

**REFURBISHMENT OF BUILDING R2**  
**AT RUTHERFORD APPLETON LABORATORIES**  
**OUTLINE PROJECT BRIEF**

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## **R2 INTERNAL REFURBISHMENT AND RECLADDING**

### **1. OUTLINE PROJECT BRIEF**

#### **1.1 Purpose of Outline Project brief**

The purpose of this Outline Project Brief is to describe the background of the Project and to specify the Science and Technology Facilities Council (STFC)'s requirements for the refurbishment of building R2.

Due to the early stage in the project, the Brief is very broad and generic. However during the next Stage, STFC's Building Projects Group (BPG) will work with Stakeholders, Users, the Project Manager, Design Team and Quantity Surveyor to develop and refine the Brief such that it fully reflects all STFC's requirements for the Project.

#### **1.2 Background**

Rutherford Appleton Laboratory (RAL) in Harwell Oxfordshire was formed following mergers of the Rutherford High Energy Laboratory, Atlas and Appleton Laboratories in 1975 and 1979 respectively, the with a diverse remit to support a wide range of university research activities. The Rutherford High Energy laboratory has been on the Chilton site since 1957.

Approximately 1,200 staff at RAL supports the work of more than 10,000 scientists and engineers, chiefly from the university research community. RAL's pioneering research in areas such as energy, security, healthcare and the environment addresses important challenges facing society.

Building R2 is a 5 and 4 storey office building with a single storey laser lab and support facility to the left of the office building, this area is not part of this refurbishment study. R2 is situated centrally on the Rutherford Appleton Laboratory site. The area of the building dates back to 1964 when it was constructed as the R2 Extension, providing approximately 3020 square meters of mainly office space with, an electronics lab along the north wing of the ground floor

The building is predominantly a concrete construction with the concrete frame providing a feature. The main facades is in- filled with windows and infill panels below providing a tired monotonous appearance, the ends of the building are brickwork.

The windows are single glassed metal framed that are in need of replacement from a maintenance and environmental stance. Some of the windows can't be opened for safety reasons.



The view of the rear of the building (below) is made up of single store offices and labs of various disciplines. The four and five storey building seen in the photograph shows the relationship between the original R2 (single storey) and the R2 extension. The R2 extension is the focus for the feasibility



The quality of accommodation is deemed poor and not very inviting to its occupancy. Apart from local refurbishment works during a fire door replacement project in 2011–12 the building hasn't been redecorated for over 20years.

The internal layout is characterised by an ad-hoc development and generally the layout does not meet the standards that STFC wishes to achieve as a centre of scientific excellence that is world renown. The current internal arrangement of the building at the upper floors is characterised by a series of small cellular offices formed in non-loadbearing masonry or lightweight stud partitions, generally matching the structural column positions. An offset spine corridor runs through the building,



The corridors vary between 1.1 to 1.5m wide. The offices running around the inner elevations are small occupied by 1 person with an average floor area of 7.5m<sup>2</sup>, the outer elevation having larger offices with an average floor area of 11.5m<sup>2</sup> where up to 3 people share. The cellular arrangement of offices provides high levels of privacy for the room occupants but is relatively inefficient in terms of space utilisation, creating offices that lack flexibility to accommodate changing needs and space to accommodate the potential increase of up to an additional 70 staff proposed by ISIS.

The Ground floor consists mainly of an electronics lab running along the north elevation leading to an associated loading bay on the east elevation. The south elevation is a link corridor between the building entrance, main staircase and the two storey original R2 building, all of which are dated and in need of refurbishment.

There are two link bridges providing covered access route between R1 on the second floor, this also provides covered access to other building via R1, and R3 on the first floor. The R3 link is an important connection between the ISIS engineers housed in R2 and the Scientists house in R3.

The roof is covered with a 3 layer felt system that was laid in 1998 some 17years ago so is past its best performance years. There are no conclusive records indicating the makeup of the insulation.

The building has a basement running along the north elevation; this houses a radiation store, switch room and boiler room



### 1.3 Site and Buildings

The site and the buildings are owned by the Science and Technology Facilities Council (STFC)

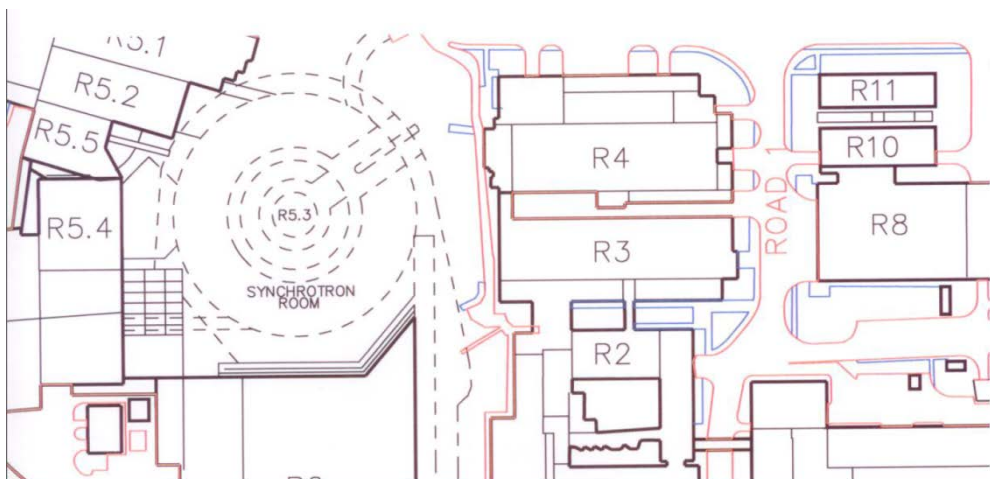
The boundaries to the R2 building are as shown in the local site plan.

