



289-297

Ballards Lane,  
London, N12  
8NP

## Noise Impact Assessment

September  
2021



Ref: 21-8484  
Rev A

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## 1. Executive Summary

An assessment has been carried out of the present noise climate and proposals for **289-297 Ballards Lane, London, N12 8NP** in order to discharge Planning Conditions 4, 5 and 6 (application ref.19/0948/PNO) for the conversion of offices to residential use and Conditions 5 and 6 (application ref. 18/6660/FUL) for the conversion of a café to residential use at the same premises. The approved scheme involves the redevelopment of an existing café and office spaces to 38 residential units over 3 floors.

The site is located on Ballards Lane in a predominantly residential area, with some commercial properties along Ballards Lane. The noise climate of the area was dominated by road traffic along Ballards Lane as well as the surrounding road network.

The assessment is based on the results of a noise measurement survey that has been carried out over a 24-hr period at the proposed development site and has considered the advice of local and national planning policy and best practice guidance.

It has been identified that the requirements of the Local Authority in respect of internal noise levels can only be achieved through careful consideration of the building envelope. The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.**
- **For the front façade, and any side façade with a habitable room with a clear line of sight to Ballards Lane:**
  - **A double glazing system in a 6/12/6.4 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 34 dB  $R_w$ .**
  - **Appropriately specified acoustic vents, with a  $D_{n,e,w}$  of at least 40 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**
- **For the side and rear façades:**
  - **A typical double glazing system in a 4/12/4 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 25 dB  $R_w$ .**
  - **Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 31 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. **It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, as such Planning Condition 4 (application ref. 19/0948/PNO) and Planning Condition 5 (application ref. 18/6660/FUL) can be discharged.**

The assessment has also shown that the internal sound insulation at the development should achieve the requirements of ADE, subject to a high quality of workmanship and should achieve the

requirements of Planning Condition 6 (application ref. 18/6660/FUL). That planning condition can therefore be discharged.

**It is important to note that, as with any construction project, the ability to meet the specification will rely upon the quality of the built structure.** As such the works should be carried out to a high standard of workmanship to ensure that any sound insulation measures are not breached, for example by installing a rigid connection across an isolated connection (such as resilient bars). Additionally, any joints between different walls and the party wall and the ceiling/floor should be carefully filled with acoustic mastic.

Maximum noise rating levels for the proposed plant to achieve the requirements of Planning Conditions 5 and 6 (application ref. 19/9480/PNO) have been provided in line with the BS 4142:2014 methodologies. **Syntegra will carry out a detailed plant noise assessment once final plant selections are made to ensure that total plant noise levels at receptors do not exceed the identified requirements.**



## 2. Introduction

This report has been prepared to support the planning application for the approved development at **289-297 Ballards Lane, London, N12 8NP**. The proposed scheme involves the redevelopment of an existing café and office spaces to residential, comprising 38 residential units over 3 floors.

The report assesses, through on-site noise measurements, the impact of the existing noise climate on the proposed development.

A glossary of acoustic terminology is provided in **Appendix 1**.

The site is located on Ballards Lane in a predominantly residential area, with some commercial properties along Ballards Lane. The noise climate of the area was dominated by road traffic along Ballards Lane as well as the surrounding road network. The location of the approved development site is provided in **Figure 2.1**.



Figure 2.1: Site Location

### 3. Planning Conditions

Planning Permission has been granted by the London Borough of Barnet (LBB) for two separate Planning Applications for the site.

Planning permission for the office conversion was granted by LBB on 27<sup>th</sup> September 2019 (application ref. 19/0948/PNO) and Conditions 4, 5 and 6 have been set as part of their decision which are provided below.

#### “Condition 4

*a) No development other than demolition works shall take place on site until a noise assessment, carried out by an approved acoustic consultant, which assesses the likely impacts of noise on the development and measures to be implemented to address its findings has been submitted to and approved in writing by the Local Planning Authority. The report shall include all calculations and baseline data, and be set out so that the Local Planning Authority can fully audit the report and critically analyse the content and recommendations*

*b) The measures approved under this condition shall be implemented in their entirety prior to the commencement of the use/first occupation of the development and retained as such thereafter.*

*Reason: To ensure that the amenities of occupiers are not prejudiced by road traffic and/or mixed use noise in the immediate surroundings in accordance with Policy DM04 of the Development Management Policies DPD (adopted September 2012), the Sustainable Design and Construction SPD (adopted April 2013) and 7.15 of the London Plan 2016.”*

#### “Condition 5

*The level of noise emitted from the extract/ventilation plant hereby approved shall be at least 5 dB(A) below the background level, as measured from any point 1 metre outside the window of any room of a neighbouring residential property.*

*If the noise emitted has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or distinct impulse (bangs, clicks, clatters, thumps), then it shall be at least 10 dB(A) below the background level, as measured from any point 1 metre outside the window of any room of a neighbouring residential property.*

*Reason: to ensure that the proposed development does not prejudice the amenities of occupiers of neighbouring properties in accordance with Policies DM04 of the Development Management Policies DPD (adopted September 2012) and 7.15 of the London Plan 2016.”*

#### “Condition 6

*a) Prior to the installation of any ventilation/extraction plant on site, a report shall be carried out by a competent acoustic consultant that assesses the likely noise impacts from the development of the ventilation/extraction plant, and mitigation measures for the development to reduce these noise impacts to acceptable levels, and has been submitted to and approved in writing by the Local Planning Authority.*

*The report shall include all calculations and baseline data, and be set out so that the Local Planning Authority can fully assess the report and critically analyse the content and recommendations.*



*b) the measures approved under this condition shall be implemented in their entirety prior to the commencement of the use/first occupation of the development and retained as such thereafter.*

*Reason: To ensure that the proposed development does not prejudice the amenities of occupiers of neighbouring properties in accordance with Policy DM04 of the Development Management Policies (adopted September 2012), the Sustainable Design and Construction SPD (adopted April 2016) and Policy 7.15 of the London Plan 2016."*

Planning permission for the conversion of the existing café to residential space was granted by LBB on 27<sup>th</sup> September 2019 (application ref. 18/6660/FUL) and Conditions 5 and 6 have been set as part of their decision, which are provided below.

