



Project:
Reading – Palmer Park Sports Centre

Document:
Ventilation & Extract Statement

Client:
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Executive Summary

This ventilation & extract statement produced by Thornley & Lumb Partnership provides a brief overview of the proposed ventilation strategy and plant arrangements being advanced by the design team to form part of the planning application associated with the extension and alterations at the Palmer Park Sports Centre, Reading.

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1. INTRODUCTION

The proposed site is located at Palmer Park Sport Stadium, Wokingham Road, Reading, Berkshire RG6 1LF and has an O.S Lan Ranger Grid Reference of SU736730.

The proposed development is to undertake partial demolition, alteration, and extension of the existing, west facing, two storey building, to increase its size and improve facilities. The principal extension will be constructed on the north side of the existing and house a new swimming pool.

The site will be subject to planning conditions defined by Reading Borough Council.

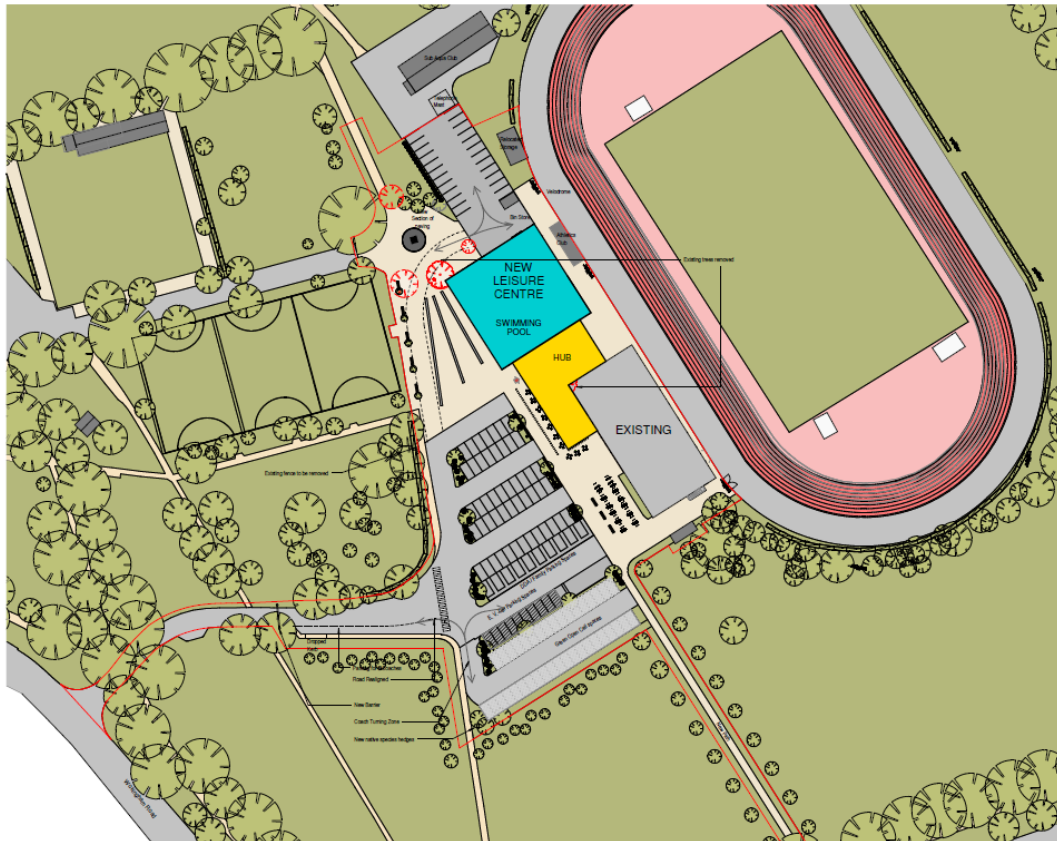


Figure 1 – Proposed Site Plan

2. SYSTEMS OVERVIEW

The developments ventilation, heating and cooling requirements will be served by a variety of systems (12No. total) which have been expanded upon further on in this document for the following areas:-

- Pool Hall
- Village Change, Male Change & Female Change
- Café & Seating
- Activity Zone & Viewing
- Kitchen & Servery
- GF WC & Accessible WC
- Circulation Spaces
- Fitness Suite / Gym
- 1F Male Change, Female Change & Toilet
- Party / Meeting room
- Functional Studio / Group Cycling
- Fitness Studio

See attached 'C7402-TLP-PP-GF-DR-M-201' & 'C7402-TLP-PP-1F-DR-M-202' layouts for reference.



