

AIR QUALITY ASSESSMENT

SUPPORTING STATEMENT

OFFICE (CLASS E) TO RESIDENTIAL (CLASS C3)

90 LONDON STREET

READING

BERKSHIRE

RG1 4SJ

AIR QUALITY ASSESSMENT SUPPORTING STATEMENT AT 90 LONDON STREET, READING, RG1 4SJ

Revised Document

The proposed development is within an air quality management area, but there are several residential dwelling in the area approved in the last five years when the air quality management area was identified.

The pollution will be reduced with less use of cars, more use of electric buses, and improved pedestrian routes and cycle lanes implemented.

The existing building will have a proposed Mechanical Ventilation with Heat Recovery (MVHR) system that improves indoor air quality throughout the home and can help reduce symptoms for asthma and allergy sufferers. The ventilation unit filters the incoming air to remove pollutants and insects and provides constant cleaned, warmed, fresh filtered air throughout the home. This practice will mechanically extract excess moisture in the air and recovers the heat. It provides the proposed flat and office space with ventilated air of the property away from the pollution coming from London Street. The main habitable rooms are also located on the top floor, further away from pollution and allow for windows to open for fresh air.

The minimum total area of the opening follows Table 1.4 Approved Document F1—sash windows with a vertical openable area of more than 1/20 of the room's floor area. The internal doors provide a 10mm gap below the structure to aid air circulation. Purge ventilation should be capable of extracting at least four air changes per hour per room directly to the outside.

MHVR system to be installed following manufacturer's details. Details of the system are to be given to BCB.

Minimum extract ventilation extract rates to be:

Kitchen – 13 l/s

Bathroom – 8 l/s

Sanitary accommodation – 6 l/s

The sum of all extracts ventilation in the dwelling, on its continuous rate, has been set to be at least the whole dwelling ventilation rate given in Table 1.3 Approved Document F.

The minimum whole dwelling ventilation rate for air supply to the habitable rooms is 0.3 litres per second per m² of internal floor area. System to include either manual or automatic controls (i.e. humidity sensors) to operate between trickle and boost modes.

The mechanical extract system will be performance tested to BS EN 13141 -7. The mechanical supply terminals should be located and directed to avoid draughts. To ensure good air transfer through the dwelling, an undercut of a minimum area of 760mm in all internal doors above the floor finish should be installed. This amount is equivalent to a standard door undercut of 10mm.

The system is designed to prevent the moist air from recirculating the wet rooms to the habitable rooms. To avoid unintended air pathways, background ventilation should not be installed with mechanical ventilation with heat recovery.

The mechanical ventilation system is to be designed and installed to minimise noise. The access is to be provided for maintaining and cleaning ventilation systems with rigid ducts to be used wherever possible. Flexible ductwork is only used for final connections, in lengths no more than 1.5m. Ductwork to meet BSRIA's BG 43/2013. Any ducting passing through a fire-resisting wall/floor or fire compartment to be adequately fire stopped, provided with suitable dampers and fire collars or in fire-resisting trucking in compliance with Approved Document B.

Mechanical ventilation systems are to be commissioned following Approved Document F. Appendix C, completion checklist, commissioning sheet, and airflow rate test results are to be given to the Local Authority on completion.

The owner is to be provided with information as listed in Approved Document F, including:

- Information about the building's ventilation system and maintenance requirements.
- The operating and maintenance instructions.
- The design flow rates.
- The completed commissioning sheet.

A Home User Guide to be provided for the dwelling containing a section on 'Ventilation' that provides nontechnical advice on the ventilation systems provided. The information should be provided in a nontechnical and precise manner. Systems to ensure that they use no more fuel and power than is reasonable in the circumstances following Approved Document L.