#### "Condition 5

*a) No development other than demolition works shall take place on site until a noise assessment, carried out by an approved acoustic consultant, which assesses the likely impacts of noise on the development and measures to be implemented to address its findings has been submitted to and approved in writing by the Local Planning Authority. The report shall include all calculations and baseline data, and be set out so that the Local Planning Authority can fully audit the report and critically analyse the content and recommendations.*

*b) The measures approved under this condition shall be implemented in their entirety prior to the commencement of the use/first occupation of the development and retained as such thereafter.*

*Reason: To ensure that the amenities of occupiers are not prejudiced by road traffic and/or mixed use noise in the immediate surroundings in accordance with Policy DM04 of the Development Management Policies DPD (adopted September 2012), the Sustainable Design and Construction SPD (adopted April 2013) and 7.15 of the London Plan 2016."*

#### "Condition 6

*Prior to the first occupation of the units, copies of Pre-completion Sound Insulation Test Certificates shall be submitted to the Local Planning Authority, confirming compliance with Requirement E of the Building Regulations 2010 (or any subsequent amendment in force at the time of implementation of the permission).*

*Reason: to protect the amenities of future and neighbouring residential occupiers in accordance with Policies DM02 and Dm04 of the Development Management Policies DPD (adopted September 2012) and the Sustainable Design and Construction SPD (adopted April 2013)."*

In order to demonstrate compliance with LBB's Planning Conditions, Syntegra will utilise the guidance documents detailed in **Section 4**.

## 4. Guidance Documents

### 4.1. British Standard BS 8233:2014

BS 8233: *Sound Insulation and Noise Reduction for Buildings – Code of Practice* has a number of design criteria and limits for intrusive external noise. The guidelines are designed to achieve reasonable resting/sleeping conditions in bedrooms and good listening conditions in other rooms and the most appropriate to the residential environment are reproduced in **Table 4.1**.

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

Table 4.1: Indoor Ambient Noise Levels for Dwellings

### 4.2. World Health Organization Guidelines for Community Noise

The World Health Organization (WHO) has developed guidelines designed to minimise the adverse effects of noise. The guidelines relevant to residential noise exposure are detailed in **Table 4.2**. For each specific environment the stated noise levels are the maximum noise levels to avoid the health effect noted.

| Specific Environment | Critical health effect(s)  | $L_{Aeq}$ dB | Time Base (hours) | $L_{Amax}$ (fast) dB |
|----------------------|--|--------------|-------------------|----------------------|
| Dwelling, indoors    | Speech intelligibility and moderate annoyance, daytime and evening | 35           | 16                | -                    |
| Inside bedrooms      | Sleep disturbance, night-time                                      | 30           | 8                 | 45                   |

Table 4.2: WHO Community Noise Guideline Values

The WHO guidelines state, with respect to the  $L_{Amax}$  threshold, that ‘for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB  $L_{Amax}$  more than 10 – 15 times per night (Vallet and Vernet 1991)’.

### 4.3. British Standard 4142:2014

British Standard 4142:2014 “*Methods for rating and assessing industrial and commercial sound*” provides a method for the measurement and rating of industrial type noise sources and background noise levels outside dwellings. The rating level (defined in the BS) is used to rate the noise source outside residential dwellings (this is defined as the “specific sound level”).

The rating level is determined by assessing the character of the noise and applying an acoustic feature correction if appropriate. Corrections are applied for the tonality and intermittency of the noise source which can both make noise more noticeable.

The initial assessment described in BS 4142 to determine whether an adverse impact is likely is based on establishing the difference between the rating level and the background noise level outside the

residential property of interest. The British Standard states that the following points should be considered:

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

#### 4.4. The Building Regulations Approved Document E “Resistance to the passage of sound” (ADE)

The requirements under Part E of Schedule 1 to the Building Regulations 2000 are from 1st July 2003 as follows:

‘E1. Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings.’

The minimum values for airborne and impact sound insulation for walls and floors between ‘dwelling-houses and flats’ that are ‘formed by material change of use’ are provided in Table 0.1a of ADE and are reproduced in **Table 4.3** below.

|  | Partition Type    | Airborne sound insulation $D_{nT,w} + C_{tr}$ dB<br>(Minimum values) | Impact sound insulation $L'_{nT,w}$ dB<br>(Maximum values) |
|--|-------------------|--|--|
| Dwelling-houses and flats formed by material change of use | Walls             | 43   | -  |
|  | Floors and stairs | 43   | 64   |

Table 4.3: Approved Document E Performance Standards

## 5. Baseline Noise Levels

In order to determine the extent to which the site is currently affected by noise, a detailed measurement study has been carried out at the site. Measurements have been carried out in order to characterise the existing noise climate. The noise climate of the area was entirely dominated by road traffic noise along Ballards Lane (A598).

The noise measurements utilised a Norsonic 140 Type 1 Precision Sound Level Meter with a current certificate of calibration, the full list of equipment is detailed in **Appendix 3**. Before and after the measurement period the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (+/- 0.5 dB). Noise Measurements were carried out in consecutive 5 minutes periods with a 1 second resolution.

Measurements were carried out between 1400 hrs on Tuesday 31<sup>st</sup> August 2021 and 1300 hrs on Wednesday 1<sup>st</sup> September 2021. It is noted that the measurement period is 1 hour short of a full 24 hour period, however for the purposes of this assessment this will have no impact on the accuracy of the assessment.

During the noise measurement survey, the weather conditions ranged from a high of 19°C during the daytime to a low of 14°C overnight. The wind speeds were moderate (approximately 3 – 5 m/s), with occasional stronger gusts, predominantly in a north-easterly direction. Cloud cover was noted to be 100% at the start of the survey and 100% at the end.

