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Report E20135/MEP/R3-B
Issue Date 25 May 2022

Project **Mount Pleasant Phase 2**
Phoenix Place, London

Title **Mechanical Plant Noise Assessment**

Sub Title

Client McAleer and Rushe Contracts UK Limited
17-19 Dungannon Road
Cookstown
Northern Ireland
BT80 8TL

Case No 2013/3807/P

Author Chris Turner BSc(Hons) MSc IEng MIOA MIoD MInstP

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Revision	Reason	Checked	Signature
A	Revised assessment following revision to operational mode	CT	
B	Revised assessment following confirmation of the emergency test operation	CT	

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1. INTRODUCTION

1.1 Adnitt Acoustics have been commissioned by McAleer and Rushe to undertake an assessment of the noise emissions from the proposed smoke extract fans located on the roof of Phase 2 of the Mount Pleasant residential development, Phoenix Place, London.

1.2 The assessment has been undertaken against the requirements of the Local Planning Authority as described in the planning decision notice.

1.3 This assessment makes use of information provided by the architect, mechanical services engineer and equipment supplier. Pre-construction background sound levels have been established through a series of background sound measurements undertaken by others and verified by Adnitt Acoustics.

1.4 Since this is a technical report, it will be necessary to make use of some technical terms. To assist the reader, a glossary has been included in Appendix A.

2. LOCAL AUTHORITY PLANNING CRITERIA

2.1 The Local Authority, Camden Council, have provided the following conditions with respect to mechanical plant noise emanating from the development.

Condition 28 – Noise (before plant installation)
Prior to the installation of any plant and ventilation equipment hereby approved, full details of a scheme for acoustic isolation and anti-vibration measure, including manufacturers specifications, noise levels and attenuation, shall be submitted to and approved by the Local Planning Authority in writing. Installation shall not precede other than in complete accordance with such scheme as has been approved. All such measures shall be retained and maintained in accordance with the manufacturer's instructions.

Condition 45
Noise levels at a point 1 metre external to sensitive façades shall be at least 5dB(A) less than the existing background measurement (LA90), expressing in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps) then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A).

3. BACKGROUND SOUND SURVEY

3.1 To determine the background sound level and, therefore, the mechanical plant noise limits an environmental noise survey was undertaken on the site as follows.

3.2 An ambient noise survey was undertaken by Cass Allen Associates Ltd between 06 October 2017 and 10 October 2017 to establish the environmental noise climate around the proposed site. The survey consisted of four unattended monitoring locations and six attended monitoring positions.

3.3 The Cass Allen noise survey results were found to be comparable to Adnitt Acoustics ambient noise survey undertaken on Thursday 29 April 2021 to Wednesday 05 May 2021 to verify the Cass Allen noise levels measured.

3.4 On this basis, for this assessment the Cass Allen noise survey results will be used. However, it is recommended that these are checked during the façade tender period (after 19 April 2021) as lockdown measures will be eased further and schools returned following the Easter Holidays.

3.5 The full Cass Allen noise survey methodology may be found in Appendix B.

Noise Survey Results

3.6 Table E20135/T1 below reproduces the results from the unattended Cass Allen noise survey. To assist the reader the results have been summarised in terms of daytime and night-time periods.

Position	Measurement Period	Ambient Noise Level ($L_{Aeq,T}$, dB)	Background Noise Level ($L_{A90,5mins}$, dB)	Maximum Noise Level (L_{AMAX}, dB)
L1	Daytime (07:00 – 23:00)	61	49	
	Night-time (23:00 – 07:00)	53	44	74
L2	Daytime (07:00 – 23:00)	60	49	
	Night-time (23:00 – 07:00)	53	45	72

Table E20135/T1 – Summary of Automated Noise Measurements Results

3.7 Table E20135/T3 below reproduces the results from the attended Cass Allen noise survey measurements.

Position	Date and time	Measurement Period	Ambient Noise Level ($L_{Aeq,T}$, dB)	Typical Background Noise Level ($L_{A90,T}$, dB)	Maximum Noise Level (L_{AMAX}, dB)
N1	06/10/2017 12:00	10 Minutes	62	51	77
N2	06/10/2017 12:14	5 Minutes	68	56	82
N3	06/10/2017 12:28	10 Minutes	64	52	83

N4	06/10/2017 12:40	5 Minutes	60	53	74
N5	06/10/2017 12:46	5 Minutes	51	49	65
N6	06/10/2017 13:06	5 Minutes	66	53	87

Table E20135/T2 – Summary of Automated Noise Measurements Results

3.8 Graphical representations of the results may be found in the attached Cass Allen planning report.

3.9 The existing noise environment has been found to be dominated mainly by road traffic noise coming from Phoenix Place and Mount Pleasant.

Mechanical Plant Noise Emission Limits

3.10 From the noise survey data, the following mechanical plant noise emission limits have been determined.

Measurement Period	Measured Background Sound Level, L_{A90}	Mechanical Plant Noise Emission Limit, L_{Aeq}
Daytime (07:00 – 23:00)	49 dB	44 dB
Night-time (23:00 – 07:00)	44 dB	39 dB

Table E20135/T3 – Mechanical Plant Noise Emission Limits

4. MECHANICAL PLANT NOISE ASSESSMENT

4.1 The assessment of mechanical plant noise has been undertaken using the proprietary noise modelling software, Cadna/A v2021. The assessment has been undertaken at the following nearest receptors:

(i) The other residential blocks forming part of the Mount Pleasant Phase 2 development,
(ii) Mount Pleasant Phase 1 development, currently under construction,
(iii) Mount Pleasant Phase 3 development, currently under construction,
(iv) Mount Pleasant Phase 4 development, currently under constructions,
(v) The residential properties to the North of the Phase 2 development on Calthorpe Street.

4.2 The fans are understood to mainly operate at 20% of normal duty for most of the time in "day-to-day" mode and will only operate at 100% duty during emergencies (e.g. fire). Each of these operational modes will be assessed in turn.

Day to Day Operation

4.3 For day-to-day operation the fans are understood to be operating at 20% of their full capacity. The predicted noise levels at the receptors identified above are as follows:

Receptor	Predicted Noise Level	Predicted Compliance
Residential Blocks in Phase 2	19dB $L_{Aeq,T}$	Yes
Residential Blocks in Phase 1	21dB $L_{Aeq,T}$	Yes
Residential Blocks in Phase 3	14dB $L_{Aeq,T}$	Yes
Residential Blocks in Phase 4	12dB $L_{Aeq,T}$	Yes
Residential properties on Calthorpe Street	<10dB $L_{Aeq,T}$	Yes

Table E20135/T4 – Predicted noise emission levels (day-to-day)

4.4 The predicted noise levels from the proposed units operating in "day-to-day" mode, 20% duty, should comply with the requirements of the local planning authority.

Emergency Use

4.5 The criteria of the local planning authority do not distinguish between day-to-day plant operation and emergency plant. The manufacturer has confirmed that the extract fans will operate at 20% of maximum duty, even under test, and will only operate at 100% duty during a real emergency.

4.6 During an emergency it is highly likely that emergency alarms will also be sounding and this, plus the addition of emergency vehicle sirens is likely to mask any additional noise from the fans operating at 100%.

5. CONCLUSION

5.1 Adnitt Acoustics have been commissioned by McAleer and Rushe to undertake an assessment of the noise emissions from the proposed extract fans located on the roof of Phase 2 of the Mount Pleasant residential development, Phoenix Place, London.

5.2 The assessment has been undertaken against the requirements of the Local Planning Authority as defined in the planning decision notice.

5.3 The predicted noise levels from the fans operating in day-to-day mode should comply with the requirements of the local planning authority without the need for any further mitigation measures.

5.4 However, the criteria of the local planning authority do not distinguish between day-to-day plant operation and emergency plant. The manufacturer has confirmed that the extract fans will operate at 20% of maximum duty, even under test, and will only operate at 100% duty during a real emergency.

5.5 During an emergency it is highly likely that emergency alarms will also be sounding and this, plus the addition of emergency vehicle sirens is likely to mask any additional noise from the fans operating at 100%.

