
3 - 6 Spring Place
Spring Place Ltd

Appendix #2
Noise Impact Assessment
Note

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Spring Place
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Noise Impact Assessment

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Project Particulars

Client Name: Spring Place Ltd

Project Name: Spring Place

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Revision History

Revision	Date	Prepared By	Checked By
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1 Introduction

- 1.1 Scotch Partners originally issued a *Noise and Vibration Assessment* in September of 2016 in support of the planning application to develop the site at 3-6 Spring Place into co-worker offices with flexible café restaurant and event space (Application ref: 2016/5181/P).
- 1.2 Using measurement data from an external noise survey carried out on site, limits for noise intrusion, noise emission and vibration were set out in line with the relevant planning requirements of the London Borough of Camden.
- 1.3 The London Borough of Camden accepted the findings of the report and in granting planning permission applied the following condition:

*“18 The design noise & vibration levels at the development hereby approved shall **meet the specified noise & vibration criteria suggested in the Scotch & Partners noise & Vibration report dated September 2016.** Approved acoustic and vibration design details shall be implemented prior to occupation of the development and thereafter be permanently retained.”*
- 1.4 Since receiving planning consent, the design has been progressed and the acoustic performance of the façades reviewed. This document presents an updated noise intrusion assessment and suggests constructions to comply with the criteria set out in the original *Noise and Vibration Assessment*.
- 1.5 The building services strategy has also been developed and plant items have been introduced to the first-floor roof above the event space and kitchen. A plant room has also been formed to the rear of the development at first floor level. A noise emission assessment of the updated proposals has been included to demonstrate compliance with the criteria set out in the original *Noise and Vibration Assessment*.
- 1.6 In the absence of substantial structural changes, the findings of the original vibration assessment are still considered relevant and a revised assessment is not considered necessary.

2 Noise intrusion

2.1 Criteria

2.1.1 There are no regulations which set specific acoustic standards for an office space, however in order to promote the creation of effective office spaces the British Council for Offices (BCO) have published their Guide to Specification 2014. This document provides guidance regarding office design and presents standards for external noise intrusion which have been deemed suitable for an office environment.

2.1.2 The Guide to Specification recommends that when averaged over a typical working day of eight hours, noise intrusion should be controlled to a level of NR38 $L_{eq,8hr}$ within a speculative office environment. In addition, L_{AFmax} noise levels in open plan offices should not regularly exceed 55dB.

2.2 Reference noise levels

2.2.1 In order to assess the level of noise intrusion into the new development, the following reference noise spectra, presented in Table 2-1, have been used in façade calculations.

2.2.2 These spectra have been determined from the noise survey measurement data detailed in the original *Noise and Vibration Assessment*.

Daytime (09:00-17:00)	Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Spring place elevation $L_{eq,8hr}$	75	73	66	63	66	67	65
Spring place elevation L_{Fmax}	91	79	73	74	83	81	71
Elevations facing the railway $L_{eq,8hr}$	74	72	68	67	67	62	56
Elevations facing the railway L_{Fmax}	94	89	86	89	87	80	73
Archway facades $L_{eq,8hr}$	69	67	63	62	62	57	51
Archway facades L_{Fmax}	89	84	81	84	82	75	68

All values are sound pressure levels in dB (ref: 2×10^{-5} Pa)

Table 2-1 Reference noise levels for use in façade sound insulation assessments

2.3 Recommended façade performance

2.3.1 To achieve the external noise intrusion limits set down in Section 2.1, the minimum recommended sound insulation performance of the façades for the development have been established using the relevant reference noise levels in Table 2-1. The sound reduction indices are set down in Table 2-2.

	Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Spring place elevation	24	26	31	36	44	46	56
Elevations facing the railway	27	30	34	40	42	48	54
Archway facades	23	26	25	33	44	46	52

*All values are sound reduction indices measured in accordance with BS EN ISO 10140-2
Table 2-2 Minimum façade sound reduction indices*

2.3.2 It is understood that the façades of the new building will comprise of both solid masonry elements and a stick system of curtain walling. While a masonry construction is expected to exceed the required performances, the curtain walling will require substantial double glazing.

2.3.3 On the Spring Place facade, this would typically require a glazing configuration such as 8mm laminate glass / 22mm cavity / 10mm glass.

2.3.4 Elevations facing the railway will require a glazing configuration such as 12mm glass / 16mm cavity / 8mm laminate glass.

2.3.5 Glazed facades to offices within the railway arches require a double-glazed configuration comprising 6mm glass / 12mm cavity / 7mm laminated glass.

2.3.6 Alternative glazing solutions may also be appropriate.

3 Noise emission

3.1 Criteria

3.1.1 Presented below in Table 3-1 are the limits established in the *Noise and Vibration Assessment* for the cumulative level of plant noise emitted from the proposed development.

