
VANGUARDIA

A BURO HAPPOLD COMPANY

Co-op Live - Canalside

Noise Assessment

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1 Introduction

- 1.1 Co-op Live is a purpose-built world class entertainment arena in Manchester, UK. The arena has been built with being a good neighbour in mind. This document provides an assessment of the noise impact associated with the Canalside development, in particular related to amplified music noise. For the main arena a full environmental impact assessment was conducted as part of the planning application that ensured the new area is designed to mitigate entertainment noise. In general, the more sensitive side of the site for noise is towards the East along Alan Turing Way, where particular attention should be carried out.
- 1.2 The assessment has been carried out based on the technical guidance from Manchester City Council for planning & noise.
- 1.3 Vanguardia has been commissioned by Co-op Live to undertake a noise assessment of the impact on the nearest noise sensitive receivers due to amplified music breakout and recommend noise mitigation measures.
- 1.4 The findings of this report are suitable for supporting future premises licensing applications submitted to Manchester City Council along with the general planning application.

2 Canalside Information

- 2.1 Co-op Live Canalside is located at Etihad Campus, 1 Sportcity Way, Manchester. The nearest noise sensitive receiver is the residential building to the East on Stuart Street.
- 2.2 Canalside is principally proposed to provide ancillary F&B and retail uses on event days. Further to this principal use, it will be used for a limited number of private hire and community events to support the operation of the Etihad Campus and will also be open outside of event days providing daytime coffee and pastries to accommodate Etihad Campus visitors throughout the week. During events, external amplified sound and live music is required to activate the space.

Figure 1– Canalside and nearest residential area locations



- 2.3 The intimate small-scale performance area is highlighted in Figure 2 below. The performance space has been defined where the highest noise levels are expected. The central performance area is expected to consist of a small stage location and a suitable sound system will be proposed to ensure noise limits are maintained. Outline maximum noise levels have been defined in this report, however, is expected that these will be re-visited during commissioning to ensure the external noise limits are satisfied at the nearest noise sensitive receiver. For the avoidance of doubt, the earmarked performance space is an ancillary use only to the main purpose of the Canalside development. Live music will be used in the space in the same way background music would be, with no publicly available tickets for live music events in the space. The performance area is the

focal point of the upper level, so is natural that any speaker design be based around this area.