Chris Turner BSc(Hons) MSc MIOA MInstP

for ADNITT ACOUSTICS

APPENDIX A: GLOSSARY OF ACOUSTIC TERMS

Ambient Noise	The noise climate heard over a period of time due to all normal sources, in the absence of extraneous or atypical sounds. Used to describe noise in the absence of the introduced sound, generally.	
Ambient Noise Level	Describes the average noise level of the ambient noise over a stated period of time, e.g. hourly noise	
	Parameter: A-weighted Continuous Equivalent Sound Pressure Level determined over the time period T.	$L_{eq,T}$ or $L_{Aeq,T}$
	Expressed in decibels / A-weighted decibels	dB(A) or dB
Decibel scale dB	A linear numbering scale used to define a logarithmic amplitude scale, thereby compressing a wide range of amplitude values to a small set of numbers	
dB(A)	An electronic filter in a sound level meter, which approximates under defined conditions the frequency response of the human ear.	
$L_{Aeq,T}$	The equivalent continuous sound level. The steady dB(A) level which would produce the same A-weighted sound energy over a stated period of time as the measured sound pressure level.	
L_{Amax}	The maximum dB(A) level measured during a survey period.	
L_{A10}	The dB(A) level exceeded for 10% of the survey period, often used as a quantifier of traffic noise level.	
L_{A90}	The dB(A) level exceeded for 90% of the survey period. Used in BS 4142:1997/2014 as being representative of the background noise level.	
Acoustic screening	Physical barrier to sound formed by fence, wall, building or other structure, which has the effect of reducing the sound transmitted.	
Individual Event Noise	The noise of a distinctive event with the varying noise climate, usually a transient activity, such as a vehicle pass-by, aircraft flyover or similar, rather than an isolated impulsive noise.	
Individual Event Noise Level	Describes the highest noise level during the event as measured under particular conditions of time-weighting	
	Parameter: A-weighted Maximum Sound Pressure Level with FAST or SLOW time weighting	$L_{Amax,FAST}$ or $L_{Amax,F}$ $L_{Amax,SLOW}$ or $L_{Amax,S}$
	Expressed in decibels / A-weighted decibels	dB(A) or dB
Sound Reduction Index R_w	Single number rating used to describe the sound insulation of building elements as defined in BS EN ISO 717 1997.	
Weighted element-normalized level difference $D_{n,e,w}$	Single number rating used to describe the sound insulation of building elements as defined in BS EN ISO 717 1997.	

APPENDIX B: CASS ALLEN ASSOCIATES NOISE SURVEY REPORT

Appendix 1 Enhanced Acoustic Performance Clause

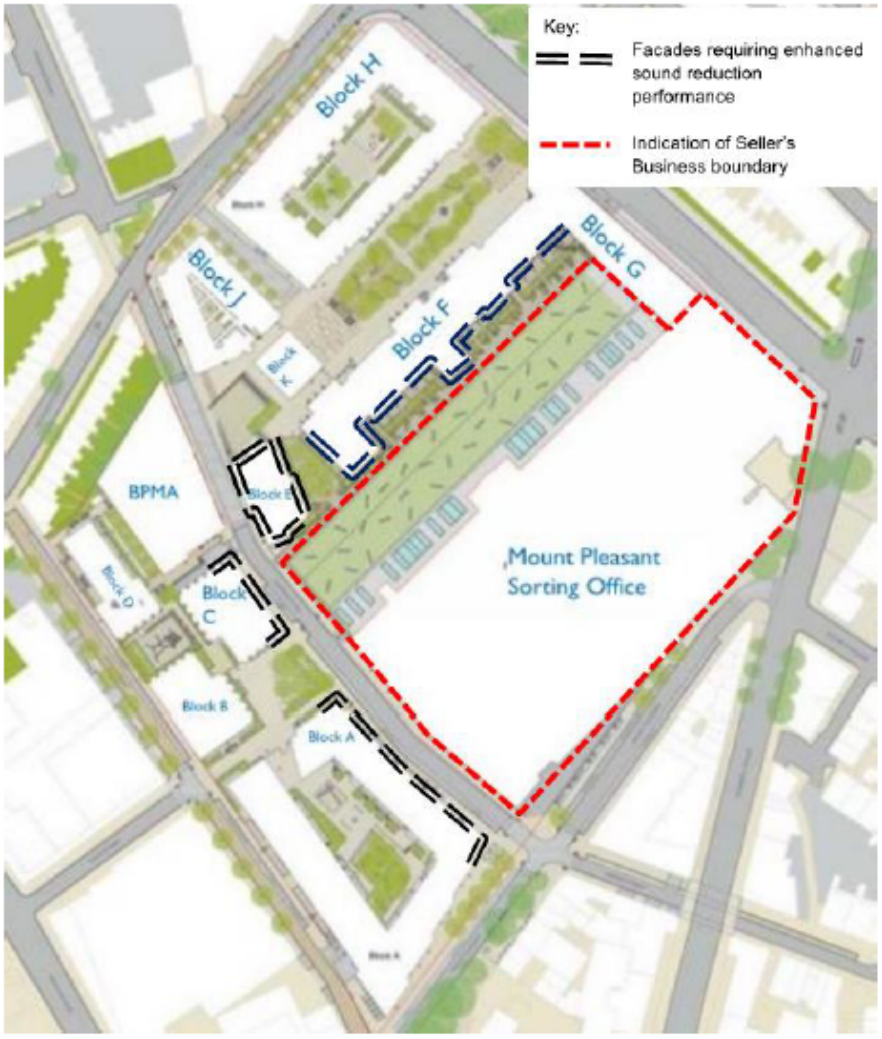
ACOUSTICS

Mount Pleasant Residential facade sound reduction

Revised Acoustic Design clause

"Acoustic Design" measures shall be incorporated into Blocks A, C, E and F, as indicated in Figure 1, by way of design development prepared by the Buyer's Acoustic Consultant in conjunction with the remainder of the Buyer's Professional Team to ensure that, in addition to controlling the effect of general ambient city noise, any residual operational sound emanating from the Seller's Business would be reduced to at least 10 dB better than the residential design standards set out in BS8233 for rest and sleep, as defined in Clause 7.7.2 Table 4 inside the habitable rooms of future residential buildings".

Figure 1. Facades requiring enhanced sound reduction performance to mitigate risk of residual noise emissions from Seller's Business impacting upon future residential buildings



Appendix 2 Survey Result

Survey Summary:

The survey comprised short-term operator attended noise measurements and longer-term unattended noise monitoring at the site. Noise levels at the site were generally dictated by road traffic on surrounding roads and noise from train passes on the adjacent railway. Vibration levels at the site were very low.

Survey Period:

06/10/2017 to 10/10/2017

Survey Objectives:

- To identify noise sources that contribute to ambient noise levels at the site;
- To measure noise and vibration levels around the site over a typical day and night-time period.

Equipment Used (Appendix 2, Table 1):

Type	Manufacturer	Model	Serial Number
Sound level meter[1]	Bruel & Kjaer	2250 (G4)	3007539
Calibrator	Bruel & Kjaer	4231	2115551
Sound level meter[1] (noise logger)	Rion	NL-32	00530374
Sound level meter[1] (noise logger)	Rion	NL-32	01182950

Note 1: All sound level meters were calibrated before and after measurement periods and no significant drift in calibration was found to have occurred. The results of the measurements are therefore considered to be representative.

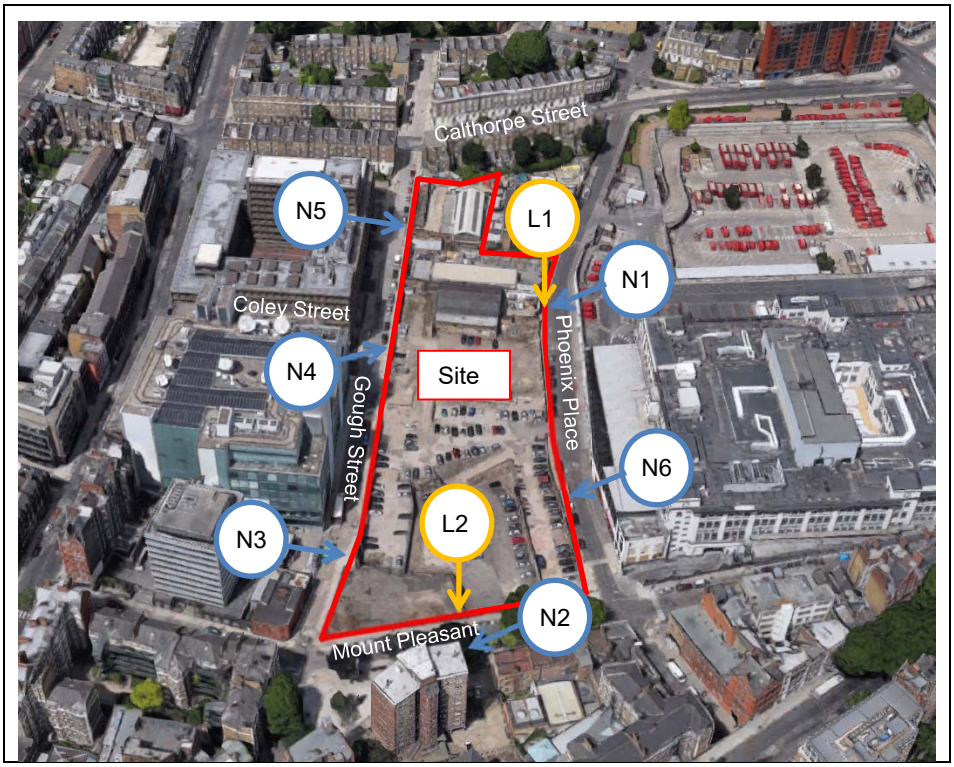
Weather Conditions:

