ACOUSTIC TECHNICAL NOTE

Reference:	13262.ATN01.PNA.0
To:	Simon J Todd
Date:	18 December 2023
Project:	Utopia Village, NW1
Subject:	Review of Plant Noise Assessment

1.0 INTRODUCTION

It is proposed to locate new items of plant in two separate plant areas in very close proximity to amenity spaces belonging to nearby noise sensitive receptors at Utopia Village, NW1.

A noise impact assessment has been carried out by Noico Ltd to assess the likely noise impact to nearby receptors and propose mitigation options to support the planning application.

The residents in the vicinity of the proposed installations have raised concerns about the potential for excessive noise transfer despite the provisions that have been made in the noise impact assessment.

The environmental noise survey report ref. 2301061-3_v1 and noise impact assessment report ref. 2301061-rev C1 published by Noico Ltd have been received by RBA Acoustics. The contents of these reports have been reviewed and the key findings following this review are detailed herein.

2.0 SITE DESCRIPTION

The site is shown in relation to its surroundings on the Site Plan in Figure 1, at the end of this technical note.

The following details regarding the site conditions have been taken from the Noico Ltd report ref. 2301061-3_v1.

> *"1.3 The development site comprises a number of individual two and three storey small to medium sized business units located in the predominantly residential area of Primrose Hill. It is understood as part of the development plans, new items of mechanical plant (air cooled condensers and heat pumps) are to be installed externally.*
>
> *1.4 The site is surrounded by residential properties (primarily three and four storey Victorian terraced town houses) with the rear elevations facing onto the development site: The closest residential properties (and hence noise sensitive) being as follows:*
>
> *No's 1 to 13 Chalcot Road to the south*
> *No's 1 to 13 Egbert Street to the west*
> *No's 79 to 109 Gloucester Road to the north*
> *No's 1 to 14 Edis Street to the east"*

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 General

As detailed in the report ref. 2301061-3_v1, an environmental noise survey was carried out by Noico Ltd from approximately 12:15 Wednesday 25th January until the early hours of Tuesday 31st January. Details of the measurement positions as stated in the aforementioned report are as follows:

> "***Measurement Position 1*** *– The '140 Yellow' environmental noise analyser microphone was located externally at 2nd floor level on the small section of flat roof facing onto the rear of No. 13 Egbert Street. The microphone was attached to a tripod, raised 1.5 metres above roof level and positioned approximately 2.5 metres from the façade of the building. This location was chosen as it was considered to be representative of the background noise environment that exists at the nearest noise-affected properties in Egbert Street.*
>
> ***Measurement Position 2*** *– The '140 Green' microphone was located externally, attached to a 1st floor window frame within Unit 19, facing onto the rear of the No. 10 and No. 11 Edis Street. The microphone was attached to an extended tripod arm protruding approximately 1 metre out from the building façade. This location was chosen as it was considered to be representative of the background noise environment that exists at the nearest noise-effected properties in Edis Street, and is shown in Figure 2. We also consider this location to be representative of the background noise environment at the rear of the nearest noise affected properties in Gloucester Road where it was not possible to set up noise monitoring equipment due to lack of access.*
>
> ***Measurement Position 3*** *– The '140 Orange' environmental noise analyser microphone was located externally at 1st floor level above the fire escape stairway at the rear of Unit 16, directly opposite No.3 Chalcot Road. The microphone was attached to a tripod arm and clamped to the top of the stairway support framework, positioned approximately 2 metres from the façade of the building. This location was chosen as it was considered to be representative of the background noise environment that exists at the rear of the nearest noise affected properties in Chalcot Road."*

These locations have been chosen as part of the assessment to be representative of the background noise environment that exists at the nearest noise-affected properties, however, the location chosen at Measurement Position 3 is approximately 30m to the east of the proposed plant area and nearest affected receptor, therefore it is possible that the noise climate at this location is not representative of noise at the actual nearest receptor on Chalcot Road. It is highly recommended that noise data is acquired as close to the nearest affected receptor as possible.

