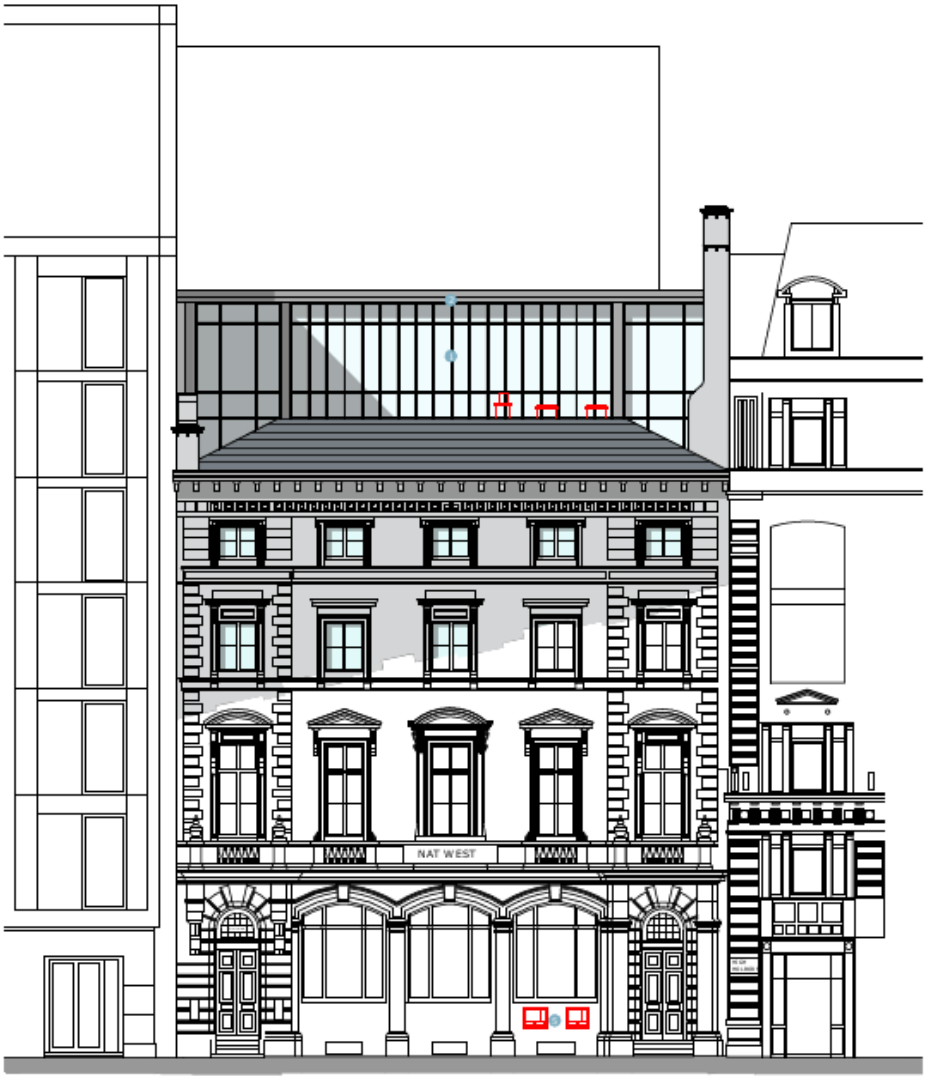


Structural Planning Report

212-214 High Holborn, Bloomsbury Parrs

Partington & Associates Ltd
13 Gillibrand Street
Chorley
PR7 2EJ
Tel: 01257 249863

Job No: 2898-16

Issue date: 23rd June 2018 rev C

CONTENTS

1.0	Introduction	3
2.0	Site History	3
3.0	Existing Structural Arrangement	3
4.0	Proposed Development	4
5.0	Structural Proposals	5
7.0	Further Considerations	14
8.0	Conclusion & Summary	14

Appendix A

Structural proposal sketch plans

1.0 Introduction

This structural report has been prepared in support of the planning application for the proposed development at 212-214 High Holborn.

Partington & Associates Ltd have been appointed as the consulting Structural Engineer to prepare a supporting report to outline the effect of the proposals on the existing Grade II listed premises.

The report has been prepared by Mr David Ormes **MiStructE.**

In preparation of the report consideration has been given to the following drawings produced by Cassidy & Ashton:

8918 - L01, L02, L03, L04, L05A, L06, L07D, L08B, L09A, P011A, P12A, P13A,P14B,P15A,P16A, P17A, P18A, P19B, P20B, P21B, P22B, P23A, P24A, P25B, P26B, P27A, P28A, P29A, P30A, P09, P31, P32, P33A, P34, P35A

An inspection of the property was undertaken on Thursday 27th October 2016.

This report is prepared in accordance with London Borough of Camden guidance. At the time of completing this report a full structural design of the proposals has not been undertaken.

This report should be read in conjunction with all Architect's and other consultants reports, drawings and other documentation submitted with the planning application.

2.0 Site History

212 to 214 High Holborn is a four storey loadbearing masonry building constructed in 1854. The front elevation is constructed from Portland stone.

The building was listed in 1974 on the basis of its architectural contribution to the street scape. The list entry number is 1378886.

The building as it stands contains four storeys of office space with dormer office space at roof level

The ground floor and basement of the property are occupied by NatWest Bank. The upper floors are currently un-occupied.

The property has been subject to alterations in the past. These include alterations to the main roof to add an additional room to the 4th floor level, re-modeling of the rear in the late 1950's to introduce a rear mezzanine level and extensions to the ground floor office accommodation.

