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106 MALDEN ROAD, LONDON,
NW5 4DA

BASEMENT IMPACT ASSESSMENT
PRC/2565/BIA

AUGUST 2015

106 MALDEN ROAD, LONDON,
NW5 4DA

BASEMENT IMPACT ASSESSMENT
PRC/2565/BIA
AUGUST 2015

1.0 Introduction

The purpose of this BIA is to consider the viability of the proposed lightwell and basement extension and its affect on:-

- a) The existing ground water
- b) Land stability
- c) Surface flow and flooding
- d) The stability of the existing building and adjoining buildings

The report is intended to address the issues set out in Camden Planning Guidance for basements and lightwells and to mitigate against the adverse effects of ground and surface water the structural integrity of this and the neighbouring buildings.

2.0 Site Context

2.1 Site Location

The site is located in London NW5 area next to Sir Robert Peel public house on the corner of Malden Road and Queen's Crescent. The property is 4 storey terraced (3 above ground at the front facing Malden Road).

2.2 Geology

The initial findings of the soils investigation indicates there is brick fill overlying clay, this information confirms the local geological maps indicate the site to be founded on clay formation. There are no trees in the vicinity of the proposed works

2.3 History

The site and its surrounding area appears to have been developed in the late 1800 as predominantly residential area. Most of the properties on 106 Malden Road side have front lightwells except 106 and 108 Malden Road. The maps show that no significant change to the property during its history. Currently the building is being used as a residential use above first and as a launderette at ground floor.

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2.4 Proposed Development

The existing semi basement at the rear of the property is to be extended over the existing paved area and the basement floor locally lowered by 500mm. At the front of the property a new lightwell is to be formed matching the existing front lightwell to 104 Malden Road.

2.5 Impact Assessment

Screening and Scoping

The site is not located in a ground water protection zone as defined by the Environment Agency and not within 100m of water course or water abstraction well. Refer to Camden Hydrological Study Water Courses Map attached.

The British Geological Survey indicates the site to be possibly in the claygate formation comprising clay, silt and sand. To establish this a site investigation was carried out. The results of which are noted in the site investigation and ground conditions section below.

There are no slopes on the site or any signs of instability and no trees in the vicinity of the proposed works.

From the Environment Agency web site, the site is not in a flood risk zone from surface flooding or rivers.

The proposed works extend over existing paved areas, therefore there will be no increase in surface water run off to public sewers.

While the front lightwell is next to the public footway, this is not different to the existing adjacent lightwell at number 104 Malden Road and the depth will be the same.

There are no known manmade cavities (e.g. tunnels) in the vicinity of the proposed basement extensions.

3.0 Site Investigation and Ground Conditions

Ground Conditions were investigated by borehole to a depth of 6.0m which revealed brick fill to 1.4m over firm to stiff silty clay to the depth of the borehole. No ground water was encountered.

