207 Sumatra Road, West Hampstead, London, NW 6 1 PF

CONSTRUCTION OF PROPOSED EXTENSIONS TO AN EXISTING BASEMENT.

Basement Impact Assessment

Prepared by Konstanty Zablocki B. Sc. (Hons.), C.Eng., MICE.

Available Information:

The property is a substantial terraced house built about 120 years ago on a residential estate and on a road close to a main road, the B510 West End Lane. It is just to the north of an east to west running over-ground railway line that serves the West Hampstead Thames-link station.
Recently, in 2014 / 5, planning permission was granted for a ground floor rear extension However, planning permission is now being sought for a full basement. The present basement is as for a traditional, Victorian property i.e. rectangular demise located directly under the ground floor hallway. This planning application seeks to extend the basement to the whole of the main demise of the existing house with light wells at the front and rear.

The site has a pronounced slope down from the front of the property towards the west. Towards the east, however, there is also a drop in level before the Hampstead escarpment is reached. This results in us assuming that this house is on a knoll. Furthermore, the railway track at the southern end of this area is at least 10, if not 12, metres sunken below the level of the rear back garden.

Site investigations were carried out by many different companies within this control area and the 6 results are given in Appendix A.
From the printed pages, 5 locations (as it appears 2 and 4 are the same site but slightly different areas) envelope the site area. We can interpret the findings and apply them to our site as they straddle in all directions and the material does not differ significantly.
It is confirmed that brown London Clay overlies Grey / Blue London Clay, which drops to a significant depth and there are no lenses of sand or gravel or even silt in the top 8 metres. Consequently, the difficulties of working in ground that could be subject to excessive water penetration, soil instability and, thus, weakening the platform for construction is completely absent here. The clay will, in all probability, remain stiff, when exposed, for at least two weeks before drying out and it may even be difficult to excavate!

Extent of the Works:

The work involves the careful excavation with some demolition of the remaining untouched area where soil extends up towards the suspended ground floor timber joists.
A complete external ring of underpinning is planned with works starting from the front of the house and extending to the rear zone.
A draft description of the works is given under the Basement Construction Method Statement which, as a document in its own right, accompanies this document.
The basement concrete floor will form an interlocking concrete " U " with the underpins and the waterproofing element of the new box will be formed inside to achieve habitable conditions. See Appendix C for waterproofing membrane details.

The following table addresses the specific requirements of Camden's Planning Guidance with added information following:

Subterranean (ground water) flow		Answers
Q1a	Is the site located directly above an aquifer?	No
Q1b	Will the proposed basement extended beneath the water table surface?	No
Q2	Is the site within 100m of a watercourse, well or potential spring line?	No
Q3	Is the site within the catchment of the pond chains on Hampstead Heath?	No
Q4	Will the proposed basement development result in a change in the proportion of hard surface/paved areas?	Yes. Well Areas.
Q5	As part of the site drainage will more surface water than at present be discharged to the ground?	No
Q6	Is the lowest point of the basement excavation close to or lower than the mean water level in any local pond or spring line	No

Q4 There will be an approximate increase of 4% in rear, hard surfaced areas (i.e. rear well area) which corresponds to a total proportion of only 4% of the present rear garden area being hard surfaced. These proportions are well below those permitted by generally. In addition there will be the area of the front light well and basement access that will be hard surfaced. Here the proportion increases from basement and ground access 5.93 m2 to 8.93 m2 when the whole area available at frontage is 13 m2. Proportion increase is from 45% to 69%.

Slope stability screening flowchart		
Q1	Does the site include slopes, natural or manmade, greater than 7^0?	No
Q2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7^o ?	No
Q3	Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7^0?	No
Q4	Is the site within a wider hillside setting in which the general slope is greater than 7^0?	No
Q5	Is London Clay the shallowest strata at the site?	Yes -see attached site investigation sheets.
Q6	Will any trees be felled as part of the development or are any works proposed within any tree protection zones where trees are retained?	No

Q7	Is there a history of shrink/swell subsidence in the local area or evidence of such effects on site	No.
Q8 Q9	Is the site within 100m of a watercourse or potential spring line Is the site within an area of previously worked ground	No No
Q10	Is the site within an aquifer	No
Q11	Is the site within 50m of the Hampstead Ponds	No
Q12	Is the site within 5m of a highway or pedestrian right of way	Yes
Q13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties.	No. less than 1.4 metres assumed.
Q14	Is the site over or within the exclusion Zone of any tunnels	No

Q5 The borehole information selected close to this site is given under Appendix A. It confirms that the significant geological strata encountered for the whole of this area is monolithic brown and blue London Clay.

Q12 Sumatra Road and its associated footpath are within 3 metres of the principal front wall line so the construction of the nearest underpins and their back propping will need to be carefully carried out and the back propping established once the underpins are ready to resist road surcharge and soil active pressure etc.

Further notes : - As with most basement constructions, the foundations here will be up to 1.4m deeper than those of adjacent properties including the two party walls; in part. The party wall closest to the existing stair-well, which allows access from basement to second floor, will be deepened the least as it frames the existing shallow basement. All underpins will be reinforced concrete cantilever walls initially. They will have a minimum thickness of 200 mm as the basement slab.

The basement rear hard surfaced / paved area will add 4 % to the existing garden/rear extension layout which, we consider is insignificant for drainage run-off if not soaking into the soils.

The front garden at 13 m2 is also insignificant in size and the alteration of formation of well area of 3.0 m2 is small bearing in mind that the run-off from this zone will be into the existing surface water drainage via an existing gulley at the base of the existing basement entrance.

Surface Flow and Flooding

Q1	Is the site within the catchment of the pond chains on Hampstead Heath	No
Q2	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
Q3	Will the proposed basement development result in a change in the proportion of hard surfaced/paved external areas?	Yes (see comments on Q4 above)
Q4	Will the proposed basement result in changes to the profiles of the inflows of surface water being received by adjacent properties or downstream watercourses?	No
Q5	Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No

Design and Construction:

The nominal demolition and excavation works will not require scaffolding or any access into the neighbouring properties. All pinning and propping will be carried out from within the site demise. The basement works must not affect adjacent properties and the scheme as given in the Basement Construction Statement together with details within this document lead us to believe that works, if carried out closely to the traditional, classical method should be more than safe. It is always a good practice to involve the Neighbours and seek any permission that may be required or requested for the erection of protecting hoardings.

