46 Inverness Street
London NW1

Basement Impact Assessment

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1.0 Non-Technical Summary

Stand Consulting Engineers were instructed by Purcell, on behalf of the client, to prepare a Basement Impact Assessment (BIA) for the proposed single-storey basement development at No. 46 Inverness Street, in the London Borough of Camden.

The BIA has been prepared by the following persons, holding the stated qualifications:

Stand Consulting Engineers:
Dimitrios Velesiotis MEng MSc
Stuart Tappin BSc MA MIStructE CEng
Robert Walton MEng MIStructE CEng

Southern Testing:
Thomas Lees MSci MSc CGeol
John Race MSc CGeol

This report has been prepared with reference to The London Borough of Camden's Planning Guidance (March 2018) and the Local Plan (A5 Basements, July 2017) to show that the key structural impacts of the proposals have been considered and the effects mitigated during the design.

No. 46 Inverness Street (the site) measures approximately 6 by 9 metres on plan. The southern boundary of the site is located adjacent to the pavement of Inverness Street (a public highway). The eastern boundary is against the boundary/ flank wall of No. 44 Inverness Street. The western boundary is against the side garden and porch of No. 24 Gloucester Crescent. The northern boundary is adjacent to the side wall of the main house and rear at of No. 24 Gloucester Crescent. Both No. 24 Gloucester Crescent and No. 44 Inverness Street are end-of-terrace houses and the 'gap' between them forms the site. The full extent of the site is occupied by a single storey building with load-bearing masonry walls on shallow footings and a timber flat roof.

The proposed development comprises the demolition of the existing single-storey building and construction of a new dwelling with a single-storey basement and two storeys above ground. The structure above ground will be built in load-bearing masonry cavity walls with timber floors and roof. The basement is to cover the entire footprint of the site and be built in reinforced concrete. A summary of the proposed development can be found in drawings SK 01 to SK 06, in Appendix C.

According to site investigations carried out by Chelmer Site Investigations in September 2014 (including 3 trial pits and 2 boreholes) the subsoil was found to be London Clay under a layer of made ground. The findings are in line with the British Geological Survey map which shows the area underlain by London Clay. An extract from the BGS map can be found in Appendix A, while the entire Chelmer report is also included in Appendix B. Groundwater was not found during the investigation works.

The proposed construction method includes traditional mass concrete underpinning under the boundary walls of neighbouring buildings in a 'hit-and-miss' sequence. The underpins will retain the soil and surcharge loads during the excavation and will be propped while the reinforced concrete basement 'box' is constructed in a "bottom-up" sequence. Drawing SK 7 in Appendix A presents an indicative sequence of the structural works.

In the permanent case the new reinforced concrete "box" to the basement will support all the lateral and vertical loads.

A movement monitoring strategy to control the works and the impact to neighbouring structures will comprise using targets attached to neighbouring buildings read from a stationary point. The existing adjacent buildings will be monitored for displacement in horizontal and vertical planes during and after completion of the works.

This BIA report has used the questions of the screening stage (re. surface water and groundwater, land stability, and surface flow and flooding) to identify the issues that need to be explored during the scoping stage and how these are addressed in the design. The conclusion is that the proposed development is not expected to lead to any adverse impacts to the neighbouring problems and the local environment.

2.0 Introduction

The purpose of this BIA is to consider the effects of the proposed single-storey basement development at 46 Inverness Street, NW1 7EG, London, on the local hydrology, geology and hydrogeology. The BIA will also consider the potential structural implications for neighbouring properties and the local environment.

2.1. Authors

The Basement Impact Assessment (BIA) has been written by Dimitrios Velesiotis (MEng, MSc), and reviewed and approved by Stuart Tappin (BSc, MA, MIStructE, CEng), director of Stand Consulting Engineers, and Robert Walton (MEng, MIStructE, Ceng), senior structural engineer. The Stage 1, 2 and 4 reports by Southern Testing have been written by Thomas Lees (MSci, MSc, CGeol), and reviewed and approved by David Vooght (MSc), Jon Race (MSc, CGeol), and Morris Stevenson (MICE).

2.2. Sources of Information

The following documents have been referenced as part of the preparation of this BIA. Relevant extracts of the following are included within the appendices:

- Site visit and discussion with client and architect (4 October 2017, and 27 June 2018)
- Historical maps (1875 and 1916 ordnance Survey maps of the area)
- Geological maps (extract from British Geological Survey maps)
- London Borough of Camden, Camden Geological, Hydrogeological and Hydrological Study (GHHS) - Guidance for Subterranean Development (produced by Arup 2010)

- London Borough of Camden Strategic Flood Risk Assessment (produced by URS July 2014)
- London Borough of Camden, Local Plan Policy A5 Basements (2017)
- London Borough of Camden, Planning Guidance (CPG) - Basements (March 2018)
- The Lost Rivers of London, by Nicholas Barton (1992)
- The London County Council - Bomb Damage Maps 1939-1945 (2005)
- Transport for London Property Asset Register (website)

2.3. Existing Site

The site is located on Inverness Street, in the London Borough of Camden. The site slopes down towards the north-east at a shallow gradient (between 0^{o} and 7^{o}, according to Illustration 4, Appendix A). The site is not within a wider hillside setting.

The current structure comprises a single-storey building with load-bearing brickwork walls, concrete ground-bearing slab, and a timber flat roof. The walls of the building are founded on corbelled brickwork footings onto London Clay. The condition of the existing building is generally poor, and has been unoccupied for a long period of time.

Adjacent buildings are No. 44 Inverness Street to the east, and No. 24 Gloucester Crescent to the north-west. No. 44 Inverness Street is a mid-19th century, end of terrace 4-storey building (including a lower ground floor). Its structure is typical for the age of the building and consists of masonry load-bearing walls and timber floors and roof. The other properties in the terrace are of a similar construction. No.24 Gloucester Crescent is a mid-19^{th} century end of terrace, 5-storey building (including a lower ground floor). The building is located at the corner of Inverness Street and Gloucester Crescent and has a two-storey side porch to the south. No. 24 comprises load-bearing masonry walls and timber floors and roof. The building has a two-storey annexe to the rear. The above buildings are all listed Grade II.

The Northern Line underground tunnel is located approximately 170-180m to the north-east. The Overground and National Rail track infrastructure from Euston Station is located in a distance of approximately 170m to the south-west. The Regent's Canal is located to the north at 190m distance (refer to Illustration 7, Appendix A).

2.4. Proposed Development

The proposed development is to comprise a new reinforced concrete basement ‘box’ with a two-storey building above. The above ground structure is to comprise load-bearing masonry cavity walls and timber floors and roof. Structural drawings are presented in Appendix C. These include plans and sections through the proposed basement development and new building.

The construction of the proposed development is to broadly follow the sequence set out in this paragraph: The existing single-storey building on site will initially be demolished. New retaining walls to the ‘open’ sides of the site and the underpinning under the existing boundary walls of No. 24 Gloucester Crescent will then be carried out in a hit-and-miss sequence. Propping and temporary works will be utilised to

mitigate ground movements as a result of the excavations. The site will then be excavated to full-depth and the new RC ‘box’ formed in a ‘bottom-up’ sequence.

Drawing SK 7 showing an indicative sequence of the construction and is included in Appendix C. The construction sequence is explained in more detail in Section 7.2.

3.0 Desk Study

3.1. Site History

Based on historic Ordnance Survey maps, the site appears to have been occupied by the current single-storey building since before 1870. Previous uses of the building include a music store and a restaurant. The site does not appear to have worked (for brick earth, etc.) or have a layer of deep made ground, as shown in Illustration 4, Appendix A.

According to the Bomb Damage Atlas of the area (Illustration 10, Appendix A), No. 46, and the adjacent buildings suffered minor blast damage, during World War II (highlighted in yellow on the map).

3.2. Geology

The British Geological Survey (BGS) map of the area shows the site underlain by the London Clay Formation. Two boreholes on site, carried out by Chelmer in 2014, confirmed this and found the made ground to a maximum depth of 1.8m over the London Clay. Groundwater was not encountered during the investigations. However there is likely to be a small amount of perched water on the London Clay.

An extract from the BGS map of the area (from the British Geological Survey website) is presented in Appendix A. Relevant site investigation data from the Chelmer Site Investigations' report is presented in Appendix B.

3.3. Hydrogeology

According to Illustration 5, Appendix A, the ground underlying the site is classified as unproductive strata. However, there is a possibility of perched water on top of the layer of clay. The flow of the perched water is expected to roughly follow the slope of the site towards the north-east. The footings of the existing building bear onto the London Clay, and act locally as a barrier for perched water flow from Gloucester Crescent.

The London Borough of Camden data indicate that the site is not within a groundwater source protection zone. The outer source protection zone north of Regent's Park to the west, is at a distance of approximately 1km from the site.

3.4. Hydrology, Drainage and Flood Risk

The site is located within 190m from Camden Lock, part of Regent's Canal, to the north. There are no natural watercourses nearby. The site is in the middle of the zone defined by river Fleet to the east (a culverted watercourse) and the system of ponds and streams in Regent's Park to the west. The site is situated in the southern part of the Borough, and is not within the catchment area of the Hampstead Heath Pond Chain, which is approximately 2.3km to the north, north-west.

As noted on section 2.3, the site is currently occupied by a single-storey building. The proposed scheme is to have the same footprint. Therefore there will be no changes in the area of impermeable surface on the site. As a result, the proposed development will not result in an increase to the surface water run-off from the site. Drainage for the new building is to utilise the existing connection from the site to the sewer under Inverness Street.

Inverness Street and Gloucester Crescent were not flooded during 2002 or 1975 and are not within an area at risk of surface flooding. According to the LB of Camden Strategic Flood Risk Assessment by URS, and based on the Map of Critical Drainage Areas and Local Flood Risk Zones (Illustration 9, Appendix A), the site is not within a flood risk zone. Based on Figure 3 vii from the same report (Illustration 8, Appendix A), the area is at low risk for a 1 in 100 years flooding event. The risk from sewer flooding is also low.

According to the Camden Flood Risk Management Strategy, the Borough is subdivided in three zones. No. 46 is located in Camden South. Camden South has a lower risk level than the north of the borough. Inverness Street is not located within a flood risk area. One of the maps in the Camden Flood Risk Management Strategy (Figure 4e) also presents the areas at risk from groundwater flooding. The site is not within a zone at risk from groundwater flooding.

4.0 Screening

The following tables are used in the screening stage to assess the existing site conditions and understand what impacts the proposed development might have to the environment and adjacent buildings. The issues which are addressed in this section are ‘surface water’, ‘groundwater’, ‘flooding’, and ‘slope stability’. The answer to each question can be Yes, No, or Unknown. The questions which have been kept in this section are the ones which received a ‘Yes’ respond. The questions which received a ‘No’ respond can be found in Appendix D. Southern Testing information from the Screening and Scoping stages can be found in Appendix B.

4.1. Slope Stability

Question	Response	Details
5. Is the London Clay the shallowest strata at the site?	Yes	London Clay was found to be the shallowest strata on the site. Both the trial pits and boreholes carried out by Chelmer

		encountered London Clay below the made ground. Site investigation results can be found in Appendix B.
12. Is the site within 5m of a highway or pedestrian right of way?	Yes	The southern boundary of the site is along the pavement to Inverness Street, a public highway. Drawings in Appendix C.
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes	The proposed basement development will change the depth of the foundations in relation to the existing footings of neighbouring buildings. Refer to section drawings in Appendix C.

4.2. Non-technical Summary of Screening Process

The screening process identified the following issues to be carried forward to scoping for further assessment:

- London Clay is the shallowest strata at the site
- The site is within 5m of a highway or pedestrian right of way
- The proposed basement development will increase the differential depth of foundations relative to existing footings of neighbouring properties

The other potential concerns considered within the screening process have been demonstrated to be not applicable or not significant when applied to the proposed development.

5.0 Scoping

5.1. London Clay

The ground conditions on the site comprise made ground over London Clay. The top of the London Clay was found to be at a depth of approximately 0.8-1.8m under ground level, according to Boreholes 1 and 2 carried out by Chelmer in September 2014. No groundwater was encountered during the site investigation works.

As noted in section 3.2, the results of the site investigation by Chelmer found the site to be underlain by London Clay, confirming the information from the British Geological Survey. The excavation for the construction of the reinforced concrete basement will lead to the excavation of approximately 2m of the London Clay over the entire footprint of the site.

When removing load from clay, the clay will tend to heave which can lead to vertical movements/ displacements to the structures adjacent. The weight of the proposed building at No. 46 will be greater than the existing load on top of the London Clay (at a depth of approximately 3m below ground). Therefore, long-term heave is not expected as a result of the development.

The resulting ground movement issues are addressed in the Basement Impact Assessment section, based on the Ground Movement Assessment by Southern Testing.

