DESIGN & ACCESS STATEMENT

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3.4 Alteration to a Listed Buildnig Added

UNIVERSITY COLLEGE LONDON PHYSICS BUILDING - 1ST FLOOR PHYSICS LABORATORIES

J: 1112 University College London 1st Floor Physics Laboratories / A341

University College London Physics Building 1st Floor Physics Labs

DESIGN & ACCESS STATEMENT IN SUPPORT OF LISTED BUILDING CONSENT

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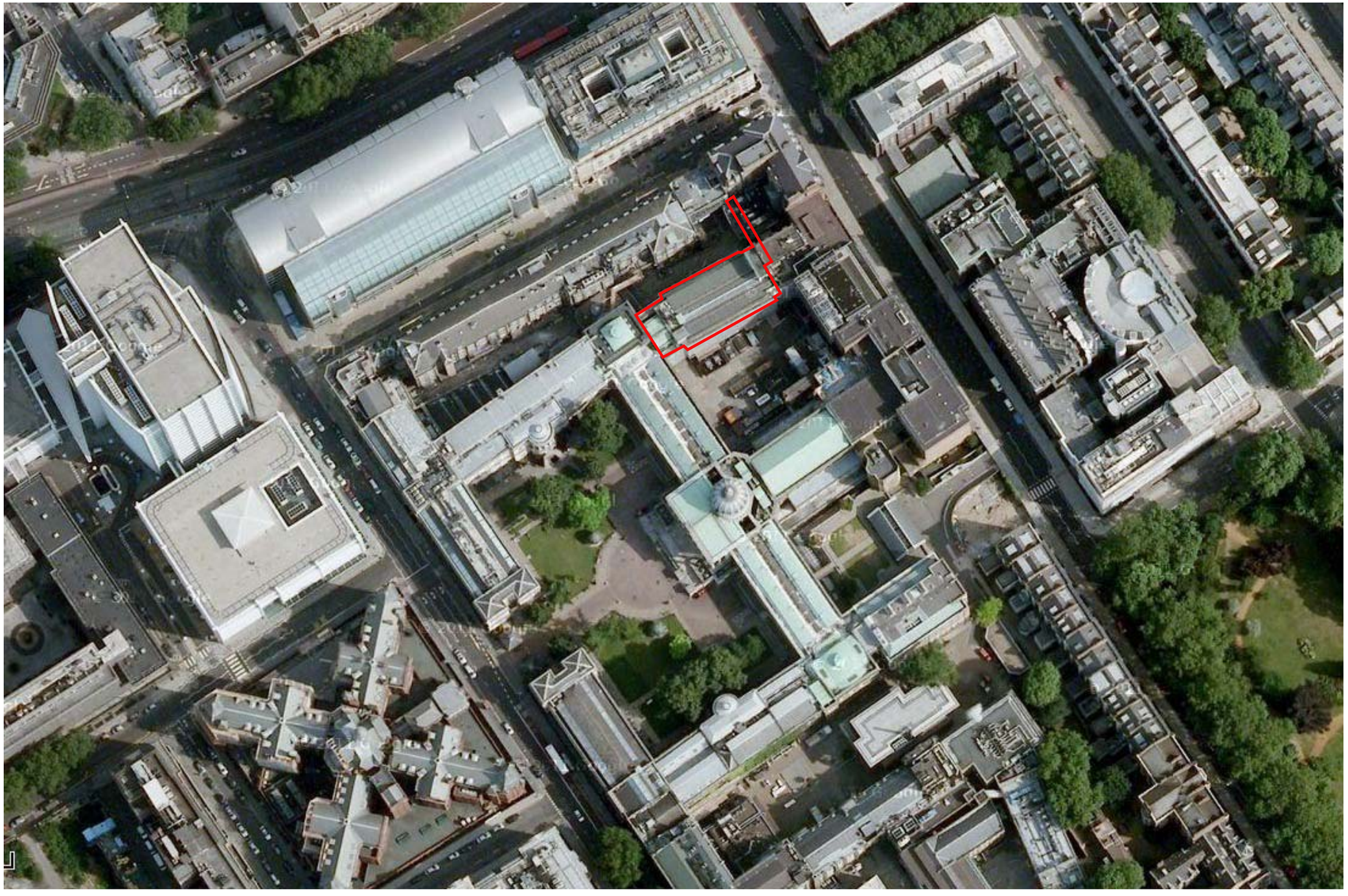