4.0 Construction Method Statement

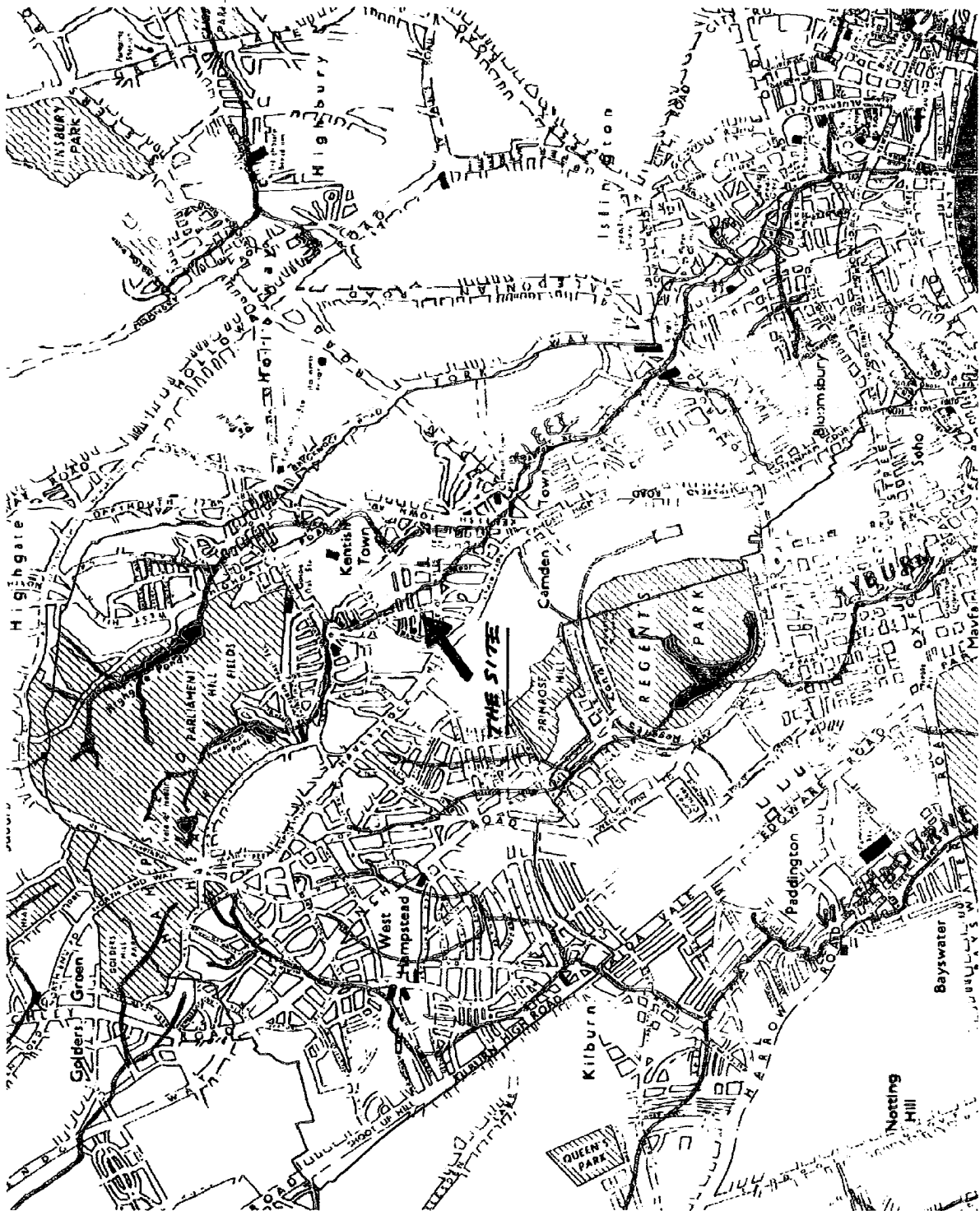
106 MALDEN ROAD

LONDON NWS 4 DA.

FIGURE 11

213923

Camden Geological, Hydrogeological
and Hydrological Study
Watercourses



Source - Barton, Lost Rivers of London

CONSTRUCTION METHOD STATEMENT
106 MALDEN ROAD, LONDON, NW5 4DA
PRC/2565/JULY 2015

This Construction Method Statement is produced to support the Architects Planning Application only and should not be used for any other purpose e.g. party wall awards.

The existing semi basement at the rear of property is to be extended and the basement floor lowered by 500mm to create bedroom accommodation and to the front under the existing front paved area a new lightwell is to be formed with a small bathroom to one side.

Description of Property

The property is a four storey terraced structure which includes an existing basement under the full footprint of the property.

The property is of masonry construction with timber floors and timber rafters forming the roof and appears to be in sound condition structurally from an external non-intrusive visual examination with similar properties either side.

To support this Construction Method Statement, we have carried out a soils investigation into the subsoil conditions the results of which are shown in the Appendices attached.

