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REPORT No. 381228/1 – issue B

8 Pilgrims Lane
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PLANT NOISE ASSESSMENT REPORT

PREPARED: **27th May 2020**

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1.0 Introduction

1.1 Noico Ltd have been instructed by Ungar Architects (on behalf of the client Mrs Iyabode Abiola) to undertake a noise assessment of the new air conditioning units proposed to be installed externally within the garden of 8 Pilgrims Lane, London NW3 1SL, as shown on Ungar Associates site plan reference 117_A_306_site_win.

1.2 The purpose of the assessment is to demonstrate that the proposed new plant will achieve the noise requirements set by the local planning authority (London Borough of Camden Council).

1.3 The assessment is to be made using the results of the background noise survey carried in the rear garden of the development site by Campbell & Associates over the period from 9th January 2019 through to 12th January 2019. We can confirm that Campbell & Associates have duly assigned the noise survey data to Noico for use within this assessment.

2.0 Design noise criteria

2.1 London Borough of Camden Council has advised that noise arising from new fixed plant installations shall not exceed a level 10dBA below the existing lowest LA90 (15min) background noise level at any time when the plant is operating, and where the source is tonal it shall not exceed a level 15dBA below. The noise emitted shall be measured or predicted at 1.0m from the façade of the nearest residential or noise sensitive premises.

In accordance with the environmental noise survey referred to above, the minimum day and nightime LA90 background noise levels are summarised as follows, together with the corresponding design noise criteria:

Plant noise emission limits:

	Daytime (0700-2300hrs)	Night time (2300-0700hrs)
Minimum background noise measurement	37 L_{A90}	35 L_{A90}
Design noise criteria (background level minus 10dB)	27 L_{Aeq}	25 L_{Aeq}

3.0 Plant Noise Assessment

3.1 Nearest noise sensitive properties

The development site is located in a predominantly residential area approximately 250 metres south of Hampstead Heath. There are a small number of commercial and retail premises close by to the east of the site in Downshire Hill, including Downshire Studios which borders the site to the west. To the west, south and south east the site is bordered by similar residential properties to the development site; namely No's 6 and 10 Pilgrim Lane, and No. 4 Downshire Hill respectively. The closest noise sensitive property to the proposed location of the new mechanical plant is the residential property of No.4 Downshire Hill, and this has windows at ground and first floor levels on all elevations. The nearest windows likely to be affected by the plant noise are considered to be at ground floor level on the north elevation of the building approximately 2 metres

away from the plant installation. It should be noted there is no line of site from the windows of No.4 Downshire Hill to the mechanical plant as it is shielded by the edge of the building.

Please refer to the site plan in figure 1 of this report for details.

3.2 Mechanical Plant details and noise data

The proposed mechanical plant comprises a single air conditioning condenser unit; a Daikin model RXYSCQ 12TY1 having the following noise output level at 1 metre as confirmed by the equipment manufacturer. From closer inspection of the noise data the noise is not considered to be tonal.

Sound pressure level at 1 metre

63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	**(dBA)**
67	61	57	54	52	49	43	36	**57**

It is understood the plant is capable of operating 24 hours a day, and therefore we have assessed the plant against the nightime design noise criteria to render the assessment as robust as possible. However it should be noted that during late evening/night time hours, it is unlikely the plant will operate at full duty and hence maximum noise level.

3.3 Calculations

The following calculations have been based on 24 hour plant operation, with a calculated allowance for the 'barrier effect' from the neighbouring 'building edge', which prevent line of sight between the window and plant installation.

	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dBA
Plant noise level (SPL@1m)	67	61	57	54	52	49	43	36	**57**
Attenuation due to distance (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Attenuation due to non line of sight	-6	-7	-8	-10	-12	-15	-18	-20	
Noise level at receiver	55	48	43	38	34	28	19	10	41
Design criteria									25
Margin of error									**16**

From the above calculation it can be seen that noise control measures will be required to the condensing unit plant in order to meet the project design noise criteria. The necessary level of attenuation can readily be achieved by enclosing the plant within a purpose made acoustic enclosure as detailed below.

4.0 Noise control measures

4.1 Typical specification

To achieve the required 16dBA noise reduction, the condenser unit will need to be enclosed within a purpose made acoustic enclosure to the following typical specification, and as detailed on the attached layout drawing.

The enclosure sides and roof shall be constructed from high performance modular acoustic panels; typically 50mm thick and formed from a sandwich construction of solid sheet steel and medium density acoustic infill. The inlet and discharge air to/from the

condenser shall be attenuated by incorporating suitable in-line attenuators within the enclosure. The minimum acoustic performance of the component parts which form the enclosure shall be as follows:

	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz
Acoustic panels – minimum sound reduction performance (dB)	19	19	25	31	40	42	45	41
Inlet air attenuator – minimum insertion loss (dB)	9	15	26	40	50	50	45	37
Discharge air attenuator – minimum insertion loss (dB)	9	15	26	40	50	50	45	37

4.2 Calculations with noise control measures incorporated

Note, the following calculation is based on the predominant noise transmission path, i.e. the inlet and discharge air. Noise breakout through the enclosure walls and roof will be significantly less.

