

Ref: HL/8072252

4th March 2026

Dear Sirs,

Re: 102 Broad Street, Reading, RG1 2AX– External Background Noise Assessment.

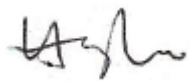
We are happy to present our environmental noise report in regards with the proposed kitchen extraction system.

On the 7th January 2026, we visited The Site to inspect the location. Noise measurements were taken to establish the background noise levels. The nearest noise sensitive receptor (NSR) is deemed to be approx. 50m away from the proposed mechanical plants at the rear of The Site's roof top level. The proposed operational hours are from 11:00hrs to 23:00hrs.

Noise calculations of the proposed mechanical plants have been undertaken using all measurements to deduce the impact to the NSR to form the basis of the assessment. Noise criteria at the nearest sensitive receptors have been assessed based on British Standard BS 4142:2014+A1:2019.

In accordance with BS 4142:2014+A1:2019 guidance, the assessment level as compared to the background noise levels – daytime has been determined more than 10 dBA **BELOW**; and as such the noise impact due to the operation of the proposed mechanical plants “is an indication of the specific sound source having a low impact” and no additional noise mitigations are required.

Yours faithfully,



H.Lo MEng, PhD, CEng Prof Mem ICME, Tech IOA

1.0 INTRODUCTION

Xcellence Consultancy Group has been appointed by Maggie Lo Catering Supplies Ltd to undertake an environmental noise assessment to assess the noise emissions from the proposed mechanical services associated with the kitchen ventilation upon nearby noise sensitive receptors. An environmental noise survey has been conducted to determine the prevailing background sound levels in the surrounding area. Using the results of the acoustic measurements and the BS4142 guidelines, the impact of the proposed ventilation system has been determined. This report describes the noise survey, its results and the outcomes of the subsequent assessment. Noise mitigation measures have been proposed where necessary.

1.1 SITE DESCRIPTION

The Site falls within the jurisdiction of Reading Borough Council. The site is located at 102 Broad Street, Reading, RG1 2AX (see Figure 1). The site is an existing unit situated within a busy high street setting. The nearest noise sensitive residential receptors are first floor flats on Queen Victoria Street located approx. 70m to the north-east of the Site. Figure 2 presents the Site in the context of its surroundings.

The prevailing sound climate at the NSR is generally dominated by heavy pedestrian traffics from both Queen Victoria Street and Broad Street.