Design and Installation Specification

Mechanical Ventilation with Heat Recovery

- The installation has been designed and must be installed following the following:
- Domestic Ventilation Compliance Guide 2010 Edition
- CIBSE B: Heating, ventilation, air conditioning and refrigeration, 2005.
- Building regulations, Approved Document F: Ventilation, Approved Document L1: Conservation of fuel and power in dwellings, Approved Part B: Fire Safety
- The relevant British Codes of Practice include:
- BS 5925: Code of Practice for ventilation principles and designing for natural ventilation.
- Manufacturer's installation instructions.
- HVCA DW/154 specification of plastics ductwork, 2000

Mechanical Ventilation with Heat Recovery System and Installation Notes:

1. System

- 1.1 The system has been designed to provide the minimum whole-house ventilation rate.
- 1.2 The system utilises a semi-rigid Comfotube and a manifold system.
- 1.3 MVHR system should be installed before any other service to ensure optimum layout.
- 1.4 MVHR system to be used and installed in conjunction with a space heating system; although up to 70% of the heat energy in stale air can be recovered, this is not to be used as an alternative to a central heating system. A space heating system is still required, and MVHR will contribute significantly to its economic use.
- 1.5 When MVHR System is installed, trickle vents to windows are not required.
- 1.6 If a cooker hood is to be installed, it will need to be set in re-circulation mode.
- 1.7 This system has been designed to comply with all relevant and current Building Regulations.

2. Condensate drain

2.1 The MVHR unit should incorporate a condensate drain, which should be connected to the nearest waste water network. Where units are sited in a position that makes the connection of piping to allow a fall, a condensate pump may be incorporated as part of the installation

2.2 The condensate drain & hose are to be connected to a self-sealing waste valve (i.e. HepVO or similar approved trap - supplied by others) and run to the nearest soil and vent pipe (SVP). All condensation pipework to have a fall of a minimum of 10°. Pipe to be located below roof insulation where possible; otherwise, insulation is to be provided to pipe in unheated areas (cold loft/void spaces).

3. Ducting and MVHR Unit

3.2 Where ducting passes through a fire-resisting wall or fire compartment, the required measures to ensure compliance with Part B of the building regulations must be taken. If it is not shown on this drawing, fire collars/sleeves are not required.

3.3 This design assumes that the ceiling void spaces are sufficient to allow for the MVHR Unit and ducting and assumes there are clear paths through the ceiling/floor voids.

3.4 Ducting to tile vents and any ducting outside the insulated envelope needs to be insulated; we have available pre-insulated ducting, but this has not been quoted for. Should you require us to do this, we will be pleased to re-quote you.

3.5 Vertical ducts should be located away from any fixings for radiators and shower doors.

4. Floor and Roof

4.1 Floor joists and roof trusses should be set out to avoid vertical runs wherever possible and follow the manufacturer's design

4.2 Any holes within floor decking, ceiling, and walls to be sealed using a flexible sealant

4.3 If terminating to a tile vent, consideration should be paid to the effective equivalent area of the terminal to ensure that this does not adversely

5. Electrical

5.1 A hard-wired boost switch should be provided locally to each wet room, as the plans indicate.

5.2 A power supply to be located within one meter of the unit, for example, isolating fused spur (3 Amp).

5.3 We have not quoted for any controllers. However, Part F, 2010 Edition, states Any manual boost controls

should be provided locally to the spaces being served, e.g. bathrooms and kitchen...

5.4 **WARNING:** Class II appliances must be earthed. All wiring must conform with BS7671: IEE Wiring Regulations. The installation must be carried out by a qualified electrician following prevailing regulations.

6. Ordering

6.1 Please refer to the materials schedule for all specific ducting models and products before ordering.

The product manual and user manual are supplied with the unit.

Please leave the product manual with the unit.

Please read additional notes on MVHR Design for specific design details.

Specific Design Details

Ducting may be subject to change on site, as we are not aware of exact joist layouts.

To be read in conjunction with Specification page and installed to manufacturer's instructions.

CAQ450 MVHR unit positioned in loft. Switched fused spur for MVHR to be located adjacent to the unit.

