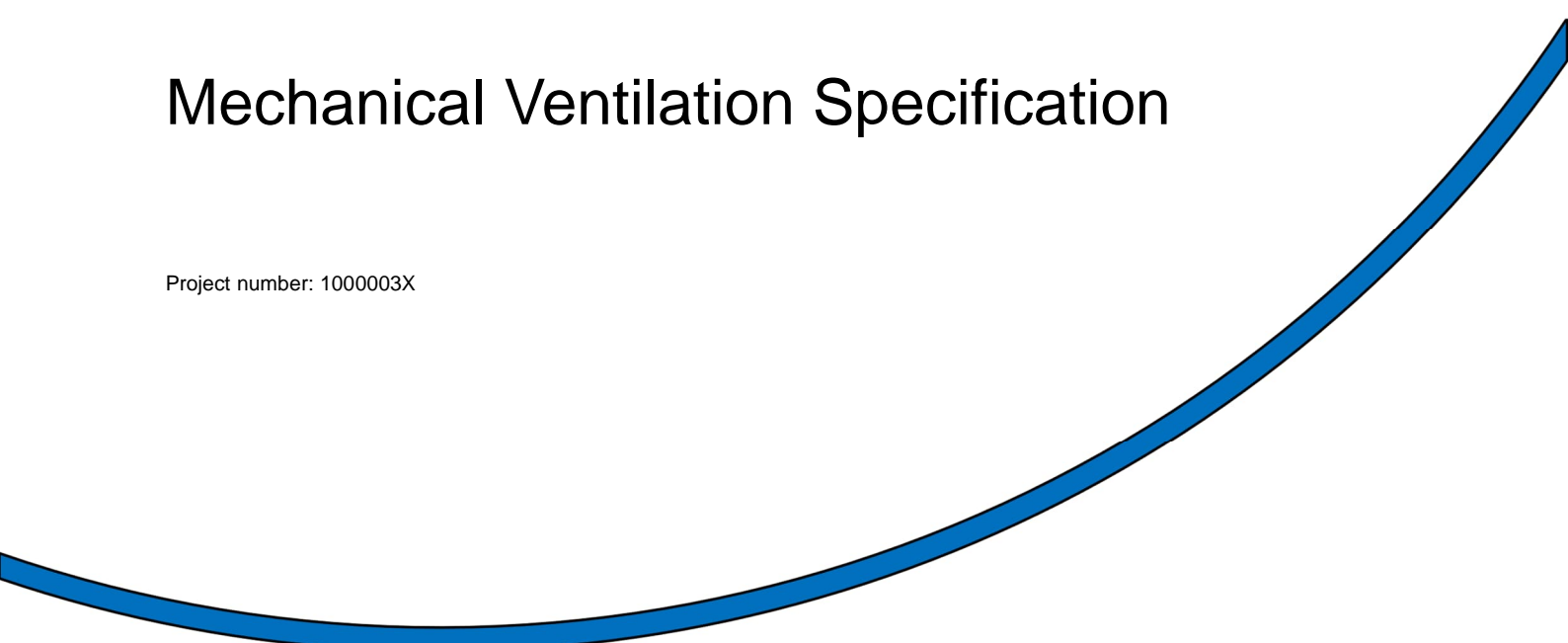


25 Queens Road

# Mechanical Ventilation Specification

Project number: 1000003X



## Quality information

### Prepared by

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Justin Knight  
Principal Engineer

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## Revision History

Revision	Revision date	Details	Authorized	Name	Position
T0	Oct 2023	For Planning and Building regulations	JK	Justin Knight	Mechanical Engineer

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### Prepared for:

25 Queens Rd Stakeholders

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## General

### General Scope of Works:

The works comprise the installation of a new ventilation system at 25 Queens Rd. The ventilation system will be serving a restaurant and associated kitchen facilities.

### General Note:

This document has been compiled to support planning and building regulations applications. The document details the mechanical schedule of works for the proposed installation.

