

3.0 Site Survey Descriptions

The site incorporates several distinct elements that make up the 'listed building', though they are now in separate usage and only part is subject to the current proposal. In its entirety, based on the Historic England listing map [Plates 3.00-3.01] the listed building incorporates the core building fronting Coupland Street with the adjoining north-south wing, part in use by the Museum, as well as the former Dynamo House and the frontage of the Hopkinson Memorial Wing along Bridgeford Street. The modern entrance block to the museum on Oxford Road, adjoining the Hopkinson Memorial Wing, is explicitly excluded in the listing entry. Only the main block on Coupland Street, including the third floor of the north-south wing, are subject to the proposals.



3.01 3D Aerial (Google Maps)



This is an A4 sized map and should be printed full size at A4 with no page scaling set.
Name: Manchester University Rutherford Building and Hopkinson Memorial Wing

3.00 Map from the National Heritage List (Historic England)

Heritage Category:	
	Listing
List Entry No :	1402635
Grade:	II
County:	
District: Manchester	
Parish: Non Civil Parish	
For all entries pre-dating 4 April 2011 maps and national grid references do not form part of the official record of a listed building. In such cases the map here and the national grid reference are generated from the list entry in the official record and added later to aid identification of the principal listed building or buildings.	
For all list entries made on or after 4 April 2011 the map here and the national grid reference do form part of the official record. In such cases the map and the national grid reference are to aid identification of the principal listed building or buildings only and must be read in conjunction with other information in the record.	
Any object or structure fixed to the principal building or buildings and any object or structure within the curtilage of the building, which, although not fixed to the building, forms part of the land and has done so since before 1st July, 1948 is by law to be treated as part of the listed building.	
This map was delivered electronically and when printed may not be to scale and may be subject to distortions.	
List Entry NGR:	SJ8450896622
Map Scale:	1:1250
Print Date:	8 February 2023
 HistoricEngland.org.uk	

3.1 The Setting of the Building

3.1.1 The Wider Setting

The building is situated within the University of Manchester campus, off the primary axis of Oxford Road, an eclectic mix of historic and contemporary buildings dating from the late 19th century onwards many of which were purpose-built for the university, lending a sense of functional coherence. This long linear spine is anchored by the dominant presence of the central collection of buildings around the Old Quadrangle, including the museum and Whitworth Hall, an exceptional example of a 19th century institutional architectural composition, in a neo gothic style, which establishes and orientates the academic-focused townscape.

3.1.2 The Immediate Setting

The Hopkinson Memorial wing fronts Bridgeford Street, a route well-integrated into the university's public realm. This road is flanked with an eclectic mix of 19th, 20th and 21st century buildings drawing a functional coherence from their university usage. This begins with the contrast between the heavily embellished Edwardian Baroque former Department of Metallurgy Building (Grade II) and the smaller-scale red brick visually restrained former townhouses at 176-188 Waterloo Place (Grade II), the only remaining fragments of the earlier domestic townscape in this area (dating to the 1830s).

The southern frontage is more continuous, including the Hopkinson memorial wing, a relatively restrained red brick frontage, with brick and stone banding,

articulated vertically by four gablets topped with finials, and finished with a series of transom and mullioned windows inset under segmented arched headers and a central recessed bay. This adjoins an expressed, lower, gabled bay with larger arched opening with inset window below and a recessed section of four bays with hipped roof.

This is contrasted to the northern side of the road by a series of larger, singular, buildings including the 20th century Humanities Building which by virtue of its design and relationship to the surrounding public realm positively contrasts with the continuous frontage of the earlier buildings, representing an evolution in the planning and execution of institutional buildings. [Plates 3.1.1-3.1.4].



3.1.1 Waterloo Place, Oxford Road



3.1.2 Southern frontage of Bridgeford Street



3.1.3 Frontage of the Hopkinson Memorial Wing on Bridgeford Street



3.1.4 Northern side of Bridgeford Street (right)

The main block of the Rutherford Building fronts Coupland Street. It is set away from Oxford Road behind an arch and bridge within the museum frontage, and as such is experienced more as part of an enclosed enclave. The area is dominated by the neogothic composition of the Beyer Building and Coupland Building 3, complemented by the more restrained interwar classicism of the red brick Whitworth Laboratory, the austere brick frontage of the mid-20th century part of Coupland 1, and contemporary extension to the museum. **[Plates 3.1.5-3.1.7]**. Set behind the main frontage, adjoined by a flat roofed one storey red brick extension, is the original entrance to the Hopkinson Wing, now part of Coupland 1 **[Plate 3.1.8]**. It echoes much of the architectural character of the main buildings – red brick with stone detailing including stone banding and window surrounds, with the frontage expressed as a gable.



3.1.5 Coupland Street looking East towards the site



3.1.6 Eastern end of Coupland Street



3.1.7 1950s part of Coupland Building 1 with Hopkinson Wing behind



3.1.8 Hopkinson Wing, now part of Coupland 1

3.2 The Building

3.3 The Building Externally

3.3.1 Front Elevation

The core of the front elevation is four bays wide, accentuated by a stepped gable over the third bay (left to right) with stone bands and topped with a finial. Fenestration is formed from a series of moulded white painted timber casements set into stone surrounds with hoods. Generally set into pairs, the gabled bay is accentuated with a collection of three windows. The façade is tied together with stone detailing, including lintel banding at ground and third floors, cill banding at first floor, and banding continuing the line of the transoms on the first floor, and finished with decorative cast iron downpipes with hoppers. The fourth bay includes the main entrance, expressed with a large stone porch and stone steps incorporating a triangular pediment, with a relief carving of the Universities' coat of arms and motto, octagonal columns, and cupolas, inset with a timber door and leaded windows [Plates 3.3.1-3.3.3].

The remainder of the front elevation is the adjoining north-south wing, a further four bays wide, stepping up to a larger gable, again topped with finial. This frontage continues much of the detailing of the remainder of the elevation, including the lintel, cill and transom level stone banding, and echoes the banding on the gable at a larger scale, though windows are generally singular rather than set into pairs. There is a heavier level of embellishment, however, to the second floor and above with windows, becoming smaller above

the third floor, set into a double height stepped stone surround tied together by continuous mullions. To the gable is also visible two sets of paired gothic niches [Plate 3.3.4].



3.3.1 Front Elevation



3.3.2 Front porch



3.3.3 Front elevation of the adjoining wing



3.3.4 Indicative window example

3.3.2 Rear Elevation

The rear, north elevation is visibly plainer with rougher brick, visible only to its upper portion from the west but characterised by a fenestration pattern of timber casements set into smoother brick reveals under segmented headers. Stone transom and mullioned surrounds are evident at the staircore to the eastern end of the elevation, and stone transoms to the first floor. The elevation also incorporates a cast iron downpipe with decorative hopper. The rear elevation of the adjoining wing is almost wholly obscured to the exterior by the modern extension to the museum, with only the upper brick gable visible [Plate 3.3.5].



3.3.5 Rear elevation

3.3.3 Return Elevations

The east return elevation is the adjoining wing and is wholly obscured from the exterior by the modern extension to the museum up to the first floor. Above this is visible a series of stone and brick buttresses between which are pairs of transom and mullioned casement windows in stone surrounds. The southernmost bay is expressed with a gabled dormer, aligned with the front pitch of the main core of the building, and echoes the stepped window surround on the frontage at a smaller scale.

The west return elevation is fronted by a modern ramp leading to a timber and glazed access door set into a stone surround with plain lights above. This elevation is formed from three primary bays, with the outer two bays gabled, topped with finials, and decorated with banding, demarcating the pitched roofs behind. The stone banding from the front elevation continues only to the southern half of the elevation.

The central bay is defined by a series of French doors, which appear more modern, in stone surrounds on each floor. The first floor leads out to a small balcony, with a small single window in a stone surround, and the second floor leads out to a larger balcony, spanning the three bays, both with decorative railings and supported by stone corbels.

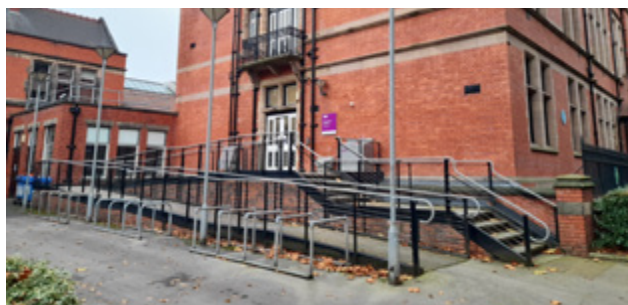
To the northern bay at the second floor a bay window, within a large stone surround, with a smaller one light casement window to the southern bay, again in a stone surround but incorporating a hood. A further small window is set next to the central French doors,

with a much simpler lintel and cill. The elevation also incorporates cast iron downpipes and flues with decorative detailing.

Adjoining the door on the north side are two small apertures with a projecting stone ledge, and a further single aperture with stone ledge set further along the northern bay. These, as part of the building's original design, enabled sunlight to enter the room beyond which originally housed a spectrograph [Plates 3.3.6-3.3.10].



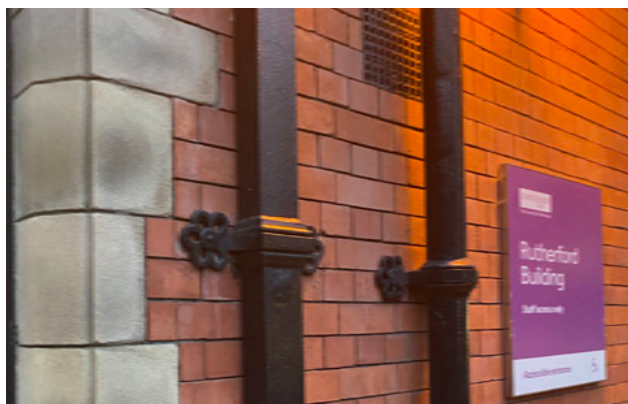
3.3.6 West return elevation



3.3.7 Ramp leading up to west return elevation



3.3.8 West return elevation as it meets the rear elevation



3.3.9 Downpipes and flues



3.3.10 Closeup of the stone ledges (above the balcony) and apertures used for light experiments



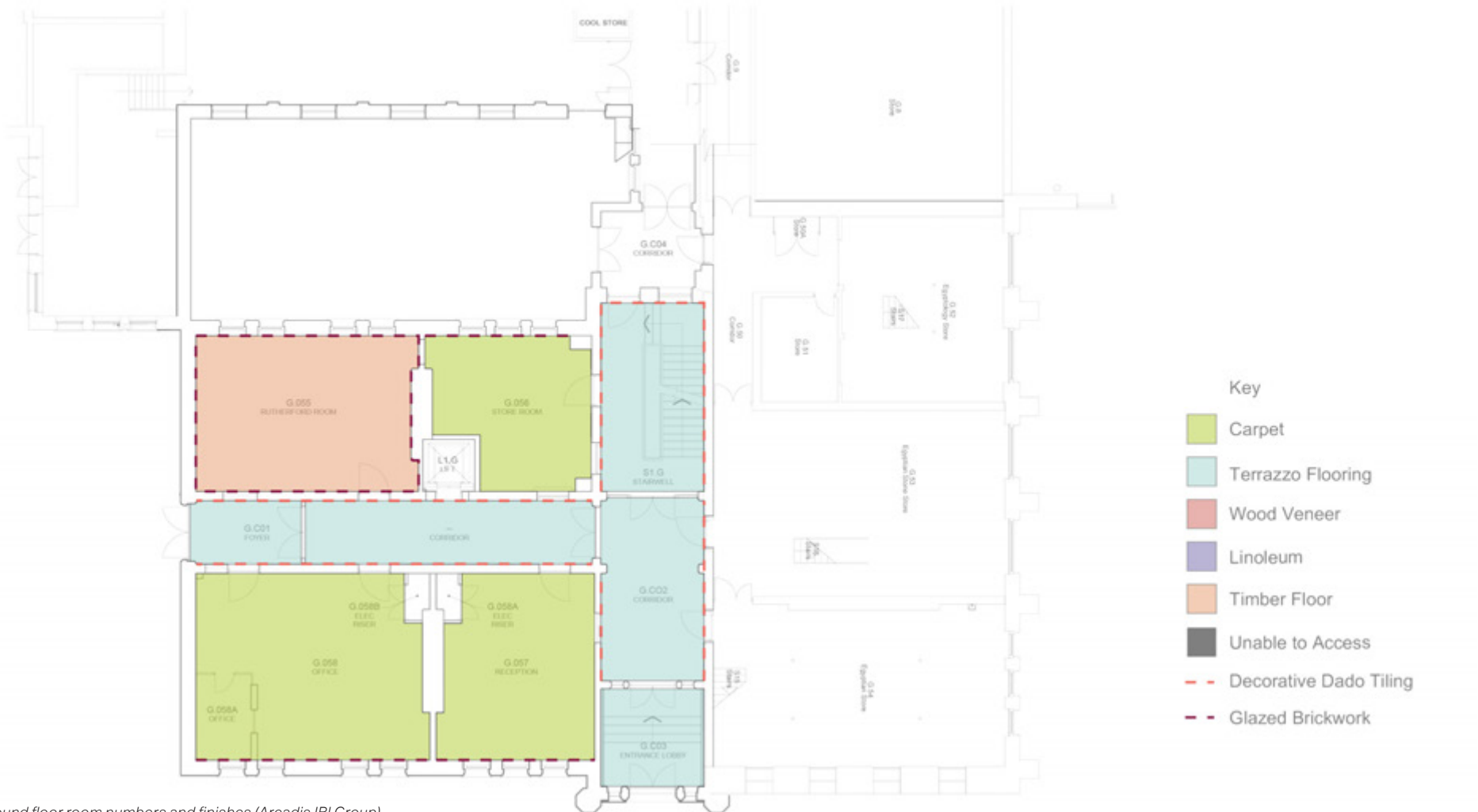
3.3.11 View of the roofscape along Bridgeford Street from University Green

3.3.4 Roof

To the core of the building, two primary double pitched roofs-- incorporating a chimney stack to each-- with a smaller central pitched roof within the valley demarcating the central corridor with flanking rooms either side below. The rear pitch incorporates a stepped-up flat-roofed area to the northeast corner, originally intended for use as an observatory with an octagonal dome (no longer extant). Roofs are set behind a stone parapet. The valley gutter leads to an access ladder to the adjoining wing with small flat-roofed access door. The adjoining wing is a continuous double pitched roof broken only by a single large brick chimney stack and a series of ventilation towers / windcatchers, and the dormer aligning with the main north-south range. Roofs are finished with clay tiles. The roofs, given scale and enclosure, are generally shielded from the wider townscape. The parapet to the rear elevation and gable end of the adjoining wing can be seen from the surrounding area as an amalgamated part of the university townscape, though the roofscape is dominated by the Beyer Building [Plate 3.3.11].

