



**117-119 Oxford Road, Reading, RG1 7UH**

**1st April 2026**

**ISSUE 01**





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| Author               | Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Checked                | Date       | Description  |
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## **1.0 INTRODUCTION**

DAA Group has been appointed to carry out a Noise Impact Assessment at 117-119 Oxford Road, Reading, RG1 7UH to support a Planning Application for the conversion of a commercial space and the construction of 6 residential units.

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Using results of the noise survey, the sound insulation performance for the whole building envelope including glazing (windows) is assessed, and a scheme of noise mitigation measures is established and included in the report verified by BS8233:2014 rigorous method building envelope sound insulation calculations.

A scheme of noise mitigation measures in the report provides specification details as appropriate for sound insulation upgrade treatment to the separating walls and separating floors.

The technical content of this assessment has been provided by a Tech member of the Institute of Acoustics.

The Institute of Acoustics is the UK's professional body for those working in acoustics, noise and vibration.

## **2.0 NOISE CRITERIA**

### **2.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)**

The Department for Communities and Local Government introduced the National Planning Policy Framework (NPPF) in March 2012. The latest revision of the NPPF is dated December 2024.

The NPPF sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework where local Councils can produce their own local and neighbourhood plans which reflect the needs of their communities.

In conserving and enhancing the natural environment, the planning system should prevent both new and existing development from contributing to, or being put at, unacceptable risk from environmental factors including noise.

Planning policies and decisions should aim to avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development. Conditions may be used to mitigate and reduce noise to a minimum so that adverse impacts on health and quality of life are minimised. It must be recognised that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them.

## 2.2 NOISE POLICY STATEMENT FOR ENGLAND (NPSE)

The long-term vision of the NPSE is stated within the documents scope, 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 policy aims are stated to:

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- 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.

The application of NPSE should mean that noise is properly considered at the appropriate time (for example in planning applications or appeals) where it must be considered alongside other relevant issues. The guiding principles of Government policy on sustainable development should be used to assist in the implementation of the NPSE.

The NPSE should apply to all types of noise apart from occupational noise in the workplace. The types of noises defined in the NPSE includes:

- Environmental noise from transportation sources.
- Neighbourhood noise which includes noise arising from within the community, industrial premises, trade and business premises, construction sites and noise in the street

The Noise Policy Statement England (NPSE) outlines observed effect levels relating to the above, as follows:

- **NOEL – No Observed Effect Level**

- o 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**

- o This is the level above which adverse effects on health and quality of life can be detected.

- **SOAEL – Significant Observed Adverse Effect Level**

- o This is the level above which significant adverse effects on health and quality of life occur.

As stated in The Noise Policy Statement England (NPSE), it is not currently possible to have a single objective-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Specific noise levels are not stated within the guidance for this reason and allow flexibility in the policy until further guidance is available.

### 2.3 ProPG: PLANNING AND NOISE

As outlined above, the National Planning Policy Framework encourages improved standards of design, although it provides no specific noise levels which should be achieved on site for varying standards of acoustic acceptability, or a prescriptive method for the assessment of noise.

ProPG: Planning and Noise was published in May 2017 in order to encourage better acoustic design for new residential schemes in order to protect future residents from the harmful effects of noise. This guidance can be seen as the missing link between the current NPPF and its predecessor, PPG24 (Planning Policy Guidance 24: Planning and Noise), which provided a prescriptive method for assessing sites for residential development, but without the nuance of 'good acoustic design' as outlined in ProPG.

ProPG allows the assessor to take a holistic approach to consider the site's suitability, taking into consideration numerous design factors which previously may not have been considered alongside the noise level measured on site, for example the orientation of the building in relation to the main source of noise incident upon it.

It should be noted this document is not an official government code of practice, and neither replaces nor provides an authoritative interpretation of the law or government policy, and therefore, should be seen as a good practice document only.

### 2.4 ACOUSTICS VENTILATION AND OVERHEATING

The AVO Guide includes:

- \* an explanation of ventilation requirements under the building regulations and as described in Approved Document F, along with typical ventilation strategies and associated noise considerations.
- \* an explanation of the overheating assessment methodology described in CIBSE TM59, potential acoustic criteria and guidance relating to different ventilation and overheating conditions, for both environmental noise ingress and building services noise.
- \* and a worked example of the application of the AVO Guide including indicative design solutions.

The AVO Guide is intended for the consideration of new residential development that will be exposed predominantly to airborne sound from transport sources, and to sound from mechanical services that are serving the dwellings in question. Although the policy coverage is limited to England, the approach may be applicable in other parts of the UK.

The AVO Guide is intended to contribute to the practice of good acoustic design, as emphasised in the Professional Practice Guidance on Planning and Noise (ProPG). In particular

## 2.5 BRITISH STANDARD BS 8233:2014

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British Standard Code of Practice BS8233:2014 'Sound insulation and noise reduction for buildings' provides recommended guideline value for internal noise levels within dwellings which are similar in scope to guideline values contained within the World Health Organisation Guidelines for Community Noise 1999 (WHO).

| Activity                   | Location         | 07:00 to 23:00     | 23:00 to 07:00    |
|----------------------------|------------------|--------------------|-------------------|
| Resting                    | Living room      | 35 dB LAeq, 16hour |                   |
|                            |                  |                    |                   |
| Dining                     | Dining room/area | 40 dB LAeq, 16hour |                   |
| Sleeping (daytime resting) | Bedroom          | 35 dB LAeq, 16hour | 30 dB LAeq, 8hour |

### 2.5 Indoor ambient noise levels for dwellings

The WHO guideline noise criteria set an internal sleep disturbance noise limit of 45dB LAmax,F which should not be exceeded on a regular basis.

## 2.6 BRITISH STANDARD BS 4142:2014+A1:2019

British Standard 4142: 2014 'Methods for rating and assessing industrial and commercial sound' [BS 4142] is typically used when a new noise generating development is introduced close to noise sensitive receptors. Guidance is given for new noise sensitive developments close to existing noise generating activities in Section 8.5 of BS4142:2014 as follows: "Introduction of a new noise-sensitive receptor Measure the background sound at the intended location of any new noise-sensitive receptor(s) in the absence of any specific sound."

Where a new noise-sensitive receptor is introduced and there is existing industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation." Based on the above guidance and the nature of existing noise levels, we would recommend that an appropriate internal environment can be achieved through compliance with the Local Authority condition (with the noted legal exceptions), and the specifications given according to British Standard 8233:2014 in Section 2.5.