Clay will tend to undergo seasonal swelling or shrinking as a result of adjacent trees. Trees in close proximity to buildings can absorb moisture from the subsoil causing the clay to shrink. This can lead to ground movement and structural damage. As there are no trees in the vicinity of No. 46 Inverness Street, these seasonal effects will not be an issue.

Clay is a type of soil known for its impermeability, so any groundwater will be perched water at the top of the clay and the bottom of the layer of made ground. As explained earlier in section 3.3, the profile of groundwater inflows to neighbouring properties is not expected to change.

5.2. Site within 5m of Pedestrian Right of Way

The southern boundary of the site is directly adjacent to the pavement of Inverness Street. An indicative construction sequence drawings included in Appendix C shows the temporary works that will need to be installed to mitigate the risk of construction activities conflicting with the public realm. Any services routes under the pavement will need to be confirmed by the contractor prior to undertaking any works to mitigate the risk of damage. The final construction sequence will be produced by the Contractor.

5.3. Change in Foundation Depths

The proposed basement development will be founded lower than the existing footings of neighbouring properties, thus increasing their relative depth.

Site investigations were carried out by Chelmer in September 2014 and included three trial pits and two boreholes. The trial pits revealed the foundation details to the footings of No. 24 Gloucester Crescent. The foundation details to the western flank wall of No. 46 Inverness Street were not confirmed. A trial pit carried out to a depth of 2.5m failed to confirm the underside of the footings. However, the footing is anticipated to be founded just below the lower ground floor slab (2.8-3.0m below ground).

Trial Pit 1 carried out by Chelmer is September 2014 revealed brick corbelled footing to the southern flank wall of No. 24. The total depth of the footing was approximately 1200mm, and the width of the corbel approximately 180mm. The full findings of the site investigation by Chelmer can be found in Appendix B.

Prior to constructing the reinforced concrete basement 'box', the walls to No. 24 Gloucester Crescent adjacent to the site will be underpinned to lower the foundation level. Underpinning the boundary wall of No. 44 Inverness Street can potentially be avoided depending on the level of the footing. The corner of the RC basement could be chamfered along the line of that wall to avoid underpinning No. 44. However, this detail will need to be confirmed prior to the start of works.

Underpinning is a well-established practice for lowering the foundation level of existing masonry walls. It is carried out in ‘hit-and-miss’ sequence, in lengths of approximately 1-1.2m, and with no adjacent pins excavated and cast in at the same time. The width of the base of the underpins is to match the width of the original corbelled footings. This mitigates any increases to the bearing pressure at the base of the wall, and therefore the risk of movement. The quality of underpinning is linked with the performance of the

contractor; as a result, it is important that such works be undertaken by a contractor with a proven record of projects dealing with underpinning and basement constructions near existing buildings.

Following the underpinning, the new foundation level of the boundary walls of the neighbouring buildings will be lower than the base of the bottom RC slab of the basement structure. Therefore, they will not be affected by the excavations for the basement 'box'. Having the two structures bearing at the same depth reduces potential differential movement issues. There will be compressible material between the underside of the edge around the bottom slab of the reinforced concrete ‘box’ and the top of the toe of the concrete underpins. This will avoid surcharge from the new basement structure acting on the toe of the mass concrete underpinning.

The development proposals are suitable to maintain stability of the adjacent structures. In order to demonstrate this, a site specific ground investigation, presented in Section 6, and a ground movement assessment in Section 7 have been undertaken by Southern Testing. A strategy to monitor any movements during construction is also discussed in Section 7. Drawing SK 7 showing an indicative proposed sequence for the construction works is included in Appendix C, as part of the set of structural drawings for the new development.

6.0 Site Investigation/ Additional Assessments

Site investigation works were carried out by Chelmer in September 2014, at No. 46 Inverness Street. Their findings were issued in the Factual and Chemical Interpretive Reports, issued in October and November 2014 respectively.

Stage 1 and 2 (BIA) report was issued by Southern Testing on 11 July 2018. This made use of information from the SI report by Chelmer. The Stage 4 (BIA) report comprised the ground movement assessment for the proposed development using information from Chelmer’s reports and loadings provided by Stand Engineers.

All aforementioned reports can be found in Appendix B.

7.0 Construction Methodology/ Engineering Statements

7.1. Outline Geotechnical Design Parameters

For information on the outline geotechnical design parameters, refer to the Chelmer and Southern Testing reports in Appendix B.

7.2. Outline Temporary and Permanent Works Proposals

The work proposals mainly include the construction of a reinforced concrete ‘box’ to form the basement of No. 46 Inverness Street. The sequence of works is broadly outlined and explained in drawing SK 7. This

summarises the stages that the structural works should follow, using Section A-A' (SK 5) as the base drawing.

The reinforced concrete retaining wall along the pavement of Inverness Street is to be formed in a hit-and-miss sequence in short lengths of 1m up to 1.2m, cast with a toe at the level of the new basement slab. The wall along the boundary with the rear garden of No. 24 Gloucester Crescent will be constructed in a similar manner. The flank walls of No. 24 and the back wall of the side porch will be underpinned in a hit-and-miss sequence as noted previously. Underpinning the flank wall of No. 44 Inverness Street could potentially be avoided by chamfering the edge of the RC basement slab along that boundary depending on the level of the footing.

During the underpinning, adequate temporary shoring will be installed in each pit as they are excavated. Stiff horizontal props will be used to further mitigate the risk of ground movements. A covered walkway will be formed at the pavement in front of the site during the works to allow the removal of spoil without creating safety hazards for pedestrians.

Following the underpinning stage and the construction of the retaining walls, the next stage will be the full-depth excavation of the site with the installation of shoring and props in both directions. The reinforced concrete box can then be completed, starting from casting the basement slab doweled to the 'toes', and moving up to the walls and the ground floor slab. Once the RC 'box' is complete, the temporary props can be removed.

Groundwater was not encountered on site during the investigation works or subsequent monitoring. However, an allowance will be made for dewatering to keep excavations dry in case perched water on the top of the clay layer is encountered.

7.3. Ground Movement and Damage Impact Assessment

A ground movement assessment (GMA) has been carried out by Southern Testing. This has been carried out in accordance with CIRIA C760 (''Guidance on Embedded Retaining Wall Design''). This takes into account the site specific ground conditions as explained in Chelmer Factual Report, and the construction methodology, detailed above in paragraph 7.2.

The structures within the zone of influence of the proposed development have been assessed to be No. 44 Inverness Street and No. 24 Gloucester Crescent. The foundation depths used were based on information from the Chelmer reports prepared in October and November 2014 and a worst case estimate for No. 44. The foundation details of the flank wall of No. 44, as mentioned earlier, will need to be confirmed at the start of the works.

The theoretical short and long-term vertical displacements (settlement and heave) were calculated by Southern Testing. The assumptions made for the assessments are likely to be over conservative as the structures are considered to be fully flexible which will not be the case as they will have a degree of rigidity. The soil behaviour has been considered linear elastic which is also conservative, as soils tend to

have a degree of plasticity which means that the soil has additional strength. This will result in the predicted movement being higher than what will actually be experienced. The results of the Ground Movement and Damage Impact Assessment by Southern Testing can be found in Appendix B.

In accordance with the Burland Scale, the potential damage impacts were calculated as maximum category 1 (very slight) for No. 24 Gloucester Crescent and No. 44 Inverness Street. Camden require that damage to neighbouring properties should not exceed Burland Scale Category 1 (Very Slight), according to Policy A5 Basements. The assessment meets these requirements. The full Stage 4 (Ground Movement Analysis) Report by Southern Testing can be found in Appendix B.

7.4. Control of Construction Works

Existing buildings will be monitored by a specialist surveyor during and after completion of the structural works for horizontal and vertical displacements. Monitoring will be achieved by using attached targets fixed to neighbouring buildings and read from a fixed stationary point remote from the site. Selection of appropriate locations will be carefully considered to ensure that the view to the targets remains unobstructed during the construction works.

The reported monitoring readings will be presented in graph form showing vertical and horizontal movement in relation with time. The frequency of readings shall be weekly during the main construction phases (e.g. underpinning, excavation, and casting of the reinforced concrete basement ‘box’). Following the construction stage, monitoring should be carried out monthly for 3 months.

The trigger values will be established based on the predicted movements and agreed with the party wall surveyor. A "traffic light" warning system will be decided, so that the Contract Administrator, Contractor, and Structural Engineer may be alerted when recorded movement approaches trigger levels. Should recorded movement reach the amber level, further excavation should cease until the following points have been addressed:

- The frequency of monitoring is to increase to daily recordings to predict the rate of movement, and whether the movement is expected to exceed the upper limit of the amber zone
- A strategy to minimise further movement is to be agreed

8.0 Impact Assessment

This section carries forward outstanding items from the screening and scoping stages to be further discussed. The proven ground conditions comprise London Clay under a layer of made ground. Groundwater was not encountered during the investigations or the monitoring visits. The site slopes down to the north-east, so we can consider that perched water flows on top of the clay layer will tend to flow in that direction.

The existing building is founded into the London Clay on footings of varying depths, up to 1.3m deep. The proposed basement will be founded at a depth of approximately 3m below ground level. The foundations to the flank wall of No. 44 Inverness Street were not confirmed during the trial pit

investigations, while the footings of the flank wall of No. 24 Gloucester Crescent were found to be 1.2m and of the back wall of the side porch 1.3m deep.

8.1. Land Stability/ Slope Stability

The site investigation identified a suitable founding stratum of London Clay under the made ground. The risk of movement and damage to this development is minor. The total weight of the proposed development is expected to be greater than the generated heave from excavating 3m of clay and made ground. Uplift is therefore not expected.

A Ground Movement Assessment carried out by Southern Testing has concluded that the Damage Impact to surrounding structures within the zone of influence has been assessed as maximum Category 1 (Very Slight), in accordance with the Burland Scale, fulfilling thus the requirements by Policy A5 Basements.

This BIA has therefore concluded that there will be no risks of stability impacts to the development or existing adjacent buildings due to the slopes on site or the proposed works.

8.2. Hydrogeology and Groundwater Flooding

In the existing and the proposed case, the structure bears on the clay forming a cut-off for water flow. The proposed structure is not expected to change the direction of flow of potential perched water on top of the clay. Therefore, the local hydrogeological environment will be unchanged. Drawing SK 8 illustrating that can be found in Appendix C. The BIA has concluded that there is a low risk of groundwater flooding on site. That is based on reviewing readily available sources extracts of which can be found in Appendix A. For additional information refer to Stage 1 and 2 report by Southern Testing issued in July 2018.

8.3. Hydrology, Surface Water Flooding and Sewer Flooding

Based on desk study of readily available information, the BIA has concluded there is a low risk of surface water and sewer flooding on site, and that the wider hydrological environment is unchanged. Stage 1 and 2 report by Southern Testing should be consulted for additional information.

