

AF Acoustics Ltd

13 Bernard Ave

West Ealing

London

W13 9TG

Tel: +44 (0)20 3372 4430

Email: info@af-acoustics.com

www.af-acoustics.com

READIPOP

**15 TRAFFORD
ROAD, READING**

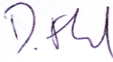
**NOISE
ASSESSMENT**

7 NOVEMBER 2022

1811-AF-00001-01

**READIPOP
15 TRAFFORD ROAD, READING
NOISE ASSESSMENT**

DOCUMENT REFERENCE: 1811-AF-00001-01

REVIEW AND AUTHORISATION			
Authored by Daniel Flood	Position Senior Consultant	Signature 	Date 07/11/2022
Approved by Adrian Finn	Position Director	Signature 	Date 07/11/2022

AMENDMENT HISTORY			
Issue	Status	Description	Date
01	Draft	Report issued as draft	07/11/2022

CONTENTS	PAGE NO.
1. INTRODUCTION	1
1.2 Brief and Scope	1
2. SITE DESCRIPTION	1
2.1 Location	1
3. GUIDANCE	3
3.1 British Standard 4142:2014	3
3.2 Local Authority Guidance – Reading Borough Council	4
3.3 World Health Organisation Noise Guidelines	5
3.4 Institute of Environment Management & Assessment (IEMA) and institute of Acoustics Guidelines on Noise Impact Assessment	5
3.5 Subjective Impact	6
3.6 Summary	6
4. NOISE SURVEY AND MEASUREMENTS	7
4.1 Unattended Noise Survey	7
4.2 Measurement Weather Conditions	8
4.3 Results	8
4.4 Attended Noise Survey	9
5. PLANT NOISE ASSESSMENT	10
5.1 Noise Rating Limit	10
5.2 Plant Noise Levels	10
5.3 Noise Sensitive Receptors	10
5.4 Calculated Noise Levels	10
6. BREAK-OUT NOISE ASSESSMENT	12
6.1 Assessment	12
6.2 Noise Levels	12
6.3 External Partition Build-ups	12
6.4 Calculation Method	13
6.5 Assumptions	13
6.6 Nearest Noise-Sensitive Receptors	14
6.7 Predicted Noise Levels	14
6.8 IEMA Evaluation	14
7. CONCLUSION	16

APPENDIX A – FIGURES

Figure A1 : Noise Measurement Results – Readipop, Reading

Figure A2 : Proposed Ground and First Floor Layouts – Readipop, Reading

APPENDIX B – TABLES

Table B1 : Calculations

APPENDIX C – TERMINOLOGY RELATING TO NOISE

APPENDIX D – LIMITATIONS TO THE REPORT

1. INTRODUCTION

- 1.1.1 Readipop has commissioned AF Acoustics Ltd. to undertake a plant noise assessment for the proposed installation of 2 No. condensers at 15 Trafford Road, Reading RG1.
- 1.1.2 In addition, AF Acoustics have undertaken an external break-out noise assessment to ensure that adjacent commercial/office buildings are not disturbed by noise from activities associated with Readipop.

1.2 Brief and Scope

- 1.2.1 The brief is to undertake a plant noise assessment for the proposed plant to be installed at the site and to calculate the level of noise impact at the nearest receptor. If the proposed plant creates an adverse impact, or the noise levels at the nearest residential receptor do not meet the local authority guidance then recommendations will be given to reduce the noise impact to meet the local authority guidance.
- 1.2.2 In addition, based on typical noise levels in the studios, calculate the noise levels at the neighbouring office units, based on the proposed wall constructions.

2. SITE DESCRIPTION

2.1 Location

- 2.1.1 Readipop is located within an industrial area within the administrative district of Reading Borough Council.
- 2.1.2 The building comprises two storeys at the front, and one storey to the rear.
- 2.1.3 The proposals include extending the property to the rear and changing the configuration/location of studio and office space. As part of the works, 2No. condensers will be installed on a flat roof area.
- 2.1.4 Located immediately to the south is the Collard waste management site, where skips are loaded/unloaded onto heavy goods vehicles. Activity from this site dominates the ambient noise environment.
- 2.1.5 The premises immediately to the north and west include car valet services and a pumbers merchant, which are light-industrial in character.
- 2.1.6 Located to the east of site is Richfield Place which houses office buildings, and have been identified as the nearest sensitive receptors to site.
- 2.1.7 The proposed plant is to be located at the rear of the site, on a flat roof area. This is shown in Figure 4.1.
- 2.1.8 Typical studio operating hours are understood to be as follows, with occasional weekend sessions:
 - 10:00 – 22:00 Monday to Friday

