

Mechanical, Electrical and Public Health Engineering Systems Report.

Access and Maintenance Strategy.

Project: Curium Cyclotron Churchill Hospital.

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strategy.**

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AUDIT SHEET

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Contents.

1. INTRODUCTION	3
1.1 Health and Safety	3
2. MAIN MEP PLANT LOCATIONS	3
2.1 Plant Rooms	3
2.2 Incoming Services	3
3. ROOF TOP PLANT	3
3.1 Access to Roof	3
3.2 Chillers	4
3.3 Circulation Pumps	4
3.4 CHW Pressurisation Unit	4
3.5 Crane Lift	4
4. FINAL DISTRIBUTION SERVICE ROUTES	4

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1. INTRODUCTION

This report outlines the proposed removal and replacement strategy for the Mechanical and Electrical (M&E) plant to be installed within the Curium Pharma space at the existing Churchill Hospital facilities.

The building is an existing two storey construction consisting of ground floor and roof/plant spaces at first level. The building is part of an existing wider building footprint at the Churchill Hospital. The space comprises hot cell laboratories, cyclotron “bunker” and associated laboratory and write-up spaces. Support spaces include wash-hand spaces, WC’s, risers etc. as well as M&E plant space(s) at roof level.

This report covers new plant and equipment only.

1.1 Health and Safety

Any replacement work carried out should follow the appropriate Health and Safety Executive (HSE) regulations and guidelines.

A method statement and risk assessment should be produced for all services replacement work required throughout the life of the building.

All replacement work involving manual handling and/or lifting equipment must be properly planned by a competent person, appropriately supervised and carried out in a safe manner.

2. MAIN MEP PLANT LOCATIONS

2.1 Plant Rooms

Within the Biochemistry Phase II Building the main locations for plant and equipment is the following locations:

1no. roof plant area (comprising covered areas and enclosed ‘open top’ areas

1no. plant room at B2 below ground comprising AHUs.

Gas storage areas and at ground floor level

1no. electrical switch room on the B2 floor level.

5no. plant rooms located on each of the other floor levels serve each floor plate and are linked via headers riser ductwork arrangements to provide a unified ventilation system with increased resilience.

The building is provided with a sprinkler fire suppression system. The sprinkler tank and sprinkler pumps are located within Phase I.

The IT hub rooms are located at each floor level above B1 level adjacent to the goods lift.

There are a series of plantrooms at B2 level, comprising department process plant, process water treatment and rainwater attenuation tanks, and local hot water generating, and ventilation plant dedicated to the Glasswash and Media Prep facility.

New plant and equipment is located within the roof plant area only.

2.2 Incoming Services

The main Low Voltage (LV) power is from the substation located to the north of the building. Low voltage cables are routed external on the north facing wall, across the roof and into the plant & switch room.

Incoming cold water and gas services enter the building from the north west of the facility.

3. ROOF TOP PLANT

The following new plant is located on the roof:

Plant	Quantity	Size (mm) (L x W x H)	Weight (kg)
Chiller	1	2200 x 898 x 1984	1000

3.1 Access to Roof

The proposed access to the roof is via the external spiral stair on the south façade. The access to the internal roof plant space is via the external stair on the north façade, with separate access to the main plant space and LV switch room.

There are no lifts or goods lifts on the project.



Figure 3.1, Existing roof layout (from Google Earth)

3.2 Chillers

The chillers represent the largest items of plant and are located on the roof above the cyclotron facility as shown in the above drawing. Sizes as detailed in the plant schedules in section 3.

CIBSE guide M Appendix 13.A1 Indicative Life Expectancy Factors recommends a plant life for screw chillers of 25 years. Therefore the chillers could potentially need replacing two or three times during the life of the building.

Due to the size and weight of each chiller, the only safe method for replacement would be through use of a crane from an access road.

The individual components of the chiller such as motors and compressors are all small enough in size and weight that they could be replaced via a davit arm and lifting bar to be lowered from the roof.