This schedule is to be read in conjunction with the drawings.

The Site: 25 Queens Rd  
Brighton  
BN1 3XA

Note: The layout arrangement and dimensions provided on the drawings are indicative. The installing Contractor will be responsible for taking all site dimensions.

The drawings and specification notes identify the materials to be used in the Works. Where exact manufacturer and reference details are not identified, The Contractor is required to provide the Employer with a sample of the intended match, prior to installation of the work, to ensure comments of the intended finish can be provided ahead of installation.

The Contractor will be responsible for all builders work, firestopping and making good in connection with any mechanical works.

## 1.1 Statutory and General Obligations

1.3.1 In respect of the installation, materials, components, equipment and workmanship the installation will comply with statutory and other obligations and the regulations of the Local Authority, Public Services or Statutory Undertaking relating to the execution of the works. In particular the installation shall comply with the requirements of:

- (a) The CIBSE Codes and Guides.
- (b) Water Supply Bylaws.
- (c) British Gas Regulations.
- (d) The HVCA Codes and Guides.
- (e) BS 7671 Regulations for Electrical Installations.
- (f) Regulations under the Electricity Acts.
- (g) The Health & Safety at Work, etc Act.
- (h) Construction Design & Management Regulations (CDM) 2015
- (i) The Electricity at Work Regulations.
- (j) The National Inspection Council for Electrical Installation Contracting.
- (k) The Building Regulations.
- (l) All other relevant British Standard Specifications and Codes of Practice, whether mentioned in this Specification, or not.

## 2. Schedule of Work and Specification

## 2.1 Scope of Works

2.100	<p><b>The Description of Works:</b></p> <p>The Contractor will attend site and carry out all works comprising of but not limited to;</p> <ul style="list-style-type: none"> <li>• <b><u>Local</u> isolation and making safe of all existing services which will be impacted by the works.</b></li> <li>• <b>The installation of new supply and extract fans to both the basement and ground floor, ductwork connections, power, control connections etc.</b></li> <li>• <b>The installation of ductwork, all necessary sound attenuation and insulation</b></li> <li>• <b>The installation of 3No. Canopies to serve cooking areas</b></li> <li>• <b>The installation of 1No. dishwasher canopy</b></li> <li>• <b>Installation of all associated controls</b></li> <li>• <b>New small power supplies to all new air handling plant</b></li> <li>• <b>New containment systems for small power supplies</b></li> <li>• <b>Record drawings and O&amp;M manuals</b></li> </ul>		
2.101	<b>Existing Equipment</b>		
2.102	All existing mechanical and electrical services shall be isolated and made safe prior to the commencement of work.		
2.103	The contractor shall ensure that the site remains live during the works and that any isolations or adjustments do not impact the day to day running of the site.		
2.104	<b>Asbestos</b>		
2.105	The Asbestos register for the Site will be made available to the Contractor. The Contractor shall alert the CA immediately should any asbestos be detected on site.		
2.106	<b>Design Life</b>		
2.107	The design life of the mechanical services plant and equipment shall be 20 years. The pipework and ductwork installation life shall be 25 years.		
2.108	<b>Ambient Conditions</b>		
2.109	<p>All plant, equipment and systems shall be capable of withstanding the following ambient conditions:</p> <p style="margin-left: 40px;">a) External plant and equipment:      Air temperature -20°C to +40°C, 90% RH</p>		

