Former Car Repair Centre 70 – 86 Royal College Street London NW1 0TH

# NOISE IMPACT ASSESSMENT



## **ROCCO VENTURES**







70-86 Royal College Street, London, NW1 0TH

## Noise Impact Assessment

## February 2020



Ref: 19-5536 NIA Rev B



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## 1. Executive Summary

An assessment has been carried out of the present noise climate at **70-86 Royal College Street**, **London**, **NW1 OHT** and the impact of that noise on the proposed development. The proposed scheme involves a 6 storey health care centre. It is proposed that the basement floor will contain an open plan office, meeting rooms, and a reception area. The ground floor will contain consultation rooms and a lobby area. Above ground floor there will be single and multi-bed wards.

The proposed development site is located in a mixed commercial and residential area. Immediately to the west is a row of residential buildings.

The assessment is based on the results of a noise measurement survey that has been carried out over a 48-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  $R_{\rm w}$  of approximately 55 dB.
- A typical double glazing system in a 13/12/13 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 45 dB R<sub>w</sub>.
- An MVHR system will be installed to allow adequate ventilation without the requirement to open windows.

The responsibilities of the proposed development to protect the future operations of the Parcelforce Worldwide depot have been addressed, in line with the advice provided in the PPG-Noise in respect of the Agent of Change Principle, through the provision of an MVHR system to provide adequate ventilation to bedrooms without the requirement to open windows.

An initial assessment of plant noise levels has been carried out and maximum plant noise levels have been provided, based on the measured noise levels. When the exact items of plant to be installed have been identified, Syntegra would recommend that a further plant noise assessment is carried out in order to ensure compliance with the target noise criteria.

Overall, it has been shown that, through careful consideration of the building envelope construction and plant selections, the proposed development should avoid future occupants 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 users would be avoided, in line with the aims of the NPPF, NPSE and PPG-Noise.

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## 2. Introduction

This report has been prepared to support the planning application for the proposed development at **70-86 Royal College Street, London, NW1 OHT**. The proposed scheme involves a 6 storey health care centre. It is proposed that the basement floor will contain an open plan office, meeting rooms, and a reception area. The ground floor will contain consultation rooms and a lobby area. Above ground floor there will be single and multi-bed wards.

The report assesses, through on-site noise measurements, the impact of the existing noise climate on the proposed development. An initial assessment of plant noise levels has been carried out and maximum plant noise levels have been provided, based on the measured noise levels.

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

The proposed development site is located in a mixed commercial and residential area. Immediately to the west is a row of residential buildings. To the south of the site is a Parcelforce Worldwide courier service centre. The location of the proposed development site is provided in **Figure 2.1**.



Figure 2.1: Site Location

















## 3. Planning Policy

### 3.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was released in March 2012 and last updated in 2019. The purpose of the planning system is to contribute to the achievement of sustainable development and to encourage good design. There are three dimensions to sustainable development: economic, social and environmental.

Central to the NPPF, paragraph 10 states: 'At the heart of the National Planning Policy Framework is a *presumption in favour of* [permitting] *sustainable development*'. This is expanded upon in paragraph 11, where it is stated:

### *'...For decision-taking* this means:

- approving development proposals that accord with an up-to-date development plan without delay; or
- where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
  - the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or
  - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole'

Paragraph 170 states 'Planning policies and decisions should contribute to and enhance the natural and local environment by... preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, unacceptable levels of... noise pollution...'.

Paragraph 180 states: 'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development and avoid noise giving rise to significant adverse impacts on health and the quality of life (see Explanatory Note to the Noise Policy Statement for England (DEFRA)).
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*'

### 3.2. Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) aims to 'through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

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



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### 3.3. Local Planning Policy

The site is located within the administrative boundary of Camden Council (CC).

