



Rodney Melville + Partners

CHARTERED ARCHITECTS
HISTORIC BUILDING CONSULTANTS

BRUCE CASTLE MUSEUM

MEND Funded Project
Reservicing and Internal Improvement Works
Design & Access Statement

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Version v1

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Job No. 7440

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APPENDIX

A	List of Application Drawings
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Revision	Details of Revision	Report Author	Q&A - Reviewed by	Approved by	Date
Version VI	First Issue	Grace Lam	Dave Cattell	Dave Cattell	05.12.2023

1.0 INTRODUCTION AND OBJECTIVES



Photo credit: Bruce Castle Museum (Haringey Archive and Museum Service)

1.1 Scope of the Design and Access Statement

1.1.1 This document has been prepared to support an application for Listed Building Consent for the reservicing and internal improvement works at Bruce Castle Museum, Haringey.

1.1.2 This statement has been prepared within the guidelines promoted by the Design Council (previously CABE – Commission for Architect and the Building Environment) for Design and Access Statements.

1.1.3 This document should be read in conjunction with all application information and in particular the drawings listed in *Appendix A* of this document.

1.1.4 The following drawings specifically describe the existing building arrangements:

7440/100/A	Site Location Plan
7440/101	Basement Plan as Existing
7440/102A	Ground Floor Plan as Existing
7440/103A	First Floor Plan as Existing
7440/104A	Second Floor Plan as Existing
7440/106	F6, F7, F8 Internal Elevations as Existing <i>Sheet 1 of 2</i>
7440/107	F6, F7, F8 Internal Elevations as Existing <i>Sheet 2 of 2</i>
7440/111	Basement Plan - Existing Uses
7440/112	Ground Floor Plan - Existing Uses
7440/113	First Floor Plan - Existing Uses
7440/114/A	Second Floor Plan - Existing Uses

1.1.5 The following drawings specifically summarise the proposed works:

7440/120/B	Ground Floor Plan - MEND Funded Works
7440/121/B	First Floor Plan - MEND Funded Works
7440/122/B	Second Floor Plan - MEND Funded Works

1.1.6 Reference should also be made to the accompanying Heritage Statement, which is included separately within the application documents.

1.1.7 This application should be read in conjunction with the following Listed Building Consent applications, which have recently received approval and relate to site operations to investigate the existing building, in order to inform the current proposals:

- LBC application ref. HGY/2023/2060 dated 22.09.2023. for works to open up floors and wall structures to the MEND funded project areas.
- LBC application ref. HGY/2023/2828 dated 20.10.2023 for asbestos removal works within a specific area of the MEND funded project.

1.2 Context of the Application

1.2.1 Bruce Castle Museum is a 16th Century Grade I listed building, set in 8 hectares of parkland on Lordship Lane, Tottenham. Bruce Castle was purchased by the Local Authority in 1892 and has housed the Museum and Archive of local history collections since 1906.

1.2.2 The Museum was successful in obtaining MEND funding for reservicing and internal improvement works to the East Wing of the building. The works are anticipated to start in 2024.

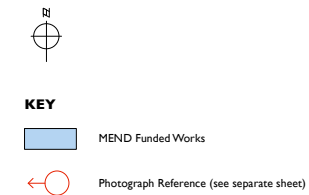
1.2.3 In support of the application for MEND funding, pre-application advice from Haringey Council and Historic England was sought in October 2021. The pre-application Design and Access Statement prepared by Butler Hegarty Architects outlined the initial appraisal and design proposals that formed the MEND funded scheme. Reference was also made to the Condition Survey prepared by Ingleton Wood in 2019.



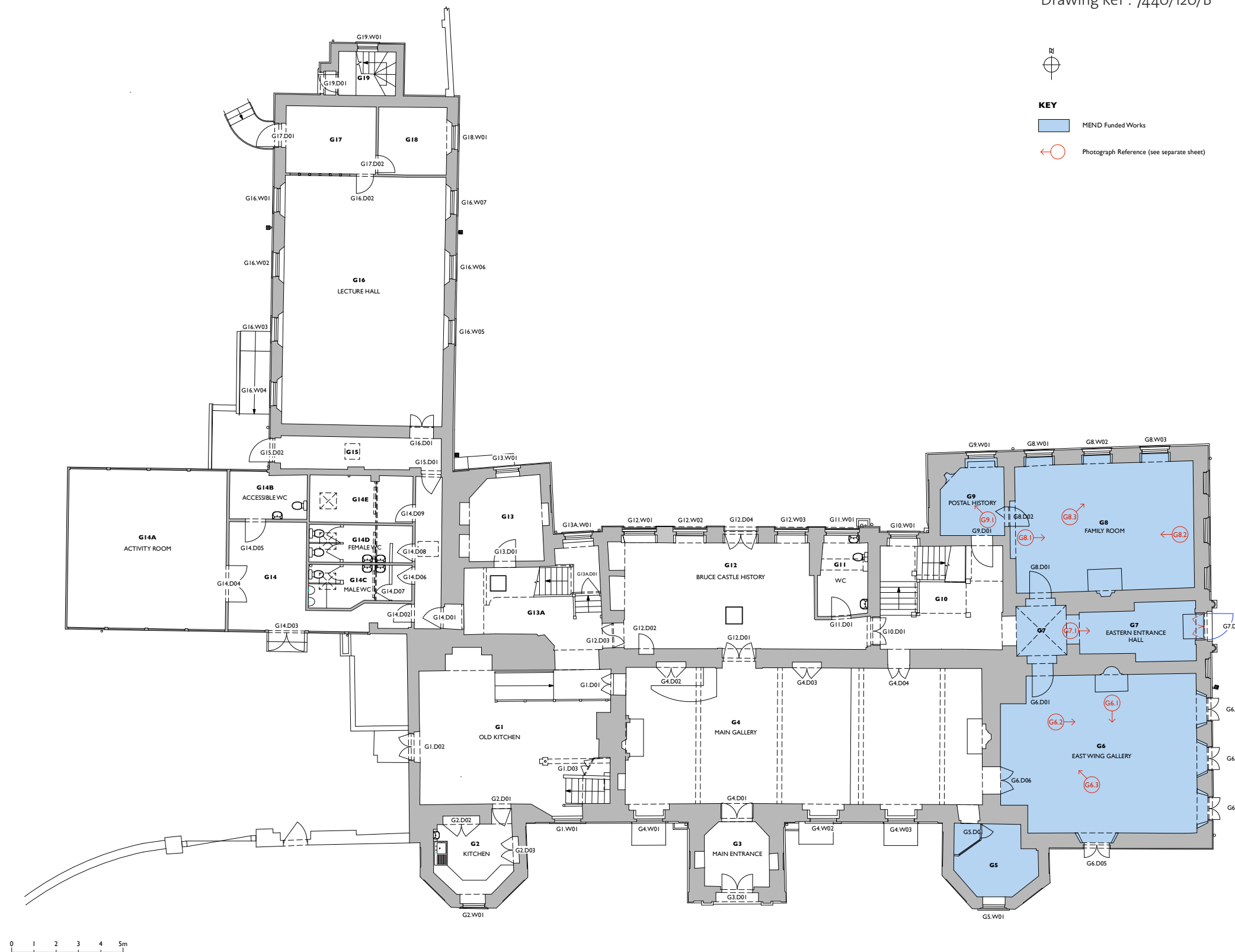
1.2.4	MEND funded areas: Refer to the floor plans 7440/120/B; 121/B and 122/B which form part of this application and indicate the location and extent of MEND funded works, highlighted in blue. The MEND fund will support critical and essential works to the Museum. The key elements of the scope are summarised as follows: • East Wing Structural Repairs: Strengthening of the first and second floors in the south-east corner of the East Wing. • Office Suit Repurposing: Formation of a new gallery in the first-floor space. • Safeguarding of staff, public, building and exhibitions collections: Improvement of the fire detection system and compartmentation arrangements, replacing or redirecting existing service cables through concealed routes. • Internal improvement works: including ceiling repair / replacement and internal refurbishment of the windows.	• The overhaul and repair of the internal joinery of existing windows and external doors within the MEND areas. • The repair, renewal and upgrading of existing doors on fire compartment lines, and fire stopping of penetrations to improve protection in the case of fire and to aid emergency escape. Allowance for such works has been extended beyond the ‘MEND’ areas, with final scope dependent upon further site investigation. • Installation of a new fire detection system to meet L1 requirements, throughout the whole of Bruce Castle Museum. • Works to conceal all hard-wired services, including power, lighting, fire detection, security, data etc, with cables moved to existing floor voids and boxings • The installation of new exhibition lighting to the East Wing galleries. • Redecoration of all rooms within the designated ‘MEND’ area.
1.2.5	With reference to the pre-application planning advice dated 15.10.2021, the proposed works are in the Conservation Officers’ opinion, “necessary, urgent and beneficial for the immediate and long-term fruition and success of Bruce Castle Museum.”	1.2.7 The proposals have been informed by site investigation and survey, as well as the development of a Fire Strategy, for the whole of Bruce Castle Museum, which addresses fire safety, detection, protection, and escape. This strategy will be finalised on completion of the site works, to incorporate any findings arising from the works.
1.2.6	Design Development During the RIBA Stage 3 and Stage 4 detailed design process, the Design Team has carried out in-depth site investigations and consultations, that informed adjustment and additions to the design proposals. The developed design proposals which form the basis of the current application are summarised as follows: • Structural repair and strengthening of the first and second-floor, floors to the south-east corner rooms of the East Wing, to address historic failure resulting from progressive overloading. These works include the removal of first floor partitions and strengthening of second floor partitions. • Replacement of the existing plaster ceilings within the ground floor exhibition space (G6) and the proposed new first-floor gallery (F6- F8) associated with the structural repairs. New ceilings to be formed in lime hair plaster to match the existing, retaining and repairing the existing historic cornices.	

Drawing Ref : 7440/120/B

Outline Scope of Works:

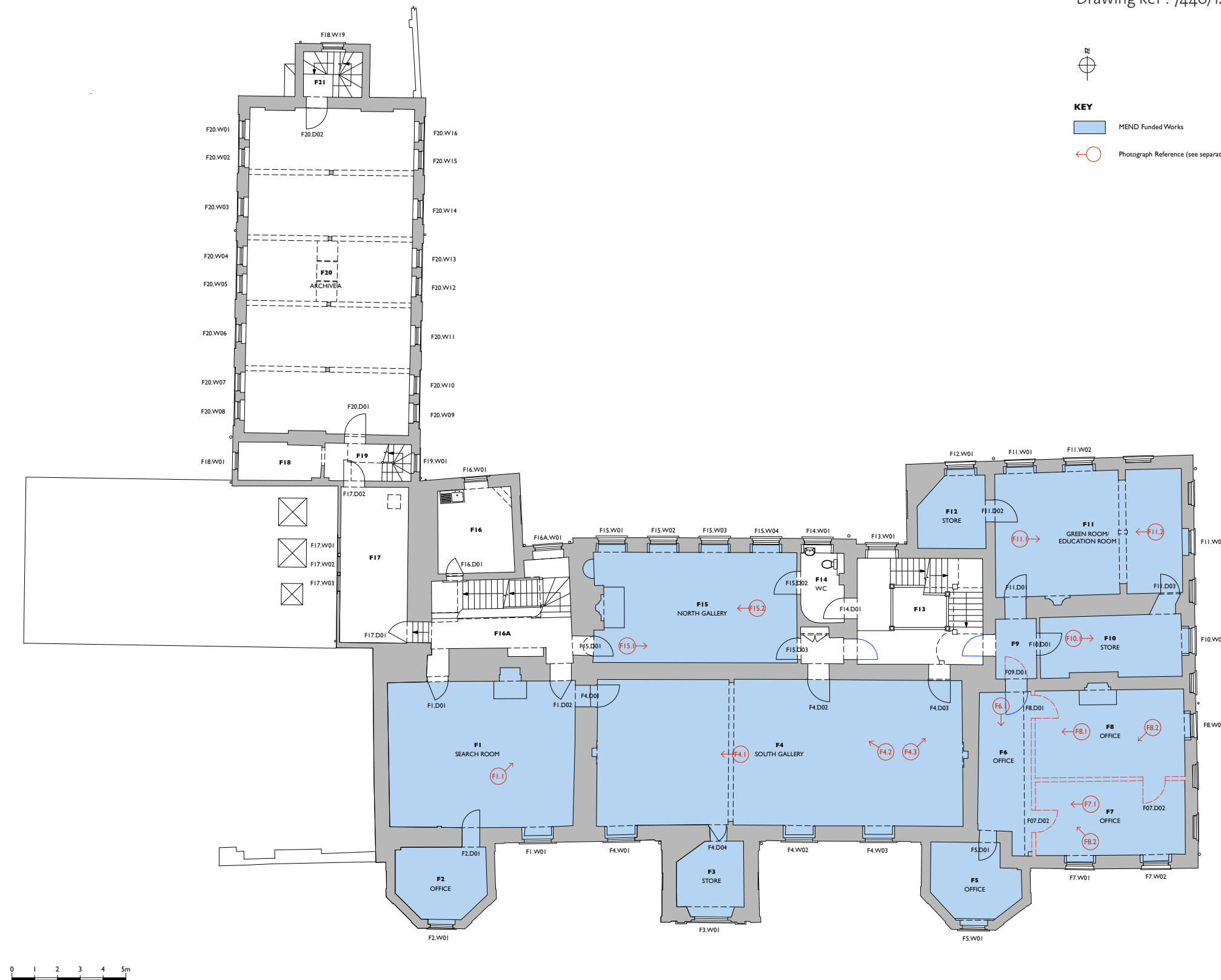
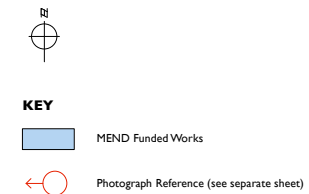


