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Report No. 72003022/Add1A

**Utopia Village, Chalcot Road
Primrose Hill
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NW1 8LH**

ADDENDUM ACOUSTIC REPORT

PREPARED: 11TH Nov 2021

Presented by:

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1.0 Introduction

- 1.1 Callisia Ltd had previously commissioned Noico Ltd to conduct an environmental noise survey at Chalk Farm Camden, Utopia Village, Chalcot Road, Primrose Hill, London NW1 8LH – see Noico Report No. 72003022/1 dated 4th May 2020.
- 1.2 The purpose of that survey was to obtain statistical noise data and to determine the background noise levels at the site. Based on the noise survey data, noise criteria were established for limiting noise emission from the proposed mechanical plant installations serving the premises. The noise criteria being set in accordance with the requirements of the local planning authority (The London Borough of Camden).
- 1.3 Noico Ltd were also instructed to carry out a plant noise assessment for the proposed new equipment being installed to ensure it meets the council requirement and offer recommendations should it not. The above referenced Noico report made suitable recommendations based upon the plant selections and proposed location at that time.
- 1.4 Since the above referenced Noico report there has been changes to the proposed plant location and selections requiring a new acoustic assessment to ensure compliance with the previously established noise criteria. This Addendum Report therefore investigates the proposed new locations and current plant selections, utilising the findings of the previous Noico Report referenced above.

2.0 Survey Results

- 2.1 The results of the previous Noico environmental survey were presented in both graphical and numerical format in Noico No. 72003022/1 dated 4th May 2020, producing the following recorded values of L_{Aeq} and L_{A90} .
- 2.2 See Appendix 1 for a glossary of terms.
- 2.3 With reference to the measured data contained within that report, the minimum background noise level measured during the survey period was:

Daytime (07:00 to 23:00hrs)	- 40.6 L_{A90}
Night-time (23:00 to 07:00hrs)	- 37.9 L_{A90}

3.0 Environmental Noise Level Criteria

- 3.1 Criteria for mechanical services noise emission are normally based upon the prevailing level of background noise in the period of concern and may be set against this to a level as normally defined by the local planning authority.
- 3.2 The London Borough of Camden Council has advised that noise arising from fixed plant installations should not cause an increase in the existing minimum background noise level (as expressed as a L_{A90}) at the nearest noise affected property.

In practical terms, this means that the noise arising from the plant should be at least 10 dB(A) below the minimum background noise level.

- 3.3 To conform to the above criteria, and in accordance with the minimum background noise levels measured during the survey (as summarised in Section 2.3), noise from the proposed plant installations should not exceed the following value.

Daytime plant operation (07:00 to 23:00hrs)	- 30.6 dB L_{Aeq}
Night-time (23:00 to 07:00hrs)	- 27.9 dB L_{Aeq}

Note: These levels must be achieved cumulatively with all plant operating, and as measured at 1 metre from the window of the nearest affected property.

4.0 BS 4142

- 4.1 Using BS 4142 the likelihood of complaints from local residents due to plant noise emissions is assessed by the difference between noise from the new source(s) and the existing background level. The noise from the new source(s) is expressed in terms of a rating level, calculated from the specific noise source(s) plus any 'acoustic feature corrections' and is given as an $L_{Aeq,T}$ noise level.
- 4.2 The acoustic feature correction is applied where the source emits a noise of a tonal, impulsive or intermittent nature.
- 4.3 The existing background noise level is expressed in terms of an $L_{A90,T}$ noise level. The rating level can be subtracted from the background noise level to determine noise impact against the design criteria.

5.0 BS 4142 Assessment

- 5.1 Using the advised current plant selections, we understand the following nine new items of equipment are to be installed on site at two flat roof locations to the rear and side of the building – each item of plant is listed below together with the associated dB(A) level for reference:

The First Roof Plant Location

This location replaces the original plant location (at the rear of the building) which we have titled The First Roof Plant Location and it is to house the following five items of plant. (See also Appendix 3 for a rough layout of the indicative plant location).