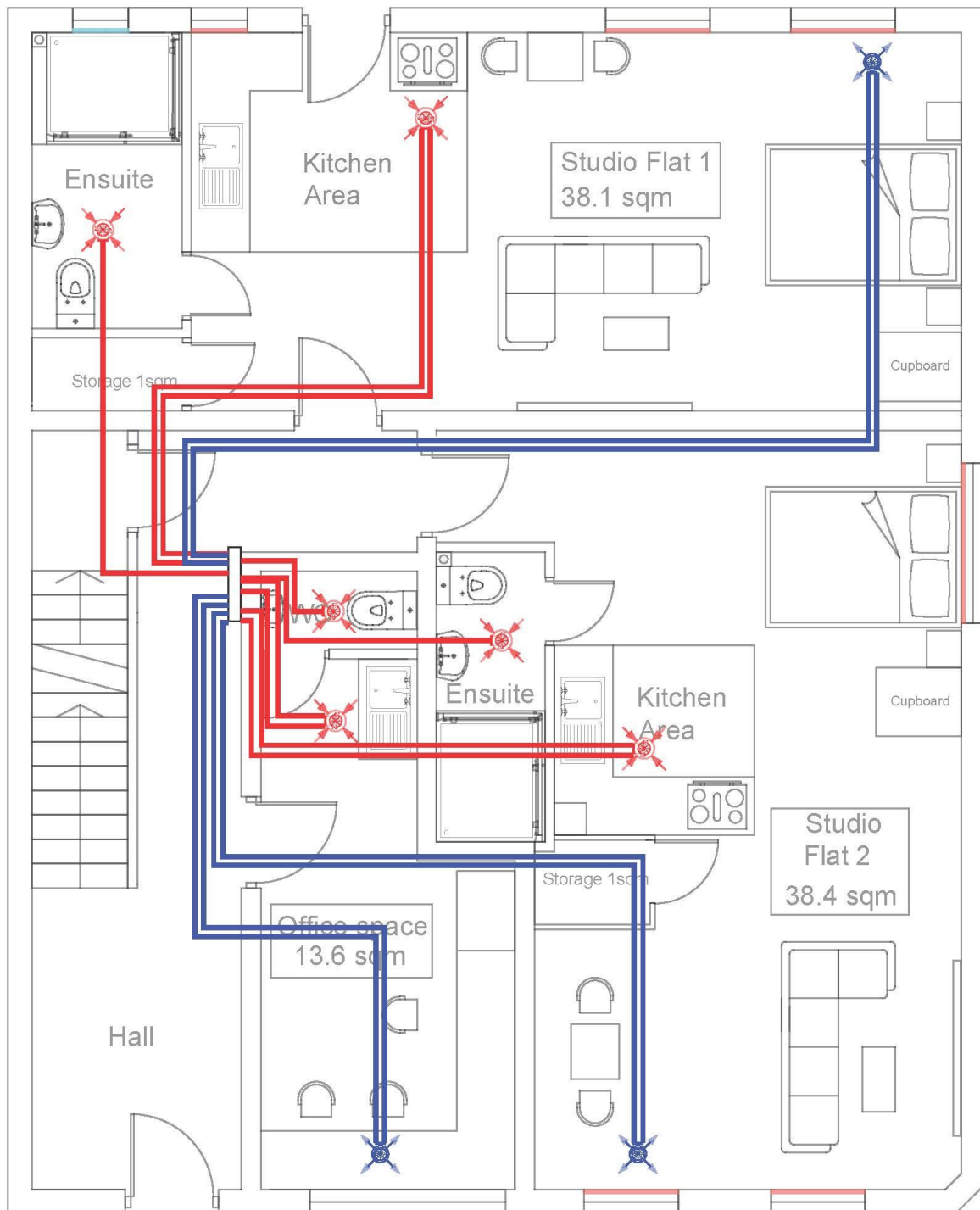
Condensate drain to be connected to SVP.

Ø180mm insulated Intake & Extract through roof, terminating a min. 1000mm apart.

2 No Comfowell CW-M 520 10 Port Manifolds, providing 9 x 90mm Comfotubes each for both Supply & Extract.

CAQ450 MVHR unit positioned in loft. Switched fused spur for MVHR to be located adjacent to the unit. Condensate drain to be connected to SVP. Ø180mm insulated Intake & Extract through roof, terminating a min. 1000mm apart. 2 No Comfowell CW-M 520 10 Port Manifolds, providing 9 x 90mm Comfotubes each for both Supply & Extract.

