Ventilation System Design Statement

1–3 Boltro Road, Haywards Heath, RH16 1BP

This ventilation system has been designed and prepared in support of the discharge of planning conditions associated with the proposed development at 1–3 Boltro Road, Haywards Heath, RH16 1BP.

The ventilation system design has been developed in full accordance with Approved Document Part F of the Building Regulations, ensuring compliance with ventilation performance requirements for both extract and whole-dwelling systems. The design has been undertaken by a qualified Mechanical Engineer holding a BEng (Hons) and membership with the Chartered Institution of Building Services Engineers (CIBSE).

In addition, the design has been developed in accordance with relevant dwelling noise criteria, with reference to BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings. To achieve this, the ventilation ductwork has been designed to maintain air velocities at or below 1.5 m/s, which in turn limits the external static pressure on the fan units and serves to reduce break-out noise through the system.

As an illustrative example, a mechanical ventilation with heat recovery (MVHR) unit has been selected for Flat 1, which represents the dwelling with the highest design airflow rate of 31 l/s, as determined by the calculation methodology in Part F of the Building Regulations. This selection ensures that the unit can meet performance criteria while operating efficiently and quietly.

All intake, exhaust, supply, and extract terminals will be provided with appropriate acoustic attenuation, and the entire ventilation system will be lagged to further mitigate noise transmission and improve thermal efficiency.

This approach ensures that the ventilation system is both compliant and suitable for a residential setting, with consideration given to acoustic performance, regulatory compliance, and energy efficiency.

Zahid Rahman

BEng (Hons) MCISE

LEGEND

- MECHANICAL HEAT RECOVERY (MVHR)
- DUCTWORK (EXTRACT / EXHAUST)
- DUCTWORK (SUPPLY/ INTAKE)
- FIRE SLEEVE (WHERE APPLICABLE)
- EXTRACT GRILLE
- SUPPLY GRILLE
- ATTENUATOR (EXTRACT/ EXHAUST)
- ATTENUATOR (SUPPLY/ INTAKE)
- RV — ROOF VENT (TILE VENT)
- AIR BRICK (FOR INTAKE AND EXHAUST)