The observed weather conditions were acceptable for acoustic measurement throughout the attended survey periods (low-medium wind speeds and no rain). Weather records for the area confirmed that weather conditions were also generally acceptable for acoustic measurement during the unattended monitoring.

Measurement Positions (Appendix 2, Table 2):

Position (refer plan below)	Description
N1	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Phoenix Place
N2	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Mount Pleasant
N3	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Gough Street and delivery gate opposite
N4	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Coley Street and Gough Street
N5	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Gough Street and car park opposite
N6	Attended noise monitoring position. 1.5m above ground. Free-field. Direct line of sight to Phoenix Place
L1	Unattended noise logging position. 3.7m above ground level. Free-field. Direct line of sight to Phoenix Place
L2	Unattended noise logging position. 4.2m above ground level. Free-field. Direct line of sight to Mount Pleasant

Site Plan showing Measurement Positions (Appendix 2, Figure 4):



Attended Noise Monitoring Results (Appendix 2, Table 3):

Date	Position	Time	Meas. Length	LAeq, dB	LAmax, dB	LA90, dB	Observations
06.10.17	N1	12:00	10 mins	62	77	51	Noise dictated by road traffic from Phoenix Place including Royal Mail vans
06.10.17	N2	12:14	5 mins	68	82	56	Noise dictated by road traffic from Mount Pleasant
06.10.17	N2	12:21	5 mins	63	74	55	Noise dictated by road traffic from Mount Pleasant
06.10.17	N3	12:28	10 mins	64	83	52	Noise dictated by road traffic on Gough Street and idle engines towards the south of the road (opposite measurement position)
06.10.17	N4	12:40	5 mins	60	74	53	Noise dictated by vehicles travelling from Coley Street to Gough Street
06.10.17	N5	12:46	5 mins	51	65	49	Noise dictated by road traffic from Calthorpe Street, Coley Street and Gough Street. No noise from car park opposite
06.10.17	N2	12:55	5 mins	65	78	56	Noise dictated by road traffic from Mount Pleasant
06.10.17	N6	13:03	5 mins	66	87	53	Noise dictated by road traffic from Phoenix Place including Royal Mail vans

Unattended Noise Monitoring Results Appendix 2, Table 4):

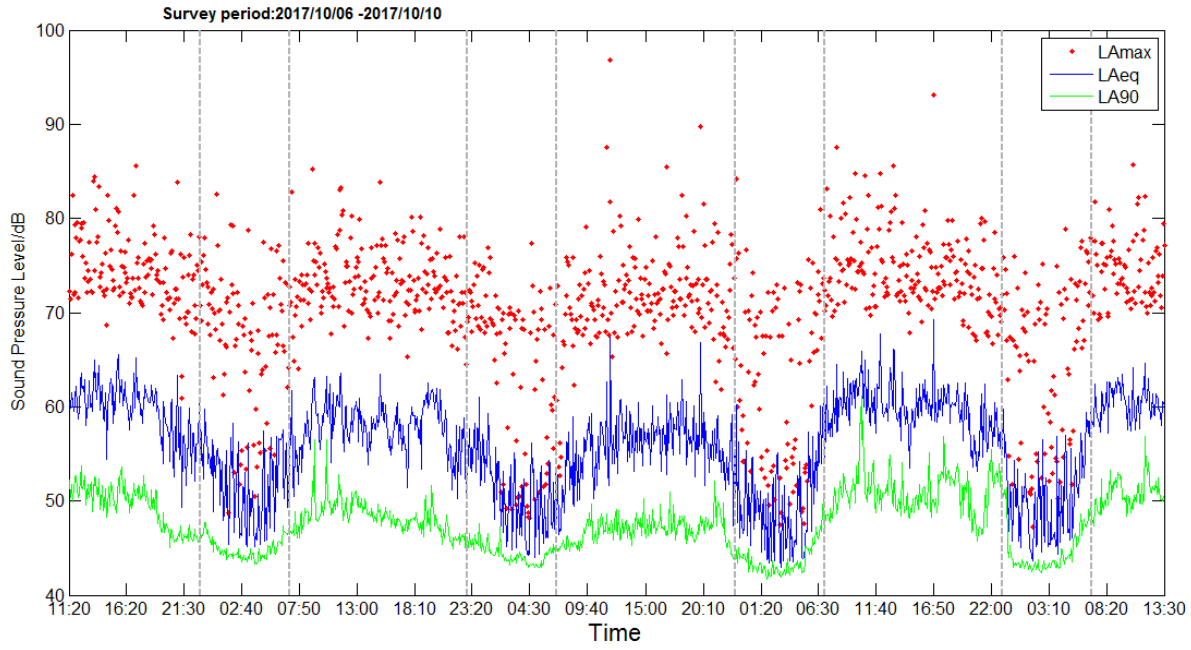
Meas. Period	Position	Daytime (0700-2300hrs)		Night-time (2300-0700hrs)		
		LAeq,16hr, dB	LA90,1hr dB[1]	LAeq,8hr, dB	LA90,5mins, dB[1]	LAmax, dB[2]
06.10.17 to 10.10.17	L1	61	49	53	44	74
06.10.17 to 10.10.17	L2	60	49	53	46	72

Note 1: Typical lowest measured during the period shown.

Note 2: Highest typical maximum noise level during the night-time (not exceeded more than 10-15 times per night).

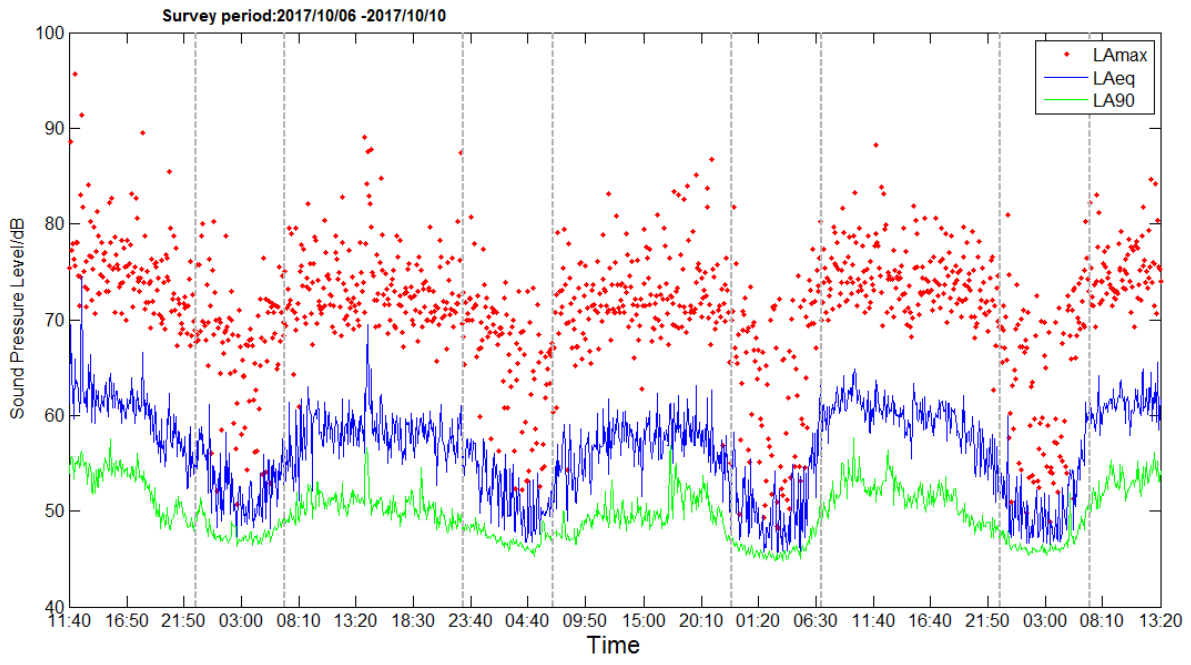
Unattended Noise Monitoring Results (Appendix 2, Figure 5):