### 3.0 SITE SURVEYS

#### 3.1 SITE DESCRIPTION

The application site is a semi-detached property (highlighted in blue) located at the rear of Oxford Road. The area is a mix of commercial and residential properties, typical of an urban cityscape environment. The dominant noise source is road noise from the surrounding roads. (See Figure 3.1)

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Figure 3.1 – Proposed Site

#### 3.2 ENVIRONMENTAL SITE SURVEY PROCEDURE

In order to characterise the sound profile of the area an environmental sound survey has been carried out from 20/03/2025 to 23/03/2026. The monitoring position was chosen in order to collect representative data for the potential noise break into the habitable rooms.

Noise Measurements were carried out Free Field on a private staircase at the front of the application site. The external monitoring location is shown in Figure 3.2.

Measurement Location



Figure 3.2 – Measurement Location

### 3.3 EQUIPMENT

|                                   |                            |
|-----------------------------------|----------------------------|
| <b>Instrument manufacturer</b>    | <b>Cirrus Research Plc</b> |
| <b>Model</b>                      | <b>IEC 61672-3:2013</b>    |
| <b>Serial Number</b>              | <b>G302987</b>             |
| <b>Microphone Type</b>            | <b>MK:224</b>              |
| <b>Serial Number</b>              | <b>214457A</b>             |
| <b>Cirrus CK: 675 Outdoor Kit</b> |                            |
| <b>Type 1 Acoustic Calibrator</b> |                            |

The calibration of the sound level meters was verified in-situ before any measurements were taken, using the handheld calibrator and reference tone of 114dB at 1kHz. Validation checks at the end of the survey indicated that all instruments had operated within permitted tolerances for drift and measured level.

### 3.4 METEOROLOGICAL CONDITIONS

The weather conditions have been documented in the following table. All measurements have been compared with met office weather data of the area, specifically the closest weather station, the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

| Weather Conditions         |               |               |                           |                  |
|----------------------------|---------------|---------------|---------------------------|------------------|
| Time Period                | Air Temp (°C) | Rainfall mm/h | Prevailing Wind Direction | Wind Speed (m/h) |
| 20/03/2026 – 10:19 – 23:59 | -1 – 13       | 0.0           | N                         | 2 – 8            |
| 21/03/2026 – 00:00 – 23:59 | -1 – 14       | 0.0           | NE                        | 2 – 7            |
| 22/03/2026 – 00:00 – 23:59 | -4 – 13       | 0.0           | NE                        | 1 – 6            |
| 23/03/2026 – 00:00 – 12:49 | 0 – 14        | 0.0           | SW                        | 1 – 7            |

Table 3.4 – Weather Summary

## 4.0 NOISE SURVEY

The following free-field sound levels have been derived for assessment of environmental noise break-in.

A maximum value is provided for each night-time measurement period. Based on the World Health Organisation interpretation that for a noise to be regular it needs to occur several (i.e. more than two) times per hour; the L<sub>AMax</sub>(f) noise needs to be based upon an average of 10-15 events that are typical in nature. The aim of protecting against maximum noise levels is to ensure protection against typical intermittent noise levels rather than one-off events; whereby an arithmetic average of the 60 typical maximum events across each night period is used to determine values of dB L<sub>AMax</sub>(f) reported below. These have been summarised in table 4.1 and 4.2 below.

| Measurement Data |                     | Free Field Sound Pressure Level dB |      |
|------------------|---------------------|------------------------------------|------|
|                  |                     | MP 1                               |      |
| Time             | L <sub>Aeq,60</sub> | L <sub>AMAX,60</sub>               | LA90 |
| 07:00 – 23:00    | 49dB                | 58dB                               | 44dB |
| 23:00 – 07:00    | 42dB                | 52dB                               | 38dB |

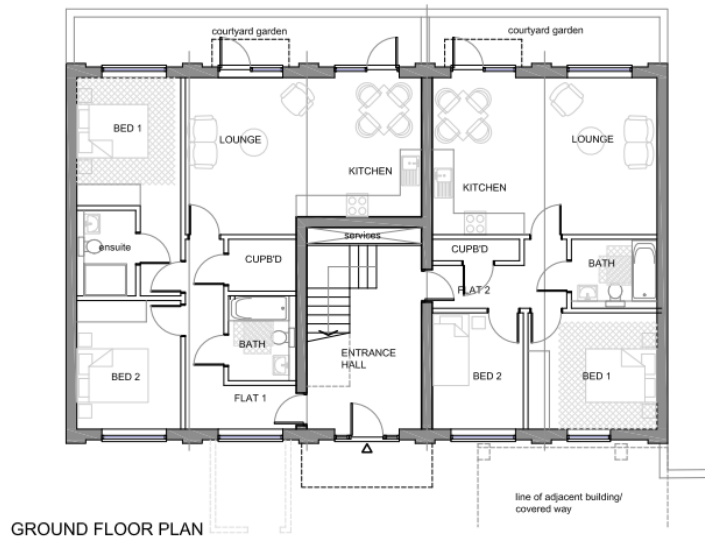
Table 4.1 Measurement Levels

Leq, ff noise levels are taken as the continuous equivalent free-field sound pressure level outside the room elements under consideration.

| Location | T   | Time  | Free-Field Sound Pressure Level Leq, T dB re.20μPa |       |       |      |      |      |    |
|----------|-----|-------|----------------------------------------------------|-------|-------|------|------|------|----|
|          |     |       | 125Hz                                              | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | A  |
| MP1      | 16h | Day   | 53                                                 | 48    | 47    | 45   | 40   | 32   | 49 |
|          | 8h  | Night | 45                                                 | 39    | 40    | 38   | 33   | 25   | 42 |
|          |     | Max   | 38                                                 | 50    | 49    | 48   | 45   | 37   | 52 |

Table 4.2 Summary of octave -band sound levels for break in assessment

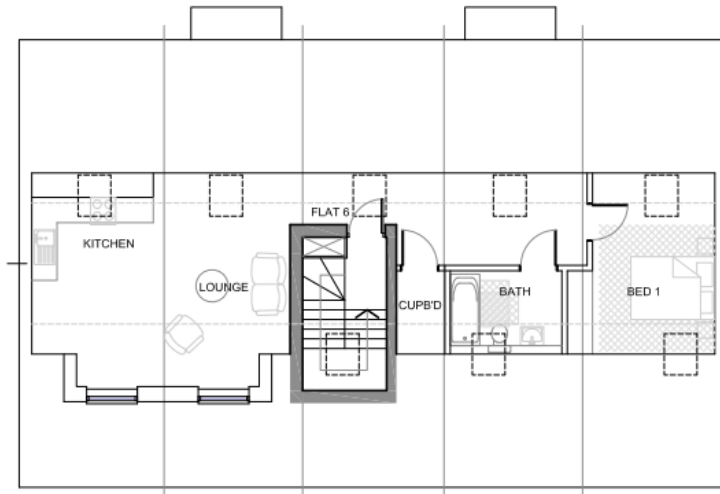
## 5.0 PROPOSED LAYOUT DESIGN



### 5.0.1 Proposed Layout Design – Ground Floor



### 5.0.2 Proposed Layout Design – First Floor



SECOND FLOOR PLAN

### 5.0.3 Proposed Layout Design – Second Floor

## 6.0 EXTERNAL SOUND LEVELS

It shall be read from Table 4.2 in Section 4.0 of this report, that the external sound levels taken by means of average equivalent or maximum sound levels are within the World Health Organisation requirements for external noise as described by Community Noise Guidelines (1999) in Section 2.5 of this report.

