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1.0 INTRODUCTION

Clarke Nicholls Marcel (CNM) were engaged by University College London Hospitals NHS Foundation Trust (UCLH) to undertake a non-intrusive visual survey to assess the structural condition of the Former Royal Ear Hospital located at 21 Capper Street.

This report sets out a description of the findings of this survey together with a comprehensive photographic record of specific defects identified. The primary purpose of this survey and report is, not only to comment on the condition of the structure, but also identify any defects which exist and categorize those defects into their order of severity.

The report also includes an outline of the history of the building and description of its structure, services, cladding and other elements.

2.0 BUILDING LOCATION

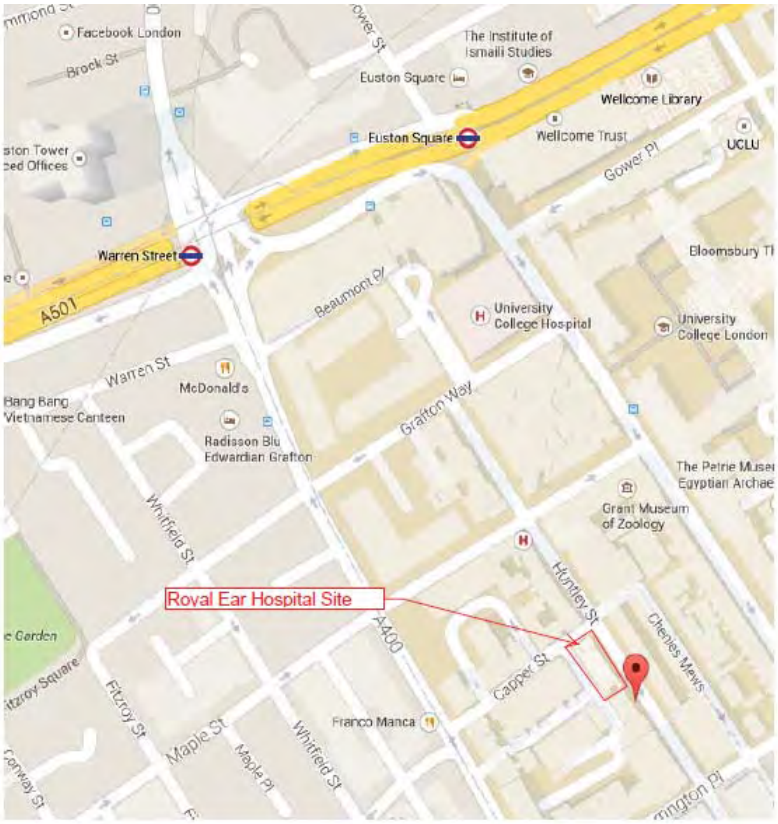
The building address is 21 Capper St, London, WC1E 6JA.

The site is located in North-West London, approximately 500m south of Warren Street and Euston Square underground stations.

The National Grid reference for the site is approximated at E529480, N182055. It is bounded by Huntley Street on the long eastern side and Capper Street on the short northern side.

Shropshire Place runs approximately half the length of the long western side and is a vehicle cul-de-sac. It provides vehicle access to a yard within the existing site. The remainder of this side is bounded by a multi-storey building with the address 179A Tottenham Court Road. A pedestrian alley called Queens Walk runs between Tottenham Court Road and the end of Shropshire Place providing access to this building.

On the south boundary of the site is a residential building called the UCL Students Union Building. The UCL Students Union is a four storey building including the mansard roof structure and is also founded at lower ground floor almost one full storey height below street level.



Location Maps for Royal Ear Hospital

3.0 BUILDING HISTORY AND DESCRIPTION

The Royal Ear Hospital is a rectangular five storey building including the roof and is also founded at lower ground floor almost one full storey height below street level. There are lightwells on the street elevations with street access provided via bridging stairs or slabs over the lightwell on both Capper Street and Huntley Street. From external viewing it can be seen that this building has predominately brick facades with a mixture of large windows with stone surrounds and smaller windows without surrounds.

There is extensive use of stone cladding on Capper Street elevation including a stone crest above the main entrance with the date MCMXXVI i.e.1926, which almost certainly confirms when the building was constructed.

Record plans, elevations and sections of the building are attached in Appendix A.

3.1. Existing Substructure and Foundations

The lower ground floor plan shows a boundary wall which is highly likely to form part of the structure upholding the surrounding streets. This plan does not show any buttressing structure to these walls from the building superstructure.

The lower ground floor plan and an associated section also show eight vaults extending approximately 24m in length from the southern end of the hospital building and 3-4m under Huntley Street. These vaults form part of the building construction. The drawing indicates three central vaults as electrical and Arup have confirmed that they contain substation plant.

It is also noted that the lower ground floor plan indicates that a tunnel exits the site on the western Capper Street boundary, towards the Cancer Centre building on the other side of Capper Street.

The information from the site investigation details a basement slab of approximately 200mm thick. This indicates a ground bearing slab with foundations under load bearing elements.

Due to the overall building height it is possible that piled foundations were used but more likely that mass concrete strip and pad foundations are located under external walls and internal columns.

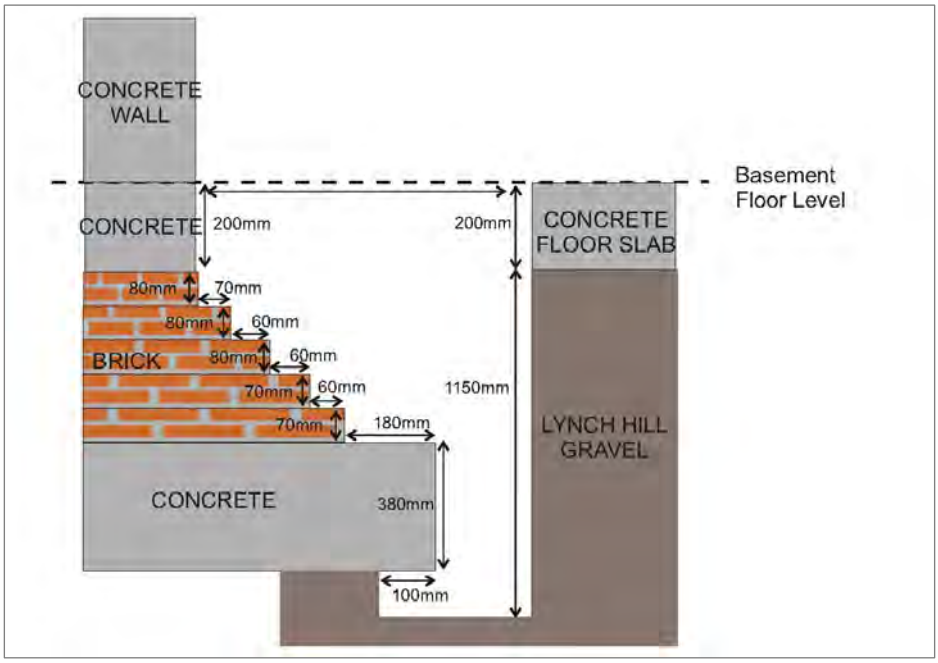


Figure 1 – Trial Pit Sketch of Façade foundation along Capper St

3.2. Existing Superstructure

The upper level plans generally show external walls and internal column structure. Some levels also show the lines of downstand beams running between the external walls and internal columns. Stair wells are also shown at each end of the building.

