

DEFRA - EMAQ+

Our assumptions based on this design and our notes

1.01 - Canopy

The stainless-steel kitchen canopy has been selected and designed in compliance with DW172 standards to suit the cooking equipment lineup. It provides adequate overhang, lighting, and integrated grease filtration, ensuring effective capture of grease-laden vapours and hot air. Grease baffle filters are removable and washable, with provision for grease collection trays.

The canopy is connected via spigots to a 500 mm duct system operating at 1.5 m/s, generating a velocity of 7.64 m/s, ensuring proper capture velocity at the hood face. The spigots are matched to this airflow, ensuring seamless transition into the extract ductwork with minimal resistance.

In accordance with DW172 guidelines, the canopy shall be installed at a height of 2000 mm to 2100 mm above Finished Floor Level (FFL) to ensure safe clearance from appliances while allowing effective fume capture. This height range maintains sufficient capture velocity while permitting unobstructed use of cooking equipment and compliance with health and safety standards for operator access.

2 - Extract Ductwork

The ductwork comprises 12 metres of 500 mm spiral ducting, introducing a resistance of 13.1 Pa, and 3 x 90° segmented bends contributing 37.8 Pa. The total linear and directional resistance in the extract line is calculated to be 50.9 Pa, not including fittings and terminal equipment.

All ducting is DW144 compliant, fabricated from galvanised or stainless steel, with airtight joints and fire-rated supports. Access panels are installed at 3-metre intervals and changes in direction, allowing for routine cleaning and maintenance in line with TR19 standards.

The external extraction ductwork can be powder coated in RAL anthracite to be in-keeping with the existing design and or a RAL TBC.

3 - Spigot Connections to the Canopy

Spigots are configured to match the 500 mm main duct to maintain even airflow distribution. Transitions are designed to minimise turbulence and backpressure. Flexible fire-rated connectors are used where isolation is needed between canopy and main duct runs.

This ensures there is negligible resistance introduced at this point, preserving overall system efficiency. Dampers may be included where balancing is required between multiple canopy sections.

4 - Supply Air Fan - MUB

The mechanical supply air fan (MUB series) is selected to deliver 80% of the extract volume, in line with best practice for commercial kitchen ventilation to ensure adequate replacement air without over-pressurisation. Based on the extract flow rate of 1.5 m³/s, the supply airflow rate is therefore set at 1.1 m³/s.

Using a 400 mm duct diameter, this results in an internal air velocity of 8.75 m/s, and the system's total static resistance has been calculated at 185.71 Pascals, factoring in: 3 metres of spiral ducting (5.6 Pa), 1 x 90° segmented bend (16.5 Pa), 1 x reducer (8.0 Pa), 1 x clean filter cassette (122.5 Pa), 1 x weather louvre (33.0 Pa).

The fan selection ensures sufficient pressure capability and airflow to offset extraction, maintain balanced air change rates, and comply with CIBSE and BESA guidance. The fan is installed with antivibration mounts and acoustic lining to mitigate mechanical noise, with optional speed control via inverter drive for real-time adjustment.

5 - Attenuator for Supply

One 600 mm long attenuator is installed to reduce fan noise into the kitchen area. This unit contributes 8.3 Pa to the system pressure drop. It includes internal baffles and is lined with fire-resistant, cleanable acoustic media.

This setup ensures the fan noise does not exceed acceptable decibel levels in the occupied kitchen zone, contributing to staff welfare and compliance with workplace regulations.

6a - Fire Damper (Supply)

No fire damper resistance is recorded here, as either the damper is open during normal use or is located outside the monitored duct section. However, any supply ducts penetrating fire-rated walls will include a damper compliant with BS 9999 and tested to BS EN 1366.

Regular inspection hatches and actuator testing access are provided to ensure compliance with fire safety inspection regimes.

6b - Filter Media for Supply Air

Pre-filtration is provided upstream of the supply fan to prevent particulate ingress. Though no resistance is recorded here in the extract system, in the full system, these filters are typically rated at F7-F9 and will contribute additional pressure drop, typically 30-70 Pa depending on dust loading.

