

CWC

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CIS Tower, Manchester

MEP and Ventilation Summary

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Revision Record

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1.0 Introduction

Crookes Walker Consulting Ltd (CWC) have developed the RIBA Stage 2 Concept Design for the refurbishment and podium extension to the existing CIS Tower in Manchester. The following provides a summary of the design development for the MEP Services with a particular focus on the ventilation for commercial kitchens contained in Section 10.

The refurbishment works concerns the following application for Full Planning Permission as described below:

Planning permission for internal and external refurbishment of the CIS Tower for office accommodation on floors 1-23 (Use Class E c)); change of use to floor 24 and 25 from Use Class E c) (office) to Use Class E b) (F&B); change of use to basement and ground floor from Class E c) (office) to mixed uses (Use Class E a) (retail)/ Use Class E d) (gym) / Use Class E b) (F&B) / Sui generis (leisure); refurbishment of the external facade including replacement of the existing single glazed facade system and replacement of strip of solar panels on the service tower; removal of existing recreational space on the fifth floor and plant to facilitate the construction of a 3-storey extension to the Podium (Use Class Ec)) external alterations to ground floor facade including an alteration to the ground floor entrance lobby; creation of new entrances on Dantzic Street and on eastern elevation; hard landscaping and planting; removal of external signage; creation of 2x DDA parking spaces; new rooftop plant and screening at level 8; and other associated works.

The associated works for Listed Building Consent are described as below:

Listed Building Consent for the wholesale internal and external refurbishment, refurbishment of the external facade including replacement of the existing single glazed facade system and replacement of strip of solar panels on the service tower; removal of existing recreational space on the fifth floor and plant to facilitate the construction of a 3-storey extension to the Podium; external alterations to ground floor facade including an alteration to the ground floor entrance lobby; creation of new entrances on Dantzic Street and eastern elevation; alternations to the existing public realm; new rooftop plant and screening at level 8; hard landscaping and planting; removal of external signage; and associated works

2.0 Sustainability and Benchmarking

Sustainability consultants TFT have reviewed the development and identified a range of benchmarks for the feasibility in terms of energy performance for the building. For the purposes of this feasibility study the baseline criteria is considered with the following targets:

- EPC of A for the office spaces in line with consideration of the anticipated Minimum Energy Efficiency Standards (MEES) of B by 2030
- BREEAM rating of Excellent.
- Compliance to UK Net Zero Building Standard (UKNZCBS)

NABERS and Well standards are also being explored as part of the next stage of design.

3.0 Existing Systems

3.1 Overview

The original installations were installed during the construction of the CIS Tower which was completed in 1962. Much of this original installation remains, with several systems and central plant being upgraded or replaced as part of a historic PPM regime.

The main plant areas are located in Basement Level B3, Podium Roof Level and Tower Roof, smaller intermediate plant areas are also located strategically in the Tower primarily to support the HVAC systems.

We have considered the following important points during the feasibility and Stage 2 of this project:

- Much of the original installation remains, especially the cable, pipework and ducting infrastructure.
- Existing systems have remained largely dormant during the circa 5-year period leading up to this Stage 2 concept design. This will have had a detrimental impact to some systems and components with regular maintenance and running.
- The existing system types are designed for a single occupancy building and do not suit the proposed multi-tenant building and energy targets.

The majority of the existing installations are to be replaced so that the building engineering services support a flexible and comfortable environment for the occupants as well as taking an approach that is in compliance with the UK Net Zero Building Standard (UKNZBS)

4.0 Proposed MEP Installations

4.1 General Approach

The MEP design approach is to provide servicing strategies that can meet the above energy targets whilst providing systems that can support the various proposed uses. It also aims to reduce the amount of structural interventions on the existing building hence reducing both cost and construction programming.

We have retained the strategy of main plant areas being located in Basement Level B3, Podium Roof Level and Tower Roof.

The Stage 2 design has been developed on the following principles to support both the energy targets and the potential range of uses.

- Heating and Cooling by Air to Water Heat Pumps
- Electric or Heat Pump Technology for Domestic Hot Water
- LED lighting and associated controls

4.2 Mechanical Services

The following mechanical services installations are proposed for the refurbishment.

Heating and Cooling

Heating and cooling will be provided to office floor plates via new high level fan coil units of four pipe type provided with heating and chilled water from the central heat pump installation at Podium Level 8.

Local control of the air conditioning on a Tenancy-by-Tenancy basis is proposed.

Cooling to individual Tenants comms rooms on the floors will be accommodated by capacity in the central Heat Pump system.

Ventilation

New air handling units with heat recovery will be provided for supply and extract air, ducted to each floor plate, with the majority of these units located on the podium roof.

Spatial allocation on the Podium roof for new heat rejection units and air handling units will be provided for the Retail units and Leisure spaces.

Acoustic Considerations

All plant will be selected so that the acoustic requirements as provided by the acoustic consultant Hann Tucker are not exceeded. Where appropriate acoustic attenuation to achieve these figures will be introduced as part of the design development.

Domestic Water Services and Drainage

Cold water services will be provided to all Landlord areas via the existing boosted cold water services system. Provision for tea points (water and drainage) will be provided at each potential Tenancy.

Domestic Hot water services to all Landlord areas will be via new electric point of use water heaters for the WC's.

