

MPF/PR0631/L10

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Dear David

NEW VICTORIA, MANCHESTER

We write with confirmation of the expected plant noise levels at the nearest residential properties due to externally mounted plant at New Victoria, Manchester.

INTRODUCTION

Fisher Acoustics Ltd has been commissioned by Vinci Construction Ltd to determine the expected external noise levels generated by the external plant at the New Victoria, Corporation Street, Manchester, M3 1NX and to compare the noise levels to the requirements of planning condition 32a of the planning approval.

PLANNING CONDITION 32A

Planning condition 32a of planning approval 111777/FO/2016/C1 states:

- '32) a) Prior to occupation of the development, a scheme for the acoustic insulation of any externally mounted ancillary equipment associated with:

- (i) the residential development; and
- (ii) any of the commercial uses;

to ensure that it achieves a background noise level of 5dB below the existing background (La90) in each octave band at the nearest noise sensitive location 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 equipment. The approved scheme shall be implemented prior to occupancy and shall remain operational thereafter.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.'

OFF-SITE RESIDENTIAL RECEPTORS

The closest pre-existing residential dwellings to the New Victoria development were detailed in the Environmental Statement prepared by Arup and Deloitte to support the planning application for New Victoria as follows: Parkers Hotel (Corporation Street), Ducie Bridge Inn (Corporation Street) and City Inn (Corporation Street/ Todd Street).

The Ducie Bridge Inn has been demolished to make way for an office building. Parkers Hotel is a six-storey hotel building and is located approximately 28 metres in plan from the closest elevation of Tower 1 of New Victoria. City Building has been redeveloped and extended and is now known as Hotel Indigo, a part-sixteen and part four-storey hotel building located approximately 86 metres in plan from the closest elevation of Tower 2 of New Victoria.

Figure 1 identifies the location of closest pre-existing residential dwellings and the New Victoria residential development.