The walls of the basement will be designed as reinforced concrete cantilevers from a spread footing as illustrated in the documents. The design parameters for pressure on the walls will be in accordance with recommended values given in the Reinforced Concrete Designer's Handbook (by Charles E. Reynolds and James C. Steedman) for the relevant soil type. In addition it will be assumed that pressure from ground water could be present to a level of 0.75 of the depth of retained material; not initially but when the basement is completed..
The walls will also be designed to support a surcharge load of 10kN/m^2 on the surface of the ground adjacent to the wall as well as the effects of pressure from any existing foundations. This surcharge will cover the nearness of stationary lorries by the house to take away skips and deliver concrete etc. Each wall section will be checked for overturning and sliding and reinforced as necessary where subject to tensile stresses.

The walls beneath the house will be constructed in traditional hit and miss lengths of generally not more than 1.2m with the top of the wall packed with mortar dry pack to the underside of the existing foundation. Adjacent lengths will be connected with steel dowel bars. It is anticipated that these walls will be cast against the face of the excavated soil.
The walls to the rear and side boundaries will be of similar construction except that the upper parts in top soil will require double shuttering. This procedure will maintain the stability of the ground and neighbouring properties at all times apart from minor disturbance of the soil at surface level.

The floor of the basement will be checked for uplift due to possible, eventual water pressure and designed to span between the walls etc. It is likely that the slab will require reinforcing on each face and, assuming confirmation of the ground conditions, it will probably be necessary to provide a layer of MOT type 1 compacted hardcore and a layer of blinding concrete before casting the basement well areas.

The ground floor construction will remain as is and be further supported with four number (at present) steel beams. This will allow the box shape of the basement to be completed.

Flooding:

The site is not in a location that is subject to flooding and we have copied three sketches from the Geological Society's internet access to flood risk assessments for particular locations. The site is rated as a LOW RISK of flooding from the sea, the nearby rivers, rainfall and from reservoirs. All this information is given under Appendix B.

Springs:

Within the nearby 50 metre zone, it would appear that there are no likely water springs or excessive pressure leaking from trapped perched water tables etc. This can be attributed to the monolithic nature of the soil profile below 207 Sumatra Road.

Trees:

There are no trees growing to the front and only mature bushes at the rear and these are pruned regularly.
Trees will not cause difficulties in the formation and behavior of the basement.

Neighbouring Properties

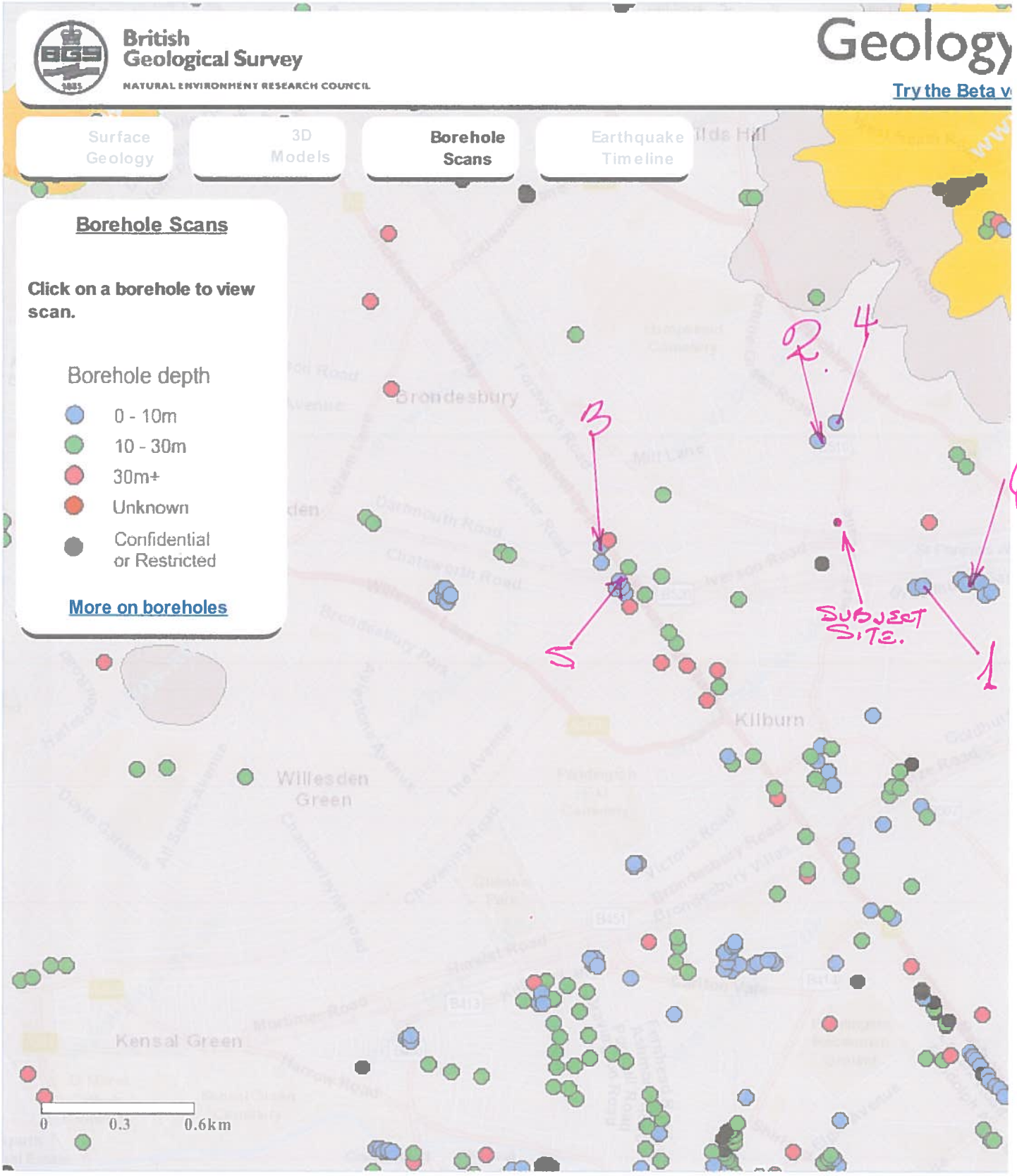
The attached properties, as terraced housing, need to be checked for condition prior to works starting at 2207. The classical basement formation, as spelled out in the two documents herewith attached, should allow risk free construction if the method of working is followed exactly. Where deviations are necessary, then these should be discussed and the Design Chartered Engineer should check, based on the information available from the opened up site, that considered changes to the approved scheme can be made.

Surface Water:

The proposed basement extension is at a lower level than the existing basement which would not have been formed in Victorian times if the construction of such would have lead to large ingress of water or wall instability etc. The basement will not be influenced by the amount and rate of rainfall as it will be protected and any arisings taken to the sump area as shown on the Delta Membrane work sheets attached to Appendix C.