Appendix A

Desk Study References

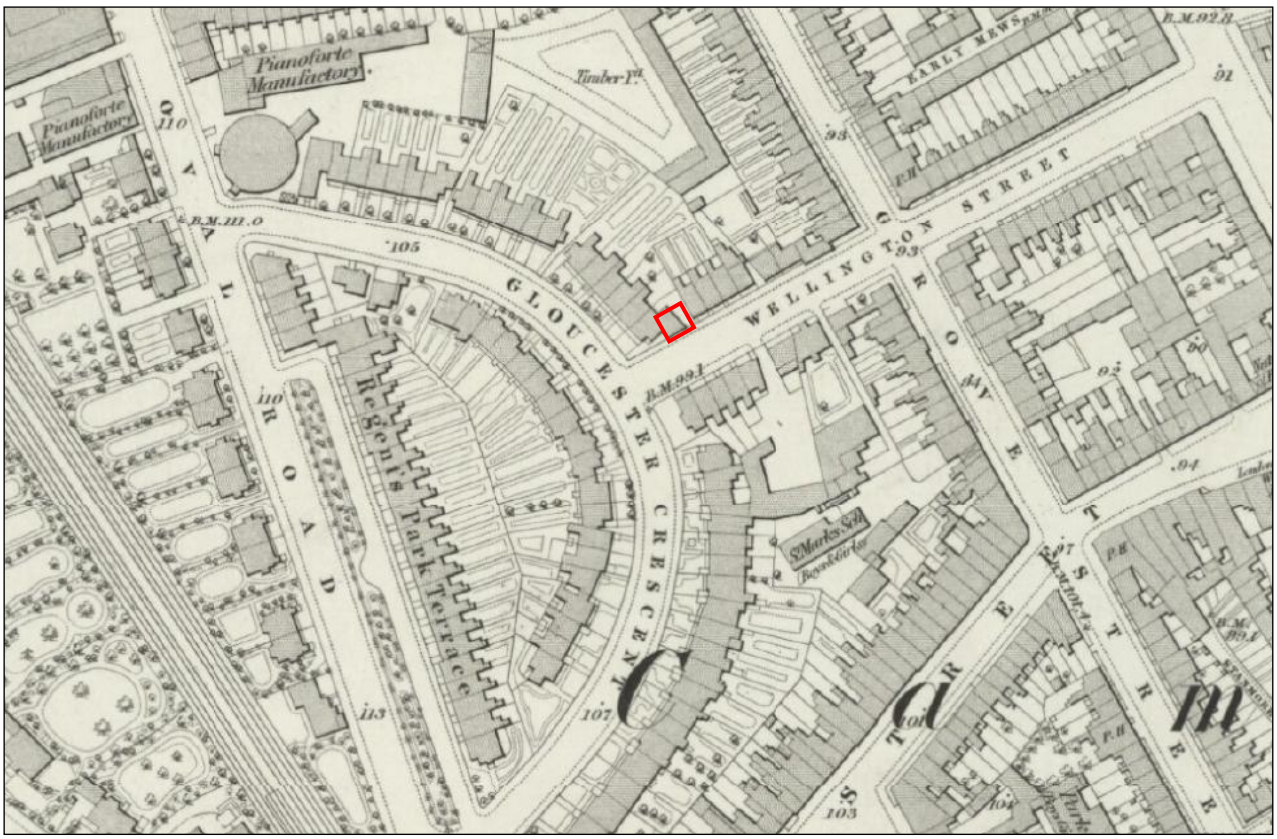

Illustration 1 - 1875 Ordnance Survey map

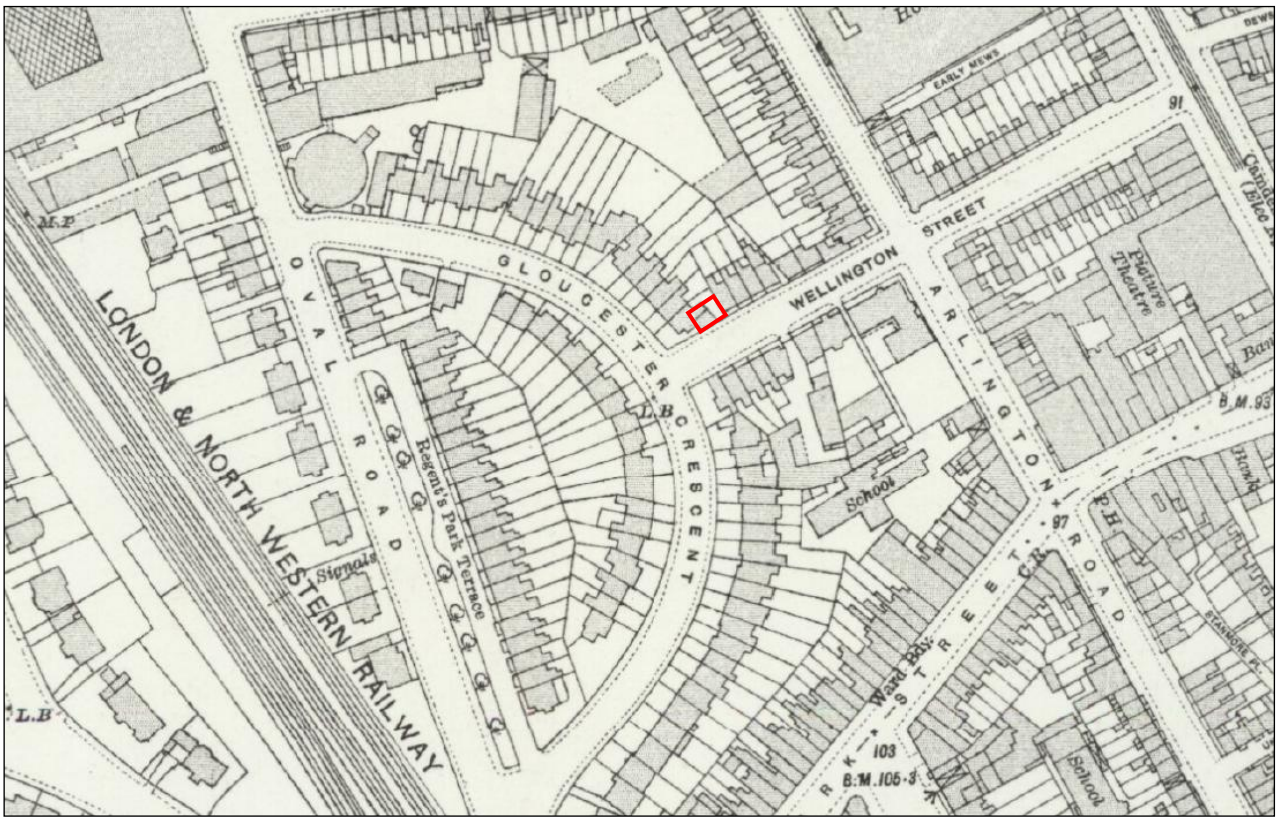

Illustration 2 - 1916 Ordnance Survey map

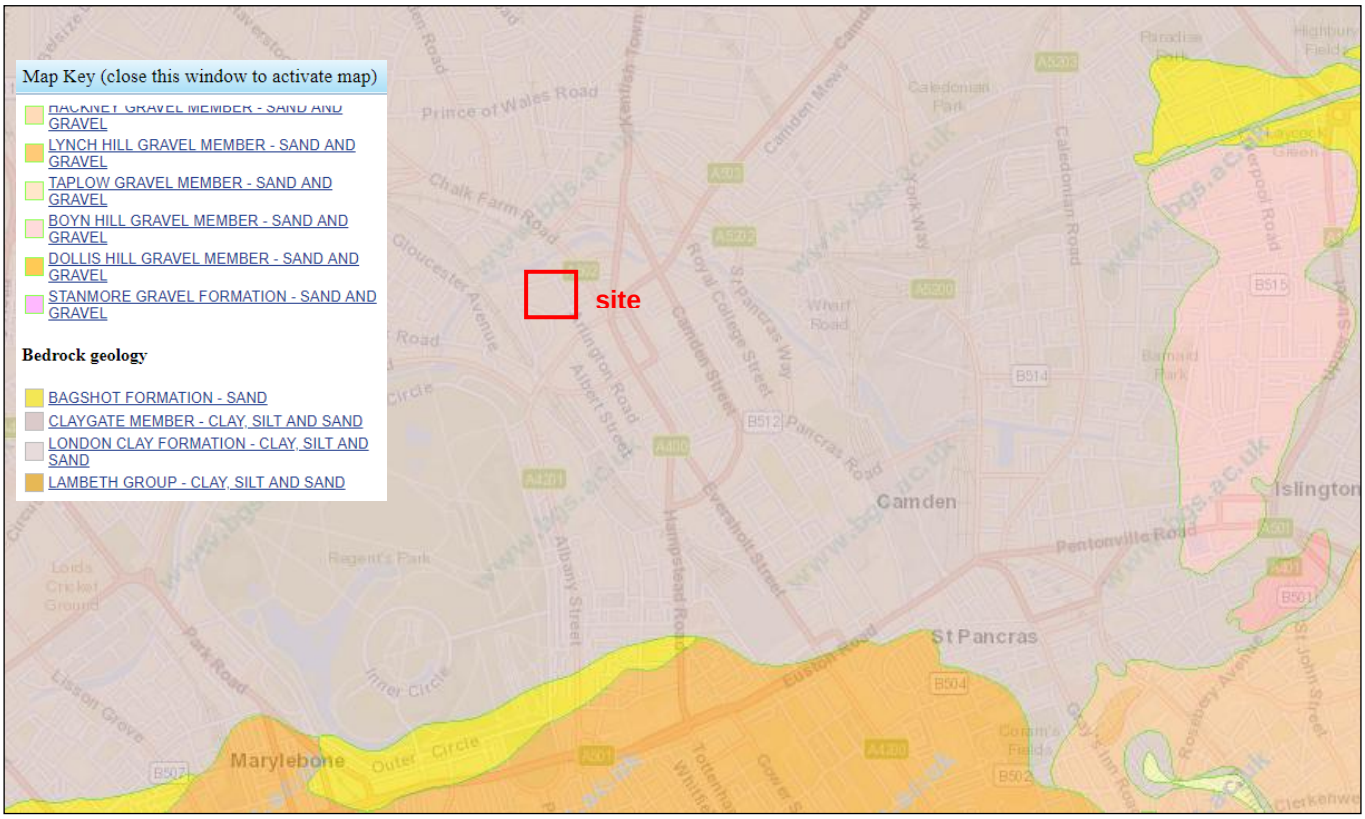

Illustration 3 - Extract from British Geological Survey maps

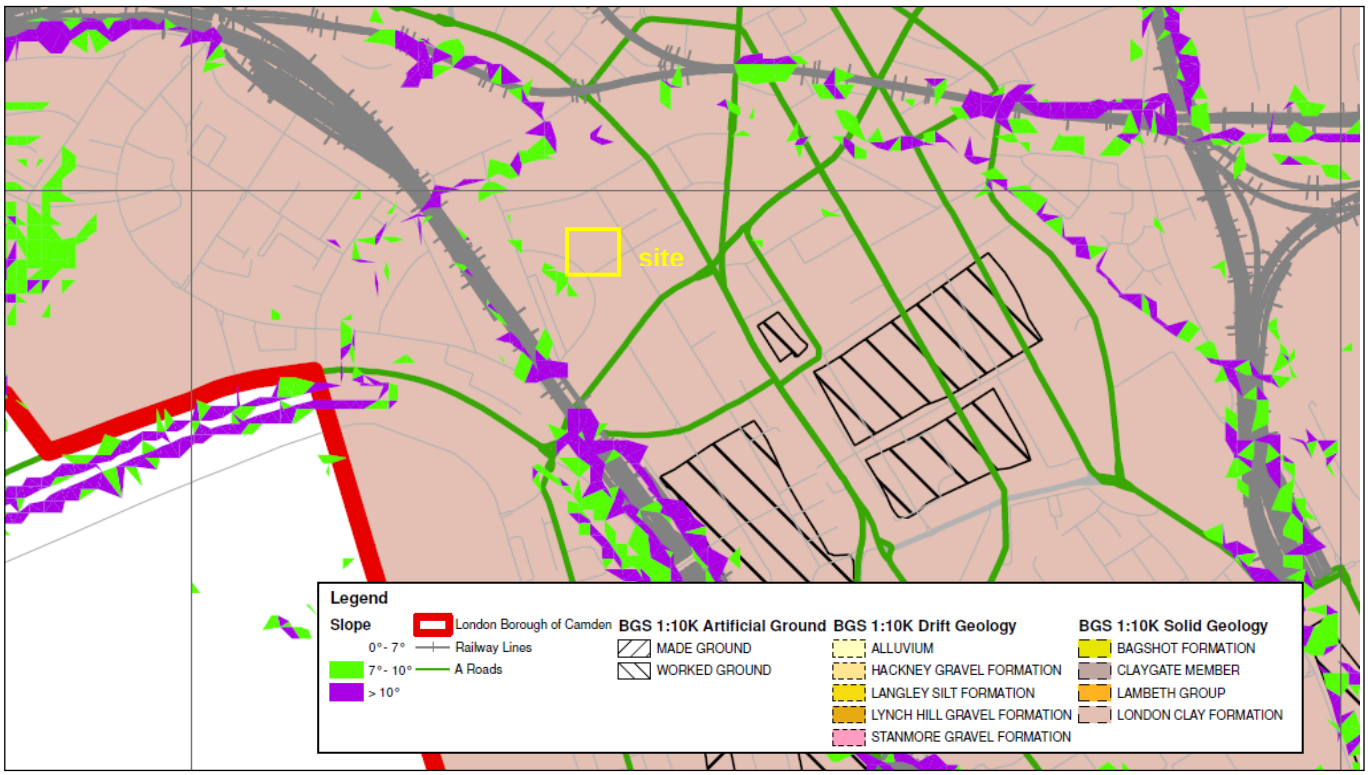

Illustration 4 - Extract from Slope Angle and Worked Ground Map of Camden (GHHS, Figure 16)