GENERAL NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL CONTRACTORS MUST VISIT THE SITE AND BE RESPONSIBLE FOR TAKING AND CHECKING DIMENSIONS.
3. ALL CONSTRUCTION INFORMATION SHOULD BE TAKEN FROM FIGURED DIMENSIONS ONLY.
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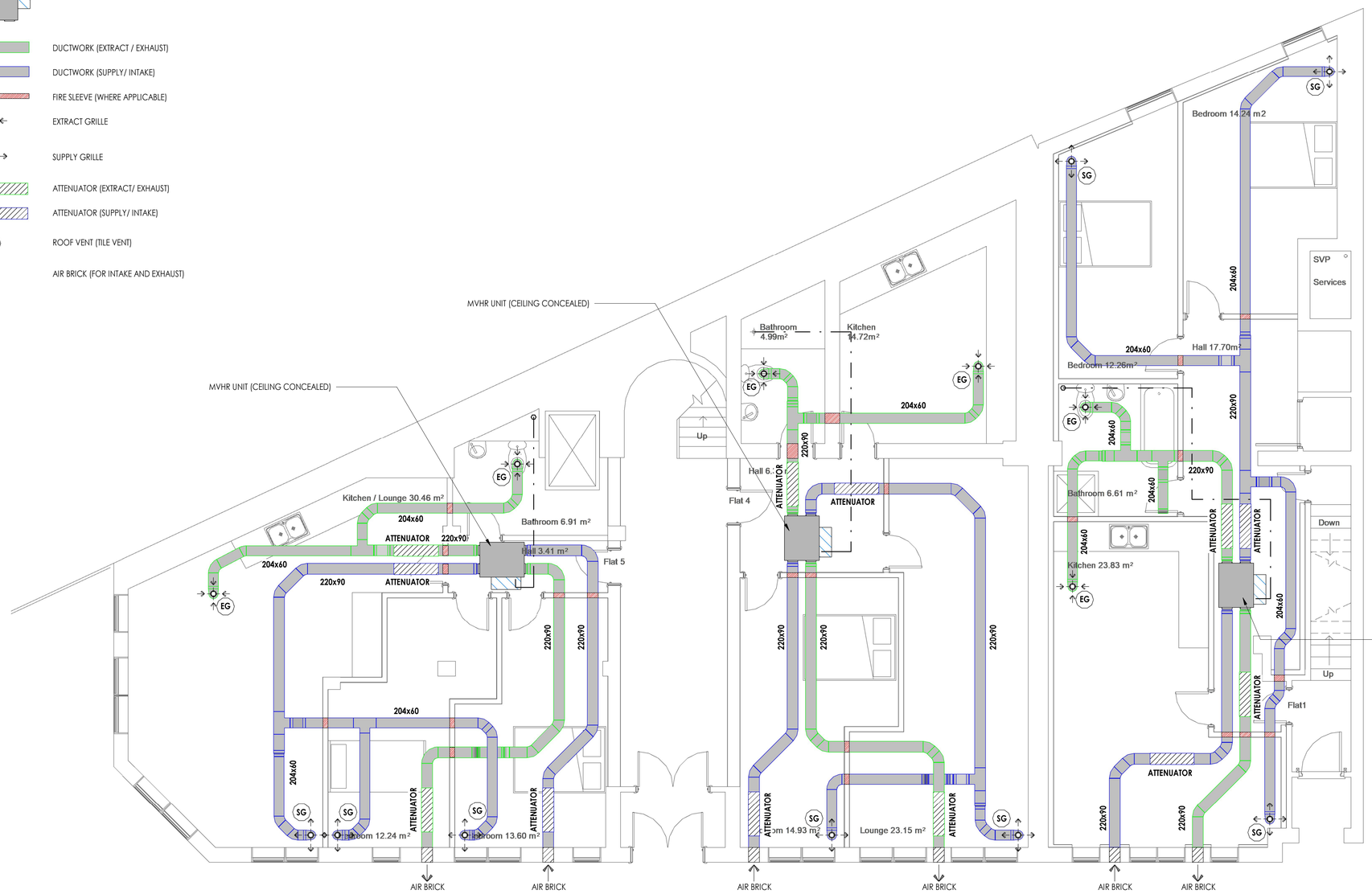
MECHANICAL NOTES

1. ALL VENTILATION DUCTWORK SHALL BE IN UPVC (204x60 OR 220x90)
2. WHERE DUCTWORK PASSES THROUGH FIRE COMPARTMENT, FIRE COLLAR SHALL BE PROVIDED
3. ALL DUCTWORK SHALL BE INSULATED WITH 25mm ROCKWOOL INSULATION
4. ALL CONDENSATE FROM MVHR UNIT SHALL DRAIN TO THE NEAREST SVP COMPLETE WITH HEPVO DRY TRAP
5. ARCHITECT TO PROVIDE ACCESS HATCH FOR ACCESS AND MAINTENANCE OF MVHR UNIT
6. MVHR UNIT TO BE CONCEALED WITH CEILING VOID



FLAT 5 VENTILATION
Area = 66.62m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 2 bedrooms)
Min. rate per m2: 0.3 x 66.62m2 = 20 l/s

Whole dwelling ventilation = 25 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Total extract = 21 l/s	

Therefore ventilation rate (supply and extract) = 25 l/s

Balanced ventilation
Bedroom 1 = 7 l/s
Bedroom 2 = 7 l/s
Lounge = 11 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 25 l/s
Velocity = 1.4 m/s
Pressure drop = 0.2 Pa/m

FLAT 4 VENTILATION
Area = 63.96m2
Bedrooms = 1
Kitchen = 1
Bathroom = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 19 l/s (based on 1 bedroom)
Min. rate per m2: 0.3 x 63.96m2 = 20 l/s

Whole dwelling ventilation = 21 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Total extract = 21 l/s	

Therefore ventilation rate (supply and extract) = 21 l/s

Balanced ventilation
Bedroom = 9 l/s
Lounge = 12 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 21 l/s
Velocity = 1.2 m/s
Pressure drop = 0.2 Pa/m

