Design Report

Project Name: **The Northern Lawn Tennis Club**

West Tower, Brook Street
LIVERPOOL
L3 9PJ
Web: www.futureserv.co.uk

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Title: Stage 2 M&E Report

1.0 Introduction

This Technical Note provides a summary of the Mechanical and Electrical services proposed for The Northern Lawn Tennis Club.

2.0 Mechanical

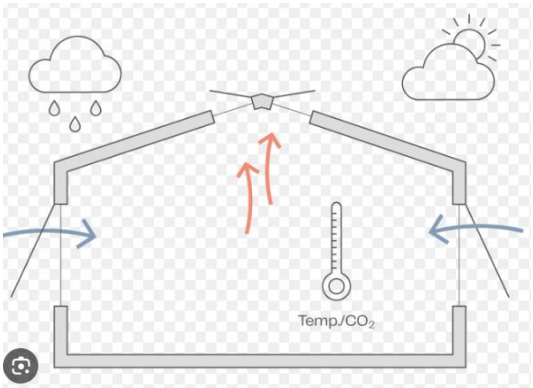
Ventilation Systems

Main Tennis Court Hall

The tennis court area will be provided by natural ventilation with high level exhaust and low level inlet actuated louvres. The ventilation system will utilise the existing louver locations and allow for the upgrade of the louvers. The natural ventilation system will operate automatically with the damper motor driven in accordance with a demand signal from dedicated natural ventilation building controls which shall consist of a control panel, outdoor temperature sensor and a number of indoor combined temperature and co2 sensors.



Typical actuated louvre



Passive Stack Ventilation

Viewing Area

Viewing area ventilation shall be provided by an MVHR system with an MVHR unit located in the Equipment Storage Room. The system will operate based on occupancy within the Viewing Area. The ventilation system shall be ducted and shall utilise existing openings to fit the louvers for air intake and air exhaust.

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Typical MVHR Unit

Toilets/Changing Rooms and Plantroom Ventilation

The second MVHR will be serving the Toilet/ Changing Room areas and the Plantroom area. The MVHR unit will be located in the Equipment Storage Room. The system will operate at the trickle and boost raes to satisfy the Building Regulations Requirements.

The ventilation system shall be ducted and shall utilise existing openings to fit the louvers for air intake and air exhaust.

Heating

Entrance, Viewing Area and Toilets

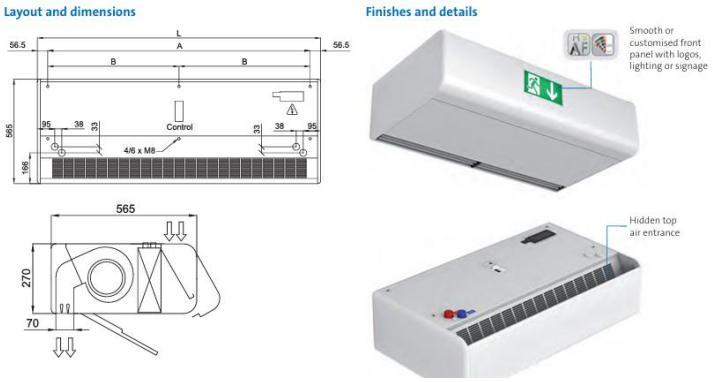
The main entrance door shall be provided with an overdoor electric heater linked to a room thermostat and a timeclock. The viewing area shall be provided with standard panel heaters with built in thermostat and timeclock and the disabled WC shall be complete with LST electric panel heaters with built in thermostat and timeclock. All heaters shall be LOT 20 compliant.



Standard Panel Heater



LST Panel Heater



Overdoor Heater Exposed

Main Tennis Court Area

Generally heating to the Tennis Court Area was considered under the LTA British Tennis Design Guidelines at the initial stage of design to provide 8deg C during occupied periods and 1 deg C as frost protection. This approach was however reviewed upon confirmation of insufficient incoming power supply to provide the heating to the Tennis Court Area. It has been confirmed by the Client that heating will be omitted.

Domestic Water Services

The existing incoming main cold water which is already metred in the pavement on Parkfield road south routes below ground via the shared access road to the site boundary, the mechanical contractor shall pick up from the site boundary and route to the incoming plantroom. From the plantroom area it shall distribute to serve the disabled WC's. Hot water to the disabled WC basin shall be via a local 6L electric water heater complete with manufacturers expansion vessel, non return valve kit, pressure reducing valve vit and tundish discharge. A thermostatic mixing valve TMV3 shall be provided to the wash hand basin.