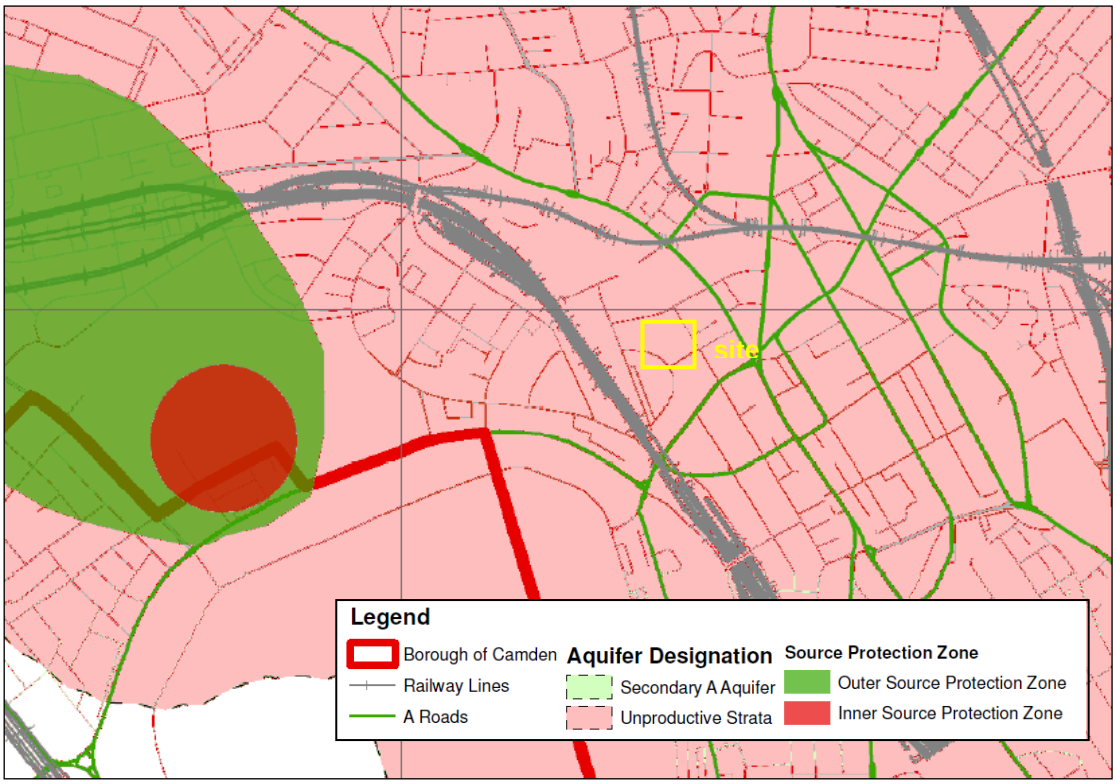

Illustration 5 - Extract from Camden Aquifer Designation Map (GHHS, Figure 8)

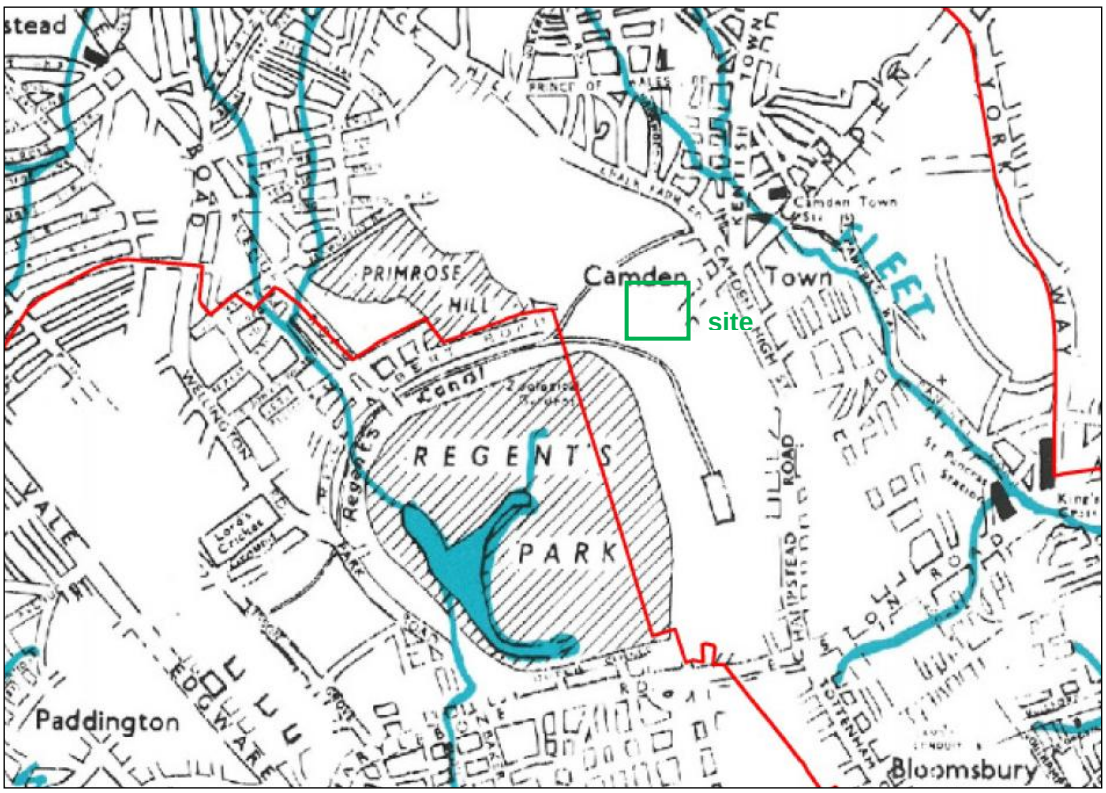

Illustration 6 - Extract from Map of Watercourses in LB of Camden (GHHS, Figure 11) (Originally from the book *"The Lost Rivers of London"*, by N. Barton)

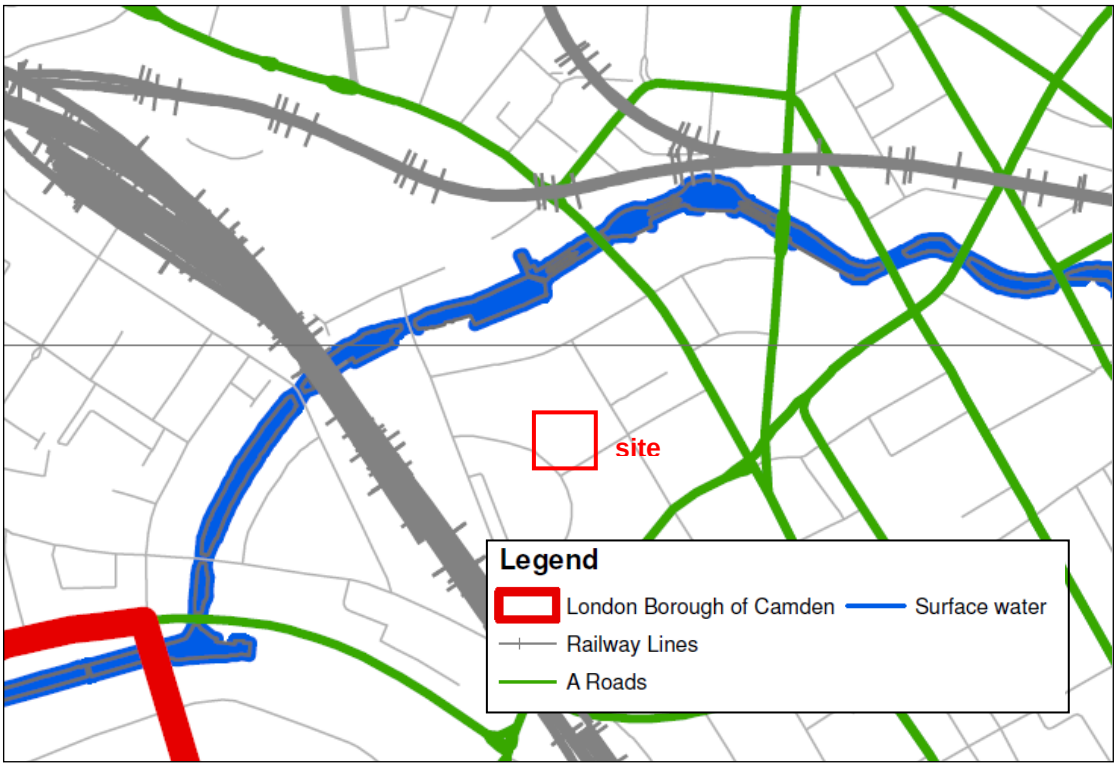

Illustration 7 - Extract from Map of Surface Water Features of Camden (GHHS, Figure 12)

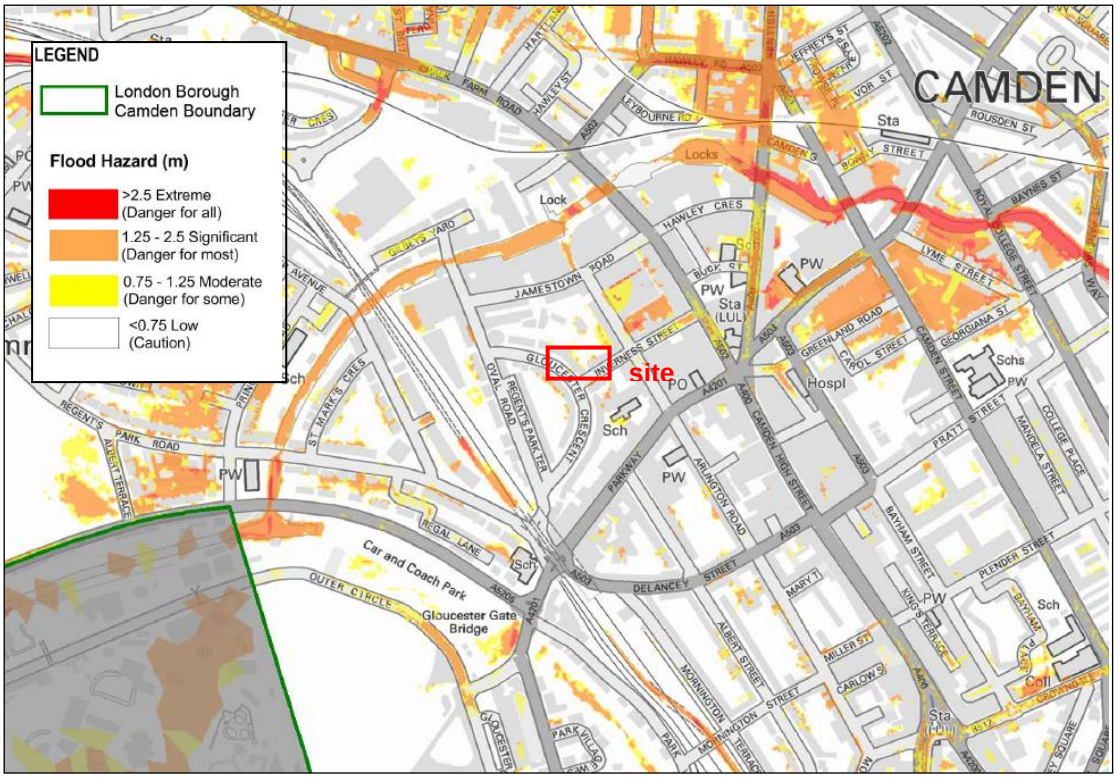

Illustration 8 - Extract from Figure 3 vii, London Borough of Camden Strategic Flood Risk Assessment (flood hazard for 1 in 100 years flood event)

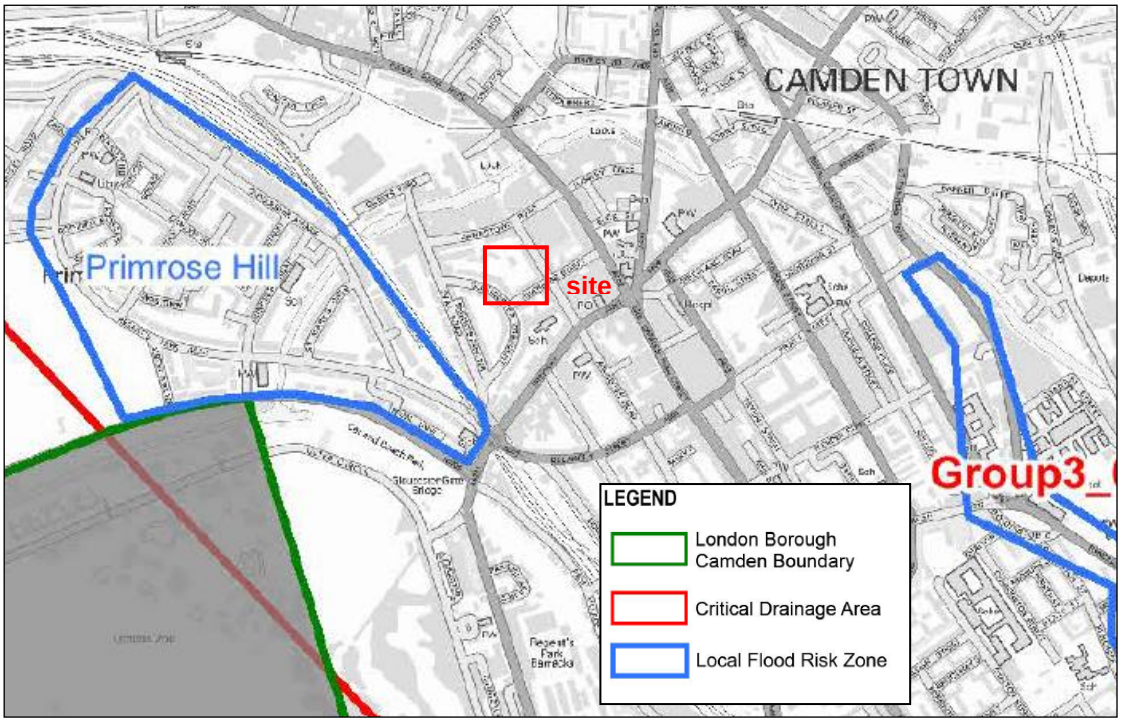

Illustration 9 - Extract from Figure 6, London Borough of Camden Strategic Flood Risk Assessment (critical drainage areas and local flood risk zones)