3.4 The Building Internally

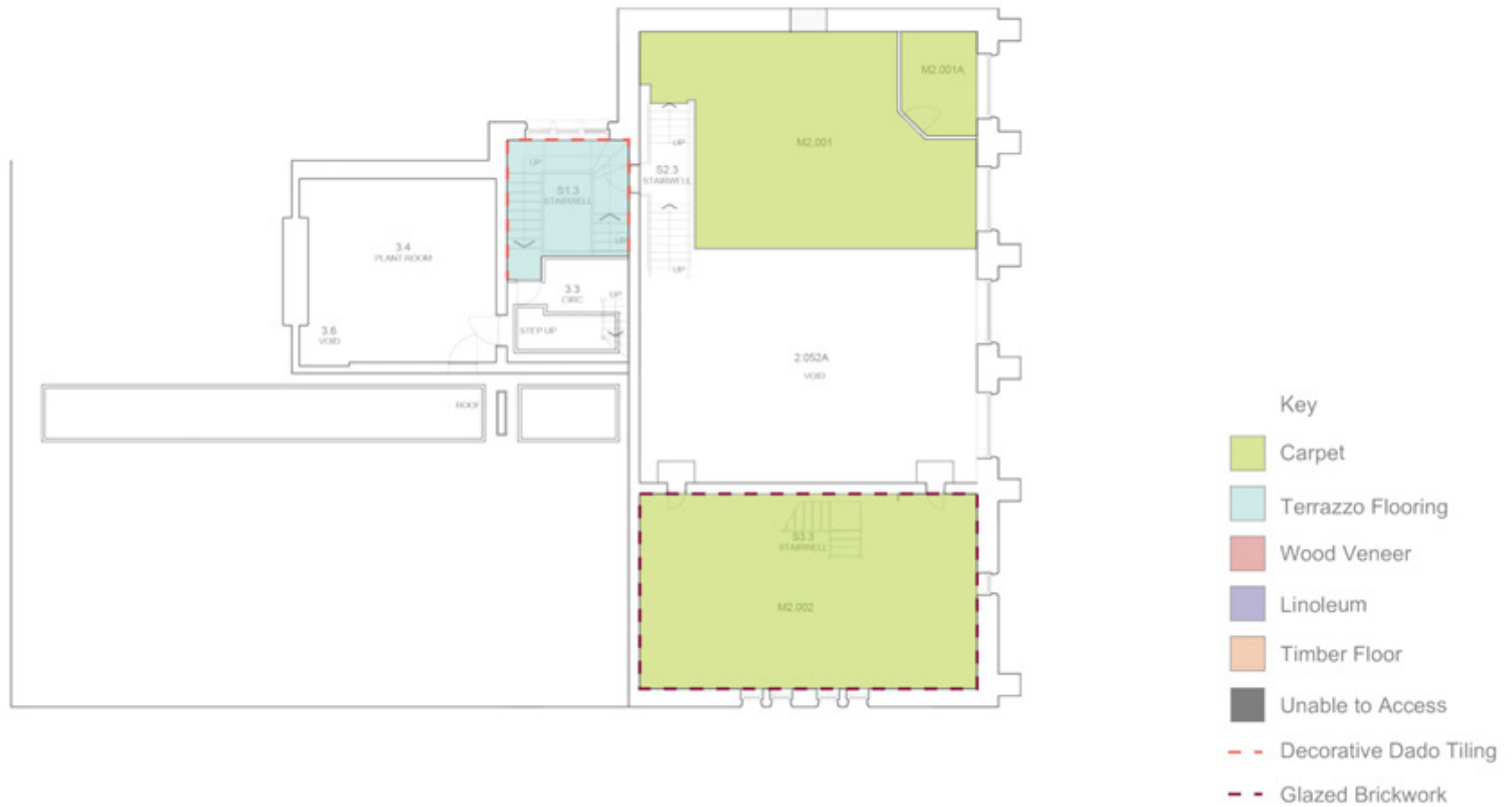
N.B. Room numbers and finish schedule are shown on Plates [3.4.1-3.4.4].



3.4.1 Ground floor room numbers and finishes (Arcadis IBI Group)



3.4.2 First floor room numbers and finishes (Arcadis IBI Group)



3.4.4 Third floor and Mezzanine room numbers and finishes (Arcadis IBI Group)

3.4.1 General arrangement and detailing

There is a common spatial arrangement and decorative scheme throughout the main wing with two principal rooms either side of an east-west corridor, separated by a spine wall with chimney stack (lacking chimneypieces) though there is some variation (see below) relating either to specific original uses or later insertions and where the main building extends into the adjoining north-south wing.

Throughout, the decorative scheme comprises a combination of moulded ceiling beams, cornices, and walls lined with glazed brick. The brick is either wholly cream or, in other areas and more commonly, a mix of cream above the dado level, dark brown at dado rail and skirting level with a lighter brown in between. In some areas, particularly in the corridors, exposed bricks lack glazing and are either red or buff. However, in most areas these bricks have been plastered over, with timber skirting boards applied below, with bricks only left partially exposed around doorways and either along the entirety of the outer walls or else around the window reveals.

Windows are white painted timber casements, generally, incorporating modern brass window furniture and plastic closers and plain machined glass. Doors to the principal rooms are a mix of four and six panelled timber set within moulded architraves with brass kick plates and more modern brass door furniture and a mix of brass and plastic closers. Separating the corridors from the stairwell, and lobby to the ground floor, are later composite screens and glazed doors. Throughout, modern office fixtures and fittings have been added, including trunking, a mix of strip and pendant lights

as well as radiators. Floors to principal rooms are generally either carpeted, finished in vinyl, or engineered wood veneer, but some floorboards are exposed (outlined below).

3.4.2 Entrance lobby

The entrance lobby (**G.C03**) leads through from the stone porch and is highly decorative with a barrel-vaulted ceiling, lined with terracotta and a terrazzo floor leading up to a terracotta screen incorporating art nouveau leaded lights, inset with a later glazed timber door. This leads through to a north-south corridor, with a terrazzo floor and lined with blue glazed tiles at dado level with floral pattern; radiators are modern. The ceiling is panelled but inset with pendant lights. The walls have largely been plastered, though cream non-glazed brick is evident around three archways, two of which lead off to the stairwell (north) and main corridor (west) inset with later composite screens and doors. Entrances to the adjoining wing are evident along the east wall, one with a panelled timber door, the other plain, though both are set into architraves. A small double light timber window is inset into the west wall into the reception area (later) [Plates 3.4.5-3.4.7].



3.4.6 Exposed brick around arches in the entrance corridor



3.4.5 Terracotta screen in lobby



3.4.7 Door leading west to the main corridor

3.4.3 East-west corridors

At the ground, first and second floors the central east-west corridors (**G.C01, 1.C01 and 2.C01**) run from the staircore, accessed through later composite fire screen doors set between cream brick arches, to glazed timber doors in the west return elevation leading out to the access ramp on the ground floor and balconies above. The ground floor is partitioned to its western end to create a lobby area, dating to the 2010s. The corridors have terrazzo floors with cream walls incorporating glazed blue tiles with floral pattern at dado level into which signs, door and lift controls have been placed in certain areas, as well as exposed cream-colored brick archways. The ceilings have cornices, painted blue to the first and second floors, with trunking and pendant lights added. A lift is positioned to the center of the corridors along its north side, with a stainless-steel finish [**Plates 3.4.8-3.4.12**].



3.4.8 Ground floor lobby



3.4.9 First-floor



3.4.11 Second floor



3.4.10 Ground floor



3.4.12 Third floor

3.4.4 Stairwell

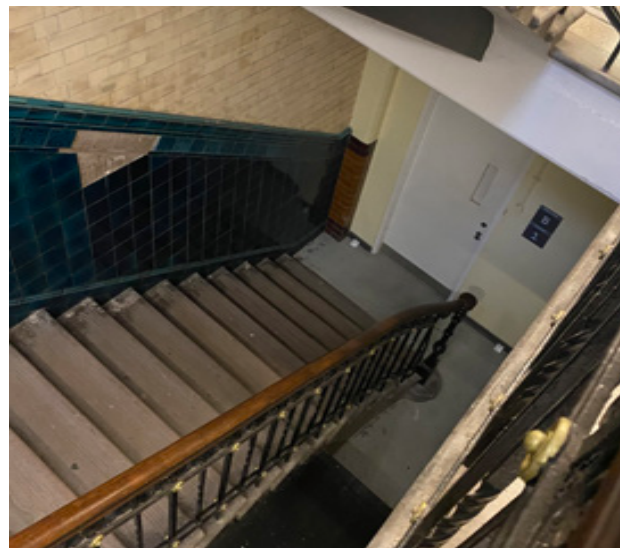
The principal stairwell, leading off the lobby to the north, rises from the basement to third floors (**S1.G, S1.1, S1.2** and **S1.3**). The dogleg staircase, supported via iron girders, incorporates decorative iron balustrading and a moulded timber handrail. The risers and treads are concrete, with the main landings floored in terrazzo, the pattern of which is replicated at the quarter landings. Large casement windows under segmented headers are positioned at the quarter landings. The decorative scheme in the staircore echoes the principal corridors, but with cream glazed brick above the dado level, including blue glazed tiles with floral pattern below. The undersides of the stair flights are panelled and finished with cornices, painted blue. Lighting is via strip lights [**Plates 3.4.13-3.4.16**].



3.4.13 Ground floor stairwell



3.4.15 Second floor landing



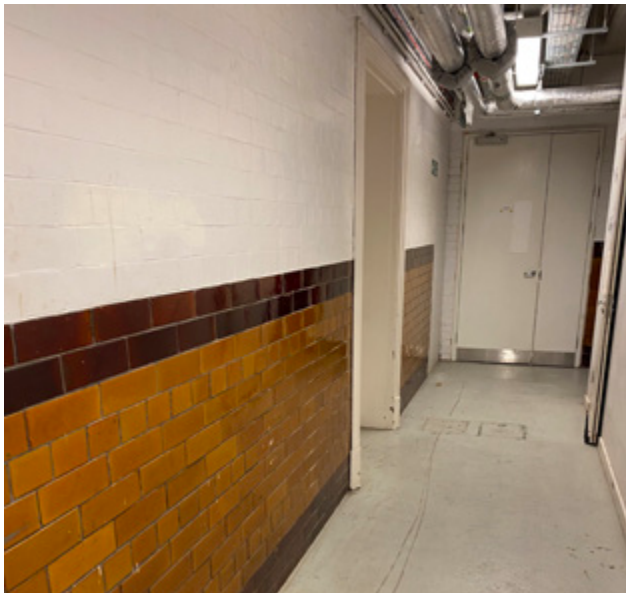
3.4.14 Ground to basement



3.4.16 View from the third floor down the stair flights

3.4.5 Basement

The basement area is currently in use by the museum for collections storage, and not associated with the use above. This area generally sits outside of the proposals, other than minor works for services. The basement echoes the spatial arrangement above, though appears to have a concrete floor with no terrazzo, and walls are lined with glazed bricks leading to cellular spaces via historic timber doors, though there are greater levels of services at ceiling level. Adjoining the corridor is a north-south corridor with glazed roof, visible from the ramp above, believed to provide subterranean access to other campus buildings. Cellular rooms have not been accessed, but are understood to have parquet flooring and ceiling molding. [Plates 3.4.17-.4.19].



3.4.17 Basement corridor



3.4.18 Basement corridor



3.4.19 Cornice to the basement corridor ceiling

3.4.6 Ground floor

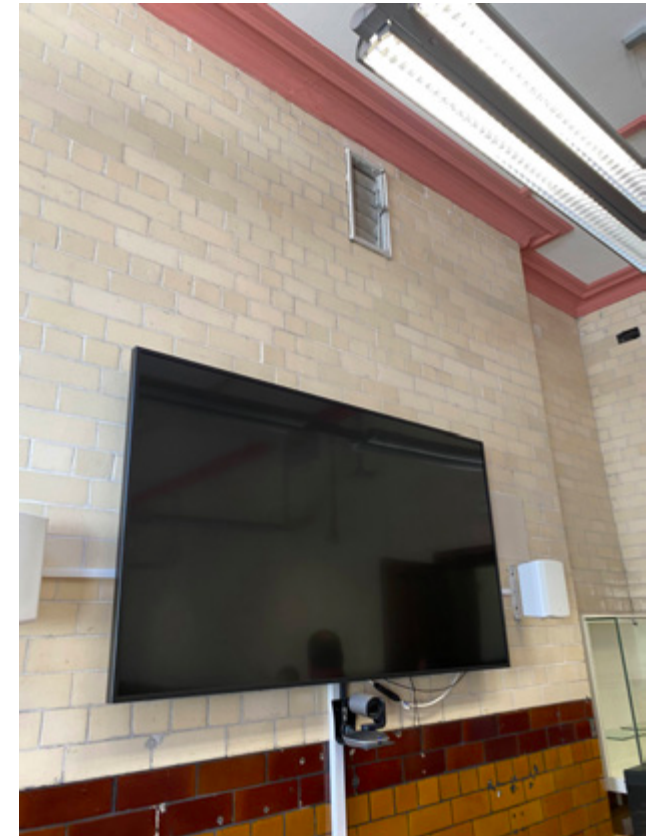
The ground floor is laid out with the north-south entrance hall adjoining an east-west corridor. To the north of the corridor is **G.055** and **G.056** separated by the spine wall, with **G.057** and **G.058** to the south. **G.055**, the Rutherford Room, is one of the only remaining spaces with its glazed brick and timber floorboards exposed, revealed as part of remediation works, and Rutherford's desk and original joinery benches line the wall. A vent is evident in the chimney stack. **G.056**, **G.057** and **G.058** are plastered with glazed brick only revealed in select places. The lift shaft partially truncates the chimney stack to **G.056**, and a small office partition is positioned to the southwest corner of **G.058**, though the original proportions of the room can be read, accentuated by the continuation of the bricks along the outer wall. **G.056** is accessed only via the staircore, with a timber window overlooking the corridor (the opening is historic, but frame and glass appear later) and **G.057** incorporates a later reception window overlooking the entrance lobby. Here, the mouldings have been truncated by an enlarged shift shaft. Risers, projecting forward of the niches, have been added to the chimney stack to the rooms along the south of the corridor, with timber doors [Plates 3.4.20-3.4.28].



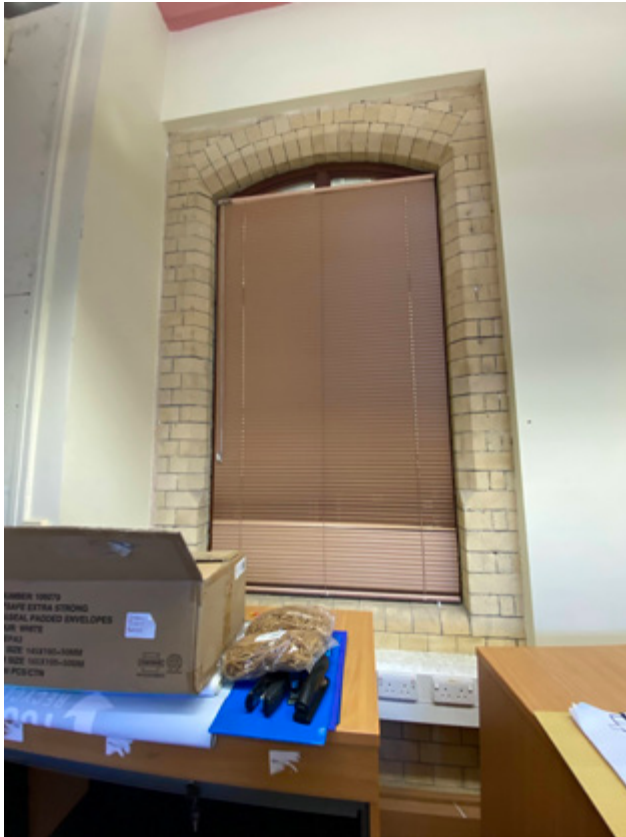
3.4.20 Entrance to G.055



3.4.21 G.055 (Rutherford Room) with floorboards and Rutherford's desk



3.4.22 G.055 (Rutherford Room) chimney stack



3.4.23 G.056 window to corridor



3.4.24 G.056



3.4.26 Ceiling detail to G.057



3.4.25 Glazed tiles to outer wall of G.057, with window detailing



3.4.27 Room G.058 with partition to far corner



3.4.28a Riser joinery to G.057



3.4.28b Riser joinery to G.058

3.4.7 First floor

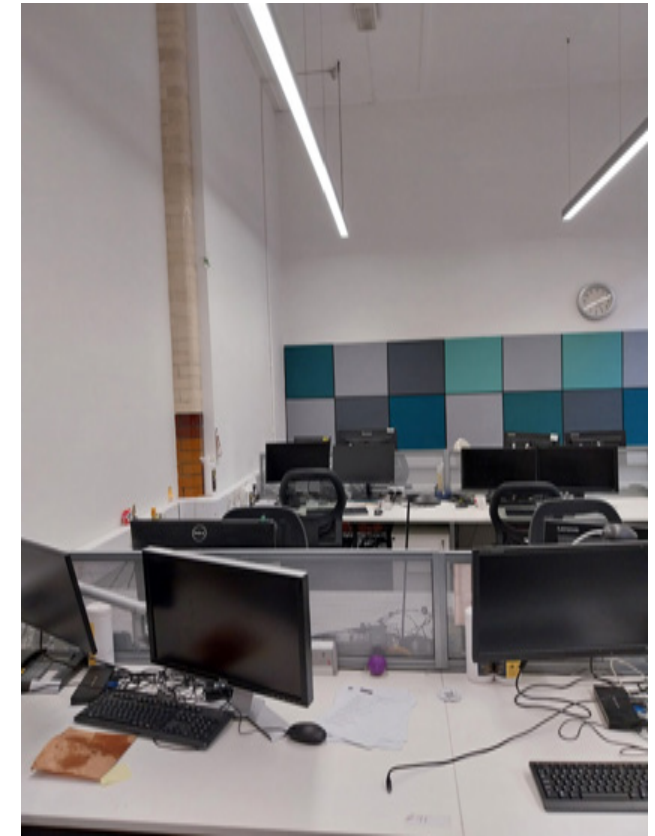
The first floor is a similar spatial arrangement to ground, however there is a greater level of variation.