Past repairs to maintain the facade have been carried out in the past with evidence of crack repairs and local stone replacement.

There has been relatively recent developments on all sides of the property.

We understand that the Central Line tube tunnel runs directly underneath High Holborn Road at an approximate depth of 24m below street level.

3.0 Existing Structural Arrangement

The existing structure consists of load bearing masonry walls with isolated steel beams & columns. Suspended solid floors exists at ground and first floor levels with suspended timber floors to remaining levels. There is a brick vaulted arch floor to the ground floor lobby above the boiler house.

The basement walls are assumed to be mass brickwork retaining walls.

There is a traditional pitched slated roof to the front half of the 5th storey roof with a newer flat dormer type arrangement behind. Reinforced concrete flat roofs exists to the rear single storey areas. These are covered with asphalt waterproofing.

Lateral stability of the building is assumed to be obtained by diaphragm action of the floors in conjunction with the in-plane shear resistance of both internal, external and party load bearing walls.

For the purpose of this report the building will be considered in two sections;

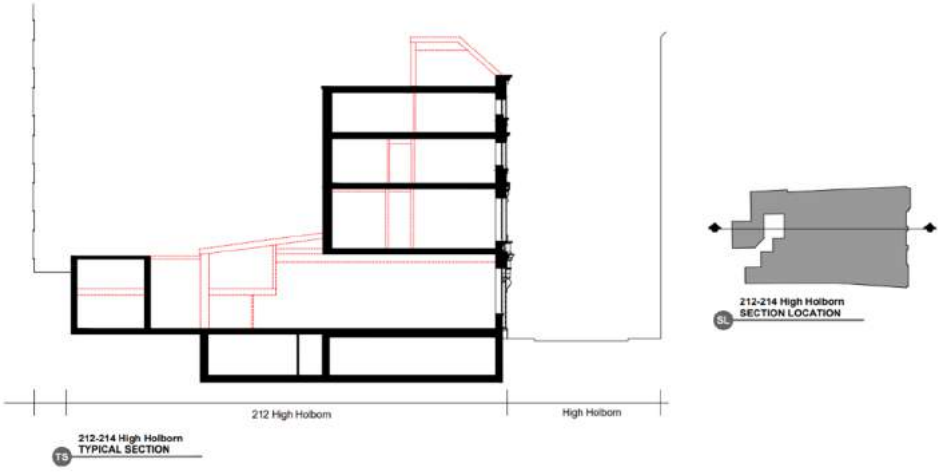
1) Front - Original 1854 3 storey building, facade and basement

2) Rear - Altered single storey + mezzanine level and basement

4.0 Proposed Development

The proposed development of the property is outlined briefly as follows. Detailed consideration of the proposals can be found further in the report.

- Demolition of rear single storey offices + mezzanine
- Internal alterations of the basement
- Construction of 6 storey office accommodation to the rear over the existing basement
- Internal alterations to existing front 4 storey area
- Demolish 5th storey dormer roof construction and return to traditional roof.
- Construction of 2 storey extension above the existing 4 storey front area set back behind mansard roof



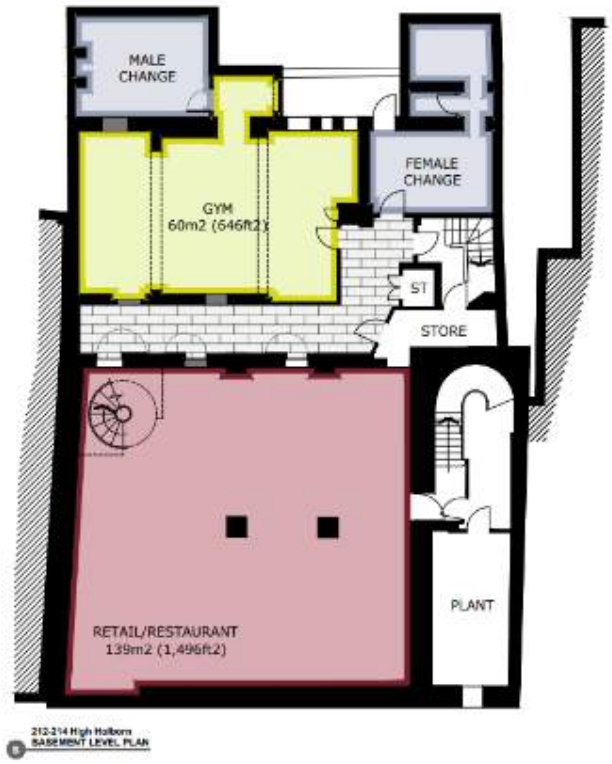
212-214 High Holborn
SECTION 1

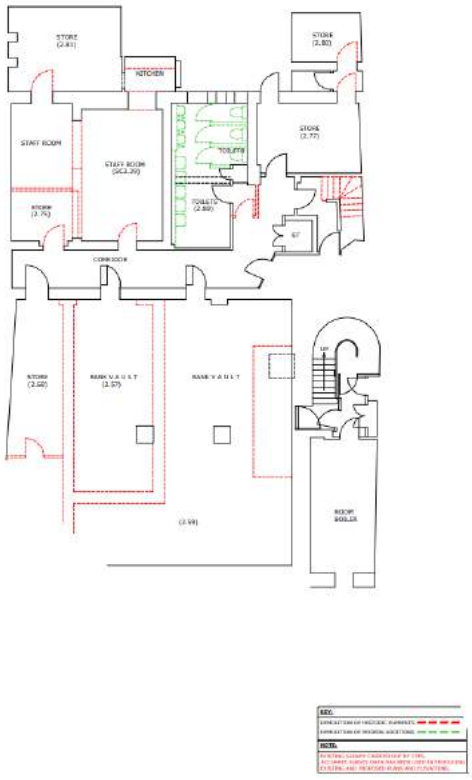
5.0 Structural Proposals

1) Front Section

The alterations and subsequent impact to the front section of the property are outlined floor by floor as follows;