From the age of the building and the types of construction used at that time it is probable that the building structure is a mixture of external loadbearing masonry walls with an internal steel column and beam arrangement. The external facade walls will likely have steel columns (stanchions) within them. The floor construction is concrete slab with hollow-pot infill.

Photos of the superstructure are provided in Appendix B.

4.0 CONDITION SURVEY

The survey of the Former Royal Ear Hospital was undertaken by CNM on 26th January 2015. This survey was visual only and no intrusive investigations, opening up works or testing was undertaken.

The level of inspection was subject to the available access of the building. At the time of the survey, the building was largely uninhabited apart from an area of the 1st floor used for temporary office space.

All levels were fully accessible internally, including the basement. The inspection of the facades was undertaken from street level.

The primary purpose of this survey and report is, not only to comment on the condition of the structure, but also identify any defects which exist and categorize those defects into their order of severity. Cost and time restraints of any possible potential repairs have not been considered in categorising the defects.

The following section describes the general defects in order of considered priority. Any photograph reference used is solely to help to identify specific defects but does not necessarily describe the full extent of that defect.

It should be noted, any contractor would need to obtain consent / approval for any repair work and materials used from concerned organisation as the building is part of Bloomsbury Conservation Area.

A photographic record of the defects identified by CNM is provided in Appendix B.

5.0 SURVEY FINDINGS

5.1. General Condition

Full access was possible to all levels of the building. Although some areas were being used to accommodate security and some office staff, the majority of the building was empty and a large amount of finishes had been stripped and removed locally exposing areas of the structure.

The lower ground (basement) level was significantly stripped and several internal non loading bearing brick walls had been removed or part demolished. There appeared to be no floor finishes on the basement ground slab. The ceiling had also been removed exposing the underside of the hollow pot structure to the ground floor slab.

Some areas of the fire protection around the steel beams and columns had spalled or been broken out. There were no significant defects internally found upon inspection of the primary structure.

The levels above the basement were in better condition internally with less finishes removed. However there were local areas of superficial deterioration and damage.

There were several locations throughout the building were the fire proofing finishes had been damaged or removed exposing the steel primary structure.

The external masonry walls of the building varied in its aesthetic and structural condition. This is likely due to thermal and environmental effects over an extended period of time. The external walls do not appear to have any vertical movement joints along their length to accommodate thermal movements within the masonry. As a consequence, cracking has developed in several areas. Areas were specifically identified during the site survey and outlined in Section 5.2.

5.2. Category Defects

CNM have categorised the defects identified in the survey on a scale of 1 to 4. Category 1 is the most severe recorded upon inspection of the Former Royal Ear Hospital Building. Such defects are of significant structural concern that would require repair and/or strengthening. Category 4 are those defects which do not pose any concern to the structural integrity of the building locally or globally in the foreseeable future. These defects have been identified and are presented in Appendix B with the corresponding category.

5.2.1 Category 1 Defects

These defects require repairs to stabilise their condition to ensure that immediate issues do not arise. They may pose a threat to the structural integrity of the building and, in turn, potential hazards to the public in the future.

Vertical cracking developing in Brickwork

The facades of do not have any vertical movement joints along their length to accommodate thermal movements within the masonry. As a consequence vertical cracking is developing in a number of locations, primarily at the north end of Huntley Street.

Once the mechanical bond is broken and a crack develops in masonry the annual cycle of thermal expansion and contraction results in a widening and probable lengthening of the crack. Further expansion could potentially lead spalling of the brick work causing potential falling debris and future exposure of the any steel structure to environmental deterioration. In order to restrict this, it would necessary to introduce some form of mechanical tie across the crack in the form of bed-joint reinforcement.

Spalling / Loose Brickwork and Stonework.

There are a number of locations where sections of brickwork and stonework are loose or show signs of imminent spalling with a subsequent risk to the general public (Image No. 12 and 19).

This is likely due to movement in the structure and/or water ingress. These defects could potentially be the result of water effects to the steel stations supporting and restraining the façade. This causes deterioration such as delamination of the steel from corrosion and specifically freeze/thaw action which can weaken the brickwork structure. This would greatly affect the structure integrity of the façade in this area and would need further investigation and repair following this.

Where no other form of repair is possible, these sections of vulnerable masonry should be broken out back to a sound surface. A decision can then be made as to what other repair can be undertaken.

5.2.2 Category 2 Defects

These are defects without immediate risk but pose a threat to the long term condition of the brick and stone facades.

Cracking in brickwork

A number of cracks and open joints can be seen throughout the elevations (Image No. 10, 15, 18 and 21). These cracks will allow water ingress into the facade eventually leading to long term problems as a result of freeze/thaw action. These could lead to greater issues as outlined in the Category 1 defects.

Where possible the joints/cracks would need to be racked out and filled with a suitable repair mortar or sealed with an appropriate flexible sealant to prevent water ingress into the joint/crack.

Missing/poor pointing

Several areas have missing/poor sections of pointing allowing water ingress into the joints with a subsequent risk of damage from freeze/thaw action. These areas would need to be racked out and re-pointed using appropriate mortar mix,, colour matched and formed to match the surrounding pointing.

5.2.3 Category 3 Defects

These are generally areas of making good.

Spalling Brick Façade

There are a number of sections of missing/spalling masonry (Image No. 14) that should be made good in accordance with the recommendations of a specialist repair contractor.

Removed/Spalling Fire Protection of Internal Structure

There are a number of sections of missing/spalling fire protection coating (Image No. 2, 5) that should be made good in accordance with the recommendations of a specialist repair contractor.

5.2.4 Category 4 Defects

These defects do not pose any particular concern at this time and are primarily related to aesthetic appearance, however, if left unattended they could cause issues in the long term.

5.5.1 Surface Water Staining

There a number of areas showing specific signs of local water staining (Image No. 9, 10, 11 13

and 17). In the case of obvious leaks from rainwater downpipes these should be investigated and the source of the leak repaired. Other areas should also be investigated to remedy the local cause of staining and the stained surface cleaned and made good.

6.0 CONCLUSIONS & RECOMMENDATIONS

The internal structure showed no visual signs of significant damage or areas of concern to the structural integrity of the building.