FLAT 1 VENTILATION
Area = 101.13m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1
Utility room = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 1 bedroom)
Min. rate per m2: 0.3 x 101m2 = 31 l/s

Whole dwelling ventilation = 31 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Utility room	8 l/s
Total extract = 29 l/s	

Therefore ventilation rate (supply and extract) = 31 l/s

Balanced ventilation
Bedroom 1 = 10 l/s
Bedroom 2 = 10
Lounge = 11 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 31 l/s
Velocity = 1.5 m/s
Pressure drop = 0.3 Pa/m

REV	DESCRIPTION	BY	DATE

STATUS: Discharge Condition

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CLIENT/ ADDRESS
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1 -3 Boltro Road, Haywards Heath, RH16 1BP

PROJECT
Mechanical Services - Mechanical Ventilation & Heat Recovery

TITLE
Ground Floor - Ventilation

SCALE AT A1	DATE	DRAWN	CHECKED
1 : 50	July '25	ZR	-
PROJECT No.	DRAWING No.		REVISION
2025040	2025040-ME-100		

LEGEND

- MECHANICAL HEAT RECOVERY (MVHR)
- DUCTWORK (EXTRACT / EXHAUST)
- DUCTWORK (SUPPLY/ INTAKE)
- FIRE SLEEVE (WHERE APPLICABLE)
- EXTRACT GRILLE
- SUPPLY GRILLE
- ATTENUATOR (EXTRACT/ EXHAUST)
- ATTENUATOR (SUPPLY/ INTAKE)
- RV — ROOF VENT (TILE VENT)
- AIR BRICK (FOR INTAKE AND EXHAUST)

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MECHANICAL NOTES

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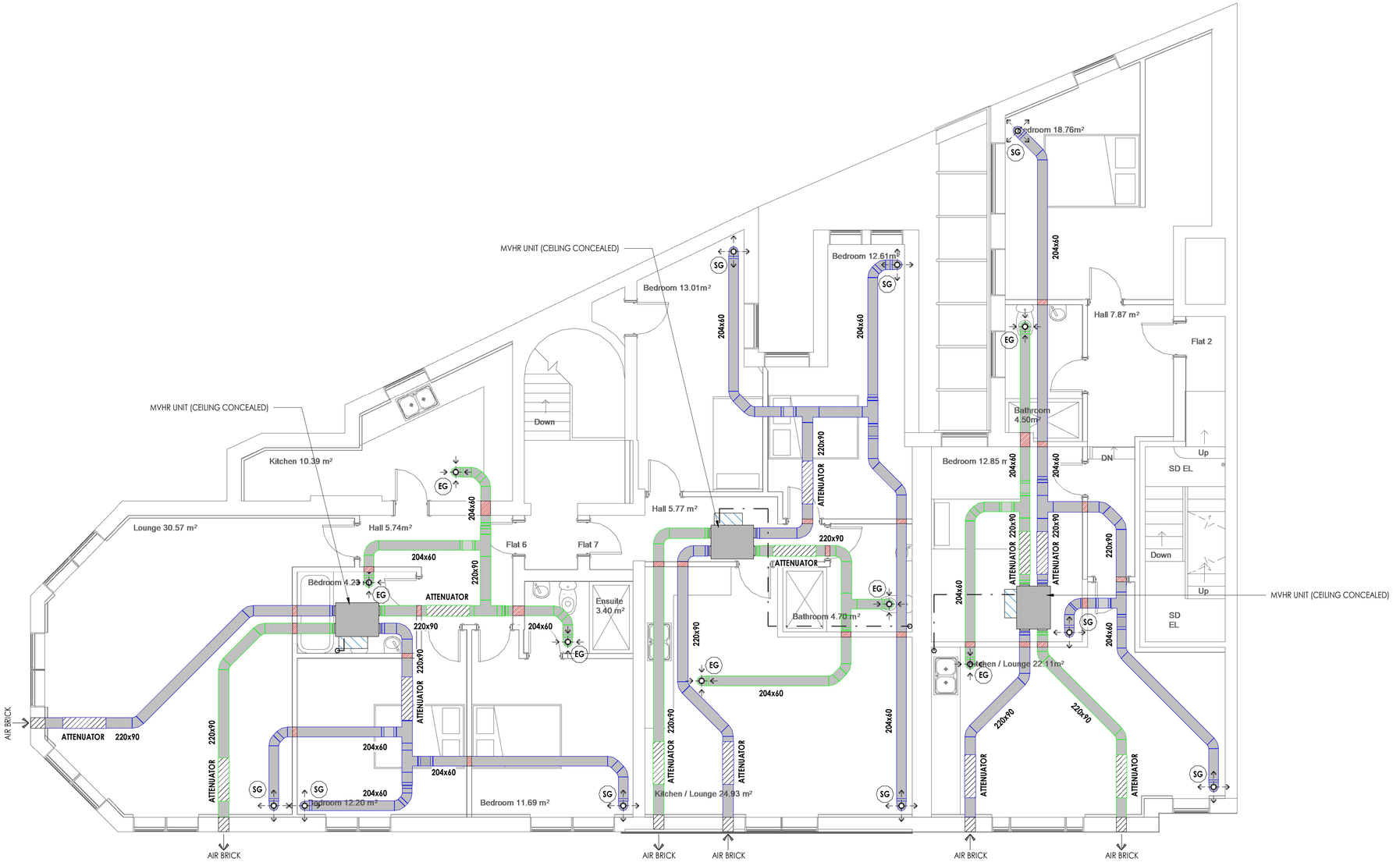
2. WHERE DUCTWORK PASSES THROUGH FIRE COMPARTMENT, FIRE COLLAR SHALL BE PROVIDED
3. ALL DUCTWORK SHALL BE INSULATED WITH 25mm ROCKWOOL INSULATION
4. ALL CONDENSATE FROM MVHR UNIT SHALL DRAIN TO THE NEAREST SVP COMPLETE WITH HEPVO DRY TRAP
5. ARCHITECT TO PROVIDE ACCESS HATCH FOR ACCESS AND MAINTENANCE OF MVHR UNIT
6. MVHR UNIT TO BE CONCEALED WITH CEILING VOID