	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz	dBA
Plant noise level (SPL@1m)	67	61	57	54	52	49	43	36	**57**
Attenuation due to distance (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Attenuation due to non line of sight	-6	-7	-8	-10	-12	-15	-18	-20	
Inlet/discharge air attenuator	-9	-15	-26	-40	-50	-50	-45	-37	
Noise level at receiver	46	33	17	<5	<5	<5	<5	<5	23
Design criteria									25
Margin of safety									**2**

4.3 Summary

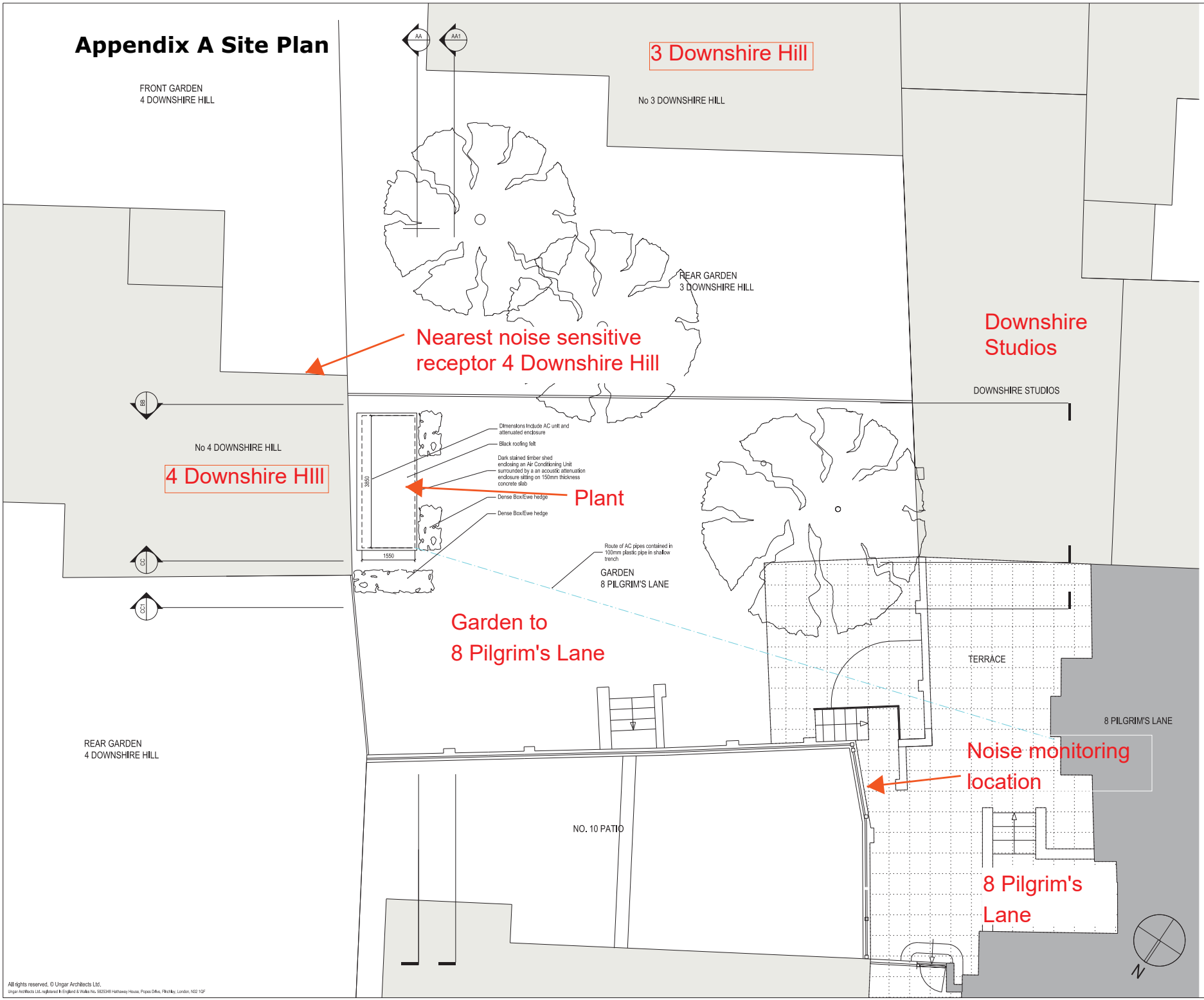
The assessment predicts that based on the proposed plant selection and specified noise control measures, the maximum noise level at the facade of the nearest noise sensitive property (No.4 Downshire Hill) will be 23dBA. This meets the design noise criteria with a safety margin of 2dBA, and therefore the requirements of the local planning authority (London Borough of Camden Council) will be met in full. It should also be noted that during nightime periods it is highly unlikely the plant will operate at maximum duty, and as such during the quietest time of the day associated with this time period, plant noise levels are likely to be lower than the above predicted maximum level.

5.0 Conclusion

5.1 Using the background noise measurement data provided by Campbell & Associates, a plant noise assessment has been carried out on the proposed new air conditioning unit proposed to be installed in the rear garden of the property at 8 Pilgrims Lane, London NW3 1SL.

5.2 The assessment predicts that based on the proposed plant selection, location, and specified noise control measures, the noise level at the nearest windows of the nearest noise sensitive property (No.4 Downshire Hill) will be within the limits of the design noise criteria, and therefore the requirements of the local planning authority ((London Borough of Camden Council) will be met in full.

Appendix A Site Plan



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Revision:	Date:	Revision Description:	Check:
-	20/06/2020	Review	PU

Client:
Private

Title:
Proposed Plan

Project:
8 PIgrim's Lane

PLAN 1:50

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Project Number:	Date:	Scale @ ISO A1:
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Drawing Number: 117_A_AC_PLAN
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APPENDIX B – GRAPHICAL REPRESENTATION OF SURVEY RESULTS