However some areas of the fire protection around the steel beams and columns had spalled or been broken out. This could affect the structural performance of the building in the event of a fire and would likely not comply with current standards.

The floor structure of the building consists of a concrete slab with hollow pot infill. It was also noted that the hollow pot floors spanned a significant distance and would have limitations in regards to loading for any future change of use. This type of construction also greatly limits any future flexibility with regard to ceiling support services and penetrations.

The inspection of the external masonry walls was undertaken from a street level and therefore the full extent of any defects to the façade wall are unknown. However it can be assumed that the more critical defects were apparent and viewed during the survey.

The masonry façade of the building varied in its aesthetic and structural condition. This is likely due to thermal and environmental effects over an extended period of time. The facades appear to not have any vertical movement joints along their length to accommodate thermal movements within the masonry. As a consequence cracking has developed in several areas.

In two specific areas, detailed in images 12 and 19 of Appendix B, there was significant movement and cracking in the brick and stone work. The two areas are located on the returns of the Capper Street façade. Deterioration such as delamination of the steel from corrosion and specifically freeze/thaw action has the potential to weaken the facades. This would affect the structure integrity of the façade in this area and would need further investigation and repair following this.

Less critical defects specified in Categories 2 to 4 have potential to create significant issues to the structure over a period of time.

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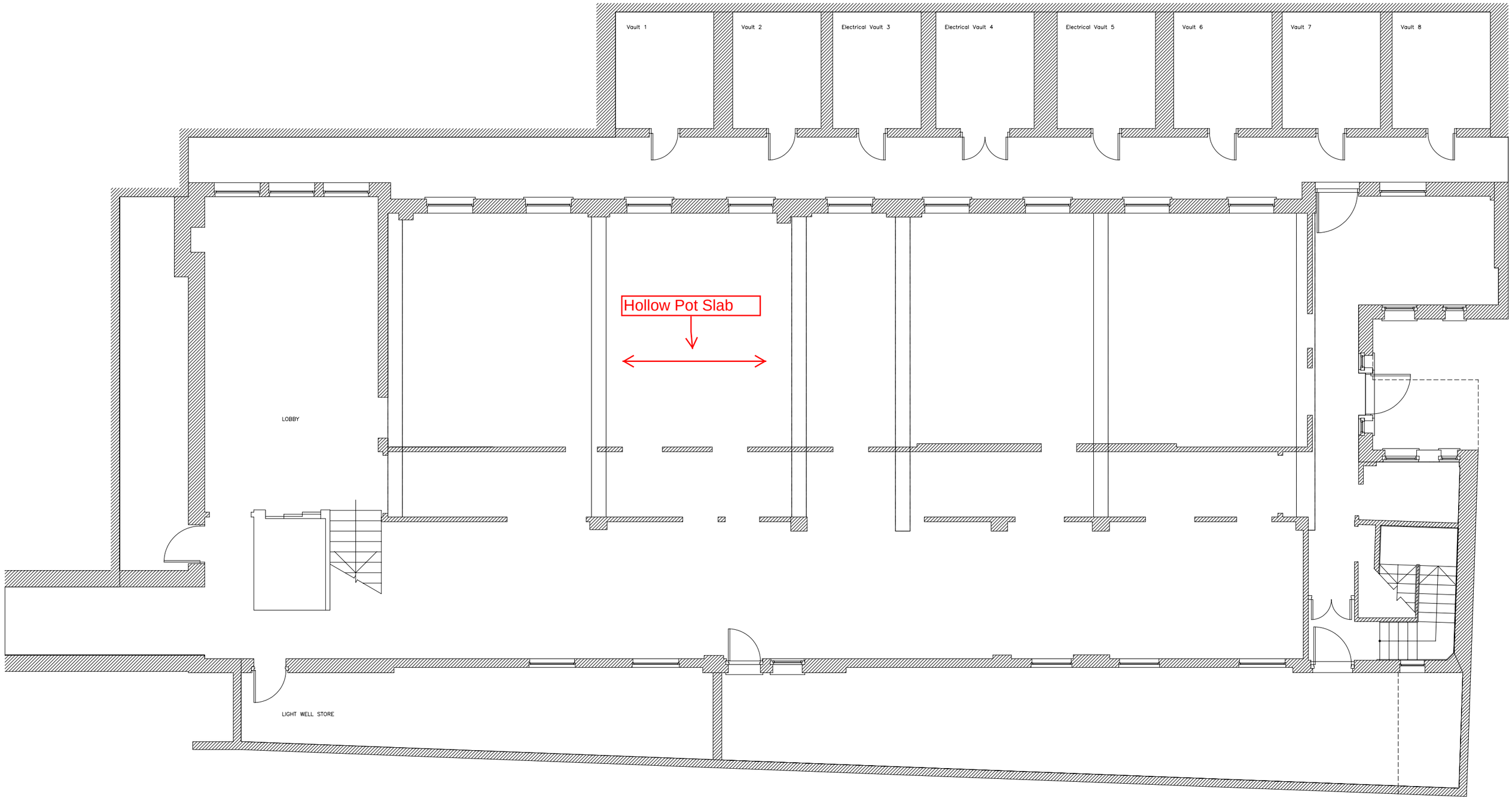
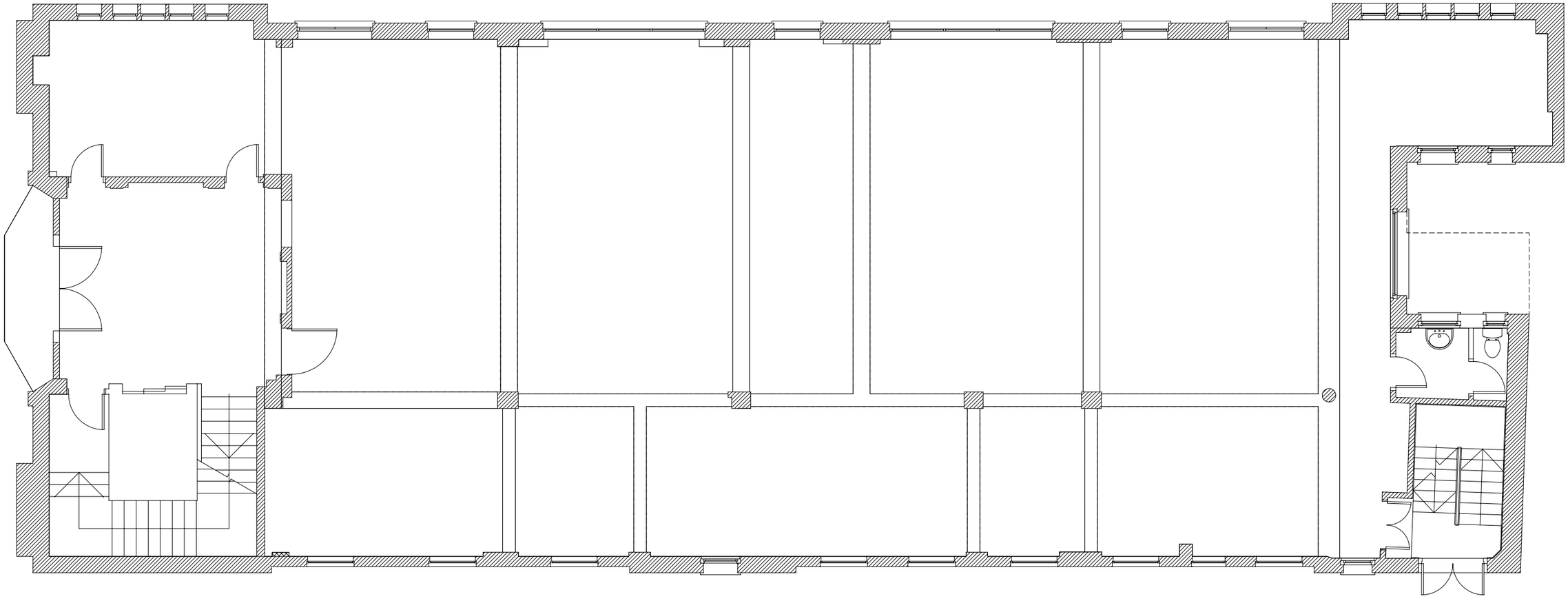
APPENDIX A – Existing Layout Drawings