Noise measurements were carried out at Measurement Position 1 (MP1) in a façade position suspended 1m from a second storey window overlooking Ballards Lane. Noise at this position was dominated by road traffic along Ballards Lane. Plant noise from surrounding commercial properties were also noted as contributing to the noise climate but was not considered dominant.

The noise monitoring positions are shown in **Figure 5.1**.



*Figure 5.1: Noise Monitoring Location*



**Table 5.1** below displays a summary of the measured noise levels and detailed measurement results are presented in **Appendix 4**.

| Measurement Position | Period (hours)           | $L_{Aeq,T}$ (dB) | $L_{Amax}$ (dB) | Typical $L_{A90}$ (dB) |
|----------------------|--------------------------|------------------|-----------------|------------------------|
| MP1                  | Daytime (0700 – 2300)    | 65               | 75              | 58                     |
|                      | Night-time (2300 – 0700) | 61               | 76              | 34                     |

*Table 5.1: Summary of Free Field Semi-Permanent Noise Levels*

Note: The average noise levels stated are logarithmic for  $L_{Aeq}$ . The  $L_{Amax,F}$  noise levels stated are the arithmetic average of the hourly noise levels during the daytime (0700 hrs – 2300 hrs) and the 10<sup>th</sup> highest  $L_{Amax,F,5min}$  noise level at night (2300 hrs – 0700 hrs), as noted in Section 4.2. The typical  $L_{A90}$  is the most commonly measured  $L_{A90,5min}$  during the assessment time period (a detailed assessment is provided in Appendix 4).

### 5.1. Previous Noise Measurement Survey

The ambient noise levels at the rear of the site have previously been obtained by measurement by Clover Acoustics from Thursday 31<sup>st</sup> August 2017 to Friday 1<sup>st</sup> September 2017 and have been previously reported in their report ‘3819-R1 - Rowlandson House, 289-297 Ballards Lane, Finchley, NR12 8NP’ dated September 2017. Measurements at MP2 were considered to be unlikely to have significantly changed due to the very shielded location and therefore the measurement survey was not repeated at the rear of the site.

All measurements were undertaken by consultants competent in environmental noise monitoring and completed in accordance with the principles of BS 7445:2003 *Description and measurement of environmental noise* (BSI, 2003). All acoustic measurement equipment used during the noise survey was designed to be in conformance with the Class 1 standard. All meters and field calibrators used held current calibration certificates obtained under laboratory conditions traceable to UK and International Standards. Before and after the measurement session the reference calibration level of the sound level meter was checked using a field calibrator. The weather conditions during the survey were noted as being dry and mild.

**Table 5.2** below displays a summary of the measured noise levels, as provided in the Clover Acoustics report.

| Measurement Position | Period (hours)           | $L_{Aeq,T}$ (dB) | $L_{Amax}$ (dB) | Typical $L_{A90}$ (dB) |
|----------------------|--------------------------|------------------|-----------------|------------------------|
| MP2                  | Daytime (0700 – 2300)    | 53               | -               | 51                     |
|                      | Night-time (2300 – 0700) | 48               | 66              | 39                     |

*Table 5.2: Summary of Free Field Semi-Permanent Noise Levels*

Note: The average noise levels stated are logarithmic for  $L_{Aeq}$ . The  $L_{Amax,F}$  noise levels stated are the 15<sup>th</sup>  $L_{Amax,F,5min}$  noise level at night (2300 hrs – 0700 hrs), in line with good sleep conditions identified in the “The Guidelines for Community Noise” (Section 3.4 Sleep Disturbance). The typical  $L_{A90}$  is the most commonly measured  $L_{A90,5min}$  during the assessment time period (a detailed assessment is provided in Appendix 4).



## 5.2. Assessment Noise Levels

Using both collected data and previous measurements, the assessment noise level for each façade at first floor level (which is the worst-case for all façades) is provided in **Table 5.3**.

| Assessment Location | Daytime $L_{Aeq,16hr}$ (dB) | Night-time $L_{Aeq,8hr}$ (dB) | Night-time $L_{Amax}$ (dB) |
|---------------------|-----------------------------|-------------------------------|----------------------------|
| Front Façade        | 65                          | 61                            | 76                         |
| Rear Façade         | 53                          | 48                            | 66                         |

Table 5.3: Assessment Noise Levels

## 6. Internal Noise Level Assessment

Internal noise levels should ideally be achieved in as many properties as possible with windows open. Due to the relatively high noise levels present at the site, habitable rooms will not be able to achieve the requirement with windows open, and therefore the sound insulation of the building façade will be required to mitigate noise levels. In carrying out our assessment, Syntegra have therefore made the following assumptions:

- The façade build-up will be a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.
- For the front façade, and any side façade with a habitable room with a clear line of sight to Ballards Lane:
  - A double glazing system in a 6/12/6.4 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 34 dB  $R_w$ .
  - Appropriately specified acoustic vents, with a  $D_{n,e,w}$  of at least 40 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.
- For the side and rear façades:
  - A typical double glazing system in a 4/12/4 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 25 dB  $R_w$ .
  - Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 31 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.