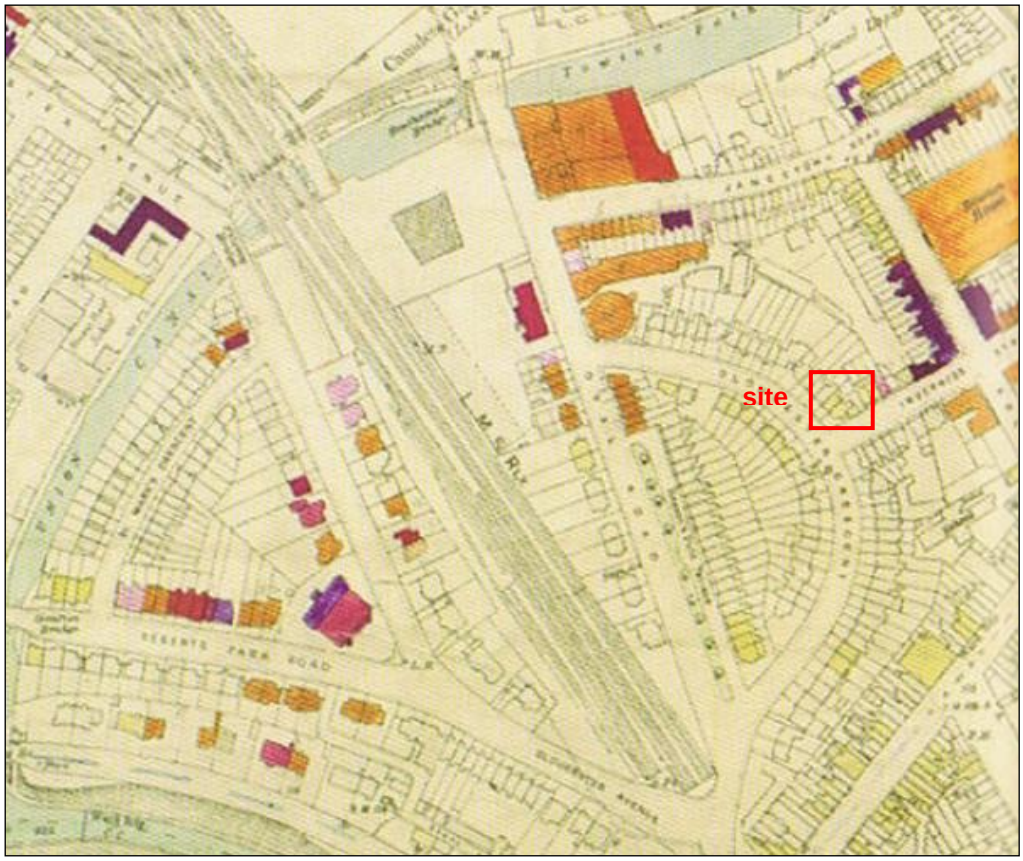

Illustration 10 - Extract from Map 38, Bomb Damage Atlas

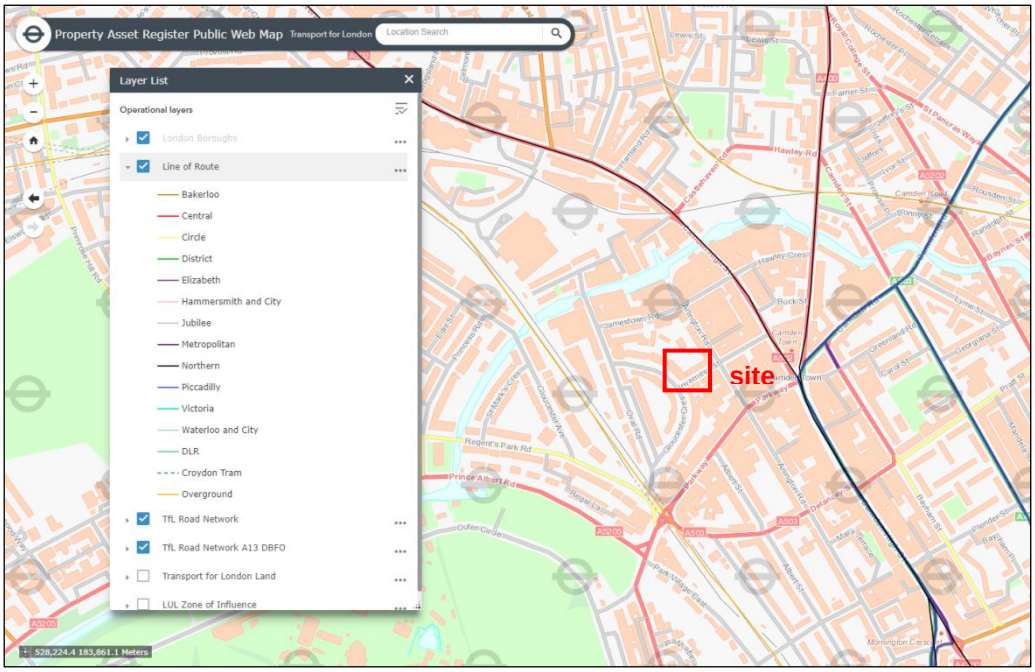

Illustration 11 - Transport for London Property Asset Register

Appendix B

Site Investigation Data, Ground Movement & Damage Impact Assessment

Appendix C

Structural Drawings

N

OUTLINE OF No24 GLOUCESTER CRESENT

NEW RETAINING WALLS TO BE CAST IN A HIT & MISS JEQUENCE REFER TO SK FOR DETAILS

MOVEMENT JOINT TO BE FORMED BETWEEN EXISTING WALL & NEW BASEMENT

APPROX 300MM THICK RC RETAINING WALLS TO FORM NEW BASEMENT

NEW MASS CONCRETE UNDERPINS TO No. 24 GLOUCESTER CRESENT, TO BE CAST IN A HIT & MISS SEQUENCE. NOTE: PROJECTING TOE TO BE CAST ON PINS SO WIDTH MATCHES EXISTING FOOTINGS. SEE SK5 FOR DETAILS

A SK5

B SK6

NEW 300MM THK RC SLAB TO ACT AS RAFT FOUNDATION SSL: TBC

LOWER GROUND FLOOR

MOVEMENT JOINT TO BE FORMED BETWEEN UNDERPINS & NEW BASEMENT

LIGHT WELL

LIGHTWELL

LIGHT -WELL

No. 24 GLOUCESTER CRESENT

No. 46 INVERNESS STREET

No. 44 INVERNESS STREET

key

NEW MASS CONCRETE UNDERPIN

NEW REINFOLCED CONCRETE WALLS

EXISTING LOAD BEARING MASONRY

NEW LOAD BEARING CAVITY WALL

REV	DESCRIPTION	DATE	BY	AUTH

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PROJECT	TITLE
No. 46 INVERNESS ST	PROPOSED STRUCTURE BASEMENT PLAN.

DATE	DRAWN	AUTHORISED	PROJECT NO.	DRAWING NO.	SCALE @ A3	REV
JAN 18	DV	ST	619	SK1	1:50	

N

TWO STOREY EXTENSION TO No. 24 GLOUCESTER CRESCENT

SITE BOUNDARY NOTED THUS — .. —

SINGLE STOREY SIDE PORCH TO No. 24 GLOUCESTER CRESCENT LOCATION OF OPENING TO MAIN BUILDING UNKNOWN.

A SK5

B SK6

NOTE: ABOVE GROUND STRUCTURE OMITTED FROM PLANS FOR CLARITY FOR THE BIA SUBMISSION

PREFABRICATED STAIR TO BE LOCATED IN CIRCULAR VOID IN SLAB.

MOVEMENT JOINT BETWEEN NEW & EXISTING STRUCTURES

GROUND FLOOR

NEW 300mm THICK RC SLAB, ACTS AS PROP TO RC RETAINING WALLS

B SK6

A SK5

PAVEMENT

No. 24 GLOUCESTER CRESCENT

No. 46 INVERNESS STREET

No. 44 INVERNESS STREET.

REV	DESCRIPTION	DATE	BY	AUTH

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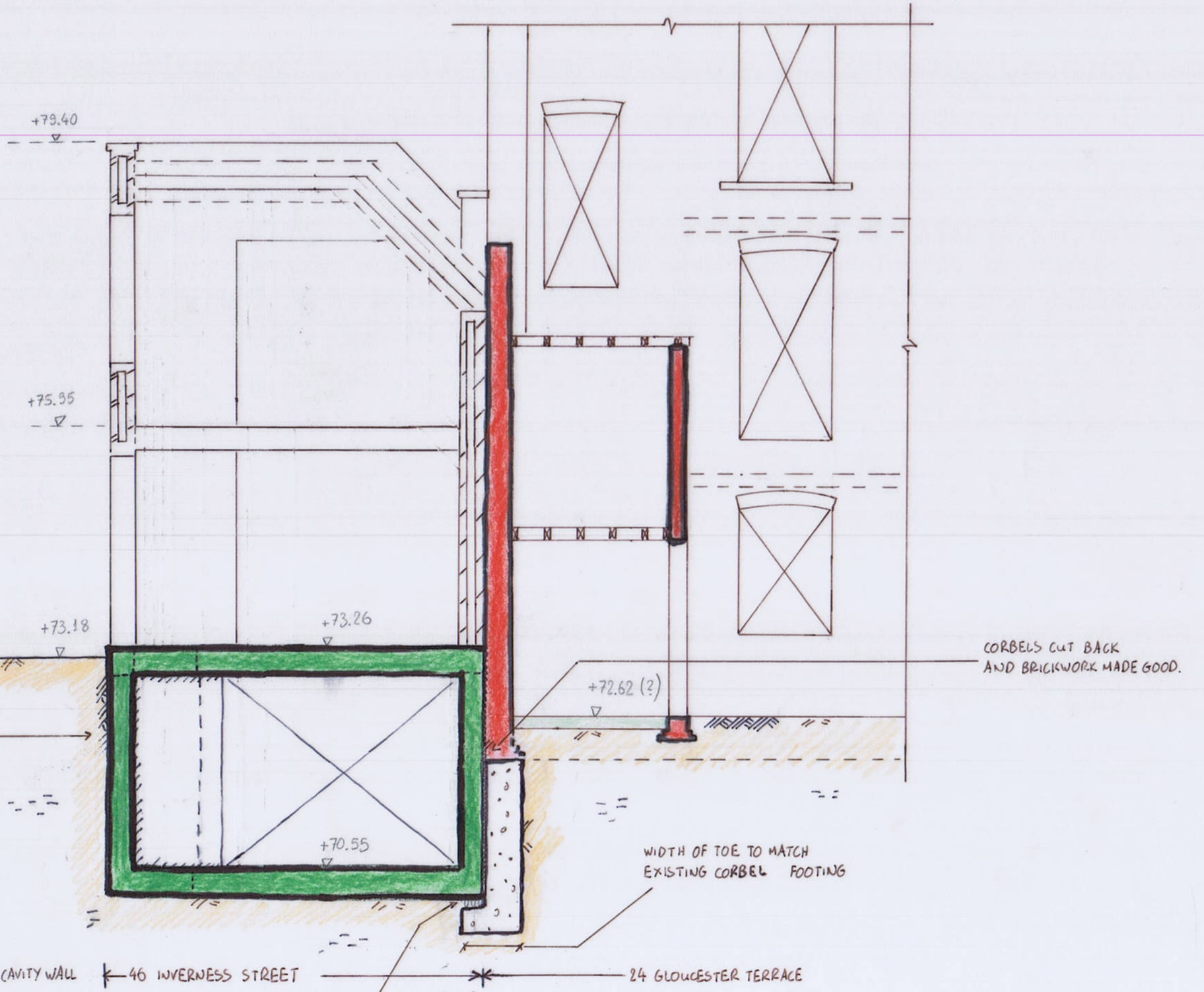
PROJECT	TITLE
No. 46 INVERNESS ST	PROPOSED STRUCTURE GROUND FLOOR PLAN.