In summary one borehole was sunk to a maximum depth of 6.0m by means of a window sampler drilling rig. The location is indicated on the site plan in the appendix, together with the borehole logs, and geotechnical test results.

By inspection of the borehole log it can be seen that the subsoil comprises soft to firm orange brown clay bound brick fill to 1.4m overlaying a firm becoming stiffer with depth orange brown silty clay to the base of the borehole at 6m with no ground water being encountered.

The proposed new basement extensions formation level will be founded in the firm/stiff clay at approximately 3.0m below ground floor level.

Laboratory testing proved the clay at formation level to be 33% moisture content and triaxial testing proved the clay to have a cohesion value of 58kN/m² equating to a permissible safe working ground bearing pressure of 100kN/m² which is more than adequate to support the basement extension loads.

Construction Drawings

See drawing PRC/2565/GA1 in the Appendices for underpinning layout sequence and sections to the party walls of the property at the rear and the lightwell section and temporary works to the front

**CONSTRUCTION METHOD STATEMENT
106 MALDEN ROAD, LONDON, NW5 4DA
PRC/2565/JULY 2015**

Construction Sequence

1. Excavation will commence with the front lightwell extension which will be formed using traditional techniques' as shown on drawing No PRC/2565/GA1 in the Appendices with spoil from the excavation being loaded into an adjacent skip for disposal.
2. Once the front lightwell has been formed the rear extension will be commenced with the spoil being transported through the existing basement to the front then onto an adjacent skip for disposal.
3. The party walls will be underpinned in the usual 1, 3, 5, 2, 4 sequence. See drawings PRC/2565/GA1 for construction sequence of a typical pin in the Appendices together with the underpinning specification.
4. The existing walls to the rear extension will be temporarily propped using steel beam needles at regular centres, as necessary with temporary concrete foundations being provided beneath the props.
5. New concrete pad foundations and strip foundations will be constructed where specified on the structural drawings.
6. New steel beams and columns will be installed as specified on the drawings. These will be supported on the underpins or on the new concrete foundations. Steel beams supported by existing masonry walls will be on concrete padstones as specified on the structural drawings. The padstones will spread the load on the existing masonry down to acceptable levels.
7. The top of the new steel beams will be dry packed to the underside of the existing walls above and the existing walls will be repaired and made good as required.
8. When all the underpins to the party walls have been completed bulk excavation will be carried out.
9. The new basement RC ground bearing slab will then be constructed and after curing the finishes applied



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**CONSTRUCTION METHOD STATEMENT
106 MALDEN ROAD, LONDON, NW5 4DA
PRC/2565/JULY 2015**

Potential Impact on 106 Malden Road and Adjacent Property

The proposed semi basement rear extension under the existing property will be formed using an underpinning method, constructed in sections each no wider than 1000mm, with no adjacent underpins constructed within a 48 hour period. This method of construction reduces the amount of potential ground movement and so minimises the effects of settlement of the adjacent structures.

Expected settlement is zero provided an experienced contractor is appointed who undertakes the works using good practice in accordance with the structural design and follows all agreed method statements, installing all necessary temporary vertical and lateral supports required. In practice some settlement is possible, but this should be now worse than "aesthetic" according to the BRE's definition. If these conditions are met, any settlement that occurs is likely to be minimal and is likely to be accommodated in the elasticity of the superstructure. This has been borne out in the vast majority of past projects on similar properties.

The design and construction methodology, as described above, deals with the potential risks and ensures that the excavation and construction of the proposed basement extensions will not affect the structural integrity of the property and adjacent property.

The formation of the lightwell at the front by traditional means will have no negative impact on the existing properties

Potential Impact on existing and surrounding Utilities Infrastructure and Man Made Cavities

Any local services on the property's land will be maintained during construction and re-routed if necessary. The exact location of these services will not be known until the works commence. However, the impact will be negligible as these services will be maintained. If it is necessary to relocate or divert any utilities, the Contractor and Design Team will be under a statutory obligation to notify the utility owner prior to any works. This will be so that they can assess the impact of the works and grant or refuse their approval. There are no known man made cavities (e.g. tunnels) in the vicinity of the proposed basement extensions.