1. Undertake structural repair and strengthening works to the floors of rooms F6-F8 at first floor level and S8-S10 at second floor level, in accordance with the Structural Engineers details. Note the requirement for temporary propping in order to execute these works and agree the necessary methodology with the design team prior to commencement.
2. Ground floor room G6 is to be renovated for use as a gallery space.
3. First floor rooms F6-F8 are to be repurposed to form a new gallery space, including the removal of the existing internal partitions, as indicated. Such works to be set out in the floor strengthening methodology.
4. Provide new lime hair plaster ceilings to rooms G6 and F6-F8, retaining and repairing the existing plaster cornices, with new sections of cast plaster cornices to match. Such works to be set out in the floor strengthening methodology.
5. Overhaul the internal window joinery of all rooms within the MEND areas, as set out in the window schedule and typical repair details. Scope and nature of repairs to be reviewed with the Architect through works to the first 'sample' window.
6. Overhaul external ground floor doors (french windows) within the MEND areas, as set out in the door schedule. Provide a new external door to opening G7.D01, as detailed.
7. Upgrade fire compartmentation to walls making good to existing and new service holes and openings, including to spaces beyond the MEND areas, where necessary works become evident as a result of opening-up.
8. Upgrade fire doors, as set out in the door schedules and including such doors to spaces beyond the MEND areas.
9. Upgrade the existing fire detection and warning system to an L1 level, including to spaces beyond the MEND areas, as set out in the Building Services Engineer's drawings and specification.
10. Remove all surface mounted service cables within the MEND areas and rewire fittings as necessary via new concealed routes within floor / ceiling voids and existing service boxings. Routes are to be agreed with the Design Team prior to installation.
11. Supply and install new exhibition lighting in accordance with the Lighting Designers specification.
12. Redecorate all MEND areas and touch-in / make good decorations to all other areas only where associated with the contract works. Refer to the Finishes Schedule for details



Ground Floor Plan - Location and Summary of MEND Funded Works

Drawing Ref : 7440/121/B



First Floor Plan - Location and Summary of MEND Funded Works

Outline Scope of Works:

1. Undertake structural repair and strengthening works to the floors of rooms F6-F8 at first floor level and S8-S10 at second floor level, in accordance with the Structural Engineers details. Note the requirement for temporary propping in order to execute these works and agree the necessary methodology with the design team prior to commencement.
2. Ground floor room G6 is to be renovated for use as a gallery space.
3. First floor rooms F6-F8 are to be repurposed to form a new gallery space, including the removal of the existing internal partitions, as indicated. Such works to be set out in the floor strengthening methodology.
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7. Upgrade fire compartmentation to walls making good to existing and new service holes and openings, including to spaces beyond the MEND areas, where necessary works become evident as a result of opening-up.
8. Upgrade fire doors, as set out in the door schedules and including such doors to spaces beyond the MEND areas.
9. Upgrade the existing fire detection and warning system to an LI level, including to spaces beyond the MEND areas, as set out in the Building Services Engineer's drawings and specification.
10. Remove all surface mounted service cables within the MEND areas and rewire fittings as necessary via new concealed routes within floor / ceiling voids and existing service boxings. Routes are to be agreed with the Design Team prior to installation.
11. Supply and install new exhibition lighting in accordance with the Lighting Designers specification.
12. Redecorate all MEND areas and touch-in / make good decorations to all other areas only where associated with the contract works. Refer to the Finishes Schedule for details.

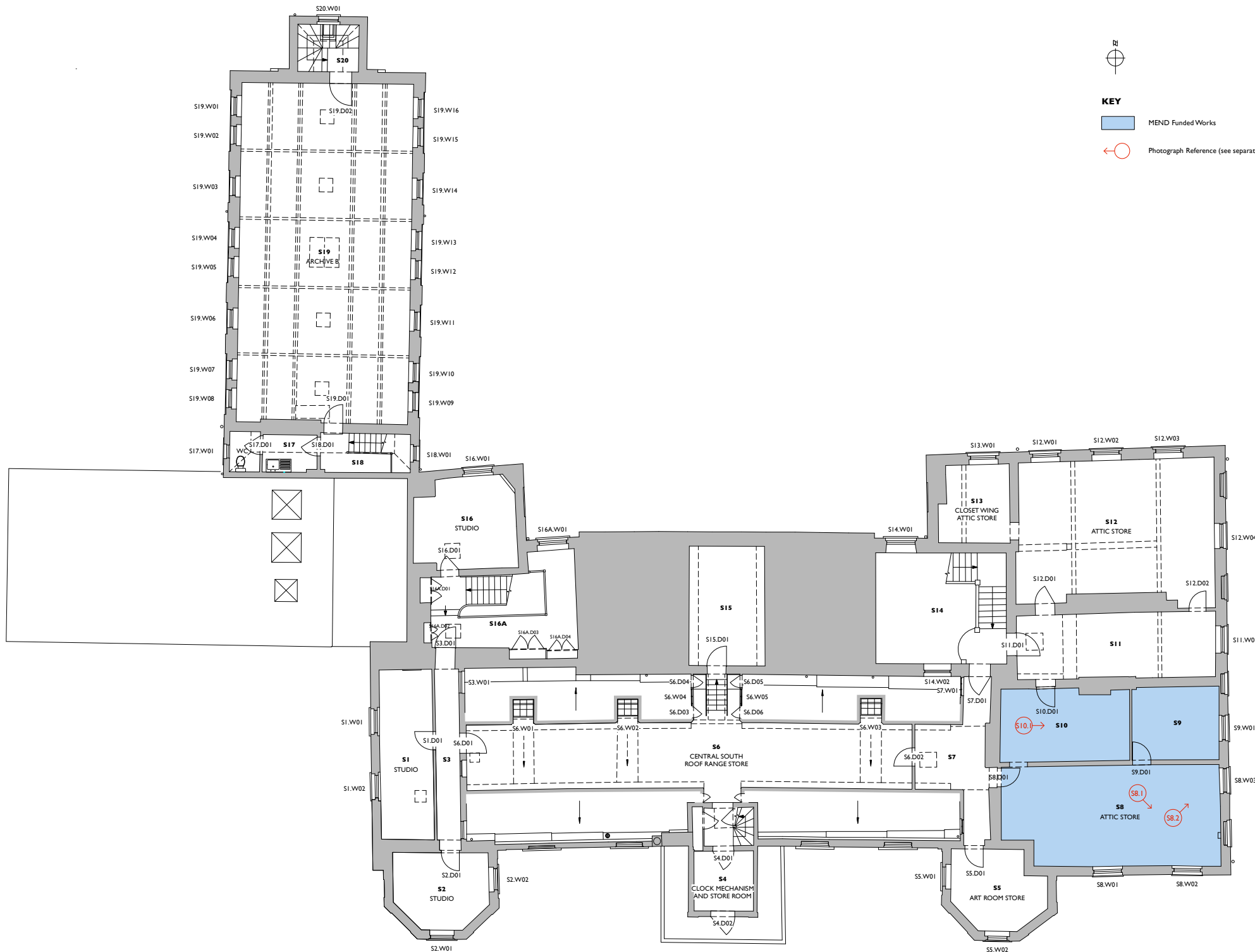
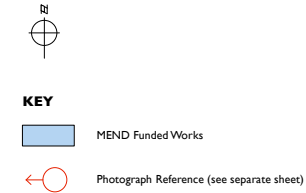
Room F6-F8:

Floor strengthening works to be undertaken as the Structural Engineers details and agreed methodology, including works to remove the existing internal partitions between the existing rooms as indicated.
Provide a new lime-hair plaster and lath ceiling finish, retaining and repairing the existing decorative cornice, with new sections cornice as detailed.
Door F09.D01 to be re-hung and handed, to open into the room.

Room F13:

Refer to Door Schedule and drawing 7440/306 for details of new fire doors

Drawing Ref : 7440/122/B



Outline Scope of Works:

1. Undertake structural repair and strengthening works to the floors of rooms F6-F8 at first floor level and S8-S10 at second floor level, in accordance with the Structural Engineers details. Note the requirement for temporary propping in order to execute these works and agree the necessary methodology with the design team prior to commencement.
2. Ground floor room G6 is to be renovated for use as a gallery space.
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6. Overhaul external ground floor doors (french windows) within the MEND areas, as set out in the door schedule. Provide a new external door to opening G7.D01, as detailed.
7. Upgrade fire compartmentation to walls making good to existing and new service holes and openings, including to spaces beyond the MEND areas, where necessary works become evident as a result of opening-up.
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9. Upgrade the existing fire detection and warning system to an LI level, including to spaces beyond the MEND areas, as set out in the Building Services Engineer's drawings and specification.
10. Remove all surface mounted service cables within the MEND areas and rewire fittings as necessary via new concealed routes within floor / ceiling voids and existing service boxings. Routes are to be agreed with the Design Team prior to installation.
11. Supply and install new exhibition lighting in accordance with the Lighting Designers specification.
12. Redecorate all MEND areas and touch-in / make good decorations to all other areas only where associated with the contract works. Refer to the Finishes Schedule for details.

Rooms S8-S10:

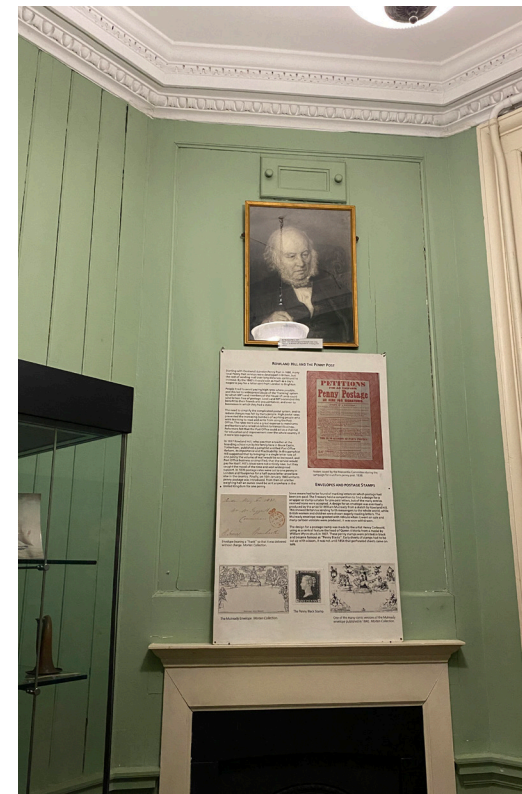
Floor strengthening works to be undertaken in accordance with the Structural Engineers details. Include for works to strip existing plaster finishes from the internal partitions between S8 and S9/S10, provide a new insulation and new plywood lining (as the Structural Engineers details) and relime with a new 'fire-line' plasterboard finish to achieve 30mins separation.