	<p>b) Internal plant and equipment: Air temperature -5°C to +40°C, 90% RH</p> <p>These figures are not design values for the sizing of HVAC plant.</p>		
2.110	<b>Design Criteria</b>		
2.111	<p>The Mechanical Services installation is designed on the following criteria:</p> <p><i>External Design Conditions</i></p> <p>Winter: -5°C fully saturated</p> <p>Summer: 27°C db, 19°C wb for heat gain calculations</p> <p>32°C db, 23°C wb for air-cooled condenser selection</p> <p><i>Internal Design Conditions</i></p> <p>Internal temperatures should be capable of being maintained at a minimum of 21°C.</p> <p>The temperature within the kitchen shall be 28°C maximum.</p> <p>Humidity levels within the kitchen shall be a maximum of 70%</p>		
2.112	<b>Noise Criteria</b>		
2.113	<p>Noise levels generated by the building services to the external environment shall be in accordance with the requirements of the Local Building Control/Environmental Health Officer.</p> <p>Attenuation will be installed to all new supply and extract fans to ensure no noise breakout to the local environment.</p>		
2.114	<b>Strip Out Works</b>		
2.115	Existing building services shall be stripped out as necessary to accommodate the works.		
2.116	Any redundant materials shall be disposed of strictly in accordance with Environmental Agency requirements.		
2.117	<b>THE DESCRIPTION OF WORKS:</b>		
2.118	A method statement detailing the proposals for access, lifting equipment requirements and manhandling shall be provided to the Employer prior to commencing works.		
2.119	The contractor shall ensure that all works contained within the following schedules are installed in accordance with Standard Materials & Workmanship for Mechanical and Electrical works.		
2.120	The Works shall include the supply, delivery, offloading, handling into storage, handling into position, erecting, installation, connecting, pressure testing, setting to work, testing, balancing and commissioning and successful hand-over of the completed installation associated with the restaurant ventilation, all ancillary items, controls and power.		
2.121	<b>Basement Supply</b>		
2.122	The Contractor shall supply and install 1No. Systemair MUB 042 450EC-K-A Multibox supply fan, or equal and approved. The fan shall		
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	be installed to provide fresh air to the basement kitchen area. The fan shall be capable of supplying 1.2 m <sup>3</sup> /s of fresh air and shall be ducted as per the drawings.		
2.123	The supply fan shall be a centrifugal box fan, insulated acoustically with anti vibration fixing pads.		
2.124	The supply fan shall be complete with 2No. Systemair KKS 042 silencer sections to prevent fan noise breakout.		
2.125	Supply air shall be heated through a dedicated heater section.		
2.126	Panel filters shall be allowed for and installed to the supply air via a dedicated filter section within the ductwork.		
2.127	<b>Basement Canopy Extract</b>		
2.128	The Contractor shall supply and install 1No. Systemair MUB/T 062 560EC extract fan, or equal and approved. The fan shall be installed to extract air from the basement kitchen area. The fan shall be capable of extracting 2.61 m <sup>3</sup> /s of air and shall be ducted as per the drawings. A new canopy shall be installed above the cooking area to facilitate extraction.		
2.129	The extract fan shall be a centrifugal box fan, insulated acoustically with anti-vibration fixing pads.		
2.130	The fan shall be rated at 120 °C.		
2.131	The fan shall be complete with 2No. Systemair KKS 062 silencer sections to prevent fan noise breakout.		
2.132	The Contractor shall install a canopy of 4.5 m by 1.4 m by 0.6 m (L x W x D). The canopy shall be fabricated in stainless steel.		
2.133	Grease filtration shall be installed to the canopy and shall be easily accessible for maintenance and cleaning purposes.		
2.134	<b>Ground Floor Supply</b>		
2.135	The Contractor shall supply and install 1No. Systemair MUB 062 560EC Multibox supply fan, or equal and approved. The fan shall be installed to provide fresh air to the ground floor restaurant dining area. The fan shall be capable of supplying 2.65 m <sup>3</sup> /s of fresh air and shall be ducted as per the drawings.		
2.136	The supply fan shall be a centrifugal box fan, insulated acoustically with anti vibration fixing pads.		
2.137	The supply fan shall be complete with 2No. Systemair KKS 062 silencer sections to prevent fan noise breakout.		
2.138	Supply air shall be heated through a dedicated heater section.		
2.139	Panel filters shall be allowed for and installed to the supply air via a dedicated filter section within the ductwork.		
2.140	<b>Ground Floor Extract</b>		
2.141	The Contractor shall supply and install 1No. Systemair MUB/T 062 560EC extract fan extract fan, or equal and approved. The fan shall be installed to extract air from the ground floor kitchen canopies. The fan shall be capable of extracting 1.74 m <sup>3</sup> /s of air and shall be ducted as per the drawings. 2No. new canopies shall be installed above the cooking areas to facilitate extraction.		
2.142	The extract fan shall be a centrifugal box fan, insulated acoustically with anti-vibration fixing pads.		