Structural Engineering
Services Ltd.

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**CONSTRUCTION METHOD STATEMENT
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Potential Impact on Drainage, Sewage, Surface and Ground Water Levels and Flows

All existing drainage and sewage connections will be maintained throughout the construction works so there will be no impact on these existing systems. The proposed extensions are to create a two bedroom apartment and therefore there will be no significant increased discharge into the existing drainage and sewer systems. Surface water will not be increased and the borehole log in the soils investigations report confirms that the new basement works will be formed above ground water levels thus there will be no impact on ground water flows and levels

A handwritten signature in black ink, appearing to read 'P. R. Collinson', is written over a horizontal line.

P R Collinson
C.Eng.MICE.MIStructE

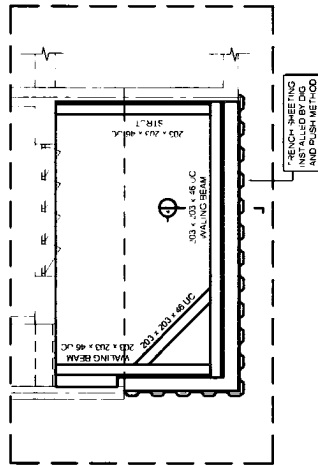
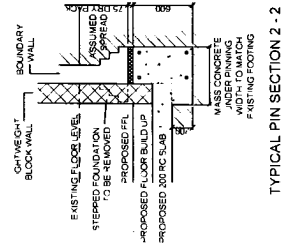
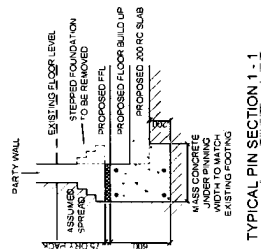
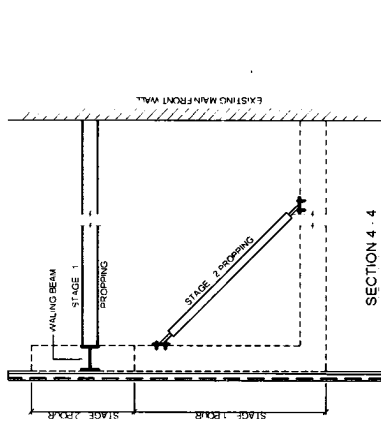
Appendices

- Soils Investigation
- Drawing nos. 2565/GA1
- Underpinning Specification

Do not scale. Work to figured dimensions only. Any discrepancies should be reported immediately. This drawing is to be read in conjunction with all other relevant documents.