Aerial View _ Not to Scale

Existing site photos

1.0 Introduction

1.1 Brief summary of the proposed development:

Proposed renovation and refit of existing physics labs by installation of new floor surface, new cladding to the inside face of the exterior walls to improve thermal and light quality performance, new mechanical heating, cooling and ventilation systems, new storage and desk furniture. Some alteration of existing non-structural partition walls and relocation of doors. Proposed addition of plant machinery on roof on existing plant deck.

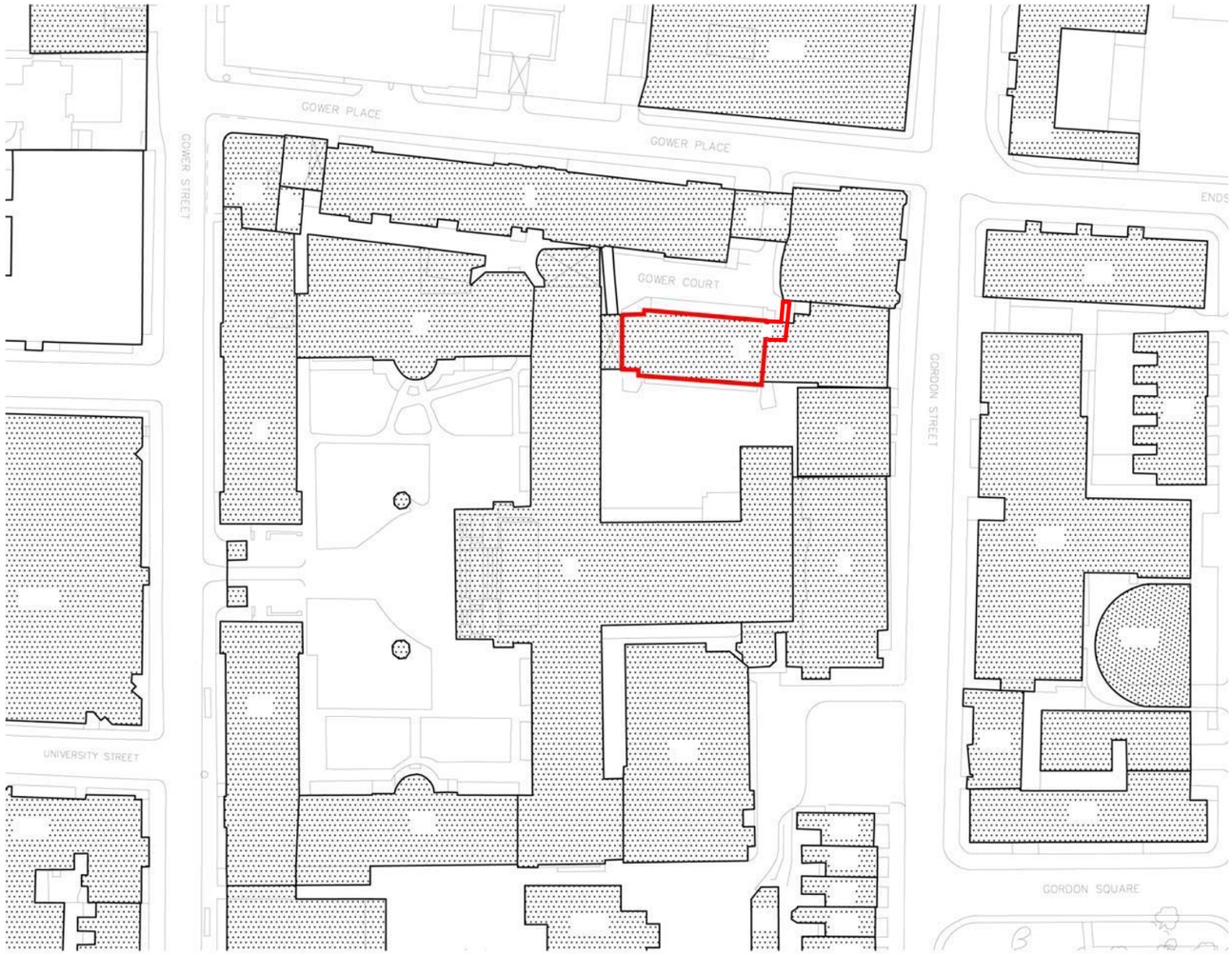
2.0 The Existing Site

2.1 University College London is an eminent centre of tertiary education and research spread across three campus sites around London - the Bloomsbury, Archway and Hampstead campuses.