Meas. Period	Position
06.10.17 to 10.10.17	L1



Unattended Noise Monitoring Results (Appendix 2, Figure 6):

Meas. Period	Position
06.10.17 to 10.10.17	L2

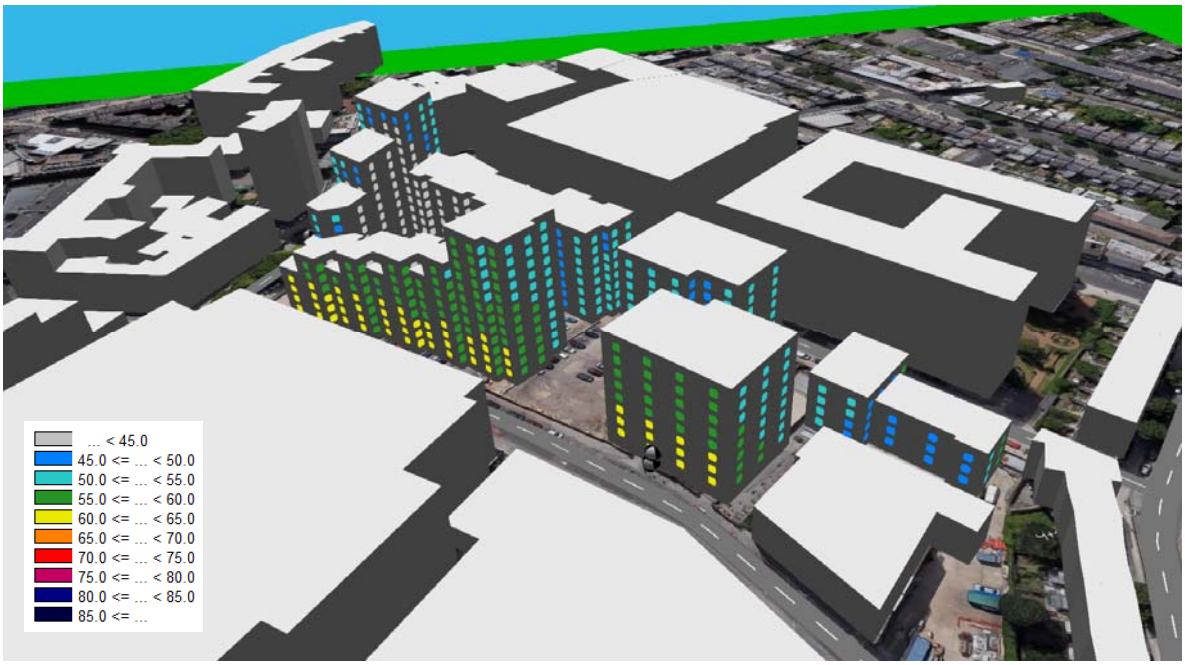


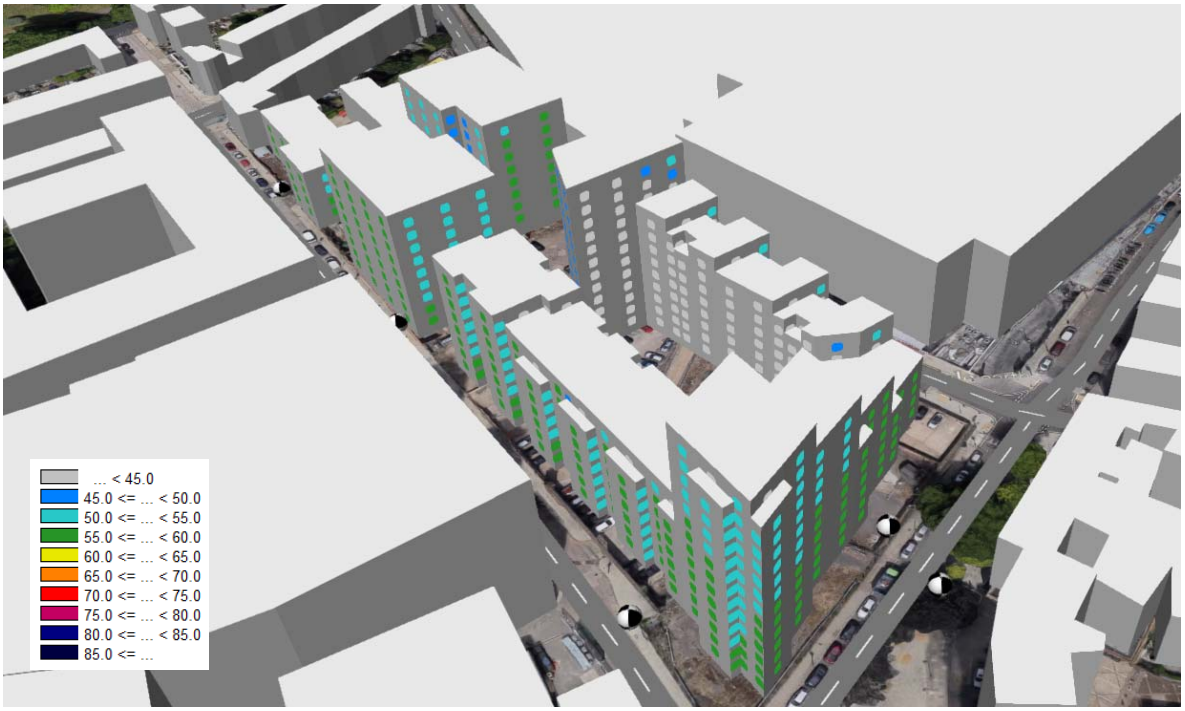
Appendix 3 Modelling Results

Modelling Software:	CADNA/A Version 2017
Modelled Scenarios:	Day and night-time average noise levels across the site
Data inputs:	• Noise survey results • Topographical data for the site • Development layout
Calculation Algorithms Used:	• Calculation of Road Traffic Noise 1988 – Department of Transport • ISO 9613-1:1993 Acoustics-Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere • ISO 9613-2:1996 Acoustics-Attenuation of sound during propagation outdoors – Part 2: General method of calculation

Modelling Printout (Appendix 3, Figure 1):

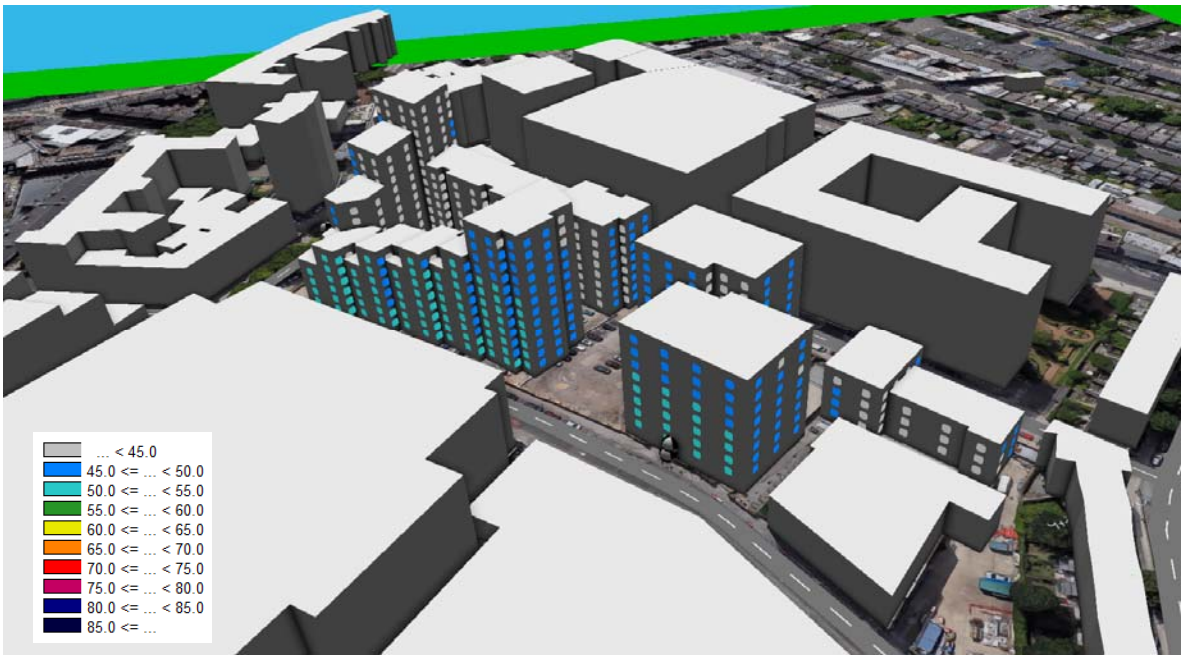
Scenario	Daytime noise levels (LAeq,16hr)