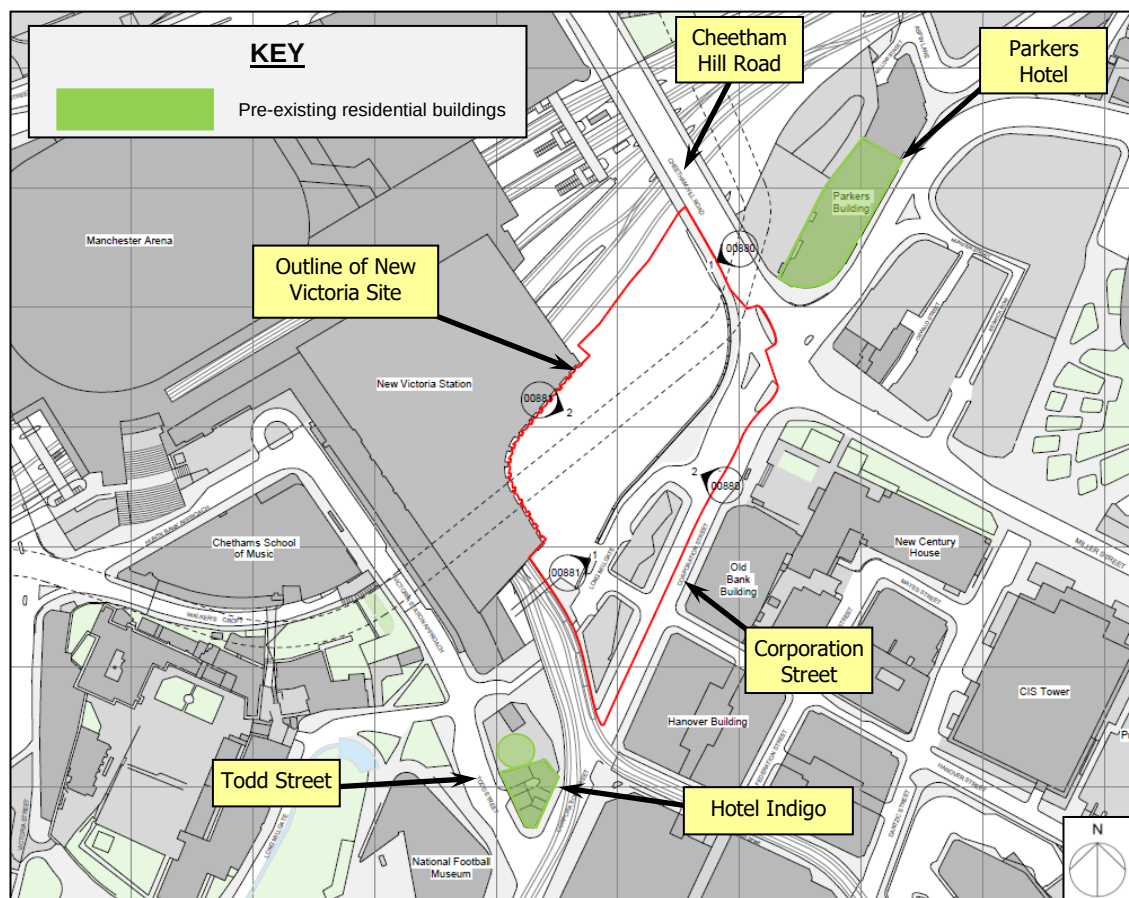


Figure 1: Site location plan

Figure 2 shows the layout of the New Victoria development.

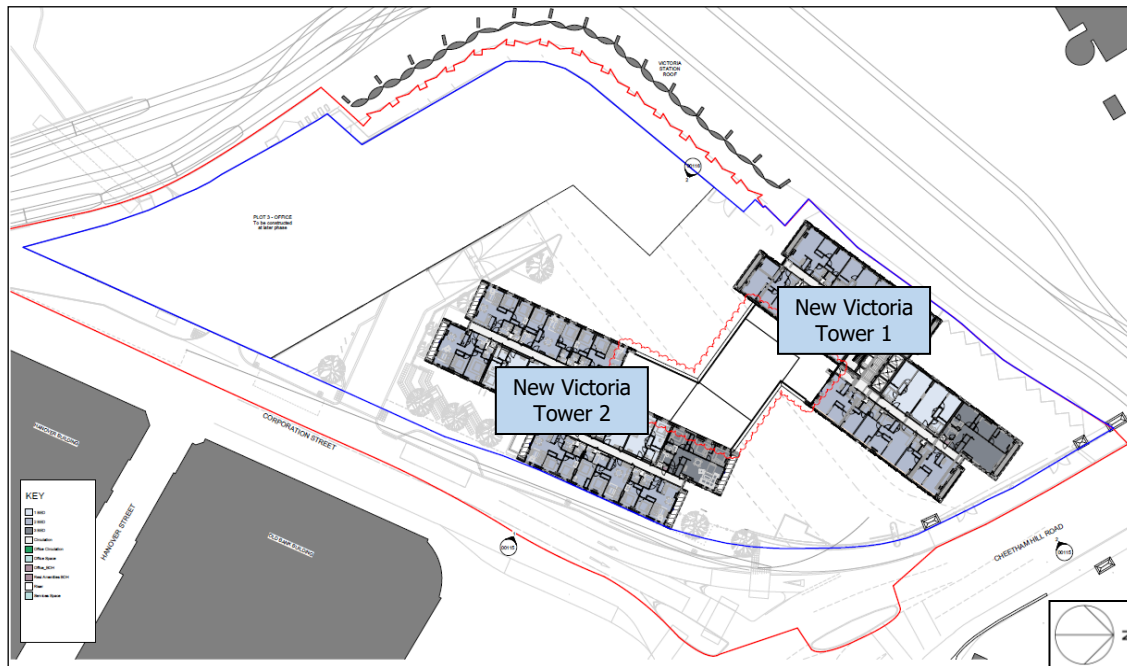


Figure 2: New Victoria residential site layout

PRE-EXISTING NOISE LEVELS & ENVIRONMENTAL NOISE STUDY

The noise survey section of the Environmental Statement prepared by Arup and Deloitte to support the planning application for New Victoria identifies the results of daytime and night time environmental noise surveys at and around the site carried out in September 2015.