2.143	The fan shall be rated at 120 °C.		
2.144	The fan shall be complete with 2No. Systemair KKS 062 silencer sections to prevent fan noise breakout.		
2.145	The Contractor shall install 2No. canopies, 1No. 2.65 m by 1.25 m by 0.6 m (L x W x D) & 1No. 1.8 by 1.1 by 0.6. The canopies shall be fabricated in stainless steel and installed as per the drawings.		
2.146	Grease filtration shall be installed to both canopies and shall be easily accessible for maintenance and cleaning purposes.		
2.147	<b>Ground Floor Dishwasher Extract</b>		
2.148	The Contractor shall supply and install 1No. Systemair Prio 315 EC extract fan, or equal and approved. The fan shall be installed to extract air from the ground floor dishwasher canopy. The fan shall be capable of extracting 0.45 m <sup>3</sup> /s of air and shall be ducted as per the drawings. 1No. new canopy shall be installed above the dishwasher area to facilitate extraction.		
2.149	The fan shall be a centrifugal box fan, insulated acoustically with anti-vibration fixing pads.		
2.150	The fan shall be complete with 2No. Systemair LDC 315-900 silencer sections to prevent fan noise breakout.		
2.151	The Contractor shall install a canopy of 1.7 m by 1.2 m by 0.6 m (L x W x D). The canopy shall be fabricated in stainless steel.		
2.152	<b>Ventilation Generally</b>		
2.153	All ductwork shall be run at high level.		
2.154	Ductwork shall connect externally to risers which will run up the outside of the existing rear extension of the building.		
2.155	All external ductwork shall be weather resistant and shall be protected from rain water ingress.		
2.156	Extracted air shall be discharged not less than 1 m above the roof eaves of the building.		
2.157	Kitchen extract ductwork shall be fire rated.		
2.158	Fire dampers shall be installed to ensure that the integrity of all fire compartments are maintained. Dampers to be installed as per fire compartmentation requirements.		
2.159	Access panels for cleaning purposes and fire damper access are to be provided within all supply and extract ductwork distribution in accordance with regulations.		
2.160	The supply and extract fans shall be interlocked with the fire alarm. In the event of a fire the ventilation systems shall be isolated.		
2.161	<p>The ventilation systems shall be interlocked with the gas supply. The gas supply shall be fitted with a solenoid valve which will open once the ventilation system has been proved operational. Operation will be proved by in duct pressure sensors. The basement and ground floor kitchen areas shall be fitted with their own solenoid valve which shall be interlocked with their respective ventilation systems.</p> <p>The solenoid valve shall not open until sufficient ventilation has been proved.</p> <p>The gas safety interlock shall monitor the continuous operation of the ventilation system. If either of the fans fail then the gas shall be shut off.</p>		

