UCL Biosciences CLOE & CDB HoRD

Design and Access Statement | 24th March 2022

Burwell Architects

Burwell Architects | Unit 001 California Building Deals Gateway London SE13 7SB

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Darwin Building at UCL

1.1 Purpose of the Document

Burwell Architects have been asked to prepare a planning application on behalf of UCL for plant equipment installations on the roof of the Darwin Building on the Bloomsbury Campus as part of two laboratory refurbishments in the Darwin Building and Medical Sciences and Anatomy Building.

This document forms the design and access statement for the application.

1.2 Project Summary

CLOE

UCL wish to launch a new Centre for Life's Origins and Evolution. CLOE has been identified as a major priority for strategic development in the Faculty of Life Sciences. To accommodate the new centre, redevelopment of the south end of the 4th Floor in the Darwin Building is proposed. This will provide space for research and teaching staff and a hub for CLOE research and teaching activities. The project will involve decanting existing staff to alternative locations until completion of the new development.

The new refurbishment project will provide equal space for laboratories and offices to be shared between CLOE staff and Postdoc & PhD Research students.

CDB HoRD

UCL wish to provide a state-of-the-art, flexible laboratory space on the 2nd floor of the Anatomy Building to house the newly recruited Head of Research Department (HoRD) in Cell and Developmental Biology. The project will create an optimal research environment supporting the research of four independent research groups. This will be the first facility of its kind in London.

This planning application pertains to the plant installations on the roof of the Darwin Building required to facilitate both projects.

Site plan showing Darwin Building within UCL campus and Bloomsbury Conservation Area

2.1 Site Location Plan

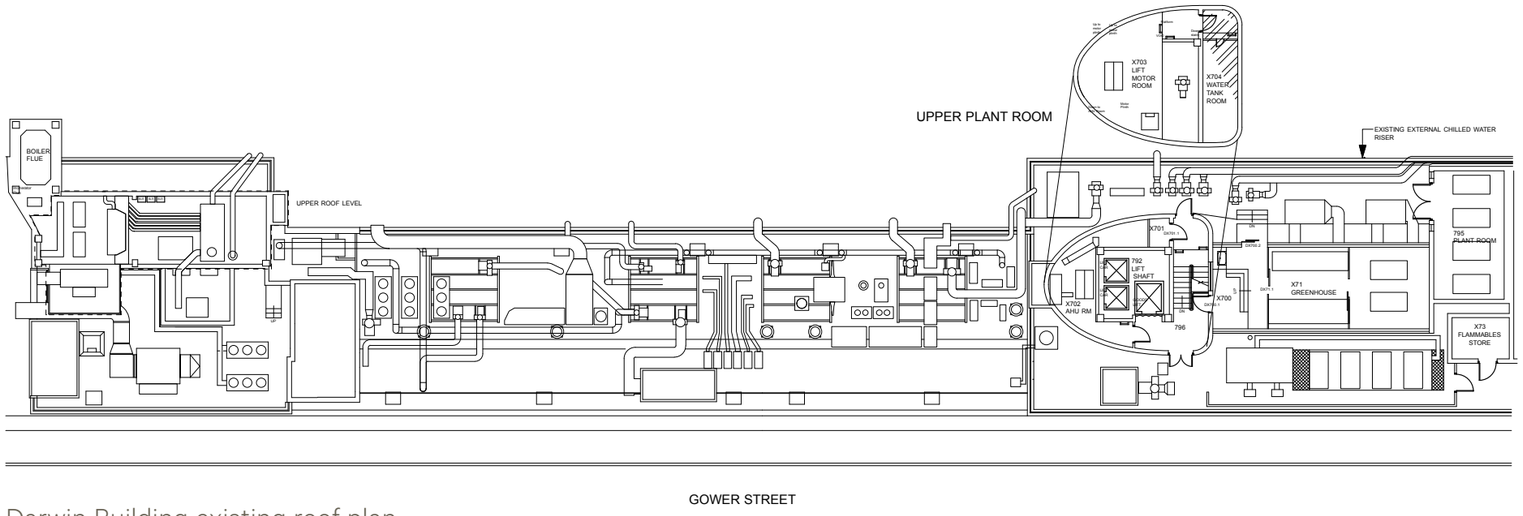
The laboratory refurbishment projects are taking place on the 4th floor of the Darwin Building and the 2nd floor of the Medical Sciences and Anatomy building on the Bloomsbury Campus at UCL.

The buildings are not listed but are situated in the Bloomsbury Conservation Area. They front onto the public street (Gower Street) and sit opposite residential buildings which do not form part of the UCL campus.

This planning application applies to plant equipment on the roof of the Darwin building to suit these laboratory refurbishments.

The residential buildings opposite are highlighted as these are the most sensitive buildings to any impact from plant noise.