South of the corridor, **1.052** has been partitioned into four smaller office and meeting spaces, generally with plaster and glazed partition walls. To the western end of the corridor are two WCs and a storeroom with suspended ceilings. These project into the office and kitchen spaces in **1.057** and **1.056**. The kitchen has exposed unglazed red brick, and historic benches, but is otherwise heavily impacted by modern kitchen units and wood veneer flooring. 1.051 maintains greater spatial integrity, as an open-plan L-shaped office space with exposed glazed brick along the outer wall.

1.058 is split into an adjoined office and meeting room, with a narrow hallway leading from the door along the outer wall of the lift shaft, positioned awkwardly against the door aperture, into an office space. The southernmost cornice has been heavily truncated by the lift shaft. A black painted picture rail has been added running partially around the room. The office is partitioned from a meeting room via an open flat arch with timber joinery. In this room, the cornice to the south of the central moulded beam is truncated by a later partition leading to the data room beyond (the data room has not been investigated onsite). **[Plates 3.4.29-3.4.48].**



3.4.29 1.051 Main space (IBI)



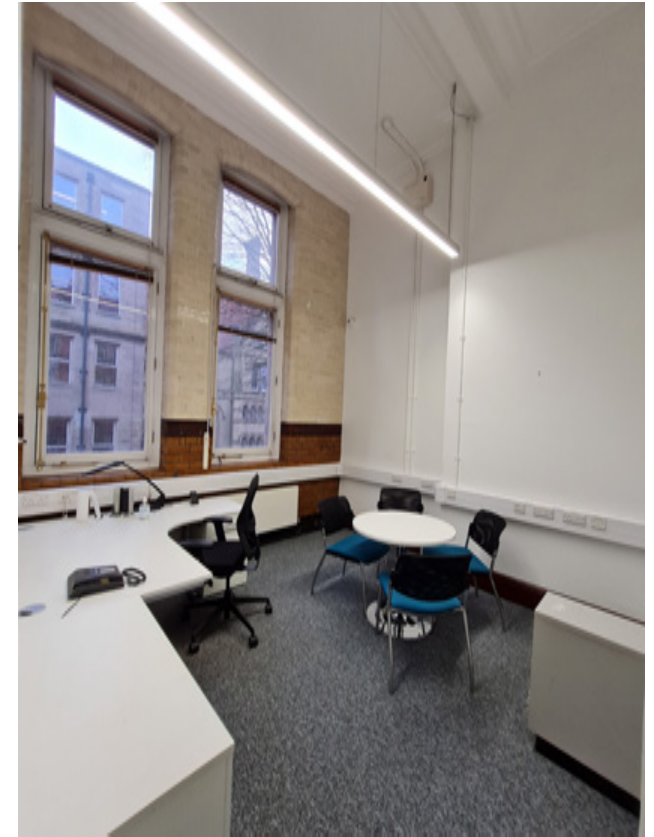
3.4.30 1.051 Main space (IBI)



3.4.31 1.051 Doorway (IBI)



3.4.32 1.052 partitioned office circulation (IBI)



3.4.33 1.052 partitioned office along the outer wall (IBI)



3.4.34 1.052 Ceiling detail



3.4.35 Brick detailing around the door in 1.053



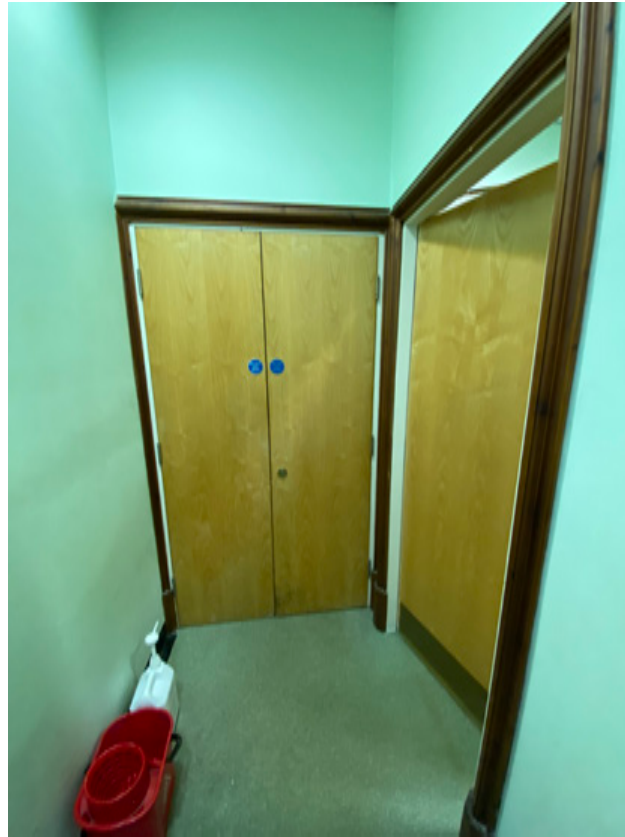
3.4.36 Brick detailing around the windows in 1.053



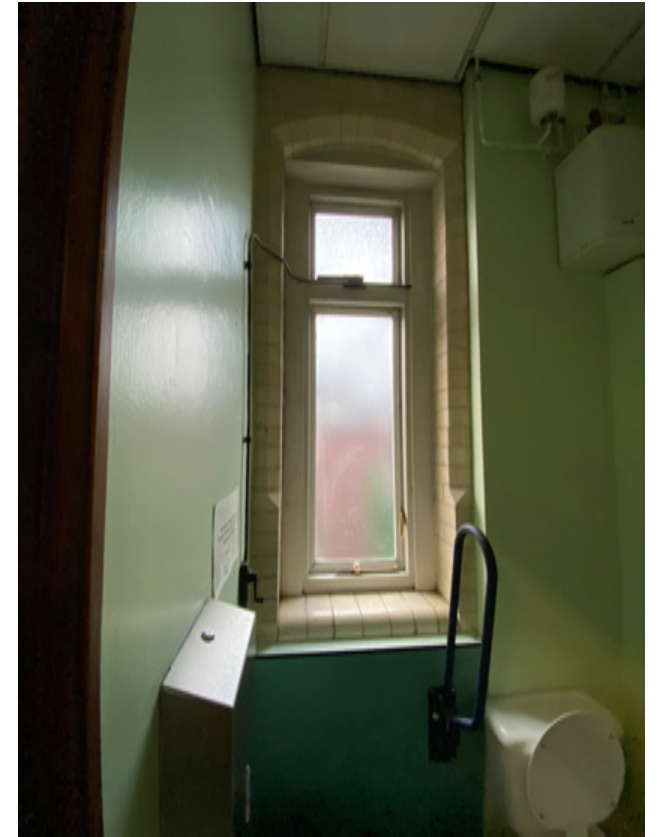
3.4.37 Historic benches moved to 1.053



3.4.38 Room 1.053



3.4.39 Entrance to 1.054, male wc



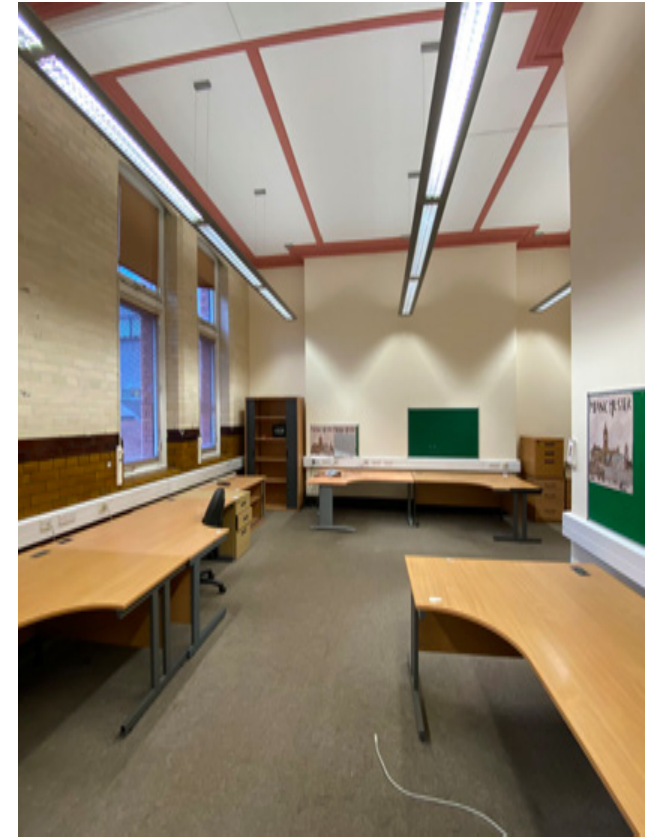
3.4.40 Glazed bricks around the window in 1.055



3.4.41 *Suspended ceiling in 1.056*



3.4.42 *Skirting and door joinery to 1.056*



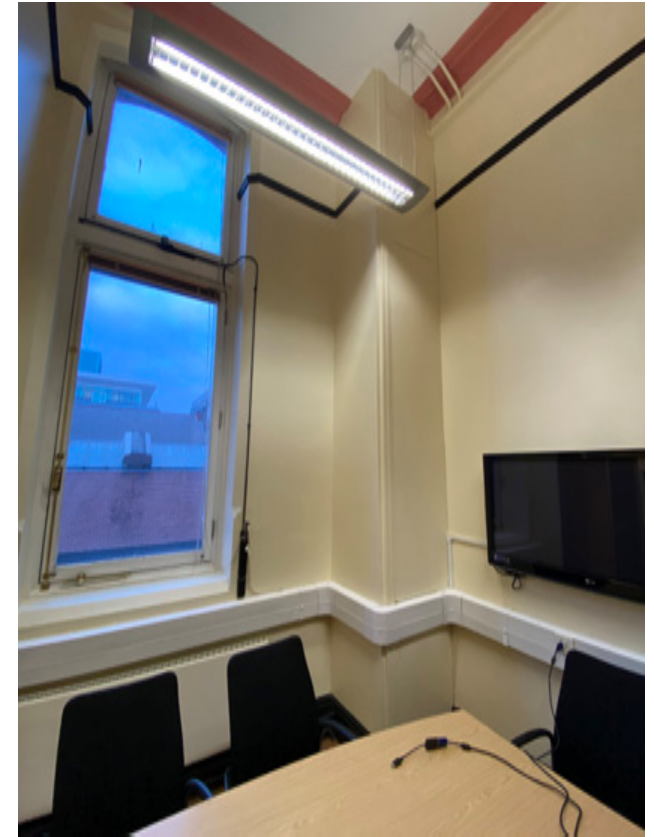
3.4.43 *Room 1.057 showing glazed bricks along the outer wall*



3.4.44 Room 1.057 with cornice wrapping around partition to 1.056 (storeroom)



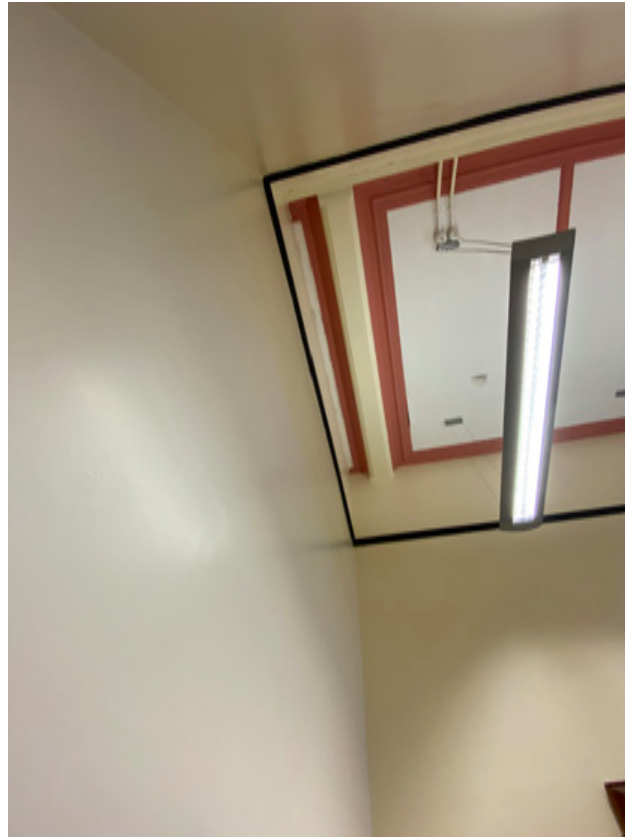
3.4.45 Ceiling of Room 1.058 truncated by the lift shaft



3.4.46 Room 1.058



3.4.47 *Open arch in Room 1.058*



3.4.48 *Ceiling truncated by the partition to the data room in 1.058*

3.4.8 Second floor

The eastern end of the corridor leads into the adjoining north-south wing. **2.051** is a large double height space, a former lecture room now in use as an office. A modern mezzanine has been added with a double height partitioned office to the northeast corner. A timber four panelled door leads off to the stairwell halfway up the modern mezzanine staircase, with architrave and segmented brick header above. Walls are white painted brick, with blue painted tongue and groove cladding up to the dado level, above skirting, onto which trunking has been applied. Large transom and mullioned windows are evident to the east wall. Floors are carpeted. The high ceiling has wooden trusses and is panelled, with inset ventilation panels, supported by iron brackets. Strip lights have been added. Two observation balconies, accessed via timber doors, are set at mezzanine level along the south wall.