2.2 The Department of Physics and Astronomy is based in the Physics Building located centrally within the Bloomsbury campus, adjacent to the Grade I listed Wilkin's Building and adjoined to it at the rear north-east corner. The Physics Building is of rectangular plan with five floors above ground and two below. The building is adjoined to neighbouring buildings on the East and West ends of the plan, while the North and South facades are left clear.

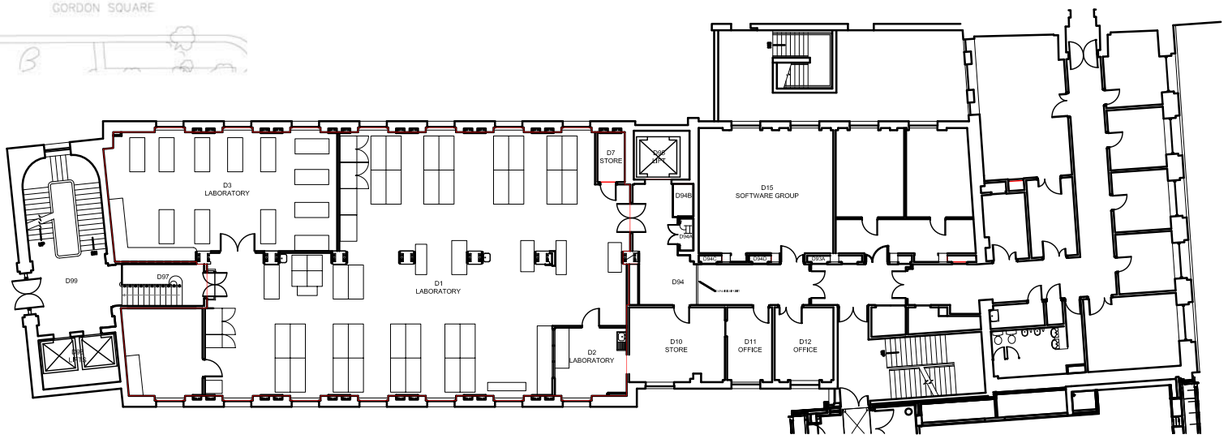
2.3 The building was built circa 1950-52, designed by architects AE Richardson and EAS Houfe. It supports teaching, research, administrative and support programmes centred around the Department of Physics and Astronomy. The site in question is located on the first floor encompassing the majority of the floor plan.

