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NEW CONSTRUCTION AND ENGINEERING CENTRE CCCG TOTTENHAM CAMPUS

NOISE ASSESSMENT

Technical Report: R9985-2 Rev 1

Date: 9th February 2024

For: Capital City College Group
76 Vincent Square
Victoria
London
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24 Acoustics Document Control Sheet

Project Title: New Construction and Engineering Building, CCG Tottenham Campus – Noise Assessment

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1.0 INTRODUCTION

- 1.1 24 Acoustics Ltd has been appointed by Capital City College Group, to provide a noise assessment for the proposed new construction and engineering building at the College of Haringey, Enfield and North East London, Tottenham Campus.
- 1.2 The new building will include teaching spaces and workshops, with new external plant. Accordingly, this noise assessment has included:
- Environmental noise monitoring;
 - External noise criteria for new building services plant;
 - Consideration of noise breakout from the new workshops.
- 1.3 This report presents the results of the assessment, following site visits and an ambient noise survey undertaken between 11th and 16th May 2023.
- 1.4 All sound pressure levels quoted in this report are in dB relative to 20 μ Pa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

- 2.1 The site is located at the College of Haringey Enfield and North East London, Tottenham Campus. The proposed building is to be located on the western side of the campus, replacing an existing building to be demolished. Nearby residential properties are located to the north on Isobel Place and to the west and south-west on Portland Road.
- 2.2 The scheme will comprise a new five-storey building for construction and engineering, to provide workshops, classrooms and other teaching/ learning spaces, with a plant area on the top floor.
- 2.3 The existing site location is shown in Figure 1 and the proposed site plan in Figure 2.

3.0 CRITERIA

Local Authority Requirements – Mechanical Plant Noise

- 3.1 The London Borough of Haringey requires the cumulative noise level (L_{Aeq}) from proposed plant, measured or predicted at 1m from the facade of any residential premises, to have a rating level of at least 5 dBA below the background noise level (L_{A90}), when assessed under BS 4142: 2014.

British Standard (BS) 4142: 2014

- 3.2 British Standard 4142:2014 'Methods for Rating Industrial and Commercial Sound, 2014' [Reference 1] provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the representative measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes, if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction should be applied.

4.0 ENVIRONMENTAL NOISE MEASUREMENTS

Ambient Noise Levels

- 4.1 An ambient noise survey was undertaken from 11th and 16th May 2023 to determine the existing noise levels at the site. Ambient noise levels were measured using the following equipment:
- Rion precision sound level meter Type NL-32;
 - Brüel & Kjær acoustic calibrator Type 4231.
- 4.2 A noise monitor was set-up on the roof of the existing building, in free-field conditions, at a height of approximately 10 m above ground level.
- 4.3 Noise measurements were undertaken in samples of 5 minutes in terms of the overall free-field A weighted L_{eq} , L_{90} and $L_{max,f}$ noise levels. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 2].

- 4.4 The instrumentation calibration was checked before and after the survey in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards. All instruments were fitted with environmental weather shields during the surveys.
- 4.5 Weather conditions during the survey were generally fine and dry.
- 4.6 Periods affected by noise from on-site activities associated with the College have been omitted from the analysis.

Results

- 4.7 The results of the ambient noise survey are shown graphically in Appendix B.
- 4.8 The principal noise source at the measurement location was road traffic using the A10 to the east of the site.
- 4.9 Table 2 summarises the typical background noise levels measured during daytime, evening and night-time hours.

Typical Background Noise Level		
Daytime (07:00 – 19:00)	Evening (19:00 – 23:00)	Night-time (23:00 – 07:00)
45 dB LA90, 1 hour	44 dB LA90, 1 hour	40 dB LA90, 15 min

Table 2 – Measured Background Noise Levels

- 4.10 The background noise levels in Table 2 are considered representative of the nearest residential properties.

5.0 NOISE ASSESSMENT

Noise Breakout from Workshops

- 5.1 The new building will include four workshops for engineering, bricklaying, electrical installations and heating & plumbing, to be located on the ground and first floor as shown in Figure 3.
- 5.2 The workshops will be large spaces and will contain noise-generating equipment and machinery. In order to control noise breakout from the workshops, all windows and external doors to the workshops shall be kept closed whilst in use, with a mechanical ventilation strategy in place and provision for cooling, as required.