South of **2.051** is an office space (**2.052**) projecting from the main building to the adjoining wing, though also connected via doors to **2.051** and **2.053**. This contains a staircase (**S3.2**), with simple metal balustrading and a timber handrail with risers clad in timber, up to mezzanine level and is partitioned from a smaller office space to the eastern extent of the building (**2.052A**). A smaller, modern, partition is evident to the southwest corner. Of the main cellular spaces off the east-west corridor, **2.053** and **2.058** are quite narrow and, along with **2.054** incorporate part of the roof pitch and lack decorative mouldings to the ceiling (though **2.058** and **2.054** have a small cornice runs above the windows). **2.054** is particularly notable for its large, embellished timber trusses. **2.059** is a

larger room and has full decorative ceiling mouldings. **2.057** also has a bay window overlooking the west elevation, and is connected to **2.058** by a door in the central partition.

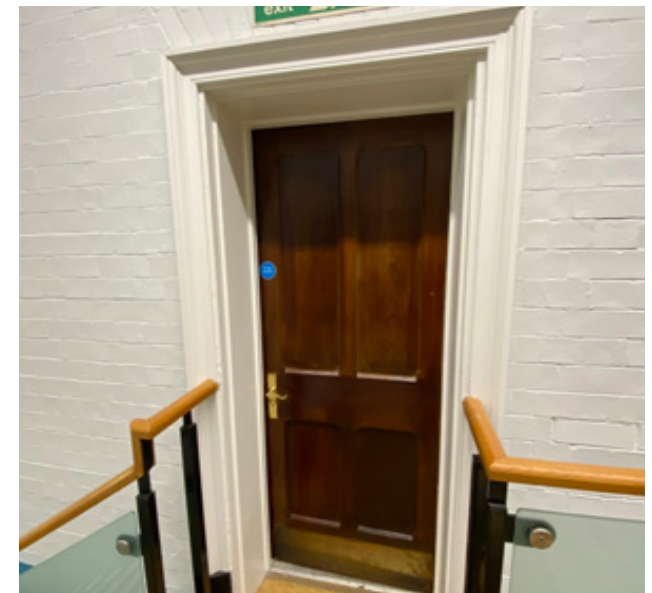
The floor also incorporates two WCs (**2.055** and **2.056**) with suspended ceilings. **2.055** is in poor condition with paint and plaster spalling along the outer wall. Both project into the cellular spaces beyond; that to **2.054** is particularly detrimental to appreciation of the historic space, sitting awkwardly against the roof beams, and presumably enclosing the historic light aperture visible to the exterior. [Plates 3.4.49-3.4.70]



3.4.49 Room 2.051, former lecture theatre, with mezzanine



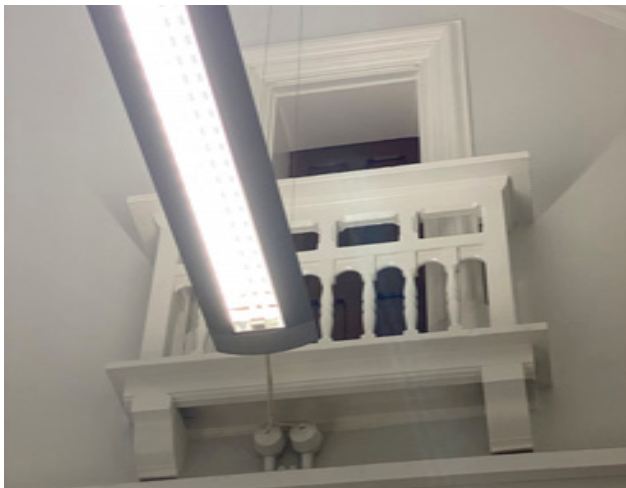
3.4.50 Paneling to 2.051



3.4.51 Door to stairwell off mezzanine stairs in 2.051



3.4.52 Extant doorway between 2.051 former lecture theatre, and 2.052, former preparation rooms



3.4.53 Observation balcony in Room 2.051



3.4.54 Ceiling detailing in Room 2.051



3.4.55 Detailing in room 2.051



3.4.56 Room 2.052 showing partition



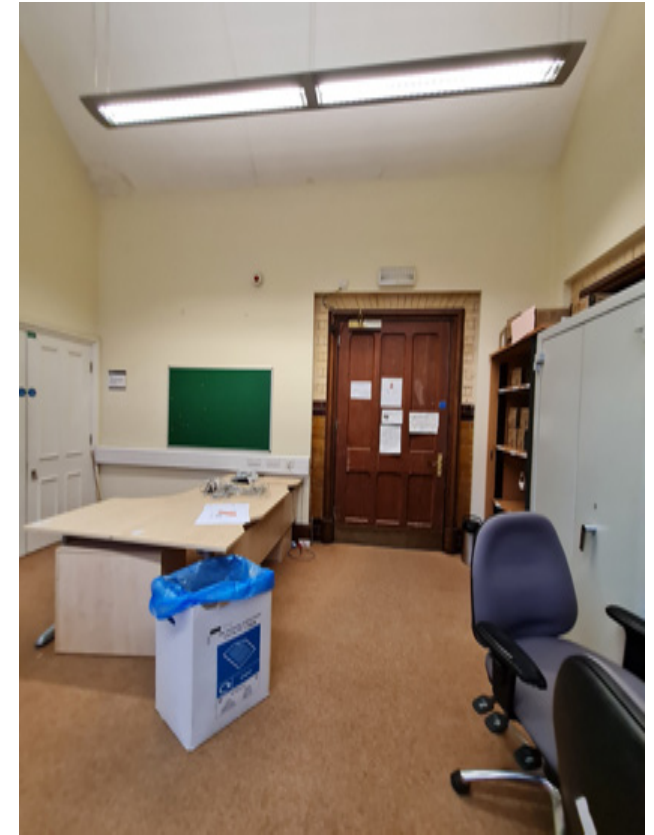
3.4.57 Later staircase in 2.052



3.4.58 Room 2.052a with east elevation windows and door into 2.051



3.4.59 Room 2.053 outer wall (IBI)



3.4.60 Room 2.053 (IBI)



3.4.61 2.054 former grating room with later WC partition



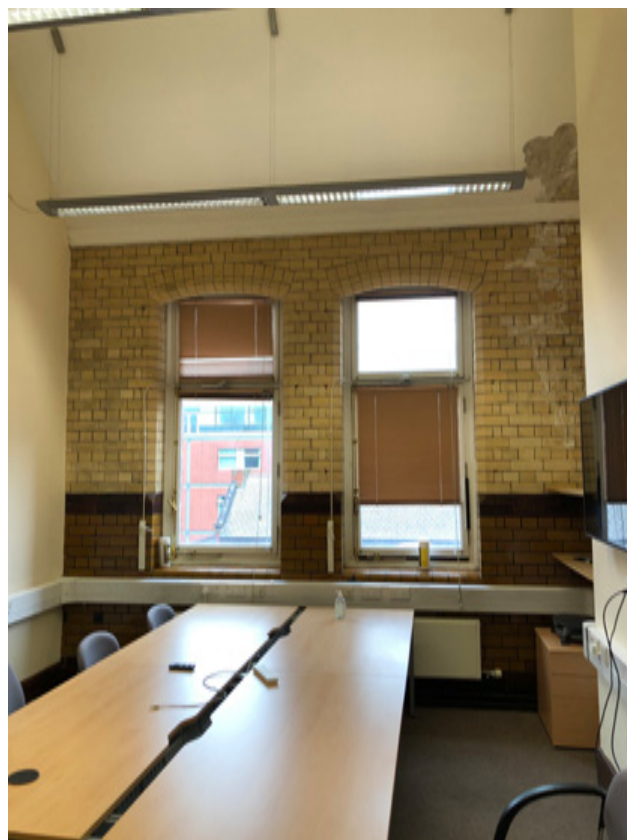
3.4.62 2.054 with later WC partition



3.4.63 Room 2.055, women's WC, partition extending into 2.054



3.4.64 Room 2.056 disabled WC, projecting into 2.057



3.4.65 2.058 (IBI)



3.4.66 2.058 chimney stack (IBI)



3.4.67 2.058 Ceiling detail (IBI)



3.4.68 2.058 partition door to 2.057 (IBI)



3.4.69 2.059 main space and outer wall (IBI)



3.4.70 2.059 doorway (IBI)

3.4.9 Third floor and mezzanine

To the third floor is part of the space originally intended for use as an observatory (**3.3**). This is accessed via a screen from the stairwell and continues the glazed blue and cream tiles and brick of the main stairwell and has a simple timber staircase, though with moulded handrail and newel post, leading to the plant room (not inspected given issues of access). It also has moulded ceiling beams and cornices, painted blue.

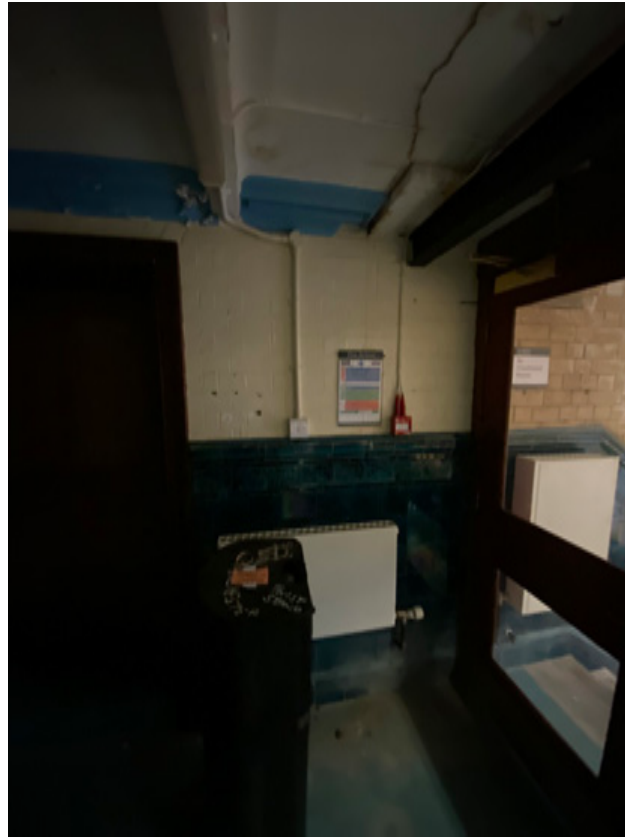
Leading from the simple timber stairwell (**S3.3**) in **2.052**, is a mezzanine level (**M2.002**) in the adjoining north-south wing within the eaves. This space incorporates the cream and brown glazed brick evident throughout the building. Of particular interest are two small timber doors that lead out to the observation balconies overlooking **2.052** [Plates **3.4.71-3.4.74**].



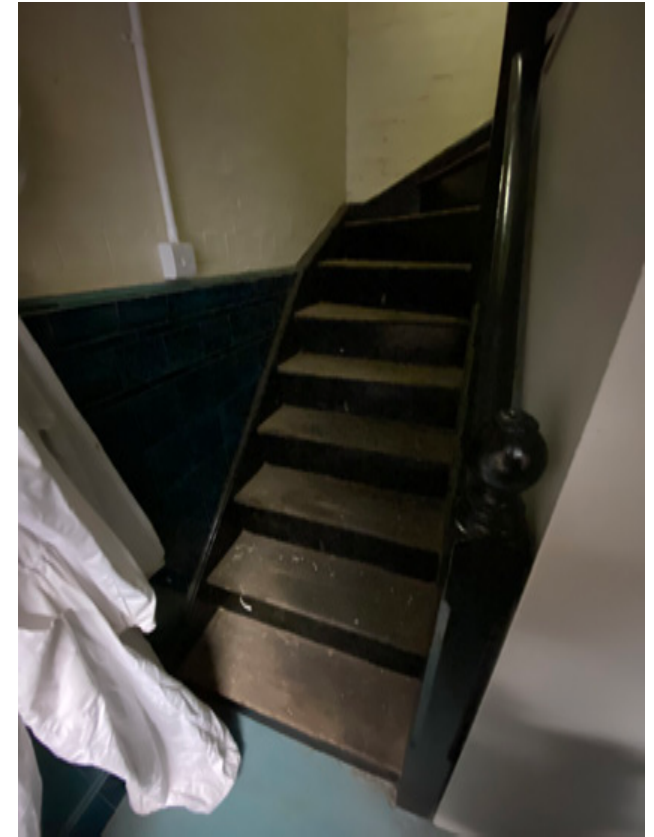
3.4.71 Room M2.002



3.4.72 Room M2.002 Door to observation balcony (20.51)



3.4.73 Room 3.3



3.4.74 Small staircase in Room 3.3

3.5 Floor Construction

The floor construction throughout the building can be summarised as follows.

- The corridors, circulation spaces and plant room are concrete with a terrazzo covering.
- Floor coverings to the cellular spaces are generally carpet over modern chipboard; the exceptions are M2.002, where chipboard overlay floorboards, and G.055 (the 'Rutherford Room') where floorboards are exposed.
- The construction of the floors in the cellular spaces were generally a hybrid structure of softwood joists notched onto rolled steel beams with modern mineral wool insulation; the exceptions being Rooms 2.057 and 2.058 where the joists and steels were largely replaced (with a steel beam retained in each) during previous remediation works (2010). Some earlier cotton insulation remains.
- The ceilings were found to be plaster, a mix of animal hair, lime and sand, on expanded metal laths.

The joists, beams, expanded metal lath / plaster and floorboards that were extant are generally considered to be original to the building's construction.

3.6 Roof Construction

The roof construction can be summarised as follows.

- Roofs are generally of softwood construction, with use of pitch pine as the principal material, with a mix of scots pine and spruce as secondary materials. Some steel sections (likely later repairs) are also evident. The roofs are largely covered in clay tiles and ridge tiles with lead gutters.
- There are 3 no. historic pitched roofs over the second floor (e.g., over the front and rear cellular spaces and central corridor), and one pitch over the third floor (e.g., over the double height 2.052). These are generally purlin and rafter roofs, though there are some king posts in areas such as above 2.051 and 2.054 and rolled steel joists over M2.002. There is evidence for late 20th century repairs in areas such as above 2.051, with sections of sarking boards, purlins and rafters replaced as well as later interventions such as venting units. There is also an impermeable bituminous felt on sarking boards over 2.054 and M2.002.
- There is a flat concrete roof over the central staircase and plant room (3rd floor), with a separate softwood pitched roof over small staircase (later additions).

As such, with the exception of the flat and later pitched roof over the stairs and plant rooms, much of the roof structure is likely original, though with later alterations and repairs.

3.7 Summary

Comparing the modern floor plans to those believed to date c.1900 the following observations can be made:

- **Ground floor:** the structure of each room, as well as the circulation between spaces remains intact. The primary extant changes are the insertion of a small partition to the corner of G.058, the creation of the lobby (with additional door into G.058), the enlargement of the lift shaft (with replacement lift) and insertion of reception window, all of which are legibly contemporary additions.
- **First-floor:** the primary extant changes to the first floor have been insertion of WCs to the south the corridor (1.054). The WC and store to the north (1.055 and 1.056) were part of the original layout, but it is understood these have been enlarged, and the walls reconstructed, and the current suspended ceilings and decorative treatments are poor. Further changes include the partitioning of 1.052. 1.058 was partitioned as part of the original layout to create an anteroom leading to private study (understood to be the office of the Langworthy Professor of Physics), however this has been further subdivided to create the data room (1.059) with re-alignment of the arch between the two rooms. An early partition has been removed in 1.051.

- **Second-floor:** alterations to the second floor are largely through insertion of toilets either side of the corridor (2.055) to the west end of the building. Here the toilets to the south of the corridor appear to have blocked the apertures on the exterior that allowed light into the grating room for experimentation (2.054). A further key change has been the repositioning, and replacement, of the staircase to the mezzanine and corner partitions in 2.052. The main change in the adjoining wing (2.051) has been insertion of the mezzanine, however retained is a door halfway up the space that now leads off the modern mezzanine stairs out into the stairwell, but is likely to have historically provided access to the higher levels of the tiered lecture seating.
- **Mezzanine and third floor:** M2.002 is intact, with only the staircase re-aligned and replaced, historically used as a chart room leading onto the observation balconies. The overall floorplan of the observatory remains, though the octagonal dome shown on the map (and in photographs – see plate 2.3.24) has been lost.