The Camden Local Plan (adopted June 2017) contains Appendix 3, which sets out their required noise criteria in terms of the adopted *Lowest Observed Adverse Effect Level* (LOAEL) and *Significant Observed Adverse Effect Level* (SOAEL), in line with the PPG-Noise guidance. In respect of the proposed development, the most appropriate noise criteria are set out in Table B of the Appendix and reproduced in this report as **Table 3.1**.

| Dominant Noise<br>Source | Assessment<br>Location                      | Design<br>Period | LOAEL                        | LOAEL to SOAEL                        | SOAEL                         |
|--------------------------|---|------------------|------------------------------|---------------------------------------|-------------------------------|
| Anonymous<br>noise such  | Noise at 1<br>metre from<br>noise sensitive | Day              | <50 dB L <sub>Aeq,16hr</sub> | 50 dB to 72 dB L <sub>Aeq,16hr</sub>  | >72 dB L <sub>Aeq,16hr</sub>  |
|                          | façade                                      | Night            | <45 dB L <sub>Aeq,8hr</sub>  | 45 dB to 62 dB L <sub>Aeq,8hr</sub>   | >62 dB L <sub>Aeq,8hr</sub>   |
| as general               | Inside a<br>bedroom                         | Day              | <35 dB L <sub>Aeq,16hr</sub> | 35 dB to 45 dB L <sub>Aeq,16hr</sub>  | >45 dB L <sub>Aeq,16hr</sub>  |
| noise, road              |   | Night            | <30 dB L <sub>Aeq,8hr</sub>  | 30 dB to 40 dB L <sub>Aeq,8hr</sub>   | >40 dB L <sub>Aeq,8hr</sub>   |
|                          |   | Night            | 42 dB L <sub>Amax,fast</sub> | 40 dB to 73 dB L <sub>Amax,fast</sub> | >73 dB L <sub>Amax,fast</sub> |
| traffic                  | Outdoor living<br>space (free<br>field)     | Day              | <50 dB L <sub>Aeq,16hr</sub> | 50 dB to 55 dB L <sub>Aeq,16hr</sub>  | >55 dB L <sub>Aeq,16hr</sub>  |

Table 3.1: Noise Levels Applicable to Noise Sensitive Residential Development Proposed in Areas of Existing Noise

It is noted that the above noise criteria provided by CC are for the purpose of residential development, as opposed to a health care centre. However, the criteria have been provided within this report in order to demonstrate the likely acceptable levels for the wards, which are a similar use to residential, within the proposed development.

The noise levels applicable to proposed industrial and commercial developments including plant and machinery is also documented in Appendix 3 of CC's Local Plan and are presented in **Table 3.2** as it is anticipated that there will be plant installed in the proposed development building.

| Dominant<br>Noise Source | Assessment Location  | Design<br>Period | LOAEL   | LOAEL to SOAEL  | SOAEL  |
|--------------------------|--|------------------|---|---|--|
| Dwellings                | Garden used for<br>main amenity (free<br>field) and Outside<br>living or dining or<br>bedroom window<br>(façade) | Day              | 'Rating level'<br>10dB below<br>background  | 'Rating level' between<br>9dB below and 5dB<br>above background   | 'Rating level' greater than<br>5dB above background  |
| Dwellings                | Outside bedroom<br>window (façade)   | Night            | 'Rating level'<br>10dB below<br>background<br>and no events<br>exceeding<br>57dBL <sub>Amax</sub> | 'Rating level' between<br>9dB below and 5dB<br>above background or<br>noise events between<br>57dB and 88dB L <sub>Amax</sub> | 'Rating level' greater than<br>5dB above background<br>and/or events exceeding<br>88dB L <sub>Amax</sub> |

Table 3.2: Noise Levels Applicable to proposed industrial and commercial developments (including plant and

machinery)



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### 4.1. Planning Practice Guidance for Noise

The Planning Practice Guidance for Noise (PPG) was published in March 2014 and updated in December 2014. The PPG provides advice on how to determine the noise impact on development:

'Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.'

The document goes on to provide a definition for the levels of noise exposure at which an effect may occur:

'Significant observed adverse effect level: this is the level of noise exposure above which significant adverse effects on health and quality of life occur.

*Lowest observed adverse effect level:* this is the level of noise exposure above which adverse effects on health and quality of life can be detected.

