

JD Sports, Bury

MEP Planning Statement - Creche and Hub Buildings

JD Sports

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Contents

1.0	Introduction	2
1.1	Preface	2
1.2	Development Overview	2
1.3	General Principles	3
2.0	Creche Servicing Strategy	5
2.1	General	5
2.2	Heating & Cooling	5
2.3	Ventilation	5
2.4	Public Health	6
2.5	External Lighting	7
2.6	Electric Vehicle Charging	7
3.0	Hub Servicing Strategy	9
3.1	General	9
3.2	Heating & Cooling	9
3.3	Ventilation	10
3.4	Public Health	11
3.5	External Lighting	11
3.6	Generator	11
3.7	Electric Vehicle Charging	11

1.0

Introduction

1.0 Introduction

1.1 Preface

This Mechanical, Electrical, and Public Health (MEP) statement document has been prepared by Cundall to support the planning application for the proposed JD Sports Head Quarters (HQ) development.

The JD Sports HQ development project consists of the new build construction of a Creche and Hub building, referred to as The Hub, in Bury, Manchester.

The primary objectives of this MEP statement document is as follows:

The Creche & The Hub

- To summarise the proposed MEP strategies within each building, with a focus on associated roof plant.
- To provide details of the ventilation systems and the measures taken to ensure that both schemes do not have an unacceptable impact on local amenity with regards to fumes, vapours, and odours.

1.2 Development Overview

The site is located on a vacant plot of land to the West of the existing JD Sports site and adjacent to an existing residential area. The site is located in Bury, Manchester, adjacent to Pilsworth Road and Hollins Brook Way.

The site was occupied by an industrial user and has been mostly demolished to ground level. The small buildings and hardstanding remaining on site are due to be demolished under an enabling works contract.

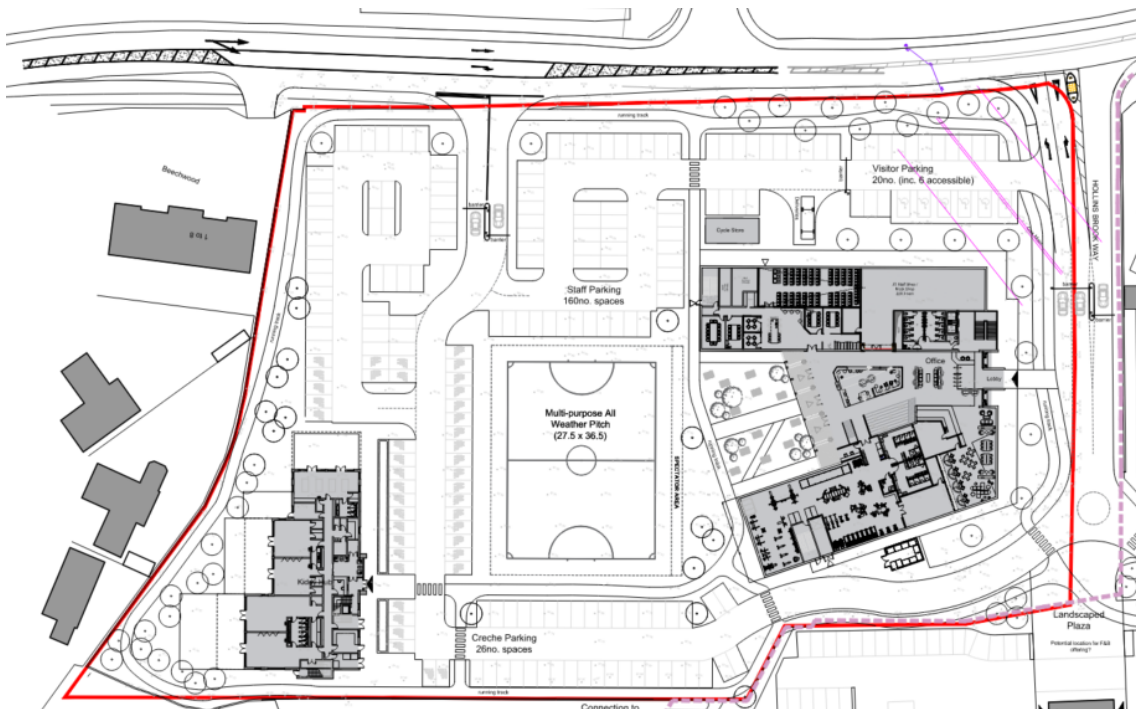


Figure 1-1: Creche and Hub Masterplan

The site is formed of two distinct areas. The portion of the site adjacent to Hollins Brook Way is the proposed location for The Hub.