Basement

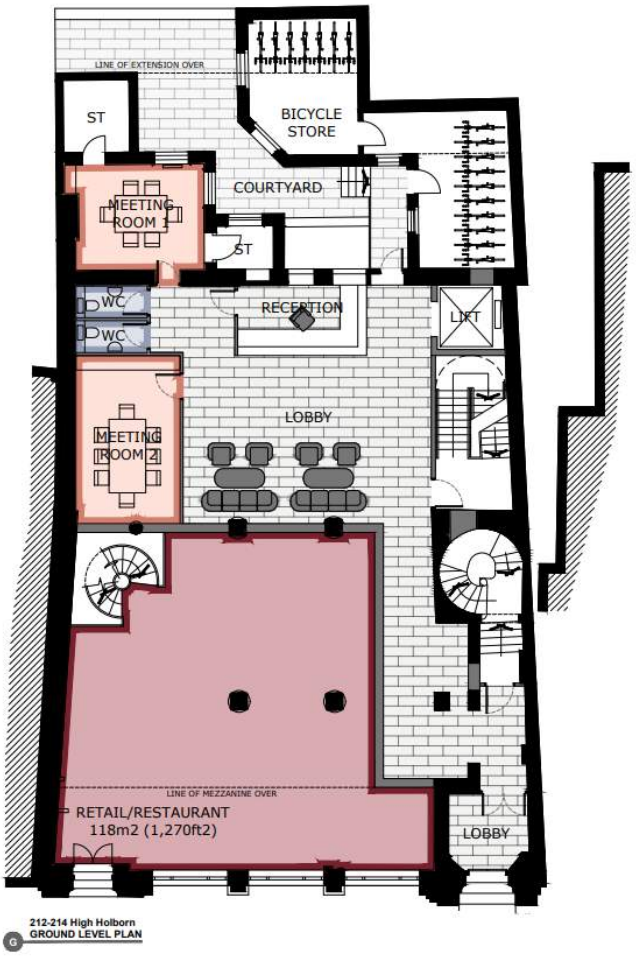




It is proposed to remove several of the internal walls at basement level. In order to achieve this it will be necessary to introduce isolated steels to support the existing ground floor structure.

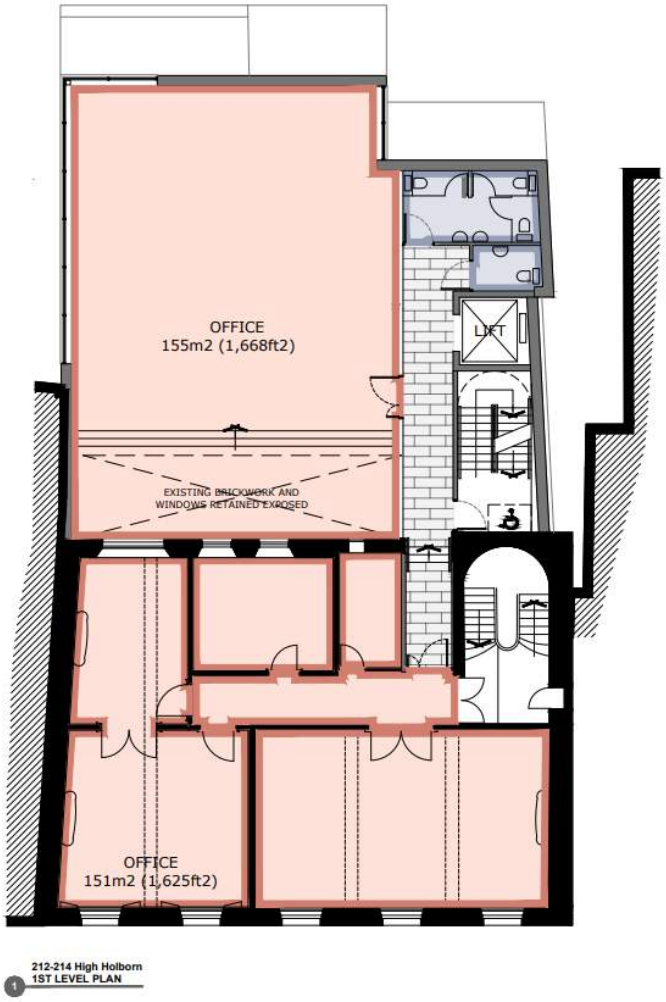
Where any internal walls currently provide a buttressing effect to basement retaining walls new steel column supports will be required.