**Table 6.1** identifies the likely  $L_{Aeq}$  and  $L_{Amax}$  internal noise levels, assuming windows closed, utilising the *Simple Calculation Method* described in BS 8233:2014.

| Assessment Location                                   | Period (hrs)             | External Noise Levels (dB)<br>(ref. Table 5.3) | Sound Insulation of Glazing (dBA) | Internal Noise Levels (dB) | Compliance with ProPG Criteria |
|---|--------------------------|--|-----------------------------------|----------------------------|--------------------------------|
| <b>Ambient Noise Level <math>L_{Aeq}</math> (dB)</b>  |                          |  |                                   |                            |                                |
| Front Façade  | Daytime (0700 – 2300)    | 65   | 34                                | 31                         | ✓                              |
|   | Night-time (2300 – 0700) | 61   | 34                                | 27                         | ✓                              |
| Rear Façade   | Daytime (0700 – 2300)    | 53   | 25                                | 28                         | ✓                              |
|   | Night-time (2300 – 0700) | 48   | 25                                | 23                         | ✓                              |
| <b>Maximum Noise Level <math>L_{Amax}</math> (dB)</b> |                          |  |                                   |                            |                                |
| Front Façade  | Night-time (2300 – 0700) | 76   | 34                                | 42                         | ✓                              |

| Assessment Location | Period (hrs)                | External Noise Levels (dB)<br>(ref. Table 5.3) | Sound Insulation of Glazing (dBA) | Internal Noise Levels (dB) | Compliance with ProPG Criteria |
|---------------------|-----------------------------|--|-----------------------------------|----------------------------|--------------------------------|
| Rear Façade         | Night-time<br>(2300 – 0700) | 66   | 25                                | 41                         | ✓                              |

Table 6.1: Internal Noise Levels

It can be identified, with reference to Table 6.1, that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, as such Planning Condition 4 (application ref. 19/0948/PNO) and Planning Condition 5 (application ref. 18/6660/FUL) can be discharged.

## 7. Plant Noise Assessment

The precise details of the proposed plant types are not yet available; therefore, the maximum sound power level has been derived utilising the background noise level presented in **Section 5** and the basic methodologies presented in BS 4142:2014. The aim is to meet the requirements of Planning Condition 5 (application ref. 19/0948/PNO) which is to be 5 dB below the background noise level.

| Results  | Daytime<br>(0700 hrs –<br>2300 hrs) | Night-time<br>(2300 hrs –<br>0700 hrs) | Relevant<br>Clauses of BS<br>4142:2014 | Commentary   |
|--|-------------------------------------|--|--|--|
| Typical Background<br>Sound Level<br><br>L <sub>A90</sub> (dB)   | 58                                  | 34                                     | 8.1, 8.2                               | Refer to <b>Table 5.1</b> .  |
| Required Difference<br>between Rating Level<br>and Background<br>Sound Level                               | -5                                  | -5                                     | 9.2                                    | Planning Condition 5: 5 dB<br>below the background<br>noise level  |
| Rating Level   | 53                                  | 29                                     | 9.2                                    | (Specific Sound Level +<br>Acoustic Feature<br>Correction)   |
| Acoustic Feature<br>Correction   | <i>Unknown</i>                      | <i>Unknown</i>                         | 9.2                                    | No acoustic feature<br>correction has been<br>applied to account for the<br>specific acoustic features<br>as the precise plant<br>specifications are<br>unknown. |
| <b>Specific Sound Level,<br/>L<sub>Aeq</sub> (dB), at 1m from<br/>nearest noise<br/>sensitive receptor</b> | <b>53</b>                           | <b>29</b>                              | 7.3.7, 7.3.9,<br>7.3.11                | Derived from the typical<br>background sound level   |

Table 7.1: Total Sound Level of Plant Equipment – Front façade

| Results  | Daytime<br>(0700 hrs –<br>2300 hrs) | Night-time<br>(2300 hrs –<br>0700 hrs) | Relevant<br>Clauses of BS<br>4142:2014 | Commentary   |
|--|-------------------------------------|--|--|--|
| Typical Background<br>Sound Level<br><br>L <sub>A90</sub> (dB)   | 51                                  | 39                                     | 8.1, 8.2                               | Refer to <b>Table 5.1</b> .  |
| Required Difference<br>between Rating Level<br>and Background<br>Sound Level                               | -5                                  | -5                                     | 9.2                                    | Planning Condition 5: 5 dB<br>below the background<br>noise level  |
| Rating Level   | 47                                  | 34                                     | 9.2                                    | (Specific Sound Level +<br>Acoustic Feature<br>Correction)   |
| Acoustic Feature<br>Correction   | <i>Unknown</i>                      | <i>Unknown</i>                         | 9.2                                    | No acoustic feature<br>correction has been<br>applied to account for the<br>specific acoustic features<br>as the precise plant<br>specifications are<br>unknown. |
| <b>Specific Sound Level,<br/>L<sub>Aeq</sub> (dB), at 1m from<br/>nearest noise<br/>sensitive receptor</b> | <b>47</b>                           | <b>34</b>                              | 7.3.7, 7.3.9,<br>7.3.11                | Derived from the typical<br>background sound level   |

*Table 7.2: Total Sound Level of Plant Equipment – Rear façade*

It will be important to ensure that the selected plant does not exceed the specific noise levels identified in this section of the report at 1m from the nearest window to a habitable room. If the plant is tonal, intermittent, or contains any other acoustic features, this would reduce the maximum specific noise levels identified in **Table 7.1**. and **Table 7.2**. Careful consideration is required as to the specification and siting of any plant. The total allowable noise level emitted from the plant will increase with distance and shielding from the nearest noise sensitive receptor.



## 8. Internal Sound Insulation

### 8.1. Proposed Party Walls & Floors

The proposed internal wall and floor constructions have been provided by *Planning Architecture Ltd.* Several wall and floor types have been proposed and these are presented in **Table 8.1**.

The sound insulation properties of the proposed floors have been determined utilising the INSUL software programme and standard acoustic formulae.