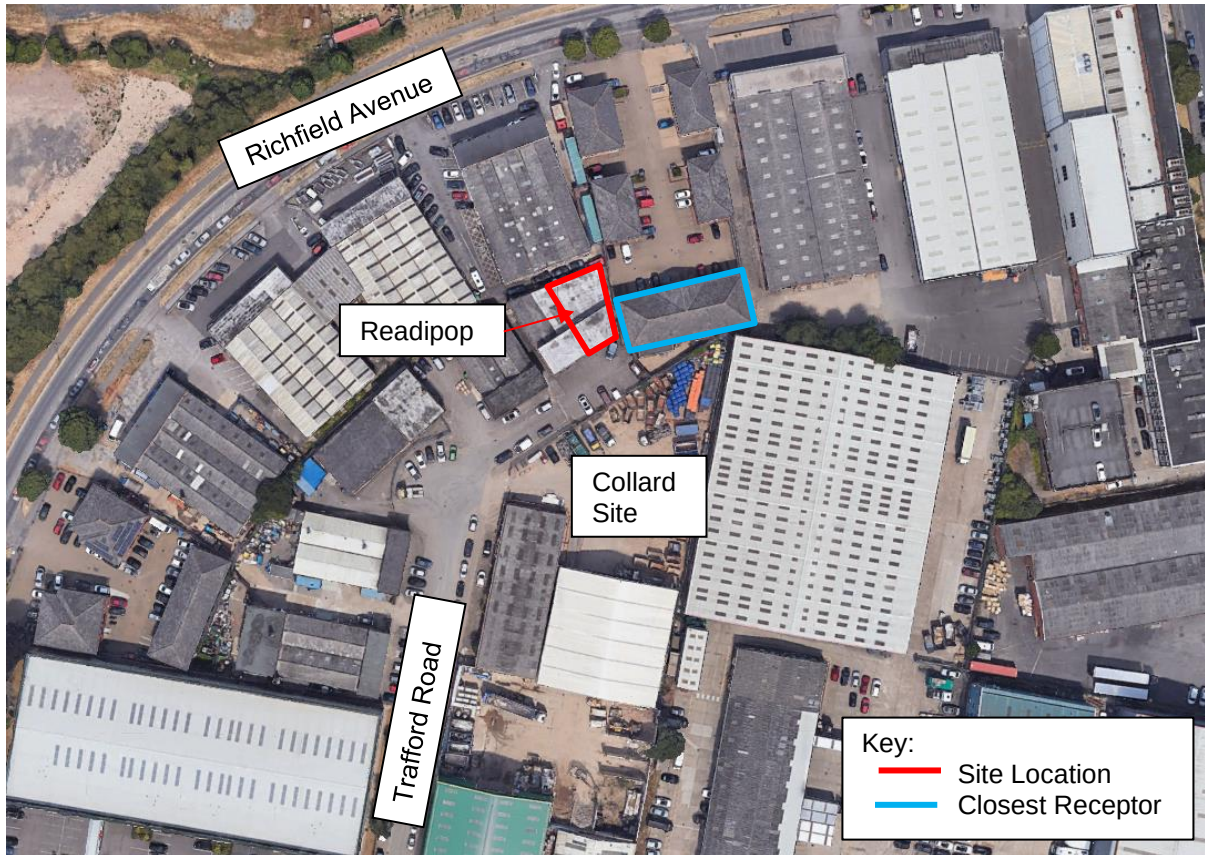


FIGURE 2.1 LOCATION MAP

3. GUIDANCE

3.1 British Standard 4142:2014

3.1.1 BS 4142:2014 'Methods for rating and assessing industrial and commercial sound' describes methods for rating and assessing sound from "fixed installations which comprise mechanical and electrical plant and equipment", amongst other sources of noise.

3.1.2 The methodology contained within BS 4142:2014 uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

3.1.3 A summary of the approach set out within BS 4142:2014 is set out below:

- establish the specific sound level of the source(s);
- measure the representative background sound level, typically by measurement close to the receptor location;
- rate the specific sound level to account for any distinguishing characteristics;
- estimate the impact by subtracting the background sound level from the rating level; and
- consider the initial estimate of impact, in the context of the noise and its environment.

3.1.4 An initial estimate of the impact of the specific sound is obtained by subtracting the background sound level from the rating level. Using this approach, BS 4142 states:

*"Typically, the greater this difference, the greater the magnitude of impact
A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context*

A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

3.1.5 Certain acoustic features can increase the significance of the impact over that expected from a basic comparison between specific sound level and the background sound level. These features include tonality and impulsivity, as well as additional characteristics and intermittency of the sound.

3.1.6 If appropriate, a subjective assessment of the plant features can be adopted. Where the plant noise contains tonal elements, the following corrections can be made depending on how perceptible the tone is at the noise receptor.

3.1.7 The specific sound level is rated to account for distinguishing characteristics by using the penalties below:

- 0 dB where the tone is not perceptible
- 2 dB where the tone is just perceptible
- 4 dB where the tone is clearly perceptible
- 6 dB where the tone is highly perceptible

3.1.8 Where the plant noise is impulsive, the following corrections can be made depending on how perceptible the impulsivity is at the noise receptor.

- 0 dB where the impulse is not perceptible
- 3 dB where the impulse is just perceptible
- 6 dB where the impulse is clearly perceptible
- 9 dB where the impulse is highly perceptible

3.1.9 For noise which is equally both impulsive and tonal, then both features can be taken into account by linearly summing the corrections for both characteristics.

3.1.10 If the plant has other distinctive characteristics, such as intermittency, then a 3 dB correction can be made.

3.1.11 If a subjective assessment is not appropriate then an objective assessment can be made. A noise source is deemed to be tonal if the time averaged sound pressure level in a one-third octave band exceeds the level in adjacent one-third octave bands by the level differences given below:

- 15 dB in the low frequency one-third octave bands (25 Hz to 125 Hz)
- 8 dB in the mid frequency one-third octave bands (160 Hz to 400 Hz)
- 5 dB in the high frequency one-third octave bands (500 Hz to 10000 Hz)

3.1.12 If an objective assessment identifies the plant noise to be tonal then a 6 dB correction must be made.

3.2 Local Authority Guidance – Reading Borough Council

3.2.1 In the pre-planning document issued by Reading Borough Council, Ref:220531, the following guidance is provided.

“Noise Generating Development

Applications which include noise generating plant when there are nearby noise sensitive receptors should be accompanied by an acoustic assessment carried out in accordance with BS4142:2014 methodology. This development may include noisy mechanical plant such as air conditioning.