Time Period	Noise limits
Daytime (07:00-23:00)	37dB $L_{Aeq,1hr}$
Night-time (23:00-07:00)	36dB $L_{Aeq,5min}$

All values are sound pressure levels in dB re: $2 \times 10^{-5} Pa$

Table 3-1 Noise emission limits for all building services plant operating simultaneously

3.1.2 These limits apply at the nearest noise sensitive neighbours and have been derived from the lowest background noise levels measured during the original noise survey.

3.1.3 Should equipment contain any distinctive acoustic characteristics then these limits should be lowered by an additional 5dB.

3.2 Nearest noise sensitive neighbours

3.2.1 The nearest noise sensitive façades to the proposed development site are the properties at 110-114 and 116 Grafton Road and 7 Spring Place. These properties have rear elevations which directly overlook the eastern edge of site and are some 30 metres from the main office building.

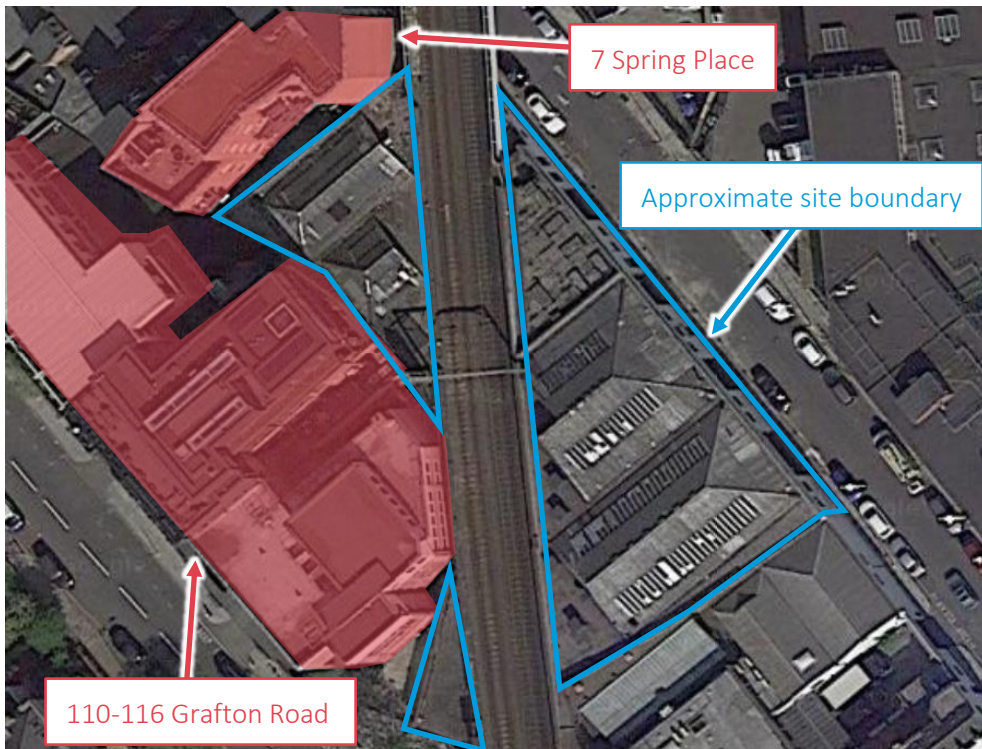


Figure 3-1 Location of nearest noise sensitive receivers

3.3 Plant proposals

- 3.3.1 The principal noise generating plant items proposed for the development are considered to be the air conditioning and ventilation equipment at multiple locations across the site. Equipment is expected to only operate during the daytime when the building is occupied and should not contain any distinctive acoustic characteristics.
- 3.3.2 The proposed plant locations and the nearest noise sensitive facades are shown on an overview of the site in Figure 3-2. Drawings issued by Cundalls should be referred to for the exact positioning of equipment.
- 3.3.3 The following external noise limits in Table 3-2 are proposed for the equipment items to satisfy the criteria set out in Table 3-1. These limits apply at a distance of 1-metre from the equipment in the direction of the nearest noise sensitive receivers.

Location	Equipment	No.	Limit
Fifth floor plant enclosure	Condensing unit	1	64dB L_{pA}
	Condensing unit	1	65dB L_{pA}
	Condensing unit	1	66dB L_{pA}
	Condensing unit	3	67dB L_{pA}
	Condensing unit	10	55dB L_{pA}
	Air handling unit	1	70dB L_{pA} ¹
Fifth floor rooftop	Extract fan	1	60dB L_{pA} ¹
Event space rooftop	Heat recovery unit	2	40dB L_{pA} ¹
First floor plant room	Air handling unit	2	42dB L_{pA} ¹
First floor plant deck	Condensing unit	1	45dB L_{pA}
	Air handling unit	1	42dB L_{pA} ¹
Bin Store	Condensing unit	2	50dB L_{pA}
	Condensing unit	2	55dB L_{pA}

¹As a combination of noise from the intake, exhaust and casing/duct breakout noise
Table 3-2 Noise limits for plant items

- 3.3.4 The limits for fifth floor plant are not considered to be particularly onerous and it is expected that these can be met through careful unit selection.
- 3.3.5 Plant at first floor level and on the event space roof are in proximity to noise sensitive receivers and consequently, subject to rather onerous limits. The fresh air intake and exhaust terminals of air handling units should be attenuated with in-line silencers and be positioned at least 5-metres from the facades of neighbouring properties. Directing the ductwork terminations away from noise-sensitive facades may allow a relaxation of the silencer specification.
- 3.3.6 Exposed equipment must be installed within an acoustic enclosure should casing breakout noise exceed the specified limit.

