



Building Engineering Services Stage 3 Report

CAT-B FITOUT
Part Ground Floor, Queens Road Bus Depot,

Prepared on behalf of
Transport for Greater Manchester
June 2025

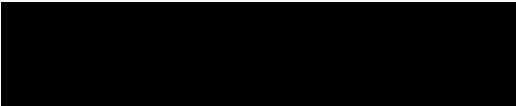
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Signed



Audit Sheet		
Revision	Date	Written By
T01	19/05/2025	AF
T02	26/06/2025	AF

File Reference: QRBD/T01

Report Issue & Date: T02 – June 2025

1.0 BUILDING ENGINEERING SERVICES STRATEGY

1.1 Introduction

This document prepared by Beehive Building Consultancy shall be used to describe the Building Engineering Services strategy for the refurbishment of Queens Road bus depot Manchester. It shall be the responsibility of the Contractor to provide the detailed design in order to deliver this strategy. Please refer to the architectural floor plan for details.

This section of the Contract Documents is the project Performance Specification and must be read in conjunction with all other Tender documentation.

The Contractor is required to provide all materials and works in accordance with all current and pending standards and revisions including British Standard or Code of Practice, and shall comply with all Statutory Instruments and Regulations, planning conditions and Local Byelaws relating to the area of the site at the date of tender. The Contractor is also required to comply with the requirements of the Approved Inspector and all relevant requirements included in the Main Contract Preliminaries Section including notification to all Authorities in accordance with their Regulations, obtaining all required approvals for the installation.

The Contractor shall visit site during the tender period and review all onsite O&M manuals and record drawings that are applicable to this project. The design and installation of the new systems shall ensure that the energy consumption of the building is made no worse, and that the installed capacity of the systems is no greater than before the works were undertaken. Therefore, if the stated design criteria were found, through Contractor calculations via the appointment of a specialist designer, to result in increased building energy consumption this shall be advised to Beehive immediately, prior to the procurement of any MEP services. The Contractor shall allow for all re-designs and calculations necessary to ensure that this requirement is met and are to the satisfaction of Beehive.

The Contractor is required to include and provide all documentation required to fully adhere to the Building Management Fitout Guide / Contractor Guidance document, included in Appendices.

The Contractors design and build is required to satisfy all Statutory Obligations, including but not limited to, the following (the latest revisions and editions shall always be adhered to):

- Health and Safety at Work Act 1974
- Local Authority and Planning Requirements.
- Local / National Statutory Requirements.
- Disabled Discrimination Act
- The Water Regulations Guide 2000
- Water Storage – British Council of Offices – Best practice specification for offices.

- British Standard BS8233 “Sound insulation and noise reduction for buildings – Code of Practice”. N.B. Where this standard gives ‘Good’ and ‘Reasonable’ criteria the ‘Good’ criteria shall be considered to apply.
- Building Regulations 2010 Non-Domestic Heating, Cooling and Ventilation Compliance Guide
- Management of Health & Safety at Work Regulations 1999
- IET Electrical Wiring Regulations 18th Edition, incorporating all current amendments
- The Working Time Regulations 1998
- Planning Conditions and other requirements of the Local Authority.
- Statutory noise nuisance legislation.
- Manufacturer’s installation instructions
- Other relevant British Standards and Codes of Practice.
- Gas Safety (Installation and Use) Regulations 1998
- Gas Safety (Management) Regulations 1996
- Building Regulations 2010 and current amendments
 - Part B - Fire Safety
 - Part F - Ventilation
 - Part H - Drainage and Waste Disposal
 - Part J - Combustion Appliances and Fuel Storage Systems
 - Part L - Conservation of Fuel and Power
 - Part M - Access and Facilities for Disabled People.
- British Council of Offices Guidelines 2019
- Building Standards (Scotland) Regulations 1990 and current amendments
- London Building Act and/or Building (Inner London) Regulations, when applicable
- Public Health Acts
- Electricity Acts
- Electricity at Work Regulations 1989
- Factories Act 1961
- Clean Air Act 1993
- The Control of Pollution Act 1974 and Amendment Acts
- The Workplace (Health, Safety and Welfare) Regulations 1992
- The Construction (Design and Management) Regulations 2015
- The Health and Safety (Display Screen Equipment) Regulations 1992
- The Clean Air (Arrestment Plant) (Exemption) Regulations 1969
- The Control of Substances Hazardous to Health (COSHH) Regulations 2002

· The Control of Substances Hazardous to Health (Amendment) Regulations 2003
· Control of Asbestos at Work Regulations 2012
· The Provision and Use of Work Equipment Regulations 1998
· Personal Protective Equipment at Work Regulations 1992
· The Construction (General Provisions) Regulations 2015
· The Lifting Operations and Lifting Equipment Regulations 1998
· The Institute of Plumbing – Plumbing Engineering Services Design Guide
· Other relevant Safety Regulations
· Public Utility Company and/or Statutory Authority Regulations, Specifications, and Requirements.
· BS EN 12056:2000 Gravity Drainage Systems Inside Buildings Parts 1, 2 & 3.
· Other Requirements
· British Standards and Codes of Practice.
· BS 5839-1:2017 Fire Detection & Fire Alarm Systems for Buildings
· BS 8300-2:2018 Design of an accessible and inclusive built environment. Buildings - code of practice.
· BS 5266-1:2016 Emergency Lighting. Code of practice for the emergency escape lighting of premises
· BS EN 81 (entire series) Lift Installations.
· BS EN 50110.
· Insurance Company Requirements.
· LDSA Fire Safety Guides.
· IEC Standards.
· IEC 61000-6-1: Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments
· IEC 61000-6-3: Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
· IEC 61000-3-11: Electromagnetic compatibility (EMC) - Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection
· IEC 61000-3-12: Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤ 75 A per phase
Where no specific design, performance or installation standards are quoted the following apply CIBSE – Chartered Institute of Building Services Engineers):
· CIBSE Guidebooks and Standard Codes for design, installation and commissioning.

· BSRIA Commissioning Guidelines and CIBSE Commissioning Codes.
· CIBSE Code for Lighting and Lighting for Offices (LG7: 2022)
· CIBSE Technical Notes and Reports.
· CIBSE Technical Memoranda.
· BRE Building Research Establishment
· BSRIA Building Services Research and Information Association publications
· Heating and Ventilation Contractors Association (HVCA) Standards and Codes of Practice
· Institute of Plumbing, Plumbing Engineering Services Design Guide.

1.2 Building Engineering Services Documents

The Building Engineering Services Documents have been prepared on behalf of Transport for Greater Manchester to provide performance criteria for the Building Engineering Services Works.

The Building Engineering Services Contract shall be based on the documents noted below and will be included in the JCT Design and Build Contract:

Building Engineering Services Documents
Building Engineering Services Stage 3 Specification
Building Engineering Services Materials and Workmanship Standard Specification (Appendix D)

Indicative Building Engineering Services Drawings are provided in Appendix A. Design risk register up to stage 3 is provided in Appendix B. Contractor shall develop and update the design risk register throughout the construction phase of the project. The Contractor shall also refer to the associated building fabric and architectural specifications, drawings and tender pack and ensure that as part of the tender returns, include for all MEP works associated with other disciplines.

