MSP Greenheys.

Acoustic Commissioning Report: Addendum – Emergency External Plant noise

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1. Quality Information.

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2. Table of Contents.

1. Quality Information. 2

2. Table of Contents. 3

3. Introduction 4

4. Criteria 4

5. Design input and modelling 5

6. Verification 6

6.1. Comparison of measured and modelled levels 7

7. Summary 9

3. Executive Summary

Following submission of the BDP Acoustics report 'Acoustic Commissioning Report - Pol 05 External Plant Noise' ref: P300 1624(REP)U004, the LPA requested additional detail relating to external emergency plant noise from a planning perspective to support the discharge of noise related planning conditions.

This report addendum outlines the emergency plant noise verification assessment undertaken via measurement and computer modelling.

Based on the verification exercise undertaken it is concluded that the installed equipment meets the acoustic requirements.

4. Introduction

BDP has undertaken additional acoustic commissioning tests to demonstrate compliance with the project acoustic criteria for the MSP Greenheys scheme with respect to Emergency/Standby plant noise emissions..

The commissioning measurements and analysis referred to in this report relates to the external plant noise emissions only, and serves as an addendum to the previously issued report covering non-emergency plant noise.

5. Criteria

The external plant noise emissions criteria applied to the scheme is based on meeting the requirements of BREEAM 2018 Pol 05 & MCC's planning requirements, summarised below:

Planning Conditions

"11) a) Any plant and associated equipment including any MVHR system, externally mounted and ancillary equipment, lift equipment, substation associated with the development shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. Prior to commencement of the use hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences or as otherwise agreed in writing by the City Council as local planning authority.

b) Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of non-conformity with the recommendations in the verification report shall be detailed along with any measures required to be undertaken prior to operation of the scheme to ensure compliance with the agreed noise criteria."

Adopted plant noise emissions criteria:

Table 1: Proposed nearest or most exposed noise sensitive receptor (NSR) noise limits for fixed plant and equipment installations associated with the new development

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Non-standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Standby plant* external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)
Residential properties across Greenheys Lane	Daytime (07:00 – 23:00 hours)	51	46	61
	Evening (19:00 - 23:00 hours)	45	40	55
	Night-time (23:00 – 07:00 hours)	38	33	48
Residential properties across Burlington Street	Daytime (07:00 – 23:00 hours)	50	45	60
	Evening (19:00 - 23:00 hours)	45	40	55
	Night-time (23:00 – 07:00 hours)	40	35	50
Bright Building	Daytime (07:00 – 23:00 hours)	45	40	55
Mosque McDougall Prayer Hall	Daytime (07:00 – 23:00 hours)	51	46	61
Base Building	Daytime (07:00 – 23:00 hours)	44	39	54
Darul Aman Mosque	Daytime (07:00 – 23:00 hours)	45	40	55

**Standby plant will only operate in the event of a mains power failure, or for other emergency life safety purposes, or when tested, with scheduled testing only taking place on a weekday in daytime hours.*

6. Design input and modelling

During the design process multiple iterations of acoustic assessment via 3D noise modelling have been undertaken, working with both the client and contractor teams to ensure that the detailed and delivered designs

are capable of meeting the external noise criteria adopted for the scheme, based on BS 4142, BREEAM and LPA requirements.

As the designs progressed acoustic mitigation measures and appropriate emergency equipment selections were adopted into the design specifications to allow the adopted noise criteria to be achieved at the nearby noise sensitive receptors.

Based on the modelling exercises, the dominant emergency plant noise sources were identified as the 2no. emergency generators at annex roof level, and 2no. smoke extract fans at main roof level.

7. Verification

To facilitate assessment, an approach of localised operational noise measurements has been undertaken to allow comparison with the acceptable noise levels which have been previously modelled in CadnaA proprietary noise propagation software.

On site measurements were carried out using the equipment shown in Table 2.

Table 2: Acoustic commission testing equipment used

Equipment Description	Manufacturer	Type Number
Sound Level Meter	Brüel & Kjær	2250
Microphone	Brüel & Kjær	4189
Pre-amp	Brüel & Kjær	ZC 0032
Calibrator	Brüel & Kjær	4231

Based on the measurements undertaken in-situ on 13th August 2026 by Lewis Herd MIOA, with the emergency plant equipment operating at the required duty, a comparison of the measured noise level (SPL, dB) with that modelled in the same location is provided in Figure 1 and Figure 2.