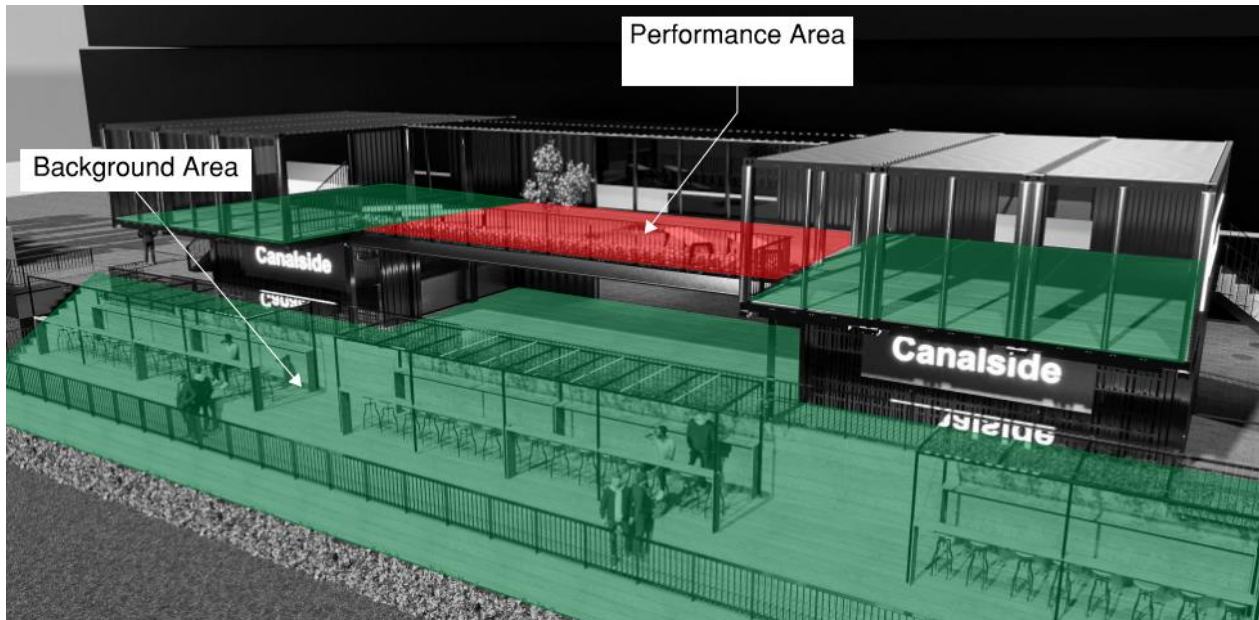


Figure 2 – Performance and background area locations

- 2.4 It is expected that outside of the central performance space, smaller distributed loudspeakers are used to provide background music. Audio content from screens will be routed through the distributed audio systems. Separate maximum noise levels have been outlined in this assessment and again will be revisited in the commissioning.
- 2.5 The dominant sound from Canalside will be from the performance space. Architectural requirements have been provided to ensure the noise impact from amplified music is minimised.

Operational Information

- 2.6 The intended hours for amplified music within the space are 10:00-22:00 for both event and non-event days. On this basis assessment against the daytime noise levels until 11pm has been reviewed.

3 Entertainment Noise Criteria

Manchester City Council guidance

- 3.1 Manchester City Council Noise and Planning guidance provides advice for new entertainment venues as follows;

'Entertainment noise (Leq) should be controlled to 10dB below the background noise level (L90) without the entertainment noise present, in each octave band at the nearest noise sensitive location.'

- 3.2 The guidance also provides advice on structurally connected venues by comparing the predicted levels against a noise curve (procedure for the assessment of low frequency noise complaints - Moorhouse et al). Although not structurally connected, the background noise levels at the low frequencies are very low and providing a level of 10dB below at these frequencies would lead to targets below the threshold of hearing. The same strategy was used for the main arena.

- 3.3 Even though the Moorhouse curve does not specifically related to entertainment noise these levels provide a good practical basis to assess low frequency noise.

- 3.4 *'Music noise levels in the 63Hz and 125Hz octave centre frequency bands (Leq) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq) respectively. This criterion may also be applicable for new residential developments that are structurally separate from an existing entertainment venue.'*

- 3.5 An allowance for 5dB for an open window has been allowed for in line with the current Co-op Live arena noise assessment. This equates to an external noise limit of 52dB and 46dB respectively.

- 3.6 On the basis of the above guidance from Manchester City Council it is proposed that the music noise levels will be controlled to be 10dB below the octave bands from 250Hz – 4kHz and to ensure 52dB and 46dB are not exceeded at 63Hz and 125Hz octave bands respectively.

4 Noise Survey Information

Background Noise Survey

- 4.1 An unattended background noise survey of the surrounding area was conducted by Vanguardia from 19th until 25th March 2025.
- 4.2 The measurement location for the Vanguardia noise survey is shown below. The measurement location is deemed to be representative of the background noise conditions experienced by the Stuart Street residential dwellings, identified as the nearest noise sensitive receiver.