Modelling Printout (Appendix 3, Figure 2):

Scenario	Night-time noise levels (LAeq,8hr)



APPENDIX C: MEHCANICAL PLANT MANUFACTURER'S DATA

Fläkt Woods Limited
Technical Data Sheet
JM Aerofoil

Quotation Number	:	Project Code	: BB-9491-1
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022

Fan Code	HT56JM/20/2/6/28
Fan Diameter / Size	560 Size / mm
Blades	6
Fan Speed	2910 rpm (Speed Controlled)
Max / Min Motor Speed	2931 rpm (50Hz) / 582 rpm (10Hz)
Velocity	20.3 m/s
Blade Angle	28°
Installation Type / Form of Running	D / B (Horizontal)
Fan Casing	Long
Requested Duty	4.98m³/s @ 749 Pa (static)
Actual Emergency Duty	5m³/s @ 756 Pa (static)
Outlet Dynamic Pressure	247 Pa
Duty Shaft Power	7.45 kW
Max Shaft Power	7.67 kW
Total Efficiency	67.4 %
Motor Frame	112M [Class H]
Motor Rating	8.25 kW [IE2] 3 Ph
Full Load Current	15.5 A
Starting Current	99.42 A
Inverter Frequency	50.00 Hz
Motor Mounting	Pad
Electrical Supply	380-420 Volts 50 Hz 3 Phase
Start Type	DOL
Motor Winding	Standard
Enclosure	Standard All
ErP [FMEG] Rating	N 64 (ErP Compliant 2015)
ErP [FMEG] Target	N 58
FMEG Blade Angle [Range]	20° [8° - 28°]
Measurement Category	D (Total)
VSD	Y
Fan + Motor Efficiency	62.4% (4.53 m³/s @ 675 Pa)
Motor Input Power (ErP)	4.90 kW
SFP value	1.70 W/(l/s) @ Requested Duty
Power from mains	8.52 kW
Energy Consumption	25565 kWh (3000 h/year)
Running Cost / Year	£3068 (£1731 using operating profile)
Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	300°C / 2 Hours (F300+)
Product Number	BZ592203

Performance data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with ISO 5801 and is specifically applicable for Ducted installations. When an electronic controller is incorporated, enhanced motor noise can occur - particularly when the operating speed is well below maximum. FWL therefore recommend using an auto transformer speed controller for noise sensitive applications. Bifurcateds are Erp exempt when used continuously at >100C. They are not for use in the EEA at lower temperatures.

Acoustic data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with BS 848 Pt 2, 1985 / ISO 5136 under Ducted conditions. The LpA figure provided is the overall Inlet sound pressure level calculated at the specified distance, under spherical, free field conditions. Breakout levels stated are estimated from induct sound power levels and are provided for guidance.

Acoustic figures for adjusted running speeds have been interpolated and are for reference only.

Fan is certified to EN 12101-3 2015 for use in high temperature applications during a fire scenario The fan motor has been de-rated to limit the motor temperature rise to a DOL level during a fire scenario. Inverter and a Sinusoidal or du/dt filter supplied by others.

This Offer is made subject to the latest version of our A100-19 Terms and Conditions, a copy of which can be made available on request. Our lead times will be re-confirmed on receipt of manufacturing release and may be subject to change.

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m**
Inlet*	98	98	99	95	94	91	88	85	104	78
Outlet*	101	98	101	96	94	92	89	86	106	79
Breakout*	91	77	75	71	69	65	70	62	91	55

* Lw dB re 10^{-12} W ** dBA re $2x10^{-5}$ Pa
Sound data at requested duty.

Description	Qty
Fan	
BZ592203 - HT56JM/20/2/6/28	1
Accessories	
Thermistors	1
Estimated Despatch : 2 Days	

Optional Controllers & Sensors

IDDXF54 - 3/3 - Inverter
[EA901023]

Optional Accessories

Mounting Feet
[897722]

Flexible Connector
[AS040560]

Matching Flange
[501355]

Website:
, ,
Email: stuart.freeman@flaktgroup.com
Tel: Fax:

Quotation Number	:	Project Code	: BB-9491-1
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022

Fan Code	HT56JM/20/2/6/28
Fan Diameter / Size	560 Size / mm
Blades	6
Fan Speed	579 rpm (Speed Controlled)
Max / Min Motor Speed	2931 rpm (50Hz) / 582 rpm (10Hz)
Velocity	4.0 m/s
Blade Angle	28°
Installation Type / Form of Running	D / B (Horizontal)
Fan Casing	Long
Actual Emergency Duty	1m³/s @ 30 Pa (static)
Outlet Dynamic Pressure	10 Pa
Duty Shaft Power	0.059 kW
Max Shaft Power	0.060 kW
Total Efficiency	67.4 %
Motor Frame	112M [Class H]
Motor Rating	8.25 kW [IE2] 3 Ph
Full Load Current	15.5 A
Starting Current	99.42 A
Inverter Frequency	9.95 Hz
Motor Mounting	Pad
Electrical Supply	380-420 Volts 50 Hz 3 Phase
Start Type	DOL
Motor Winding	Standard
Enclosure	Standard All
ErP [FMEG] Rating	N 64 (ErP Compliant 2015)
ErP [FMEG] Target	N 58
FMEG Blade Angle [Range]	20° [8° - 28°]
Measurement Category	D (Total)
VSD	Y
Fan + Motor Efficiency	62.4% (4.53 m³/s @ 675 Pa)
Motor Input Power (ErP)	4.90 kW
SFP value	2.53 W/(l/s) @ Requested Duty
Power from mains	2.52 kW
Energy Consumption	7559 kWh (3000 h/year)
Running Cost / Year	£907
Air Density	1.2 kg/m³ / 20 °C / 0 m / 40% RH
Smoke Venting	300°C / 2 Hours (F300+)
Product Number	BZ592203

Performance data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with ISO 5801 and is specifically applicable for Ducted installations. When an electronic controller is incorporated, enhanced motor noise can occur - particularly when the operating speed is well below maximum. FWL therefore recommend using an auto transformer speed controller for noise sensitive applications. Bifurcateds are Erp exempt when used continuously at >100C. They are not for use in the EEA at lower temperatures.

Acoustic data has been derived from tests carried out in a Flakt Woods laboratory, in accordance with BS 848 Pt 2, 1985 / ISO 5136 under Ducted conditions. The LpA figure provided is the overall Inlet sound pressure level calculated at the specified distance, under spherical, free field conditions. Breakout levels stated are estimated from induct sound power levels and are provided for guidance.

Acoustic figures for adjusted running speeds have been interpolated and are for reference only.

Fan is certified to EN 12101-3 2015 for use in high temperature applications during a fire scenario The fan motor has been de-rated to limit the motor temperature rise to a DOL level during a fire scenario. Inverter and a Sinusoidal or du/dt filter supplied by others.

This Offer is made subject to the latest version of our A100-19 Terms and Conditions, a copy of which can be made available on request. Our lead times will be re-confirmed on receipt of manufacturing release and may be subject to change.

	Sound Spectrum (Hz)								Overall	
	63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3 m**
Inlet*	63	62	60	58	55	51	47	43	68	40
Outlet*	65	65	60	58	55	52	48	43	69	40
Breakout*	55	44	34	33	30	25	29	19	56	17

* Lw dB re 10^{-12} W ** dBA re $2x10^{-5}$ Pa
Sound data at requested duty.