Plant in Heating Mode

1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P300YNW-A	67dB(A) @ 1m
1no. PURY-P400YNW-A	69dB(A) @ 1m
Combined Total	72dB(A) @ 1m

Plant in Cooling Mode

1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P200YNW-A	59dB(A) @ 1m
1no. PURY-P300YNW-A	61dB(A) @ 1m
1no. PURY-P400YNW-A	65dB(A) @ 1m
Combined Total	69dB(A) @ 1m

There appears to be a further Low Noise Mode for the above plant selections, but as this limits the capacity of the plant and can switch from Low Noise Mode automatically when operation conditions are severe, it has therefore been ignored in our calculations for this Addendum Report.

The Second Roof Plant Location

This location is to the side of the building, down an external metal staircase from the original plant location. We have titled this position as The Second Roof Plant Location and it is to house the following four items of plant. (See also Appendix 3 for a rough layout of the indicative plant location).

Plant in Heating Mode

1no. PUZ-ZM100VKA	51dB(A) @ 1m
1no. PUZ-ZM100VKA	51dB(A) @ 1m
1no. PUZ-ZM100VKA	51dB(A) @ 1m
1no. PUZ-ZM100VKA	51dB(A) @ 1m
Combined Total	57dB(A) @ 1m

Plant in Cooling Mode

1no. PUZ-ZM100VKA	49dB(A) @ 1m
1no. PUZ-ZM100VKA	49dB(A) @ 1m
1no. PUZ-ZM100VKA	49dB(A) @ 1m
1no. PUZ-ZM100VKA	49dB(A) @ 1m
Combined Total	55dB(A) @ 1m

- 5.2 We have been advised that the plant will only operate during the day and so the limits of plant operation will be 07:00 to 23:00 hours. The resulting design target is therefore 31dB(A) - the rounded figure identified in Section 3.3 of this Addendum Report.
- 5.3 A review of the plant noise level indicates that there is no evidence of any tonal content and no acoustic feature correction is therefore required.
- 5.4 For the First Roof Plant Location, as previously identified in our original acoustic report, there are numerous residential properties in the immediate vicinity (ie. the rear of those along Gloucester Avenue), each with direct line of sight to the proposed plant installation location. The nearest residential location is estimated to be at 15m from the proposed plant location and we have labelled this position as Assessment Location A in our calculations.
- 5.5 For the Second Roof Plant Location, the nearest noise sensitive windows are at the rear of the adjacent residential property (ie. 14 Egbert Street), with potentially direct line of sight to the proposed plant installation location. The nearest residential location is estimated to be at a distance of 7m from the proposed plant location and for this Second Roof Location we have labelled this position as Assessment Location A in our calculations.
- 5.6 Our full calculations are contained within Appendix 2 of this Addendum Report, but we can now summarise our findings for each assessment location.

The First Roof Plant Location – Plant in Heating Mode

Considering the plant at this location our acoustic Calculation Sheet A indicates a noise level of 51dB(A) at 1m from this nearest noise sensitive window without any mitigation measures. Once the proposed mitigation measures are put in place – a full acoustic enclosure with inlet and outlet attenuation – this level reduces to 30dB(A). The Day Time (07:00 to 23:00hours) design target is 31dB(A) – the rounded figure identified in Section 3.3 of this report – and so with the proposed mitigation measures in place this location in Heating Mode complies with the requirements of the local authority with a 1dB(A) margin of safety.

Additionally, having established the daytime (07:00-23:00hours) external noise level 1m outside the nearest noise sensitive window to be 30dB(A), the internal noise level can also be obtained by deducting the attenuation produced by an open window. It is known that an open window has a noise reduction of approximately 8-15dB(A). Consequently, if we were to utilize the more conservative figure of only 8dB(A) in this calculation it can be seen that the daytime (07:00-23:00hours) internal noise level would be 22dB(A) – a level that should prove to be acceptable to all parties.

The First Roof Plant Location – Plant in Cooling Mode

Considering the plant at this location our acoustic Calculation Sheet B indicates a noise level of 48dB(A) at 1m from this nearest noise sensitive window without any mitigation measures. Once the proposed mitigation measures are put in place – a full acoustic enclosure with inlet and outlet attenuation – this level reduces to 29dB(A). The Day Time (07:00 to 23:00hours) design target is 31dB(A) – the rounded figure identified in Section 3.3 of this report – and so with the proposed mitigation measures in place this location in Cooling Mode complies with the requirements of the local authority with a 2dB(A) margin of safety.