Electric Water Heater

BMS

A BMS system shall be provided to control the actuated natural ventilation passive louvre system to the main tennis court hall. The system shall have facility for a user to log on remotely via the internet to adjust timeclock settings via a web browser facility. All other services will have local controls and not linked to the BMS system.

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3.0 Electrical

Low Voltage Power

An electrical load schedule has been produced L6426-XX-XX-SH-E-6000 which includes the power requirements for the proposed Mechanical and Electrical Equipment Loads and indicates a load of 99.9kVA will be required.

This figure includes an allowance of 20% spare capacity for future use.

A new TP&N Distribution Board shall be provided for all new general lighting and small power electrical circuits. The distribution board shall be equipped with separate meters for lighting and power. A Surge protection device shall be fitted to the DB. The distribution board shall be left with 20% spare capacity once all new circuits have been accounted for.



Typical Three Phase Distribution Board

For pricing a Triple Pole 125A isolator shall be allowed for the supply to the new DB.

The cable feeding each distribution board shall be checked for this load. For pricing an 10m of 4Cr 35mm^2 XLPE/LSF/SWA/LSF shall be allowed for the supply from the utility meter and cut out to the new DB.

Earthing and Bonding shall be provided in accordance with the latest version of BS 7671.

Circuits for sockets and fixed equipment shall utilise RCBOs.

Containment

New Hi Level containment shall be provided for power, lighting and ceiling mounted ELV equipment.

New galvanised steel cable trunking shall be provided for power and lighting circuits.

ELV cables shall be installed on cable wire basket. Separate cable tray shall be provided for Fire Alarm cables or where systems utilise the same basket i.e. ELV systems, then a fixed cable divider is to be provided to allow separation of services.

Drops to low level electrical accessories shall be provided in galvanised steel conduit with adaptable boxes.

All new containment sizes are to be verified by the electrical subcontractor.

All containment that passes through a fire wall shall be provided with a suitably rated fire barrier. The fire stopping is to be provided by the Main Contractor.

Small Power and Data

New power and data outlets and cables shall be provided to serve general small power sockets, heating equipment, door access and security, CCTV, wifi antennas, hand dryers, hair dryers, .

Accessories shall be selected suitable for the room type. For pricing purposes for general front of house areas white moulded plastic shall be allowed for. In tennis court spaces, metal clad accessories and back boxes shall be installed.

All final positions and mounting heights of power and data outlets is to be agreed with the architect.

Lighting, General & Emergency & Controls

New luminaires are to be provided for all areas. Luminaires for circulation spaces internally shall be controlled via automatic presence sensors with suitable run on timers. Controls for the tennis court areas shall be via manual retractive switches and also automatic lighting controls with absence detection.

Generally lighting shall utilise the associated British Standards and also the LTA British Tennis Design Guides to determine the appropriate lux levels and uniformity to be achieved.

However, the following levels are to be achieved as a minimum.

Space	Lux Level
Entrance	200
Acc WC	200
Plant	200
Store	150
Tennis Court PPA (Principal Playing Area)	600
Tennis Court TPA (Total Playing Area)	500
Viewing Area	200

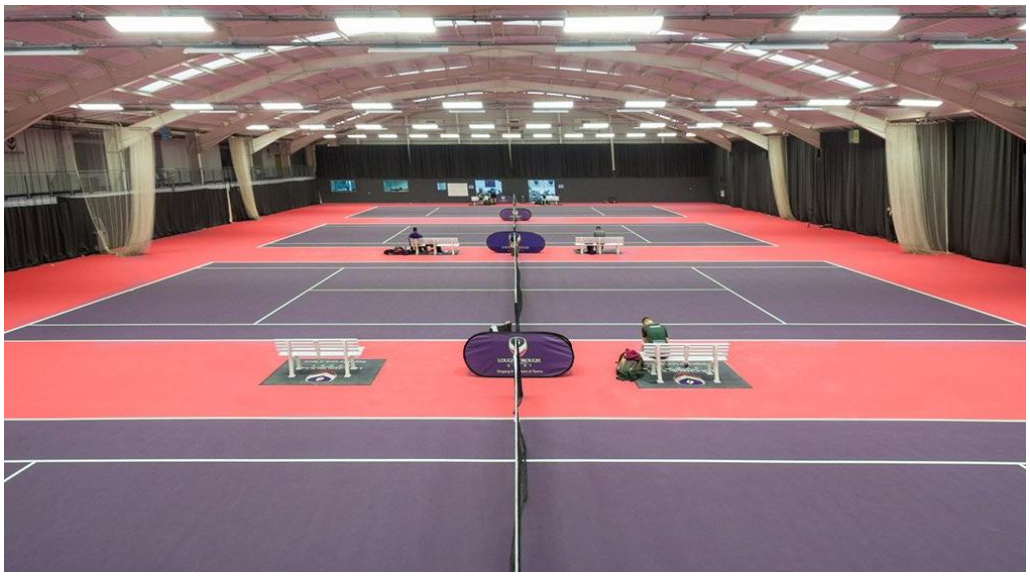
All Emergency lighting shall be selected and positioned to ensure compliance with BS 5266.