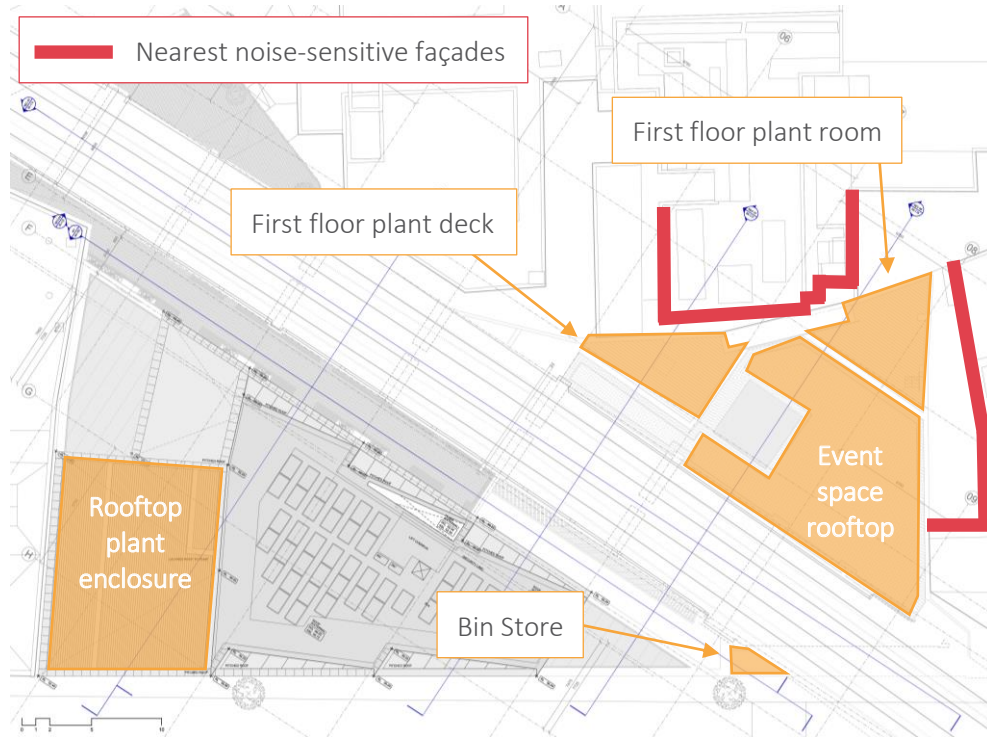


Figure 3-2 Proposed plant locations and nearest noise sensitive neighbours

3.4 Prediction of noise emission levels

3.4.1 Presented in Table 3-3 are the levels of plant noise predicted at each receiver. These levels have been calculated based on the plant details outlined in Section 3.1 and the calculation methodology presented in ISO 9613-2 *Attenuation of sound during propagation outdoors*.

3.4.2 Attenuation from the ground effect and air absorption is expected to be negligible over the short distance to the receivers and has therefore been omitted from the calculation.

Receiver	Noise level
110-116 Grafton Road	37dB L_{pA}
7 Spring Place	36dB L_{pA}

Table 3-3 Predicted level of plant noise at each receiver

3.4.3 The prediction demonstrates that during the development’s anticipated hours of operation, plant noise can be expected to satisfy the London Borough of Camden’s planning requirements.

3.4.4 It should be noted that this prediction represents a worst-case scenario as it assumes all items of equipment to be simultaneously operating at their maximum design duty. Due to the diversity of heating and cooling requirements throughout the year, air-conditioning equipment can typically be expected to operate at a lower duty, resulting in lower levels of noise.

4 Conclusions

- 4.1 A noise impact assessment has been undertaken for the revised development proposed at 3-6 Spring Place with consideration given to both noise intrusion and emission.
- 4.2 The required sound insulation performances for the various facades of the development have been established based on the findings of a noise survey detailed in the original *Noise and Vibration Assessment*. It is concluded that if these sound insulation performance specifications are achieved, noise intrusion into the development will be controlled to acceptable levels.
- 4.3 Noise emission from fixed building services equipment associated with the development has also been considered and noise limits have been set for the various items of equipment so as to satisfy the London Borough of Camden's planning requirements.

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