Ground Floor



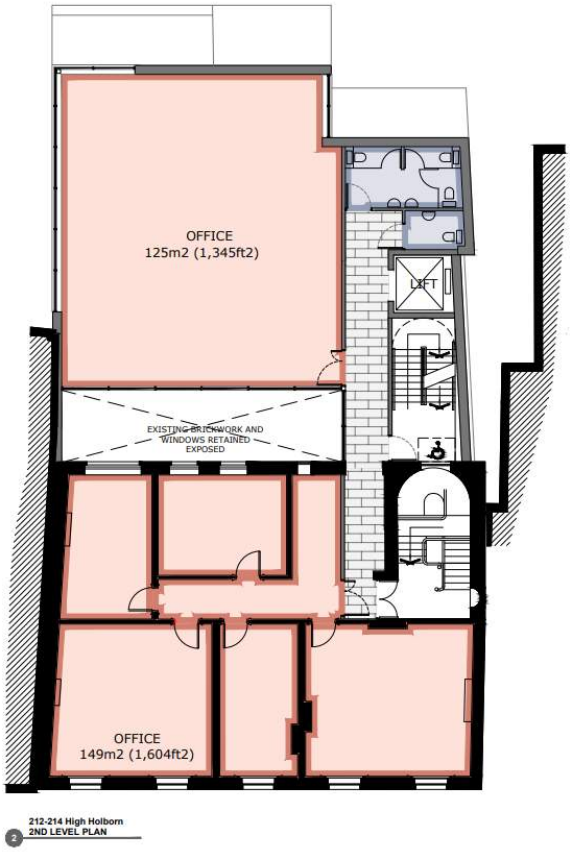
It is proposed to install a new mezzanine floor between the ground and first floor levels. We would recommend that a new lightweight steel frame structure will be required. It is envisaged that this can be supported off the existing internal columns and loadbearing masonry walls.

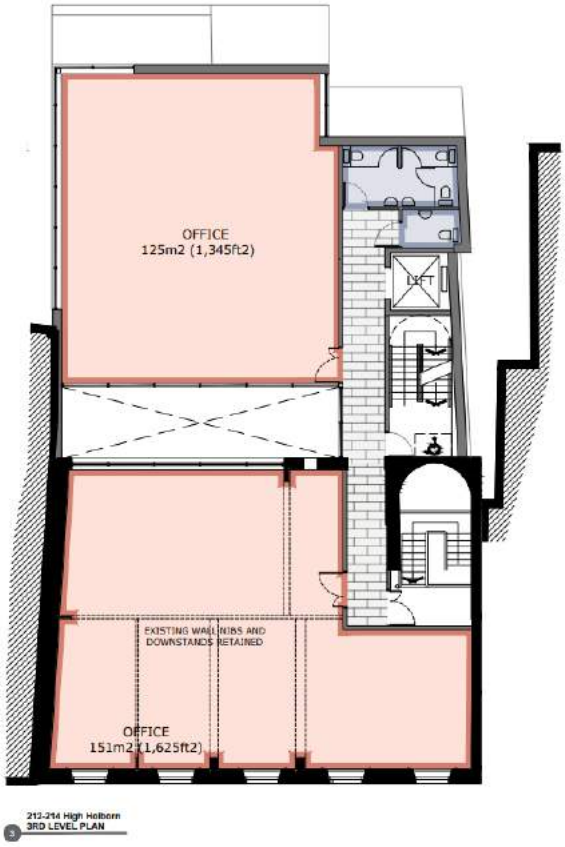
1st Floor



The first floor is essentially to remain as existing with some minor alterations to the lobby. These proposals will not have any effect on the existing building.