3. SYSTEM 01 – POOL HALL

The Pool Hall will be provided with mechanical supply and extract ventilation in accordance with Part F of building regulations. Ventilation shall be provided from 1No. Air Handling Units (AHU) located within the first floor plant room. The AHU will comprise of filters, heating coils, heat exchangers and will be capable of dehumidifying the pool air to maintain ideal conditions within the pool hall area. The AHU heating coils will be served via LPHW from boiler plant, also located within the first floor plant room, and will be used to maintain air temperature 1°C above pool water temperature. Fresh air to, and exhaust air from the AHU's will be ducted via external louvres located at high level on the first floor of the buildings north east elevation. Extract air from the pool will be ducted back to the unit via a single point of extract louvre and supply air will run below ground and distribute around the perimeter of the pool hall.

The proposed air handling plant caters for municipal pools and water leisure centres where high evaporation rates and large pool enclosures are encountered. The air handling units have in built mechanical dehumidification with recirculation and fresh air induction capabilities.

The proposed air handling unit has the facility to exhaust a controlled percentage of the recirculating air flow which ensures an ideal pool hall environment and caters for short term humidity excesses at periods of high pool usage. A controlled quantity of fresh air is admitted to balance the exhaust, and, by means of step control dampers, the incoming air is maintained at a slightly lower volume than the outgoing, thus providing a negative pressure on the pool hall ensuring that fresh air leaks in rather than pool hall air being forced out into the building fabric and migrating into attached buildings.

The units are fitted with fully controlled air heater batteries fed by LPHW. Pool water heat exchangers can be fitted and will be considered. Full heat recovery from both recirculating latent and exhaust latent and sensible is provided and refrigerated air conditioning is available with the excess heat being rejected to atmosphere via the exhaust air duct.

The air quality parameters are controlled from an integral pool environmental controller with all sensors being built within the unit envelope. An Air Quality Sensor is fitted in the unit.



Figure 2 – Swimming Pool Air Handling Unit c/w Dehumidification & Heat Recovery

4. SYSTEM 02 – VILLAGE CHANGE AND MALE / FEMALE DRY CHANGE

The Village Change, Male dry Change and Female Dry Change areas will be provided with mechanical supply and extract ventilation in accordance with Part F of building regulations. Ventilation shall be provided from 1No. Air Handling Unit located within the first floor plant room. The AHU will provide supply ventilation to the changing areas and extract ventilation to the shower and toilets via ductwork running at high level within the ground floor ceiling void. The unit will also provide fresh air to the changing facilities which will be ducted from a high level external louvre at first floor level on the buildings north east elevation and will provide zonal reheat (where required) via LPHW boiler plant. The AHU will comprise of filters, heating coils and a plate heat exchanger.