Above Ground Drainage

It is proposed as part of the Stage 2 design that the existing above ground drainage internal to the building is replaced and the existing outfalls are retained.

4.3 Electrical Services

The following electrical services installations are proposed for the refurbishment.

Incoming Supply and Substation

The existing electrical capacity to the building will be retained from ENWL, with a new ENWL substation being formed at ground floor level within the building footprint.

This substation will become the new source of supply to the building and will be integrated into the new and retained elements of the electrical distribution system via internal cable pathways.

HV/LV Power

The existing HV and LV distribution main distribution panels in the basement will be re-used and rationalised to suit the proposed installation. The CIS critical power transformer, LV panel and back up generator will be decommissioned.

A complete new LV distribution system supplied from the retained main panels will be specified throughout the building, comprising busbar risers, landlord and tenant NABERS compliant tri-metered distribution boards.

Primary and secondary life safety supplies will be specified to all life safety equipment, with the standby source of power being a diesel driven generator. Current thoughts are to retain the existing unit at mezzanine level should the condition and arrangement be suitable.

Podium office small power distribution will be via raised access floors, with fit out of powertrack, floorboxes and small power by the occupier under their CAT B.

Lighting Installation

New LED lighting will be provided throughout the development. The aesthetic is to be developed in coordination with the architecture and interior design however at this stage is anticipated to be a hybrid approach to exposed and concealed services, therefore likely a combination of suspended and recessed luminaires.

Automated lighting control will be provided to all areas with daylight dimming to perimeter areas. Lighting controls are to be local to each tenancy on office floor plates, and not connected to a building wide control system. Due to the scale of the building, a centrally controlled system for landlord areas may be appropriate should cost plan allow.

Fire Alarm Installation

A new BS5839-1 fire detection system will be provided throughout the building. Category is to be determined by the final fire engineering strategy, however at this stage is understood to be L2 with voice alerts and phased evacuation.

Access Control

An access control system will be provided to grant, monitor and restrict access throughout the building. Connections to Lift destination control and Smart building technologies will be explored during the next phase of design.

Lightning Protection

A new lightning protection system to BS EN 62305 will be required. This shall be developed in conjunction with a specialist in the next design stage using the existing infrastructure (subject to satisfactory testing), supplemented where required.

Photovoltaic System

Solar PV will be incorporated of sufficient area to meet compliance and energy benchmarking targets. This will be installed at the Level 08 plant deck, on a gantry system above part of the plant area, however below the level of the plant screen.

The existing PV system is beyond life expectancy however the panels will be retained, At present the energy analysis has not taken into account of reuse of the existing PV panels however the condition and viability for the reuse of the panels and associated equipment is to be determined at the next design stage.

5.0 Digital Connectivity

The refurbished building is being provided with the infrastructure to achieve a Wirescore rating of Platinum. These measures include the following:

- Duplicate comms rooms
- Diverse incoming positions for ISP incomers
- Wide ISP choice
- Managed fibre building wide infrastructure with diverse internal routes
- Generator back up power for comms

High-speed Wirescore accredited fibre infrastructure will be provided throughout the building. This will allow Tenants to connect to their choice of service provider whilst allowing Public Access WiFi throughout the common parts.

Mobile communications signal strength has been analysed, and it is determined that mobile signal boosting equipment may be required to achieve acceptable upload / download speeds and voice reception across the main network providers.

Future proof infrastructure for Smart Building Technologies will be provided; the extent and scope has yet to be determined but will be implemented via the managed fibre infrastructure in conjunction with an appropriate service provider.

6.0 Fire Engineering Systems

The following active fire engineering systems are proposed in the building covering both office floor plates and landlord areas. These systems should read in conjunction with the fire engineering strategy.

- Commercial Sprinkler protection (BS EN 12845:2015) to Ordinary Hazard III.
- Smoke ventilation to fire fighting lobby areas
- Wet Riser to Tower fire fighting stairs/lobbies.
- Dry Risers to basement and podium areas
- Smoke extract to basement areas

7.0 Protection of Listed Items and Building

The following have been considered as measure to preserve as far as practical the existing listed features of the building.

- Retain existing risers and distribution strategies as far as practical
- Safeguard features such as the control room in the Basement B3 level
- Development of plant locations and distribution strategies to safeguard listed features in Levels 24 and 25.

8.0 Access and Maintenance

The access and maintenance strategy has been developed for the refurbishment with the following key criteria satisfied:

- Removal of existing plant in the building
- Installation of new plant
- Facility for the addition of plant for incoming Tenants
- Replacement of major plant at end of serviceable life
- General maintenance and PPM to be safely carried out

These principles will be carried forwards to the next design stages.

Generally, the majority of major plant installation and removal will be achievable by crane, with these located at the Hanover / Dantzic St junction and Hanover St adjacent to the building. This will require temporary road closures in this area.

Plant replacement via crane from Miller St has been avoided as far as possible. This is only likely to be required for B3 plant via the plant well during the initial demolition phase and for electricity transformer replacement upon failure.

The latter will likely be very infrequent – a 1:25 year estimate would not be unreasonable. It may also be possible to conduct plant removal during demolition from the adjacent car park if this can be negotiated with the land owner and car park operator.

9.0 Retail and Commercial Units

General Provisions

Restaurant/Bar on Levels 24 and 25, retail units on the ground floor, leisure units on Level B1 and office amenity (potentially gym) spaces on Level B1L will be treated as tenant fit out with the following base build 'shell and core' provisions with sufficient capacity for each of the units.