In addition, daytime and night time environmental noise surveys at and around the site were carried out by Fisher Acoustics Ltd in October, November and December 2019.

The results of the noise surveys have been used to establish the allowable noise levels at the nearest residential receptors to the site due to building services plant at New Victoria.

Noise limits for non-emergency building services plant

With reference to the noise survey section of the Environmental Statement submitted with the planning application for New Victoria and the environmental noise surveys conducted by Fisher Acoustics, Table 1 identifies the maximum allowable noise levels at the nearest pre-existing noise sensitive receptors to comply with the noise criterion of Condition 32a in relation to non-emergency building services plant.

Location	Rating Level (dB LAeq)	
	Daytime (07:00 hrs to 23:00 hrs)	Night time (23:00 hrs to 07:00 hrs)
Parkers Hotel	53	38
Hotel Indigo (Formerly City Buildings)	54	42
North elevation Tower 1	59	47
NW elevation Tower 1	50	41
NE elevation Tower 1	53	47
SW elevation Tower 1	46	46
NE & SE elevation Tower 2	53	47
South elevation Tower 1 & Tower 2	46	46
NW elevation Tower 2	46	46

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

Figure 3 shows the above daytime and night maximum allowable noise levels respectively due to non-emergency building services plant at each façade of the residential towers.

