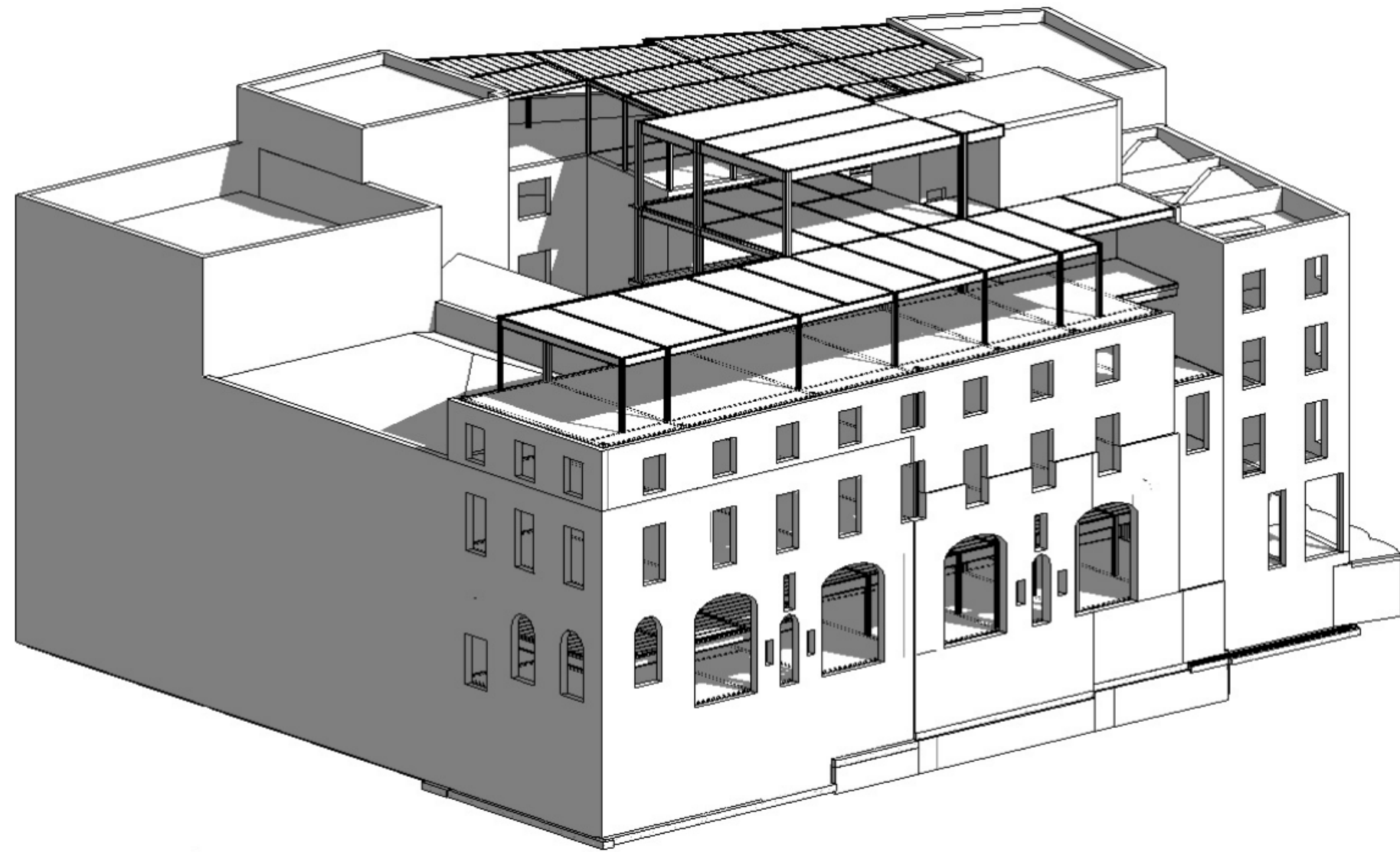


# NEW OXFORD STREET

Structural Methodology Statement  
In Support of a Planning Application



Prepared by: **Parag Sidhpura**  
Job Number: **214312**

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## CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>2</b>	<b>PROJECT DESCRIPTION</b>	<b>1</b>
2.1	OVERVIEW	1
2.2	LOCATION	1
2.3	EXISTING BUILDINGS	2
2.4	GROUND CONDITION	3
2.5	SITE HYDROLOGY AND HYDROGEOLOGY	3
2.6	TUNNELS - SEARCHES	3
<b>3</b>	<b>PROPOSED STRUCTURE</b>	<b>4</b>
3.1	35-41 New Oxford Street	4
3.2	10-12 Museum Street	4
3.3	West Central Street	4
<b>4</b>	<b>CONSTRUCTION METHODOLOGY</b>	<b>5</b>
4.1	CONSTRUCTION GENERALLY	5
4.2	NOISE AND VIBRATION	5
<b>5</b>	<b>CONSTRUCTION SEQUENCE</b>	<b>5</b>
5.1	NO. 35-37 NEW OXFORD STREET	5
5.2	NO. 10-12 MUSEUM STREET	5
5.3	WEST CENTRL STREET	5
<b>6</b>	<b>DESIGN CRITERIA</b>	<b>6</b>
6.1	CODES AND STANDARDS	6
6.2	DESIGN LIFE	6
6.3	FIRE RESISTANCE	6
6.4	DESIGN LOAD PATHS	6
6.5	HORIZONTAL LOADS & OVERALL STABILITY	6
6.6	DEFLECTIONS	6
6.7	MOVEMENT JOINTS	6
6.8	DESIGN FIRE PERIODS	6
6.9	DISPROPORTIONATE COLLAPSE	6
<b>7</b>	<b>INVESTIGATIONS</b>	<b>6</b>

APPENDIX - A PROPOSED DRAWINGS  
APPENDIX - B CONSTRUCTION SEQUENCE

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## 1 INTRODUCTION

Mason Navarro Pledge has been appointed to carry out a structural feasibility study for the refurbishment and extension of 35-41 New Oxford Street, 10-12 Museum Street and 16 West Central Street.

