provision of an acoustic barrier described above. Within this model, the internal noise levels within the units have been increased to understand the maximum allowable internal noise levels once occupied.

The noise level predictions are summarised below with the noise contours are presented in Appendix 2.

| Receptor                       | Period  | Predicted Operational noise (excluding plant noise), dB LAeq | Proposed noise limit, dB LAeq | Difference |
|--------------------------------|---------|--|-------------------------------|------------|
| Closest: 12 and 15 Cedar Court | Daytime | 45   | 45                            | ≤ 0        |
|                                | Night   | 43   | 43                            | ≤ 0        |
| All others                     | Daytime | ≤ 42   | 45                            | ≤ -3       |
|                                | Night   | ≤ 41   | 43                            | ≤ -2       |

**Table 12 – Predicted noise levels at the nearest sensitive receptors**

These contours identify that noise levels at all dwellings to the east of the Site are no greater than the limits shown in Table 5. A high proportion are below these limits.

Where predicted noise levels are not greater than the limits in Table 5, noise levels are equal to existing noise levels. Noise may be audible but is not expected to cause any change in behaviour or attitude.

The models presented in Appendix 3 are also based on elevated internal noise levels of 80 dBA, which has been derived as a 6dB increase on the internal noise levels measured in a similar commercial unit in order to derive the limitations of the inherited building envelope.

It should be noted that this would represent noise levels at the Lower Exposure Action Value of the 2005 Control of Noise at Work Regulations whereby hearing protection is not specifically mandatory but must be available together with suitable health and safety training. At these levels, someone working in such an environment would need to raise their voice to communicate. For most B2/B8 uses such noise levels are not expected.

### 6.1.3 Specific Requirements for Future Tenants

The following considerations should be taken by future tenants taking occupation of either unit. This is to provide ongoing best practice and practicable means of reducing operational noise.

- The noise limit in Table 13 represents the reverberant sound pressure level that can be controlled by the existing building construction.

| Overall, dB LAeq | Indoor sound pressure level limit, dB @ octave band centre frequency |     |     |     |    |    |    |    |
|------------------|--|-----|-----|-----|----|----|----|----|
|                  | 63   | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| 80               | 82   | 80  | 80  | 80  | 75 | 70 | 70 | 65 |

**Table 13 – Maximum allowable internal noise levels**

Some internal processes or machines are likely to be acceptable where marginally greater than this limit due to the volume of the units, and incident sound pressure levels on the internal walls are likely to be lower, in practice, than measured in the middle of the volume. Any specifically noisy operations proposed by future tenants will need to be confirmed suitable by an acoustic consultant, which may identify noise control measures are necessary.

- Doors and loading bay doors should be closed when not in use.
- On-site vehicles should shut down engines once parked or within a loading bay.
- The bays furthest from the houses to the east should be used first, particularly overnight to assist with the reduction of noise over distance.
- Where practicable, ‘bat wings’ should be fitted to bay doors to help minimise noise breakout from within the unit while a HGV is unloaded or loaded.
- Reversing alarms should be carefully managed during periods outside of normal working hours, particularly overnight.
- Any penetrations made in the façade of the unit must be considered with respect to noise. Duct terminations, or vent grilles for example should be acoustically attenuated.
- All visitors and vehicle operatives should be briefed on considerate ways of working, which may also include signage, and a management plan. The plan should seek to raise awareness for noise that can occur during raised voices, slamming of doors, and the way in which vehicles are loaded or unloaded.

### 6.2 Noise levels at 4 Marlo Road

The noise modelling exercise identifies that noise levels at 4 Marlo Road, to the north, would be 25 dB LAeq during the worst-case daytime hour and 24 dB LAeq during the worst-case night-time hour. These predicted levels are significantly lower than the 28 dB LAeq limit set in Condition 22 of 2001/92939.

### 6.3 External noise limits

The nearest sensitive properties to the unit(s) are to the east as shown on Figure 2.

Using the noise survey data from the previous ES, the following noise limits apply to plant serving the development. These relate to noise emissions, as assessed using the methodology of BS4142 at the nearest sensitive receptors.

Where the Rating level -5dB below background this is expected to result in 'no effects' (NOEL). Where the Rating level is no greater than the background level this is expected to result in a negligible impact (NOAEL).

| Receptor                           | Rating noise limit at nearest sensitive receptor, dB L <sub>Ar,Tr</sub> |                               |
|------------------------------------|---|-------------------------------|
|                                    | Daytime, 1h<br>(0700 – 2300)  | Night, 15min<br>(2300 – 0700) |
| Residential properties to the east | 38  | 35                            |

Table 14 – Noise limits for plant

The above limits provide an initial basis for selecting select plant items and identify suitable placement of new plant serving the scheme.