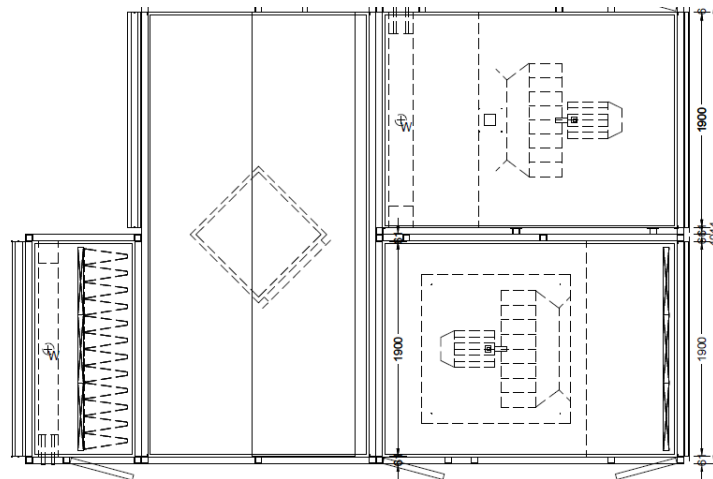


Figure 3 – Typical Diagrammatic View of an Air Handling Unit

5. SYSTEM 03 – CAFÉ & SEATING

Void mounted decentralised Lossnay AHU's will provide mechanical ventilation complete with heat recovery to the ground floor Café & Seating area in accordance with Part F of building regulations. Fresh air and exhaust air will be ducted from external louvres located on the north east elevation. Heating and cooling will be provided to this area via Ceiling Mounted Cassettes or Ducted Fan Coil Units served by a DX Heat Pump located within the external condenser compound at ground floor level.

6. SYSTEM 04 – ACTIVITY ZONE & VIEWING

Void mounted decentralised Lossnay AHU's will provide mechanical ventilation complete with heat recovery to the ground floor Activity Zone and Party Rooms in accordance with Part F of building regulations. Fresh air and exhaust air will be ducted into the Activity Zone and Party Rooms from external louvres located on the north east elevation. Ceiling Mounted Cassettes or Wall Mounted Units will provide heating and cooling to these areas which shall be fed from outdoor DX Heat Pumps located within the external condenser compound at ground floor level. The AC system shall also have the capability to provide simultaneous heating and cooling to allow different operation in each room.

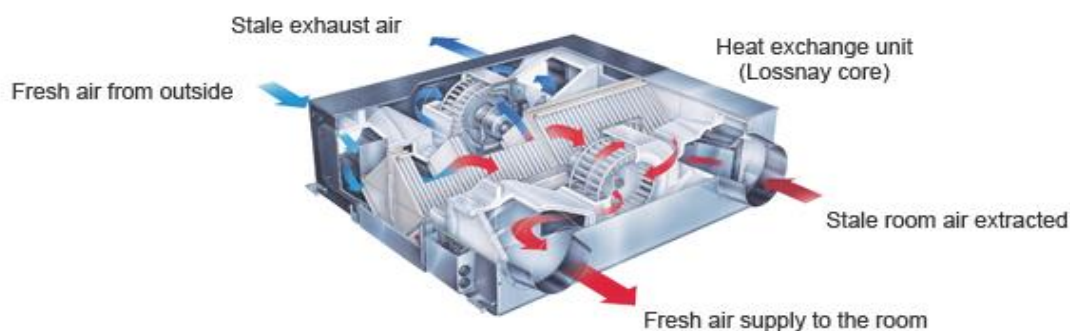


Figure 4 – Void Mounted Decentralised Lossnay Unit

7. SYSTEM 05 – KITCHEN AND SERVERY

Local mechanical extract ventilation will be provided to the ground floor kitchen via Ceiling Grilles and will be in accordance with DW/172, DW/144, TR/19 and DEFRA guidelines. Kitchen extract air will be ducted to an external louver on the north east elevation. Make up air will also be provided to this space via mechanical supply air ducted from an external louver on the buildings north east elevation and shall be tempered by a reheat battery.

The proposed kitchen and servery is anticipated to be only serving light snacks (ie sandwiches, cakes, paninis, jacket potatoes etc) and therefore only warming / heating of food to serve will take place and no heavy preparation



and cooking. There is no provision for gas cooking so Carbon Monoxide emissions and ventilation for combustion do not need to be considered.

It is therefore not considered that any form of grease extraction or odour control provision will be required and that general supply and extract ventilation will be provided.

8. SYSTEM 06 – GF WC & ACCESSIBLE WC

Local mechanical extract ventilation will be provided to the ground floor WC & Accessible WC in accordance with Part F of building regulations. Dirty air will be extracted from each space via ceiling mounted grilles which will be ducted back to an in-line extract fan at high level within the ground floor ceiling which then connects on to the external louvre located on the buildings north east elevation.