Description	Qty
Fan	
BZ592203 - HT56JM/20/2/6/28	1
Accessories	
Thermistors	1
Estimated Despatch : 2 Days	

Optional Controllers & Sensors

IDDXF54 - 3/3 - Inverter
[EA901023]

Optional Accessories

Mounting Feet
[897722]

Flexible Connector
[AS040560]

Matching Flange
[501355]

Website:
, ,
Email: stuart.freeman@flaktgroup.com
Tel: Fax:

Quotation Number	:	Project Code	: BB-9491-1
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022

Selection

Selection	100%	20%
Percentage compared to 50/60 Hz	100 %	20 %
Frequency Hz	50.00 Hz	9.95 Hz
Fan Speed rpm	2910 rpm	579 rpm
Velocity m/s	20.3 m/s	4.0 m/s
Speed Ratio	100 %	20 %
Actual Duty m³/s / Pa (static)	5 @ 756	1 @ 30
Outlet Dynamic Pressure Pa	247	10
Duty Shaft Power kW	7.45	0.059
SFP W(l/s)	1.70	2.53

Power Consumption and Emissions

Energy Consumption kW/h	25565	7559
Running Cost / Year	£3068	£907
Co2 Emissions (Tonnes)	14.6 tonnes	4.3 tonnes

Savings

Power Savings kWh	-	18005
Co2 Savings (Tonnes)	-	10.3 tonnes

Sound Levels Hz	Inlet	Outlet	Inlet	Outlet
63	98	101	63	65
125	98	98	62	65
250	99	101	60	60
500	95	96	58	58
1k	94	94	55	55
2k	91	92	51	52
4k	88	89	47	48
8k	85	86	43	43
Lw	104	104	68	68
LpA @ 3m	78	78	40	40

Fan Details

Fan Code	HT56JM/20/2/6/28
Diameter / Size	560 Size / mm
Blades	6
Blade Angle	28°
Form of Running	B
Fan Casing	Long

Inverter Drive

Inverter Type	-
Inverter Power	-
Inverter Current	-
Inverter FW Order Code	-

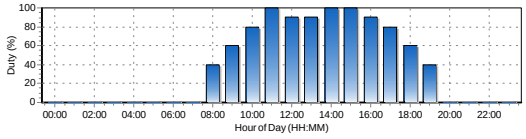
Motor Details

Motor Frame	112M
Motor Efficiency	IE2
Motor Rating	8.25 kW
Full Load Current	15.5 A
Starting Current	99.42 A
Electrical Supply	380-420 Volts 50 Hz 3 Phase

Savings and Operation

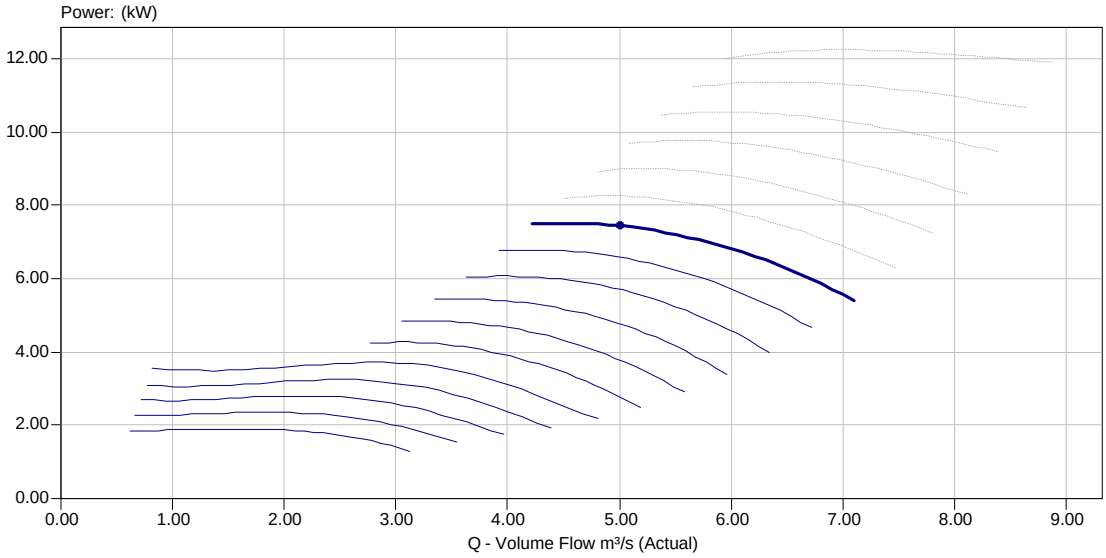
Annual Savings	£1337
Life Cost (12 Years)	-
Payback Period	-
Co2 per Year	8.2 tonnes

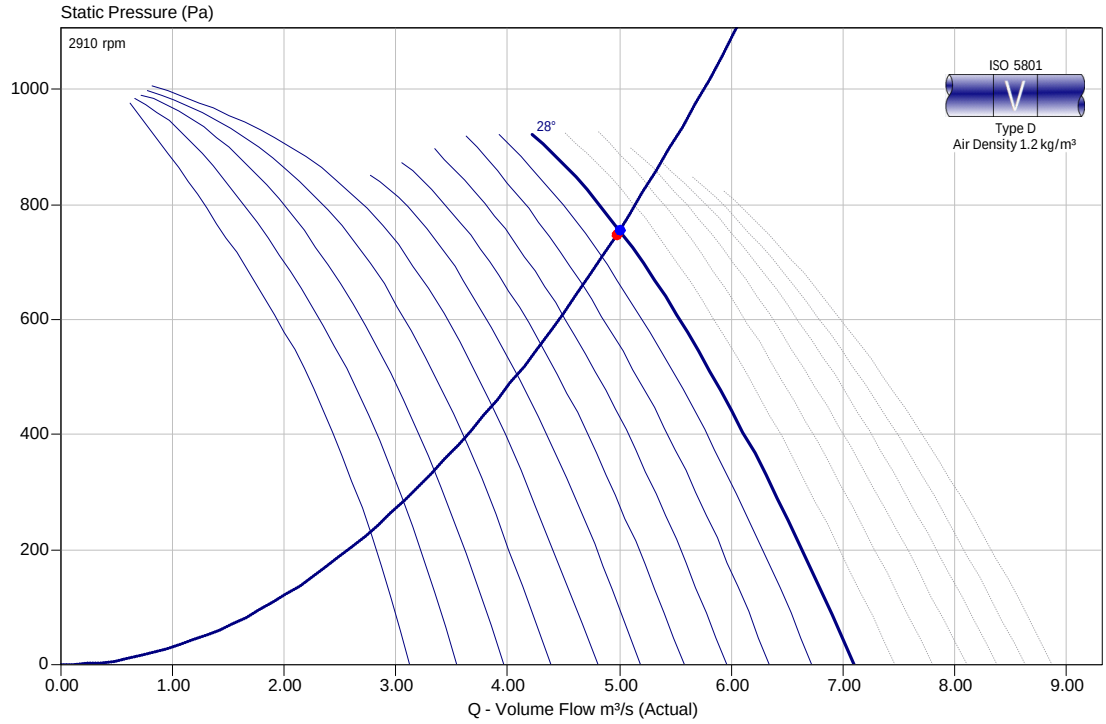
Daily Operation



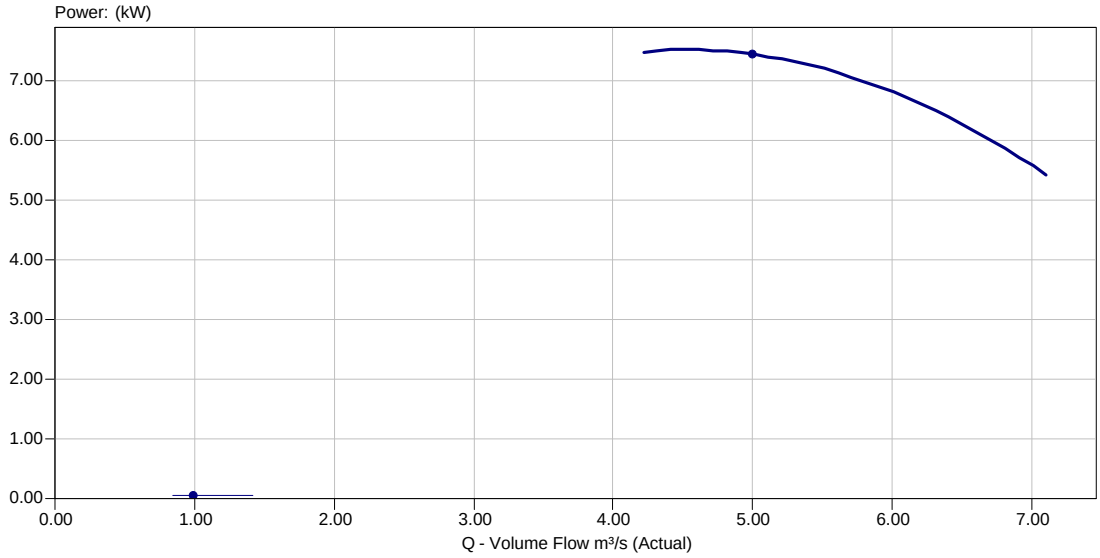
, ,
Tel: Fax:
Website:
Email: stuart.freeman@flaktgroup.com