4.0 Assessment of Significance

4.1 Introduction

The purpose of this section is to provide an assessment of significance of the Rutherford Building so that the proposals for change to the building are fully informed as to its significance and so that the effect of the proposals on that significance can be evaluated.

The assessment begins with a general summary of the building's history and significance; then the various elements of the building are assessed according to a sliding scale of significance, reflecting the extent to which they contribute to the listed building's special architectural and historical interest.

This assessment responds to the requirement of the National Planning Policy Framework to 'recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance'. The NPPF defines significance as;

'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological (potential to yield evidence about the past), architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting'.

4.2 Assessment of Significance

4.2.1 Historic Context

The building was initially designed by architect William Henry Beaumont between 1898 and 1900 in close collaboration with Arthur Schuster, Langworthy Professor of Physics at the University. They endeavoured to create a renowned physics laboratory that could, through its spatial arrangement and provision of facilities, build upon the university's use of Germanic practices of student participation in research.

Opening in 1900, the early building brought together research, lecturing and study spaces for a range of topics within the rapidly expanding discipline, reflecting significant recent discoveries such as x-rays, under the tutelage of Schuster, resulting in one of the largest and well-appointed university laboratories in the world.

The early layout included the main building along Coupland Street, the adjoining north-south wing, and a dynamo house to the rear with early extensions in 1912 for the Hopkinson Wing, focused primarily on electrotechnical research with later uses including the development of the Royal Society Computer Laboratory in 1948, and further expanded with extensions in 1920, 1932 and the 1950s.

Vacating the premises between 1967-1970 for the purpose-built Schuster Building, the Physics Department was replaced by the Psychology Department who occupied the building until 1999. Throughout the latter stages of the 20th century the

components of the building have fallen into various uses, though all under the auspices of the university, including as part of the museum, with infilling, oversailing and extension. A period of remediation of refurbishment of the main building, including removal of paintwork from glazed bricks and removal of partitions, was undertaken in the 2000s.

4.2.2 Summary of Significance

The building is a fine example of late-Victorian institutional design, sited near a range of 19th, 20th and 21st century buildings which draw a functional coherence, as university buildings, whilst exhibiting an evolution in styles. However, of arguably greater importance is its historic interest, associated as it is with the growth and development of physical science research, following significant innovations in the late-Victorian period, adaptation of collaborative ways of teaching in the early 20th century, and the contribution this research has made, through figures such as Schuster, Rutherford, and Geiger, to the course of human history.

The building embodies the following values which contribute to its overall significance.

Historic

The building draws significant value from its association with:

- The evolution of the country's first civic university (Victoria University), and specifically development of the universities' prominent focus on scientific research as reflected in

the growing demand for dedicated spaces to accommodate instruction in the broad range of the new, expanded, physics discipline drawing together research on a range of recently discovered aspects of study. This resulted in one of the largest and best equipped laboratories in the world.

- Directly adapting and bringing forward, through the influence of figures such as Schuster, Germanic methods of active participation of students in research and experimentation, moving beyond the more traditional, passive, lecturing model.
- The continued innovation in the discipline, building on Manchester's significant scientific focus, through Schuster's successors, including Rutherford and his cohort shifting focus to atomic physics.
- Renowned figures such as Schuster, Rutherford, Bohr and Geiger (to name a few), the impact of whose research has gone beyond the confines of their discipline, making a significant, potentially the primary, contribution to the development of the modern physics, and more broadly reflecting the significant influence the development of atomic physics had on the course of human history throughout the 20th century and beyond.
- James William Beaumont, a prominent Victorian and Edwardian architect.

Architectural

- The building is a well-detailed example of late-Victorian institutional architecture, purpose built for a university, expressed particularly

through its brick and stone detailing, strong bay structure accentuated by gables, and the use of institution-specific decoration on the prominent stone porch which all combine to create a design that embodies a sense of pride in the institution and its commitment to the advancement of knowledge.

- Internally, the building retains significant examples of late-Victorian design and craftsmanship through its decorative schemes including joinery, mouldings, brickwork and tiling.

Communal

- The building has communal importance as part of the broader Manchester University campus and as key part of the earlier development of a culture of research, engagement, and participation in academic advancement.

This special interest is manifest in the fabric and form of the building.

Of particular importance are:

- Retention of Schuster's spatial arrangement
- Early adaptations by successors such as Rutherford for specific types of physics research
- Retention of Beaumont's original external design scheme.
- Indicators of the specific uses of its spaces as a physics laboratory.
- Internal decorative schemes as examples

of late 19th/early 20th century design and craftsmanship.

- Continued use of the building by the University, though the original use as physics laboratories is no longer evident.

4.2.3 Internal hierarchy of significance

Based on the above factors, the building has the following hierarchy of significance internally:

Of **high significance**, and particularly sensitive to change are:

- **Internal decorative scheme, and structure,** including, most notably:
 - Glazed bricks / tile
 - Moulded ceilings and cornices, with expanded metal laths
 - Four and six panelled timber doors and architraves
 - Terrazzo and timber floors
 - Terracotta lobby
 - Floor structure of hybrid timber and steel construction, using historic wool insulation in places
 - Primary staircase
 - Decorative roof finishes and panelling to the lecture hall (2.051).

However, the floor and wall materials have been significantly impacted by later plastering and modern fixtures and fittings.

Of high significance is also the **survival of the early spatial arrangement**. As the building has evolved the original uses of each room have all changed with loss of the associated fixtures and fittings and the addition of elements such as WCs and an enlarged lift shaft. However, perception of the early layout through the retained volume of spaces is highly legible, accentuated by remediation works to both the layout and finishes in the 1990s and 2000s.

Perception of the original uses of each room in the built fabric is now mostly obscured following removal of equipment and changing uses over the last century. However, there are areas where this is still perceptible, and these are of high significance including:

- The large lecture theatre in 2.051 through retention of the observation balconies, the size of the space, and door halfway up the staircase (hinting at the former lecture seating). Physical connection to the former apparatus room remains (2.051), showing the functional relationship between the two spaces, but the doorway to the preparation room (2.052A) has been blocked up eroding legibility of those elements.
- The grating room (2.054) given survival of the apertures to the exterior that allowed light through for experimentation, though this has been undermined to the interior given partitioning and the introduction of the WC.
- The survival of the bay window in 2.057, which may be the place where a Toepler Pump was positioned to support venting of radium, though this is theorised.

- Perception of the comparative size of spaces given over to study, reading, storage, lecturing, and laboratory work or experimentation.

Of **low-moderate significance**, and therefore less sensitive to change are:

- The timber casement windows. The windows were originally considered historic. However, further inspection by the architectural team indicates design discrepancies in units across the façade leading to the conclusion there is in fact mix of historic and modern additions. Whilst some are original, and all incorporate moulded profiles, they are relatively inconspicuous and instead defer to the powerful and striking stone and brick detailing which better underpin the building's institutional aesthetic. The glass is of more limited significance, as it is plain.
- The roof structure, as it retains much of the original timber with elements of higher-quality king truss post design. However, it appears to lack some of the innovations in the ceiling and floor structure.

Of **neutral significance, neither contributing nor detracting from the significance** of the whole and therefore a clear opportunity for change are:

- Office partitions, by virtue of the fact the original volume of the rooms is legible, particularly through continuation of the historic decoration behind.
- Colour schemes, e.g., blue, and red paint to mouldings which are later, but subjective in their aesthetic quality.

- Brass door and window furniture, as they are likely later additions but reasonably well-detailed.
- Skirting boards. Given the original glazed tiling included specific colours at skirting level these are later, further evidenced as they sit on and wrap around the later plasterwork. Most are reasonably well-moulded and well-detailed (though some are simple profile, and where this is evident detract) and are inoffensive in themselves.

Factors which are **negative and detract from the building's significance** and offer an opportunity for enhancement are:

- Plaster walls. Whilst inoffensive, the plaster has specifically overlaid the glazed brick and key features such as the light apertures on the west elevation internally.
- Modern fixtures and fittings, including carpets, vinyl, and wood veneer, particularly given they likely overlay historic timber floorboards, as well as radiators, strip lights, pendant lights, and trunking given their largely generic appearance, and the visual clutter brought by the trunking.
- Suspended ceilings, e.g., in the WCs.
- Condition of certain areas, including the WCs.
- General fixtures including signs and controls bolted or cut into glazed bricks.
- Lift and lift shaft. Whilst historic maps indicate a lift was in this location in the 1900s, reflecting Schuster's modernising efforts, the current lift is modern with a poor-quality stainless-steel finish. It is, furthermore, larger than the original

lift shaft and visually truncates cornices and chimney stacks.

- Composite fire screen doors, as they are visually heavy and of lower quality than the historic joinery.
- Modern mezzanine insertion, as it is visually and physically intrusive.

4.2.4 External hierarchy of significance

Externally, the building has the following hierarchy of significance:

Of **high significance**, and particularly sensitive to change are:

- The overall architectural composition of the front and return elevations, with retention of key detailing including the stone dressings, porch and buttresses.
- Elements that evidence the original uses of the building including the balconies and apertures on the west return elevation used for light experiments and calibrating telescopes / sextants.

Of **moderate significance**, and therefore less sensitive to change are:

- The rear, north, elevation given the more restrained, though well-considered architectural detailing.

Factors which are **negative and detract from the building's significance** and offer an opportunity for enhancement are:

- The access ramp on the west return elevation, given its footprint, poor-quality materials, and visual complexity.

4.2.5 Setting

As outlined above, the part of the building subject of this scheme of works is situated in an area both setback and screened from the main spine of Oxford Road via an arch in the museum. This creates a more **enclosed streetscape** and from this the building's setting contributes particularly to its significance through:

- **Linear views** to its front and side elevations, accentuated by the open space in front of Coupland 1, which highlights its **strong institutional design** and specific **aspects of the building that reflect former uses**, such as the balconies, light apertures, etc.
- A **spatial and experiential proximity** to several other university buildings which exhibit a range of architectural styles and collectively underpin and illustrate the **university's contribution to research** over the course of its history as undertaken by internationally renowned figures such as Alan Turing.

5.0 Commentary on the Proposals

5.1 Description of the Proposals and their Impact on the Listed Building

The proposed works are outlined in detail in the plans and Design and Access Statement (DAS) by Arcadis IBI and broadly seeks to fully refurbish the building to enable, and make sustainable, its continued and longer-term use for academic and postgraduate study at the University. They should be understood in conjunction with a series of enabling and repair works to the internal floor and ceiling structures (currently under consideration, RN: 138277/LO/2023). The works subject to this application represent the broader refurbishment scheme, involving:

- **External:** conservation repairs to masonry and other historic elements, insertion of discrete ventilation grilles, and replacement of signage and west elevation door, alongside re-cladding the modern access ramp.
- **Internal:** select reconfiguration of the layout to provide useable office and research spaces, coinciding with a rationalisation of internal services, changes to finishes and upgrades to doors and screens that focus on stripping back modern finishes to the historic fabric.
- **Retrofit:** measures to significantly enhance the thermal efficiency of the building including replacement of window glass and casements (retaining frames) as well as insertion of insulation into the roof voids.

The approach is outlined in the DAS, but key principles that have underpinned the proposal include:

- **Enhancement:** actively exploring where it is possible to enhance the building's interest, including revealing historic surfaces, removing later additions, and rationalising services.
- **Reversibility:** focused on, for example, the use of freestanding furniture and meeting pods to limit physical impact.
- **Upgrade:** seeking ways to improve the useability of spaces, including thermal comfort, and balanced against the significance of finishes, spaces, and design philosophy.

5.1.1 External

External works are minimal and have been primarily proposed where necessary to facilitate the scheme or enhance the building's longevity. The scheme allows for repairs to historic fabric such as external masonry, including a conservation approach to the stonework on the highly significant entrance porch, of evident benefit. Furthermore, changes to the interior layout necessitate the addition of ventilation grilles to the west and north elevations, providing air into proposed partitioned spaces. These are designed to be discrete, draw on the existing pattern and placement of grilles to the south elevation and use a like-for-like appearance and materiality and as such would have a neutral impact on the building's interest. Building on this, coinciding with the overall approach to creating higher quality finishes throughout the building, and improving the user experience, it is proposed to enhance the approach to the building on the west elevation including replacement of the modern entrance door with a more appropriate solid double door, and

re-cladding the access ramp in ashlar stone, both higher quality in its finish and more akin to materiality elsewhere on the university estate.

5.1.2.1 Layout

The proposed layout has been planned to provide spaces for academics, researchers, and postgraduate students, all of which have varied requirements for space and privacy. The Design and Access statement should be reviewed for broader rationale, but the works would result in the following;

Removal

It is proposed to remove the following internal partition walls (the room numbers below are those shown on plates 3.4.1-3.4.4):

- **G.058, 1.052, 2.051, and 2.052.** These are modern glazed partitions, so their removal will enhance appreciation of the space.
- **1.053:** This is a modern heavy partition, installed to create toilets, themselves in poor condition and of poor visual quality. Its removal will significantly enhance appreciation of the historic volume.
- **1.057:** This was the historic location for a WC and storage room; however, the walls have been replaced and the space enlarged. As such, their removal will impact legibility of a small part of the historic plan (leading to a low level of less than substantial harm), but the WC provision is poor, as are finishes (including suspended ceilings), and providing appropriate services is

considered necessary to ensure the building's use longer-term (the 'proposed layout' section considers the benefits of moving the WCs).

- **1.058 / 1.059:** This is a modern heavyweight partition for a server room. Historically an anteroom to the Head of Physics's office, its removal will reinstate historic proportions (to be retained in the proposed layout) and reinstate the original door location.
- **2.054:** This is a modern heavyweight partition for WCs, themselves in poor condition. Their removal will significantly enhance appreciation of a space with high architectural interest, the former grating room (as well as appreciation of its decorative roof beams).
- **2.055:** This is a later heavyweight partition for a WC, and its removal will enhance appreciation of the historic volume.
- **2.057 and 2.056:** This space was historically divided, into the transit and research rooms, but the current wall (in its historic position) was replaced in the 2000s. As such, this will impact perception of the original layout, leading to a low level of less than substantial harm, but no loss of historic fabric. This is considered a necessary change to provide adequate socialisation spaces close to areas of highest occupancy and the legibility of the space will be retained through a down-stand beam.
- **2.052 / 2.053A:** This is a historic dividing wall between an apparatus and preparation room adjoining the lecture theatre. Its removal will cause less than substantial harm through loss of fabric and perception of layout. However, it is considered necessary to provide appropriate space when considering the wider uses and

layout across the building. This harm is also mitigated by the insertion of a wellbeing room to the northern part of this space, which reinstates a historic, now blocked, door opening from the lecture room. This will enhance legibility of the lost historic connection between the lecture room and preparation space – a key historic relationship.

Proposed layout

The spatial strategy has considered the requirements for different users of the building, including where private meeting or workspaces are needed (the numbers below use those outlined on the Arcadis IBI Proposal drawings, accounting for new rooms).