2nd & 3rd Floors

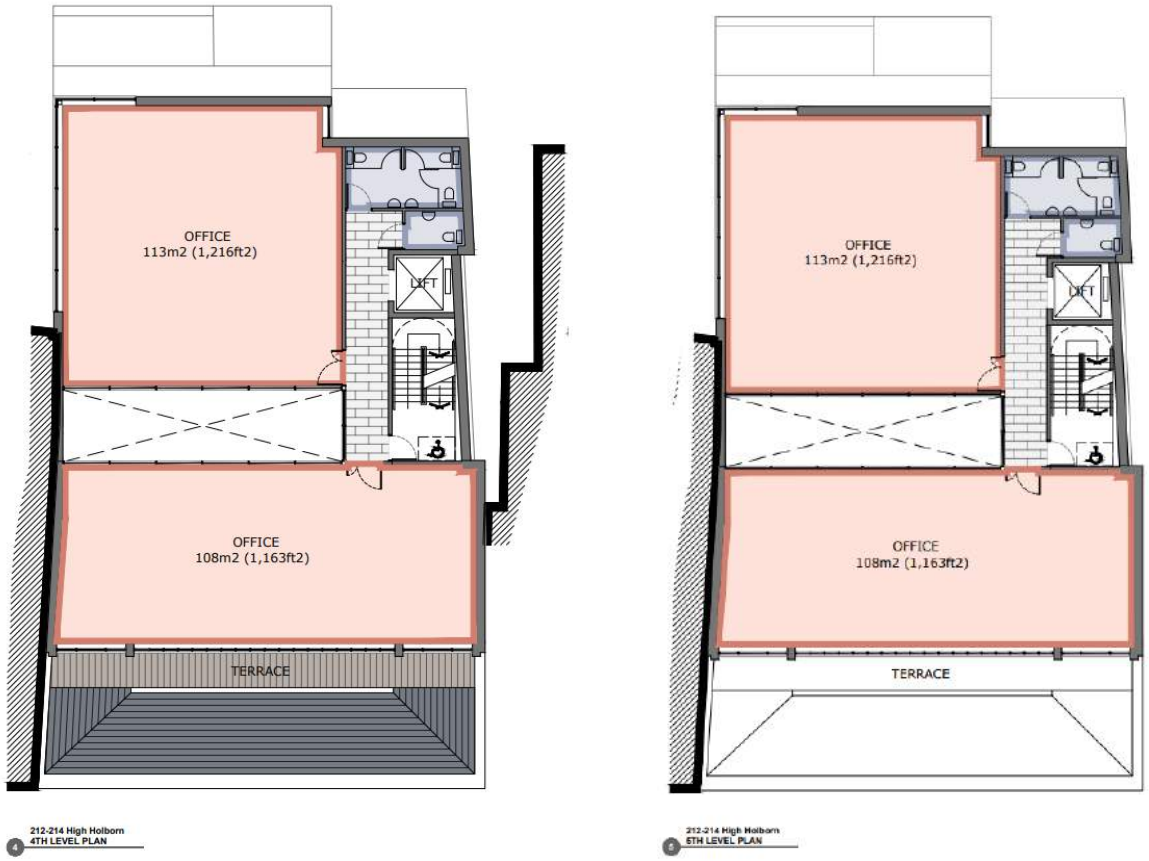




It is intended to remove all internal walls at 3rd floors. Some of the walls are noted to be load bearing and others are timber partitions.

To achieve this and also maintain the stability of the structure at these levels it will be necessary to install isolated steel beams and columns to support the floors above. In addition, windposts will be required against the external walls to reinstate the buttressing effect of any walls that have been removed.

New 4th & 5th Floor Extension



We would recommend that these two new floors are cantilevered out from the new multi-storey structure to the rear. This will alleviate any additional load being imposed on the existing structure.

It may be possible to support a lightweight 5th & 6th storey on the existing structure bearing in mind that a significant amount of dead load will be removed at 3rd floor level. However, this will need a detailed intrusive investigation into the construction and capacity of the internal columns at basement, ground and first floors.

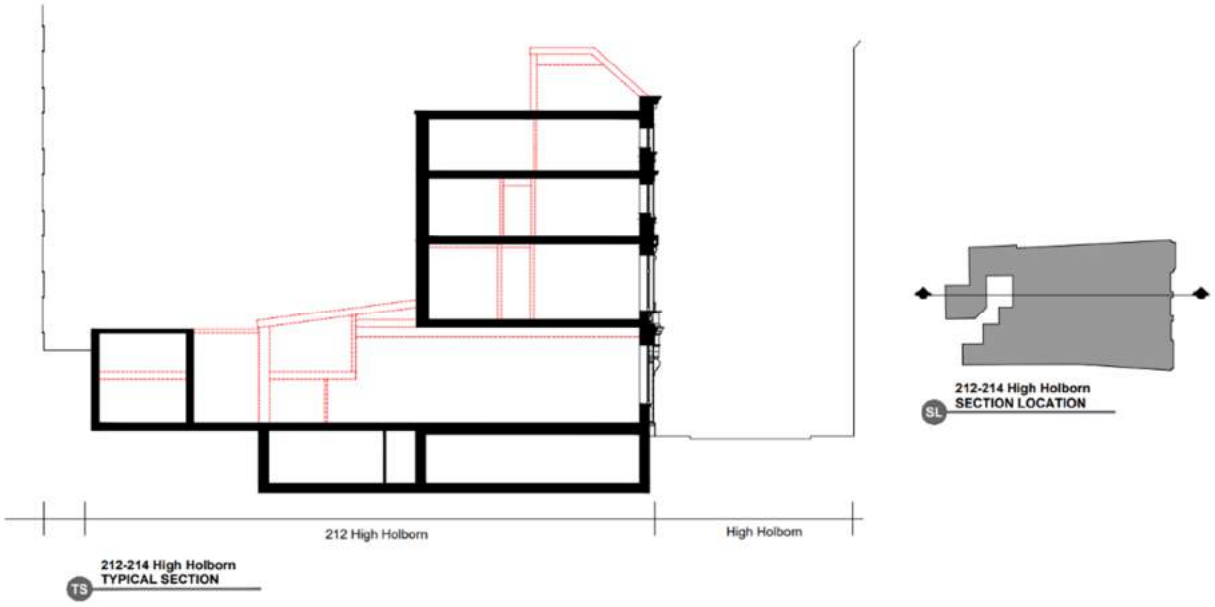
Refer to annotated drawings in Appendix 'A' for further details on the above.