12/3/2018.

APPENDIX A


British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL
Geology
Try the Beta v
Surface Geology
3D Models
Borehole Scans
Earthquake Timeline
Borehole Scans
Click on a borehole to view scan.
Borehole depth
0 - 10m
10 - 30m
30m+
Unknown
Confidential or Restricted
More on boreholes
Brondesbury
Kilburn
Willesden Green
Kensal Green
0
0.3
0.6km
2
4
3
6
5
1
SUBJECT SITE.

TQ 28SE / 519

BOREHOLE LOG

N.G.R. 2605. 8465

LOCATION No 973 Broadhurst Gardens

CARRIED OUT FOR Roff and Son Limited.

BOREHOLE No 10 DIAMETER: 6" - 4"

GROUND LEVEL: 152.5 DATE: 3rd to 8th May, 1951.

Description	O.S.D.	Legend	Sample	Depth	Thickness	Depth to Water below Ground Level
Ground Level	152.5			0'0"		
Open Pit 5' X 5'					10'0"	
Fine, medium and coarse GRAVEL	142.5		1	10'0"	0'3"	4.00pm.3.5.51 8'6"
	142.2		2	10'3"		10.00am.4.5.51 9'9"
			3			Pit was pumped out on 4th and 5th May.
			4			
Brown firm CLAY with blue fissures becoming firmer with depth and gradually changing to stiff grey CLAY. Gypsum crystals found between 15' and 20'.			5			
			6		12'9"	
			7			5.00pm.4.5.51 19'0"
						8.00am.5.5.51 18'0"
			8			
	129.5		9	23'0"		
	123.0		11	24'6"	1'6" penetrated	8.00am.7.5.51 22'0"
						5.00pm.7.5.51 23'0"
						8.00am.8.5.51 23'0"
				End of boring		5.00pm.8.5.51 24'6"

FIG. 6.

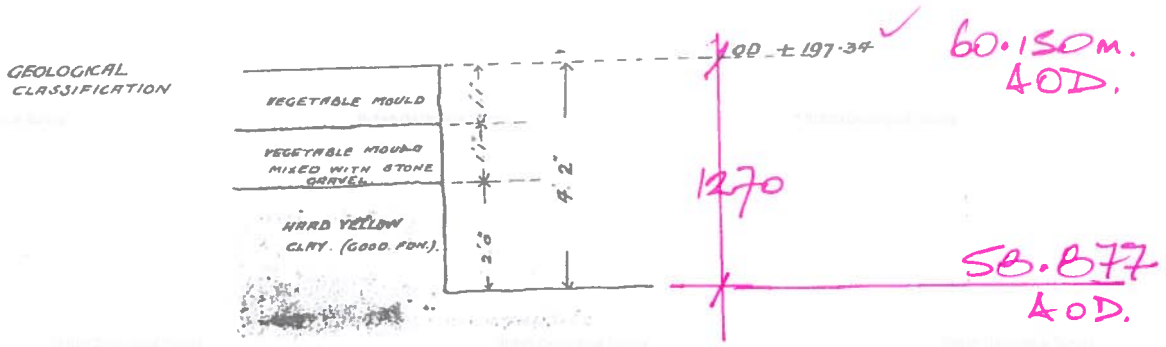
SCALE: 1cm = 2'6" ● DISTURBED SAMPLE ▮ UNDISTURBED SAMPLE

WEST END LANE. WEST HAMPSTEAD

FIRE BRIGADE STATION

SECTION Nº43

TOP STRATUM

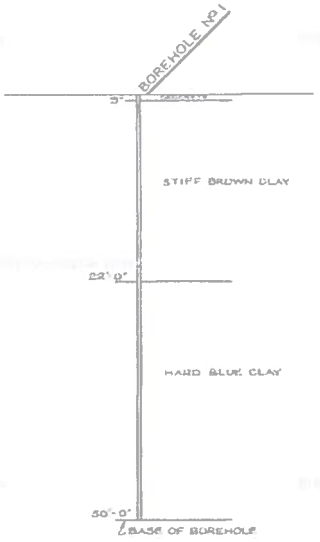


SCALE ½ INCH = 1 FOOT.

TQ 28NE/32
2539.8519
256

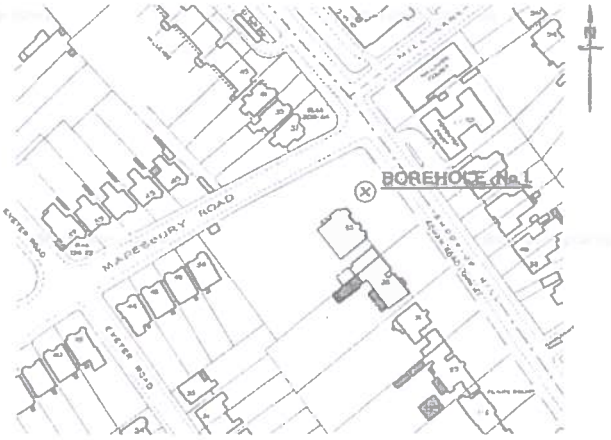
D/141-1/1.

DATE	AMENDMENTS	SIGNED



BOREHOLE SUNK 8TH JULY 1964.
DIAMETER OF BOREHOLE 6"
NO MOVEMENT OF GROUND WATER DISCOVERED DURING DRILLING OPERATIONS.
SEE SITE INVESTIGATION REPORT No 653/14 MADE BY MESSRS TERRESEARCH LTD

DETAILS OF STRATA ENCOUNTERED
Scale:- 1/4" to 1'



SITE PLAN
Scale:- 1/1250
REFERENCE PLAN TQ 2484 N W

TQ28SW/85
2479 8496
256.

LONDON BOROUGH OF BRENT
SITE INVESTIGATION WORK AT MAPESBURY ROAD WILLESDEN

C.W STEEDMAN, A.M.I.C.E., M.I.MUN.E., M.T.P.I., M.R.San.I. BOROUGH ENGINEER & SURVEYOR.	DATE APRIL '65
DESIGNED	TRACING No. T/141-1/1
DRAWN ADDS.	
TRACED BH.	DRAWING No. D/141-1/1.
CHECKED	

BGS ID: 590601 : BGS Reference: TQ28NE21
British National Grid (27700) : 525460,185260
Report an issue with this borehole

4.

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
6-inch Map Registered No. TQ28NE/21

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: B.S. The Cock and Hoop

Nat. Grid Reference 2546.8526

For whom made

Town or Village St John Hampstead County

Exact site West End Lane.