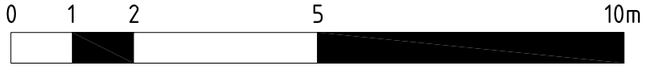


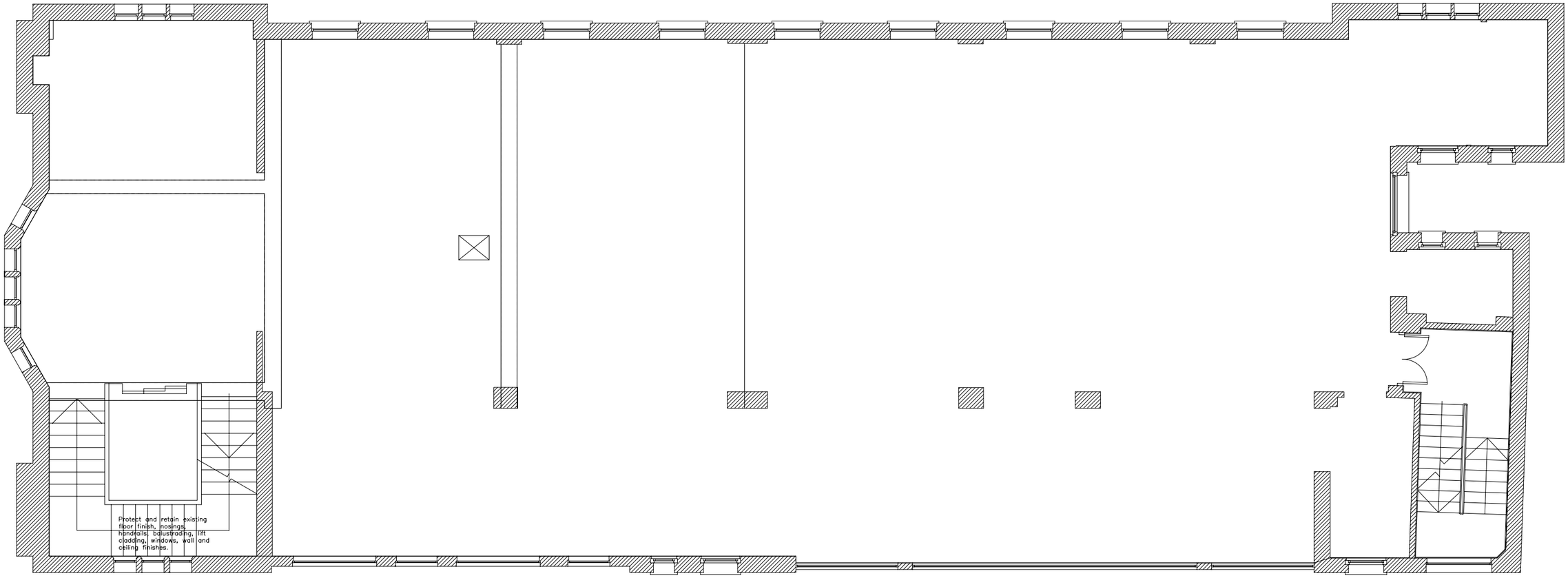
Lower Ground Floor – R Ear Hospital
Gross Internal Area 702.45 sq m

0 1 2 5 10m



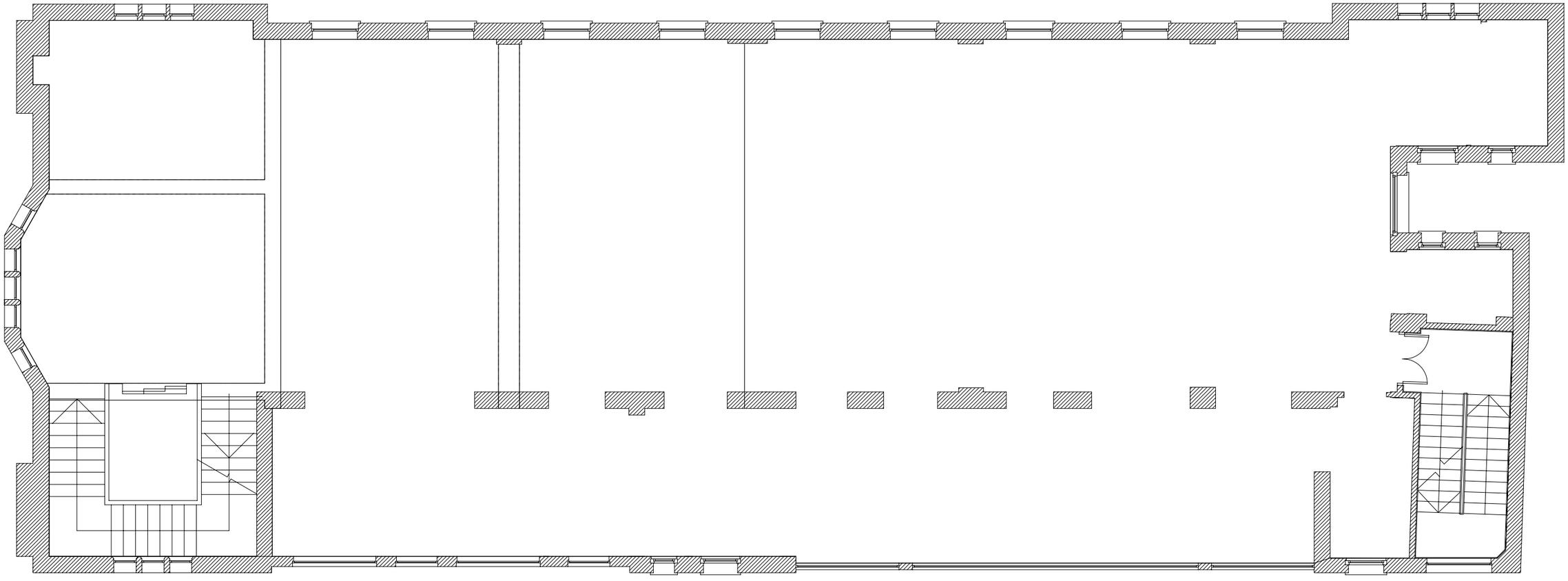
Ground Floor – R Ear Hospital
Gross Internal Area 415.24 sq m



