

DOVER LEISURE CENTRE

DESIGN & SERVICE REQUIREMENTS WATER TREATMENT SYSTEMS

Date	7 th June 2016
Issue	A
Contract	Dover Leisure Centre
Sheerwater Consultancy Limited	13 Stocks Brow, Tintwistle, Glossop, Derbyshire, SK13 1LG
Landline	01457 857264
Mobile	07766 738167
Email	sheerwater123@btinternet.com
Registered in England	No. 4408935

Scope

The leisure centre is to incorporate a 25m. x 8 lane main pool and a 15m. x 8.5m. teaching pool.

1. Filtration & Water Treatment Systems

The filtration and water treatment systems are to incorporate medium pressure sand filtration with PAC (polyaluminium chloride) for coagulation, chlorine disinfection in the form of sodium hypochlorite (complimented by UV treatment) and hydrochloric acid for pH correction.

The systems are to be designed in accordance with the PWTAG Guidelines together with the relevant criteria as follows:-

Main Pool

Volume	638m ³
Turnover	3 hours
Hourly Flow	213m ³
Filters	2 x 2.4m. diameter vertical
Filter Area Total	9.04m ²
Filtration Rate	23.56m./hour
Maximum Instantaneous Bathing Load (based on circulation rate)	125

Teaching Pool

Volume	120m ³
Turnover	1 hour
Hourly Flow	120m ³
Filters	2 x 1.8m. diameter vertical
Filter Area Total	5.09m ²
Filtration Rate	23.6m./hour
Maximum Instantaneous Bathing Load (based on circulation rate)	71

2. Balance Tank

A balance tank is to be incorporated for each of the systems and these are to be located under the pool surround at the side of each respective pool. The positions and physical sizes of the tanks are to be agreed with the Architect and Structural Engineer and tanks are to comply with the requirements in relation to the Regulations on 'Access to Confined Spaces' and the Recommendations laid down by PWTAG.

Main pool minimum operating volume	35m ³
Teaching pool minimum operating volume	20m ³

3. Filter Backwashing

It is proposed that filter backwashing will be carried out at the end of each operating day. Under normal bathing load conditions it will probably be necessary to wash each filter once per week, but this may increase during heavy bathing load periods.

At the current time, on most new swimming pool projects it is usual practice for the local Water Company to limit the flow rate to foul to within approximately 5 litres/second. If this Regulation is applied on this particular contract it will be necessary to include an attenuation/backwash holding tank as part of the drainage systems. The size of the tank is to be based on the following:-

Item	Each of the Main Pool Filters	Each of the Teaching Pool Filters
Backwash flow rate	38 litres/second	22 litres/second
Length of backwash process	7 minutes	7 minutes
Volume discharged	15.96m ³	9.42m ³

Assuming that the attenuation tank is allowed to drain after backwashing each filter, the tank would have to have a minimum operating volume capacity of 16m³. If it is necessary to design the system to enable two filters to be washed consecutively, then the volume of the tank would have to be increased to 32m³.

The engineer responsible for drainage is to determine how the tank is to be drained to foul and vented.

4. Drainage Requirements

4.1 Approximately five drainage gullies will be required in the floor of the filtration plantroom.

4.2 DRENCH SHOWER DRAINAGE STILL TO BE DECIDED.

5. Services

5.1 Electrical

Electrical supplies will be required as follows:-

Main filtration plantroom	50Kw.
---------------------------	-------

All the above supplies are to be 415 volt, 3 phase and neutral and the above figures do not take into account power factor correction.

5.2 Water Supply

A makeup water supply will be required, terminating at an agreed point in the filtration plantroom and this should be based on a flow rate of 2 litres/second. The maximum flow rate will be required after filter backwashing for pool water makeup. Filter backwashing is usually carried out at the end of the operating day, which allows the pool water makeup to operate overnight when the demand for water in the remainder of the building is low.

Additional water supplies will be required for the following:-

- The sink in the main plantroom.
- Hose down point in the main plantroom.
- Hose down point in each of the chemical rooms.
- Drench shower in each of the chemical rooms.

5.3 Heat Requirements

We assume that low pressure hot water will be provided to initially heat the pool water, raising the volume of the water temperature by 0.5°C per hour. Plate heat exchangers should be provided as part of the filtration contract and it is usual practice, for the controls on the low pressure hot water side, to be provided by the mechanical contractor. LPHW – 70°C supply and 50°C return.

Pool	Anticipated Pool Water Temperature	Anticipated Heat Load
Main	28 - 29°C	371Kw.
Teaching	29 - 30°C	70Kw.

6. Ventilation

6.1 Chemical Rooms

Whilst the PWTAG Guidelines indicate that natural ventilation is acceptable it would be preferable to incorporate forced ventilation, the recommended rate being four air changes per hour.

6.2 Filtration Plantroom

The mechanical and electrical consultant should assess whether or not forced ventilation is required in the main plantroom, giving consideration to the fact that this room also accommodates the boilers, electrical equipment etc.

Dover Leisure Centre

MEP Basis of design stage 2 report

Doc No: P2007256 – WLC_BDP_ZZ_ZZ_RP_MEP_ZZ_0002
Issue: Stage 2
Rev: P01
Date: June 2016
Author: SS/AM
Checked: SM

Contents

1.0 Executive summary

2.0 Qualitative requirements

3.0 Quantitative requirements

4.0 Part L

5.0 Information required

Appendix A – BDP MEP Planning deliverables

Appendix B – Basis of Design

Revision History:

Revision	Description	Issued by	Date	Checked
P01	Stage 2 Issue	AM	16.06.2016	SM

1.0 Executive Summary

This document has been produced to record the current interim stage 2 basis of design, and the MEP process through to issue of planning information.

The general approach to the MEP servicing strategy is as follows;

- BDP programme and deliverables provided in the appendices.
- Adoption of mechanical ventilation strategy in line with requirements of the building function.
- Design of the MEP systems to be primarily as below with early supply chain engagement to drive efficiencies: -
 - Standard above ground drainage by services,
 - Rainwater harvesting required.
 - Rainwater design by GT Architect
 - Domestic water services to break tank and booster set with hot water generation
 - Heating options under consideration
 - Gas fired boilers with lead CHP plant complete with thermal buffer
 - Air source heat pumps and heat recovery for cooling in Gym, etc.
 - Variable speed air handling plant for pool, gym, studios, spinning, wet and dry changing areas
 - Consideration for natural ventilation to general circulation and hall – subject to suitable flow rates
- Pool Process plant sketch information has been provided by Sheerwater and interpreted onto layout drawings BDP MEP sketch Drawings included as Appendix.
- Requirements to meet general development guidance and the intention is to improve upon the carbon requirements of Part L 2013 by up to 10% by being LEAN and MEAN any further enhancement to this would be proposed by renewables following a suitable feasibility study (likely options are micro CHP, solar thermal, solar photovoltaics and air source heat pumps) i.e. BE GREEN.
- Requirement to meet the brief requirements of BREEAM VERY GOOD
- No spare capacity to be allowed within the mechanical systems design beyond standard engineering margins.
- 25% spare capacity to be allowed for within electrical distribution systems for future load increases.
- 20% spare capacity to be allowed for data cabling future requirements.
- There is currently no requirement for Sprinklers system and/or gas suppression within ICT server room
- GT Architects to incorporate full plant, risers and horizontal distribution requirements as indicated upon the MEP spatial requirement sketches.
- Room data sheets will be developed during the stage 3 process.
- Public Address system will be provided.

- Assumption of limited use of access control and CCTV provisions will be included.
- Fire alarm system design category to be advised by the Fire Consultant

2.0 Qualitative Requirements

The following standards and guidance will be followed in the design of the MEP design of the leisure centre;

- 10% Improvement on the requirements of part L.
- BREEAM Very Good.
- Generally the mechanical & electrical services shall be designed in compliance with current editions of:
 - The Gas Safety Regulations
 - BS EN 12056 – Above ground drainage
 - BS EN 806 – Specifications for installations inside buildings conveying water for human consumption
 - BS 6173 Installations of gas-fired catering appliances for use in all types of catering establishments (2nd and 3rd family gases)
 - CIBSE Design Guides Building Services Industry Standards
 - CIBSE Guide A: Environmental Design
 - CIBSE Guide B: Heating, Ventilation, Air-Conditioning and Refrigeration.
 - CIBSE Guide F: Energy Efficiency in Buildings
 - CIBSE Guide G: Public Health Engineering.
 - CIBSE Guide H: Building Control Systems.
 - CIBSE Guide L: Sustainability
 - CIBSE Applications Manual 10: Natural Ventilation in Non-Domestic Buildings:
 - CIBSE TM13 – Minimising the Risk of Legionnaires Disease.
 - Sport England – Swimming Pool Design Guidance Note
 - Sport England – Badminton Design Guidance Note
 - Sport England – Artificial sports lighting design guide 2012
 - Sport England - Sports halls: Design and Layouts design guide
 - Sport council - Swimming Pools Guidance Notes - Building Services
 - Standards for Swimming pool - SPATA - Volume 02
 - Institute of Gas Engineering Publication IGE/UP/1&2
 - IM25 – Gas safety in educational premises
 - BREEAM
 - BS 8300, Design of buildings and their approaches to meet the needs of disabled people
 - ISO 11801 - 2nd Edition International Standards
 - BS7671 - Requirements for Electrical Installations / IET Wiring Regulations
 - BS 8206-2 Lighting for Buildings: Code of Practice for Daylighting
 - BS EN 12464-1 Light and lighting - Lighting of work places. Indoor work places
 - BS EN 12464-2, Light and lighting - Lighting of work places. Outdoor work places

- SLL Code for Lighting:
- BS EN 5266-1 – Code of practice for the emergency escape lighting of premises
- BS EN 1838 – Lighting applications - emergency lighting
- Industry Standard 1006:2012 – Emergency lighting design guide
- BS EN 5489-1 – Code of Practice for the Design of Road Lighting, Lighting of roads and public amenity areas
- BS EN 13201-2 – Code of Practice for the Design of Road Lighting
- BS EN 50173-1, 2, 3 – Information technology - Generic cabling systems
- BS 6701 – Telecommunications equipment and telecommunications cabling - Specification for installation, operation and maintenance
- BS EN 50346 – Information technology. Cabling installation. Testing of installed cabling
- ANSI TIA EIA 568-B – Commercial Building Telecommunications Cabling Standard
- BS EN 50174-1, 2 and 3 – Information Technology Cabling Installations.
- BS EN 50131 – Alarm systems - Intrusion and hold-up systems. System
- BS 50133 – Alarm systems. Access control systems for use in security applications.
- BS EN 60839-11-2 – Alarm and electronic security systems. Electronic access control systems - application guidelines
- National Code of Practice 104
- EN 62676-4 – Video surveillance systems for use in security applications.
- BS6259 Public Address
- BS 5839-1 – Fire detection and fire alarm systems for buildings. Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises
- BS 5839-9 – Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems
- BS 8519 – Code of Practice for Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting applications
- BS EN 50310 – Code of Practice for Application of equipotential bonding and earthing in buildings with information technology equipment
- BS7430 - Code of Practice for protective earthing of electrical installations
- BSEN 62305 – Code of Practice for protection of structures against lightning
- NJUG Volume 1 Guidelines On The Positioning and Colour Coding of Underground Utilities' Apparatus
- BS EN 81 – Lifts and service lifts. Safety rules for the construction and installation of electric lifts.

3.0 Quantitative Requirements

The following describes the approach to servicing being adopted for the stage 2 design.

Service	Solution	Reasoning
Below Ground pipework	By others	By others
Above Ground Drainage	PVC pipework to be utilised for soil and waste above ground drainage.	Utilising plastic pipework will provide cost saving.
Rainwater Harvesting	Capture into tank within the building basement level	
Mains cold water	New incoming main to feed potable water and potential fire hydrant	A new application for a water connection will need to be made approximately 3.5l/s for the potable and circa 1500l/min for the hydrant.
Domestic cold water	Storage tank and booster set for potable water	To maintain suitable system pressure and to hold a capacity in the building should the external mains fail.
	Storage tank and cat 5 for washdown and similar supplies	To comply with water regulations
Domestic hot water	Heat interface units connected to LTHW distribution.	Towards part L 2010
Natural Gas	Low pressure natural gas will be provided to plantroom equipment	A new supply for approximately 1300kW will be required. Engage with the gas shipper for availability.
Heating	<p>Generation :</p> <p>CHP, boilers and VRF systems</p> <p>Distribution :</p> <p>LTHW to AHU's, radiators and under floor heating</p>	<p>Towards part L 2013 + 10%</p> <p>CHP works well with constant heating load of the two swimming pools</p>

	Electric Door curtains	
Cooling	VRF– to FCU's in server room / comms room + fitness suite and activity studio. Eco-cooler type DX AHU for activity + fitness.	Utilise VRF & DX units to provide electrical demand for CHP.
Ventilation	Centralised air handling units, zoned to suit areas being served. In changing rooms provide egg crate grills. Variable Flow AHU to Pool Hall.	Centralised air handling units meet design requirements.
Energy Metering	Extensive energy metering to be provided along with an energy management system on the BMS	Good practice to allow MC to control energy costs.
'Renewables'	CHP, Solar thermal and Solar PV potential to be investigated further	To meet planning requirements and generate savings. Further renewable requirements to be on risk register until part L model produced.
Incoming electrical Supply	A new LV supply will be derived from a new 500kVA sub-station located internally to the building. Site investigation required.	To accommodate the current anticipated maximum demand and any future expansion if required Spare capacity available at local sub-stations. Site investigation required.
Incoming Telecoms	To be provided by ISP and Network specialist via diverse routes.	Provides for resilient, secure configuration of incoming network services.
Mains Distribution	The main LV switchboard to comprise of an 800A switchboard. The switchboard to comprise ACB / MCCB incomer with MCCBs for outgoing services. Automatic power factor correction to be provided to the main switchboard.	To accommodate the current anticipated maximum demand and any future expansion if required
Submains Distribution	Sub-main cabling from main distribution panel (via sub distribution	Cost effective solution for low rise buildings with low number of sub-mains