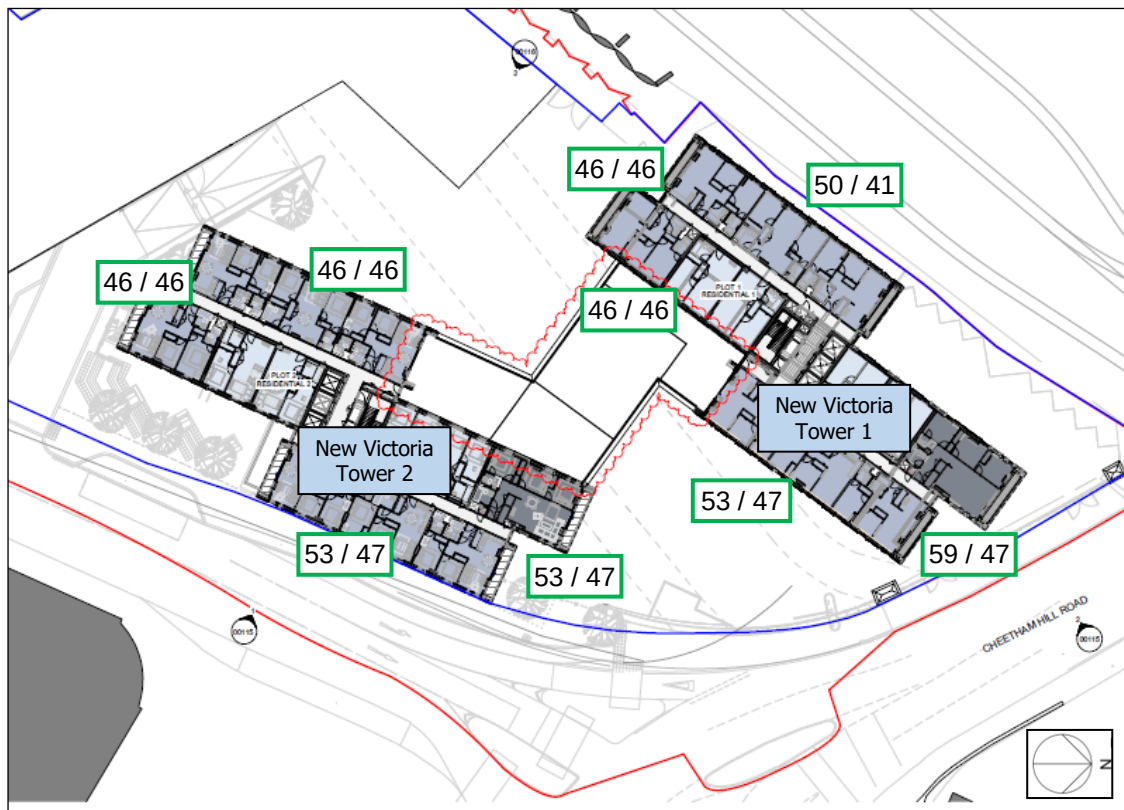


Figure 3: Daytime and night time maximum allowable noise levels (dB(A)) due to non-emergency building services plant

Noise limits for emergency building services plant

The emergency plant items at New Victoria are smoke extract fans, supply fans and a standby generator.

The emergency fans and generator would only operate during emergencies and during test runs as follows:

- Smoke extract fans: Tested once every 6 months
- Supply fans: Tested once every 6 months
- Standby generator: Tested once a year for one hour under full load & once per month for 15 minutes off-load

On the basis of the infrequent and short-duration test runs, it is not considered appropriate to require the smoke extract fans and standby generator to comply with the noise limits for continuously operating non-emergency plant. It is suggested that the operational noise level at pre-existing residential properties around the site due to operation of the generator and smoke extract fan is no more than 10dB(A) greater than the pre-existing ambient noise level (measured as an LA90).

With reference to the results of the environmental noise surveys at and around the site, Table 2 identifies the maximum recommended allowable noise levels at the nearest noise sensitive receptors to comply with the above stated emergency plant noise criterion.

Location	Daytime Noise Level (dB LAeq)
Parkers Hotel	68
Hotel Indigo (Formerly City Buildings)	69
NW Façade Tower 1	65
NE Façade Tower 1	74
SW Façade Tower 1 & Tower 2	61
NE & SE façade Tower 2	68
Courtyard Facades Tower 1 & Tower 2	61

Table 2: Environmental noise limits for emergency building services plant

BUILDING SERVICES PLANT AND LOCATIONS

The locations of the external non-emergency building services plant items at New Victoria are as follows:

- 4 no. corridor extract fans (2 no. duty, 2 no. standby) on roof of Tower 1
- 2 no. supply fans (1 no. duty, 1 no. standby) on roof of Tower 1
- 2 no. Gym condensers at lower ground floor level internal plant enclosure of Tower 1
- 2 no. Gym condensers at lower ground floor level externally located at Tower 1
- 4 no. corridor extract fans (2 no. duty, 2 no. standby) on roof of Tower 2
- 2 no. supply fans (1 no. duty, 1 no. standby) on roof of Tower 2
- 1 no. Amenity space condenser at lower ground floor level externally located at Tower 2
- 2 no. Condensers at lower ground floor level externally located at Tower 2 (tenants fit only)

The external emergency building services plant items are as follows:

- 4 no. smoke extract fans (2 no. duty, 2 no. standby) on roof of Tower 1
- 4 no. smoke extract fans (2 no. duty, 2 no. standby) on roof of Tower 2
- 2 no. supply fans (1 no. duty, 1 no. standby) on roof of Tower 1
- 2 no. supply fans (1 no. duty, 1 no. standby) on roof of Tower 2
- 1 no. Standby Generator at lower ground floor level of Tower 2

Figure 4 shows the building services layout at the lower ground floor levels of Towers 1 and 2.