- UCL Owned Buildings
- Darwin Building
- Medical Sciences and Anatomy Building
- Assumed Residential Buildings
- Bloomsbury Conservation Area



Darwin Building existing roof plan

Darwin Building rooftop plant

2.2 Existing Roof Plan

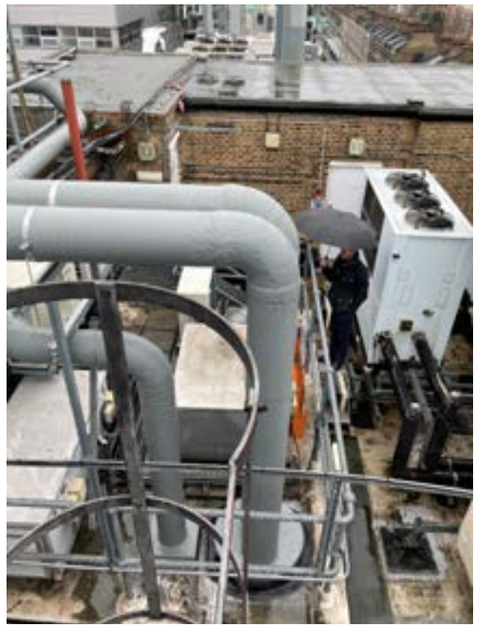
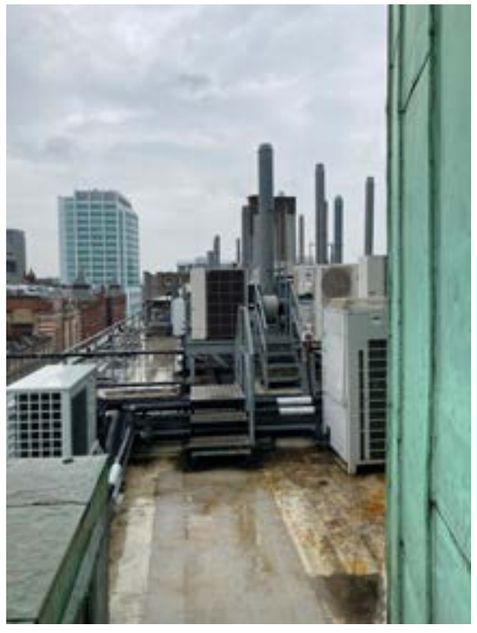
The Darwin Building is 6 storeys high, with a single-storey projection at roof level housing the main circulation core for the building.

The existing roof has a large number of plant items to serve the buildings, including varying plant equipment ranging from chillers, condensers, and other HVAC equipment as well as specialist extraction plant for laboratory equipment such as fume cupboard exhaust ducts.

The main core of the building extends up to roof level in the Upper Plant Room, and this provides maintenance access to the roof plant, as well as the escape route in the case of a fire.



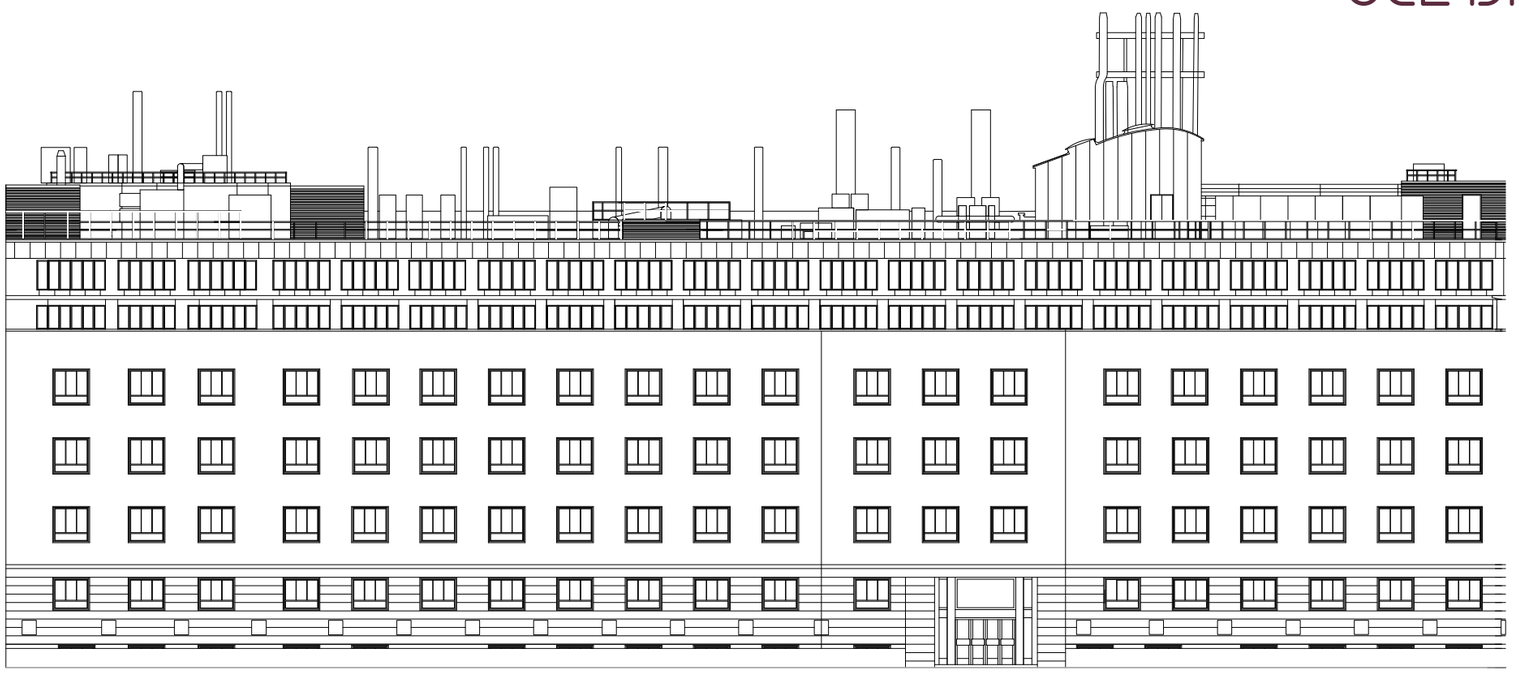


Exisitng plant equipment on the roof of the Darwin building

2.3 Existing Roof Plant

The photographs adjacent further illustrate the quantity of existing plant equipment on the roof of the Darwin building.