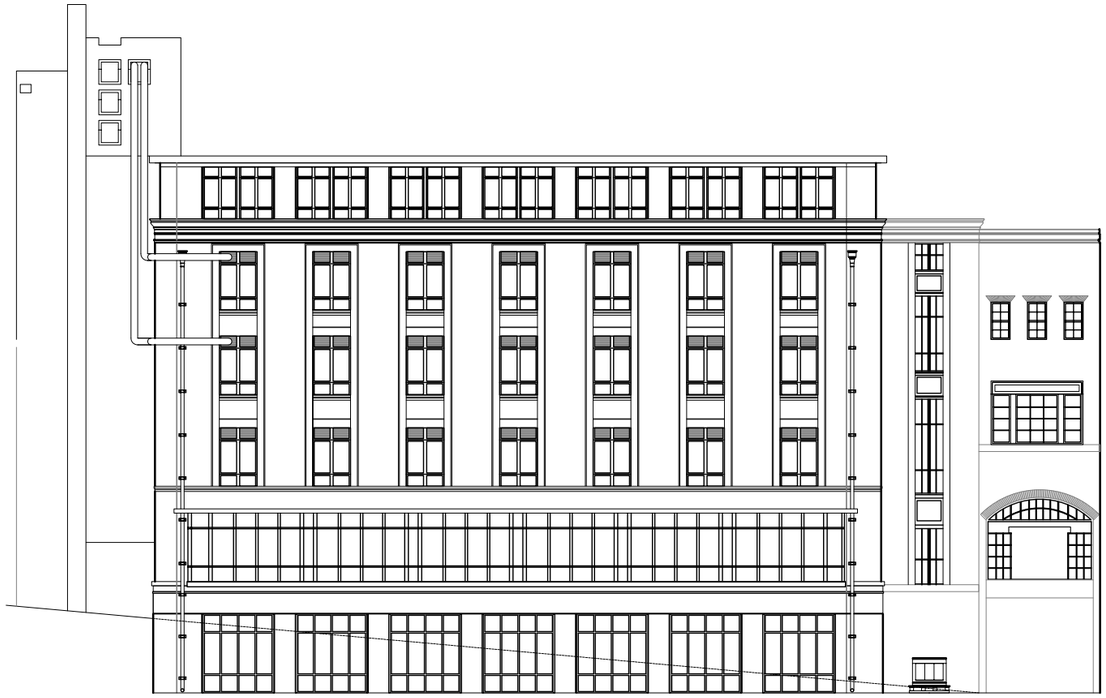
2.4 The laboratory environment is disorganised and out-dated, no longer adequately catering for the requirements of a modern scientific facility. In particular, there is inadequate climate control which results in intolerable working conditions during the warmest and coldest times of year. In general the laboratory lacks the type of clean, hygenic environment that has become the standard for modern scientific environments. The poor quality of the environment impacts negatively on the successful use of the space.



Proposed Development

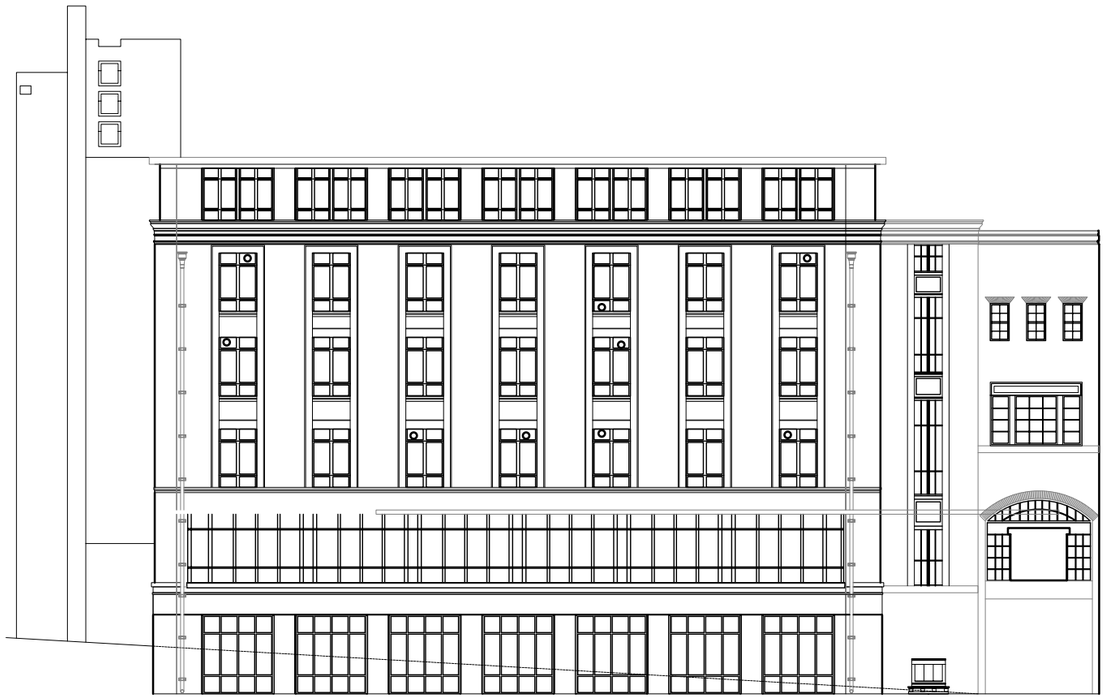
Existing Site Plan _ Not to Scale





Proposed North Facade

Proposed South Facade



Existing North Facade

Existing South Facade

Existing & Proposed Elevations _ Not to Scale

3.0 The New Proposals

3.1 Amount

The proposed development creates no new floor space but reconfigures and renovates the existing laboratory and support areas.