9. SYSTEM 07 – CIRCULATION SPACES

The Circulation spaces located on the ground floor will be naturally ventilated via infiltration through the external doors. Heating to the entrance Lobby will be provided via an Overdoor heater.

10. SYSTEM 08 – FITNESS SUITE / GYM

Void mounted decentralised Lossnay AHU's will provide mechanical ventilation complete with heat recovery the first floor Fitness Suite in accordance with Part F of building regulations. Fresh air and exhaust air will be ducted into the Fitness Suite from external louvres located both on the north west and north east elevations. Ceiling Mounted Cassettes or Wall Mounted Units will provide heating and cooling to these areas which shall be fed from outdoor DX Heat Pumps located within the external condenser compound at ground floor level.



Figure 5 – Ceiling Mounted Cassette & Outdoor Heat Pump

11. SYSTEM 09 – MALE DRY CHANGE, FEMALE DRY CHANGE & TOILET

Void mounted decentralised Lossnay AHU's will provide mechanical ventilation complete with heat recovery the first floor Male & Female Dry Change areas in accordance with Part F of building regulations. Fresh air and exhaust air will be ducted into each of the dry change spaces from external louvres located on the north east elevation. Supply air will be tempered by a local reheat battery where required.

12. SYSTEMS 10, 11 & 12 – PARTY ROOM, FUNCTIONAL STUDIO & FITNESS STUDIO

Localised Void mounted decentralised Lossnay AHU's will provide mechanical ventilation complete with heat recovery the first floor Party Room, Functional Studio and Fitness Studio areas in accordance with Part F of building regulations. Fresh air and exhaust air will be ducted into these spaces from external louvres located north east elevation. Ceiling Mounted Cassettes or Wall Mounted Units will provide heating and cooling to these areas which shall be fed from outdoor DX Heat Pumps located within the external condenser compound at ground floor level.

13. OTHER PLANT ITEMS – BOILER FLUES

A common flue header from the proposed LPHW Gas Condensing boilers located within the first floor plant room will run at high level and terminate above roof level to comply with the requirements of the clean air act.

The condensing boilers shall be low NOx type achieving 35mg/kWh NOx emissions.