- Metered LV Power Supply
- Fire Alarm interface
- Incoming metered water supply
- Drainage pop ups in strategic locations for notional toilet and kitchen areas.
- Commercial sprinkler valved connection with flow switch and fire alarm link

It is proposed that following the intention to remove gas from the building that the commercial kitchen facilities are all electric. Grease traps for commercial kitchens would be provided by the Tenant as part of the unit fit out.

10.0 Commercial Kitchen Ventilation

General Arrangements

Retail Units 1 and 2 as well as the two proposed leisure units on level B1 will be provided with safeguarded routes to podium plant Level 8 for kitchen extract and heat rejection plant to support F&B use.

The proposed F&B accommodation at Levels 24 and 25 would have plant and associated kitchen extract equipment at Level 26.

These locations have been developed to reduce the impact on potential receptors and to allow ample space for the incorporation of air treatment plant. The location of plant has been selected to enable the plant and ductwork to be maintained and cleaned.

Design Requirements

The design of the kitchen extract systems will comply with the following:

- All relevant British and European standards
- DW / 172 – Specification for Kitchen Ventilation Systems (2nd Edition, 2018, V2)
- EMAQ Guidance 'Control of Odour and Noise from Commercial Kitchen Exhaust Systems 2018'
- TR / 19 – HVCA Guide to Good Practice, Internal Cleanliness of Ventilation Systems
- British Standards BS EN 1366 - Fire Resistant Tests for Service Ducts and Shafts
- DEFRA Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems, 2005
- Non-Domestic Building Services Compliance Guild CLG 2010
- CIBSE Codes of Practice and Design Guidance Notes

Riser and Plant Space Allowances

Each of the potential F&B units detailed above have allowance for commercial kitchen spaces based the following allowances:

Unit	Level	Kitchen Area (m2)	Air Change/Hr	Max Air Volume (m3/sec)
Leisure 1	B1	100	50	4.7
Leisure 2	B1	100	50	4.7
Retail 1	Grnd	80	50	3.3
Retail 2	Grnd	109	50	4.5
Restaurant	24	126	50	4.9
Restaurant	25	140	50	4.7

Plant and Equipment

Ventilation ductwork will be supplied, manufactured, erected, supported and tested in accordance with the requirements of HVCA DW144 and DW172. All ductwork would be complete with access doors for cleaning in compliance with TR/19.

The final selection of air treatment will be determined by the Tenant that occupies the particular unit and it will be determined from a risk analysis in line with the above documents. The following are identified as potential measures that could be applied to ensure the correct arrestment of grease, odour and smoke.

- Initial filtration of air through grease filters within the canopy
- Ultraviolet/Ozone treatment
- Carbon Filtration
- Electrostatic Precipitator (ESP)

All systems would be appropriately selected to match the air volumes and appropriate dwell times for the equipment.

Acoustic attenuation would be applied to mitigate acoustic impact on any sensitive noise receptors.

11.0 Appendix 1 Kitchen Extract Drawings

3292-CWC-OC-ZZ-DR-M-5710 Levels B1 and 00 Kitchen Extract Routes

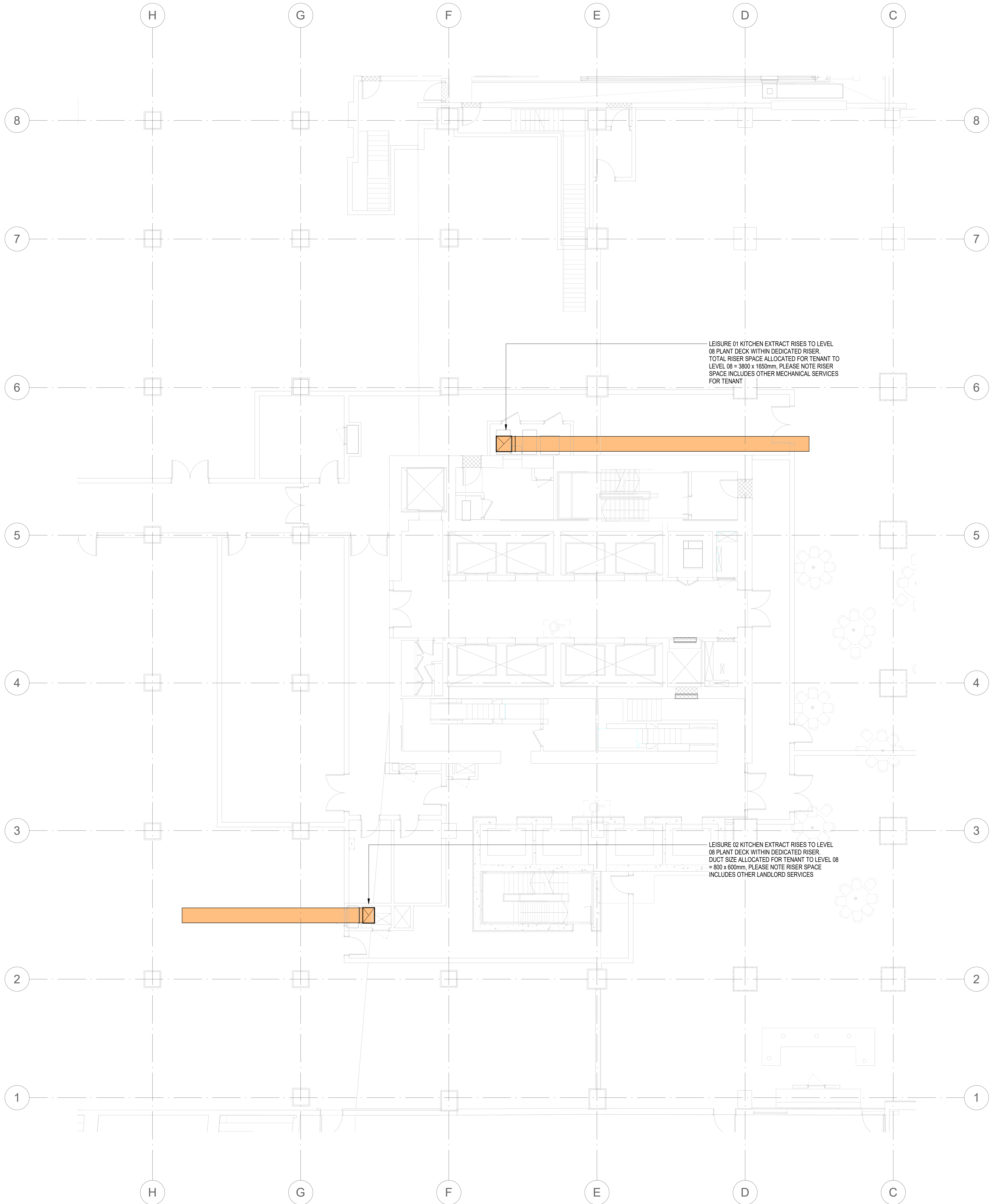
3292-CWC-OC-ZZ-DR-M-5711 Levels 01 to 08 Kitchen Extract Routes and Plant Space

