

MPF/PR0569/L04

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Dear Brian

MOTEL ONE & STAYCITY, 3 ST PETER'S SQUARE, MANCHESTER – PLANNING CONDITION 11

We write with confirmation of the expected plant noise levels at the nearest sensitive properties to Motel One and Staycity at 3 St Peters Square (formerly Peterloo House), Manchester.

INTRODUCTION

Fisher Acoustics Ltd has been commissioned by Russell WBHO to determine the expected external noise levels generated by the proposed external building services plant to be installed at Motel One and Staycity, 3 St Peters Square, Manchester and to compare the noise levels to the requirements of planning condition 11 of the planning approval for the development.

Motel One is to occupy Levels 0 to 8 of 3 St Peters Square. Staycity is occupy Levels 9 to 20 of 3 St Peters Square.

PLANNING CONDITION 11

Planning condition 11 of the Planning Permission for 3 St Peters Square Motel One and Staycity development reference: 116189/FO/2017 - 3 St Peters Square (formerly Peterloo House), Manchester, states:

- *'Externally mounted ancillary plant, equipment and servicing 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.*

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.

Reason - To minimize the impact of the development and to prevent a general increase in pre-existing background noise levels around the site, pursuant to policy DM1 of the Core Strategy'

PRE-EXISTING NOISE LEVELS & ENVIRONMENTAL NOISE STUDY

The environmental noise report included with the planning submission for 3 St Peters Square identifies the results of daytime and night time environmental noise surveys at and around the site. The results of the noise surveys can be used to establish the allowable noise levels due to building services plant at the Development.

Noise limits for non-emergency Building Services plant

The closest pre-existing noise sensitive properties to 3 St Peters Square, Manchester are as follows:

- Tuscany House, an eight storey apartment building at the junction of Dickinson Street and George Street
- Princess St Hotel (formerly Arora) six storey building directly adjacent to 3 St Peters Square at the junction of George Street and Princess Street

With reference to the results of the environmental noise surveys at and around the site, Table 1 identifies the maximum allowable noise levels at the above receptors to comply with the above stated plant noise criterion.

Location	Rating level (dB LAeq)	
	Daytime (07:00 hrs to 23:00 hrs)	Night time (07:00 hrs to 23:00 hrs)
Tuscany House	47	43
Princess St Hotel, Back George Street	45	42
Princess St Hotel, George Street	47	43

Table 1: Environmental noise limits for non-emergency building services plant

Noise limit for Emergency Building Services plant

A life safety smoke extract fan is located on the roof of 3 St Peters Square at level 21 of the building.

The smoke extract fan will only operate during emergencies and during periodical test runs (perhaps test runs of thirty minutes every two weeks).

On this basis, it is not considered appropriate to require the smoke extract fan to comply with the noise limits for continuously operating non-emergency plant. It is therefore suggested that the operational noise level at the pre-existing sensitive receptors due to operation of the smoke extract fan is no more than 10dB(A) greater than the pre-existing ambient noise level (measured as an LAeq).

With reference to the results of the environmental noise surveys, it is therefore recommended that the noise level at the sensitive receptors close to 3 St Peters Square, during operation of the smoke extract fan does not exceed the daytime noise levels given in Table 2.

Location	Daytime noise level (dB LAeq)
Tuscany House	67
Princess St Hotel, Back George Street	63
Princess St Hotel, George Street	67

Table 2: Environmental noise limits for emergency building services plant

PROPOSED BUILDING SERVICES PLANT (NON-EMERGENCY)

The proposed external non-emergency building services plant items that serve Motel One are to be located on the lower roof (level 9) of the development and are as follows:

- 27 no. Condensing units
- 3 no. Air Source Heat Pumps (ASHP)

Table 3 identifies the reported sound power levels of the above non-emergency plant items that will serve Motel One.

Building services plant item	Sound Power Level (dB re 1 x 10 ⁻¹² W)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin – VRV Condenser Unit, REYQ8T, 24 no.	78	-	77	78	77	74	67	65
Daikin – VRV Condenser Unit, REYQ16T, 1 no	86	-	88	87	85	81	75	70
Daikin – VRV Condenser Unit, REYQ18T, 1 no	86	-	86	85	85	81	75	71
Daikin – Condenser Unit, RZAG35A, 1 no	62	-	65	65	62	61	57	50
NIBE F2040-16, Compact Inverter Controlled ASHP, 3 no.	61	-	-	-	-	-	-	-

Table 3: Sound power levels of non-emergency building services plant, Motel One (Roof Level)

Table 4 identifies the reported sound pressure levels of the above non-emergency plant items that will serve Motel One.

Building services plant item	Sound Pressure Level (dB re 2 x 10 ⁻⁵ Pa) @ 1 metre							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin – VRV Condenser Unit, REYQ8T, 24 no.	58	61	58	58	57	51	47	48
Daikin – VRV Condenser Unit, REYQ16T, 1 no	64	70	69	67	62	57	54	47
Daikin – VRV Condenser Unit, REYQ18T, 1 no	65	66	65	67	64	59	55	50
Daikin – Condenser Unit, RZAG35A, 1 no	48	52	52	50	48	41	38	30
NIBE F2040-16, Compact Inverter Controlled ASHP, 3 no.	47	-	-	-	-	-	-	-

Table 4: Sound pressure levels of non-emergency building services plant, Motel One (Roof Level)

The proposed external non-emergency building services plant items that will serve Staycity are to be located on the roof (Level 21) of the Development and are as follows:

- 29 no. Condensing units
- 3 no. Air Source Heat Pumps (ASHP)
- 2 no. Air Handling Units

Table 5 identifies the reported sound power levels of the above non-emergency plant items that will serve Staycity.