FLAT 6 VENTILATION
Area = 78.22m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1
Ensuite = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 1 bedroom)
Min. rate per m2: 0.3 x 78.22m2 = 23.5 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Ensuite	6 l/s
Total extract = 27 l/s	

Therefore ventilation rate (supply and extract) = 27 l/s

Balanced ventilation
Bedroom 1 = 7.5 l/s
Bedroom 2 = 7.5 l/s
Lounge = 12 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 27 l/s
Velocity = 1.5 m/s
Pressure drop = 0.3 Pa/m

FLAT 7 VENTILATION
Area = 61m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 2 bedroom)
Min. rate per m2: 0.3 x 61m2 = 18.6 l/s

Whole dwelling ventilation = 25 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Total extract = 21 l/s	

Therefore ventilation rate (supply and extract) = 25 l/s

Balanced ventilation
Bedroom = 12 l/s
Lounge = 13 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 25 l/s
Velocity = 1.4 m/s
Pressure drop = 0.2 Pa/m

FLAT 2 VENTILATION
Area = 66m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 2 bedroom)
Min. rate per m2: 0.3 x 66m2 = 20 l/s

Whole dwelling ventilation = 25 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Total extract = 21 l/s	

Therefore ventilation rate (supply and extract) = 25 l/s

Balanced ventilation
Bedroom 1 = 7 l/s
Bedroom 2 = 7 l/s
Lounge = 11 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 25 l/s
Velocity = 1.4 m/s
Pressure drop = 0.2 Pa/m

REV	DESCRIPTION	BY	DATE

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1 -3 Boltro Road, Haywards Heath, RH16 1BP

PROJECT
Mechanical Services - Mechanical Ventilation & Heat Recovery

TITLE
First Floor - Ventilation

SCALE AT A1	DATE	DRAWN	CHECKED
1 : 50	July '25	ZR	-
PROJECT No.	DRAWING No.		REVISION
2025040	2025040-ME-101		

LEGEND

MECHANICAL HEAT RECOVERY (MVHR)