Filtration helps maintain a hygienic environment and extends the life of the fan and duct components.

7 - Weather Louvre - RAL to Match Existing (Anthracite)

A weather louvre is included at the termination point of the system with a recorded resistance of 33.0 Pa. This louvre is fabricated from powder-coated aluminium to RAL 7016 Anthracite Grey, matching the existing building finishes and avoiding visual disruption.

The louvre includes integral bird mesh, rain deflection blades, and is installed with drip trays to prevent water ingress. It's sized to maintain acceptable face velocity (<2 m/s) to limit pressure losses and avoid suction of external debris.

8 - Extract Fan - MUB

The extract fan is selected to handle the total system resistance of 243.87 Pa at a flow rate of 1.5 m³/s, ensuring reliable performance under peak load. Fan type is a MUB backward-curved centrifugal fan with high static efficiency and noise reduction features.

Mounted externally, it includes full vibration isolation and acoustic lining to reduce breakout noise to surrounding areas.

9 - Extraction Fan Attenuator

Not recorded separately here but assumed included in the attenuation calculations. If a second attenuator were present, additional resistance (typically 8-12 Pa) would be factored into the fan selection.

Where sensitive boundaries exist, fan discharge silencers or secondary attenuators may be added depending on acoustic modelling outcomes.

10 - Extract Duct (Gable Mounted with Anti-Vibration Fixings)

The duct is externally routed up the gable wall and secured with anti-vibration brackets to avoid transmission of mechanical vibration into the building structure. The vertical length is included in the 12 m ductwork run and contributes to the total system resistance.

This approach allows clear access for maintenance and avoids disruptive penetration through roof structures. External ducting is weatherproofed and insulated where required.

11 - Extraction Weather Cowl

A weatherproof cowl is installed at the terminal discharge to protect against rain ingress and wind-driven backflow. This terminal component works in tandem with the weather louvre and is assumed to be integrated into the recorded 33.0 Pa resistance from terminal components. Design may be upgraded to a high-velocity jet cowl if required by environmental or planning constraints.