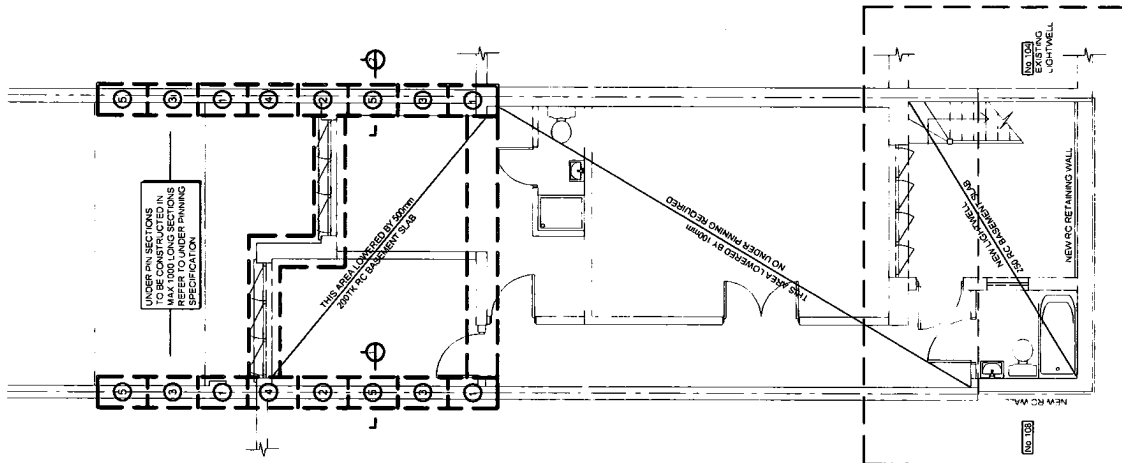
NOTE

* THIS DRAWING IS NOT FOR PARTY WALL AWARDS OR CONSTRUCTION



CONSTRUCTION SEQUENCE

- 1 PLACE WALING BEAMS AND PROPS AND INSTALL TRENCH SHEETING AS EXCAVATION PROCEEDS TOEING IN THE SHEETS AT THE BASE
- 2 ON COMPLETION OF (1) CAST BASEMENT SLAB
- 3 WHEN BASEMENT SLAB HAS CURED SHUTTER AND CAST THE RETAINING WALL STAGE - 1 POUR
- 4 WHEN STAGE - 1 RW POUR HAS CURED INSTALL STAGE - 2 PROPS
- 5 WITH STAGE - 2 PROPS BOLTED IN POSITION REMOVE STAGE - 1 PROPPING AND COMPLETE RETAINING WALL POUR 2
- 6 REMOVE TRENCH SHEETING ON COMPLETION FILLING SPACE WITH SAND CEMENT GROUT



PROPOSED BASEMENT PLAN

TYPICAL RETAINING WALL SECTION 3 - 3

THIS DRAWING IS TO BE USED ONLY FOR SUBMISSION TO THE PLANNING AUTHORITY IN SUPPORT OF THE ARCHITECT'S PLANNING APPLICATION ONLY AND IS TO BE READ IN CONJUNCTION WITH THE PRC CONSTRUCTION METHOD STATEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
P.R.C. Structural Engineering										106 MALDEN ROAD, LONDON, NWS 4DA										PROPOSED EXISTING BASEMENT EXTENSION TO THE REAR AND FORMATION OF FRONT LIGHTWELL										MALDEN ROAD, LONDON, NWS 4DA										PRC/25605/GAL 1																																																											

CONSTRUCTION METHOD STATEMENT
106 MALDEN ROAD LONDON NW5 4DA
PRC/2565/JULY 2015

Underpinning Specification

1. The party walls at the rear of the existing semi-basement shall be underpinned in mass concrete. The underpins shall take the vertical loads from the walls and horizontal loads from the earth.
2. Underpinning bases shall be excavated in short sections not exceeding 1000mm in width.
3. The sequence of the underpinning shall be such that any given underpin will be completed, dry packed and a minimum of 48 hours lapse before an adjacent excavation is commenced to form another underpin.
4. In the event that the existing foundations to the wall are found to be unstable, sacrificial steel jacks shall be installed underneath the foundation to prop the bottom few courses of bricks. These steel jacks shall be left in place and shall be incorporated into the mass concrete pin.
5. In the event that the ground is unstable, lateral propping shall be provided as required to the rear of the excavation and to the sides of the excavated working trench. The front and side faces of the excavation shall be propped using trench sheeting or plywood, timber boards and acrow props as appropriate. Sacrificial back shutters shall be used to the rear face of the excavation (i.e. underneath the wall) if required. Cementitious grout will be poured behind the back shutters to fill up the voids behind the back shutters.
6. Excavation for an underpin section shall be dug in a day, and the concrete to the pin shall be poured by the end of the same day. The pin shall be poured up to within 50-75mm of the underside of the existing wall foundations.
7. On the following day, the gap between the concrete and the underside of the existing foundation shall be dry packed with C35 concrete using 5-10mm coarse aggregate and "Combex 100" expanding admixture by Fosroc UK Ltd in accordance with their instructions.
8. Once the dry pack has gained sufficient strength, any protrusions of the footings into our site shall be carefully trimmed back using hand tools to avoid causing any damage to the foundations. The protrusions shall be trimmed back to be flush in line with the face of the wall above.
9. A minimum of 48 hours shall be allowed before adjacent sections are excavated to form a new underpin.
10. Adjacent underpins shall be connected using 4-H20 dowel bars 400mm long, 200mm embedment each side 75mm cover.
11. Grade of concrete shall be C35 with minimum cement content 300kg/m³, maximum free water to cement ratio 0.60, slump 100mm, design sulphate class DS – 3.