3.2 Layout

3.2.1 The proposed layout has been informed by its immediate context, namely re-enforcing the existing spinal circulation route and improving visibility of the stair. All doors, aisles and thoroughfares have been dimensioned to accomodate disabled users.

3.2.2 The key objectives of the design are:

- To create an ergonomic, efficient and programmatically adaptable teaching and learning environment through stripping out the existing partition walls and re-organising the plan;
- To enable a greater level of environmental control in the Laboratory environment through provision of air handling, heating, cooling, and improved thermal and acoustic insulation - achieved via local air handling plant and a wall lining system and secondary glazing.
- To improve the general quality of the teaching and learning environments through renovation of the floor surface, provision of modern bench furniture, re-cladding and making good the internal walls, improved lighting, and provision of adequate and streamlined storage.

3.3 Design and Appearance

The proposal seeks to bring the existing labs into the 21st century by presenting the laboratory environment as a clean, sleek and minimal space more in keeping with the method and practices of modern science. The current plan has become confused by subdivisions whose current layout is not fit for current teaching practices. The scheme proposes to remedy this by redefining the axial circulation route running through the building, improving visual connection and ease of use.
The scheme proposes lining the perimeter walls with painted timber panelling, integrating access to existing service risers and insulation. The wall lining is proposed to hold a secondary glazing system oversailing the existing windows to give added noise and thermal insulation.
A new suspended ceiling is proposed to conceal the proposed local air handling plant installed at high level between the existing downstand beams. The ceiling will be used to recess the proposed lighting fixtures.

Glazed doors are proposed for the two entrances to the labs, one set near the lift lobby and the other set accessing the existing stair enclosure. These doors are proposed to be set within local glazed partition walls, improving visibility of circulation and escape routes.
On the exterior of the building it is proposed to replace the uppermost window panes in the existing windows with ventilation louvres to feed into the local air handling plant. Many of these upper panes have already been removed and used to install local vents prior to the development of this scheme. the proposed louvres will be homogenous and sensitive to the appearance of the existing windows and may well improve the appearance of the facade compared to the scattered and untidy appearance as existing.
Finally, in light of UCL's current plans to develop the area immediately outside the south elevation as a campus social amenity area, proposed that the existing large extract ducts running vertically across the south facade be removed, and replacements be located on the less visible north facade.

3.4 Alterations to Existing Building

Pre-Application Advice
Pre-Application advice was sought from the Council (ref: 7453506) and the applicant received written advice (via email) from the Council's Senior Planner (Conservation) Development Management Team (West Area), Antonia Powers, on 14 December 2011.

In summary, the advice confirmed the following:

- The Physics building is included under the Grade I citation for University College (University of London) and although the building dates from 1950-1952 the 'interior appears to retain much of the original fittings'.
- The proposal to upgrade the laboratories was supported in principle, with the introduction of wall lining and suspended ceilings considered acceptable subject to 'acceptable design details' and providing the dropped ceiling level 'does not interfere with the appearance of the window openings and the visual and physical impact is kept to a minimum'.
- The relationship of the electrical trunking to the windows requires further design consideration.
- The introduction of vents to the windows 'also needs a particularly sensitive solution'.
- The applicant to consider reuse or salvage of the hardwood benches.
- The removal of the stair – considered to be 'essentially part of the homogenous character of the listed interior' would not be supported, however it was suggested the applicant consider forming 'window type' openings within the stairwell at higher level.
- Alterations to internal partitions would need to be considered in relation to the stair and circulation routes.