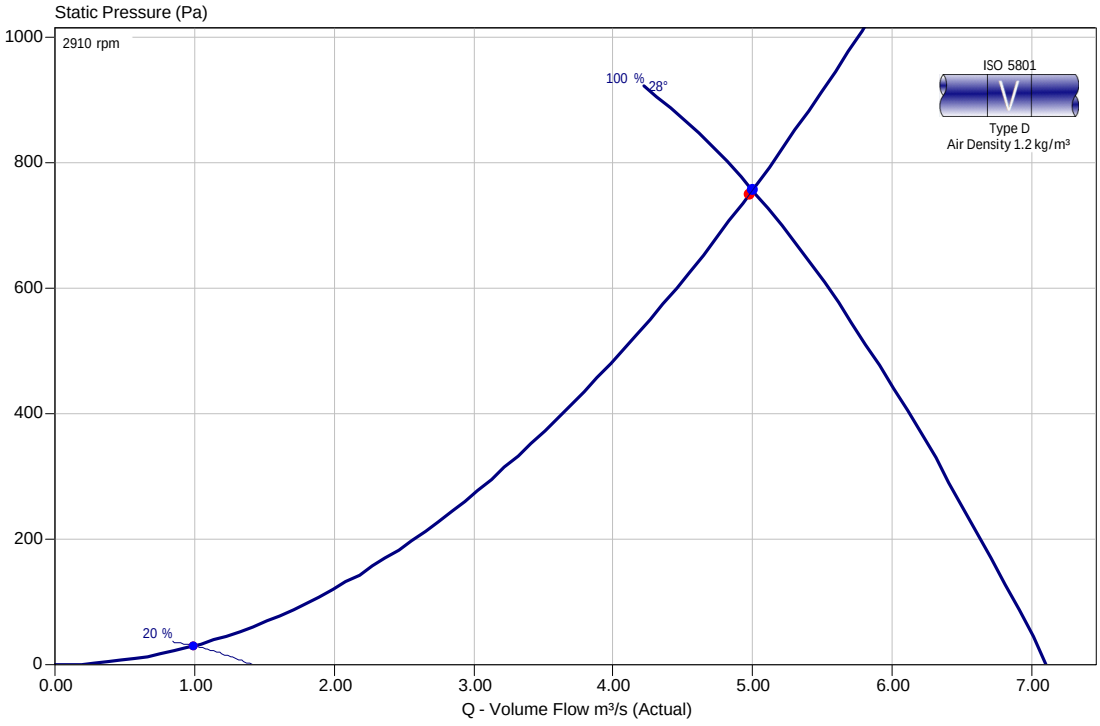
Quotation Number	:	Project Code	: BB-9491-1
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022
		Fan Code	: HT56JM/20/2/6/28





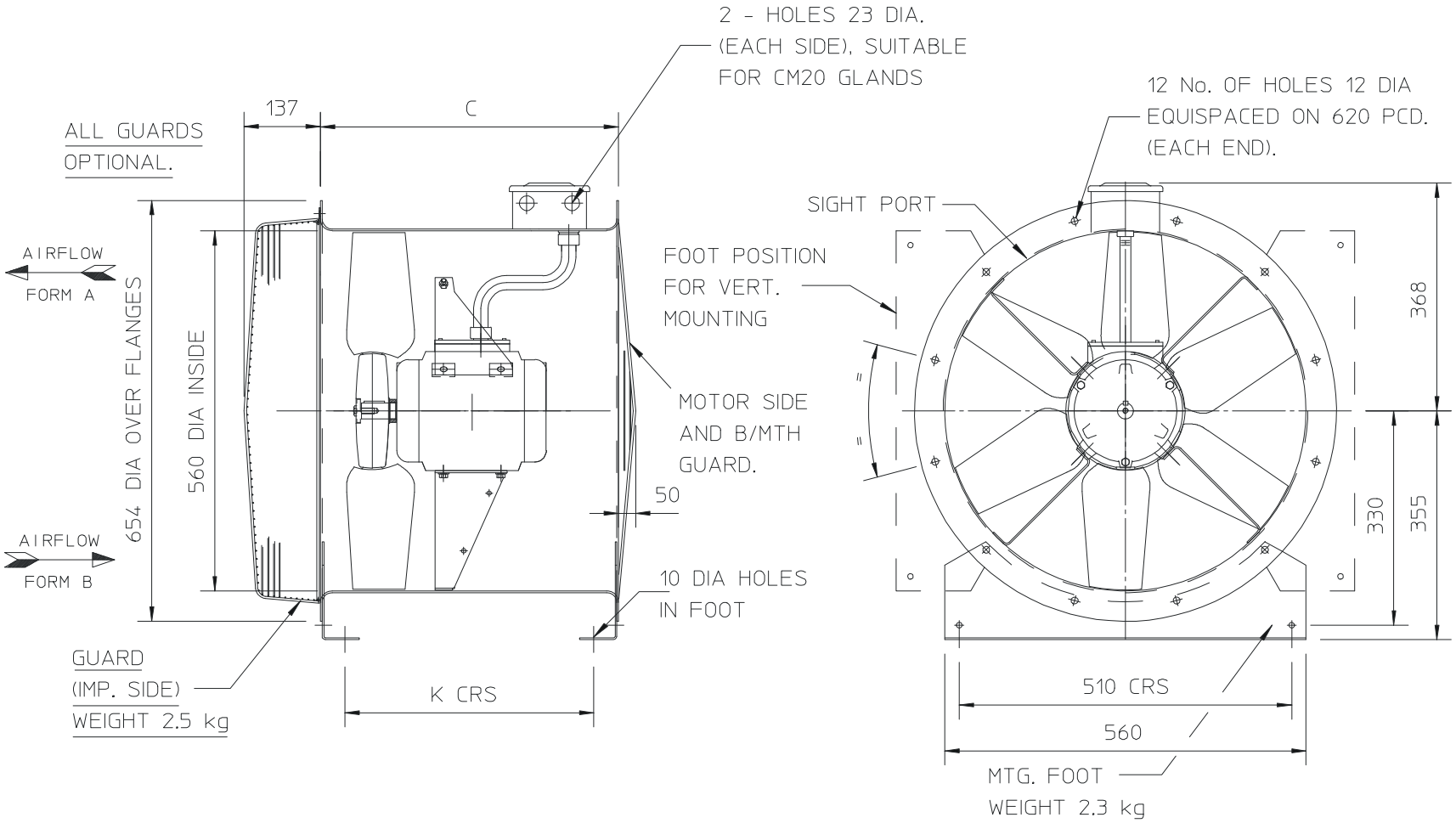
Quotation Number	:	Project Code	: BB-9491-1
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022
		Fan Code	: HT56JM/20/2/6/28





Quotation Number	:	Fan Code	: HT56JM/20/2/6/28
Project Name	: MPP2	Customer	:
Item Reference:	:	Date:	: Tuesday, May 3, 2022

C	520
K	424
Weight (kg)	78



Notes : Dimensions shown in mm / Weight in kg

Reference :D275256

This drawing shows dimensions that should be used as a guide only and are subject to change. Certified drawings are available on request.