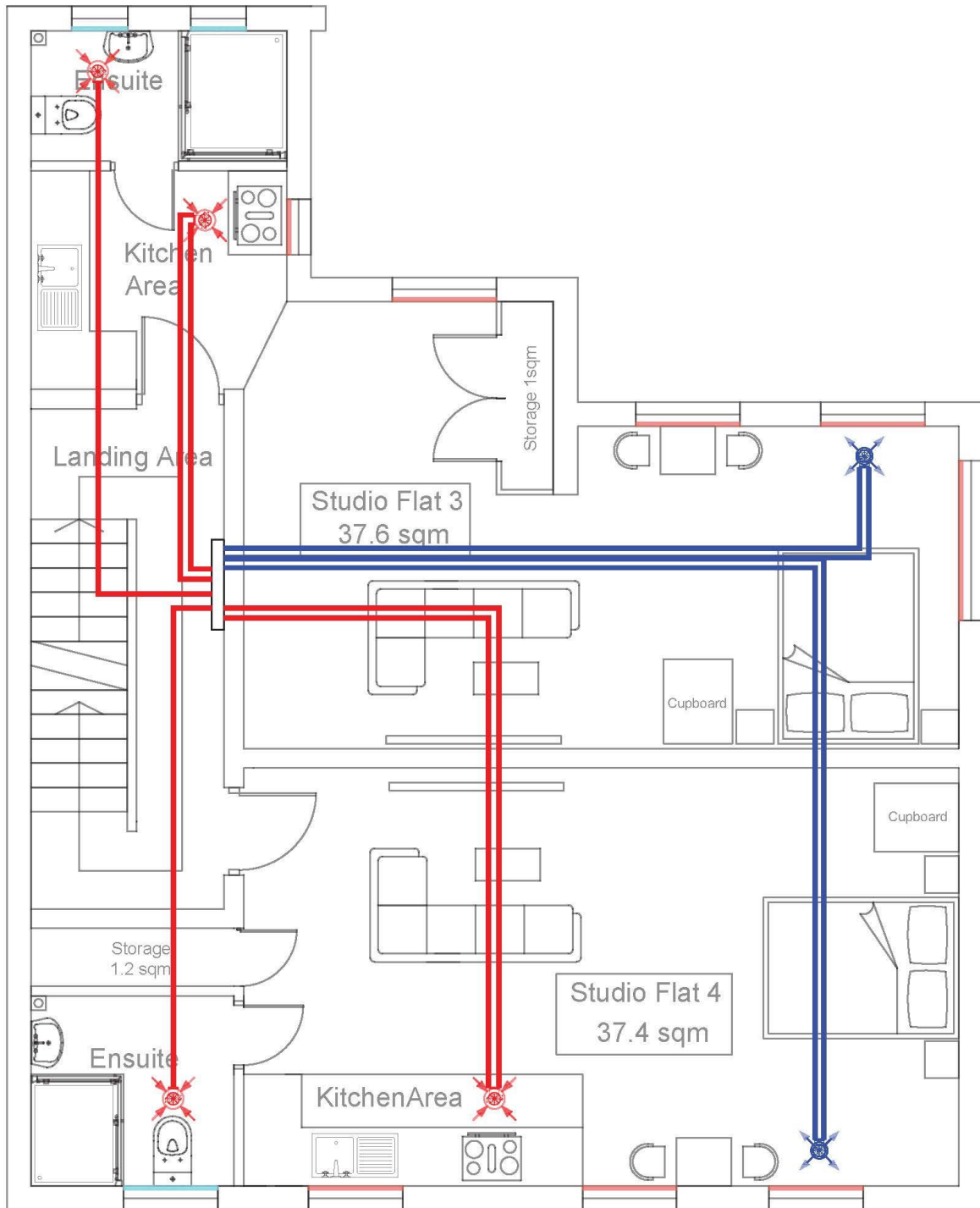
Ducting to be concealed in suitable boxing. All ducting in cold roof space to be insulated.



6 x 90mm supply drop from above
9 x 90mm extract rise to above.