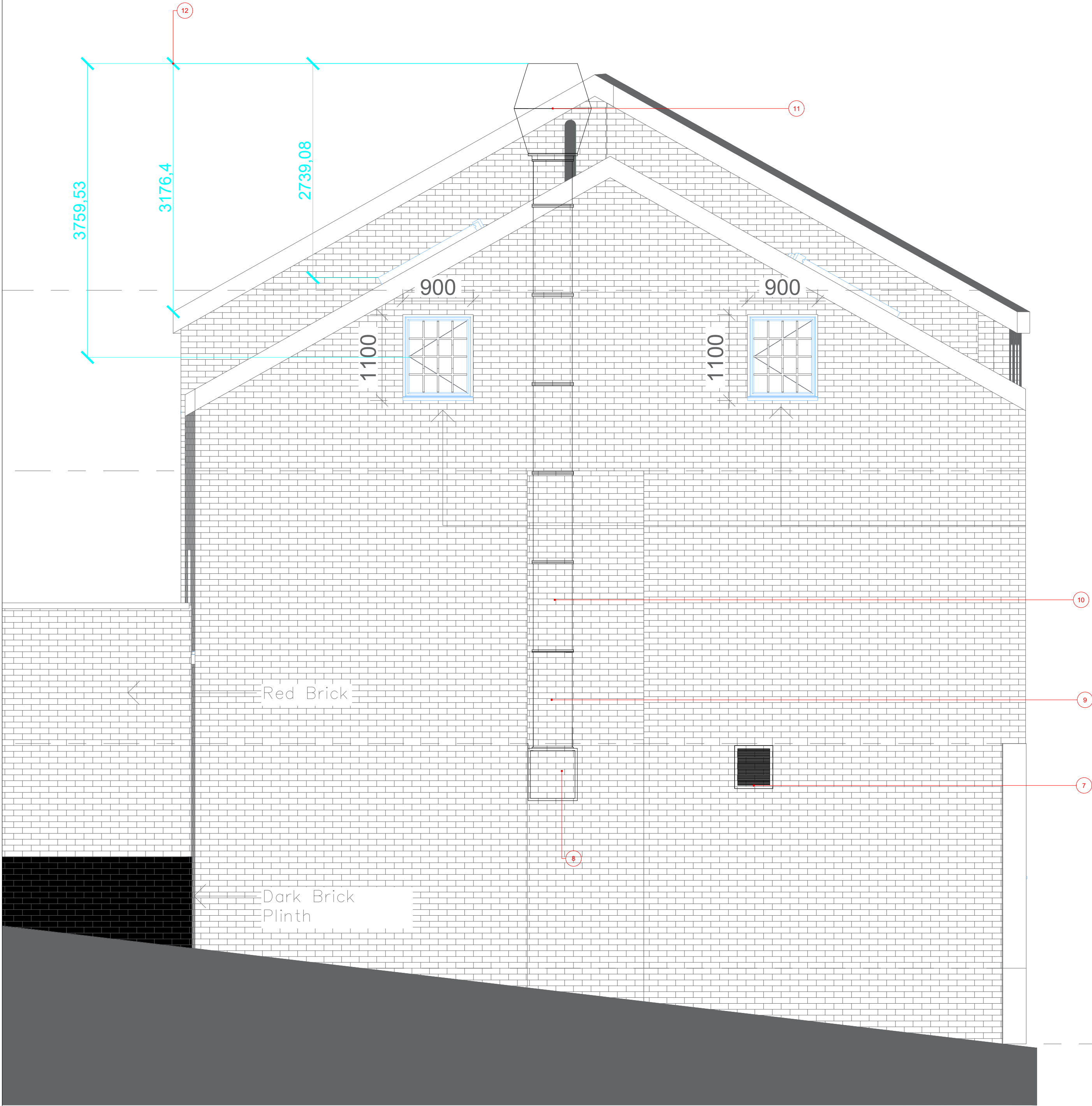
12 - Minimum of 1m from Eaves - Extraction

The final discharge point is situated a minimum of 1 metre above the eaves in line with EMAQ+ and DEFRA Best Practice Guidance. This ensures proper dispersion of exhaust fumes and limits the impact on neighbouring properties or rooftop plant equipment. This configuration avoids down-draughts and maximises vertical exhaust velocity, reducing risk of odour complaints and ensuring planning and environmental compliance.