	<p>panels if required) on containment in voids where possible.</p> <p>The sub-main distribution to take the form of XLPE/SWA/LSF multi core cables run from the main switchboard, to local distribution boards positioned in the plantrooms and electrical cupboards and stores. Where an area and facility requires supplies of differing levels of integrity separate distribution boards to be provided for each level of supply.</p> <p>The distribution boards are to be of the wall mounted type with MCCBs or MCB's providing protection to the outgoing circuits.</p> <p>The local distribution boards to be either type "A" or "B" single or three phase as required, generally having type 'B' and 'C' MCB's providing protection to the outgoing circuits.</p>	
<p>UPS / Essential supplies</p>	<p>UPS space provision only in hub/comms rooms.</p> <p>Essential supplies to life safety systems to be included with relevant system where needed.</p> <p>Swimming pool to be provided with central battery system for safe lighting.</p>	<p>Decentralised approach to UPS meaning no single point of failure for all systems</p>
<p>Containment systems</p>	<p>Primary containment is to be provided within ceiling voids where possible, via combination of cable ladders and medium/heavy duty cable trays for submain cables, cable baskets for Data, fire alarm, security and other ELV items, trunkings for lighting and power</p>	<p>Robust re-wireable installation for power and cost effective easily maintainable for data/ELV cabling</p>

	<p>Secondary containment is to be provided via conduits & dado trunkings for various electrical installation.</p>	
<p>Small Power</p>	<p>To suit ICT & FF&E Requirements. Cleaners sockets throughout</p>	<p>To meet operational requirements of the building</p>
<p>Lighting</p>	<p>Lighting is to be provided throughout all areas of the building to achieve the required lighting levels and uniformity ratios. The light levels are the average maintained illumination levels, taking into account maintenance factors, lamp lumen depreciation, colour and texture of finishes, furniture and equipment (including nets, curtains etc.) and glare control.</p> <p>The lighting design in a badminton hall must take into consideration the requirements for provision of:</p> <ul style="list-style-type: none"> • A safe environment for players • Effective illumination of the shuttlecock and court markings to aid players and to assist match officials in the execution of their duties • Suitable and sufficient lighting for spectators. <p>Light fittings not to be mounted above the pool to facilitate maintenance.</p> <p>Light fittings to be directed so as to avoid glare or reflection to bathers and staff. The use of uplighters is preferred as opposed to using direct lighting.</p> <p>Providing reliable and evenly spread artificial underwater lighting can be difficult to achieve. Underwater areas</p>	<p>To provide general lighting to the general environment and working plane considering energy efficiency, maintenance, colour, appearance, rendition, and glare control.</p>

	<p>left in shadow can be detrimental to the ability to see objects clearly in the pool.</p> <p>Underwater lighting therefore requires careful specialist design and would form part of the swimming pool specialist package.</p>	
Emergency Lighting	<p>Luminaires that are normally operational are utilised to provide the emergency lighting.</p> <p>Generally emergency lighting to be provided by integral self-contained emergency packs within normal luminaires. This system to provide 3-hour backup for all the emergency luminaires.</p> <p>Pool hall lighting to consist of self-contained / central battery system flood packs to IP65, positioned around the perimeter of the pool to provide 5lux minimum for 3hrs (general emergency lighting) and 5% of the maintained illuminance for 30s (for safe stopping of an event)</p>	<p>To provide emergency lighting to escape routes and open areas. Locate emergency exit signs to define clear and unambiguous escape routes.</p>
External Lighting	<p>Lighting to any external walkways to be provided to allow egress and access to the space with emergency fittings installed as required by Building Control and Approved Inspector Services to the requirements of BSEN 5266-1 and BS EN 1838</p>	<p>To provide safe movement into and around the building during hours of darkness</p>
Clocks	<p>Auto updating battery clocks throughout</p>	<p>To be provided as part of FF&E package (not included in MEP package)</p>
Induction Loops	<p>Provided at main reception desk, swimming pools, studio and fitness suite Portable unit also to be provided</p>	<p>Areas where 1 to 1 interaction is commonplace and key locations for announcements and media requirement.</p>

		Portable loop to allow flexibility in use.
Disabled Refuge Alarms	At each disabled refuge point	TO BS5839 and BS8300
Fire Alarms	<p>An addressable analogue AFD system to be provided in the building in conformity with BS 5839 Part 1. This to cover horizontal and vertical escape routes and any identified areas of enhanced fire risk.</p> <p>The system to include detector devices, break glass call points, and sounders, on all escape route and vulnerable spaces, smoke detection to be included within all voids/ ceiling voids with a greater height than 0.8 m.</p> <p>Call points to be sited at final exits and other locations such that no one has to travel more than 30m to a call point.</p>	As per Fire Consultant's advice.
Security Systems	Motion detection and door contacts to protect all entry points and accessible ground floor areas and circulation spaces	To ACPO, NACOSS and Sports England requirements
Accessible alarms	<p>Each designated accessible toilet to be provided with an independent alarm system. All accessible alarms to be remotely monitored at the reception area.</p> <p>Poolside alarms</p> <p>Each lifeguard position to be provided with an independent alarm system.</p> <p>All alarms to be remotely monitored at the reception area</p> <p>Drowning alarms for swimming pool with repeaters at Reception and Plantroom</p>	To provide alerting alarm for people with disability or when anybody is in need in the swimming pool

Access control	Electronic access control limited to secured areas requiring frequent usage and main entrances, IT hub/server rooms	Based on previous similar leisure projects
Intercom	Audio 2 way system only at Vehicle entrances to site, main entrance and plant room external access	Based on previous similar leisure projects
Public Address / Audio Equipment	<p>A separate non-emergency public address system shall be provided to building. This shall have its own dedicated announcement and control system.</p> <p>The system shall be capable of being zoned off so that different areas can be either isolated or the volume controlled locally.</p> <p>The system shall be linked into the fire alarm system so that the system does not operate during a fire alarm condition.</p>	To broadcast various announcements and TV/Radio/Audio signals throughout the building from a central source
CCTV	<p>Coverage to building perimeter, main entrances, reception, changing room exit to lobby and circulation spaces only.</p> <p>CCTV may also be used for the purpose of the drowning alarm in the swimming pool depending on the final solution</p>	To monitor entrance and exits building and common circulation to help deter intruders & criminal behaviour
TV Aerial	Multi receiver points on roof and utilise IPTV via ICT network. Leisure to provide Distribution active equipment	Flexibility in TV locations and removing need for independent distribution system
Vertical Transport	<p>2 No. in total</p> <p>Requirement of Evacuation lift to be confirmed</p>	<p>In line with design for access document</p> <p>In line with Fire strategy report</p>

<p>Lightning Protection System</p>	<p>A fully enclosing lightning protection system to be provided to protect the new development utilising the building structure where possible e.g. Copper lightning tape fixed to steelwork. The complete installation to include bonding of all new roof projections as required to meet the requirements of BS EN 62305-1.</p>	
------------------------------------	---	--

Work in progress issued to the team for coordination and information are;

MEP	P2007256 Deliverables					
Drawing Ref	Drawing Description	Type	Size	Scale	08/06/2016	16/06/2016
DLC-BDP-ZZ-00-DR-MEP-ZZ-0001	LEVEL 00 - COMBINED SERVICES PLANTROOM	PDF	A0	1:50	✓	
DLC-BDP-ZZ-00-DR-MEP-ZZ-0002	COMBINED SERVICES ROUTE - LEVEL 00	PDF	A1	1:50	✓	
DLC-BDP-ZZ-01-DR-MEP-ZZ-0001	LEVEL 01 - COMBINED SERVICES PLANTROOM	PDF	A0	1:50	✓	
DLC-BDP-ZZ-01-DR-MEP-ZZ-0002	COMBINED SERVICES ROUTE – LEVEL 01	PDF	A1	1:50	✓	
DLC-BDP-ZZ-02-DR-MEP-ZZ-0001	ROOFTOP AHU/COMPOUND – LEVEL ROOF	PDF	A0	1:50	✓	
DLC-BDP-ZZ-ZZ-DR-E-70_30-0001	ELECTRICAL DISTRIBUTION AND TRANSMISSION SYSTEMS	PDF	A0	NTS	✓	
WLC-BDP-ZZ-ZZ-SH-MEP-ZZ-0001	SCHEDULE OF MAJOR PLANT	PDF	A3	NA	✓	
SK. SLOU-01	FILTRATION PLANTROOM	PDF	A3	NTS	✓	
	Design & Services Requirements Issue A doc	WORD	A4	NA	✓	
DLC-BDP-ZZ-ZZ-DR-M-60-0001	SCHEMATIC - HEATING, COOLING AND REFRIGERATION SYSTEMS	PDF	A0	NTS		✓
DLC-BDP-ZZ-ZZ-DR-M-65-0001	SCHEMATIC - VENTILATION AND AIR CONDITIONING SYSTEMS	PDF	A0	NTS		✓

4.0 Part L

The part L assessment thus far has been to compare this centre with other centres and the measures necessary to achieve Part L compliance. The approach on all other centre has been consistently

BE LEAN measures to reduce the dependence on energy by optimising the orientation, shading and fabric performance of the building.

BE MEAN utilise high efficiency plant and fittings to minimise energy consumption

BE GREEN when all the above measures are taken then the amount of green energy from photovoltaics or similar can be optimised to achieve the required carbon reductions at minimum expenditure

The calculations assume the following none MEP parameters are within the cost plan;

- Generally U-values are 20% lower than Part L 2013 allowances.
- Window U-values are 1.1 Centre panes, 1.5 overall.
- East, West, South facing glazing has either G Value of 0.4 or achieves the same via external solar shading.
- Input required regarding curtain wall system.
- Air permeability is 3 m³/m²/hr@50Pa
- Full metering and sub-metering throughout with separate metering for lighting and power