2.162	<b>Ductwork</b>		
2.163	Ductwork shall be installed as per the routes and dimensions as stated on the drawings.		
2.164	<p>Ductwork shall be Low Pressure Class 'A' and constructed in accordance with HVCA Specification DW/144[1] with a minimum thickness of 0.8mm.</p> <p>- Duct velocities should be as follows:</p> <ul style="list-style-type: none"> <li>• Supply (m/s) Extract (m/s)</li> <li>• Main runs 6-8 6-9</li> <li>• Branch runs 4-6 5-7</li> <li>• Spigots 3-5 5-7</li> </ul> <p>All internal surfaces of the ductwork should be accessible for cleaning and inspection. Access panels should be installed at 3.0m centres and should be grease tight using a heat proof gasket or sealant.</p>		
2.165	All ductwork, fittings and accessories shall be manufactured from hot-dip zinc coated and iron zinc ally coated mild steel sheet and plate in accordance with BS EN 10143:1993		
2.166	All ductwork fittings and accessories will be manufactured and installed in accordance with HVCA Specification for sheet Metal Ductwork DW/144. The pressure and leakage classification for the ductwork system shall be identified elsewhere in this Specification.		
2.167	The kitchen ventilation systems shall be manufactured and installed in accordance with DW/171 guide to good practice for kitchen ventilation systems.		
2.168	The ductwork shall be complete with dampers, bends, tees, tapers, transformation and special pieces. Lobster back type bends or mitred type elbows will NOT be permitted under any circumstances.		
2.169	All flanged joints shall be provided with a 3mm thick full faced rubber gasket, where slip joints occur, they shall be telescoped to ensure a tight taper fit, have an overlap of not less than 75mm and sealed over the full lap not greater than 50mm.		
2.170	Control dampers shall be provided where indicated upon the drawings and these shall be of the streamlined multi-leaf type, the spindles of which shall be fixed to quadrants. The damper blades shall be fixed in line with the operating arm of the quadrant and 'open' and 'closed' plates.		
2.171	The connections to all items of plant shall be made with acoustic type flexible connectors.		
2.172	All supports and brackets shall be felt lined and painted ONE COAT of red oxide before and after erecting. All nuts and bolts shall be sheradised. The fastening of electrical cables to ductwork will NOT be permitted.		
2.173	Ductwork where passing through floors, walls, roofs, etc. shall be provided with galvanised steel sleeves packed with mineral fibre or similar non-flammable fire resisting material form a fire/smoke stop of adequate rating and to eliminate movement of air between the duct and		
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	the sleeve and the transmission of noise from one area to another.		
2.174	Ducts shall not come into contact with the fabric of the building except where fire/smoke dampers are fitted in the building fabric.		
2.175	Test points shall be included at each side of items of equipment, upstream of dampers and as required to measure the system performance.		
2.176	Upon completion of the ductwork installation, the Contractor shall be required to demonstrate to the Engineer that the system is air tight by carrying out air leakage test in accordance with DW/143 where appropriate.		
2.177	<b>Duct Access Doors</b>		
2.178	The Contractor shall supply and fix duct access doors to ductwork at intervals not exceeding 3m for cleaning and at the following positions: <ul style="list-style-type: none"> <li>▪ At each side of all heating and cooling coils for the purpose of inspecting and cleaning the coils.</li> <li>▪ At each side of all filters.</li> <li>▪ At each side of all attenuators.</li> <li>▪ At one side of all dampers.</li> <li>▪ At one side of all fire dampers.</li> <li>▪ As required by Table 25 of DW/144.</li> </ul>		
2.179	Access doors shall be rectangular double skin sandwich construction lift-off doors.		
2.180	<b>Grilles and Diffusers</b>		
2.181	The Contractor shall provide and fix in the positions indicated upon the drawings, diffusers and transfer grilles.		
2.182	The grilles and diffusers shall be constructed from polished extruded aluminium complete with standard fixings, as recommended by the manufacturers, or of the type detailed later and finished with a finish to the architects BS colour.		
2.183	<b>Silencers</b>		
2.184	The Contractor shall provide and fix silencers to the installation as required to nullify the impact of noise breakout from the ventilation fans.		
2.185	Silencers shall be suitable for the temperature and quality of air being handled, constructed to DW/144 Specification for low/medium pressure ductwork and type tested to BS 4718 at the manufacturer's works or an approved testing laboratory, and certificates provided.		
2.186	Silencers shall have an outer casing of not less than 0.8mm gauge galvanised sheet steel. Longitudinal joints shall be lock formed and mastic sealed. Each connection shall be drilled angle iron Doby flanges to the casing with huckbolts with the casing peened back over the flanges, or extended spigot fixing as detailed in the schedules. The direction of airflow shall be clearly marked on the casing.		
2.187	Silencers shall be lined with melinex or equal material to prevent the absorption of moisture, dirt and corrosive substances and the release of fibrous particles.		
2.188	<b>Controls</b>		
2.189	All of the fans shall be installed with variable speed controls. The controls shall be set upon commissioning. The commissioning control setpoint shall be documented and the controllers locked to these settings.		