- **G.055 and 2.051:** The significant 'Rutherford Room', which retains historic wall and floor coverings and aids legibility of the building's history through interpretation boards, and the large historic lecture theatre are to remain open spaces, preserving their critical contribution to the building through the quality of finishes and perception of historic use.
- **G.057 and G.058:** These are required for meeting spaces and as such will involve installation of glazed partitions. This is considered, however, a neutral addition as the lightweight nature of the design will enable legibility of the historic volume, enhanced by key elements such as the glazed brickwork.
- **1.051, 1.052, 1.053, 1.057, 2.053, 2.054:** These, following removal of modern partitions, will remain as large historic volumes. Meeting spaces are achieved using small freestanding,

and reversible, pods. As such, the historic volume of these spaces, enhanced through removal works, are preserved.

- **Corridors:** It is proposed to add meeting rooms to the east-west corridors at first and second floor. This has a small degree of impact on perception of the historic volume, though is mitigated given the partitions are glazed with discrete frames, and further reinforced by retention of the doors into the historic volumes beyond. The historic balconies will also remain accessible.
- **3.01:** This is currently a modern plant room and is to be partitioned for a server room. This will enable removal of the server room from the first floor where it has divided the historic anteroom to the Head of Physics' office (allowing reinstatement).
- **North-east rooms:** These spaces, historically single, open volumes (other than the first floor, separated between an anteroom and office for the Head of Physics) are proposed to house new WC and service spaces, requiring a higher level of partitioning in historic volumes. This is considered necessary as the current toilet provision, primarily to the west side of the building is inadequate and much is in poor visual and physical condition. Moving them to the north-east corner creates a rationalised and adequate provision whilst limiting additional penetrations, given siting, through historic fabric to four additional vertical stacks (causing a low level of less than substantial harm through historic ceiling and floor structures) leading into the basement. Furthermore, the impact on the historic volume is mitigated through use of

part height WCs, with the historic volume of the space appreciated in the circulation spaces. Furthermore, to the first-floor, reorientation of this space has allowed reinstatement of the volume of the historic anteroom to the Head of Physics' Office (proposed as a tea point), including the doorway location. Creation of the WC at ground floor, will require opening a doorway into the corridor (where there is currently a modern interior window, in a historic location), given the existing doorway leads off the staircase (leading to fire safety concerns). Legibility of this space is still evident through retention of this door to the staircase side (boarded to the interior for fire and acoustics). Furthermore, the current tiles, whilst visually high-quality, are later repairs and their broader influence on the space is retained given only a small proportion are to be removed. As such, whilst having a low level of less than substantial harm through alteration to the layout, and loss of wall fabric, this is necessary given the need for WC provision and is mitigated through retention of the historic door.

5.1.2.2 Services and Finishes

Throughout the building, the intention is to significantly enhance and pare back the interior to something more akin to the original internal design of the historic spaces. Of critical importance, is the intention, where possible, to remove later plasterboard to reveal the historic glazed brickwork beneath. The extent of this will be subject to further investigation (and dependent on whether mechanical or adhesive fixings were

used, due to the techniques that will be needed to remove them). This will be of substantial benefit in all spaces it can be undertaken.

The proposal, further, includes:

- **Colour palette and finish:** A colour and soft furnishings palette has been designed to draw on the historic hues of the interior. As an example of creating a more appropriate aesthetic, the tongue and groove panelling in 2.052 is to be stripped of its modern, blue paint, and varnished, bringing it back to the original aesthetic. Similarly, the architrave of the stainless-steel lift shaft, visually prominent, will be lined with tiles to match the historic blue tiles in the corridors. Furthermore, the circulation spaces in the new WCs will draw on the precedent of corridors with new terrazzo.
- **Skirtings:** The skirting boards throughout the building are modern, and they are proposed for removal, paring back to simple timber or vinyl coving.
- **Historic doors:** The proposal will retain historic doors, with sensitive fire upgrades. Doors in new partitioned spaces will be retained to one side, and boarded to the other for fire safety and acoustics.
- **Screens:** Throughout the stair core, modern screens have been inserted. These are clunky and visually poor. It is proposed to replace these with a more visually discrete set of screens to the staircase and corridors (the latter a new addition, but preserving appreciation of the volume through their discrete design) to enhance fire compartmentalisation.

- **Mezzanine (2.052) and Staircase (2.053):** The mezzanine in 2.052 is a later addition and its visually poor. The intention is to introduce new cladding, stair coverings and balustrading, drawing on the design of historic joinery in the space – including the observation balconies. Similarly, the staircase in 2.053 is a later addition, and this is also proposed to be upgraded visually.
- **Services:** Throughout the building, there is a high level of visually and physically intrusive services including plastic dado trunking and high-level trunking to corridors below, and impacting appreciation of, historic cornices. These will be carefully removed. Concurrently, an approach has been developed to limit new provision, such as exploring use of task lighting in desk furniture. Furthermore, investigation and repairs to the floors have revealed it is possible to create spaces for services in the floor voids. This will dramatically decrease the extent of visually and physically intrusive services. Where required to exit the floor, services will be undertaken using vertical drops – a style reminiscent of the building's original interior as shown on historic photographs in the sections above.
- **Acoustic baffles:** The tall height of the historic volume of the spaces, and hard wall surfaces (tiles), require use of acoustic baffles to minimise the poor sound quality of the spaces. Rather than lowering ceilings, baffles would be affixed to the ceilings. While these have the potential to impact appreciation of the volume of the space, they are less intrusive than suspended ceilings, and have a very minor physical impact on the

ceiling through affixing. They are considered necessary for usability of the space, and have been designed as sensitively as possible – running perpendicular to the corridor walls to ensure legibility of the volume on entering rooms.

Approach to the interior: the balance

Some aspects of the proposals would cause ‘less than substantial’ harm to the building’s significance, principally removal of one historic wall and two modern walls from historic locations, the higher levels of partitioning in service areas including the WCs, additional partitions in select areas (such as meeting rooms), and to a lesser degree the visibility of the historic doors in certain room interiors. However, these works need to be considered in relation to the overarching usability of the building and the way in which this supports its longer-term conservation and use, with areas such as the WCs a key and necessary amenity, as well as required upgrades for aspects such as fire safety and acoustic comfort. Careful attention has been given to mitigating this impact where possible through good design, freestanding furnishings, partial height WCs, and scribing around moldings where necessary. However, more critically this harm should further be balanced against the myriad of aesthetic improvements and rationalisations to the interior, including better revealing the proportions of certain rooms, addressing the visual impact of modern services and aspects of the proposal such as reinstatement of a doorway from the former lecture theatre, and revealing previously covered internal glazed brick. Overall, when balancing

the isolated instances of harm with the holistic heritage benefits, this assessment finds that there will be no harm to heritage significance.

5.1.3 Retrofit

A critical part of the building’s refurbishment is the careful consideration given to thermal upgrade and enhancing efficiency of the building longer term. This aligns with the legal requirement to meet carbon reduction targets in the UK, and national planning policy that supports development that contributes to radical reductions in greenhouse gas emissions (NPPF:152). Specifically, the proposal seeks to take a holistic approach and deal concurrently with the windows and roof.

5.1.3.1 Windows and External Doors

Whilst initially considered original, further inspection by the architectural team has indicated there is a mix of historic and later casement windows (though the outer frames, built into the masonry, are historic), with generally plain glass across the façade. Evaluation indicates that approx. 70% are later (with historic casements concentrated primarily on the stair core). Whilst there is some interest, given the retention of earlier frames, this is generally limited, with greater architectural interest in the overarching architectural pattern and masonry details which surround. It is proposed to replace the glass with vacuum-sealed units and replace the surrounding casements on a like-for-like basis, retaining the surrounding frame to

both preserve fabric and avoid any physical impact on the highly significant glazed tiles and surrounding masonry detail.

There are some windows that would not be replaced, given they are in separate use by the museum. Those to the east elevation are fully encapsulated within a later extension, so would not have a direct visual relationship, but a small portion of the south frontage windows would remain as existing. This, however, is unlikely to result in a perceptible variance across the façade given the intention to match the casements like-for-like, and the limited visual difference between the types of glazing, which would have low reflectivity.

The works would result in a low level of ‘less than substantial’ harm through the removal some earlier fabric, and some potential variations in windows across the façade given ownership division. However, this should be balanced against the significant improvements the works would bring to the thermal efficiency of the building going forward (when considered also in relation to the proposed roof works). Various options were considered during the design process ranging from draught-stripping to wholesale replacement, as well as the installation of secondary glazing. In this instance the solution presented the least harmful means of achieving the maximum thermal benefits; secondary glazing and the wholesale removal of the windows both likely resulting in damage to the highly significant exposed glazed bricks to the interior and fine masonry detailing.

5.1.3.2 Roof

Coinciding with the window proposals, there is a need to improve the thermal performance of the original roof structure, which is currently uninsulated. Options have been explored to consider how best to install roof insulation without harming the historic ceilings and roof coverings. The chosen approach is to retain the early metal-lath ceilings in situ and insert insulation above this, effectively resulting in a raised roof profile of 54mm. This proposal would result in a degree of physical and visual change to the building. For example, the existing clay roof tiles (considered historic, although relating to the advent of mass production and of no unique design) would need to be lifted (retained for reinstatement) and the sarking boards and battens replaced, which would result in 'less than substantial' harm through the removal of some historic fabric – although not beyond that would which occur through the periodic renewal of a building. Furthermore, the primary elements, such as king posts, would be retained, whilst the works would allow elements of later reworking to the roofs, such as the vapor impermeable bituminous felt layer to several areas, to be removed. Similarly, the profile of would roof will need to be raised by 54mm; this would have a largely imperceptible impact on the external appearance of the roofscape or the building more widely, whilst careful consideration has been given to how this change would interact with verges, chimneys, and other detailing (outlined in the accompanying drawings) with the connection achieved through provision of flashing rather than a course of tiles, the impact being limited to a small level of additional covering of material largely obscured by the existing

parapets. The innovative and early use of metal laths in the ceiling will be unaffected by this solution, allowing architectural and historic interest to be preserved.

5.2 Justification of the Proposals

The Rutherford Building is at a critical point in its history. The University are keen to invest in the building to enable and ensure its longer-term use for academic and postgraduate research, continuing and perpetuating the building's contribution to academic collaboration. To achieve this a series of works are required which would either result in enhancements to heritage significance, or cause 'less than substantial harm' to isolated areas - primarily through some loss of internal and external fabric (e.g., walls, windows, and roof) and partitioning of historic spaces where necessary. On balance, these heritage benefits and harmful impacts are considered to result in an overall benefit to heritage significance.

As explained in Section 1.2, Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires planning applications to be determined in accordance with the development plan, unless material considerations indicate otherwise. The development plan applicable to the building comprises **The Core Strategy (2012)** and saved policies from the **Unitary Development Plan (1995)**. **Policy EN3 Heritage in the Core Strategy** establishes a presumption in favour of '*development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the city centre*' and that '*proposals which enable the re-use of heritage assets will be encouraged where*

they are considered consistent with the significance of the heritage asset'. Similarly, **Policy 19 Listed Buildings of the UDP** indicates the '*council will have regard to the desirability of securing the retention, restoration, maintenance and continued use of such buildings*'...provided '*in its opinion, there would be an adverse effect on its architectural historic character*'. The proposals are considered to part meet these policies. Specifically, the proposals seek to ensure reuse of the building in the longer-term with an approach that balances its interest with usability through managed change. However, elements of the proposals, as outlined above, would lead to 'less than substantial' harm.

Weighing this harm, however, with public benefits is a key factor in the **NPPF**. As noted above, the courts have previously held that a decision-maker that properly works its way through the relevant paragraphs of the NPPF will typically have satisfied its statutory duties under the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990 (see *Mordue v Secretary of State for Communities and Local Government* (2015)). Paragraph 199 of the NPPF makes clear that great weight should be given to the conservation of designated heritage assets, irrespective of whether the harm amounts to substantial harm, total loss or less than substantial harm to its significance. As outlined in detail above, it is considered that the proposals would cause some 'less than substantial' harm to the significance of the listed building, principally through the loss of historic fabric and alterations to plan form, in accordance with the terminology of the NPPF. Paragraph 202 of the NPPF states that any 'less than substantial' harm to the

significance of a designated heritage asset should be weighed against the public benefits of the proposal. It is considered that in this case, the 'less than substantial' harm resulting from the proposals would be outweighed by the degree to which the proposals would directly lead to heritage-focused public benefits. Specifically, this includes the overarching benefit of securing its longer-term use consistent with the purpose and philosophy in which it was designed, continuing the spirit of academic collaboration at the heart of its origins, through the provision of spaces for academic research and study, which requires a certain level of amenity, as well as improvements to thermal performance. This is further reinforced by specific elements of the proposal including enhancement to the visual aesthetic of the building's, i.e., through works to the internal and external spaces and fabric, including removing and rationalising poor later services such as trunking, enhancements to the ramp, and revealing the earlier glazed brickwork.

It is therefore the conclusion of this report that the proposals would meet the statutory duties of the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990, the policy requirements of the Local Plan and the tests for sustainable development outlined in the NPPF insofar as they relate to the historic environment.

Appendix I - Statutory List Description

Manchester University Rutherford Building, Coupland Street, Off Oxford Road, Manchester

Grade: II

List Entry Number: 1402635

Date first listed: 19th October 2011

Summary

University physics laboratory, now administrative offices. 1898-1901 by James William Beaumont in collaboration with Professor Arthur Schuster over the interior arrangements.

Reasons for Designation

The Rutherford Building and Hopkinson memorial wing (formerly the Physical Laboratories and John Hopkinson Electrotechnical Laboratory) of 1898-1901 by James William Beaumont is designated at Grade II for the following principal reasons: * Architect: Designed by James William Beaumont, a prominent Manchester architect, with a number of listed buildings to his name, in collaboration with the Professor of Physics, Arthur Schuster, resulting in a well thought-out bespoke university science laboratory building * Historic interest: Ernest Rutherford led the Manchester physics laboratories between 1907 and 1919, and it was in this specific building that he carried out ground-breaking research resulting in his discovery of the nuclear atom in 1911, subsequent splitting of the atom in 1917, and initiation of the field of nuclear physics * Design: The building, which was one of the largest physical laboratories in the world when built, combined the practicalities required to provide first-class teaching facilities covering electrical

engineering, electro-chemistry, practical physics, and research, with a judicious use of more elaborate detailing to the building, concentrated on the main entrance which incorporates the university coat of arms and motto, manifesting a sense of civic pride in the provision of this dedicated science building at a provincial university. * Interiors: Much of the original layout survives and the rooms retain their original glazed brick linings which, although more costly, were used to facilitate the cleaning and brightness of the rooms. Other original features include the decorative dado tiling and terrazzo flooring to the wide corridors, original staircases, panelled doors, moulded architraves, moulded cornices, observation balconies, panelled ceiling and wooden roof trusses in the large lecture room. * Group Value: The Rutherford Building forms an important component of the development of the science faculty at the University of Manchester and is located close to a number of other listed university buildings including the Main Quadrangle (Grade II*), the Museum Extensions (Grade II) and Former Department of Metallurgy (Grade II), both on Oxford Road, and the Pharmacy Department, formerly the Medical School, Coupland Road (Grade II).

History

The Rutherford Building was originally known as the Physical Laboratories. Work commenced in 1898, and the building was formally opened in 1901. It was built to designs by James William Beaumont in collaboration with Professor Arthur Schuster over the interior arrangements. When built they were amongst the largest and best-equipped physical laboratories in the world. The building was partially funded by anonymous

donations totalling £17,000, thought by some to have come from Schuster himself. To the rear of the main building is a contemporary wing referred to on a stone plaque as The John Hopkinson Electrotechnical Laboratory which was erected and equipped in 1899 in memory of Dr John Hopkinson FRS by his parents, relatives and friends. (Hopkinson was an eminent electrical engineer born in Manchester who had studied as a student at Owens College and died in 1898 in an Alpine climbing accident.)

