9 MARESFIELD GARDENS,
CAMDEN,
LONDON, NW3 5SJ

BASEMENT IMPACT ASSESSMENT

Report Ref	Revision	Notes	Issued by	Date
8972_FS_GB	1.1	Issued for Planning	GB	18th July 2016

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APPENDICES

EXECUTIVE SUMMARY

The Basement Impact Assessment (BIA) is prepared in accordance with London Borough of Camden's Local Development Framework (LDF), Camden Planning Guidance Basements and Lightwells CPG4 dated July 2015. Camden Development Policies – DP27 Basements and Lightwells. London Borough of Camden SFRA URS July 2014. London Borough of Camden, Camden Geological, Hydrogeological and Hydrological Study.

The Basement Impact Assessment is separated into seven sections covering 1.0 Introduction, 2.0 Structural Appraisal, 3.0 Hydrogeological Review, 4.0 Drainage and Surface Water Flow Appraisal 5.0 Flood Risk Assessment, 6.0 Conclusions and 7.0 Designers Hazard and Risk Identification.

The Introduction provides the screening aspect with Figures 1, 2 and 3 noting Yes or No if the basement is likely to have any affect on the surrounding area and referenced to each of the relevant sections 2.0, 3.0, 4.0 and 5.0, within which are provided the scoping and details of potential impact and any mitigation measures with Recommendations and Conclusions within section 6.0.

A topographic survey is available and Taylor Whalley Spyra are also undertaking works on an adjacent site which backs on to the rear garden of 9 Maresfield Garden. The soil investigation and ground water monitoring from this site and the SI information available were reviewed against the site requirements along with local borehole records. These provide the necessary site specific data to undertake the Basement Impact Assessment and to allow for the detailed design to be undertaken following Planning Approval.

The construction of the new basement in the temporary and permanent stages has been reviewed with an outline methodology included to demonstrate feasibility.

Existing site material is being recycled and utilised within the new construction with demolition material to be used as hardcore to assist the construction process. Existing top soil will be retained and reused. The consideration of SUDS on site for the surface water drainage system with inclusive storm water storage and restricted flow rates has been included.

The BIA concludes that the proposed lower ground floor works can be carried out safely and without adverse affect on the adjacent structures, local hydrogeology, surface water flow or increase local flooding risks. The risks noted within the BIA, even though they are only slight, can be further mitigated by diligent detailed design and implementation to include the installation of additional surface water drainage, careful detailed installation of temporary works, a suitable on site monitoring procedure and use of experienced contractors and an experienced design consultant team.

1.0 INTRODUCTION

1.1 This Basement Impact Assessment has been prepared by Taylor Whalley Spyra as requested by Studio Architectural services Ltd as part of the Planning Application for the proposed refurbishment of the site.

1.2 The information contained within this Basement Impact Assessment (BIA) has been produced to cover the information required within a BIA as set out by London Borough of Camden's Local Development Framework (LDF), Camden Planning Guidance Basements and Lightwells CPG4 dated July 2015. Camden Development Policies – DP27 Basements and Lightwells. London Borough of Camden SFRA URS July 2014. London Borough of Camden, Camden Geological, Hydrogeological and Hydrological Study.

1.3 The purpose of this Basement Impact Assessment document is to outline the key points for the safe construction of the proposed redevelopment of 9 Maresfield Gardens.

1.4 It also sets out how the neighbouring buildings and the local environment and amenity will be protected.

1.5 The topics covered within the BIA are Structural Stability and Movement Assessment, Method of Construction, Hydrogeological, Drainage & Surface Water Flow, Flood Risk and Temporary Works during basement construction.

1.6 This is not the final design information but is intended to demonstrate that each of the aspects of the design and construction has been carefully considered. All aspects will be subject to detailed design once Planning Approval is granted.

1.7 The existing property is located on Maresfield Gardens and consists of the main house which is four storeys and set back from Maresfield Gardens with a front drive way and rear garden. The rear of the property has a lower ground floor onto the rear garden (refer to Appendix A).

1.8 The Client is proposing to refurbish the existing structure and extend the rear lower ground floor under the whole of the building and construct a rear extension. The residential property will have the same number of floor levels of lower ground to second floor (refer to Appendix B).

1.9 The site is 43m long and 18.5m wide being rectangular in shape and orientated approximately East to West. The nearest adjoining properties are 7 Maresfield Gardens to the South boundary and 11 Maresfield Gardens to the North boundary. To the East boundary is Maresfield Gardens along the West boundary is a two store off building called The Rotunda (refer to Appendix A).

1.10 The floor level of the proposed lower ground is approximately 64.110 with the existing upper ground floor level approximately 67.090. The external level at the front is 66.380 and the rear garden level is 64.580

1.11 The existing building upper ground floor is 600mm above the front of the site and the existing brick walls have deep mass concrete footings 2.66m below the front site level. These deep footing extend almost all the way to the rear of the property to the existing lower ground floor see drawing 8972_BIA_03 (refer to Appendix C).

1.12 The proposed works will involve the removal of the existing mass concrete footings and the installation of RC retaining walls along the front and side boundaries and installation of new RC lower ground floor slab with the existing building solid brickwork walls being extended down and supported back of the new lower ground floor slab. The installation of the new RC and brickwork walls and slab are to be undertaken as underpinning works in a phased sequenced.

1.13 The works will be braced with temporary waling and propping as works proceed and as the ground is excavated to lower ground formation level. This will form the watertight RC structure on three sides with the lower ground floor level leading out onto the rear garden.

1.14 The new reinforced concrete box structure is designed to form the permanent support works for the retaining walls and existing structure over.

1.15 Once the lower ground floor structure is completed the proposed rear extension will then be built supported off the new rear section of the lower ground floor slab.

1.16 The following screening stages in Figures 3, 4, and 5 taken from CPG4 are reviewed to see the effect of the lower ground floor works on the surrounding area and the relevant scoping stages are noted in the adjacent contents items referenced to within this BIA report, which then outlines any possible impacts and any mitigation necessary to reduce the impact of the basement on the surrounding area.

1.17

Figure 3 - Subterranean (ground water) flow screening chart

Q 1a: Is the site located directly above an aquifer?	No	See Content 3.0, 4.0, 5.0
Q 1b: Will the proposed basement extend beneath the water table surface?	No	See Content 2.0, 3.0, 4.0
Q 2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	See Content 3.0,
Q 3: Is the site within the catchment of the pond chains on Hampstead Heath?	No	See Content 3.0
Q 4: Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	Yes	See Content 4.0
Q 5: As part of the 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	See Content 4.0
Q6: 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	See Content 2.0, 3.0, 4.0

Figure 4 - Slope stability screening chart

Q 1: Does the existing site include slopes, natural or man made, greater than 7° ? (approximately 1 in 8)	No	See Content 2.0, 3.0
Q 2: Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7° ? (approximately 1 in 8)	No	See Content 2.0, 3.0
Q 3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7° ? (approximately 1 in 8)	No	See Content 2.0, 3.0
Q 4: Is the site within a wider hillside setting in which the general slope is greater than 7° ? (approximately 1 in 8)	No	See Content 2.0, 3.0
Q 5: Is the London Clay the shallowest strata at the site?	No	See Content 2.0, 3.0,
Q 6: Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree zones where trees are to be retained?	No	See Arboriculture Report
Q 7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	No	See Content 2.0
Q 8: Is the site within 100m of a watercourse or a potential spring line?	No	See Content 3.0, 4.0
Q 9: Is the site within an area of previously worked ground?	No	See Content 2.0, 3.0
Q 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	See Content 3.0, 4.0
Q 11: Is the site within 50m of the Hampstead Heath ponds?	No	See Content 3.0
Q12: Is the site within 5m of a highway or pedestrian right of way?	No	See Content 2.0
Q 13: Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No	See Content 2.0
Q 14: Is the site over (or with the exclusion zone of) any tunnels e.g. railway lines?	No	See Content 2.0

Figure 5 - Surface flow and flooding screening chart

Q 1: Is the site within the catchment of the pond chain on Hampstead Heath?	No	See Content 3.0, 5.0
Q 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	See Content 4.0
Q 3: Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	Yes	See Content 4.0
Q 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	See Content 2.0, 3.0, 4.0 5.0
Q 5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	See Content 3.0, 4.0, 5.0
Q 6: Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy of 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	See Content 3.0, 4.0, 5.0

1.18 The Client will appoint a Project Manager to oversee the nominated building contractor and will liaise with London Borough of Camden and local residents to ensure the impact of the proposals are fully understood and mitigated as far as possible.

1.19 Safety both on site and adjacent to the site is of paramount importance and the method of construction proposed has taken this into account.

1.20 Taylor Whalley Spyra are retained as consulting civil and structural engineers for the project. The company was formed in 1955 and is a private company wholly owned by the directors. Our expertise covers all building types and we have particular experience of working in Central London locations where sites have tight urban constraints. Related examples of this type of work are included on the following page.

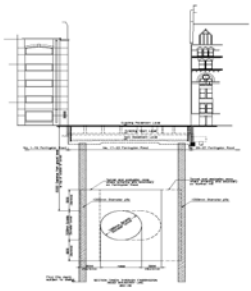
TYPICAL EXAMPLES OF DIFFICULT SUPERSTRUCTURE RETENTION AND SUBSTANTIAL BASEMENT CONSTRUCTION IN LONDON




16 Boltons Place, London
Formation of significant residential basements adjacent to and beneath existing

37 Loudon Road, London

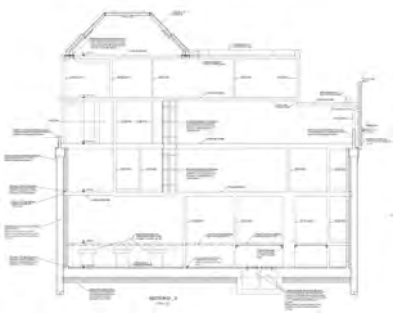


67 West Heath Road, London
New construction adjacent to existing buildings

17-23 Farringdon Road, London
Construction of new retail, commercial and residential building over the proposed Crossrail link

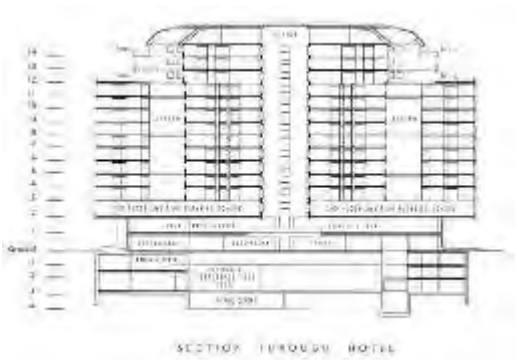




60 Addison Road W14,
Facade retention over new basement

1 St Kildas Road N16
New single basement office facility

5, Cannon Lane, NW3
New residential double basement

Westminster Park Plaza, London
Construction of new luxury hotel by top-down method incorporating 4 basement levels

2.0 STRUCTURAL APPRAISAL

2.1 A review of how best to construct the lower ground floor taking into account the existing deep mass concrete footings exposed form site investigation works was undertaken and it was concluded that the most efficient form of construction would be a phased sequence of underpinning suitably propped by installing propping as works progress. This then allows the construction of a rigid reinforced concrete lower ground floor box with additional temporary propping as works progress to minimise any disturbance to the existing and surrounding buildings.

2.2 In order to control ground movement the breaking out of the existing mass concrete footings and installation of sections of the new slab and supporting brickwork will be undertaken in a five bay underpinning sequence. Each underpinning bay will be undertaken from within the existing building and working towards the boundary and lightwell walls. This will allow clear working areas and also easier installation of the temporary steel shoring as underpinning progresses.

2.3 The process for installing each underpinning is

Excavate a 1.2 m wide trench to the base of existing mass concrete footing
Breakout the existing mass concrete footing
Excavate to underside of boundary brickwall
Install RC wall under existing boundary wall
Install RC slab base section
Install new brickwork to underside of existing house wall
All RC bays are to have reinforcing bars to be bent and lapped to adjoining bays.

2.4 Once all the underpinning has been completed then the main diagonal props are to be installed. With the props installed the existing remain ground within the building can be excavated in phases and the lower ground floor build-up and RC slab installed.

2.5 Internal load bearing walls and their mass concrete footings are to remain, with the lower ground floor slab cast around them. Once the lower ground floor slab has reached the required design strength then the internal load bearing mass concrete footings can be removed with the brickwork walls over propped off the new RC lower ground floor slab. The remaining areas of slab can be cast and the new brickwork built-up off the slab to take the load bearing walls over. Once these walls have reached their design strength all propping can be removed

2.6 With the lower ground floor installed the rear extension can be built and refurbishment of the building then undertaken.

2.7 To the South boundary, 7 Maresfield Gardens is a detached property of similar construction to 9 Maresfield Gardens. The main house wall is set back 1m from the site boundary. The proposed lower ground floor is set back 1m from the boundary of the two properties. See drawing 8972_BIA_04 shows the permanent and temporary works (refer to Appendix C).

2.8 To the North Boundary, 11 Marersfield Gardens is a large residential flats complex. The main wall is 6m away from the site boundary. See drawing 8972_BIA_04 shows the permanent and temporary works (refer to Appendix C).