3292-CWC-OC-ZZ-DR-M-5712 Levels 24, 25 and 26 Kitchen Extract Routes and Plant Space

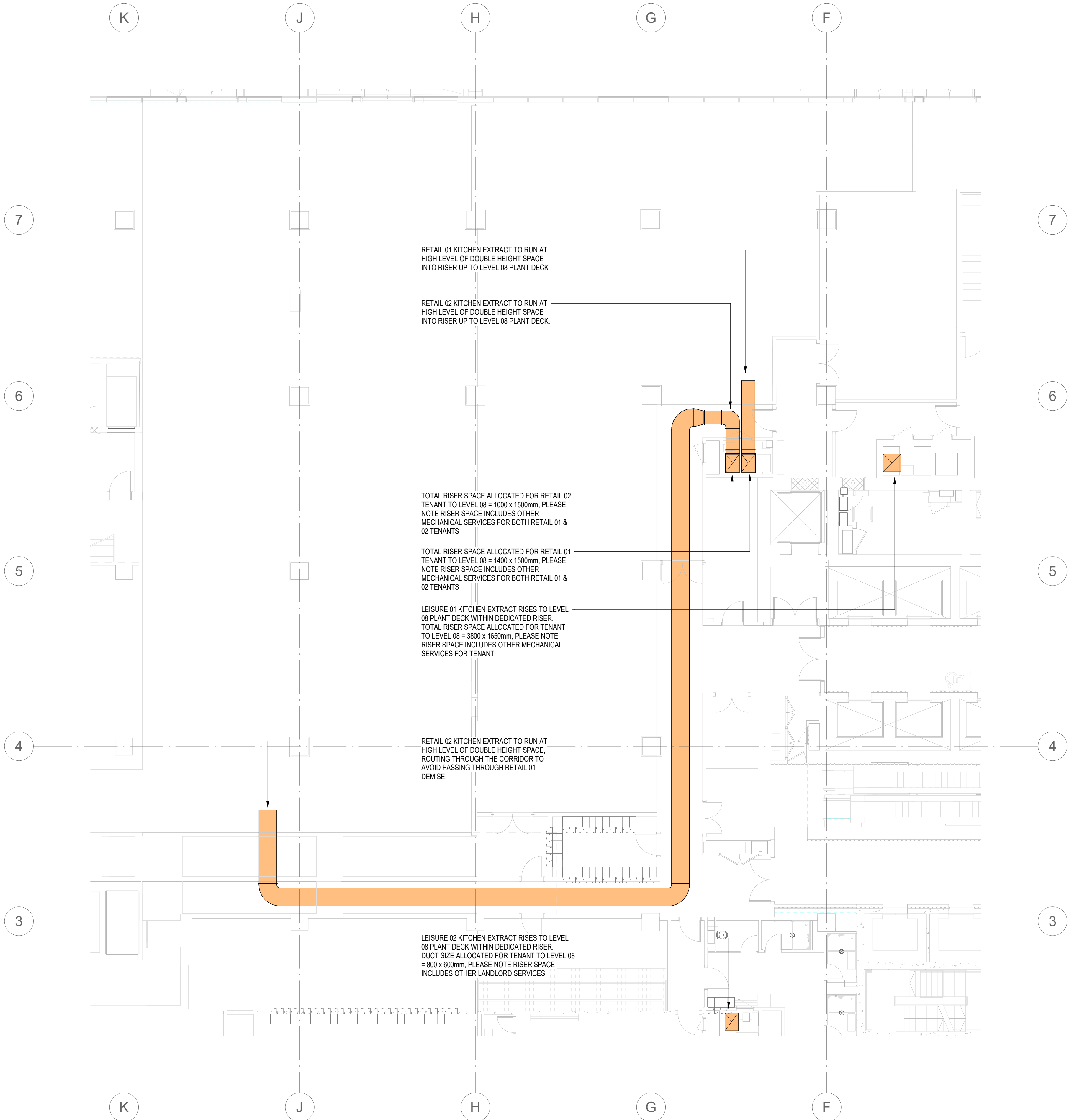
DESIGNERS RISK ASSESSMENT SCHEDULE
REFER TO APPENDIX 1 OF MAE SPECIFICATION FOR DESIGNERS RISK ASSESSMENT SCHEDULE