HERTS & ESSEX SITE INVESTIGATIONS

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8th July 2015

Our Ref : MRS/12870

Studio 11 Development
79 St Barnabas Road
Woodford Green
IG8 7BY

For the attention of Z.Durrani Esq.:

Dear Sir,

Re: 106 Malden Road, London NW5 4DA : Site Investigation

1.0 Introduction

- 1.01 In accordance with your instructions, we visited the above site during June 2015 .
- 1.02 The purpose of our visit was to carry out an investigation into the subsoil conditions with a view to foundation design.
- 1.03 The comments and opinions expressed are based purely on the conditions encountered and the subsequent laboratory testing.
- 1.04 Therefore, it is possible that some special conditions prevailing on site have not been encountered or taken into account.
- 1.05 All ground water recordings or their absence relate to short term observations and do not allow for fluctuations due to seasonal or other effects.

2.0 Description of Site

- 2.01 The site is situated at 106 Malden Road, London NW5 4DA
- 2.02 At the time of our visit the site was generally flat.

3.0 Fieldwork

- 3.01 One borehole was sunk to a maximum depth of 6.00m by means of a window sampler drilling rig.
- 3.02 The location of the works is indicated on the site plan forming appendix one.

- 3.03 The various strata and details encountered were noted and are recorded on the borehole logs forming appendix two.
- 3.04 Insitu strength tests were carried out in the boreholes, the results of which can be seen on the aforementioned logs.
- 3.05 A full range of samples were recovered as noted and retained for subsequent laboratory testing.
- 3.06 The location, type and height of any trees should be taken from a survey for later use with NHBC Chapter 4.20, if required.

4.0 Laboratory Testing

- 4.01 All samples were tested in accordance with BS:1377:1990 Methods of Test for Soils for Civil Engineering purposes.
- 4.02 Selected samples were tested to determine their atterberg limit, triaxial tests, soluble sulphate content and pH value.
- 4.03 The results of all laboratory testing are summarised in appendix three.

5.0 Conclusions and Recommendations

- 5.01 By inspection of the borehole logs it can be seen that the subsoil consists of a Weak Concrete to 0.15m over a Soft To Firm Orange Brown Claybound Brick FILL to 1.40m where a Firm Becoming Stiffer With Depth Orange Brown Slightly Silty CLAY is present to the base of the borehole.
- 5.02 No water was encountered upon excavation of the borehole as described on the borehole log.
- 5.03 No significant roots were encountered in the boreholes beyond 0.60m.
- 5.04 Laboratory testing proved the clays to be of very high plasticity ($PI=46 - 54\%$) which indicates a high susceptibility to movement associated with moisture content change.
- 5.05 Triaxial testing proved the CLAYS to have cohesion values between 39 - 106 Kn/m^2 these values are generally seen to increase with depth.

- 5.06 Therefore when considering the information available we are of the opinion that a the basement can take the form of a reinforced raft with walls designed to take the pressure of the retained soil.
- 5.07 Further investigation may be required in order to locate existing foundations within the area of the site which may restrict any future works.
- 5.08 As the site contains less than 0.50g/L of soluble sulphate it can be categorised as a class 1 site in accordance with BRE Digest, and as such any concrete in contact with the subsoil needs no special precautions.

