



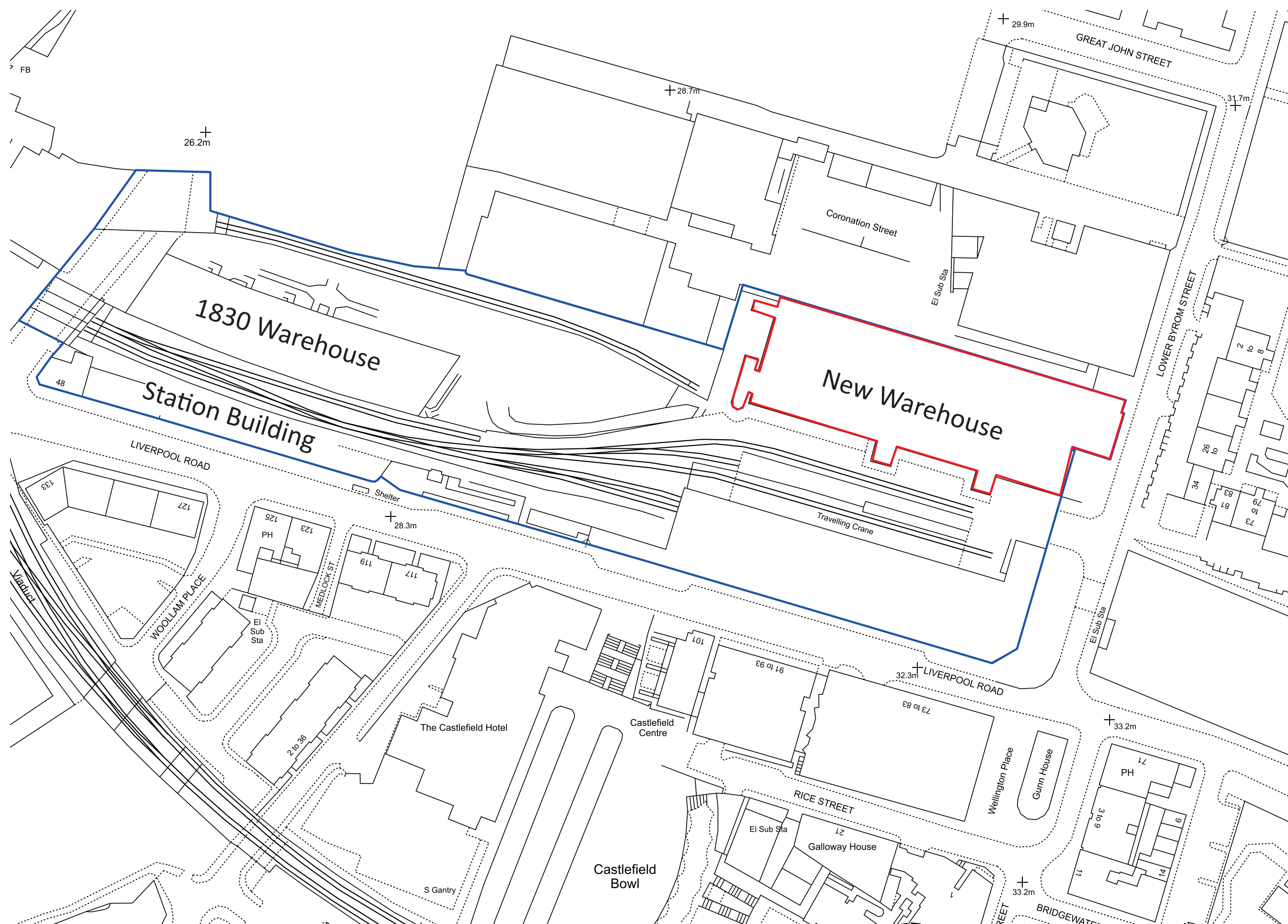
Atelier MB
Urban Architects

Design and Access Statement

Science and Industry Museum New Warehouse

Client: The Board of Trustees of the Science Museum
Date: June 2023
Revision: A





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Introduction



1.0 INTRODUCTION

This Design and Access Statement accompanies a formal application for Listed Building consent for a range of urgent fire protection remediation works throughout the Grade II listed New Warehouse. This building forms part of the Science and Industry Museum estate in central Manchester. The building is currently in use as the main entrance for the museum, hosting both permanent and temporary exhibitions.

This document has been prepared by Atelier MB Ltd for our Client, The Trustees of the Science Museum, and must be read in conjunction with the full supporting information package, including the Heritage Report prepared by Atelier Heritage.