This report provides a preliminary review of the existing structure and outlines options for the new proposal, developed alongside TP Bennett Architects, and makes recommendations on the structural scheme to be developed further.

To date MNP have carried visual inspections of the buildings, some opening up, trial pitting and a geotechnical survey. The preliminary design is based on currently available information.

This report should be read in conjunction with MNP drawings and specifications for the scheme.

## 2 PROJECT DESCRIPTION

### 2.1 OVERVIEW

The project will consolidate several existing buildings into a new residential block with retail space at ground floor level.

### 2.2 LOCATION

New Oxford Street estate comprises 16a/b and 18 West Central Street, 35-41 New Oxford Street, and 10 to 12 Museum Street, (NGR 530182 181435: Fig 1). The site is bounded by New Oxford Street to the north, Museum Street to the east, and West Central Street and the 43 and 45 New Oxford Street to the east.

The site addresses are:

- 35, 37, 39, and 41  
New Oxford Street  
WC1A 1BH & WC1A 1BN
- 10, 11, and 12  
Museum Street  
WC1A 1JJ
- 16a, 18, and 16b  
West Central Street  
WC1A 1JJ

The site is located on the southern fringe of the Bloomsbury Conservation Area that was designated in 1968.

The extent of the existing New Oxford Street buildings is indicated in Figure 1.