Second Floor Plan - Location and Summary of MEND Funded Works

Photographs of Selected Rooms Which Feature Within the Proposed MEND Funded Works



East Wing Gallery (G6)



Postal History (G9)



Family Room (G8)



North Gallery (F15)



Education Room (F11)



Office Suite (F8)

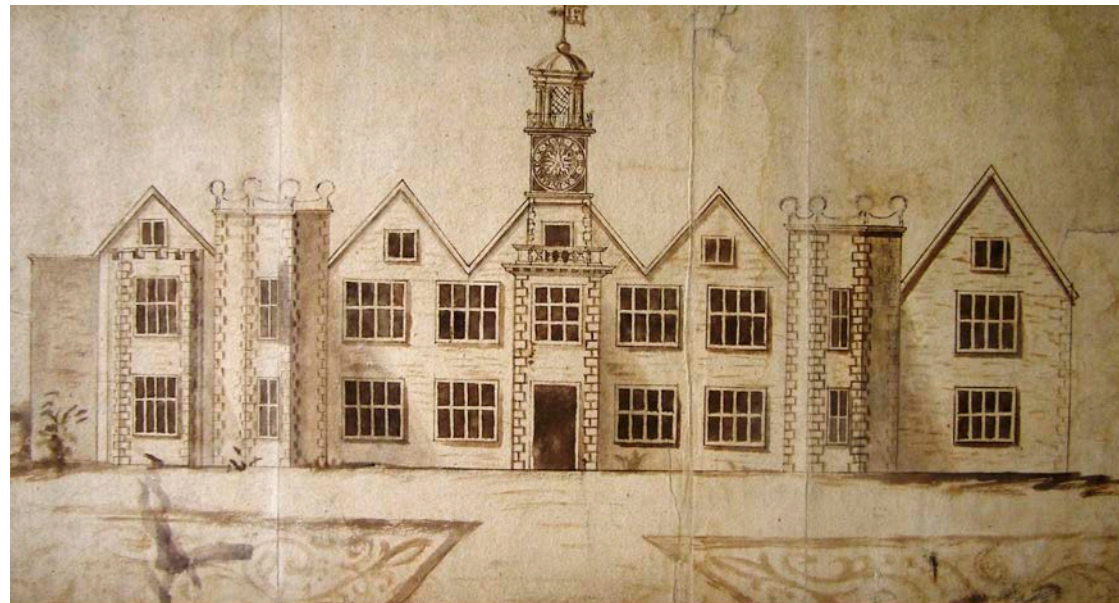


Archive Store (S10)

2.0 DEVELOPED CONSIDERATIONS



Photo credit: Bruce Castle Museum (Haringey Archive and Museum Service)



1682 Elevation (Unexecuted Design) : Reproduced with the permission of Bruce Castle Museum



Oil Painting by Wolridge 1686 : Reproduced with the permission of Bruce Castle Museum

2.1 Objectives of the Application

2.1.1 This application for Listed Building Consent seeks approval for the reservicing and internal improvement works at Bruce Castle Museum.

2.1.2 The key objectives of the current proposals remain unchanged from the pre-application consultations although the designs have been further developed as summarised below:

- **East Wing Structural Repairs and Office Suite Repurposing:**

Repair and upgrading of the existing floor structures at first and second floor levels, together with the removal of the circa C19th partitions at first floor, to reinstate the 'Office Suite' as a single exhibition space. The existing partitions are causing structural overloading of the floor structure, leading to failure of the existing ceiling within the ground floor gallery space below.

- **Repair and Redecoration of the Historic Fabric:**

Comprising the overhaul and repair of the internal joinery of existing windows and external doors, in addition to the full redecoration of all spaces within the MEND areas. Decorations to other areas will be made good as necessary as a result of any works.

- **Safeguarding Building, Visitors, Staff and Collections:**

A Fire Strategy has been developed to inform the proposals for fire protection (passive and active), comprising upgrading of the historic fabric within the building, addressing fire compartmentation, fire doors and upgrading of the fire detection system.

- **Relocation of Surface Mounted Services:**

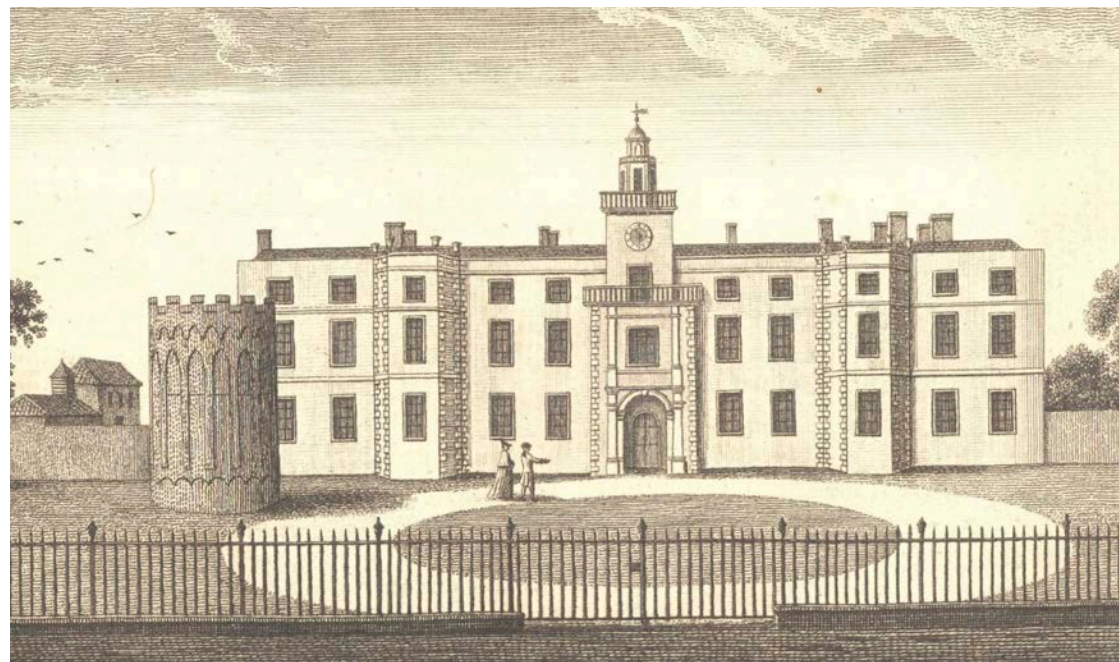
Existing services, which are predominantly surface mounted and are intrusive to the historic fabric are to be concealed within existing voids as far as possible, improving the aesthetics and functionality of the East Wing spaces. This principle will then be rolled out elsewhere in the building as future projects are defined.

- **Improving Exhibition Lighting:**

Upgrading of existing room lighting and installation of new exhibition lighting to gallery spaces to improve the display of exhibits and reduce energy consumption. These proposals for the MEND areas would then be extended into the other Museum spaces as part of future projects.



Watercolour Sketch dated 1764 : Bodleian Library - extract from the Bruce Castle CMP



An undated engraving C.1763-87 : Reproduced with the permission of Bruce Castle Museum

2.2 East Wing Structural Repairs and Office Suite Repurposing.

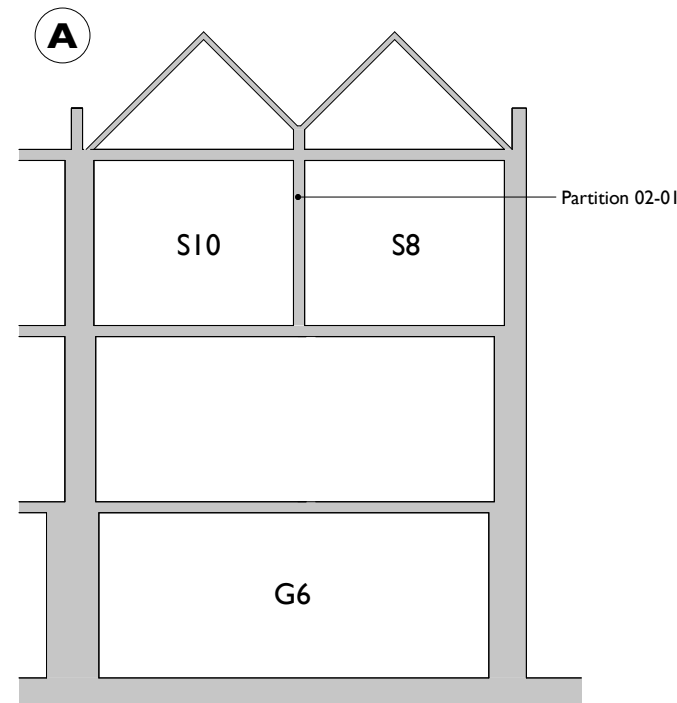
2.2.1 Impact of Structural Change

Bruce Castle as a whole has seen extensive change over its lifetime, and this is particularly reflected in the East Wing, the area of the proposed MEND funded works. Progressive proposals and physical alterations to this south east corner of the building are illustrated through the adjacent historic images

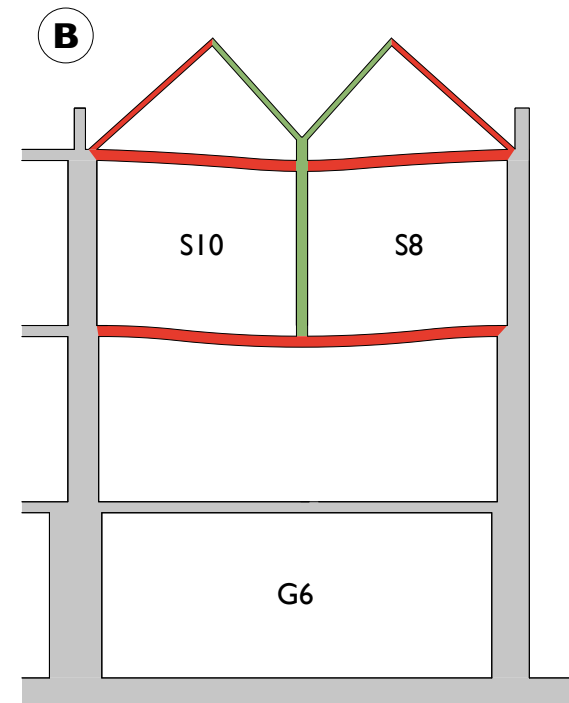
- **1682** – Although this is a design for proposals which remained unexecuted, it is illustrative of the desire for change through the 17th and 18th century's.
- **1686** – A comparative record 'as built', closely imitating the earlier unexecuted proposal, showing four gables, the central clock tower (with fifth gable behind?) and the two flanking towers. The windows at the eastern-most end are formed as one per floor level ('one over one').
- **1764** – Almost 80 years later and it appears that the roof line has changed, as to have the window arrangements to the south elevation, with the openings at the eastern-most end (now 'one over two') and major change to the external wall and roof structure.
- **1763-87** – Within a short time of the previous sketch the southern gables have been replaced with a parapet arrangement and the windows are now uniform through each floor level, (being 'two over two') at the eastern end of the elevation.

It is not clear from site investigations whether these progressive changes were executed through re-construction of the structure or modifications, although there are no obvious tell-tales on the external elevations and the change in brickwork suggests an extensive re-build in parts, although potentially retaining earlier internal floors and partitions.

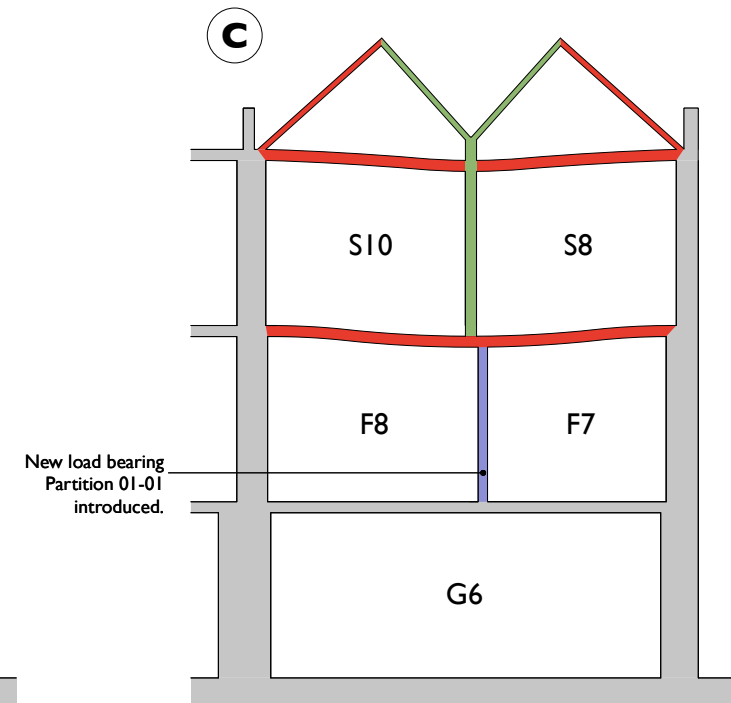
However these modifications had a progressive and negative impact on the structure of the East Wing. The schematic illustrative building sections overleaf display a hypothesis of the impact of such change, evidenced by apparent structural alterations and adaptations exposed during the site investigations.