Archive image of the New warehouse c. 1984



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Context and Site Analysis



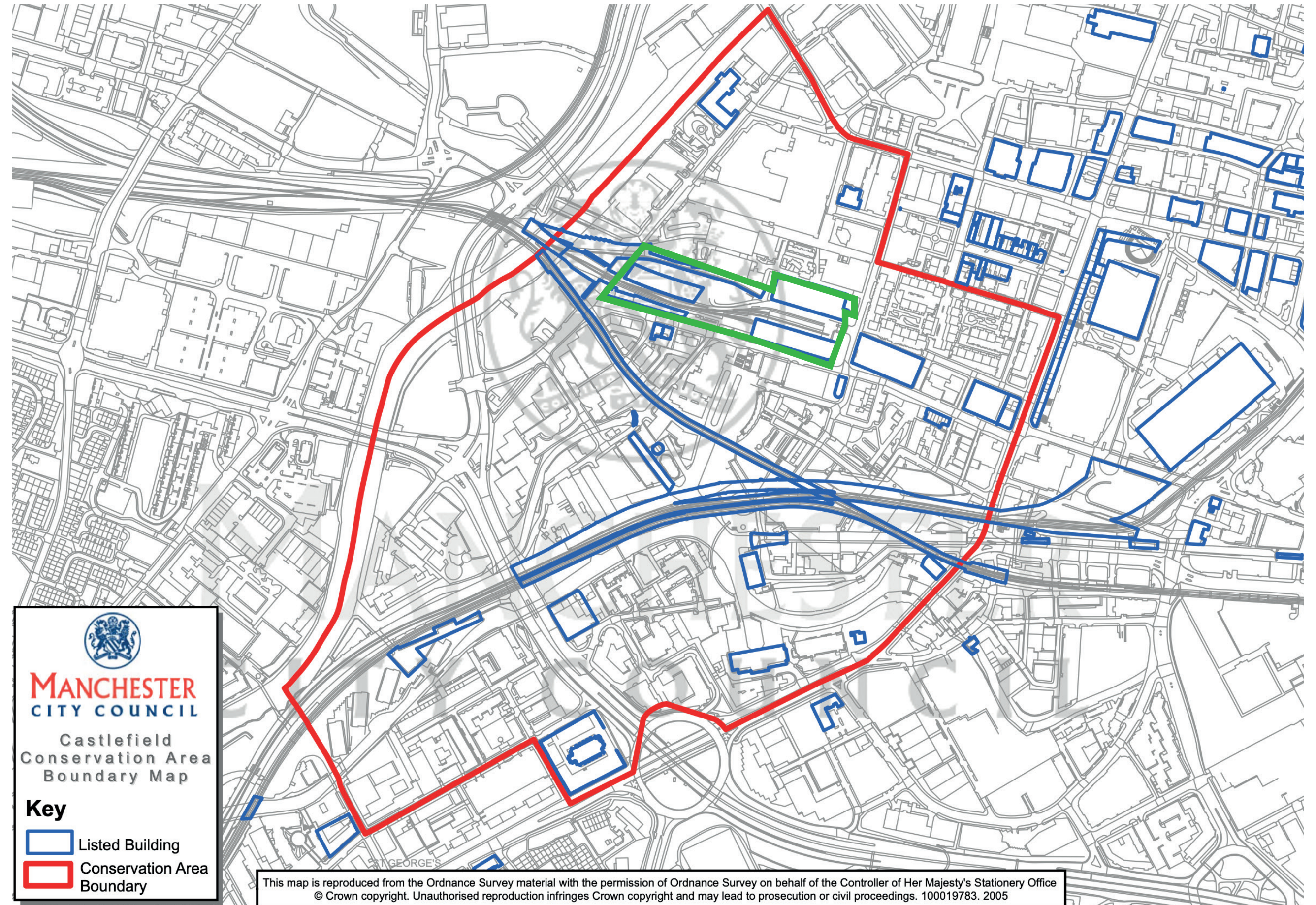
2.1 LOCATION

The Science Museum site is in the Castlefield Conservation Area of Manchester City Centre. This is one of the largest Conservation Areas in Manchester and was designated in 1979 and holds great importance in terms of international industrial heritage. The area is also designated for its Roman history. The listed buildings in the estate take up a sizeable area, and therefore are of considerable importance to the character.

The complex of buildings is bounded by Liverpool Road to the South, Lower Byrom St to the East, and the River Irwell to the West.

Within the complex there are several Listed Buildings. This Listed Building Consent application relates only to the following building:

New Warehouse (sometimes referred to as the New Warehouse)



Castlefield Conservation Area Boundary - with the SIM site bounded in green.

2.2 THE BUILDING

This report is to accompany the application for works to the New Warehouse only. Please refer to accompanying applications for reports covering works to the other buildings.

New Warehouse

CXCXVCCVCVCXVCVCXVCX

2.3 HISTORICAL CONTEXT

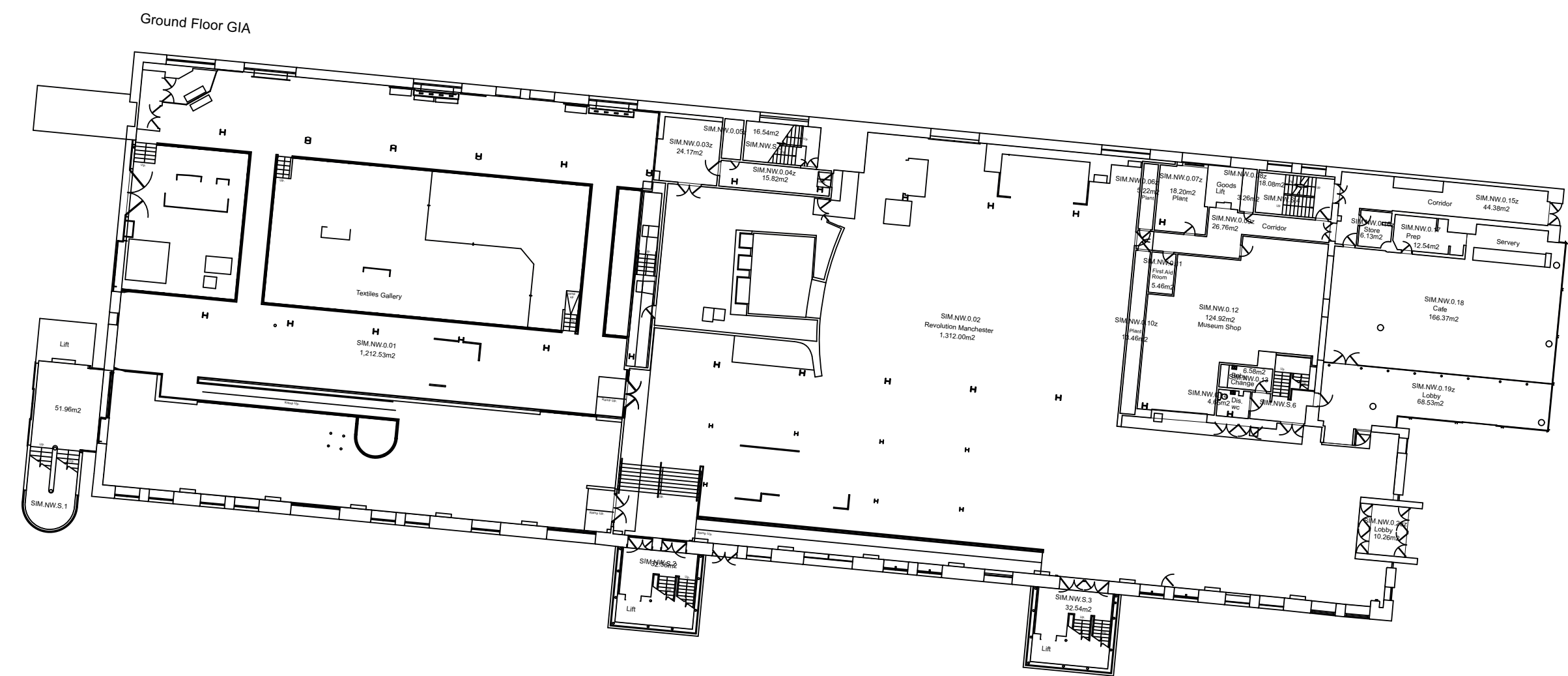
This report is to be read in conjunction with the separate Heritage Statement prepared by the Atelier Heritage. An extract is included below:

Significance.

VCXVCXVCXVCXVCVCVCXCV

3.1 BUILDING CONDITION AND USE

The building is fully occupied, with exhibition space in the basement, ground floor and 1st floor. At 2nd floor there area spaces for conferences and educational workshops.



Plan showing the New Warehouse at ground level.

A vertical collage of eight diamond-shaped images arranged in a grid-like fashion, set against a dark blue background. The images are: 1. Top: A modern glass and steel building next to a traditional brick building. 2. Second row: A solid white diamond on the right, and a solid orange diamond on the left. 3. Third row: A modern interior with a large, curved, orange-colored wall. 4. Fourth row: A low-angle shot of a large, ornate brick building with a curved facade. 5. Fifth row: A modern interior space with a staircase, a red sofa, and a small table. 6. Sixth row: A solid orange diamond on the left, and a solid white diamond on the right. 7. Seventh row: A modern interior space with a staircase and a red sofa. 8. Eighth row: A street view of a modern building with a glass facade. 9. Bottom: A street view of a row of shops and buildings.

4.0 THE BRIEF

Atelier MB Ltd have been appointed by The Trustees of the Science Museum to prepare applications for Listed Building Consent in relation to a series of fire related remediation works. These urgent works have been identified by a Fire Door and Compartmentation Surveys carried out by Neo.



Museum of Science & Industry
Fire Compartmentation Survey Report

Building Name	Station Building
---------------	------------------



Neo Property Solutions
Neo Court, Knowsthorpe Lane, Cross Green Ind Estate, Leeds, LS9 0PF
T: 0843 455 4455
E: info@neo-ps.com
E: recruitment@neo-ps.com



0015:38 - History 2 of 2 (ates
Zone(s) - Ground Floor

Date Added: 15/02/2022 - 11:23

Location: Science Museum Group 355 / Museum of Science and Industry Manchester
/ Station Building / Station Building

Status: Action required

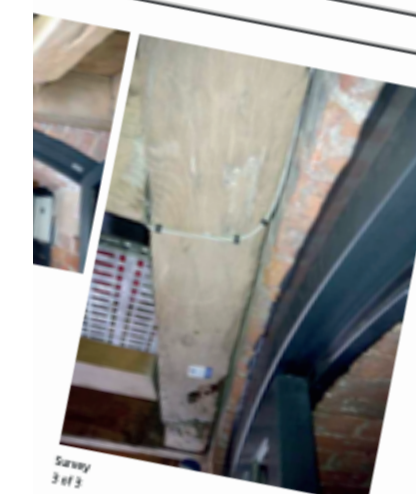
	LL977
	Groundfloor
	1830 warehouse
	WCO2
	Communal

ap where the metal conduit penetrates the blockwork. Use RWA-45 to pack out the gap and mastic.

	Work about 1m
	Joint
	30 minutes (not suitable if basement or > 5m to top floor above ground)
	Concrete / Brick / Block
	RWSD-AIS-0001

istic seal is needed to close the gap. Push up rwa45 as high as can so mastic seal is not on show as much.

	1
	2500
	30
	Red
	No
	Yes



A collage of eight diamond-shaped images arranged in a grid-like pattern on a dark blue background. The images depict various urban and architectural scenes: 1. Top-left: A modern glass and steel building next to a historic red brick building. 2. Top-right: A solid white diamond. 3. Second row, left: A solid orange diamond. 4. Second row, right: A low-angle view of a red brick building with arched windows. 5. Third row, left: An interior view of a modern staircase and seating area. 6. Third row, right: A view of a courtyard or walkway with a patterned wall. 7. Fourth row, left: A view of a modern interior space with a wooden floor and black pillars. 8. Fourth row, right: A street view of a historic building with a green awning. 9. Bottom row: A street view of a row of historic buildings with shops on the ground floor.

