Basement Impact Assessment

17 Colville Place

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1 Introduction

The Basement Impact Assessment has been carried out by Andrew Smith MEng(Hons) CEng MIStructe MFPWS a Chartered Structural Engineer as required under the Camden Borough Council Supplementary Planning Document SPD.

1.1 Non-Technical Summary

The site location is 17 Colville Place, London W1T 2BN (NGR 523000, 188800), a four- storey terraced building with existing basement.

The proposed development added an enlarged lightwell to the rear elevation.

The following assessments are presented:

- Desk study
- Screening
- Scoping

The site is underlain by Lynch Hill Gravel Member (a Secondary aquifer), with London Clay beneath at an anticipated depth of at least 7 m below ground. Groundwater level at the site is unknown, although nearby historical data suggest it is likely to be 3 to 4m below the existing basement floor level.

The site has a very low risk of flooding from surface water, rivers or groundwater, and is distant from any mapped surface water features. The development will not change the proportion of hard surfacing at the site.

Based on the available evidence, there are no significant impacts predicted to the wider hydrogeological environment from the proposed development.

There would be no increase in surface water runoff from the site and therefore the development will not impact the wider surface water environment.

2 Desk Top Study

2.1 Sources of information

The following data have been used in this study:

- Existing and proposed plans (Appendix A);
- Geological information: British Geological Survey on-line mapping and borehole database;
- Camden Geological, Hydrogeological and Hydrological Study - Guidance for Subterranean Development (Arup, 2010);
- Ordnance Survey mapping: MagicMap on-line mapping;
- Flood risk mapping
- London Borough of Camden Strategic Flood Risk Assessment (TRS, 2014); and
- Relevant guidance documentation from Camden Borough Council, including Camden Planning Guidance for Basements.

2.2 Existing Building

The houses on Colville Place (Formerly Colville Court) were built around 1766 as a narrow passage with houses on both sides. The existing building comprises three storeys in height in stock brick with a plain parapet and an original basement over the entire ground floor footprint with a front lightwell and small rear lightwell.

The building is constructed from traditional materials with tiled roofs, masonry walls internal walls up to ground floor with timber walls above. The adjoining properties at have basements, which are also original.

Figure 1 Historic Site Plan

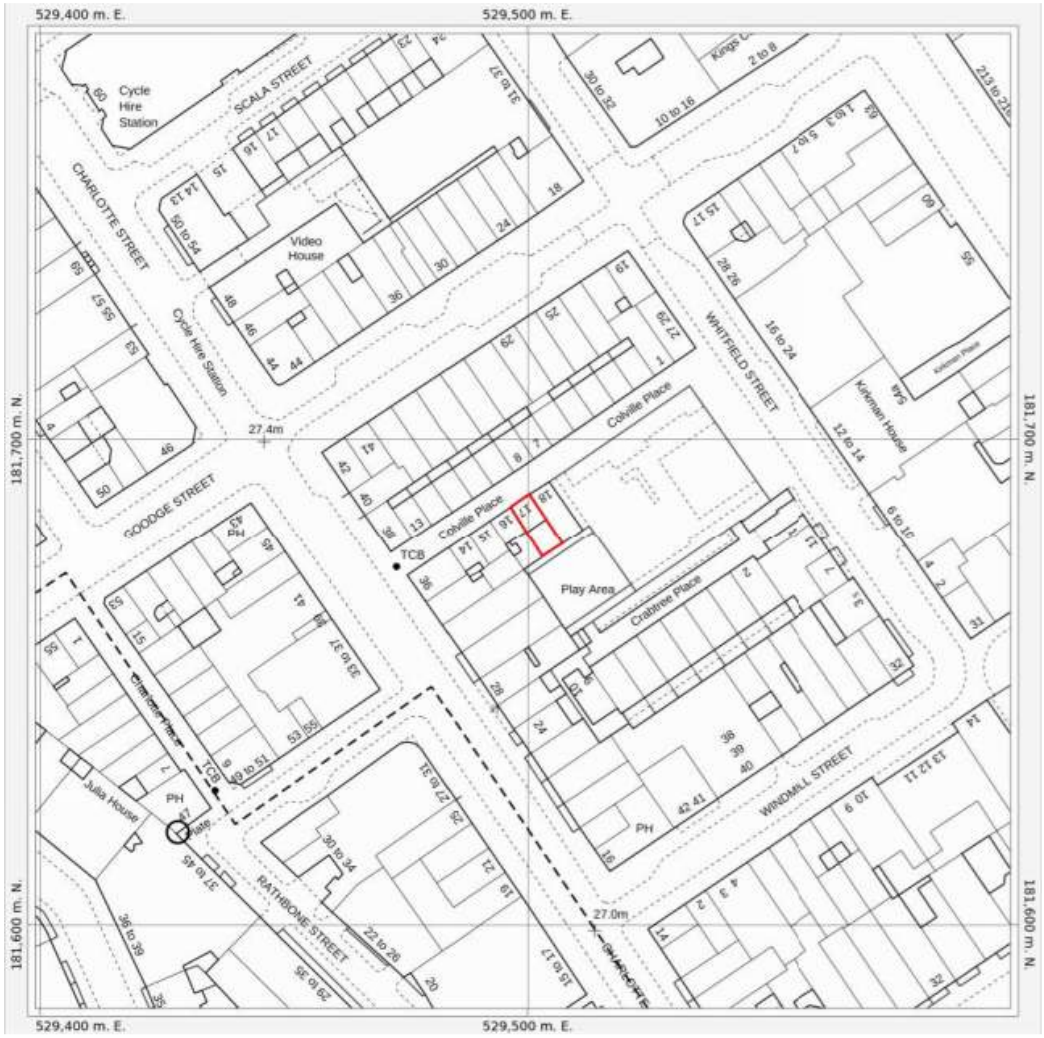


Figure 2 OS Map [1:1250]

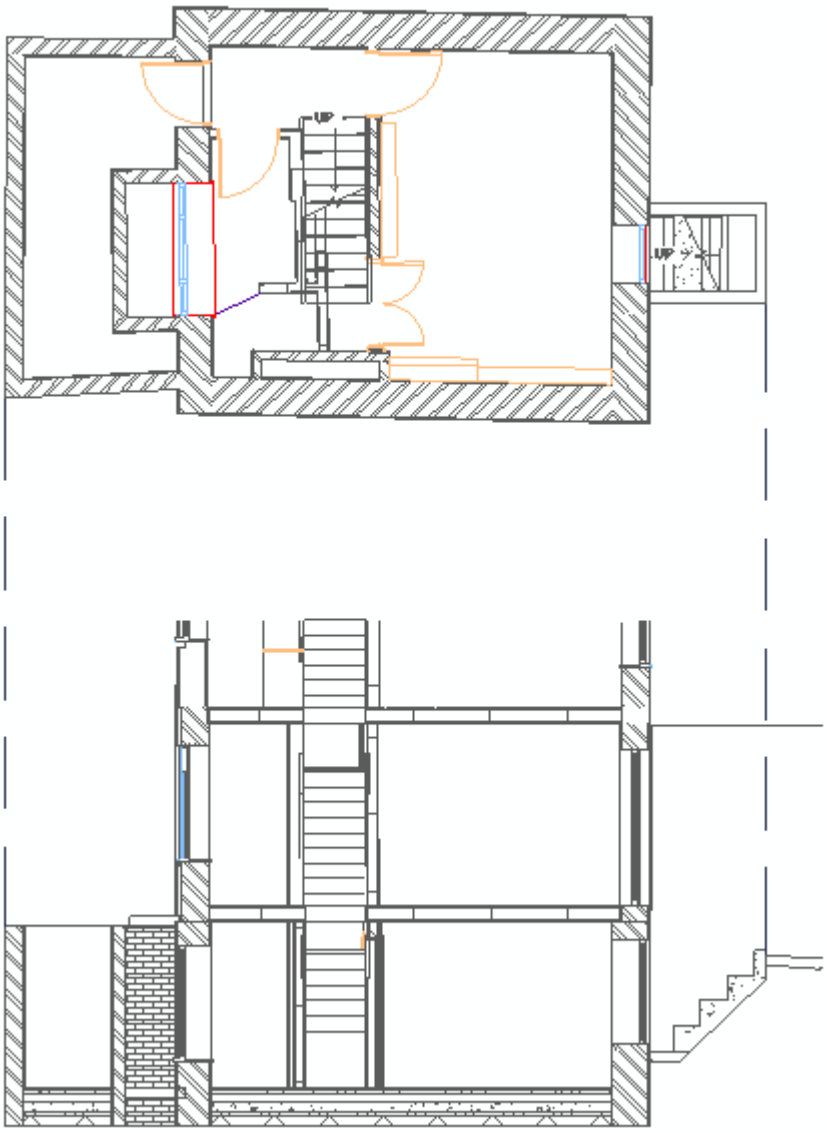


Figure 3 Existing Basement Plan and Section

3 Proposal

The proposal is to enlarge the existing rear lightwell to the rear to allow improved natural light into the existing basement footprint. The outline of the proposed, compared to the existing (Red dotted Outline) is shown in Figure 4.