DRAWING BACKGROUNDS:		
COMPANY	MODEL NUMBER	REV
SIMPSONHAUGH	10218-SHA-Z1-A-G200-M3-XX-001	150425
SIMPSONHAUGH	10218-SHA-Z1-A-G225-M3-XX-001	150425

- GENERAL NOTES:
- THE DESIGN OF THE KITCHEN EXTRACT SYSTEMS WILL COMPLY WITH THE FOLLOWING:
- ALL RELEVANT BRITISH AND EUROPEAN STANDARDS
 - DW / 172 - SPECIFICATION FOR KITCHEN VENTILATION SYSTEMS (2ND EDITION, 2018, V2)
 - ENAG GUIDANCE: CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS 2019
 - TR / 19 - HYCA GUIDE TO GOOD PRACTICE, INTERNAL CLEANLINESS OF VENTILATION SYSTEMS
 - BRITISH STANDARDS BS EN 1386 - FIRE RESISTANT TESTS FOR SERVICE DUCTS AND SHAFTS
 - DEFRA GUIDANCE ON THE CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS, 2005
 - NON-DOMESTIC BUILDING SERVICES COMPLIANCE GUID CLG 2010
 - CIBSE CODES OF PRACTICE AND DESIGN GUIDANCE NOTES



B1 - KITCHEN EXTRACT
1 : 100



00 - KITCHEN EXTRACT
1 : 100

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P01 / 26.03.25 / STAGE 2 DRAFT ISSUE	JL / SW
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Project
**CIS TOWER REFURBISHMENT
MILLER STREET,
MANCHESTER**

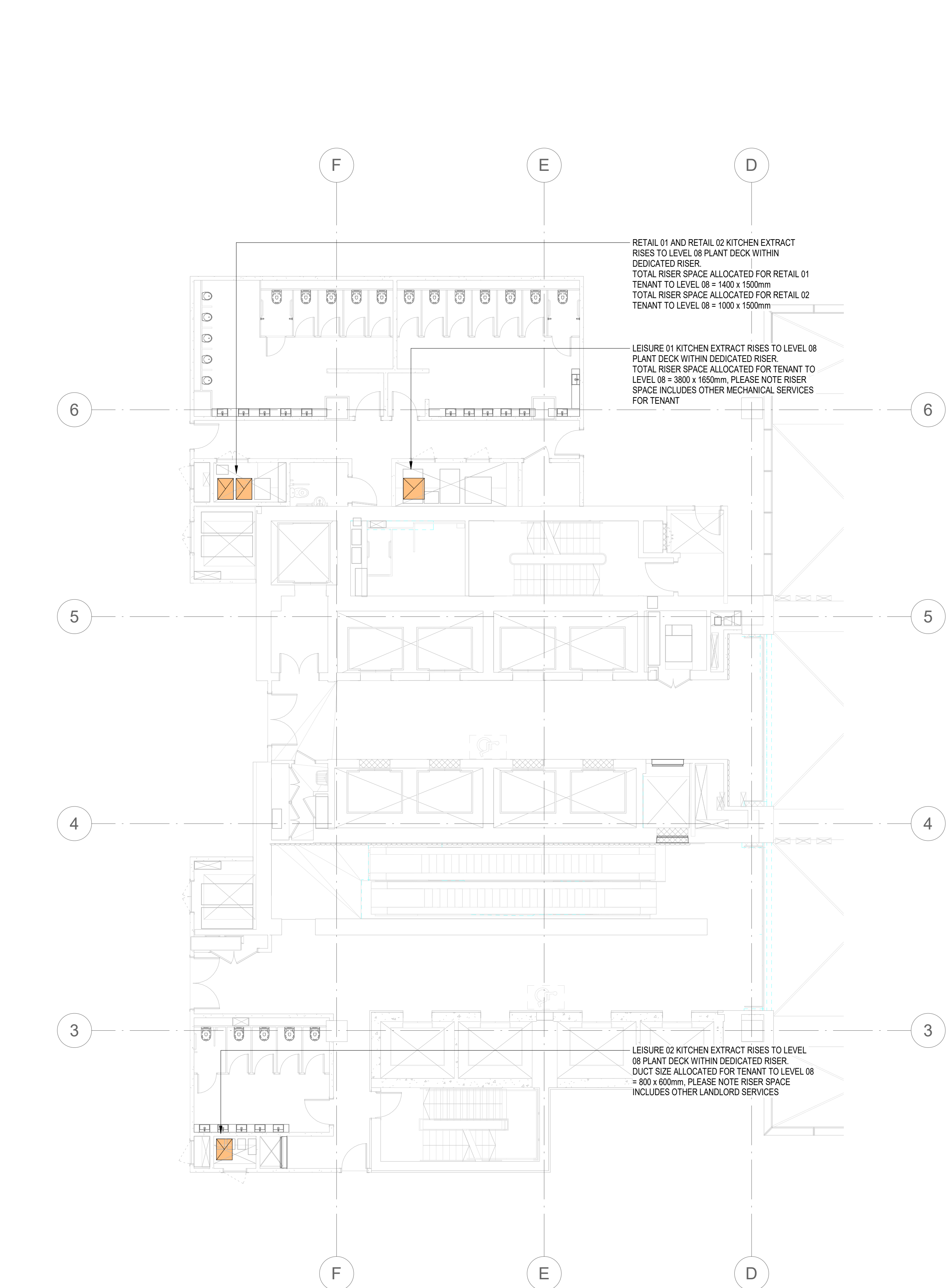
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**LEVEL B1 & 00
KITCHEN EXTRACT
ROUTES TO PODIUM ROOF**