Additionally, having established the daytime (07:00-23:00hours) external noise level 1m outside the nearest noise sensitive window to be 29dB(A), the internal noise level can also be obtained by deducting the attenuation produced by an open window. It is known that an open window has a noise reduction of approximately 8-15dB(A). Consequently, if we were to utilize the more conservative figure of only 8dB(A) in this calculation it can be seen that the daytime (07:00-23:00hours) internal noise level would be 21dB(A) – a level that should prove to be acceptable to all parties.

The Second Roof Plant Location – Plant in Heating Mode

Considering the plant at this location our acoustic Calculation Sheet A indicates a noise level of 43dB(A) at 1m from this nearest noise sensitive window without any mitigation measures. Once the proposed mitigation measures are put in place – a full acoustic enclosure with inlet and outlet attenuation – this level reduces to 28dB(A). The Day Time (07:00 to 23:00hours) design target is 31dB(A) – the rounded figure identified in Section 3.3 of this report – and so with the proposed mitigation measures in place this location in Heating Mode complies with the requirements of the local authority with a 3dB(A) margin of safety.

Additionally, having established the daytime (07:00-23:00hours) external noise level 1m outside the nearest noise sensitive window to be 28dB(A), the internal noise level can also be obtained by deducting the attenuation produced by an open window. It is known that an open window has a noise reduction of approximately 8-15dB(A). Consequently, if we were to utilize the more conservative figure of only 8dB(A) in this calculation it can be seen that the daytime (07:00-23:00hours) internal noise level would be 20dB(A) – a level that should prove to be acceptable to all parties.

The Second Roof Plant Location – Plant in Cooling Mode

Considering the plant at this location our acoustic Calculation Sheet B indicates a noise level of 41dB(A) at 1m from this nearest noise sensitive window without any mitigation measures. Once the proposed mitigation measures are put in place – a full acoustic enclosure with inlet and outlet attenuation – this level reduces to 25dB(A). The Day Time (07:00 to 23:00hours) design target is 31dB(A) – the rounded figure identified in Section 3.3 of this report – and so with the proposed mitigation measures in place this location in Cooling Mode complies with the requirements of the local authority with a 6dB(A) margin of safety.

Additionally, having established the daytime (07:00-23:00hours) external noise level 1m outside the nearest noise sensitive window to be 25dB(A), the internal noise level can also be obtained by deducting the attenuation produced by an open window. It is known that an open window has a noise reduction of approximately 8-15dB(A). Consequently, if we were to utilize the more conservative figure of only 8dB(A) in this calculation it can be seen that the daytime (07:00-23:00hours) internal noise level would be 17dB(A) – a level that should prove to be acceptable to all parties.

For reference and clarity, below is a summary of the previous four calculations.

First Roof Plant Location:	External	Internal
Plant in Heating Mode <u>without</u> mitigation measures	51dB(A)	43dB(A)
Plant in Cooling Mode <u>without</u> mitigation measures	48dB(A)	40dB(A)
Plant in Heating Mode <u>with</u> mitigation measures	30dB(A)	22dB(A)
Plant in Cooling Mode <u>with</u> mitigation measures	29dB(A)	21dB(A)

Second Roof Plant Location:	External	Internal
Plant in Heating Mode <u>without</u> mitigation measures	43dB(A)	35dB(A)
Plant in Cooling Mode <u>without</u> mitigation measures	41dB(A)	33dB(A)
Plant in Heating Mode <u>with</u> mitigation measures	28dB(A)	20dB(A)
Plant in Cooling Mode <u>with</u> mitigation measures	25dB(A)	17dB(A)

The previously established Day Time (07:00 to 23:00hours) design target is 31dB(A), the rounded figure identified in Section 3.3 of this report – the external design target.

As illustrated by the above, with the proposed mitigation measures in place, each location, in each operating mode, is below the Day Time (07:00 to 23:00hours) design target of 31dB(A) – the external design target.