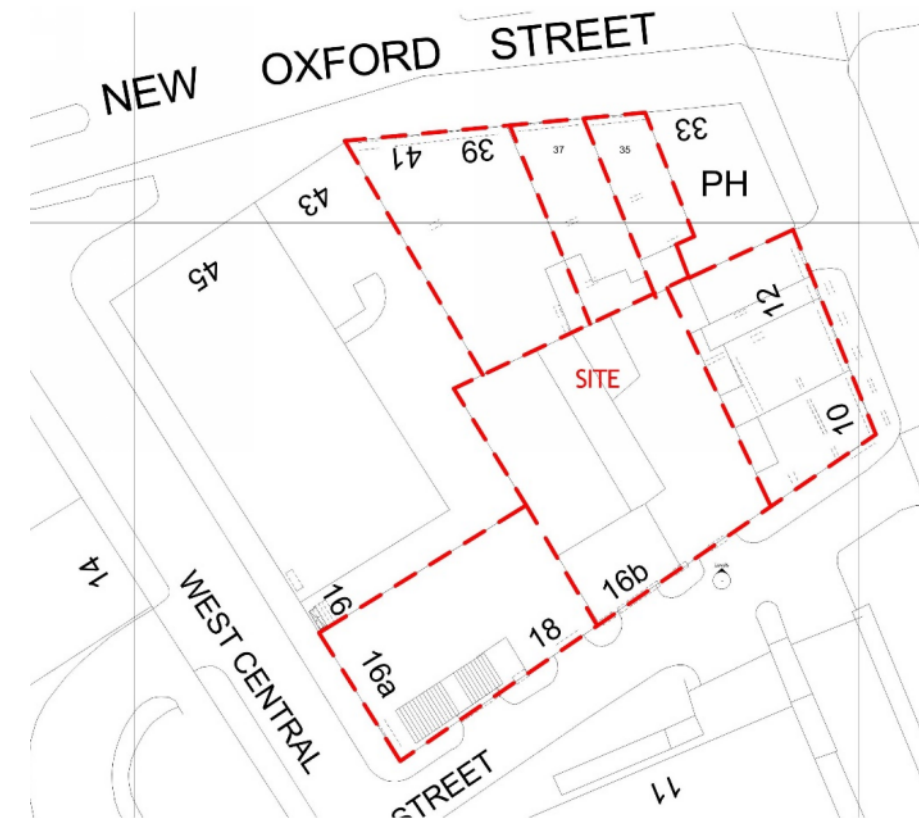


Figure -1 Site Location



Figure - 2 Site aerial view



2.3 EXISTING BUILDINGS

No. 35 & 37 New Oxford Street are 3 storey residential properties over retail at ground floor. Both buildings contain basements to the entire footprint, and appear to be of concrete construction.



Figure - 3 Existing Elevation along New Oxford Street

During our initial inspection, the ground floor and first floor of No. 41 consists of transfer structures, composed of steel beams and columns, suggesting that the building has undergone modernisation possibly during the 1930s. It appears that the building had also undergone façade alteration during this period, however the rear elevation brickwork appears to be from the Georgian period. The basement is extended to the boundary of 18 West Central Street to the rear of the property and includes vaults under the New Oxford Street footpath.



Figure - 4 Existing Elevation along Museum Street

No.10 Museum Street is a three story residential property over retail space at the ground floor. However No 11 - 12 have undergone modernisation and consolidation, as well as an addition of a full height rear extension. The construction appears to be load bearing brickwork with timber floors. The basement covers entire footprint of the three buildings and includes vaults under the Museum Street footpath.

16b West Central Street is a single storey building with a traditional façade, whereas the construction is of modern steel frame, consisting of steel columns, cellular beams and precast floors.

18 West Central Street is a two and three storey building, with the lowest section of the building on the corner of West Central Street comprising load bearing brickwork supporting timber joist floors.