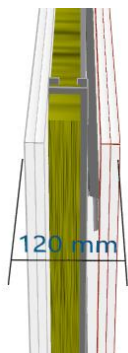
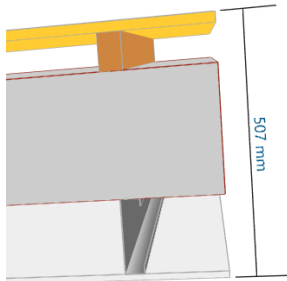
| Partition Reference  | Plan of Partition   | Description of Partition  | $R_w [C_{tr}]$ (dB) | $L'_{n,w}$ (dB) |
|--|---|---|---------------------|-----------------|
| Separating Wall between Flats                                |    | <ul style="list-style-type: none"> <li>Gypframe 70 S 50 'C' Studs at 600mm centres with Gypframe RB1 Resilient Bar at 600mm centres fixed to one side of the stud</li> <li>50mm Isover acoustic Partition Roll (APR 1200) positioned in cavity</li> <li>Lined each side with a double layer of 12.5mm Gyproc SoundBloc</li> </ul> | 56 [-11]            | n/a             |
| Separating floor between flats – Reinforced In-Situ Concrete |  | <ul style="list-style-type: none"> <li>Minimum 250mm depth in-situ concrete floor slab with minimum density of 2400kg/m³ with minimum 40mm screed directly applied</li> <li>CasoLine MF or GypLyner Universal ceiling providing minimum 150mm ceiling void, lined with a single layer of 12.5mm Gyproc WallBoard</li> </ul>       | 65 [-10]            | 51              |

Table 8.1: Sound Insulation Properties

### 8.2. Workmanship

It is important to note that, as with any construction project, the ability to meet the specification will rely upon the quality of the built structure. As such the works should be carried out to a high standard of workmanship to ensure that any sound insulation measures are not breached, for example by installing a rigid connection across an isolated connection (such as resilient bars). Additionally, any joints between different walls and the party wall and the ceiling/floor should be carefully filled with acoustic mastic.

### 8.3. Sound Insulation Assessment

The predicted sound insulation values have been calculated using standard acoustic formulae for example rooms across the proposed development is presented in **Table 8.2**. The predicted sound insulation values are also compared against the assessment criteria provided in **Section 4.4**.

It can be identified from Table 8.2 that the proposed constructions should achieve the requirements of ADE and the requirements of Planning Condition 6 (application ref. 19/6660/FUL).

| Source Room |                  | Receiver Room |                  | Element | Predicted $D_{nT,w} + C_{tr}$ (dB) | Achievement of Identified Criteria (Minimum 43 dB) | Predicted $L'_{nT,w}$ (dB) | Achievement of Identified Criteria (Maximum 64 dB) |
|-------------|------------------|---------------|------------------|---------|------------------------------------|--|----------------------------|--|
| Floor       | Flat Designation | Floor         | Flat Designation |         |                                    |  |                            |  |
| 2F          | 1 Bed            | 2F            | 1 Bed            | Wall    | 45                                 | ✓  | n/a                        | n/a  |
| 1F          | 2 Bed            | 1F            | 1 Bed            | Wall    | 45                                 | ✓  | n/a                        | n/a  |
| GF          | 1 Bed            | GF            | 1 Bed            | Wall    | 46                                 | ✓  | n/a                        | n/a  |
| GF          | 1 Bed            | GF            | Existing Café    | Wall    | 46                                 | ✓  | n/a                        | n/a  |
| 2F          | 2 Bed            | 1F            | 2 Bed            | Floor   | 51                                 | ✓  | 47                         | ✓  |
| 2F          | 2 Bed            | 1F            | 1 Bed            | Floor   | 51                                 | ✓  | 50                         | ✓  |
| 1F          | 1 Bed            | GF            | 1 Bed            | Floor   | 51                                 | ✓  | 50                         | ✓  |
| 1F          | 2 Bed            | GF            | Existing Café    | Floor   | 51                                 | ✓  | 45                         | ✓  |

Table 8.2: Sound Insulation Assessment

## 9. Conclusion

An assessment has been carried out of the present noise climate and proposals for **289-297 Ballards Lane, London, N12 8NP** in order to discharge Planning Conditions 4, 5 and 6 (application ref.19/0948/PNO) for the conversion of offices to residential use and Conditions 5 and 6 (application ref. 18/6660/FUL) for the conversion of a café to residential use at the same premises. The approved scheme involves the redevelopment of an existing café and office spaces to 38 residential units over 3 floors.

The site is located on Ballards Lane in a predominantly residential area, with some commercial properties along Ballards Lane. The noise climate of the area was dominated by road traffic along Ballards Lane as well as the surrounding road network.

The assessment is based on the results of noise measurement surveys that have been carried out at the approved development site and has considered the advice of local and national planning policy and best practice guidance.

It has been identified that the requirements of the Local Authority in respect of internal noise levels can only be achieved through careful consideration of the building envelope. The construction assumptions that have led to this conclusion are:

- **The façade build-up will be a standard brick and block construction (or equivalent) to achieve an  $R_w$  of approximately 55 dB.**
- **For the front façade, and any side façade with a habitable room with a clear line of sight to Ballards Lane:**
  - **A double glazing system in a 6/12/6.4 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 34 dB  $R_w$ .**
  - **Appropriately specified acoustic vents, with a  $D_{n,e,w}$  of at least 40 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**
- **For the side and rear façades:**
  - **A typical double glazing system in a 4/12/4 configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 25 dB  $R_w$ .**
  - **Appropriately specified acoustic trickle vents, with a  $D_{n,e,w}$  of at least 31 dB, or an alternative means of ventilation will be installed to allow adequate ventilation without the requirement to open windows.**

Overall, it has been shown that, through careful consideration of the building envelope construction, the proposed development should avoid future residents being exposed to harmful levels of noise. **It can therefore be concluded that significant adverse impacts on the health or quality of life of those future residents would be avoided, as such Planning Condition 4 (application ref. 19/0948/PNO) and Planning Condition 5 (application ref. (18/6660/FUL) can be discharged.**

The assessment has also shown that the internal sound insulation at the development should achieve the requirements of ADE, subject to a high quality of workmanship and should achieve the requirements of Planning Condition 6 (application ref. 19/6660/FUL).