Attach a tracing from a map, or a sketch-map, if possible.

1" N.S.Map No.	1" O.S.Map No.	Confidential or not
256.		

Purpose for which made Tube

Ground Level at shaft/bore relative to O.D. 197.34 If not ground level give O.D. of beginning of shaft/bore

Made by Date of sinking

Information from L.C.C. Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

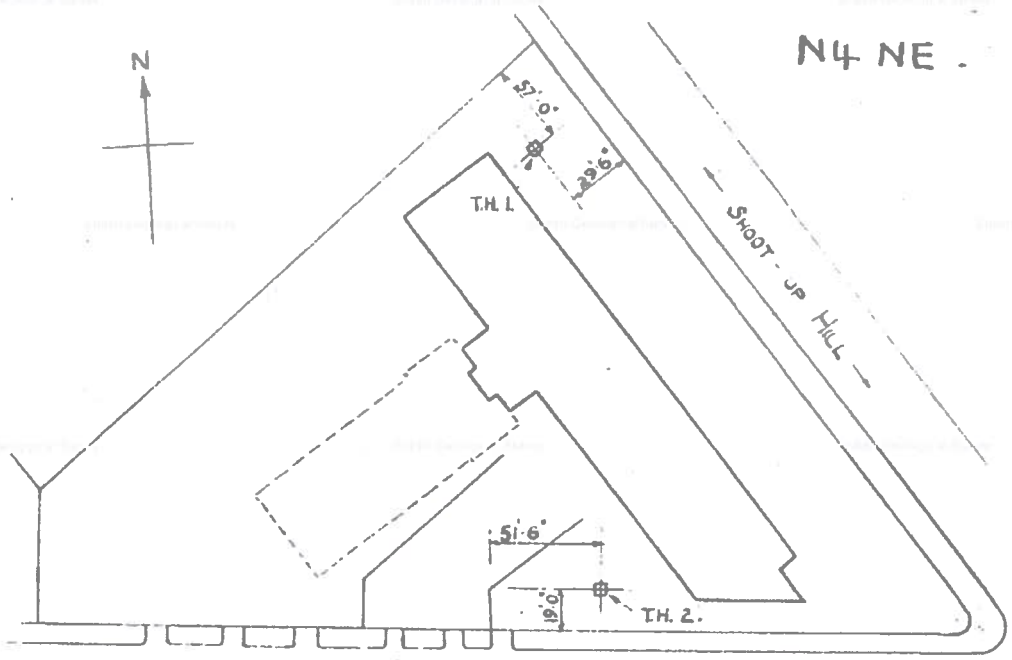
(For Survey use only) Geological Classification	Description of Strata	Thickness Ft.	Thickness In.	Depth Ft.	Depth In.
[illegible]	Vegetable Mould	1	1		
MGR	Vegetable Mould with stone gravel.	1	1	2	2
LC(v)	Hard yellow clay	2	0	4	2

Gp.863

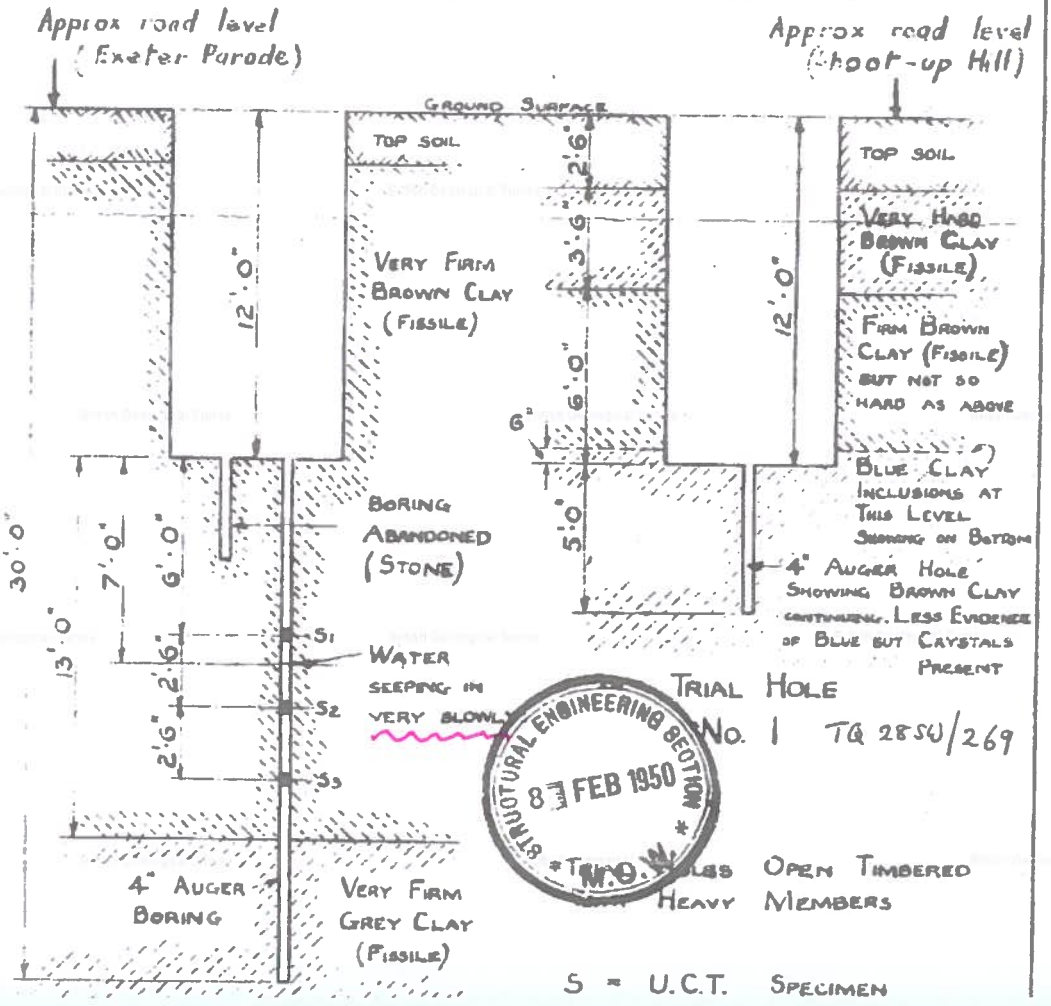
TQ 28 SW/269-270 N.3189

INSPECTED BY D.W.C. on 3-3-49 & 5-8-49

N4 NE.



SITE PLAN — EXETER PARADE —



TQ28SE/[redacted]

6

L6

BOREHOLE LOG 1" : 25

LOCATION No 973 Broadhurst Gardens

CARRIED OUT FOR Roff and Son Limited.