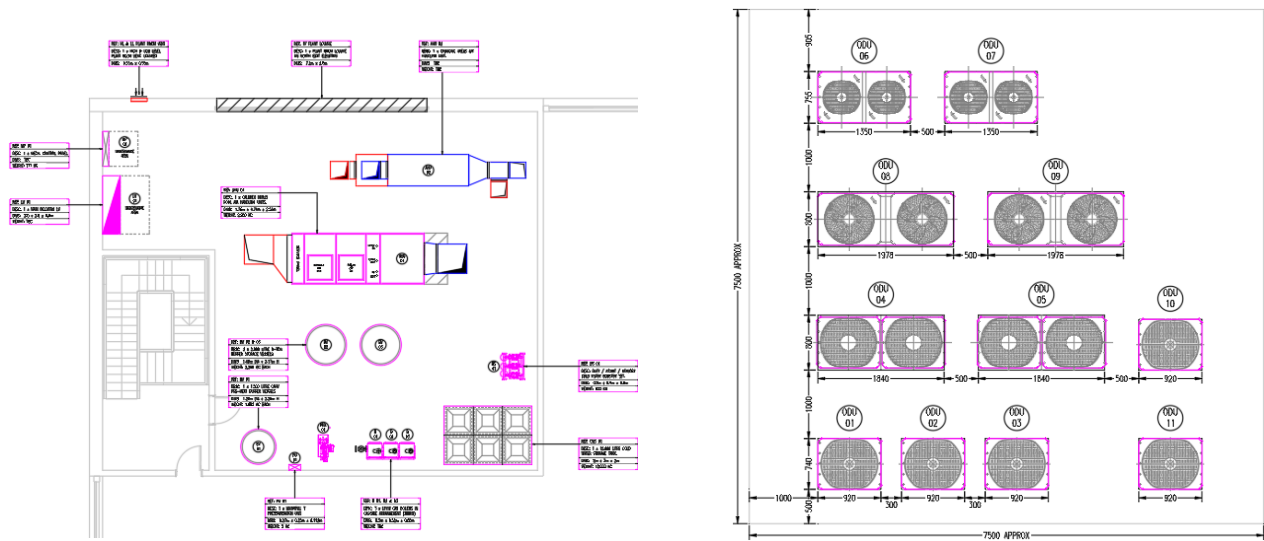


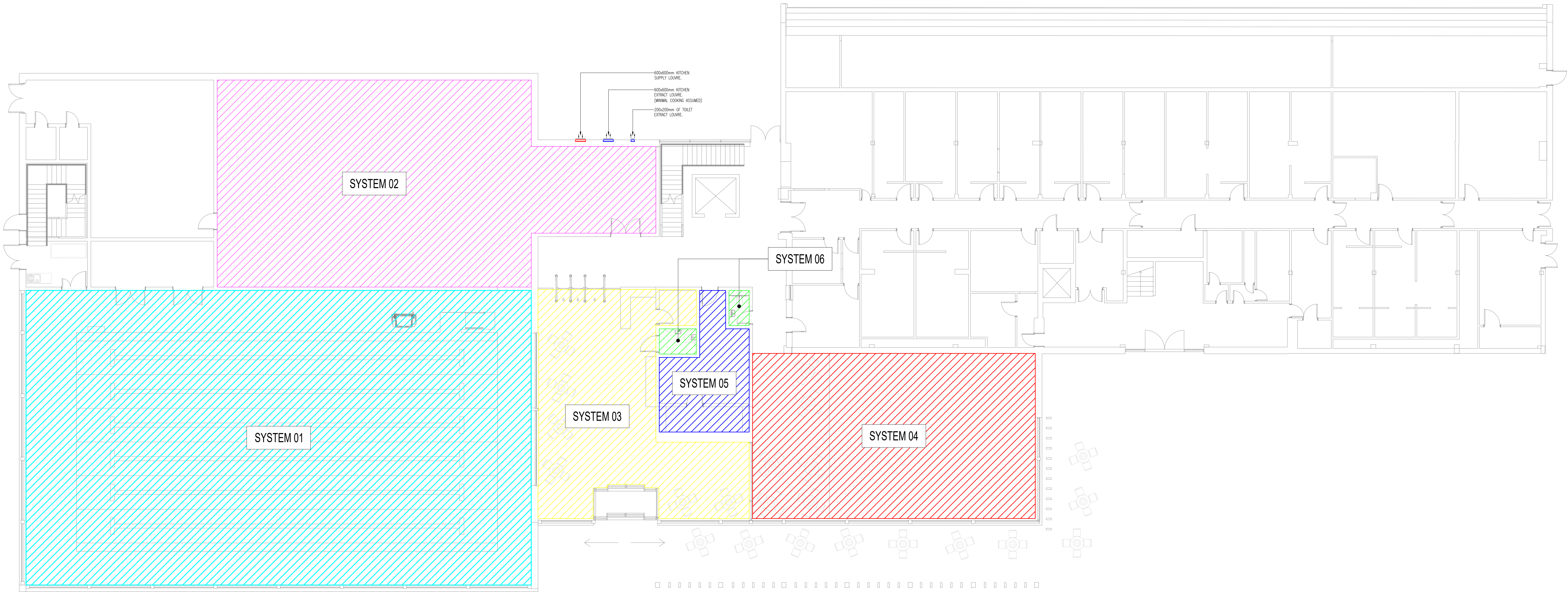
Figure 6 – Proposed 1F Plant Room & GF Condenser Compound Arrangements