2.0 THE PROJECT

Beehive have been commissioned by Transport for Greater Manchester to provide a Building Engineering Services Strategy for the works in the ground floor demise as illustrated within the architect's layouts.

This document is to be read in conjunction with all documents provided by all members of the design team and the Building Tenant's Fitout Guide / Contractors Guidelines.

2.1 Base Building – Design Criteria

The ground floor is currently occupied by Stagecoach who operate out of Queens Road bus depot. All services are currently installed in a CAT-B arrangement. Beehive in conjunction with the design team have prepared a scheme to refurbish the existing CAT-B fit-out.

2.2 CAT B fitout - Design Criteria for Building Engineering Services

The proposed CAT B MEP design criteria relative to the environmental system for the development are as follows. The Contractor shall visit site, review all O&Ms including liaison with the Building Management team and review the validation report results, to verify the information. The Contractor shall also raise with Beehive where discrepancies or shortfalls are identified to meet the design criteria noted.

Mechanical Services	
Existing LTHW system to be retained with minor work to be carried out	
Electrical Services	
Lighting, details refer to lighting report:	
Open Plan Office	400 lux (average at desk level, 0.75m)
Meeting Room & Phone Booth	500 lux
Board Room	500 lux
Break Out	300 lux
Circulation	150 lux
Fire Protection System	
Fire Detection System	Assumed to be L1 type fire detection/alarm system to BS 5839: Part 1 with a voice alarm system to facilitate evacuation (Contractor to confirm category of fire alarm system installed)

3.0 BUILDING ENGINEERING SERVICES DESCRIPTIONS AND PROPOSED MODIFICATIONS

The MEP services shall be generally stripped out, with new installations noted on the proposed drawings. Some electrical services that serve other areas of the ground floor but run through the refurbishment demise are to be retained, modified and included within the cable containing scope.

It is the responsibility of the main contractor to ensure the electrical and mechanical contractor receives the full tender documentation. The electrical and mechanical contractor shall comply with the main contractors' programme of works and shall allow fully for all out of hours works necessary to complete this work on programme.

A site survey prior to submission of tender is required. It shall be deemed that aspects of the site conditions have been assessed and included in the tender. This includes careful review of all on site O&M manuals and drawings, some of which are provided in Appendices.

The Contractor shall take the necessary precautions in the execution of the Works to prevent damage to the building, fittings or equipment. In the event of such damage occurring, the Contractor shall bear the cost of replacement or making good.

Furthermore, the Contractor shall also ensure that the works would be least disruptive to the existing operations. Therefore, consideration to noisy working hours will be needed and agreed with Beehive prior to works proceeding.

For quality control the contractor is assumed, in their tender returns, to have used the stated manufacturers, without obtaining alternatives. However, the Contractor can provide alternative suppliers as cost options below the line.

There are cost options noted in the following sections of this report. The Contractor shall provide a cost for these options as part of the tender return, as a below the line figure.

NOTE:

- Note that the MEP drawings and sketches included within the appendices of this document as only available in pdf format and the contractor shall allow for creating .dwg format drawings / REVIT model as part of their design. Dwg format as-built drawings are included in the appendices of this report to facilitate the drawing production.
- The Contractor shall take special note that the ceiling and associated services are proposed to be exposed. Refer to the architect's RCP for further details.

3.1 Mechanical Services

3.1.1 Existing Services Description

- The demise in this project is provided with Low Temperature Hot Water (LTHW) which consists of radiators within the refurbishment demise along with gas fired radiators located within the ground floor plant room.
- A sprinkler system has been installed throughout the building for means of fire protection. The sprinkler system is now redundant but remains in situ. As part of this project, the Contractor shall modify the existing installation as required to suit the new demise partition. Please refer to the architect's design pack.

3.1.2 Mechanical Validations

The required validations for the mechanical systems are described in detail in Section 4.1 of this report. The validations must be carried out prior to any works being undertaken.

The Contractor shall raise with Beehive where discrepancies or shortfalls are identified to meet the design criteria noted. The Contractor shall also raise if further validations are required.

The Contractor must allow for and complete any further validations required to allow the full delivery of this scheme.

The Contractor shall record and document the outcome of all validations, test, measurements and samples, etc. The Contractor shall submit a typed written and structured report with their findings to the Employer and their representatives for comment. Any recommendations for corrective works shall be fully costed as part of the reporting process.

3.1.3 Mechanical Strip-out:

The aim of the strip out works is to disconnect services which are redundant.

The Contractor shall produce strip out drawings, indicating the extent of the proposed strip out works, which shall be issued for comment to the Contract Administrator. All services that are to be stripped out shall be clearly indicated and all services that are to be retained shall be clearly protected. Where equipment is to be taken down for later re-location, the Contractor shall take a detailed condition survey (including photographs) to demonstrate the condition of these services prior to works being undertaken. All such equipment shall be carefully handled and stored in a protected area clear from any construction works.

The Contractor shall isolate, disconnect and remove all redundant existing services entirely. All redundant materials shall be removed from site and disposed of with due regard to the health, safety and the environment. Strip out works shall generally include the strip out of all associated hangers, supports, containment etc.

The Contractor shall allow for making good all builders-works and any required redecoration associated with the strip out. (Refer to architect spec for architectural specification for detail).

On completion of the strip out works, the contractor shall complete any validation investigations and reports to confirm all remaining systems are fit for purpose for the fitout. The base build systems in the areas not covered by these works must be left in working order at all times and protected throughout the entirety of the contract period.

All services to facilitate the proposed demise scope, layout and performance are to be stripped out, refer to Tender Drawings. This includes, but is not limited to:

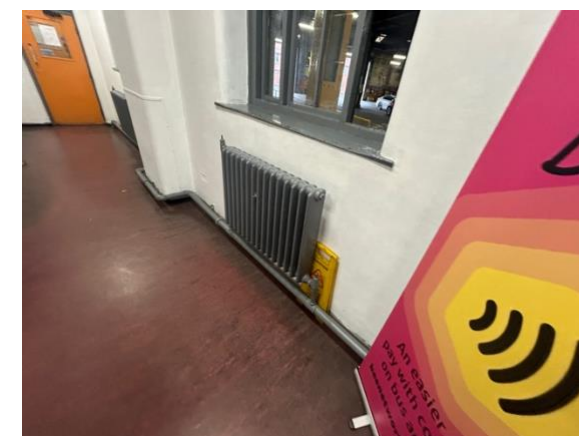
- Removal of any tenant installed services within the refurbishment demise as identified by the validations exercise.