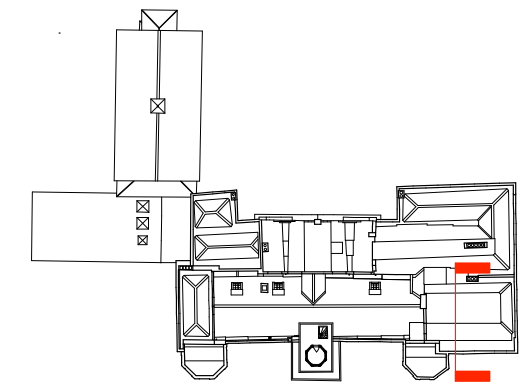
A - Assumed mid C.18th roof arrangement. External walls and floors possibly remaining from mid C.17th construction.



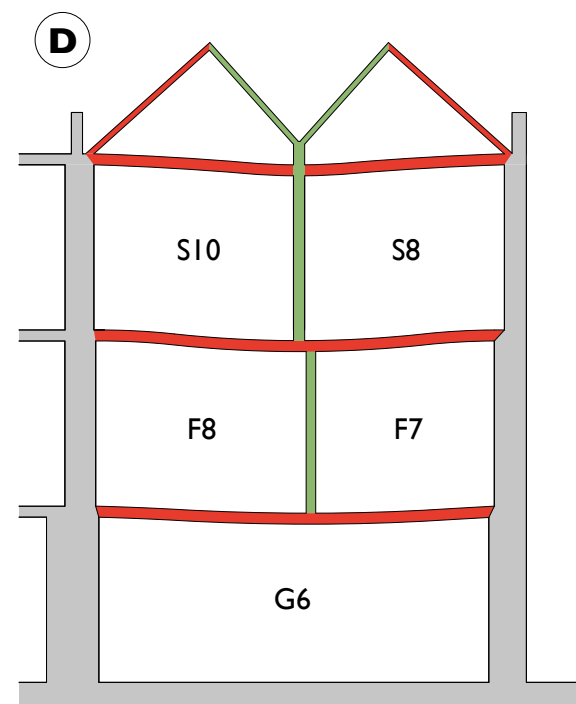
B - Deflection of the second floor due to roof and partition loads bearing onto the over-stressed floor structure.



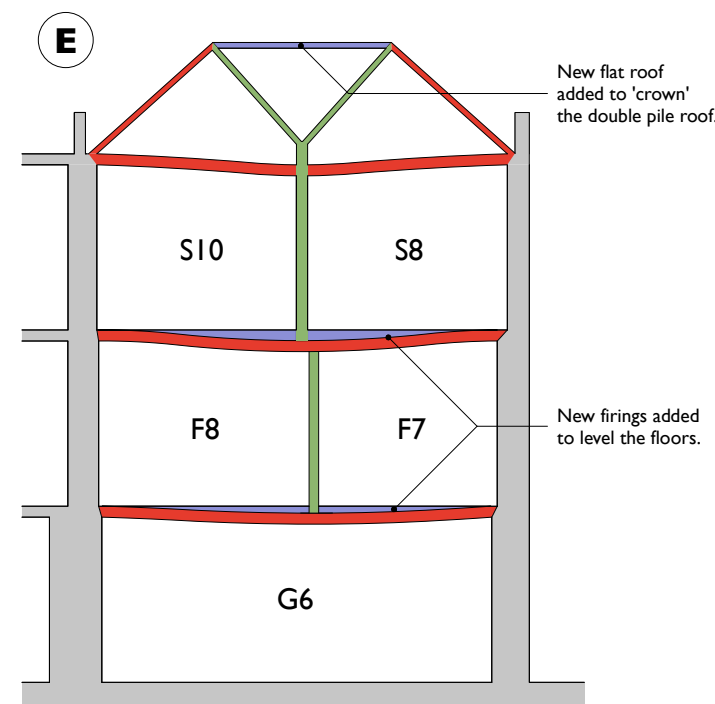
C - The addition of a braced, load bearing, timber stud partition at first floor level seeks to provide support to the floor above. Possibly late C.19th.



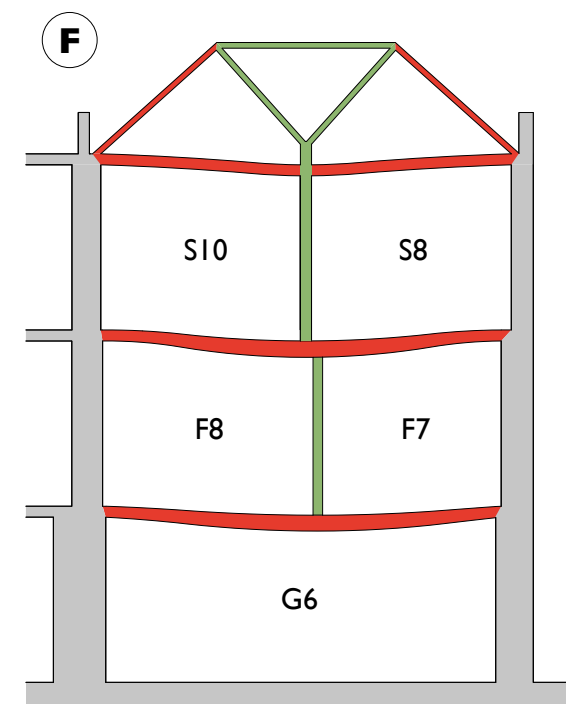
Location Plan



D - All loads are now transferred to the first floor, which begins to deflect.



E - As a result of further movement, the valley gutter at roof level may have failed and is resolved by 'crowning' the double pile roof with a new flat roof construction. Timber firings are added to level the first and second floor.



F - The newly fired floors continue to sag, impacting on the integrity of the ceilings at all levels.

Key:

- Signifies the load path through the internal structure.
- Structural elements under stress and deflecting.
- Newly introduced structure.

Note:

This is a graphic illustration of the structure of the building and not a measured survey.

2.2.2 Hypothesis of Structural Change

Recent enabling works undertaken to open up and investigate apparent movement within the building and the resultant failure of the ceiling in the ground floor south-east gallery (Go6) has exposed extensive historic change and previous repair. The impact of this historic change has had a progressive impact upon the floor and ceiling structures in the south-eastern corner of the building, and the area covered by the MEND funded works. The schematic drawing illustrates the Structural Engineer's hypothesis on the change and impact on the structure, as follows:

- A: Building was new, square and true.
- B: The inherent flaw in the floor structure of the Second-Floor level was beginning to become apparent – this being the 2 no. primary timber beams, which were loaded along their lengths by the second floor and by the central point load of the roof via the partition between rooms S8 and S10. These beams were nowhere near deep enough to prevent marked deflections building up, with the result that they began to sag.
- C: Perhaps on observing this deflection, and to take advantage of the desire to sub-divide the single first-floor room below, new partitions were introduced to create the three spaces Fo6, Fo7 and Fo8. Although the specific reason for this alteration remains unknown, the use of diagonal bracing within the partition suggests it was intended to perform a structural purpose and as such assisted in strengthening the second floor.
- D: The problems with this arrangement would gradually become apparent. The First Floor onto which most of the loads from above were now transferring, suffers from the same span/depth issues of the primary beams as those in the second-floor construction. This floor, now carrying part of the roof load, the second floor and the self-weight of the partitions as a midspan point load, as well as the weight of the first floor as a uniformly distributed load, itself began to deflect. It is probable that around this time the secondary beams in the first floor began to fail by horizontal shear splitting along the grain.
- E: It may be assumed that by this stage, the continued structural movement had caused the roof to leak through the central roof valley gutter. The typical and perhaps simplest solution to this problem, in isolation from all other factors, was to fill the valley by forming a high-level flat roof. This work/project may have been extended to incorporate the furring up (re-levelling) of the floors. It was also probable that at around this time an attempt was made to address the shear splitting of the secondary beams.
- F: Reflects the current situation. The First and Second Floor floors continue to deflect as indicated by the out of level furred floors and failure of the ground floor ceiling (Room Go6). Informed by the further opening up, evidence of the past works and alterations to the historic structure, the resultant impact, has now become clearer. So too has the need for repair and strengthening of these floor structures.

2.2.3 Floor Loading Capability

Whilst reviewing the existing condition of the building and the need for floor repairs, the Design Team raised the issue of historic, domestic structures being used to perform as modern gallery spaces.

The original building was not designed to carry loads associated with museum use. Both the first and second floor structures are currently capable of supporting loads in the region of 1 kN/m² and so the structural repairs must also consider the proposed use of the spaces and suitable upgrading, within the constraints of the grade I listed building. Through benefit of the upgrading works described in the following sections, it is calculated that the first-floor structure will have a capacity in the region of 2.0 kN/m² and at second-floor a capacity of circa 2.5 kN/m². However the resultant loading capacity is still below the typical 5kN/m² guidance for modern museum design.

As a result, careful management of the spaces will be critical to the use and function of the proposed gallery spaces and the second-floor rooms. This will be controlled through a planning and management strategy, to be implemented by the museum staff to ensure these rooms do not become overloaded.

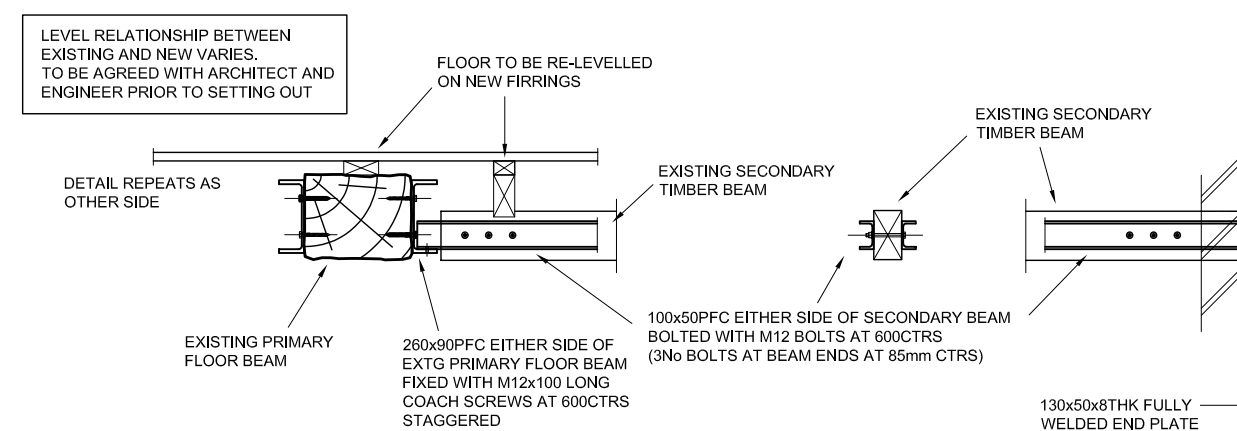
2.2.4 The Proposed Works

The findings from the investigation and enabling works have led to a review of the proposed floor strengthening arrangements. The structural solutions are summarised below:

First Floor: A concealed steel solution is proposed. New steel channels will be introduced either side of the primary beams to provide reinforcement within the existing floor depth. During the process the secondary beams will be cut and re-connected to the primary beams via new steel channels. The partitions at F6, F7 & F8 will be removed to release the load.

Of the various alternative solutions investigated, this proposal enables strengthening of the floor structure, through upgrading of the primary beams, replacement of the failing secondary beam connections and the formation of new bearings into the existing masonry walls, to create a stiffer and better braced structure. The steelwork solution enables shorter spliced steel sections to be employed, allowing these to be introduced via the existing window openings, rather than the need to form access holes through the historic brick walls.