System	Serving	Ventilation Strategy		Heating & Cooling Strategy	
		Plant Location	System Description	Plant Location	System Description
GROUND FLOOR					
3	Pool Hall	FF Main Plant Room	Package AHU providing Pool Hall Heating, Fresh Air Requirements and Humidity Control. Heating via UPHW from Boiler Plant.	Served from Ventilation Plant	Heating via Pool AHU to maintain air temperature of 1°C above pool water temperature.
	Village Change and GF Male & Female Dry Change	FF Main Plant Room	Package AHU providing supply and extract ventilation providing fresh air and heating via zonal reheat. Extract ventilation to showers and toilet areas with supply to change areas. Heating via UPHW from Boiler Plant.	Served From Ventilation Plant	Heating via Changing Room AHU through ducted supply ventilation. Zonal reheats provided where necessary.
	Café / Seating	Ceiling Void	Local packaged heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the façade.	Condensers location in External Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DX Heat Pump Units to provide heating and cooling.
	Activity Zone and Viewing	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the façade. No heating on supply air, this will be factored into the room heating and cooling loads.	Condensers location in External Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DX Heat Pump Units to provide heating and cooling.
	Kitchen & Servery	Ceiling Void	Local Mechanical Extract Ventilation to Kitchen via Canopy Hood or Ceiling Grilles (To be determined with final equipment selection). Make up mechanical supply air.	Served From Ventilation Plant	Reheat Battery of Make up Supply to provide minimal heating requirement
	GF WC & Accessible WC	Ceiling Void	Local Mechanical Extract Ventilation	N/A	Internal Spaces, No Heating required Overhead Heater within lobby.
7	Circulation Spaces	N/A	Natural Ventilation from infiltration through external doors	High Level within Space	System 3 to be sized to cater for Circulation Spaces adjacent.

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NOTES



GROUND FLOOR Scale 1:100
VENTILATION, HEATING & COOLING STRATEGY LAYOUT

THIS DRAWING IS PRODUCED IN ACCORDANCE WITH ARCHITECTS/MAIN CONTRACTORS DRAWING REFERENCE

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REV DESCRIPTION DRN CHK DATE

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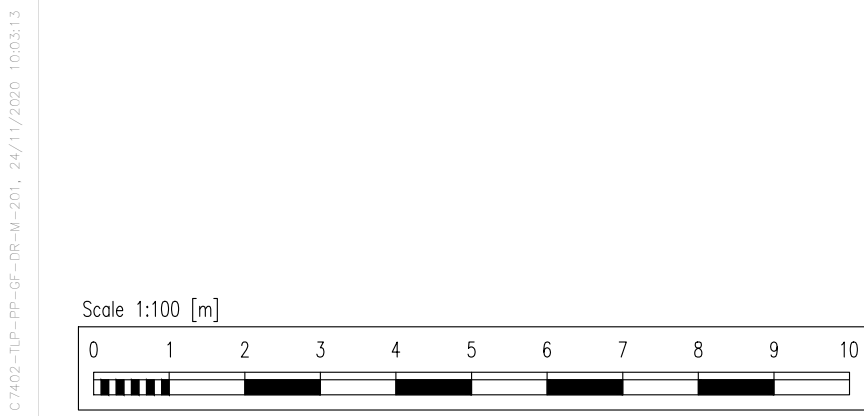
Project Name
Reading
Palmer Park Sport Centre