3.1.4 Heating

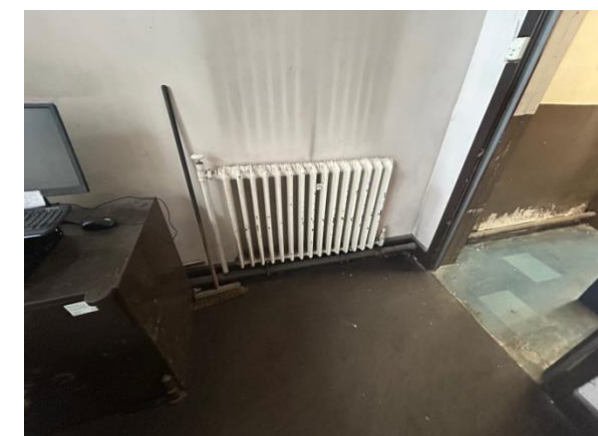
The existing low temperature hot water (LTHW) heating system is to be retained as part of the refurbishment works. 1no. new radiator is to be installed within room GF.09 to provide adequate heating in line with the revised layout. This new radiator shall match the style and output of the existing radiators serving the ground floor and is to be a column-type radiator to maintain consistency with the existing installation.

The contractor shall assess the integration of existing radiators and associated pipework in relation to the proposed new internal partitions and spatial configuration. Where necessary, radiators may require repositioning or adjustment to suit the revised room layouts and ensure effective thermal performance. Should any additional radiators be required beyond those identified, or if existing pipework requires significant modification to accommodate the new layout, the contractor must notify Beehive Building Consultancy for review and approval prior to undertaking such works.

A new IP-rated electric panel heater will be installed within the WC area to provide additional heating. The radiator will be appropriately selected to meet the environmental conditions of the space, ensuring compliance with relevant electrical safety regulations for wet areas. All installation works will be carried out by qualified electricians, and the final installation will be tested and certified in accordance with BS 7671 (IET Wiring Regulations). A 13A switched fused connection unit for the Electric Panel Heater is required.



Radiator example to be retained



Radiator example to be retained

3.1.5 Heating Pipework

The existing LTHW heating system is to be retained. 1no. new radiator is to be installed within room GF.09 to provide adequate heating in line with the revised layout. This new radiator shall match the style and output of the existing radiators serving the ground floor and is to be a column-type radiator to maintain consistency with the existing installation.

The contractor shall however, coordinate and modify any installed radiators and pipework with the new proposed demise partition if required. Where this is not possible, and additional radiators are required or an alternative solution, this shall be discussed with and agreed with the architect / Beehive team prior to proceeding.

For the any new LTHW pipework installation:

- Any alterations to the pipework and fittings shall be formed in heavy grade steel (to match existing). The Contractor shall include all associated pipework supports, expansion and fixings to complete the systems in line with manufacturer and design guidance.
- Install new isolating valves, commissioning sets, measuring stations, strainers, expansion valves, drain cocks, air vents etc. as required.
- Allow for pressure testing of the new pipework and connections.
- No dead-legs or blind ends shall be left in either a temporary or permanent basis on any system.
- Cleaned and flushing in accordance with BSRIA BG29 guide, refer to Testing and Commissioning section.

3.1.6 Public Health Services

Above-Ground Drainage

Some drainage works is envisaged as part of the works, including the replacement of a redundant toilet, sink and taps, see details below for guidelines if installations are found to be required post validation/detailed design stages.



Existing WC to be refurbished

Public Health Services

Some domestic water services work is envisaged as part of the scope. This will fall within the refurbishment of the toilet area, including new toilet and sinks. The works consist of replacing the existing toilet, sink and taps.

3.1.7 Fire Protection

The Contractor's design proposal must be agreed with Building Control, the Fire Officer, Beehive Building Consultancy.

The Contractor shall ensure that the refurbishment design fully complies to the current fire strategy.

Sprinklers

A redundant sprinkler system remains in situ throughout the first floor. This is to be retained to comply with heritage recommendations. Minor alterations to accommodate the new glazed screening are to be carried out on the sprinkler system. Please refer to the architect's pack.

3.1.10 Building Management System (BMS)

There doesn't appear to be an existing BMS present onsite. No further works required.

3.1.12 Insulation / Finishes

All finishes are listed within the architect's pack.

3.2 Electrical Services

The contractor must attend site to inform their Tender return to fully understand the extent of the strip out works and associated works for the fit-out proposals. The required validations for the electrical systems are described in detail in Section 4.1 of this report. The validations must be carried out prior to any works being undertaken.

Where electrical services are to be retained, they shall be fully inspected, tested and validated and then modified to suit reinstatement to new layout.

Alterations to the internal features including lighting, small power, life safety systems including automatic fire detection, voice alarm systems, and security systems shall be designed in line with all applicable standards and regulations and shall reflect best and innovative practice.

The services shall be very carefully co-ordinated. Existing services such as lv cables that run through the refurbishment demise that supply other areas of the ground floor that are to be retained will likely require to be relocated and modified to suit aesthetic aspirations for the project. Refer to the architect's tender information for further details.

3.2.1 Electrical Distribution

The main low voltage switch panels for the building are located in the engineering service area on the ground floor. The switch panels provide power throughout the bus depot.

The combined distribution boards serve all tenant circuits including lighting, small power and mechanical services. The distribution boards are of varying ratings, sizes and number of outgoing ways.

Please refer to the as-fitted information as well as the information generated from the validations exercise carried out during the works.

All downstream circuits from the existing distribution board that serves the refurbishment demise are to be stripped out to make way for new services installations, as detailed below.

3.2.2 Electrical Distribution Strip Out works

The aim of the strip out works is to disconnect services which are within the refurbishment demise. Some services are expected to be retained that service other areas of the ground floor but run through the refurbishment demise such as data cables and cables that supply power to lighting within the lighting cable containment.

The Contractor shall produce strip out drawings, indicating the extent of the proposed strip out works, which shall be issued for comment to the Contract Administrator. All services that are to be stripped out shall be clearly indicated and all services that are to be retained shall be clearly protected. Where equipment is to be taken down for later re-location, the Contractor shall take a detailed condition survey (including photographs) to demonstrate the condition of these services prior to works being undertaken. All such equipment shall be carefully handled and stored in a protected area clear from any construction works.

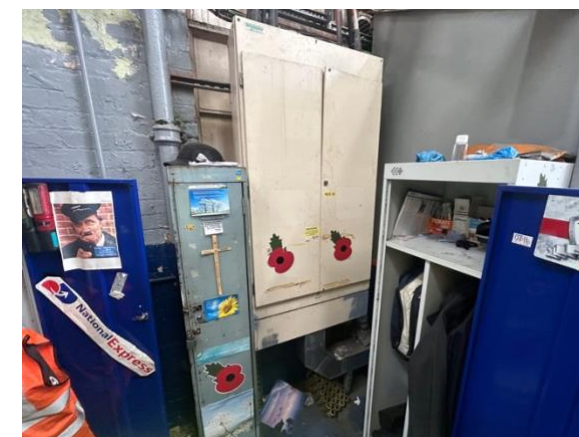
The Contractor shall isolate, disconnect and remove all redundant existing services entirely. All redundant materials shall be removed from site and disposed of with due regard to the health, safety and the environment. Strip out works shall generally include the strip out of all associated hangers, supports, containment etc.