Figure - 5 Existing Elevation along West Central Street

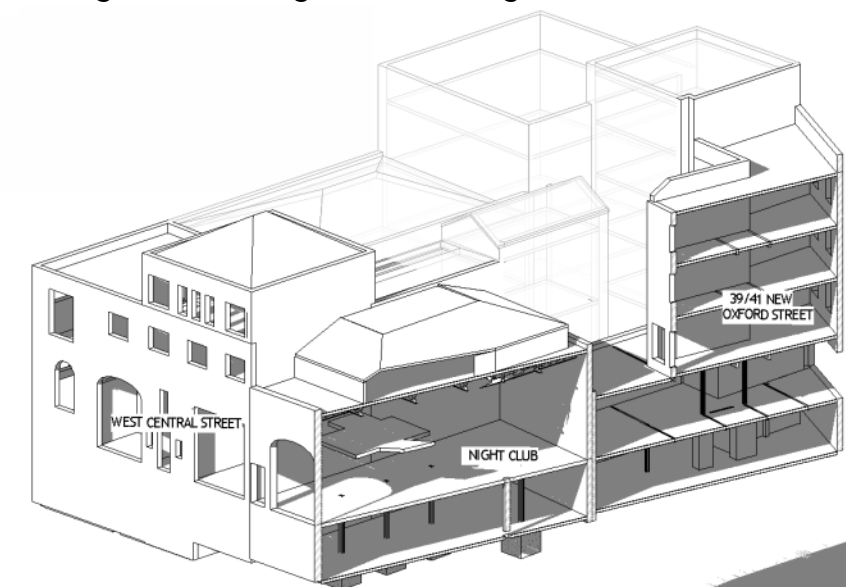


Figure - 6 Cross section through New Oxford Street and West central street night club



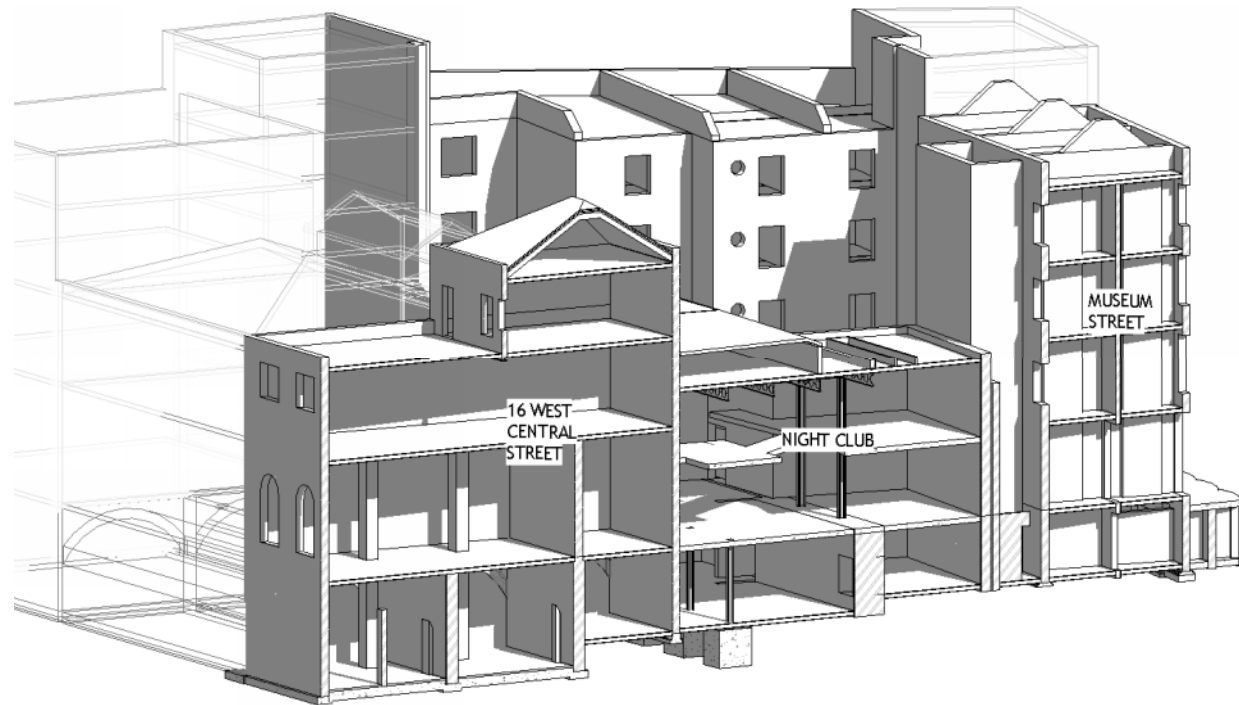


Figure - 7 Cross section through West Central Street and Museum Street

## 2.4 GROUND CONDITION

An assessment of geology and ground conditions has been made using the online British Geological Survey historical borehole records and a site investigation undertaken by GEA Ltd in July 2015. The geology is comprised of variable thickness of made ground, Lynch Hill Gravel over the London Clay Formation.

The underlying geology in the vicinity of the site comprises a band of sand / gravel overlying London Clay.