External Plant Noise Limits

- 5.3 The proposed building will include external building services plant at roof level, as indicated on the plan in Figure 4. The roof plant area will be enclosed by a hit and miss brickwork wall.
- 5.4 The roof-mounted plant is likely to comprise air source heat pumps, air handling units and extract fans for local exhaust ventilation (LEV).
- 5.5 The nearest residential properties to the building are to the north on Isobel Place and to the west and south-west on Portland Road.
- 5.6 An external plant noise limit of 5 dB below the prevailing background noise level at the nearest noise sensitive windows is proposed, during the plant operating hours, in line with the requirements of the local authority. Plant noise levels should be assessed using the guidance of BS 4142: 2014.
- 5.7 In accordance with the above, the following maximum cumulative plant noise levels are applicable for new plant associated with the scheme, during the relevant plant operating hours as described in Table 3.

Maximum External Plant Noise Rating Level		
Daytime (07:00 – 19:00)	Evening (19:00 – 23:00)	Night-time (23:00 – 07:00)
40 dB L _{Aeq} , 1 hour	39 dB L _{Aeq} , 1 hour	35 dB L _{Aeq} , 15 min

Table 3 – External Plant Noise Limits – at Nearest Residential Properties

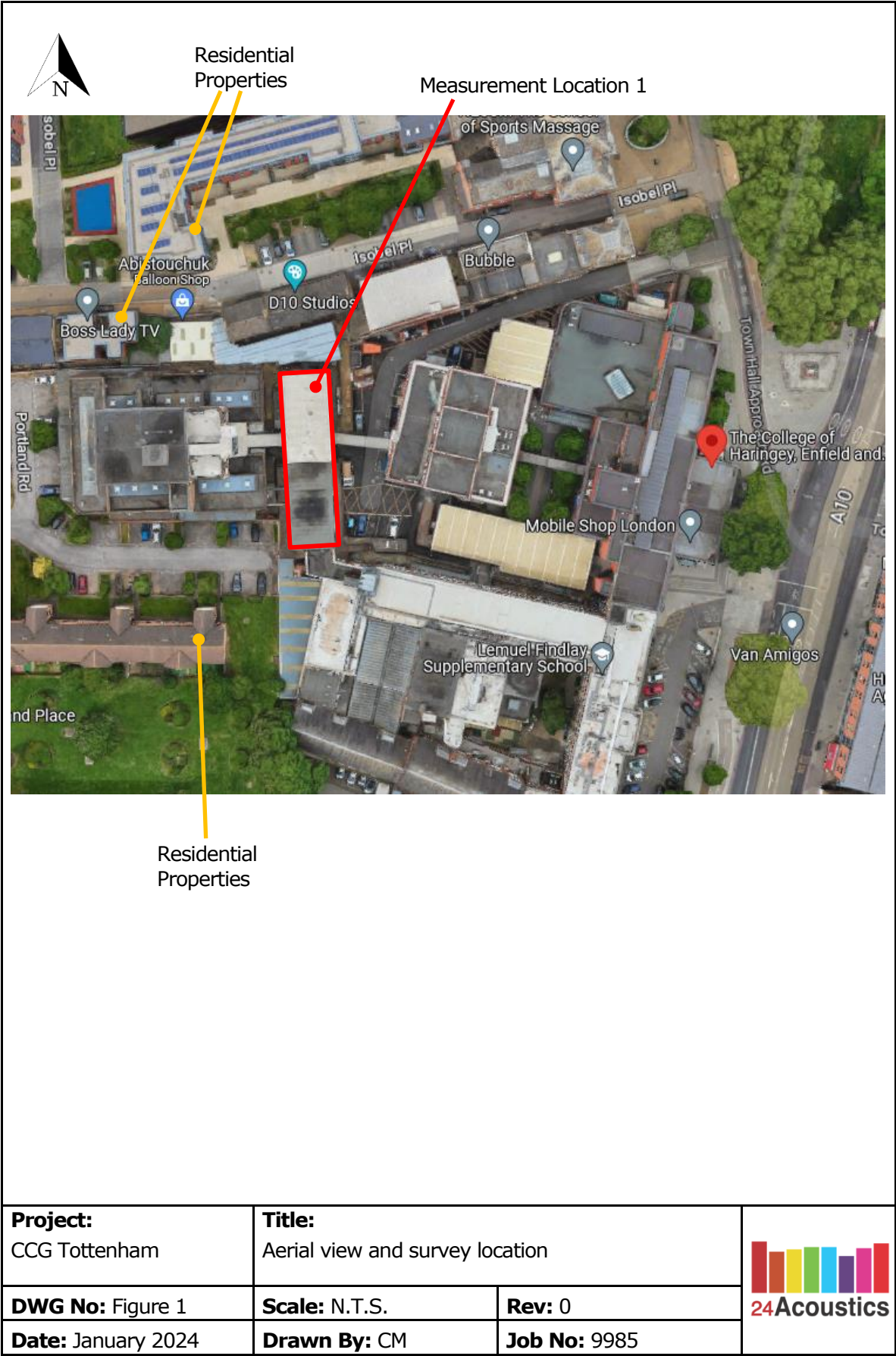
- 5.8 The design and selection of the plant shall include noise attenuation measures, to be fully developed during detailed design, in order to meet the plant noise limits set out in Table 3. All building services plant shall be designed to avoid tonal, impulsive or other distinctive characteristics. If any such characteristics are present then a suitable correction is applicable, in accordance with BS 4142:2014.