The Contractor shall allow for making good all builders-works and any required redecoration associated with the strip out. (Refer to architect spec for architectural specification for detail).

The Contractor shall allow for the necessary licenses / permissions for the strip out.

On completion of the strip out works, the contractor shall complete any validation investigations and reports to confirm all remaining systems are fit for purpose for the CAT B layout plan. The base build systems in the areas not covered by these works must be left in working order at all times and protected throughout the entirety of the contract period.

The existing distribution board shall be isolated prior to the strip our works commencing and all associated downstream circuits will be disconnected from the distribution boards and removed.



Main switchpanel – To be retained



Existing ditribution board to be stripped out



Trunking example to be stripped out



Existing distribution board to be stripped out
Data cabinet to remove and replaced with 2no wall
mounted cabinets

Following the strip out of existing installations and installation of all the lighting, mechanical and small power services to form the refurbishment demise, all distribution boards shall be fully tested and inspected in line with requirements of BS 7671 18th Edition (5-yearly text) and a certificate to be produced. Any Category C1, C2 or C3 remedial works shall be undertaken as part of this project.

3.2.3 Electrical Distribution CAT B Fit out works

The project's power distribution shall generally consist of stripping out the existing electrical distribution systems and installing circuit requirements for new sockets and dado trunking. All new circuits tested and certified accordingly to BS 7671 18th Edition.

The existing electrical distribution board located within the existing reception area is to be fully decommissioned and stripped out, including the safe isolation and removal of all associated cabling and components. A new 32-way distribution board will be installed within the designated ground floor demise area to provide improved capacity and compliance with current standards. The installation will include all necessary containment, wiring, and protective devices, and will be fully tested and certified in accordance with BS 7671 (IET Wiring Regulations).

Contractors are to refer to the latest LV power layout drawing for locations, circuit allocations, and associated installation requirements. All works must be coordinated with the main project programme. Contractors are to refer to the architect's pack for precise positioning.

The existing low voltage (LV) electrical supply serving rooms GF.09, GF.10, GF.11, and GF.12 will be retained and adapted to meet the requirements of the proposed refurbishment works. As part of the refurbishment, the existing distribution infrastructure will be reviewed, and necessary modifications will be made to align with the new LV layout,

including the repositioning and installation of new power and data outlets, lighting circuits, and any associated containment. All adaptations will comply with current IET Wiring Regulations (BS 7671) and will be fully coordinated with the architectural and mechanical layouts to ensure seamless integration within the refurbished areas.

The electrical contractor is required to develop the electrical design at Stage 4 to a fully compliant system for the various systems and services to be installed as part of the CAT B fit out works.

Upon completion of the works, the Contractor shall fully test and inspect the electrical installation in line with the latest IET Wiring Regulations (BS7671, 18th Edition). Once the works are complete, new distribution board schedules shall be produced.

Electrical accessories shall be as per the MK Edge range or equivalent. All finished to be confirmed the Architect during the next stage of design. All accessories (including socket outlets, fused connection units, isolators etc.) must be labelled, indicating the full electrical circuit reference.

The Contractor shall allow to provide all new power supplies for new mechanical systems, it is the Contractor's responsibility to coordinate the provision of electrical supplies in order to provide a full and complete installation.

All socket outlets, switches and electrical accessories shall be compliant with Part M of the Building Regulations.

At the completion of the fit out works, the entire electrical installation impacted by this project shall be fully tested and commissioned and updated distribution board schedules shall be produced for the entire electrical installation and copies placed within the O&M manual and a paper copy attached to the inside cover the distribution boards. All existing circuits to be retained (as well as new) shall also be tested as part of the works.

Cable tray and trunking shall be provided for small power distribution, ICT, AV, security & fire alarm cables as required. Please refer to the LV distribution drawing which illustrate the cable tray and trunking locations. Cable dado trunking, cable conduits and small power outlets shall be in a metal finish to adhere to the planning application.

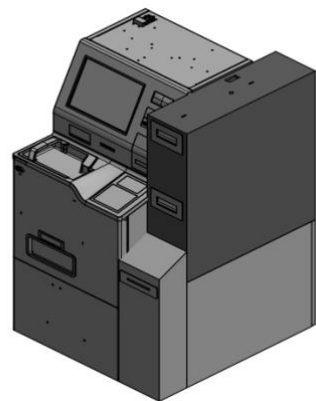
Due to the new glass partitions the cable tray locations must adhere to the drawings. The contractor must seek approval from Beehive or the architects for alterations to the cable tray route and locations.



Proposed Dado Trunking Aluminium Finish Example



Proposed Wall Mounted Data Cabinet



New Cash Machines



Proposed Cable Tray

The Contractor shall survey the current installed systems in order to develop the design suitably within Stage 4 and make proposals based on the design specification and incumbent controls manufacturer recommendations.

The lighting for the ground floor refurbishment demise shall design and installed in accordance to the following.

The lighting design must seek to minimise the use of energy through:

- Maximising the use of daylight within all areas that benefit from natural daylight.
- Minimising waste energy through the provision of appropriate light levels and the use of lighting control systems linked to both daylight and occupancy.
- The use of efficient lighting technologies where new lighting is proposed.
- Maximising the use of energy efficiency controls such as presence detection absence detection and daylight sensors to external façade areas to maximise control efficacy of the installed lights.

New lighting is expected throughout the proposed refurbishment demise.

The initial design proposals for the new lighting scheme are indicated on the lighting layout drawings within the appendices. Refer also to the Architect's Design tender package for further details of the lighting scheme. The Stage 3 proposals indicate design intent only and shall be further developed by the Contractor during the next stage of design, in consultation with Beehive & the Project Architect. Note that the sketches within the appendices reflect design intent only and hence quantities are purely indicative.

The lighting installation shall comply with the requirements of CIBSE/SLL LG7:2022 and the Building Regulations Part L and the final luminaire selections must ensure that the efficacy of the luminaires meet with compliance via appropriate calculation methods.

Note that prior to any equipment ordering the Contractor shall perform full lighting calculations (including for the emergency lighting installation) to ensure design is agreed and signed off by Beehive and the project Architect.

For the purposes of this tender exercise, the lighting design has been developed using Luceco lighting products. The proposed lighting solution is designed to deliver illumination levels equal to, or exceeding, the requirements set out in the relevant CIBSE lighting guides and BS EN 12464-1:2021.

Contact details

Andy Whalley
Luceco Project Manager
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3.2.4 Lighting & lighting control

The existing lighting to the ground floor areas consists primarily of suspended fluorescent and LED type fittings throughout consisting of linear types. please refer to the as-fitted information.