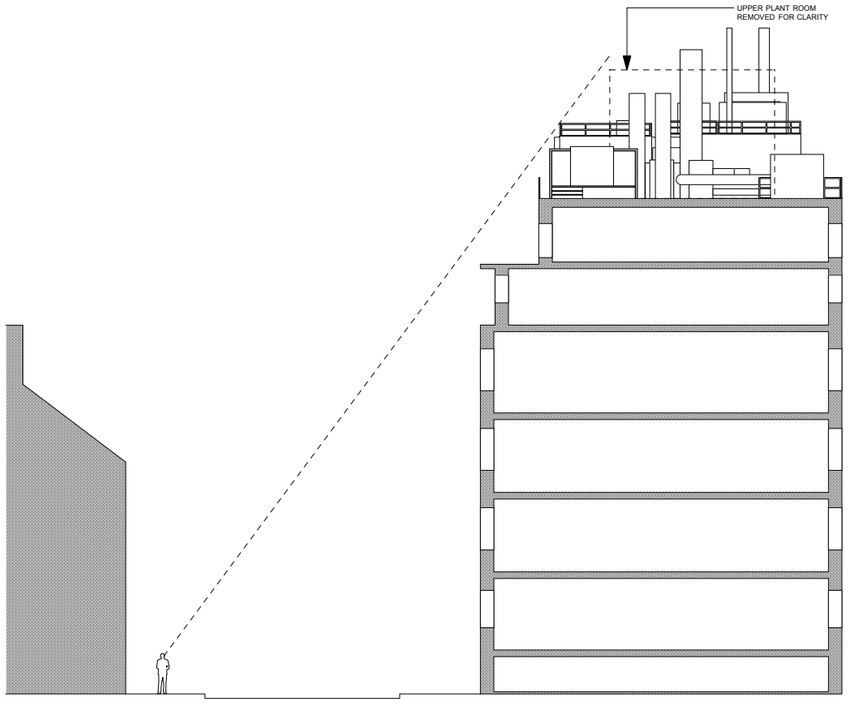


Existing Front Elevation

2.4 Existing Front Elevation

The Darwin Building is within the Bloomsbury Conservation Area. The facade facing onto Gower St. is the only public-facing facade of the building. As such, the facade is free from visible plant installations.

Additionally, the roof top plant is largely obscured from view from ground level on Gower St, despite the large quantity of plant equipment on the roof.