Where multiple measurements were taken around the generators, the worst-case loudest measurement is presented (both generator outlets were the dominant noise source)

As can be seen in the figures & table below, each measured in-situ emergency plant noise level was lower than that modelled.

As such, it is inferred that the modelled results predicted at the receptor positions can be expected to be realised at the same receptors in-situ (refer Table 4 for predicted levels at NSR positions).

7.1. Comparison of measured and modelled levels

Figure 1: Annex roof, modelled & measured comparison: Emergency plant

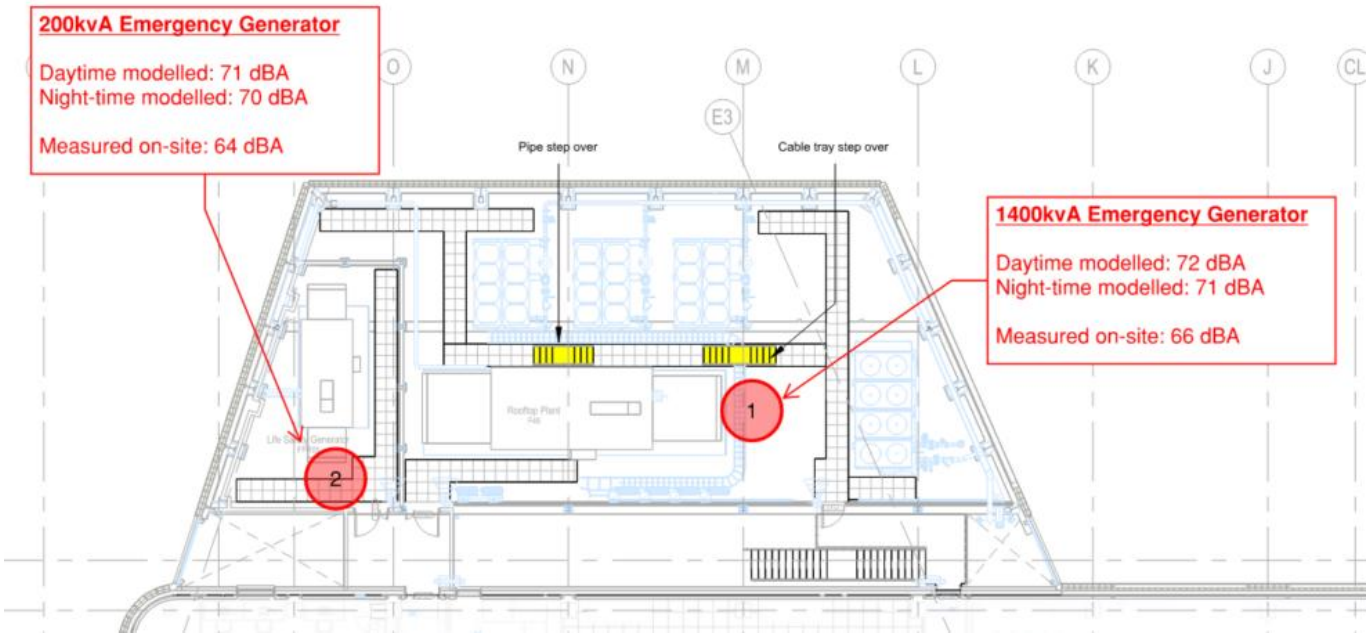


Figure 2: Main roof, modelled & measured comparison: Emergency plant

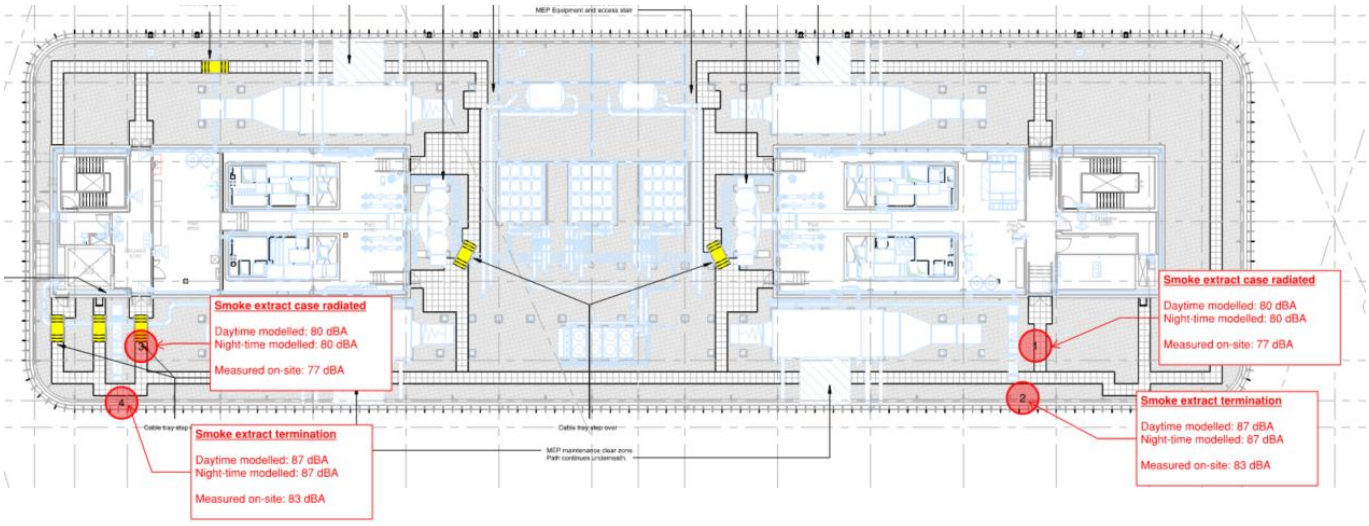


Table 3: Table of modelled & measured levels comparison

Location/equipment	Modelled level, dBA (Day/Night)	Measured level on-site, dBA
200kvA Emergency Generator	71/70	64
1400kvA Emergency Generator	72/71	66
Emergency smoke extract fans: case	80/80	77
Emergency smoke extract fans: termination	87/87	83

The following levels are predicted at the nearby residential receptors based on the CadnaA modelling of the scheme. Acoustic features will not be readily distinctive against the residual ambient noise at the receptor locations and therefore no character corrections have been added to establish the rating level.

Table 4: CadnaA predicted noise levels at NSR locations: Emergency plant operation

Nearest or most exposed noise sensitive receptor (NSR) location	Time Period	Lowest measured existing background noise level at NSR (dB $L_{A90,5min}$)	Standby plant external noise limits at the NSR façade location (dB $L_{Ar,Tr}$)	Predicted external plant noise at the NSR façade location (dB $L_{Ar,Tr}$)