5.0 Information Required

Stage 2 Information required schedules

Information required		From Who

Appendix A – BDP MEP Planning Deliverables

DOCUMENT REFERENCE				MEP DELIVERABLES				COMMENTS							
Project/Originator/Zone	Level	Container/ Role	Uniclass	Ref.	Document Number (Combined)			SCALE	PAPER SIZE	RIBA	STAGE 2 Lite	RIBA	STAGE 3 (TBC)	RIBA	STAGE 4 (TBC)
75_40 - Security systems															
DLC BDP	ZZ	00	DR	IE	75_40	0001	DLC-BDP-	ZZ-00-DR-E-75_40-0001	LEVEL 00 - SECURITY SYSTEMS						
DLC BDP	ZZ	01	DR	IE	75_40	0001	DLC-BDP-	ZZ-01-DR-E-75_40-0001	LEVEL 01 - SECURITY SYSTEMS						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	02	DR	IE	75_40_02	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_40_02-0001	SCHEMATIC - ACCESS CONTROL SYSTEMS						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	03	DR	IE	75_40_53_86	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_40_53_86-0001	SCHEMATIC - SURVEILLANCE SYSTEMS (CCTV)	NTS					
DLC BDP	ZZ	04	DR	IE	75_40_75_40	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_40_75_40-0001	SCHEMATIC - INTRUDER DETECTION AND ALARM SYSTEMS	NTS					
75_50 - Communication, safety and protection systems															
DLC BDP	ZZ	05	DR	IE	75_50_11_05	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_50_11_05-0001	SCHEMATIC - ASSISTANCE CALL SYSTEMS (INC. POOL ALARM)	NTS					
DLC BDP	ZZ	06	DR	IE	75_50_11_27	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_50_11_27-0001	SCHEMATIC - EMERGENCY VOICE COMMUNICATION SYSTEMS	NTS					
75_50_28_29 - Fire detection and alarm systems															
DLC BDP	ZZ	00	DR	IE	75_50_28_29	0001	DLC-BDP-	ZZ-00-DR-E-75_50_28_29-0001	LEVEL 00 - FIRE DETECTION AND ALARM SYSTEMS						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	01	DR	IE	75_50_28_29	0002	DLC-BDP-	ZZ-00-DR-E-75_50_28_29-0002	LEVEL 00 - FIRE DETECTION AND ALARM SYSTEM ZONES						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	02	DR	IE	75_50_28_29	0001	DLC-BDP-	ZZ-01-DR-E-75_50_28_29-0001	LEVEL 01 - FIRE DETECTION AND ALARM SYSTEMS						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	03	DR	IE	75_50_28_29	0002	DLC-BDP-	ZZ-01-DR-E-75_50_28_29-0002	LEVEL 01 - FIRE DETECTION AND ALARM SYSTEM ZONES						ZONAL LAYOUTS STAGE 3
DLC BDP	ZZ	04	DR	IE	75_50_28_29	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_50_28_29-0001	SCHEMATIC - FIRE DETECTION AND ALARM SYSTEMS	NTS					
75_80 - Protection systems															
DLC BDP	ZZ	05	DR	IE	75_80_45_25	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_80_45_25-0001	SCHEMATIC - EARTHING & BONDING SYSTEMS	NTS					
DLC BDP	ZZ	06	DR	IE	75_80_45_45	0001	DLC-BDP-	ZZ-ZZ-DR-E-75_80_45_45-0001	LIGHTNING PROTECTION SYSTEMS	NTS					
Reports															
DLC BDP	ZZ	07	RP	MEP	ZZ	0001	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0001	MEP DELIVERABLES SCHEDULE	Doc.					
DLC BDP	ZZ	08	RP	MEP	ZZ	0002	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0002	KEY STAGE REPORT	Doc.					
DLC BDP	ZZ	09	RP	MEP	ZZ	0003	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0003	ENERGY STRATEGY REPORT	Doc.					NOT PART OF STAGE 2 DELIVERABLES
DLC BDP	ZZ	10	RP	MEP	ZZ	0004	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0004	DESIGNERS RISK ASSESSMENT	Doc.					
DLC BDP	ZZ	11	RP	MEP	ZZ	0005	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0005	ACCESS AND MAINTENANCE REPORT	Doc.					
DLC BDP	ZZ	12	RP	MEP	ZZ	0006	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0006	ACOUSTICS REPORT	Doc.					
DLC BDP	ZZ	13	SH	MEP	ZZ	0007	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0007	ROOM DATA SHEETS	Doc.					
DLC BDP	ZZ	14	SP	MEP	ZZ	0008	DLC-BDP-	ZZ-ZZ-SP-MEP-ZZ-0008	OUTLINE MEP SPECIFICATION	Doc.					
DLC BDP	ZZ	15	SP	MEP	ZZ	0009	DLC-BDP-	ZZ-ZZ-SP-MEP-ZZ-0009	OUTLINE BMS SPECIFICATION	Doc.					
DLC BDP	ZZ	16	SP	MEP	ZZ	0010	DLC-BDP-	ZZ-ZZ-SP-MEP-ZZ-0010	ELECTRICAL WORKMANSHIP SPECIFICATION	Doc.					
DLC BDP	ZZ	17	SP	MEP	ZZ	0011	DLC-BDP-	ZZ-ZZ-SP-MEP-ZZ-0011	MECHANICAL WORKMANSHIP SPECIFICATION	Doc.					
Planning reports															
DLC BDP	ZZ	18	RP	MEP	ZZ	0013	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0013	PLANNING REPORT	Doc.					
DLC BDP	ZZ	19	RP	MEP	ZZ	0014	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0014	UTILITIES ASSESSMENT PLANNING STATEMENT	Doc.					
DLC BDP	ZZ	20	RP	MEP	ZZ	0015	DLC-BDP-	ZZ-ZZ-RP-MEP-ZZ-0015	LIGHTING STRATEGY	Doc.					
Schedules															
DLC BDP	ZZ	21	SH	MEP	ZZ	0001	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0001	SCHEDULE OF MAJOR PLANT	Doc.					
DLC BDP	ZZ	22	SH	MEP	ZZ	0002	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0002	AIR HANDLING UNIT SCHEDULE	Doc.					
DLC BDP	ZZ	23	SH	MEP	ZZ	0003	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0003	SILENCERS SCHEDULE	Doc.					
DLC BDP	ZZ	24	SH	MEP	ZZ	0004	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0004	FAN SCHEDULE	Doc.					
DLC BDP	ZZ	25	SH	MEP	ZZ	0005	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0005	FIRE DAMPER SCHEDULE	Doc.					
DLC BDP	ZZ	26	SH	MEP	ZZ	0006	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0006	GRILLE SCHEDULE	Doc.					
DLC BDP	ZZ	27	SH	MEP	ZZ	0007	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0007	VRV UNITS SCHEDULE	Doc.					
DLC BDP	ZZ	28	SH	MEP	ZZ	0008	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0008	CHW SCHEDULE	Doc.					
DLC BDP	ZZ	29	SH	MEP	ZZ	0009	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0009	OVERDOOR HEATER SCHEDULE	Doc.					
DLC BDP	ZZ	30	SH	MEP	ZZ	0010	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0010	RADIATOR SCHEDULE	Doc.					
DLC BDP	ZZ	31	SH	MEP	ZZ	0011	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0011	UNDERFLOOR HEATING SCHEDULE	Doc.					
DLC BDP	ZZ	32	SH	MEP	ZZ	0012	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0012	PLATE HEAT EXCHANGER SCHEDULE	Doc.					
DLC BDP	ZZ	33	SH	MEP	ZZ	0013	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0013	GAS CONDENSING BOILER SCHEDULE	Doc.					
DLC BDP	ZZ	34	SH	MEP	ZZ	0014	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0014	HEATING PUMPS SCHEDULE	Doc.					
DLC BDP	ZZ	35	SH	MEP	ZZ	0015	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0015	PRESSURISATION UNIT SCHEDULE	Doc.					
DLC BDP	ZZ	36	SH	MEP	ZZ	0016	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0016	DHW TANK SCHEDULE	Doc.					
DLC BDP	ZZ	37	SH	MEP	ZZ	0017	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0017	DHW CALORIFIERS SCHEDULE	Doc.					
DLC BDP	ZZ	38	SH	MEP	ZZ	0018	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0018	DHW GAS FIRED BOILER SCHEDULE	Doc.					
DLC BDP	ZZ	39	SH	MEP	ZZ	0019	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0019	DHW PUMP SCHEDULE	Doc.					
DLC BDP	ZZ	40	SH	MEP	ZZ	0020	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0020	ELECTRICAL EQUIPMENT SCHEDULE	Doc.					
DLC BDP	ZZ	41	SH	MEP	ZZ	0021	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0021	LUMINAIRE SCHEDULE	Doc.					
DLC BDP	ZZ	42	SH	MEP	ZZ	0022	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0022	EXTERNAL LUMINAIRE SCHEDULE	Doc.					

DOCUMENT REFERENCE										MEP DELIVERABLES				COMMENTS				
Project	Originator	Zone	Level	Container	Role	Uniclass	Ref.	Document Number (Combined)										
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0023	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0023	HOT WATER RETURN VALVE SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0024	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0024	GAS METER SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0025	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0025	GAS SAFETY PANEL SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0026	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0026	ABOVE GROUND DRAINAGE CONNECTIONS SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0027	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0027	WATER METERS SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0028	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0028	REDUCED PRESSURE ZONE VALVE SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0029	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0029	THERMOSTATIC MIXING VALVE SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0030	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0030	SUBMAIN CABLE SCHEDULE	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0031	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0031	DISTRIBUTION BOARD SCHEDULES	Doc.	A4						
DLC	BDP	ZZ	ZZ	SH	MEP/ZZ		0032	DLC-BDP-	ZZ-ZZ-SH-MEP-ZZ-0032	FIRE ALARM CAUSE & EFFECT	Doc.	A4						

Appendix B – Basis of design

GT 3 Architectural Layouts –

- 15042- SK(020) – Ground and First Floors, As Proposed
- 15042- SK(021) – Site Plan, As Proposed
- Area Schedule

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN THAT FOR WHICH IT WAS PREPARED AND ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
DO NOT SCALE FROM THIS DRAWING.

ANY DRAWING ERRORS OR OMISSIONS SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

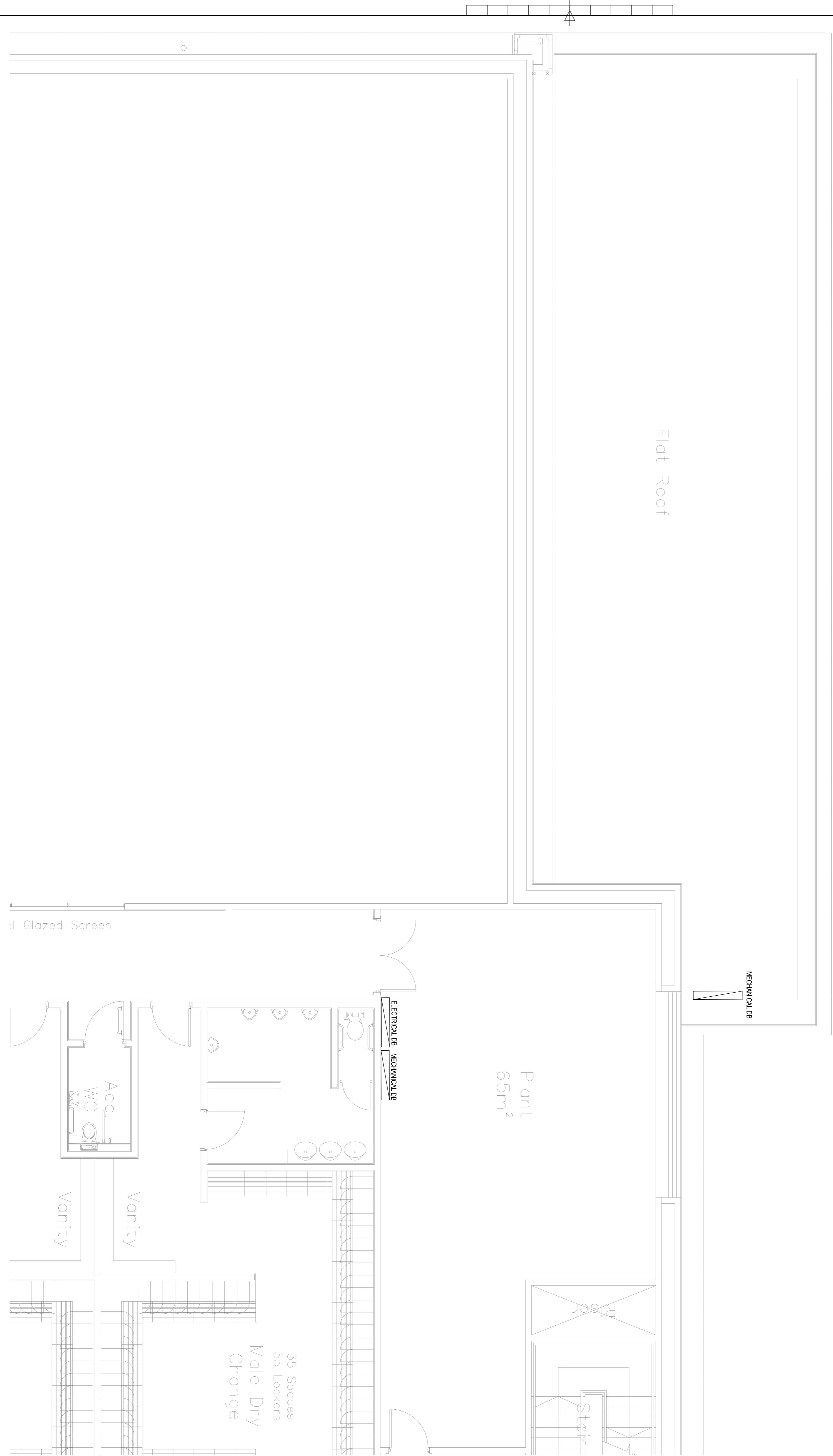
NOTES

DL - JONG COSHING
DRAWN: AA
CHECKED: AM
DATE: 08.06.16



11 Duke Street
P.O. Box 55, Piccadilly, Bath
Bath BA1 1UA
United Kingdom
T +44 (0)1635 628 2200
F +44 (0)1635 628 2235
www.bdp.com

WHITEFIELD LESURE CENTRE		DATE:	08.06.16
MEP SERVICES COMBINED SERVICES PLANT RM		SCALE:	@ A1 1:50
LEVEL - 01		PROJECT:	P1
P2007256		CLIENT:	DL-C-BDP-ZJ-01-DR-MEP-ZZ-001



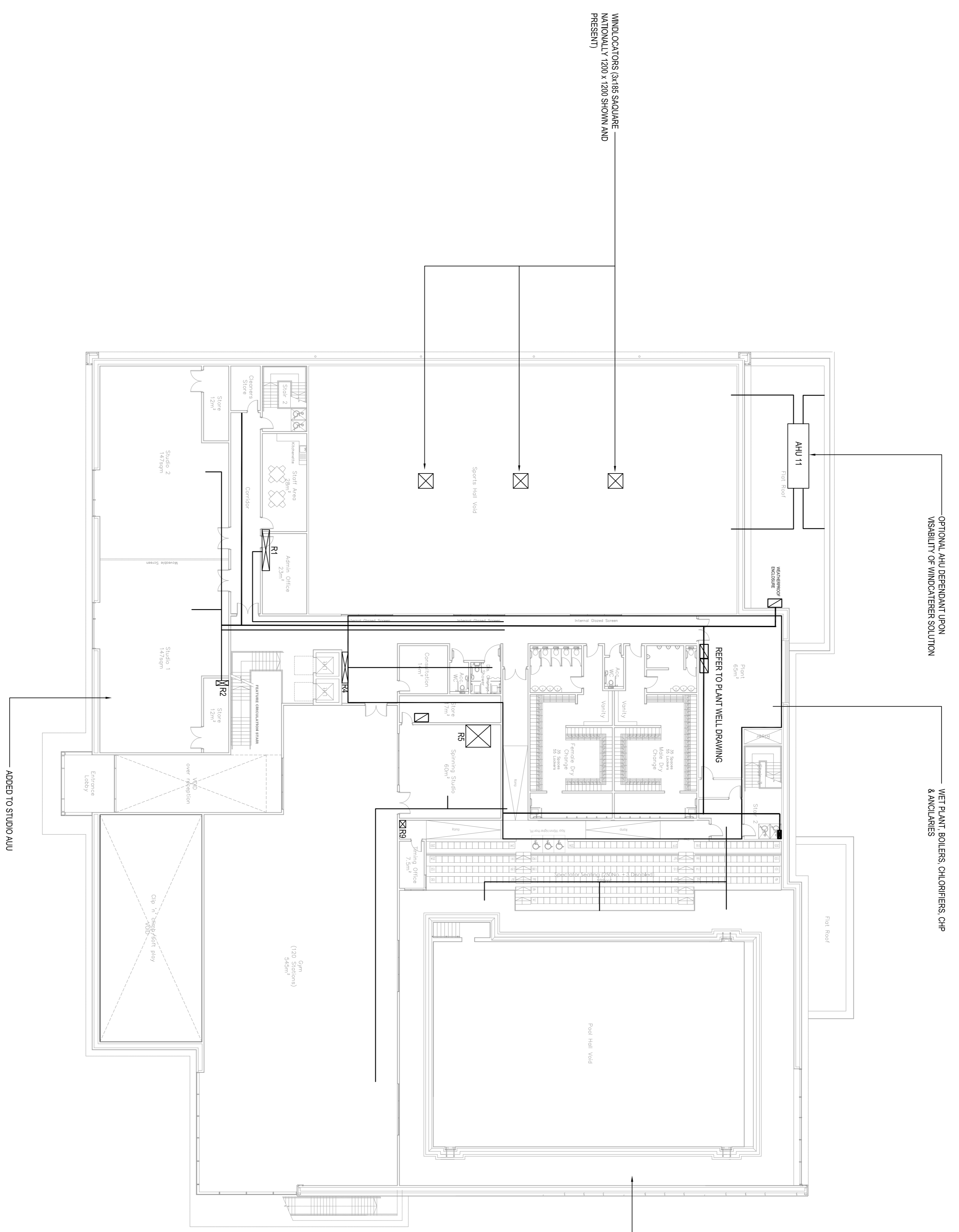
BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN THAT FOR WHICH IT WAS PREPARED AND ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
DO NOT SCALE FROM THIS DRAWING.