British Geological Record BH ref TQ38SW799 - reports the ground conditions as follows:

Depth below ground (garden)	Soil Type
From 0 to 3m	Made Ground
From 3m to 8m	Sandy gravel
8m to 18m plus	London Clay

## 2.5 SITE HYDROLOGY AND HYDROGEOLOGY

GEA were asked to comment on the site hydrology and hydrogeology. Their report is included within the planning application.

The GEA report concludes the following:

- There are no Environment Agency designated Source Protection Zones (SPZs) within 500m of the site.

- Lynch Hill Gravel is classified as a secondary 'A' Aquifer.
- The River Thames is located 900m to the southeast of the site.
- Any surface water runoff which infiltrates the shallow made ground and Lynch Hill gravels above the London Clay is likely to flow southwards along the surface of the London Clay towards the River Thames.
- The development is not considered likely to impact the surface water regime of the site or adjacent sites as proposed development is under existing footprint of the building.
- The proposed development will not alter any existing slopes such that instabilities may occur. On this basis, slope stabilization measures need not be considered.
- The Flood Risk Assessment Report found that the site is not located within an area at risk of flooding from rivers or sea, as defined by the Environment Agency.
- Ground water was encountered close to the base of the gravel at a depth of approximately 5.0m.

## 2.6 TUNNELS - SEARCHES

Searches on the property has identified presence of subterranean tunnels; Royal Mail tunnels below 16a West Central Street and LUL Central Line tunnel within close proximity of the 37-41 New Oxford street.

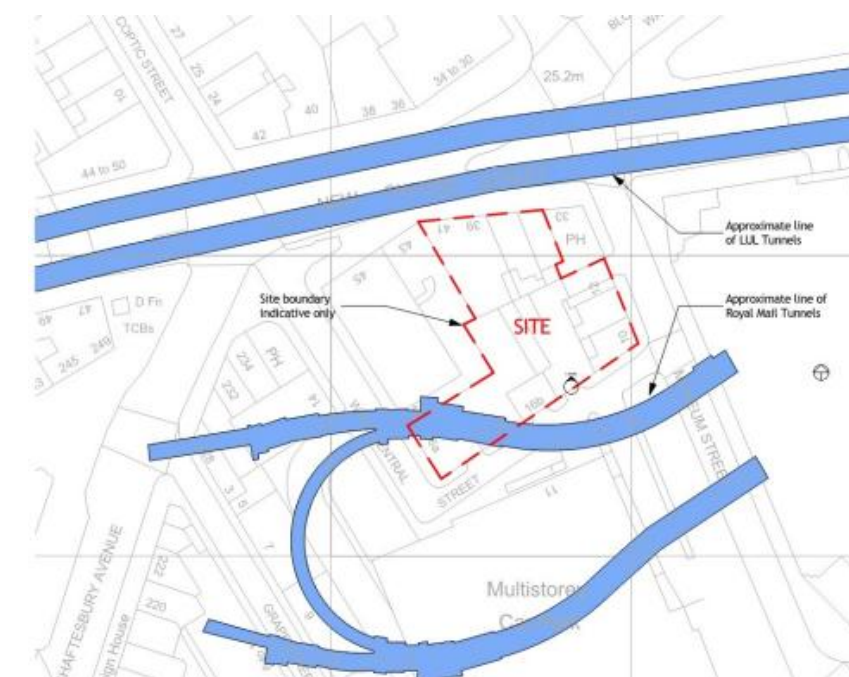


Figure - 8 Site plan showing approximate locations of LUL & Royal Mail tunnels

MNP are in consultation with both LUL and CH2M (Royal Mail Consulting Engineers) regarding the proposed development. To date we have submitted both calculations and structural proposals for their approval and are waiting for their comments.

### 3 PROPOSED STRUCTURE

Structural drawings and sequence of construction are included within the appendix of this report.

#### 3.1 35-41 New Oxford Street

The proposal is to retain the existing façade, party walls and floors. A single storey light weight steel framed roof extension will be added to the entire footprint of the New Oxford street frontage

A new steel framed stair case will be created to the rear of No. 35 and 37.