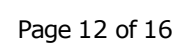
6.0 CONCLUSIONS

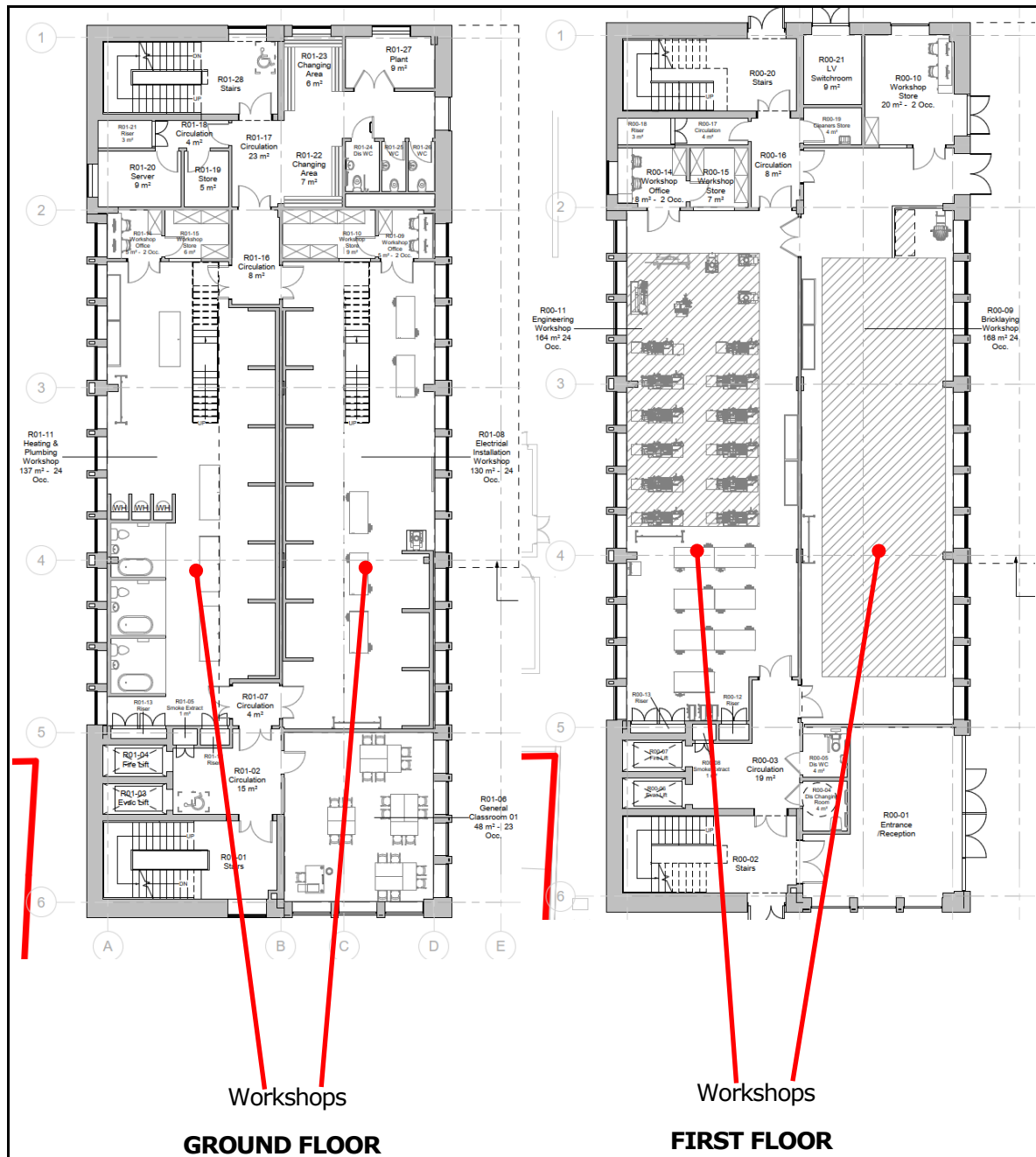
- 6.1 24 Acoustics Ltd has been instructed by Capital City College Group to undertake a noise impact assessment for the proposed new construction and engineering building at the College of Haringey Enfield and North East London, Tottenham Campus.
- 6.2 An environmental noise survey has been undertaken to determine prevailing ambient and background noise levels at the proposed site.
- 6.3 In order to control noise breakout from the proposed workshops, all windows and external doors to the workshops shall be kept closed whilst in-use, with a mechanical ventilation strategy in place, and cooling as required.
- 6.4 Limiting external noise criteria have been determined, applicable to new building services plant associated with the scheme. The design and selection of the plant shall include noise attenuation measures, to be fully developed during detailed design.