Building services plant item	Sound Power Level (dB re 1 x 10 ⁻¹² W)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin – VRV Condenser Unit, REYQ8T, 21 no.	78	-	77	78	77	74	67	65
Daikin – VRV Condenser Unit, REYQ10T, 1 no	79	-	81	78	78	74	70	64
Daikin – VRV Condenser Unit, REYQ14T, 1 no	81	-	84	83	80	76	70	67
Daikin – VRV Condenser Unit, REYQ20T, 1 no	88	-	88	88	87	83	78	74
Daikin – Condenser Unit, RZAG35A, 4 no	62	-	65	62	61	57	50	45
NIBE F2040-16, Compact Inverter Controlled ASHP, 3 no.	61	-	-	-	-	-	-	-
Daikin – Condenser Unit, RXYSQ4T8VB9, 1 no.	68	-	-	-	-	-	-	-
Geniox 18, Air Handling Unit, Breakout	60	65	73	56	54	54	50	45
Geniox 18, Air Handling Unit, Outdoor Air (Fresh Air Intake)	65	61	67	71	62	55	50	43
Geniox 18, Air Handling Unit, Exhaust Air	79	73	80	75	78	75	70	66
Geniox 22, Air Handling Unit, Breakout	60	66	74	53	54	51	46	40
Geniox 22, Air Handling Unit, Outdoor Air (Fresh Air Intake)	62	66	69	66	60	55	48	41
Geniox 22, Air Handling Unit, Exhaust Air	79	73	82	73	77	73	70	66

Table 5: Sound power levels of non-emergency building services plant, Staycity Apartments (Roof Level)

Table 6 identifies the reported sound pressure levels of the above non-emergency plant items that will serve Staycity.

Building services plant item	Sound Pressure Level (dB re 2 x 10 ⁻⁵ Pa) @ 1 metre							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin – VRV Condenser Unit, REYQ8T, 21 no.	58	61	58	58	57	51	47	48
Daikin – VRV Condenser Unit, REYQ10T, 1 no	58	63	65	57	58	51	48	41
Daikin – VRV Condenser Unit, REYQ14T, 1 no	61	66	68	64	59	54	50	48
Daikin – VRV Condenser Unit, REYQ20T, 1 no	66	66	65	67	65	60	57	52
Daikin – Condenser Unit, RZAG35A, 1 no	48	52	52	50	48	41	38	30
NIBE F2040-16, Compact Inverter Controlled ASHP, 3 no.	47	-	-	-	-	-	-	-
Daikin – Condenser Unit, RXYSQ4T8VB9, 1 no.	50	56	51	50	47	45	43	36

Table 5: Sound pressure levels of non-emergency building services plant, Staycity Apartments (Roof Level)

The sound power levels given above for the condensers is the maximum sound power level of the units when running at full load. However, the condensers are to be controlled by a variable speed drive (Inverter) that responds to the demand placed on the unit. An inverter drive reduces the speed and hence noise output of the unit. It is expected that the condensers will not operate at more than 70% of full capacity during the night time due to reduced demand. The calculated sound power level of the condensers when operating in this 'quiet mode' is 9dB lower than when operating at normal load.

The calculations take the attendant reduction in noise into account.

PROPOSED BUILDING SERVICES PLANT (EMERGENCY)

The only external emergency building services plant, which is to be installed on the Level 21 roof of the St Peters Square, is as follows:

- 1 no. Smoke extract fan

Table 6 identifies the reported sound power levels of the proposed smoke extract fan.

Building services plant item	Sound Power Level (dB re 1 x 10 ⁻¹² W)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Smoke Extract Fan, 1 no., Exhaust, Breakout	91	91	78	67	68	67	58	63
Smoke Extract Fan, 1 no., Exhaust, in-duct	104	101	99	93	93	92	86	83

Table 6: Sound power levels of proposed smoke extract fan, Staycity Roof top (Level 21)

EXPECTED ENVIRONMENTAL NOISE LEVELS DUE TO BUILDING SERVICES PLANT

Based on the reported source sound level data for all plant, the expected noise levels at the nearest existing noise sensitive properties have been calculated. Table 7 identifies the calculated noise levels.

Noise Sensitive Property	Sound Pressure Level		
	Daytime Non-emergency Plant (dB LAeq)	Night time Non-emergency Plant (dB LAeq)	Emergency Plant (dB LAeq)
Tuscany House	33	24	49
Princess St Hotel, Back George Street	43	34	45
Princess St Hotel, George Street	39	30	45

Table 7: Calculated building services noise levels at the nearest existing noise sensitive properties

With reference to Table 1 and Table 7, it can be seen that the calculated cumulative non-emergency plant noise levels at the closest residential properties to 3 St Peters Square comply with the recommended noise limits given in Table 1 above.

Therefore, compliance with Manchester City Council's published guidance on environmental noise limits at the sensitive receptors is expected in relation to operation of the proposed non-emergency building services plant.

With reference to Table 2 and Table 7, it can be seen that the calculated emergency plant noise levels at the closest residential properties to 3 St Peters Square comply with the recommended noise limits given in Table 2 above.

CONCLUSION

The calculated noise levels at the nearest existing noise-sensitive properties to 3 St Peters Square due to the proposed non-emergency building services plant serving the Development are considered to be compliant with the requirements of planning condition 11 of the Planning Approval.

The expected noise level at the nearest noise-sensitive properties due to the operation of emergency building services plant at 3 St Peters Square is considered to be commensurate with the maintenance of residential amenity.

If there are any aspects that you would like to discuss, please do not hesitate to contact the undersigned.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Matt Fisher', with a stylized flourish at the end.

MATT FISHER BEng(Hons) CEng MIOA
For and on behalf of Fisher Acoustics Limited