ANY DRAWING ERRORS OR DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

NOTES

- LEGEND:
- VENTILATION
 - ⊠ WINDCATERER
 - ▧ RISER
 - CONTAINMENT
 - ▨ ELECTRICAL DB

PREFERRED VENTILATION OPTION
BASED ON LOW LEVEL SLOT
DIFFUSERS. (MERGEGA OF SIMILAR)
SECONDARY OPTION OF HIGH LEVEL
FABRIC DUCTS.



WINDLOCATORS (3x88 SQUARE
NATURALLY 1200 X 1200 SHOWN AND
PRESENT)

OPTIONAL AIRDEPENDANT UPON
VISIBILITY OF WINDCATERER SOLUTION

NET PLANT BOILERS, CHLORIFIERS, CIP
& ANOULARES

REFER TO PLANT WELL DRAWING

ADDED TO STUDIO AVU

BDP.

11 Duke Street
P.O. Box 85, Piccadilly, Bath
Maidenhead, MK61 3JA
United Kingdom
T +44 (0)161 628 2200
F +44 (0)161 628 2235
www.bdp.com

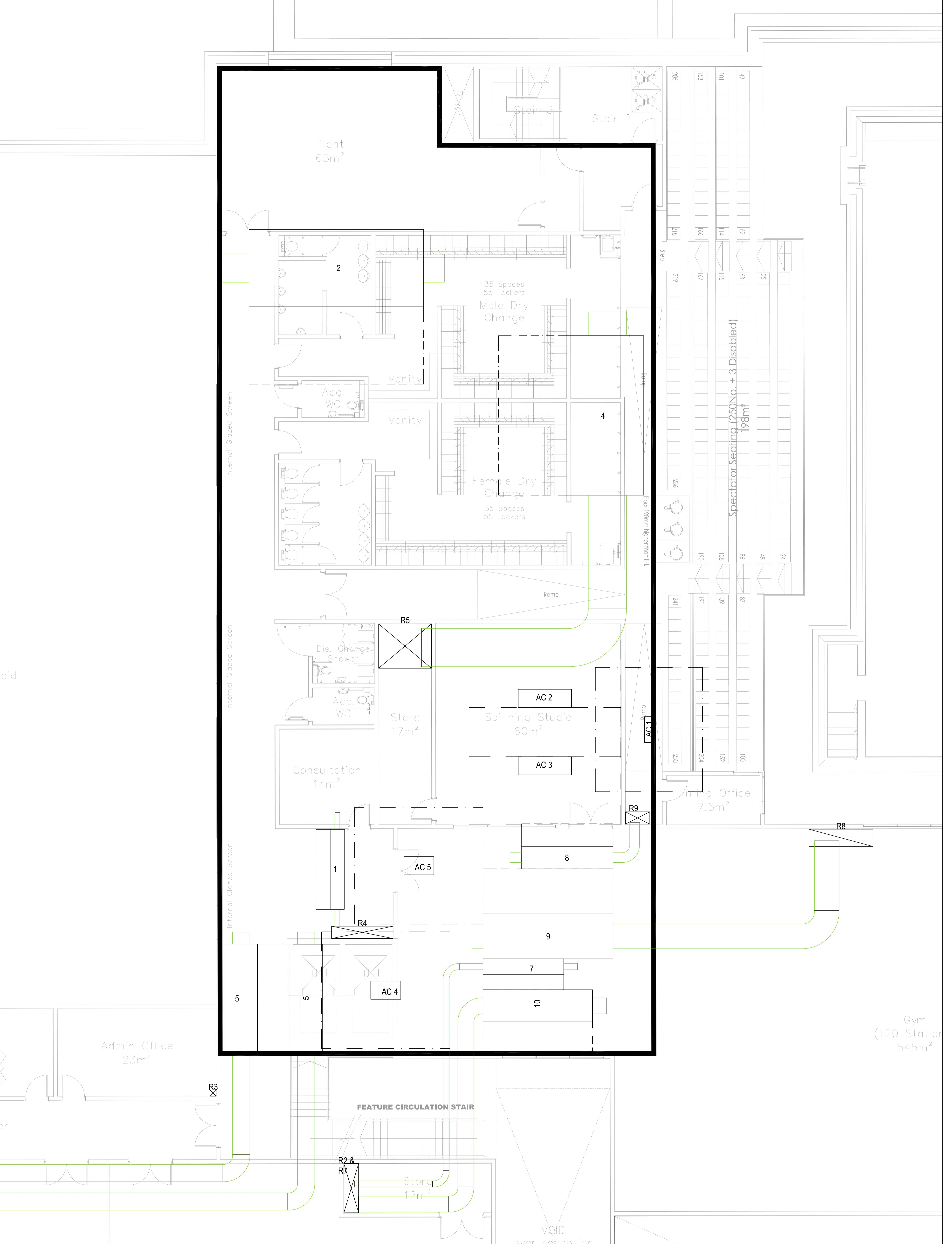
WHITEFIELD LESURE CENTRE

MEP SERVICES
COMBINED SERVICES ROUTE
LEVEL - 01

DATE: 08.06.16
SCALE: 1:50
SHEET: P1

PROJECT NO: P2007256
DRAWING NO: D1-C-BP-Z2-01-09-RMEP-ZZ-002

DL - LONG COSING AA AM 08.06.16



NOTES

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE SPECIFICATION.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SERVICES AND STRUCTURE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SERVICES AND STRUCTURE.

BASE DRAWINGS

Author: [] Date: []

Checked: [] Date: []

Drawn: [] Date: []

LEGEND

	VENTILATION
	WINDCATCHER
	RISER
	PLAN ROOM OUTLINE
	CLEARANCE ZONE
	AIR CONDENSER
	AIR HANDLING UNIT

NOTES

REVISIONS

NO.	DATE	DESCRIPTION
1	08/06/16	ISSUE FOR PERMIT

BDP.

11 Dukes Road
 P.O. Box 16, Roskilde, Denmark
 Copenhagen 4000, Denmark
 T +45 4631 1234
 F +45 4631 1235
 www.bdp.dk

WHITEFIELD CONSULTING CENTRE

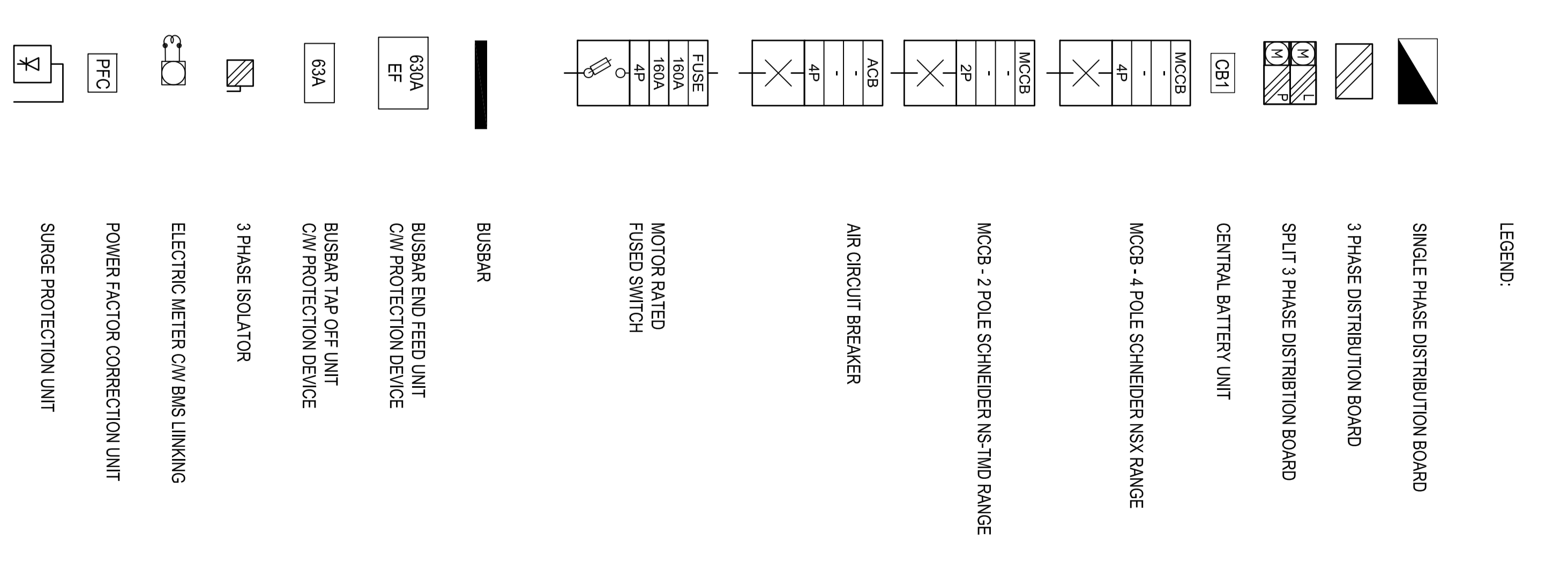
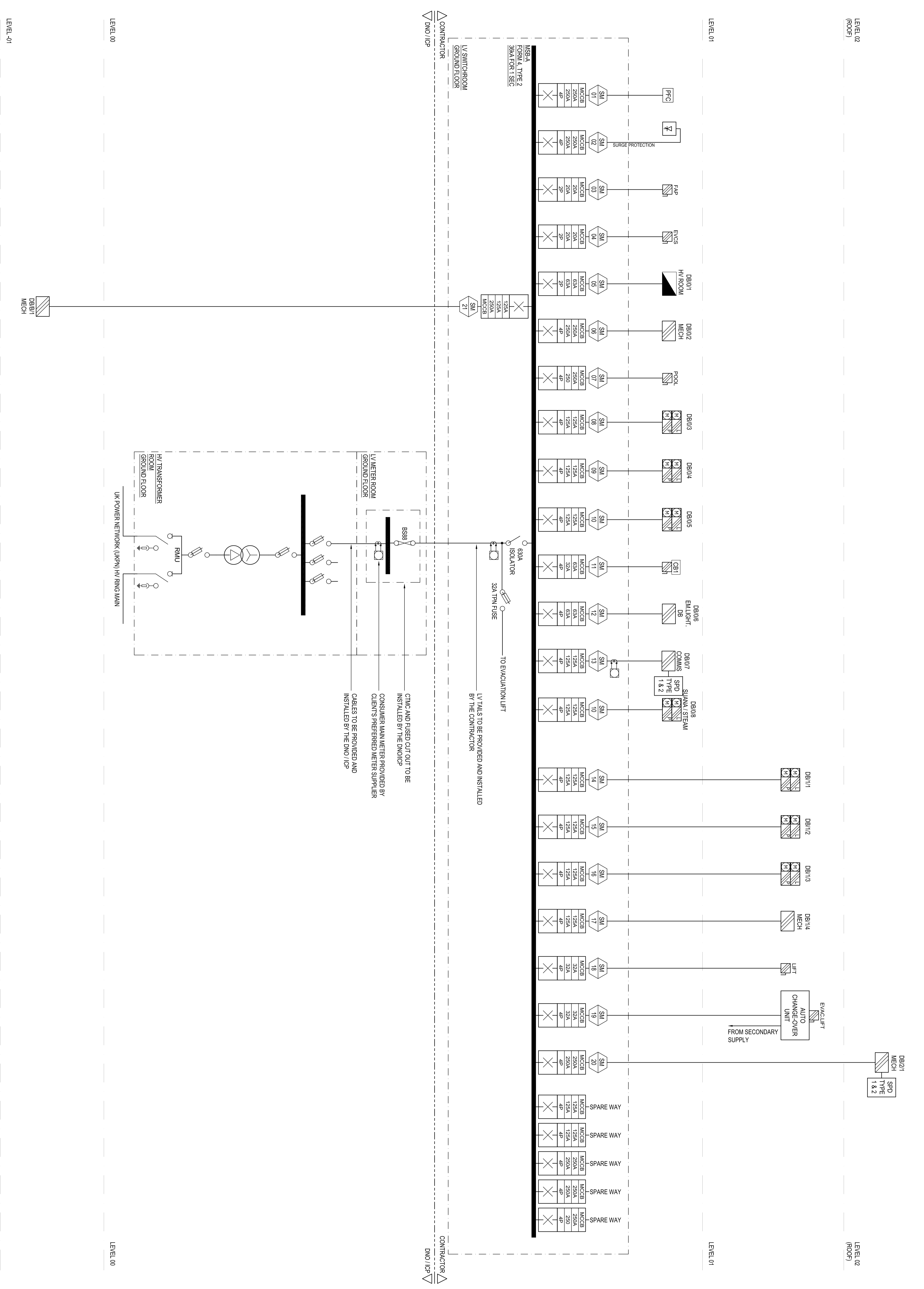
MEP SERVICES
 ROOF TOP AHU COMPOUND
 LEVEL - ROOF