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## 6.1 Pro PG Acoustic Design Statement

The scope of ProPG is restricted to the consideration of new residential development that will be exposed predominantly to airborne noise from transport sources. New apartments, flats and houses are the most common type of new residential development, however the guidance can also be applied to other types of residential developments such as residential institutions, care homes etc. As such it is directly applicable to this development.

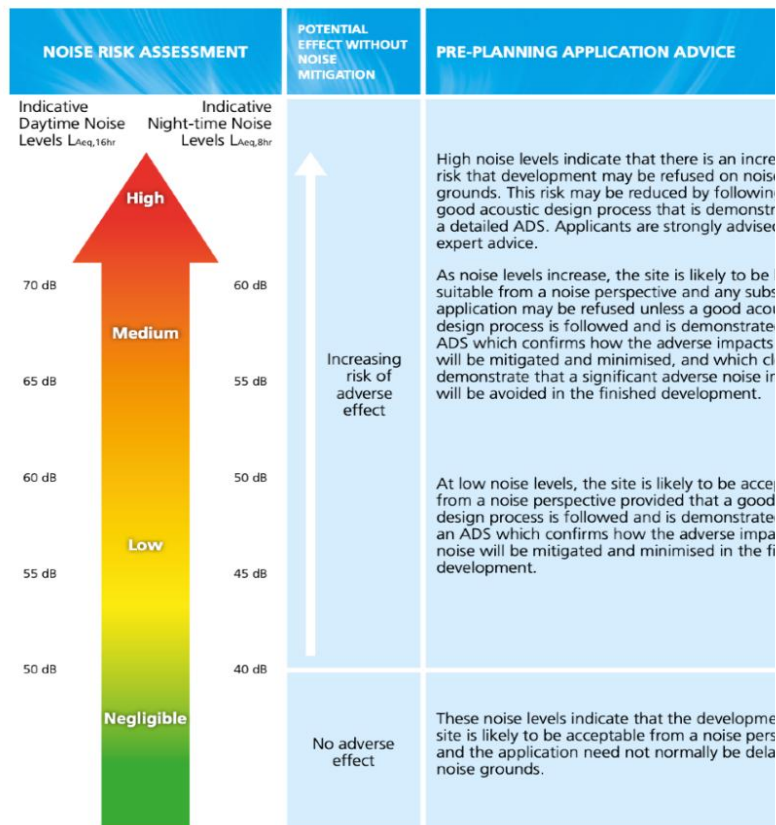


Figure 6.1 - ProPG Noise risk assessment guide



The following table assesses the ProPG noise risk for the measured data. The purpose of this is to provide a view of the noise risk at the site.

| MP1              | Daytime LAeq, 16hr<br>07:00 – 23:00 | Night-time LAeq, 8hr<br>23:00 – 07:00 |
|------------------|-------------------------------------|---------------------------------------|
| Noise Level      | 49dB                                | 42dB                                  |
| ProPG Noise Risk | LOW                                 | LOW                                   |

Table 6.1.1 : ProPG Stage 1 Assessment table

ProPG states that “Particular care should be taken to ensure that any noise events (as quantified by LA<sub>max,F</sub>) have been properly identified and assessed”.

## 6.1.2 ASSESSMENT OF COMMERCIAL SOURCES

Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to BS4142:2014 can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation.” The observed commercial noise sources affect the rear of the site and are as follows:

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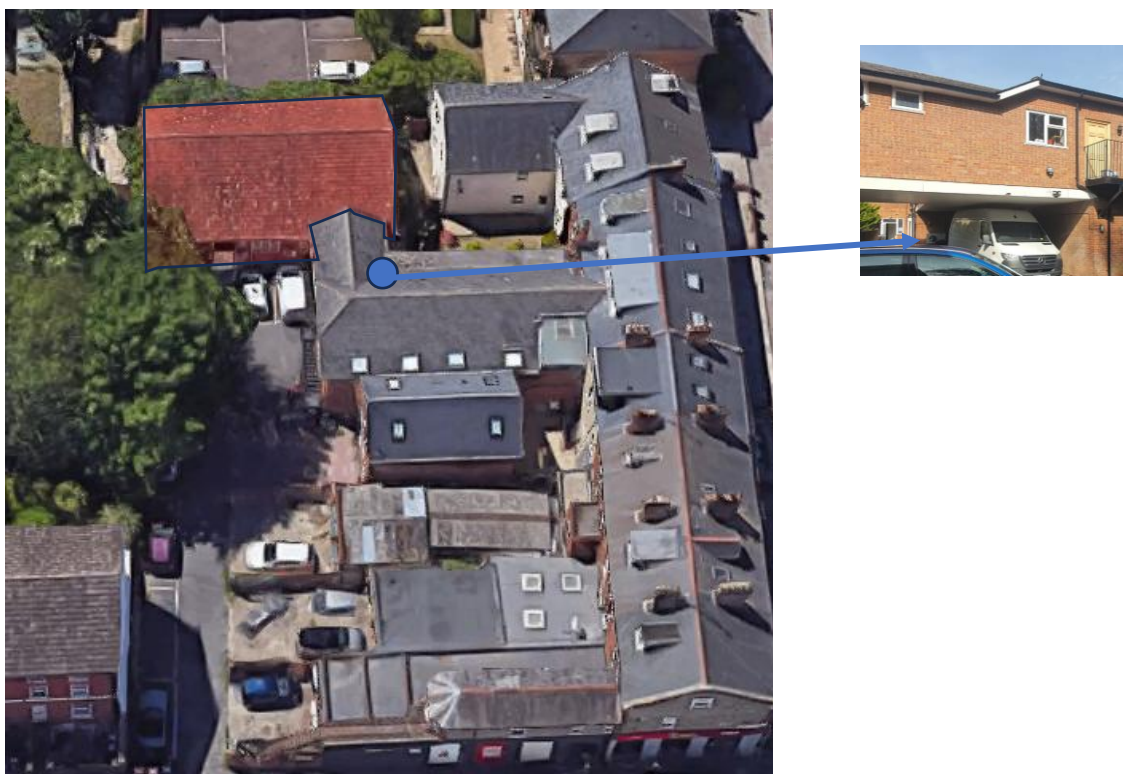


Figure 5.1.2 – Commercial Noise Sources

|                                                                                     |                                                                |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------|
|  | Application Site                                               |
|  | 1 x Condenser Unit – National Halal Meat - 117-119 Oxford Road |

Located at the rear of 117 – 119 Oxford Road, under existing flats is one condenser unit. On attendance, the unit could not be heard over the background noise levels at the façade of the site.