The noise assessment needs to establish the predicted noise rating level taking account of any characteristic factors like tonality or impulsiveness of the noise. The rating level should be compared with the background noise level.

The noise source specific noise level (plant noise level) should be at least 10dBA below the existing background level as measured at the nearest noise sensitive receptor and the rating level should not exceed the background level (as measured in accordance with BS4142:2014).

Will the extension and the larger music studio spaces increase the potential for noise from the music to disturb nearby occupants of commercial properties such as offices? If so then a noise assessment may be required, or as a minimum further information should be submitted on the sound insulation of the outer walls and roof.”

3.3 World Health Organisation Noise Guidelines

- 3.3.1 The guidelines presented in the World Health Organization (WHO) document reflect conclusions drawn up after consideration of international research evidence on the health effects of exposure to noise. The guidelines define the goal of noise management as ‘to maintain low noise exposures such that human health and well-being are protected’, with ‘specific objectives to develop criteria for the maximum safe exposure levels and to promote noise assessment and control as part of environmental health programmes’.
- 3.3.2 These WHO guideline values are based on precautionary limits for community noise in specific environments and are reproduced below.

Specific Environment	Critical Health Effect(s)	dB L _{Aeq,T}	Time Base hours	dB L _{AFMAX}
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	-
Inside bedrooms	Sleep disturbance, night-time	30	8	45

TABLE 3.1: WHO COMMUNITY NOISE GUIDELINE VALUES

- 3.3.3 It should be noted that the above values generally apply to ‘anonymous’ or everyday levels of environmental noise from road traffic, trains and aircraft. Human reaction to tonal and low frequency noise may be underestimated by the dB(A) noise level and hence lower limits may apply.

3.4 Institute of Environment Management & Assessment (IEMA) and institute of Acoustics Guidelines on Noise Impact Assessment

- 3.4.1 When assessing the subjective impact of any development it is important to consider the specific circumstances of the site. The characteristics of the various sources must therefore be considered in addition to factors common to all noise impact assessments.
- 3.4.2 The Institute of Environmental Management and Assessment (IEMA) document “Guidelines on Noise Impact Assessment” gives guidance as to how basic noise changes may be categorised.
- 3.4.3 Table 3.2 has been adopted to categorise the difference between the existing and proposed predicted levels as identified in the guidelines published jointly by the IOA and IEMA. This identifies the impact of different levels of noise above the prevailing background noise.

Noise Change (dBA)	Category
0	No Impact
0.1 - 2.9	Slight Impact
3.0 – 4.9	Moderate Impact
5.0 – 9.9	Substantial Impact
10.0 and above	Severe Impact

TABLE 3.2: SIGNIFICANCE OF NOISE LEVEL CHANGE

3.5 Subjective Impact

3.5.1 In addition to the comparison of the difference in background noise levels in line with the above guidelines, it is important to understand the potential subjective effect of such changes in the noise level. Table 3.2 compares the generally accepted subjective response of typical subjects to variations in sound pressure level.

Change in Sound Level (dB)	Change in Power		Apparent Change in Loudness
	Decrease	Increase	
3	$\frac{1}{2}$	2	Just Perceptible
5	$\frac{1}{3}$	3	Clearly Noticeable
10	$\frac{1}{10}$	10	Half or Twice as Loud
20	$\frac{1}{100}$	100	Much Quieter or Louder

TABLE 3.3: SUBJECTIVE RESPONSE TO NOISE LEVELS

3.6 Summary

3.6.1 Based on the above criteria, the following assessments will be made:

- An IEMA assessment comparison between the existing and proposed L_{Aeq} noise levels at the nearest receptors due to breakout noise from studio areas.

4. NOISE SURVEY AND MEASUREMENTS

4.1 Unattended Noise Survey

- 4.1.1 An unattended noise survey was undertaken by Daniel Flood of AF Acoustics at Readipop, 15 Trafford Road, Reading.
- 4.1.2 The duration of the survey was between 12:49 on Wednesday 12 October and 13:40 Friday 14 October. This measurement location is displayed in Figure 4.1
- 4.1.3 Noise measurements were undertaken at the rear of site, on a flat roof area towards the eastern boundary. The microphone was mounted on a tripod at a height of 1.5m above roof level. The noise profile at this location was dominated by activity from the Collard waste management facility. When this source was quiet, noise from Richfield Avenue and the surrounding road network became audible.
- 4.1.4 Measurements were carried out in accordance with the requirements of BS 7445-2:1991 and ISO 1996-2:1987.