Provisional

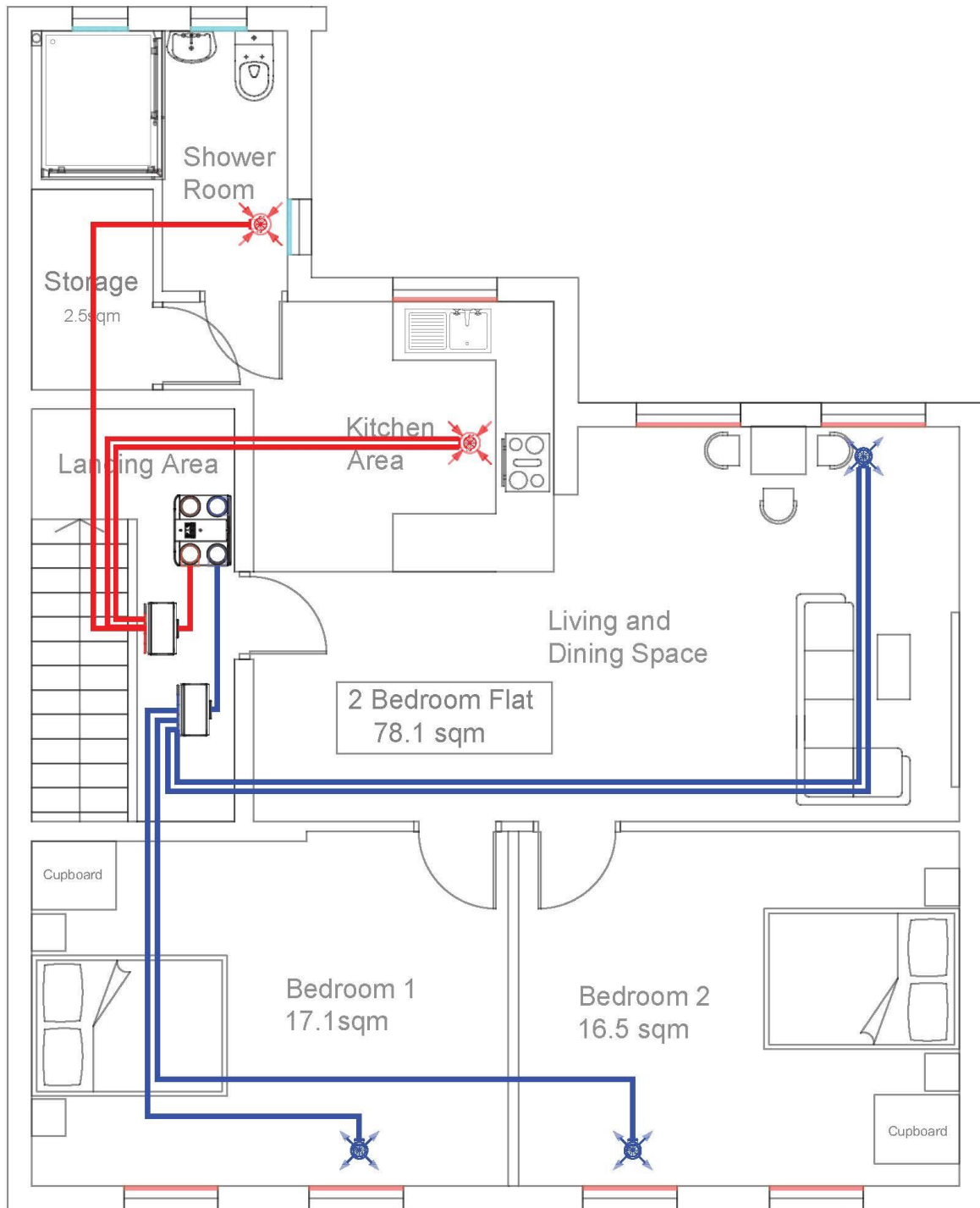
Ground Floor



4 x 90mm supply drop from above
6 x 90mm extract rise to above.

Provisional

First Floor



4 x 90mm supply drop from above
3 x 90mm extract rise to above.