DATE	DRAWN	AUTHORISED	PROJECT NO.	DRAWING NO.	SCALE @ A3	REV
JAN'18	DV	ST	619	SK2	1:50	



REV	DESCRIPTION	DATE	BY	AUTH
P2	UPDATED AND REISSUED FOR INFORMATION	29.6.18	DV	ST
P1	ISSUED FOR COMMENTS	31.1.18	DV	ST

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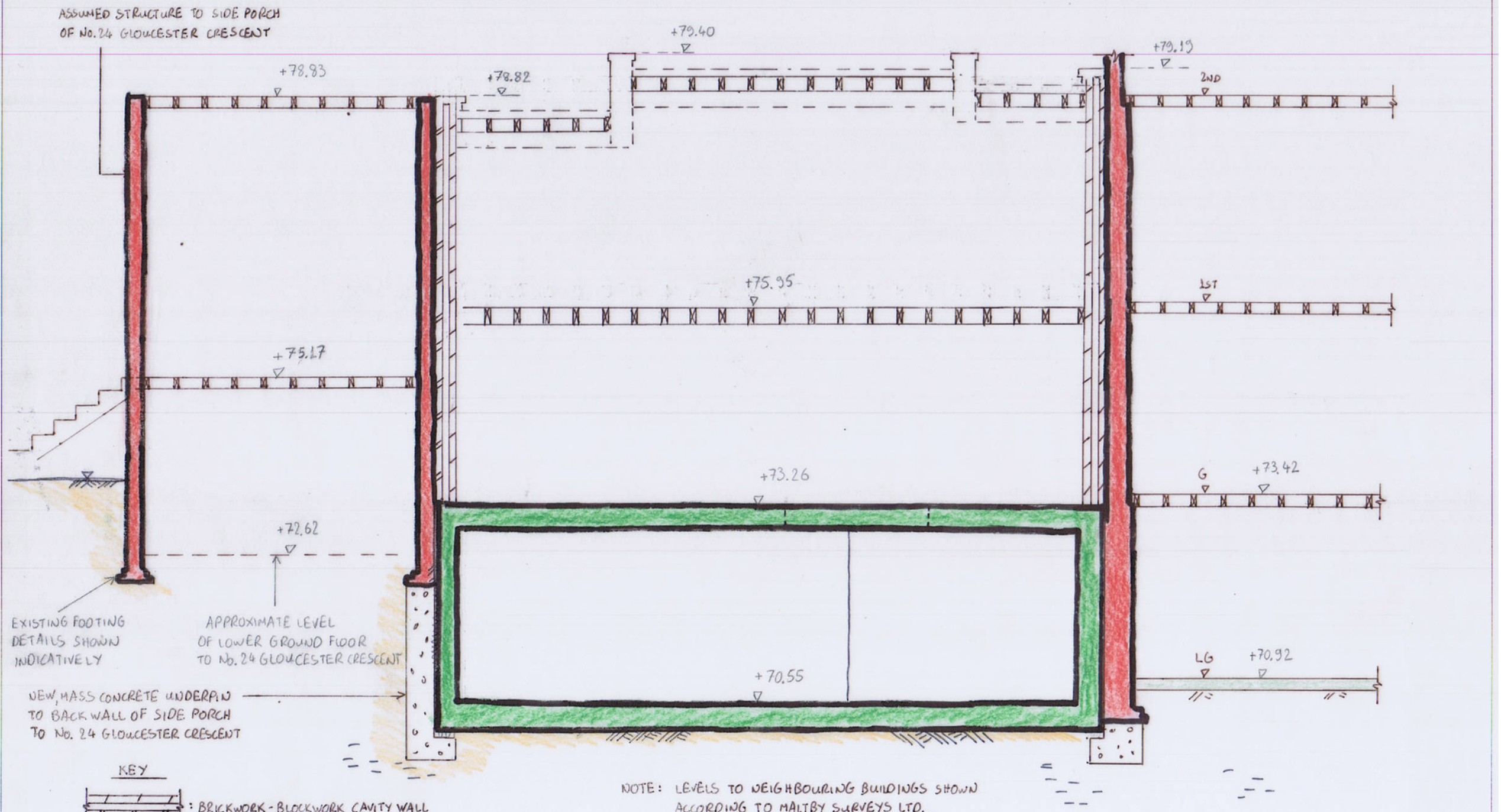
PROJECT	TITLE
46 INVERNESS STREET	SECTION A-A' - PROPOSED STRUCTURE

DATE	DRAWN	AUTHORISED	PROJECT NO.	DRAWING NO.	SCALE @ A3	REV
4.1.2018	DV	ST	619	SK5	1:50	P2



KEY

: BRICKWORK - BLOCKWORK CAVITY WALL

: BLOCKWORK - BLOCKWORK CAVITY WALL

: MASS CONCRETE UNDERPIN

: RC. WALLS AND SLABS

NOTE: LEVELS TO NEIGHBOURING BUILDINGS SHOWN ACCORDING TO MALTBY SURVEYS LTD., DRAWING No. 17/295/400, DATED OCTOBER 2017

REV	DESCRIPTION	DATE	BY	AUTH
P2	UPDATED AND REISSUED FOR INFORMATION	29.6.18	DV	ST
P1	ISSUED FOR COMMENTS	31.1.18	DV	ST

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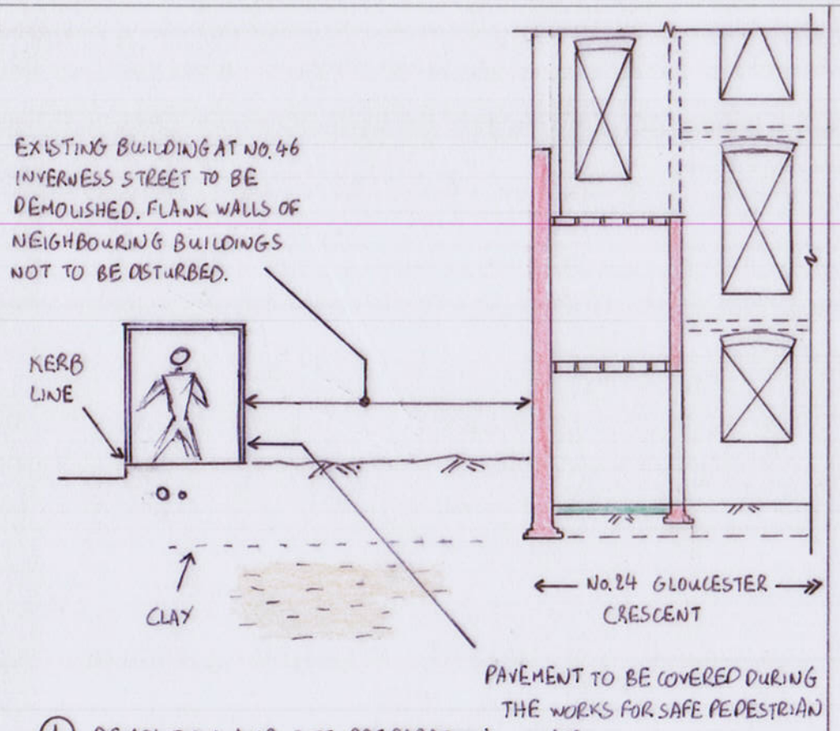
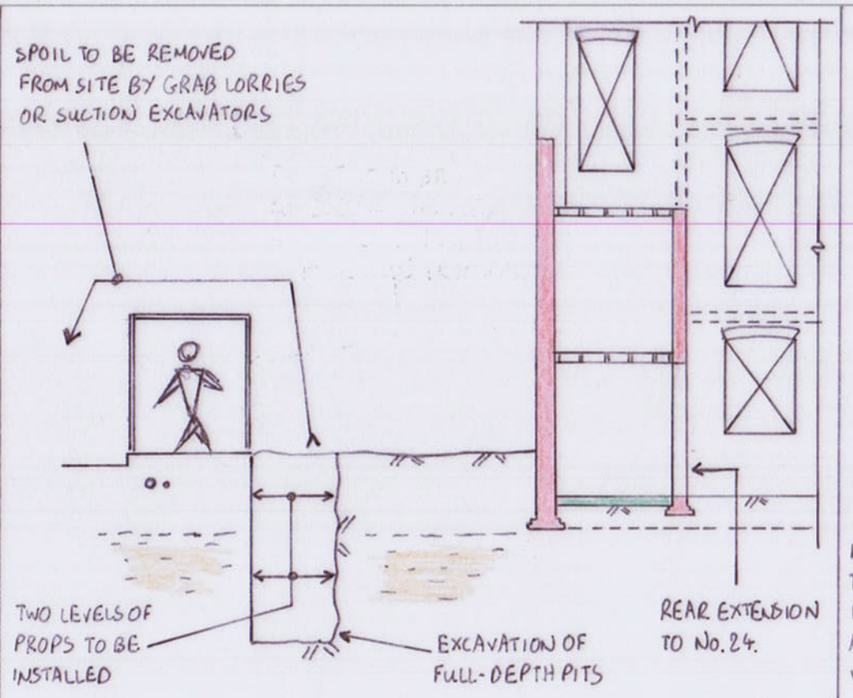
PROJECT	TITLE
46 INVERNESS STREET	SECTION B-B' - PROPOSED STRUCTURE

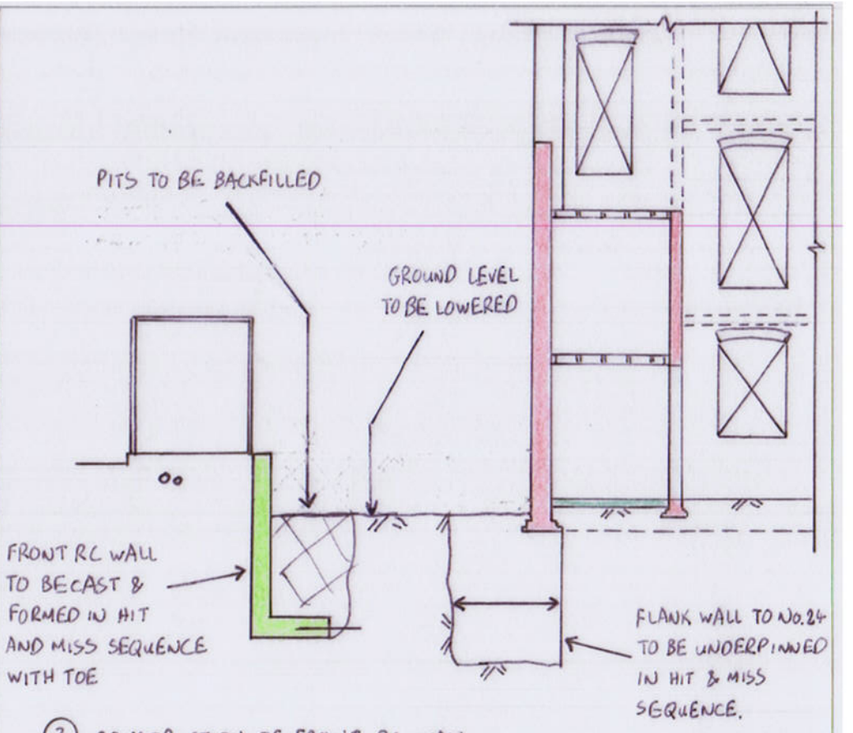
DATE	DRAWN	AUTHORISED	PROJECT NO.	DRAWING NO.	SCALE @ A3	REV
9.1.18	DV	ST	619	SK6	1:50	P2



