762 MON PAIN,
79-81 HEATH STREET

CHANGE OF USE - MEP SERVICES REPORT

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Cudd Bentley Consulting

Contents

1.0 INTRODUCTION

This MEP Services report has been prepared to record the change of use design proposals for the mechanical, electrical and public health engineering systems for the development at 762 Mon Pain, 79-81 Heath Street.

This outline MEP Services Report shall be read in conjunction with the architectural change of use drawings prepared for the unit as well as the following MEP information:

2.0. Proposed Mechanical Engineering Systems
3.0. Proposed Electrical Engineering Systems
4.0. Proposed Public Health Engineering Systems
5.0. DEFRA Report

This report responds to requirements as discussed at site meetings and Architectural planning layouts received to date together with the comments received from the design team.

The development comprises of a new Bakery consisting of BOH kitchen areas, FOH services and customer seating areas, customer and staff WC and storage areas.

The overall quality standard for the project shall be that which is expected from a development of this type.

The project is to comply with all current British or European Standard Statutory Regulations, and good practice. However, these are to be considered as the minimum requirements as set out in all relevant legislation and any statutory instrument, Building Regulation, by law, or European Standard and Code of Practice.

The building will be designed with materials, components and techniques that are readily available, reliable and maintainable and that the building should be maintained in accordance with good practice and the guidelines and recommendations contained in the maintenance manuals.

The design life spans of the major components of the mechanical and electrical engineering systems are to be as per the CIBSE Guidelines.

2.0 MECHANICAL ENGINEERING SERVICES

2.1 INCOMING UTILITY SUPPLIES

2.1.1 Gas

A non-intrusive survey was carried out to ascertain and confirm if an existing gas supply was present at the property.

There was no indication that a meter or incoming gas supply was present during this survey.

Murphy's utilities (gas company) conducted a review of the gas supply in the area using existing gas asset maps.

From their review it would seem there is no existing gas supply serving the property (though an intrusive survey is required to confirm this).

If this is the case, then a new gas supply shall be applied for through Murphy's utilities.

If, during an intrusive survey, it was found that an existing supply does exist, this supply is subject to review against the new bakery gas requirements.

2.1.2 Water

The existing water supply serving the property shall be retained, reused and extended to serve the new bakery water requirements.

An intrusive survey is required to be undertaken to identify all existing redundant water services pipework.

Once identified, redundant pipework shall be stripped out.

2.2 VENTILATION SYSTEMS

An intrusive survey is required to be undertaken to identify all existing redundant ventilation systems.

Once identified, redundant systems shall be stripped out.

2.2.1 Dry Storage Extract

A localised mechanical extract fan system shall be provided to dry storage areas to prevent damp air causing condensation.

Door undercuts / vent grilles shall be provided on the door to the dry storage to provide suitable supply air circulation

2.2.2 Main kitchen Extract

A kitchen extract system shall be installed to serve the kitchen areas. The system shall incorporate a range of extract ductwork, designed and installed in accordance with DW172, served via an exhaust fan located at roof level. An extract canopy shall be provided above the cooking / baking range and the extract system shall be commissioned to deliver appropriate hood capture velocities.

Consideration shall be given to the installation of Electrostatic precipitation (ESP) units which shall be installed to remove the grease that adheres to smoke.

Where installed, pre-filters shall be fitted upstream of the ESP to provide protection from large contaminants. Due to the non-aggressive nature of the cooking / baking, an odour neutraliser shall be provided.
(For more details please refer to Section 5.0 DEFRA Report)

The selected extract fan dBA levels shall conform to the noise assessment report produced by Sharpsredmore.

In the event the extract fan dBA levels do not conform with the Noise Assessment report, acoustic measures shall be introduced by way of an acoustic screening or attenuators to reduce the dBA to the required levels.

2.2.3 Main kitchen Supply

A kitchen supply system shall be installed to provide make-up supply air totalling approximately 85% of the total kitchen extract to replace the air being drawn out of the kitchen by the exhaust hoods.

To combat overheating in summer months, the supply air duct shall be pre-conditioned by way of a VRF condenser to provide cooled air to the kitchen and surrounding areas.

The selected supply fan dBA levels shall conform to the noise assessment report produced by Sharpsredmore.