**No observed effect level:** this is the level of noise exposure below which no effect at all on health and quality of life can be detected.'

It is important to understand that as the PPG does not provide any advice with respect to specific noise levels/ limits for different sources of noise, it is appropriate to consider other sources of advice and guidance documents when considering whether new developments would be sensitive to the prevailing acoustic environment.

### 4.1.1. Agent of Change Principle

The Agent of Change Principle was introduced to the National Planning Policy Framework (NPPF) within the July 2018 update and was retained in the more recent February 2019 update. In both versions of the document, it is stated at paragraph 182:

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



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The PPG provides detailed guidance on this principle, and in particular states, at Paragraph 005 (reference ID: 30-005-20190722, Revision date: 22 07 2019):

### "What factors influence whether noise could be a concern?

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

•••

More specific factors to consider when relevant include:

•••

• whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations."

Additionally, at Paragraph 008 (Reference ID: 30-008-20190722, Revision date: 22 07 2019) it is stated:

## "How can the risk of conflict between new development and existing businesses or facilities be addressed?

...

The agent of change will also need to define clearly the mitigation being proposed to address any potential significant adverse effects that are identified. Adopting this approach may not prevent all complaints from the new residents/users about noise or other effects, but can help to achieve a satisfactory living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed (for example, keeping windows closed and using alternative ventilation systems when the noise or other effects are occurring).

It can be helpful for developers to provide information to prospective purchasers or occupants about mitigation measures that have been put in place, to raise awareness and reduce the risk of post-purchase/occupancy complaints."

The PPG states, at Paragraph 010 (Reference ID: 30-010-20190722, Revision date: 22 07 2019):

## "Are there further considerations relating to mitigating the impact of noise on residential developments?

Noise impacts may be partially offset if residents have access to one or more of:

- a relatively quiet facade (containing windows to habitable rooms) as part of their dwelling;
- a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced if this area is exposed to noise levels that result in significant adverse effects;
- a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or
- a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minute walking distance)."

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### 4.2. Health Technical Memorandum 08-01: Acoustics

The Health Technical Memorandum 08-01: Acoustics (HTM 08-01) was published by the Department of Health in 2013. HTM 08-01 details the acoustic design criteria that are important for healthcare premises.

Table 1 in Section 2 of the document specifies the criteria for noise intrusion from external sources. Those most relevant to the proposed development are reproduced in **Table 4.1** below.

| Room Type                               | Example                           | Criteria for noise intrusion to<br>be met inside the spaces from<br>external sources (dB) |
|---|-----------------------------------|---|
| Ward – single person                    | Single-bed ward, single-bed       | 40 L <sub>Aeq, 1hr</sub> daytime  |
|   | recovery areas and on-call        | 35 L <sub>Aeq, 1hr</sub> night  |
|   | room, relatives' overnight stay   | 45 L <sub>Amax,f</sub> night  |
| Ward- multi-bed                         | Multi-bed wards, recovery         | 40 L <sub>Aeq, 1hr</sub> daytime  |
|   | areas                             | 35 L <sub>Aeq, 1hr</sub> night  |
|   |                                   | 45 L <sub>Amax,f</sub> night  |
| Small office-type spaces                | Private offices, small            | 40 L <sub>Aeq, 1hr</sub>  |
|   | treatment rooms, interview        |   |
|   | rooms, consulting rooms           |   |
| Circulation spaces                      | Corridors, hospital street, atria | 55 L <sub>Aeq, 1hr</sub>  |
| Public areas                            | Dining areas, waiting areas,      | 50 LAeq, 1hr  |
|   | playrooms                         |   |
| Personal hygiene (en-suite)             | Toilets, showers                  | 45 L <sub>Aeq, 1hr</sub>  |
| Personal hygiene (public and staff)     | Toilets, showers                  | 55 L <sub>Aeq, 1hr</sub>  |
| Large meeting rooms (>35 m <sup>2</sup> | Lecture theatres, meeting         | 35 L <sub>Aeq, 1hr</sub>  |
| floor area)                             | rooms, board rooms, seminar       |   |
|   | rooms, classrooms                 |   |
| Small meeting rooms (≤35 m <sup>2</sup> | Meeting rooms, seminar            | 40 LAeq, 1hr  |
| floor area)                             | rooms, classrooms, board          |   |
|   | rooms                             |   |