The portion of the site to the South West of the site is the proposed location of The Creche.

1.3 General Principles

This MEP statement document covers both the Creche and Hub buildings and is to be read in conjunction with all other planning reports prepared by other members of the design team.

The basis of design data has been taken from the following documentation:

- British Standards, Codes of Practice and Building Regulations
- Design Guides i.e. CIBSE, IoP, etc., incl. Technical Memoranda (HVCA & BSRIA)
- Local and Statutory Authority Requirements
- Supply Authority Regulations
- Local Planning Requirements
- BCO 2019 Guidance
- DEFRA guidance

The Creche

- Mixture of central plant at roof level and at ground floor level.
- Service risers between floors and roof.
- Mixed mode natural ventilation and mechanical ventilation strategy
- Heating via modular Air Source Heat Pump (ASHPs).
- Minimal cooling proposed.
- Small scale kitchen and associated roof plant.
- No natural gas.
- Electric domestic hot water generation.

The Hub

- Mixture of central plant at roof level (North and South) and at ground floor level.
- Service risers between floors and roof.
- Mixed mode natural ventilation and mechanical ventilation strategy
- Heating via modular Air Source Heat Pump (ASHPs).
- No natural gas.
- Cooling via modular chillers.
- Commercial kitchen and associated roof plant.
- Electric domestic hot water generation.
- PV on roof (TBC)

2.0

Nursery Servicing Strategy

2.0 Creche Servicing Strategy

2.1 General

The MEP strategies outlined within this section are based on a RIBA Stage 2 Concept Design for the new Creche building development, providing an overview of the building services strategies for the planning submission.

2.2 Heating & Cooling

The following section provides an overview of the proposed space heating & cooling strategies for the new Creche building, including central plant and floor plate terminal units.

2.2.1 Central Plant

Heating to the building is proposed to be generated via central modular air source heat pumps (ASHPs), located within the screened plant area located at main roof level. The heat pumps are all electric, reducing the reliance on fossil fuels. No gas boilers are proposed.

Minimal cooling is proposed, generally to temper the fresh air from AHU plant in summer. Central modular chiller plant or DX condensers to also be located within the screened plant deck at roof level.

DX condensers are also proposed at roof level for server / comms rooms cooling.

From the chiller and heat pump arrays, chilled water (CHW) and low temperature hot water (LTHW) pipework is to be routed to an internal plant room at roof level. The internal plant room is to house central pumps sets, buffer vessels, and controls.

From the internal plant room, CHW and LTHW flow & return pipework is routed down the building within mechanical risers.

2.2.2 Floor Plates

To maintain the required indoor space temperatures, the proposed strategy is to provide a mixture of radiators, LST radiators, and radiant panels.

LTHW flow & return pipework is routed from the main roof top plant, down the mechanical risers, branching off at each floor level to serve the various terminal units.

Cooling is generally proposed to be limited to cooling coils within AHU plant.

Local DX refrigerant based cooling to be provided to server / comms rooms via terminal wall mounted DX indoor units.

2.3 Ventilation

The following section provides an overview of the proposed ventilation strategies for the new Creche building, including central plant, floor plate terminal units, and natural ventilation façade openings.

2.3.1 Central Plant

Mechanical supply & extract ventilation to the Creche building is to be provided via a series of roof mounted packaged Air Handling Units (AHUs) and supply & extract fans, located within the screened plant area at main roof level. The following central ventilation plant is envisaged:

- General / Toilet AHU plant
- Event space AHU
- Kitchen supply AHU

- Kitchen extract fan

Separation between intake and discharge to and from plant is to be maximised to prevent re-circulation at roof level.

Mechanical risers are to be provided to allow fresh air supply and extract ductwork to be routed from roof level, down the building to serve each floor plate. A dedicated kitchen mechanical riser is proposed.

The systems are to be designed to deliver fresh air and minimise internal pollutants.

The General / Toilet AHU systems are to be designed to achieve 10l/s/person, based on the proposed occupancy level of staff and children, and 6ACH for toilet areas.

The Event Space system is to be designed to achieve 10l/s/person.

The kitchen ventilation plant is to be sized based on the final proposed kitchen equipment and extract canopy requirements, with intake and exhaust to kitchen ventilation plant at roof level.