In the event the extract fan dBA levels do not conform with the Noise Assessment report, acoustic measures shall be introduced by way of an acoustic screening or attenuators to reduce the dBA to the required levels.

2.2.4 Cleaning Room

A localised mechanical extract fan system shall be provided to the cleaning room. Door undercuts / vent grilles shall be provided on the door to the cleaning room to provide sufficient air circulation.

2.2.5 Customer / Staff WC areas

WCs shall be ventilated via a separate mechanical extract ventilation unit.

Ventilation rate shall be 12 air changes per hour (extract).

3.3 AIR CONDITIONING SYSTEMS

An intrusive survey is required to be undertaken to identify all existing redundant air conditioning systems.

Once identified, redundant services shall be stripped out.

The bakery shall be comfort cooled and heated by way of a 3-pipe VRV/VRF fan coil unit system.

Due to the reduced floor to ceiling height, it is envisaged ceiling mounted 4-way blow cassettes shall be selected.

A condensing unit serving the cassettes shall be located externally at roof level.

This condenser shall also be used to pre-condition supply air during summer months.

The selected VRF condenser dBA levels shall conform to the noise assessment report produced by Sharpsredmore.

In the event the VRF condenser dBA levels do not conform with the Noise Assessment report, acoustic measures shall be introduced by way of an acoustic enclosure to reduce the dBA to the required levels.

3.4 GAS SYSTEM

As gas is required in the kitchen area, a 'Gas Interlock System' shall be provided and shall be designed to shut off the gas supply to the kitchen in the event of failure of the kitchen extract fan.

It shall also be installed to ensure that the air flow rates achieved by commercial kitchen extract systems meet the minimum standards as set out by DW/172, the specification of kitchen ventilation systems.

3.0 ELECTRICAL ENGINEERING SERVICES

3.1 INCOMING SUPPLY

3.1.1 Power

The existing supply shall be reviewed against current authorised supply capacity.

Subject to new bakery power requirements, should this exceed the current authorised supply capacity, then a new application will be required to be made to UKPN.

3.2 ELECTRICAL SUPPLY AND DISTRIBUTION

An intrusive survey is required to be undertaken to identify all existing redundant electrical cabling, wiring and power sockets.

Once identified, redundant services shall be stripped out.

3.2.1 Mains supply and Sub-mains Distribution

Upon reviewing the selected bakery equipment, subject that no piece of equipment has a greater full load current of 63A @ 400V then a replacement 250A rated MCB DB shall suffice the bakery load requirements.

The existing LV primary MCB distribution board appears to require replacing.

The replacement LV MCB Distribution Board shall be provided with a main incomer MCCB and various outgoing MCB's to serve the following: -

MCB distribution boards lighting & small power, including IT/Data & Comms.
Bakery preparation equipment
Front of house café / prep / tilling
HVAC plant & equipment.
Lightning transient protection.
Fire Alarm panel.

Dedicated main Earth Bar shall be located adjacent to each main LV switchboard mounted on insulated spacers complete with 'test' links.

Sub mains distribution shall utilise XLPE/SWA/LSF type cabling and be dressed onto perforated cable tray, where cabling is routed horizontally, and vertically throughout the building.

3.2.2 Electrical Distribution

Final circuit LV distribution cabling serving lighting, small power and ancillary services shall utilise typically Prysmian, LSX, BS8436 (Low Smoke Zero Halogen & Screened) type cabling incorporating a fully rayed CPC conductor.
A building network of multi compartment containment (with dividers) utilising either 'cable basket' or 'cable tray' shall be provided for final circuit LV distribution.

The multi compartment containment shall be provided for the following segregated electrical services:-

LV final circuit cabling. LSX White sheath LSZH
Fire Alarm cabling. Red sheath to BS7629-1 (Firetuff) exceeding standard category. LSZH.
Structured Cabling for IT/Data, Comms, CCTV and Door access. Cat 5/6 LSZH sheath.
HVAC ELV controls type cabling. LSF.

3.3 LIGHTING

Lighting throughout the development will be selected in conjunction with the architect so that the aesthetical aspirations are met as well as the energy performance requirements.

LED high efficiency ambient luminaires and access lighting shall be utilised for front of house areas. (Typically, 600x600 modular LED panels. To be confirmed during detailed design).