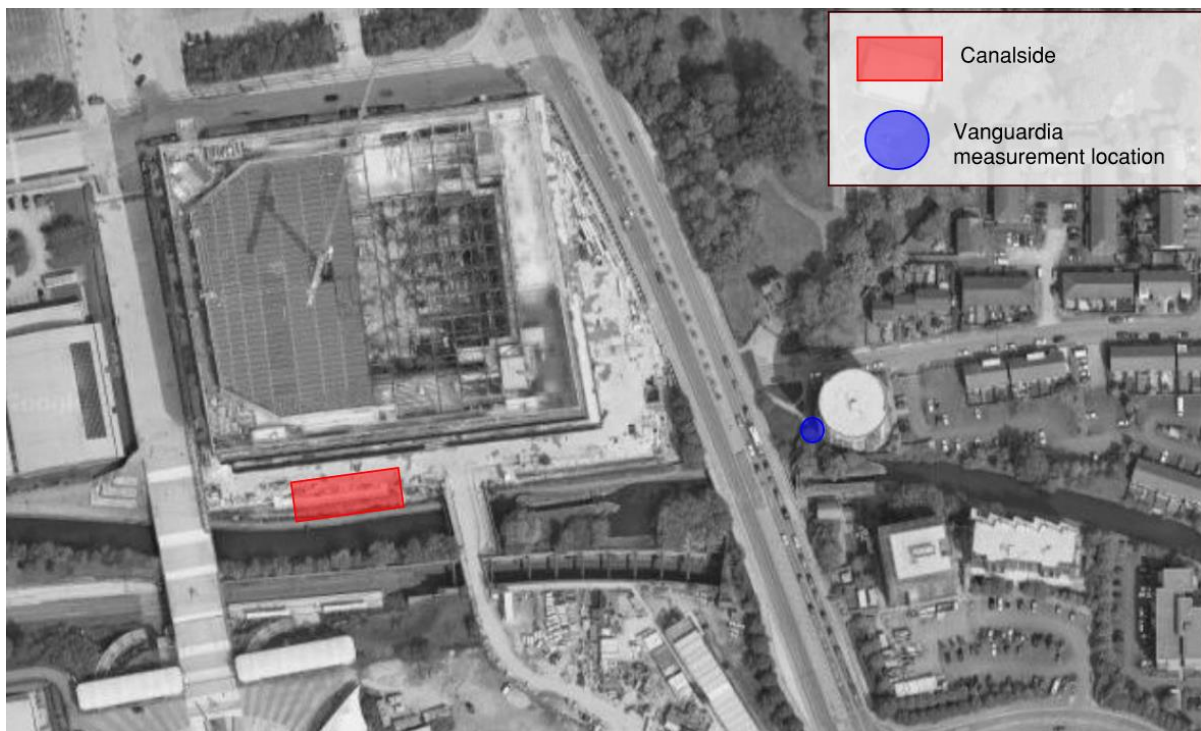


Figure 3 – Vanguardia noise measurement location

4.3 Frequency specific noise levels were carried out to determine the existing noise climate at the nearest residential receiver. The background noise levels reported from the noise survey are summarised below. Measurements were undertaken to determine the noise levels with and without an event at the Co-op Live Arena across several weekdays and a weekend period. The variations in noise levels across the survey period was minimal, with the lowest noise levels measured on a Sunday.

Date	Start	End	dB L _{A90} , 16hr	dB L ₉₀ , 16hr 63Hz	dB L ₉₀ , 16hr 125Hz	dB L ₉₀ , 16hr 250Hz	dB L ₉₀ , 16hr 500Hz	dB L ₉₀ , 16hr 1000Hz	dB L ₉₀ , 16hr 2000Hz	dB L ₉₀ , 16hr 4000Hz
19/03/25	07:00	23:00	52	57.6	53.0	50.3	46.8	49.8	44.0	32.4
20/03/25	07:00	23:00	52	58.6	53.9	50.8	47.7	49.1	43.8	34.9
21/03/25	07:00	23:00	52	57.9	53.3	50.7	46.9	49.5	43.8	33.3
22/03/25	07:00	23:00	52	55.1	51.5	49.5	46.0	49.7	44.9	36.7
23/03/25	07:00	23:00	51	56.3	51.9	48.9	45.5	48.5	42.8	32.8
24/03/25	07:00	23:00	53	58.4	53.9	51.4	47.9	50.7	44.9	34.1
25/03/25	07:00	23:00	56	59.9	55.6	52.8	49.8	52.7	47.9	39.0

Table 1 – Measured L₉₀ background noise levels

Date	Start	End	dB L _{Aeq} , 16hr	dB L _{eq} , 16hr 63Hz	dB L _{eq} , 16hr 125Hz	dB L _{eq} , 16hr 250Hz	dB L _{eq} , 16hr 500Hz	dB L _{eq} , 16hr 1000Hz	dB L _{eq} , 16hr 2000Hz	dB L _{eq} , 16hr 4000Hz
19/03/25	07:00	23:00	61	65.5	61.2	58.3	54.2	57.9	53.7	43.0
20/03/25	07:00	23:00	62	67.0	62.1	59.0	58.5	56.1	52.6	53.3
21/03/25	07:00	23:00	60	66.8	61.4	58.5	53.9	56.1	51.7	43.9
22/03/25	07:00	23:00	60	63.7	59.1	57.0	53.0	56.3	53.7	47.8
23/03/25	07:00	23:00	59	64.8	59.7	56.9	52.7	55.5	50.5	42.4
24/03/25	07:00	23:00	61	66.8	61.6	58.8	54.6	57.2	53.5	43.8
25/03/25	07:00	23:00	63	67.4	62.5	59.7	55.9	59.5	57.9	46.9