Testing of emergency lighting shall be provided via emergency test key switches located adjacent to the Supply Distribution Board.

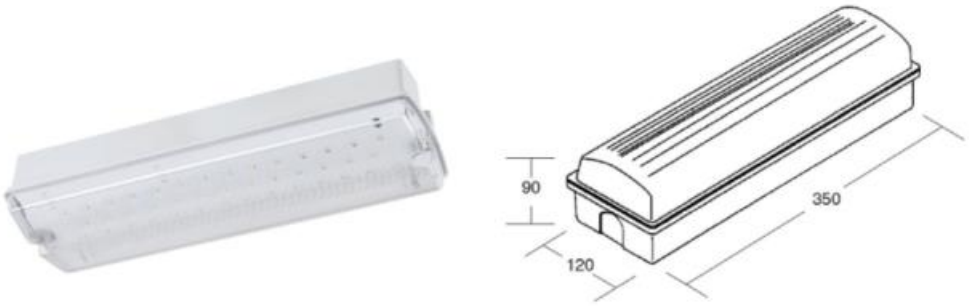
Luminaire Examples:



Tennis Hall Lighting – Dextra ProSport LED

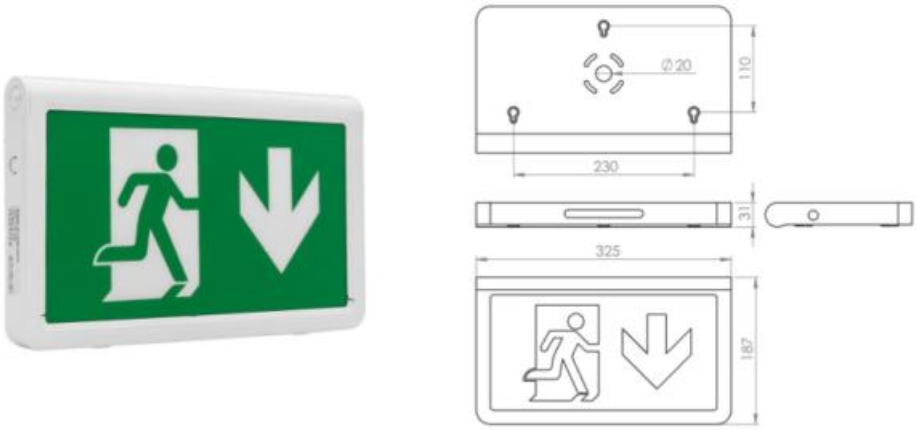


Installation Example



Typical Emergency Bulkheads

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Exit Signage

Lighting Controls

Luminaires shall be connected to a series of new Lighting Control Modules in locations as shown on the drawing layouts. Final quantities of luminaires shall be determined by calculation with the chosen supplier.

New Lighting Controls shall be provided as follows:

- Store – PIR Presence
- Toilets – PIR Presence
- Tennis Court – PIR Absence c/w manual override.
- Plant Room – Manual Switch
- Entrance – PIR Presence

Fire Alarm

A fire alarm specialist is to be engaged to verify the proposed fire alarm system design. Generally, the fire alarm system shall comply with BS 5839-1.

To be confirmed with the appointed fire alarm specialist.

Security and Access Control

Access control doors and security alarm equipment shall be provided.

Access control doors shall generally be provided with a proximity reader on the non-secure side. The secure side shall have a maglock, break glass and push to exit button door release. Door contacts shall be fitted to external doors.

Lightning Protection

A new Lightning Protection System shall be provided in accordance with BS 62305. A verified LKPS specialist shall complete a Risk Assessment to determine the level of coverage for the building.

Surge protection devices shall be fitted from distribution boards feeding external equipment i.e. lighting columns.