Back of house prep areas to have IP rated hygienic type LED panels (subject to confirmation during detailed design).

BOH areas to utilise LED baton type luminaires with integral sensors.

Details of the lighting design are to be developed with the client and the architects during the next stages of the design.

Lighting control within ancillary spaces, risers etc shall utilise PIR 'presence' sensors, and be either 'standalone' or mounted integrally into the luminaires.

Emergency lighting shall be provided in all building spaces/ areas. Emergency lighting shall be provided via 3 hour battery packs, self-contained, and be either mounted integrally into main luminaires or 'standalone' units.

Emergency MOE Exit signage lighting shall be provided as required to suit the unit requirements. Illuminated signage shall be LED type, and incorporate 3 hour battery packs, self-contained and as per architectural fire strategy drawings.

3.4 POWER SUPPLIES

Power supplies will be provided for all LV distribution, plant & equipment, alarm and ancillary systems, forming the landlord's system requirements.

Finishes to all electrical accessories will need to be agreed with the Architect and Client. Electrical accessories within the riser will generally be surface mounted metal clad, and or ingress protected as required, to meet the environmental conditions of the space.

Isolators to be provided adjacent to each item of plant and equipment suitably rated and ingress protected to suit application.

Dedicated 230 Volt power supplies shall be provided, but not limited to, the following:-

Fire alarm main control panel.

Data Wiring Cabinet.

Music system (subject to confirmation)

Security control equipment.

General cleaners' small power and FOH customer USB charging (subject to confirmation)

3.5 IT/DATA, VOICE & COMMS

The unit shall utilise the existing incoming Voice/Communication services served from the telecom network (subject to intrusive survey).

Dedicated Telephone lines will be provided for Fire Alarm and Intruder. Full details of the services to be provided will be determined during the next stage of the design.
Confirmation on the communications provider shall be agreed with the client during the next stage of design.

Building 'structured wiring. to have a dedicated DWC (Data Wiring Cabinet) to serve the unit requirements.

IT structured wiring primary containment to be provided throughout demise.

3.6 FIRE ALARM PROTECTION

The Fire Alarm systems will be in accordance with BS 5839, and in accordance with the Fire Strategy for the overall development. It is anticipated that the Fire Alarm category shall be as a minimum L1 category system.

The automatic fire detection and alarm system shall be provided to meet the needs of the Building Control and Fire Officer.

The system is to include equipment such as automatic smoke detectors, automatic heat detectors, and electronic sounders.

Fire Alarm Interface units shall also be provided for the following systems cause & effect 'evac' signals:-

HVAC. Plant 'shut down'.
Public Music/ systems. 'Mute' (subject to confirmation).
Main entrance automatic door. 'Open' (subject to confirmation).

3.7 SECURITY SYSTEM

3.7.1 Access Control Door System

Access controlled doors system will be provided generally at staff entry / exit door (subject to confirmation).

The access control strategy will be developed further during the next stage of the design.

The Access control system shall be IP (Internet Protocol), and form part of the building structured wiring system.

3.7.2 CCTV system

The requirement for CCTV will need to be developed further during the next stage of the design.

CCTV cameras will be strategically placed around the till point of areas, customer entrance and staff entry/exit door

Further CCTV enhancements are to be agreed by the architect and client.

Cameras shall generally be 'static' type, but for enhanced CCTV requirements PTZ (Pan Tilt Zoom) shall be utilised.

CCTV control equipment shall DVR record digitally, and data kept for a minimum of 30 days.

The CCTV system shall be IP (Internet Protocol) forming part of the building structured wiring system.

4.0 PUBLIC HEALTH ENGINEERING SERVICES

4.1 ABOVE GROUND FOUL DRAINAGE

A review of the existing foul drainage services shall be reviewed prior to re-using.

Where existing SVPs are located, these shall be utilised to serve the new bakery drainage requirements.

Where existing SVPs cannot be re-used, new stub stack with air admittance valve shall be provided to serve drainage requirements.

All small diameter discharge pipework will be in uPVC from the connection of the individual sanitary fittings to the connection to the main discharge stack.

Where pipework is exposed it will be designed to a high standard, true to line and gradient and with adequate support fixings.