6.0 World Health Organisation Guidelines on Community Noise

6.1 We have previously established the design criteria for the proposed plant on this project in our original Acoustic Noico Report No. 72003022/1 dated 4th May 2020, and have repeated the findings here in this Addendum Report. However, we also wanted to make reference to and contrast against the World Health Organisation (WHO) guidance on community noise. The following WHO noise guidelines are therefore listed below for reference.

Residential Environment	Critical Health Effect(s)	LAeq	LAFmax	Time Base
Outdoor Living area	Serious annoyance, daytime and evening	55	-	07:00 – 23:00
	Moderate annoyance, daytime and evening	50	-	07:00 – 23:00
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	-	07:00 – 23:00
Inside, bedrooms	Sleep disturbance, night-time	30	45	23:00 – 07:00
Outside, bedrooms	Sleep disturbance, windows open (outdoor values)	45	60	23:00 – 07:00

The WHO guidelines are based, in almost all cases, on the lower threshold below which the occurrence rates of any particular effect can be assumed to be negligible.

The WHO figures can be used for assessment of the representative noise levels 1m from the façade of the nearest noise sensitive residential windows – with all locations and plant selections as previously established earlier in this Addendum Report.

- 6.2 Using the WHO internal noise levels previously outlined, plant noise emission criteria 1metre away from the nearest noise sensitive residential windows, can be established by adding the attenuation of an open window to the WHO internal noise levels.

An open window has a noise reduction of approximately 8-15dB(A). Consequently, if we were to utilize the more conservative figure of only 8dB(A) in our calculations it can be seen that the external plant noise emission limit, at 1metre from the nearest noise sensitive residential window, can be established as follows:

	Daytime 07:00-23:00	Night-time 23:00 to 07:00
Internal Noise Level (WHO)	35dB(A)	30dB(A)
Window attenuation	8dB(A)	8dB(A)
External Noise Level 1m from Window	43dB(A)	38dB(A)

- 6.3 In the above calculation it can be seen that the external Daytime (07:00 to 23:00) design criteria 1m from the nearest noise sensitive residential window would be 43dB(A) and the external Night-time (23:00 – 07:00) design criteria 1m from the nearest residential window would be 38dB(A).

7.0 Conclusion

- 7.1 Callisia Ltd had previously commissioned Noico Ltd to conduct an environmental noise survey at Chalk Farm Camden, Utopia Village, Chalcot Road, Primrose Hill, London NW1 8LH – see Noico Report No. 72003022/1 dated 4th May 2020.
- 7.2 Based upon the survey results contained within that report and discussions with the local planning authority, criteria applicable to noise from the mechanical services plant had been established.
- 7.3 A new plant noise assessment for the currently proposed equipment to be installed at the above site – now positioned in two separate locations – has established that the required criterion – as required by the local authority – will only be achieved with the installation of suitable mitigation measures as outlined in this Addendum Report.
- 7.4 The calculations in this Addendum Report also illustrate that with the proposed mitigation measures in place, the predicted noise levels 1m from the nearest noise sensitive residential windows are below the guidelines set out by the World Health Organisation for community noise.
- 7.5 Based upon the contents of this Addendum Report we can confirm the installation of the proposed plant with the proposed mitigation measures we have outlined will comply with the requirements of the local planning authority (The London Borough of Camden).

Appendix 1 - Glossary of Terms

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is 2×10^{-5} N/m ² . The sound pressure level existing when microphone measured pressure is 2×10^{-5} N/m ² is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p).
Frequency	Is related to sound pitch; frequency equals the ratio between velocity of sound and wavelength.
A weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dB(A) which was exceeded for n% of time, T.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during time, T.
$L_{Amax,T}$	The instantaneous maximum A weighted sound pressure level which occurred during time, T.
Background Noise Level	The value of $L_{A90,T}$, ref. BS4142:1997.
Traffic Noise Level	The value of $L_{A10,T}$.
Specific Noise Level	The value of $L_{Aeq,T}$ at the assessment position produced by the specific noise source, ref. BS4142:1997.
Rating Level	The specific noise level, corrected to account for any characteristic features of the noise, by adding a 5 dB(A) penalty for any tonal, impulsive or irregular qualities, ref. BS4142:1997.
Specific Noise Source	The noise source under consideration when assessing the likelihood of complaint.
Assessment Position	Unless otherwise noted, is a point at 1 m from the façade of the nearest affected sensitive property.