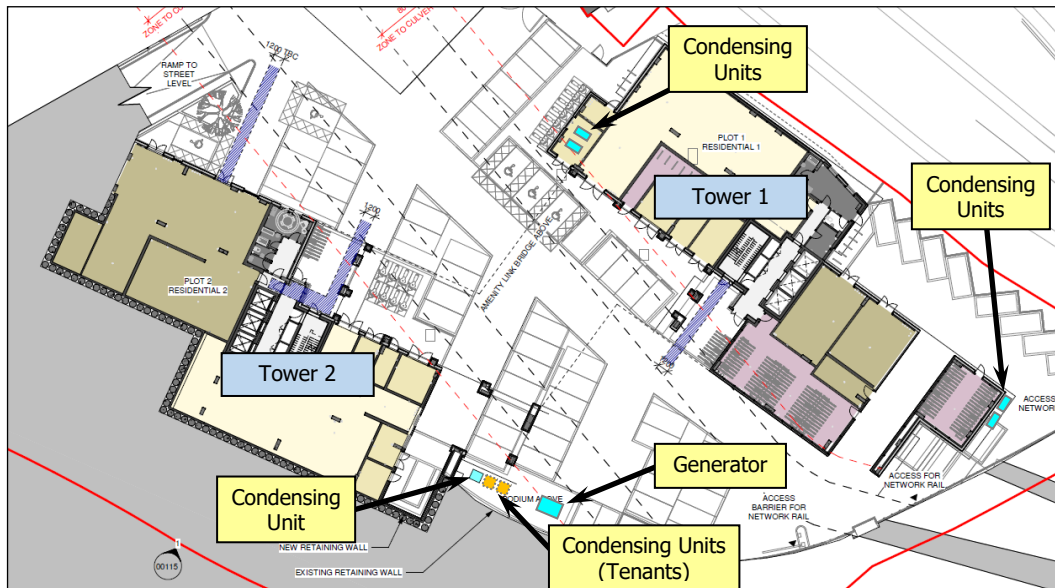


Figure 4: Site location plan - Lower Ground Floor

Figure 5 shows the building services layout at the roof top levels of Towers 1 and 2.

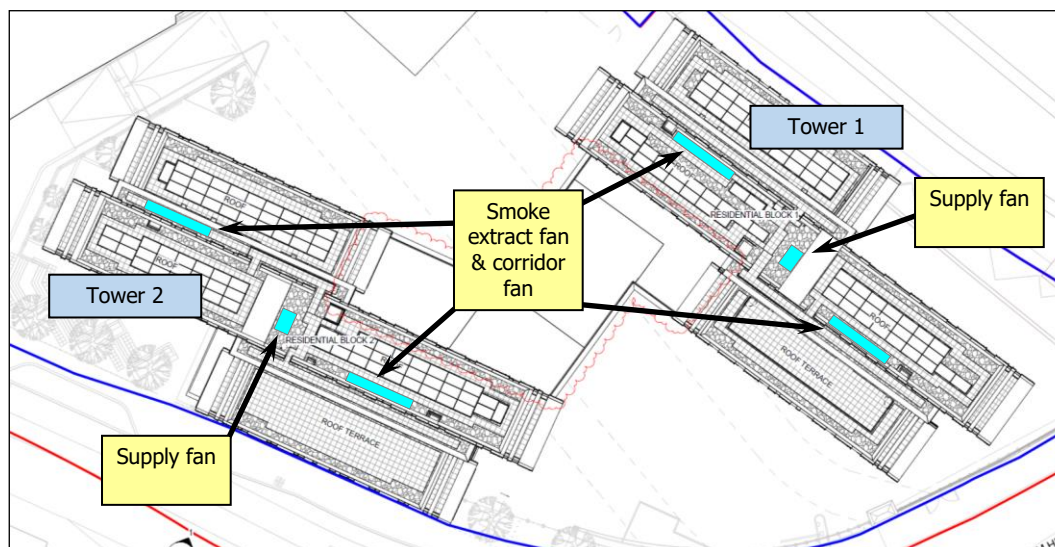


Figure 5: Site location plan – Roof top level

BUILDING SERVICES PLANT - SOURCE SOUND LEVELS

NON-EMERGENCY PLANT

Manufacturer's sound level data for the external non-emergency plant have been provided either in the form of sound power levels or sound pressure levels, as identified below.