Status		
PLANNING		
Project No. 3292	Drawn JL	Scale / Paper Size 1 : 100 @ A0
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DESIGNERS RISK ASSESSMENT SCHEDULE
REFER TO APPENDIX 1 OF M&E SPECIFICATION FOR DESIGNERS RISK ASSESSMENT SCHEDULE

DRAWING BACKGROUND(S):	
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SIMPSONHAUGH 10218-SHA-Z1-A-G201-M3-XX-001	REV2
SIMPSONHAUGH 10218-SHA-Z1-A-G202-M3-XX-001	REV3

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1. ALL RELEVANT BRITISH AND EUROPEAN STANDARDS
 2. DW / 172 - SPECIFICATION FOR KITCHEN VENTILATION SYSTEMS (2ND EDITION, 2018, V2)
 3. ENAQ GUIDANCE: CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS 2018
 4. TR / 19 - HYCA GUIDE TO GOOD PRACTICE. INTERNAL CLEANLINESS OF VENTILATION SYSTEMS
 5. BRITISH STANDARDS BS EN 1386 - FIRE RESISTANT TESTS FOR SERVICE DUCTS AND SHAFTS
 6. DEBRA GUIDANCE ON THE CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS, 2005
 7. NON-DOMESTIC BUILDING SERVICES COMPLIANCE BUILD CLG 2010
 8. CIBSE CODES OF PRACTICE AND DESIGN GUIDANCE NOTES



1 01-07 - KITCHEN EXTRACT
1 : 100



2 08 - KITCHEN EXTRACT
1 : 100

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			Eng	Chk

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Client

LENROSE INVESTMENTS LIMITED

Project

**CIS TOWER REFURBISHMENT
MILLER STREET,
MANCHESTER**

Drawing Title

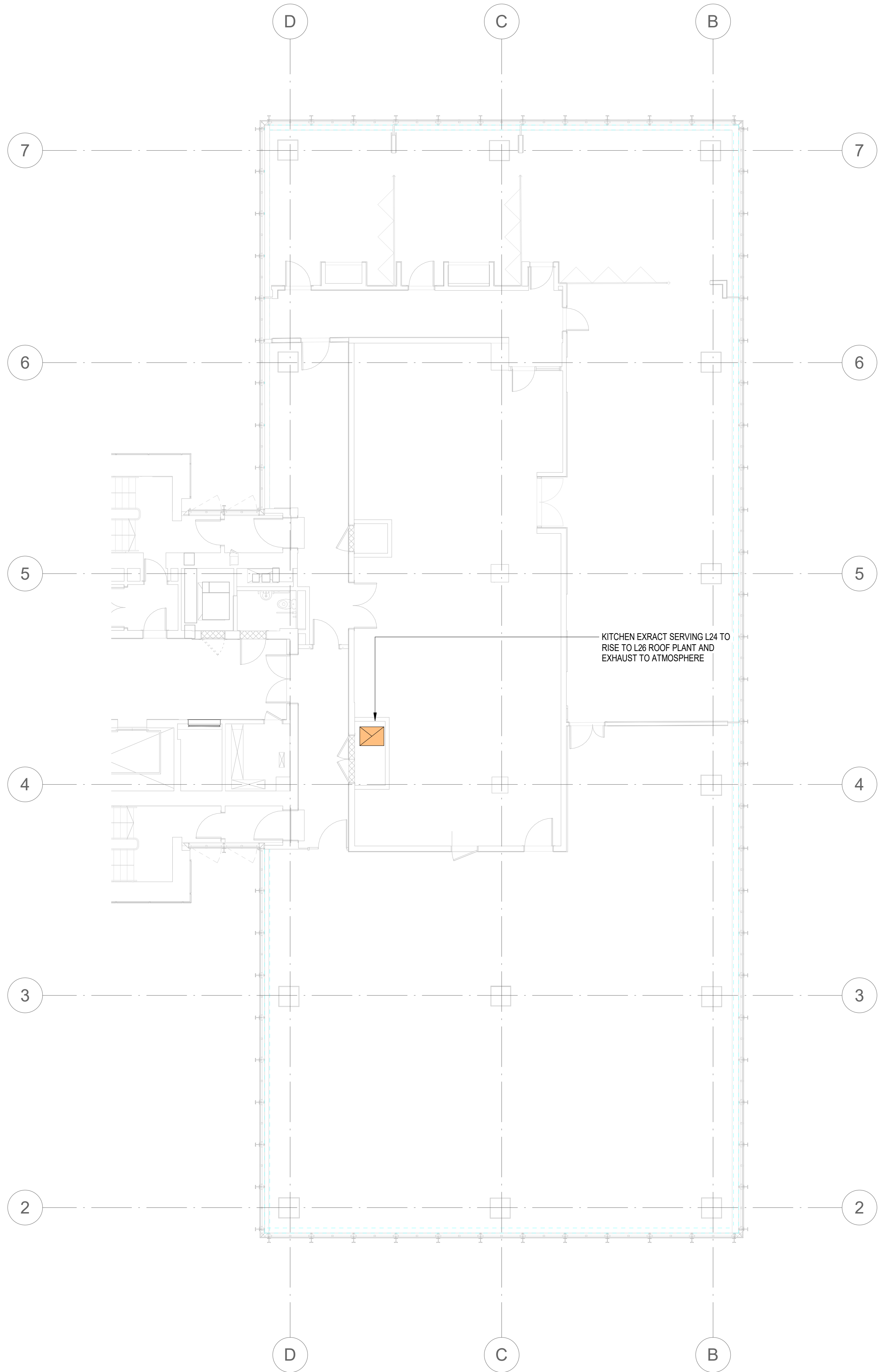
**LEVEL 01-08
KITCHEN EXTRACT
ROUTES TO PODIUM ROOF**

