



ACOUSTIC DESIGN REPORT

UNIT 2, WESTLODE STREET, SPALDING

MGPM LTD

FEBRUARY 2024

ACOUSTIC DESIGN REPORT
UNIT 2 WESTLODE ST, SPALDING
OUR REF: 6887_001r_2-0_jn



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Date: **8 February 2024**

Project No: **6887**

Status: **Issued**

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REVISION HISTORY

Version	Comments	Changes made by	Approved by
1.0	First issued version	JN	PS

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1 INTRODUCTION

Anderson Acoustics Ltd has been commissioned by MGPM Ltd to undertake a noise impact assessment for external plant serving a new gymnasium fit out of an existing commercial plot in Unit 2, Westlode Street, Spalding.

The plant serving the premises is proposed to be installed on the north and east façade of the commercial unit, approximately 22 metres to the nearest residential dwellings. This requires a noise assessment to be carried out in order to:

- a) evaluate the existing acoustic environment and background sound levels at neighbouring noise sensitive receptors;
- b) establish appropriate plant noise emission limits that will be required outside noise sensitive receptors to maintain occupant amenity; and
- c) predict noise emission levels from the proposed installation at sensitive receptors and provide mitigation advice where required to comply with the noise emission limits.

A brief description of the site and proposed plant installation is given in Section 2.

The methodology and results of an environmental noise survey along with the assessment of the proposed plant noise levels against the environmental noise survey results is given in Section 3.

A visit was made to inspect the site on Thursday 10th and Friday 11th of August 2023 during which an unattended noise survey was conducted to ascertain the prevailing background noise levels on site in which to compare with predicted plant noise emissions.

2 SITE DETAILS

The proposed site is located on Westlode Street, Spalding and is currently occupied by Carpetright. It is a standalone unit however is partially connected to residential property to the east via a brick wall, which has a large access opening to the rear car park / loading bay of Carpetright and neighbouring commercial units (see Figure 2.2). The position of the unit relative to the nearest residential premises is shown in Figure 2.1.

Figure 2.1: Location of proposed gym and surrounding residential receptors

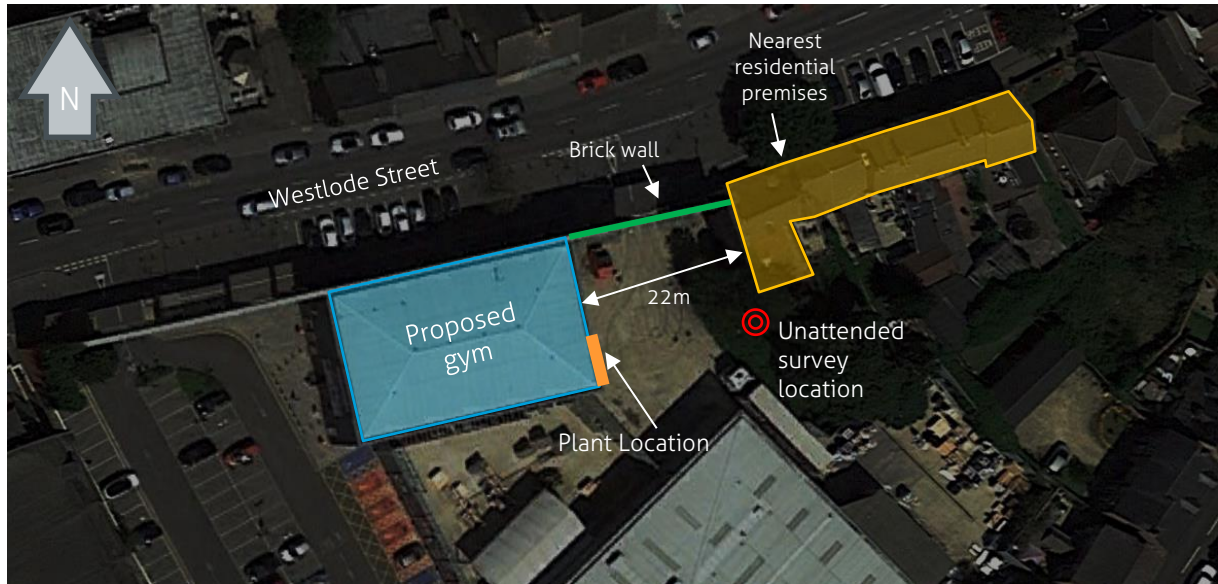


Figure 2.2: Wall between Carpetright and 65 Westlode Street



2.1 Proposed Use

The proposed fitout will provide dedicated areas for free-weights and functional use (which includes use of kettle bells and slam balls), there will also be a large main floor for resistance and cardio activity and a flex zone for stretching and light activities (no weight drops). Amplified music will be played throughout these areas for background purposes only.