Section showing visibility of existing plant on Darwin Building roof

Photograph of Darwin Building

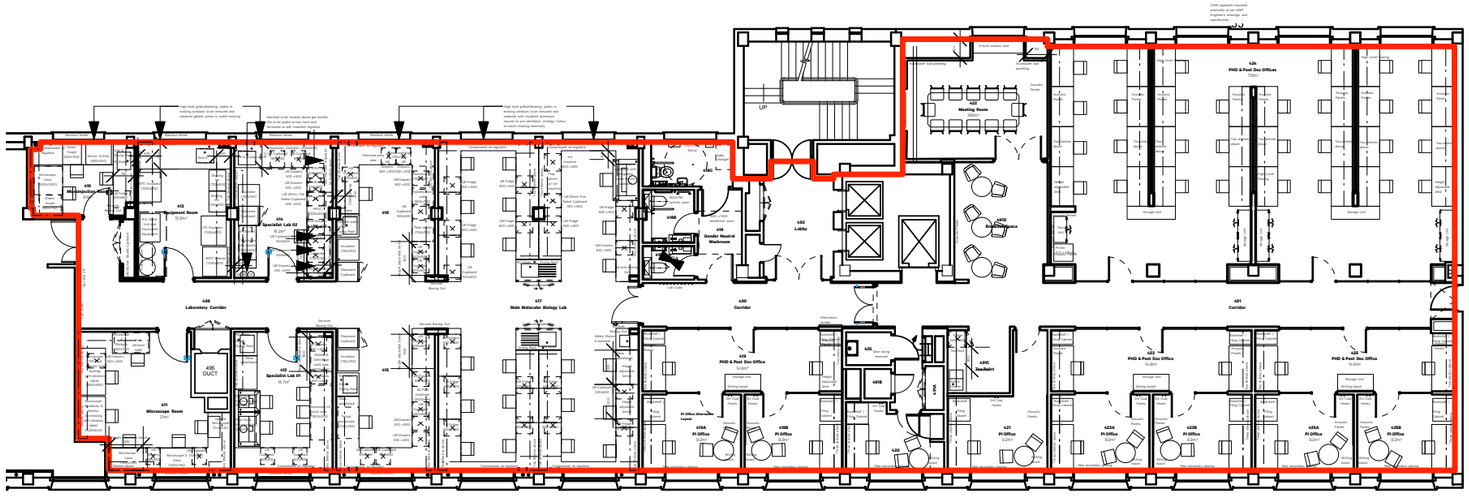
Existing Rear Elevation

2.5 Existing Rear Elevation

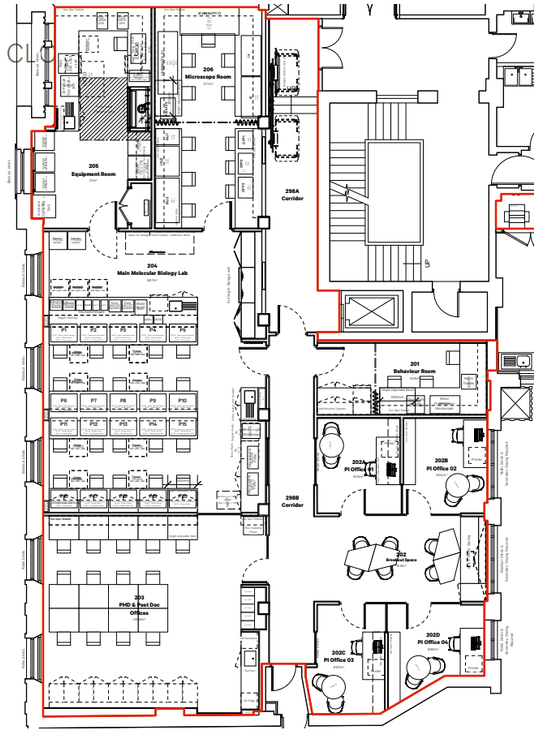
The rear facade of the Darwin building faces the backs of other UCL owned buildings, and is not visible from any public streets.

Over time there has been a build up of plant equipment on this facade serving various laboratories in the buildings. Most visibly, there is a large number of fume cupboard exhaust ducts which rise vertically to discharge above roof level.

Photographs showing the rear elevation



CLOE main plan



CDB HORD main plan

Visualisations showing proposed lab spaces for CLOE (above) and CDB HoRD (below)

3.1 Design Statement

The refurbishment projects in the Darwin Building and Medical Sciences and Anatomy Building will create world class laboratory facilities for cutting edge research. The current spaces are laboratories, however, they have outdated mechanical and electrical services and it has been determined that these needs to be upgraded to meet the specific requirements of the new laboratories.

Currently there is a single cooling system which serves the project area. In line with sustainability best practices, separate systems for the process cooling of the laboratories and the comfort cooling of the office spaces is proposed. This requires the installation of additional plant equipment to be located on the roof of the Darwin Building.

The additional equipment comprises the replacement of 2 chillers and addition of 6 condensers as well as a new plate heat exchanger. The plate heat exchanger is required as part of a longer term strategy to replace the chilled water system for the entire building because the existing system has reached the end of its design life.

To facilitate the connection of the plant equipment on the roof and the installation of the ventilation equipment in the 4th floor Darwin Building, there will be modifications made to the rear elevation. These include installation of 2 chilled water pipes which will run externally from roof level down to first floor level and several wall-mounted grilles.

3.2 Proposed Roof Plan

The proposed alterations to the roof comprise the replacement of 2 no. chillers and the addition of 6 no. condensers and a new plate heat exchanger to the roof, with locations shown on the plan below.

The 2 no. chillers to be replaced are in an existing acoustic enclosure, while the other plant equipment is small and located in suitable locations on the roof. The acoustic enclosure will require modifying to ensure that LB Camden's noise requirements will be met.