Table 2 – Measured L_{eq} ambient noise levels

4.4 Based on the reported survey noise levels and the MCC council's guidance, the targets at the nearest residence are shown below. A statistical average of the background L₉₀ daytime noise levels has been taken as the baseline. It should be noted that based on the existing ambient noise levels the target music noise is not likely to be measurable.

	dB L _{Aeq}	dB L _{eq} , 63Hz	dB L _{eq} , 125Hz	dB L _{eq} , 250Hz	dB L _{eq} , 500Hz	dB L _{eq} , 1000Hz	dB L _{eq} , 2000Hz	dB L _{eq} , 4000Hz
Measured	53	58	53	51	47	50	45	35
Target	43	52*	46*	41	37	40	35	25

Table 3 – Target music noise levels (MNL) results based off measured results. *Target based off NANR.

5 Noise Impact Assessment

Acoustic Prediction Model

- 5.1 An acoustic prediction model of the Canalside space has been made using IMMI 3D acoustic modelling software. The model has been used to determine the noise impact associated with music from Canalside. The acoustic model allows for calculation of the propagation of sound in accordance with ISO-9613 standard prediction methods.
- 5.2 An estimate of the sound source locations has been carried out using directivity from d&b audio xS series loudspeakers. These have been calibrated to provide the outline source music levels indicated in Table 4 for the performance space and distributed background music across the other spaces (also suitable for sports screenings etc.)
- 5.3 The proposed development consists of the performance area where the highest levels of noise are expected. The other areas are to provide a more ambient setting with lower noise levels. For the purpose of this assessment the following noise levels have been assumed for each of the areas. This provides a reasonable level for live music and entertainment in the performance space. It is expected that based on the final sound system design appropriate levels will be 'set' during final commissioning.

	dB L _{Aeq}	dB L _{eq} , 63Hz	dB L _{eq} , 125Hz	dB L _{eq} , 250Hz	dB L _{eq} , 500Hz	dB L _{eq} , 1000Hz	dB L _{eq} , 2000Hz	dB L _{eq} , 4000Hz
Small Scale performance space	80	86	81	81	78	78	75	75
Background Music	76	74	73	73	73	73	65	63

Table 4 – Indicative source music levels

	dB L _{Aeq}	dB L _{eq} , 63Hz	dB L _{eq} , 125Hz	dB L _{eq} , 250Hz	dB L _{eq} , 500Hz	dB L _{eq} , 1000Hz	dB L _{eq} , 2000Hz	dB L _{eq} , 4000Hz
Predicted MNL performance space	39	48	44	41	37	32	22	15
Predicted MNL Background music	37	42	40	37	35	33	23	14
Target MNL	43	52*	46*	41	37	40	35	25

Table 5 – Target music noise levels (MNL) results based off measured results. *Target based off NANR.

- 5.4 The predicted noise levels are provided above. These satisfy the requirements of Manchester City Council guidance and demonstrate that the noise impact from music associated with the Canalside development is unlikely to give rise to complaint. The assumptions used for the basis of this assessment are included in the next section of the report. These are estimated noise levels based on prediction and the final internal music levels will be set during commissioning of Canalside.

- 5.5 From the predictions it is expected that the low frequency (bass) elements of the music will drive the maximum levels. By reducing the low frequency (bass) it is expected that louder broadband levels will be able to be achieved. The balance between low frequency contour and overall level will be balanced during commissioning. Refer to Appendix for noise map.
- 5.6 Any non-music noise shall be managed in accordance with Co-op Live Arena noise management policy. Although crowd noise might be dominant during sports screenings, it is unlikely that these will be as significant as the proposed music noise assessment.