Figure 1. The Site

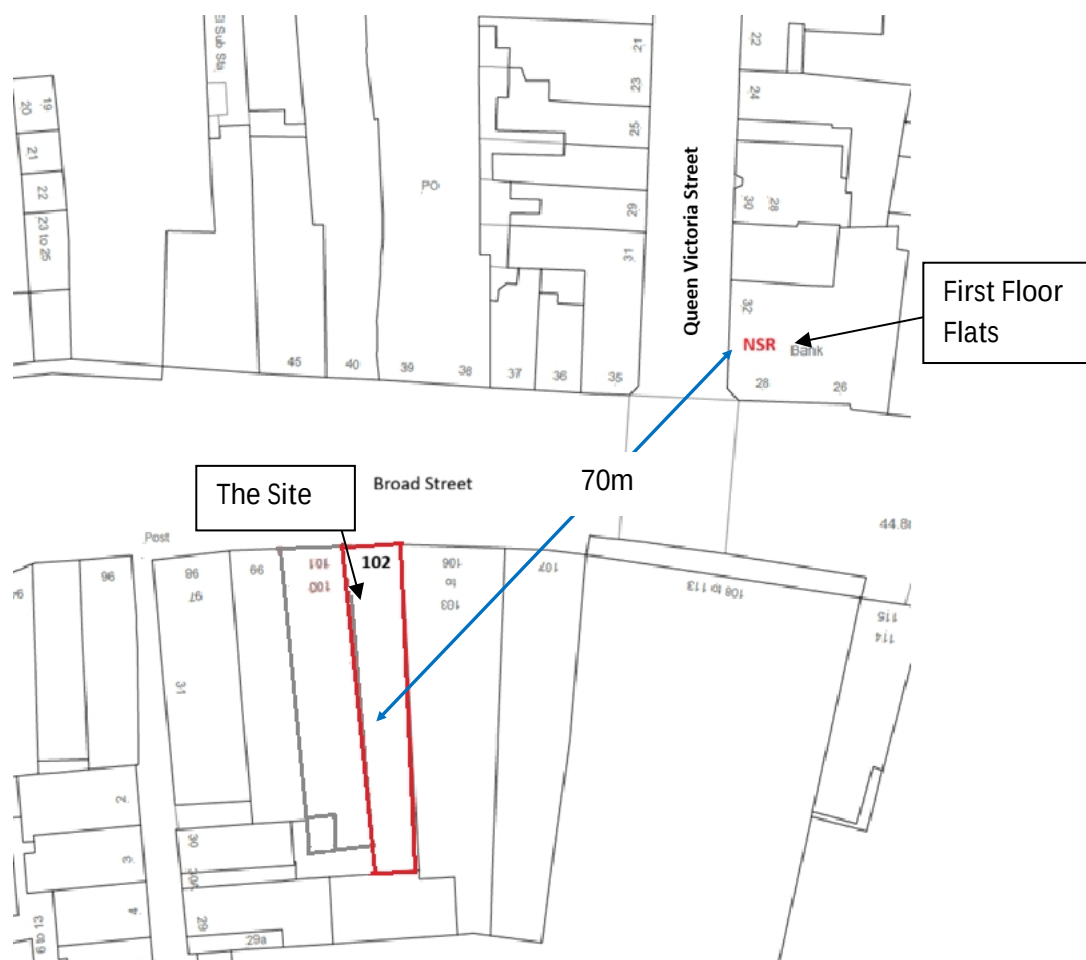


Figure 2 Birdseye view of closest residential dwellings in relation to the Site.

2.1 PROPOSALS

The proposed development comprises a restaurant with associated kitchen and dining areas. The proposals include the installation of kitchen ventilation and air intake systems. According to Maggie Lo Catering Supplies Ltd's design specification, the mechanical ventilation fans will include 3 exhaust fans and 2 air supply fans and they will be mounted externally on a flat roof at approx. 4m above street level within an enclave space located at the centre of the site (Figure 3). The exhausts and the air-ins will terminate at the same roof top level where due to the design of the building, natural building screening will contribute to substantial noise attenuation. In addition, the ductwork near the fans is proposed to have the installation of appropriate silencer for further noise attenuation. It is understood that the proposed development is open between 11am to 11pm everyday and the proposed mechanical plants would not be operating during the night time period from 11pm.