Table 4.1: Criteria for noise intrusion from external sources

Notes (taken from Section 2 of HTM 08-01 in relation to the above Table):

- "Night is defined as the hours between 23.00 and 07.00.
- A L<sub>Amax,f</sub> limit for short-term events is included for sleeping areas and operating theatres. The intention is that this should apply to events that occur several times during the night (for example passing trains) rather than sporadic events.
- Where windows have trickle vents, the criteria would normally apply with the windows closed but trickle vents open. If natural ventilation is provided by means other than trickle vents, the acoustic criteria are to be achieved while the required amount of ventilation is supplied.
- To achieve the acoustic criteria on noisy sites, acoustically treated trickle vents or mechanical ventilation may be required. Sealed façades may be necessary for the noisiest sites. The acoustic adviser should liaise with the services designer to establish what constitutes the required amount of ventilation, the size of trickle vents, and the acoustic implications of natural ventilation.
- Noise from a service yard and other similar activities should be designed not to disturb noisesensitive accommodation or noise sensitive receptors outside the site. Where possible, the

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service yard should be kept away from accommodation, and canopies and other acoustic screening methods should be considered. Without these, it is unlikely that noise-sensitive rooms overlooking a service yard can use trickle vents or openable windows for ventilation. A sealed façade and mechanical ventilation are therefore likely to be required in these locations.

• The intrusive noise criteria do not include plant noise from adjacent hospital buildings. This should be considered as mechanical service noise."

### 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.





















#### 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 over a 48-hour period. The noise climate at the site is dominated by road traffic noise and occasional activity from the Parcelforce Worldwide building. It is noted that the Parcelforce Worldwide operations are practically 24 hours a day, 7 days a week.

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 9<sup>th</sup> July 2019 and 1100 hrs on Thursday 11<sup>th</sup> June 2019.

During the noise measurement survey, the temperature was up to 25°C during the daytime, dropping to approximately  $16^{\circ}$ C overnight. There was a light (0.5 - 1 m/s) south-westerly wind throughout the survey. The cloud cover was noted to be 80% at the start and 20% at the end of the survey.

Noise measurements were carried out over a 48-hr period at Measurement Position 1 (MP1) in a freefield location at a height of approximately 2m on the southern boundary of the site and 14m from Royal College Street. The location was chosen in order to obtain representative noise levels from road traffic at the site from a reasonably secure location.

> The Golden Lion College MP1 elforce Worldwide Parcelforce Worldwide site

The noise monitoring position is shown in Figure 5.1.

Figure 5.1: Noise Monitoring Location

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

| Measurement<br>Position | Period (hours)              | L <sub>Aeq,T</sub> (dB) | L <sub>Amax</sub> (dB) | Typical L <sub>A90</sub> (dB) |
|-------------------------|-----------------------------|-------------------------|------------------------|-------------------------------|
| N4D4                    | Daytime<br>(0700 – 2300)    | 57                      | 80                     | 47                            |
| WPI                     | Night-time<br>(2300 – 0700) | 53                      | 73                     | 36                            |

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

Note: The average noise levels stated are logarithmic for L<sub>Aeq</sub>. The L<sub>Amax,F</sub> 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<sub>Amax,F,5min</sub> noise level at night (2300 hrs – 0700 hrs). The typical L<sub>A90</sub> is the most commonly measured L<sub>A90,5min</sub> over the identified assessment periods.

In order to determine the noise levels at the proposed façade positions, the measured noise level have been corrected for distance to the dominant noise source (assumed to be Royal College Street as a worst-case) using standard acoustic formulae. We have assumed a line source correction for the  $L_{Aeq}$ and a point source correction for the  $L_{Amax}$  in line with normal good acoustic practices for a road.