TQ28SE/514

BOREHOLE No 1 DIAMETER: 6" - 4" N.G.R. 2579. 8462

GROUND LEVEL: 152.0 DATE: 9th May, 1951.

974

Description	O.S.D.	Depth	Thickness
Made ground.	152.0	0'0"	
	150.0	2'0"	2'0"
Soft to firm red-brown mottled CLAY gradually changing to brown and grey mottled CLAY. A few gypsum crystals at 12'9".			7'0"
		9'0"	
			3'9" penetrated
	139.2	12'9"	
End of Borehole			

Borehole dry

M.
GROUND 46.330.
3.912 M.
42.418.

SOFT TO FIRM RED-BROWN MOTTLED CLAY GRADUALLY CHANGING TO BROWN AND GREY MOTTLED CLAY.

A FEW GYPSUM CRYSTALS AT 42.418m. A.O.D.

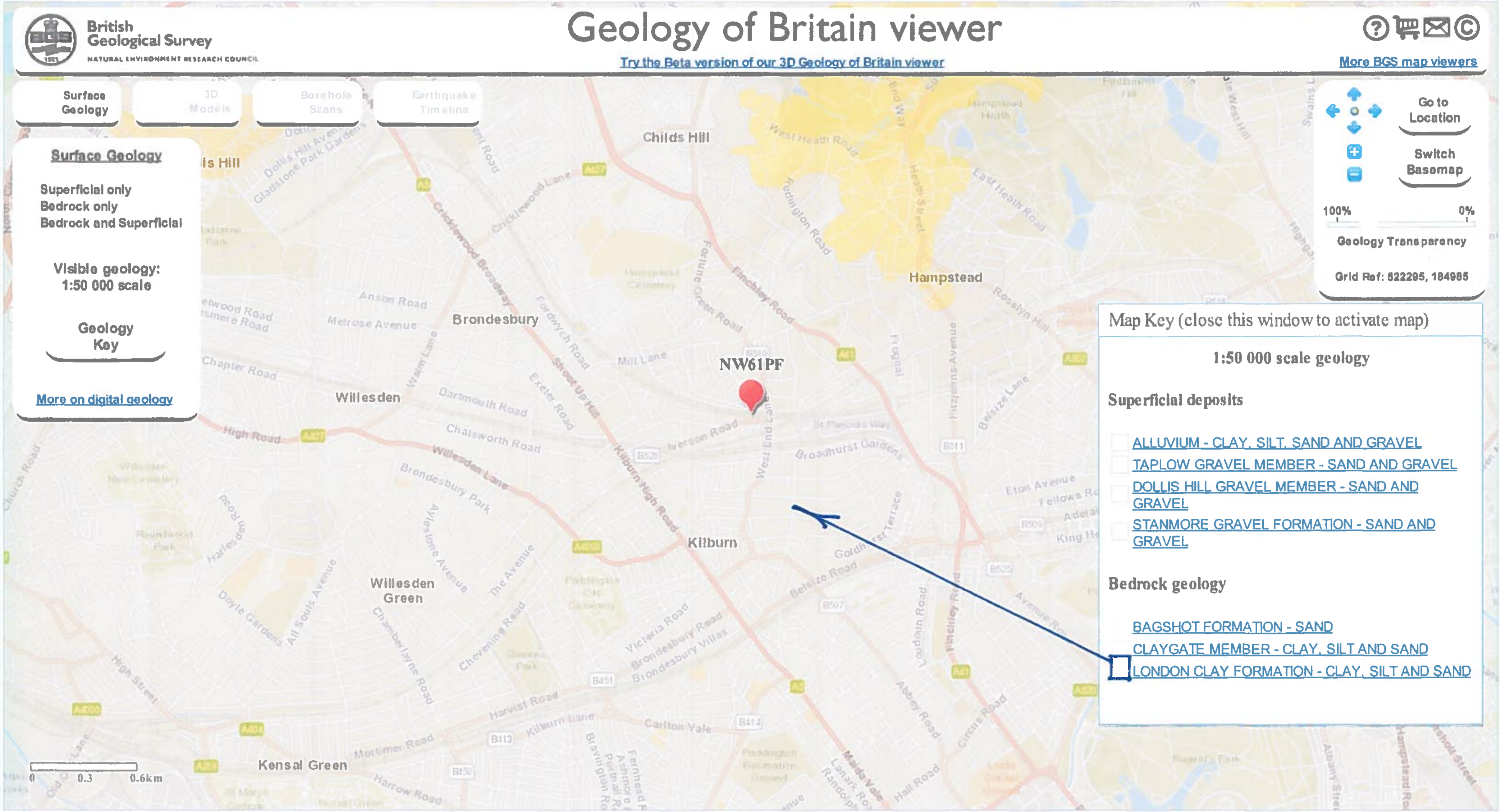
FIG. 1

SCALE: 1cm = 2'0"