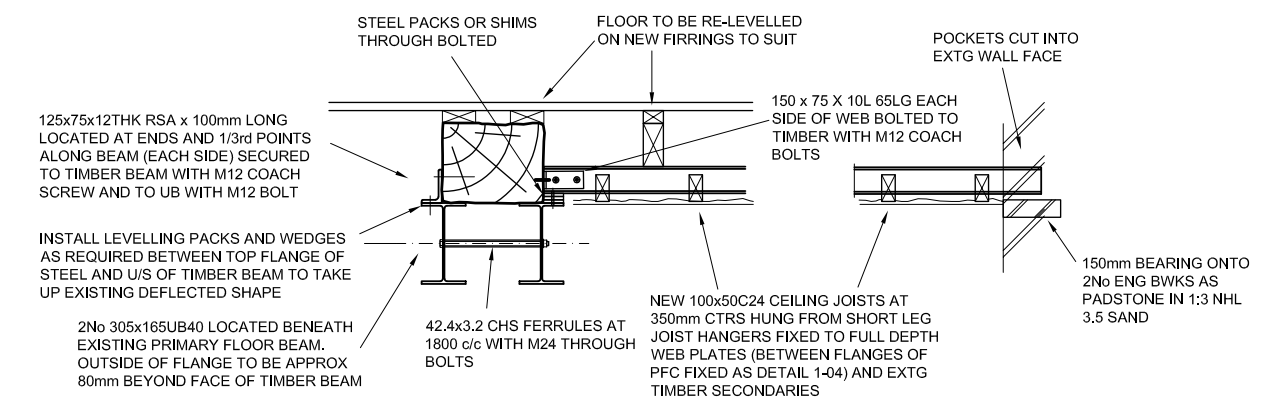
The removal of the timber stud partitions aids the loading capacity of the floor, but also enables the re-instatement of the earlier single room arrangement and permits the establishment of a new gallery space at first floor level, thereby increasing public access and improving interpretation and engagement opportunities for Museum visitors.



Structural Engineers detail illustrating the strengthening of primary timber beams at first floor level

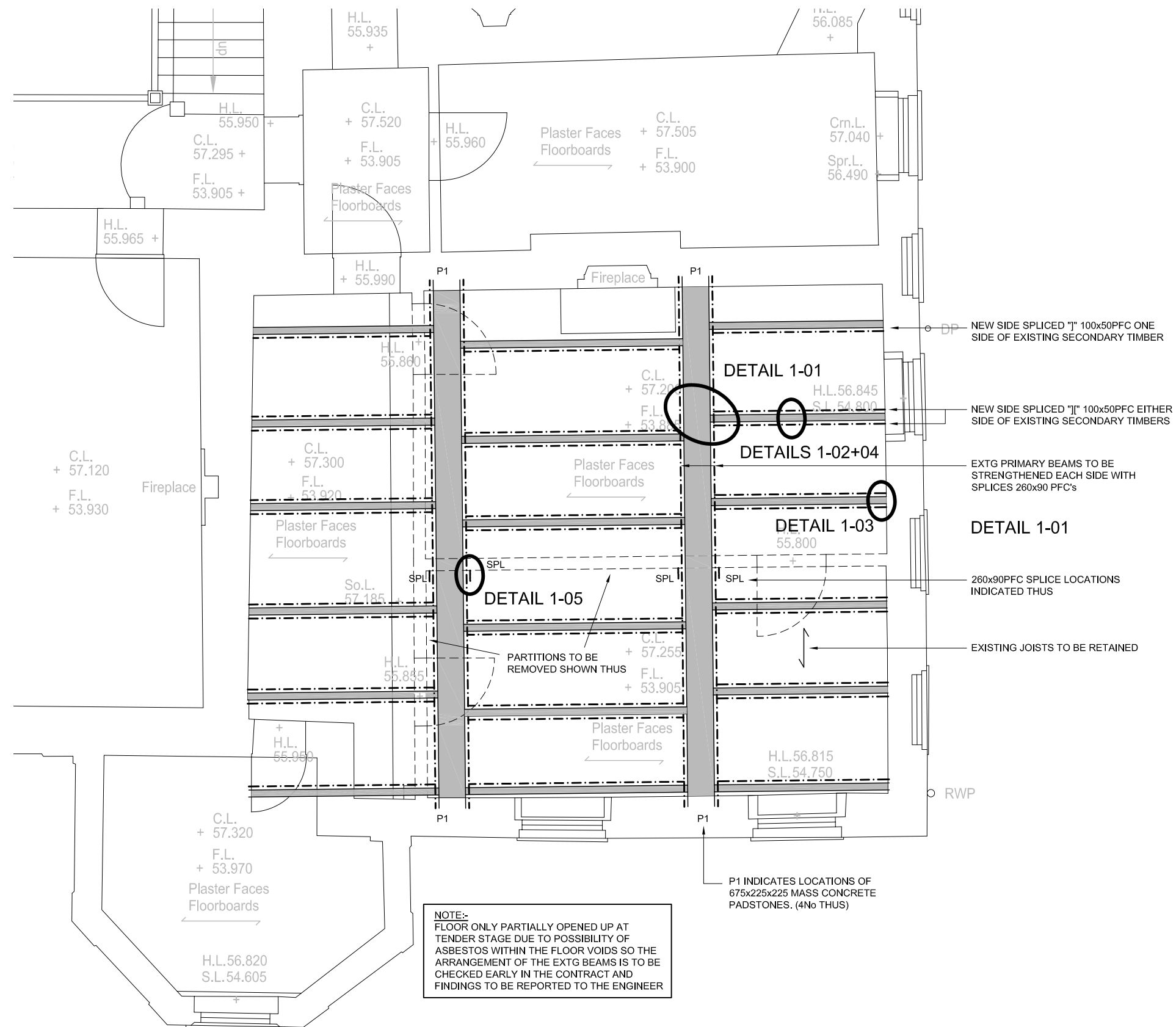
These proposals necessitate the replacement of the ground floor ceiling in room Go6 below, which is failing as described previously, resulting in the room being closed to public access. Details of the proposed new lime-hair plaster and lath ceiling and cornice repairs are described later in this report.

Second Floor: Due to the need to continue to carry the roof loads above, the structural solution at second floor level differs. In order to achieve the necessary loading capacity a down-stand beam solution is proposed with new twin steel beams installed below the primary timber beams to reinforce the floor structure. The down-stand will be visible in the new gallery space below and will be dressed in a new plasterboard and skim boxing with a new plaster cornice run along each side, to match the adjacent, extant cornice. The partitions on the second floor will be retained and strengthened with new plywood lining and new plaster finishes to aid fire compartmentation.

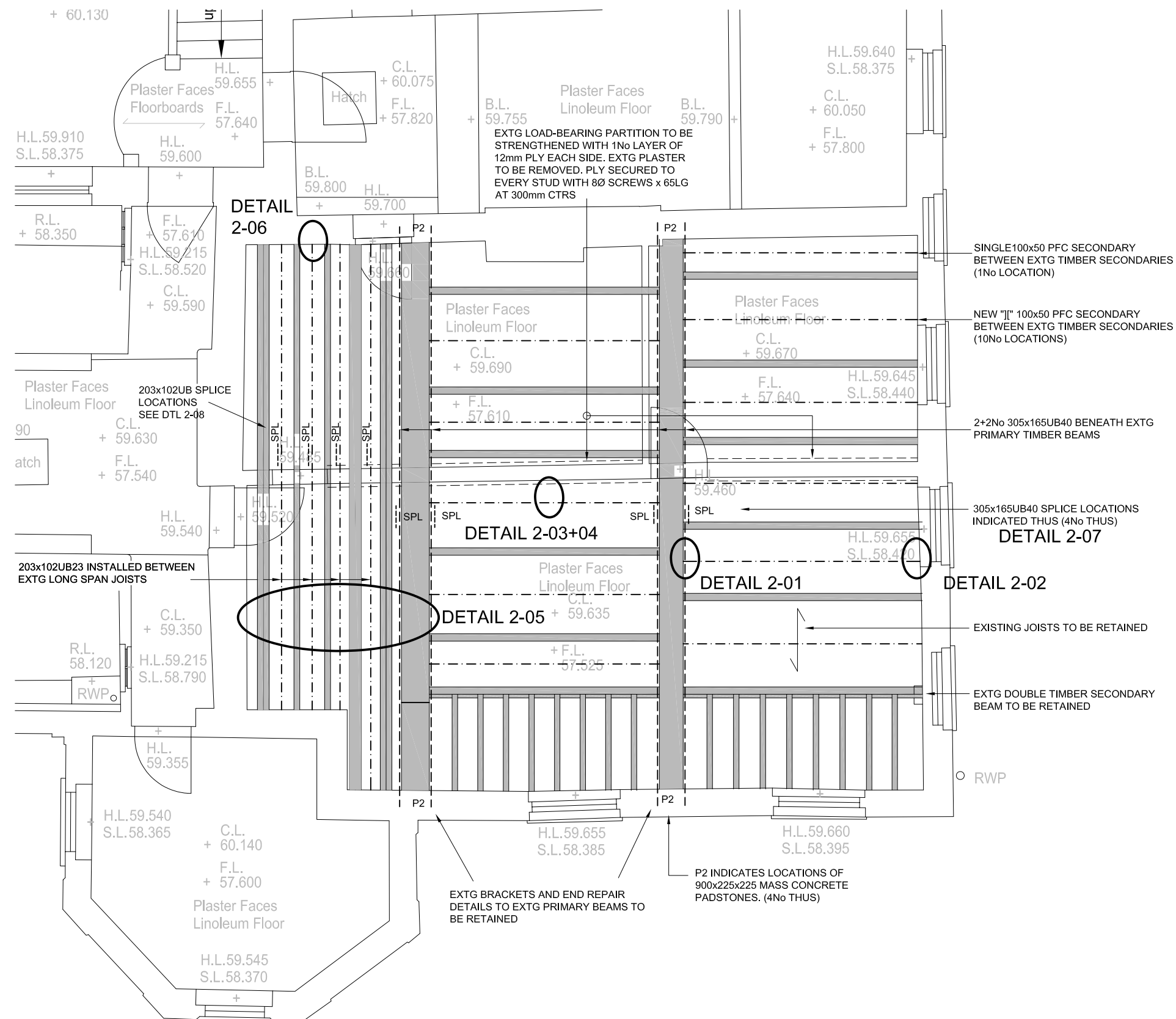


Structural Engineers detail illustrating the strengthening of primary timber beams at second floor level

The second floor will also be provided with additional steel secondary beams concealed within the structural zone, designed to reduce the span of the floor joists. All new steel end bearings will be provided with new concrete padstones formed within the existing brick walls. It is of note in this case that the limiting factor in the strengthening of the floors to carry increased loads, is their bearing into the existing brickwork walls and the historic footings at ground level. This has therefore been taken into account in developing the design proposals.



Structural Engineers Drawings -Showing First Floor Strengthening Works



Structural Engineers Drawings -Showing Second Floor Strengthening Works

2.25 **Sequencing of Works:** The works to repair and upgrade the two floors will require extensive propping and temporary works to protect the historic structure and fabric, and the implementation of this element is an integral part of the design proposals. The temporary works are key in the ordering of operations, which will follow a critical sequence, as follows:

1. Removal of the ceiling fabric from the underside of the floor structures serving first and second floor levels.
2. Installation of the internal propping and external temporary shoring, together with the removal of all floorboards at all levels.
3. Installation of the new primary steel beams at second floor level, followed by the new secondary steels.
4. Installation of secondary propping at second floor level.
5. Removal of existing plaster finishes to the second-floor load bearing timber stud partitions between S8 and S9/S10 and installation of new plywood lining and plasterboard with skim finish
6. Removal of all temporary propping at second and first floor level, including the existing first-floor load bearing partitions.
7. Installation of new steelwork to the primary timber beams at first floor level.
8. Undertaking the associated repairs and strengthening works to the first-floor in accordance with the Structural Engineers designated sequencing.
9. Removal of the ground floor props.
10. Reinstatement of the floorboards at all levels and formation of the new lath and lime-hair plaster ceilings.

Recording: A photographic record will be made of the existing room arrangements, floor boarding and plaster ceilings, prior to any works being undertaken. The existing floorboards will be referenced, lifted and stored in preparation for refixing. A measured survey will record the historic structural arrangements and deformation of the floors, which will also inform final detailing of steelwork joints.