The Setting of the Physics Building and Laboratories

The Listing citation of 10th June1954 records the following buildings:

- Central Block c.1827-29 by William Wilkins and J P Gandy-Deering
- Flaxman Galley and Library c.1848 by T L Donaldson
- South Wing c.1869-76; North Wing c.1870-1881 both by T Hayter Lewis
- North West Wing c. 1923 by A E Richardson
- South Junction Block 1950, North Junction Block 1951, Physics Building 1950-52 by A E Richardson and EAS House

The Physics Building is attached to the North Cloisters of the original 'Wilkins Building' and is connected by a staircase which mediates the geometry on plan of the two buildings. The Physics Building is arranged at various split levels in contrast to the North Cloisters and reflects the differences in storey height of the respective buildings. The Main Quad is predominantly two storeys plus an attic storey, whereas the Physics Building features ground plus four storeys above a double basement. At the West end of the laboratories an existing stair, perpendicular to the main stair, connects the split levels with the original building,
The building is arranged with offices supporting the Department of Physics and Astronomy at ground and fourth floor levels, with teaching laboratories arranged on levels 1, 2 and 3 within the main body of the building. Internally, the circulation spaces between the various buildings achieve a relatively consistent visual appearance, featuring painted plaster and oak joinery.
The main entrance to the building is accessed from Gower Court, with students and staff either using the east stair or the service lift to gain entrance to the upper floor laboratories at the East end of the building.

Service access to the northern part of the campus is available from Gower Place, under the Student Medical Centre and into Gower Court to the North of the Physics Building. Access to the 'Physics Yard', south of the Physics Building, is provided alongside the linking staircase referred to above, which runs beneath the Physics Building.
Externally, the north and south elevations to the Physics building feature unadorned brick facades , divided into a stripped classical form of base (basement and ground floor offices), middle (teaching laboratories to floors 1,2 &3) and top ("clerestory" offices at fourth floor level). Windows are generally single glazed steel framed with stone framed surrounds. These are grouped vertically for the central laboratory floors with stone infill/spandrel panels between respective window head and cill levels.

On the South elevation, two existing fume cupboard extracts at 2nd and 3rd floor level run horizontally from the high level vents to rise vertically alongside similar flues serving the lower levels. Mindful of UCL's emerging proposal to insert a new deck within the Physics Yard, we discussed the possibility of relocating these high level vents to the North elevation with the Conservation Officer and this has been adopted within this proposal. The extract fans to these fume extracts are currently located in an existing roof top plant room and there are no changes to proposed to either the fans or exhaust locations at high level.

Existing Laboratory Interior

The principal entrance to the first floor laboratory is located at the east end of the lab is currently offset from the implied circulation zone running alongside the central row of columns. The west entrance to the labs is only used by staff and is generally secured by roller shutters when not in use.

The existing laboratory interiors feature approximately 14m wide spaces divided by a central row of columns. It is unclear at this stage whether the building is framed in steel or reinforced concrete with a loadbearing masonry façade, but given the age of the building it is quite possible the structure is of a hybrid type.

The floor plates are divided into seven bays, with five equal bays in the centre at approximately 3.6m centres, with the end bays accommodating different geometries and accommodating differing conditions to connect to adjoining buildings. Each structural bay is defined by lateral downstand beams bisected by a shallow central spine beam.
The laboratory space at first floor level has been subdivided: a darkroom and office are arranged either side of the Western stair and a technician's office is located at the eastern end of the lab.
The Laboratory space is naturally lit and ventilated by steel 'Crittall' type windows divided into six sections, comprising four small sections at low and high level, the latter operable by a gearing mechanism. The central two windows are hinged casements. Solar gain is an issue on the South facing façade which is partially addressed by internal blinds.
Building services are contained within the central columns and perimeter walls, which act as service risers for small services distribution.
Typically students are carrying out experiments in the labs for three hours at a time and the heat generated by the combination of student numbers, lighting and equipment means the building is unable to control the environment comfortably throughout the year.

Historical Significance

The Laboratory interior is a simple, functional and unadorned space, characterised by the rhythm of columns, downstand beams and perimeter windows, providing a framework for academic experiments.
There are no striking architectural details which we consider need to be retained and we consider the form and structure of the space are the important characteristics to recognise in approaching a redesign of the interior.