3.2.1 Chiller Maintenance

The chillers do require regular maintenance and manufacturers usually recommend a service every 6 months. During a service pressure tests will be taken and, if required, refrigerant will be added to the system. The typical size of refrigerant cylinder used for services are 7kg type 'E' cylinders, which weigh around 9kg when full. The size and weight of these cylinders mean that services could be safely carried out by a single operative.

3.3 Circulation Pumps

The internal circulation pumps are expected to be small in enough in size and weight to be lifted by a single operative. Care should be taken when using the spiral staircase. Where the spiral staircase is not suitable a Davit arm and lift bar may be used.

3.4 CHW Pressurisation Unit

The pressurisation unit shall be maintained via the stairs. Where replacement of the unit is required. This shall be via a Davit arm and lifting bar.

3.5 Crane Lift

The building, located within the Churchill Hospital, is surrounded by other Hospital buildings, as indicated.

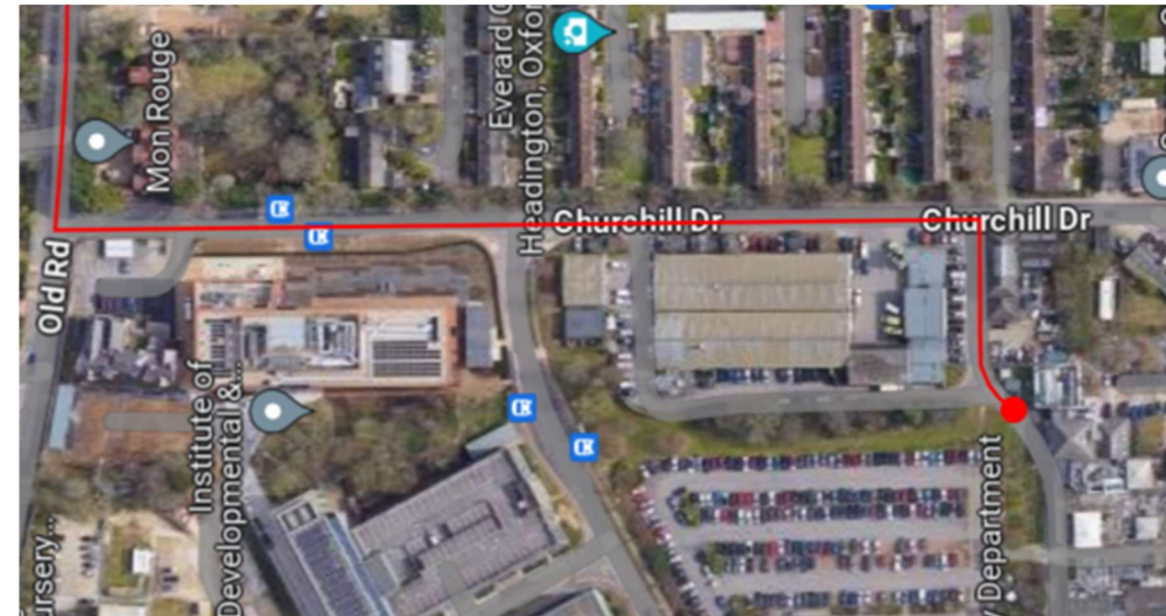


Figure 3.2, Aerial view of Churchill Drive and the Curium building (including potential access routes for cranes)

Plant lifts could be achieved by a crane in off of Churchill Drive. This would cause local access issues during the lifts.

4. FINAL DISTRIBUTION SERVICE ROUTES

Final distribution of MEP services from the main plant room and rood positions is largely achieved via the ceiling voids at ground floor level.

Service	Final Distribution Route
Ventilation ductwork	Ceiling voids
VAV boxes	Ceiling voids
Heating pipework	Ceiling voids
Hot and cold water services pipework	Ceiling voids
Sprinkler pipework	Ceiling voids
Gas system pipework	Ceiling voids
Lighting Wiring	Ceiling voids
Fire Alarm Wiring	Ceiling voids
Security Wiring	Ceiling voids

Data/IT Wiring	Ceiling voids
Small power	Ceiling voids
Controls Wiring	Ceiling voids

Maintenance of the distribution is expected to take place via step ladder and no specialist equipment shall be needed.