## 7.0 FAÇADE SOUND INSULATION

In accordance with the assessment guidance in Annex G of BS 8233:2014, the sound insulation performance of the building can be estimated by simple calculation from the free-field noise.

| CALCULATION |                        | A                                       | B                                                               | (A-B) +5                                     |
|-------------|------------------------|-----------------------------------------|-----------------------------------------------------------------|----------------------------------------------|
| Location    | Period                 | Free-Field<br>Noise Levels<br>LAeq,T dB | BS8233/WHO<br>Internal Noise<br>Guidance Criteria<br>LAeq, T dB | Typical Insulation<br>Specification<br>dB Rw |
| 1           | Day<br>07:00 – 23:00   | 49                                      | 35                                                              | 19                                           |
|             | Night<br>23:00 – 07:00 | 42                                      | 30                                                              | 17                                           |
|             |                        | 52                                      | 45                                                              | 12                                           |

Table 7.0 - Sound insulation estimate using the simple calculation method of BS8233

Following the rigorous calculation method of Annex G of BS 8233:2014, it can be shown that a suitable standard of residential amenity can be achieved with façade sound insulation of acoustic double glazing.

## 7.1 BUILDING FABRIC SPECIFICATION

Sound reduction performance calculations have been undertaken in order to specify the minimum performance required from glazed and non-glazed elements in order to achieve the recommended internal noise levels shown in Table 2.5, taking into account average and maximum noise levels monitored during the environmental noise survey.

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Typical sized bedrooms with a high ratio of glazing to masonry have been used for all calculations in order to specify glazing.

As a more robust assessment, L<sub>Amax</sub> spectrum values of night-time peaks have also been considered and incorporated into the glazing calculation in order to cater for the interior limit of 45 dB L<sub>Amax</sub> for individual events, as recommended in WHO Guidelines.

## 7.2 NON-GLAZED ELEMENTS

It is understood that the non-glazed element is brickwork cavity walls and would be expected to provide the minimum figures shown above when tested in accordance with BS EN ISO, 140-3:1995.

| Element                | Octave Band Centre Frequency SRI, dB |     |     |    |    |    |
|------------------------|--------------------------------------|-----|-----|----|----|----|
|                        | 125                                  | 250 | 500 | 1K | 2K | 4K |
| Non-Glazed Element SRI | 41                                   | 43  | 48  | 50 | 55 | 55 |

Table 7.2 non-glazed elements sound reduction minimum performance

### 7.3 SPECIFICATION OF GLAZED UNITS

The minimum sound reduction index (SRI) value required for the glazed elements to be installed is shown in Table 7.3.

| Glazing Configuration – 10mm/ 16mm/ 10.5mm Lamiglass |     |     |    |    |    |        |         |  |
|------------------------------------------------------|-----|-----|----|----|----|--------|---------|--|
| Frequency, Hz/dB                                     |     |     |    |    | Rw | Rw + C | Rw +Ctr |  |
| 125                                                  | 250 | 500 | 1K | 2K | 29 | -1     | -4      |  |
| 14                                                   | 19  | 24  | 31 | 41 |    |        |         |  |

Table 7.3 – Required Glazing Performance

The sound reduction performance stated above must be achieved by the glazing system as a whole in its installed condition. The specification therefore applies to both the glazing element and all seals on any openable part of the system. It should be confirmed with any supplier that the full glazing system supplied complies with the requirements stated in Table 7.3. Data has been used from Guardian Glass, see Appendix C for details.

Please note that the above guidance only considers acoustic performance. Other disciplines, which consider thermal, safety, durability etc. should be consulted to ensure suitability.

## 8.0 INTERNAL NOISE CRITERIA

| MP1<br>Monitoring Period | Noise Criteria L <sub>MAX</sub> | No. times exceeded L <sub>MAX</sub> |
|--------------------------|---------------------------------|-------------------------------------|
| 07:00 – 23:00            | 55dB                            | 0                                   |
| 23:00 – 07:00            | 45dB                            | 0                                   |

Table 8.0 – Noise Criteria L<sub>MAX</sub>

| MP1<br>Monitoring Period | Noise Criteria L <sub>Aeq</sub> | Internal Noise Level |
|--------------------------|---------------------------------|----------------------|
| 07:00 – 23:00            | 35dB                            | 23dB                 |
| 23:00 – 07:00            | 30dB                            | 16dB                 |

Table 8.1 - Noise Criteria L<sub>Aeq</sub> -

## 9.0 VENTILATION AND OVERHEATING

Guidance on ventilation and associated acoustic considerations is given in Acoustic Ventilation and Overheating – Residential Design Guide [AVO] issued jointly by the Association of Noise Consultants and the Institute of Acoustics. In this guide, the need for ventilation (as falls under the requirements of Approved Document F [ADF] are covered in three main requirements as follows:

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- Whole Dwelling Ventilation - General ventilation – continuous ventilation of rooms or spaces at a relatively low rate
- Extract Ventilation - Removal of air from a space or spaces (typically stale air from bathrooms or kitchens) to outside
- Purge Ventilation - Manually controlled removal of air at a high rate to eliminate fumes and odours, e.g. during painting and decorating or from burnt food. May be provided by natural or mechanical means.