The measurement positions are also shown on the Site Plan in Figure 1, at the end of this technical note.

3.2 Results

The results measured as part of the environmental noise survey carried out by Noico Ltd are as follows:

Table 1 – Results (Noico Ltd Report Ref. 2301061-3_v1)

Monitoring Location	Monitoring period	Equivalent noise level (dB $L_{Aeq,period}$)	Typical background noise level (dB $L_{A90,15min}$)	Minimum background noise level ($L_{A90,15min}$)
SD7	Daytime (07:00 - 19:00 hours)	50.2	41	35
	Evening (19:00 - 23:00 hours)	45.2	39	32
	Night-time (23:00 - 07:00 hours)	42.4	35	30
SD8	Daytime (07:00 - 19:00 hours)	53.3	40	32
	Evening (19:00 - 23:00 hours)	44.6	40	32
	Night-time (23:00 - 07:00 hours)	44.2	32	29
SD9	Daytime (07:00 - 19:00 hours)	48.5	44	33
	Evening (19:00 - 23:00 hours)	46.8	40	36
	Night-time (23:00 - 07:00 hours)	44.1	35	30

It is worth noting that even though an evening period has been assessed, this is not an assessment period that is recognised by Camden Council, instead, the daytime period spans from 07:00 – 23:00.

Both the typical background noise level and minimum background noise level have been presented. BS4142:2014 suggests that statistical analysis is a suitable method to determine the "typical" background level. This can be carried out by calculating the level of the most commonly occurring $L_{A90,15mns}$ during the operating period, as undertaken by Noico Ltd.

4.0 PLANT NOISE CRITERIA

4.1 Noico Ltd Criteria

An excerpt from Appendix 3 of the Camden Council Local Plan has been quoted by Noico Ltd as follows:

> *"5.2 In terms of an appropriate external noise criteria, Camden London Borough Council advise the following within Appendix 3 of the Local Plan - it is expected that BS:4142:2014 'Methods for rating and assessing commercial and industrial noise' will be used. For such cases a 'rating level' of 10dB below the background noise level (15dB if tonal elements are present) should be considered as the design criteria"*

The following is later stated in the criteria section of the Noico Ltd report:

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

4.2 Camden Council Guidance

Although not included in the Noico Ltd report, the following Table 2 can also be found within Appendix C of the Camden Local Plan, which makes reference to three distinct categorisation levels:

- NOEL – No Observed Effect Level
- LOAEL – Lowest Observed Adverse Effect Level
- SOAEL – Significant Observed Adverse Effect Level

Table 2 – Camden Council Local Plan Noise Thresholds

Existing noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAL (Red)
Dwellings	Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dBL_{Amax}	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dBL_{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dBL_{Amax}

As shown in Table 2 above, during the day, the location at which plant noise should be assessed is within the nearest garden used for amenity purposes rather than at 1m from the window of the nearest affected residential property which is used as the night period assessment location. It is noted that for both day and night periods, 1m from the nearest residential windows has been used as the receptor location as part of the Noico Ltd assessment, which is not in line with Camden Council guidance.

The distance between the plant rooms and the gardens of the nearest respective residential receptors are significantly less than the nearest windows therefore it is likely that the assessment carried out by Noico Ltd has underestimated the potential for excessive levels of plant noise in the gardens of the nearest receptors during the daytime.

4.3 Criteria

The criteria shown in Table 3 below has been adopted in the Noico Ltd assessment report.

Table 3 – Criteria (Noico Ltd Report Ref. 2301061-3_v1)

Operation Period	Sound pressure level (dB $L_{Aeq,15min}$)
Properties in Egbert Street	
Daytime (07:00 to 19:00 hours)	31
Evening (19:00 to 23:00 hours)	29
Night-time (23:00 to 07:00 hours)	25
Properties in Chalcot Road	
Daytime (07:00 to 19:00 hours)	34
Evening (19:00 to 23:00 hours)	30
Night-time (23:00 to 07:00 hours)	25

The plant noise criteria adopted by Noico Ltd has been based on the typical background noise levels. RBA Acoustics generally considers that designing to the most commonly occurring $L_{A90,15mins}$ is not sufficient during those slightly quieter periods. It is noted that the typical background noise level indicated in the Table 1 is as much as 11dB higher than the minimum background noise level in some cases. In our opinion, a more representative value would be the "typical-lowest" level, which can be determined statistically as the lowest rounded $L_{A90,15mins}$ level which occurs for at least 10% of the assessment period.