5.0 THE WORKS

Please find below a summary of the works proposed:

5.1 FIRE COMPARTMENTATION REMEDIATION

Works not affecting historic fabric:

-Fire stopping to heads of walls, and around pipe, cable, and duct penetrations of said walls. This involves both the installation of fire rated batts and sealants.

Works affecting or abutting historic fabric:

In some instances, making good works are required to the existing wall or partition prior to the fire stopping. In other instances, the existing cabling will need to be bunched together to reduce the size of the wall penetration needed.

-Where making good of the existing masonry wall is required, this will be done in matching brickwork with a lime mortar. The firestopping works will then follow on as required.

-Where possible openings within fire rated walls will be reduced in size by infilling the opening with matching brick/blockwork prior to installing the fire rated batts and sealant.

-In some instances, sealant is required around beam

penetrations of a wall – these are both timber and steel beams.

-In several locations, existing cables need to be moved to facilitate the fire stopping before being reinstated. SIM will need to facilitate the isolation of these cables accordingly.

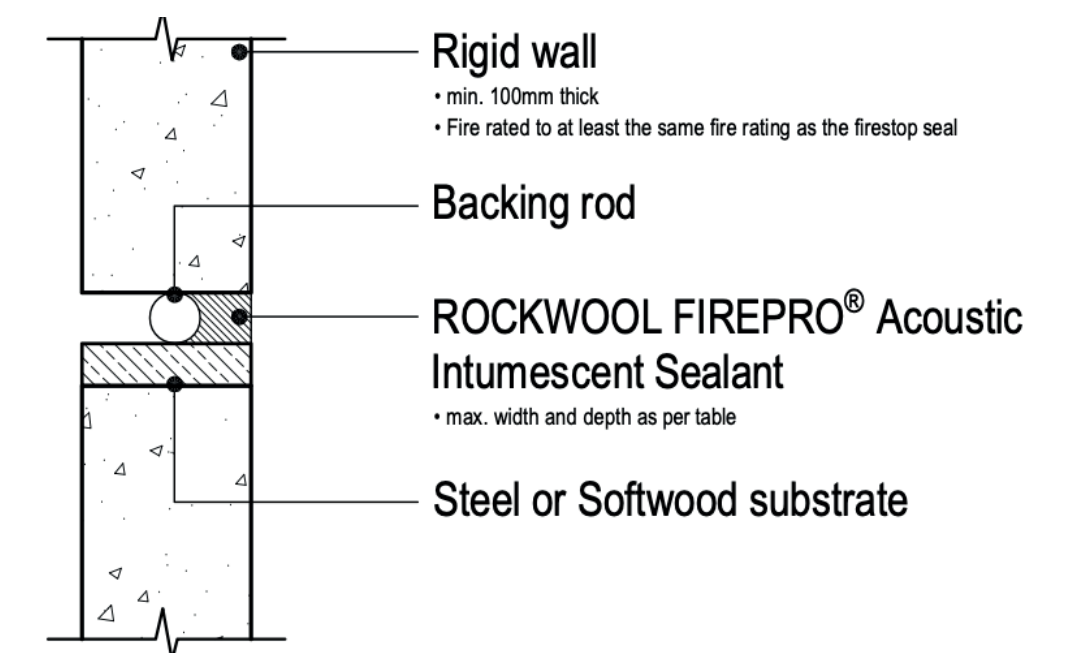
-Replacement partitions are proposed where the existing partitions are not fire rated to the correct standard



Example location where the existing partition needs to be sealed to the brickwork/beam.



Example location where the existing fire stopping needs to be replaced. New matching brickwork may be required if the extent of the batt can be reduced and brick reinstated instead.



VERTICAL SEAL
ACOUSTIC INTUMESCENT SEALANT BETWEEN
CONCRETE AND STEEL OR CONCRETE AND
SOFTWOOD SUBSTRATES

ACO

Example standard Rockwool detail.

New Fire Rated Enclosures

In 2 no. locations within the basement, the proposal is to form a new fire rated store enclosure within an existing store which has not been separated from the adjacent spaces.