2.9 To the East Boundary, Maresfield Gardens which is the access for the site. The front lightwell is set back 6.7m at its closest point. See drawing 8972_BIA_04 shows the permanent and temporary works (refer to Appendix C).

2.10 To the West Boundary, The Rotunda Building which is a small residential building of two floors and is set back 14m at its closest point to the proposed lower ground floor.

2.11 All properties that are adjacent to the proposed development will fall within The Party Wall Act 1996 which will require building condition surveys to be undertaken.

2.12 As part of the design and to control ground movement, a scheme will be agreed as part of the party wall agreements to install a movement monitoring system to monitor movement and vibration during the course of the basement works. This will involve the location of monitoring nodes to be located along the surrounding ground, on the retained garden walls and also on adjacent property walls, where allowed, as part of the party wall agreements. Readings will be taken at regular intervals and additional readings undertaken when specific works are planned. (refer to Appendix K).

2.13 The design of the underpinning sequence, lower ground floor slab and temporary support works is to be undertaken to minimise any structural disturbance to the adjoining properties or infrastructure. See drawing 8972_BIA_05 shows the proposed underpinning sequence works (refer to Appendix C).

2.14 The nearest buildings adjacent to the proposed basement are 7 Maresfield gardens and 11 Maresfield Garden. See existing building drawings (refer to Appendix C). The design of the reinforced retaining walls and reinforced box structure will incorporate an allowance for a surcharge loading to take into account the location and loads from the adjacent building foundations. An allowance will also be included to allow for any future surcharging of the adjacent ground along the site boundary next to the new reinforced retaining walls.

2.15 The temporary propping against the new boundary walls are to minimise disturbance to the surrounding ground whilst excavation of the lower ground and installing the lower ground slab.

2.16 An detailed analysis of the basement retaining walls and required temporary works will be undertaken as part of the party wall stage.

2.17 From our experience of similar works movement can be limited to the adjoining properties as Very Slight, as categorised by Damage Category Chart (CIRCA C580).

2.18 There are three possible causes of ground movement; the installation of the underpinning to the boundary walls, the excavation for the lower ground floor and the adjustment of the ground under the net load changes.

2.19 The estimated movements inside and outside the lower ground floor are calculated on basis of structural loads and level

2.20 The installation of the reinforced underpinning walls is away from any adjoining buildings the closest is 1m away from 7 Maresfield Gardens. Any horizontal ground movement from the installation of the underpinning would be limited and with good workmanship horizontal movement would be negligible and not affect adjacent properties.

2.21 The process of excavation will result in the forward translation of the retaining wall and rise of ground inside the lower ground floor as the overburden is removed. Provided that the installation of the underpinning of the wall is carefully installed and sequenced properly and with additional temporary propping prior to excavation and casting of the lower ground floor slab movement affecting the property next door can be limited to acceptable amounts.

2.22 Excavation depth on site will be about 2.2m to slab formation and settlements generally occur with movement at the wall being 0.05% of the excavation depth or less and reduce to zero at a distance of four times the excavation depths behind the wall. The peak movement behind the wall would be 1 to 2mm, with vertical movements of 1 to 2mm this would reduce to zero at a distance of about four times excavation from the wall.

2.23 With the excavation undertaken in stages and propping introduced prior to excavation movements would be expected to be minimal and lie within its original position and with good workmanship these movements are unlikely to result in damage greater than category 1 – Very slight.

2.24 The existing footing for 7 Maresfield Gardens are expected to be similar to 9 Maresfield Gardens as the buildings are similar with a mirrored design layout to our existing site and the ground level is set approximately 500mm lower than our site. The base of the footing for 7 Maresfield based on a similar design to our site would be lower that our lower ground floor slab formation level. see drawing 8972_BIA_03 (refer to Appendix C).

2.25 In the long term the London Clay within which the lower ground floor is constructed will adjust to the changes that have taken place as a result of the net load changes and water pressure will build up on the underside of the slab. In this case there will be a net load reduction and there will be a tendency for the structure to rise a small amount. This readjustment may result in small upward movement of the surrounding ground, but this is unlikely to result in any significant effect on the adjacent structure.

Category of damage	Description of typical damage	Approximate crack width (mm)	Limiting tensile strain ε_{lim} (per cent)
0 Negligible	Hairline cracks of less than about 0.1 mm are classed as negligible	<0.1	0.0-0.05
1 Very slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection	<1	0.05-0.075
2 Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weathertightness. Doors and windows may stick slightly.	<5	0.075-0.15
3 Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable lining. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5-15 or a number of cracks > 3	0.15-0.3
4 Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15-25 but also depends on number of cracks	>0.3
5 Very severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion, Danger of instability.	Usually > 25 but depends on number of cracks	

Damage Category Chart (CIRIA C580)

Table 1.1

2.26 Proposed Sequence of Works.

- Install monitoring points on site and the surrounding area
- Contractor to review proposed underpinning and excavation sequence and supply full method statements to Project Engineer for approval
- The proposed sequence for each underpin is the same for all three elevations on the east boundary, west boundary walls and south elevation

- All excavation is to be undertaken from with the existing building envelope with excavation undertaken towards the new RC retaining walls supporting the boundary line walls and the front lightwell walls

Installation of Bay Type ONE

- Excavate 1.2m wide Bay Type ONE in front of existing mass concrete underpins and excavation depth to be level with mass concrete footing.

- Install temporary mechanized shoring system for 1.2m wide trench

- Carefully saw cut existing mass concrete underpins and break out concrete with small breakers to minimise vibration and disturbance to adjoining properties

- Excavate ground between building and boundary wall and install additional temporary shoring system

- Install 75mm concrete blinding and DPM to base of excavation and smooth off soil face for casting RC wall face against

- Install drilled dowel bars and resin fix to underside of existing brickwork wall

- Install all rebar/shuttering and cast RC retaining wall to underside of existing boundary wall and cast RC lower ground floor base with RC upstand

- Leave for 24 hours and remove all shuttering and then build new lower ground floor brickwork wall off RC upstand tight to underside of existing building brickwork to be built in tight. Allowing for window lintels as required and install solid hardwood timber strutting within window opening.

- All new brickwork to be built in lifts and allow 12 hours between next lift. The last three brick course are to be installed 12 hours after lower lift and packed tight to underside of existing brickwork. Any existing brickwork that is loose is to be reinstated.

- Repeat the above for Bay Type TWO, then Bay Type THREE, then Bay Type FOUR and Bay Type FIVE.

Phased Installation of RC lower ground floor slab

- With all RC walls and new building external elevation brickwork now in place the lower ground floor slab can be installed in a phased sequence

- Install 10no. diagonal props between new boundary RC retaining wall and slab . Once installed excavate Phase One ground under the building to lower ground formation level.

- Existing internal load bearing walls and mass concrete underpins are to remain in place whilst casting lower ground floor slab around them

- Install Phase One below slab drainage, main RC slab build-up of 75mm concrete blinding, DPM reinforcement and cast lower ground floor RC slab tied into perimeter RC slab thickening

Internal Load bearing wall installation

- With lower ground floor RC slab in place install temporary propping off new RC slab to support existing internal load bearing walls. With propping in place carefully saw cut and break out mass concrete underpins.

- Install RC slab build-up of 75mm concrete blinding, lap DPM and reinforcement to adjacent cast slab and cast remainder of lower ground floor RC slab infill.

- Leave for 24 hours and then build new lower ground floor internal load bearing brickwork walls off RC slab tight to underside of existing building brick to be built in tight.

- All new load bearing internal brickwork to be built in lifts and allow 12 hours between next lift. The last three brick course are to be installed 12 hours after lower lift and packed tight to underside of existing brickwork. Any existing brickwork that is loose is to be reinstated.

- Once the lower ground floor RC slab and load bearing brickwork walls have gained the required design strength all, temporary horizontal props can be removed.

- With the lower ground floor now complete the rear extension can now be undertaken and refurbishment of existing building undertaken.

2.27 During detailed design a review of uplift will be undertaken to the lower ground floor slab for heave. With the depth of actual excavated ground of 2.2m the effects of uplift will be minimal.

2.28 Investigation works have been undertaken in the form of 6 deep trial holes to confirm existing foundations, soil type and ground water. The existing on site ground conditions are 400mm of made ground overlaying stiff brown/yellow London Clay (refer to Appendix E).

2.29 There was some slight ground water in the base of the rear garden trial holes with seepage within the made ground which is to be expected. The trial holes where left exposed for 72 hours and the ground water level remained constant at the base of the trial holes. All other trial holes were dry.

2.30 Due to existing footing depths there is no groundwater flow under the building. The trial holes in the areas of the passage ways between the site boundaries that are to be lowered did not encounter any ground water, so are no expected to restrict any possible ground water flow to these areas. It is intended to install a granular drain along the boundaries beneath the new passage ways and these will allow any future groundwater to this area to flow to the rear gardens as would be the case in the existing condition.

2.31 Taylor Whalley Spyra are also undertaking works on an adjacent site which backs on to the rear garden of 9 Maresfield Garden. The soil investigation and ground water monitoring form this site and the SI information available to date confirm that the lower ground floor area will be within the stiff London Clay and will not affect the groundwater

2.32 The soil PH value was high and all concrete in contact with existing soil will need to be sulphate resisting.

3.0 HYDROGEOLOGICAL REVIEW

3.1 The average existing site ground level is in the order of 66.35m OD at the front and steps down to 65.5m OD for the rear lower ground floor and the garden behind steps down to 64.4m OD. This confirm the overall slope for the site is in the region of 2.8 degs and 400mm fall North to South across the site (refer to Appendix F).

3.2 The geology of the area is well known as summarised on the relevant geological sheets, being London Clay formation and confirm on site by the trial holes and adjoining site Soil Investigation (refer to Appendix G).

3.3 The current policy implemented by the Environment Agency is to maintain water levels in the lower underlying chalk aquifer to those which currently exist, i.e. approximately -10m OD (refer to Appendix H).

3.4 It is unlikely therefore that the site will be influenced directly by these ground water levels.

3.5 Ground water was initially encountered within the rear garden trial hole. This was slight seepage from with the made ground. During subsequent return visit the rear garden trial

holes water level remained constant and the trail holes at the front and sides of the main house were dry (refer to Appendix E).

3.6 This indicates that there is some water seepage from within the shallow made ground at the rear of the property the rate of seepage is slow which confirms that any ground water flow on site is considered to be very low and will not affect the proposed lower ground floor or adjoining properties.

3.7 The site is not within any ground water protection zone as reviewed with the Environment Agency maps and is classed by the EA as a minor aquifer zone with permeability. This is mainly due to the London Clay formation.

3.8 By virtue of the existing deep mass concrete footings and the proposed lower ground floor structure design ground water flow will not be restricted and the proposed design will allow future ground water to flow around and below, we confirm that the proposed development will not lead to an increase in flood potential or impediment of ground water flow.

4.0 DRAINAGE AND SURFACE WATER FLOW APPRAISAL

4.1 The existing site area is 794m² consisting of 442.5m² of non-permeable hard standing and 351.5m² of permeable soft standing (refer to Appendix I).

4.2 The proposed site area is 794m² built-up of 569m² of non-pervious hard standing within which there is 121m² of SUDS hard standing storage and 225m² of pervious soft standing (refer to Appendix I).

	Hard Standing	Soft Standing	Permeable storage (in Hard Standing)
Existing	442.5m²	351.5m²	0m²
Proposed	569m²	225m²	121m²

4.3 Initial calculations based on a 1:100 year event have been undertaken which show that the existing volume of surface water run off from the site is in the region of 10.8.m³ with onsite storage of 4m³ and the new surface water run off increases to 18.7m³ but there is an onsite storage increase of 9.6m³ (refer to Appendix M).

4.4 The majority of the existing 442.5m² area of hard standing surface water run off from the site discharges to the public sewer system in Maresfield Gardens.

4.5 The surface water drainage will be designed to discharge to the existing sewer in Maresfield Gardens at reduced 3l/s flow rate (l/s flow rate to be agreed with Thames Water). A non return valve will be installed at the last manhole within the site boundary (refer to Appendix J).

4.6 There is an increase in the surface water runoff storage of 7.9m³ due to increased area of hard standing and an increase in SW on site storage due to the restricted discharge rate into the existing sewer of 3l/s. This can be compensated for with the 121m² of permeable storage within the hard standing to the sides and rear of the proposed building and within the attenuation chamber at the rear garden which will provide on-site storage and can be used to provide grey water for irrigation of the landscaped areas. The depth and size of the attenuation chamber will be subject to site requirements suggested by the M&E Consultants (refer to Appendix L).

4.7 The above ground drainage design for the foul water system will be gravity fed to the sewer in Maresfield Gardens. The foul water drainage below the basement slab will fall to a separate foul water pumping chamber that will allow for initial storage prior to pumping to the

high level gravity pipe and then to the main sewer in Maresfield Gardens (refer to Appendix J).

4.8 The foul water discharge rate will be agreed with Thames Water but it is anticipated that it will be designed to maintain the existing site discharge flow rates into the public sewer.