Drawing Title
Ground Floor
Ventilation, Heating & Cooling Strategy Layout

Engineer LW Checked by JF Drawn By LW

Date 08.09.20 Scale 1:100 Size A1

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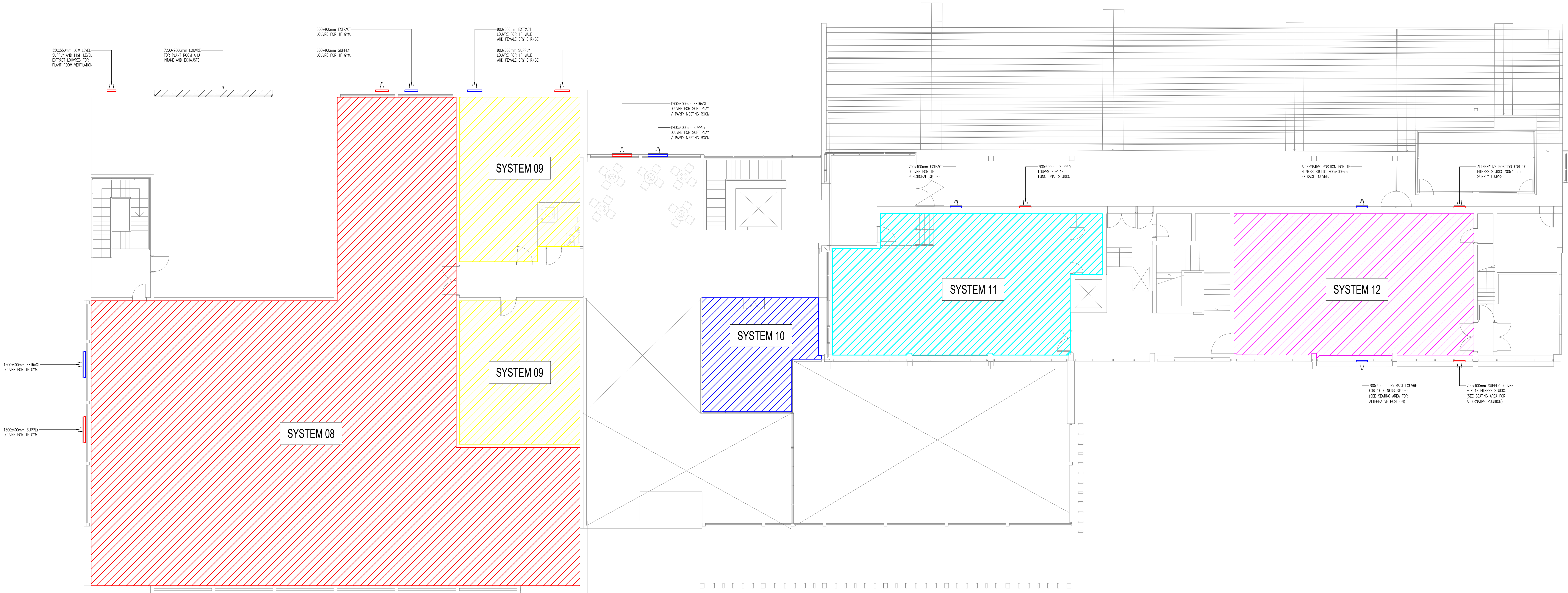


System	Serving	Ventilation Strategy		Heating & Cooling Strategy	
		Plant Location	System Description	Plant Location	System Description
FIRST FLOOR					
8	Gym	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the facade. No heating on supply air, this will be factored into the room heating and cooling loads.	Condensers location in Internal Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DXHeat Pump Units to provided heating and cooling.
	Male & Female Dry Change & Toilets	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilations. Ducted supply and extract from external louvers within the facade. Incoming supply air to be tempered with local heater baththeries.	Served From Ventilation Plant	Heating via ventilation through ducted supply ventilation. Zonal reheats provided as necessary.
9	Party / Meeting Room	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the facade. No heating on supply air, this will be factored into the room heating and cooling loads.	Condensers location in Internal Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DXHeat Pump Units to provided heating and cooling.
11	Functional Studio / Group Cycling	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the facade. No heating on supply air, this will be factored into the room heating and cooling loads.	Condensers location in Internal Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DXHeat Pump Units to provided heating and cooling.
12	Fitness Studio	Ceiling Void	Local packaged high efficiency heat recovery ventilation units located within the ceiling void to provide fresh air supply and extract ventilation for the occupants. Ducted supply and extract from external louvers within the facade. No heating on supply air, this will be factored into the room heating and cooling loads.	Condensers location in Internal Compound to the rear of the building.	Ceiling Mounted Cassettes or Ducted DXHeat Pump Units to provided heating and cooling.

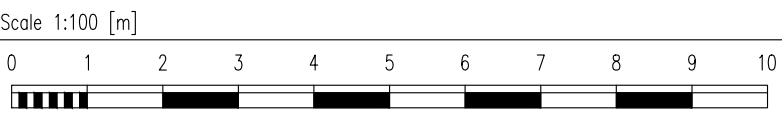
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