**It is important to note that, as with any construction project, the ability to meet the specification will rely upon the quality of the built structure.** As such the works should be carried out to a high standard of workmanship to ensure that any sound insulation measures are not breached, for example by installing a rigid connection across an isolated connection (such as resilient bars). Additionally, any joints between different walls and the party wall and the ceiling/floor should be carefully filled with acoustic mastic.

Maximum noise rating levels for the proposed plant to achieve the requirements of Planning Conditions 5 and 6 (application ref. 19/9480/PNO) have been provided in line with the BS 4142:2014 methodologies. **Syntegra will carry out a detailed plant noise assessment once final plant selections are made to ensure that total plant noise levels at receptors do not exceed the identified requirements.**

## 10. Appendix 1: Glossary of Acoustic Terminology

| Term                          | Description   |
|-------------------------------|---|
| <b>'A'-Weighting</b>          | <i>This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.</i>  |
| <b>Decibel (dB)</b>           | <i>This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.</i>   |
| <b><math>L_{Aeq,T}</math></b> | <i>The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. <math>L_{Aeq,T}</math> can be measured directly with an integrating sound level meter.</i> |
| <b><math>L_{A10}</math></b>   | <i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the <math>L_{A10T}</math>. The <math>L_{A10}</math> is used to describe the levels of road traffic noise at a particular location.</i>   |
| <b><math>L_{A50}</math></b>   | <i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the <math>L_{A50T}</math>.</i>   |
| <b><math>L_{A90}</math></b>   | <i>The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the <math>L_{A90T}</math>. The <math>L_{A90}</math> is used to describe the background noise levels at a particular location.</i>  |
| <b><math>L_{Amax}</math></b>  | <i>The 'A'-weighted maximum sound pressure level measured over a measurement period.</i>  |



## 11. Appendix 2: Professional Statement

### David Yates

David Yates is a full member of the Institute of Acoustics (MIOA) and has over ten years' experience in acoustic consultancy. David has particular expertise in environmental noise providing acoustic consultancy for residential and mixed use planning applications, plant noise and vibration, construction noise and the design of acoustic, noise and vibration control. David is also experienced in providing sound insulation testing and design advice. David is familiar with the application of all relevant standards associated with his work, including but not limited to, BS 4142, BS 8233, BS 7445, BS 6472, BS 5228, BS 140 series, BS 16283 series and BS 717 series. David manages the acoustic department and is responsible for maintaining Syntegra's ANC membership.