4.9 The profile of surface water inflow to adjacent properties or water courses will not be materially changed and the sizes of below ground pipes, the gradients and attenuation systems will be designed to maintain the existing site conditions and with the use of SUDS to reduce the surface water discharge into the main drainage system.

4.10 The lower ground floor structure will be designed to allow for water to flow between the site boundaries along the RC walls and under the basement slab, where the installation of a number of granular stone drainage channels will allow ground water seepage to flow freely.

5.0 FLOOD RISK ASSESSMENT

5.1 Reference to the Environment Agency maps confirms that the site is not within a flood zone area and is not at risk of flooding from local rivers/water features and defines the area as having a very low risk of flooding due principally to its geology and topography.

5.2 Thames Water have been consulted and confirm that there are no known incidents of historic flooding within the vicinity of the site from surcharging of the public drain system.

5.3 Reference to London Borough of Camden SFRA URS July 2014 confirms that the site is not at risk or in the vicinity of past surface water flooding, potential elevated groundwater, past flooded sewer incidents, past flooded ground water incidents or any main river/fluvial/tidal incidents.

5.4 The inclusion of SUDs on site and reduced surface water outfall flow rate of 3l/s will reduce the surface water run off from site and the discharge of surface water into the main drainage system. The affect of this is to reduce volume of site run off discharging into the main drainage system and reduce the effects of any possible flooding further down stream.

5.5 By virtue of the lower ground floor structure design, which will not restrict ground water flow and will allow groundwater to seep below and around the basement structure by installing a number of granular stone drainage channels, this will not restrict ground water flow of any perched ground water within the made ground.

5.6 The soil investigation works undertaken on site and adjacent site SI confirms the ground water seepage and any ground water flow on site is considered to be low superficial ground water.

6.0 CONCLUSIONS

6.1 Detailed analysis of the various aspects of construction has been undertaken to demonstrate how the level of sequencing will enable the development to be constructed safely with ground movements within acceptable levels.

6.2 The stability of the adjacent properties and surrounding ground will not be affected by the basement works with the influence of adjoining building foundation depths taken into account during the initial design process as indicated on drawings 8972_BIA_03, BIA_04 & BIA_05 (refer to Appendix C). Within the design an allowance has been allowed for surcharge from adjoining buildings and at the detailed design stage calculations will confirm final working sizes and depths of RC underpins, walls and slabs and temporary propping which will keep ground movement within the specified design limits.

6.3 If any temporary localized dewatering of the basement area will be reviewed, designed and monitored to reduce the water level locally to the area of works for the construction of the lower ground floor. Water levels will be monitored prior to the start of works.

6.4 Prior to commencement a full schedule of condition will be carried out to all relevant buildings as defined within The Party Wall Act 1996 where the excavations may be within the influence zone of existing foundations.

6.5 The desk top study carried out to date indicates that the construction of the new lower ground floor levels will not lead to a cut off of natural ground water flow. Detailed designs will follow as part of the construction design. If any supplemental drainage is required it will be included as necessary to ensure that the current ground water equilibrium levels are maintained and that there is no increase in the risk of flooding.

6.6 The construction of the lower ground floor will be founded within the London Clay at a depth similar to the existing mass concrete footings and is not envisaged as having a detrimental effect on the local or surrounding hydrogeological conditions.

6.7 There is an increase in hard standing areas and with the incorporation of SUDS around the site as shown on the proposed site drainage layout drawing no. 8972_BIA_07 (refer to Appendix I) this will minimise the effects on the surrounding area and maintain the existing ground water conditions on site.

6.8 There will not be any increase in foul water flow from the site. This can be controlled by the use of a pumping chamber in the basement with in-built storage capacity to be pumped to match the existing flow rate from the site as to be agreed with Thames Water.

6.9 The surface water run off and subterranean flow from the site can maintain the existing site condition with the surface water drainage to the rear of the lower ground floor being designed to maintain the existing site flow rates and with the further use of SUDS being implemented to reduce the surface water run off rates.

6.10 The granular drainage channels beneath the slab and adjacent the side walls will minimise any changes to the existing conditions along the adjoining properties.

6.11 Safety both on site and adjacent to the site is of paramount importance and the method of construction proposed has taken this into account.

6.12 The selection of the main contractor and piling sub-contractor and designer of temporary works will be based on having previous experience constructing similar projects and a requirement to provide programmes and method statements detailing the final sequence of construction prior to carrying out works on site. The main contractor is to be registered with The Considerate Constructors Scheme.

6.13 One of the site requirements will be the selection of experienced site supervision staff and selection of plant and machinery based on minimising noise and vibration.

6.14 The project as currently envisaged is feasible in terms of the general construction process, structural stability, long term integrity of adjacent buildings and the existing site and surrounding infrastructure.

7.0 DESIGNER'S HAZARD AND RISK IDENTIFICATION

See report on following pages.

For and on behalf of
TAYLOR WHALLEY SPYRA

SIMON LANE
BSc(Eng), CEng, FICE, FIStructE, FConsE

9 MARESFIELD GARDENS
HAMPSTEAD,
LONDON, NW3 5SJ

Job No. 8972

DESIGNER'S HAZARD AND RISK IDENTIFICATION

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INTRODUCTION

It is intended to refurbish the existing 4 storey residential detached property on the site which is constructed from solid brick walls, timber floors and with a timber roof over, construct a rear extension and excavate a lower ground floor under the main house. The existing building consists of Lower ground floor at the rear, upper ground floor, first floor and second floor

Beneath the footprint of the existing building and set back into the rear garden it is proposed to excavate a lower ground floor, with light wells at the sides and front. This is to be constructed with an RC lower ground floor slab raft which will support the existing structure over and RC retaining walls

The new works involve the installation of RC walls and extending existing brickwork walls down to be supported off the new lower ground floor slab and propping to support the surrounding ground as excavation proceeds and this will allow the lower ground floor to be excavated and the installation of the watertight RC structure and perimeter retaining wall.

The Main Contractor will be required to make particular reference to the Pre-contract Health and Safety Plan which summarises all salient points.

The designer's hazard identification sheets as contained within this document are generic to the site but also to a degree similar for all types of structural work undertaken.

Where possible unusual risks have been highlighted, it will be the Main Contractor's responsibility however to highlight any areas of the design which they feel could be improved upon with regard to safe construction and for themselves to become fully aware of the building and its environment and ask questions with regard to any health and safety aspects which are not clear, either within the pre-contract health and safety plan or within the contract documents.

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LOCATION/PROCESS	HAZARD	RISK	CONTROLS/ACTION
Generic risks	• Contractor competence • Inadequate site supervision • Inadequate contact programme	• Building stability • Damage to site and adjoining properties • Contract period overrun	• Competent tender process • Contractor to have proven track record of similar projects • Contractor to have an experienced site supervision team and experienced sub-contractors • Contractor to provide CV's of site management personnel • Contractor to provide Method Statements & Risk Assessments • All works to be carried out to the agreed programme and sequence of phasing. Any changes to be adequately programmed and agreed prior to be carried out • Site monitoring and supervision • Removal of temporary propping scheme phased to coincide with basement construction of RC structure and removed only upon confirmation of required concrete design strength achieved and permission to be given by Project Engineer
Working on a shared site and adjacent to: Other Public & Residential Buildings, Public Footpaths and Roads	• Conflict with other contractors and subcontractors sharing the site • Conflict with other site and building users • Conflict with others outside the site boundary	• Personal injury • Damage to property	• Clear warning signs. • Safe routes for traffic and pedestrians. • Close liaison with other site users. • Appoint a Neighbour Liaison Officer. • Keep local neighbours informed of works on site that may affect them. • Temporary hoarding. • Temporary crash deck and safety netting/bags.
Cranes Heavy lifting machinery	• Heavy machinery. • Falling debris. • Lifting and lowering of heavy loads near people / public.	• Being struck by machinery. • Machinery failure.	• Look-out in attendance. • Certified operators and certificates of maintenance for machinery. • Monitoring wind conditions. • Adequate outrigger spreaders to distribute loads.

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LOCATION/PROCESS	HAZARD	RISK	CONTROLS/ACTION
Demolition works to existing structure	• Falls. • Falling debris. • Falling materials. • Noise. • Dust. • Live services. • Asbestos/cement roof sheets. • Out of plumb walls. • Stability of walls. • Cutting and removing existing steelwork. • Removing timber floor. • Collapse of enveloping walls. • Fire/explosion. • Demolishing walls. • Debris, walls falling, falling objects onto adjoining property. • Working adjacent to footpaths and publicly accessible areas.	• Injury to operatives from falling debris. • Shock and injuries from live services. • Noise/hearing damage. • Contaminated material ingestion, eye/skin irritation. • Dust inhalation. • Fire/explosion. • Flammable materials and gases. • Confined spaces. • Vibration. • Collapse.	• Contractor to check and survey for any live services. • Contractor to prepare method statements. • Contractor to provide all appropriate and necessary temporary works and support. • Provide protection from falling debris and materials. • Contractor to provide all necessary and appropriate PPE. • Refer to Code of Practice – Demolition BS6187 latest edition. • Provide all scaffolding, access to works, including guardrails, toe boards – all erected, regularly checked and inspected by competent persons. • Dust to be kept to a minimum – damp down. • Noise to be controlled – refer to BS5228 – Noise, latest edition. Provide baffling screens to reduce noise. • Dispose of waste safely to an approved source. • Check for asbestos/refer to asbestos survey. • Restrict personnel access in vicinity of demolition. • Vibration to be minimised. • Provide temporary shoring and propping to existing walls where required.
Sheet Shoring	• Heavy machinery. • Deep shafts. • Site traffic. • Manoeuvring of large loads	• Being struck by machinery. • Falling down shaft. • Trip hazards • Machinery failure. • Aligning sheet piles. • Danger to public and operatives when delivering ready mixed concrete.	• Look-out in attendance. • Open shafts to be covered over and clearly marked or cordoned off. • Provision of adequate access ramp and pile mat.

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LOCATION/PROCESS	HAZARD	RISK	CONTROLS/ACTION
Excavations for lower ground floor underpinning, Foundations, Drainage Trenches, Services Trenches	• Stability of excavations. • Heavy rain fall. • Confined spaces. • Falls into excavations. • Underground services. • Fire/explosion. • Contaminated soils. • Depth of excavation. • Underground drainage. • Water in excavation. • Breaking out obstructions. • Noise from plant. • Contaminated water.	• Injury to persons from collapsing excavations. • Damage to surrounding properties from excessive ground movement. • Injury/illness of site operatives/ personnel, eye/skin irritation. • Injury or electrocution from services. • Flying materials and debris from breaking out. • Gas/fuel pipes/tanks/methane. • Falls. • Hearing damage. • Dust inhalation & ingestion. • Giardiasis Syndrome (Wells Disease etc.).	• Adequate design and provision of suitable temporary propping scheme / permanent works to support excavations. • Monitoring of ground movement by installation of movement and vibration sensor monitoring points on site and surrounding buildings. • Properly sequenced phasing of excavation and propping. • Installation of Ground Water well points to control water ingress within excavated basement. • Leave soil formation 500mm above final excavation prior to excavation to final formation level. • Refer CIRIA reports. • HSE guidance notes. • Undertake survey to determine location of existing underground services crossing site and those within immediate vicinity. • Check with statutory authorities for underground services and drainage. • Protective barriers to be provided around all excavations. • Provision of all PPE. • Provision of pumps etc. to remove excess water. • Check for contaminated subsoils in excavations. • Disposal of contaminated materials to licensed tip. • COSHH assessment of materials. • Safe access to be provided with all necessary safety rails, harness, etc. • Investigate adjacent structures/ foundations. • Testing manholes, contaminated ground, etc for gas/methane. • Provide adequate personnel cleaning facilities on site.

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LOCATION/PROCESS	HAZARD	RISK	CONTROLS/ACTION
Concrete works.	• Collapse of formwork/ shuttering/props. • Stability of framework. • Falls from heights. • Handling reinforcement. • Placing concrete • Sharp edges. • Spillage of materials. • Falling objects/debris. • Overhead working. • Projecting reinforcement. • Cement/concrete. • Weight of wet materials. • Delivery of ready mixed concrete.	• Tripping. • Injury from collapsing formwork, shuttering/frames. • Manual handling/muscular- skeletal injuries. • Injury/illness/skin irritation/inhalation/ ingestion. • Falls. • Fixing reinforcement. • Danger to public and operatives when delivering ready mixed concrete.	• Properly sequenced phasing of RC frame structure construction and removal of temporary propping scheme phased to coincide with basement construction of RC structure and removed only upon confirmation of required concrete design strength achieved. • Allow for concrete in fluid state. • Provision of all PPE. • Adequate design and specification of temporary works and supervision and installation. • Adequate design and specification for formwork, propping and adequate supervision and checking of installation. • COSHH assessment of materials. • Refer to HSE guidelines/notes. • Provision of guardrails and barriers. • Refer to building advisory services publications. • Provision of adequate lifting facilities. • Provision of off-street standing ready mixed concrete lorries.
Construction of brick and block work.	• Stability of walls during construction. • Weights of materials and components. • Falls. • Falling objects, debris. • Cement. • Off-loading. • Manoeuvring blocks in position. • Dust, debris, drilling when cutting & chasing. • Projecting ties. • Sharp edges. • Noise.	• Falling walls – injury to personnel. • Manual handling/muscular-skeletal injuries. • Falling components and debris. • Control of off-loading. • Illness/injury/skin irritation/ inhalation/ingestion/ cuts/hearing damage. • Falls.	• Walls to be temporarily supported laterally during construction. • Provision of adequate and suitable lifting facilities. • Provision of adequate scaffold, scaffold access towers, ladders with appropriate guardrails, toe boards, etc. all to be checked and inspected regularly by competent person. • Mechanical sawing and cutting of block and bricks to size and cutting chases. • Provision of all appropriate PPE. • COSHH assessment of materials. • Protect ends of projecting ties.