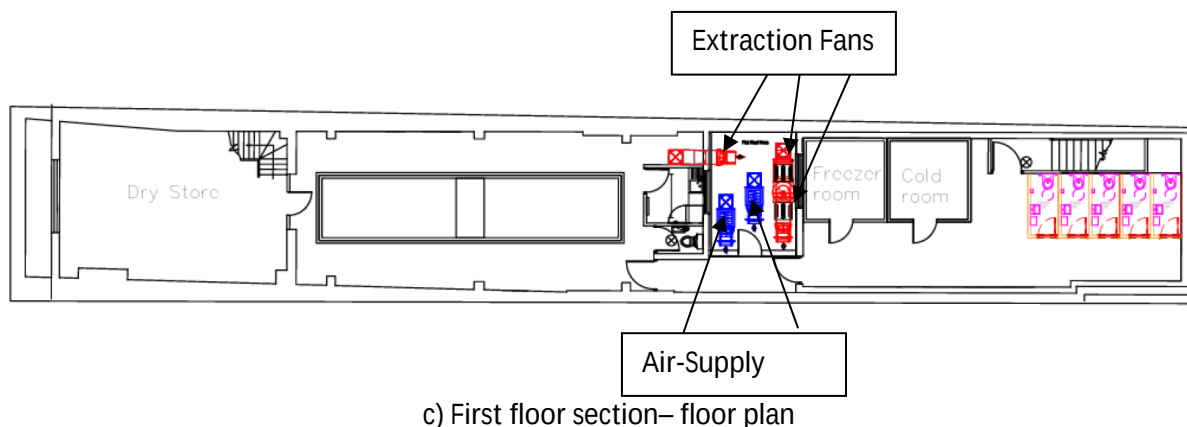
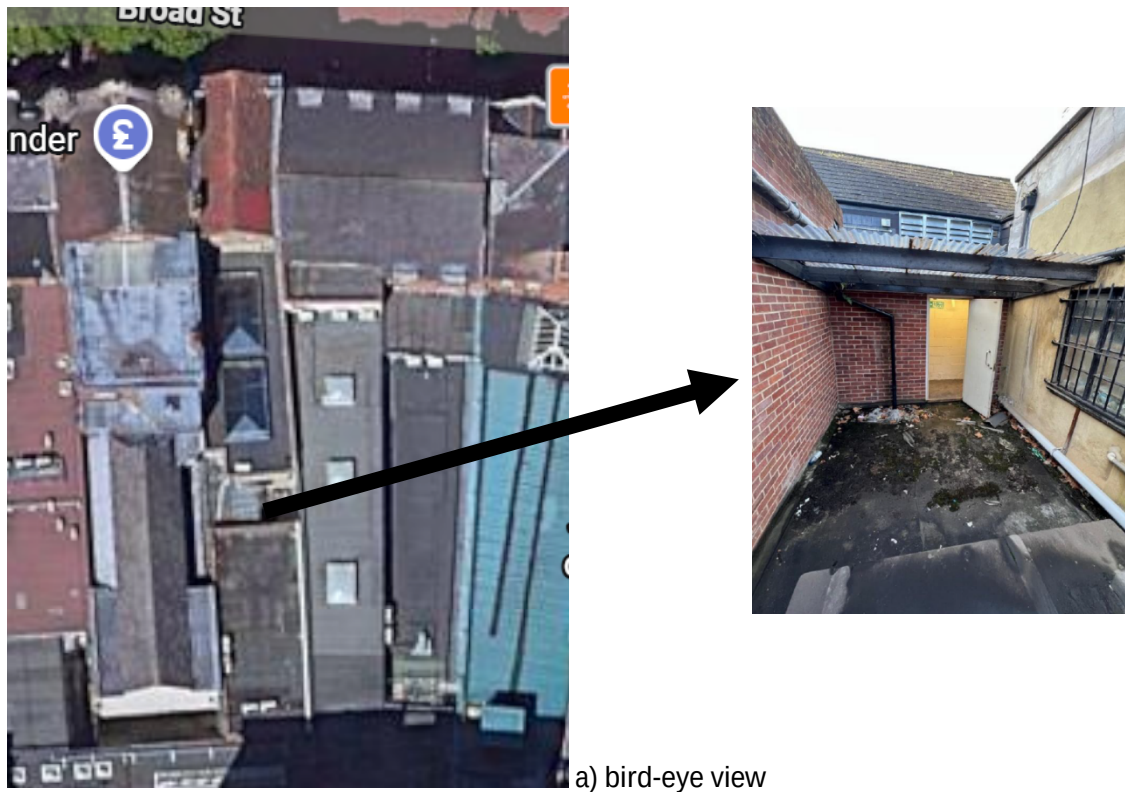


Figure 3 Proposed roof top showing the new ventilation in relation to the building (courtesy of Maggie Lo Catering Supplies Ventilation Ltd)

3.0 GUIDANCE AND CRITERIA

BS 7445-2:1991 'Description and Measurement of Environmental Noise'

BS 7445-2:1991 'Description and Measurement of Environmental Noise - Part 2: Guide to the acquisition of data pertinent to land use' defines parameters, procedures and instrumentation required for noise measurement and analysis. Accordingly, together with associated guidance within the documents below, this Standard has been used to ensure the survey and data are fit for purpose.