The gym may also provide a general Activity Studio and a Spin Studio with the former used for all manner of exercise classes, including dance and high intensity interval training classes. Some activities in the studio and spin spaces will include higher levels of amplified music.

It is understood the gym will operate 24 hours a day, with the studio activities limited to 0600-2230 hours.

3 PLANT NOISE ASSESSMENT

3.1 Criteria

The South Holland District Council (SHDC) Guide to the Validation of Planning Applications states that a noise impact assessment is required in stances where *'an alteration to an existing industrial or commercial site (alteration can take many forms including introduction of a new noise source such as fixed plant, a change to the layout or a change to working hours)*. Reference is made to BS4142 amongst other guidance documents however no specific noise criteria is provided/

Therefore, based on our experience and knowledge of the criteria typically applied by other local authorities, we recommend that plant noise should be limited to 5 dB below typical background noise when assessed according to BS4142 methodology.

Table 3.1 presents the adopted criteria based on the results of our unattended noise survey which have been presented in graphical form in Appendix A.

Table 3.1: Measured typical background noise levels (free-field)

Period	Typical background noise level $L_{A90,15mins}$ dB	Plant noise limit $L_{Aeq,T}$ dB
Daytime (0700 – 2300)	48	43
Night-time (2300 – 0700)	46	41

3.2 Assumed Plant Selection

As the selection of plant serving the PureGym has yet to be stated, the following assumptions (based on similar 'small-box' PureGym sites) have been made and will be adhered to for the purpose of this assessment. When a final plant selection is made and locations confirmed, full calculations should be undertaken to evaluate the noise impact.

- 5 No. condensers (3 No. Mitsubishi PUHZ-ZRP250YKA3, 1 No. Mitsubishi PUHZ-ZM100VKA3 and 1 No. SUZ-M50VA)
- 2 No. Heat Recovery Units (Mitsubishi LGH 200 RVX-E-1)
- 1 No. Extract Fan (Systemair PRIO 355 EC)

It is understood that the condensers will provide both heating and cooling to the gym, therefore we have considered the worst-case sound pressure level data for our assessment (heating mode).

3.3 Plant Noise Assessment

3.3.1 Condenser Noise

It has been confirmed by PureGym that any plant serving the gym is scheduled to be located at the rear façade (east) of the unit with no mitigation in place, as illustrated in Figure 2.1 above and 3.1 below.

units within the gym, along with the size/length/path of associated ductwork and the termination point on the façade, it is not possible to predict noise emissions accurately. A design limit 1m from the termination point has therefore been set, such that adopted noise limit will be satisfied.

At this stage the exact termination points are unknown, however based on the facades of the proposed gym unit, as a worst-case, it will be assumed that the termination points will be located on the north-west facing façade (given this location is the closest to a sensitive receptor).

A total of 5 termination points on the façade facing north-west has been assumed (1 termination for the intake and exhaust per HRU and 1 termination for the extract fan). It is expected that all termination points will be not be visible from the nearest receptors.

With the above in mind, a design limit of 68 dB(A) at 1m from each termination point should adequately control noise emissions to comply with the adopted noise limit.

Once the information regarding the ducting and exact termination points has been finalised, calculations can be updated to the confirm compliance with the noise limit.

3.4 Uncertainty

The following steps have been taken to reduce uncertainty in the assessment:

- Background sound level measurements were taken at <10 m from the location of the nearest noise sensitive receptors windows. This location is considered representative of the typical background sound at the nearest noise-sensitive receptor (dwellings on Westlode Street).
- The unattended measurements were undertaken over a 24-hour period between Thursday 10th and Friday 11th of August 2023 and gave accurate and reliable results.
- Surveys were planned to ensure that weather conditions did not have any significant effect on the measured levels. Measured wind speeds below 5 m/s during the measurement period.
- An IEC 61672 Class 1 sound level meter was used for sound level measurements.
- No significant calibration drift was observed between the start and end of the unattended survey.
- The sound level meter and field calibrator used for the unattended survey have been sent for calibration at UKAS approved laboratories within the last 12 months.
- Calculations assume all plant running simultaneously to represent a worst-case scenario.

APPENDIX A

SUMMARY OF ENVIRONMENTAL NOISE SURVEY

Table A.1: Summary of equipment used for survey

Equipment	Serial no.	Date calibrated	Calibration certification number ¹
Rion NL-52 sound level meter	01076327	17/01/2023	TCRT23/1045
Rion NC-74 calibrator	35125828	28/02/2022	1502008-3

¹Certificates available on request

Table A.1: Results of environmental noise survey