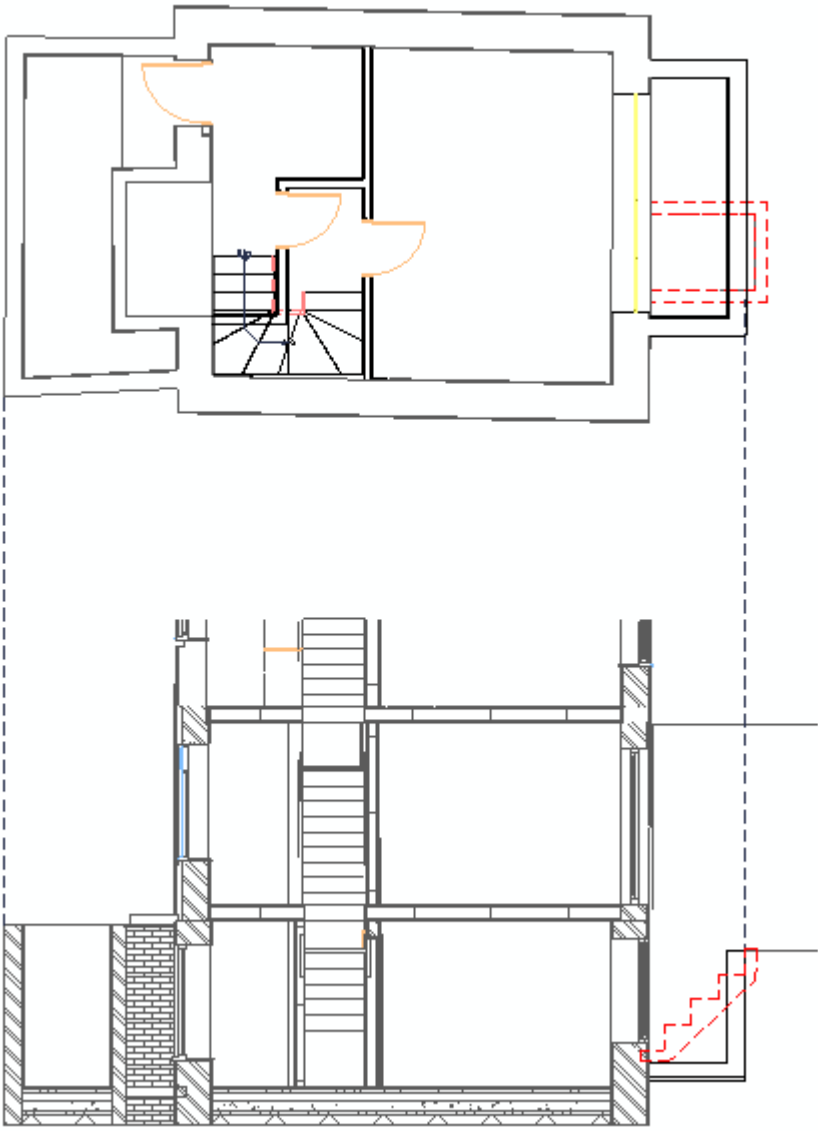


Figure 4 Proposed Lightwell/Basement Floor Plan and Section

The lightwell is formed with reinforced concrete walls and slab, all within the curtilage of the rear garden.

4 Ground Conditions

At the time of submission, a full site investigation has not been carried out, however through the use of RGS Borehole log the geotechnical design parameters have been derived.

4.1 RGS Borehole logs

There are number of local boreholes in the surrounding streets in all directions. The borehole logs whilst of differing age are very thorough, and all provide similar information on the strata in this area.

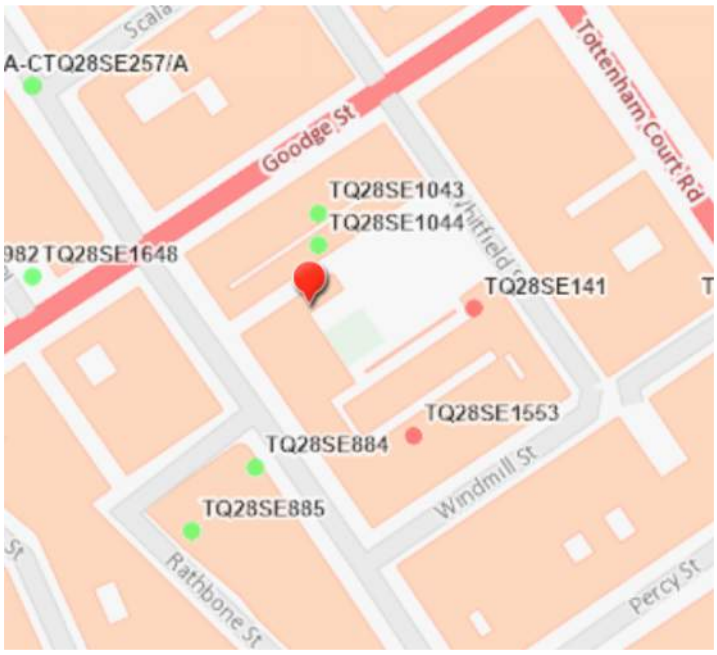


Figure 5 RGS Borehole Log

Description	Constituents	Depth to top of strata (m)	Thickness (m)
Topsoil/ Made Ground	Brick/Loose Soil	Ground Level	4.0m
Gravel/Clay	Medium Dense Gravel and Firm Clay	4.0m	1.5-2.0m
Ballast	Medium Dense Gravel and Course Sand	5.5-6.0m	1.0-1.5m
London Clay	Firm to hard brown Clay	5.5-6.5m	7m+

Ref to Appendix B for Local Borehole logs.

4.2 Geology

The British Geology Survey (BGS) web site shows that the superficial geology at the site is the Lynch Hill Gravel Formation , and that this is underlain by the London Clay Formation (see Appendix C, which shows the site location on the geological figure taken from Arup (2010)

The London Clay mainly comprises bioturbated or poorly laminated, blue- grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay.

The three nearest records from the BGS borehole database (10/15m north northeast, 75m southwest of the site) are presented in Appendix B. These show Made Ground between 1 and 4.5m thick above sand and gravel that extends to a depth between 7 and 11 m below ground. The London Clay was found beneath the sand and gravel. The boreholes to the north recorded groundwater levels. In this location groundwater at the time of construction (1965) was recorded at circa. 7.5-10.5m below ground level.

4.3 Engineering Design Parameters

Based on the historic RGS borehole logs, the existing basement is bearing within the ballast/gravels. The lightwell walls are conservatively designed based on cohesionless soil and an allowable Bearing Pressure (150kN/m^2)

4.4 Landfill Gas

There are no records of landfill on the site and for the purpose of this report and the outline design no gas remediation measures have been included, this will be confirmed prior to detailed design.

4.5 Swelling/Shrinking

There are no major trees in the existing footprint of the site or the adjacent properties. The rear garden is hardstanding with a single beds with large shrubs, but nothing of risk to cause Swelling/Shrinking of the soil. As the nearby trees are not close to the works area the depth of foundation/retaining wall is sufficient to meet NHBC requirements for building near trees.

4.6 Rivers/Springs

The River Thames, circa 1.5km to the south, is the only mapped water body near the site. One of London's "lost" rivers, the Tyburn, ran 0.5km to the West and tributaries of the Fleet 0.5km to the East.

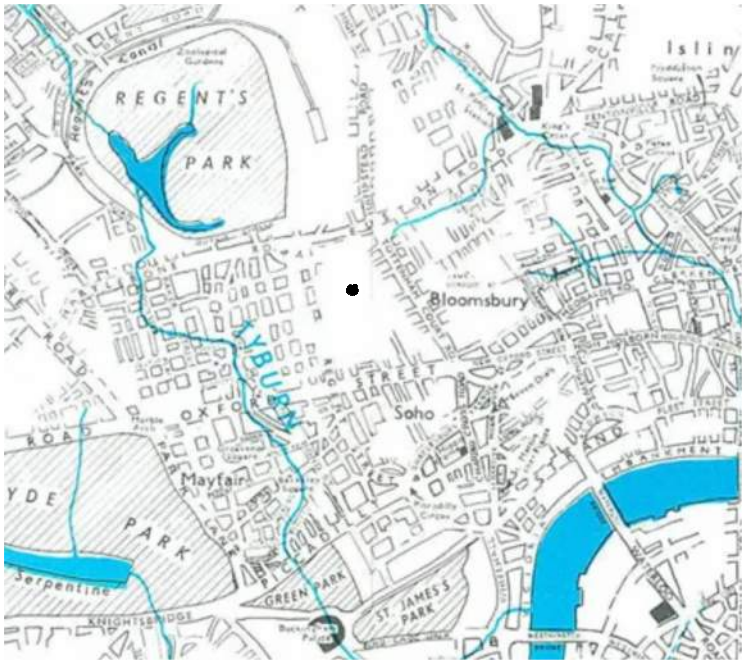


Figure 6 London's Lost Rivers

4.7 Wells

The site is not located within a source protection zone (SPZ).

4.8 Flood Risk

The site is classed as being at very low risk of flooding by either surface water or rivers. The site does not lie within a critical drainage area or local flood risk zone, according to information from Camden Borough Council. The Council's information also indicates that the site is outside any areas susceptible to groundwater flooding and has no history of sewer flooding.