BS 4142:2014+A1:2019 'Method for Rating and Assessing Industrial & Commercial Sound'.

BS 4142 is the generally adopted method for assessing plant noise emissions affecting residential areas and is specifically referenced as the assessment methodology and is also specified by the

majority of local authorities for such instances commercial & industrial sound affecting residential properties.

Comparing the rating level with the background sound level, 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."

4.0 NOISE MEASUREMENT EQUIPMENT

In accordance with BS 7445-2, the instrumentation used for the noise measurements was a Svantek SV971A precision grade Class 1 real time analysing sound level meter, serial number 121091 with a Svantek ½" 7152 prepolarized condenser microphone (last calibrated 24th June 2024), serial number 83677. The instrument was field calibrated before and after measurements were taken, using the Svantek SV33B acoustic calibrator, serial number 116638 (last calibrated 17th July 2025). No signs of drift in calibration level were recorded.

4.1 WEATHER CONDITIONS

The noise measurements were undertaken in satisfactory weather with no significant wind or precipitation. The temperature recorded on the day was around 6 degrees Celsius with 75% humidity.

4.2 NOISE MEASUREMENTS PROCEDURE

The purpose of the assessment is to determine the impact of noise from the operation of the proposed ventilation system at Highfield House.

Xcellence Consultancy group have carried out a fully manned environmental noise survey from 15:00 – 16:00 on 7th January 2026 to establish the existing background noise levels at location representative of NSR. Measurements were carried out at one location (see Figure 4). The noise levels measured are therefore assumed to be representative of the noise climate during the hour in which the measurements were taken.

In order to evaluate the impact of noise from the proposed operation of the ventilation system, measured background noise levels have been compared against the noise of the proposed ventilation mechanical plants. This assessment has been undertaken in accordance with methodology outlined within BS4142:2014 "Methods for rating and assessing industrial and commercial sound" as typically required for planning purposes.

A fixed microphone position was used to determine the change in noise levels during typical operating hours of the restaurant with sound level meter set to measure consecutive “A” weighted 15 minute time samples. The measurement location of the fixed microphone is shown in Figure 4. The microphone was positioned on a tripod of 1.3 metres above ground level and at least 3m from the closest façade at the selected monitoring position. Measurements have been taken in free-field conditions. Ambient and background noise levels (L_{Aeq} and L_{A90} respectively) were measured throughout the noise survey in continuous 15 minute periods. Measurement periods of 15 minutes were used during the survey to ensure these periods are considered an adequate range of measurements to be taken.