The measured noise levels at MP1 will be utilised with a distance correction to Royal College Street (MP1 was 14m from Royal College Street and the proposed front façade is approximately 4m from Royal College Street).

An additional 5 dB has been added to the distance corrected noise levels in order to account for any partial shielding from the open slatted fence between the measurement position and Royal College Street which may have been acting as a partial barrier.

The predicted noise levels, taking into account distance corrections and partial shielding corrections, fall within the range indicated on the Extrium noise maps<sup>1</sup> which were produced as part of the strategic noise mapping exercise undertaken by Defra in 2012 to meet the requirements of the Environmental Noise Directive (Directive 2002/49/EC) and the Environmental Noise (England) Regulations 2006 (as amended). Accordingly, the corrections taken are justified.

| Assessment<br>Position | Period (hours)              | L <sub>Aeq,T</sub> (dB) | L <sub>Amax</sub> (dB) |
|------------------------|-----------------------------|-------------------------|------------------------|
| Royal College          | Daytime<br>(0700 – 2300)    | 67                      | -                      |
| Street Façade          | Night-time<br>(2300 – 0700) | 63                      | 88                     |

The assessment noise levels are presented in Table 5.2.

Table 5.2: Assessment Noise Levels

<sup>1</sup> <u>http://extrium.co.uk/noiseviewer.html</u>

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## 6. Initial Risk Assessment

The assessment noise levels have been compared against the Camden Local Plan criteria presented in **Table 3.1**, and this comparison is presented in **Table 6.1**.

| Accossment    |                |                         | Camden     |
|---------------|----------------|-------------------------|------------|
| Assessment    | Period (hours) | L <sub>Aeq,T</sub> (dB) | Assessment |
| Location      |                |                         | Criteria   |
|               | Daytime        | 67                      | LOAEL to   |
| Royal College | (0700 – 2300)  | 07                      | SOAEL      |
| Street Façade | Night-time     | 62                      | SOAEL      |
|               | (2300 – 0700)  | 05                      | JUAEL      |

Table 6.1: Initial Risk Assessment

It can be identified, from **Table 6.1**, that the assessment noise levels fall into the LOAEL to SOAEL category during the daytime and just fall into the SOAEL category at night. Accordingly, the sound insulation of the building façade will be required to mitigate noise levels to achieve the noise level criteria presented in HTM 08:01 and, where reasonably practicable, the LOAEL internal noise level requirements of CC.

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## 7. Internal Noise Levels

Ideally internal noise levels should be achieved in as many properties as possible with windows open. Due to the relatively high noise levels present at the site, bedrooms 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. As a worst case, the assessment has been carried out only for bedrooms. In carrying out our assessment, Syntegra have made the following assumptions:

- The façade build-up will be a standard brick and block construction (or equivalent) to achieve an  $R_{\rm w}$  of approximately 55 dB.
- A typical double glazing system in a 13/12/13 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 45 dB R<sub>w</sub>.
- An MVHR system will be installed to allow adequate ventilation without the requirement to open windows.

**Table 7.1** identifies the likely L<sub>Aeq</sub> and L<sub>Amax</sub> internal noise levels, assuming windows closed, utilising the *Simple Calculation Method* described in BS 8233:2014. It can be seen that bedrooms will achieve the identified requirements with closed windows.

| Location                                    | Period (brs)                   | External<br>Noise Levels | Sound Insulation of | Internal<br>Noise Levels<br>(dB) | Compliance with Criteria |                   |  |
|---|--------------------------------|--------------------------|---------------------|----------------------------------|--------------------------|-------------------|--|
| Location                                    | Period (IIIS)                  | (dB) (ref.<br>Table 5.2) | Glazing (dBA)       |                                  | HTM 08-01                | СС                |  |
| Ambient Noise Level L <sub>Aeq</sub> (dB)   |                                |                          |                     |                                  |                          |                   |  |
| All façades -<br>bedrooms                   | Daytime<br>(0700 –<br>2300)    | 67                       | 45                  | 22                               | ~                        | LOAEL             |  |
| All façades -<br>bedrooms                   | Night-time<br>(2300 –<br>0700) | 63                       | 45                  | 18                               | ~                        | LOAEL             |  |
| Maximum Noise Level L <sub>AFmax</sub> (dB) |                                |                          |                     |                                  |                          |                   |  |
| All façades -<br>bedrooms                   | Night-time<br>(2300 –<br>0700) | 88                       | 45                  | 43                               | ~                        | LOAEL TO<br>SOAEL |  |