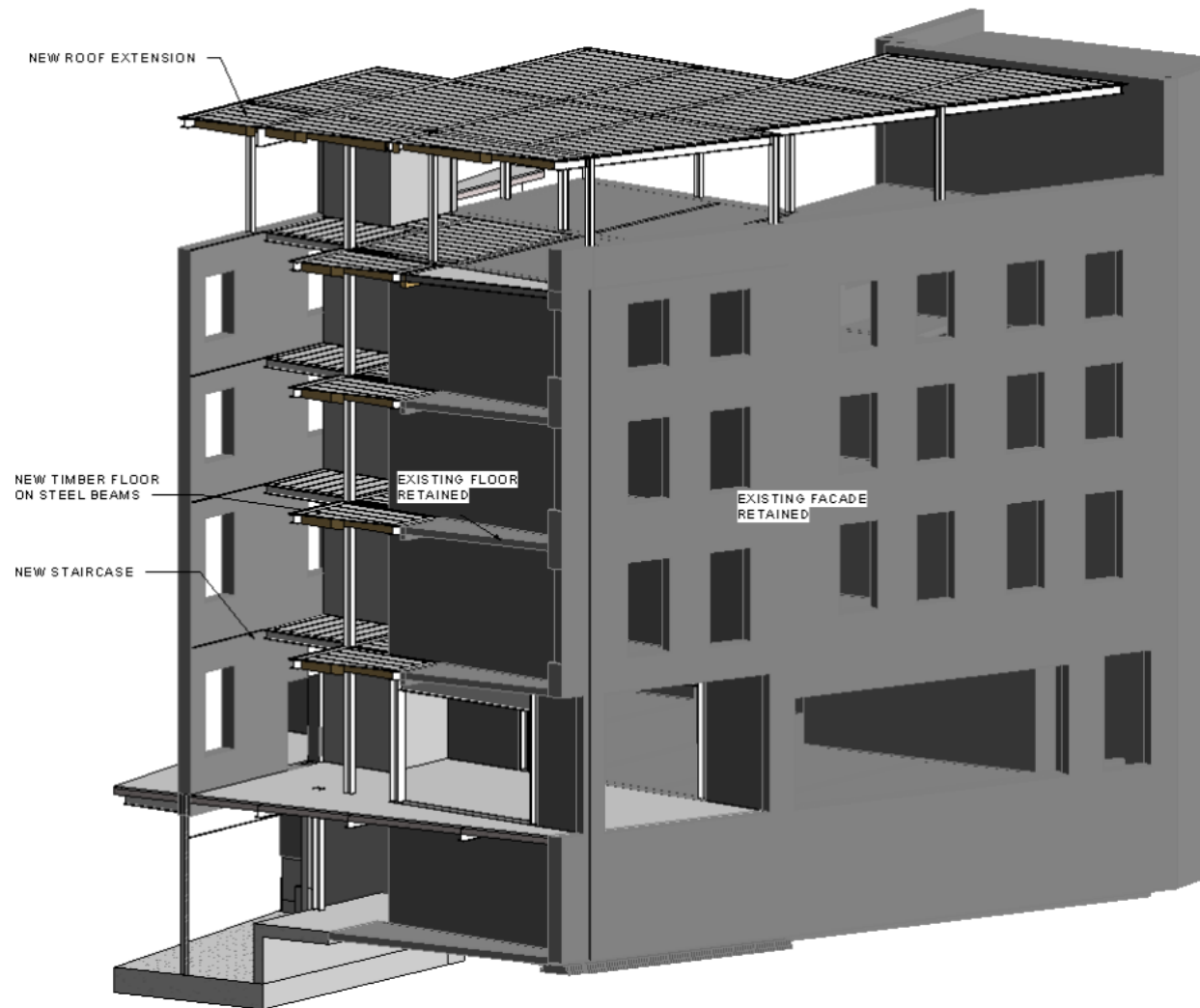


Figure - 9 Proposed section through No. 35 New Oxford Street

#### 3.2 10-12 Museum Street

The façade of No. 10 to 12 Museum Street will be retained including the existing floor construction. The existing stairs will be demolished and infilled with a new timber floor and new opening will be created through the existing walls to accommodate a new residential layout.