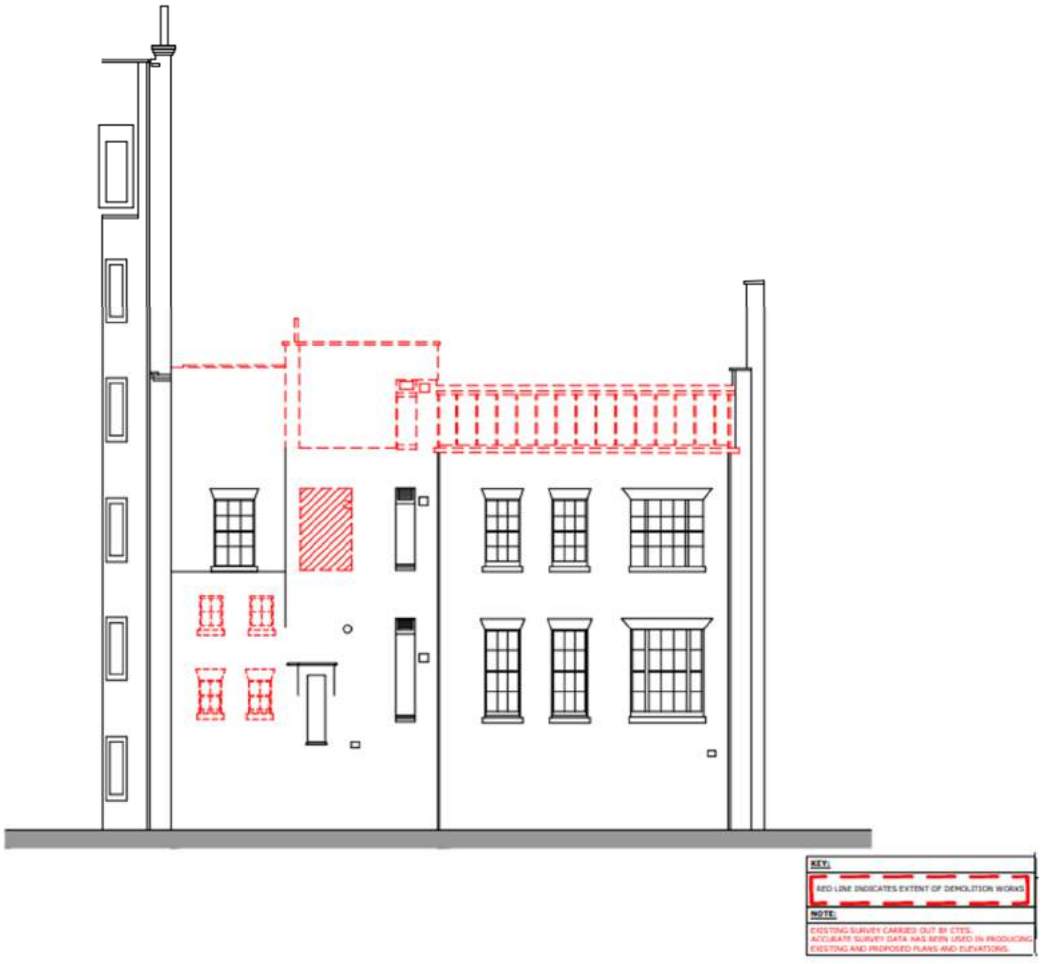
It is noted that the front section of the building has been used as offices in the past therefore it is assumed that there will not be any issues with increased superimposed loading from office use.

In addition, due to the removal of internal walls at 3rd floors there will be a general reduction in dead loading applied through the existing listed building.

2) Rear Section

The works to the rear section of the property comprise the demolition of the current single storey structure and construction of a new independent multi storey structure off piled foundations. At this stage it has not been decided whether this will be a steel frame, concrete or a combination of the two.





The alterations and subsequent impact to the rear section of the property are noted as follows;

Basement

All the perimeter basement walls to the property will be left in place and temporarily propped whilst the new construction of the ground floor is complete.

Selective internal basement walls are to be demolished and removed any loadbearing walls will be replaced with steel beams spanning onto new columns with designed foundations should the existing foundation not be found adequate to carry the concentrated load.

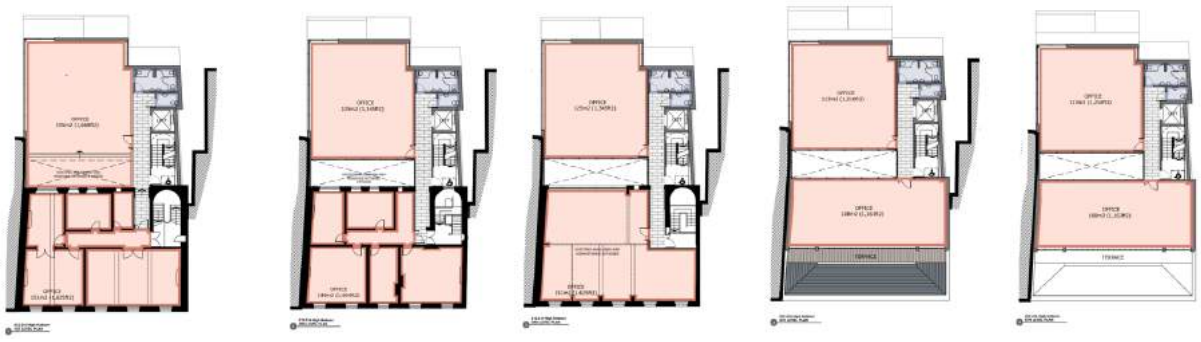
Ground Floor

It is intended for partial demolition of this floors internal walls and flat roof construction for the section between the rear and the main body of the four storey building at the front. The rear section of the ground floor is to remain.

The partial removal of the rear ground floor roof and internal walls is not deemed to have any detrimental effect on the remaining front section of the property. This rear extension was constructed at a later date and does not provide any vertical support to the existing structure.

Lateral stability of the existing front section will be maintained and enhanced by ensuring the existing floors are adequately tied into the party wall construction on either side of the building. This should be carried out prior to any demolition works.

Rear New 1st to 5th Floor Extension



As the new structure will be independent from the existing building it will not be necessary to tie into the existing building to provide either vertical or horizontal support. The interface between the two sections will be provided with a full height movement joint to effectively isolate the old and new construction.

Any new works will be designed to limit vibration effects on the existing structure. It is assumed that due to the restricted site access to the rear piled foundations will be of the bored type with restricted access piling equipment utilized which will limit any excess vibration.