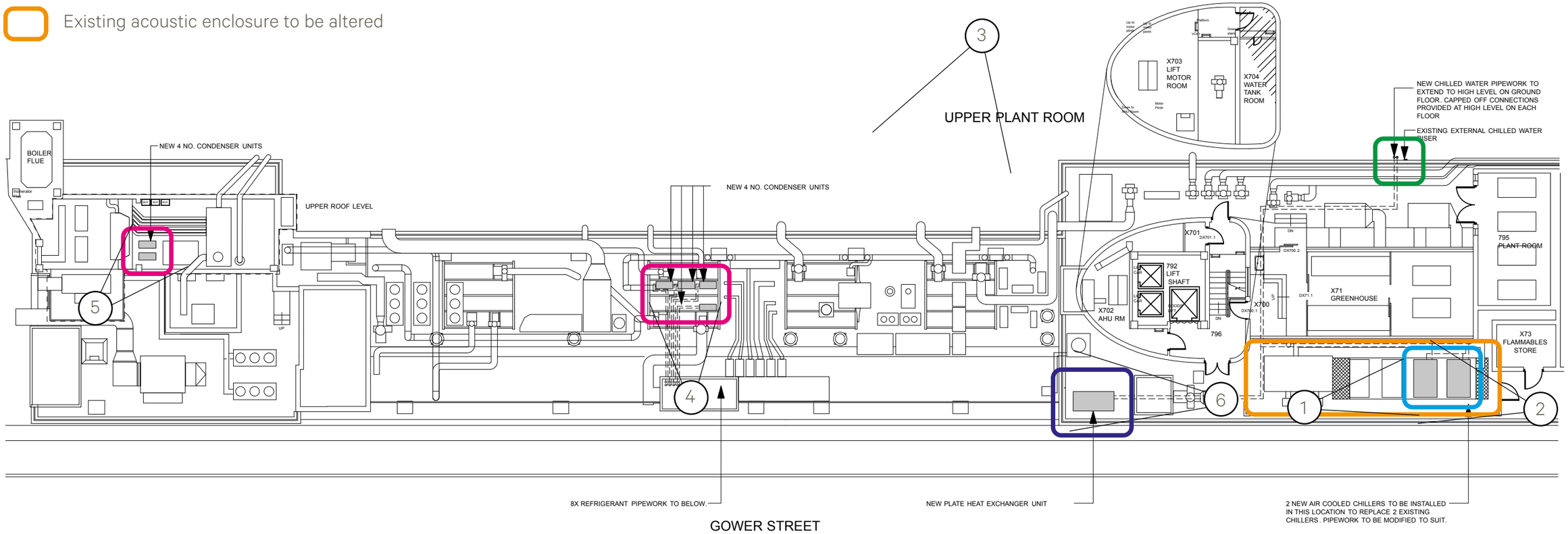
Proposed replacement chillers

Proposed new chillers

Proposed new plate heat exchanger

Proposed new external chilled water pipework route

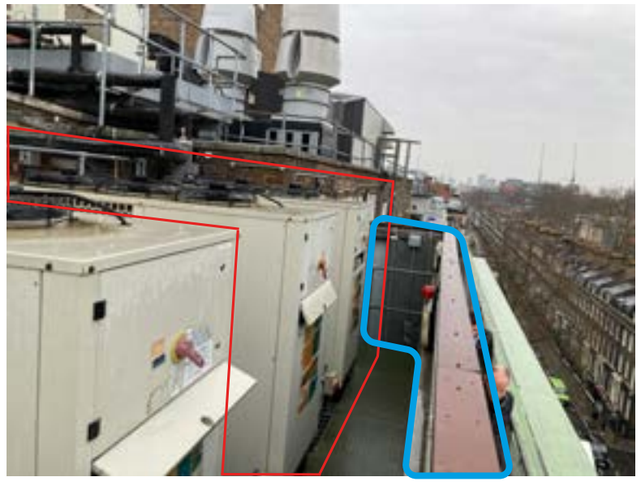
Existing acoustic enclosure to be altered



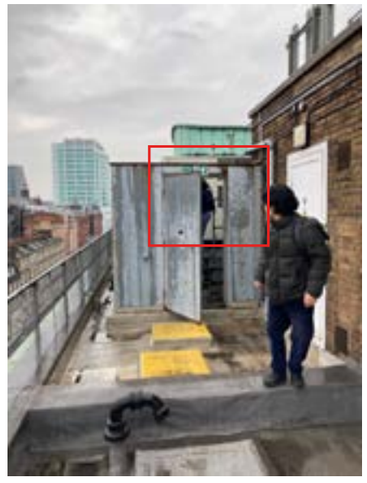
3.3 Rooftop Plant Locations

The photographs adjacent show the proposed locations for the new plant equipment. This will all be housed on existing supporting framework or within existing acoustic enclosures.

Photo 1 shows the acoustic enclosure highlighted in blue. This is proposed to be widened by to accommodate the new chillers, which are slightly larger in plan. Additionally, the height of the enclosure will be raised by 350mm to mitigate any noise issues

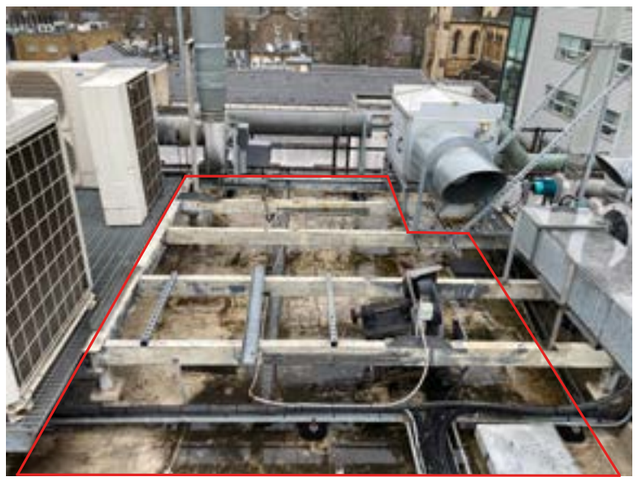


1. Existing chillers in acoustic enclosure to be replaced



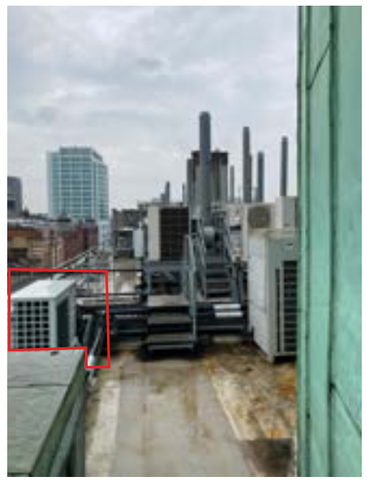
2. Existing chillers in the acoustic enclosure