Table 3 identifies the reported daytime sound power levels of the non-emergency rooftop plant at New Victoria, Tower 1.

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
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 1.21m ³ /s. 37 Pa (Duct Outlet)	46	53	54	50	42	38	37	33
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 1.21 m ³ /s. 37 Pa (Casing Radiated)	30	27	22	24	18	25	26	17
Supply Fan, 0.98 m ³ /s, 42 Pa (Duct Outlet)	43	55	49	49	38	29	26	21
Supply Fan, 0.98 m ³ /s, 42 Pa (Casing Radiated)	22	30	25	17	8	18	17	10
Daikin, REYQ12U, Gym Condensers (plantroom), 2 no.	84	90	85	83	81	77	75	76

Table 3: Sound power levels of non-emergency building services plant, New Victoria – Tower 1

Table 4 identifies the reported daytime sound power levels of the non-emergency plant at New Victoria, Tower 2.

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
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 1.11m ³ /s. 36 Pa (Duct Outlet)	50	58	63	55	39	30	29	28
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 1.11 m ³ /s. 36 Pa (Casing Radiated)	31	29	24	28	24	27	26	13
Supply Fan, 0.90 m ³ /s, 33 Pa (Duct Outlet)	42	53	54	48	34	23	22	19
Supply Fan, 0.90 m ³ /s, 33 Pa (Casing Radiated)	19	26	27	24	14	11	7	0

Table 4: Sound power levels of non-emergency building services plant, New Victoria – Tower 2

Table 5 identifies the reported daytime sound pressure levels of the identified condensing units.

Building services plant item	Sound Pressure Level (dB re 2 x 10 ⁻⁵ Pa at 1 metre)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin, RZASG100MV1, Gym Condenser, 1 no.	57	63	64	58	56	51	47	42
Daikin, Sky Air Advance: RZA200D, Gym Condenser, 1 no.	60	67	63	59	59	54	49	43
Daikin REYQ14U, Amenity Space Condenser, 1 no.	60	62	63	60	60	53	49	48

Table 5: Sound pressure levels of condensers, New Victoria – daytime

The values given above for the condensing units are the sound level of the units when running at full load (100 %) during the daytime. It is proposed that the externally mounted condensing units will run at a reduced output during the night time. Table 6 identifies the reported night time operating sound pressure levels of the units at New Victoria.

Building services plant item	Sound Pressure Level (dB re 2 x 10 ⁻⁵ Pa at 1 metre)							
	dB(A)	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daikin, RZASG100MV1, Gym Condenser, 1 no.	44	62	49	47	38	37	31	23
Daikin, Sky Air Advance: RZA200D, Gym Condenser, 1 no.	48	54	49	46	47	43	37	33
Daikin REYQ14U, Amenity Space Condenser, 1 no.	53	50	55	55	51	43	44	41

Table 6: Sound pressure levels of condensers, New Victoria - night time

EMERGENCY PLANT

Table 7 identifies the reported sound power levels of the emergency smoke extract and supply fans at Tower 1.

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
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 6.0 m ³ /s. 400 Pa (Duct Outlet)	83	87	78	81	75	77	77	75
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 6.0 m ³ /s. 400 Pa (Casing Radiated)	60	34	32	39	44	56	56	45
Supply Fan, 5.0 m ³ /s, 350 Pa (Duct Outlet)	75	89	82	73	64	68	67	68
Supply Fan, 5.0 m ³ /s, 350 Pa (Casing Radiated)	71	84	79	61	66	65	65	59

Table 7: Sound power levels of roof mounted emergency plant, New Victoria – Tower 1

Table 8 identifies the reported sound power levels of the emergency smoke extract and supply fans at Tower 2.