5 SCREENING

5.1 Groundwater Assessment

A groundwater screening assessment has been undertaken and the results are presented in Table 5.1:-

Table 5-1 Groundwater screening assessment

Question	Response	Details
1a. Is the site located directly above an aquifer?	Yes	There is a superficial aquifer. The site is underlain by the Lynch Hill Gravel Formation, which is classed as a Secondary A aquifer.
1b. Will the proposed basement extend beneath the water table surface?	No	The water table is not well known. Historical borehole records suggest that groundwater levels may be quite deep (more than 7 m below ground – which would be well below the existing basement depth).
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No	There are no watercourses, wells or springs recorded within 100 m.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No	Hampstead Heath ponds are well to the north and upstream of the site.
4. Will the proposed basement development result in a change in the proportion of hard surface/paved areas?	No	The hard surface/paved area of the development area will not change.
5. As part of the drainage, will more surface water (e.g., rainfall and run-off) than at present be discharged to the ground (e.g., via soakaways and/or SuDS)?	No	No changes to the surface water drainage and foul water associated with the proposed development will go into the existing mains system. Rainfall and run-off discharge will be unchanged from the existing situation.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond or spring line?	No	There are no local ponds or spring lines.

5.2 Surface water and flooding

A surface water screening assessment has been undertaken and the results are presented in Table 5.2

Question	Response	Detail
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No	Hampstead Heath ponds are well to the north and upstream of the site.
2. As part of the proposed site drainage, will surface water flows (e.g., volume of rainfall and peak run-off) be materially changed from the existing route?	No	There is no anticipated change to surface water flows from the site.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	The hard surface/paved area of the development area will not change.
4. Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?	No	The hard surface/paved area of the development area will not change.
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	The proposed lightwell will be constructed so that its impermeable, sealed and isolated from surface water and cannot influence surface water quality. It is also small in area compared to the scale of the site.
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy (LFRMS) or the Strategic Flood Risk Assessment (SFRA) or is it at risk from flooding, for example because the proposed basement is below the static water level of nearby surface water feature.	No	The SFRA did not highlight the site as being in an area of flood risk. The site is classed as being at very low risk of surface water flooding or river flooding (see Figure 7). There are no nearby surface water feature

In the tables in this section, questions to which the response is “No” are deemed to be screened out and only those with a response of “Yes” or “Unknown” are taken forward to the Scoping assessment in the following section.

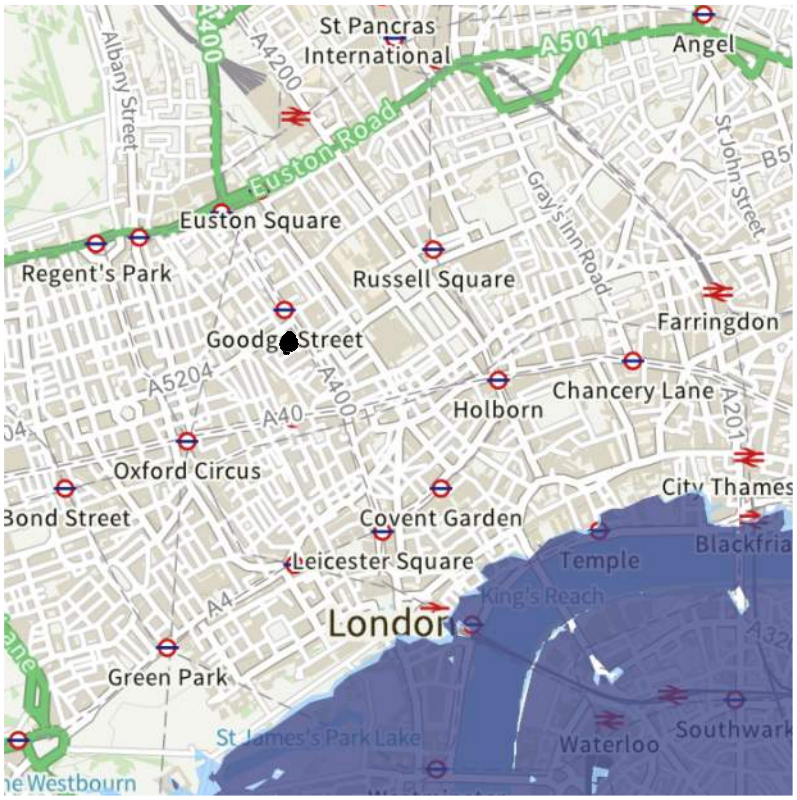


Figure 7 Environmental Agency Flood Map

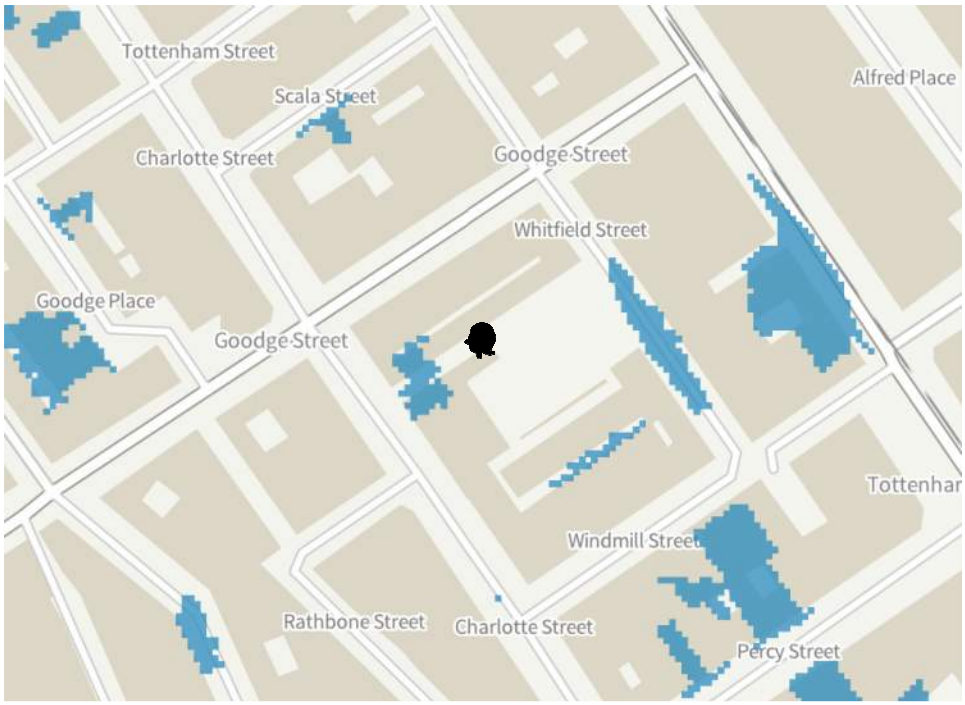


Figure 8 Surface Water Floor Risk {1:30yrs}

5.3 Sources of Information

The primary sources of information used within this report are:

- British Geological Survey, GeoIndex Website (accessed August 2024)
- Ordnance Survey (OS) historic maps (Appendix A)
- EA Website (accessed August 2024)
- Google EarthTM (accessed August 2024)
- Property Asset Register Public Web Map, Transport for London
- Design Supplementary Planning Document (SPD):
- Camden geological, hydrogeological and hydrological study

6 SCOPING

This Scoping assessment reviews the risks that were not screened out in the Screening assessment in the previous section.

6.1 Groundwater level

The nature of the bedrock in the area (London Clay) means that significant movement of groundwater is unlikely. However, above the bedrock the site is underlain by permeable superficial deposits of the Lynch Hill Gravel Formation, which are potentially to contain water.

The water table depth is unknown, although a historical record nearby indicated a groundwater elevation of circa 7m below ground level, which would be well below the planned lightwell structure.

As the lightwell is above the existing basement level ground water is not expected to be encountered or an issue.

The lightwell should be constructed so that no water penetration or dampness is permitted, and even if no water table is encountered, arrangements for minor dewatering of the excavation to deal with potential groundwater seepage and near-surface flows during rainfall events are recommended during construction.

7 Structural Design

7.1 Proposal

The proposal lightwell is to be formed in reinforced concrete, tied to existing rear brickwork with steel reinforced dowels. Around the rear face of the wall the soil will be battered at min 60^0 angle to facilitate the shuttering for the concrete. Once cured the central section will be propped and the flank walls dug and cast with sacrificial cementitious boards to retain the soil along the sides whilst the reinforcement is placed and the concrete poured.