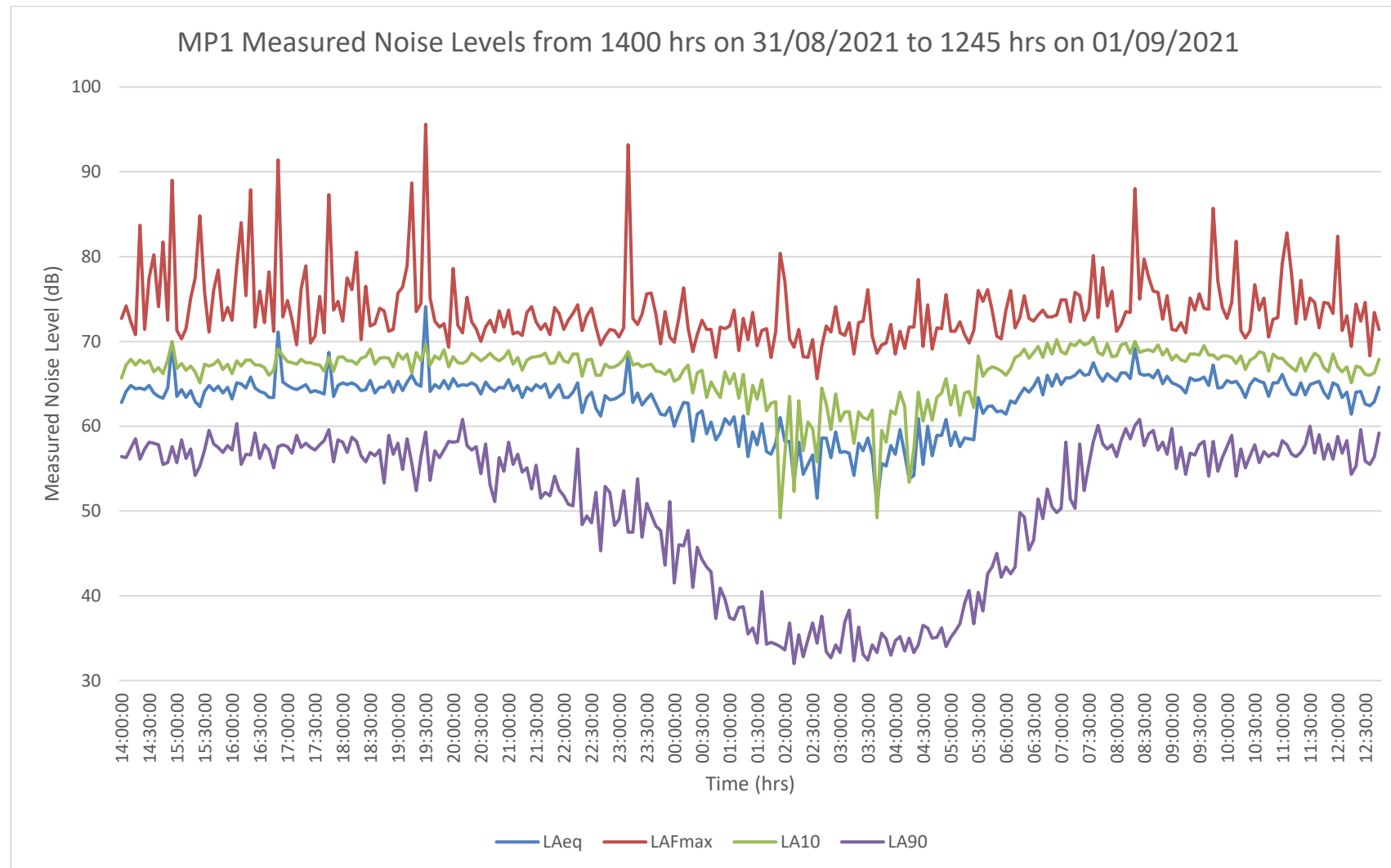
## 12. Appendix 3: List of Equipment

| Equipment Type                   | Manufacturer | Serial Number | Calibration Certification Number | Date of Last Calibration Check |
|----------------------------------|--------------|---------------|----------------------------------|--------------------------------|
| Nor-140 Type 1 Sound Level Meter | Norsonic     | 1406389       | 33658                            | December 2019                  |
| Nor-1225 Microphone              | Norsonic     | 225519        | 33657                            | December 2019                  |
| Nor-1209 Preamplifier            | Norsonic     | 20598         | 33658                            | December 2019                  |
| Nor-1251 Sound Calibrator        | Norsonic     | 35115         | 36310                            | November 2020                  |

### 13. Appendix 4: Detailed Noise Measurement Results

Measured Noise levels – MP1

| Time               | L <sub>Aeq,T</sub> (dB) | L <sub>AF(max)</sub> (dB) | L <sub>A10</sub> (dB) | L <sub>A90</sub> (dB) |
|--------------------|-------------------------|---------------------------|-----------------------|-----------------------|
| 14:00-15:00        | 65                      | 77                        | 65                    | 63                    |
| 15:00-16:00        | 64                      | 75                        | 65                    | 63                    |
| 16:00-17:00        | 66                      | 78                        | 66                    | 63                    |
| 17:00-18:00        | 65                      | 75                        | 65                    | 64                    |
| 18:00-19:00        | 65                      | 74                        | 65                    | 64                    |
| 19:00-20:00        | 67                      | 77                        | 66                    | 64                    |
| 20:00-21:00        | 65                      | 73                        | 65                    | 64                    |
| 21:00-22:00        | 65                      | 72                        | 65                    | 63                    |
| 22:00-23:00        | 63                      | 72                        | 64                    | 62                    |
| 23:00-00:00        | 64                      | 74                        | 64                    | 61                    |
| 00:00-01:00        | 61                      | 71                        | 63                    | 58                    |
| 01:00-02:00        | 59                      | 72                        | 61                    | 57                    |
| 02:00-03:00        | 57                      | 71                        | 59                    | 54                    |
| 03:00-04:00        | 57                      | 71                        | 58                    | 54                    |
| 04:00-05:00        | 58                      | 72                        | 61                    | 54                    |
| 05:00-06:00        | 61                      | 72                        | 62                    | 58                    |
| 06:00-07:00        | 64                      | 73                        | 66                    | 63                    |
| 07:00-08:00        | 66                      | 75                        | 67                    | 65                    |
| 08:00-09:00        | 66                      | 76                        | 67                    | 65                    |
| 09:00-10:00        | 65                      | 75                        | 66                    | 65                    |
| 10:00-11:00        | 65                      | 74                        | 65                    | 64                    |
| 11:00-12:00        | 65                      | 75                        | 65                    | 64                    |
| 12:00-13:00        | 64                      | 73                        | 65                    | 62                    |
| 13:00-14:00        | 65                      | 77                        | 65                    | 63                    |
| <b>07:00-23:00</b> | <b>65</b>               | <b>75</b>                 | <b>66</b>             | <b>63</b>             |
| <b>23:00-07:00</b> | <b>61</b>               | <b>72</b>                 | <b>64</b>             | <b>56</b>             |