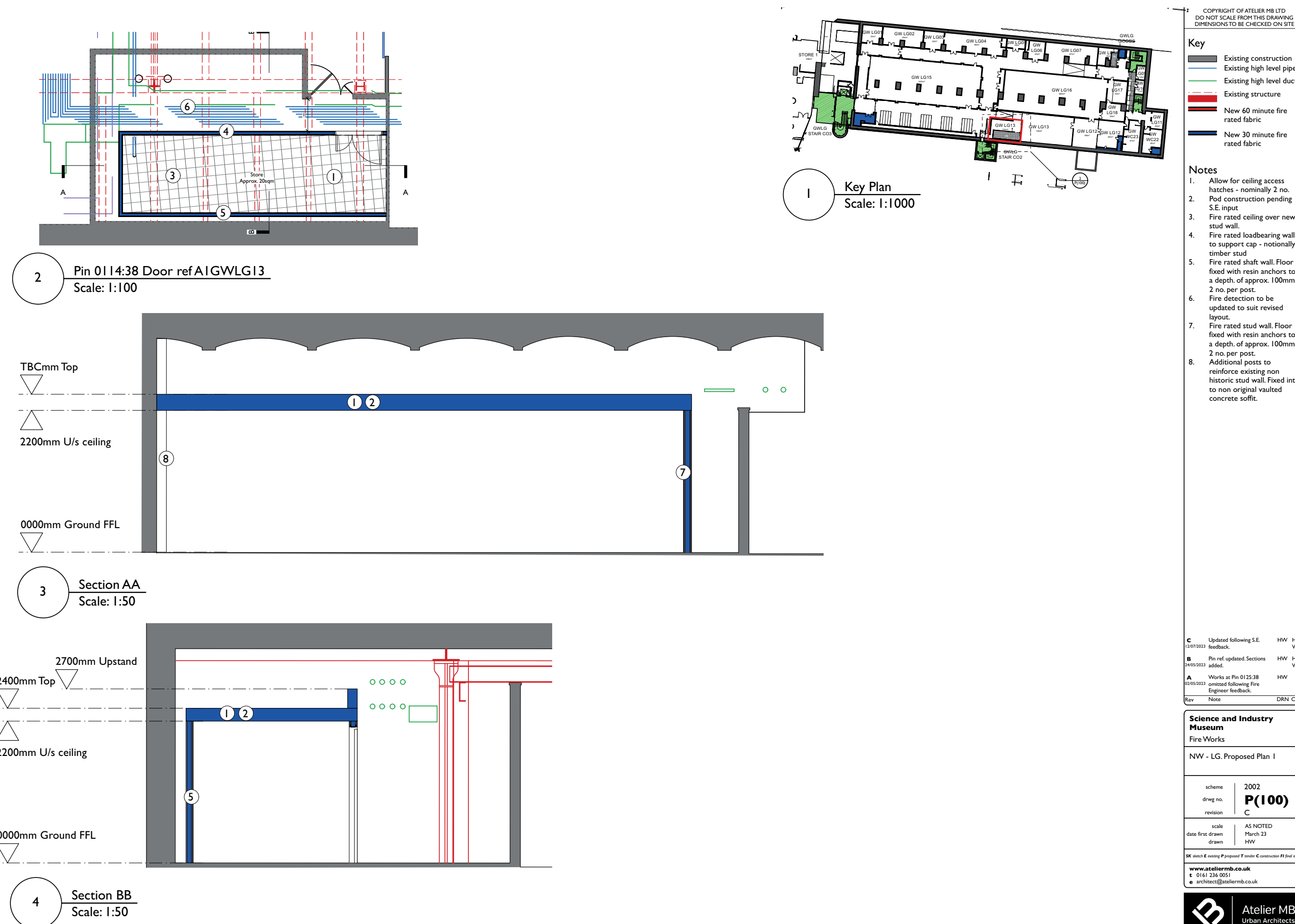
These are established store areas within the museum. However, they have not been adequately separated from plant equipment, which therefore has the potential to be a fire risk.

The Science and Industry Museum, has endeavoured to relocate the items to be stored. However, space is at a significant premium and therefore alternative locations cannot be found to these existing storage areas.

The new store enclosures will therefore separate the storage space from the plant equipment.

In response to the heritage significance of the building, each enclosure will have a cap ceiling. These are located well below the existing exposed brick and iron arched ceilings. This distance varies from approx. 600mm to 2200mm below the existing structural soffit, depending on the location within the building and therefore the existing soffit height. The stores are also pulled away from any historic fabric e.g. brick walls.

A third enclosure is required at ground floor, behind the exhibition area. In this instance, it will separate the plant equipment from the public exhibition area.



Example of one of the new storage enclosures.

Fire Separation Adjacent to Beam

The main back of house corridor to the basement area shares a wall with GW_LG16. This wall is identified in the Neo Compartment Survey report as not being adequately fire sealed to the soffit. Due to the close proximity of the beam to the wall head, this cannot be fire stopped. Neo propose that the adjacent cast iron beam is clad in a fire rated board and sealed to the wall itself to rectify this situation.

In discussion with the Conservation Officer, we understand that cladding the beam is not a preferable solution in heritage terms.

We have explored the following alternative options:

1. Fire stop from the other side of the wall.
 - a. Neo cannot confirm this as an acceptable solution in fire separation terms.
 - b. The SIM archives are located in GW_LG16. This is a highly sensitive controlled environment in which the storage of a huge amount of significant historical material is stored. The archive stacks themselves abut the wall in question, and are embedded into the floor. Any attempts to fire rate from within this space would cause significant costly disruption to the museum and risk potential irreversible damage to these sensitive archives.

This option has not been progressed for the above reasons. The cost and disruption would also affect the running of this publicly funded and accessible museum. These risks and implications are considered to outweigh the reversible covering over of a single

cast iron beam in a back of house location.

2. Overboard the corridor face of the wall
 - a. Neo cannot confirm this as an acceptable solution in fire separation terms.
 - b. A lot of equipment is fixed to this wall and would need to be moved – this would be costly and may cause the museum to close certain areas for a time due to the plant equipment being disconnected.