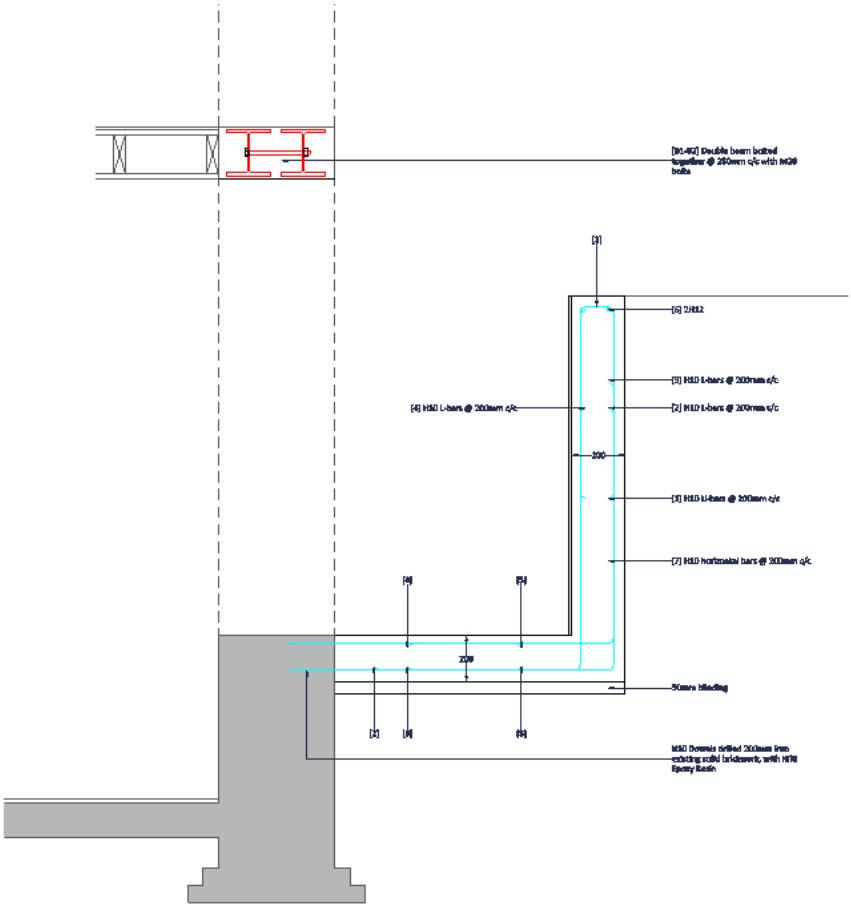


Figure 9 Proposed Lightwell Section

The proposed lightwell will be designed to level I, in accordance with BS8102:2009 for water retaining structures. To achieve this a Cementitious Type A Paint will be utilised on the inside of the lightwell walls, with a central gulley.

8 CONCLUSIONS

8.1 Groundwater

Based on the available evidence, there is likely to be groundwater is present in the gravels beneath the site, but at a great enough depth that the lightwell will not interfere with groundwater flow.

8.2 Surface water

The site has a very low risk of flooding by surface water run-off, by river water or by groundwater. The proposed redevelopment would not change the quantities of rainfall run-off from the site or the run-off routes.

There is therefore no significant risk of any surface water impacts resulting from the redevelopment

8.3 Impact on Surrounding Structures

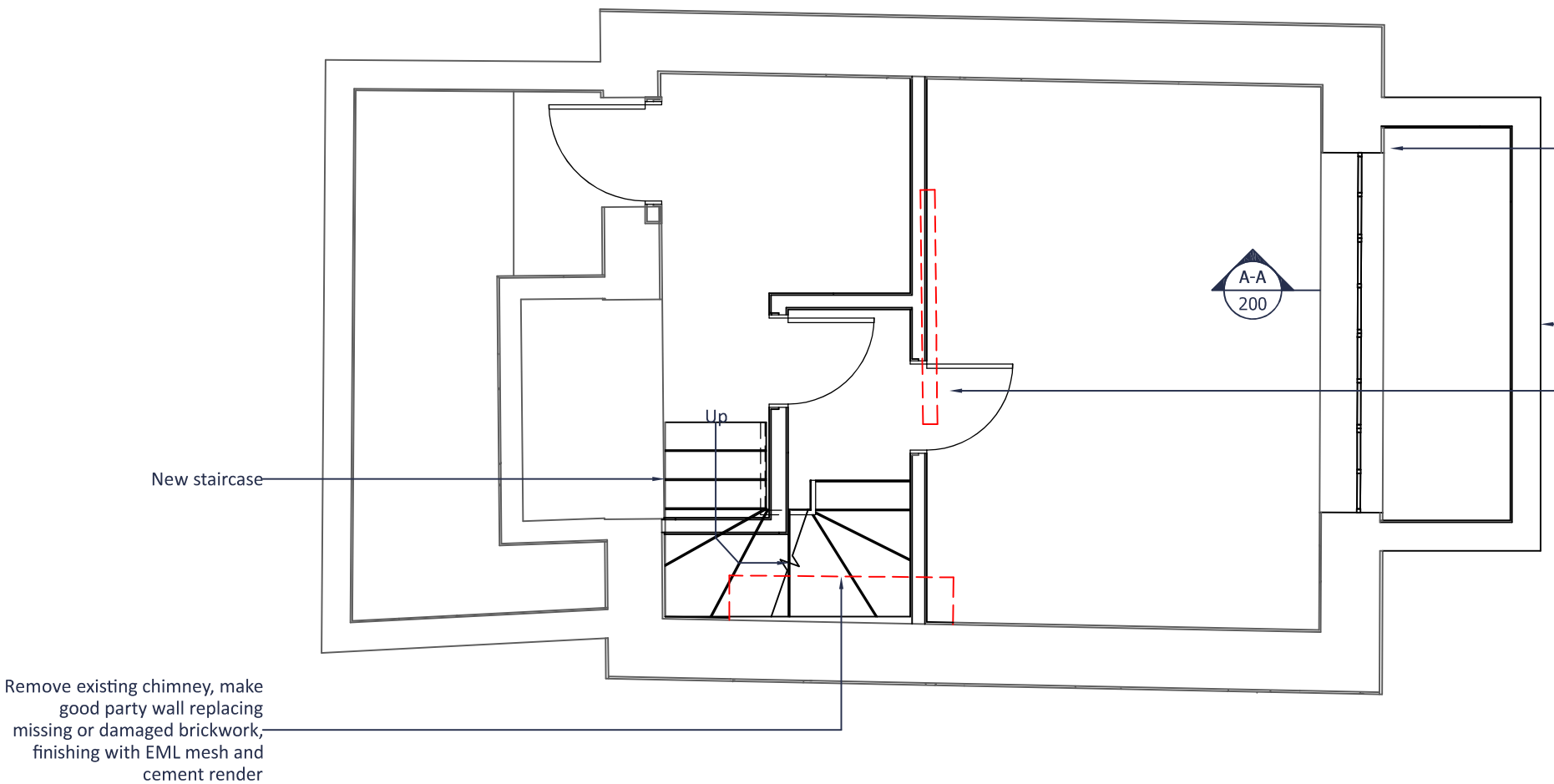
The lightwell is outside the footprint of the existing building and its founded levels is above the foundation of No. 17 and neighbouring properties so there should be no impact structurally.

8.4 Surface Water Discharge

There is no change to the surface water volume or discharge system.

Appendix A [Proposed Structural Plans]

Existing Construction
New Partition
Demolition
New Load bearing Wall



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Do not scale

NOTES

All dimensions should be confrimed on site. Any measurements required for construction must not be scaled from this drawing.

All structural elements to be agreed with local authority Building Control prior to commencement of works.

Attention is drawn to the provisions of the party wall act 1996. Legal boundaries should be determined by others.

Existing {TBC} — Timber joist span size, spacing and direction of span

New foundation outline

B1-01 — Steelwork

Issue	Date	By	
A	25/03/25	APS	Structural Draft Issue

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info@FTFDesigns.co.uk

Client

17 Colville Road
London
W11 2BT

Job Title

Rear Lightwell, internal remodeling, chimney removal

Drawing Title

Structural Basement Floor Plan

Scale at A3 1:50

Drawing Status

Draft

Job No	Drawing No	Issue
1168	1168-S-099	A

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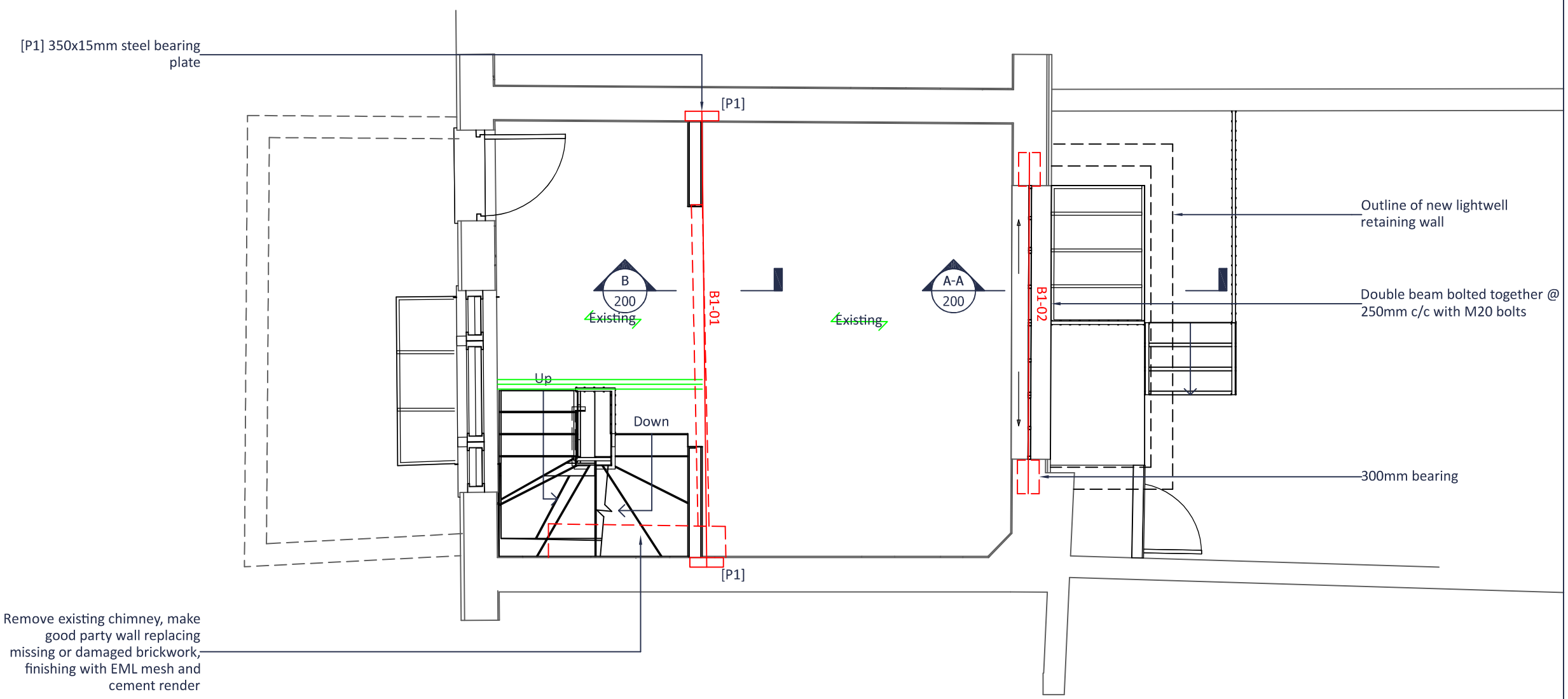
A3 | A | B | C | D | E | F | G