We hope that this is satisfactory, however if you should require any further information, please do not hesitate to contact us.

Yours faithfully,

M. R. Smith M.Sc
Principal Engineer

HERTS & ESSEX SITE INVESTIGATIONS

The Old Post Office, Wellpond Green, Standon, Ware, Herts SG11 1NJ

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Appendix No. 1

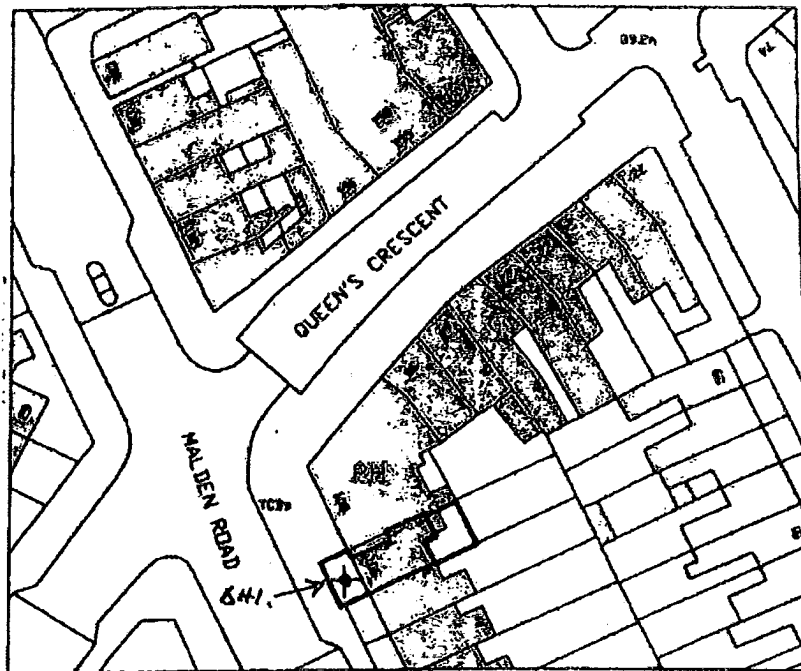
Sheet No. 1

Job No. 12870

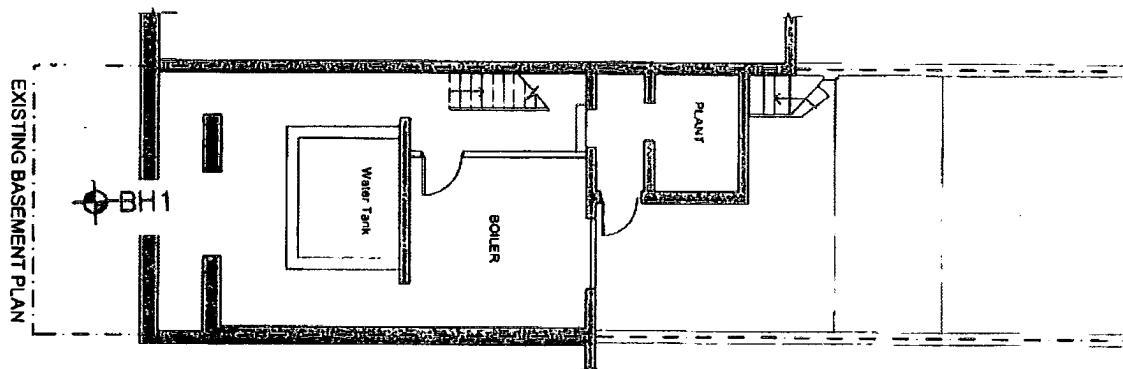
Date June 2015

106 Malden Road, London NW5 4DA

Site Plan



LOCATION PLAN
SCALE 1:1250



EXISTING BASEMENT PLAN

Not to Scale

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Appendix No. 2
Sheet No. 2
Job No. 12870
Date June 2015