North - R3 and R4

South - R7 Artimis

West - R2 dormitories and labs (original R2 not currently in the scope of work)

East - R1.



## 1.4 Site Restrictions and Hazards

RAL, DLS and the Harwell Oxford Campus will remain fully operational and it is essential that work is carried out with minimum disruption to these facilities;

Existing services, drains etc. (which serve RAL and DLS) shall be kept operational at all times. Any shutdowns, connections, diversions etc. will require be carefully planning and agreeing in advance;

STFC have an Asbestos Register (based on the old Type 2 surveys) which confirms the presence of asbestos throughout Building R2. A refurbishment (old Type 3) survey will be undertaken in advance of the main refurbishment contract.

Notwithstanding the above there is the possibility that further asbestos may be discovered. In such cases, work must stop immediately, the area vacated and the Client notified. STFC have a term registered asbestos contractor who will employ the appropriate asbestos surveyors and laboratories to deal with any asbestos found.

## 2. STRATEGIC OBJECTIVE

There are several aspects of BIS Government Estates Strategy that are relevant to this project. BIS want to achieve greener properties and ultimately greener estates resulting in lower production of greenhouse gases and waste. By being more energy efficient using greener products when constructing or refurbishing the building along with new modern building services we aim to achieve a more environmentally friendly building and working place.

The floor area currently being occupied by a desk space area that isn't in line with the new guidelines of no more than 10m<sup>2</sup>, ultimately for new builds or major refurbishments this should be 8m<sup>2</sup> per desk space. STFC have previously applied 8.5m<sup>2</sup> per desk space to optimising the configuration of the internal layouts embrace the needs of the users the "Work Place Standard" will be met by this project.

This project addresses the refurbished of office accommodation will enable R2 to accommodate greater numbers of staff . Current occupancy levels of 1<sup>st</sup>, 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> floors total 115, ultimately a target of an additional 70 occupants should be aimed for. As staff will be relocated in to R2 this will release property elsewhere on the STFC site for alternative use (for example as part of the Harwell-Oxford Campus) or demolition; and the external recladding, new roof and renewal of services will significantly improve the building's energy efficiency.

STFC's Corporate Strategy aims for World Class Research, World Class Innovation and World Class Skills, and identifies six strategic themes to achieve this:

- Solutions for Global Challenges
- Inspiring and Involving
- Sustaining Research Excellence and Leadership
- Effective Knowledge Exchange
- Strengthening Strategic Partnerships
- Building International Influence



A refurbished Building R2 will contribute to this in varying degrees by:

Having a building that looks part of a modern/state of the art estate that matches the aspirational nature of the work carried out;

Improving the internal quality of the environment, inspiring the occupants, helping attract new staff and scientific programme funding, and improving efficiency of use of assets;

Improving the thermal efficiency reducing to reduce fuel consumption and CO2 emissions, saving on running costs and significantly reducing maintenance costs thus allowing more resources to be spent on science.

The success of this proposed project will be judged on the realising the benefits described, meeting the factors such as:

- Delivering a modern looking building both inside and out.
- Meets all current statutory requirements
- Has an increased occupancy ratio
- Has a good thermal envelope
- Reduced maintenance cost.

### **3. BUILDING PROJECT OBJECTIVES**

- To actively involve Stakeholders and Users in the project;
- To meet the Client's Brief:
- To meet the client and STFC's space management requirements. 8.5m<sup>2</sup> per person.
- To provide aesthetically pleasing, weather-tight cladding system,
- To carry out the work in such phases and in such a manner as to minimise disruption, inconvenience and nuisance to occupiers and to the Establishment as a whole;
- To remove asbestos from the building.
- To complete the Project within the agreed budget,
- To design and detail the external fabric to minimise the effects of staining and dis-colouration
- To minimise maintenance and operational costs.
- To provide robust construction;
- To design and construct in accordance with the health, safety and security needs of the Project;
- To upgrade or replace the building services to improve operational efficiencies
- To reduce energy costs.

## **4. PROJECT DEFINITION AND BRIEF**

### **4.1 Overall Project Scope**

To refurbish and upgrade Building R2 to provide a building worthy of the world-class scientific and engineering work taking place on the Rutherford Appleton Laboratory site.