The scoring methodology from DEFRA 2005 'Guidance of the Control of Odour and Noise from Commercial Kitchen Exhaust Systems' is to be used as a means of determining odour control requirements such as carbon filtration, UV filters or ozone.

2.3.2 Floor Plates

Fresh air supply is to be delivered into floor plate via Variable Air Volume (VAV) control dampers to allow a variable air volume (Creche Areas, Event Space) or fixed volume (Toilets) to be provided.

VAV dampers to be controlled on CO2 and temperature as part of a hybrid mixed mode natural ventilation and mechanical ventilation strategy. Façade natural ventilation openings to be provided via openable windows and natural ventilation louvres.

Generally, the mechanical Supply & Extract (S&E) ventilation system is to provide fresh air ventilation during the heating season, with heat recovery. Outside of the heating season, during mid-season and summer, the spaces are proposed to be naturally ventilated via high level natural ventilation louvres and openable windows.

Fresh, filtered, air is to be delivered from the AHU plant via supply diffusers with extract via extract grilles.

The kitchen is to be provided with an extract canopy with appropriate filtration and odour control, with make-up air via supply diffusers, dedicated to the space.

2.4 Public Health

The following section provides an overview of the proposed domestic hot & cold water and above ground drainage strategies for the new Creche building, including central plant and floor plate strategies.

2.4.1 Landlord Central Plant

The proposed strategy for providing Boosted Cold Water (BCWS) to the new Creche building is for a central wholesome water storage tank and booster sets located at ground floor level within an internal plant room.

Domestic hot water generation is to be via central calorifiers at roof level, within an internal plant room, served via modular high temperature Air Source Heat Pumps (ASHPs) and electric top up. ASHPs are to be modular and located within the screened plant area at roof level. The heat pumps are all electric, reducing the reliance on fossil fuels. No gas boiler or gas water heaters are proposed.

2.4.2 Office Floor Plates

From the internal plant rooms, boosted cold water (BCWS) and domestic hot water (DHWS) flow & return pipework is routed around the building to serve the various outlets at each floor level.

Rising foul drainage stacks are to be provided with vent pipes to roof level to serve the various sanitary drainage outlets.

2.5 External Lighting

Refer to separate planning documentation for details

2.6 Electric Vehicle Charging

It is intended to provide 20% of parking spaces with EV charging points of 7kW for the building.

3.0

Hub Servicing Strategy

3.0 Hub Servicing Strategy

3.1 General

The MEP strategies outlined within this section are based on a RIBA Stage 2 Concept Design for the new Hub building development, providing an overview of the building services strategies for the planning submission.

3.2 Heating & Cooling

The following section provides an overview of the proposed space heating & cooling strategies for the new Hub building, including central plant and floor plate terminal units.

3.2.1 Central Plant

Heating to the building is proposed to be generated via central modular air source heat pumps (ASHPs), located within the screened plant area located at main roof level (North). The heat pumps are all electric, reducing the reliance on fossil fuels. No gas boilers are proposed.

Cooling to the building is proposed to be generated via central modular chillers, located within the screened plant area located at main roof level (North).

DX condensers are also proposed at roof level for server / comms rooms cooling.

From the chiller and heat pump arrays, chilled water (CHW) and low temperature hot water (LTHW) pipework is to be routed to an internal plant room at roof level. The internal plant room is to house central pumps sets, buffer vessels, and controls.

From the internal plant room, CHW and LTHW flow & return pipework is routed down the building within mechanical risers.

3.2.2 Floor Plates

To maintain the required indoor space temperatures, the proposed strategy for space heating & cooling provision to the office floor plates is to provide ducted, chassis type, Fan Coil Units (FCUs) mounted at high level within ceiling voids.

The cooling (and heating) system is to operate as part of a mixed mode natural ventilation / mechanical ventilation system, with interlocks to turn off terminal cooling when relying on natural ventilation. In the event comfort levels cannot be achieved by natural ventilation, due to peak summer ambient temperatures, facades openings to be closed and cooling / mechanical ventilation provided. A traffic light system is proposed to direct staff / end users when to open / close façade openings where not automated.

The ground and first floors are to be fully fitted out, with 2nd and 3rd floors provided as shell and core for future fit-out.

CHW and LTHW flow & return pipework is routed from the main roof top plant, down the central mechanical risers, branching off at each floor level to serve 4-pipe Fan Coil Units (FCUs).

FCUs are to be arranged to suit a BCO compliant thermal zoning strategy, based on perimeter thermal zones of 6m x 4.5m and internal zones of 50-70m².