6 Mitigation

6.1 To ensure the noise levels in section 5 are achieved a series of management details have been outlined below.

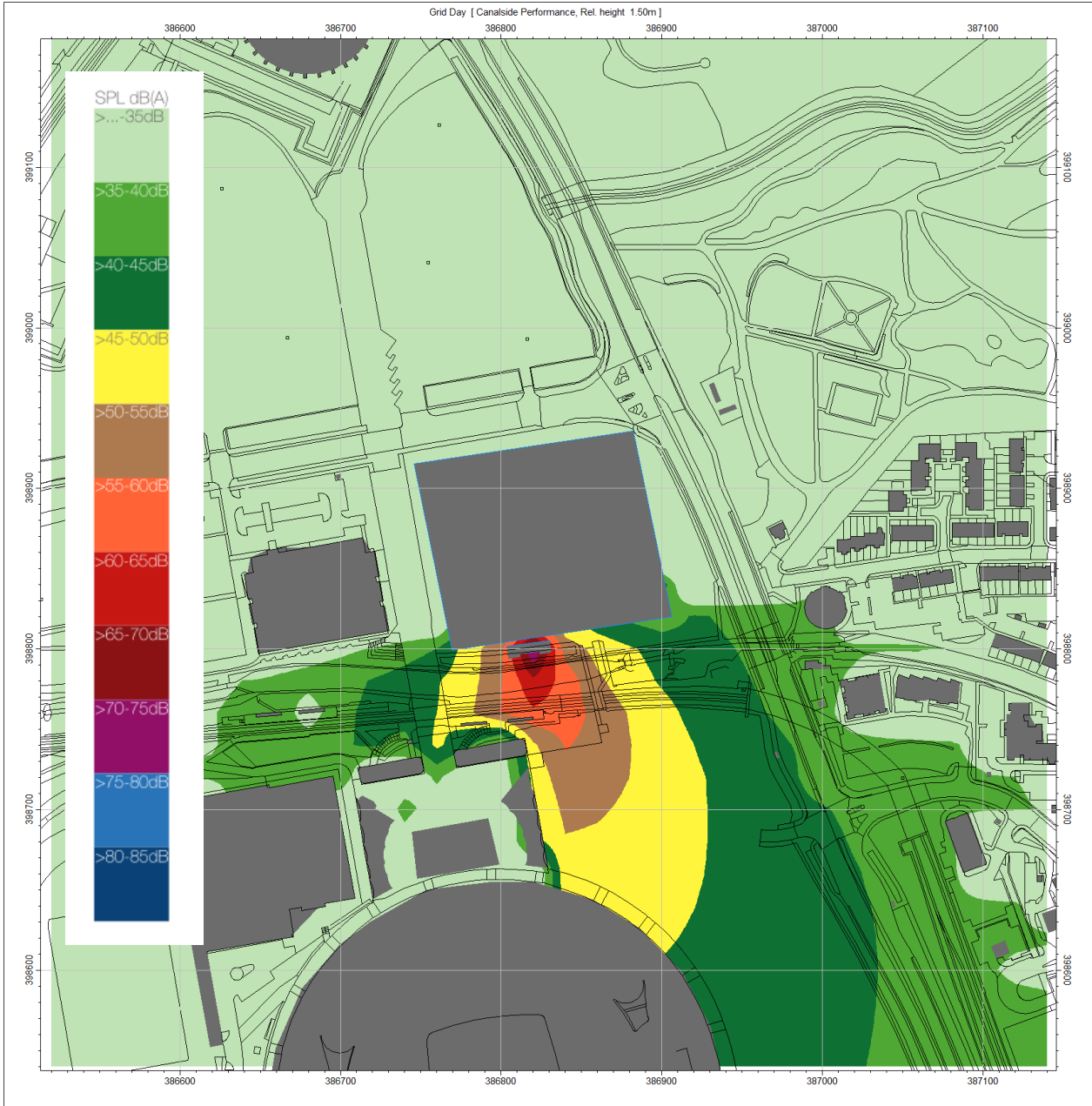
Event Management

6.2 Noise complaints and neighbour dissatisfaction can be effectively managed by implementing a formal event management strategy. The following should be considered. Further details are provided in the Co-op Arena Noise Management policy.