2.3 Repair and Redecoration of the Historic Fabric

2.3.1 New Plaster Ceilings

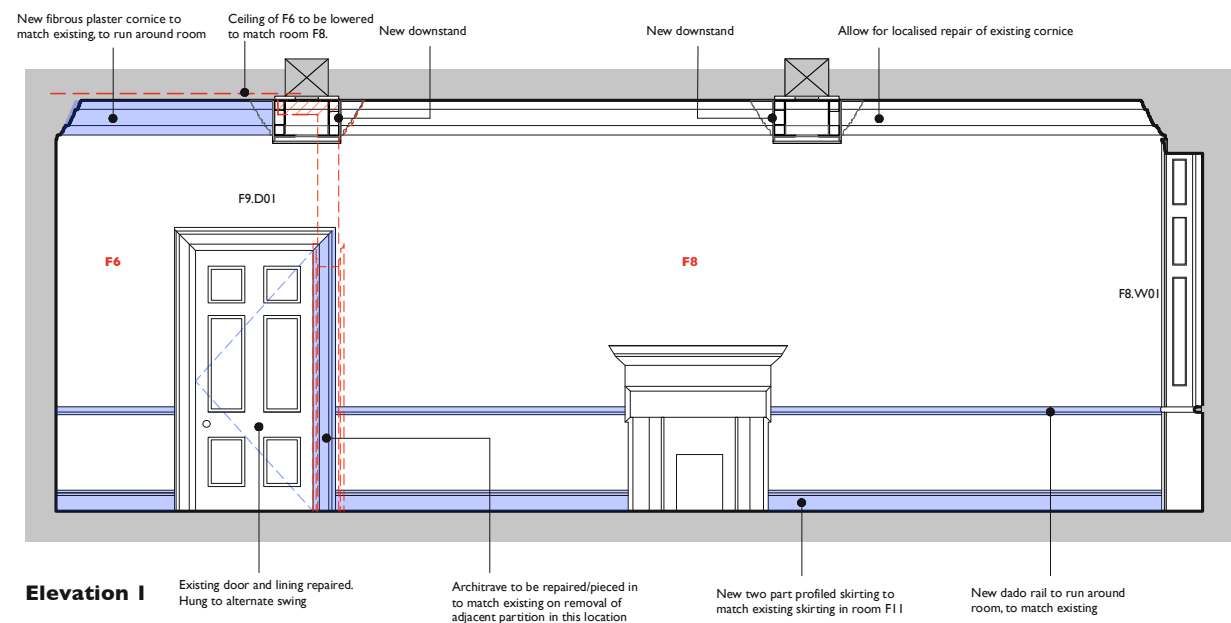
During the initial appraisal process, it was identified that an area of the plaster ceiling above the Ground Floor Exhibition Space (Room Go6) was in poor condition, requiring urgent attention. The 'Lime Plaster Survey' prepared by Artisan Plastercraft Ltd, reported "Severe cracking throughout ceiling. Significant movement and deflection. Ceiling at risk of failure." This visual inspection recommended works to "Take down affected areas of ceiling and renew. Re-secure remainder of ceiling, rake out cracks and repair."

Whilst the first option would always be consideration of repair, rather than replacement, in this situation the issues are exacerbated by the failure of the floor / ceiling structures. As a result, new lime-hair plaster ceilings formed over riven chestnut lath are proposed to a matching level and appearance of the existing ceilings. At the western end of the first-floor room (existing room Fo6) the new ceiling will replace a modern plasterboard finish, reinstating the original level.

At ground floor the existing plaster cornice will be repaired and retained, whilst at first floor level, the remains of the extant cornice will be repaired and retained, with new cast plaster cornice sections introduced in place of missing material. The new sections will be modelled on the existing and will also be introduced along the side of the new down-stand ceiling beams.



Existing decorative plasterwork in first floor room F8

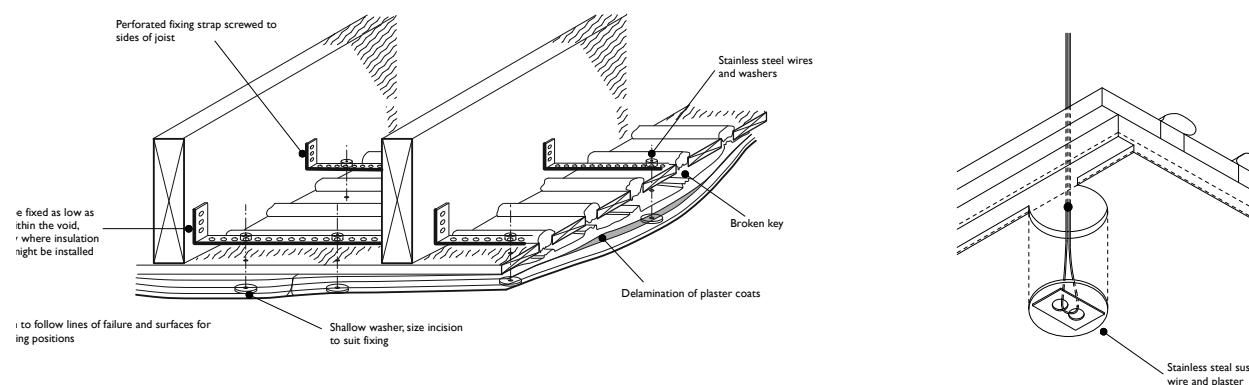


Proposed fabric repairs and downstands in first floor rooms F6, F7 & F8

2.3.2 Repair of Existing Plasterwork:

Overhaul of the MEND funded rooms will include concealment of existing cables and making good to new wall chases and existing ceilings. The following methods are proposed:

- **Ceiling Plaster Repairs:** Localised repair of plaster ceilings will be undertaken on a like for-like basis employing new timber lath and lime hair plaster finishes. Where existing ceilings require strengthening, a conservation approach will be used, typically employing stainless steel washer and wire arrangements to secure the failing plaster in-situ.



- **Wall Plaster Repairs:** Localised opening up of plaster finishes has been undertaken during the enabling works, indicating that the historic plaster finishes are generally a lime hair plaster on either sawn or riven lath, fixed to vertical timber battens. This arrangement results in a void between the lath and brickwork wall face ranging from approximately 25 to 90 mm. This is considered sufficient in most areas for cables to be fixed within the void, employing a metal sheathing or conduit, thereby reducing the amount of wall chases to be formed in the brick backing.
- **Lime Plaster for Repairs:** All plaster repairs will be formed to match the existing, typically 3 coat lime-hair plaster on a sawn or riven lath. The final specification will be determined following analysis of the existing material with either sawn or riven chestnut lath being employed to match the specific location. For full ceiling renewal a sawn chestnut lath is proposed, to be indicative of C21st replacement.
- **Decorative Plaster Cornices:** New sections of plaster cornice will be formed to match the existing, based on squeeze moulds taken from the primary fabric. These will typically be fibrous cast plaster mouldings.

2.3.3 Windows and External Door Repairs

Windows: The condition survey prepared by Ingleton Wood (Oct 2019) and included in the client's Due Diligence report advises that the vertical sliding sash windows have been repaired externally but remain in poor condition internally, "with some windows not balanced or opening, and others stiff to operate".

Internal site inspection of all windows in the MEND funded spaces has been undertaken and a detailed schedule of repairs has been prepared, a copy of which forms part of the application information (refer to drawing 7440/200 - Internal Window Repair Schedule). The condition of the window joinery was generally found to be in sound condition, with only general overhaul required. Rationalisation of ironmongery has also been proposed where dis-similar modern items have previously been used, together with an allowance for replacement UV film to the glazing of gallery spaces.

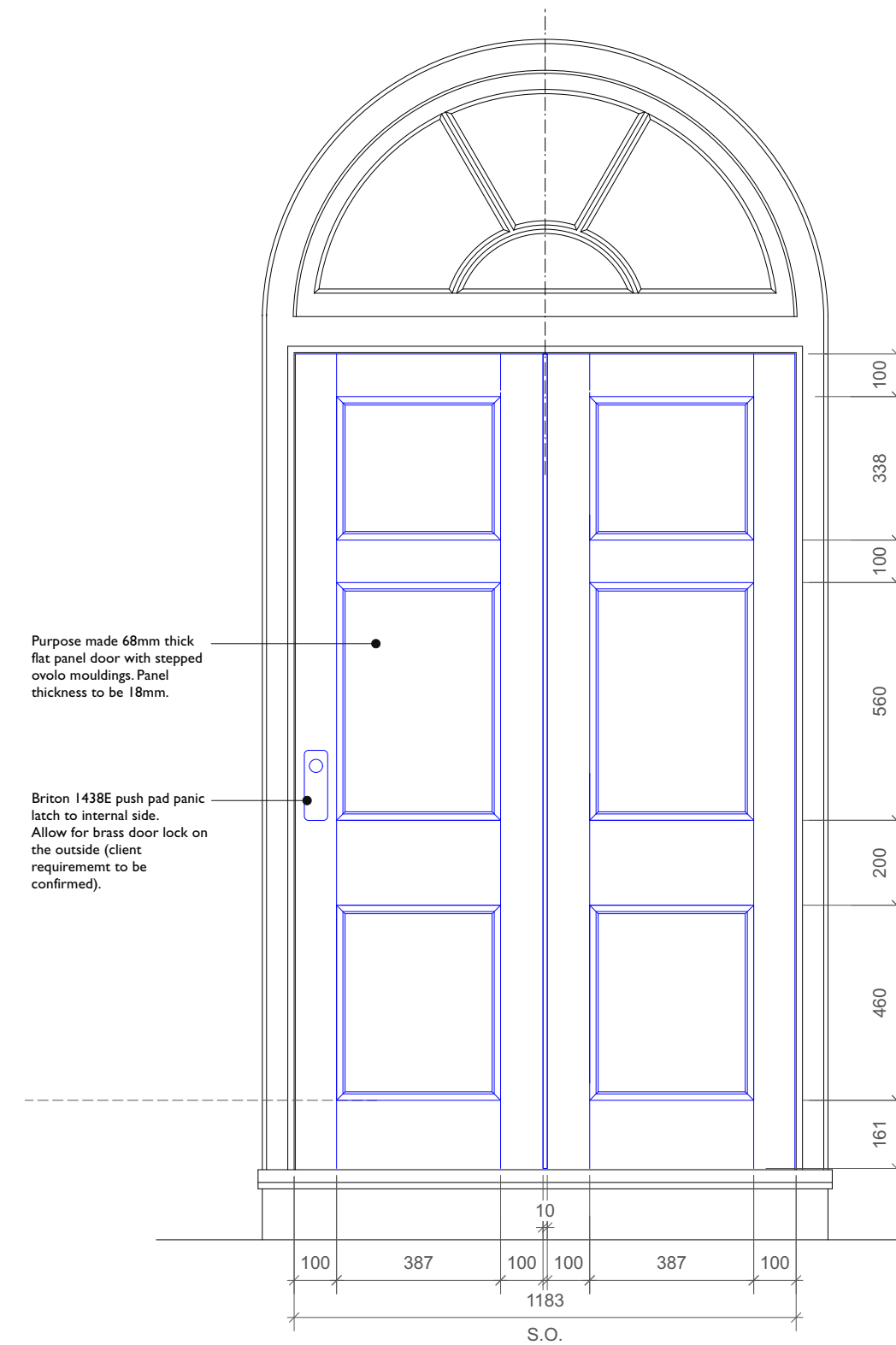
External Doors: In general, external doors to the MEND funded area consist of the painted timber and glazed, double French Windows in room Go6 and the painted timber double doors forming the East entrance and fire exit. An internal inspection of these doors has been undertaken and recorded in the External Door Repair Schedule (refer to drawing 7440/250), which is included in the application.

New External Door: In conjunction with the development of the fire strategy, a review of all doors was undertaken, and it was noted that the existing East entrance door Go7.Do1, being the final exit on the emergency escape route was of unsuitable design, consisting of two narrow leaves which open inwards and against the flow of escape. This particular door leaf also appears to be of a later construction reusing ironmongery from an earlier door leaf.

Change of this existing double door, to a new single leaf, outward opening door, with suitable escape ironmongery would be beneficial to health and safety of building occupants, and on the advice of the Consultant Fire Engineer, would avoid the need to introduce an additional internal fire door at the foot of the main staircase. It is therefore proposed to introduce a new door leaf within the existing frame and to retain the fanlight above. (refer to drawing 7440/260)



Existing and Proposed Eastern Entrance Door



2.4 Safeguarding Building, Visitors, Staff and Collections:

2.4.1 Fire Strategy

In the initial pre-application appraisal it was recognised that fire is a major threat to the building users, the museum collection and the historic building.

“Bruce Castle Museum is a building which has a range of users, including the public, and therefore it is vital that emergency fire detection and evacuation plans are effective.”

“In addition, the building is a significant statutorily listed Grade 1 structure that is vulnerable to fire damage”.

It was suggested that the initial proposals were ‘outline’ and ‘in principle’ and would be developed in-line with a long-term fire strategy that will eventually be fully implemented.

The subsequent Fire Strategy therefore informs the approach to the design proposals and promotes aspirational levels of fire protection which have been developed following consultation with Haringey Council, Building Control. Implementing alterations to the Grade 1 listed historic fabric, in accordance with the benchmarks offered by the Building Regulations and BS 9999 (2017) is not always feasible, particularly if significant aspects of the building are to be preserved. Through liaison with Building Control, a ‘best endeavours’ approach has been applied to the proposed upgrading designs, using ‘tried and tested’ methods.