Appendix 2 – Acoustic Calculations

CALCULATION SHEET A												
CLIENT: Callisia Ltd				PROJECT: Utopia Village Primrose Hill NW1 8LH								
Job ref: 72003022				DATE: 11th Nov 2021								
First Roof Plant location												
Plant operation: 07:00 to 23:00hours				Octave Band Centre Frequency (Hz)								
Description			63	125	250	500	1K	2K	4K	8K	dB(A)	
ASSESSMENT LOCATION A												
PURY-P200YNW-A	Heating Mode	Lp @ 1m	69	61	61	58	52	48	48	43	59	
PURY-P200YNW-A	Heating Mode	Lp @ 1m	69	61	61	58	52	48	48	43	59	
PURY-P200YNW-A	Heating Mode	Lp @ 1m	69	61	61	58	52	48	48	43	59	
PURY-P300YNW-A	Heating Mode	Lp @ 1m	75	70	69	66	61	57	52	48	67	
PURY-P400YNW-A	Heating Mode	Lp @ 1m	81	70	70	68	62	59	54	49	69	
Combined Plant Total			83	74	73	71	65	62	58	53	72	
Additional surface reflections	None		0	0	0	0	0	0	0	0		
Distance Loss: 1m to 15m			-24	-24	-24	-24	-24	-24	-24	-24		
Screening via existing building	None		0	0	0	0	0	0	0	0		
Façade Correction			3	3	3	3	3	3	3	3		
Lp @1m from receivers façade			62	53	52	50	44	41	37	32	51	
Noise criteria external to nearest noise sensitive window for plant operating period =											31	
											Excess =	20
Notes												
Calculations to the nearest noise sensitive residential windows												
No allowance has been made in the above calculations for any noise/vibration transfer through the structure												
Vibration isolation should be allowed for under the new plant												
Mitigation measures: Required - in the form of an acoustic enclosure utilising 1500mm long attenuators												
Mitigation measures to provide a minimum of 20dB(A) attenuation - see below.												
Lp @1m from receivers façade	(no mitigation)		62	53	52	50	44	41	37	32	51	
Attenuator performance 1500/40			-8	-12	-21	-39	-50	-43	-34	-18		
Lp @1m from receivers façade	(with mitigation)		54	41	31	11	-6	-2	3	14	30	
Noise criteria external to nearest noise sensitive window =											31	
											Excess =	-1
The above figures suggest with the proposed mitigation measures in place there is a 1dB(A) margin of safety												

CALCULATION SHEET B											
CLIENT: Callisia Ltd			PROJECT: Utopia Village Primrose Hill NW1 8LH								
Job ref: 72003022			DATE: 11th Nov 2021								
First Roof Plant location											
Plant operation: 07:00 to 23:00hours			Octave Band Centre Frequency (Hz)								
Description			63	125	250	500	1K	2K	4K	8K	dB(A)
ASSESSMENT LOCATION A											
PURY-P200YNW-A	Cooling Mode	Lp @ 1m	77	61	61	58	51	47	44	42	59
PURY-P200YNW-A	Cooling Mode	Lp @ 1m	77	61	61	58	51	47	44	42	59
PURY-P200YNW-A	Cooling Mode	Lp @ 1m	77	61	61	58	51	47	44	42	59
PURY-P300YNW-A	Cooling Mode	Lp @ 1m	76	63	63	60	54	50	45	40	61
PURY-P400YNW-A	Cooling Mode	Lp @ 1m	74	64	66	64	59	55	49	45	65
Combined Plant Total			83	69	70	67	62	58	53	50	69
Additional surface reflections		None	0	0	0	0	0	0	0	0	
Distance Loss: 1m to 15m			-24	-24	-24	-24	-24	-24	-24	-24	
Screening via existing building		None	0	0	0	0	0	0	0	0	
Façade Correction			3	3	3	3	3	3	3	3	
Lp @1m from receivers façade			62	48	49	46	41	37	32	29	48
Noise criteria external to nearest noise sensitive window for plant operating period =											31
Excess =											17
Notes											
Calculations to the nearest noise sensitive residential windows											
No allowance has been made in the above calculations for any noise/vibration transfer through the structure											
Vibration isolation should be allowed for under the new plant											
Mitigation measures: Required - in the form of an acoustic enclosure utilisng 1500mm long attenuators											
Mitigation measures to provide a minimum of 17dB(A) attenuation - see below.											
Lp @1m from receivers façade (no mitigation)			62	48	49	46	41	37	32	29	48
Attenuator performance 1500/40			-8	-12	-21	-39	-50	-43	-34	-18	
Lp @1m from receivers façade (with mitigation)			54	36	28	7	-9	-6	-2	11	29
Noise criteria external to nearest noise sensitive window =											31
Excess =											-2
The above figures suggest with the proposed mitigation measures in place there is a 2dB(A) margin of safety											