DUCTWORK (EXTRACT / EXHAUST)

DUCTWORK (SUPPLY/ INTAKE)

FIRE SLEEVE (WHERE APPLICABLE)

EXTRACT GRILLE

SUPPLY GRILLE

ATTENUATOR (EXTRACT/ EXHAUST)

ATTENUATOR (SUPPLY/ INTAKE)

RV — ROOF VENT (TILE VENT)

AIR BRICK (FOR INTAKE AND EXHAUST)

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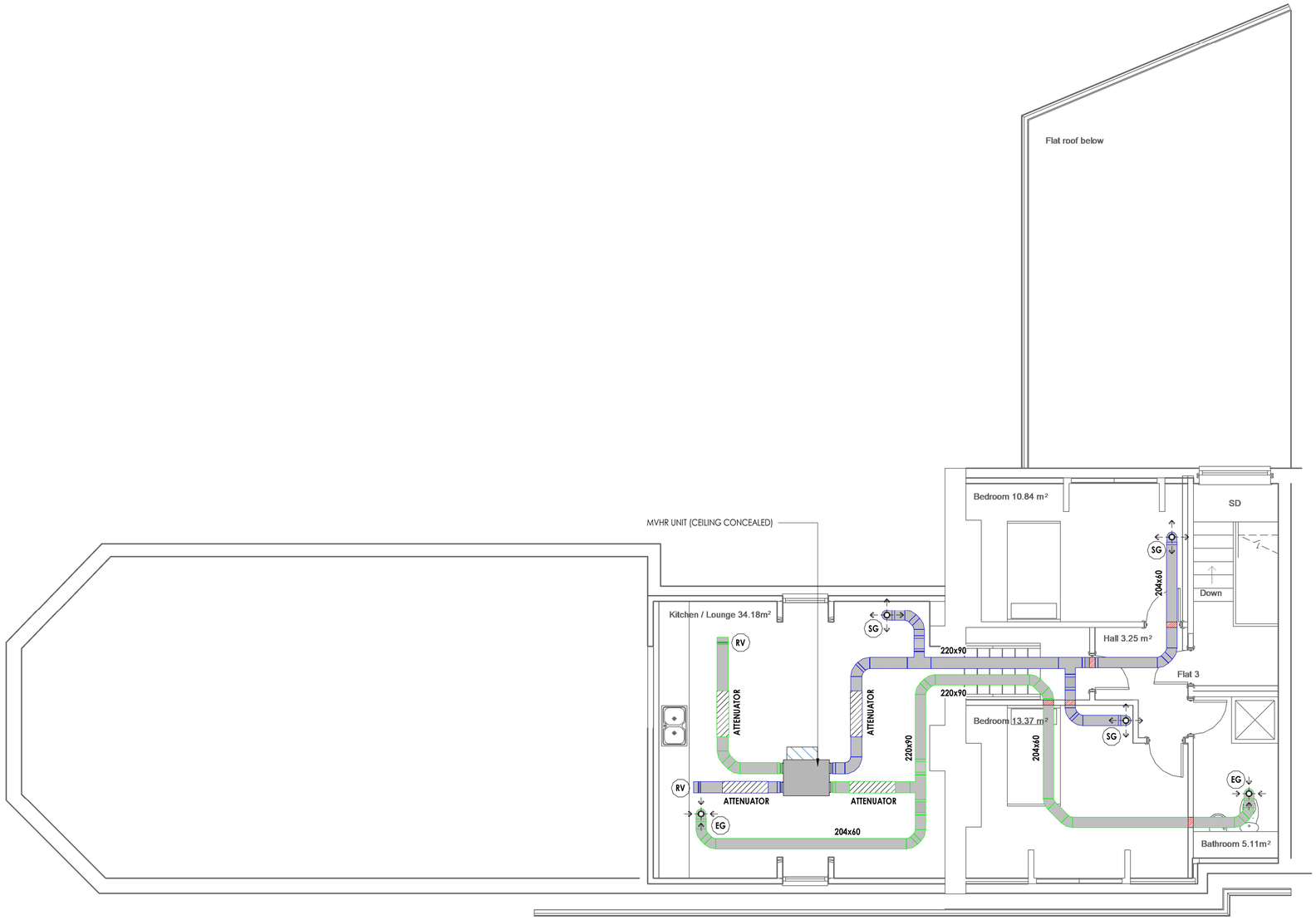