2.4.2 Structural Fire Resistance & Compartmentation

Walls: The period of fire resistance afforded by the existing elements of structure is unknown, although the existing masonry wall constructions will provide good separation in the event of fire and for this reason a vertical approach has been applied in establishing compartment lines. This approach is highlighted on application drawings 7440/304 to 307 and is supported by the upgrading of the fire detection system to an L1 classification.

In order to ensure integrity of the vertical compartment lines, allowance has been made within the project to make good any openings or voids within the compartment walls, and in particular such holes formed by the passage of both new and existing services. Whilst this will only be feasible to areas of the works, where such defects are found, it is a principle of the Fire Strategy that such an approach should be added to any package of works undertaken in the future, particularly where an element of reservicing is included.

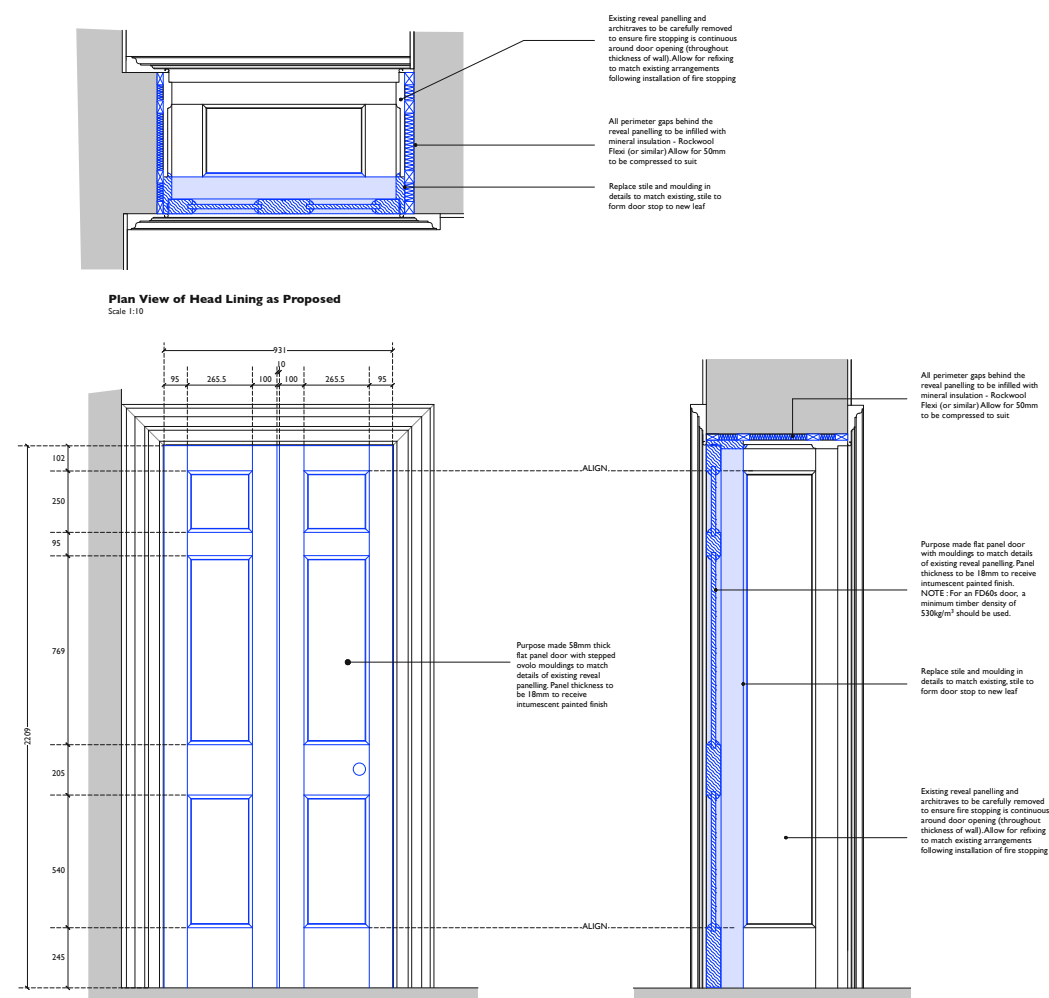
Where ever possible, fire stopping will be achieved by making good wall faces in matching brick and lime mortars, although alternative methods are also proposed as indicated on drawing 7440/420, for concealed voids or where traditional methods are unsuitable.

Floors: Whilst not ‘compartment’ structures, the existing floors will ideally provide at least 30 minutes integrity, which may be achievable with a lath and plaster ceiling finish which is in very good condition. However, it is proposed that all new steel elements used in the repair and strengthening of the floors (see previous descriptions) will be fire protected with intumescent coatings. In addition consideration is to be given to the introduction of fire-resistant insulation within the repaired floor/ ceiling structure providing a second line of protection.

2.4.3 Fire Compartmentation and Fire Doors

A series of reports including the Compartmentation Survey prepared by LFCDA in 2019, the 2021 Homes for Haringey 'FRA' and the Fire Surgery's 'Strategic Fire Risk Assessment' form the basis of guidance provided to the design team in the determination and designation of the fire compartment lines; upgrading of fire doors; determination of the emergency escape arrangements, etc.

Under the detailed design process, the compartmentation arrangements have been rationalised and designed to protect the means of escape and areas of high fire risk. The performance of each door sitting on the compartmentation lines has been assessed and the following approach is proposed:



Detail of Proposed New Fire Door F13.D02

- An assessment has been undertaken for each door, based on location and desired performance.
- Replacement of non-historic doors with new certified doors, has been proposed in high-risk areas, or where these currently exist outside the MEND areas, pending any future refurbishment project.

- Historic doors which are deemed suitable for upgrading with an 'acceptable' level of impact will form 'nominal' fire doors with a performance to suit the Fire Strategy but will not be certified or tested. This approach has been agreed with Building Control.

The locations of all fire doors are highlighted on the drawings 7440/304 to 307, included with this application. Details of the upgrading works for each relevant door are described within the Door Schedules, application drawings 7440/321 to 323. Proposed upgrading methods include:

- Application of intumescent paint systems.
- Upgrading of ironmongery where necessary and introduction of intumescent beddings and seals.
- Installation of intumescent fire and smoke seals to door frames, and potential use of retracting seals to the base of the door leaf to infill gaps beneath.
- Fire stopping behind linings to voids at the head, reveals and threshold of door openings.
- Installation of new purpose designed 'fire doors' within existing openings where this avoids modification of adjacent historic fabric.

Doors beyond the MEND funded areas were also reviewed under the design process and upgrading works are described in the door schedules.

In order to avoid extensive associated works and impact on the historic fabric in such areas, resulting from installation of new electrical supplies to automated and linked 'hold open' devices, a simpler approach has been proposed in these areas. The doors and frames will still be upgraded in accordance with the fire strategy but face fixed and audio linked hold-open devices have been recommended. A future project with the opportunity to take a more 'heritage focused' approach should consider the removal of modern and unsympathetic doors and the installation of upgrading works replicating those currently proposed to the MEND areas.

Following review with the Fire Engineer, the MEND funded areas are not considered to include any high-risk areas requiring the use of certified fire-doors. All such boiler rooms and electrical switch gear rooms are generally located at basement level. Equally, it has been possible to avoid 'over-boarding' of doors as an upgrading solution, relying instead on specialist paint solutions.

2.4.5 Fire Detection and Warning Installation

Although the existing active fire detection and warning system is extensive and effective, upgrading this to a category L1 detection system is proposed. In general this will involve extending the system into large voids and cupboard spaces, to ensure early and effective detection and warning of any fire. The project allows for this approach to be implemented through-out the building.

Whilst a wireless detection and warning system has been considered, with the benefit that this is easier to install and avoids the impact of opening up of historic fabric to install cables, it is recognised that such installations have limitations within historic buildings, associated with poor connectivity and increased maintenance requirements due to battery life. Therefore and in line with the approach applied more widely in the field of historic buildings, the project includes for a hardwired installation to the MEND funded areas and to the wider building, where this can be achieved.

The proposed system also seeks to address the current unsightly arrangements by replacing separate detector and sounder heads with single combined units, introducing a single compatible system throughout the building.

2.5 Relocation of Surface Mounted Services

In the pre-application appraisal, it is advised that a long-term strategy should be adopted to reduce the need for building works associated with new installations and thus reduce any necessary future intervention to a minimum. It is also noted that some of the rooms within Bruce Castle are heavily congested with multiple surface-mounted cables of various types, sizes and finishes, and that rationalisation of this situation will greatly aid the understanding and appreciation of the building.

Whilst removal of the exposed heating pipework is also desirable, this would be a building wide aspiration and beyond the funding capabilities of the current MEND funded project. However removal of exposed cables alone will have considerable impact and enable current and future works to repair, restore or replace plaster, paint or other finishes.

Under the current design scope it is proposed that all surface fixed cables in the MEND areas be relocated, and concealed where-ever possible, within the floor and wall voids or existing boxings.

During the recent enabling works, investigation of the plastered external walls identified voids behind the plaster finishes ranging from approximately 25 to 90 mm and access for reservicing can be achieved by opening up the plasterwork whilst avoiding the need for extensive chasing into the historic brickwork walls. Such arrangements are indicated on the application drawing 7440/410.

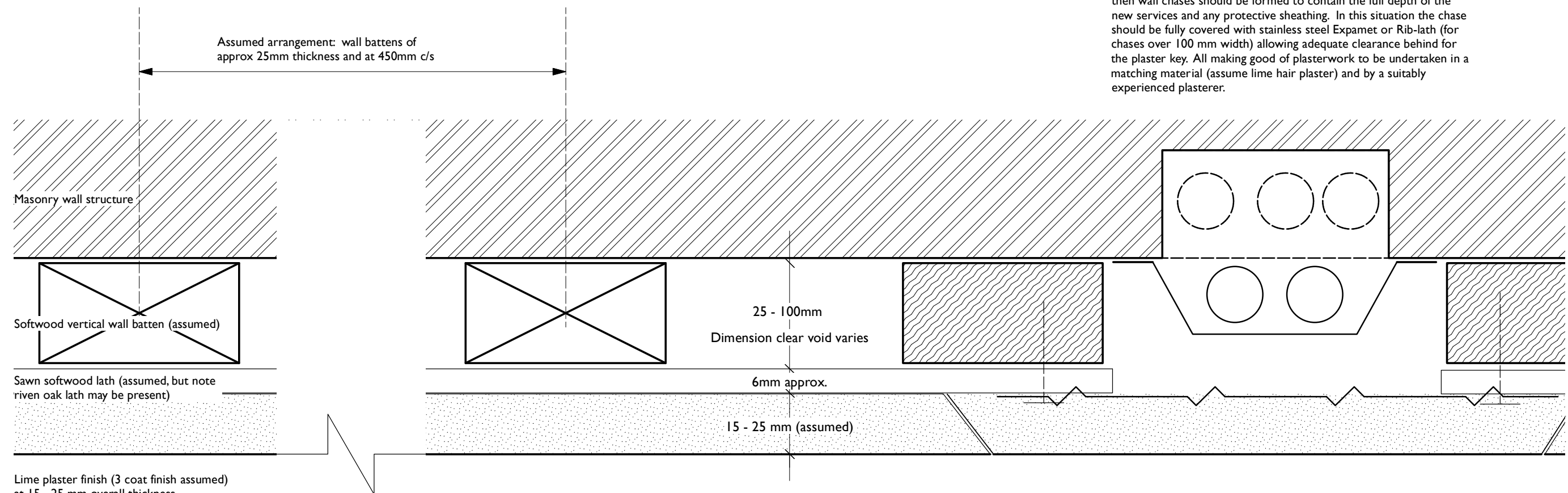
On the whole the existing floor / ceiling structures comprise of a double joisted arrangement with adequate space for running services. Where voids are blocked by timber cross beams etc then existing routes, chases and notches will be reused, to avoid excessive notching of timber joists and beams. In summary, the reservicing works comprise:

- Rewiring of small power installations and removal of the modern blue surface fixed cables.
 - Replacement of aged, switched socket outlets etc in existing locations, with additional new sockets as required.
 - Removal and replacement of any 'life expired' VIR cables which may be found.
 - New emergency lighting and escape signage.
 - Upgrade of the existing security system
 - Removal of all redundant surface fixed cables
 - Connection of new overhead door closers and other hold open devices on fire doors, with the fire alarm system
 - Relocation of the main fire alarm panel, to the point of fire brigade emergency entry.
 - Re-routing of existing IT cabling installments
- Drawings indicating proposed electrical layouts are included within this application, although those illustrating security installations are omitted for security reasons.