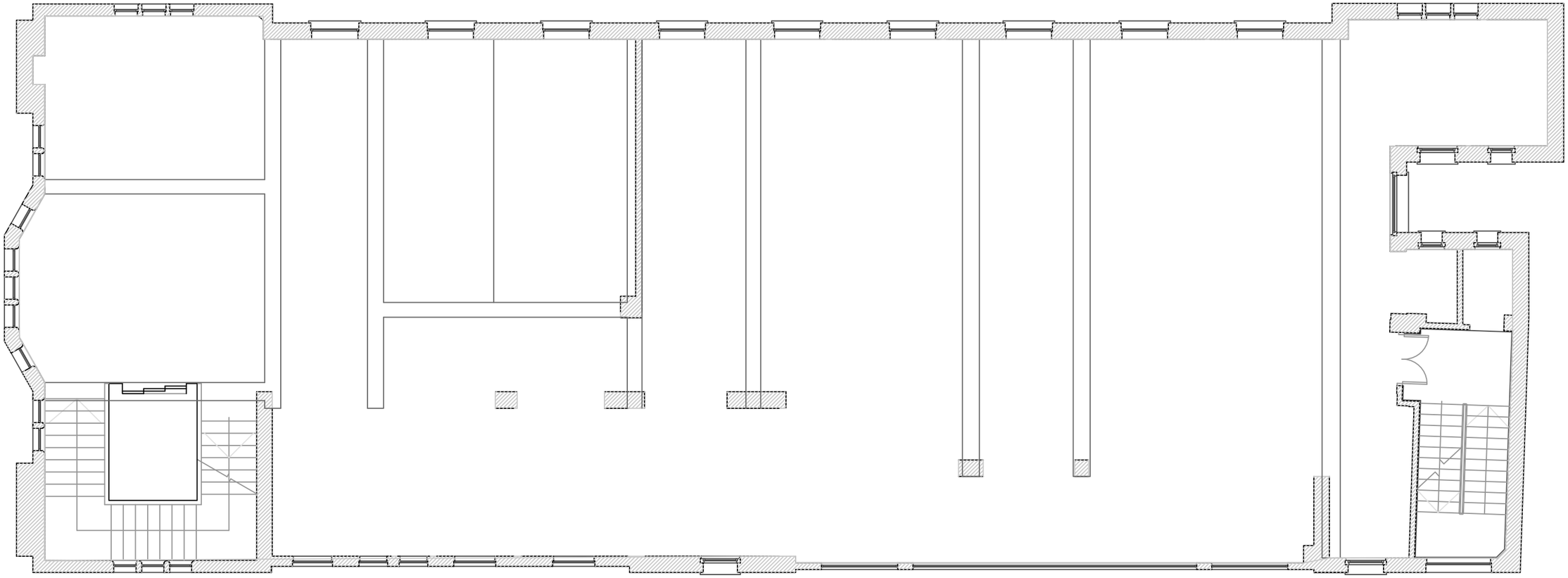


First Floor – R Ear Hospital
Gross Internal Area 427.46 sq m

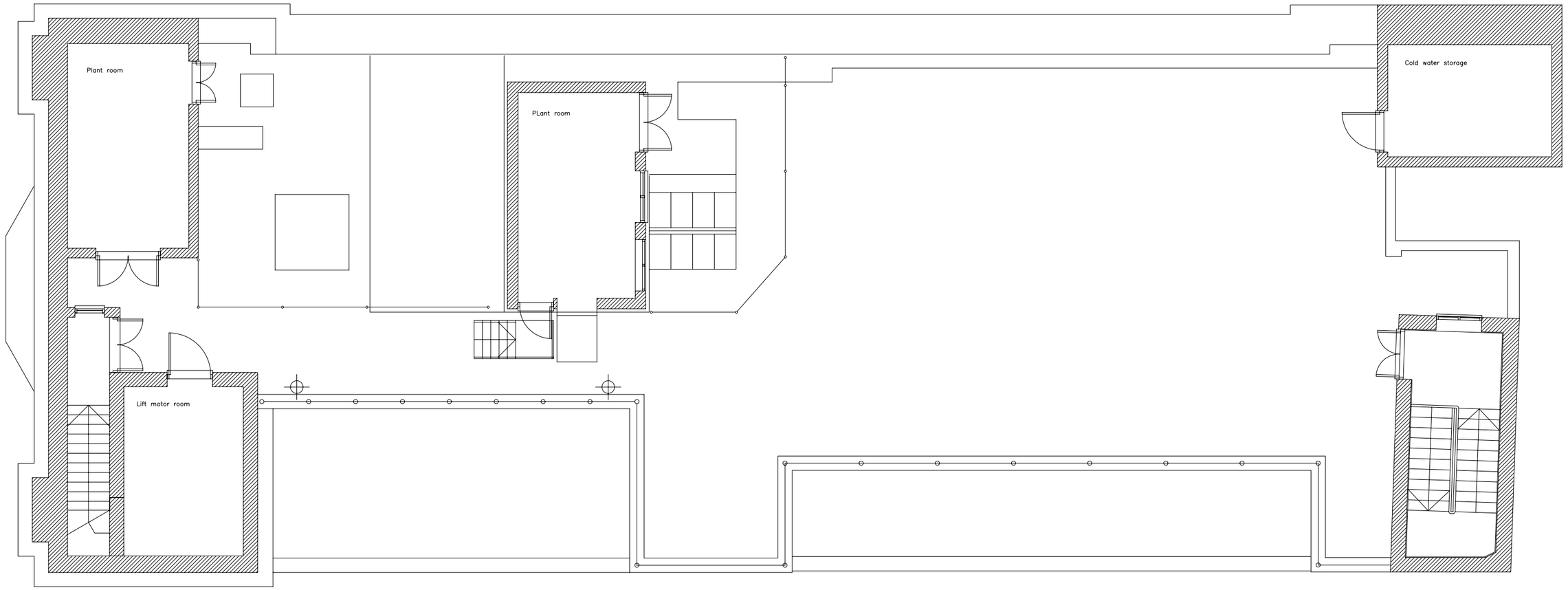
0 1 2 5 10m



Second Floor – R Ear Hospital
Gross Internal Area 427.46 sq m

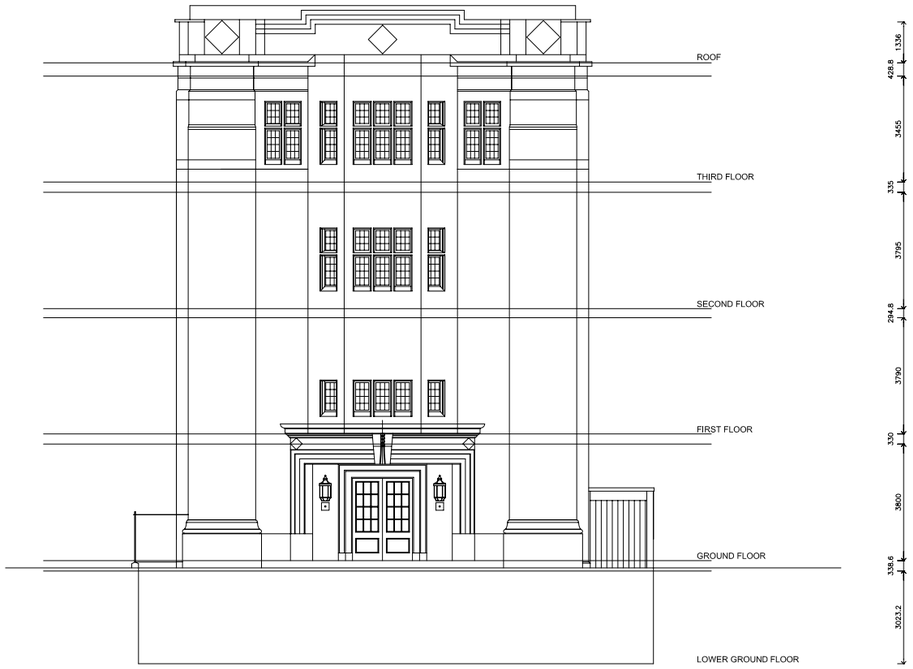


Third Floor – R Ear Hospital
Gross Internal Area 429.86 sq m

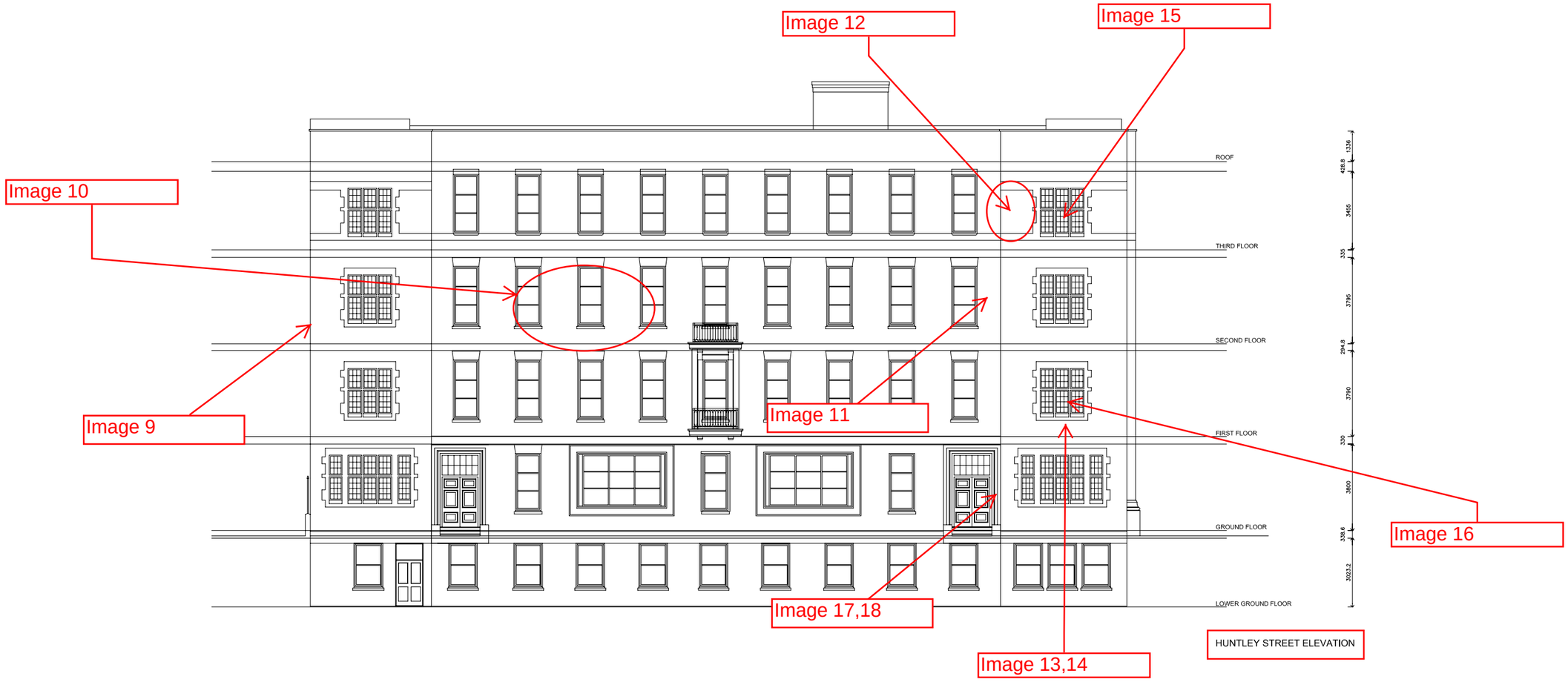


Roof Plan – R Ear Hospital

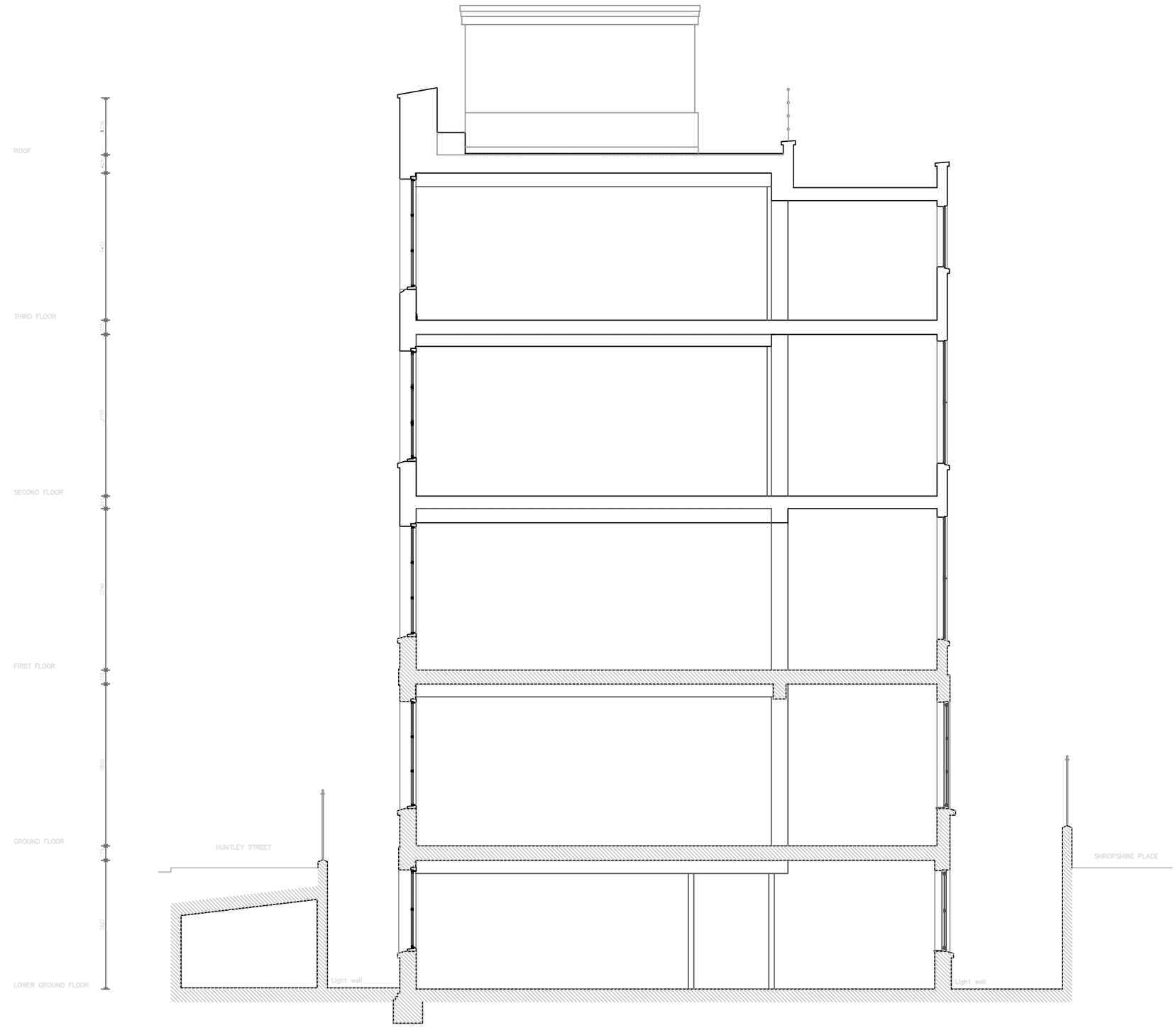