FLAT 2 VENTILATION
Area = 70m2
Bedrooms = 2
Kitchen = 1
Bathroom = 1

Whole Dwelling Ventilation Rate
From Table 1.3 Part F = 25 l/s (based on 2 bedroom)
Min. rate per m2: 0.3 x 70m2 = 21 l/s

Whole dwelling ventilation = 25 l/s

Minimum Extract Rates (Wet Rooms)
Table 1.2 from Part F:

Room	Min. extract rate
Kitchen	13 l/s
Bathroom	8 l/s
Total extract	= 21 l/s

Therefore ventilation rate (supply and extract) = 25 l/s

Balanced ventilation
Bedroom 1 = 7 l/s
Bedroom 2 = 7 l/s
Lounge = 11 l/s

Duct sizing
Using UPVc 220mm x 90mm for a total flow of 25 l/s
Velocity = 1.4 m/s
Pressure drop = 0.2 Pa/m

REV	DESCRIPTION	BY	DATE

STATUS: Discharge Condition

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1 -3 Boltro Road, Haywards Heath, RH16 1BP

PROJECT
Mechanical Services - Mechanical Ventilation & Heat Recovery

TITLE
Second Floor - Ventilation

SCALE AT A1	DATE	DRAWN	CHECKED
1 : 50	July '25	ZR	-
PROJECT No.	DRAWING No.		REVISION
2025040	2025040-ME-102		

SUMMARY FAN DATA SHEET

1 - 3 Boltro Road, Haywards Heath RH16 1BP

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 13 Jul 2025 12:15 using software version 5.8.4571.0

Technical Data

MRXBOX95-LP - Low Profile Multi Room Xbox

Fan Code:	**MRXBOXAB-ECO-LP2**
Installation Manual Links:	671875
Required duty:	31 l/s at 70 Pa
Actual duty:	59 l/s at 254 Pa
Actual at required flow:	31 l/s at 475 Pa

When speed controlled to required duty (52.36%):

Motor Input Power:	**0.023 kW**
Specific Fan Power:	**0.8 W/(l/s)**
Velocity at required duty:	2.533 m/s

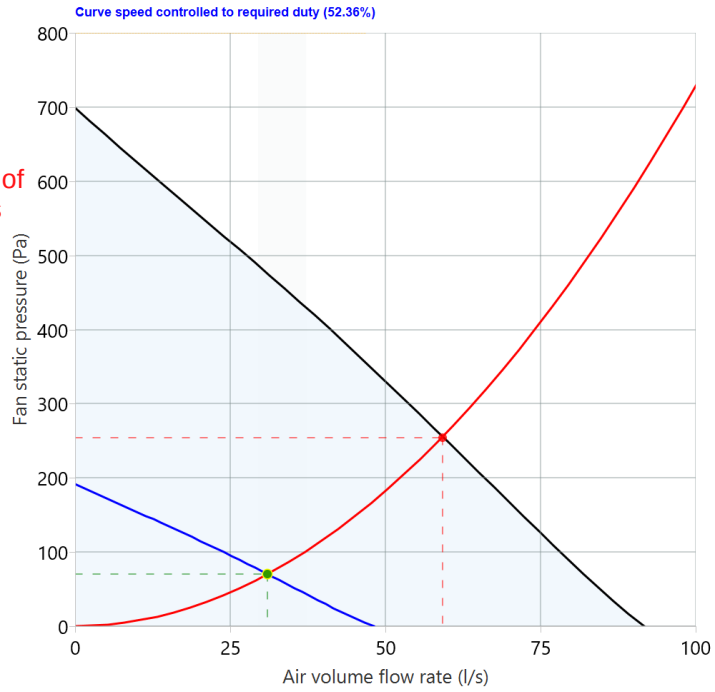
Meets requirements of Building Regulations

At full speed:

Motor Input Power:	0.163 kW
Specific Fan Power:	2.7 W/(l/s)
Maximum Fan Speed:	3,750 RPM
Electrical Supply:	230V, 1 Phase, 50 Hz
Nominal Motor Rating:	0.152 kW
Motor current (flc):	1.2 A
Max. operating temp:	40°C
Weight:	37 kg

Starting currents are nominal.