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LOCATION/PROCESS	HAZARD	RISK	CONTROLS/ACTION
Steelwork Erection	• Weight of materials. • Sharp edges. • Raising and lifting material. • Site welding. • Site bolting. • Overhead working. • Cutting steelwork. • Falls from heights. • Manoeuvring steelwork into position. • Off/unloading materials.	• Control of off-loading materials, danger to operatives and general public. • Fire and explosion. • Falling materials, components, debris. • Manual handling/musculo-skeletal injuries.	• Refer to specification. • Protection against falling materials and components. • Protection from falling objects and debris. • Adequate and proper lifting facilities. • Hot work permits. • Adequate scaffolding, scaffold towers, including edge guards and guardrails. • Provision of all PPE. • Refer to British Standards and/or Codes of Practice for assembly and erection of steelwork. • Refer to HSE guidance notes and building advisory service publications. • COSHH assessment of paint and materials used for fire protection. • Provision of safety netting, harness, safety lines for erection of steelwork.
Construction and erection of timber flat roofing and framing	• Stability of floors and walls during construction. • Power tools/ cables • Weight of materials. • Falling objects, debris. • Sharp edges. • Raising and lifting material. • Dust, debris, drilling when cutting & chasing. • Site bolting/fixing. • Overhead working. • Cutting timber. • Falls from heights. • Manoeuvring timber into position. • Off/unloading materials.	• Falling walls – injury to personnel. • Electrocution/ trip hazards. • Control of off-loading materials, danger to operatives and general public. • Fire. • Falling materials, components, debris. • Illness/injury/skin irritation/ inhalation/ingestion/cuts/hearing damage. • Manual handling/musculo-skeletal injuries. • Falls/Tripping.	• Refer to specification. • Protection against falling materials and components. • Protection from falling objects and debris. • Adequate and proper lifting facilities. • Adequate scaffolding, scaffold towers, including edge guards and guardrails. • Provision of all PPE. • Refer to British Standards and/or Codes of Practice for assembly and erection of steelwork. • Refer to HSE guidance notes and building advisory service publications. • COSHH assessment of paint and materials used for fire protection. • Provision of safety netting, harness, safety lines for erection of timber.

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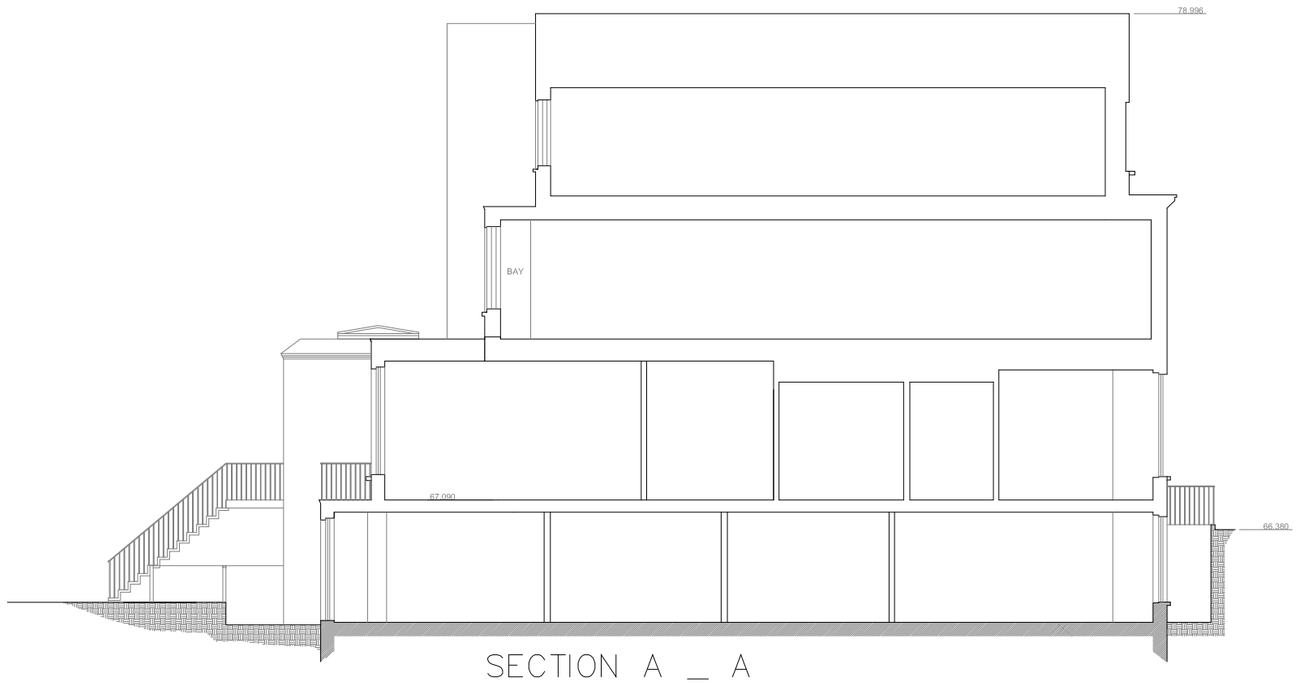
APPENDIX A

TWS - 8972_BIA_01 – SITE LOCATION PLAN INDICATING ADJOINING PROPERTIES

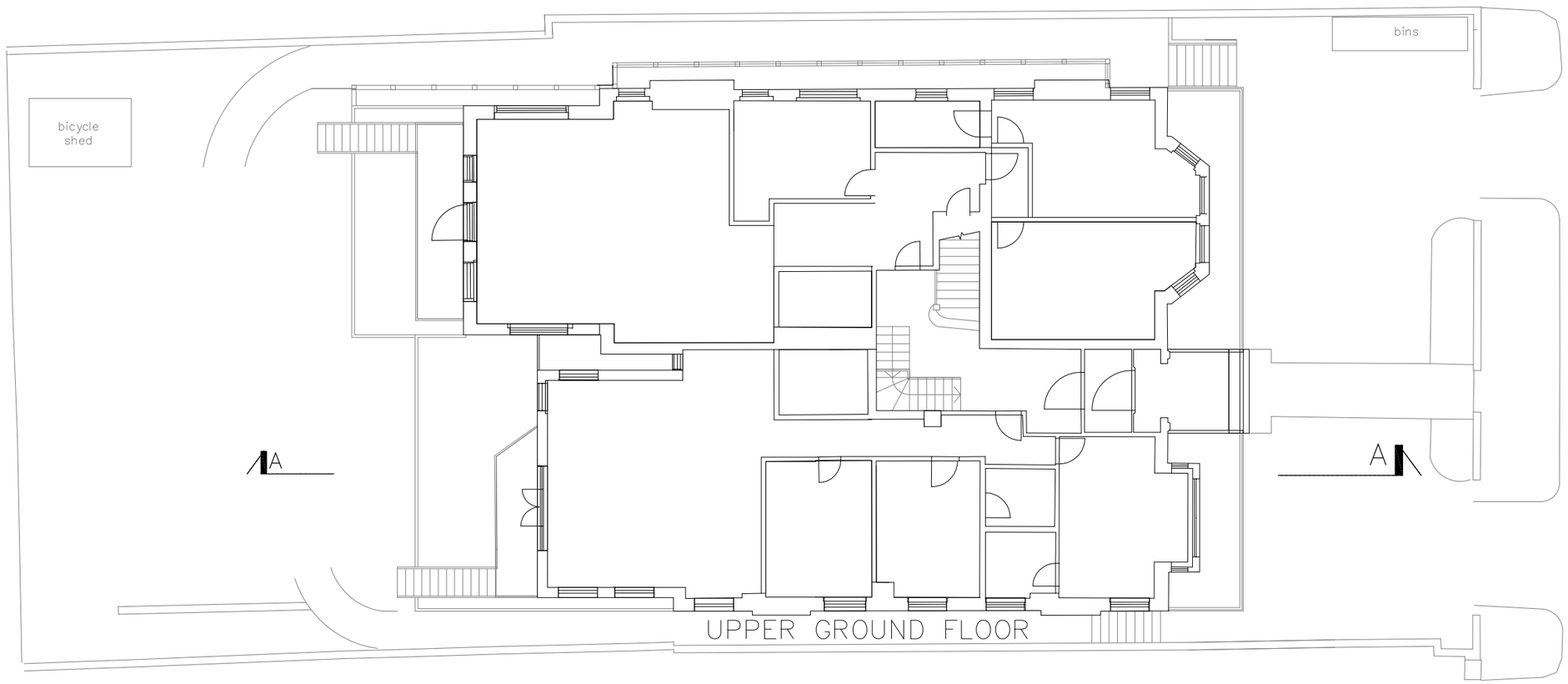
taylor whalley spyra consulting civil and structural engineers 3 Dufferin Avenue, Barbican, LONDON EC1Y 8PQ Tel (020) 7253 2626 Fax (020) 7253 2767 E-mail: tws@tws.uk.com Website: www.tws.uk.com	Contract 9 MARESFIELD GARDENS, HAMPSTEAD, LONDON, NW3 5SJ,	Title SITE LOCATION PLAN AND SURROUNDING AREA	Scale NTS	Date 16.06.16	Drawn GB
			Job No. 8972	Drawing No. BIA_01	Rev. -

APPENDIX B

TWS – 8972_BIA_02 – ARCHITECTS GROUND FLOOR LAYOUT &
LONG SECTION THROUGH



SECTION A _ A



UPPER GROUND FLOOR

taylor whalley spyra
tws
consulting civil and structural engineers
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Contract	Title	Scale	Date	Drawn
9 MARESFIELD GARDENS, HAMPSTEAD, LONDON, NW3 5SJ,	ARCHITECTS GROUND FLOOR PLAN AND LONG SECTION THROUGH	1:150	16.06.16	GB
		Job No. 8972	Drawing No. BIA_02	Rev. -

APPENDIX C

TWS - 8972_BIA_03 - EXISTING BUILDING ELEVATION AND SECTION SHOWING EXISTING DEEPMASS CONCRETE FOOTINGS

TWS - 8972_BIA_04 - PROPOSED BUILDING ELEVATION AND SECTION SHOWING NEW LOWER GROUND FLOOR AND RC SLAB AND WALLS

TWS - 8972_BIA_05 – PROPOSED UNDERPINNING INSTALLATION OF NEW RC WALLS, SLABS AND NEW BRICKWORK SEQUENCE OF WORKS

EXISTING ADJOINING BUILDING DRAWINGS
L110 7 MARESFIELD GARDENS
575_10 11 MARESFIELD GRARDENS LOWER GROUND FLOOR PLAN
575_13 11 MARESFIELD GARDENS PROPOSED ELEVATION AND CROSS SECTIONS

1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
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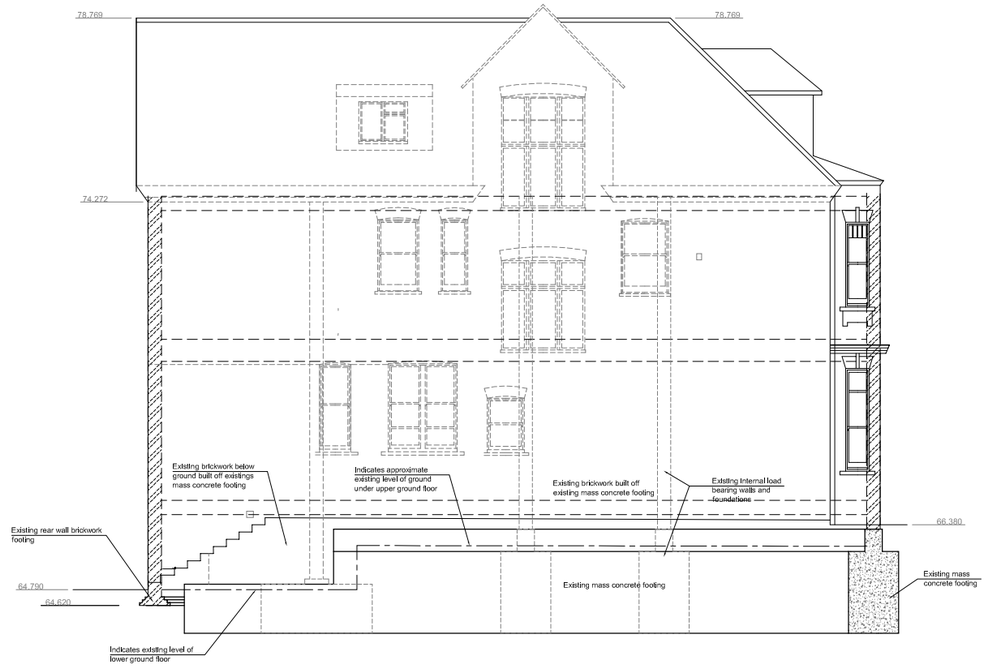