PROJECT NO: []
 DRAWING NO: []
 DATE: 08/06/16

NOTES

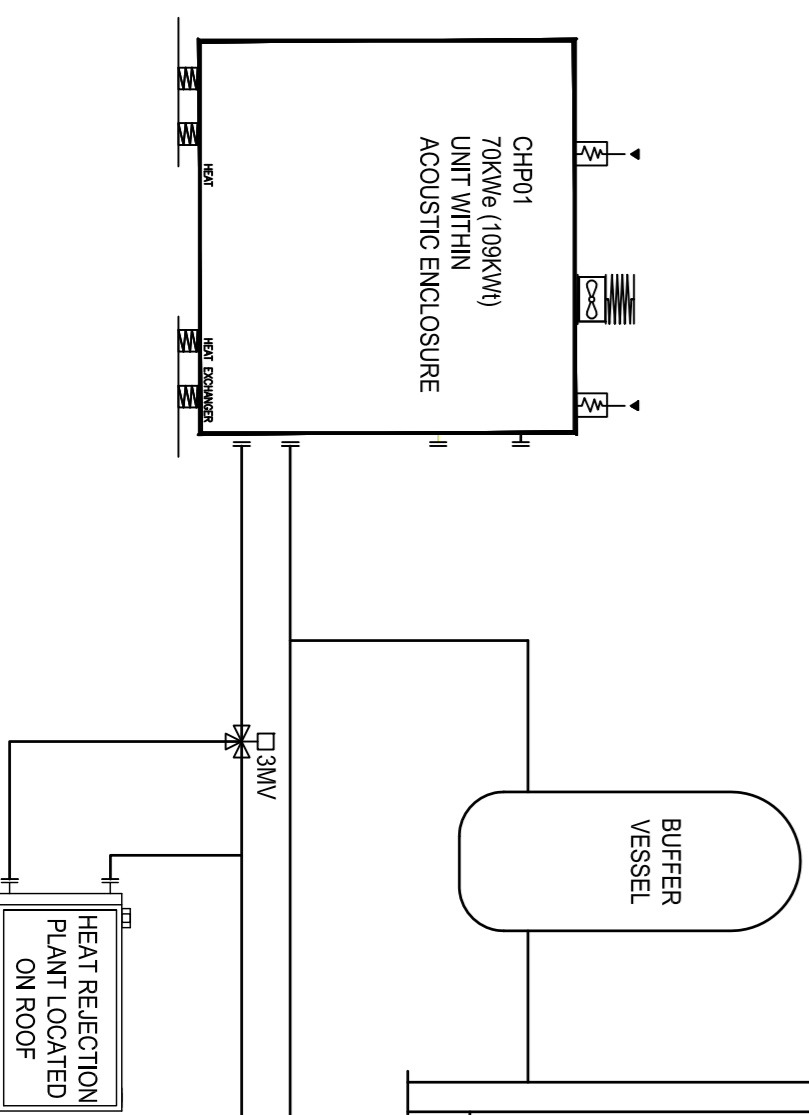
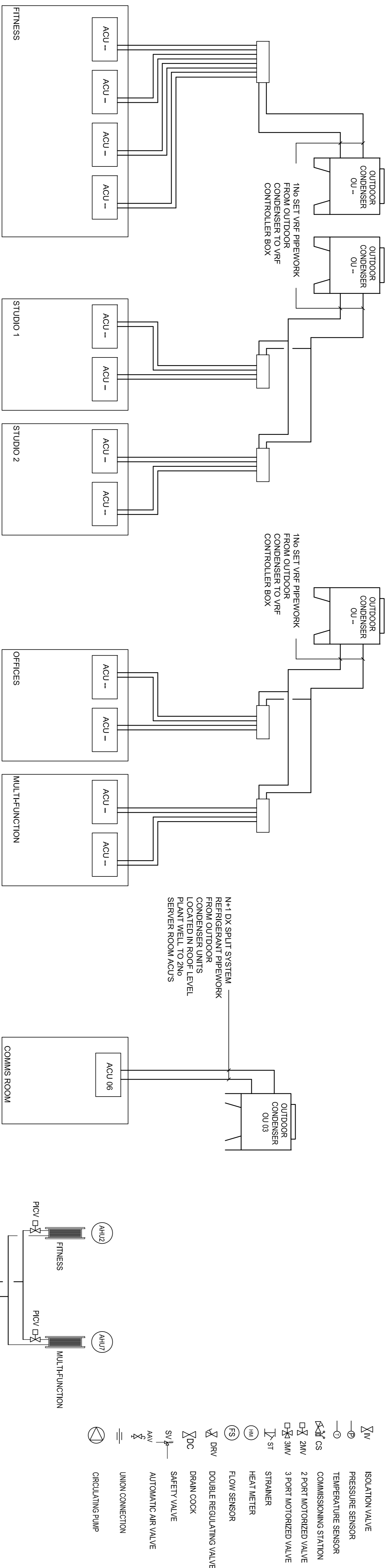
BASE DRAWINGS
 USED FOR CONSTRUCTION OF THE PROJECT.
 Author: [Name] Drawing No: [Number] Date Revised: [Date]

- NOTES**
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS & SPECIFICATIONS.
 - ALL METERS SHALL BE CONNECTED TO THE BUILDING BUSINESS SYSTEM.
 - DRAWINGS ARE BASED ON STAGE 2 INFORMATION ONLY. ANY CHANGES AND/OR CHANGE SUBJECT TO DESIGN DEVELOPMENT.
 - PANEL BOARD'S / DISTRIBUTION BOARD'S BUSBAR RATING NOT TO BE LOWER THAN THEIR INCOMING PROTECTIVE DEVICES.

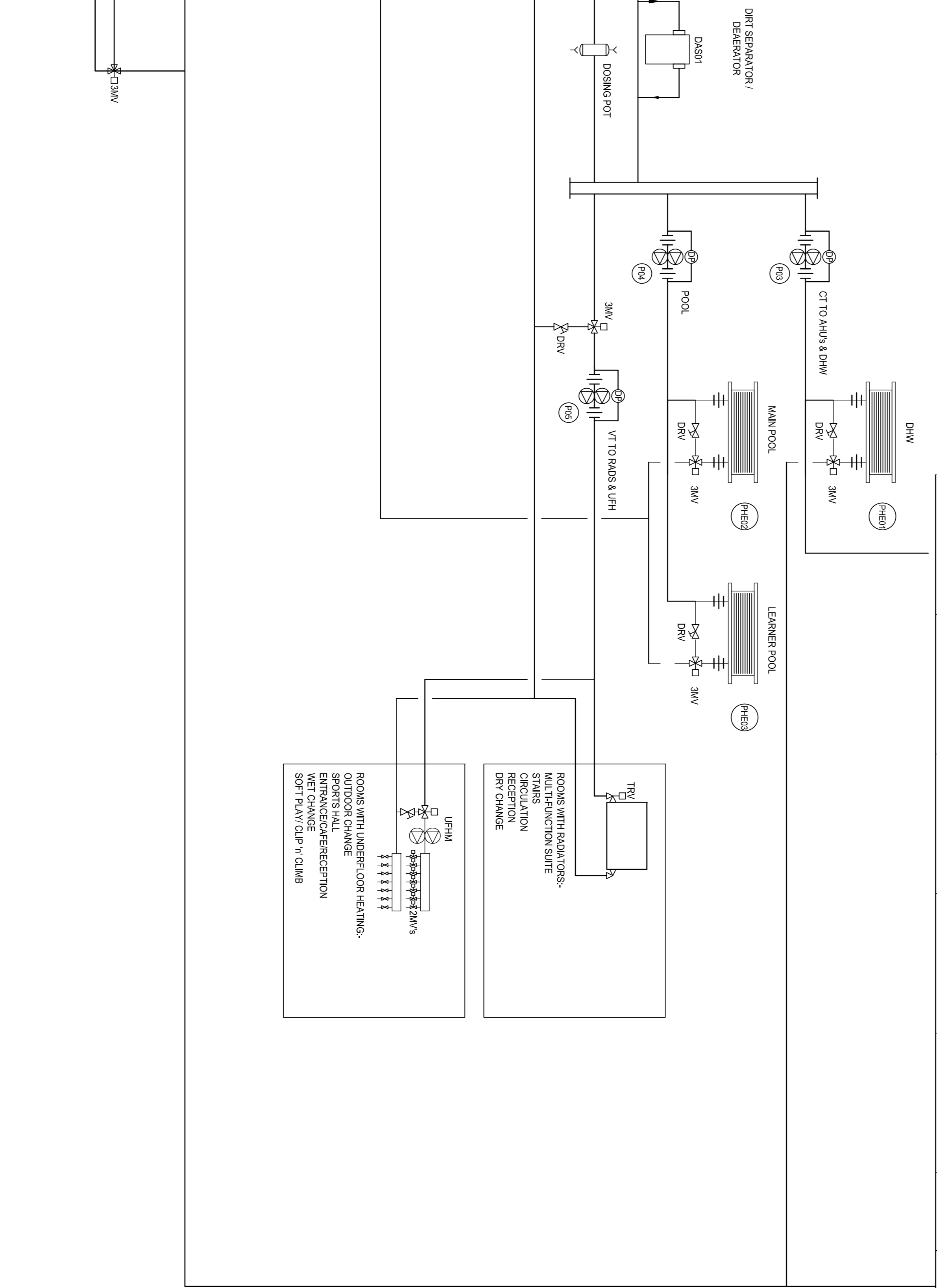
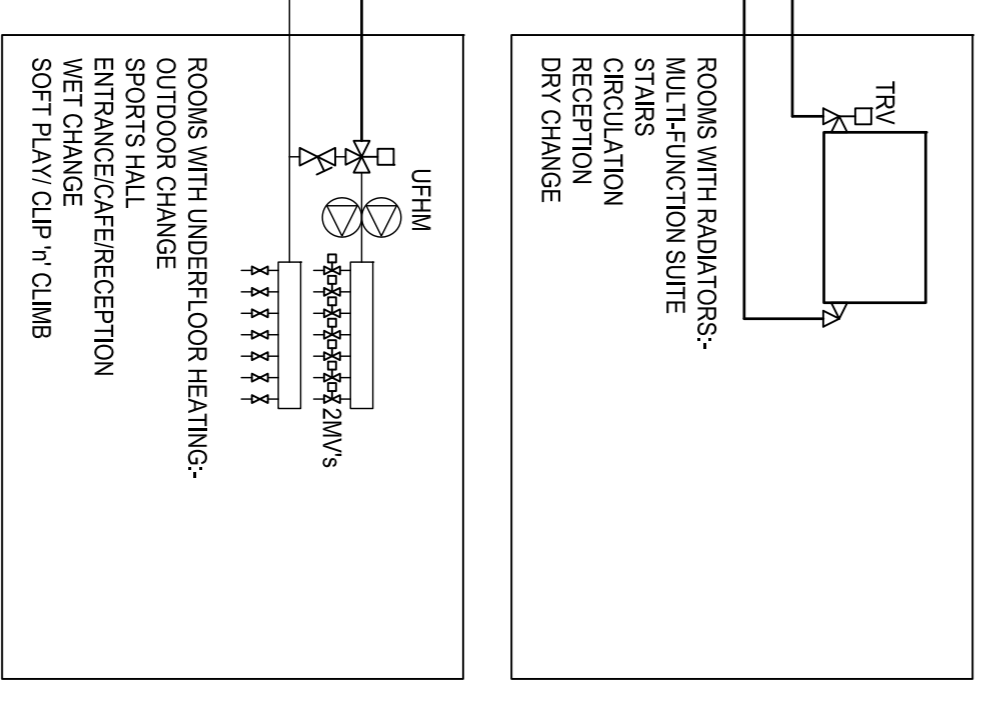


11 Duke Street
 F-02, Suite 10, Riverside House
 Manchester, M60 3JA
 T: +44 (0)161 828 2200
 F: +44 (0)161 828 2225
 www.bdp.com

BDP.



- LEGEND**
- ⊗ Isolation Valve
 - ⊙ Pressure Sensor
 - ⊖ Temperature Sensor
 - ⊕ Commissioning Station
 - ⊗ 2mV 2 Port Motorized Valve
 - ⊗ 3mV 3 Port Motorized Valve
 - ⊗ 5T Strainer
 - ⊗ Heat Meter
 - ⊗ Flow Sensor
 - ⊗ Double Regulating Valve
 - ⊗ Drain Cook
 - ⊗ Safety Valve
 - ⊗ Automatic Air Valve
 - ⊗ Union Connection
 - ⊗ Circulating Pump