Four main template systems for providing each of the above ADF ventilation requirements are summarised in the AVO guide as shown in Table 6.0.

| Ventilation System                                                                        | Method Of Whole Dwelling Ventilation                                      | Method of Extract Ventilation                                              | Method of purge Ventilation           |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------|
| <b>System 1</b><br>(Background Ventilators and intermittent extract Fans)                 | Background ventilators<br>(Trickle Vents)                                 | Intermittent extract fans                                                  | Typically provided by opening windows |
| <b>System 2</b><br>(Passive Stack)                                                        | Background ventilators<br>(Trickle Vents) & Passive Stack                 | Continuous via passive stack                                               | Typically provided by opening windows |
| <b>System 3</b><br>(Continuous Mechanical Extract (MEV))                                  | Continuous mechanical extract (low rate), trickle vents provide fresh air | Continuous mechanical extract (high rate), trickle vents provide fresh air | Typically provided by opening windows |
| <b>System 4</b><br>(Continuously mechanical supply and extract with heat recovery (MVHR)) | Continuous mechanical supply and extract (low rate)                       | Continuous mechanical supply and extract (high rate)                       | Typically provided by opening windows |

Table 9.0 – Summary of ADF Ventilation Requirements

The Below Table outlines the appropriate ventilation strategies for this development.

| Ventilation Strategy (according to ADF)                                    |   |
|----------------------------------------------------------------------------|---|
| System 1: Intermittent Extract Fans<br>System 2: Passive Stack Ventilation | ✓ |
| System 3: Continuous Mechanical Extract (MEV)                              | ✓ |
| System 4: Continuous Mechanical Supply & Extract with Heat Recovery (MVHR) | ✓ |

Table 9.0.1 – Ventilation Options

## 9.1 OVERHEATING

The advice in this section has considered the internal ambient noise level with closed windows. The AVO guide requires that consideration has also been given to the overheating condition. With an advocated and simplistic insertion loss of 13 dB from external to internal areas with an open window. It has been noted from the AVO guide, that a material change in behaviour may occur with internal ambient noise levels of > 50 dB LAeq, T (07:00 – 23:00) during the day, > 42 dB LAeq, T or > 65 dB LAmax(F) (23:00 – 07:00) during the night. A Level 1 risk assessment is applicable for the rear façade.

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| Level 1 Risk Assessment following the AVO Guide |                                     |                         | Internal Ambient Noise Level<br>dB re. 20µPa |                    |                  |
|-------------------------------------------------|-------------------------------------|-------------------------|----------------------------------------------|--------------------|------------------|
| Location                                        | Windows                             | Ventilation State       | Day<br>dB LAeq,T                             | Night<br>dB LAeq,T | Max<br>dB LAeq,T |
| MP1                                             | Windows closed and ventilators open | Building Ventilation    | 23                                           | 16                 | 32               |
|                                                 | Windows partially open              | Overheating Ventilation | 36                                           | 29                 | 39               |

Table 9.1 – IANL

## 10.0 EXTERNAL AREAS

External amenity space of the approved development relates to balconies and patio space to the rear.

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BS8233 provides the following guidance regarding balconies. Due to the below, small balconies are not considered in this assessment for external amenity noise: "Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB LAeq,T or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."

The recorded Noise level during the day period was LAeq,16hour is 49dB. It is noted that this is below the desirable noise level range of 50-55 dB recommended by BS8233.

## **11.0 RESIDENTIAL SOUND INSULATION REVIEW**

The floor and wall structure may be subject to pre-completion testing in accordance with requirements of The Building Regulations 2010 Approved Document E (2003 Edition & amendments). It should be expected that the proposed dwelling will exceed the minimum performance standards of the Regulations, as stipulated between dwellings in terms of dB DnT,w +Ctr.

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### **11.1 PARTY FLOOR/ CEILING BETWEEN RESIDENTIAL UNITS**

The following specification is recommended:

1. Sub Floor - Between Joists 100mm mineral wool 45kg/m<sup>3</sup> rigid slabs to be laid tight.
2. Floor - 22mm T&G chipboard sub floor to be laid with a Acoustilay 15mm tiles layed to manufacturer specification or similar to be laid over a T&G 18mm chipboard, creating a floating floor. A separating gap with minimum 3mm must be left between walls and floor and then filled with acoustic sealant to prevent flanking noise.
3. Party Ceilings - 25mm Resilient bars to be installed and fitted with 1x layer 15mm soundbloc plasterboard and 1x 12.5mm soundbloc plasterboard with staggered joins.

### **11.2 PROPOSED SEPARATING WALL CONSTRUCTION**

It is understood that new build separating walls between flats is based on a twin timber stud construction. The following wall specifications are provided:

#### **Timber Stud Party Wall**

- 1 x 12.5mm Gyproc Fire Line
- 1 x 15mm Gyproc Sound Bloc
- 2 x 75mm Studs
- Minimum 200mm Cavity between inner boards
- 100mm Mineral Wool Insulation, density  $\geq 45\text{Kg/m}^3$
- 1 x 15mm Sound Bloc
- 1 x 12.5mm Fire Line

## Masonry Party Wall

- 100mm Brick/Block
- 50mm Timber Stud – Not fixed to wall
- 25mm Mineral Wool Insulation, density  $\geq 45\text{Kg/m}^3$
- 1 x 12.5mm Fire Line

### 11.3 DOOR REQUIREMENTS

Where a degree of sound insulation is deemed necessary, doors with rated acoustic performance would be required. Recommendations with regards to the necessary sound insulation performance of the door units to be installed are shown in Table 11.3

| Rw (dB)        | Typical Door Construction                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| Entrance Doors | Solid Core timber door with drop seals and gaskets, or high quality acoustic perimeter and threshold seals         |
| Internal Doors | Solid core timber door, no seals around the perimeter Solid core timber door, foam tape seals around the perimeter |

Table 11.3– Acoustic Specification of Door Systems

Some general points that should be followed regarding the acoustic performance of doors are as follows.

- Non-hardening caulk should be used to seal joints airtight
- If hollow metal frames are used, they should be fibre- or grout-filled
- Doors should be gasketed around the entire perimeter to be airtight when closed
- Seals should be adjustable to compensate for wear, thermal movement, settlement of building structure and other factors that cause misalignment of the doors
- Good quality hydraulic closers should be fitted on all doors likely to be subjected to heavy use

### 11.4 LIGHTWEIGHT WALL DETAILING

Socket backs in lightweight partitions should be boxed in using two layers of plasterboard of the same mass as the partition wall and should be staggered by at least 300mm. Party walls should ‘break’ any lightweight flanking constructions to ensure acoustic discontinuity between the leaves of the partition.

## 11.5 DOWNLIGHTERS

Downlighters should be installed in accordance with the manufacturer's guidelines at a density of no more than 1 light per 2m<sup>2</sup> of ceiling and at centres not less than 0.75m. Openings should be no larger than 100mm diameter, or 10mm x 100mm.