Ref.	Revisions	By	Date
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9 MARESFIELD GARDENS,
HAMPSTEAD,
LONDON,
NW3 5SJ,

EXISTING BUILDING ELEVATION AND SECTIONS SHOWING EXISTING DEEP MASS CONCRETE FOOTINGS

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Scale at A1	Date	Drawn By	
1:100	16/06/16	GB	

Project No.	Drg No.	Rev.
8972	BIA_03	-

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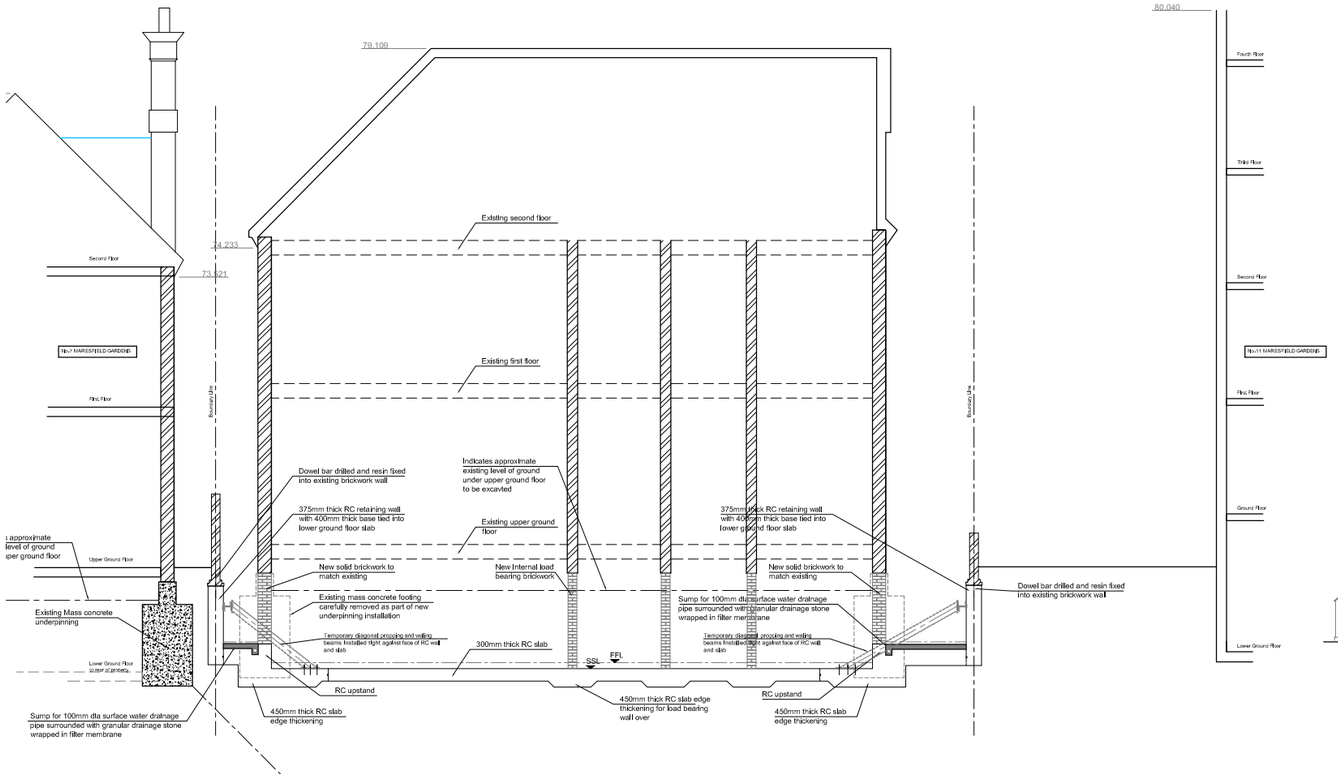

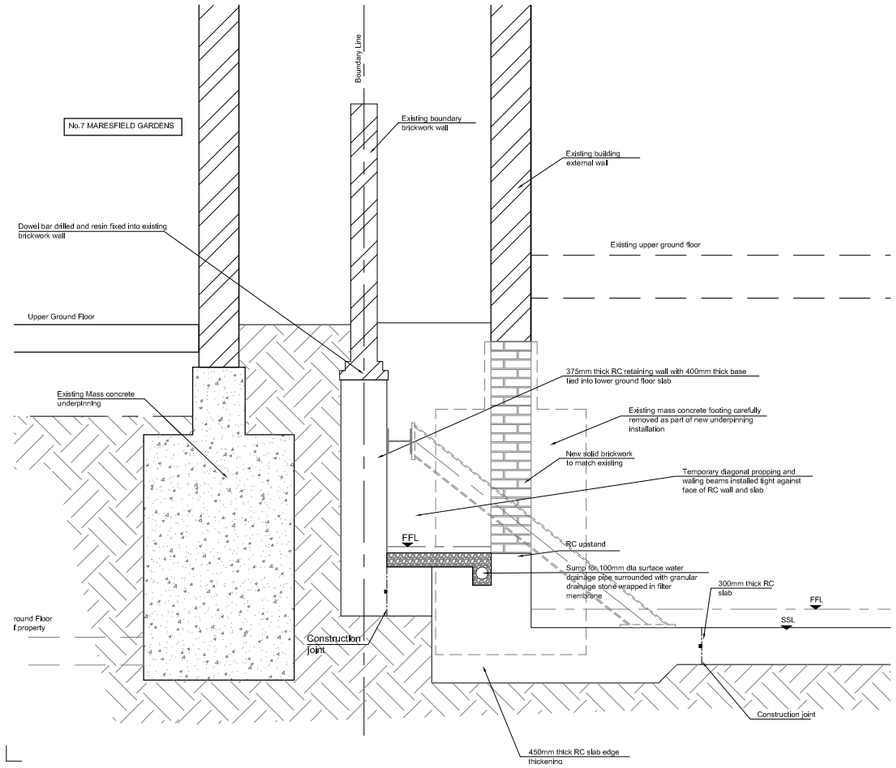

Ref.	Revisions	By	Date
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9 MARESFIELD GARDENS,
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LONDON,
NW3 5SJ,

PROPOSED BUILDING ELEVATION AND SECTION SHOWING NEW LOWER GROUND FLOOR RC SLAB AND RC WALLS

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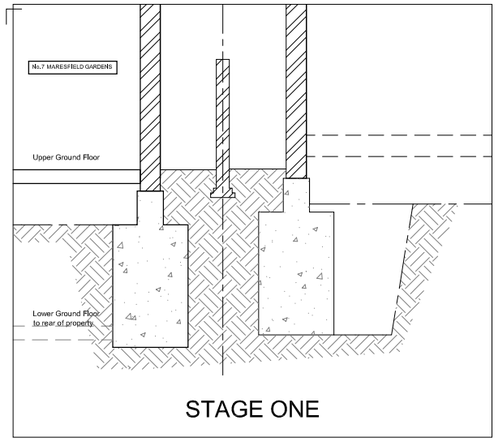
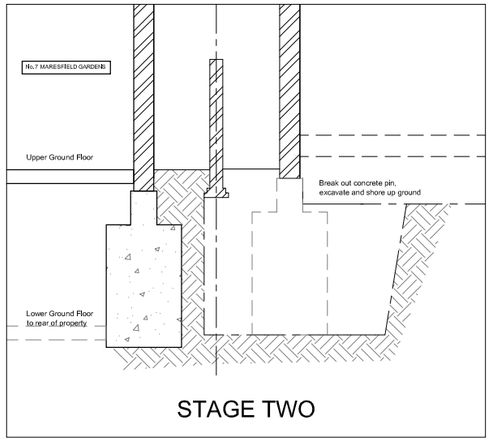
Scale at A1	Date	Drawn By	
1:100	16/06/16	GB	

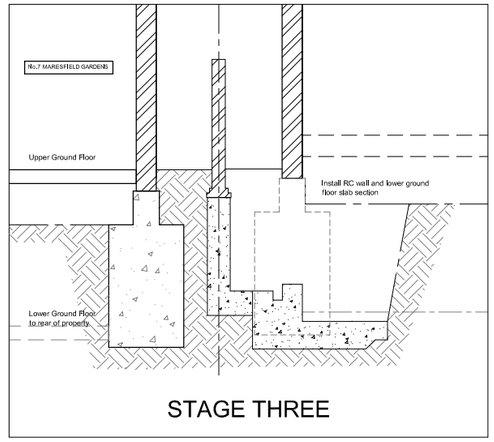
Project No.	Drg No.	Rev.
8972	BIA_04	-



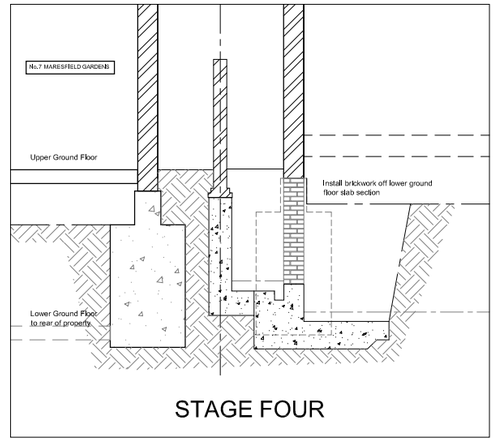
STAGE ONE



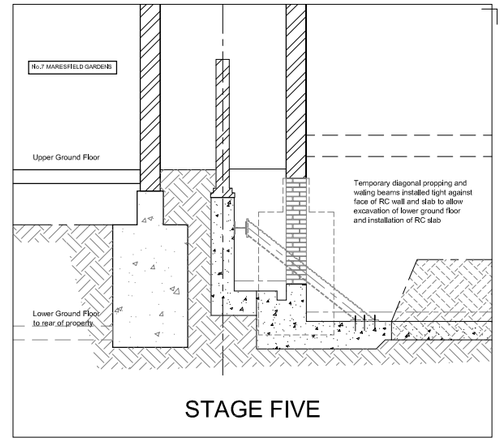
STAGE TWO



STAGE THREE



STAGE FOUR



STAGE FIVE

SEQUENCE OF WORKS

Install monitoring points on site and the surrounding area

Contractor to review proposed underpinning and excavation sequence and supply full method statements to Project Engineer for approval

The proposed sequence for each underpin is the same for all three elevations on the east boundary, west boundary walls and south elevation

All excavation is to be undertaken from with the existing building envelope with excavation undertaken towards the new RC retaining walls supporting the boundary line walls and the front lightwell walls

Installation of Bay Type ONE

Excavate 1.2m wide Bay Type ONE in front of existing mass concrete underpins and excavation depth to be level with mass concrete footing.

Install temporary mechanized shoring system for 1.2m wide trench

Carefully saw cut existing mass concrete underpins and break out concrete with small breakers to minimise vibration and disturbance to adjoining properties

Excavate ground between building and boundary wall and install additional temporary shoring system

Install 75mm concrete blinding and DPM to base of excavation and smooth off soil face for casting RC wall face against

Install drilled dowel bars and resin fix to underside of existing brickwork wall

Install all rebar/shuttering and cast RC retaining wall to underside of existing boundary wall and cast RC lower ground floor base with RC upstand

Leave for 24 hours and remove all shuttering and then build new lower ground floor brickwork wall off RC upstand tight to underside of existing building brickwork to be built in tight. Allowing for window lintels as required and install solid hardwood timber strutting within window opening.

All new brickwork to be built in lifts and allow 12 hours between next lift. The last three brick course are to be installed 12 hours after lower lift and packed tight to underside of existing brickwork. Any existing brickwork that is loose is to be reinstated.

Repeat the above for Bay Type TWO, then Bay Type THREE, then Bay Type FOUR and Bay Type FIVE.

Phased Installation of RC lower ground floor slab

With all RC walls and new building external elevation brickwork now in place the lower ground floor slab can be installed in a phased sequence

Install 5no. diagonal props between new boundary RC and RC slab. Once installed excavate Phase One ground under the building to lower ground formation level.

Existing internal load bearing walls and mass concrete underpinns are to remain in place whilst casting lower ground floor slab around them

Install Phase One below slab drainage, main RC slab build-up of 75mm concrete blinding, DPM reinforcement and cast lower ground floor RC slab tied into perimeter RC slab thickening

Internal Load bearing wall installation

With lower ground floor RC slab in place install temporary propping off new RC slab to support existing internal load bearing walls. With propping in place carefully saw cut and break out mass concrete underpins.

Install RC slab build-up of 75mm concrete blinding, lap DPM and reinforcement to adjacent cast slab and cast remainder of lower ground floor RC slab infill.