3.2.5 Strip Out works

All lighting within the demise line is to be stripped out and disposed of in an ethical manner.

3.2.6 Lighting & Lighting Control refurbishment demise works and CAT B Works

Lighting Controls

The contractor is required to survey site to confirm the installation and be able to develop the design in Stage 4 to provide adequate controls to suit the proposals.

In general, the lighting is to be controlled by presence detection and manual first man in / last man out switches at each of the entrances.

3.2.7 Emergency Lighting

Emergency lighting shall also be provided throughout the ground floor which shall be developed by the contractor in Stage 4 alongside assistance from Beehive.

A new emergency lighting and escape lighting installation shall be provided and be designed and installed in full compliance with fire strategy, BS5266: Part 1 (2016) and BS EN 1838 with a minimum required illumination level of 1 lux across the open plan office floorplate. The emergency lighting is to maintain the specified lighting level for a minimum duration of 3 hours. The emergency luminaires shall be integrated into the general lighting, maintained luminaires that form part of the general office lighting unless specified otherwise. Supplementary dedicated, non-maintained luminaires will be used where necessary but minimised in their use to align with architectural intent. Key test switches are to be integrated within the lighting scheme.

New final exit illuminated wayfinding signage will be provided as a minimum to confirm to local standards with suspended plate type fittings, not bulkheads. To be approved by the designers. Locations and quantities will be co-ordinated with the Architect / Approved Inspector. Refer to the lighting / emergency lighting drawings for initial proposed locations of emergency exit signage.

3.2.8 Fire Alarm

The building is provided with an addressable fire alarm system consisting of smoke detectors, heat detectors, call points, sounders, fire alarm interfaces, a main fire alarm panel at ground floor and some repeater and mimic panels installed in various locations around the building.

The category of the fire alarm system is L1 and should be maintained as such for the purposes of the tender assume it to be a minimum of L1 (in line with BS 5839 Part 1:2017). The Contractor shall ensure that all works to the fire alarm system are compliant with this category.

3.2.9 Fire Alarm Strip Out

Fire alarm devices and cabling should only be removed if it is in line with refurbishment demise.

3.2.10 Fire Alarm CAT B Fit Out

The existing fire alarm system shall be modified to suit the refurbishment proposals and demise wall layout arrangement.

A summary of the works to be carried follows below:

- The existing Ground floor fire alarm system shall be fully validated to confirm its condition and working operation.
- The existing system shall be modified and reinstated to suit new layout. This will require the strip out of the existing devices and cabling within the refurbishment demise. Contractor to advise appropriately.

The specialist contractor is to develop the design to compliance within stage 4 of the design and make proposals for formal sign off by Beehive, Project Architect and client in conjunction with the proposed aesthetics for cabling and device installation.

The fire alarm installation shall be fully compliant with the requirements of BS 5839 Part 1:2017 and BS5839-8:2013 as well as meeting the relevant detection requirements, suitable visual alarms shall be provided to fully comply with the BS 5839 Part 1, the requirements of the Approved Inspector and the fire strategy for the building and the relevant Building Regulations.

New fire alarm cables shall be run on new cable trays following onto conduits to final device locations. Any new fire alarm devices that are required shall be of same manufacturer as existing fire alarm system. Automatic fire alarm devices are addressable and shall be labelled.

The building's cause and effect shall also be updated as part of the works to reflect changes to the fire alarm and voice alarm system.

3.2.11 WC Emergency Assistance Alarm System

The M&E design includes the installation of an accessible WC emergency assistance alarm system incorporating a pull cord, which shall be clearly visible, easily reachable from both the WC and the floor, and linked directly to the reception area to enable immediate alert and response in the event of an emergency. The system shall be designed and installed in accordance with the requirements of BS 8300-2:2018 *Design of an accessible and inclusive built environment Part 2: Buildings Code of practice*, which sets out best practice for accessible sanitary facilities, including alarm systems for

users requiring assistance. The design shall also comply with the functional requirements of Part M of the Building Regulations 2010 (Access to and Use of Buildings), ensuring inclusivity and usability for persons with reduced mobility. The alarm unit shall include a visual and audible indicator, a reset control within the WC, and an overdoor light and sounder in adjacent corridors, as recommended by BS 8300 and BS 5839-1:2017 where integration with wider fire alarm systems is applicable. The system shall be integrated into the building's wider facilities management strategy, with routine testing and maintenance carried out in accordance with CIBSE Guide M: Maintenance Engineering and Management to ensure continued reliability and compliance with statutory requirements.

3.2.12 Electric Hand Dryer

The M&E design includes the provision and installation of an electric hand dryer within the WC, selected for energy efficiency and durability in line with the building's operational requirements. The unit shall be installed at an accessible height in accordance with BS 8300-2:2018 to ensure inclusive use. The hand dryer shall be connected via a dedicated 13A switched fused connection unit (SFCU), located outside of the splash zone and compliant with the requirements of BS 7671:2018 (IET Wiring Regulations, 18th Edition). The electrical circuit shall be protected by an RCD in accordance with current wiring regulations, and the installation shall form part of the overall electrical distribution design for the facility. The system shall be designed and installed to facilitate ease of maintenance and meet the guidance provided in CIBSE Guide K: Electricity in Buildings and CIBSE Guide M: Maintenance Engineering and Management.

3.2.13 Data Installation

The appointed contractor will be required to work in close coordination with the Transport for Greater Manchester (TfGM) IT team to decommission and remove the existing data infrastructure within the refurbishment demise. This includes, but is not limited to, the disconnection and safe removal of outdated cabling, data outlets, and any associated hardware or containment systems.

Following the successful removal of the legacy infrastructure, the contractor will then be responsible for the supply and installation of the new data infrastructure. This will include the installation of new data outlets at specified locations, and data cabinets as per the approved design specifications. All works must comply with current industry standards and TfGM's technical requirements.

Once the new infrastructure has been fully installed and tested by the contractor, the TfGM IT team will then proceed with the installation and configuration of the operational IT systems, including the cabling. This final stage will ensure that the infrastructure is fully functional and aligned with TfGM's ongoing operational needs.

3.2.14 Audio Visual (AV) and Telecommunications

The ground floor refurbishment is to include the installation of AV systems including AV/TV screens and associated cabling (data and power) and containment.

3.2.15 Electromagnetic Compatibility

Electrical installation will be designed and installed in compliance with the EU Electromagnetic Compatibility (EMC) Directive, enacted in the UK as Statutory Instrument 2006 No. 3418, The Electromagnetic Compatibility Regulations 2006.

In order to do this, all equipment will be "CE marked" and a certificate of conformity for the equipment will be placed in an evidence file that will form part of the operation and maintenance documentation for the project. In addition, the electrical installation that provides the EMC environment for the equipment will be designed using "good engineering practices" which will also be documented in the evidence file. This includes the application of rules on separation distances and choice of cable to suit each system being co-located.