When considering the noise level categorisation system in the Camden Local Plan, the assessment criteria have been developed based on a noise level of 10dB below the typical background noise level for each period which would result in plant noise levels falling into LOAEL (Lowest Observed Adverse Effect Level) categorisation, however, the same plant noise level would likely be less than 10dB below the typical-lowest or lowest background noise level which, would result in plant noise levels falling in the SOAEL (Significant Observed Adverse Effect Level) category if either of these background noise parameters were used. From a subjective point of view, designing to the typical background level is likely to mean that plant noise would still audible during many time periods when the background noise level drops lower.

In summary, while the chosen parameter of "typical" background level is suggested in BS4142:2014, it is considered in RBA Acoustics opinion to not be sufficient but is technically permissible.

5.0 PLANT NOISE ASSESSMENT

5.1 Items of Plant

The items of plant that are proposed are shown in Table 4 below.

Table 4 – Items of Plant (Noico Ltd Report Ref. 2301061-rev C1)

Ref.	Manufacturer/Model/Duty	Plant Type
Plant Area 1 – Southwest of Site		
HR1	Daikin EWYD5504ZXSB2	Heat Recovery Unit
Plant Area 2 – West of Site		
ACU1	Mitsubishi REYQ16U	Air Conditioning Units
ACU2-5	Mitsubishi REYQ18U	Air Conditioning Units

It is understood that Plant Area 1 will comprise a newly formed plantroom in the southwest corner of the site, overlooking receptors on Chalcot Road. The discharge air from HR1 will be ducted up through the roof via a newly formed ventilation opening, and the inlet air to the plantroom will be via an opening in the wall of the east elevation.

Plant Area 2 will comprise a purpose-made acoustic enclosure located in an existing outdoor space mid-way along the west boundary with Egbert Street. The discharge air and inlet air for the plant will move via attenuated openings in the roof of the enclosure.

The proposed plant locations are indicated on the Site Plan in Figure 1.

5.2 Plant Noise Levels

Octave band noise levels for the proposed units are included in the Noico Ltd report and are as follows:

Table 5 – Plant Noise Levels (Noico Ltd Report Ref. 2301061-rev C1)

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Plant Area 1								
Daikin EWYD5504ZXSB2 heat recovery unit	101	98	98	100	100	91	83	75
Plant Area 2								
1No.Mitsubishi REYQ16U heat recovery condensing units	94	90	85	85	78	75	73	70
4No.Mitsubishi REYQ18U heat recovery condensing units	92	84	82	83	77	74	74	70

It is assumed that the above noise levels are an average of all measurements taken around the unit to give an overall sound power level. In reality, the noise levels around the unit will vary. As such, using these noise levels to represent the discharge/intake noise paths may overestimate or underestimate the actual resultant noise level.

5.3 Nearest Noise Sensitive Receptors

The nearest noise sensitive receptors to each of the two plant areas have been described by Noico Ltd below:

> *"Plant Area 1 - South west corner of the site*
>
> *The nearest property in Egbert Street in relation to Plant area 1, is No.1 Egbert Street. The nearest windows are assessed to be approximately 10 metres from the nearest façade of the plantroom.*
>
> *The nearest property in Chalcot Road in relation to Plant area 1, is No.9 Chalcot Road. The nearest windows are assessed to be approximately 6 metres from the nearest façade of the plantroom.*
>
> *Plant Area 2 – West boundary of site*
>
> *The nearest property in Egbert Street in relation to Plant area 2, is No.9 Egbert Street. The nearest windows are assessed to be approximately 8 metres from the edge of the plant area."*

It is noted that the distances between the gardens of the above receptors and the corresponding plant areas are significantly less than the distances quoted above. The closest distance between Plant Area 1 is approximately 2m from the closest point of the rear garden of 9 Chalcot Road, while the distance between Plant Area 2 is approximately 2m from the closest point of the rear garden of 9 Egbert Street.