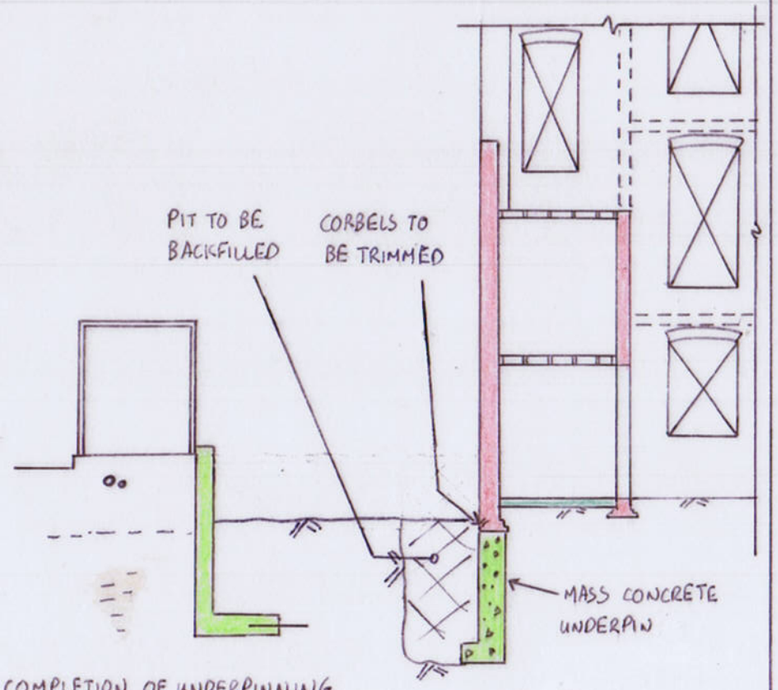
(1) DEMOLITION AND SITE PREPARATION



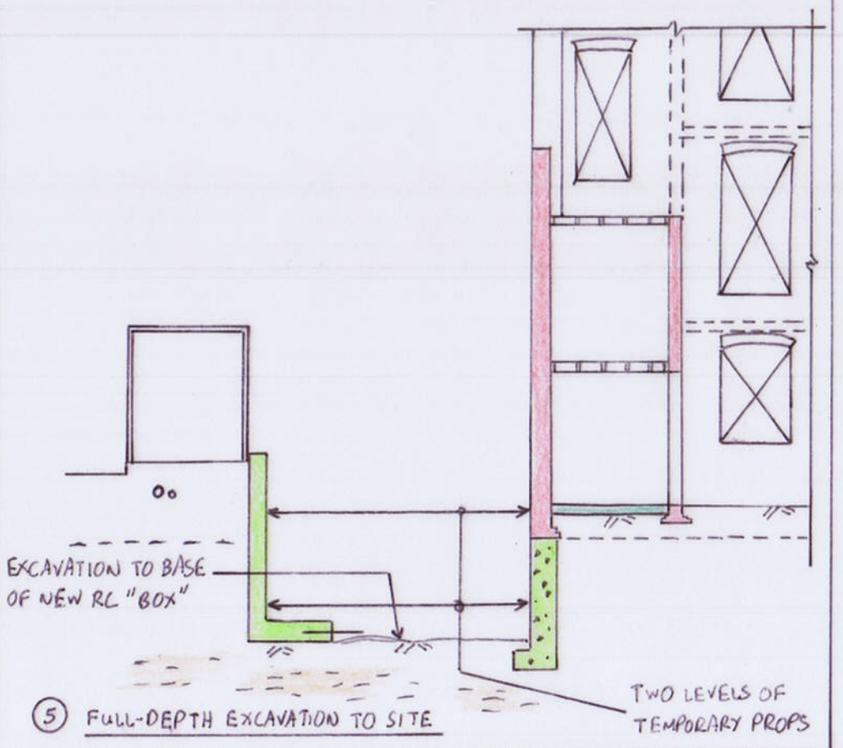
(2) EXCAVATION TO FORM RC RETAINING WALL ALONG PAVEMENT LINE



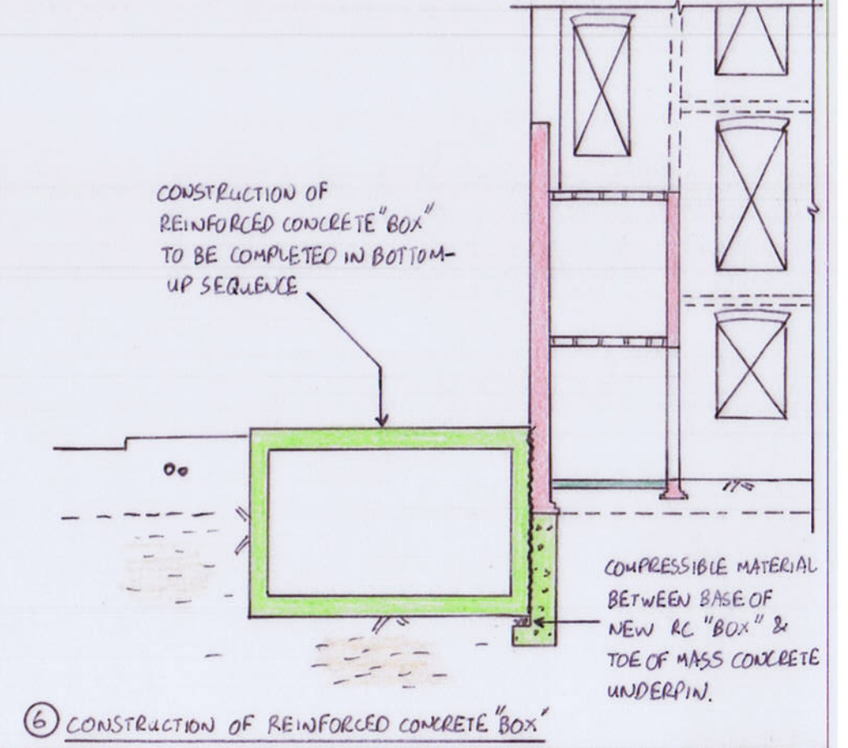
(3) CONSTRUCTION OF FRONT RC WALL



(4) COMPLETION OF UNDERPINNING



(5) FULL-DEPTH EXCAVATION TO SITE



(6) CONSTRUCTION OF REINFORCED CONCRETE "BOX"

GENERAL NOTES:

- SECTION A-A', DRAWING SK.5 HAS BEEN USED AS BASE DRAWING TO PREPARE SEQUENCE DRAWING
- THE DRAWING PRESENTS AN INDICATIVE SEQUENCE OF WORKS. FINAL CONSTRUCTION SEQUENCE TO BE DEVELOPED & PREPARED BY CONTRACTOR

REV	DESCRIPTION	DATE	BY	AUTH

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PROJECT	TITLE
46 INVERNESS STREET	INDICATIVE SEQUENCE OF CONSTRUCTION OF RC BASEMENT

DATE	DRAWN	AUTHORISED	PROJECT NO.	DRAWING NO.	SCALE @ A3	REV
29.10.18	OV	ST	619	SK7	1:100	P1

Stand Consulting Engineers
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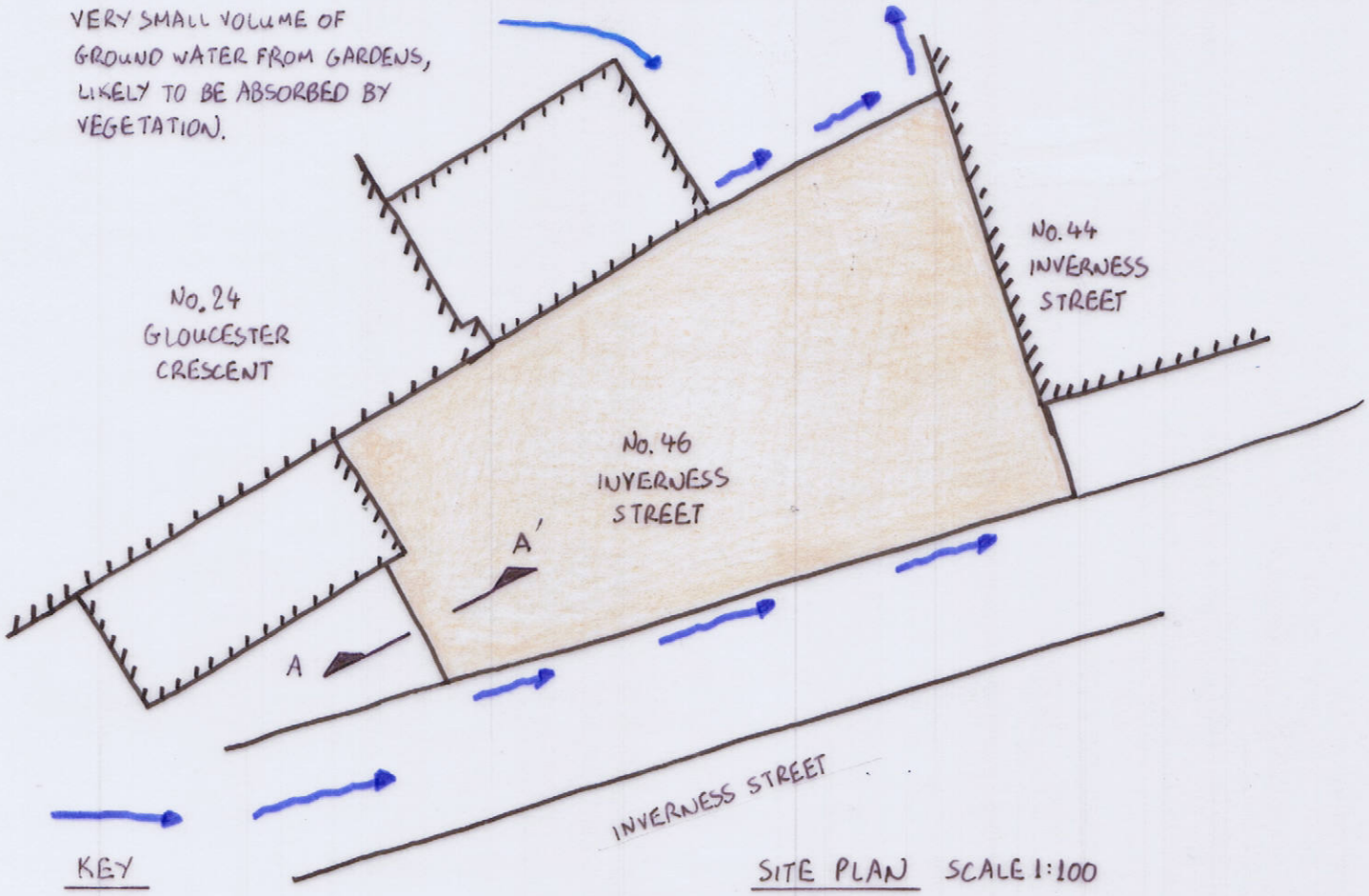
PROJECT	PROJECT NO.	DRAWING NO.	REV
46 INVERNESS STREET	619	SK8	P1
TITLE	**SCALE @ A4**	**DATE**	**DRAWN** / **AUTHORISED**
GROUNDWATER FLOWS FOR EXISTING BUILDING AND PROPOSED DEVELOPMENT	AS NOTED	1.11.18	DV / ST



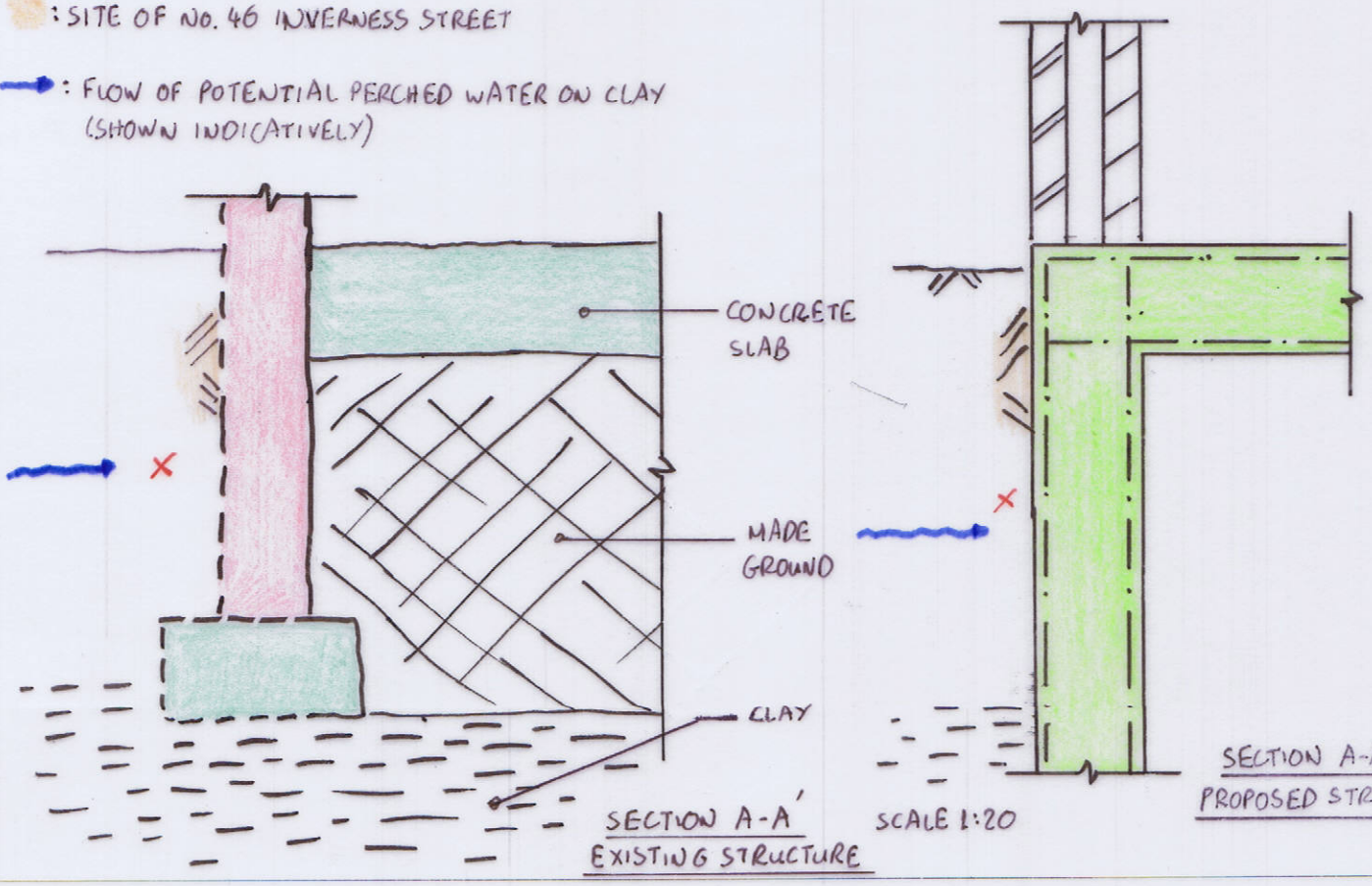
SITE PLAN SCALE 1:100

KEY

: NEIGHBOURING BUILDINGS INDICATED THUS

: SITE OF No. 46 INVERNESS STREET

: FLOW OF POTENTIAL PERCHED WATER ON CLAY (SHOWN INDICATIVELY)