Borehole One

Description of Strata	Depth	Reduced Level	Legend	Thickness (m)	Water Level	Samples			S.P.T N-Value or Vane Strength	Casing Depth (m)
						No.	Type	Depth (m)		
Weak Concrete	0.15			0.15	DRY	1	U	0.00		1.00
Soft To Firm Orange Brown Claybound Brick FILL	1.40			1.25		2	U	1.00		
Firm Becomming Stiffer With Depth Orange Brown Slightly Silty CLAY	6.00			4.60		3	U	2.00		
						4	U	3.00		
						5	U	4.00		
						6	U	5.00		
						7	U	6.00		
Borehole Complete At 6.00 M										
Remarks:										
Scale 1:50										
Key : U-Undisturbed Sample B-Bulk Sample D-Disturbed Sample W-Water Sample H-S.P.T. H-Value (100mm diameter) SZ-Water Struck SZ-Water Standing P-Piston Sample V-Vane Strength (kN/m²)										

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Date July 2015

LIQUID AND PLASTIC LIMIT	TEST RESULTS
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Borehole	Depth (m)	Sample	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Group Symbol	Desiccation Profile	Percentage Retained 425 Micron Sieve (%)
1	2.00	U	40	71	25	46	CV		0
1	3.00	U	33	78	26	52	CV		0
1	5.00	U	30	80	26	54	CV		0

HERTS & ESSEX SITE INVESTIGATIONS

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Appendix No. 3

Sheet No. 2

Job No. 12870

Date July 2015

LOCATION 106 Malden Road, London, NW5

UNDRAINED COMPRESSION TEST RESULTS

Borehole	Depth (m)	Sample	Natural Moisture Content (%)	Bulk Density (Mg/m ³)	Lateral Pressure (kN/m ²)	Deviator Stress (kN/m ²)	Apparent Cohesion (kN/m ²)	Angle of Shearing Resistance	Remarks
1	1.00	U	37	—	20				Fill Material
1	2.00	U	40	1.94	40	58	39		
1	3.00	U	33	1.96	60	116	58		
1	4.00	U	34	1.99	80	212	106		
1	5.00	U	30	2.00	100	152	76		
1	6.00	U	35	2.01	120	202	101		

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Sheet No. 3

Job No. 12870

Date July 2015

LOCATION 106 Malden Road, London, NW5

Window Sampler	Depth (m)	Sample	Concentrations of Soluble Sulphate			Classification	pH
			Soil		Groundwater		
			Total SO ₄ (%)	SO ₄ in 2:1 water:soil (g/l)			
1	2.00	U		0.14			7.24
1	3.00	U		0.04			7.61
1	5.00	U		0.18			7.55

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1. PLACE WAILING BEAMS AND PROPS AND INSTALL TRENCH SHEETING AS EXCAVATION PROCEEDS TOEING IN THE SHEETS AT THE BASE.
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3. WHEN BASEMENT SLAB HAS CURED SHUTTE AND CAST THE RETAINING WALL STAGE - 1 POUR.
4. WHEN STAGE - 1 RW POUR HAS CURED INST. STAGE - 2 PROPS.
5. WITH STAGE - 2 PROPS PROPS BOLTED IN POSITION REMOVE STAGE - 1 PROPPING AND COMPLETE RETAINING WALL POUR 2.
6. REMOVE TRENCH SHEETING ON COMPLETION FILLING SPACE WITH SAND CEMENT GROUT.

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SCALE: 1:50	APPROVED BY: Paul.R.Collinson	DRAWN BY: MC
DATE: 28/07/2015	C.Eng. MICE. MIStruct.E.	CHECKED:

PROJECT: 106 MALDEN ROAD,
LONDON, NW5 4DA

DRAWING STATUS: FOR CONSTRUCTION METHOD STATEMENT

CAD REFERENCE:	MALD_100	DRAWING NUMBER:	REV:
		PRC/2565/GA1	A