Attenuator Schedule

Project: MPP2 **Date:** 03/05/2022

Notes

1. All attenuators shall be supplied by Flaktgroup Uk Ltd or equal and approved.
2. Reduction of the attenuator sizes shown will not be permitted.
3. The Contractor shall order the attenuator sizes scheduled below, and shall send finalised drawings and equipment noise levels to the attenuator supplier to check the selections prior to manufacture.
4. The attenuator supplier shall then undertake acoustic calculations to ensure that the attenuators achieve the specified noise criteria, based upon the finalised information.
5. A Technical Submittal comprising acoustic calculations and a finalised schedule of attenuators shall then be issued to the Consultant for final approval.
6. If an alternative attenuator supplier is proposed then the Contractor shall allow for them to undertake witnessed tests to prove their claimed insertion loss performance in a UKAS accredited BS EN ISO 7235: 2009 test facility, for two sample units. This shall be undertaken prior to order.
7. Pressure losses are stated in accordance with ISO 7235, which is based on laminar airflow conditions. The system designer shall make allowance for increased attenuator pressure losses where turbulent airflow conditions exist on the attenuator entry or exit.
8. Unless stated otherwise all attenuators shall be constructed as follows: Galvanised sheet steel casings with 30mm profile flanges that are fully compliant with DW/TM1 at a high pressure rating (+2000/-750Pa). Profile flanges shall be compatible with Doby, Mez & Metu flanging systems. Elements shall be installed in the vertical plane, with side elements provided as standard, and all elements shall have aerodynamic inlet and outlet fairings. Element facings shall be constructed from expanded galvanised steel mesh with fibre glass tissue bonded to the inner face. Mineral wool infill shall be overpacked to minimise voids due to settlement. Attenuator ends shall be protectively wrapped, and all attenuators shall be delivered to site on pallets and individually labelled.

Ref.	Description	Type and Model Code	Dimensions (mm)			Insertion Loss (dB)								Vol (m^3/s)	PL (Pa)	Qty	Noise Criteria	Features
			W	H	L	63	125	250	500	1k	2k	4k	8k					
AT001	Atmospheric	Rectangular SG01H/3C/L/S	1000	1000	2400	8	9	21	45	34	21	12	10	5.00	33	1		Horizontal elements.
AT002	Atmospheric	Rectangular SG02H/3C/L/S	1400	1400	2400	13	19	37	55	55	47	29	21	5.00	38	1		Unit delivered in 2 sections, split in length. Horizontal elements.
AT003	Atmospheric	Rectangular SG02V/2C/L/S	1800	1800	2400	14	23	43	55	55	55	43	30	5.00	36	1		Unit delivered in 2 sections, split in length. Medium pressure rating (+1000/-750Pa).

Attenuator Drawings

Project: MPP2 **Date:** 03/05/2022

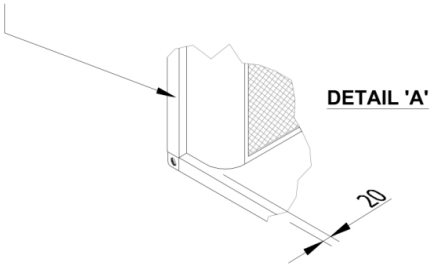
Construction codes confirm the physical properties of each item. This drawing must therefore be read in conjunction with the Construction Code Definitions. Dimensions W1, H1, W2, H2, WD1, HD1 are always shown as "inside-duct". Dimensions L1, L2, LD1 are always shown as "over connections".

Splitter attenuator - with profile flanges

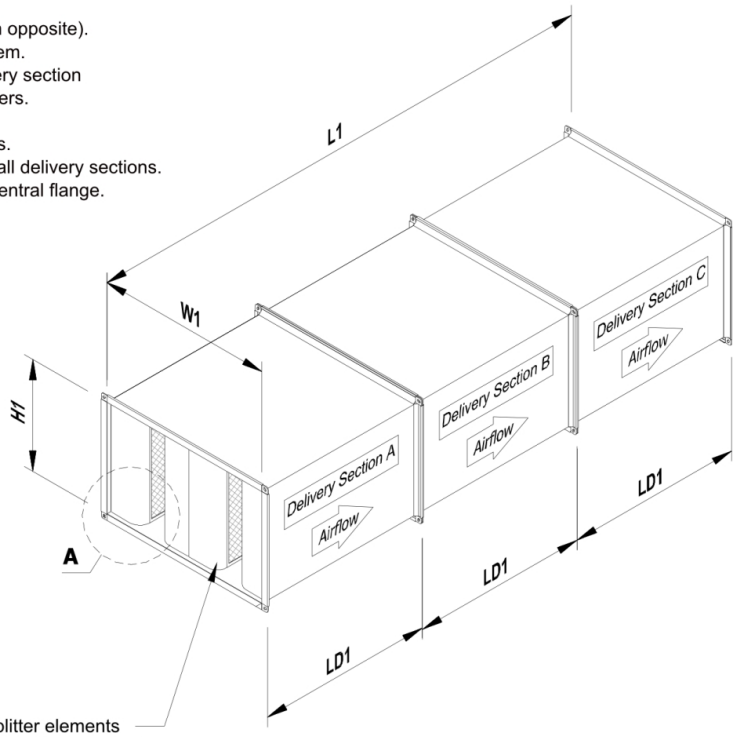
Notes:

1. Attenuators may be delivered in 1, 2, 3 or 4 sections in length (3 shown opposite).
2. See **NDL** in table below for number of delivery sections in length per item.
3. Assembly of multiple piece items must be in accordance with the delivery section and airflow label layouts, typically as shown opposite. Assembly by others.
4. Nuts, bolts, flange clamps and gasket between flanges by others.
5. Delivery section and airflow labels only provided on multiple piece items.
6. Identification labels stating item reference and description provided on all delivery sections.
7. Where **LD1** exceeds 1250 each delivery section has an intermediate central flange.
8. All dimensions in mm.
9. Tolerances on **W1** & **H1** +/- 2mm.
10. Tolerances on **LD1** +/- 3mm

Profile flanges suitable for MEZ, DOBY or METU flanging systems. See table below for flange size.



Splitter elements set back in casing by 20mm and provided with aerodynamic bullnoses on inlet and outlet as shown. However if item has non-standard elements refer to Attenuator Model Code Definitions for details.



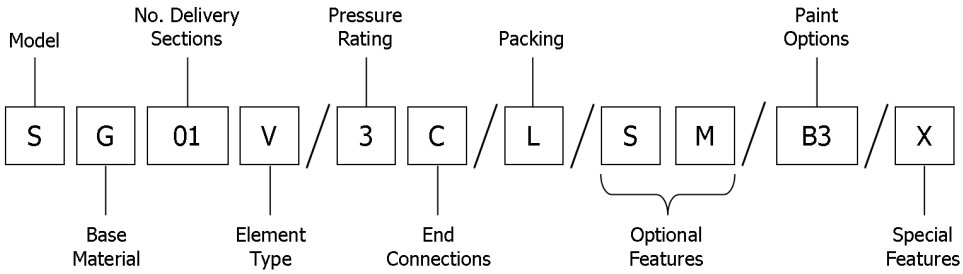
Splitter elements shown installed in the vertical plane. Refer to item Model Code for actual orientation.

Ref.	Construction Code	Primary Dimensions			Delivery Data		Flange Size	Paint Colour	Wt (Kg)	No. Off
		W1	H1	L1	LD1	NDL				
AT001	SG01H/3C/L/S	1000	1000	2400	2400	1	30mm		196	1
AT002	SG02H/3C/L/S	1400	1400	2400	1200	2	30mm		379	1
AT003	SG02V/2C/L/S	1800	1800	2400	1200	2	30mm		610	1

Attenuator Construction Code Definitions

Project: MPP2 **Date:** 03/05/2022

Sample Construction Code Format Diagram



Construction Code Definitions

Code Section	Code	Description
Model	S	Rectangular attenuator with splitter elements
Base material	G	Standard gauge galvanised sheet steel
No. delivery sections	01 upwards	This number confirms how many sections will be delivered to site for each attenuator or splitter. For 02 or above assembly will be required by others.
Element type	H	Elements installed in the horizontal plane
	V	Elements installed in the vertical plane
Pressure rating	2	Medium pressure (+1000/-750Pa)
	3	High pressure (+2000/-750Pa)
End connections	C	30mm profile flanges (compatible with Doby, Mez & Metu flanges)
Packing	L	Lightweight pallet wrapping on casing ends (splitter & individual elements palletised and wrapped on the pallet)
Optional features	S	Side elements (splitter & individual elements supplied with steel backing)