SECTION A-A' EXISTING STRUCTURE

SCALE 1:20

SECTION A-A' PROPOSED STRUCTURE

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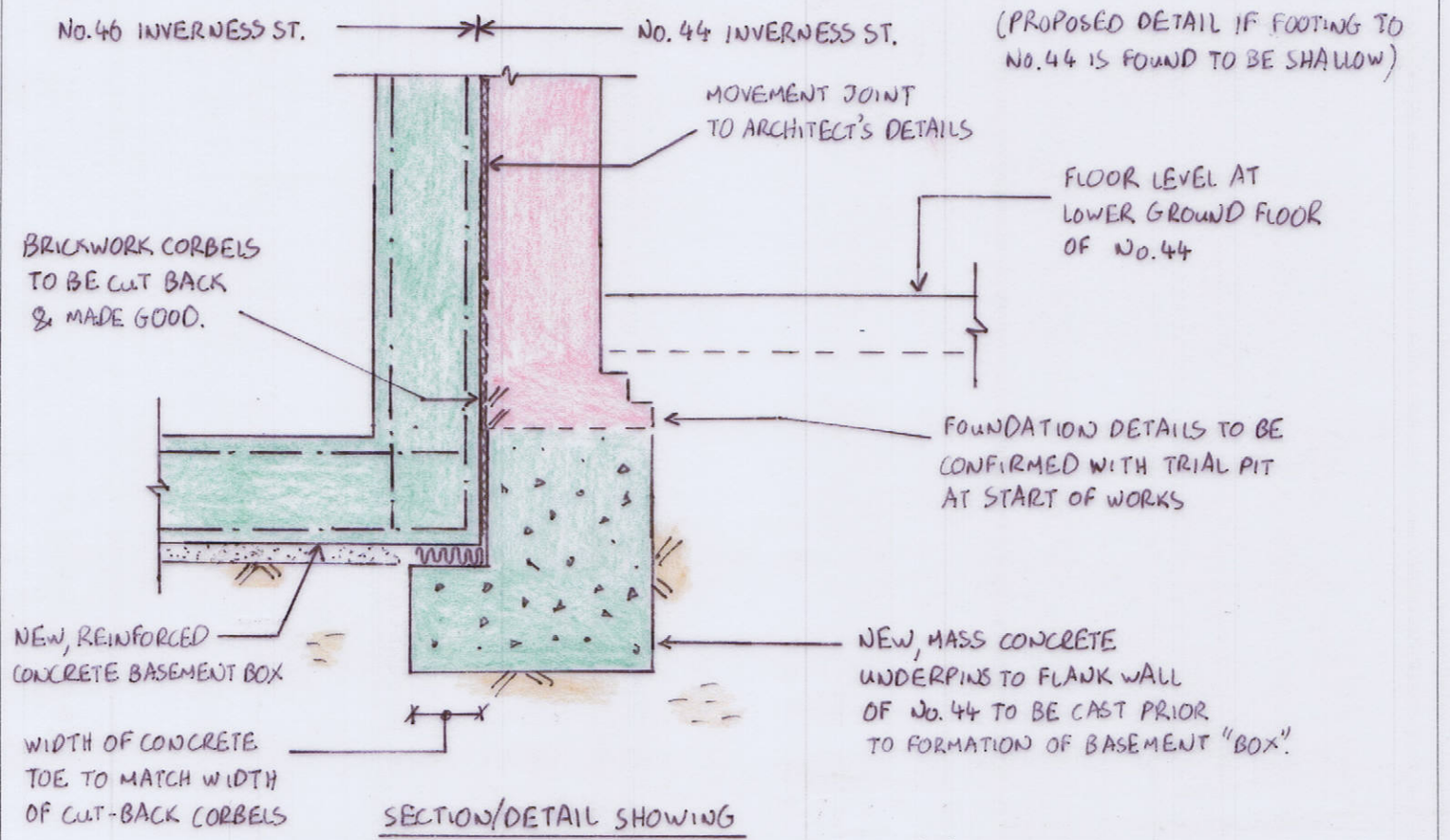
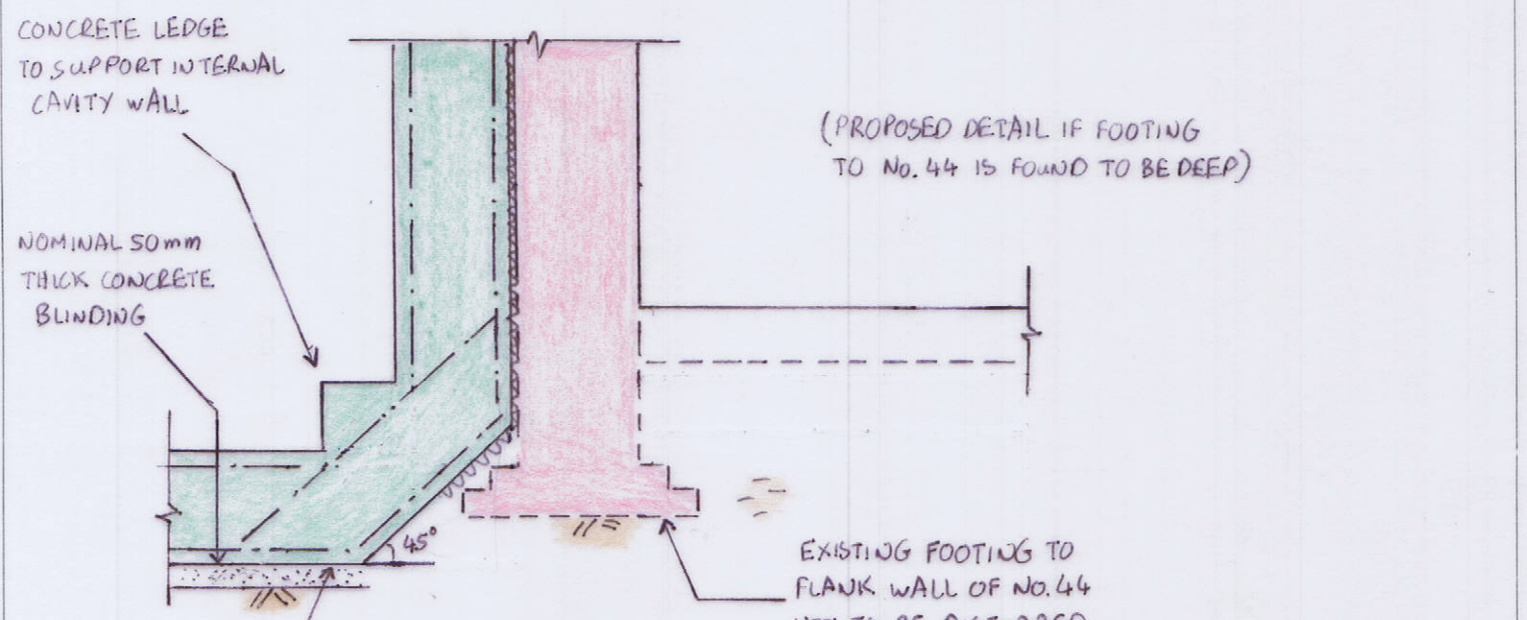
PROJECT	PROJECT NO.	DRAWING NO.	REV
46 INVERNESS STREET	619	SK9	P1

TITLE	SCALE @ A4	DATE	DRAWN	AUTHORISED
STRUCTURAL OPTIONS FOR LINE OF BASEMENT BOX AGAINST No.44 INVERNESS ST.	1:20	1.11.18	DV	ST



SECTION/DETAIL SHOWING

UNDERPINNING OPTION (1)



SECTION/DETAIL SHOWING

CHAMFERED CORNER OPTION (2)

Appendix D

Negative Responses from Screening

D.1. Surface Water and Groundwater

Question	Response	Details
1a. Is the site located directly above an aquifer?	No	The site is not located above an aquifer, as shown in Illustration 5, in Appendix A.
1b. Will the proposed basement extend beneath the water table surface?	No	Site investigation by Chelmer in 2014 did not encounter groundwater. The proposed basement development will extend up to a depth of approximately 3m below ground and not beneath the water table surface.
2. Is the site within 100m of a watercourse, well (used / disused) or potential spring line?	No	Map of watercourses in the London Borough of Camden (Illustration 6 - Appendix A) shows that the site is not in the vicinity of watercourses.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No	Camden GHHS Figure 14 (Hampstead Heath Surface Water Catchments and Drainage) shows the catchment areas of the pond chains of Hampstead Heath. The site is not within these zones.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No	The proportion of hard surfaced areas of No. 46 Inverness Street will remain the same.
5. As part of site 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	The status quo of the surface water will be maintained.
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 (not just the pond chains on Hampstead Heath) or spring line?	No	No local ponds or spring lines in close proximity are hydraulically connected to the site.

D.2. Slope Stability

Question	Response	Details
1. Does the existing site include slopes, natural or man-made greater than 7 degrees (approximately 1 in 8)?	No	Slopes on site are smaller than 7 degrees. Refer to Slope Angle and Worked Ground Map of Camden, Illustration 4, in Appendix A.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)?	No	Slopes on site will not change as part of the proposed development.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?	No	Slopes on site are smaller than 7 degrees. Refer to Slope Angle and Worked Ground Map of Camden, Illustration 4, in Appendix A.
4. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8)?	No	Slopes on site are smaller than 7 degrees. Refer to Slope Angle and Worked Ground Map of Camden, Illustration 4, in Appendix A.
6. Will any trees be felled as part of the development and/or are any works proposed within any tree protection zones where trees are to be retained?	No	No trees are to be felled as part of the development or works to be carried out within tree protection zones. The site is not expected to be in the zone of influence of the mature tree to the north, approximately 10-15m from the site.
7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of	No	There are no signs of such effects on the site.

such effects at the site?`		
8. Is the site within 100m of a watercourse or a potential spring line?	No	Map of watercourses in the London Borough of Camden (Illustration 6 - Appendix A) shows that the site is not in the vicinity of watercourses.
9. Is the site within an area of previously worked ground?	No	Refer to Slope Angle and Worked Ground Map of Camden (Illustration 4) in Appendix A. The map does not show the site as located within an area of worked ground.
10. Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	No	The site is not located within an aquifer.
11. Is the site within 50m of the Hampstead Heath Ponds?	No	The site is not in the vicinity of the Hampstead Heath Ponds. Refer to Camden GHHS, Figure 14 (Hampstead Heath Surface Water Catchments and Drainage)
14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No	The site is not located over or within the exclusion zones of any tunnels or railway lines. Refer to an extract from Transport for London Property Asset Register (Illustration 11, Appendix A).

D.3. Surface Water and Flooding

Question	Response	Details
1. Is the site within the catchment of the ponds chains on Hampstead Heath?	No	The site is not in the vicinity of the Hampstead Heath Ponds. Refer to Camden GHHS, Figure 14 (Hampstead Heath Surface Water Catchments and Drainage)
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	Water from the site will be routed into the existing main sewer under Inverness Street with a new connection. Water from No. 46 is currently discharged in the same way.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	The proportion of hard surfaced areas of No. 46 Inverness Street will remain the same.
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 proposed basement development will not change the status quo regarding inflows of surface water received by neighbouring properties. The existing building at No. 46 acts as a cut-off for flows and the new development will assume the same role.
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 basement development is not expected to have an impact on the quality of surface water received by adjacent properties or watercourses.
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment 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 site is not located within a critical drainage area or a local flood risk zone according to Illustration 9. Illustration 8 shows the site located in an area of low flood hazard in terms of a 1 in 100 flooding event. No. 46 Inverness Street is not located on a street flooded during the 1975 or 2002 floods or in a area of potential surface water flooding.

Appendix E

Structural Calculations

Appendix F

Photographs

Photograph 1 - Front elevation of single-storey building at No. 46 Inverness St.

Photograph 2 - Corner of Inverness St. and Gloucester Crescent

Photograph 3 - View from rear of No. 46