Table 7.1: Internal Noise Levels

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### 8. 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 typical background noise level presented in **Table 5.1** and the basic methodologies presented in BS 4142:2014. This derivation is summarised in **Table 8.1**. The aim is to achieve a rating level of 10 dB below the background noise level.

| Results  | Daytime | Night-<br>time | Relevant<br>Clauses of<br>BS<br>4142:2014 | Commentary   |
|--|---------|----------------|---|--|
| Typical Background<br>Sound Level<br>L <sub>A90</sub> (dB)                   | 47      | 36             | 8.1, 8.2                                  | Refer to <b>Table 5.1</b> .  |
| Required Difference<br>between Rating Level<br>and Background<br>Sound Level | -10     | -10            | 9.2                                       | The requirement is to be 10 dB below background sound level  |
| Rating Level<br>L <sub>Ar</sub> (dB)   | 37      | 26             | 7.3.7, 7.3.9,<br>7.3.11                   | (Background Sound Level + Required Difference)   |
| Acoustic Feature<br>Correction   | Unknown | Unknown        | 9.2                                       | No acoustic feature correction has been applied<br>to account for the specific acoustic features as<br>the precise plant specifications are unknown. |
| Specific Sound Level<br>L <sub>Aeq,T</sub> (dB)                              | 37      | 26             | 9.2                                       | (Rating Level - Acoustic Feature Correction)   |

Table 8.1: Total Sound Level of Plant Equipment

It will be important to ensure that the selected plant does not exceed the specific noise levels identified in this section of the report. If the plant is tonal, intermittent, or contains any other acoustic features, this would reduce the maximum specific noise level and total sound power levels identified in **Table 8.1**. Careful consideration is required as to the specification and siting of any plant. If the plant was positioned further away from the identified noise sensitive receptors, the total sound power levels identified in **Table 8.1** may be increased accordingly.

When the exact items of plant to be installed have been identified, Syntegra would recommend that a detailed plant noise assessment is carried out in order to ensure compliance with the target noise criteria. Compliance with the target noise criteria will ensure that adverse impacts on the health and quality of life from plant noise are avoided at future and existing noise senstive receptors.

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### 9. Conclusion

An assessment has been carried out of the present noise climate at **70-86 Royal College Street**, **London**, **NW1 0HT** and the impact of that noise on the proposed development.

The assessment is based on the results of a noise measurement survey that has been carried out over a 48-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.
- A typical double glazing system in a 13/12/13 (with acoustic laminate) configuration (or equivalent) will be installed to give a Sound Reduction Index (SRI) of 45 dB R<sub>w</sub>.
- An MVHR system will be installed to allow adequate ventilation without the requirement to open windows.

The responsibilities of the proposed development to protect the future operations of the Parcelforce Worldwide depot have been addressed, in line with the advice provided in the PPG-Noise in respect of the Agent of Change Principle, through the provision of an MVHR system to provide adequate ventilation to bedrooms without the requirement to open windows.

An initial assessment of plant noise levels has been carried out and maximum plant noise levels have been provided, based on the measured noise levels. When the exact items of plant to be installed have been identified, Syntegra would recommend that a further plant noise assessment is carried out in order to ensure compliance with the target noise criteria.

Overall, it has been shown that, through careful consideration of the building envelope construction and plant selections, the proposed development should avoid future occupants 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 users would be avoided, in line with the aims of the NPPF, NPSE and PPG-Noise.