James William Beaumont was a leading Manchester architect of the late C19 and early C20, whose designs include the Whitworth Art Gallery, Manchester (Grade II), Pendlebury Hall, Stockport (Grade II), Winters Buildings, 28-32 St Ann Street, Manchester (Grade II), a former packing warehouse on Tariff Street, Manchester (Grade II), and Hyde Town Hall (Grade II).

Arthur Schuster had moved as a child to Manchester from Germany in 1869 after the family textile business transferred there. After attending Henry Roscoe's evening classes in science at Owens College, he determined to study physics. He was subsequently appointed professor of applied mathematics at Owens College in 1881, which in the previous year had become the first college of the new Victoria University, and in 1888 became professor of physics. From 1903-5 Schuster was dean of the faculty of science before resigning his chair in 1907, due in part to ill health, having first ensured Ernest Rutherford would become his successor. He also left the laboratory his personal assistant, Hans Geiger, who went on to work closely with Rutherford. Ernest Rutherford led the Manchester laboratory from 1907 to 1919, before leaving to work in

Cambridge. It was whilst he was working in Manchester that he discovered the nuclear atom (1911), split the atom (1917), and initiated the field of nuclear physics. In 2006 the University of Manchester renamed the building the Rutherford Building in honour of its most famous former resident.

A contemporary report stated that Beaumont was sent to visit the principal modern laboratories in Germany by the Council of Owens College before drawing up the plans for the building. It also reported that Professor Schuster advocated an internal arrangement with rooms sufficiently large to accommodate at least several students rather than individual rooms for single students (which was the tendency in some contemporary continental laboratories) as experience had taught him the educational value of mixing senior and junior students together. There was a carefully planned system of ventilation designed to exclude dust as far as possible from all the rooms and especially from instrument cases, and many rooms were supplied with water, gas, steam for experimental purposes, and compressed air, conveyed by a series of pipes coloured differently to enable them to be easily distinguished. A 1906 publication describes the building as being arranged so that the ground floor was devoted to electrical engineering and electro-chemistry; the first floor to general instruction in practical physics; and the second floor and basement mainly to research purposes. A large lecture theatre, seating 200, and a smaller lecture room, seating 25, were also situated on the second floor. On the roof was a small astronomical observatory. The Hopkinson memorial wing contained a dynamo house containing seventeen examples of types of direct and alternating-

current generators and motors, an accumulator room, photometer room, and the electro-chemical laboratory. It is visible to the rear on a drawing of the building by Beaumont.

Details

PLAN: L-shaped building of two and three storeys over a raised basement. East range, running north-south, contains largest laboratory and lecture room; west range, running east-west, contains two parallel series of rooms separated by wide spine corridors. The ground floor was devoted to electrical engineering and electro-chemistry, the first floor to general instruction in practical physics, and the second floor and basement mainly to research purposes. There is a flat platform on the roof of the west range, which originally housed an observatory. Attached to north end of east range is a single-storey range over a raised basement which was formerly a dynamo house for the Hopkinson memorial wing; it contained seventeen examples of direct and alternating-current generators and motors.

EXTERIOR: The front, south elevation is of eight bays with a gable over the third bay, the main entrance in the fourth bay, and a slightly projecting wide, four-bay gable to the right. Stone window surrounds with heavy stone mullions and thinner stone transoms with lintel bands to basement and ground floors, and sill bands to first and second floors, which carry round onto the east side elevation: bays one and two have four-light mullion and transom windows on the ground and first floors; the second-floor of bay one is blind with a two-light mullion window in bay two; bay three has six-light windows on ground, first and second floors; bay four

has a four-light window on the first floor and two-light mullion window on the second floor; bays five to eight have four two-light transom windows on the ground and first floors. The windows on the second and third storeys are set in a stepped stone panel, with four widely spaced single-light windows on the second floor and four closely spaced single light windows on the third floor. The main entrance has a stone fronted porch with stone steps leading up to a wide, depressed arch doorway with panelled double doors, narrow side lights and five square overlights, all with Art Nouveau leaded glass, flanked by two octagonal columns with cupolas. A triangular pediment over the doorway has a relief carving of the University of Manchester's coat of arms and motto (ARDUUS AD SOLEM). The area in front of the building has low brick walls with moulded stone coping and decorative iron railings. At ground-floor level between bays one and two is a circular blue plaque commemorating Ernest Rutherford's achievements within the building; between bays five and six is a circular blue plaque commemorating Alison Uttley, children's author and Physics graduate of the university in 1906.

The west side elevation is of three bays with symmetrical gables over the outer bays. The central bay has a wide doorway with double, part-glazed doors and a mullioned overlight; in front are modern steps and a ramp. Above, on the first floor is a doorway set in a segmental-arched glazed screen, which opens onto a small stone balcony with decorative iron railings (originally used to adjust telescopes and practice using a sextant). Immediately to the left is a narrow single-light window. On the second floor is a similar central doorway set in a segmental-arched

screen, which opens onto a wide stone balcony with decorative iron railings running almost the entire width of the façade. To the immediate left of the doorway is a small window and to the immediate right are two small apertures with a projecting stone ledge, with a similar single aperture and ledge towards the right corner (the room to the rear contained a Rowland concave grating (spectrograph) and the apertures enabled sunlight to enter via helioscopes placed on the ledges). The left bay has a stone segmental-arched window frame containing a wooden canted bay window. The right bay has a single-light window.

The east side elevation is of five bays defined by buttresses. The left bay is wider with a gablet over; it has six-light mullion and transom windows on the ground and first floors, three single-light windows on the second floor set in a stepped stone panel with a single-light window above in the gablet. The remaining bays have four-light mullion and transom windows on the ground, first and second floors.

INTERIOR: The main entrance opens into a porch with barrel-vaulted and panelled ceiling, orange terracotta screen with double doors, and side and overlights, the upper lights with Art Nouveau leaded glass. Beyond is an open space with two wide segmental arches of cream-coloured brick; the arch to the rear (now with an inserted glazed screen containing double doors) opens onto a stairwell containing the main staircase and a corridor through to the lobby of the Hopkinson memorial wing; the left arch opens onto the wide spine corridor. The open well staircase has concrete steps and half landings supported on iron girders, decorative iron balusters with a moulded wooden handrail and blue tile dado. Features

of note include corridors with terrazzo flooring with black and white border bands, blue glazed tiling to dado height with Art Nouveau floral border, and moulded cornices. Rutherford's personal laboratory is located on the ground floor in the north-west corner of the building; along with many other rooms the room is lined with glazed brick, with an orange brick dado with dark brown border and cream bricks above (in some rooms the glazed bricks are covered with plasterboard and some are painted). All rooms have moulded cornices, wide ground-floor doorways have six-panelled doors, with four-panelled doors on the upper floors. The east range contains a large former lecture room on the second floor which rises through to an open roof with wooden roof trusses and panelled ceiling. High on either side of the south wall is an individual observation balcony. A modern mezzanine floor has been inserted in part of the room.

The Hopkinson memorial wing has a stone wall plaque in the east wall of the corridor inscribed 'THE JOHN HOPKINSON ELECTROTECHNICAL LABORATORY / This portion of the building / was erected and equipped in the year 1899 / in memory of / Dr JOHN HOPKINSON F.R.S./ by his parents relatives and friends'. The lobby and corridor have glazed brown and cream bricks; the bricks in the dynamo room have been painted blue. The dynamo room has iron roof trusses; Perspex sheeting has been inserted beneath the original skylights to each side of the ridge. Attached to the west gable wall is a metal relief portrait of John Hopkinson.

The modern entrance block to the museum extension on Oxford Road which is attached to the north-east corner of the Rutherford Building is not of special interest.

Appendix II - Planning Policy and Guidance

Planning (Listed Buildings and Conservation Areas) Act 1990

The Act is legislative basis for decision making on applications that relate to the historic environment.

Sections 16 and 66 of the Act impose a statutory duty upon local planning authorities to consider the impact of proposals upon listed buildings.

Section 16 of the Planning (Listed Buildings and Conservation Areas) Act 1990 states that:

[...] in considering whether to grant listed building consent for any works the local planning authority or the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.

Similarly, section 66 of the above Act states that:

In considering whether to grant permission for development which affects a listed building or its setting, the local planning authority, or as the case may be the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.

Local Policy

Manchester City Council's Core Strategy (2012)

Policy EN 3 Heritage

Throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.

New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains.

Proposals which enable the re-use of heritage assets will be encouraged where they are considered consistent with the significance of the heritage asset.

The Unitary Development Plan (1995)

19. LISTED BUILDINGS

DC19.1 *In determining applications for listed building consent or planning applications for development involving or having an impact on buildings of Special Architectural or Historic Interest, the Council will have regard to the desirability of securing the retention,*

restoration, maintenance and continued use of such buildings and to protecting their general setting. In giving effect to this policy, the Council will:

- a. Not grant Listed building consent for the demolition of a listed building other than in the most exceptional circumstances, and in any case, not unless it is satisfied that every possible effort has been made to continue the present use or to find a suitable alternative use;
- b. Not permit a change of use of a listed building, where it would have a detrimental effect on the character or appearance of the building;
- c. Not permit any external or internal alteration or addition to a Listed building where, in its opinion, there would be an adverse effect on its architectural or historic character;
- d. Seek to preserve and enhance the settings of listed buildings by appropriate control over the design of new development in their vicinity, control over the use of adjacent land, and where appropriate, by the preservation of trees and landscape features;
- e. Permit demolition only where there are approved detailed plans for redevelopment and where there is evidence of a firm building contract;

- f. Not permit alterations to a listed building which would prevent the future use of any part of the building, in particular upper floors or basements, or where poor maintenance is likely to result.

National Planning Policy Framework

Any proposals for consent relating to heritage assets are subject to the policies of the NPPF (July 2021). This sets out the Government's planning policies for England and how these are expected to be applied. With regard to 'Conserving and enhancing the historic environment', the framework requires proposals relating to heritage assets to be justified and an explanation of their effect on the heritage asset's significance provided.

Paragraph 7 of the Framework states that the purpose of the planning system is to 'contribute to the achievement of sustainable development' and that, at a very high level, 'the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs'.

At paragraph 8, the document expands on this as follows:

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives:

a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

and notes at paragraph 10:

10. So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development (paragraph 11).

With regard to the significance of a heritage asset, the framework contains the following policies:

195. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

In determining applications local planning authorities are required to take account of significance, viability, sustainability and local character and distinctiveness. Paragraph 197 of the NPPF identifies the following criteria in relation to this:

the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;

b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and

c) the desirability of new development making a positive contribution to local character and distinctiveness

With regard to potential 'harm' to the significance designated heritage asset, in paragraph 199 the framework states the following:

...great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

The Framework goes on to state at paragraph 200 that:

Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification.

With regard to 'less than substantial harm' to the significance of a designated heritage asset, paragraph 202 of the NPPF states the following;

202. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

National Planning Practice Guidance

The National Planning Practice Guidance (NPPG) was published on 23 July 2019 to support the National Planning Policy Framework (NPPF) and the planning system. It includes particular guidance on matters relating to protecting the historic environment in the section: Conserving and Enhancing the Historic Environment.

The relevant guidance is as follows:

Paragraph 2: What is meant by the conservation and enhancement of the historic environment?

Conservation is an active process of maintenance and managing change. It requires a flexible and thoughtful approach to get the best out of assets as diverse as listed buildings in every day use and as yet undiscovered, undesignated buried remains of archaeological interest.

In the case of buildings, generally the risks of neglect and decay of heritage assets are best addressed through ensuring that they remain in active use that is consistent with their conservation. Ensuring such heritage assets remain used and valued is likely to require sympathetic changes to be made from time to time. In the case of archaeological sites, many have no active use, and so for those kinds of sites, periodic changes may not be necessary, though on-going management remains important.

Where changes are proposed, the National Planning Policy Framework sets out a clear framework for both plan-making and decision-making in respect of applications for planning permission and listed building consent to ensure that heritage assets are conserved, and where appropriate enhanced, in a manner that is consistent with their significance and thereby achieving sustainable development. Heritage assets are either designated heritage assets or non-designated heritage assets.

Part of the public value of heritage assets is the contribution that they can make to understanding and interpreting our past. So where the complete or partial loss of a heritage asset is justified (noting that the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted), the aim then is to:

- capture and record the evidence of the asset's significance which is to be lost
- interpret its contribution to the understanding of our past; and
- make that publicly available (National Planning Policy Framework paragraph 199)

Paragraph 6: What is "significance"?

'Significance' in terms of heritage-related planning policy is defined in the Glossary of the National Planning Policy Framework as the value of a heritage asset to this and future generations because of its heritage interest. Significance derives not only from a heritage asset's physical presence, but also from its setting.

The National Planning Policy Framework definition further states that in the planning context heritage interest may be archaeological, architectural, artistic or historic. This can be interpreted as follows:

- **archaeological interest:** As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point.

- **architectural and artistic interest:** These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, like sculpture.
- **historic interest:** An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history, but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity.

In legislation and designation criteria, the terms 'special architectural or historic interest' of a listed building and the 'national importance' of a scheduled monument are used to describe all or part of what, in planning terms, is referred to as the identified heritage asset's significance.

Paragraph 7: Why is 'significance' important in decision-taking?

Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset, and the

contribution of its setting, is very important to understanding the potential impact and acceptability of development proposals.

Paragraph 13: What is the setting of a heritage asset and how should it be taken into account?

The setting of a heritage asset is defined in the Glossary of the National Planning Policy Framework.

All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. The setting of a heritage asset and the asset's curtilage may not have the same extent.

The extent and importance of setting is often expressed by reference to the visual relationship between the asset and the proposed development and associated visual/physical considerations. Although views of or from an asset will play an important part in the assessment of impacts on setting, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust, smell and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. For example, buildings that are in close proximity but are not visible from each other may have a historic or aesthetic connection that amplifies the experience of the significance of each.

The contribution that setting makes to the significance of the heritage asset does not depend on there being public rights of way or an ability to otherwise access or experience that setting. The contribution may vary over time.

When assessing any application which may affect the setting of a heritage asset, local planning authorities may need to consider the implications of cumulative change. They may also need to consider the fact that developments which materially detract from the asset's significance may also damage its economic viability now, or in the future, thereby threatening its ongoing conservation.

Paragraph 15: What is the optimum viable use for a heritage asset and how is it taken into account in planning decisions?

The vast majority of heritage assets are in private hands. Thus, sustaining heritage assets in the long term often requires an incentive for their active conservation. Putting heritage assets to a viable use is likely to lead to the investment in their maintenance necessary for their long-term conservation.

By their nature, some heritage assets have limited or even no economic end use. A scheduled monument in a rural area may preclude any use of the land other than as a pasture, whereas a listed building may potentially have a variety of alternative uses such as residential, commercial and leisure.

In a small number of cases a heritage asset may be capable of active use in theory but be so important and sensitive to change that alterations to accommodate a viable use would lead to an unacceptable loss of significance.

It is important that any use is viable, not just for the owner, but also for the future conservation of the asset: a series of failed ventures could result in a number of unnecessary harmful changes being made to the asset.

If there is only one viable use, that use is the optimum viable use. If there is a range of alternative economically viable uses, the optimum viable use is the one likely to cause the least harm to the significance of the asset, not just through necessary initial changes, but also as a result of subsequent wear and tear and likely future changes. The optimum viable use may not necessarily be the most economically viable one. Nor need it be the original use. However, if from a conservation point of view there is no real difference between alternative economically viable uses, then the choice of use is a decision for the owner, subject of course to obtaining any necessary consents.