Provisional

Second Floor

EXTRACT VENTILATION RATES																			
						Speed 1 (Const)				Speed 3 (Boost)									
Spaces	Minimum l/s	CFM		minium Btu/h		Grille Quantities	Required l/s	CFM	Required m3/h	Required l/s	CFM	Required m3/h	Required Btu/h	V, m/s	S . m2	S G, m2	d, mm	a, mm	b, mm
Ground Floor														2					
Office: WC	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
Office: Kitchen	13	27.5444		1016.9958		2	6.5	13.7722	23.4	15	31.782	54		2	0.0065	0.00325	64.34382168	50	70
Studio Flat 1: Kitcher	13	27.5444		1016.9958		2	6.5	13.7722	23.4	16	33.9008	57.6		2	0.0065	0.00325	64.34382168	50	70
Studio Flat 1: Ensuite	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
Studio Flat 2: Kitcher	13	27.5444		1016.9958		2	6.5	13.7722	23.4	16	33.9008	57.6		2	0.0065	0.00325	64.34382168	50	70
Studio Flat 2: Ensuite	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
First Floor		0		0				0			0			2				50	
Studio Flat 3: Kitcher	13	27.5444		1016.9958		2	6.5	13.7722	23.4	16	33.9008	57.6		2	0.0065	0.00325	64.34382168	50	70
Studio Flat 3: Ensuite	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
Studio Flat 4: Kitcher	13	27.5444		1016.9958		2	6.5	13.7722	23.4	16	33.9008	57.6		2	0.0065	0.00325	64.34382168	50	70
Studio Flat 4: Ensuite	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
Second Floor		0		0				0			0			2				50	0
2 Bedroom Flat - Kitchen	13	27.5444		1016.9958		2	6.5	13.7722	23.4	15	31.782	54		2	0.0065	0.00325	64.34382168	50	70
2 Bedroom Flat - Shower Room	8	16.9504		625.84358		1	8	16.9504	28.8	10	21.188	36		2	0.004	0.004	71.38306102	50	80
Building Total	105			9857.0364		15	42	88.9896	151.2	129	273.3252	298.8		2	0.0525	0.0035	66.77273939	50	70
					SUPPLY VENTILATION RATES									2				50	0
						Speed 1 (Const)				Speed 3 (Boost)				2				50	0
Room	Room size. m2	Room size. Sft	L X W X H	minium Btu/h	TOTAL CFM	Grille Quantities	Required l/s	CFM	Required m3/h	Required l/s	CFM	Required m3/h		2				50	0
Ground Floor														2				50	0
Office	10.2	109.752	10x 11 x9	4390.08	146.336	2	4.25	9.0049	15.3	5.1	10.80588	18.36	146.336	2	0.0051	0.00255	56.99480365	50	50
Studio Flat 1	25.6	275.456	15 x18.36 x9	7988.224	266.27413	2	10.66667	22.60053	38.4	12.8	27.12064	46.08	266.2741333	2	0.0128	0.0064	90.29322368	50	130
Studio Flat 2	30.7	330.332	20 x16.5 x9	9579.628	319.32093	2	12.79167	27.10298	46.05	15.35	32.52358	55.26	319.3209333	2	0.01535	0.007675	98.87906787	50	150
First Floor								0			0		0	2				50	0
Studio Flat 3	28.1	302.356	15 x20.16 x9	8919.502	297.31673	2	11.70833	24.80762	42.15	14.05	29.76914	50.58	297.3167333	2	0.01405	0.007025	94.59938999	50	140
Studio Flat 4	28.9	310.964	20 x15.55 x9	9017.956	300.59853	2	12.04167	25.51388	43.35	14.45	30.61666	52.02	300.5985333	2	0.01445	0.007225	95.93655016	50	140
Second Floor - 2 Bedroom Flat		0		0	0			0			0		0	2				50	0
Bedroom 1	17.1	183.996	14 x13.14 x9	5335.884	177.8628	1	7.125	15.09645	25.65	8.55	18.11574	30.78	177.8628	2	0.00855	0.00855	104.3634023	50	170
Bedroom 2	16.5	177.54	15 x12 x9	5148.66	171.622	1	6.875	14.56675	24.75	8.25	17.4801	29.7	171.622	2	0.00825	0.00825	102.5161165	50	170
Living and Dining Space	24.7	265.772	15x17.73 x9	7973.16	265.772	2	10.29167	21.80598	37.05	12.35	26.16718	44.46	265.772	2	0.01235	0.006175	88.69183749	50	120
Building Total	115.3	1954		58353.094	1945.1031	14	23.75	50.3215	85.5	28.5	60.3858	102.6	1701.965242	2	0.05765	0.004118	72.42705219	50	80
					Whole Buildings Ventilation Rates														
Minimum Supply Rate (Continuis)						23.75	l/s	50.3215	85.5	m3/h									
Minimum Extract Rate (Boost)						129	l/s	273.3252	464.4	m3/h									
Recommended Minimum Extract Rate (Boost + 10%)						141.9	l/s	300.6577	510.84	m3/h									