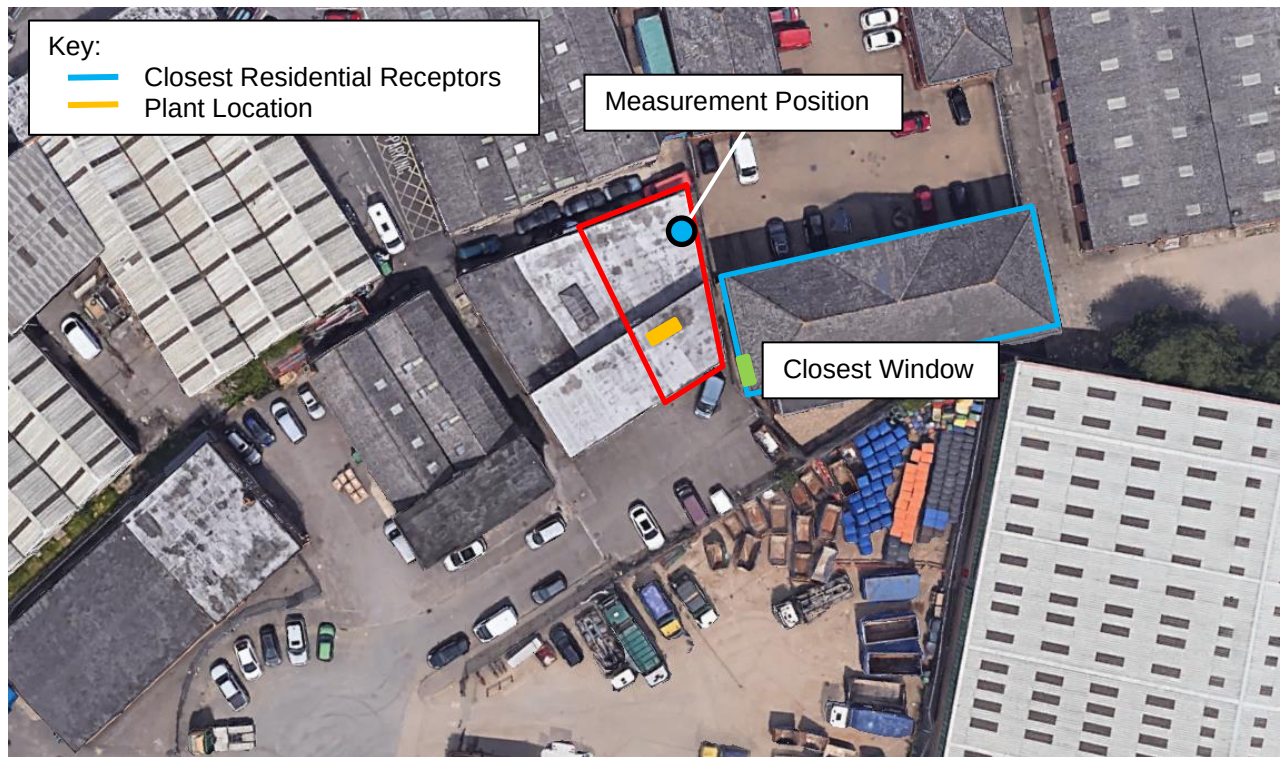


FIGURE 4.1: MEASUREMENT LOCATION

- 4.1.5 The sound level meter was calibrated both prior to and on completion of the survey, with no calibration drift observed. The microphone was fitted with a windshield.

4.1.6 The equipment used is shown in Table 4.1.

Location	Name	Serial Number	Last Calibrated
Unattended	NTI Audio XL2-TA Class 1 Sound Level Meter	A2A-18530-E0	January 2021
	NTI Audio MA220 Pre-amplifier	9566	January 2021
	NTI Audio MC230A Microphone	A19842	January 2021
Attended	NTI Audio XL2-TA Class 1 Sound Level Meter	A2A-17402-E0	February 2022
	NTI Audio MA220 Pre-amplifier	8850	February 2022
	NTI Audio MC230A Microphone	A18347	February 2022
All	Larson Davis Calibrator	18295	15 December 2020

TABLE 4.1: MEASUREMENT EQUIPMENT

4.2 Measurement Weather Conditions

4.2.1 The weather during the measurements was mainly dry and clear. The temperature ranged from 11 to 18°C. Average wind speeds remained below 3 ms⁻¹. The weather is deemed to have caused no significant effect during the measurement period.

4.3 Results

4.3.1 The results of the continuous noise monitoring survey are presented in graphical form in Figure A1 of Appendix A and summarised in Table 4.2. The lowest measured $L_{A90,15min}$ sample is presented, along with maximum measured noise levels and the period averaged L_{Aeq} levels.

Time period	Measured Noise Levels (dB re 2.0 x 10 ⁻⁵ Pa)		
	$L_{Amax,F}$	$L_{Aeq,T}$	Lowest $L_{A90,T}$
Daytime (07:00 – 23:00)	85	55	49
Nighttime (23:00 – 07:00)	76	47	35
Assessment Period (10:00 – 20:00)	85	55	50

TABLE 4.2: SUMMARY OF UNATTENDED NOISE MEASUREMENTS

4.4 Attended Noise Survey

- 4.4.1 Internal measurements were undertaken within studio spaces to assist in assessing break-out noise from site.
- 4.4.2 Measurements were made with the microphone mounted on a tripod at a height of 1.5m, towards the middle of the room.
- 4.4.3 Measurements were made within a recording Studio for a duration of 17 minutes. The activity included noise from an electric guitar, electric piano and playback of bass heavy music. This is considered representative of activity likely to take place within the XOX studio.
- 4.4.4 A further 5 minute measurement was taken within studio 1. The sources included a drum kit, bass guitar and electric guitar. This is considered representative of activity which will take place within the large studio.
- 4.4.5 Floorplans of the proposed layouts are presented in Figure A3 of Appendix A.
- 4.4.6 The time averaged L_{Aeq} levels are presented below in Table 4.3.

Location	Measured $L_{Aeq,T}$ Noise Levels (dB)
Recording Studio	76
Studio 1	98

TABLE 4.3: INTERNAL NOISE MEASUREMENTS

5. PLANT NOISE ASSESSMENT

5.1 Noise Rating Limit

- 5.1.1 In accordance with the requirements of Reading Borough Council, Table 5.1 presents the maximum noise rating level which must not be exceeded at the noise sensitive receptor.
- 5.1.2 The plant will generally be in operation between 10:00 – 22:00. The closest receptor is the adjacent office building, where hours would typically be 08:00 – 18:00 hours. However, to ensure a worst-case assessment, the analysis has been undertaken between the hours of 10:00 – 20:00.