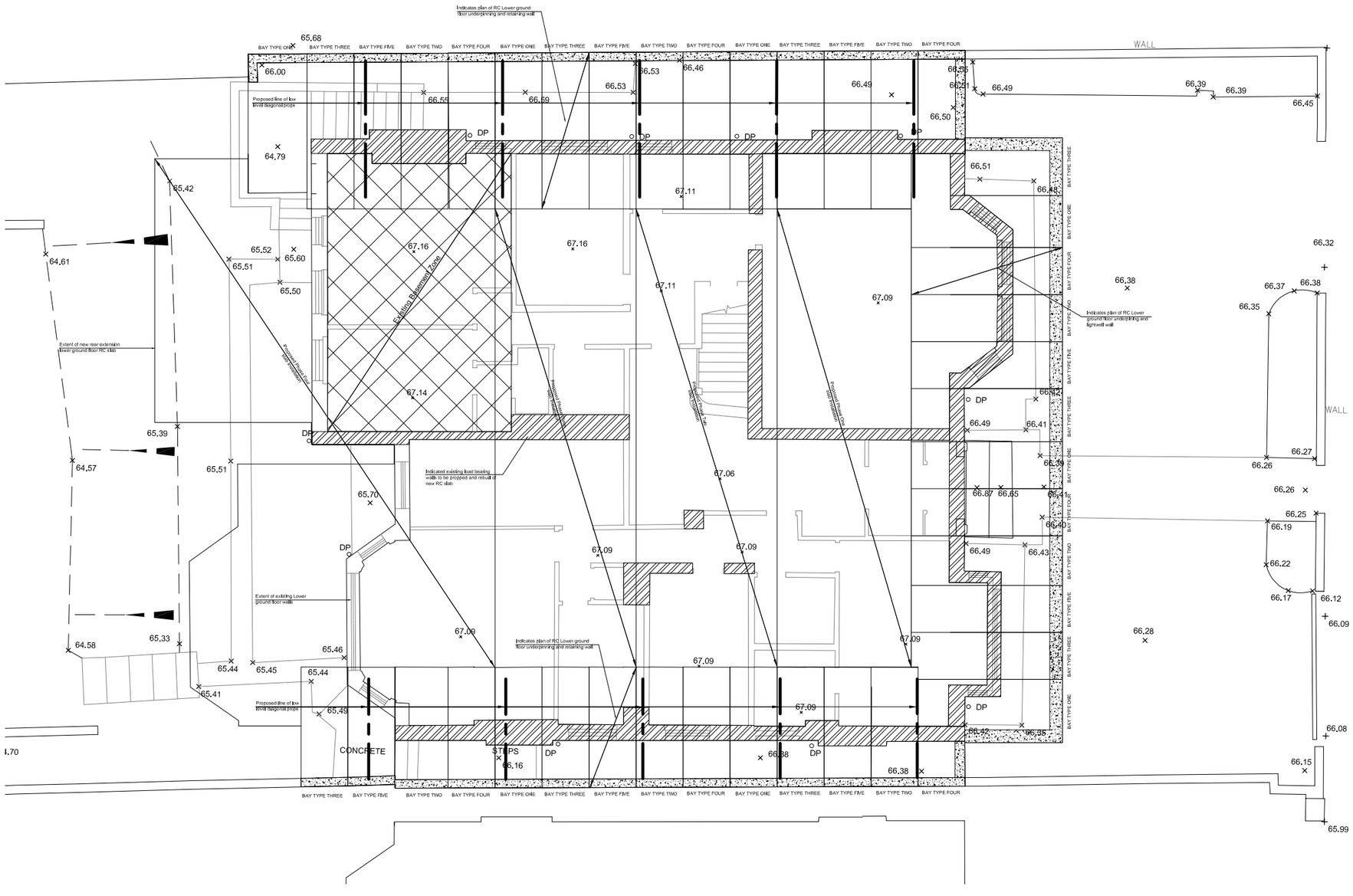
Leave for 24 hours and then build new lower ground floor internal load bearing brickwork walls off RC slab tight to underside of existing building brick to be built in tight.

All new load bearing internal brickwork to be built in lifts and allow 12 hours between next lift. The last three brick course are to be installed 12 hours after lower lift and packed tight to underside of existing brickwork. Any existing brickwork that is loose is to be reinstated.

Once the lower ground floor RC slab and load bearing brickwork walls have gained the required design strength all, temporary propping can be removed.

With the lower ground floor now complete the rear extension can now be undertaken and refurbishment of existing building undertaken.

STAGED SEQUENCES ONE TO FIVE FOR INSTALLATION OF UNDERPINNING RC WORKS ALONG 7 MARESFIELD GARDENS (SEQUENCE ALONG 11 MARESFIELD SIMILAR)



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Ref.	Revisions	By	Date

9 MARESFIELD GARDENS,
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NW3 5SJ,

PROPOSED UNDERPINNING INSTALLATION OF NEW RC WALL, SLABS AND NEW BRICKWORK SEQUENCING OF WORKS

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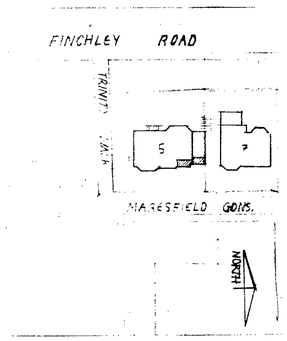
3 Dufferin Avenue, Barbican, LONDON EC1Y 8PQ
Tel (020) 7253 2626 Fax (020) 7253 2767
E-mail: tws@zeus.com Website: www.zeus.com

Scale at A1	Date	Drawn By	
1:60, 1:50	16/06/16	GB	

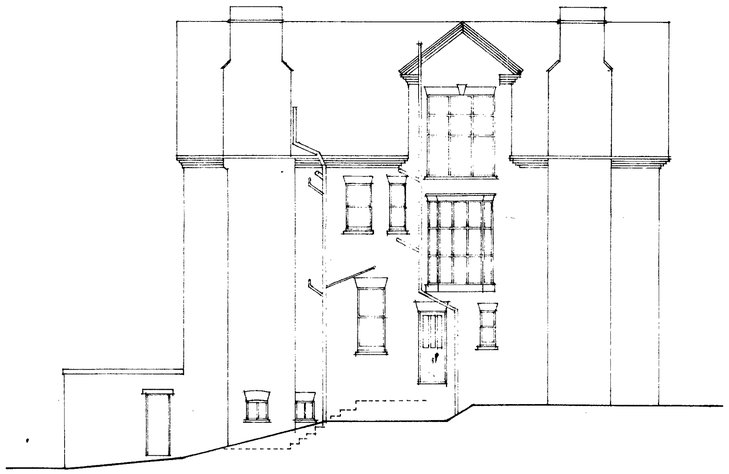
Project No.	Drg No.	Rev.
8972	BIA_05	-

REAR ELEVATION AS EXISTING

AS PROPOSED



LOCATION PLAN 1:1000



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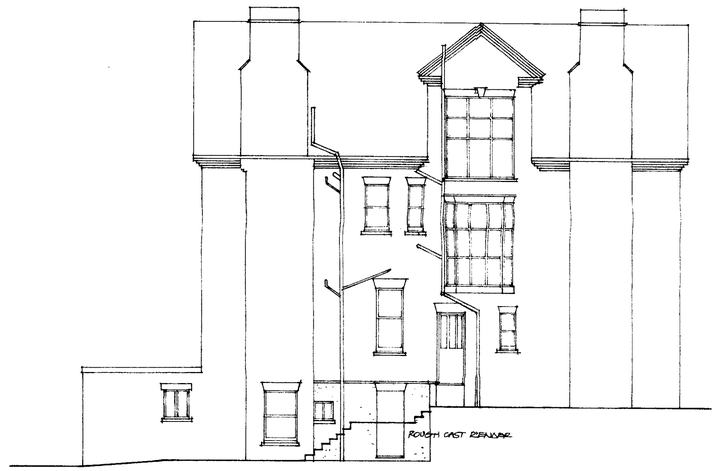

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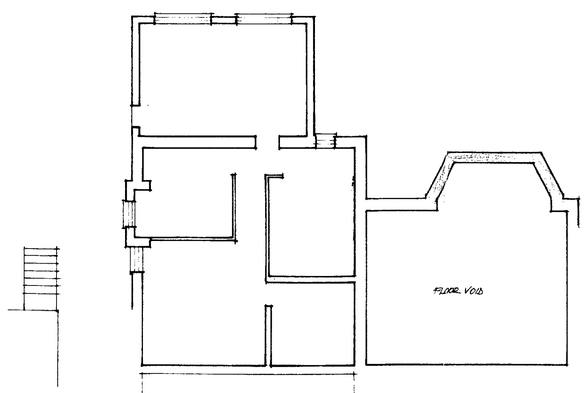
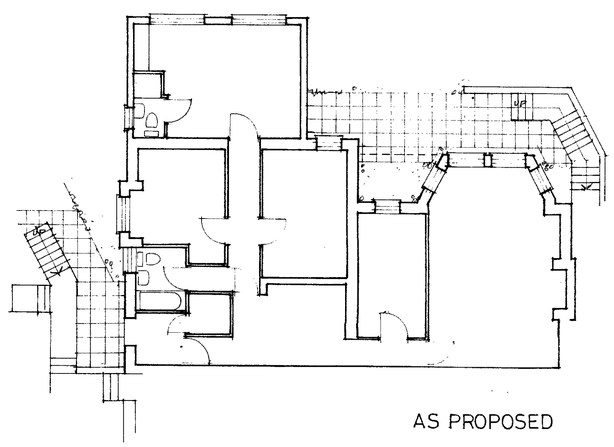


PART LOWER GROUND FLOOR PLAN AS EXISTING



AS PROPOSED

LONDON BOROUGH OF CAMDEN
TOWN AND COUNTRY PLANNING ACTS
14 AUG 1996
PLANS APPROVED
ON BEHALF OF THE COUNCIL

P9601954
C9601955

Client
SEARS PROPERTY

Job title
EXTENSION TO
7 MARESFIELD GARDENS
LONDON NW3

Drawing title
PLANS AND
ELEVATIONS

Scale 1:100 | June 96 | Drawn

MILGROUP
7-11 Kensington High Street,
London W8 5NP

L110 01

A1 594 x 841

communal gardens

parking

balcony projection over

footpath

vehicular entrance

store (no access)

louvred vent

access stair

store (no access)

access stair

1

2

parking

parking

parking

parking

parking

garage

garage

garage

garage

garage

garage

garage

storage

store (no access)

downstand beams

EXISTING PARKING & GARAGES

downstand beams

downstand beams

hose reel

Fire Ext

Fire Ext

parking

parking

parking

boiler room (no access)

parking

garage

garage

parking

garage

garage

garage

parking

garage

louvred vent

lift

lift lobby

glass encased free standing wall climber lift & lift lobby

steps to car park

steps to car park

existing footpath

new footpath

existing footpath

new entrance created through exg dwarf brick boundary wall

footpath

9 Maresfield Gardens

17 Maresfield Gardens

LOWER GROUND FLOOR LAYOUT

MARESFIELD GARDENS

1 0 5 10

1 0 5 10

Revision Date

Peter Newson Associates Ltd
Chartered Architects
The Old Reading Room, 32 High Road
Essendon, Hatfield, Herts, AL9 6HW
Tel: 01707 276595 Fax: 01707 260024

Job Title

Mourne House
Maresfield Gardens
London NW3

Drawing Title

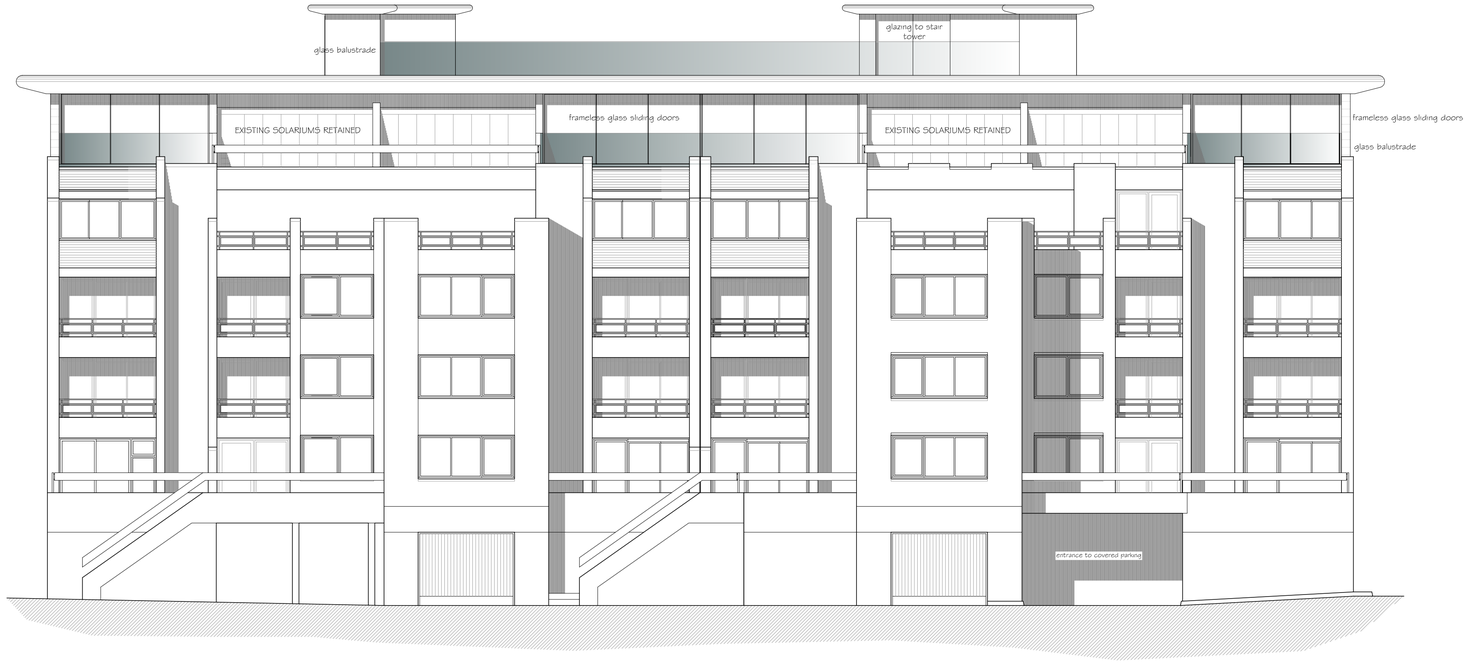
Proposed Ground Floor & Lower Ground Floor Plan