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## 11.6 WALL JUNCTIONS

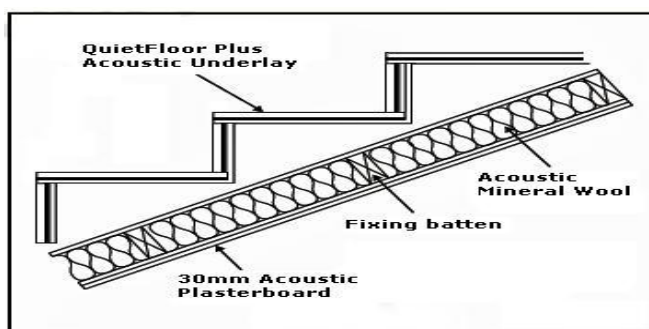
Where party walls meet other constructions, the party wall construction must 'break' the flanking construction, such as the plasterboard lining of external walls. Blockwork for internal leaves of external and flanking walls should have a minimum density of 1850kg/m<sup>3</sup>. With these proposed works implemented the flanking construction is expected to achieve the uprated performance requirements. Cavity stops should be used at all junctions between walls and floors in the external cavity

### 11.10 PARTY WALL DETAIL BETWEEN FLATS AND STAIRWELLS

It is understood that the proposed wall construction to be used between residences and communal areas (in area of column only) is as follows:

- 3mm plaster skim finish
- 2x12.5mm SoundBloc plasterboard
- Gypframe 'I' Stud (70 'I' 70) framework with 50mm Isover Steel
- Frame Infill Batts between studs
- 200mm RC concrete shear wall (fairfaced on staircase side)

The stair treads will have Acoustilay 8 or equivalent glued to each individual tread to prevent impact noise.



### 11.12 REVERBERATION CONTROL IN COMMON SPACES

Approved Document E of the Building Regulations provides two methods for providing reverberation control in common spaces. Method A states that for entrance halls, corridors, and hallways, an area equal to or greater than the floor area should be covered with a Class C absorber or better.

Method B provides a methodology for calculating the required percentage area of absorption in a space based on the proposed finishes. As carpet is proposed as the walking surface in the entrance halls, corridors, and hallways, Method A would result in excess reverberation treatment being installed. Therefore, calculations have been undertaken as per Method B, with the resultant percentage areas of absorption being shown in Table 11.12

| Product                       | Absorber Class | Ceiling Coverage %               |
|-------------------------------|----------------|----------------------------------|
| Gyptone Line 6 or Similar     | D              | 100% of corridors ceiling        |
| Gyptone Quattro 41 or Similar | C              | 50% of the entrance hall ceiling |
| Gyptone Quattro 42 or Similar | D              | 80% of the Stairwells            |

Table 11.12 – Gypsum Reverberation treatment Options

## 12.0 SUMMARY AND CONCLUSIONS

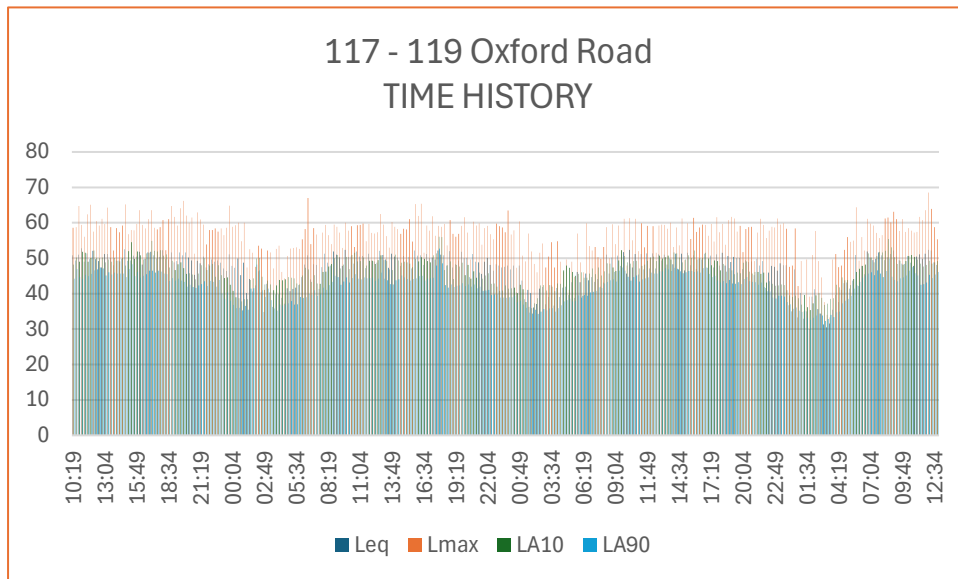
A baseline noise survey has been undertaken by DAA Group to establish the prevailing noise climate in the locality of 117-119 Oxford Road, Reading, RG1 7UH in support of a Planning Application for the conversion of a commercial space and the construction of 6 residential units.

Using results of the noise survey, the sound insulation performance for the whole building envelope including glazing (windows) is assessed, and a scheme of noise mitigation measures is established and included in the report verified by BS8233:2014 rigorous method building envelope sound insulation calculations.

A scheme of noise mitigation measures in the report provides specification details for the internal sound insulation.

It is concluded that, the impact of noise will not prejudice the amenities of any future occupants provided the above points are taken into consideration.

## APPENDIX A – MEASUREMENTS



## APPENDIX B - ACOUSTIC TERMINOLOGY

### B.1 WEIGHTED DECIBEL, dB(A)

The unit generally used for measuring environmental, traffic or industrial noise is the A-weighted sound pressure level in decibels, denoted dB(A). The weighting is based on the frequency response of the human ear and has been found to correlate well with human subjective reactions to various sounds. An increase or decrease of approximately 10 dB corresponds to a subjective doubling or halving of the loudness of a noise, and a change of 2 to 3 dB is subjectively barely perceptible.

### B.2 EQUIVALENT CONTINUOUS SOUND LEVEL, $L_{Aeq}$

Another index for assessment for overall noise exposure is the equivalent continuous sound level,  $L_{Aeq}$ . This is a notional steady level which would, over a given period, deliver the same sound energy as the actual time-varying sound over the same period.

### B.3 MAXIMUM NOISE LEVEL, $L_{Amax}$

The maximum noise level identified during a measurement period. Experimental data has shown that the human ear does not generally register the full loudness of transient sound events of less than 125 ms in duration.

### B.4 NOISE RATING, NR

Noise ratings are used as a single figure criterion for specifying services noise in buildings. Each noise rating value has an associated spectrum of defined values in each third or octave frequency band. To determine the noise rating of a room the measured spectrum is compared to a set of noise rating curves. The highest NR curve that crosses any single frequency band of the measurement determines the noise rating for the room.