2.190	The controls shall be interlocked with the gas via dedicated control panels for each floor. The panels shall communicate with their respective solenoid valve and shall disable the gas in the event of an air flow failure and or insufficient air flow.		
2.191	<b>Power</b>		
2.192	Enabling Works – Administration.  Liaise with mechanical services contractor including confirming final locations of equipment.  Liaise with client including: determining any particular site requirements; site labelling standards.		
2.193	The electrical contractor shall allow for all required containment for the proposed works including modifications of existing containment to suit proposed electrical services.		
2.194	The electrical contractor shall allow for all power supply circuit wiring to the new fans, associated equipment and control panels including termination of cables.		
2.195	The electrical contractor shall allow for earthing and bonding to the proposed works. Including but not limited to; bonding of fans to containment, bonding containment to MET, bonding containment sections with proprietary bonding links, ensuring electrical continuity of containment where it is not possible to install continuous containment.		
2.196	Inspection, testing and certifying of the proposed works.		
2.197	<b>Commissioning</b>		
2.198	The Contractor shall provide a commissioning schedule and method statement to the Employer 2 weeks prior to commencement of commissioning.		
2.199	The Contractor shall carry out all testing and commissioning on completion.  All testing and commissioning shall be carried out as recommended by standard testing procedures of the CIBSE Guide to current practice and Commissioning Codes Series A,B,C,R and W, British Standard Codes of Practice, BSRIA, and/or as otherwise specified.		
2.200	The Contractor shall allow for demonstrating all final test/commissioning results to the Employer, site staff and or their representative.		
2.201	<b>Building Work associated with the Installation</b>		
2.202	<b>Attendance On Engineering Works</b>		
2.203	The Contractor shall undertake all builders work in connection with the installation, including; <ul style="list-style-type: none"> <li>Allow for cutting, forming chases, holes and making good plaster/render - wall finishes, as appropriate in accordance with the general wall/ceiling finish. Specification to match surrounding surfaces to all areas affected by the works.</li> </ul>		
2.204	<b>Fire Stopping</b>		

2.205	<p>Comply with BS 9999, relevant approved technical guidance to Building Regulations. Comply with BESA Technical Bulletin TB/032 for protection of pipework/Ductwork for penetrating fire separating elements.</p> <p>All elements of the work requiring fire stopping shall be undertaken by a specialist sub-contractor. Fire stopping shall be installed in accordance with the existing fire strategy.</p> <p>Install all fire stopping systems in accordance with the manufacturer's written instructions and the test/assessment/certification evidence provided by the installer / manufacturer of the penetration seal.</p>		
2.206	<b>Site Protection and Warning Notices</b>		
2.207	<p>Provide and erect temporary barriers around the work including all temporary illuminations, etc. in order to safeguard personnel and vehicles on, or visiting the site in accordance with current Health and Safety Regulations. The Contractor will be responsible for the supply and display of all necessary warning notices during the progress of the works.</p>		
2.208	<b>Site Cleanliness</b>		
2.209	<p>The Contractor shall regularly remove from site and dispose of all materials arising as they accumulate during the progress of the works and leave the site clean and tidy upon completion.</p> <p>The Contractor is to ensure that all surfaces are thoroughly cleaned prior to handover.</p>		
2.210	<b>O&amp;Ms</b>		
2.211	Allow for the creation of O&M manuals.		

End of Section

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