From each FCU, insulated, secondary ductwork is to be provided serving supply diffusers.

Return air is to be via exposed soffits or return air grilles.

Local DX refrigerant based cooling to be provided to server / comms rooms via terminal wall mounted DX indoor units.

3.3 Ventilation

The following section provides an overview of the proposed ventilation strategies for the new Hub building, including central plant, floor plate terminal units, and natural ventilation façade openings.

3.3.1 Central Plant

Mechanical supply & extract ventilation to the Hub building is to be provided via a series of roof mounted packaged Air Handling Units (AHUs) and supply & extract fans, located within the screened plant area at main roof level (North and South). The following central ventilation plant is envisaged:

North Roof

- General AHU plant (North)
- Toilet AHU plant (North)

South Roof

- General AHU plant (South)
- Toilet AHU plant (South)
- Gym AHU
- Restaurant / Café AHU
- Kitchen Supply AHU
- Kitchen extract fan

Separation between intake and discharge to and from plant is to be maximised to prevent re-circulation at roof level.

Mechanical risers are to be provided to allow fresh air supply and extract ductwork to be routed from roof level, down the building to serve each floor plate. A dedicated kitchen mechanical riser is proposed.

The systems are to be designed to deliver fresh air and minimise internal pollutants.

The General AHU, Gym AHU, and Restaurant/café AHU systems are to be designed to achieve 14l/s/person, based on the proposed occupancy levels.

The toilet AHUs are to be designed to achieve 6ACH for toilet areas.

The kitchen ventilation plant is to be sized based on the final proposed kitchen equipment and extract canopy requirements, with intake and exhaust to kitchen ventilation plant at roof level.

The scoring methodology from DEFRA 2005 'Guidance of the Control of Odour and Noise from Commercial Kitchen Exhaust Systems' is to be used as a means of determining odour control requirements such as carbon filtration, UV filters or ozone.

3.3.2 Floor Plates

Fresh air supply is to be delivered into each office floor via Variable Air Volume (VAV) control dampers to allow a variable air volume system to be provided. Balanced extract to the roof AHUs is via core risers.

Fresh, filtered, air is to be delivered to the back of the Fan Coil Units (FCUs) mounted at high level within ceiling voids or within exposed soffit areas.

VAV dampers to be controlled on CO₂ and temperature as part of a hybrid mixed mode natural ventilation and mechanical ventilation strategy. Façade natural ventilation openings to be provided via openable windows and natural ventilation louvres.

Generally, the mechanical Supply & Extract (S&E) ventilation system is to provide fresh air ventilation during the heating season, with heat recovery. Outside of the heating season, during mid-season and summer, the spaces are proposed to be naturally ventilated via high level natural ventilation louvres and openable windows where ambient temperatures and internal temperatures permit (to reduce reliance on cooling). In the event comfort levels cannot be achieved, due to peak

summer ambient temperatures, facades openings to be closed and cooling / mechanical ventilation provided. A traffic light system is proposed to direct staff / end users when to open / close façade openings where not automated.

The kitchen / café prep are to be provided with extract canopies with appropriate filtration and odour control, with make-up air via supply diffusers, dedicated to the spaces.

3.4 Public Health

The following section provides an overview of the proposed domestic hot & cold water and above ground drainage strategies for the new Hub building, including central plant and floor plate strategies.

3.4.1 Landlord Central Plant

The proposed strategy for providing Boosted Cold Water (BCWS) to the new Hub building is for a central wholesome water storage tank and booster sets located at ground floor level within an internal plant room.

Domestic hot water generation is to be via central calorifiers at roof level, within an internal plant room, served via modular high temperature Air Source Heat Pumps (ASHPs) and electric top up. ASHPs are to be modular and located within the screened plant area at roof level (North). The heat pumps are all electric, reducing the reliance on fossil fuels. No gas boiler or gas water heaters are proposed.

3.4.2 Office Floor Plates

From the internal plant rooms, boosted cold water (BCWS) and domestic hot water (DHWS) flow & return pipework is routed around the building to serve the various outlets at each floor level.

Rising foul drainage stacks are to be provided with vent pipes to roof level to serve the various sanitary drainage outlets.

3.5 External Lighting

Refer to separate planning documentation for details

3.6 Generator

A new generator is to be provided for backup to the Hub building in the event of mains failure, which is reportedly quite common in the area, although only for short periods. The generator is located on the ground floor

3.7 Electric Vehicle Charging

It is intended to provide 20% of parking spaces with EV charging points of 7kW for the building.

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