In the absence of drawings or plans showing the precise location of the noise discharge point, these distances should be assumed for the discharge/intake openings within the assessment.

It should also be noted that the nearest receptors to the inlet and discharge points of Plant Area 1 are different. 9 Chalcot Road is closest receptor to the discharge outlet at 2m, however 8 Chalcot Road is closest to the inlet façade at 3m, so this receptor should also be considered with cumulative noise levels from inlet and discharge at both receptors.

5.4 Calculations of Plant Noise Levels

Plant Area 1 - Discharge

The calculation of noise from the discharge duct opening on the roof of Plant Area 1 to 9 Chalcot Road taken from the Noico Ltd report is shown below:

Table 6 – Plant Area 1 Discharge Calculation to 9 Chalcot Road (Noico Ltd Report Ref. 2301061-rev C1)

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Unit sound power level	101	98	98	100	100	91	83	75	**101**
45 degrees directivity correction	+5	+5	+5	+5	+6	+6	+6	+6	**-**
Plenum Loss	-1	-2	-2	-3	-3	-4	-4	-5	**-**
Distance loss to windows (8m)	-29	-29	-29	-29	-29	-29	-29	-29	**-**
Resulting Level at Windows (L_{eq})	82	72	72	73	73	63	55	46	**75**
Design criteria (07;00 to 19;00 hrs)									34
Required reduction									**41**
Design criteria (19;00 to 23;00 hrs)									30
Required reduction									**45**
Design criteria (23;00 to 07;00 hrs)									25
Required reduction									**50**

To achieve the required reduction to meet the criteria, an attenuator with the following insertion losses to be applied to the discharge duct opening has been recommended by Noico Ltd:

Table 7 – Discharge Duct Attenuator (Noico Ltd Report Ref. 2301061-rev C1)

	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Minimum insertion loss (dB)	22	36	50	56	56	52	50	49

The calculation in Table 6 incorrectly assumes a distance loss of 8m to the nearest noise sensitive windows would be required. Following the guidance of Camden Council, noise from items of plant should be assessed to gardens/amenity spaces during the daytime, which would be approximately 2m from the discharge duct opening.

Our calculation of noise from Plant Area 1 into the garden of 9 Chalcot Road without attenuation measures is shown in Table 8 below.

Table 8 – Plant Area 1 Discharge Calculation to 9 Chalcot Road

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Source Sound Power Level (L_w)	101	98	98	100	100	91	83	75	**101**
Plenum Loss	-1	-2	-2	-3	-3	-4	-4	-5	
Total Sound Power Level (L_w) at Grille	100	96	96	97	97	87	79	70	**99**
Directivity	+5	+5	+5	+5	+6	+6	+6	+6	
Conversion to Sound Pressure Level (L_p)	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Loss (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Resulting Level at Receptor (L_{eq})	91	87	87	88	89	79	71	62	**91**

As can be seen from Table 8 above, noise from the unit is predicted to be as much as 16 dB higher than predicted previously at the nearest residential receptor due to the closer proximity of the garden.

Our calculation of noise from Plant Area 1 into the garden of 9 Chalcot Road with the attenuation specified by Noico Ltd is shown in Table 9 below.