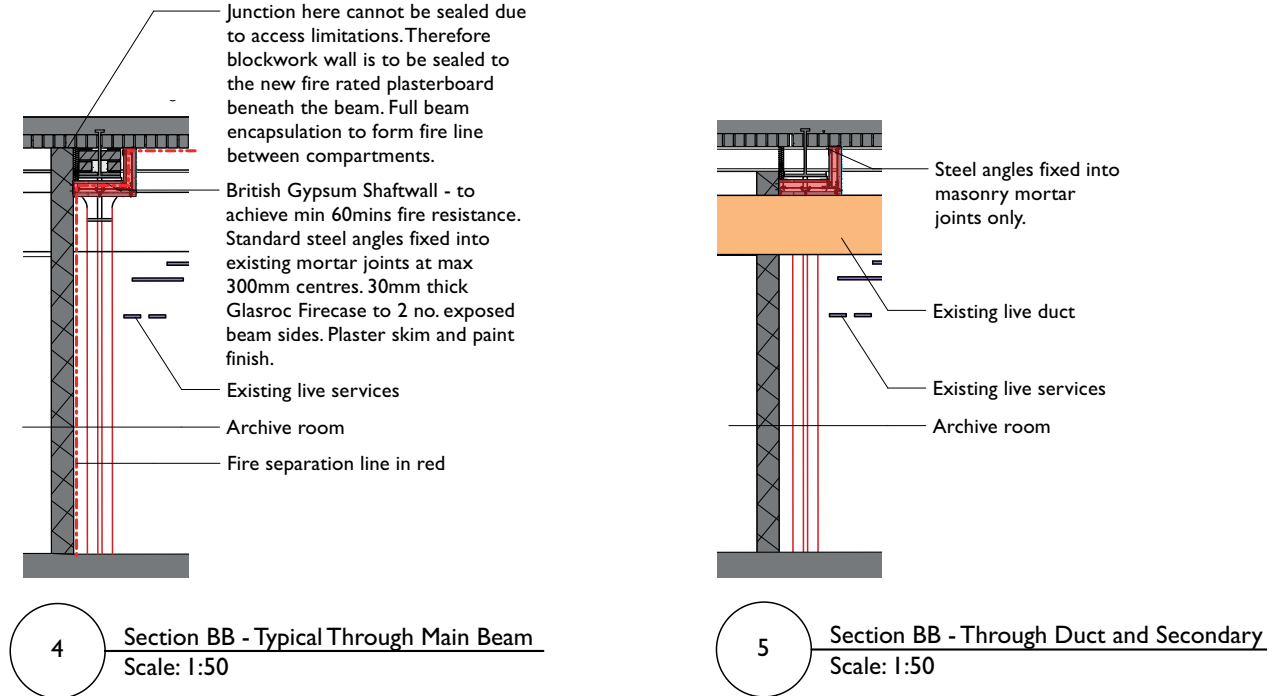
This option has not been progressed for the above reasons. The cost and disruption would also affect the running of this publicly funded and accessible museum. These risks and implications are considered to outweigh the reversible covering over of a single cast iron beam in a back of house location.

3. Secondary fire separated corridor within the main corridor
 - a. Due to the layout of the existing cable/duct/pipe runs, this would unacceptably reduce the width and height of the corridor, and reduce the storage space available to the museum – this is already in significantly short supply.
 - b. Low lying fittings such as lighting would need altered/relocated at significant cost and disruption to the museum.
 - c. All the beams and columns in the space would need to be hidden from view.

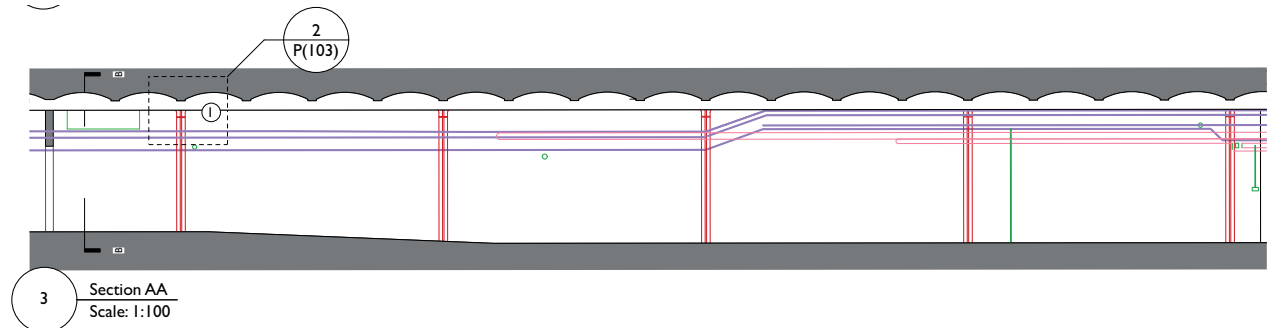
This option has not been progressed for the above reasons. The cost and disruption would also affect the running of this publicly funded and accessible

museum. These risks and implications are considered to outweigh the reversible covering over of a single cast iron beam in a back of house location.

Having explored all the other options as outlined above, cladding of the beam is the only solution that is acceptable. The cladding is limited to 1 no. beam, whilst all others remain exposed. It is also a fully reversible solution.