Residential properties across Greenheys Lane	Daytime (07:00 – 23:00 hours)	51	61	41
	Evening (19:00 - 23:00 hours)	45	55	41
	Night-time (23:00 – 07:00 hours)	38	48	39
Residential properties across Burlington Street	Daytime (07:00 – 23:00 hours)	50	60	44
	Evening (19:00 - 23:00 hours)	45	55	44
	Night-time (23:00 – 07:00 hours)	40	50	42
Bright Building	Daytime (07:00 – 23:00 hours)	45	55	43
Mosque McDougall Prayer Hall	Daytime (07:00 – 23:00 hours)	51	61	48
Base Building	Daytime (07:00 – 23:00 hours)	44	54	42
Darul Aman Mosque	Daytime (07:00 – 23:00 hours)	45	55	32

8. Summary

In summary, BDP Acoustics has undertaken acoustic commissioning for the Greenheys MSP project. With this report addendum relating to emergency plant noise emissions only.

A verification approach has been undertaken based on a comparison of modelled noise levels against measured in-situ noise levels associated with the operation of emergency plant items.

Based on a comparison of the measured and modelled results, it is apparent that the localised measurements are lower than those modelled at the same locations.

It is therefore considered that the measurements verify the previous noise modelling exercises completed during the design stages which predicted compliance with the LPA emergency plant noise requirements. As such this demonstrates that the external plant noise emissions criteria set out in Table 1 can be expected to be compiled with at the nearby noise sensitive receptor locations.