Where new floor slabs abut the existing rear wall they will be separated by a fire stopped isolation joint similar to the detail shown below:

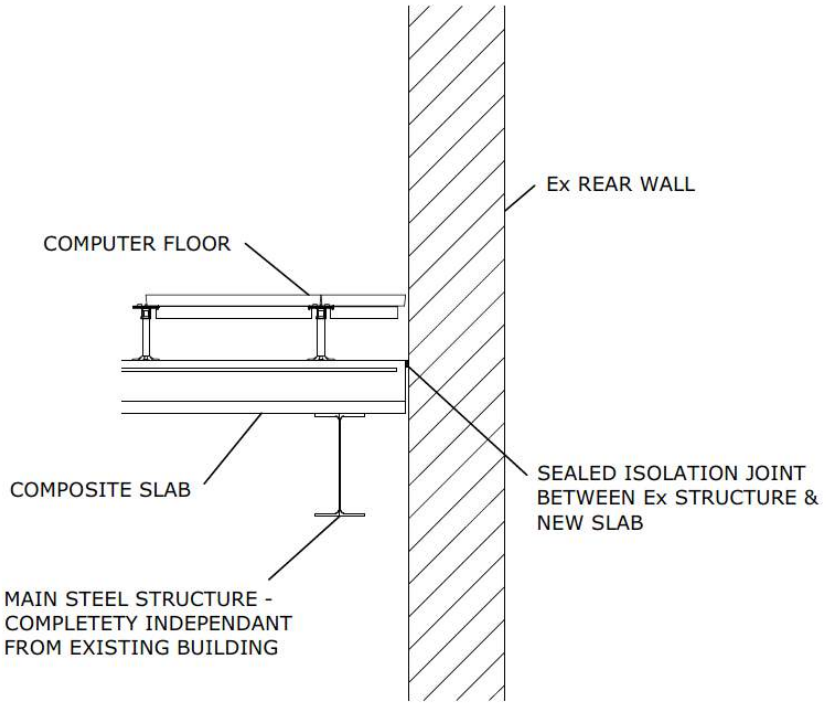


Figure 1 – **Typical slab/wall abutment detail**

Where new external cladding abuts the rear wall it will only be necessary to fix a flashing strip to the existing brickwork to prevent water ingress between the new and existing structure. A typical detail is shown below:

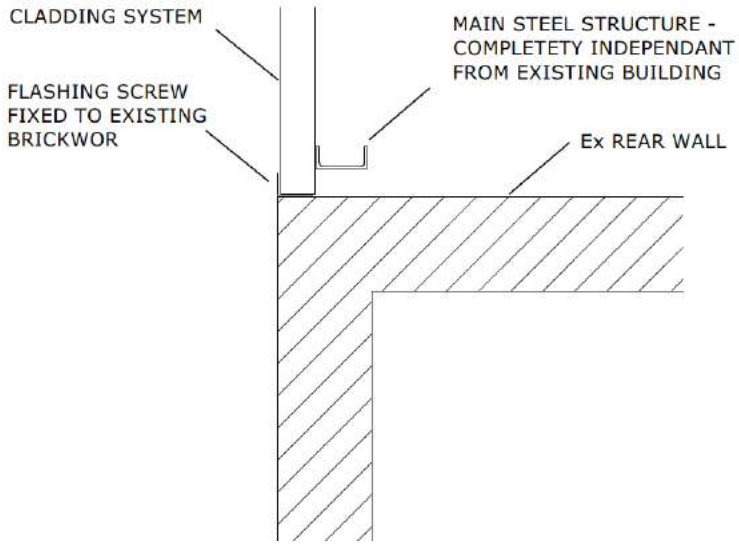


Figure 2 – **Typical cladding/wall abutment detail**

Final details will be developed during detailed design phase.

Ground Conditions

A review of the British Geological Survey and historic borehole information confirms that the site is underlain with a band of gravel (Lynch Hill gravel formation) above London clay. This is also confirmed within the Camden Geological, Hydrogeological and Hydrological Study carried out by Ove Arup.

Trial pit and boreholes excavated within the basement of the adjacent Aviation House show the gravel band to be approximately 1.5m to 2.0m thick. Groundwater was found to lie within the gravel formation at approximately 5m below ground level 1m above the London clays. The ground water within the gravels has been classed as a Secondary A (minor) Aquafer by the Environment Agency.

The basement is most likely to be founded in the gravel formation with supporting piles for the building extending into the London clays.

A site-specific ground investigation will be undertaken prior to works commencing however, it is considered that there is sufficient information for the purposes of this report available from adjacent sites to confirm the general ground conditions for the area

Topography

The general topography of the surrounding area is flat. Therefore, no slope stability issues will arise.

Neighbouring Buildings

1212 to 214 High Holborn is bounded by 3 No. neighbouring properties:

- Aviation House to the East & South (Redeveloped in 2000)
- Aria House to the South West (Redeveloped in 1999)
- 210 High Holborn to the West (Constructed circa 1900, extended to rear in 1989)

To the north, the site is bounded by the High Holborn road.

As discussed earlier in the report the Central Line tube tunnel runs directly underneath High Holborn Road at an approximate depth of 24m below street level. However, as the works to extend the basement are at the furthest point away from the tube tunnels, (approximately 25m) and outside any possible influencing distance on the tunnels

We have been advised that Aviation House, Aria House and 210 High Holborn have existing basements under all or part of the buildings. At present, the exact extent is unknown and will need to be surveyed prior to final design works being undertaken. Due to the size and nature of adjoining buildings, where most are in excess of 5 storeys, it is assumed that they will have significantly large and deep foundations.

Design and construction of the redevelopment works will give due consideration to the listed building frontage and neighbouring buildings. Construction methods will be planned with the objective of not exceeding Category 2 “slight” damage as defined by Burland and as referred to in CPG4. Due to the front section of the building and adjacent buildings currently having basements it is unlikely that any damage will occur.