Performance Chart



Sound Data

Acoustic perfomance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (52.36%)

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	50	53	49	45	35	27	<16	<16	27
Open Inlet (Intake & Extract)	48	40	39	37	29	28	<16	<16	
Open Outlet (Supply & Exhaust)	47	40	48	51	48	46	35	25	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Noise Rating for Dwellings

The Noise Rating (NR) criteria are not directly stated in the Building Regulations, but are specified in acoustic design guidance—most notably in BS 8233:2014 (Annex B) for indoor environmental noise from mechanical/fan systems.

NR 25–30 ≈ LAeq 31–36 dB(A), aligning with internal noise targets of 30 dB LAeq at night

The selected unit has a break out noise level of 27 dBA.

Specification

The unit shall be manufactured from galvanised sheet steel with a white, pre-painted removable access panel. The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate, aluminium, counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 79%.
The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the underside access panels, enabling quick and easy maintenance.
The unit shall have a maximum depth of 200mm to fit within ceiling void restrictions.
The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, and the impellers shall be backward curved centrifugal type. The motors shall be suitable of an ambient temperature of 40°C. Motor assemblies shall be removable from the underside of the unit and will not require the unit to be removed from situ.
The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.
The unit shall be suitable for 204x60mm rectangular ducting.
The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.
The unit shall be fitted with 100% summer bypass as standard. The bypass opens automatically when outside temperature exceeds 20°C.
This shall open the damper via an actuator. Outside air supplied through the bypass shall be filtered, so the air quality is optimal, irrespective of the bypass setting (open or closed).
The unit shall have an integral frost protection facility by switching the supply fan off below temperatures of -5°C.

SUMMARY FAN DATA SHEET

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UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
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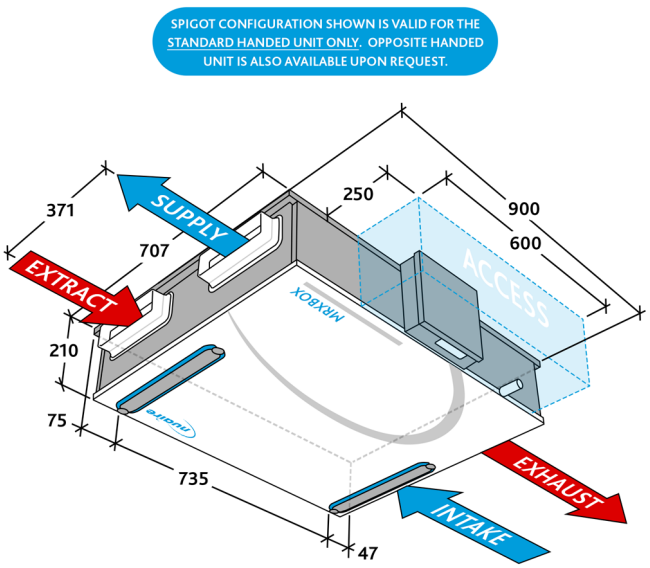
Fan Dimensions



Length:	Width:	Height:
900	700	200

Spigot size: 204x60
Duct size: 204 x 60
Drawing is for dimensional purposes only. Dimensions in mm.
Please see selected ancillaries section for additional dimensions for any requested additional ancillaries.

SAP Appendix Q Test Results

Application	Specific Fan Power (W/l/s)	Heat Exchange Efficiency %
Kitchen + 1 wet room	0.48	78%
Kitchen + 2 wet rooms	0.61	79%
Kitchen + 3 wet rooms	0.77	79%
Kitchen + 4 wet rooms	1.01	79%
Kitchen + 5 wet rooms	1.26	79%