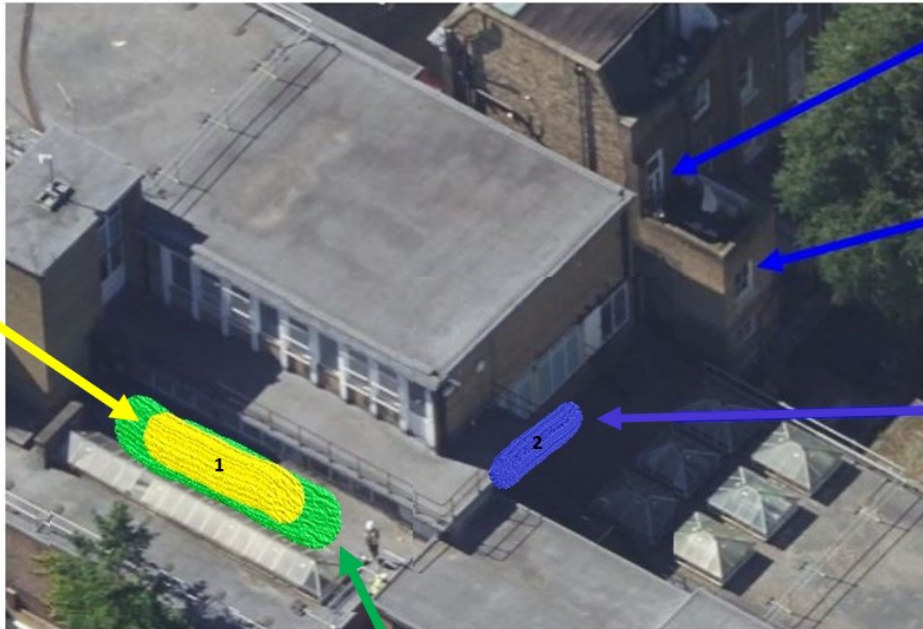
CALCULATION SHEET A											
CLIENT: Callisia Ltd			PROJECT: Utopia Village Primrose Hill NW1 8LH								
Job ref: 72003022			DATE: 11th Nov 2021								
Second Roof Plant Location											
Plant operation: 07:00 to 23:00hours			Octave Band Centre Frequency (Hz)								
Description			63	125	250	500	1K	2K	4K	8K	dB(A)
ASSESSMENT LOCATION A											
PUZ-ZM100VKA	Heating Mode	Lp @ 1m	54	54	53	49	46	41	36	29	51
PUZ-ZM100VKA	Heating Mode	Lp @ 1m	54	54	53	49	46	41	36	29	51
PUZ-ZM100VKA	Heating Mode	Lp @ 1m	54	54	53	49	46	41	36	29	51
PUZ-ZM100VKA	Heating Mode	Lp @ 1m	54	54	53	49	46	41	36	29	51
Combined Plant Total			60	60	59	55	52	47	42	35	57
Additional surface reflections		None	0	0	0	0	0	0	0	0	
Distance Loss: 1m to 7m			-17	-17	-17	-17	-17	-17	-17	-17	
Screening via existing building		None	0	0	0	0	0	0	0	0	
Façade Correction			3	3	3	3	3	3	3	3	
Lp @1m from receivers façade			46	46	45	41	38	33	28	21	43
Noise criteria external to nearest noise sensitive window for plant operating period =											31
Excess =											12
Notes											
Calculations to the nearest noise sensitive residential windows											
No allowance has been made in the above calculations for any noise/vibration transfer through the structure											
Vibration isolation should be allowed for under the new plant											
Mitigation measures: Required - in the form of an acoustic enclosure utilisng 900mm long attenuators											
Mitigation measures to provide a minimum of 12dB(A) attenuation - see below.											
Lp @1m from receivers façade (no mitigation)			46	46	45	41	38	33	28	21	43
Attenuator performance 900/45			-5	-7	-12	-19	-29	-22	-14	-11	
Lp @1m from receivers façade (with mitigation)			41	39	33	22	9	11	14	10	28
Noise criteria external to nearest noise sensitive window =											31
Excess =											-3
The above figures suggest with the proposed mitigation measures in place there is a 3dB(A) margin of safety											