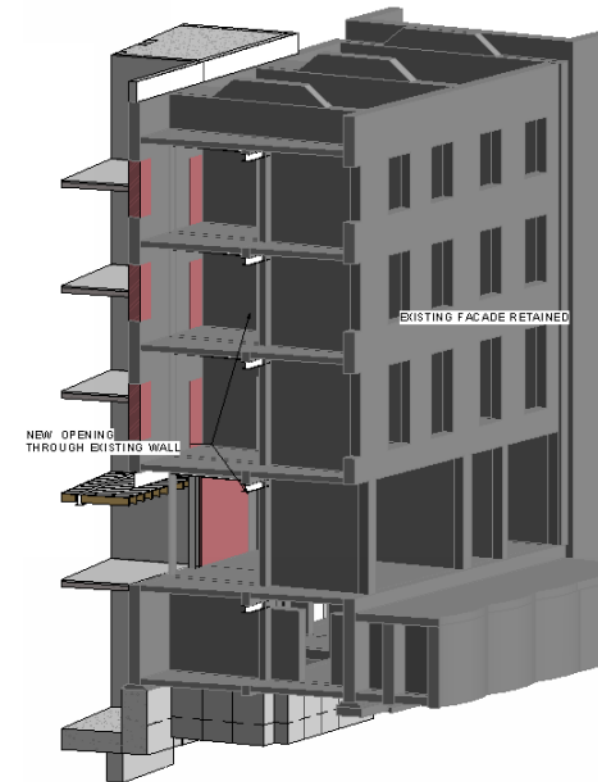


Figure - 10 Proposed section through No. 10 Museum Street

#### 3.3 West Central Street

The existing properties along West Central Street will require partial demolition and a new residential block.



Figure - 11 Proposed section through West Central Street

The substructure will be of reinforced concrete frame construction. Concentrated loads from the columns that support the multi-storey buildings over are to be transferred to the ground via a reinforced concrete raft.

The superstructure will be of steel framed construction, with precast hollow core floor slab.

## 4 CONSTRUCTION METHODOLOGY

All of the works, particularly the sub-structure are to be carried out in a manner which minimizes noise and vibration that may affect the neighboring properties. The Structural Engineer will make regular site visits during the construction.

The outline construction sequence and temporary works assumed in the design as described below will be superseded by the Contractor's proposals. The Contractor will be required to submit full proposals, method statements and calculations to the Structural Engineer for review prior to the start of any works on site.

The Contractor will be responsible for the design, erection and maintenance of all temporary works in accordance with all relevant British Standards or Eurocodes. The Contractor is to provide adequate temporary works and supervision to ensure that the stability of the existing structure, excavations and surrounding structures are maintained at all times.

### 4.1 CONSTRUCTION GENERALLY

Some of the issues that will affect the sequence of works on this project are:

- The stability of the existing building
- The stability of adjacent buildings
- Forming sensible access onto the site to minimise disruption to the neighbors
- Dust suppression will be adopted during all demolition activity.
- Providing a safe working environment

### 4.2 NOISE AND VIBRATION

The Contractor shall undertake the works in such a way as to minimise noise, dust and vibration when working close to adjacent buildings in order to protect the amenities of the nearby occupiers.

In the breaking out of the existing floor and demolition, where possible vibration and associated construction noise to the adjacent properties should be minimized by using non percussive machinery such as Brock hydraulic equipment. All demolitions and excavations will be undertaken in a carefully controlled sequence, taking into account the requirement to minimise vibration and noise.

## 5 CONSTRUCTION SEQUENCE

Due to the nature of the project the construction sequence is split between three segments as shown below:

### 5.1 NO. 35-37 NEW OXFORD STREET

1. Underpin the rear wall and the adjacent party walls.
2. Demolish the existing pitched roof, stairs and rear segment of the floor & wall down to second floor level.
3. Install temporary stability bracing to the roof and third floor level.
4. Demolish existing stairs and floor down to basement level.
5. Install temporary stability bracing down to ground floor level.
6. Excavate down to proposed level adjacent to the rear wall and construct the foundation Slab.
7. Construct new lift shaft and steel frame up to roof.
8. Create ground floor wall opening.
9. Infill existing third floor staircase to No. 41.
10. Construct new roof extension.