Measurement Period	Assessed Background Noise Level dB L_{A90}	Noise Rating Level Design Criteria	Plant Noise Rating Level Limit dB $L_{Ar,Tr}$
Assessment Period (10:00 – 20:00)	50	10dB below the typical background noise level	40

TABLE 5.1: TARGET PLANT NOISE LEVEL

5.2 Plant Noise Levels

- 5.2.1 2No. Daikin RZAG125NY1 condensers are proposed to be located on the roof of Readipop. The equipment positions are shown in Figure 4.2.
- 5.2.2 The manufacturer's noise levels are presented in Table 5.2.

Plant	Parameter	Sound Level (dB) at Octave band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
Daikin RZAG125NY1	L_p at 1m	53	59	53	51	46	40	35	30	52

TABLE 5.2: PLANT NOISE LEVEL

5.3 Noise Sensitive Receptors

- 5.3.1 The closest windows with the potential to be affected by noise from the plant installation are located along the western façade of the office building in Richfield Place. These windows are located at first-floor level at an approximate distance of 10m. These windows will be fully screened from the plant installation by the roof of Readipop.

5.4 Calculated Noise Levels

- 5.4.1 Based on the information above, Table 5.3 provides a summary of the calculated plant noise level at the nearest receptor. Our calculation method has included: 20LogR distance correction; and screening. The calculation sheets are presented in Appendix B.

5.4.2 No correction factors have been added in accordance with BS4142:2014. There are no tones or other acoustic characteristics present from the proposed plant.

Property	Assessment Period	Target Plant Noise Rating Level dB $L_{Ar,Tr}$	Plant Specific Sound Level dB $L_{Aeq,Tr}$
Closest Receptor at Richfield Place	Assessment Period (10:00 – 20:00)	40	26

TABLE 5.3: PREDICTED NOISE AT NEAREST RECEPTOR

5.4.3 Noise levels from the proposed plant installation meet the requirements of Reading Borough Council, and should therefore be considered acceptable.

6. BREAK-OUT NOISE ASSESSMENT

6.1 Assessment

- 6.1.1 Noise from the large studio, located on the ground floor, and the XOX studio on the first-floor, have been considered in this assessment. Both of these studios have external walls.
- 6.1.2 Other areas of the business have not been considered. The recording studio on the ground floor has not been included as it shares a party wall with the adjoining property to the west, which is an industrial unit, and not considered sensitive. Likewise, the studio positioned towards the front of the property on the ground floor, also only shares a party wall with the adjoining property to the west.
- 6.1.3 Other non-recording/admin areas have also not been considered as they will not generate high noise levels.
- 6.1.4 As described in Section 5.1.2, the studio will typically be in operation between 10:00 – 22:00 hours. The closest receptor is the adjacent office building, where hours would typically be 08:00 – 18:00 hours. However, to ensure a worst-case assessment, the analysis has been undertaken between the hours of 10:00 – 20:00.

6.2 Noise Levels

- 6.2.1 We have used the following sound pressure levels within our assessment.

Source	Sound Power Level, dB								dBA
	63	125	250	500	1000	2000	4000	8000	
XOX Studio	89	75	76	74	69	65	65	62	76
Large Studio	94	101	98	94	88	87	88	83	97

TABLE 6.1: ASSESSMENT NOISE LEVELS

6.3 External Partition Build-ups

- 6.3.1 It is understood that the existing external walls of the building consist of a standard brickwork cavity wall. The external walls are being treated with Kingspan TEK Building System wall panels. These panels have a thickness of 275mm and comprise the following construction:

- 1No. layer 27.5mm brick slip / bedding compound
- 1No. layer 10mm calcium silicate board
- 25mm deep batten
- 0.5 mm Kingspan nilvent® breathable membrane
- 1No. layer 172mm Kingspan TEK® panel
- 25 mm deep batten
- 1No. layer 12.5 mm plasterboard with 3mm skim

- 6.3.2 The Insul software package has been utilised to estimate the sound insulation performance of the Kingspan wall panels applied to the external cavity brickwork wall. The predicted single figure value is R_w 65dB. The octave band performance presented in Table 6.2.
- 6.3.3 To ensure noise break out is minimised medium performance glazing is recommended for the external windows of the XOX studio. Meanwhile, medium performance glazing and an acoustic door is recommended for the external elements of the large studio.
- 6.3.4 The recommended sound insulation performance for the proposed windows and door to be within the façades of the XOX studio and large studio are also presented in Table 6.2.

Element	Sound Reduction Index (dB)at Octave band Centre Frequency Hz								R_w
	63	125	250	500	1000	2000	4000	8000	
External Wall	50	57	55	59	67	72	72	72	65
Windows (10/12/4)	21	25	22	33	40	43	44	44	36
Door	23	22	29	36	42	47	47	47	35

TABLE 6.2: EXTERNAL ELEMENT SRI

- 6.3.5 The sound reduction performance quoted above must be achieved by the glazing systems/door taken as a whole in its installed condition. The specification, therefore, applies to the glazing/door the frames and all seals etc.

6.4 Calculation Method

- 6.4.1 The following calculation method has been used to predict break-out noise from the studios at the nearest noise-sensitive receptors:

$$L_R = L_{IN} + 10\log S - 6 - 20\log r - 8$$

- 6.4.2 Where L_R represents the noise levels at the receptor; S represents the surface area of the radiating partition; “-6” corrects for the difference in reverberant conditions from in to out; r represents the distance between source and receiver; “-8” corrects for hemispherical radiation.