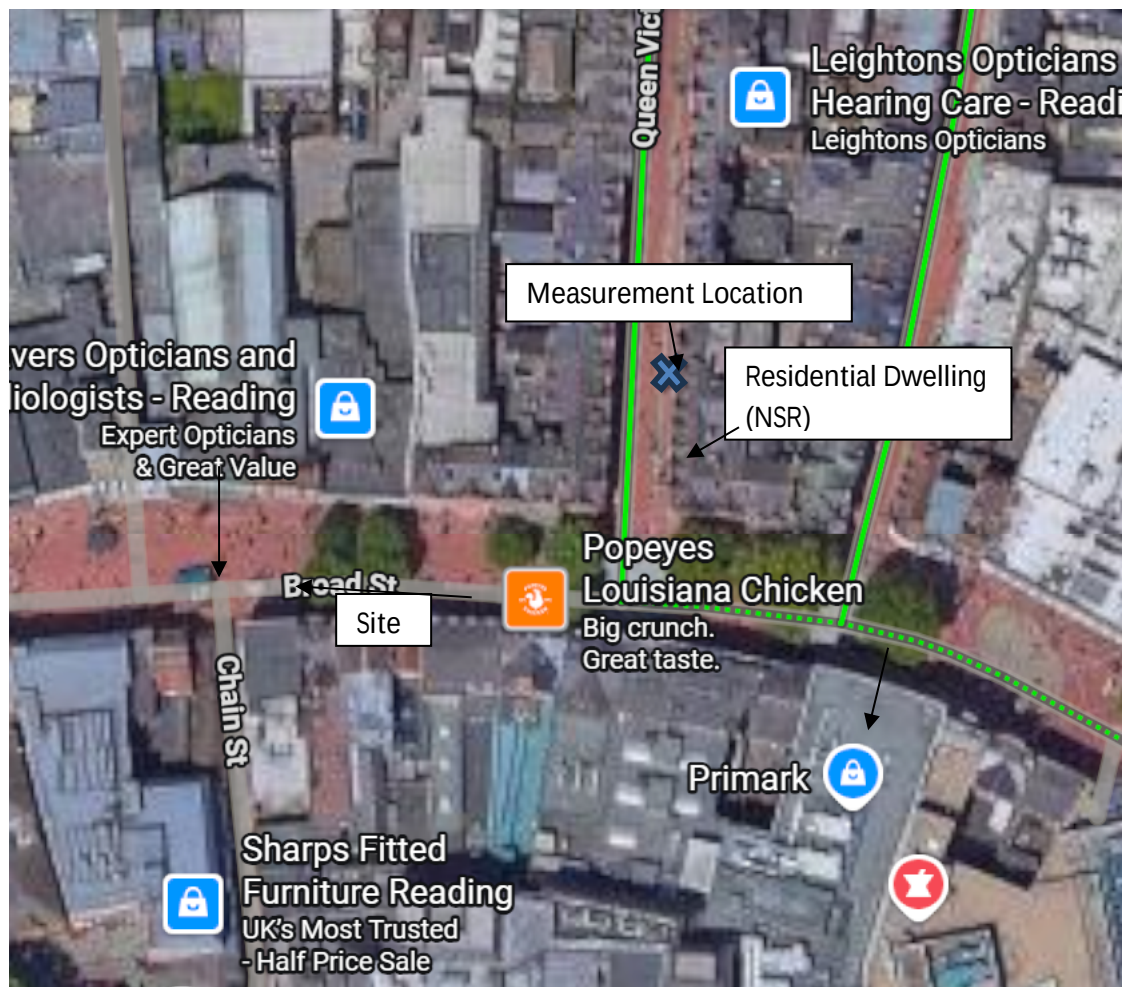


Figure 4. Bird's eye view of measurement location in relation to the Site and the NSR, (courtesy of Google Maps)

4.2.1 MEASUREMENT LOCATIONS

- Measurement Location - sound level meter was placed close to the NSR at street level (see Figure 4)

4.3 NOISE MEASUREMENT - BACKGROUND NOISE

4.3.1 BACKGROUND NOISE LEVELS

For the purpose of the noise impact assessment the lowest L_{A90} value will be used. However, the environmental noise survey data does not cover the full representative period of the hours of operation (11am – 11pm), therefore uncertainty is introduced given that background sound levels at the latter end of the day will be lower than those measured mid-afternoon. Therefore a conservative approach of 20% has been discounted. For the purpose of the impact assessment, Table 1 provides the noise levels at the measurement location. Detailed measured levels can be found in Appendix 1.

	$L_{A90, 1hr}$
Day Time Period, dB	45.2

Table 1. Typical background sound pressure levels at the measurement survey location

5.0 NOISE IMPACT ASSESMENT

As discussed previously, the Site lies within a primarily retail park setting with the nearest noise sensitive residential receptors located approx. 70m southwest of the Site (Highfield House).

The proposed operation and layout of the Site has been planned in order to contain all the required operations and activities within the Site, thus limiting the impacts from noise on any nearby receptors.

The operational noises of the proposed extract discharge and air supply inlet have been calculated (Appendix 2). The summarised results are detailed in the following table, Table 2.