Acoustic insulation will be applied to the discharge pipes in accordance with the Building Regulations.

To conform with planning conditions and to limit FOGs (fats, oils and grease) from entering the drainage system, grease traps shall be installed and connected to sinks and dishwashers.

5.0 DEFRA REPORT

The Commercial Kitchen Filtration Experts

Specification & Defra Report

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Interpretation of Requirements

Following our conversation today I am pleased to provide an equipment selection for an odour control solution.

As with any project we get involved in we always recommend to our clients that they should closely follow the DEFRA guide for guidance on odour control equipment selection.
This ensures that what they propose will be in line with local authority's requirements and if the system is maintained correctly they will not exhaust nuisance odours leading to complaints from nearby residents.

With this in mind I carried out a risk assessment as detailed in Annex C of the DEFRA Guide.
Taking into consideration the level of discharge, proximity of receptors, size of kitchen and cooking type your project requires a high level of odour control to comply.

We have scored as below and as taken from Annex C: Risk Assessment for Odour;

Dispersion = 15
Proximity of receptors = 10
Size of kitchen = 5
Cooking type = 1
Total score = 31

The type of odour abatement system that complies is as below, taken directly from the DEFRA Guide and must be to a high level of control;

Odour arrestment plant performance

High level odour control may include:

1. Fine filtration or ESP followed by carbon filtration (carbon filters rated with a 0.2 – 0.4 residence time).
2. Fine filtration or ESP followed by UV ozone system to achieve the same level of control as 1.

In this case due to the non-aggressive nature of the cooking and odour neutraliser will suffice for this property.

DEFRA states ESP or fine filtration followed by either carbon or a UV system. From what we can tell the property won't have a long enough duct run for UV or space for carbon, the best solution would be an odour neutraliser.

Impact Risk	Odour Control Requirement	Significance Score*
Low to Medium	Low level odour control	Less than 20
High	High level odour control	20 to 35
Very high	Very high level odour control	more than 35

* based on the sum of contributions from dispersion, proximity of receptors, size of kitchen and cooking type:

Criteria	Score	Score	Details
Dispersion	Very poor	20	Low level discharge, discharge into courtyard or restriction on stack.
	Poor	15	Not low level but below eaves, or discharge at below 10 m/s.
	Moderate	10	Discharging 1m above eaves at 10 -15 m/s.
	Good	5	Discharging 1m above ridge at 15 m/s.
Proximity of receptors	Close	10	Closest sensitive receptor less than 20m from kitchen discharge.
	Medium	5	Closest sensitive receptor between 20 and 100m from kitchen discharge.
	Far	1	Closest sensitive receptor more than 100m from kitchen discharge.
Size of kitchen	Large	5	More than 100 covers or large sized take away.
	Medium	3	Between 30 and 100 covers or medium sized take away.
	Small	1	Less than 30 covers or small take away.
Cooking type (odour and grease loading)	Very high	10	Pub (high level of fried food), fried chicken, burgers or fish & chips.
	High	7	Kebab, Vietnamese, Thai or Indian.
	Medium	4	Cantonese, Japanese or Chinese.
	Low	1	Most pubs, Italian, French, Pizza or steakhouse.

The System

The first stage of control should be our ON100

ON100 Odour Neutraliser

Purified Air use patented technology to scientifically treat cooking odours emitted by commercial kitchen and restaurant exhausts. Once the airstream in the exhaust duct has had the majority of the particulate contaminates removed by one of our ESP units the gaseous phase or malodour can then be treated by the ON100.
The vapour from a specially blended neutralising agent, ELIMINODOR®, is mixed with ambient air drawn into the ON 100 and ionised to a negative potential of 15,000 volts.

This ionised vapour then passes along a non-conductive tube to be discharged into the centre of the duct via a venturi spigot, the metal ducting is earthed through the same high tension circuit which makes the contaminant at an opposite potential to the negatively charged ELIMINODOR® vapour. This then causes the negative and positive particles to combine, so treating the malodour. As you can see the system that has been specified is in line with DEFRA guidance.

Specification

1 No. ON 100 Unit.

Specification per unit

Air volume max	4.16m3/s
Electrical Supply	220/240V 50HV 1ph
Power Consumption	40 W
Weight	12.25 Kg