3. Proposed locations of alterations to high level grilles in window openings

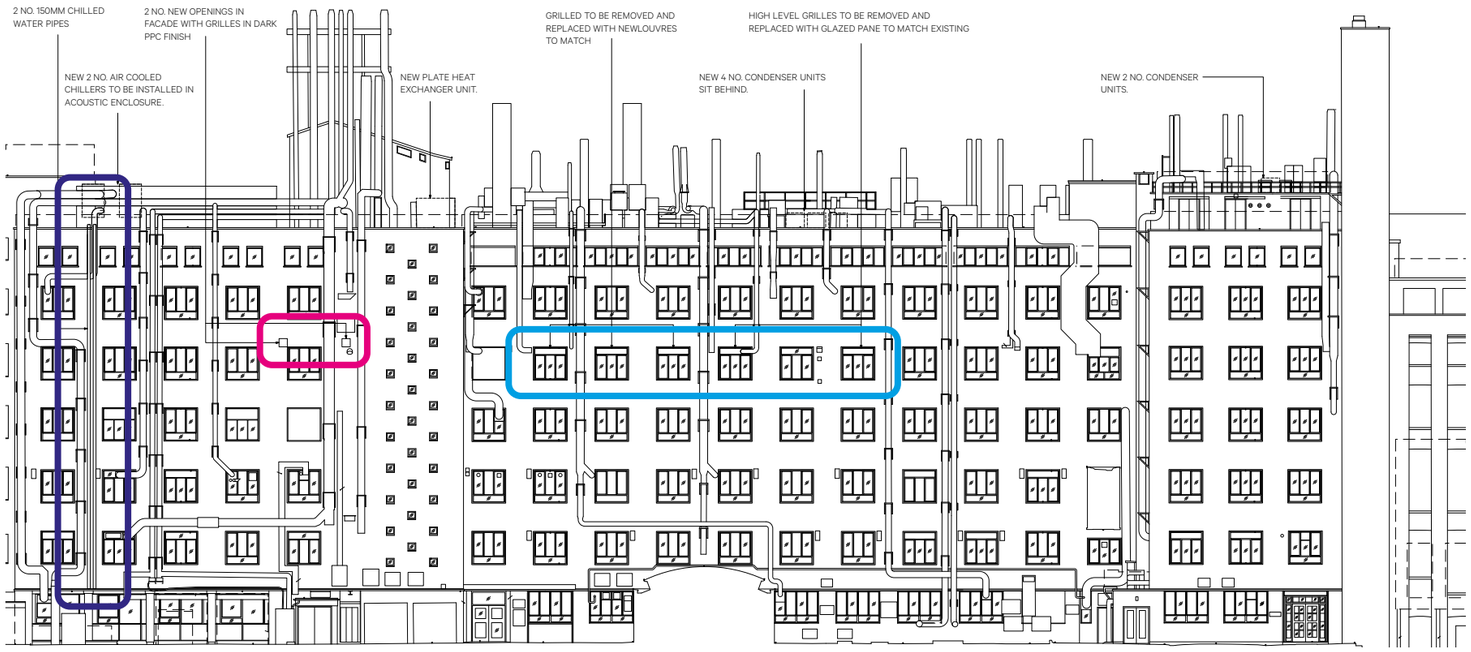


4. Proposed location for 4 new condenser units

5. Proposed location for 2 new condenser units



6. Proposed location for new plate heat exchanger unit



Proposed Rear Elevation

Windows on rear elevation to be altered

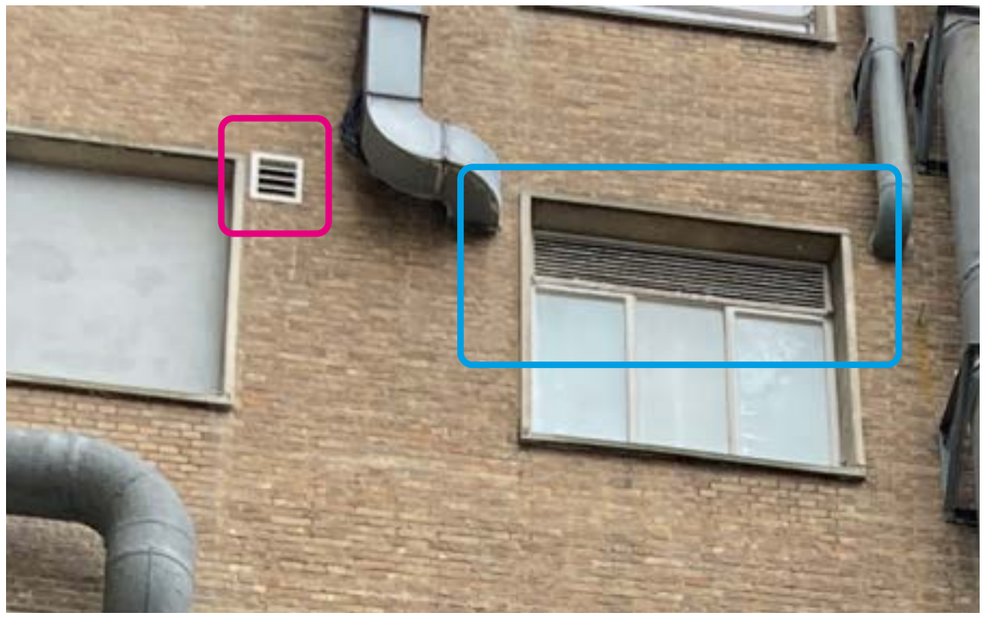


Photo showing existing high level grilles in window opening and adjacent to window

3.4 Proposed Rear Elevation

The rear elevation has a large number of ducts and plant installations visible. The proposals include for some minor additions and alterations to this facade.

2no. new chilled water pipes will be installed to the rear of the building rising from first floor to roof level. These will be 150mm diameter and capped at each level to allow future connection of other floors of the building to new chilled water system as and when those cooling systems are upgraded.

There are also a number of existing high level grilles on the 4th floor within the window openings. These will be replaced with grilles to match as part of the works as there will be new vent ductwork connected to the back of the grilles.