3.2.16 Security

Door Access Control (DAC) System

The contractor shall supply and install a new door intercom system and a CCTV camera at the main reception entrance. This system is to provide secure audio-visual access control and shall be connected to two internal monitors to facilitate remote communication. The system shall be suitable for commercial application, vandal-resistant, and compatible with the building's operational and security requirements.

The final positioning of the two monitors is to be confirmed during the detailed design and coordination stages, based on input from the client and end users. However, indicative locations have been provided on the security drawings for reference and planning purposes.

The contractor shall ensure all necessary cabling, power supplies, and network connections are provided, and that the system is fully commissioned, tested, and demonstrated to the client upon completion. All works are to be carried out in accordance with the manufacturer's installation guidelines and relevant industry standards.

CCTV System

An existing closed-circuit television (CCTV) system is currently installed throughout the ground floor of the building, providing surveillance coverage for key areas. The core components of the system, including the monitor, connection/control box, and associated drivers, are presently situated within the driver's mess area. This existing CCTV infrastructure is to be retained as part of the new works.

As part of the proposed refurbishment and reconfiguration of the ground floor, the CCTV monitor is to be relocated from its current position in the driver's mess area to a more central and visible location within the newly proposed reception area. This will enhance the ability of reception personnel to monitor real-time security footage and respond promptly to any security concerns. The relocation should be executed in a way that maintains the integrity and functionality of the current CCTV system, including proper cable management, power supply, and uninterrupted connectivity to all existing cameras.

All changes are to be carried out in accordance with relevant electrical and data communication standards, ensuring system reliability and compliance with applicable safety and privacy regulations.

Intruder Detection System

The existing intruder detection system appears to be redundant. The contractor shall confirm on site that there is no intruder alarm and remaining ancillaries associated with this type of system during the validations.

- Lighting – Luceco, equal or approved
- Distribution board – Schneider, equal or approved

3.2.17 Earthing and Bonding

The earthing installation should be designed and installed in accordance with BS7671 18th Edition and BS 7430.

The contractor shall install all associated equipotential supplementary bonding conductors to all mechanical and electrical installations including floors, ceiling, ductwork, metal containment, pipework etc.

3.2.18 Lightning Protection

No external plant is envisioned for this project.

3.2.19 Manufacturers

The design shall be based on the manufacturers detailed below. The final selection shall be as per below, equal or approved. However, it's the contractors' responsibility to select the plant and unit(s)/component(s).

- Electrical accessories: MK Electric (MK Edge, brushed stainless steel)

3.2 4.0 TESTING AND COMMISSIONING

The Contractor should refer to the Tenant's Fitout Guide for all of the Landlord requirements for testing and commissioning and comply with all Permit to Work guidance.

3.3 4.1 Validation

The Contractor shall carry out a full validation of all existing systems that are to be retained throughout the ground floor prior to commencement of the Contractor's detail design.

The contractor shall also confirm that the existing MEP record drawings provided accurately reflect the MEP installation and provide updated design drawings to reflect the actual installation within the as-fitted drawings as part of the O&Ms.

The scope of works shall include the allowance for all accesses, providing and / or hiring of ladders and temporary / mobile access platforms, providing temporary protections, undertaking furniture moving (Temporarily relocated and reinstated with each shift / working day), providing and / or hiring of any and all calibrated equipment / ancillaries and tools, temporarily removing ceiling / floor tiles and other access panels / hatches etc. (Only where readily accessible; temporarily remove and reinstate all within each and every shift / working day), visits, surveys, validations, measurements, tests and additional specialist appointments, etc.; all as deemed necessary and required, to complete the full validation scope or works processes herein and, to present the information to Beehive in a typed and legible format. All additional allowances made shall be and highlighted during the tendering process. The Contractor shall fully manage and complete the entire validation processes as expressed within this document, including liaising with the incumbent specialist subcontractors and Beehive to minimise disruption. This shall include arranging for all accesses and the management of all sub-trades, as required, to complete the full validation scope or works processes herein.

A single complete, comprehensive and fully word-processed report shall be produced by the Contractor, documenting all validation processes herein; appendices shall be included as required. The report shall include the following.

- **Title Page:** Specific to the building and project
- **Contents Page:** Referencing all main / sub-sections and page numbers.
- **Executive Summary:** Itemising key issues and findings
- **Main Report:** Discussing the scope of works undertaken, methodology and the findings in detail, clearly identifying all items and issues recorded. This should include a detailed description of each system, the condition of each and every element, wants of repair and, any issues found, etc. This should also include commentary on the quality of the O&M manual and record information onsite.
- **Recommendations:** Schedule of remedial works required to mitigate any and all issues.
- **Appendix Section A:** System schematics

- **Appendix Section B:** Raw data, Results, Test and Measurements
- **Appendix Section C:** Supplementary Manufacturer and other reports
- **Appendix Section D:** Referenced Photographs
- **Appendix Section E:** Validation equipment details, as below.
- **Appendix Section F:** Method Statements

All validations shall be undertaken by Testing and Commissioning Contractor; all fully in accordance with the CIBSE and BSRIA commissioning codes / guideline, good practice guidelines, British Standard and BS7671.

Prior to undertaking any validation works, the Specialist Contractor must produce full and complete Risk and Method Statements (RAM's), in accordance with the Health and Safety Executive Guidelines, for all validation scope of works or processes herein.

It is the Contractors responsibility to ensure that all works are fully agreed with Beehive prior to undertaking any validation processes herein. Prior to undertaking any surveys, measurements, tests and validations, etc., the Contractor shall allow for producing and forwarding all supporting RAM's documentation, or as deemed required and to the satisfaction of Beehive, in obtaining full approval for the full validation processes herein; this is also as the methodologies employed could potentially lead to damage, contamination, imbalance, fault, alarm or controllability issues, etc, prior to undertaking all works.

The Contractor is fully liable for any issues, alarms, faults and damage, etc, created as part of completing the validation processes, including rectification in full. Where there is doubt as to any potential issues, alarms, faults and damage, etc, being caused by an exercise, this shall be highlighted within the RAM's prior to being undertaken for comment by Beehive. No destructive or damaging validation processes shall be carried out, and tasks shall be undertaken where it is not safe to do so.

All validations, measurements and tests shall be undertaken by fully calibrated test equipment. The equipment used shall be documented, including the types, the manufacturers, the model and serial numbers, the asset numbers and calibration certificates.

All information provided shall be in SI metric units and measure, IP imperial units and measures are not acceptable. At the end of the validation processes reinstate and reset all systems, including but not exclusively all; thermal insulation, access panels and hatches, ceiling and floor tiles, systems, elements, services, plant, equipment, terminal unit(s), filters, strainers, test points, dirt and / or air separators, equipment, items, dampers, valves and ancillaries, etc, as affected back to their pre-validation conditions (except where more detrimental), control methodologies, settings,

operations and positions, etc. Where any pre-validation conditions, control methodologies, settings, operations and positions, etc, are unsafe or potentially detrimental and damaging to the systems, etc, this shall be highlighted to the Landlord, the Client and Beehive prior to reinstatement and resetting. This shall be witnessed to the satisfaction of the Landlord, the Client and Beehive.