Harmful development may sometimes be justified in the interests of realising the optimum viable use of an asset, notwithstanding the loss of significance caused, and provided the harm is minimised. The policy on addressing substantial and less than substantial harm is set out in paragraphs 199-203 of the National Planning Policy Framework.

Paragraph 18: How can the possibility of harm to a heritage asset be assessed?

What matters in assessing whether a proposal might cause harm is the impact on the significance of the heritage asset. As the National Planning Policy

Framework makes clear, significance derives not only from a heritage asset's physical presence, but also from its setting.

Proposed development affecting a heritage asset may have no impact on its significance or may enhance its significance and therefore cause no harm to the heritage asset. Where potential harm to designated heritage assets is identified, it needs to be categorised as either less than substantial harm or substantial harm (which includes total loss) in order to identify which policies in the National Planning Policy Framework (paragraphs 199-203) apply.

Within each category of harm (which category applies should be explicitly identified), the extent of the harm may vary and should be clearly articulated.

Whether a proposal causes substantial harm will be a judgment for the decision-maker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of its special architectural or historic interest. It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed. The harm may arise from works to the asset or from development within its setting.

While the impact of destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later additions to historic buildings where those additions are inappropriate and harm the buildings' significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm, depending on the nature of their impact on the asset and its setting.

The National Planning Policy Framework confirms that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). It also makes clear that any harm to a designated heritage asset requires clear and convincing justification and sets out certain assets in respect of which harm should be exceptional/wholly exceptional (see National Planning Policy Framework, paragraph 200).

Paragraph 20: What is meant by the term public benefits?

The National Planning Policy Framework requires any harm to designated heritage assets to be weighed against the public benefits of the proposal.

Public benefits may follow from many developments and could be anything that delivers economic, social or environmental objectives as described in the National

Planning Policy Framework (paragraph 8). Public benefits should flow from the proposed development. They should be of a nature or scale to be of benefit to the public at large and not just be a private benefit. However, benefits do not always have to be visible or accessible to the public in order to be genuine public benefits, for example, works to a listed private dwelling which secure its future as a designated heritage asset could be a public benefit.

Examples of heritage benefits may include:

- sustaining or enhancing the significance of a heritage asset and the contribution of its setting
- reducing or removing risks to a heritage asset
- securing the optimum viable use of a heritage asset in support of its long term conservation

Other Relevant Policy Documents

Historic England: Historic Environment Good Practice Advice in Planning (March 2015)

Historic England: Conservation Principles and Assessment (2008)

Appendix III - Commemorative Plaques

Commemorative Plaques³⁵

Henry Moseley

A plaque commemorating Moseley was unveiled by Rutherford in the early-1920s and was situated on one of the landings of the main building. It was removed to the new Schuster Building in 1967 and erected in the Moseley Lecture Theatre.

Rutherfordian Commemorative Plaques

Various small plaques recognising the importance of the discoveries made in the department were installed in the main building at an unknown date after Rutherford's departure, probably in the 1950s or early 1960s. Six are known to have existed, those with photographs still being in situ in 1999 and presumably removed during the subsequent remediation works.

1. Basement, Research Room: *"1913. In this room Moseley first measured the K and L series of X-rays photographically and so established the law of atomic numbers"*
2. Basement, Liquid Air Room (1): *"1909 - Here alpha-particles were first counted by an electrical method by Geiger and Rutherford"*
3. Basement, Photographic Room: *"1909 - Geiger and Marsden discovered large angle scattering of alpha-particles here, and later made the accurate measurements which verified Rutherford's scattering law".*
4. Ground floor, Private Research Room (now known as "Rutherford's Room" (1): *"1919. On the bench below the artificial disintegration of nitrogen was first achieved by Rutherford"*
5. Ground floor, Private Research Room (now known as "Rutherford's Room" (2): *"1919 - From 1907 – 1919 Rutherford carried out many of his important researches in this room; notably the determination of e/m for alpha-particles in 1912 and the first successful experiments on the disintegration of light nuclei in 1919".*
6. Second Floor, Transit Room: *"1908 – In this room Rutherford and Royds first collected helium from alpha particles and photographed the spectrum"*

35 See Todd (2021), pp. 37-49.

Appendix IV - Associated Figures

Architect

James William Beaumont (1848-1931) FRIBA

Manchester-born Beaumont trained as an apprentice under Sir James Allanson Picton of Liverpool in 1865-69 and worked as assistant to Corson & Aitken (Manchester) in 1870-71. He established a practice in Manchester in 1873 and later entered partnerships with A. H. Davies Colley (c.1875-78) and Richard F. Beaumont (his brother, c.1886-1894). A new partnership with J. W.'s son William Somerville Beaumont – J. W. Beaumont & Son – was commenced in 1900, with William's brother John Somerville Beaumont joining in 1919 (at which point the firm was renamed J. W. Beaumont & Sons). J. W. Beaumont remained in the partnership until his retirement in 1930.

Beaumont's works included a number of public and municipal buildings. In Greater Manchester, he was responsible for the Whitworth Art Gallery, the Pendlebury Hall and Orphanage (Stockport), Hyde Town Hall and Municipal Buildings, Denton's Working Lads' Club, the Openshaw and Gorton libraries, Pavilion Firs Athletic Ground (Fallowfield), the Chorlton-on-Medlock Free Church Sunday School, Hyde Public Baths, Stockport' Memorial Buildings, the Ancoats hydraulic pumping station and the Albert Square fountain. His commissions for private customers included the Cannon Street Chambers (Manchester), the Ducie Avenue Schools and the Greenheys Board School, the Richard Howard & Co. warehouse, the Peal Assurance Building (St Ann Stret) and the Winter's Building on St Ann's Square. In Lancashire, he designed the Municipal Buildings at Bacup and the Colne Town Hall.

Beaumont was a Fellow of the Manchester Society of Architects and served as President in 1903-1905. At the time of the construction and extension of the Rutherford Building the practice was based at 10 St James's Square.

In memoriam

John Hopkinson (1849-1898)

Hopkinson was the son of a Manchester mechanical engineer. After preparatory studies at Owens College he studied maths at Trinity College, Cambridge and was also awarded a BSc from the University of London. After a short time at his father's company he was appointed an engineering manager at the Chance Brothers optical works (Birmingham), before settling in London as an electrical-engineering consultant.

Hopkinson remained a keen physicist, experimenting in magnetism and electricity, applying James Clerk Maxwell's theory of electromagnetism to problems of electrostatic capacity and residual charge, inventing the three-wire system for electricity distribution (patented in 1882) and developing several means of improving dynamos (i.e. electric generators). With his brother, he developed the general theory of alternating current and mathematically demonstrated that it was possible to operate two alternating current generators in parallel. Studying magnetic permeability at high temperature, he also discovered what would later be known as the Hopkinson peak effect.

Hopkinson was elected a Fellow of the Royal Society in 1878. He declined the post of Professor of Mechanism and Applied Mechanics at Cambridge but did accept the position of Professor of Electrical Engineering

at King's College London (1890), where he oversaw the new Siemens Laboratory. He twice served as the President of the Institution of Electrical Engineers and in 1897 became Major in Command of the newly formed Volunteer Corps of Electrical Engineers.

Hopkinson was killed, with three of his children, in 1898. In his memory, his widow bequeathed funds for the extension of the engineering laboratory at Cambridge University and, presumably, also for the new Physical Laboratories at Manchester.

Proponent of the 1900 building

Sir Arthur Schuster (1851-1934) FRSA

Born in Germany, Schuster studied in Geneva before moving to England in 1870 to join the Manchester branch of Schuster Brothers, the family textile business. He worked for the company for a year whilst attending evening classes at Owens College, before joining the college as a full-time mathematics study. He later completed his doctoral studies at the University of Heidelberg (1871-73), before returning to Manchester and working as an unpaid demonstrator for Balfour Stewart, Professor of Physics. He then returned to Germany to Europe to study in Gottingen and Berlin, spent another year in Manchester as honorary demonstrator (also delivering a course of lectures) and from 1875 to 1880 researched electricity in the Cavendish Laboratory in Cambridge.

Schuster was appointed to the Beyer Chair of Applied Mathematics at Victoria University in 1881, taking up post in Manchester and spending seven years specialising in physics. He succeeded Balfour Stewart

as the Langworthy Professor of Physics on Stewart's death in 1888. During this decade he was actively involved in spectrum analysis research, alongside his work on earthquakes, magnetism, electricity, solar eclipses and atmospheric electricity.

Although retiring in 1907, Schuster remained an Honorary Professor of Physics, provided the laboratory with his personal assistant, Hans Geiger, and endowed a readership in mathematical physics (filled by Harry Bateman, Charles G. Darwin and Niels Bohr). Having been elected a Fellow in 1879, he was also active in the Royal Society, serving, variously, as Secretary, Vice-President and Foreign Secretary in 1919-1924. He was knighted in 1920.

Rutherford and his "boys"

Lord Ernest Rutherford (1871-1937)

Rutherford was born in New Zealand and arrived in England in 1895 to study at Cambridge under J. J. Tomlinson (one-time student of Owens College and the trailblazer in the study of electromagnetic phenomenon). In 1898 he moved to McGill University in Montreal as a Macdonald Professor of Physics, investigating the radioactivity of thorium, developing the theory of emanation and advancing the work of Henri Becquerel and Marie Curie to show that radiation is comprised of alpha, beta and gamma rays,

Rutherford returned to England in 1907, succeeding Schuster as Langworthy Professor of Physics (as had been Schuster's intention), and in 1908 received the Nobel Prize (in chemistry) for his research into '*the disintegration of the elements, and the chemistry of radioactive substances*'.

It was here that student Ernest Marsden, assisted by Geiger, conducted the "gold foil" experiments that led Rutherford to develop the theory of the nuclear atom – today regarded as Rutherford's greatest achievement. In 1911 Rutherford then developed the nuclear atom model (suggesting that atoms are comprised of nuclei surrounded by orbiting electrons), which was further developed by Niels Bohr who moved to the university in 1912. Rutherford was knighted in 1914 and his reputation attracted many international researchers, students and radiochemists to the university. His team "split the atom" (or, rather, achieved nuclear fission) in 1917, initiating an artificial nuclear reaction by firing naturally occurring alpha particles into nitrogen gas.

Rutherford left Manchester in 1919 for Cambridge, where he had been offered the Cavendish Chair, taking with him his laboratory deputy James Chadwick. He continued to build on his earlier work, in 1920 suggesting that hydrogen nuclei (protons) are the building blocks of all matter. He was created 1st Baron Rutherford of Nelson in 1931, the year before his students performed the first fully controlled experiment to split the nucleus.

John Cockcroft, in the 1953 Rutherford Memorial Lecture, remarked that '*[t]he history of Nuclear Physics is very largely the history of Rutherford and his schools*'. Rutherford is today regarded as "the father of modern physics" and a recent study summarises the importance of his time at Manchester as thus:

Ernest Rutherford was probably the most significant experimental physicist in the first half of the twentieth century, both for his own discoveries and for those made by others in the laboratories he directed. He took the newly discovered phenomenon of radioactivity and made it the instrument of the most penetrating investigation of the nature of matter before the advent of particle accelerators. Although he made major discoveries at all of the institutions where he worked, a very significant part of his most important work was accomplished during the twelve years when he was Langworthy Professor of Physics at Manchester, from 1907 to 1919, where his colleagues and students included Moseley, Bohr, Geiger, Marsden, Chadwick, Hevesy, Russell, Boltwood, Nuttall, Makower, Andrade, Lantsberry and Kay, to name only the most outstanding of many. This period culminated in the achievement of artificial nuclear transmutation, as revealed in a tetralogy of papers in 1919³⁶

36 Todd, Rowlands and Cooper (2021), p. 4.

Lawrence Bragg (1890-1971)

Bragg held the Langworthy Professorship from 1919 to 1937.

With his father, Bragg was awarded a Nobel Prize in 1915 for 'services in the analysis of crystal structure by means of X-rays', having developed X-ray crystallography. He remains the youngest-ever recipient of a Nobel Prize for Physics.

Patrick Maynard Stuart Blackett, Baron Blackett (1897-1974)

Blackett succeeded Bragg as the Langworthy Professor in 1937. He was awarded the Nobel Prize for Physics in 1948 in recognition of '*his development of the Wilson cloud chamber method, and his discoveries therewith in the fields of nuclear physics and cosmic radiation*'. His work in cosmic rays and geomagnetism is regarded as having paved the way to radio astronomy.

Schuster, Rutherford, Bragg and Blackett are commemorated in the names of lecture theatres in the Schuster Building.

Niels Bohr (1885-1962)

Born in Denmark, Bohr completed a doctorate in Copenhagen and subsequently studied at Cambridge under J. J. Thomson. Having visited the Manchester Physical Laboratories in 1912 he returned as an employee in 1914-16, under Rutherford, continuing the work that would later culminate in the conception of the periodic table as governed by atomic number (rather than weight). He subsequently became a Professor of Physics at Copenhagen.

Bohrs was the first scientist to apply the quantum concept to the problem of atomic and molecular structure and his work on single-electron atoms led to a Nobel Prize in Physics (1922).

James Chadwick (1891-1974)

Born in Bollington (Macclesfield), Chadwick studied under Rutherford at Manchester, completing first undergraduate studies and then an MSc. Recommended for a scholarship by Rutherford, by 1914 Chadwick was researching in Berlin, supervised by Geiger. Released from an internment camp at the end of the First World War, Chadwick returned to England to work for Rutherford, initially in Manchester and subsequently in Cambridge. With Rutherford, Chadwick hypothesized the existence of the neutron and in 1932 he carried out the experiments that proved its existence. He was awarded a Nobel Prize in Physics in 1935.

Hans Geiger (1882-1945)

The German Hans Geiger was employed as Schuster's assistant in 1906, continuing in this role under Rutherford. Here, he developed the first version of the particle counter, paving the way to the identification of the alpha particle as the nucleus of the helium atom. This made possible Rutherford's hypothesis that the nucleus occupies a small volume at the centre of an atom. By 1912, when he returned to Germany, Geiger was a recognised authority on measurements of radioactivity.

Geiger and Walther Bothe introduced the method of coincidence measurement in 1924-25, Bothe later being awarded a Nobel Prize (after Geiger's death) for

their study of the Compton effect. With his assistant, Walther Müller, Geiger subsequently developed a particle detector measuring ionising radiation (now known as the Geiger-Müller counter).

Ernest Marsden (1889-1970)

Born in Rishton, Marsden won a scholarship to the university and in his final year was assigned to assist Geiger in experiments on the particles emitted during radioactive decay. The findings (published in 1909) led Rutherford to develop the nuclear model of the atom and are regarded as one of the most fundamental scientific experiments of 20th-century physics.

Marsden graduated in 1909 and moved to the University of London as a lecturer, returning to Manchester in 1912 to replace Geiger as Rutherford's assistant. Working with Rutherford and their students in the new field of atomic physics, he was awarded a doctorate in 1913 and on Rutherford's recommendation was appointed Professor of Physics at Victoria University College (New Zealand) in 1915.

Henry Gwyn Jeffreys Moseley (1887-1915)

Employed as a demonstrator for Rutherford in 1910, Moseley used his spare time to work with C. G. Darwin in researching the X-ray spectra of the elements.

Moseley moved to Oxford in 1913/14, continuing his earlier work to establish a new physical basis for the order of the periodic table. He was killed at the Front in 1915 and commemorated in a memorial tablet erected inside the Rutherford Building.