### 5.2 NO. 10-12 MUSEUM STREET

1. Underpin existing rear wall.
2. Install temporary props from third floor down to basement as shown in the proposed temporary work drawings.
3. Demolish the existing staircases.
4. Create opening through existing wall, starting from third floor.
5. Install new steel beams and support the existing retained floors.
6. Repeat steps 4-5 for second floor down to basement level.
7. Create ground floor wall opening using stool method.
8. Excavate down to the proposed basement level within the new staircase area.
9. Construct the foundation slab.

### 5.3 WEST CENTRL STREET

1. Demolish existing building down to ground floor level.

2. Construct façade retention temporary works.
3. Install temporary plan bracing.
4. Demolish internal walls and floor down to basement level.
5. Install temporary support to ground floor and basement.
6. Underpin existing perimeter and party walls.
7. Excavate down to formation level.
8. Construct new RC Raft foundation.
9. Construct new steel frame up to roof level.

## 6 DESIGN CRITERIA

### 6.1 CODES AND STANDARDS

All design work will be undertaken in accordance with the Eurocode and relevant National Annexes for the UK.

The building is to be designed to meet the England Building Regulations and in accordance with the Construction Design and Management Regulations.

BS EN 1990	Basis of Design
BS EN 1991	Actions of Structures
BS EN 1992	Design of Concrete Structures
BS EN 1993	Design of Steel Structures
BS EN 1994	Design of Composite Steel and Concrete Structures
BS EN 1997	Geotechnical Design

### 6.2 DESIGN LIFE

The structure is to be designed to have a design life of 50 years with a life to first major maintenance of 25 years in accordance with EC1990NA Table NA.2.1.

### 6.3 FIRE RESISTANCE

All primary structural elements are to be designed to have 1 hour fire resistance.

### 6.4 DESIGN LOAD PATHS

All vertical dead and imposed loads will be taken down from the roof to the foundation level through an arrangement of columns and beams.

### 6.5 HORIZONTAL LOADS & OVERALL STABILITY

RC walls forming the lift core and stairwells will be designed to provide lateral stability. The slabs will act as horizontal diaphragms to transfer the horizontal loads to these walls. The core walls will be supported on foundations which will transfer the lateral loads to the ground.

### 6.6 DEFLECTIONS

Horizontal structural elements will be designed so that the theoretical maximum deflection will not exceed the code stipulated maximum deflection of 1/360th of the span for supporting the stipulated live loads and 1/250th of the span for supporting applicable dead loads. Provisions must be made in the architectural details to allow for these deflections to occur without affecting the operation of the building.

### 6.7 MOVEMENT JOINTS

The standard requirements for movement joint are one per 50m length. Based on the proposed layouts movement joint will not be required.

### 6.8 DESIGN FIRE PERIODS

To be defined by the Fire Consultant and Approved Inspector. All structures will be suitably protected, either externally or intrinsically to meet the fire resistance periods.

### 6.9 DISPROPORTIONATE COLLAPSE

The building will be designed as a class 2B structure as required by the building regulations. Effective horizontal and vertical ties will be provided in all supporting columns and walls.

## 7 INVESTIGATIONS

We have undertaken visual investigations to try to identify the details of the building in order to inform the design of the proposed scheme.

Further investigations will need to be undertaken in order to identify elements of structure and the loads which they carry, especially in areas where it has been identified for removal.

Therefore the main elements of investigation required are:

- Investigation of existing floor construction.
- Investigation of the nature and support details of the existing floor structure adjacent to party wall.
- Investigation of the existing parapet wall to confirm support details for the new structure.
- Investigation of existing underground drainage to determine arrangement and condition of the outfall pipes within the site and their connections to the public sewer.

In addition to these discrete investigations, a soft strip demolition of the spaces which are in vacant possession in advance of the main contract could prove highly advantageous in identifying underlying defects in the building, exposing structural elements, and identifying load paths and transfer system. The identification and understanding of the building loading regime, load paths and structural details is the major element of the structural works going forward.