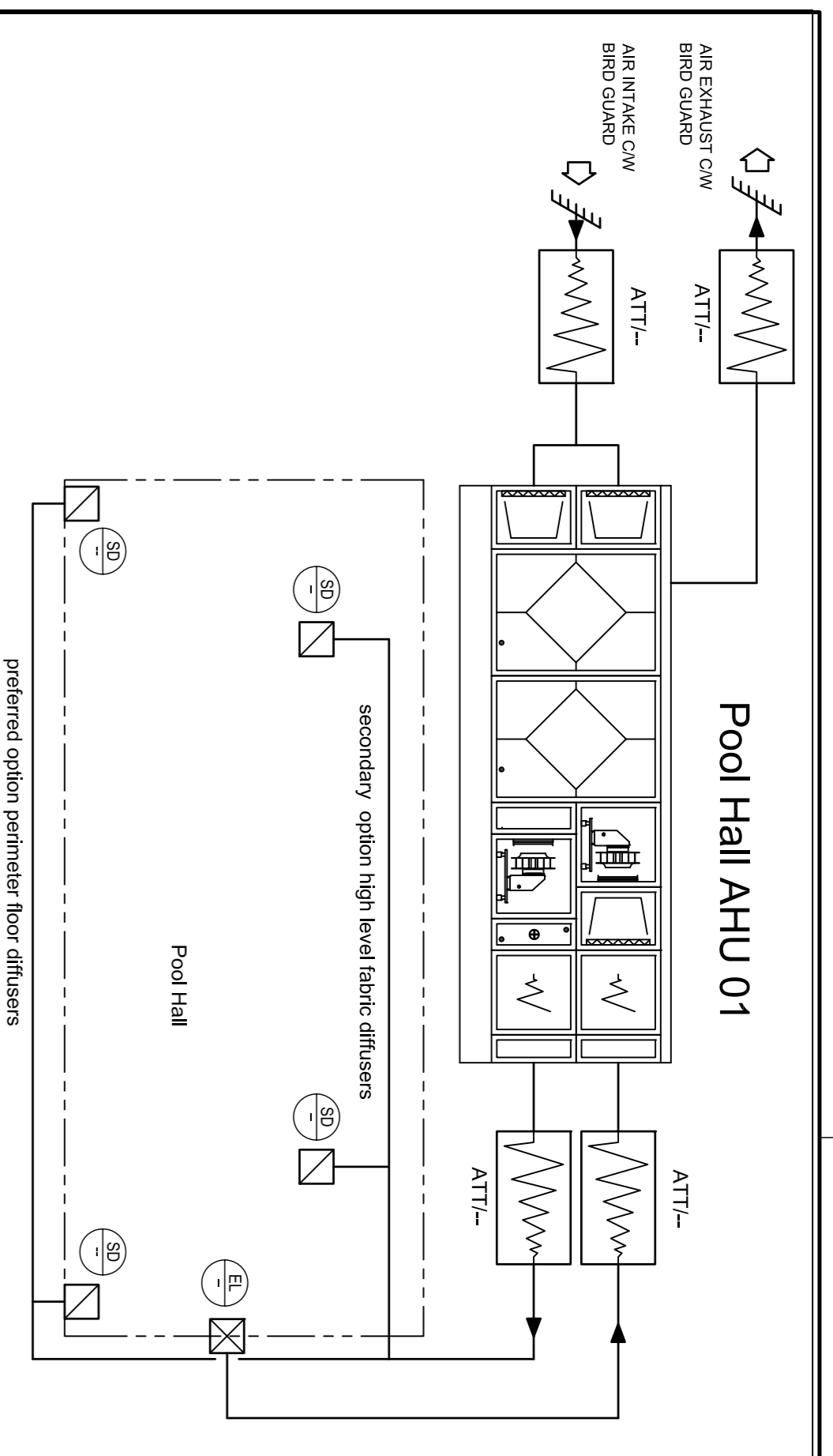
- NOTES**
1. ALL SYSTEM LOW POINTS SHALL BE INSTALLED COMPLETE WITH DRAIN POINTS.
 2. ALL SYSTEM HIGH POINTS SHALL BE INSTALLED COMPLETE WITH AUTOMATIC AIR UNITS (AAU).
 3. THE CONTRACTOR SHALL INSTALL SUFFICIENT COMMISSIONING STATIONS, OR EQUIVALENT, TO PERMIT ALL SYSTEMS TO BE FULLY BALANCED AND COMMISSIONED IN ACCORDANCE WITH RELEVANT PUBLICATIONS BY BSRIA AND OBESE. DIFFERENTIAL PRESSURE REDUCING VALVES TO BE USED ON RADIATOR BRANCH LEGS WHERE TRV WILL BE EXPOSED TO PRESSURES IN EXCESS OF 3MPa.
 4. ALL FINAL CONNECTIONS TO HEAT EMITTERS ARE TO BE 15mm FLOW AND RETURN UNLESS STATED OTHERWISE ON DRAWING.
 5. ALL RADIATORS TO HAVE DOUBLE REGULATING TRV CONTROL.
 6. ALL HIDDEN PIPEWORK TO BE INSULATED.
 7. ALL RADIATORS TO BE CONNECTED TO THE VARIABLE TEMPERATURE HEATING CIRCUIT (VT HEATING).
 8. IDENTICAL PIPELINE SIZES APPLY FOR BOTH FLOW AND RETURN PIPEWORK.
 9. ALL BRANCHES TO HAVE ISOLATION VALVES.
 10. THE UNDERFLOOR HEATING ZONES SHALL BE DEFINED BY THE UNDERFLOOR HEATING SPECIALIST AND ARE TO INCLUDE ALL NECESSARY PRE-COLS AND FURNITURE.
 11. THE UNDERFLOOR HEATING SPECIALIST SHALL BE RESPONSIBLE FOR SURVEYING THE STRUCTURAL FLOOR SLAB AND CONFIRMING ITS SUITABILITY PRIOR TO COMMENCING WORKS.

PROJECT NO.	P1	ISSUE	FIRST ISSUE
DATE	AM	SM	16.06.16



11 Duke Street
P.O. Box 85, Fenchurch Road
Merchanteile, MK1 3JA
United Kingdom
T +44 (0)161 828 2200
F +44 (0)161 828 2235
www.bdp.com

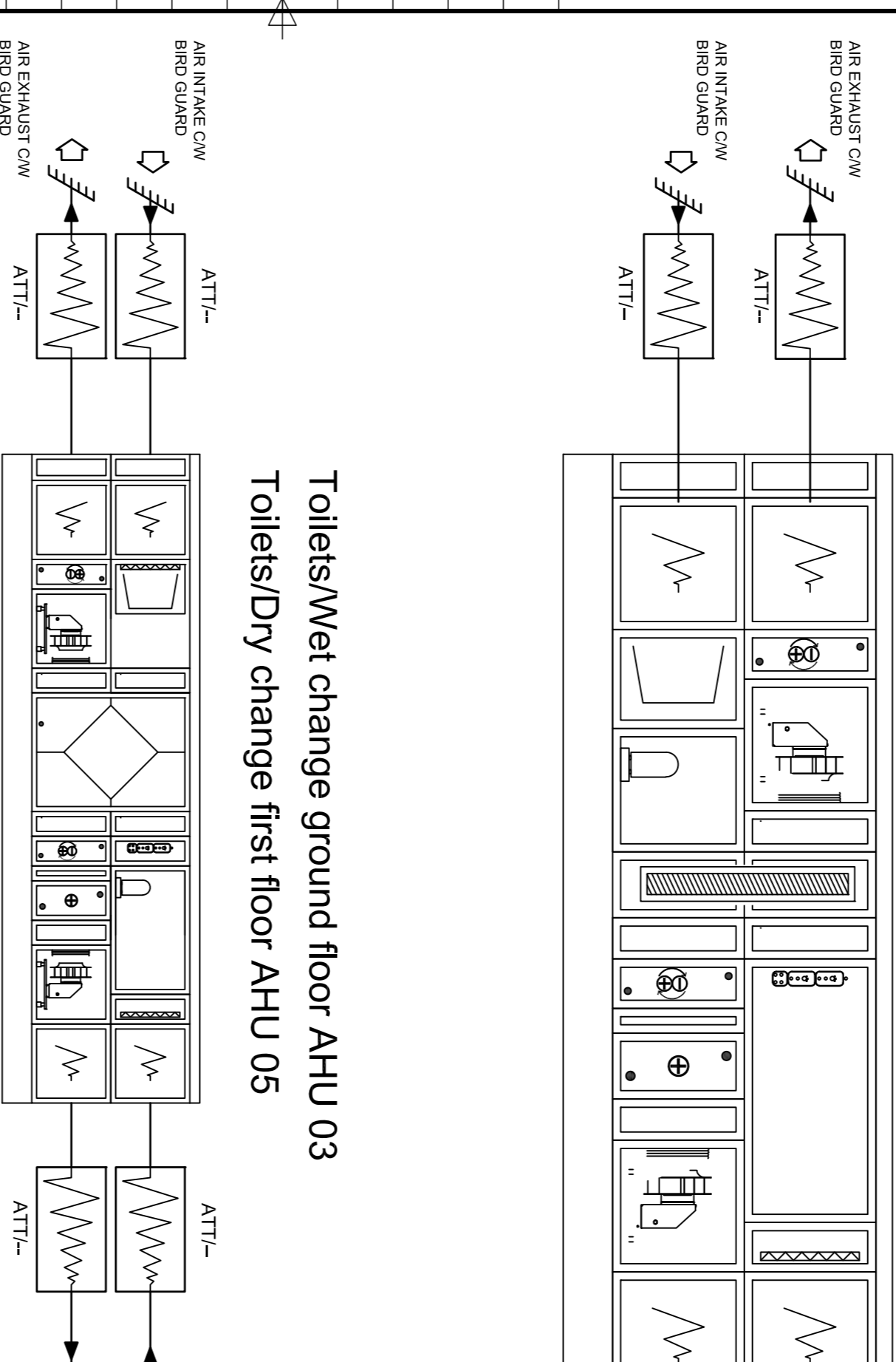
DOVER LEISURE CENTRE
SCHEMATIC - HEATING, COOLING AND REFRIGERATION SYSTEMS
JUN '16



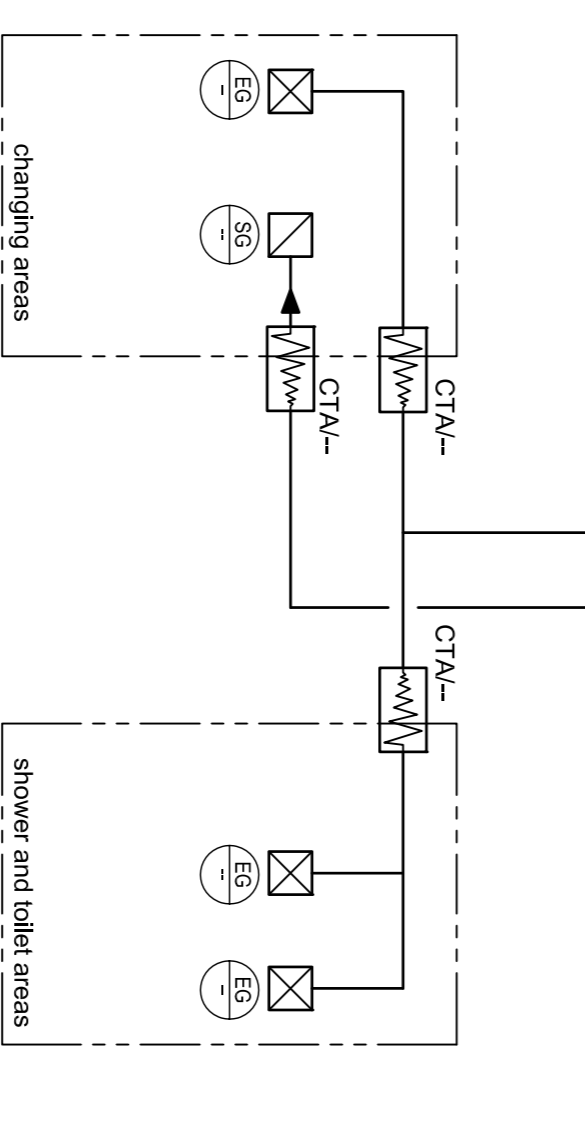
Pool Hall AHU 01



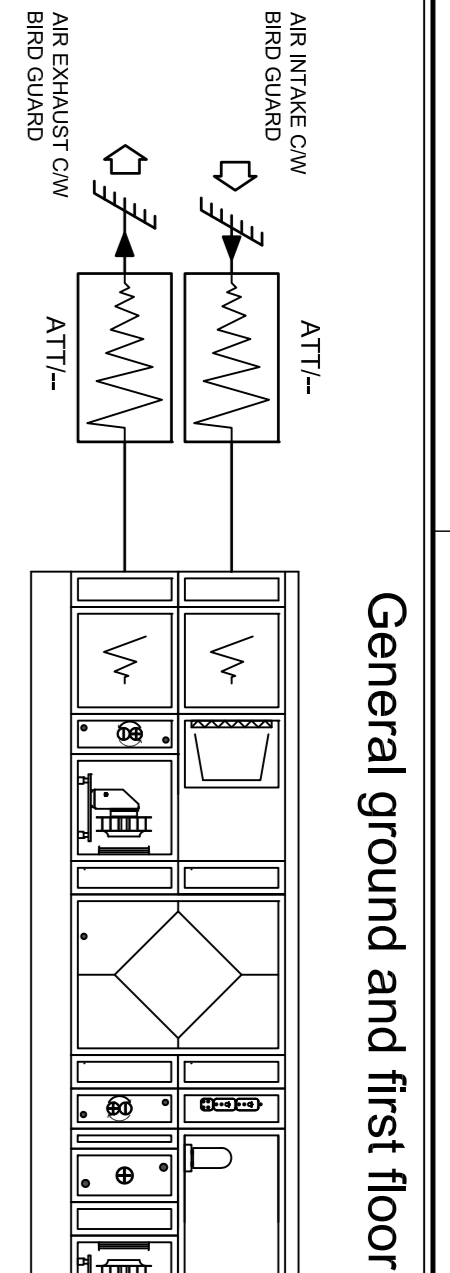
Fitness AHU 02



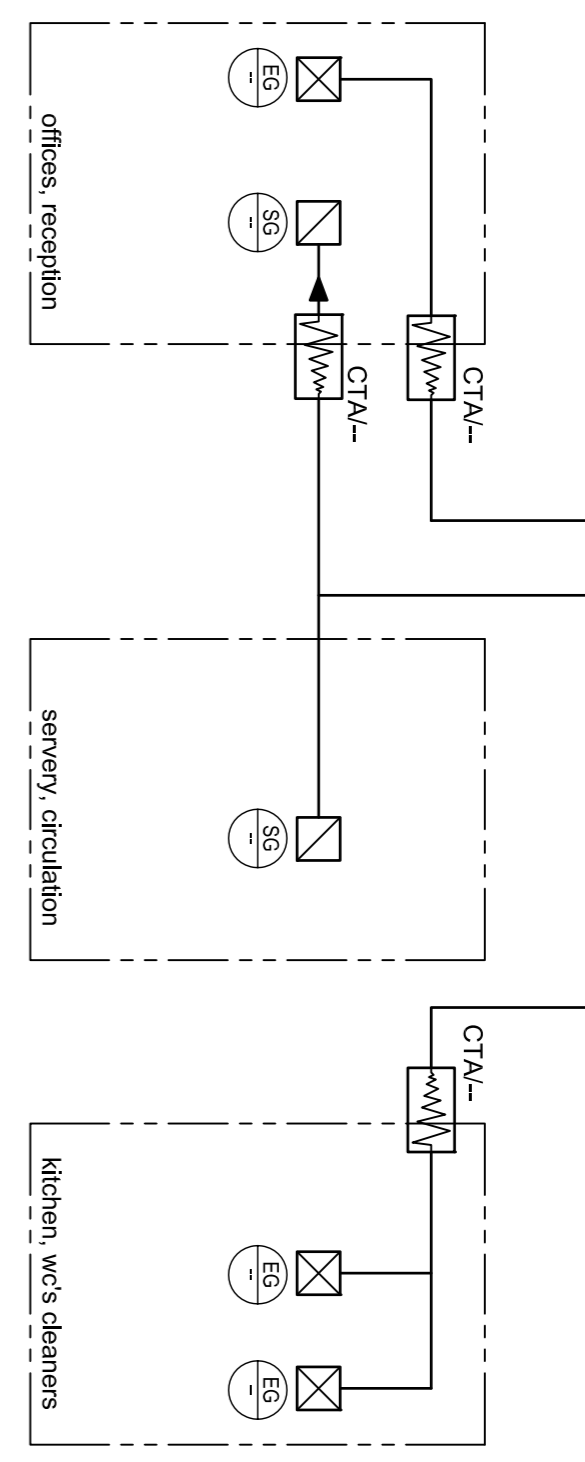
Toilets/Wet change first floor AHU 03
Toilets/Dry change first floor AHU 05