● DISTURBED SAMPLE

▮ UNDISTURBED SAMPLE

APPENDIX B

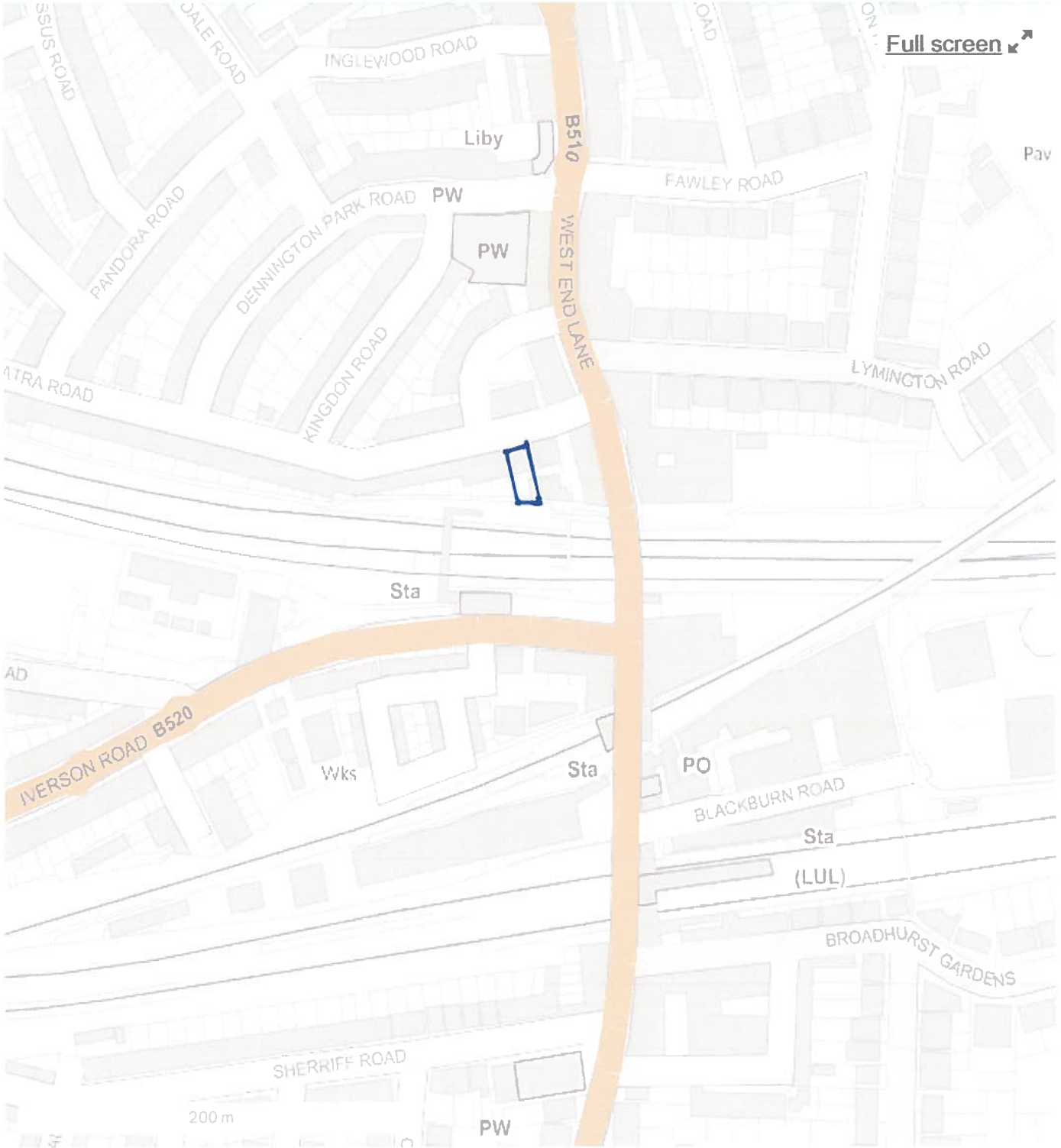


CAMDEN PLANNING APPLICATION.

HIGHLIGHTED SITE

207 SUMATRA ROAD, WEST HAMPSTEAD, LONDON NW6 1PF

JOB NO. 1381.

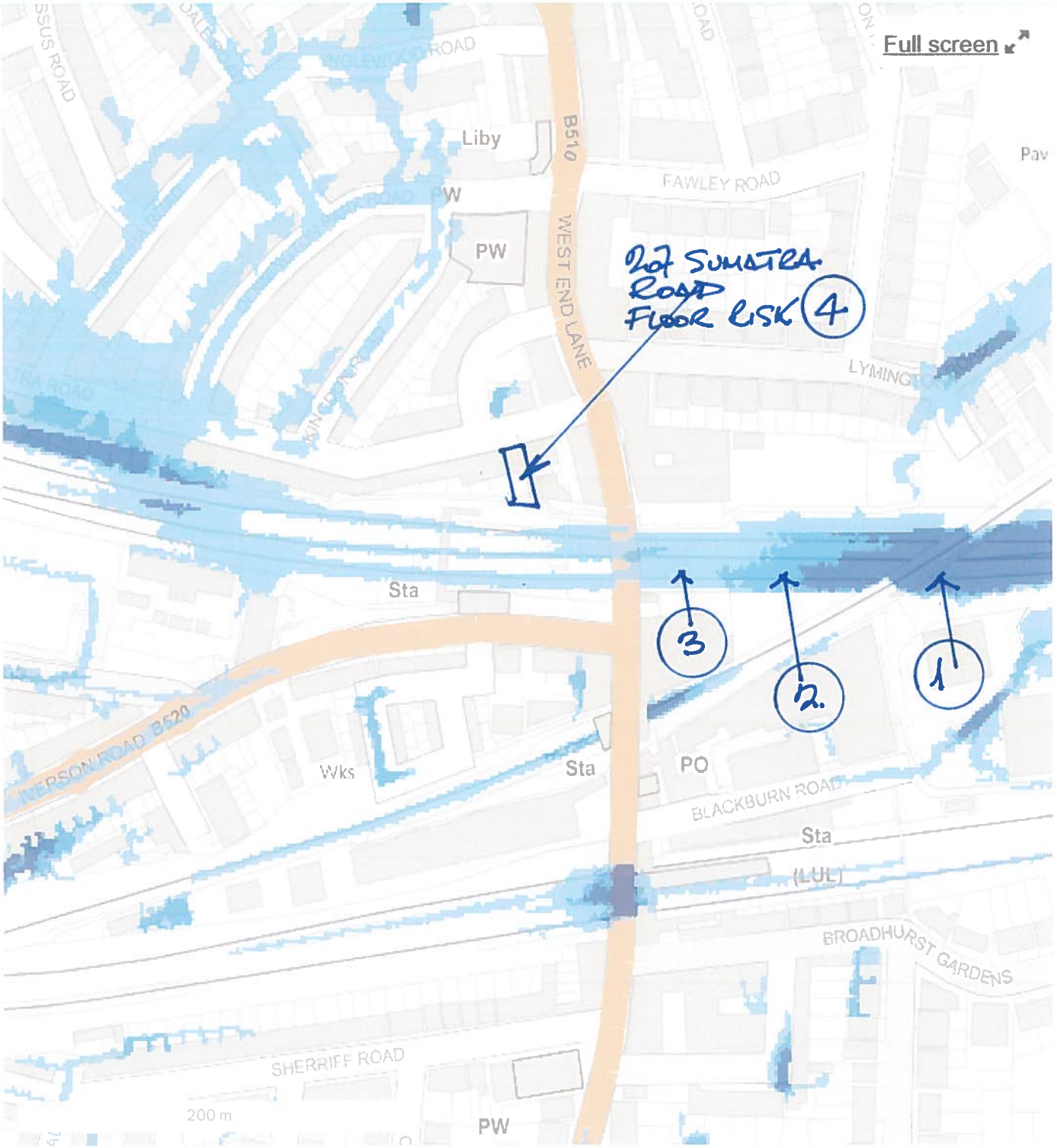


Flood risk FROM THE SEA AND RIVERS

- High — DEEP BLUE
- Medium — MED BLUE.
- Low — LIGHT BLUE
- Very low ✓

} SEE SURFACE WATER FLOODING.