Table 9 – Plant Area 1 Discharge Calculation to 9 Chalcot Road With Attenuation

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Source Sound Power Level (L_w)	101	98	98	100	100	91	83	75	**101**
Plenum Loss	-1	-2	-2	-3	-3	-4	-4	-5	
Attenuator Insertion Losses	-22	-36	-50	-56	-56	-52	-50	-49	
Total Sound Power Level (L_w) at Grille	78	60	46	41	41	35	29	21	**51**
Directivity	+5	+5	+5	+5	+6	+6	+6	+6	
Conversion to Sound Pressure Level (L_p)	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Loss (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Resulting Level at Receptor (L_{eq})	69	51	37	32	33	27	21	13	**44**
Daytime Criteria (07:00 – 19:00)	-	-	-	-	-	-	-	-	34
Further Reduction Needed	-	-	-	-	-	-	-	-	**10**

It can be seen from that a further 10dB reduction would be required from the mitigation measures to meet the criteria at the receptor. It is important to note that if the typical lowest background L_{A90} noise level was used to determine criteria, an even higher reduction would likely be required to meet the necessary criteria.

Plant Area 1 – Inlet

The calculation of noise from the inlet opening of Plant Area 1 to the rear windows of 9 Chalcot Road taken from the Noico Ltd report is shown below:

Table 10 – Plant Area 1 Inlet Calculation to 9 Chalcot Road (Noico Ltd Report Ref. 2301061-rev C1)

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Unit sound power level	101	98	98	100	100	91	83	75	**101**
Losses through inlet coils	-3	-3	-3	-3	-3	-3	-3	-3	**-**
Attenuation from plantroom absorption	-5	-7	-8	-8	-7	-7	-7	-7	**-**
Sound power level at louvre	93	88	87	89	90	81	73	65	**75**
80 degrees directivity correction	-1	-4	-4	-4	-10	-10	-10	-10	
Distance loss to windows (10m)	-31	-31	-31	-31	-31	-31	-31	-31	
Resultant level at windows	61	53	52	54	49	40	32	24	**54**
Design criteria (07;00 to 19;00 hrs)									34
Required reduction									**20**
Design criteria (19;00 to 23;00 hrs)									30
Required reduction									**24**
Design criteria (23;00 to 07;00 hrs)									25
Required reduction									**29**

An in-line attenuator capable of achieving the minimum insertion losses shown in Table 11 below has been proposed by Noico Ltd in order to ensure that noise from the inlet air path is within the required criteria.

Table 11 – Inlet Attenuator (Noico Ltd Report Ref. 2301061-rev C1)

	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Minimum insertion loss (dB)	13	25	39	50	50	50	50	43

The calculation in Table 10 assumes that 9 Chalcot Road is the nearest receptor to both the discharge and inlet duct openings, whereas 8 Chalcot Road is the closest residential receptor to the inlet on the eastern façade of the plant room, the garden of which is approximately 3m (off-axis) at their closest points.

Our calculations of noise to the rear garden of 8 Chalcot Road without mitigation is shown in Table 12 below.

Table 12 – Plant Area 1 Inlet to 8 Chalcot Road

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Unit sound power level	101	98	98	100	100	91	83	75	**101**
Losses through inlet coils	-3	-3	-3	-3	-3	-3	-3	-3	-
Attenuation from plantroom absorption	-5	-7	-8	-8	-7	-7	-7	-7	-
Sound power level at louvre	93	88	87	89	90	81	73	65	
Sound Pressure Level (L_p) at 1m from louvre	86	81	80	82	83	74	66	58	
Directivity Correction	-1	-4	-4	-4	-10	-10	-10	-10	
Distance loss to windows (10m)	-10	-10	-10	-10	-10	-10	-10	-10	
Resultant level at windows	75	67	66	68	63	54	46	38	**68**

It can be seen that the predicted noise level within the garden of 8 Chalcot Road is 14dB higher than previously predicted when considering the 9 Chalcot Road as the nearest receptor.

Table 13 below shows the predicted noise level with the above mitigation measures incorporated.