Noise Source	Specific Noise Level $L_{Aeq, T}$, dB at NSR, dB	Acoustic Feature Correction, dB	Rating Level at NSR, dBA
No.1 Exhaust Discharge	25.9	0	25.9
No.1 Exhaust Breakout	19.3	3	22.3
No.2 Exhaust Discharge	26.2	0	26.2
No.2 Exhaust Breakout	18.2	3	21.2
No.3 Exhaust Discharge	26	0	26
No.3 Exhaust Breakout	26	3	29
No.1 Air inlet	25.6	0	25.6
No.1 Air Supply Breakout	18.2	3	21.2
No.2 Air inlet	25.6	0	25.6
No.2 Air Supply Breakout	18.2	3	21.2

Table 2. Rating level at NSR after acoustic feature correction, (Total rating level at NSR = 35.2dBA)

With the proposed location of the ventilation machinery and the ducting and having the system sitting in an enclave space, this will effect a large amount of natural building attenuation effect. This will create a screening attenuation of 10-15dB. Conservatively, a reduction of 10dB will be taken into account when considering the noise impact from the whole ventilation system.

Below in Table 3, the difference between the Total Rating Level and Background Daytime noise level is -20.0 dB. In accordance to the BS4142 guidelines, “the lower the rating level is relative to the measured background sound level is an indication of the specific sound source having a low impact”.

Total Rating Level, dBA L_{Aeq, T}	Background Noise Level Day (07:00-24:00), dBA L_{A90}	Assessment Level, dB
25.2	45.2	-20.0

Table 3. Daytime BS4142 assessment level at NSR

Noise survey around the NSR was undertaken to measure the existing noise climate at the NSR. Existing representative background sounds levels have been determined, following the methodology of BS4142:2014, and used to define the plant noise rating limits at nearest sensitive receptors.

The manufacturer’s data sheets for the proposed fans have provided (courtesy of Maggie Lo Catering Supplies Ltd). The operational noises from the proposed ventilation system have been calculated to be 25.2 dBA at the NSR (refer to Appendix 2 and Table 2). As per the semantics of BS4142, at 25.2dBA this would be an indication of the specific sound source having a low impact. By adopting this as a design criterion and the guidance contained in BS 4142:2014, the proposed ventilation system is deemed compliance.

The assessment has been undertaken in general accordance with methodology of BS4142:2014+A1 2019 ‘Methods for rating and assessing industrial and commercial sound’, which compares ‘rated’ ($L_{Ar, T}$) noise levels with ‘typical’ prevailing background sound levels (L_{AF90}). Although the environmental noise survey data on which the assessment limited as it does not cover the full representative period of the hours of operation (11am – 11pm), therefore uncertainty is introduced given that background sound levels at the latter end of the day will be lower than those measured mid-afternoon and as such certain assumption has been made. The resultant noise propagation calculations demonstrate that the ‘rated’ noise levels will be significantly below the background sound levels presented and will be further reduced through the proposed noise attenuation measures, including baffle silencers.

The BS4142 assessment indicates that the ‘rated’ noise levels are predicted to result in a ‘low impact’. Despite the uncertainty associated with the limited background sound level data available, the assessment outcome remains ‘low impact’, given the substantial margin by which the predicted ‘rated’ noise level falls below the measured background sound level adopted in the assessment.

6.0 CONCLUSIONS

Xcellence Consultancy Group has been appointed by Maggie Lo Catering Supply Ltd to conduct a background external noise assessment impact of a proposed ventilation system upon nearby noise receivers. The calculations within this report are based upon sourced and/or calculated data. Uncertainties in these assessments do exist in terms of potential seasonal and future variance of background levels over time but these are not thought to be significant here. The opinions and interpretations presented in this report represent our best technical interpretation of the data made available to us.

An environmental noise survey has been undertaken to determine prevailing background sound levels in the surrounding area which have been used as the basis of the assessment.

During the survey and after analysis of the data, no abnormal noise data was removed. It is considered that the whole of the measured noise levels are reasonable given the location of the measurement position.

Upon the results of the noise surveys external noise criteria have been. A robust, worst case assessment of the noise levels associated to the proposed mechanical plant has been undertaken.