0 1 2 5 10m



CAPPER STREET ELEVATION



HUNTLEY STREET ELEVATION



TYPICAL CROSS SECTION

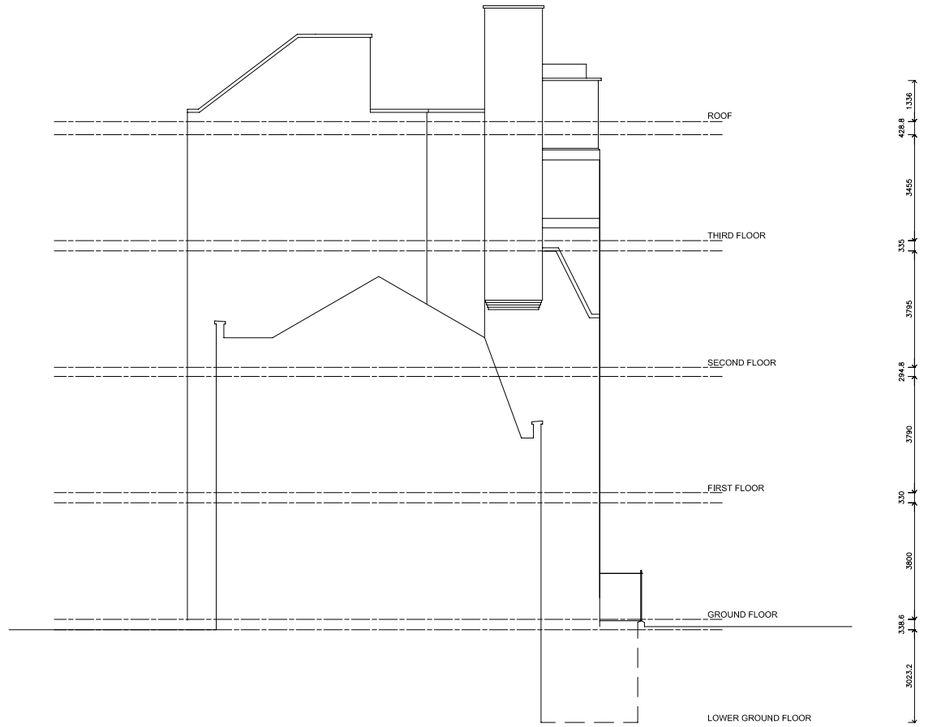
NOTE

DO NOT SCALE FROM THIS DRAWING

FIGURED DIMENSIONS ONLY ARE TO BE USED

REVISIONS

REVISION	DATE	ITEM



SOUTH SECTIONAL ELEVATION

0 1 2 5 10m

SHROPSHIRE PLACE ELEVATION

ARCHITECHNICS

CHARTERED ARCHITECTS

GODSTONE STUDIOS, HIGH STREET, GODSTONE, SURREY RH9 8DR
TEL: 01883 744509 FAX: 01883 744510

CLIENT
CAMDEN AND ISLINGTON CHS NHS TRUST

PROJECT
INTEGRATED CARE UNIT

LOCATION
CAPPER STREET LONDON WC1

DRAWING
SHROPSHIRE PLACE EXISTING ELEVATION

SCALE
1:100

DATE	DRAWING NO.	REVISION
07:01	0118/CD/09	

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APPENDIX B – Survey Photographs

Image 1: Typical hollow-pot floor structure of building. Taken at underside of ground floor.