Note - Where plant has any acoustic characteristics then this must be factored into the calculations of proposed selections by the tenant of the unit(s) the plant serves.

While the noise survey data from the ES does not provide any detail on the way background noise levels change during the day or night, it is important to recognise achieving noise limits in Table 14 above would equate to internal noise levels of around 26 dB L<sub>Aeq</sub> during the day and 23 dB L<sub>Aeq</sub> at night where ventilation is provided via a partially open window (allowing for 12 dB reduction). These noise levels are some 9dB and 7dB below the internal noise limits of British Standard 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (BS 8233:2014) for living rooms and bedrooms respectively as shown below.

| Space        | Upper limit for internal ambient noise level dB L <sub>Aeq,T</sub> |                          |
|--------------|--|--------------------------|
|              | Daytime (07:00-23:00)  | Night-time (23:00-07:00) |
| Bedrooms     | 35   | 30                       |
| Living rooms | 35   | -                        |

Table 15 – BS 8233:2014 Internal ambient noise criteria for habitable rooms

## 7. Conclusion

This assessment has been prepared to support a planning application for the scheme proposals, which is for the subdivision of an existing building to create two separate units of General Industrial (B2) and Storage and Distribution (B8) Use, associated re-orientation of car parking and service yards, erection of a noise barrier and the addition of associated ancillary office space.

This assessment considers noise emissions from the proposed development in terms of noise breakout from the existing building, mobile on-site noise sources, and loading/unloading activities. This report also sets limits for external plant serving the building as based on the requirements set out by Kirklees Council.

The assessment concludes that the site may operate in a way which results in no significant impacts on the nearest sensitive receptors. To achieve this, the site must include an acoustic barrier to the south of the site as shown in this report, operate considerately and to no greater than the allowable internal noise limits in this report, and install plant that complies with the noise limits set by Kirklees Council. Any plant or internal activities that are likely to exceed the noise limits within this report will require the tenant to introduce further noise control measures, supported by a noise assessment which can be submitted to Local Authority.

This assessment concludes there are expected to be no or negligible impacts and no or negligible effects are expected at the closest receptors considered with the mitigation measures proposed.

### 7.1 Statement of Uncertainty

This assessment considers noise emissions from expected site operations, and sets limits for future plant and machinery. The information within this report reflects Ramboll's understanding of how the site will operate, as informed by Crossbay, the Architect, and design team.

Baseline noise levels are based on the 2015 Environmental Statement. Since the site was operational at the time, these are considered a suitable baseline for the assessment within this document. Use of these noise levels has been agreed with Kirklees Council.

Specific building construction are not provided for the existing unit. To provide a robust assessment, a basic provision for building constructions is allowed for in this assessment.

This assessment is based on noise model inputs and archive noise data from similar operations elsewhere in the UK. Actual use of the site could be different to the assumptions presented within this report. Therefore, a list of specific requirements for future tenants is listed to assist with ongoing best practice and reducing unnecessary noise from site activities.