For any and all validation processes that shall affect the output, performance and operation of the systems being validated (i.e. any activities that shall result in partial or full system shutdown, or that shall temporarily reduce the output and performance of the systems) the Contractor shall allow for 'out of hours' working i.e. over evenings and weekend periods to complete the scope. This shall be highlighted within the tender return documents.

- Full site orientation survey, the Contractor shall familiarise themselves with the site, the existing building MEP services / elements and systems, and the existing record documentation, if any.
- Review all of the record documentation.
- Survey all the existing plant, risers, and service routes to familiarise themselves with the building and the extent of the works.
- Review any available Operation and Maintenance (O&M) Manual documentation to determine if all testing and commissioning data, record drawings / layouts / schematics and documentation, etc, are present for the systems being validated, including their associated ancillary systems. Document and record all deficiencies within the information and highlight where the commissioning figures presented are significantly less than the original design intent where stated (i.e. greater than the CIBSE commissioning code tolerances for the terminal unit(s), specific item of plant, equipment, and ancillaries, etc). Record findings and note any issues.
- Full survey of all landlord areas to verify landlord plant and equipment, where relevant to the refurbishment works.
- Identification of where pipework / ductwork re-routing is required due to the new space planning.
- Differences between the record drawings and documentation and the actual installation.
- Location of new / replacement plant along with a suitable storage area.
- Transportation routes of delivered plant and equipment through the building to the area of works.
- Location of site project office and welfare facilities.

The Contractor shall undertake the following validations (measurements, tests and recording of all data) for the Ground floor.

Mechanical and Public Health Services

The following mechanical services shall be validated:

- Validation / Verification of all mechanical systems to be stripped out (see strip-out section)

Ventilation and Ductwork

- Fresh air will be supplied via openable windows.

Low Temperature Hot Water (LTHW)

- Circuits configuration
- Condition and operation of all valves at the risers, including IVs, DRV, MS, DPCV, on/off floor valve.
- Flow temperature and flowrate from risers
- Flow pressure
- Return temperature and flowrate
- Return pressure
- Pipework condition
- Condition of pipework insulation

Sprinklers

- N/A

Water Sampling

- Biological and chemical samples of all water services, including:
 - LTHW
 - Domestic hot and cold-water systems
- Sampling to be in according with BSRIA requirements.

Electrical Services

The following electrical services shall be validated:

- All existing on-floor distribution boards serving the ground floor refurbishment demise. Allow for full testing and inspection of all existing circuits and new added for the project and carry out a 5-yearly fixed wiring test and production of an EICR report.
- Confirm that the electrical installation is fully compliant with the latest version of the 18th Edition of the IET Wiring Regulations including all amendments and identify any deviations including the omission of RCDs etc. Contractor also to identify where the electrical installation is non-compliant with the 18th Edition of the IET Wiring Regulations and make recommendations to bring the existing installations in line with the 18th Edition.

- Fire Alarm Installations
 - The fire alarm system shall be fully stripped out and replaced with new detectors, cabling, interfaces and dedicated conduit to suit the new fit out proposals. No validations are necessary.
- Lighting, Emergency lighting and Lighting Control Installations
 - All lighting will be replaced as part of this project so no validations to be carried out on the lighting installations.

3.4 4.2 Post Installation

Before any project can be handed over it is essential that all systems and equipment installed / retained are tested and commissioned to ensure that they are safe, working at optimum efficiency and meet the design requirements. Upon completion of the works, the installation shall be tested in accordance with the requirements of the latest revision of manufacturer guidance, CIBSE Commissioning Codes and BSRIA Application Guides.

Beehive, or his representative and, if necessary, the Insurance Company, shall be invited to witness all testing and commissioning and shall have access at all reasonable times to such parts of the Contract Works and of any Contractors' and Suppliers' Works, as may be necessary for the purpose of inspecting, examining and testing the materials, workmanship and performance of plant.

Testing and Commissioning certification shall be provided for all services prior to handover.

Water pipework shall be cleaned and commissioned in line with BSRIA BG 29 and commissioned in line with CIBSE Commissioning Code W.

All hydraulic and pneumatic systems shall be subject to pressure test either in sections or as a whole in small self-contained systems.

BMS System shall be commissioned in line with the manufacturer recommendations and CIBSE Commissioning Code C.

Domestic Water systems shall be cleaned, chlorinated and commissioned in line with ACoP L8, HSG274 and BS8558.

The electrical installation shall be installed, testing and commissioned in line with the requirements of BS 7671 18th Edition.

All Fire Conditions to test the cause-and-effect strategy for the building/development:

Allow for compiling a detailed event procedure for each system detailing the expected reaction under each situation and provide adequate resources to manage and control this testing procedure.

Allow for specialist subcontractors personnel including but not Fire Alarm and Security to be available on the day to monitor their individual systems.

3.5 4.3 Co-ordination

The Contractor shall prepare a fully coordinated design and installation, further to their validations and measurements onsite, to meet the requirements of this design.

The installation shall ensure that every building service is fully accessible and maintainable.

3.6 4.4 Operation & Maintenance Manuals

Provide 2No. final hard and soft copies in English of the operation and maintenance data bound in A4 size, vinyl covered, hard back, four-ring covers. Title sheet in book to be labelled "Manufacturer's Data Book" and to bear Project Name, Date and List of Contents.

Copies shall be provided on flash drives and be fully indexed for ease of use. This will be uploaded onto the Landlords record information site.

2 copies of draft documents to be issued 4 weeks prior to practical completion.

Title sheet, in each book, to be labelled "Maintenance and Operating Manuals" and bear following:

- Project Name.
- Date.
- List of Contents.
- Each manual is to contain following:
 - List of Sub-Contractors, Suppliers, Professional Team and Responsible Authorities.
 - Control schematics for each system.
 - Description of each system and associated control elements.
 - Control operating sequences at various load conditions, reset schedules and anticipated seasonal variances.
 - Operating instructions for each system and each component.
 - Description of actions to be taken in event of equipment failure.

- List of Formal Consents and Certificates obtained.
- Details of Guarantees and Warranties.
- Commissioning Reports.
- Schedule of equipment listing manufacturer, model, serial number and kW rating.
- Manufacturer's operating instructions and recommendations for servicing and maintenance, parts lists, reviewed shop drawings, name and address of closest service organization and spare parts source, for each item or equipment.
- Voltage and ampere rating for each item of electrical equipment.
- List of record drawings.

Manuals to be supplied in electronic Microsoft Word 2013 or newer. All final certification, documentation and, testing and commissioning results shall be provided within the Operating and Maintenance manuals by the Contractor. Additionally, all information shall be inserted into the Site Logbook.