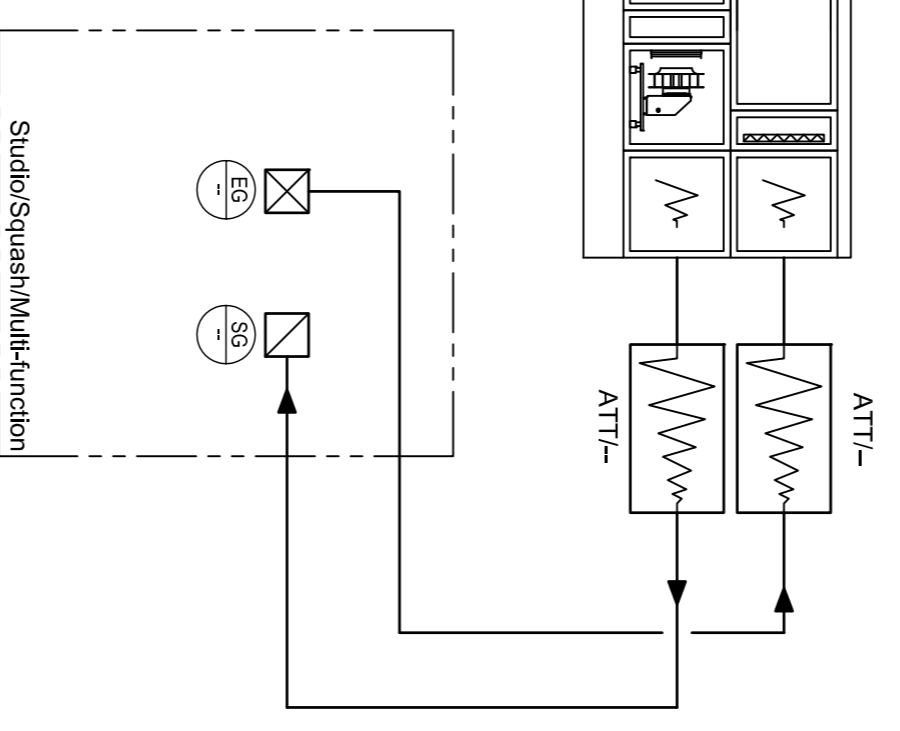
FITNESS AND SPINNING



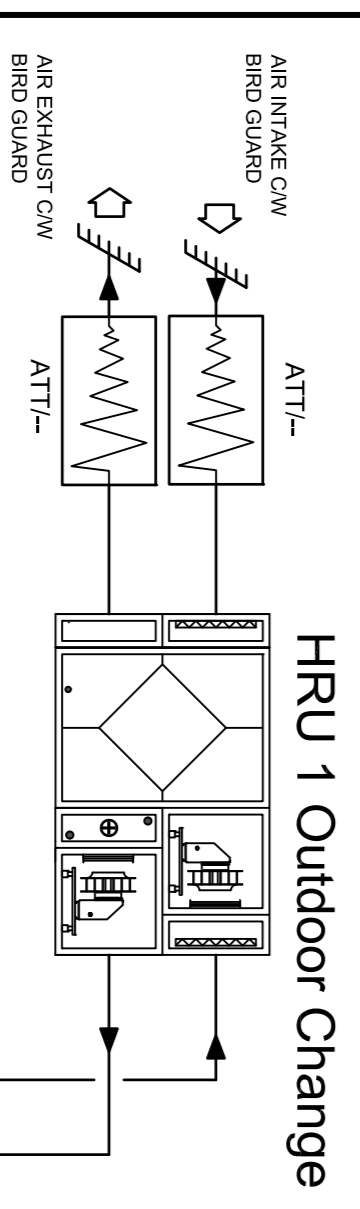
General ground and first floor AHU 04



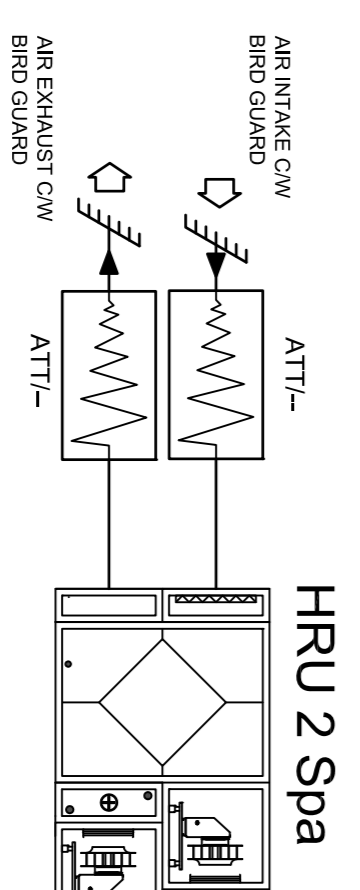
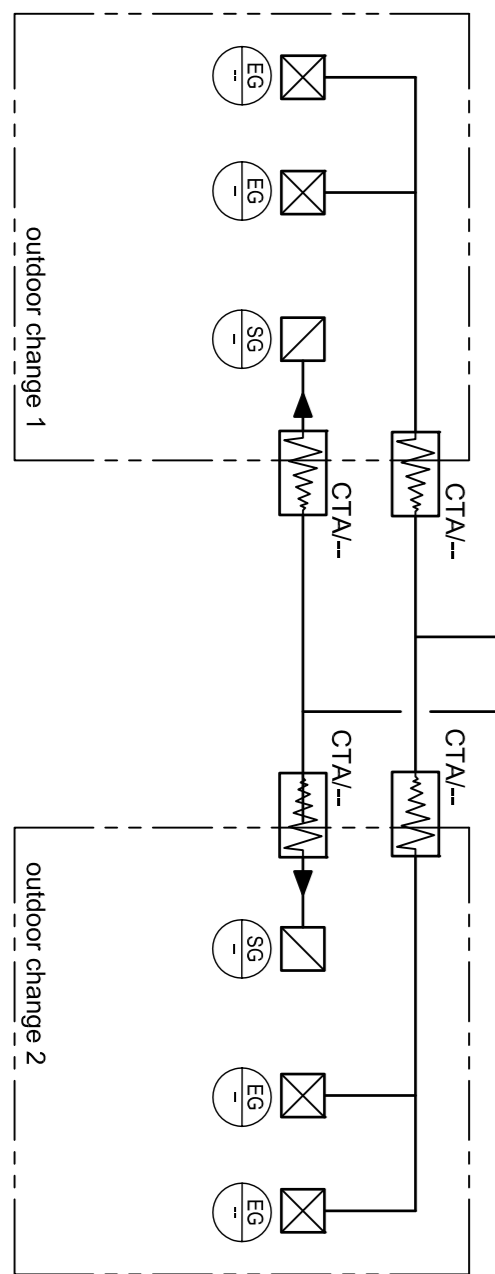
STUDIOS AHU 06
MULTI-FUNCTION AHU 07
SQUASH AHU 08



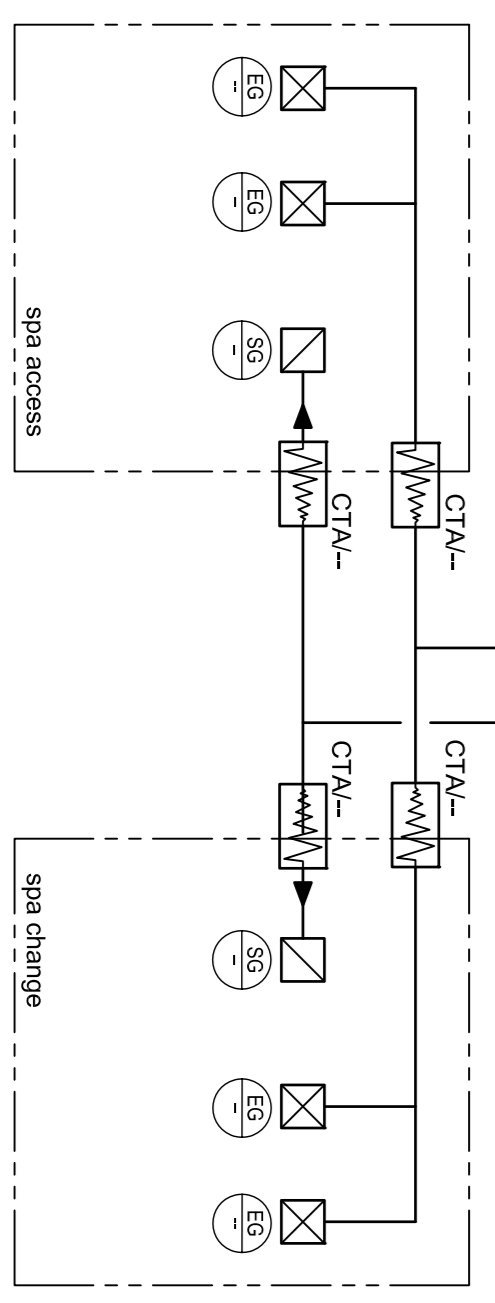
Studios/Squash Multi-function



HRU 1 Outdoor Change



HRU 2 Spa

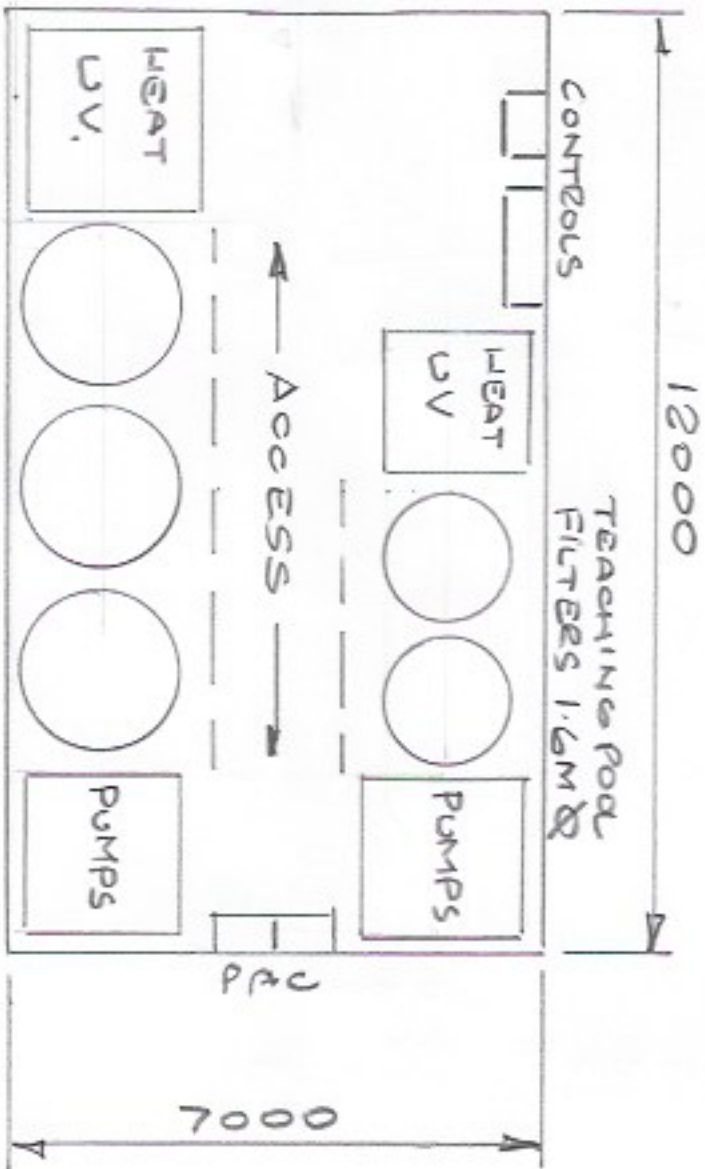


- BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED.
- ALL DIMENSIONS SHOULD BE CHECKED ON SITE.
- DO NOT SCALE FROM THIS DRAWING.
- ANY DRAWING ERRORS OR INCONSISTENCIES SHOULD BE REPORTED TO THE ARCHITECT OR BUILDING DESIGN PARTNERSHIP IN THE ADDRESS SHOWN BELOW.
- NOTES**
1. THE CONTRACTOR SHALL INSTALL SUFFICIENT VOLUME CONTROL DAMPERS TO PERMIT ALL SYSTEMS TO BE FULLY BALANCED AND COMMISSIONED IN ACCORDANCE WITH RELEVANT PUBLICATIONS BY BSRIA AND OHSSE.
 2. ALL DUCTWORK TO BE INSULATED WHERE THE DUCT IS EXTERNAL. THEN THE INSULATION SHALL BE WEATHERPROOFED WITH A SYSTEM THAT IS NOT SUSCEPTIBLE TO EITHER VERMIN OR SEAGULLS/BIRDS.
 3. EXTERNAL AIR HANDLING UNITS SHALL BE PROVIDED WITH ROOFS AND WITH ROOF PRO OR SIMILAR RAISED ACCESS SYSTEM FOR ROOF MAINTENANCE.
 4. WHERE POSSIBLE AIR INTAKES AND AIR DISCHARGES SHALL BE SEPARATED FROM EXTERNAL POLLUTION SOURCES (CARS, FLIES, ETC).
 5. DUCTWORK SHALL BE FIRE RATED WHERE IT PASSES THROUGH FREE ESCAPE ROUTES.
 6. POOL HALL VENTILATION IS TO BE TREATED INTERNALLY AND EXTERNALLY TO REDUCE THE RISK OF CORROSION FROM THE POOL ENVIRONMENT.
 7. ALL AIR HANDLING PLANT SHALL CONFORM TO THE LATEST EUDIRECTIVE AND MEET THE FUTURE 2018 REQUIREMENTS AS A MINIMUM.