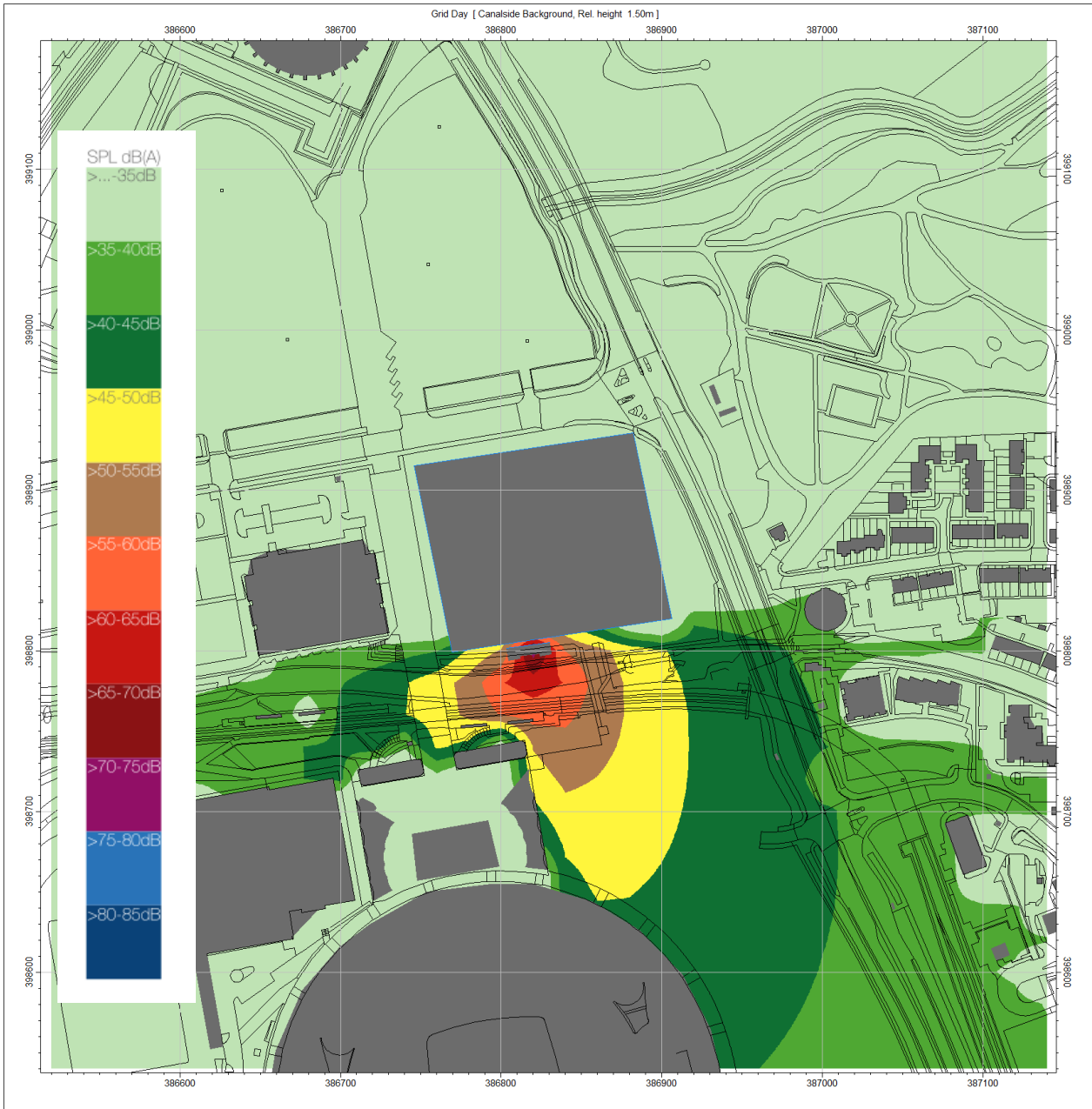
- Ensure that the pre-defined noise levels are managed and not exceeded during operation.
- Provide neighbours with a schedule of events including identification of louder/amplified shows.
- Aiming sound system away from Stuart Street and using directional loudspeakers.
- Providing a contact number for direct complaints.
- Produce noise management plan with defined actions in response to noise complaints

Appendix A - MAPPING

Small-Scale performance area



Background Music



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