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# CIS Tower, Manchester

MEP Summary for D&A Statement

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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 to support the Design and Access Statement developed by Simpson Haugh Architects.

## 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 (UKNZBS)

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 Carbon Building Standard (UKNZCBS)

## 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.

### Incoming Gas and Water

It is proposed that the existing gas supply is removed from the building as part of a decarbonisation strategy with an all-electric approach to the building.

The existing water supply is to be retained for the general use of the offices with separate metered supplies for the retail and leisure units. An independent fire main will also be provided for firefighting purposes.

### 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.

### 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.

### HV/LV Power

The existing HV connection to the building will be re-used. 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 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.

Podium office small power distribution will be via raised access floors or existing screed trunking, 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 using a combination of suspended and recessed luminaires.

Automated lighting control will be provided to all areas with daylight dimming to perimeter areas.

### Fire Alarm Installation

A new BS5839-1 fire detection system will be provided throughout the building with a minimum L2 coverage 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 targeting 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.

Future proof infrastructure for Smart Building Technologies will be provided and 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 to align with the proposed Fire Strategy.

- Commercial Sprinkler protection (BS EN 12845:2015) to Ordinary Hazard III.
- Smoke ventilation to firefighting lobby areas
- Wet Riser to tower firefighting 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 Energy Performance

The performance of the building has been assessed through Thermal Modelling using IES software. It has been used to provide an estimate of the operational energy and carbon for the building as a whole and a detailed analysis of the benefits of the façade replacement.

Detailed descriptions of the studies are included within the Energy Statement and the outcomes of these studies are as summarised below.

### Façade Replacement

A study was carried out on the series of options for the façade replacement through Thermal Modelling applying the NCM template for predictions on the operational energy and carbon savings.

The results have indicated that the by incorporating the replacement façade and through the application of the efficient building services systems as described above a significant operational carbon saving can be achieved. The results of the analysis have been carried forward and incorporated into the overall facade matrix.

Building Operational Performance

Further studies have been carried out using the TM54 methodology on the operational energy of the whole building and the NCM Templates applied to the Thermal Model to predict the potential EPC of the refurbished building.

| Criteria                                                                | Rating                                                                  |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Current Asset Rating (Existing building with existing systems)          | E Rating                                                                |
| New Asset Rating (Refurbished building with new systems and new facade) | A Rating                                                                |
| Energy Use Intensity (EUI)                                              | 72.23 kWh/m <sup>2</sup><br>(UKNZBS 2025 Target 125kWh/m <sup>2</sup> ) |

The results have demonstrated that the proposals will comply to the UK Net Zero Carbon Building Standard based on a start date for the refurbishment of either 2025 or 2026.

9.0 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.

10.0 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:

- Metered LV Power Supply
- Fire Alarm interface
- Incoming metered water supply
- Drainage pop ups in strategic locations for notional toilet and kitchen areas.
- ISP connectivity
- 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.

Plant and riser space allocations

Retail Units 1 and 2 as well as the proposed leisure unit on level B1 will be provided with safeguarded routes to podium plant Level 8 for kitchen extract and heat rejection plant.

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