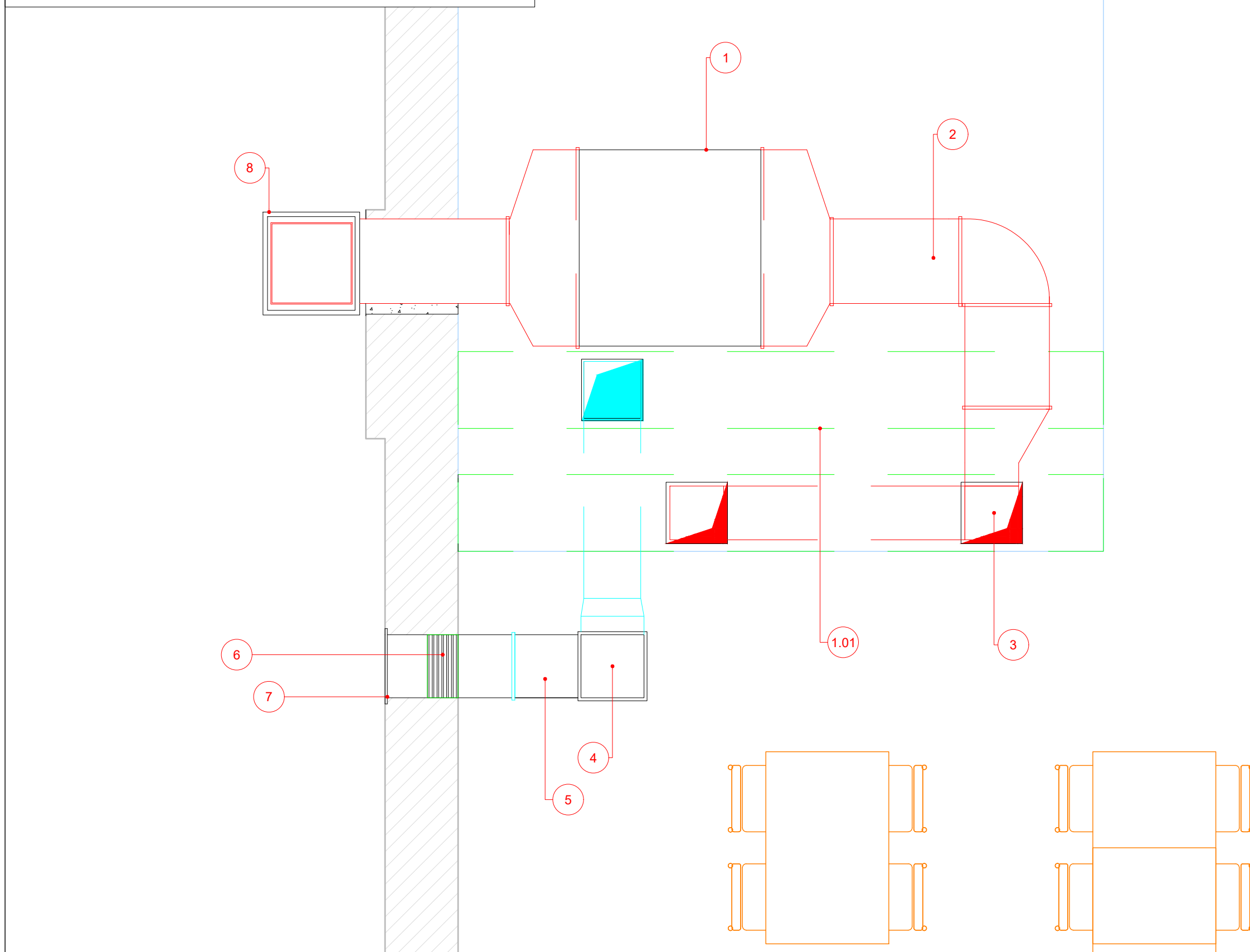
EMAQ+ Odour and Noise Risk Assessment - Points Matrix

Premises: Small Commercial Kitchen
Cuisine: English / Mediterranean
Covers: 50
Filtration: Grease baffle, carbon filter, HEPA filter
Duct Design Resistance: Extract = 243.87 Pa @ 1.5 m³/s (500mm)
Supply Air: 1.1 m³/s @ 400 mm duct, Resistance = 185.71 Pa
Discharge: >1 metre above eaves with cowl and louvre (RAL 7016)