CALCULATION SHEET B											
CLIENT: Callisia Ltd			PROJECT: Utopia Village Primrose Hill NW1 8LH								
Job ref: 72003022			DATE: 11th Nov 2021								
Second Roof Plant Location											
Plant operation: 07:00 to 23:00hours			Octave Band Centre Frequency (Hz)								
Description			63	125	250	500	1K	2K	4K	8K	dB(A)
ASSESSMENT LOCATION A											
PUZ-ZM100VKA	Cooling Mode	Lp @ 1m	53	51	50	47	44	40	34	27	49
PUZ-ZM100VKA	Cooling Mode	Lp @ 1m	53	51	50	47	44	40	34	27	49
PUZ-ZM100VKA	Cooling Mode	Lp @ 1m	53	51	50	47	44	40	34	27	49
PUZ-ZM100VKA	Cooling Mode	Lp @ 1m	53	51	50	47	44	40	34	27	49
Combined Plant Total			59	57	56	53	50	46	40	33	55
Additional surface reflections		None	0	0	0	0	0	0	0	0	
Distance Loss: 1m to 7m			-17	-17	-17	-17	-17	-17	-17	-17	
Screening via existing building		None	0	0	0	0	0	0	0	0	
Façade Correction			3	3	3	3	3	3	3	3	
Lp @1m from receivers façade			45	43	42	39	36	32	26	19	41
Noise criteria external to nearest noise sensitive window for plant operating period =											31
Excess =											10
Notes											
Calculations to the nearest noise sensitive residential windows											
No allowance has been made in the above calculations for any noise/vibration transfer through the structure											
Vibration isolation should be allowed for under the new plant											
Mitigation measures: Required - in the form of an acoustic enclosure utilisng 900mm long attenuators											
Mitigation measures to provide a minimum of 10dB(A) attenuation - see below.											
Lp @1m from receivers façade (no mitigation)			45	43	42	39	36	32	26	19	41
Attenuator performance 900/45			-5	-7	-12	-19	-29	-22	-14	-11	
Lp @1m from receivers façade (with mitigation)			40	36	30	20	7	10	12	8	25
Noise criteria external to nearest noise sensitive window =											31
Excess =											-6
The above figures suggest with the proposed mitigation measures in place there is a 6dB(A) margin of safety											



Appendix 3 Indicative plant locations – Utopia Village

FIRST ROOF PLANT LOCATION with same visibility and distances to nearest residential properties as the original plant position shown in GREFN



Nearest residential window A2 at 14 Egbert Street

Nearest residential window A1 at 14 Egbert Street

SECOND ROOF PLANT LOCATION now closer to the nearest residential properties as marked

ORIGINAL ROOF PLANT LOCATION with all plant contained within a single acoustic enclosure (see Noico Acoustic Report) with the nearest residential properties being the rear of those along Gloucester Avenue



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Report No. 72003022/Add1A

**Utopia Village, Chalcot Road
Primrose Hill
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NW1 8LH**

ADDENDUM ACOUSTIC REPORT

PREPARED: 11TH Nov 2021

Presented by:

J E Redknap

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