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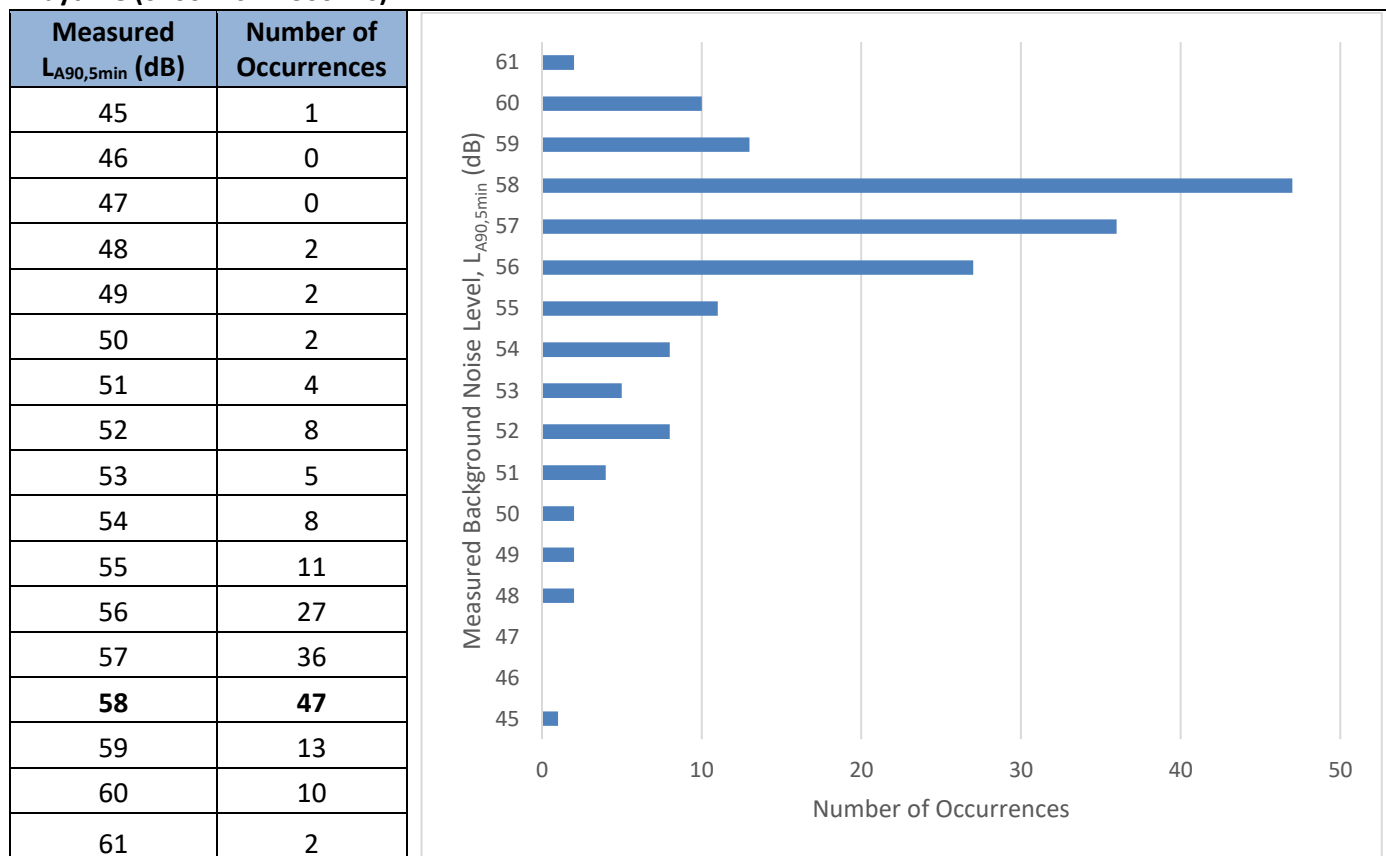
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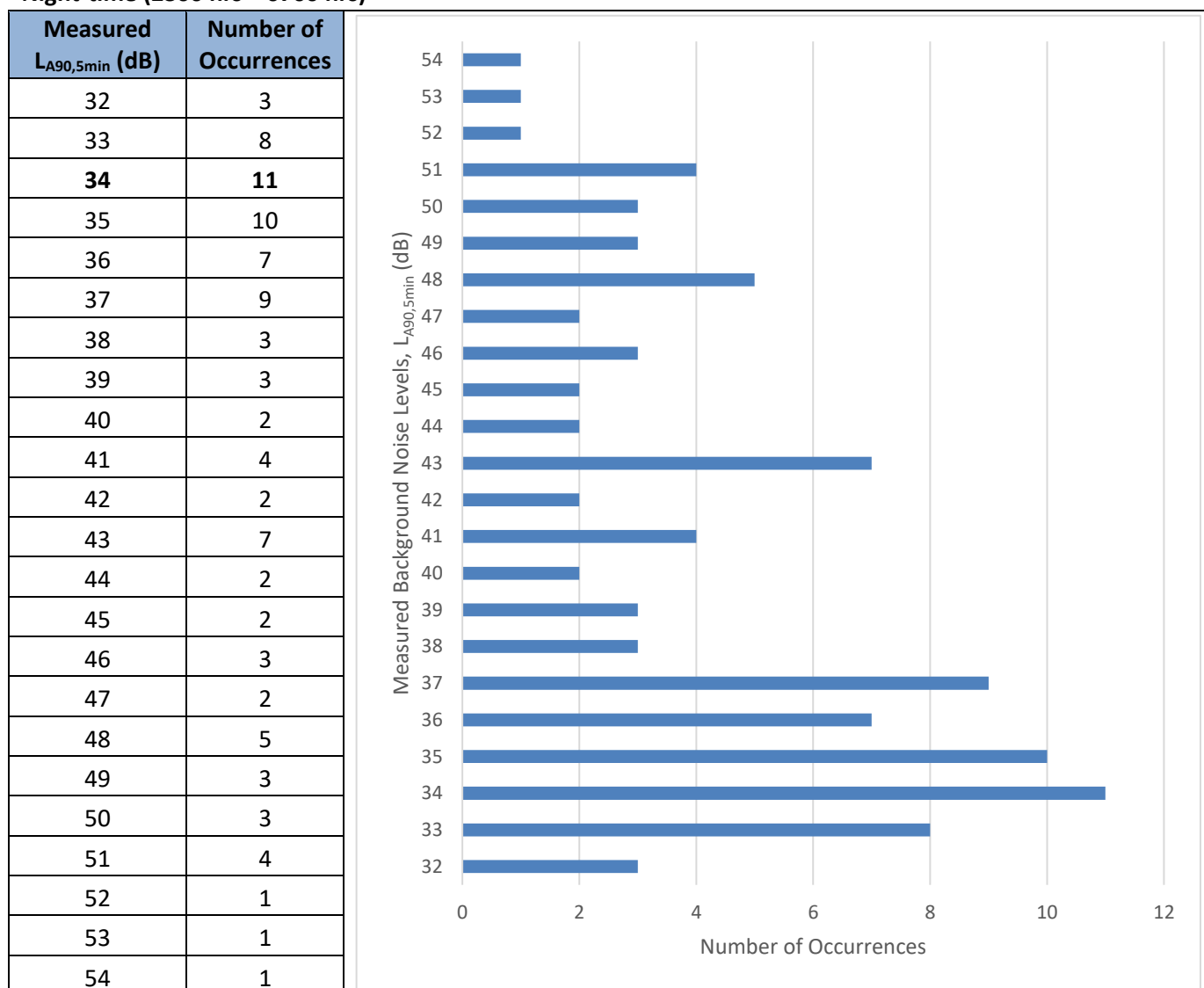
### 13.1. Typical Background Noise Level Analysis for BS 4142:2014 Assessment

Daytime (0700 hrs – 2300 hrs)



Note: The row marked in bold is the chosen Typical  $L_{A90}$  for the BS 4142 plant noise assessment.

### Night-time (2300 hrs – 0700 hrs)



Note: The row marked in bold is the chosen Typical  $L_{A90}$  for the BS 4142 plant noise assessment.