### **4.2 Building Project Brief**

The Project comprises a comprehensive refurbishment of Building 2 to provide good quality modern accommodation equivalent to that available in the current office market. However since this is an existing building, meeting these standards will not be completely attainable due to the existing floor plate, height, structure, location of staircases, lift, services risers etc.

The purpose of any new layouts of accommodation is to:

- Retain flexibility of accommodation such that boundaries between groups can be delineated.
- Maintain security i.e. allow areas to be locked off, especially for any tenants.
- Maintain the covered circulation route between buildings.
- Improve space efficiency (8.5m<sup>2</sup> pp)
- Improve working conditions for occupants.

Space utilisation options include:

- Wholly open plan 8.5m<sup>2</sup> per person
- A flexible mixture of grouped open plan areas of differing sizes
- A combination of open plan supported with cellular offices and meeting rooms
- A cellular based solution.

These will be investigated in depth during the next stage.

The depth of the Upper Floors allows the rooms to be naturally ventilated. This coupled with improvements to the fabric of the building should ensure a comfortable environment. The South and west elevation are subject to direct sunlight which in the summer months can prove uncomfortable as the cellular layout does not allow for efficient natural cooling with air flow, additional comfort cooling would benefit occupants especially during the hottest times of the calendar year.

The depth of the building and ceiling heights at Ground Floor level is best suited to non-office activities such as those currently occupying the areas. Most of the areas have an established use that is not expected to change in the near future. It is, therefore proposed that internal refurbishment at Ground and Lower Ground Floor levels would be carried out as and when areas change functionally. The exception would be the public areas.

Work on the Upper Floors, 5 on the wing running north south and 4 on the wing running east west, would involve stripping out the building back to the structural frame and taking out some of the internal walls. The stripping-out would be far less at Ground Floor and Lower Ground Floor levels due to the type of accommodation and the need to keep facilities operational.



More specifically the Upper Floors would have:

- New partitions,
- Suspended ceilings, floor coverings, etc.
- New / additional telephone and data outlets
- Additional power outlets
- Completely refurbished toilet areas
- New doors / fire doors throughout
- Some mechanical ventilation/cooling
- Complete Re-wire of the electrical network.
- Green measures such as solar glazing/bris soleil
- New profiled energy efficient roof

The public areas of the Ground Floor would have completely refurbished corridors, entrances, staircases and any other public areas including replacing all doors, redecorating, new floor finishes, new lighting and new ceilings. Data infrastructure and other services running through these areas are to be renewed.

The court yard area will requires stripping out and given an inviting face lift to form a usable space possible forming a covered atrium. The current link corridor between R2 extension and the original R2 running east to west requires a complete refurbishment of the following elements:

- New ceilings
- New floor covering
- New windows
- New wall covering

The scope of the building works will be refined as the Brief develops but can broadly be summarised as follows:

- re-roofing or over-roofing;
- re-cladding or overcladding the elevations;
- upgrading to achieve statutory compliance;
- complete mechanical and electrical overhaul.
- improving thermal efficiency, thereby reducing energy costs;
- stripping out and refurbishing the office floors;
- increasing occupancy by considering the extent of cellular and open plan offices;
- refurbishing the entrances, corridors, staircases, toilets and other public areas on the Ground and Lower Ground Floors.

Inevitably, this amount of refurbishment would require staff to be temporarily housed elsewhere. However, there is limited space within existing building on site that could house all staff temporarily; temporary accommodation could be an option. It would be more cost effective, therefore, to phase the work to allow staff to be decanted at the rate of say 50 at a time. The possibility of over cladding (i.e. leaving the existing curtain walling in place and encapsulating the asbestos lower panels) will be investigated. If viable, this would reduce the overall programme, reduce decant time, and save money.

The removal of the asbestos panels should be given serious consideration, to encapsulate will prevent monitoring of the asbestos condition.

The refurbishment of the electronics laboratory areas on the ground floor may be instructed as an increase in scope of this project or could be carried out as a separate project at a later date as it is self-contained with access from the west end of the lab from the rear corridor. The loading bay has a set of folding doors that are from the original construction and require replacing with a roller shutter door.

The Building Project will include fitting out items like:

- mirrors;
- fixed shelving;
- signage;
- whiteboards ;
- projection screens,
- blinds;
- carpets

The Building Project will specifically exclude

- scientific equipment,
- loose furniture;
- audio-visual equipment,
- paintings etc.
- non-statutory signage, directories etc.

It is possible that other refurbishment / construction contracts within the Harwell/Oxford Campus may be concurrent with the refurbishment of Building R2. This will be confirmed once a proposed time scale is agreed.

## **5. STATUTORY APPROVALS**

### **5.1 Planning Permission**

The Architect in conjunction with the client will on behalf of STFC Rutherford Appleton Laboratory, make an application for Planning Permission to the Vale of the White Horse District Council.

The Vale of White Horse District Council Building Control Department should be contacted at an early stage and the subsequent Plan and Inspection applications made. RAL's Fire Officer should also be involved in these discussions.