Localised details of proposed beam cladding



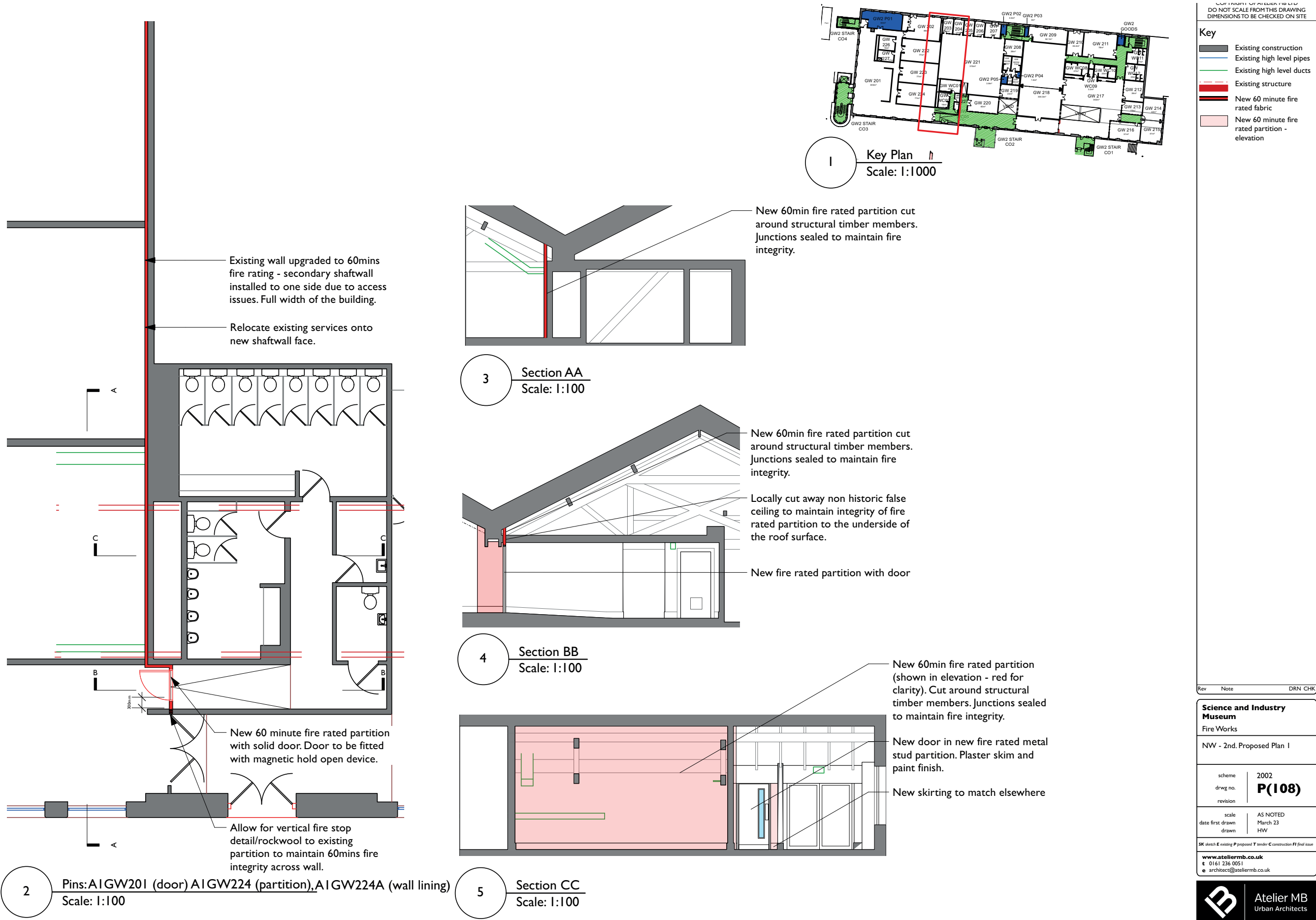
Elevation indicating localised beam cladding

New Partitions and Fire Doors

At the 2nd floor, the Fire Surgery Fire Strategy report, identified a need to separate the fire escape routes used by the education area - space 201 and associated rooms, and the conference facilities accessed off space 217.

As a result, we propose a new door be inserted along this corridor - see drawing P(109). This door will be glazed, and will also be connected to an electromagnetic hold open device so that the doors can remain open unless the fire alarm is triggered. Other alternatives were considered, but these required much more intrusive partitions to be added into the floorplate.

The same fire strategy report also requires that a 60mins fire rated compartment line be installed at 2nd floor between circulation spaces 201 and 217. The result is our proposal to add a door to enclose the WC lobby. This has been located behind the existing roof timbers and therefore only abuts the existing false ceiling. The existing partition that runs across the full floorplate width will also need to be upgraded to achieve 60 mins fire separation. The latter will be scribed around the existing roof timbers which remain exposed in spaces 202, 222, 223 and 224.



Details of the proposed new door and fire rated lining to the 2nd floor.

Rev	Note	Drawn	CHK
Science and Industry Fire Works NW - 2nd. Proposed Plan 1			
scheme	2002		
drawg no.	P(108)		
revision			
scale	AS NOTED		
date first drawn	March 23		
drawn	HW		
HW Architect & Interior Design Ltd www.ateliermb.co.uk t: 0141 236 9051 e: architect@ateliermb.co.uk			
 Atelier MB Urban Architects			

The fire strategy also highlights the need to increase the exist capacity of stair C02 which serves ground to 2nd floor.