Table 13 – Plant Area 1 Inlet with Attenuation to 8 Chalcot Road

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Unit sound power level	101	98	98	100	100	91	83	75	**101**
Losses through inlet coils	-3	-3	-3	-3	-3	-3	-3	-3	-
Attenuation from plantroom absorption	-5	-7	-8	-8	-7	-7	-7	-7	-
Sound power level at louvre	93	88	87	89	90	81	73	65	**75**
Sound Pressure Level (L_p) at 1m from louvre	86	81	80	82	83	74	66	58	
Attenuator Insertion Losses	-13	-25	-39	-50	-50	-50	-50	-43	
Directivity Correction	-1	-4	-4	-4	-10	-10	-10	-10	
Distance loss to windows (3m)	-10	-10	-10	-10	-10	-10	-10	-10	
Resultant level at windows	62	42	27	18	13	0	0	0	**36**
Design criteria (07;00 to 19;00 hrs)									34
Required reduction									**2**

It can be seen from Table 13 that a further 2dB reduction would be required from the mitigation measures to meet the criteria at the receptor. It is important to note that if the typical lowest background L_{A90} noise level was used to determine criteria, an even higher reduction would likely be required.

Plant Area 2

The calculation of noise from Plant Area 2 to the nearest noise sensitive receptor, 9 Egbert Street, taken from the Noico Ltd report is shown below.

Table 14 – Plant Area 2 Calculation to 9 Egbert Street (Noico Ltd Report Ref. 2301061-rev C1)

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
REYQ16U Sound Power Level (10-12 Watts)	94	90	85	85	78	75	73	70	**85.6**
REYQ18U Sound Power Level (10-12 Watts)	92	84	82	83	77	74	74	70	**84**
Correction for 4 REYQ18U units	+6	+6	+6	+6	+6	+6	+6	+6	
Combined level REYQ18U units	98	90	88	89	83	80	80	76	**90**
Combined level all units	99	93	90	90	84	81	81	77	**91**
60 degrees directivity correction	+2	+2	+2	+2	0	0	0	0	
Distance loss to windows (8m)	-29	-29	-29	-29	-29	-29	-29	-29	
Resultant level at windows	72	66	63	63	55	52	52	48	**63**
Design criteria (07;00 to 19;00 hrs)									31
Required reduction									**32**
Design criteria (19;00 to 23;00 hrs)									29
Required reduction									**34**
Design criteria (23;00 to 07;00 hrs)									25
Required reduction									**39**

In order to achieve the required criteria, it has been proposed contain the units in an acoustic enclosure with attenuators fitted to the roof of the enclosure. The required insertion losses are shown below.

Table 15 – Plant Area 2 Attenuation (Noico Ltd Report Ref. 2301061-rev C1)

Mitigation Measure	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Acoustic enclosure insertion loss (dB)	21	22	29	38	47	52	57	56
Discharge air attenuator insertion loss (dB)	21	22	29	38	47	52	57	56
Inlet air attenuator (dB)	13	21	36	50	50	50	50	50

The calculation in Table 14 assumes a distance loss of 8m to the nearest noise sensitive windows would be required. Following the requirements of Camden Council, noise from items of plant should be assessed to gardens/amenity spaces during the daytime, which would be approximately 2m from the proposed units in Plant Area 2.

Our calculations of noise to the rear garden of 9 Egbert Street without mitigation is shown in Table 16 below.

Table 16 – Plant Area 2 to 9 Egbert Street Calculation

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
REYQ16U Sound Power Level (10-12 Watts)	94	90	85	85	78	75	73	70	**86**
REYQ18U Sound Power Level (10-12 Watts)	92	84	82	83	77	74	74	70	**84**
Correction 4 REYQ18U Units	+6	+6	+6	+6	+6	+6	+6	+6	-
Combined Level 4 REYQ18U Units	98	90	88	89	83	80	80	76	**90**
Combined Level All Units	99	93	90	90	84	81	81	77	**91**
Conversion to Sound Pressure Level (L_p)	-8	-8	-8	-8	-8	-8	-8	-8	-
Distance Loss (2m)	-6	-6	-6	-6	-6	-6	-6	-6	-
Resulting Level at Receptor (L_{eq})	85	79	76	76	70	67	67	63	**77**

The predicted noise level within the garden of 9 Egbert Street is 14dB higher than previously predicted to the nearest windows.