PROJECT	DOVER LEISURE CENTRE
DATE	16.06.16
ISSUE	SM
REVISION	AI
NO.	P1
DESCRIPTION	FIRST ISSUE

11 Duke Street
P.O. Box 85, Fordingly, Rush
Macclesfield, M40 3JA
United Kingdom
T +44 (0)161 829 2200
F +44 (0)161 829 2235
www.bdp.com





MAIN POOL
FILTERS 2.0M Ø

- SLOUGH LEISURE CENTRE
- FILTRATION PLANT ROOM
- SLOW - 01

Whitefield Leisure Centre

Schedule of Major Plant

Job No: P2007256
Doc No: WLC-BDP-ZZ-ZZ-SH-MEP-ZZ-0001
Issue: Stage 2 lite
Rev: P01
Date: 08 June 2016

BDP.

Issue Status

Revision	Description	Issued by	Date	Checked
P01	Stage 2 Issue	AM	08-06-2016	SM

Schedule of Major M+E Plant Items

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
Rainwater harvesting tank 15,000 litres [requires assessment from BREEAM calculator to determine final capacity] May be a Sport England funding requirement	1.8m dia x 8m	1 No.	Monsoon or equivalent	External buried	One piece moulded tank with access manholes for inspection, inlet chamber with filter, weir and discharge chamber complete with suction connection and all level controls
Rainwater filter unit and tank	1.5m x 1.5m x 1.2m	1 No.	Monsoon or equivalent	External buried	One piece tank with access chamber enclosing a leaf filter unit
Rainwater booster set and control panel	TBC	1 No	Monsoon or equivalent	Basement plantroom	Sufficient to supply all toilet flush cisterns
Sump pumps		1 No.?		Basement plantroom	Depending on invert levels but expect at least the basement should have a sump pump. Possible that the buried rainwater and backwash tanks will need sump pumps externally
Mains cold feed into the building using protectaline or similar barrier pipe				Buried boundary to basement	Unknown ground condition will require barrier pipe unless there is some assessment that mains will remain potable
Main Cold Water Storage Tank. 4,000 litres	2.0m x 1.5m x 1.5m high	1 No.	Nicholson plastics	Basement Plantroom	GRP sectional divided tank with ball valve housings screened warning pipe and overflow, low level alarm. Tanks shall comply with Water Supply Regulations and Amendment 1999, BS EN 13280. Tank mounted on frame over cold water booster set.
Main Cold water booster set.	Flow rate: TBC	1 set.	Grundfos/ Pressmain	Basement plantroom	Three inverter driven pumps - duty, assist, standby, skid mounted with control panel. Change over on run and standby pumps, variable speed driven pumps to meet safety requirements of BS EN 61800-5-1, integral controls and suitable for BMS link. Pumps manufactured and tested in accordance with BS EN 809, BS EN 60335-2-41
Cat 5 booster set and break tank	1.1 l/s at 2.7 bar	1 set	Arrow boost-a-break	Basement plantroom	Serves all hose bib taps
Water conditioning unit	1.5l/s	2no.	Hydromag	Basement plantroom	To serve the Heating and hot water generation units with treated water to prevent scale formation
Hot Water storage vessel + plate heat exchanger	4000 litres/ 1350 dia 3050 high 900 x 450 x 1800 high PHE	1No storage vessel 1 No PHE	Ormandy – Rycroft/ CHWL	First floor Plantroom	Pre-Insulated stainless steel cylinder with plate heat exchanger capable of 1 hour recovery

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
Gas fired, high efficiency condensing boilers	850 kW(TBC)/ 750 w x 2200 deep x 2100 high	2 No. each at 66% duty	Remeha / EvoMod modular boilers	First floor Plantroom	
Gas CHP	70 kWe / 109 KW (Thermal) 3300 x 1200 x 2400high	1 No.	EnerG/ Hoval Powerbloc	First floor Plantroom	Note alternative option for 2 No. SAV loadtracker units
Air Source Heat Pump – VRF Outdoor Unit	118 KW Cooling(TBC) 61 KW Heating(TBC) 4300 x 760 x 1710 high	1 No.	Mitsubishi/ Daikin	2 nd Floor Roof Plant well	Serving Fitness suite
Air Source Heat Recovery – VRF Outdoor Unit	69 KW Cooling(TBC) 75 KW Heating(TBC) 3100 x 760 x 1710 high	1 No.	Mitsubishi/ Daikin	2 nd Floor Roof Plant well	Serving studio 1 & 2, multi-function space and general office areas
Power Inverter Heat Pump – wall mount split system	4.5 KW Cooling(TBC) 0.5 KW Heating(TBC)	2 No.	Mitsubishi/ Daikin	2 nd Floor Roof Plant well	Serving comms room on duty and standby
LTHW - Packaged pressurisation unit and expansion vessel with control system.	TBC	1 No.	TBC	First floor Plantroom	c/w expansion vessels, integral control panel and twin pumps. Heating circuits.
CHP - Packaged pressurisation unit and expansion vessel with control system.	TBC	1 No.	TBC	First floor Plantroom	c/w expansion vessels, integral control panel and twin pumps. Heating circuits.
CHP – LTHW Buffer Vessels	2000 litres(TBC)	1 No.	TBC	First floor Plantroom	
CHP- heat rejection unit	110kW 1200 x 1200 x 1300 high	1 No.	TBC	2 nd Floor Roof Plant well	
Underfloor heating in the Leisure Centre	Size TBC	TBC	TBC	Ground Floor	Serves sports hall, general circulation, changing areas, pool surround
Primary HTG pumps to serve gas fired boilers	Size TBC	2 No. single head inverter driven	TBC	First floor plantroom	Single head pumps c/w variable speed drives

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
Primary HTG pumps to serve CHP	Size TBC	1 No. single head inverter driven	TBC	First floor plantroom	Single head pumps c/w variable speed drives
Secondary HTG pumps to serve CHP	Size TBC	2 No. single head inverter driven	TBC	First floor plantroom	Single head pumps c/w variable speed drives to serve plate heat exchanger (domestic hot water system) plate heat exchanger (return LTHW heating circuit)
CT HTG pumps for AHU's	Size TBC	1 No. Twin Head, Inverter driven	TBC	First floor plantroom	Variable speed pump with remote variable speed drive. Pumps manufactured and tested in accordance with BS EN 809, BS EN 60335-2-41
CT HTG pumps for Pool	Size TBC	1 No. Twin Head, Inverter driven	TBC	First floor plantroom	Variable speed pump with remote variable speed drive. Pumps manufactured and tested in accordance with BS EN 809, BS EN 60335-2-41
VT HTG pumps for underfloor heated areas.	Size TBC	1 No. Twin Head, Inverter driven	TBC	First floor plantroom	Variable speed pumps with remote variable speed drive. Pumps manufactured and tested in accordance with BS EN 809, BS EN 60335-2-41
Fan Coil Units to serve Fitness studio	10 KW (Cooling) TBC	Approx 12 No	TBC	Local to Room	Final quantity to be confirmed
Fan Coil Units to serve studios	4 KW (Cooling) TBC	Approx 6 No	TBC	Local to Room	Final quantity to be confirmed
Fan Coil Units to serve multi-function suite	4 KW (Cooling) TBC	Approx 2 No	TBC	Local to Room	Final quantity to be confirmed
Fan Coil Units to serve offices	3.2 KW (Cooling) TBC	Approx 6 No	TBC	Local to Room	Final quantity to be confirmed
Wall Mounted DX Split to serve comms room	4.5 KW (Cooling) TBC	2 No (duty/ standby)	TBC	Local to Room	Final quantity to be confirmed
AHU 02- Pool Hall	8.4 m ³ /s Supply + 8.4 m ³ /s Extract @ 300 pa (c/w heat recovery Plate Heat exchange, bag filters, heating coil + Inverter driven fans, mixing box	1 No.	Recotherm	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998 Units to be suitable for pool chlorine environment
AHU 09- Fitness suite	2.7 m ³ /s Supply + 2.1 m ³ /s Extract @ 350 pa: frost coil, heat recovery unit c/w heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), Inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
AHU 04 - Changing Village, Pool Store, Toilets, Dry change & Viewing Area/Corridor	7.4 m3/s Supply + 7.4 m3/s Extract @ 350 pa: frost coil, heat recovery unit c/w heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), Inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998
AHU 01- Café, general office, circulation ground floor	0.2 m3/s Supply + 0.2 m3/s Extract @ 350 pa c/w frost coil, heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998
AHU 10 - Studios	1.3 m3/s Supply + 1.3 m3/s Extract @ 350 pa c/w frost coil, heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998
AHU 07- Multi-function suite	0.25 m3/s Supply + 0.25 m3/s Extract @ 350 pa c/w frost coil, heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998
AHU 05- Squash courts	1.3 m3/s Supply + 1.3 m3/s Extract @ 350 pa c/w frost coil, heat recovery unit thermal wheel, bag filters, heating coil + integral dx cooling coil (heat pump system), inverter driven fans (Heating 70F 50R).	1 No.	Air source (Tempair)	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Channel base frame to be 300mm high. Re-circulation box required. Units shall be suitable for external mounting, c/w AV mounts external to unit. Air Handling Units shall be to BS EN 1886: 1998

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
HRU 01- Outdoor change	0.8 m3/s Supply + 0.8 m3/s Extract @ 200 pa c/w frost coil, heat recovery unit PHE, bag filters, heating coil , inverter driven fans (Heating 70F 50R).	1 No.	Air source	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Unit suitable for installation in ceiling void. Air Handling Units shall be to BS EN 1886: 1998
HRU 02- Spa	1.58 m3/s Supply + 1.58 m3/s Extract @ 200 pa c/w frost coil, heat recovery unit PHE, bag filters, heating coil , inverter driven fans (Heating 70F 50R).	1 No.	Air source	2 nd Floor External Roof Plantroom	Motorised dampers. Filters to be F7. Unit suitable for installation in ceiling void. Air Handling Units shall be to BS EN 1886: 1998
Monodraught/ windcatcher	1.5 ach-1	6 No	Monodraught	Sports hall roof	Natural ventilation to sports hall, volumes, size and number of windcatchers yet to be assessed
Plate heat exchangers for CHP serving LTHW circuits	Size TBC	1 No.	HRS	First floor plantroom	
Overdoor Heaters	TBC	1 No.	Biddle	Main Ground Doors	Electric sourced unit.
Gas meter/governor kiosk	1100kW circa 1000 x 600 x 1200 high	1No	British Gas	Site boundary	Utility and shipper supply items
Transformer / HV Switchgear	TBC by appointed Sub-contractor.	1 No	UKPN preferred supplier / manufacturer.	Site boundary	Sub-station to be owned and operated by UK Power Network (UKPN).
Main LV switchboard with Transient Surge Protection and Automatic Power Factor Correction.	Form 3b, Type 2	1 No.	Schneider Electric.	Ground Floor Plantroom	M&E Contractor to nominate preferred manufacturer
Emergency lighting cubicle	5kVA	1 No	Eton Cooper	Ground Floor Plantroom	M&E Contractor to nominate preferred manufacturer
MCB Boards	Type B	As required	Schneider Electric.	Plantrooms, Switch Cupboards and Store Rooms	M&E Contractor to nominate preferred manufacturer
Mechanical Control Panel basement floor	TBC	As required	BMS contractor to name preferred supplier	Plant Rooms	M&E Contractor to nominate preferred manufacturer
Mechanical Control Panel first floor	TBC	As required	BMS contractor to name preferred supplier	Plant Rooms	M&E Contractor to nominate preferred manufacturer
Mechanical Control Panel roof	TBC	As required AHU and roof plant	BMS contractor to name preferred supplier	Plant Rooms	M&E Contractor to nominate preferred manufacturer

Plant Item/ Specification	Load / Duty / Capacity/Size	Quantity	Manufacturer Preliminary design based on	Location	Comments
Mechanical Control Panel roof	TBC	As required Condenser plant	BMS contractor to name preferred supplier	Plant Rooms	M&E Contractor to nominate preferred manufacturer
Comms Cabinet	TBC	01-02	Excel Networking	Dedicated Comms room	M&E Contractor to nominate preferred manufacturer

ALL SPECIALIST POOL PROCESS PLANT TO BE DETAILED, SELECTED AND SIZED BY OTHERS but note requirement for large external attenuation tank for backwash circa 15m³-17m³.

Excludes :-

External irrigation for sports pitches

Commercial Kitchen Extract Fan : assumed to be reheat facility only

Sports Hall Air Handling Unit : Assumes wind catch solution is viable.