2no. small new openings are also proposed in the brickwork of the rear facade, as shown on the adjacent elevation. These will match the aesthetic of the existing grilles in brickwork, example shown in the adjacent photo.

New chilled water pipework

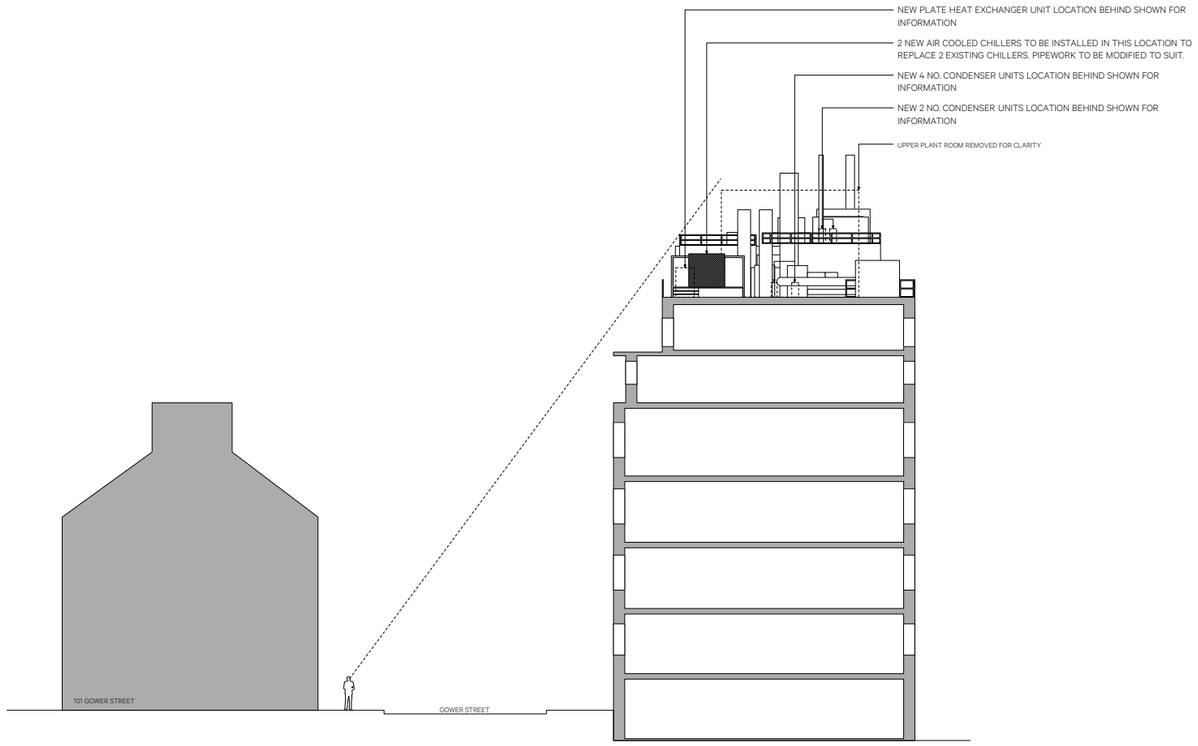
High level grilles to be replaced

New openings in brickwork with grilles

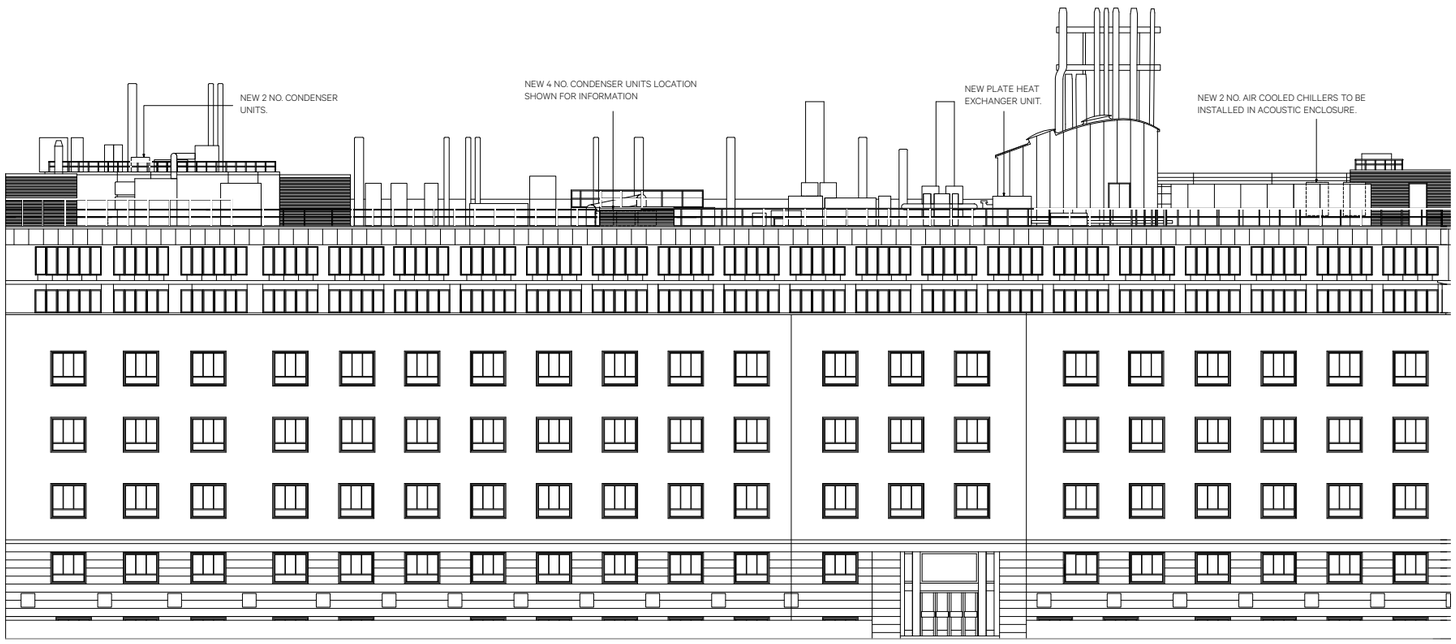
3.5 Front Elevation and Section

From ground level on Gower Street, the new plant installations will be largely hidden from view. The 2 no. new chillers will be inside an existing acoustic enclosure and the new condensers are behind a walkway, so the addition/ replacement of plant equipment will not be detrimental to the appearance of the Bloomsbury Conservation Area.

The section and elevation adjacent show the extent and location of new plant installations on the roof and their visibility from street level.



Proposed Section



Proposed Gower St. Elevation

Photo from ground level on Gower St looking up at roof

4.1 Plant Noise

The closest noise sensitive receptors are the assumed residential buildings opposite the Darwin building on Gower Street.

A noise survey has been undertaken to assess the impact of the new plant equipment on these buildings. The noise survey is included as part of the planning application.

4.2 Overheating Assessment

MEP engineers Buro Happold have advised that an overheating assessment is only required if the capacity of the comfort cooling is being increased in the building. They have provided the following statement to explain their position:

Buro Happold Engineers confirm that as part of the proposed works, no additional mechanical cooling systems are being installed on the project(s) for the sole purposes of providing occupant thermal comfort.

Where elements of the existing mechanical cooling systems are being changed, this will constitute a 'like for like' replacement rather than providing additional cooling capacity on to the system.

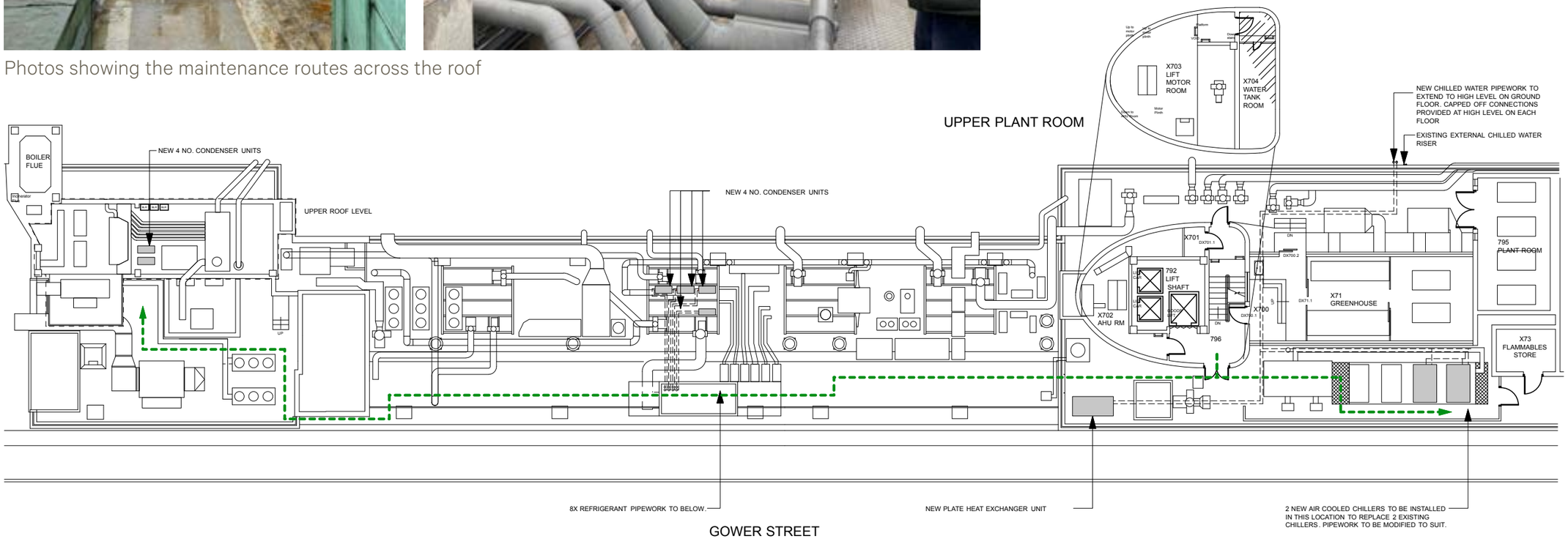
This applies across both projects (CLOE and CDB HoRD), where changes are a result of architectural modifications and existing systems being replaced at the end of their lifespan.

Any new cooling system(s) being installed as part of the proposed works (e.g. vapour compression refrigerant systems within specialist labs), are provided only to serve a dedicated scientific process and are operated and controlled separate to the existing mechanical comfort cooling systems.

Photos showing the maintenance routes across the roof

5.1 Access Statement

The roof is not publicly accessible, and the only access required is for maintenance purposes. Therefore the maintenance routes are not subject to compliance with Approved Document M. Maintenance access to the roof is from the main access core which extends to the upper plant room.



Maintenance access and fire escape route

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