Response to Pre-Application Advice

Following receipt of the Council's Pre-Application advice a 14.12.11, the proposals have been amended to respond to the points raised as set out below:

1. Suspended Ceilings - In order to address the environmental shortcomings of the buildings a new energy efficient modular chilled beam systems is to be installed within the bays in between the existing downstand beams. The chilled beams will incorporate a heat recovery unit for supply and extract ventilation and active chilled beams for heating and cooling. Each chilled beam will draw fresh air via the existing high level vents to each window. This equipment is contained with a new suspended ceiling which incorporates a detail at each window head to address the transition of ceiling to window head.
This system maximises ceiling heights and provides a solution capable of implementation to the upper level laboratories (where headroom will be more challenging) and avoids the introduction of large ventilation ductwork which are considered to be visually detrimental to the space.
A new plasterboard bulkhead is proposed to run down the centre of the laboratory, mirroring and reinforcing the circulation route internally from the relocated east lab entrance, so that it aligns with the existing stair at the west end of the lab. The bulkhead conceals chilled water pipework connecting the chilled beams to the external condensers.

2. Wall Lining - The proposal includes the installation of new secondary glazing units (which reflect the existing central window division) and the introduction of a new lacquered panel system to the perimeter wall. Bench positions have been repositioned on plan to coincide with the solid wall elements, providing opportunity for audio visual projects on the wall surface at each bench location.
In conjunction with the reorganisation of the laboratory plan, the proposal to line the external walls seek to reinforce the legibility of the internal space.

3. Electrical Trunking to the External Walls - Currently the power and data trunking runs above the existing bench levels and in so doing, also runs across the window openings. The proposal is to relocate new trunking below cill level and integrate this with the new wall lining to improve the visual relationship of window, benching and trunking.

4. New Louvres to Windows - The integration of new building services to control the environment more successfully has been considered in the context of minimising the impact on the existing structure and fabric.
The chilled beam system provides a bay by bay solution, avoiding long runs of ventilation ductwork usually associated with other systems, which could compromise both headroom and legibility of the space. Through the adaption of the existing high level vents within the steel windows, it is proposed to incorporate new louvres, powder coated to match the existing window frames, which will provide fresh air to each of the chilled beam/heat recovery units.
It is proposed this project be procured using a Design and Build contract and therefore the selection of the actual louvre would rest with the contractor in order to ensure this correctly meets the performance criteria of the building services equipment . We would therefore be happy for this to be a condition of the consent.

5. Existing Hardwood Benches - It is not proposed to re-use the existing benches as part of the refurbishment, however, UCL are currently seeking other areas within the estate where they can be reused. In the meantime it is UCL's intention these be placed in storage.

6. Existing Stair - Following the advice of the Conservation Officer, the proposal to replace the existing stair at the west end of the labs has been omitted and it is now proposed to retain the existing stair and enclosure. However, it is still thought beneficial to improve the relative transparency of the labs when viewed from the main stair landings and we therefore propose to replace the existing timber glazed doors with a contemporary metal framed glazed screen, forming an L-shape on plan.

4.0 Accessibility

The scheme proposes no changes to the existing access to the building. Level access is already provided elsewhere in the building. The entire scheme is proposed on a level floor plane and therefore we predict no access issues within the lab.

5.0 Sustainability

7.1 Building Services Energy Statement

The design of the building services installations is concieved to be as energy efficient as is feasible. Air handling is achieved locally allowing for smaller capacity and therefore smaller energy usage.

6.0 Summary

The proposed scheme aims to revitalise the UCL 1st floor Physics Labs through the following means;

- Reorganising the plan to create more efficient spaces; increase adaptability of space.
- Introduce mechanical air handling, heating and cooling to stabilise the environment, improve user experience.
- Introduce wall cladding and secondary glazing to reduce noise, improve insulation, improve appearance.
- Clarify and make visible circulation routes, improve security.
- Introduction of modern storage, lab furniture, flooring - to improve hygiene, organisation, ergonomics, appearance.
- Introduction of new suspended ceiling to conceal local air handling plant, recess lighting.