Existing Construction
New Partition
Demolition
New Load bearing Wall



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B1-02	2x 203x203x46 UC	

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Drawing Title

Foundation and Structural Ground Floor Plan

Scale at A3 1:50

Drawing Status

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Existing Construction
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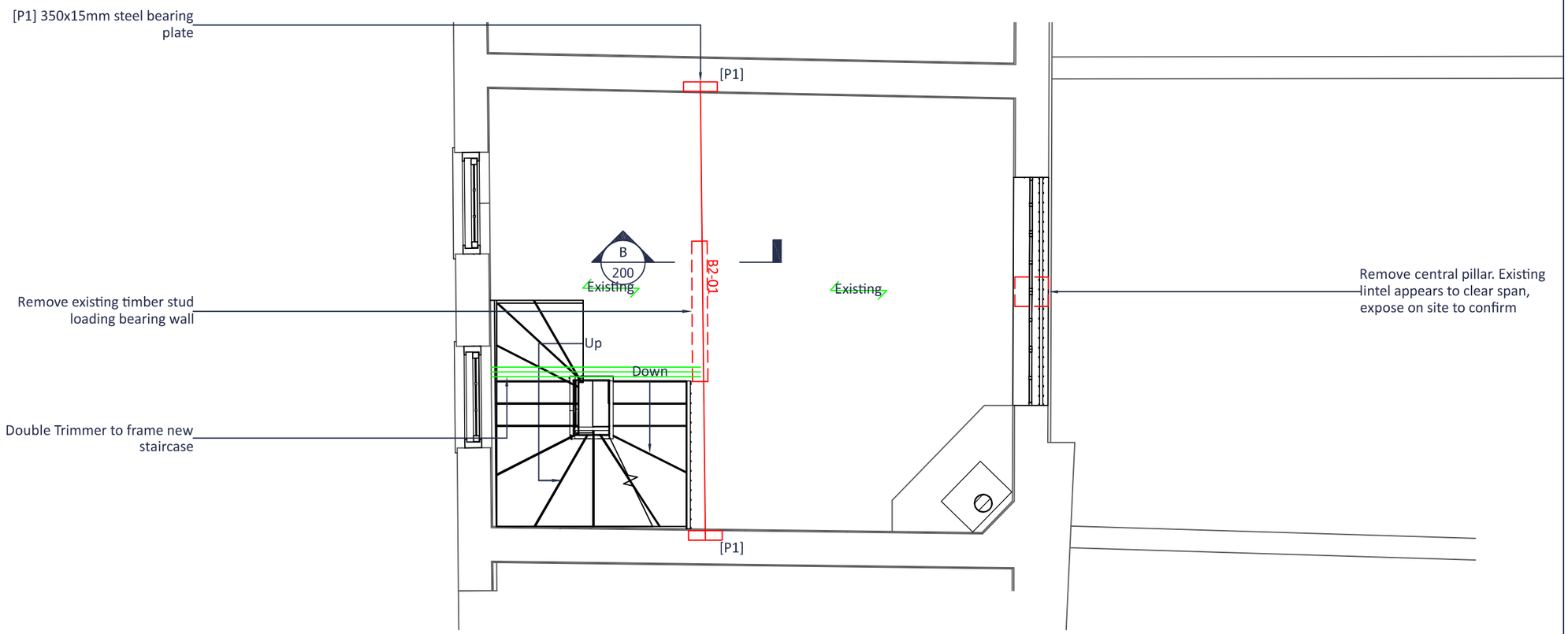
Demolition
New Load bearing Wall



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New foundation outline

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Job Title

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Structural First Floor Plan

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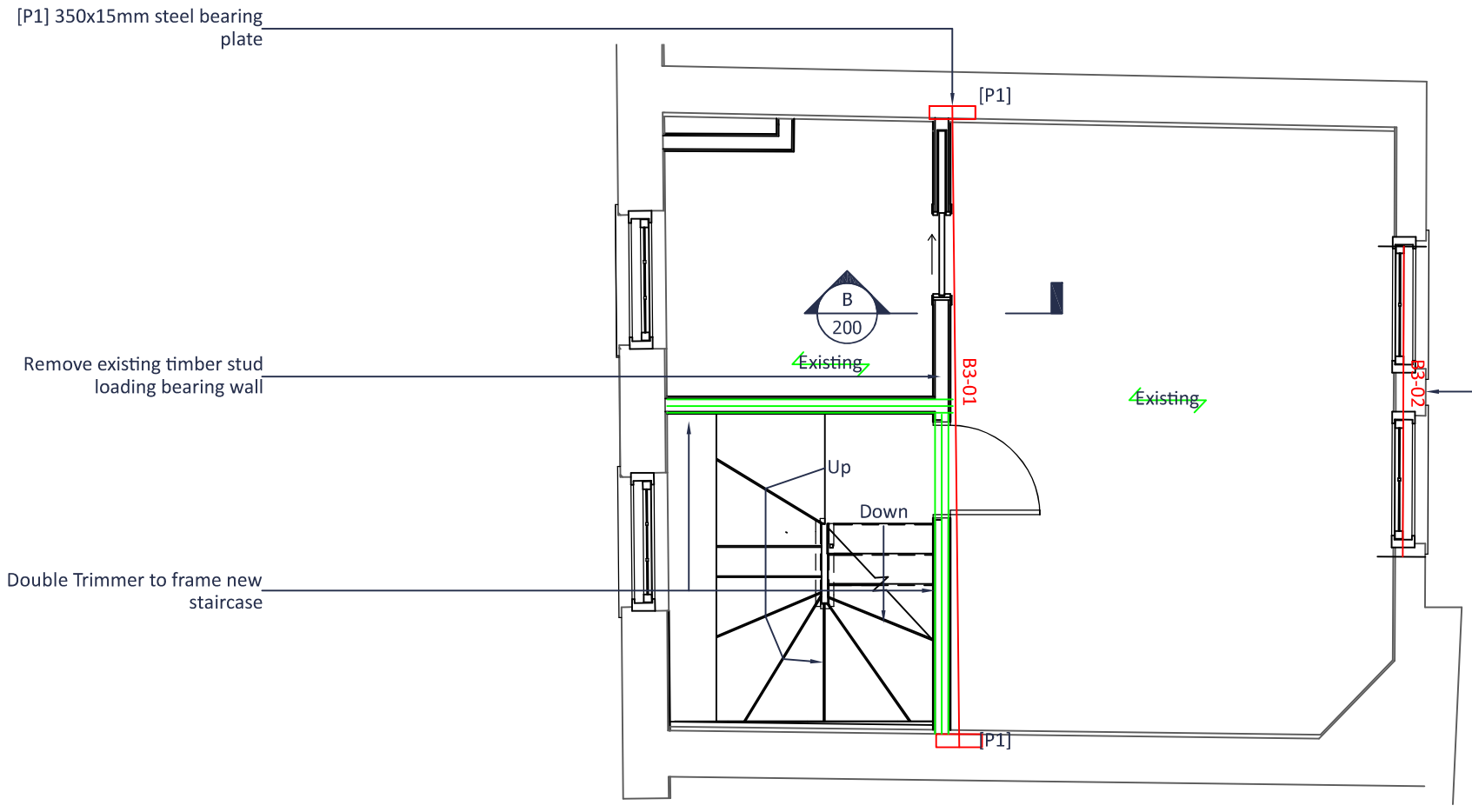
Existing Construction
New Partition
Demolition
New Load bearing Wall



Remove central pillar below. Existing lintel appears to clear span, expose on site to confirm. Allowance for new lintels

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Structural Second Floor Plan