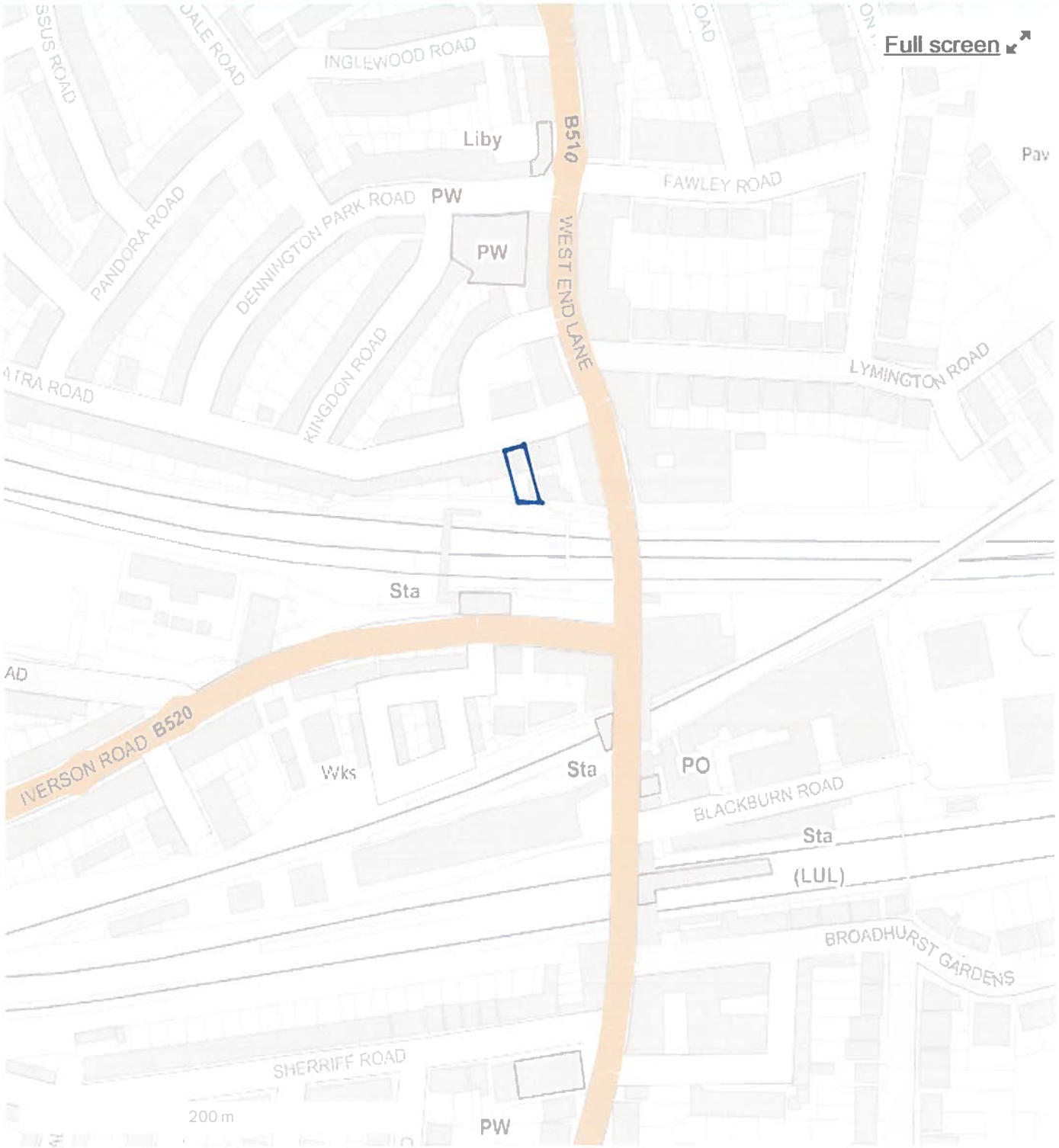
Location you selected NW6 1PF.



Flood risk SURFACE WATER - RAINFALL

- High — DEEP BLUE NOTED AS 1.
- Medium — MEDIUM BLUE NOTED AS 2.
- Low — LIGHT BLUE NOTED AS 3.
- ○ Very low — WHITE. 4

Location you selected



Flood risk FROM RESERVOIRS.

Maximum extent of flooding — ZERO WITHIN 50m.

Location you selected

▶ Accuracy of surface water flood risk information

View the flood risk information for another location

Go to the national flood information service

APPENDIX C

DELTA membrane systems

Search website here

CE

01992 523 523

MENU

Internal Waterproofing

Internal Waterproofing

DELTA offer a range of internal waterproofing products and systems, to not only stop water from entering your basement/property but also to manage and control it.

The DELTA internal 'Type C' waterproofing system consists of two main components, the cavity drain membranes, and the specialist drainage, such as sump pump stations, perimeter drainage channels, or our 129 drainage detail. (Technical details at bottom of this page)

The cavity drain membranes act as the internal barrier that is wrapped around the walls, laid across the floor and sealed using the Delta systems range of adhesive products. The studded profile on these membranes create a cavity that allows water/water vapour to collect and drain to a drainage system i.e. sump pumps.

There are two main types of specialist drainage systems, the perimeter channel system, and our 129 drainage detail, which is designed into the new slab using 110mm drainage pipe, with upstands, one inlet for every 12m² of floor area, (See technical drawings below). The water is drained to one of our sump-pump stations that pumps the water out of the basement externally.