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## **10.** Appendix 1: Glossary of Acoustic Terminology

| Term               | Description   |
|--------------------|---|
| 'A'-Weighting      | This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.   |
| Decibel (dB)       | This is a tenth (deci) of a bel. The decibel can be a measure of the<br>magnitude of sound, changes in sound level and a measure of<br>sound insulation. Decibels are not an absolute unit of measurement<br>but are an expression of ratio between two quantities expressed in<br>logarithmic form.  |
| L <sub>Aeq,T</sub> | 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. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter. |
| L <sub>A10</sub>   | The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the $L_{A10T}$ .<br>The $L_{A10}$ is used to describe the levels of road traffic noise at a particular location.  |
| L <sub>A50</sub>   | The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the $L_{A50T}$ .  |
| L <sub>A90</sub>   | The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the $L_{A90T}$ .<br>The $L_{A90}$ is used to describe the background noise levels at a particular location.   |
| L <sub>Amax</sub>  | The 'A'-weighted maximum sound pressure level measured over a measurement period.   |

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## 11. Appendix 3: Professional Statement

### **David Yates**

David Yates is a full member of the Institute of Acoustics (MIOA) and has approximately 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 4: List of Equipment

| Equipment Type                   | Manufacturer | Serial<br>Number | Calibration<br>Certification<br>Number | Date of Last<br>Calibration Check |
|----------------------------------|--------------|------------------|--|-----------------------------------|
| Nor-140 Type 1 Sound Level Meter | Norsonic     | 1406389          | 27193                                  | December 2017                     |
| Nor-1225 Microphone              | Norsonic     | 225519           | 27192                                  | December 2017                     |
| Nor-1209 Preamplifier            | Norsonic     | 20598            | 27193                                  | December 2017                     |
| Nor-1251 Sound Calibrator        | Norsonic     | 35115            | 30042                                  | November 2018                     |

## 13. Appendix 5: Detailed Noise Measurement Results

Measured Noise levels – MP1 (09.07.2019)

| 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 | 57.8                    | 80.0                      | 60.8                  | 47.0                  |
| 15:00-16:00 | 57.1                    | 73.0                      | 60.6                  | 47.4                  |
| 16:00-17:00 | 57.9                    | 75.0                      | 61.2                  | 47.5                  |
| 17:00-18:00 | 58.3                    | 80.0                      | 61.3                  | 47.7                  |
| 18:00-19:00 | 58.2                    | 80.0                      | 61.3                  | 48.1                  |
| 19:00-20:00 | 56.6                    | 76.0                      | 60.3                  | 46.1                  |
| 20:00-21:00 | 56.6                    | 77.0                      | 60.3                  | 45.0                  |
| 21:00-22:00 | 55.4                    | 80.0                      | 59.3                  | 43.4                  |
| 22:00-23:00 | 54.1                    | 73.0                      | 58.4                  | 42.1                  |
| 23:00-00:00 | 54.2                    | 73.0                      | 58.6                  | 41.3                  |
| 07:00-23:00 | 57.1                    | 77.1                      | 60.4                  | 46.0                  |
| 23:00-07:00 | 54.2                    | 73.0                      | 58.6                  | 41.3                  |

Measured Noise levels - MP1 (10.07.2019)