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Existing Construction
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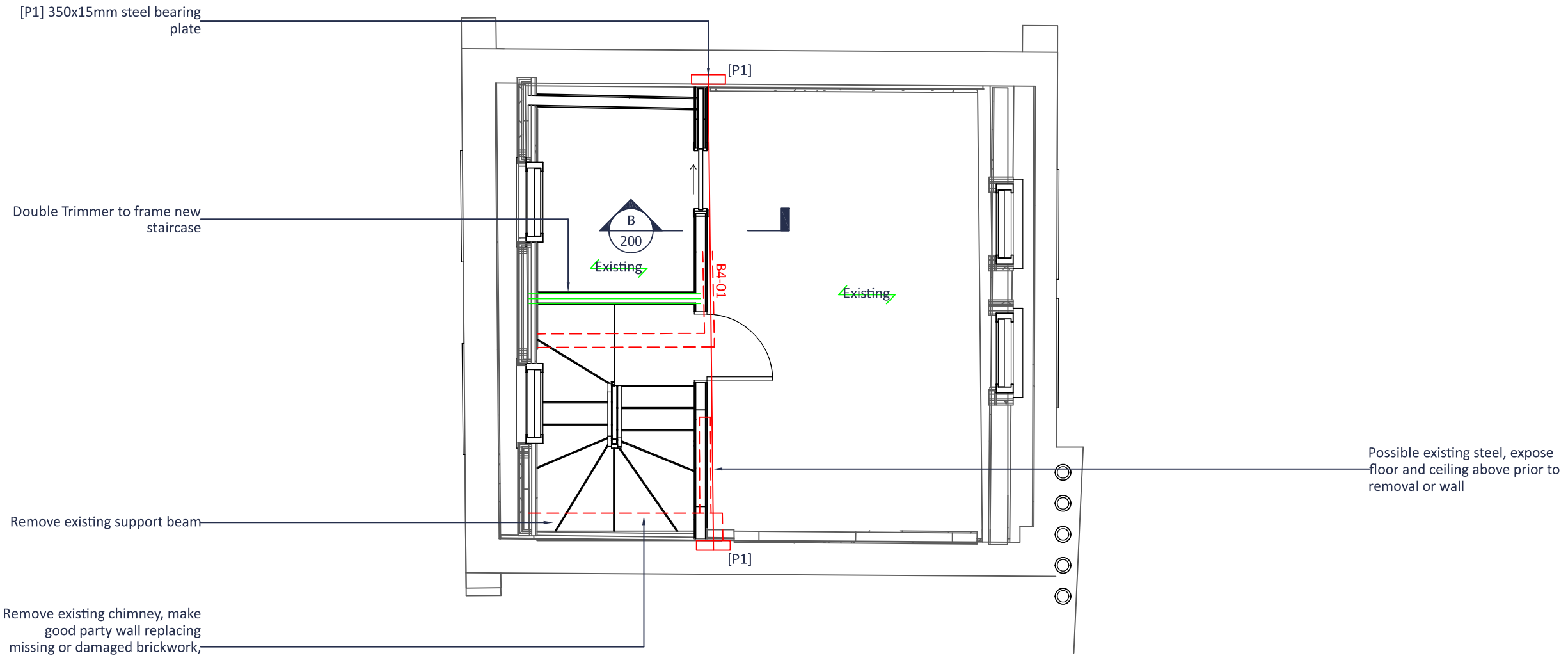
Demolition
New Load bearing Wall



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Job Title

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Drawing Title

Structural Third Floor Plan

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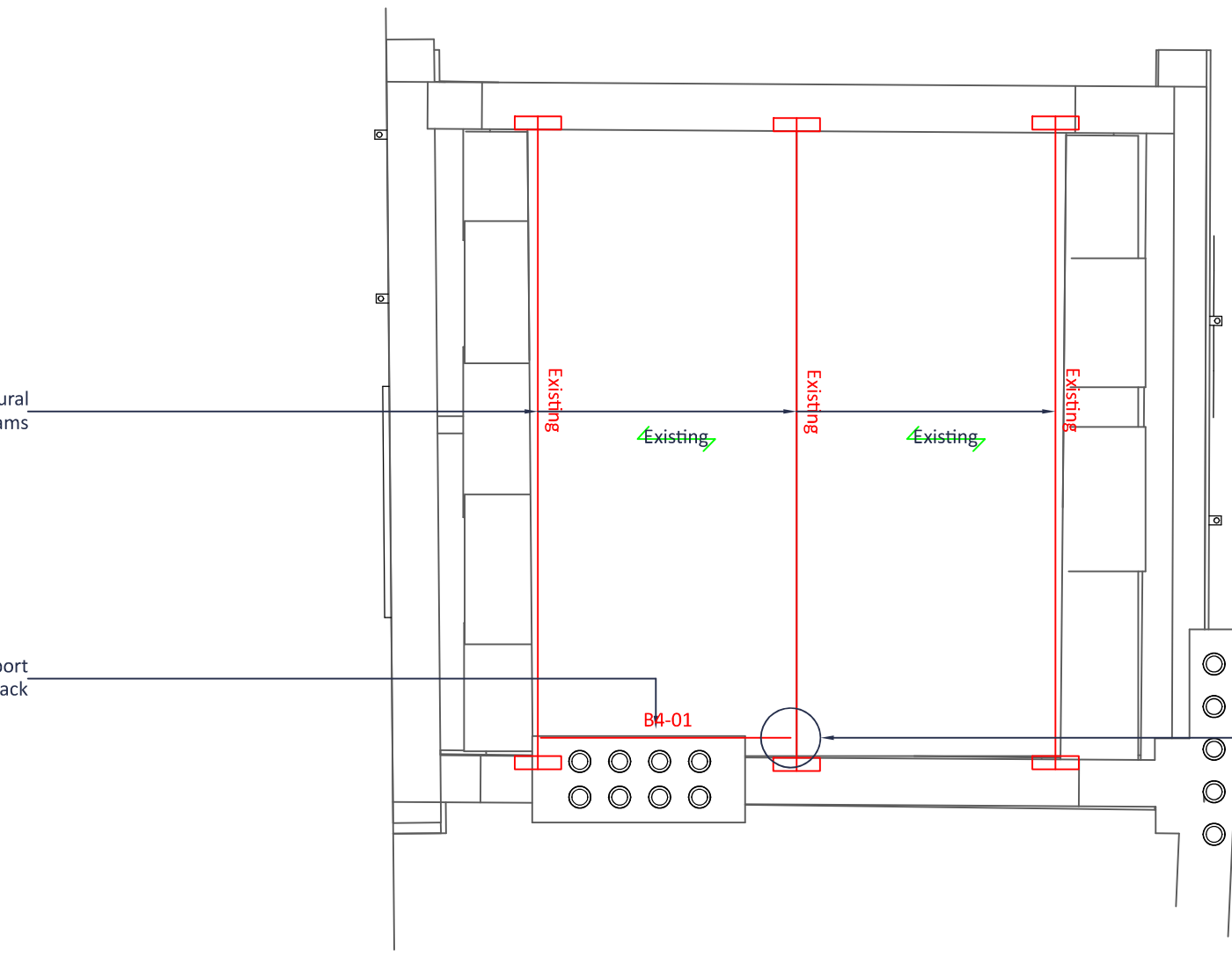
Existing Construction
New Partition
Demolition
New Load bearing Wall