Adjacent property owners and tenants will be consulted through the Party Wall approvals process prior to works commencing.

Screening Flow Chart

In accordance with the screening criteria presented in London Borough of Camdon planning guidance CPG4, we consider that the basement to be low risk of impact for the three criteria considered as follows:

Groundwater flow: The basement is most likely to be founded within the Lynch Hill gavels. Due to the water table being below basement level and the fact that there are significant basements within the adjacent properties we do not consider that the basement extension will have any significant change on ground water flows within the surrounding area.

Land stability: There are no significant slopes on the site or within the immediate surrounding areas. There are however adjacent buildings near the existing building and due to the adjacent building currently having basements it is unlikely that significant additional support or underpinning will be required during the construction phase.

Surface water flow and flooding: The area of the building lies within the current confines of the building outline. Therefore, there will be no change to the existing surface water flows or drainage of the site.

Based on the above we do not consider that a formal Basement Impact Assessment is required for this development.

6.0 Further Considerations

All the works contained within the report will be subject to further intrusive investigation and full and final design and detailing prior to works commencing.

All existing structural elements subject to additional load / revised load path must be reviewed and analysed to ascertain whether they are capable of supporting additional load.

Whilst substantial internal propping of the structure will be required to undertake the above works we do not consider that full facade retention will be required.

In addition to the above the following will be required;

- Full ground investigation
- Liaison with London Underground
- Party Wall Approval
- Watching brief during demolition works to ascertain the condition of existing basement walls.

7.0 Conclusions & Summary

The building is in reasonable condition bearing in mind its age with some minor cracking noted at high level to the front elevation which will be addressed during the proposed development works.

Should any of existing retaining walls are found to be in poor condition during the demolition works these will be replaced with new with the approval of local authority

The structural alterations to the front section of the building are not considered to be excessive or detrimental to the stability of the building and frontage and will be designed to enhance the overall lateral stability of this section safeguarding the longevity of the listed structure.

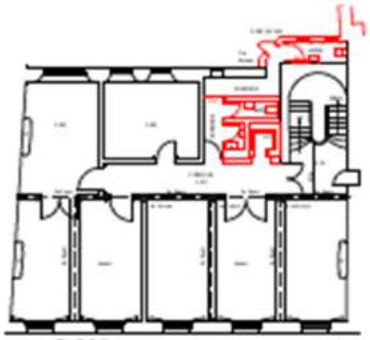
The extension to the rear section of the building will be designed as a complete standalone structure with no vertical or lateral loading applied to the existing front section of the building. The basement works will have minimal impact on both the existing and neighbouring buildings.

With due consideration to the above we do not consider the proposals represent a threat to the integrity of the listed building.

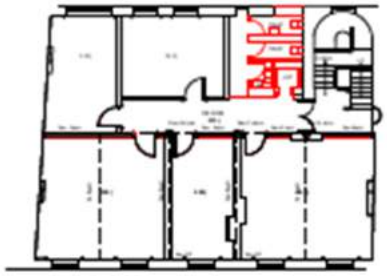
Appendix A

Structural proposal sketch plans

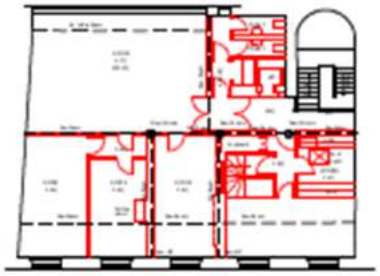
Drawing No's 2898-16 / 01



1st FLOOR

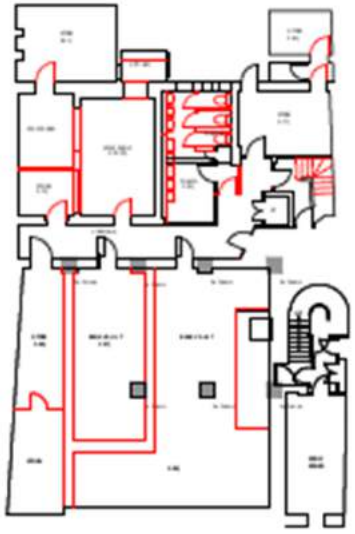


2nd FLOOR

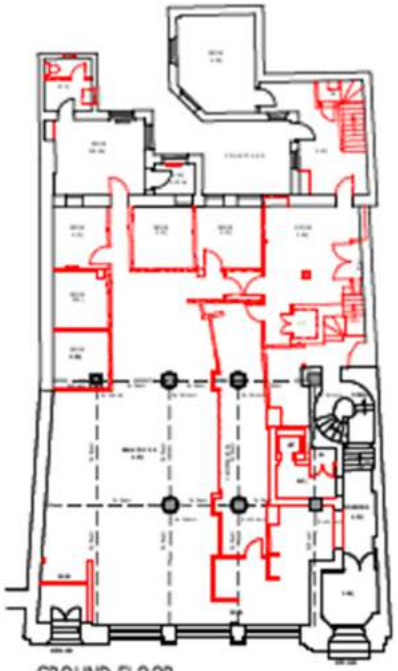


3rd FLOOR

4th FLOOR



BASEMENT



GROUND FLOOR

MEZZANINE FLOOR

Pennington & Associates Limited
Structural Design Consultants

Axminger Capital Ltd

HIGH HOLBORN
PROPOSED OFFICES

DEMOLITION PLAN

8918

Cassidy+Ashton