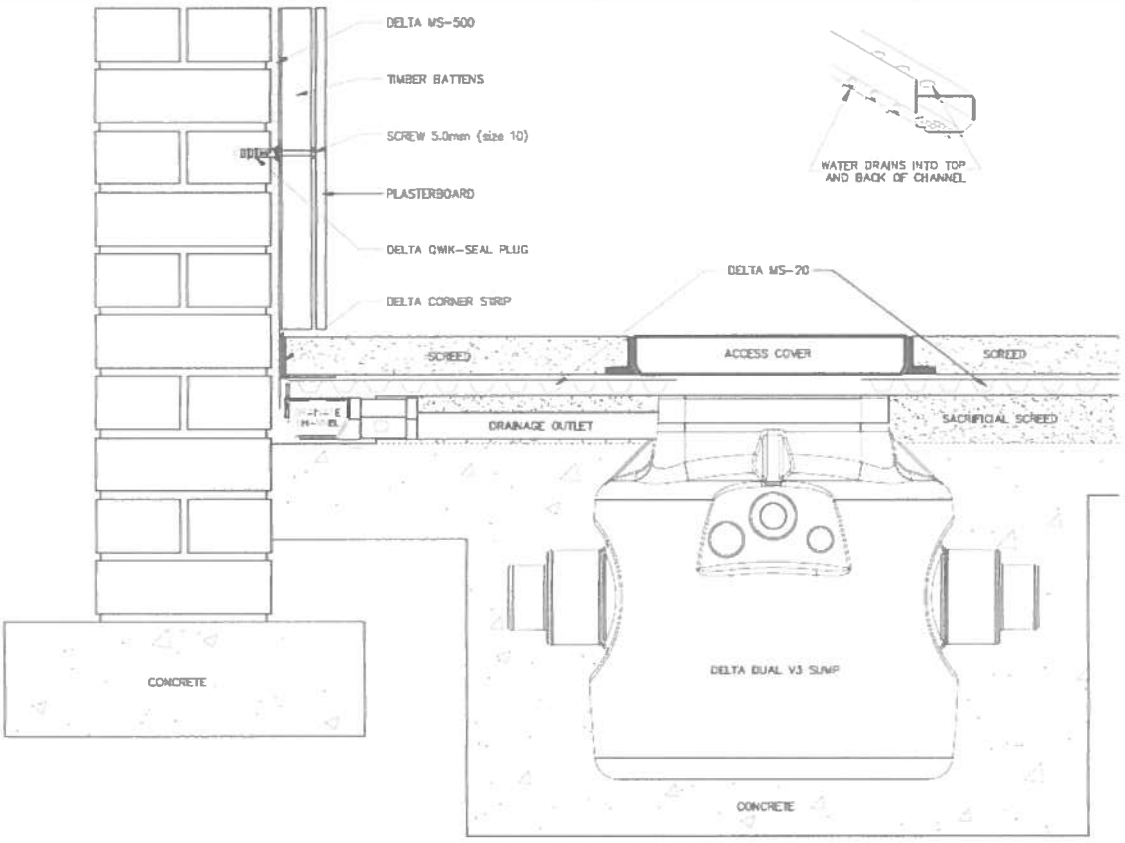
As well as waterproofing existing basements, DELTA products can also be used in new construction. Properties undergoing refurbishment frequently have basements that will need upgrading so they can become drier and then converted into there desired room. These basements may be used for storage, offices, bedrooms, games rooms, toilets, etc. which all require different levels of dryness. Buildings/structures aren't always dry, water and water vapour will always exist.

To make your basement fit for refurbishment you must have control of the moisture and water that's in the actual building structure and also the humidity and temperature, each of these will prove vital to rid your basement of any dampness and maintain a dry building. To achieve this you need to apply a waterproof coating inside the walls and floors, this needs to be done before insulation or decorating. Once the room is waterproofed/damp-proofed the air needs conditioning to maintain the right levels of humidity through sufficient ventilation or air conditioning. If this specification is not met then any moisture in the home will cause the humidity levels to rise.

Areas below ground level are prone to condensation, occurring on the coolest surface so steps must be taken to prevent condensation causing problems. DELTA have the right products for all your needs.

Typical detail of our internal 'Type C' waterproofing system

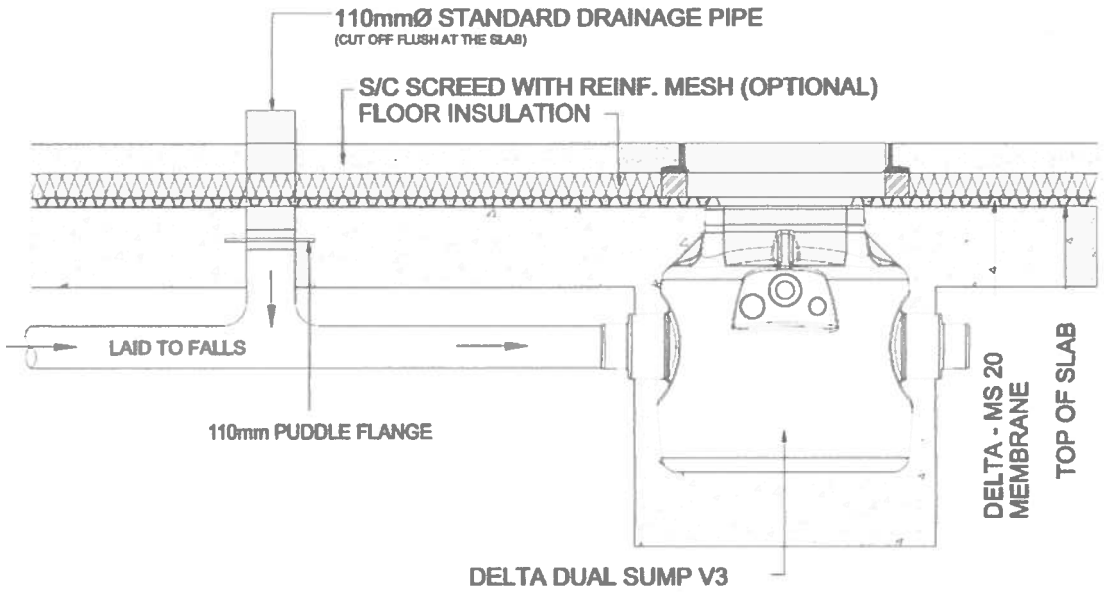
DELTA®-MS500 on the walls fixed with Qwik-Seal Plugs, DELTA®-MS20 on the floor, both sealed with Tape and Corner strip at the joints. DELTA Drainage Channel is installed around the perimeter of the room collecting the ground water draining away to a Dual V3 Sump Pump. (Click image below to view technical detail)



Maintenance

Maintenance of Type C systems and most important pump maintenance is essential and regular servicing is required to ensure pumps do not fail and the cavity membrane does not block. Potential build up of free lime could occur especially where new concrete is present in the basement construction, this can be treated with an anti lime primer as part of a Type A system. Built into the drainage design flushing ports and access panels are to be incorporated at the required points, ask a member of our technical team for specific detailing. Click here to view our flushing port/access panel detail.

DELTA floor drain design 129 using 110mm soil pipe – drainage points across slab (click image below to view full technical detail)



DETAIL - SUMP CONNECTION TO FLOOR DRAIN WITH PUDDLE FLANGE

For any queries on cellar drainage equipment, basement waterproofing solutions or structural waterproofing systems please contact us.

Get in touch

Our teams accreditations

Useful links

- About DELTA Systems
- Full Product List
- Services
- Frequently asked questions – Basement waterproofing (FAQs)
- Latest News
- The Video Centre

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