6.5 Assumptions

- 6.5.1 Our assessment has been based on the following assumptions:

Location	Element	Surface Area m ²
XOX Studio	External Wall	16.75
	Glazing	6.75
Large Studio	External Wall	18.70
	Glazing	3.75
	Door	1.50

TABLE 6.3: EXTERNAL ELEMENT SURFACE AREAS

6.6 Nearest Noise-Sensitive Receptors

Receptor 1

The closest windows with the potential to be affected by noise from the XOX studio are located at along the western façade of the office building in Richfield Place. These windows are located at first-floor level at an approximate distance of 2m.

Receptor 2

The closest windows with the potential to be affected by noise from the large studio are located at along the northern façade of the office building in Richfield Place. These windows are located on the ground and first-floor level, at an approximate distance of 5m.

6.7 Predicted Noise Levels

6.7.1 Table 6.4 presents the noise levels predicted at the nearest receptors.

Source	Receive	Predicted Noise Level (dBA)
XOX Studio	Receptor 1 - Richfield Place (western elevation)	35.7
Large Studio	Receptor 2 - Richfield Place (northern elevation)	47.9

TABLE 6.4: PREDICTED NOISE LEVELS AT THE NEAREST RECEPTORS

6.8 IEMA Evaluation

6.8.1 To assess the impact of the outdoor seated areas. Table 6.5 presents the period averaged L_{Aeq} value measured during the assessment period (10:00 – 20:00), and the predicted noise change.

Source	Predicted external noise level (dB)	Resultant Overall Noise Level (dB)	Noise Change (dB)
Existing Average Level (10:00 – 20:00)	55.0	N/A	N/A
XOX Studio	35.7	55.1	+0.1
Large Studio	47.9	55.8	+0.8

TABLE 6.5: IEMA EVALUATION

6.8.2 When assessing the effect of noise from the XOX studio, an increase of 0.1dB is predicted at the nearest noise-sensitive receptor. In line with the guidance of IEMA, this is considered as having no impact. Meanwhile, based on the guidance presented in Section 3.5, the subjective impact is expected to be imperceptible.

6.8.3 When assessing the effect of noise from the large studio, an increase of 0.8dB is predicted at the nearest noise-sensitive receptor. In line with the guidance of IEMA, this is considered

as having a no impact. Meanwhile, based on the guidance presented in Section 3.5, the subjective impact is expected to be imperceptible.

- 6.8.4 On that basis, noise break-out from activities at Readipop, to the nearest noise-sensitive receptor, should be considered acceptable.

7. CONCLUSION

- 7.1.1 Readipop has commissioned AF Acoustics to undertake a plant noise assessment for the proposed installation of 2 No. condensers at 15 Trafford Road, Reading RG1.
- 7.1.2 In addition, AF Acoustics have undertaken an external break-out noise assessment to ensure that adjacent office buildings are not disturbed by noise from activities associated with Readipop.
- 7.1.3 An environmental noise survey has been undertaken at the rear of Readipop, in a position considered representative of the prevailing noise climate at the nearest sensitive windows.
- 7.1.4 Plant noise emission criteria have been set at the nearest receptor based on the results of the noise survey and in conjunction with the guidance of Reading Borough Council.
- 7.1.5 The results of the plant noise assessment indicate that atmospheric emissions from the plant are within the criteria required by Reading Borough Council. The proposed plant installation should therefore be considered acceptable.
- 7.1.6 Further measurements were taken within studio areas of typical activities.
- 7.1.7 Guidance sound insulation performance levels have been provided for proposed windows and doors to be located within the external façade of the XOX studio and large studio.
- 7.1.8 A break-out noise assessment of studio activity has also been undertaken, utilising IEMA methodology to assess acceptable noise levels at the closest receptors.
- 7.1.9 The results of likely noise break-out from the XOX studio indicate that “no impact” is predicted, which will be subjectively inaudible. Noise break-out from the large studio is also predicted to result in no impact, which will be subjectively inaudible at the closest receptor.
- 7.1.10 On that basis, noise from activities associated with Readipop should be considered acceptable.