## Appendix 1 – Acoustic Glossary

**Table A1-1: Glossary of acoustic terminology**

| Terminology               | Definition   |
|---------------------------|--|
| Ambient sound level       | The total sound pressure level in a given position from all surrounding sources of noise, both near and far. Normally expressed as an equivalent continuous A-weighted sound pressure level, dB $L_{Aeq,T}$ .  |
| A-weighting               | The process of weighting the observed sound pressure level at each frequency band, to approximate the sensitivity of the human ear to sounds of different frequencies. A-weighted sound pressure levels are expressed as dB(A) or dB $L_{Ap}$ .  |
| Decibel                   | A logarithmic value quantifying the sound pressure at a specified position or sound power, relative to a reference sound pressure or sound power (20 $\mu$ Pa for sound pressure, $10^{-12}$ W for sound power).   |
| Façade                    | A sound monitoring position is a "façade" position when it includes a strong reflection from an adjacent building or structure. This corresponds with a position that is between 1 and 2 metres away from a reflecting building or structure.  |
| Free-field                | A sound monitoring position is a "free-field" position when it is not affected by sound reflections from surrounding buildings and structures. This corresponds with a position at least 3.5 metres away from reflecting buildings or structures.  |
| Frequency                 | The number of oscillations per second of a vibrating particle in a medium, measured in Hertz (Hz) or cycles per second.  |
| $L_{A90,T}$               | The A-weighted sound pressure level exceeded during 90% of the time interval, T. Typically used to quantify the background sound level at a specified position.  |
| $L_{Aeq,T}$               | The equivalent continuous A-weighted sound pressure level over a time interval, T. This is an energy-average sound pressure level over the specified time period.  |
| $L_{AFmax,T}$             | The maximum A-weight sound pressure level during a specified time interval, T. Measured with "fast" time-weighting (which approximates the time-response of the human ear).  |
| Noise                     | Unwanted or undesirable sounds observed by a listener.   |
| Octave band               | A frequency band used in acoustical measurements. An octave is a frequency interval between two sounds where the frequency of the lower sound is half the frequency of the upper sound. The human hearing range is divided into ten logarithmically equal frequency divisions called octave bands, with centre-band frequencies as follows:<br><br>(16 Hz, 32 Hz,) 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, 16000 Hz. |
| Rating level, $L_{Ar,Tr}$ | The specific sound level plus a correction accounting for acoustic features such as impulses, tones, intermittent features, or any other characteristics that draw more attention to the sound source.   |

| Terminology          | Definition  |
|----------------------|---|
| Residual sound level | The equivalent continuous A-weighted sound pressure level of the ambient sound remaining at a specified position when the specific sound source (the sound source being assessed) does not contribute to the ambient sound.   |
| Reverberation        | The reflection of sound from room surfaces, resulting in the prolongation or persistence of a sound in a room.  |
| Reverberation time   | Time, in seconds, required for the sound pressure level in a room to decrease by 60 dB after a sound source has stopped. Long reverberation times are present in large empty rooms with hard surfaces (e.g. a cathedral); short reverberation times are present in smaller rooms with soft furnishing (e.g. typical living room, a recording studio). |
| Sound                | The vibration, or oscillation, of particles in a medium, such as air, which may be detected by the human ear.   |
| Sound absorption     | The reduction of sound energy by transmission through an absorbing medium such as an "acoustically soft" material or surface which results in a reduced reflection of incident sound.   |
| Sound insulation     | The ability of architectural elements or structures to reduce the transmission of sound, predominantly due to the reflection of sound incident on the element or structure. Typically measured as the difference in sound pressure levels between a "source" room containing a loudspeaker and an adjacent "receiving" room.                          |
| Sound power level    | A logarithmic measurement that quantifies the total sound power of a source emitted in all directions relative to a reference sound power ( $W_{ref} = 1$ pW or $10^{-12}$ W). Equal to $10 \log_{10} (W / W_{ref})$ and expressed in decibels.   |
| Sound pressure level | A logarithmic measurement that quantifies the sound pressure at a specified position relative to a reference sound pressure ( $p_{ref} = 20$ $\mu$ Pa). Equal to $20 \log_{10} (p / p_{ref})$ and expressed in decibels.  |
| Specific sound level | The equivalent continuous A-weighted sound pressure level at a specified position due to the specific sound source (the sound source being assessed).   |

## Appendix 2 – Day and Night Contours



**Legend**

- Buildings
- HGV Movements

**dB LAeq**

- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >65

3m high acoustic barrier ( $\geq 10\text{kg/m}^2$ )

---

Figure Title  
**Daytime Noise Contours at 4m**

Project Name  
**Shawcross Logistics**

|  |                          |
|--|--------------------------|
| Project Number<br><b>RUK2023N00237</b> | Figure No.<br><b>1</b>   |
| Date<br><b>November 2023</b>           | Prepared By<br><b>MB</b> |
| Scale<br><b>1:1,300 @A3</b>            | Issue<br><b>1</b>        |

Client  
**Crossbay II (UK) Propco 1 Limited**

Daytime with Barrier.pagx



**Legend**

- Buildings
- HGV Movements

**dB LAeq**

- 0 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- >65

3m high acoustic barrier ( $\geq 10\text{kg/m}^2$ )

Figure Title  
**Night-time Noise Contours at 4m**

Project Name  
**Shawcross Logistics**

|                                 |                   |
|---------------------------------|-------------------|
| Project Number<br>RUK2023N00237 | Figure No<br>2    |
| Date<br>November 2023           | Prepared By<br>MB |
| Scale<br>1:1,300 @A3            | Issue<br>1        |

Client  
**Crossbay II (UK) Propco 1 Limited**



Night-time with Barrier.pagx