Image 2: Typical exposed steel girder beam, supporting floor structure. (Cat 3)

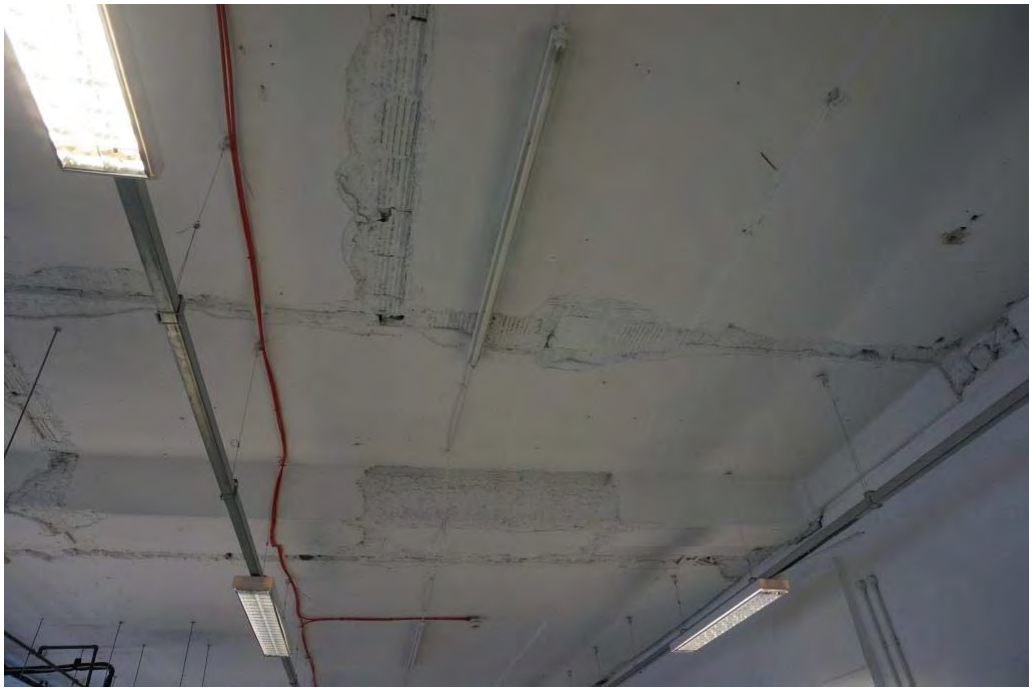

Image 3: Deterioration of finishes and fire proof cladding to structural elements. (Cat 3)

Image 4: Locally removed fire proofing of primary steel. (Cat 3)

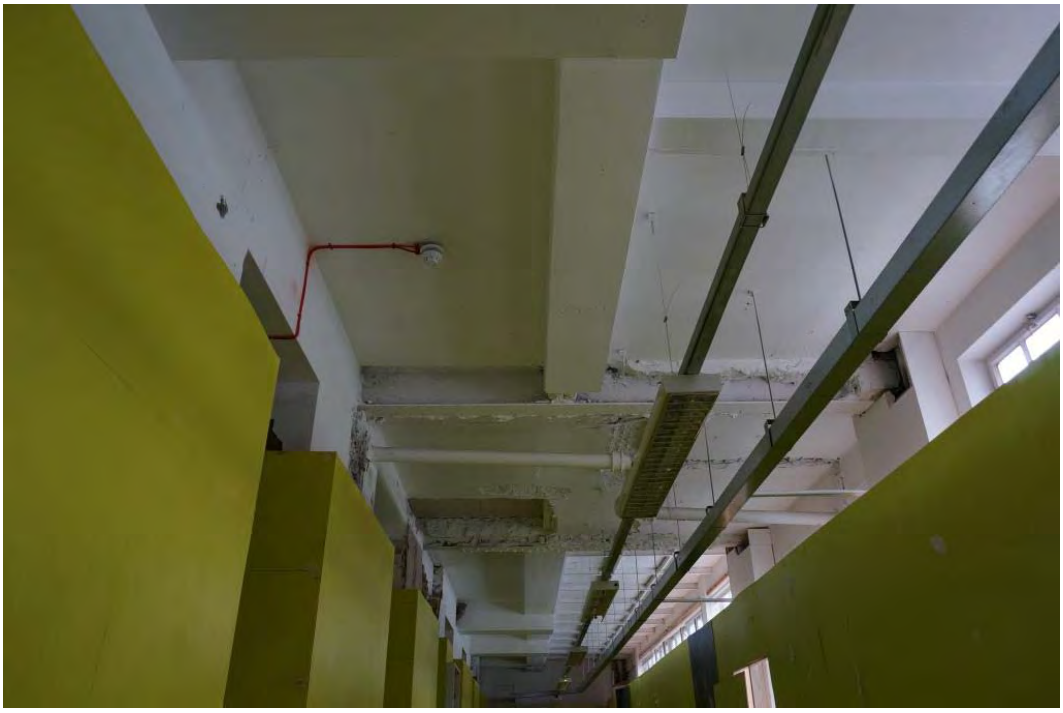

Image 5: Exposed primary steel structure (Cat 3)

Image 6: Exposed steel grider beam with fire proofing cladding removed (Cat 3)

Image 7 Exposed steel beam to column connection. (Cat 3)

Image 8: External view of infill of original external balconies on Shropshire Place elevation

Image 9: Huntley St elevation. Evidence of water staining and local brick repairs. (Cat 4)

Image 10: Huntley St elevation. Evidence of water staining and local brick repairs. Linear cracking in brick above 3rd floor windows. (Cat 2)

Image 11: Huntley St elevation. Evidence of water staining and local brick repairs on Capper St return. (Cat 4)

Image 12: Huntley St elevation. Significant defects in brick façade and visible water damage. Cracking of brick façade and bowing of damaged brick potentially casued by deterioration and liley delamination of steel support structure of façade. (Cat 1)

Image 13: Huntley St elevation. Evidence of water staining and local brick repairs on both corners of return. (Cat 4)

Image 14: Huntley St elevation. Evidence of water staining and local brick repairs on both corners of return. (Cat 4)

Image 15: Magnification of Image 13. Evidence of significant water damage. Possible spalling of concrete window sill and cracking of brick work. (Cat2/3)

Image 16: Magnification of Image 14. Spalling of concrete window sill exposing reinforcement. (Cat 3)

Image 17: Water effects along corner of façade return adjacent to downpipe. (Cat 4)

Image 18: Cracking in brick façade likely due to water ingress. (Cat 2)

Image 19: Significant cracking and spalling brick and concrete. Likely deterioration of support structure with delamination of steel stansions forcing façade to crack and move. (Cat 1)

Image 20: Brick damage and possible local repairs (Cat 2)

Image 21: Brick damage and possible local repairs (Cat 2)

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