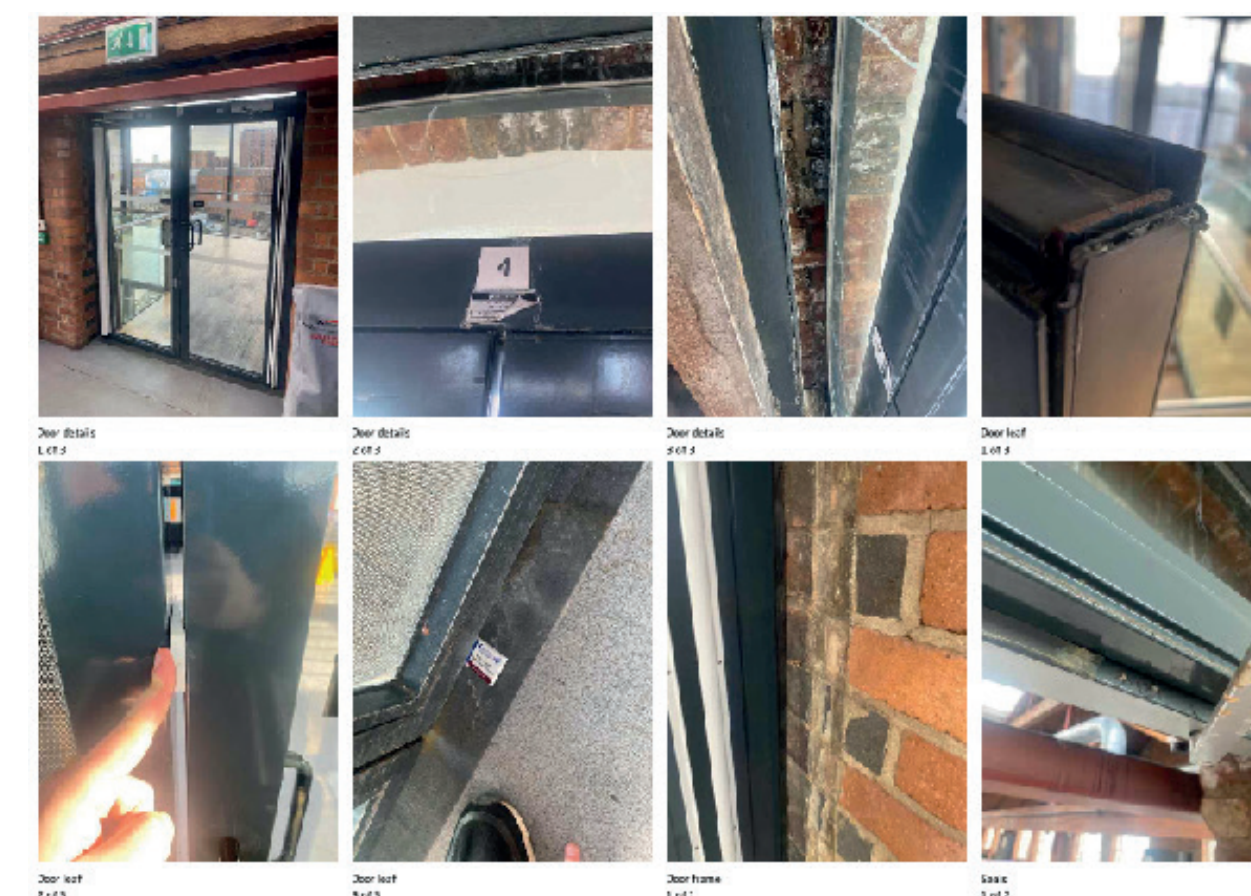
The alternatives considered were:

- a) Continue management strategy which would direct people to use alternative final exits based on flow rates of people. The client would like to eliminate the residual risk associated with this strategy.
- b) widen the existing fire escape door at ground floor to stair core CO2. This was reviewed on site. However, due to the position of an existing column, there is very little scope to achieve this without a major structural change to the glass and steel circulation core structure.
- c) Insert an additional final exit door on the opposite side of the stair core. This proposal as presented in this application, offers a door to match the existing, and allows the increased flow of people down and out of the building in an emergency.

5.2 FIRE DOOR REMEDIATION

-Door works range from replacement hinges, signage, and lipping of door leaves; to replacement of wholly non-compliant doors and the insertion of new doors where they are missing

-Any new doors will be designed to match existing or where none existed, doors will be designed to match those within in the surrounding vicinity.



Photographs showing example remediation works required to the doors.

The Neo reports for the New Warehouse were split into the wider warehouse, and a localised survey for the recently completed exhibition area in the basement. The following works relate to that localised area of the basement:

New Warehouse_Basement Supplementary Works

5.3 FIRE COMPARTMENTATION REMEDICATION

-Fire stopping to ceilings around pipe, cable, and duct penetrations. This involves both the installation of fire rated batts and sealants. In some instances, making good works are required to the existing ceiling/floor construction prior to the fire stopping. In other instances, the existing cabling will need to be bunched together to reduce the size of the wall penetration needed.

-Fire stopping to heads of walls, and around pipe, cable, and duct penetrations of said walls. This involves both the installation of fire rated batts and sealants. In some instances, making good works are required to the existing wall or partition prior to the fire stopping. In other instances, the existing cabling will need to be bunched together to reduce the size of the wall penetration needed.

-Where possible openings within fire rated walls will be reduced in size by infilling the opening with matching brick/blockwork prior to installing the fire rated batts and sealant.

5.4 FIRE DOOR REMEDIATION

-Door works range from replacement hinges, signage, and lipping of door leaves; to replacement of wholly non-compliant doors and the insertion of new doors where they are missing

-Any new doors will be designed to match existing or where none existed, doors will be designed to match those within in the surrounding vicinity.



6.0 RESPONSE TO HERITAGE SIGNIFICANCE

Where possible, existing historic fabric will be retained and cleaned and repaired only as necessary to reinstate fire separation requirements.

Where not partitions and enclosures have been proposed, these are driven by the requirements set out in the Fire Surgery fire strategy for the building, and the Neo condition surveys. They have been designed where possible not to connect into the historic fabric. Each situation has been reviewed on site, and the minimal intervention proposed.

6.01 - CONSULTATION

As part of the design process, we consulted with the Conservation Officer. We met with Paul Mason on site on the 8th March 2023.

We showed typical examples of the fire remediation required, and the impact on the historical fabric.

We were able to show and explain the difficulty of rectifying some of these fire issues within the constraints of a working public building with a plethora of plant equipment.



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Access Statement



7.0 ACCESS STATEMENT

There are several new doors proposed.

Internally, these are proposed to have electromagnetic hold open devices and as a result do not alter the current access arrangements day to day. All of the new doors are designed to have clear openings to meet current AD:M standards. Externally, the additional door has a wide clear opening to match the existing.

Where new store enclosures/pods are required, these have been designed to maintain access to plant equipment whilst separating storage areas. Although only to be used for back of house staff, they have been designed to include doors and corridors with clear widths to meet current AD:M standards.



-  [ateliemb](#)
-  0161 236 0051
-  [ateliembarchitects](#)
-  [atelier mb architects](#)
-  info@ateliemb.co.uk
-  Atelier MB Ltd. Suite 2A, Amazon House, Brazil Street, Manchester, M1 3PJ