REFERENCES

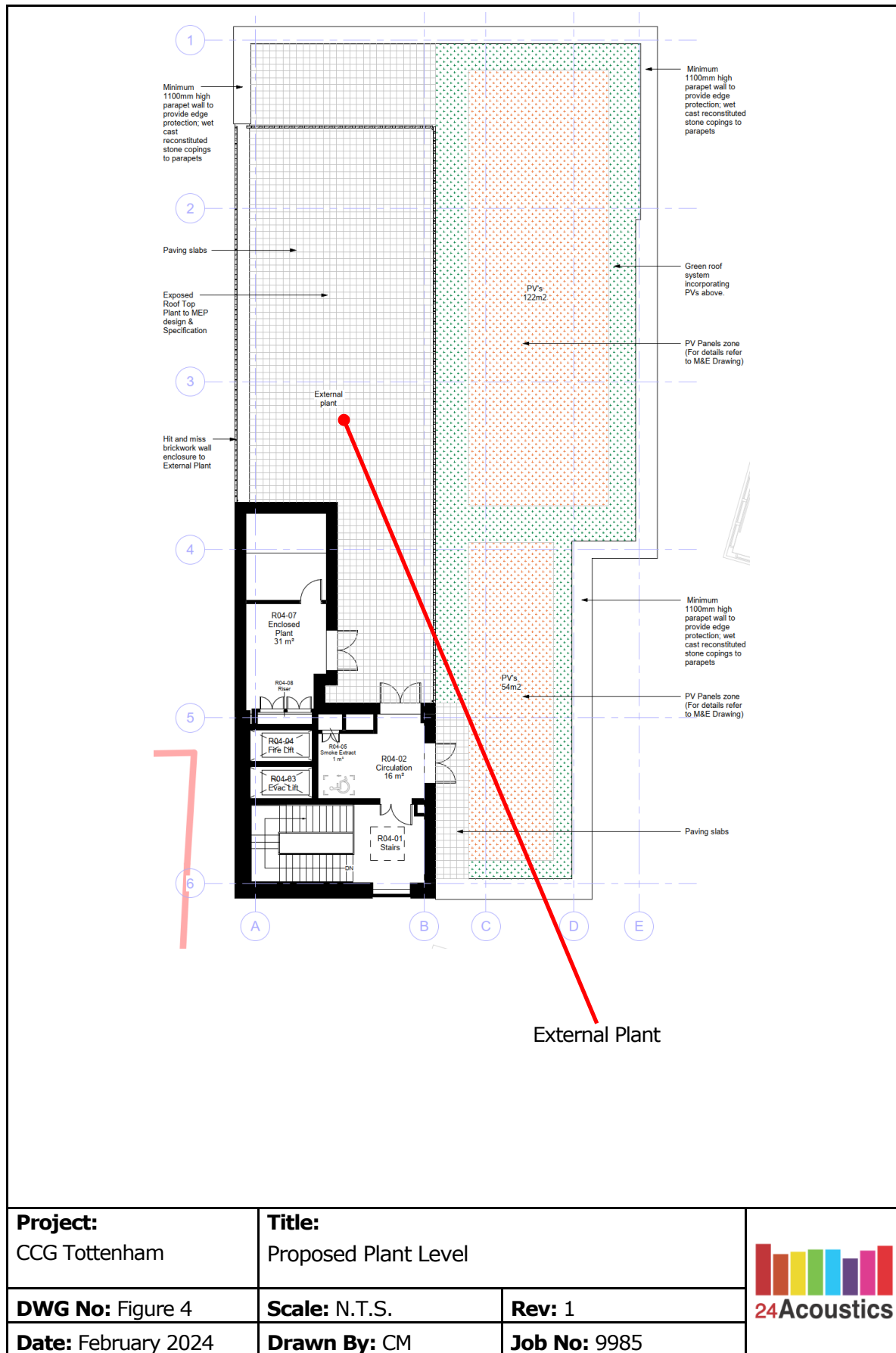
1. British Standards Institution. British Standard 4142. Methods for Rating Industrial and Commercial Sound, 2014
2. British Standards Institution. British Standard 7445:1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use, 1991.







Project: CCG Tottenham	Title: Proposed Ground and First Floor – Workshops		
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APPENDIX A: ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T , has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B: ENVIRONMENTAL NOISE MEASUREMENTS