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Do not scale

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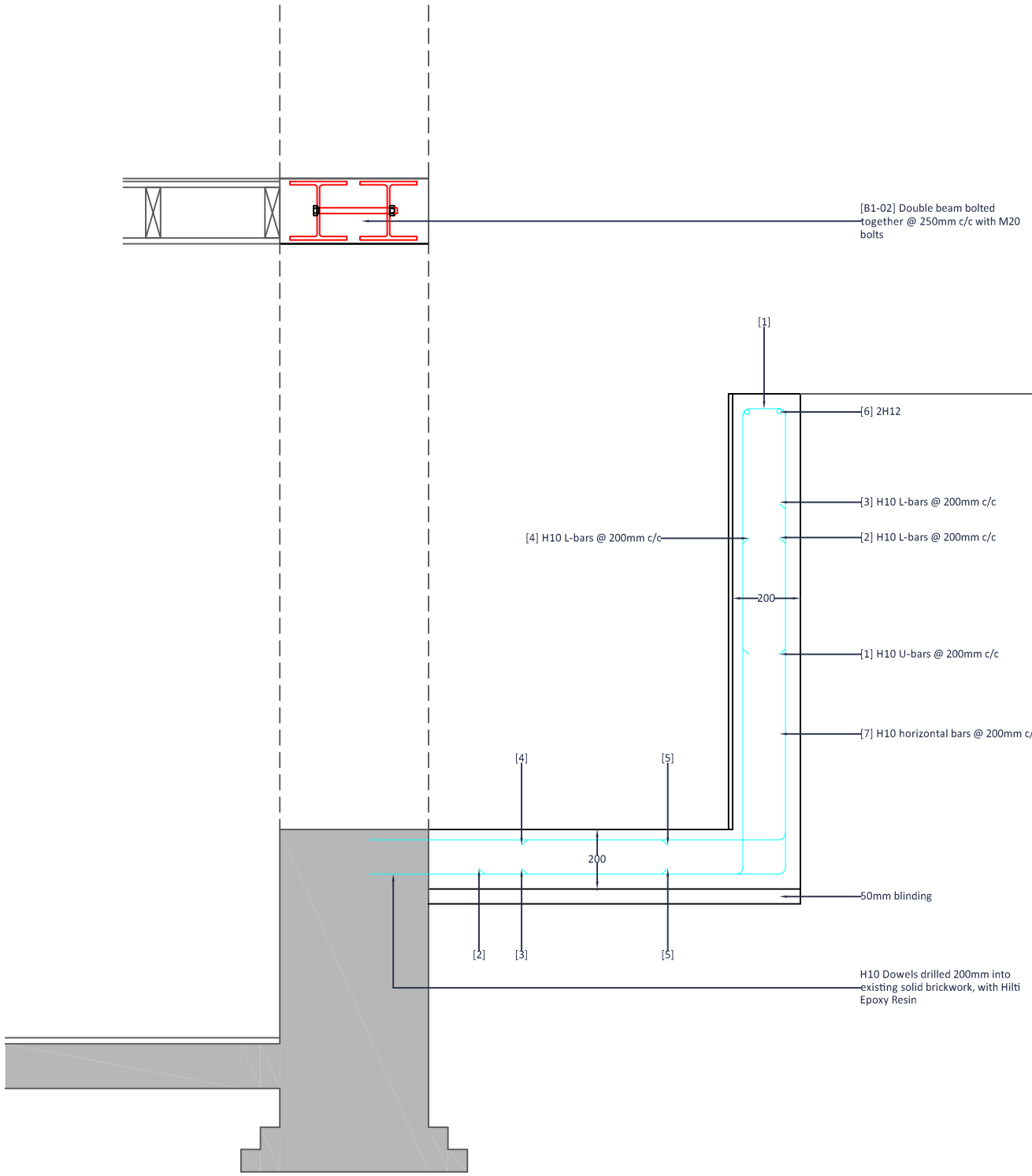
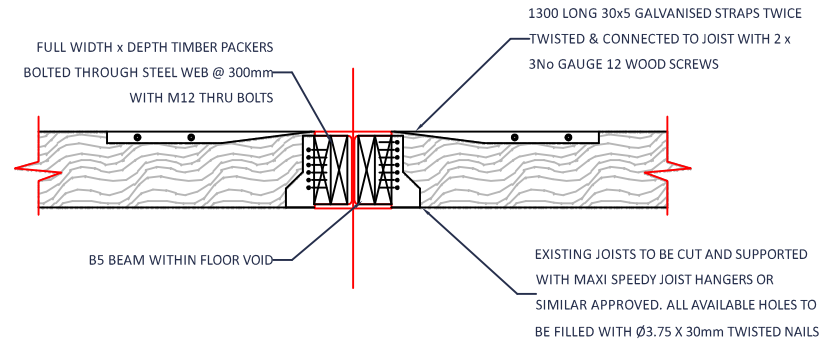
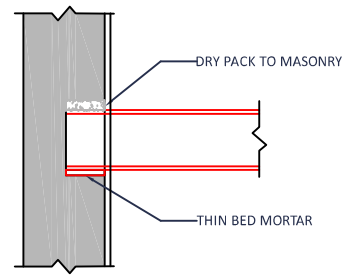


SECTION B - B
LIGHTWELL REINFORCEMENT



DETAIL B
RESTRAINT DETAIL OVER STEELWORK



DETAIL C
BEARING PLATE

NOTES

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New foundation outline

B1-01 — Steelwork

Issue	Date	By	
A	25/03/25	APS	Structural Draft Issue

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Client

17 Colville Road
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Job Title

Rear Lightwell, internal remodeling, chimney removal

Drawing Title

Structural Third Floor Plan

Scale at A3
1:20

Drawing Status
Draft

Job No	Drawing No	Issue
1168	1168-S-200	A

Do not scale

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Appendix B [Historic Borehole Logs]

British Geological Survey

BGS ID: 592465 : BGS Reference: TQ28SE884
British National Grid (27700) : 529480,181630

TQ 28 SE / 884
2948, 8163

BOREHOLE NO. 1

Ground Level 82.04 ft OD. (25.01m) Diameter of Boring 8"

Water Struck 79.8 ft OD. Method Shell & Auger

Standing Water Level 68.9 ft (1.12.70) Start 27.11.70 Finish 30.11.70

REMARKS:

Description of Strata	Thickness	Depth	Reduced Level	Disturbed Samples	Undisturbed Samples and Shelby Tubes
Made Ground: Loose broken bricks, ashes and soil.	13'6"	13'6"	68.5	2'0" J9827 2'3" W9828 3'0" B9829 5'0" J9830 8'6" J9832 10'0" B9833 12'0" J9834	3'0" N=5 6'0" U9831 10'0" N=7
Medium dense gravel and firm brown clay.	5'9"	19'3"	62.7	15'0" B9835 17'6" J9836	15'0" N=15
Medium dense gravel with coarse brown sand.	4'9"	24'0"	58.8	20'0" B9837 22'6" J9838	20'0" N=27
Stiff brown clay	1'6"	25'6"	56.5		24'0" U9839
Stiff grey clay	24'6"			27'6" J9840 32'6" J9842 37'6" J9844 42'6" J9846 47'6" J9848 W9850	30'0" U9841 35'0" U9843 40'0" U9845 45'0" U9847 48'6" U9849
Bottom of Borehole		50'0"	32.0		
TOTALS	50'0"	50'0"			

NOTES: Descriptions in accordance with C.P.2001 "Site investigations"
J = Jar Sample B = Bulk Sample W = Water Sample
U = Undisturbed Core Samples 4 in. dia. x 18 in. long. Depth shown to top of sample. U* = Sample not recovered

Contact BGS: ngdc@bgs.ac.uk

TQ28SE 1043
2950 8171 TQ298T (TQ28SE)

RECORD OF BOREHOLE NO. 1

Basement level: 83.3ft. above O.D. Newlyn

Dia. of boring: 8in. to 20ft. 6in., 6in. to 50ft.

Type of boring: Shell and Auger

Lining tubes: 8in. to 23ft. 6in.

Daily Progress	Samples Depth	Samples Type	Change of Strata Legend	Change of Strata Depth	Change of Strata O.D. level	Description of Strata
				0'6"	82.8	CONCRETE
8.4.65.	1'0" - 3'0" 1'6" 3'6" 4'6" - 6'0" 6'0" 7'0" 9'6" - 11'0" 11'0" 12'0"	C(21) BD BD U(4) D D U(4) D D		18'0"	65.3	FILL (brown sandy clay, gravel and brick fragments)
	14'6" - 15'6" 15'0" 17'6" - 18'6" 18'0" 20'6" - 21'6" 21'0"	C(18) BD C(16) BD C(10) BD		23'0"	60.3	Medium dense grey SAND and GRAVEL becoming light brown below 18ft.
	23'6"	D		25'0"	58.3	Stiff fissured light brown silty CLAY
9.4.65. 10.4.65. 12.4.65.	24'0" - 25'6" 25'6" 27'0" 29'0" - 30'6" 30'6" 32'0" 34'0" - 35'6" 35'6" 37'0" 39'0" - 40'6" 40'6" 42'0" 44'0" - 45'6" 45'6" 47'0" 49'6" - 50'0"	U(4) D D U(4) D D U(4) D D U(4) D D U(4) D D C(53)		50'0"	33.3	Stiff, becoming very stiff with depth, fissured dark grey silty CLAY

Key to type of sample:
U (4) — 4 in. dia. undisturbed sample.
U (1½) — 1½ in. dia.
D — disturbed sample.
BD — bulk disturbed sample.
V — vane test.
S ( ) — standard penetration test.
C ( ) — dynamic cone penetration test.
[illegible]

Remarks: (Observations on ground-water, etc.)

No ground-water was encountered during boring. Water was added to assist boring in the fill and the gravel. During the weekend 10th/12th April, 1965, the level of the water in the borehole rose from 26ft. to 20ft. below ground level.

Sample of ground-water taken.

GOODGE STREET

Soils No: S/4196

FIG. 1

GEORGE WIMPEY & CO., LTD. CENTRAL LABORATORY HAYES

TQ28SE 1044

RECORD OF BOREHOLE NO. 2 2950 8/70

Basement level: 83.1ft. above O.D.Newlyn

Dia. of boring: 6in. to 23ft., 4in. to 40ft.

Type of boring: Shell and Auger

Lining tubes: 6in. to 23ft.

Daily Progress	Samples: Depth	Samples: Type	Change of Strata: Depth	Change of Strata: O.D. level	Description of Strata
	1'6"	BD			FILL (brown sandy clay, gravel and brick fragments)
	3'6" - 5'0"	U(4)			
	5'0"	D			
	5'0"	BD			
	6'6"	D			
	8'6" - 10'0"	U(4)			
	10'0"	D			
	11'6"	BD			
13.5.65.	12'6"	D			
	13'6" - 15'0"	U(4)			
	15'0"	D	15'6"	67.6	
	16'6" - 17'6"	C(11)			Medium dense brown SAND and GRAVEL
	17'0"	BD			
	19'6" - 20'6"	C(14)			
	20'0"	BD	20'9"	62.3	Stiff light brown silty CLAY
	20'9"	D			
	21'0" - 22'6"	U(4)			
	22'6"	D	23'0"	60.1	Stiff, becoming very stiff with depth, fissured dark grey silty CLAY with a trace of fine sand from 35ft.6in. below ground level
	24'0" - 25'6"	U(4)			
	25'6"	D			
	26'6"	D			
	29'0" - 30'6"	U(4)			
	32'6"	D			
	34'0" - 35'6"	U(4)			
	35'6"	D			
	36'6"	D			
14.5.65.	38'6" - 40'0"	U(4)	40'0"	43.1	
	40'0"	D			

Key to type of sample:
- U (4) — 4 in. dia. undisturbed sample.
- U (1½) — 1½ in. dia. " "
- D — disturbed sample.
- BD — bulk disturbed sample.
- V — vane test.
- S ( ) — standard penetration test.
- C ( ) — dynamic cone penetration test.