Date: August 2011

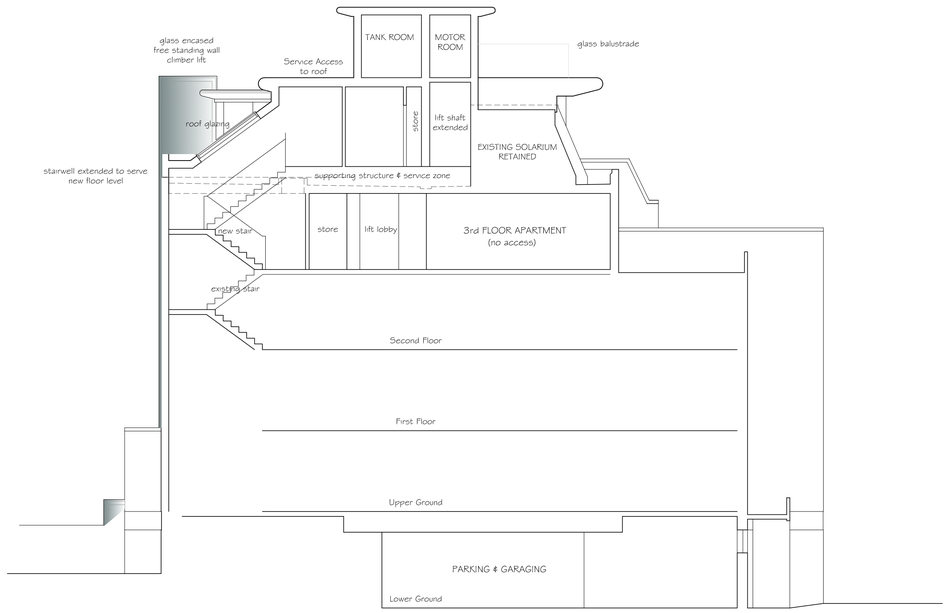
Scale: 1:100

Job No: 575

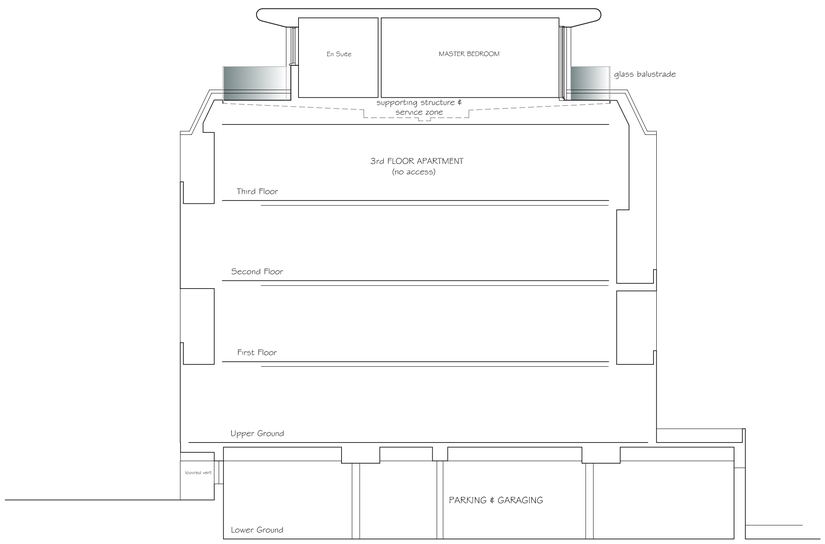
Drawing No: 10



WEST ELEVATION TO GARDEN



SECTION 2-2 Proposed



SECTION 1-1 Proposed

1 0 5 10

Revision Date

Peter Newson Associates Ltd
Chartered Architects
The Old Reading Room, 32 High Road
Essendon, Hatfield, Herts, AL9 6HW
Tel: 01707 276595 Fax: 01707 260024

Job Title
Mourne House
Maresfield Gardens
London NW3

Drawing Title
Proposed Rear Elevation & Cross Sections

Date August 2011
Scale 1:100

Job No 575
Drawing No 13

APPENDIX D

SBH TEMPORARY SHORING DETAILS

100 E0412

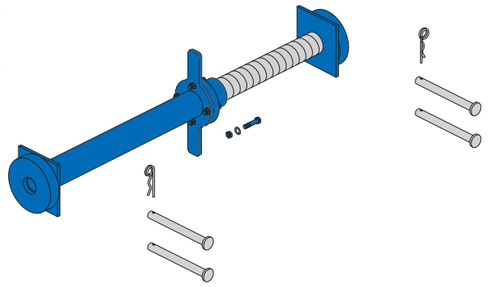
An all-rounder

6 different strut types make SBH lightweight shoring a real all-rounder in its field.

Depending on the job, trench widths between 65 centimetres and 3.21 metres can be shored safely.

Light weight strut

Stut type	Working width b_c [m] min.	Working width b_c [m] max.	Trench width b [m] min.	Trench width b [m] max.	Permissible compressive force [kN]	Weight [kg]
A	0,53	0,73	0,66	0,86	160	14,2
B	0,71	1,07	0,84	1,20	147	16,9
C	1,05	1,65	1,18	1,78	124	20,9
D	1,50	2,10	1,63	2,23	107	23,6
E	1,88	2,48	2,01	2,61	92	25,8
F	2,48	3,08	2,61	3,21	69	29,3



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info@sbh-tiefbautechnik.com
www.sbh-tiefbautechnik.com

www.team-vk.de

LIGHT WEIGHT SHORING

Series 100

Simple

Durable

Economical

LIGHT WEIGHT SHORING
Series 100

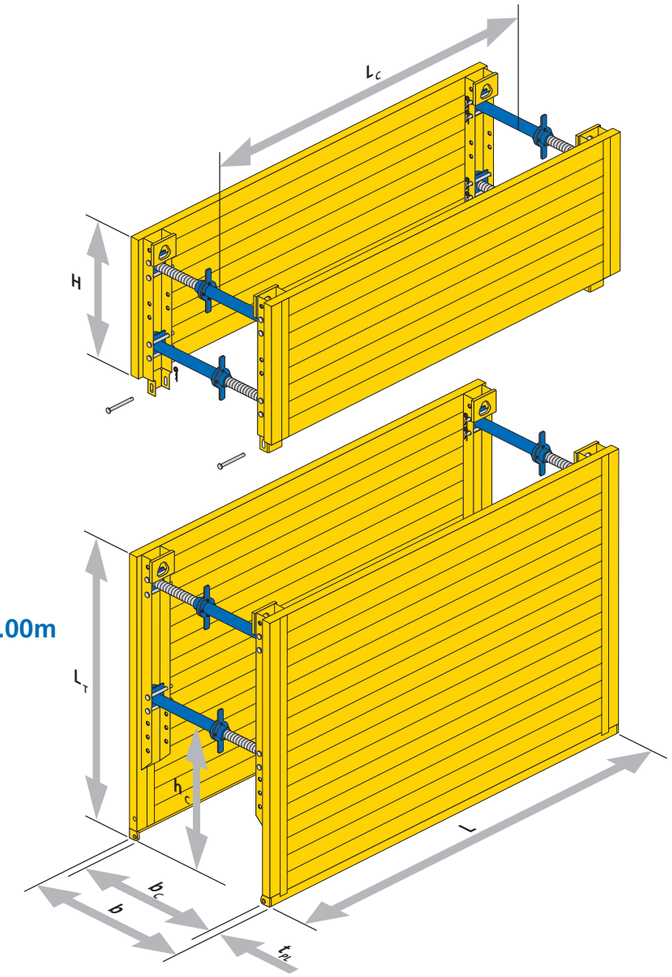
Small-sized shoring, great flexibility

SBH lightweight steel shoring is chosen all over the world as the preferred shoring system for small to middle-sized trenches and use of lightweight excavators.

The system is versatile and is particulary suitable for supply lines and service lines.

Variable system

The base plates are available in lengths from 2.00m up to 3.50m and heights from 1.60m up to 2.60m. Deeper trenches can be shored using top boxes.



- ideal for **house service connection**
- **Place and adjust method** only
- Lightweight construction with plate thickness of 60 mm
- Recommended **trench depth up to 3.00m**

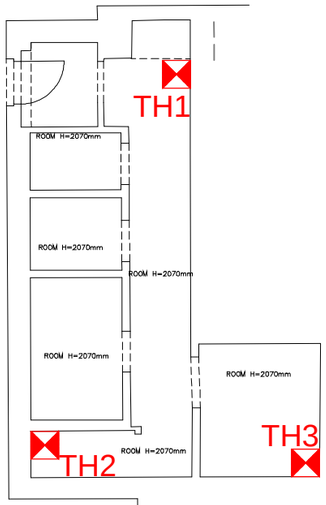
Plates t_{PL} = 60mm

Plate length L [m]	Plate height H [m]	Pipe clearance length L_c [m]	Pipe clearance height h_c [m]	Safe working load [kN/m²]	Weight c/w strut B [kg/box]
2.00	1.60 2.00 2.40 2.60	1.60	0.94	27.7	570 670 770 830
	0.60 1.00				275 415
2.50	1.60 2.00 2.40 2.60	2.10	0.94	22.1	655 770 890 965
	0.60 1.00				315 470
3.00	1.60 2.00 2.40 2.60	2.60	0.94	18.5	745 875 1010 1095
	0.60 1.00				355 525
3.50	1.60 2.00 2.40 2.60	3.10	0.94	15.3	830 980 1130 1230
	0.60 1.00				395 585

APPENDIX E

TWS - 8972_SI01 & SI02 – TRIAL HOLE LOCATIONS
STRUCTURAL SOILS LIMITED 120 FINCHLEY ROAD GROUND INVESTIGATION REPORT
BRITISH GEOLOGICAL SOCIETY LOCAL BOREHOLE LOGS

1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
2. No dimensions are to be scaled from this drawing.
3. No deviation may be made from the details shown on this drawing without prior agreement of the Engineers.
4. Any discrepancy between this drawing and any other document should be referred immediately to the Engineer.