5.0 CONTRACTOR DESIGN RESPONSIBILITIES

The Contractor shall be responsible for all elements of the MEP services and systems design as per the requirements of Beehive documents. The Contractor shall ensure that the D&B Contractor are made fully aware of the extent of the works to be carried out.

Summary

Design the elements of the Building Engineering Services Works identified below:

Design Management Activities	Responsibility	
	Beehive	Contractor
Outline Design Intent (ER)	✓	
Detailed Design Drawings (where relevant for new installations)		✓
Specification		✓
Equipment Data Sheets and Technical Submittals for all MEP services / elements and systems, for example all plant, equipment, terminal unit(s) and ancillaries, etc (all elements as discussed within this specification).		✓
CDM Hazard Identification and Risk Assessments		✓
Fully evaluate and submit a detailed report on any alternative equipment proposed		✓
Fully re-evaluate and submit a detailed report on all parts of the Building Engineering Services Works installations and building design, affected by any alternative equipment proposed		✓
CDM Hazard Identification and Risk Assessments		✓
Safety Method Statements		✓
Method Statements		✓
Co-ordination Drawings		✓
Installation Drawings		✓
Builders' Work Drawings		✓
Installation Wiring Drawings		✓
Shop Drawings		✓
Specialist Drawings		✓
Manufacturers' Drawings		✓
Manufacturers' Certified Drawings		✓

Design Management Activities	Responsibility	
	Beehive	Contractor
Record Drawings		✓
O & M Manuals		✓
Spatial Co-ordination		✓
Final Calculations: Pump Duties – Pressure Drop / Loss and Volumetric Flow Rates, etc, to suit the buildings revised requirements. Heating and chilled water pumps pressure calculations		✓
Final Calculations: Fan Duties – Pressure Drop / Loss and Volumetric Flow Rates, etc, to suit the buildings revised requirements. Supply and extract fan external static pressure calculations.		✓
Final Calculations: HVAC System Potential, Available and Spare Capacity Calculations, etc, to suit the buildings revised requirements		✓
Final Calculations: Heating and chilled water system content calculations to verify pressurization unit, expansion vessel sizes respectively		✓
Final Calculations: Condensate and Condensation Provision and Sizing Calculations, etc, to suit the buildings revised requirements		✓
Final Calculations: Ductwork and Pipework Sizing, etc, to suit the buildings revised requirements		✓
Final Calculations: HVAC System Noise and Attenuation Provisions and Sizing, etc, to suit the buildings revised requirements		✓
Final Calculations: LUX and Lighting Levels		✓
Final Calculations: CIBSE Carbon Dioxide Room Level Calculations, etc, to suit the buildings revised requirements		✓
Final Calculations: CIBSE Heat Gain, Heat Loss and Summertime Overheating Calculations, etc, to suit the buildings revised requirements		✓
Final Calculations: CIBSE Guide G and The Institute of Plumbing – Plumbing Engineering Services Design Guide, domestic services plant, equipment, terminal unit(s), ancillaries, etc, and pipework sizing and selection, etc, to suit the buildings revised requirements.		✓
Design, Sizing and Selection of associated MEP Services Steelwork, Containment, Tray work, Bracketry and Other Support Systems		✓
Design and Sizing of Mechanical, Electrical and Public Health Services (Including the Design and Sizing of all MEP services / elements and systems, for example all plant, equipment, terminal unit(s) and ancillaries, etc (all elements as discussed within this specification).		✓
Design of Access Ways and Supports using an approved proprietary system		✓

Design Management Activities	Responsibility	
	Beehive	Contractor
Design, Sizing and Selection of Guide, Anchor and Expansion Systems		✓
Design, Sizing and Selection of Fire Stopping		✓
Final Sizing and Selection of all MEP services / elements and systems, for example all plant, equipment, terminal unit(s) and ancillaries, etc (all elements as discussed within this specification).		✓
Final Selection of grilles and Diffusers		✓
Design, Sizing and Selection of Anti-vibration Systems		✓
Design, Sizing and Selection of Electrical and LV wiring Containment		✓
Design, Sizing and Selection of Fire Detection and Alarm Systems		✓
Design, Sizing and Selection of the Fire Protection Systems (including sprinklers)		✓
Design, Sizing and Selection of all Control Systems (including BMS)		✓
Design of IT/AV/Communications Systems		✓
Design of lighting layout and Final Selection of light fittings		✓

This document is to be used to give the RIBA Stage 3 Building Engineering services strategy for the demise. The Contractor shall be responsible for the detailed design, which shall be approved by Beehive.

The following list of Contractor Responsibilities includes:

1. Full design and co-ordination of all systems and associated steelwork, builder's work etc using the information provided as an outline scheme and minimum requirements.
2. Production of Technical Submittals of all items of plant and equipment proposed by the Contractor for approval by the design team.
3. Provision of all logistics co-ordination and planning including transport, off-loading, lifting into place, setting into position, protection and storage of equipment as necessary.
4. Procurement of all plant, equipment, materials, connection, testing, commissioning and the setting to work of all systems.
5. Co-ordination of all systems with each other, with the building fabric and existing systems.
6. All local authority and supply utility liaison including the production of information required for submissions.
7. Provision of all installation and test method statements.
8. Provision of reports associated with the design process to include plant replacement strategy, cost in use, fault level study and protection discrimination exercise.

9. Provision of all calculations to support the design including all pipework, pump, cable, lighting, ventilation, and thermal calculations. Heat loss and gain calculations shall be provided by means of a thermal model such as IES.
10. Provision of permanent non-corroding securely retained identification labels on all items of equipment. Schedule and positions to be agreed with client.
11. Production of all design, installation and co-ordination drawings including sections, elevations, 3-D developments and detailed installation drawings.
12. Liaison with all other contractors on the site.
13. Liaison with the project manager and tenants where access to other tenant's demises shall be required.
14. Liaison with Landlord and Approved Inspector for full approval of proposed design prior to procurement and installation.
15. The Principal Contractor shall comply with the duties of the Construction (Design and Management) Regulations 2015. The Principal Contractor shall produce a construction phase plan and regularly review and amend this as required.
16. Attendance at factory acceptance, travel, accommodation and subsistence for the Employer and his representatives.
17. Define, fully document, programme and undertake integrated systems testing upon completion of all individual system tests, to include the provision of all specialist labour of sub-contractors, trade contractors, manufacturers and the like.
18. A structural assessment shall be carried out for any roof plant at their proposed locations.
19. A noise assessment shall be carried out for all new plant including roof plant. The Contractor shall allow a cost for acoustic treatment of roof plant.
20. Procurement and management of a commissioning management service.
21. Production of O&M documents and as-installed documentation. Provision or update of the Part L Building Logbook.
22. Provision of Employer training for all systems.
23. Minimum 12 Months warranty of all new systems from the date of Practical Completion.

Appendix A: Indicative MEP drawings

Appendix B: Design Risk Assessment