In accordance with BS 4142:2014+A1:2019 guidance the predicted noise impact due to the operation of the proposed mechanical plants “is an indication of the specific sound source having a low impact”. No additional measures are necessary to reduce further noise breakout.

Nevertheless, it is recommended that all fan units should be mounted on anti-vibration mounts to avoid vibration transmission into the structure.

Appendix 1 - Background sound level measurements

Times	LAeq, dB	LAfmax, dB	LA90, dB
15:03	60.5	80.2	56.5
15:18	61	78.9	57.3
15:33	64.1	78	58.1

Summary of the measurements at Measurement Location to establish the background sound pressure level (a 20% discount has been adopted to effect the lowest reading (45.2 dBA))

Appendix 2 - Noise calculation sheets for kitchen extraction in relation to Queen Victoria Street

Exhaust Canopy 1

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt ePowerBox 80-560-3	SWL	93	93	84	85	81	78	76	72
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		45	45	36	37	33	30	28	24
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	1
Resultant SPL_A @ 70m		19	29	27.5	34	33	31	29	25
Resultant SPL_A @ 70m		= 39.2 dBA							
Use of splitter silencer baffle, attenuation		3	6	10	19	21	21	13	8
Resultant SPL_A @ 70m		16	23	17.5	15	12	10	16	17
Resultant SPL_A @ 70m with silencer		= 25.9 dBA							

Exhaust Fan Breakout

Exhaust 1

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt ePowerBox 80-560-3	SWL	72	77	73	59	57	52	53	42
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		24	29	25	11	9	4	5	1
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	-
Resultant SPL_A @ 70m		-	13	16.5	8	9	5	6	-
Resultant SPL_A @ 70m		=19.3dBA							

Exhaust Canopy 2

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt ePowerBox 67-500-3	SWL	93	93	85	82	80	81	80	78
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		45	45	37	34	32	33	32	30
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	1
Resultant SPL_A @ 70m		19	29	28.5	31	32	34	33	31
Resultant SPL_A @ 70m		= 40.1 dBA							
Use of splitter silencer baffle, attenuation		3	6	10	19	21	21	13	8
Resultant SPL_A @ 70m		16	23	18.5	12	11	13	20	23
Resultant SPL_A @ 70m with silencer		= 26.6 dBA							

Exhaust 2

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt ePowerBox 67-500-3	SWL	72	75	73	57	53	49	46	40
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		24	27	25	9	5	1	-	-
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	-
Resultant SPL_A @ 70m		-	11	16.5	6	5	2	-	-
Resultant SPL_A @ 70m		=18.2dBA							

Canopy 3

No Octave Bands sound data was found, therefore only a single frequency is used. (assuming a sound power level of 74dB for both outlet and breakout). Therefore at 70m, the SPL will be as follows:

Exhaust at 70m = 26=dBA

Breakout = 26dBA

Air-supply Inlet

Air Supply

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt Powerbox3 67-500-3	SWL	87	91	85	81	76	80	77	74
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		39	43	37	33	28	32	29	26
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	1
Resultant SPL _A @ 70m		13	27	28.5	30	28	33	30	27
Resultant SPL _A @ 70m		= 38.0 dBA							
Silemcer		3	6	10	19	21	21	13	8
Resultant SPL _A @ 70m		10	21	18.5	11	7	12	17	19
Resultant SPL _A @ 70m with silencer		= 25.6 dBA							

Air-Supply Fan Breakout

Airsupply

		Octave band frequency							
		63	125	250	500	1k	2k	4k	8k
Flakt Powerbox3 67-500-3	SWL	70	74	73	57	54	48	46	39
SWL to SPL @ 70m (Assume spherical radiation)		48	48	48	48	48	48	48	48
SPL@70m		22	26	25	9	6	-	-2	-
'A' - Weighting		-26	-16	-8.5	-3	0	1	1	1
Resultant SPL _A @ 70m		-	10	16.5	6	6	1	-	-
Resultant SPL _A @ 70m		=18.2dBA							