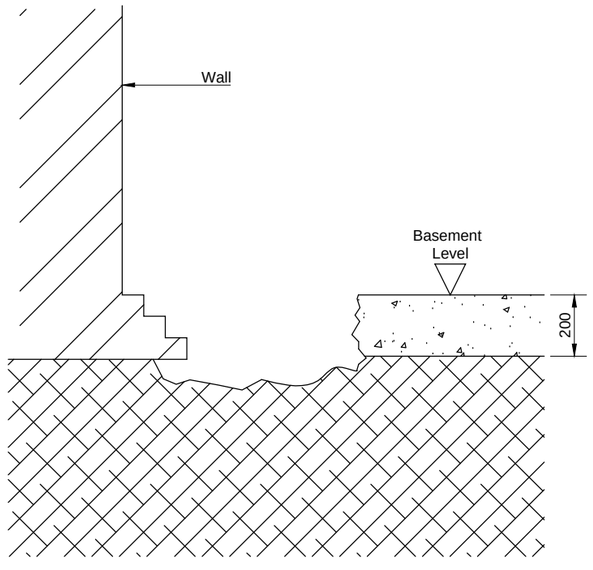


EXISTING BASEMENT PLAN
Scale 1:100

TRIAL HOLE 1

TRIAL HOLE 2

TRIAL HOLE 3



Internal TH01,TH02 and TH03
SCALE 1:20

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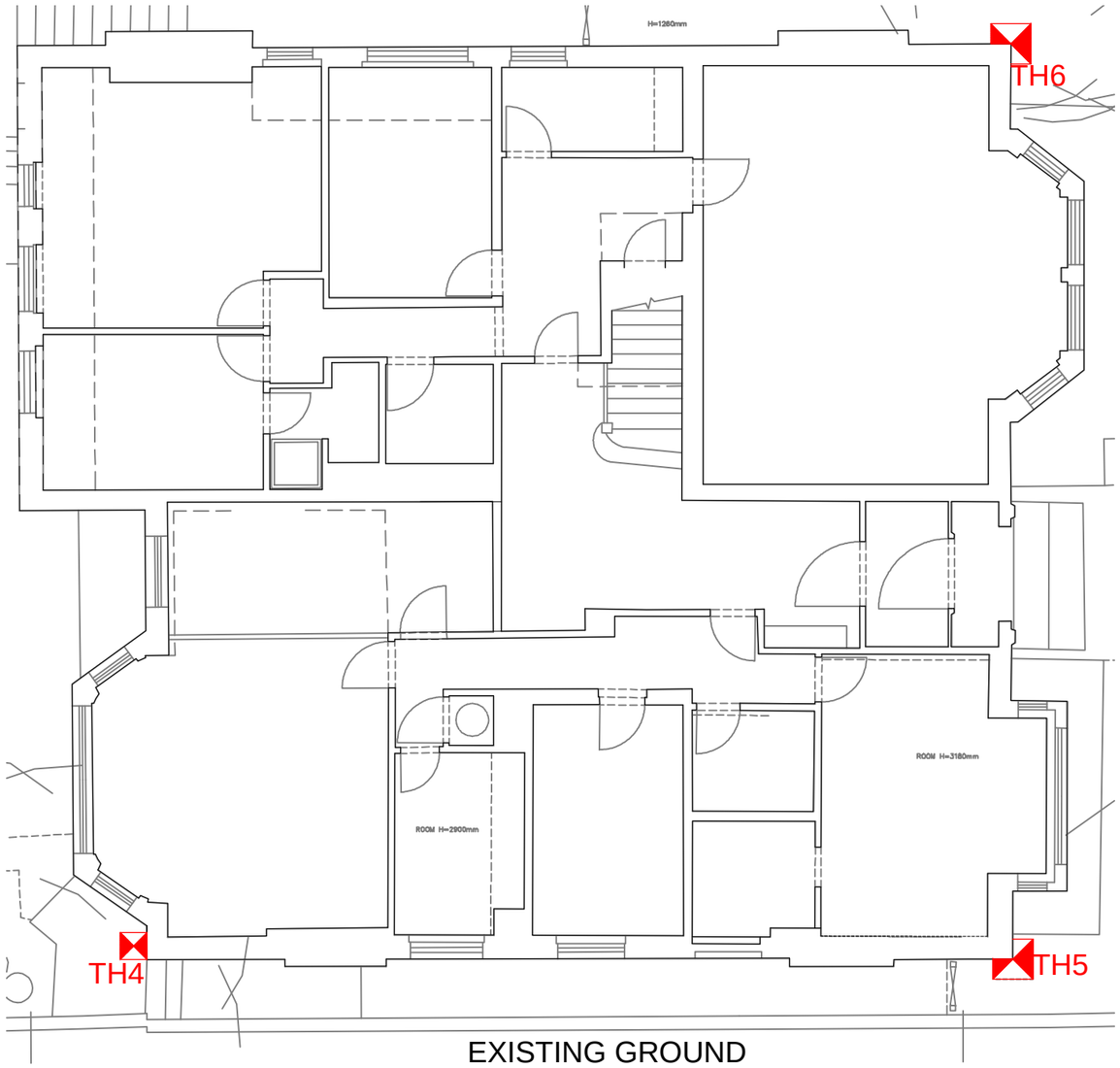
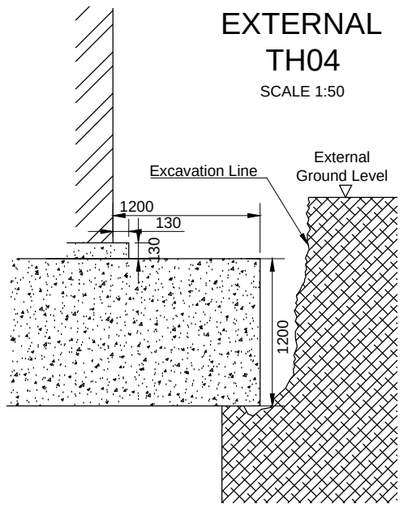
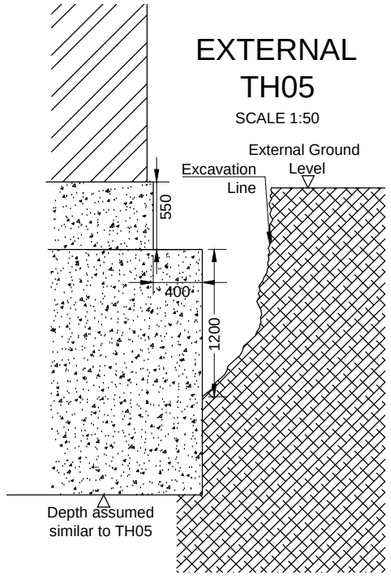
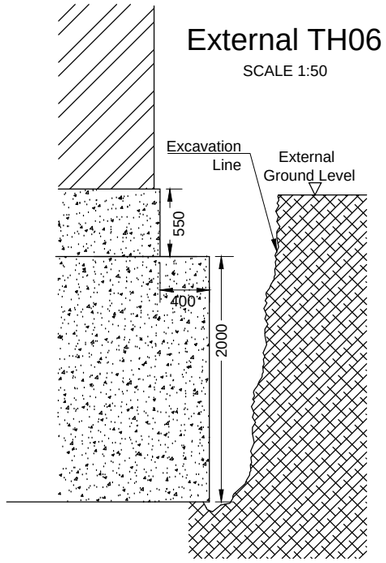
Contract	Title	Scale @ A3	Date	Drawn
9 MARESFIELD GARDENS, NW3 5SJ, LONDON	PROPOSED INTERNAL TRIAL HOLES	1:100	10.12.15	AK
		Job No. 8972	Drawing No. SI01	Rev. -



EXISTING GROUND
FLOOR PLAN
Scale 1:100







1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
2. No dimensions are to be scaled from this drawing.
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Contract	Title	Scale @ A3	Date	Drawn
9 MARESFIELD GARDENS, NW3 5SJ, LONDON	PROPOSED EXTERNAL TRIAL HOLEs	1:100, 1:20	12.10.15	AK
		Job No. 8972	Drawing No. SI02	Rev. -

BRAVO INVESTMENT LIMITED

FACTUAL REPORT

on

GROUND INVESTIGATION

at

120 FINCHLEY ROAD

HAMPSTEAD

12 JULY 2012

REPORT NO: 726815

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DOCUMENT ISSUE RECORD

Contract No:	726815
Client:	Bravo Investment Limited
Contract:	120 Finchley Road, London
Document:	Factual Report on Ground Investigation

Prepared by:		K Bridges BSc (Hons) MSc FGS
Approved by:		A Cattell BSc PhD CGeol FGS
Date:		12 July 2012

REVISION RECORD

Revision	Date	Description	Prepared by
01	12/07/12	Final	KB

STRUCTURAL SOILS LIMITED
The Old School
Stillhouse Lane
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BRISTOL
BS3 4EB

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Table of Contents

1 INTRODUCTION

This investigation was carried out on the instructions of Taylor Whalley Spyra on behalf of Bravo Investment Limited. The purpose of the work was to investigate ground conditions and provide information for the design of piled foundations. The work included an intrusive investigation, laboratory testing and the preparation of a report. Borehole logs and test results from a previous investigation completed by others relating to this site have been made available to Structural Soils Limited.

This report details the work carried out both on site and in the geotechnical and chemical testing laboratories; it contains a description of the site and the works undertaken, the exploratory hole logs and laboratory testing results.

The ground investigation has been carried out using cable percussion techniques in general accordance with the recommendations of BS5930: 1999 *Code of Practice for Site Investigations.* Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

A comprehensive desk study, other than an inspection of geological maps, has not been requested or undertaken as part of this investigation. No testing has been undertaken to detect the presence of gas in the ground.

All information given in this report is based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes. It should be noted that groundwater levels usually vary due to seasonal and/or other effects and may at times differ to those measured during the investigation.

This report was prepared by Structural Soils Ltd for the sole and exclusive use of Bravo Investment Limited in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located on the A41 Finchley Road in Hampstead, North London at British National Grid Reference TQ 264 846 (see Site Location Plan in Appendix A). Access to the site is from the southbound carriageway of the A41, in the direction of Central London.

The topography of the local area generally slopes upwards towards the northeast and the site slopes steeply upwards from approximately 53.8maod on the western boundary to approximately 60.5maod on the eastern boundary. The main access gate is along the western boundary and the site has been cut into three level terraces stepping up from road level at the site entrance. Access between the terraces is via two steep ramps constructed from granular hardcore. At the time of investigation, the site had being cleared of all buildings and trees, a piling mat had being laid across the site and hoarding had been installed along the entire perimeter.

All services from the site have been removed, with the exception of a junction box at the far north western corner of the site where water, gas and electricity supplies have been cut off at the site boundary. No overhead cables cross the site.

The site is bounded to the north by the Holy Trinity Church, to the east by flats, to the south by commercial property and the west by Finchley Road.

2.2 Geology

The British Geological Survey map (sheet 256, scale 1:50,000, published 1993) shows the site to be underlain by London Clay Formation, which is a silty clay with occasional sandy layers.

3 FIELDWORK

3.1 Scope of Works

1 no. cable percussion borehole (BH1) was completed between 8 and 15 May 2012 at the location shown on the Exploratory Hole Location Plan in Appendix A. The scope of investigation and choice of investigation equipment was decided by Taylor Whalley Spyra. Sampling and in-situ testing details were specified by Taylor Whalley Spyra.

The position was selected by Taylor Whalley Spyra and set out by Structural Soils Limited. The exploratory hole was logged by an engineer in general accordance with the recommendations of BS5930: 2010 Amendment 2, which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1. Detailed descriptions, together with relevant comments, are given in the log included in Appendix B.

3.2 Cable Percussion Boreholes

The borehole was drilled using a cable tool percussion drilling rig and was 250mm diameter reducing to 150mm diameter with depth. The depth of the borehole was 50m and it encountered Made Ground over London Clay. An inspection pit was excavated by hand at the borehole location prior to the commencement of drilling.

100mm diameter undisturbed samples were recovered from the cohesive strata in the borehole. Small disturbed and bulk soil samples were taken from the borehole at regular intervals. Standard Penetration Tests (SPT) were carried out at regular intervals, in accordance with BS EN ISO 22476-3. The recorded SPT N-values are summarised on the borehole log. The SPT hammer used was calibrated for efficiency; the calibration certificate for the hammer is also included in Appendix C. The SPT results are presented there in tabular format on the Summary of Standard Penetration Tests, on which the normalised N_{60} values are also reported (equivalent N-value for a hammer delivering 60% of the theoretical drop energy). The serial number of the hammer used for each test is stated on the summary table. Plots showing both N and N_{60} values versus depth are also included.

On completion the borehole was backfilled with arisings.

4 LABORATORY TESTING

Samples for potential geotechnical testing were returned to the company's laboratory in Bristol. Geotechnical and chemical tests were scheduled by Taylor Whalley Spyra and Structural Soils Ltd.

Geotechnical laboratory testing was generally carried out in accordance with BS1377: 1990, *Methods of Test for Soils for Civil Engineering Purposes*, Parts 1 to 8, unless indicated otherwise. Where non-standard procedures have been undertaken, this is recorded on the report sheet. The results are reported in tabular and graphical form and included as Appendix D of this report.

Chemical testing (e.g., for concrete classification) was carried out in accordance with MCERTs/UKAS standards. The results are reported in Appendix E of this report, along with the accreditation certificate for the laboratory.

4.1 Unconsolidated Undrained Triaxial Compressive Shear Strength Tests (without the measurement of pore pressure)

16 no. single stage unconsolidated undrained triaxial compression tests without the measurement of pore pressure were undertaken in accordance with BS1377: Part 7: 1990. Each test was carried out on a single specimen nominally 100mm in diameter and 200mm in length. The confining pressures ranged between 30kPa and 930kPa.

Each test result is reported on an individual sheet that records test details including sample dimensions, confining pressures, mode of failure and measured undrained shear strength. A plot of applied deviator stress versus axial strain is also included on each sheet.

4.2 Chemical Analyses

8 no. soil samples were tested to determine their pH values, water soluble sulphate, total acid soluble sulphate and total sulphur contents.

STRUCTURAL SOILS LIMITED

K Bridges BSc (Hons) MSc FGS

A Cattell BSc PhD CGeol FGS

5 REFERENCES

5.1 BS 5930:1999 *Code of Practice for Site Investigation,* including amendment A2 (2010)

5.2 British Geological Survey sheet 256 1:50,000, published 1993

5.3 BS EN ISO 14688-1:2002 *Geotechnical investigation and testing – Identification and classification of soil: Part 1: Identification and description*

5.4 BS EN ISO 14688-1:2004 *Geotechnical investigation and testing – Identification and classification of soil: Part 2: Principles for a classification*

5.5 BS EN ISO 14689-1:2003 *Geotechnical investigation and testing – Identification and classification of rock: Part 1: Identification and description*

5.6 BS EN ISO 22476-3:2005 (updated February 2007) *Geotechnical Investigation and Testing – Field Testing Part 3: Standard Penetration Test*

APPENDIX A

(i) Site Location Plan

(ii) Exploratory Hole Location Plan