Figure in brackets is No. of blows for penetration given in depth column (see Notes, sect 1).

Remarks: (Observations on ground-water, etc.)

No ground-water was encountered during boring. Water was added to assist boring in the fill and the gravel. On completion of the borehole water stood at a level of 39ft. below ground level.

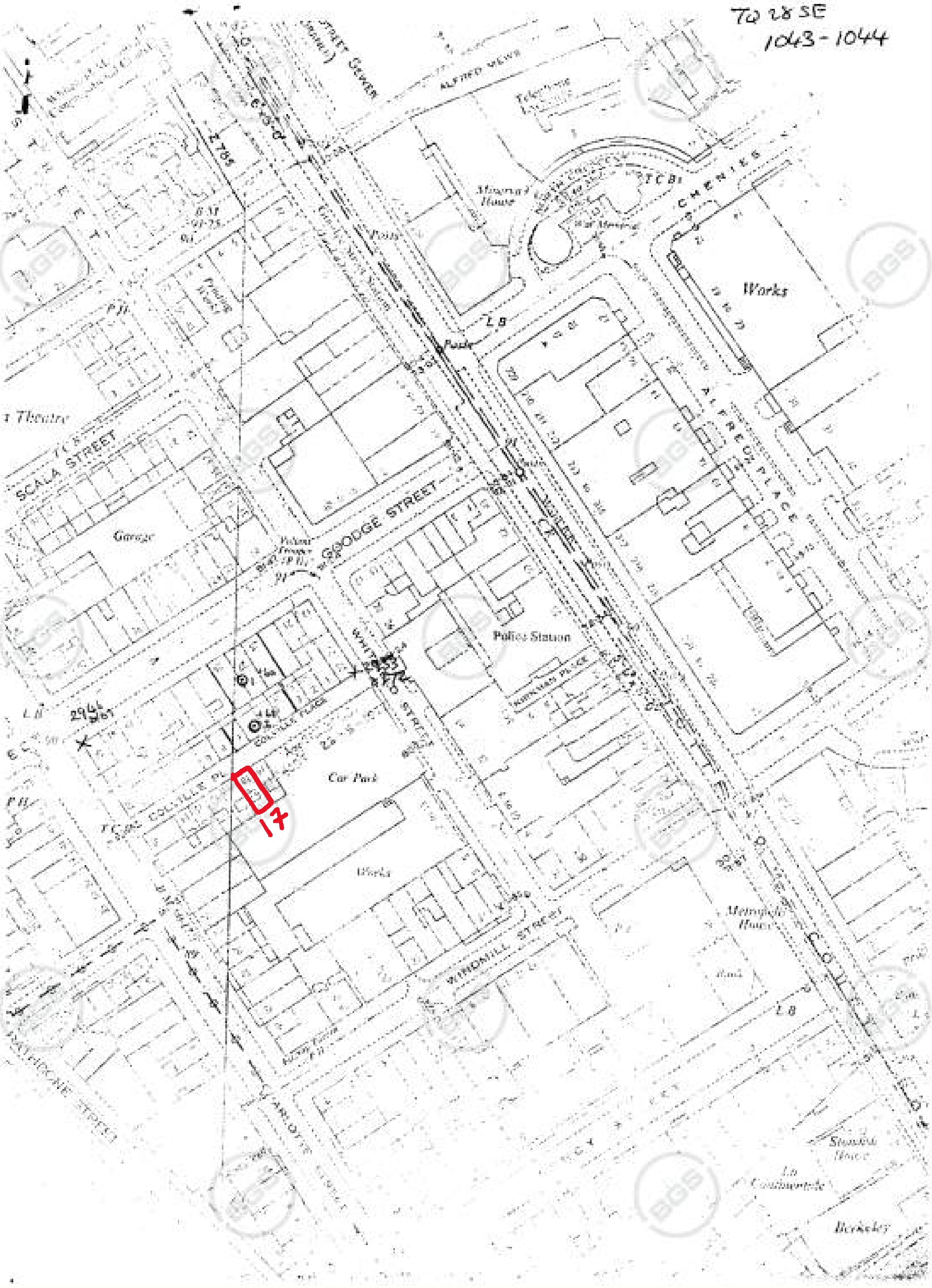
Sample of ground-water taken.

GOODGE STREET

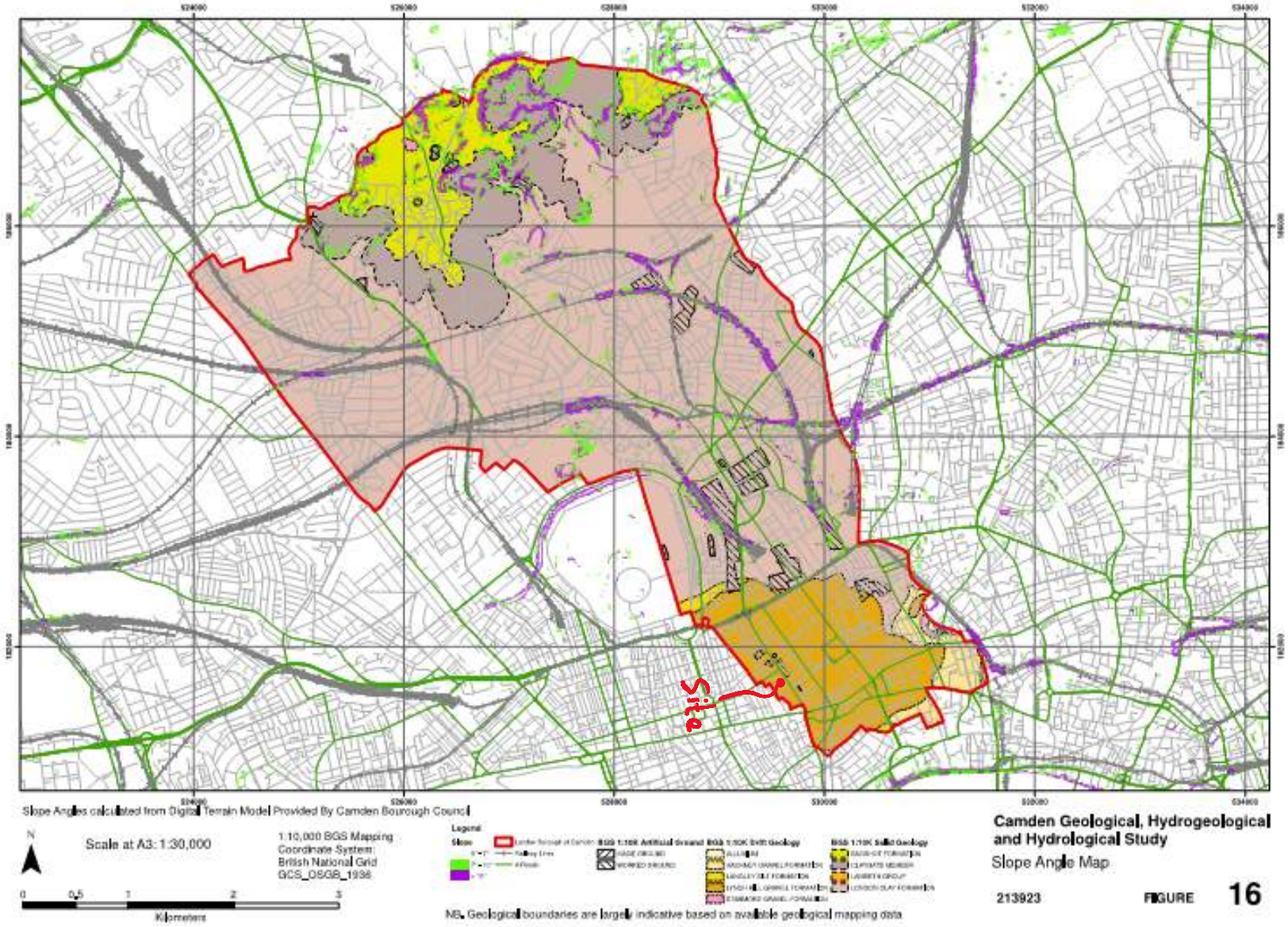
Scale No: S/5708

FIG. 2

GEORGE WIMPEY & CO. LTD. CENTRAL LABORATORY HAYES


TQ 28 SE
1043-1044
ALFRED MEWS
CHENIES
Works
ALFRED PLACE
Theatre
SCALA STREET
Garage
GOODGE STREET
Police Station
Car Park
Works
WINDMILL STREET
COLVILLE PLACE
Metropolis House
17

Appendix C [Camden Geological Hydrogeological and Hydrological Study-Figure 16]



Camden Geological, Hydrogeological and Hydrological Study

Slope Angle Map

213923

FIGURE 16