The single figure noise rating is read at the 1 kHz band.

### B.5 SOUND LEVEL DIFFERENCE (D)

The sound insulation required between two spaces may be determined by the sound level difference needed between them. A single figure descriptor which characterises a range of frequencies, the weighted sound level difference, D, is sometimes used (BS EN ISO 717-1). This parameter is not adjusted to reference conditions.

The standardized level difference,  $D_n$ , T is a measure of the difference in sound level between two rooms, in each frequency band, where the reverberation time in the receiving room has been normalised to 0.5 s. This parameter measures all transmission paths, including flanking paths.

The weighted standardized level difference,  $D_{nTw}$ , is a measure of the difference in sound level between two rooms, which characterises a range of frequencies and is normalised to a reference reverberation time

### B.6 SOUND REDUCTION INDEX (R)

The sound reduction index (or transmission loss) of a building element is a measure of the loss of sound through the material, i.e. its attenuation properties. It is a property of the component, unlike the sound level difference which is affected by the common area between the rooms and the acoustic of the receiving room. The weighted sound reduction index,  $R_w$ , is a single figure description of sound reduction index characterising a range of frequencies, which is defined in BS EN ISO 717-1: 1997. The  $R_w$  is calculated from measurements in an acoustic laboratory

## B.7 STATISTICAL NOISE LEVELS ( $L_{A90, (T)}$ $L_{A1, (T)}$ $L_{A10, (T)}$ etc.)

For levels of noise that vary widely with time, for example road traffic noise, it is necessary to employ an index which allows for this variation. The  $L_{A10}$  is the level exceeded for ten per cent of the time under consideration, has historically been

adopted in the UK for the assessment of road traffic noise. The  $L_{A90}$  is the level exceeded for ninety per cent of the time, has been adopted to represent the background noise level. The  $L_{A1}$  the level exceeded for one per cent of the time, is representative of the maximum levels recorded during the sample period. A weighted statistical noise levels are denoted  $L_{A10, dB}$   $L_{A90, dB}$  etc. The reference time (T) is normally included, e.g.  $L_{A10, (5min)}$ , &  $L_{A90, (8hr)}$ .

## B.8 TYPICAL NOISE LEVELS

Typical noise levels are given in the following table.

| Noise Level dB(A) | Example                               |
|-------------------|---------------------------------------|
| 130               | Threshold of pain                     |
| 120               | Jet aircraft take-offs at 100 m       |
| 110               | Chain saw at 1 m                      |
| 100               | Inside disco                          |
| 90                | Heavy lorries at 5 m                  |
| 80                | Kerbside of busy street               |
| 70                | Loud radio (in typical domestic room) |
| 60                | Office or restaurant                  |
| 50                | Domestic fan heaters at 1m            |
| 40                | Living room                           |
| 30                | Ventilation Noise in Theatre          |
| 20                | Remote countryside on still night     |
| 10                | Sound insulated test chamber          |
| 0                 | Threshold of hearing.                 |

## APPENDIX C – GLAZING SPECIFICATION



### Acoustic Performance

#### Glazing Configuration

**3mm Float Glass**  
10mm Cavity  
**3mm Float Glass**

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#### Sound Reduction Indices

| Frequency, Hz / dB* |     |     |      |      |      | Rw | C  | Ctr | O/TC | STC |
|---------------------|-----|-----|------|------|------|----|----|-----|------|-----|
| 125                 | 250 | 500 | 1000 | 2000 | 4000 | 29 | -1 | -4  | 23   | 28  |
| 14                  | 19  | 24  | 31   | 41   | 21   |    |    |     |      |     |

\*The values expressed in the frequency table correspond to the central values of the 1/3 octave band

Disclaimer: The acoustic performance data provided in the reports is based on a test protocol or an estimation and may be used if user actual glazing is identical to input data described herein. Acoustic performance data herein is only applicable for glazing dimensions 1,23 m x 1,48 m (as per testing standard). Estimation of acoustic performance is based on component-similarity assumptions which are derived from measured data and interpolation to expand the database of values from test protocols. Due to inherent variations in acoustic performance when testing in accordance with EN ISO 10140-3/EN ISO 10140-2, some variation in the calculated performance can also be expected. As such, the weighted performance, Rw, and adaptation terms, C and Ctr, should typically be considered to be accurate within ±2 dB. However, wider deviations can occur. Actual performance may vary according to the glazing dimensions, frame system, noise sources and many other parameters. The acoustic performance data herein should not be used as a substitute for tests of actual glazing. For more information, please consult Assumptions and Terminology section in Guardian Acoustic Assistant. By accessing this calculator, you agree not to alter or modify the generated report data and information, by any means. Any manual alteration will be your own responsibility and will annul all the content of the report.

Thursday, October 31, 2024 | Acoustic database 20221229

## APPENDIX D – CALCULATIONS

### Calculation Sheet

MP1 - 07:00 - 23:00 to LR

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|                                    |     | Octave Band Centre Frequency (Hz) |       |       |       |       |       |       |               |
|------------------------------------|-----|-----------------------------------|-------|-------|-------|-------|-------|-------|---------------|
|                                    |     | 63                                | 125   | 250   | 500   | 1k    | 2k    | 4k    | 8k            |
| <b>Noise Source</b>                |     |                                   |       |       |       |       |       |       |               |
| Noise Source - MP1 - 07:00 - 23:00 |     |                                   |       |       |       |       |       |       |               |
| Noise Levels                       |     | 53.0                              | 53.0  | 48.0  | 47.0  | 45.0  | 40.0  | 32.0  | 32.0 49.4 dBA |
| <b>Composite SRI</b>               |     |                                   |       |       |       |       |       |       |               |
| Facade Width (m)                   | 4.0 |                                   |       |       |       |       |       |       |               |
| Facade Height (m)                  | 3.0 |                                   |       |       |       |       |       |       |               |
| Main Element - External Wall       |     |                                   |       |       |       |       |       |       |               |
| SRI                                |     | -                                 | 41    | 43    | 48    | 50    | 55    | 55    | - Rw 51       |
| Window Width (m)                   | 1.4 |                                   |       |       |       |       |       |       |               |
| Window Height (m)                  | 2.1 |                                   |       |       |       |       |       |       |               |
| No. of Windows (no)                | 1.0 |                                   |       |       |       |       |       |       |               |
| Glazed Element - 29Rw              |     |                                   |       |       |       |       |       |       |               |
| SRI                                |     | -                                 | 14    | 19    | 24    | 31    | 41    | 21    | - Rw 29       |
| No. of Vents (no)                  | 1.0 |                                   |       |       |       |       |       |       |               |
| Vent - Standard Vents              |     |                                   |       |       |       |       |       |       |               |
| Dne                                |     | 36                                | 36    | 38    | 36    | 32    | 37    | 39    | 48 Dnew 36    |
|                                    |     | -                                 | -20.0 | -24.9 | -29.2 | -31.4 | -37.3 | -26.9 | -             |
| <b>10 log (S/A)</b>                |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver - LR             |     |                                   |       |       |       |       |       |       |               |
|                                    |     | -                                 | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -             |
| <b>+3</b>                          |     |                                   |       |       |       |       |       |       |               |
|                                    |     | -                                 | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | -             |
| <b>Internal Receiver Noise</b>     |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver Noise - LR       |     |                                   |       |       |       |       |       |       |               |
| Reverberant Field, LPrev           |     | -                                 | 34.9  | 25.0  | 19.7  | 15.5  | 4.6   | 7.0   | - 23.2 dBA    |