Table 17 and Table 18 below show the noise levels predicted in the garden of 9 Egbert Street with the recommended attenuation.

Table 17 – Plant Area 2 with Inlet Attenuation to Receptor 2

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
REYQ16U Sound Power Level (10-12 Watts)	94	90	85	85	78	75	73	70	**86**
REYQ18U Sound Power Level (10-12 Watts)	92	84	82	83	77	74	74	70	**84**
Correction 4 REYQ18U Units	+6	+6	+6	+6	+6	+6	+6	+6	
Combined Level 4 REYQ18U Units	98	90	88	89	83	80	80	76	**90**
Combined Level All Units	99	93	90	90	84	81	81	77	**91**
Inlet Attenuator	-16	-25	-42	-50	-50	-50	-50	-50	
Conversion to Sound Pressure Level (L_p)	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Loss (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Resulting Level at Receptor (L_{eq})	69	54	34	26	20	17	17	13	**44**
Required Criteria	-	-	-	-	-	-	-	-	**31**
Further Reduction Needed	-	-	-	-	-	-	-	-	**13**

Table 18 – Plant Area 2 with Discharge Attenuation to Receptor 2

Calculation	Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
REYQ16U Sound Power Level (10-12 Watts)	94	90	85	85	78	75	73	70	**86**
REYQ18U Sound Power Level (10-12 Watts)	92	84	82	83	77	74	74	70	**84**
Correction 4 REYQ18U Units	+6	+6	+6	+6	+6	+6	+6	+6	
Combined Level 4 REYQ18U Units	98	90	88	89	83	80	80	76	**90**
Combined Level All Units	99	93	90	90	84	81	81	77	**91**
Discharge Attenuator	-13	-21	-36	-50	-50	-50	-50	-50	
Conversion to Sound Pressure Level (L_p)	-8	-8	-8	-8	-8	-8	-8	-8	
Distance Loss (2m)	-6	-6	-6	-6	-6	-6	-6	-6	
Resulting Level at Receptor (L_{eq})	72	58	40	26	20	17	17	13	**48**
Required Criteria	-	-	-	-	-	-	-	-	31
Further Reduction Needed	-	-	-	-	-	-	-	-	**17**

As can be seen from Table 17 and 18 above, as much as 17dB of further reduction would be required in order to achieve the required criteria in the garden of 9 Egbert Street.

6.0 DISCUSSION

The results of the review show that the Noico Ltd assessment overestimates the amount of distance attenuation that would occur by not considering the garden spaces of residential properties on Chalcot Road and Egbert Road as the appropriate receptor locations during the daytime. The revised calculations to consider the gardens as the receptors show that the calculated noise levels are considerably higher than previously predicted without mitigation and would fail to meet the criteria even with the necessary mitigation options which are already of a high specification.

Considering the above, we strongly recommend that a full assessment is repeated to consider the actual receptor distances and examples of real-life products capable of achieving the required insertion losses are provided prior to planning permission being granted. If it cannot be demonstrated with actual products that noise from plant can be adequately controlled to meet the council criteria within the gardens of the nearest residential receptors, we would recommend that the plant areas are relocated to an area within Utopia Village that is well isolated from any nearby residential receptors.

7.0 CONCLUSION

A review of the noise assessment carried out by Noico Ltd for the proposed items of plant at Utopia Village, NW1 has been undertaken. To summarise, the assessment undertaken has not considered the correct receptor location during the daytime and, as a result, has underestimated the noise levels that are likely to be experienced at the nearest noise sensitive receptors. It has also been shown that the proposed mitigation measures are likely to be insufficient to attenuate noise levels to meet the council criteria.

Considering the above, it is of the opinion of RBA Acoustics that the current proposals will result in unacceptable levels of noise within the amenity spaces of the nearest residential receptors.

Utopia Village, NW1
Site Plan
Project 13262

Figure 1
18 December 2023
Not to Scale

RBA ACOUSTICS