Status			
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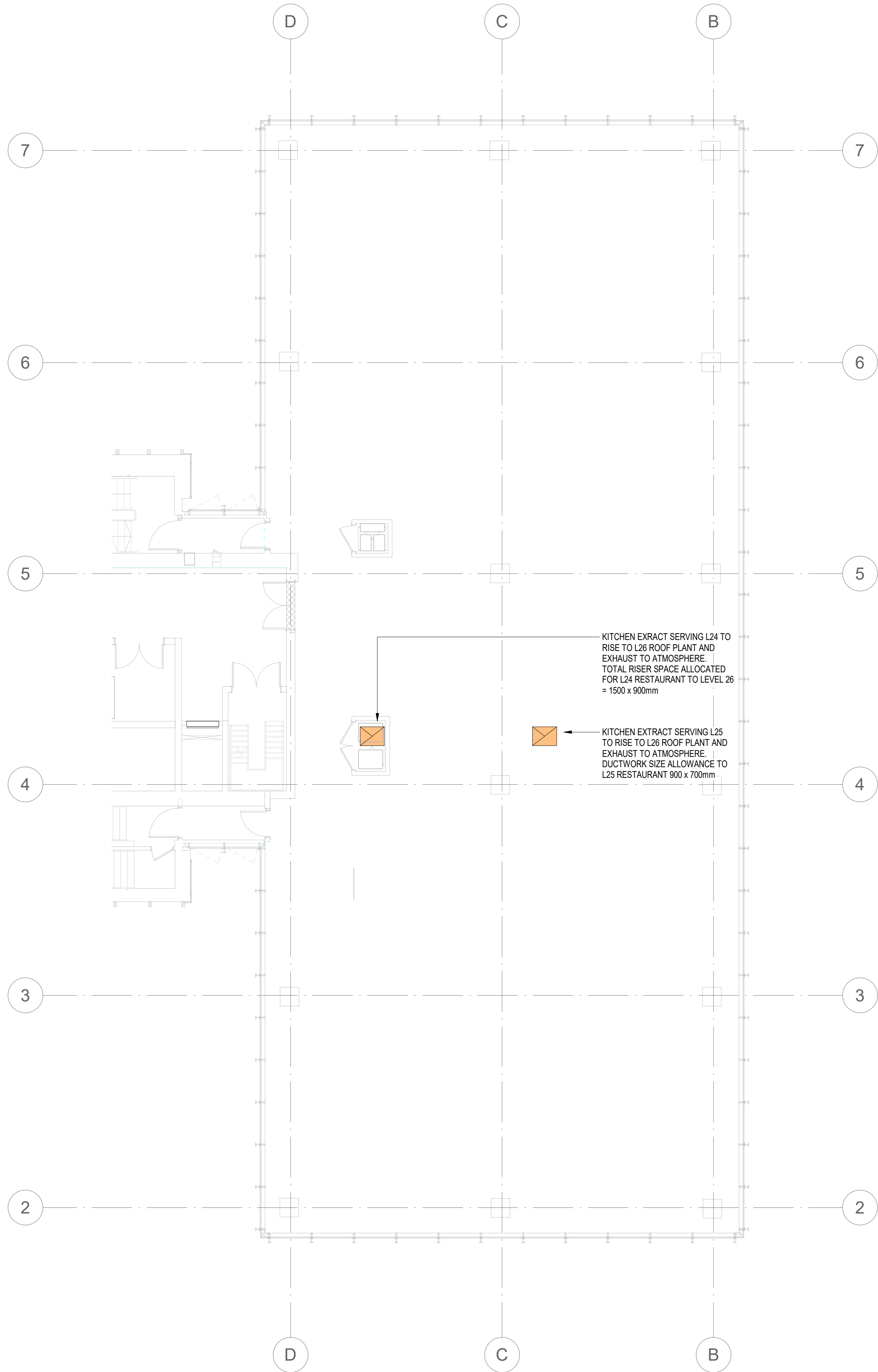
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SIMPSONHAUGH	10218-SHA-Z1-A-G225-M3-XX-001	150425