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| Time        | L <sub>Aeq,T</sub> (dB) | L <sub>AF(max)</sub> (dB) | L <sub>A10</sub> (dB) | L <sub>A90</sub> (dB) |
|-------------|-------------------------|---------------------------|-----------------------|-----------------------|
| 00:00-01:00 | 52.6                    | 73.0                      | 55.7                  | 38.3                  |
| 01:00-02:00 | 54.6                    | 90.0                      | 50.0                  | 35.4                  |
| 02:00-03:00 | 48.4                    | 71.0                      | 48.4                  | 34.8                  |
| 03:00-04:00 | 46.7                    | 70.0                      | 45.9                  | 34.8                  |
| 04:00-05:00 | 49.8                    | 71.0                      | 50.3                  | 36.3                  |
| 05:00-06:00 | 53.8                    | 78.0                      | 55.7                  | 38.2                  |
| 06:00-07:00 | 54.7                    | 72.0                      | 58.7                  | 43.8                  |
| 07:00-08:00 | 57.4                    | 81.0                      | 60.9                  | 47.7                  |
| 08:00-09:00 | 57.2                    | 73.0                      | 60.7                  | 48.3                  |
| 09:00-10:00 | 58.4                    | 89.0                      | 60.1                  | 47.2                  |
| 10:00-11:00 | 56.9                    | 74.0                      | 60.5                  | 46.9                  |
| 11:00-12:00 | 57.0                    | 75.0                      | 60.3                  | 47.5                  |
| 12:00-13:00 | 57.9                    | 85.0                      | 60.8                  | 47.1                  |
| 13:00-14:00 | 57.9                    | 78.0                      | 60.8                  | 47.6                  |
| 14:00-15:00 | 56.0                    | 82.0                      | 59.3                  | 47.4                  |
| 15:00-16:00 | 58.6                    | 89.0                      | 59.8                  | 48.2                  |
| 16:00-17:00 | 58.2                    | 90.0                      | 60.5                  | 47.6                  |
| 17:00-18:00 | 57.8                    | 79.0                      | 60.8                  | 47.4                  |
| 18:00-19:00 | 58.9                    | 80.0                      | 61.7                  | 47.8                  |
| 19:00-20:00 | 57.1                    | 77.0                      | 60.6                  | 46.3                  |
| 20:00-21:00 | 56.6                    | 77.0                      | 60.2                  | 45.2                  |
| 21:00-22:00 | 55.7                    | 70.0                      | 59.8                  | 44.2                  |
| 22:00-23:00 | 54.9                    | 76.0                      | 58.8                  | 42.8                  |
| 23:00-00:00 | 53.2                    | 68.0                      | 57.8                  | 40.8                  |
| 07:00-23:00 | 57.4                    | 79.7                      | 60.3                  | 46.8                  |
| 23:00-07:00 | 52.5                    | 74.1                      | 52.8                  | 37.8                  |

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| Time        | L <sub>Aeq,T</sub> (dB) | L <sub>AF(max)</sub> (dB) | L <sub>A10</sub> (dB) | L <sub>A90</sub> (dB) |
|-------------|-------------------------|---------------------------|-----------------------|-----------------------|
| 00:00-01:00 | 52.5                    | 78.0                      | 55.6                  | 39.0                  |
| 01:00-02:00 | 52.9                    | 80.0                      | 52.7                  | 37.5                  |
| 02:00-03:00 | 48.3                    | 69.0                      | 49.4                  | 35.6                  |
| 03:00-04:00 | 48.0                    | 67.0                      | 48.5                  | 35.7                  |
| 04:00-05:00 | 49.8                    | 71.0                      | 51.3                  | 36.0                  |
| 05:00-06:00 | 52.7                    | 77.0                      | 55.1                  | 39.5                  |
| 06:00-07:00 | 54.4                    | 74.0                      | 57.9                  | 43.8                  |
| 07:00-08:00 | 57.9                    | 85.0                      | 60.9                  | 46.8                  |
| 08:00-09:00 | 57.5                    | 84.0                      | 60.5                  | 48.3                  |
| 09:00-10:00 | 57.1                    | 73.0                      | 60.9                  | 47.8                  |
| 10:00-11:00 | 56.7                    | 73.0                      | 60.2                  | 47.5                  |
| 07:00-23:00 | 57.3                    | 78.8                      | 60.6                  | 47.6                  |
| 23:00-07:00 | 51.8                    | 73.7                      | 52.9                  | 38.1                  |

### Measured Noise levels - MP1 (11.07.2019)

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



#### MP1 - Daytime (0700 hrs - 2300 hrs)

Note: The row marked in bold is the chosen Typical LA90 for the BS 4142 plant noise assessment.

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### MP1 – Night-time (2300 hrs – 0700 hrs)

Note: The row marked in **bold** is the chosen Typical LA90 for the BS 4142 plant noise assessment.

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