AF Acoustics

APPENDIX A: FIGURES

1811 - Readipop

Rear Flat Roof

Time History - 12 October to 14 October 2022

Graph 1

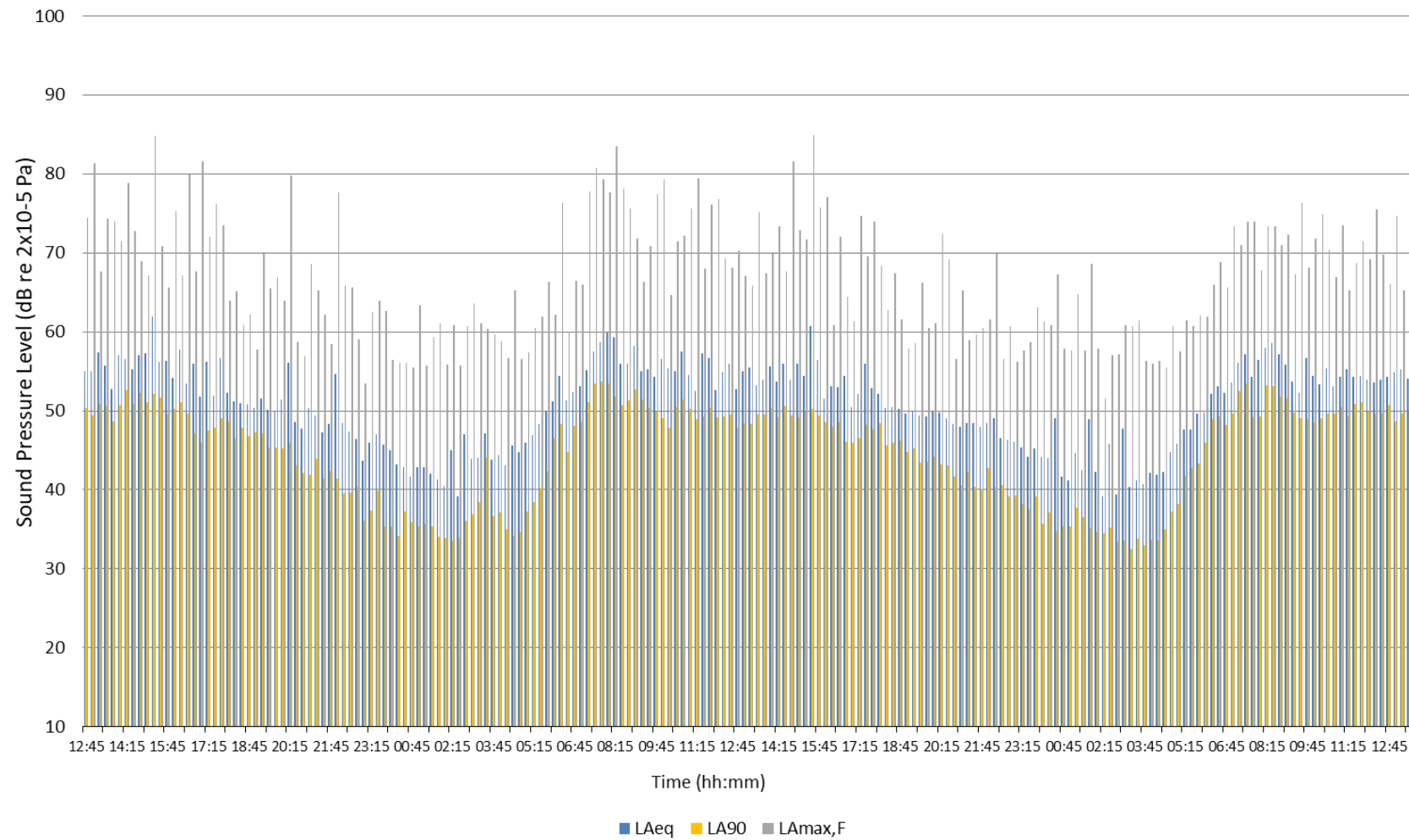


FIGURE A1: NOISE MEASUREMENT RESULTS – READIPOP, READING

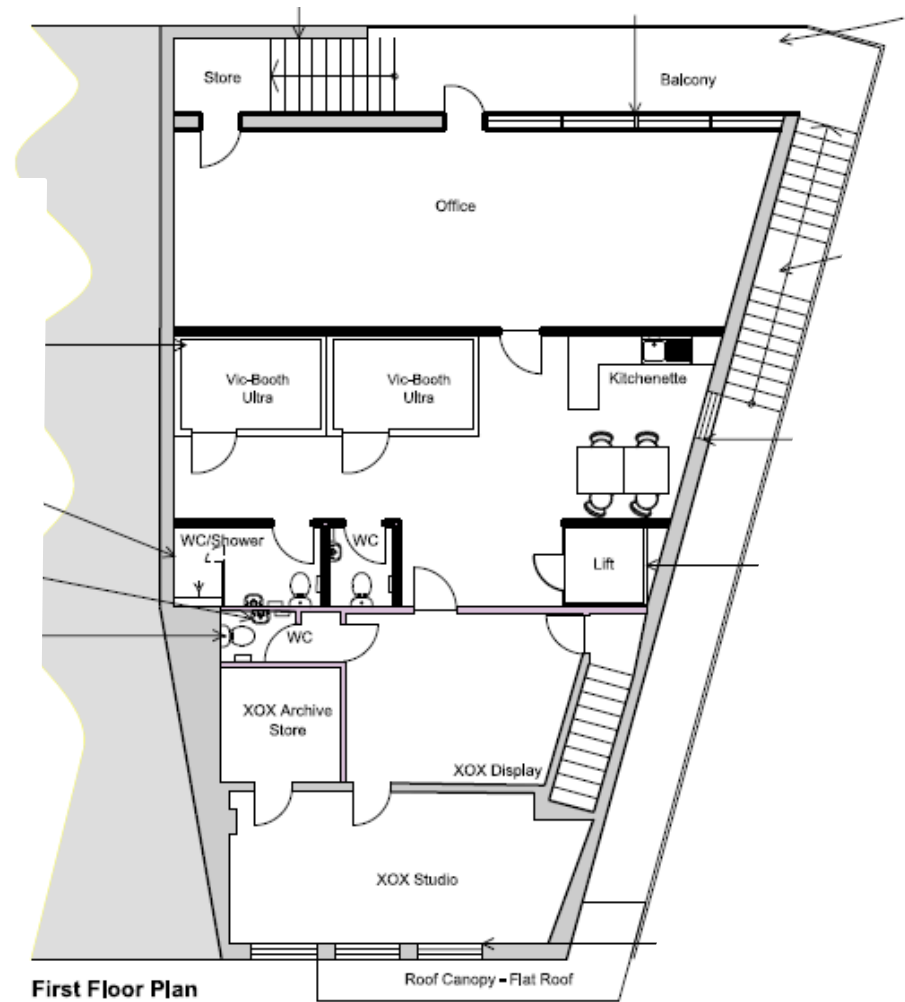
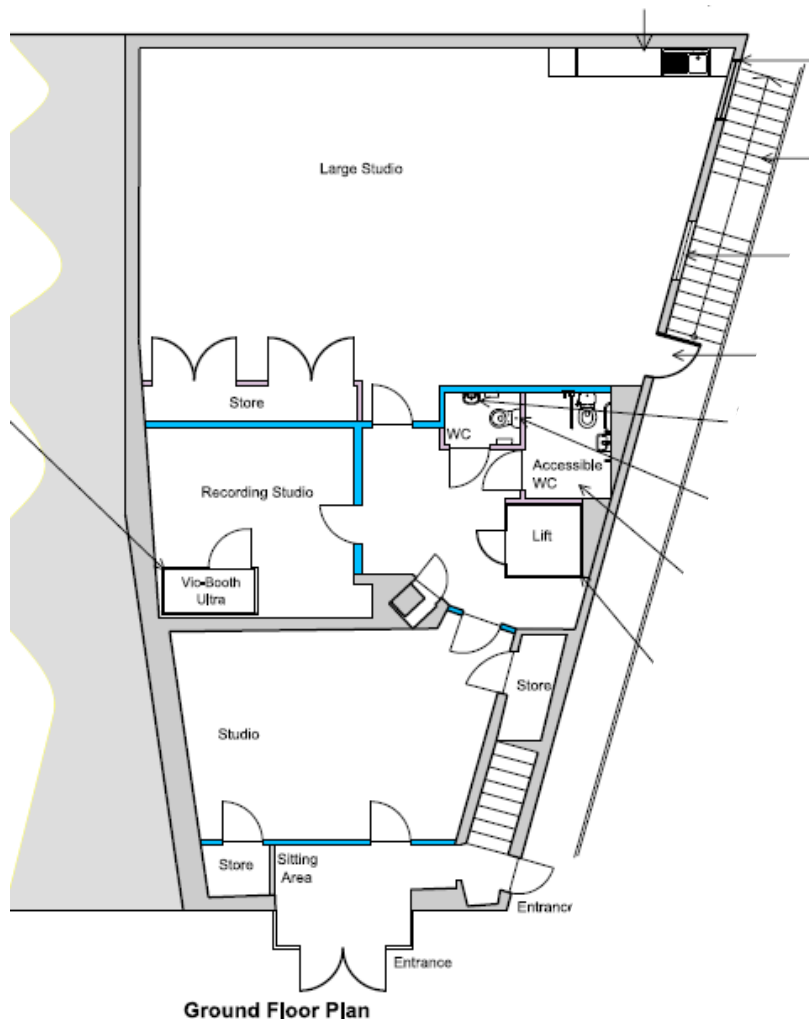