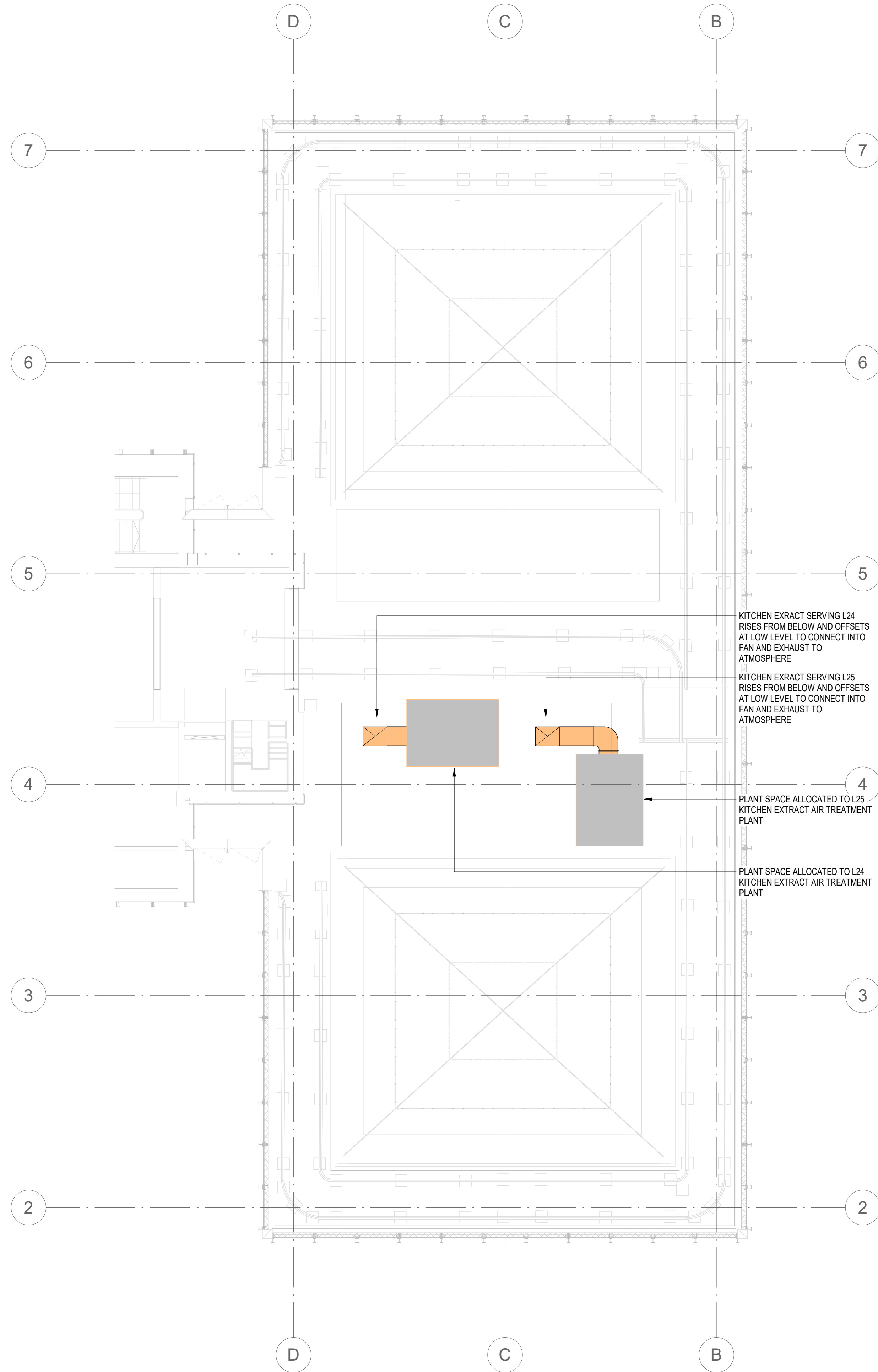
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 - EMAG GUIDANCE 'CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS 2016'
 - TR / 19 - HYCA GUIDE TO GOOD PRACTICE, INTERNAL CLEANLINESS OF VENTILATION SYSTEMS
 - BRITISH STANDARDS BS EN 1386 - FIRE RESISTANT TESTS FOR SERVICE DUCTS AND SHIFTS
 - DEFRA GUIDANCE ON THE CONTROL OF ODOUR AND NOISE FROM COMMERCIAL KITCHEN EXHAUST SYSTEMS, 2005
 - NON-DOMESTIC BUILDING SERVICES COMPLIANCE GUID CLG 2010
 - CIBSE CODES OF PRACTICE AND DESIGN GUIDANCE NOTES



1 24 - KITCHEN EXTRACT
1 : 100



2 25 - KITCHEN EXTRACT
1 : 100



3 26 - KITCHEN EXTRACT
1 : 100

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Project
**CIS TOWER REFURBISHMENT
MILLER STREET,
MANCHESTER**

Drawing Title
**LEVEL 24-26
KITCHEN EXTRACT
ROUTES TO LEVEL 26 ROOF**

Status			
PLANNING			
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