Form new chase through the existing plaster finish, cutting a dove-tail profile as shown and cutting back the existing laths as necessary to form adequate width to the chase. Install new cables within the existing wall void with any necessary protective metal sheathing, all as the Electrical Engineers specification.

Where necessary, form a deeper chase back into the masonry to ensure that all cables are adequately housed and safely protected.

Where plaster finishes are applied directly to the masonry backing, then wall chases should be formed to contain the full depth of the new services and any protective sheathing. In this situation the chase should be fully covered with stainless steel Expamet or Rib-lath (for chases over 100 mm width) allowing adequate clearance behind for the plaster key. All making good of plasterwork to be undertaken in a matching material (assume lime hair plaster) and by a suitably experienced plasterer.



Prior to forming the new wall chase, neatly cut back any lining or wall papers beneath the existing painted finish. Note that new plaster skim finish is to align with the existing plaster skim finish and not paper or paint finishes.

Allow for making good all decorations to match, providing new lining paper strips where required to build up finish thickness for alignment of wall paper or paint coats.

For chases up to 150mm in width: Install new treated softwood wall battens to either edge of the chase line to support the cut ends of the existing laths and install new stainless steel Expamet mesh to bridge the cut in the timber laths. Fix all in place with new stainless steel screws and washers into the wall battens. Fix new battens using s/s screws in plastic wall plugs.

Make good chase with new lime plaster to match the existing, ensuring clean edges to the dovetail chase.

For chases over 150mm in width: Provide new sawn softwood laths to match existing, in place of the proposed Expamet mesh. Laths to be screw fixed to existing or new wall battens as necessary. Screw fixings specified to avoid undue impact on the existing plasterwork. All fixings to be stainless steel.

2.6 Exhibition lighting

In conjunction with the proposals for ceiling replacement and creation of the new gallery space in the East Wing, improvements to the exhibition lighting in these areas are proposed. It is intended that the improvement works would then be extend into the Museum as a whole, either under the current project, or as part of later phases of work.

The specialist lighting proposals are therefore illustrated holistically by QODA Light on the application drawings for all Exhibition Spaces, to demonstrate overall design intentions for Bruce Castle Museum. In addition to the specialist lighting installations, the re-lamping or replacement of general luminaires is to be undertaken to improve the functionality and efficiency of fittings throughout the MEND Funded areas.

Sample light fittings have been selected to have integrated adjustment and have been reviewed on site, although further consultation and agreement of proposed fittings is to be undertaken.

Flexibility and ease of adjustment is key in the control of new lighting installations, to ensure it is a user-friendly system, with the ability to adjust lighting levels independently to suit each curated exhibition space. Colour temperature is proposed to be a warm 3000K, suited to Museum spaces.

2.7 Use of the building

Under the proposals, Bruce Castle Museum will continue to function as a museum, for public access and enjoyment of it's collection, without significant 'change of use' under either Planning policy or Building Regulations. The proposals include repairs at ground floor level (room Go6) to reinstate previous use of this exhibition gallery with improved lighting; and the reordering of the first-floor rooms Fo6 to Fo8, to create a new exhibition gallery for public access.

Access: During the proposed site operations, it is proposed that the Museum will remain open and accessible for public use of selected galleries, the archive and function spaces. Drawings 7440/170 to 172 outline the strategy and arrangements to be employed in ensuring that public access can be maintained, without impact on the proposed works and that safe interface between the various site users can be achieved. *(Refer to ground floor site logistics plan overleaf)*

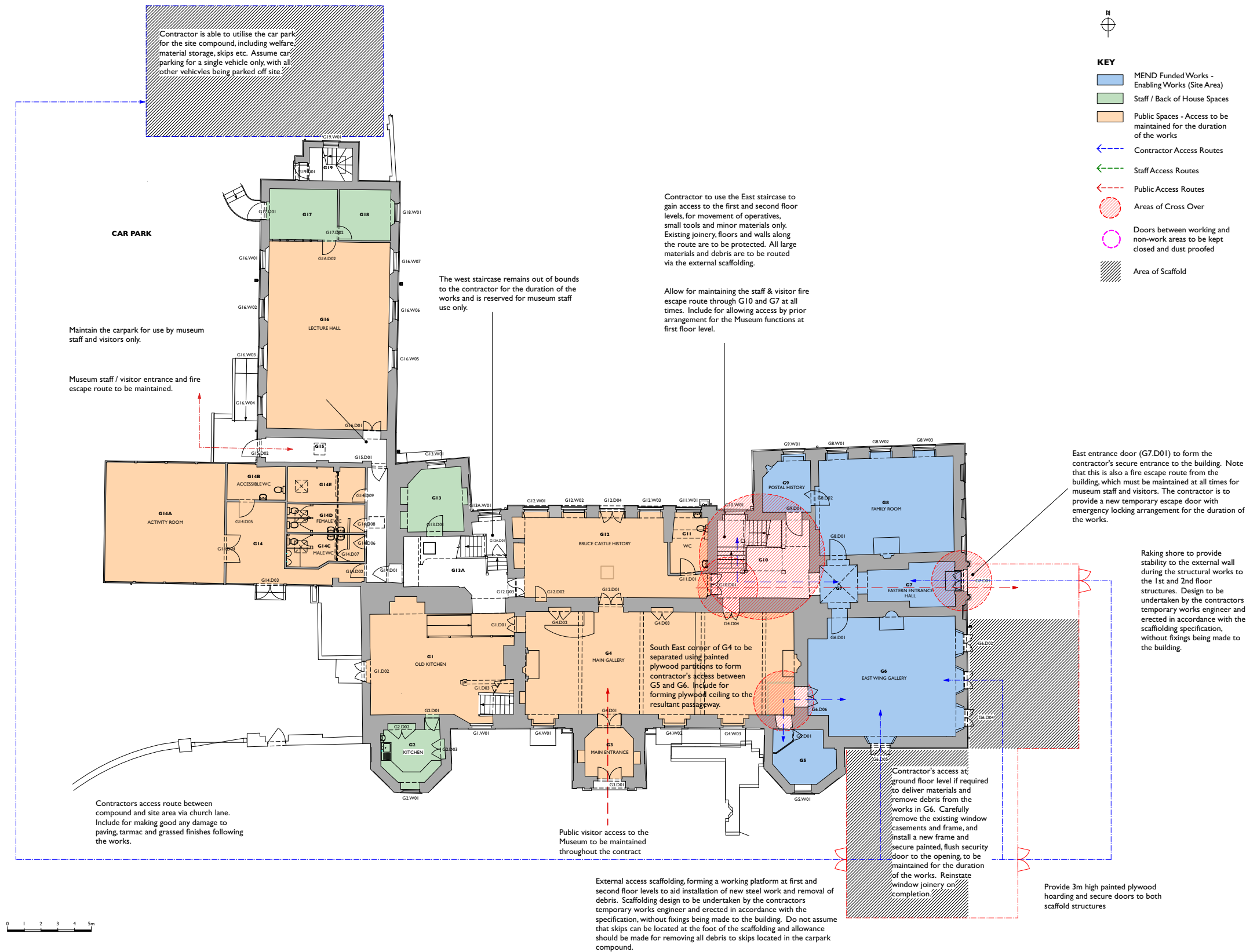
It is proposed that the necessary limitations on public use of the Museum, imposed by the works will be mitigated by employing suitable engagement techniques and opportunities, which have the ability to enhance public understanding and appreciation of the historic building, its conservation and repair.

2.8 Environment and Sustainability

All existing historic joinery and the like, which is removed to enable the works will be repaired as necessary and reinstated in existing positions. Such works will be undertaken in accordance with a suitable workmanship specification.

Where appropriate, all new materials are specified to match the existing and be of a traditional composition and construction, including the use of lime-hair plasters, lime mortars, softwood laths and matching mouldings. All new materials will be from sustainable sources and within the constraints of necessary performance requirements, of sustainable, low carbon manufacture.

Any materials which cannot be re-used will be removed from site through an environmentally considerate waste management process.



Ground Floor Operational and Logistics Plan - Main contract works

Appendix A

List of Application Drawings

November 2023
Version v1

A

List of Application Drawings

RMP		ARCHITECTURAL DRAWINGS	
Drawing No.	Drawing Title	Drawing No.	Drawing Title
7440/		200	Internal Window Repair Schedule
I00/A	Site Location Plan	201	Typical Window Repair Details Sheet 1
I01	Basement Plan as Existing	202	Typical Window Repair Details Sheet 2
I02/A	Ground Floor Plan as Existing	203	Typical Window Repair Details Sheet 3
I03/A	First Floor Plan as Existing	204	Typical Window Repair Details Sheet 4
I04/A	Second Floor Plan as Existing	250/A	External Door Internal Repair Schedule
I06	F6, F7, F8 Internal Elevations as Existing - Sheet 1 of 2	260	G7.D01 as proposed
I07	F6, F7, F8 Internal Elevations as Existing - Sheet 2 of 2	304	Basement Floor Plan - Compartmentation & Door Upgrading Proposals
I11	Basement Plan - Existing Uses	305/B	Ground Floor Plan - Compartmentation & Door Upgrading Proposals
I12	Ground Floor Plan - Existing Uses	306/B	First Floor Plan - Compartmentation & Door Upgrading Proposals
I13	First Floor Plan - Existing Uses	307/B	Second Floor Plan - Compartmentation & Door Upgrading Proposals
I14/A	Second Floor Plan - Existing Uses	312	New Door Proposals at First Floor Level F13.D01
I20/B	Ground Floor Plan - MEND Funded Works	313	New Door Proposals at First Floor Level F13.D02
I21/B	First Floor Plan - MEND Funded Works	321/A	Ground Floor Door Schedule
I22/B	Second Floor Plan - MEND Funded Works	322/A	First Floor Door Schedule
I25	Ground Floor Existing Photographs - Sheet 1 of 1	323/A	Second Floor Door Schedule
I26	First Floor Existing Photographs - Sheet 1 of 2	400	Typical Lime Plaster Ceiling Repair Detail
I27	First Floor Existing Photographs - Sheet 2 of 2	410/A	Typical Wall Chase Detail
I28	Second Floor Existing Photographs - Sheet 1 of 1	420	Typical Fire Stopping Details
I60	F6, F7, F8 First Floor Plan - Proposed Removals	430	F6, F7, F8 First Floor Plan - Proposed Repairs
I61	F6, F7, F8 Internal Elevations Proposed Removals - Sheet 1 of 2	431/A	F6, F7, F8 Internal Elevations - Proposed Repairs
I62	F6, F7, F8 Internal Elevations Proposed Removals - Sheet 2 of 2	432	F6, F7, F8 Proposed Downstand
I70/C	Ground Floor Operations and Logistics Plan - Main Contract Works	505	Ground Floor - Existing floor arrangements
I71/C	First Floor Operations and Logistics Plan - Main Contract Works	506	First Floor - Existing floor arrangements
I72/C	Second Floor Operations and Logistics Plan - Main Contract Works	507	Second Floor - Existing floor arrangements

SFK	STRUCTURAL DRAWINGS
Drawing No.	Drawing Title
22129-1001	Ground Floor Layout - TW Sheet 1
22129-1002	Ground Floor Layout - TW Sheet 2
22129-1011	First Floor Layout and Details
22129-1021	Second Floor layout and Details

QUODA	BUILDING SERVICES DRAWINGS
Drawing No	Drawing Title
3156-QODA-XX-00-DR-E-0401	Fire Alarm Services - Ground Floor
3156-QODA-XX-01-DR-E-0401	Fire Alarm Services - First Floor
3156-QODA-XX-02-DR-E-0401	Fire Alarm Services - Second Floor
3156-QODA-XX-03-DR-E-0401	Fire Alarm Services - Roof
3156-QODA-XX-00-DR-E-0501	Lighting Layout - Ground Floor
3156-QODA-XX-01-DR-E-0501	Lighting Layout - First Floor
3156-QODA-XX-02-DR-E-0501	Lighting Layout - Second Floor

QUODA Lighting	DISPLAY LIGHTING DRAWINGS
Drawing No.	Drawing Title
OX-3156-QODA-01-GF-DR-YL-0501-T	Ground Floor Lighting Layout
OX-3156-QODA-01-01-DR-YL-0501-T	First Floor Level Lighting Layout
OX-3156-QODA-01-02-DR-YL-0501-T	Second Floor Level Lighting Layout