## Calculation Sheet

MP1 23:00 - 07:00 to BR

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|                                  |     | Octave Band Centre Frequency (Hz) |       |       |       |       |       |       |               |
|----------------------------------|-----|-----------------------------------|-------|-------|-------|-------|-------|-------|---------------|
|                                  |     | 63                                | 125   | 250   | 500   | 1k    | 2k    | 4k    | 8k            |
| <b>Noise Source</b>              |     |                                   |       |       |       |       |       |       |               |
| Noise Source - MP1 23:00 - 07:00 |     |                                   |       |       |       |       |       |       |               |
| Noise Levels                     |     | 45.0                              | 45.0  | 39.0  | 40.0  | 38.0  | 33.0  | 25.0  | 25.0 42.1 dBA |
| <b>Composite SRI</b>             |     |                                   |       |       |       |       |       |       |               |
| Facade Width (m)                 | 3.0 |                                   |       |       |       |       |       |       |               |
| Facade Height (m)                | 3.0 |                                   |       |       |       |       |       |       |               |
| Main Element - External Wall     |     |                                   |       |       |       |       |       |       |               |
| SRI                              |     | -                                 | 41    | 43    | 48    | 50    | 55    | 55    | - Rw 51       |
| Window Width (m)                 | 1.2 |                                   |       |       |       |       |       |       |               |
| Window Height (m)                | 2.1 |                                   |       |       |       |       |       |       |               |
| No. of Windows (no)              | 1.0 |                                   |       |       |       |       |       |       |               |
| Glazed Element - 29Rw            |     |                                   |       |       |       |       |       |       |               |
| SRI                              |     | -                                 | 14    | 19    | 24    | 31    | 41    | 21    | - Rw 29       |
| No. of Vents (no)                | 1.0 |                                   |       |       |       |       |       |       |               |
| Vent - Standard Vents            |     |                                   |       |       |       |       |       |       |               |
| Dne                              |     | 36                                | 36    | 38    | 36    | 32    | 37    | 39    | 48 Dnew 36    |
|                                  |     | -                                 | -19.3 | -24.2 | -28.4 | -30.3 | -36.1 | -26.2 | -             |
| <b>10 log (S/A)</b>              |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver - BR           |     |                                   |       |       |       |       |       |       |               |
|                                  |     | -                                 | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -             |
| <b>+3</b>                        |     |                                   |       |       |       |       |       |       |               |
|                                  |     | -                                 | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | -             |
| <b>Internal Receiver Noise</b>   |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver Noise - BR     |     |                                   |       |       |       |       |       |       |               |
| Reverberant Field, LPrev         |     | -                                 | 27.6  | 16.7  | 13.5  | 9.6   | -1.2  | 0.7   | - 16.3 dBA    |

## Calculation Sheet

### MP1 LAMAX to BR

|                                |     | Octave Band Centre Frequency (Hz) |       |       |       |       |       |       |               |
|--------------------------------|-----|-----------------------------------|-------|-------|-------|-------|-------|-------|---------------|
|                                |     | 63                                | 125   | 250   | 500   | 1k    | 2k    | 4k    | 8k            |
| <b>Noise Source</b>            |     |                                   |       |       |       |       |       |       |               |
| Noise Source - MP1 LAMAX       |     |                                   |       |       |       |       |       |       |               |
| Noise Levels                   |     | 38.0                              | 38.0  | 50.0  | 49.0  | 48.0  | 45.0  | 37.0  | 37.0 52.2 dBA |
| <b>Composite SRI</b>           |     |                                   |       |       |       |       |       |       |               |
| Facade Width (m)               | 3.0 |                                   |       |       |       |       |       |       |               |
| Facade Height (m)              | 3.0 |                                   |       |       |       |       |       |       |               |
| Main Element - External Wall   |     |                                   |       |       |       |       |       |       |               |
| SRI                            |     | -                                 | 41    | 43    | 48    | 50    | 55    | 55    | - Rw 51       |
| Window Width (m)               | 1.2 |                                   |       |       |       |       |       |       |               |
| Window Height (m)              | 2.1 |                                   |       |       |       |       |       |       |               |
| No. of Windows (no)            | 1.0 |                                   |       |       |       |       |       |       |               |
| Glazed Element - 29Rw          |     |                                   |       |       |       |       |       |       |               |
| SRI                            |     | -                                 | 14    | 19    | 24    | 31    | 41    | 21    | - Rw 29       |
| No. of Vents (no)              | 1.0 |                                   |       |       |       |       |       |       |               |
| Vent - Standard Vents          |     |                                   |       |       |       |       |       |       |               |
| Dne                            |     | 36                                | 36    | 38    | 36    | 32    | 37    | 39    | 48 Dnew 36    |
|                                |     | -                                 | -19.3 | -24.2 | -28.4 | -30.3 | -36.1 | -26.2 | -             |
| <b>10 log (S/A)</b>            |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver - BR         |     |                                   |       |       |       |       |       |       |               |
|                                |     | -                                 | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -1.1  | -             |
| <b>+3</b>                      |     |                                   |       |       |       |       |       |       |               |
|                                |     | -                                 | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | -             |
| <b>Internal Receiver Noise</b> |     |                                   |       |       |       |       |       |       |               |
| Internal Receiver Noise - BR   |     |                                   |       |       |       |       |       |       |               |
| Reverberant Field, LPrev       |     | -                                 | 20.6  | 27.7  | 22.5  | 19.6  | 10.8  | 12.7  | - 24.8 dBA    |