FIGURE A2: PROPOSED GROUND AND FIRST FLOOR LAYOUTS – READIPOP, READING

APPENDIX B: TABLES



Job No.	Job Title				
1811	Readipop				
Date Created	By	Date Revised	Rev	Sheet	
01 Nov 2022	DF	02 Nov 2022	4	1	
Date Reviewed	By	Review Type	Review Status		

Readipop - Plant Noise Assessment

Item / Description		Rating/Broadband/Input			31.5	Octave Band Centre Frequency, Hz							
		Rating	dB	dB(A)		63	125	250	500	1k	2k	4k	8k
Daikin RZAG125NY1	Lp at 1m			52.2 (A)		53.0	59.0	53.0	51.0	46.0	40.0	35.0	30.0
2No. Units						3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Distance loss	10m					20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Barrier Attenuation - Theory: Maekawa, Source Height: 7 m, Receiver Height: 4.5 m		6.0 m	7.0 m	3.0 m		-5.7	-6.4	-7.5	-9.3	-11.6	-14.4	-17.3	-20.3
Total at Receptor				26.0 (A)		30.3	35.6	28.5	24.7	17.4	8.6	0.7	-7.3

TABLE B1: CALCULATIONS

APPENDIX C: TERMINOLOGY RELATING TO NOISE

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level	The sound level is the sound pressure relative to a standard reference pressure of $20\mu\text{Pa}$ (20×10^{-6} Pascals) on a decibel scale.
Sound Power Level (L_w)	is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1 / s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
L_{Aeq,T}	Equivalent continuous A-weighted sound pressure level. The value of the A-weighted sound pressure level of a continuous steady sound that, within a measurement time interval T, has the same A-weighted sound energy as the actual time-varying sound
L_{90,T}	L ₉₀ is the noise level exceeded for 90% of the period T (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.
L_{max,T}	A noise level index defined as the maximum noise level during the period T. L _{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L _{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
Specific Noise	The noise source under investigation for assessing the likelihood of complaints.
Rating Level	The specific noise level plus any adjustment for the characteristic features of the noise.
Free field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m.
Façade	At a distance of 1m in front of a large sound reflecting object such as a building façade.

APPENDIX D: LIMITATIONS TO THE REPORT

This report has been prepared for the titled project or named part thereof and should not be used in whole or part and relied upon for any other project without the written authorisation of AF Acoustics Ltd. AF Acoustics Ltd accept no responsibility or liability for the consequences of this document if it is used for a purpose other than that for which it was commissioned. Persons wishing to use or rely upon this report for other purposes must seek written authority to do so from the owner of this report and/or AF Acoustics Ltd and agree to indemnify AF Acoustics Ltd for any and all loss or damage resulting therefrom. AF Acoustics Ltd accepts no responsibility or liability for this document to any other party other than the person by whom it was commissioned.

The findings and opinions expressed are relevant to the dates of the site works and should not be relied upon to represent conditions at substantially later dates. Opinions included therein are based on information gathered during the study and from our experience. If additional information becomes available which may affect our comments, conclusions or recommendations AF Acoustics Ltd reserves the right to review the information, reassess any new potential concerns and modify our opinions accordingly.