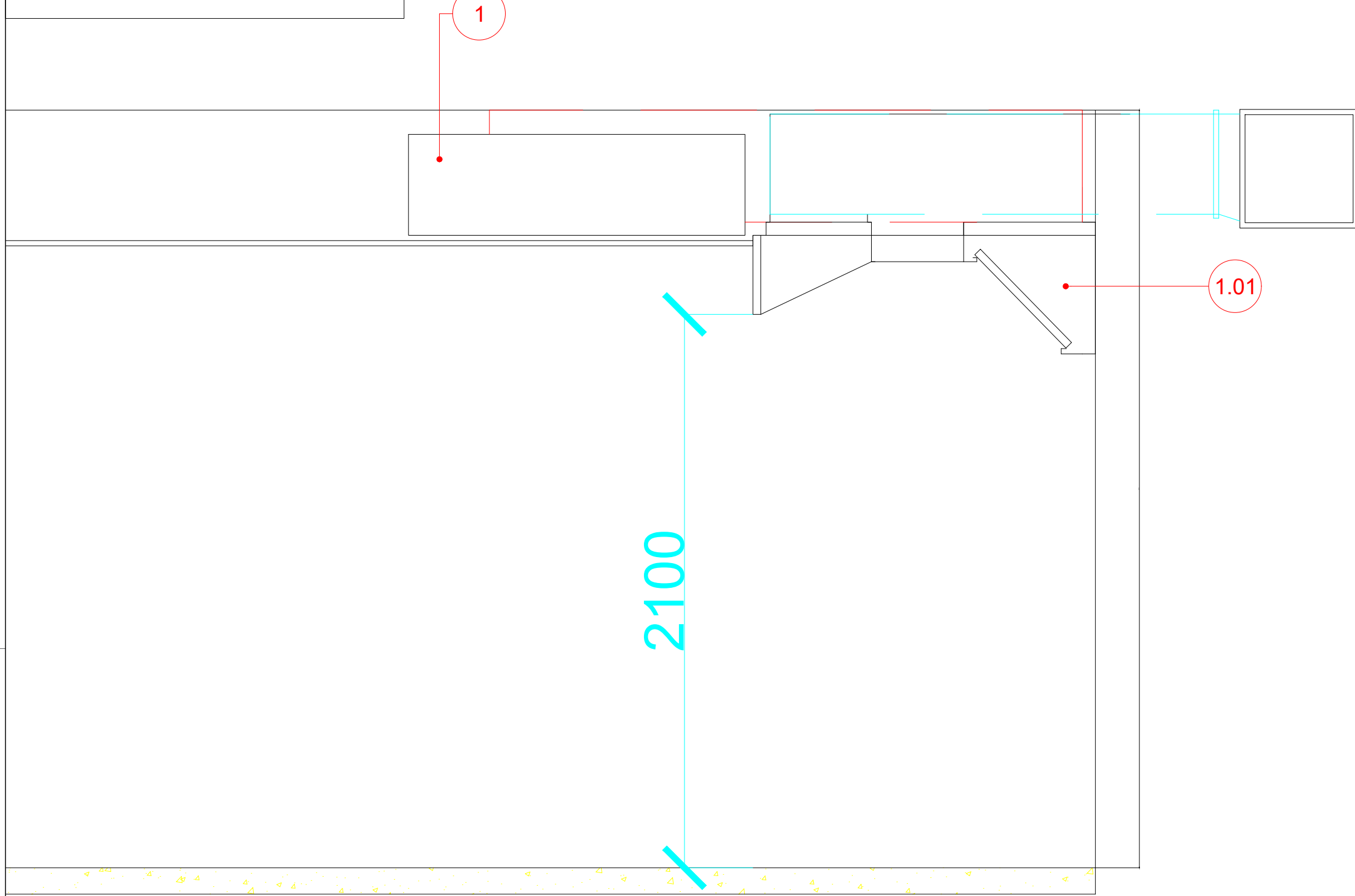
SIDE GABLE ELEVATION



KITCHEN GA



KITCHEN SIDE ELEVATION



LEGISLATION AND COMPLIANCY

- All design and construction should comply with current UK law and legislation. The building act 1984.
- All gas work and installation should be carried out in accordance with BS6173.
- Mechanical systems should comply with DW172 specification.
- All electrical work should be carried out in accordance to current IET requirements.
- All diligence is to be checked and design to fall in line with current health and safety laws such as the food safety act of 2004

NOTES:

SERVICES SYMBOLS

	Switched Fused Spur
	Plug Sockets (Single or Double)
	Commando Socket (1 or 3 Phase)
	Electrical Isolator
	Data Supply
	Hot Water Supply
	Cold Water Supply
	Drain Connection
	Gas Connection

REVISIONS

Rev Description

Date



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Client: ECCLESTON STREET - PRESCOT

Project:

Scale: 1:20 @ A1 Date:

Drawn: RP

Approved: _____

Drawing No: Status:

Revision

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