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
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 5.5 m ³ /s. 400 Pa (Duct Outlet)	83	89	81	83	80	78	76	70
Corridor Extract, Elta, Fan Model: 2DEP+LCS080L2-A9/14 R&S Set+2DEP, 5.5 m ³ /s. 400 Pa (Casing Radiated)	84	85	73	67	74	80	80	68
Supply Fan, 4.5 m ³ /s, 350 Pa (Duct Outlet)	74	84	82	80	68	61	56	56
Supply Fan, 4.5 m ³ /s, 350 Pa (Casing Radiated)	67	79	75	65	60	62	59	51

Table 8: Sound power levels of roof mounted emergency plant, New Victoria – Tower 2

Table 9 identifies the reported sound pressure levels of the standby generator when running at full load (annual test for one hour) and no load (monthly tests for 15 minutes).

Building services plant item	Sound Pressure Level at 1 metre (dB re 2 x 10 ⁻⁵ Pa)
	dB(A)
Model YC550RSC with a standby output of 550kVA, 440kW, Standby Generator, 1 no, full load	79
Model YC550RSC with a standby output of 550kVA, 440kW, Standby Generator, 1 no, no load	69

Table 9: Sound pressure levels of emergency building services plant, New Victoria

ENVIRONMENTAL NOISE LEVELS DUE TO BUILDING SERVICES PLANT

Based on the reported source sound level data for plant, the expected noise levels at the nearest noise sensitive properties have been calculated. The calculations take into account the distance from the plant items to the receptors and the screening attenuation due to the elevated position of the plant on the roof of the New Victoria towers.

The plant items are not expected to attract a rating penalty in relation to perceivable tonal noise, intermittent operation or impulsive noise at the noise sensitive receptors. Therefore the rating level is the same as the calculated noise level.

Table 10 identifies the calculated noise levels.

Noise Sensitive Property	Noise Level		
	Daytime Non-emergency Plant (dB L _{Aeq})	Night time Non-emergency Plant (dB L _{Aeq})	Emergency Plant (dB L _{Aeq})
Parkers Hotel	33	33	42 (50 – Generator on full load)
Hotel Indigo (Formerly City Buildings)	28	28	39
North elevation Tower 1	46	35	52 – Generator on full load
NW elevation Tower 1	39	39	43
NE elevation Tower 1	39	39	43
SW elevation Tower 1	33	33	57
SE elevation Tower 2	39	38	51
NE elevation Tower 2	39	38	56 (66 = Generator on full load)
South elevation Tower 1	40	40	41
NW elevation Tower 2	43	43	47

Table 10: Calculated noise levels at the nearest noise sensitive properties due to building services plant

It can be seen that the calculated cumulative non-emergency plant noise levels identified in Table 10 comply with the noise limits given in Table 1.

It can also be seen that the calculated cumulative emergency plant noise levels identified in Table 10 comply with the noise limits given in Table 2.

Compliance with the requirements of planning condition 32a is therefore expected in relation to operation of the installed building services plant.

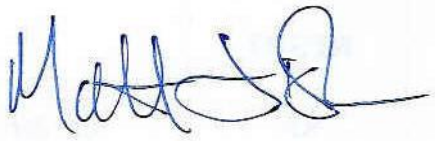
CONCLUSION

The calculated noise levels at the nearest existing residential properties due to the non-emergency building services plant serving the New Victoria development are considered to be compliant with the requirements of planning condition 32a of the planning approval.

The expected noise level at the nearest noise-sensitive properties due to the operation of all emergency building services plant at New Victoria is considered to be commensurate with the maintenance of residential amenity.

If there is any aspect of the above that you would like to discuss then please do not hesitate to contact the undersigned.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Matt Fisher', is written over a light blue rectangular background.

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