Sewer Flooding:

10.8.9 The Camden SFRA noted that Thames Water's DG5 Flood Register had only one record of flooding from public sewers affecting this post code area ('NW6 1', see 5.12). However, no drainage system can be guaranteed to have adequate capacity for all storm eventualities and all drainage systems only work at full capacity when they are properly maintained, including emptying gullies and regular checks of the sewers themselves for condition and blockages. Maintenance of the adopted sewers is the responsibility of Thames Water, so is outside the Applicant's control and largely outside of the Council's influence. The probability of future sewer flooding affecting No.8 is considered to be very low, provided that the sewer system is well maintained and appropriate flood resistance measures are implemented, as set out below.

10.8.10 Drainage systems are designed to operate under 'surcharge' at times of peak rainfall, which means that the level of effluent in the sewers may rise to ground level. When this happens, the effluent can back-up into un-protected properties with basements or lower ground floors. During major rainfall events it is possible for some sewers to overflow at ground level, though this is rare.

10.8.11 Camden's CPG Basements requires all basements to be "*protected from sewer flooding by the installation of a positive pumped device*" (paragraph 6.16 in CPG, 2018). Non-return valves and pumped loop systems must therefore be fitted on the drains serving the basement and the lightwell, in order to ensure that water from the mains sewer system cannot enter the basement when the adjacent sewer is operating under surcharge. All drains which discharge via the same outfall as the basement must be protected, including those carrying foul water and roof/surface water including from the rear lightwell. A battery-powered reserve pump should be fitted to ensure that the system remains functional during power cuts.

10.8.12 The pumped loops must rise high enough to create sufficient pressure head to open the non-return valves when the mains sewer flow is surcharged to ground level, otherwise the basement would once again be vulnerable to flooding while the surcharged flow continues. If it is not possible to achieve a sufficient rise of the loop then temporary interception storage would be required, to hold temporarily the predicted maximum volume of water from all relevant sources which discharge via the valve-protected outfalls (including surface water from the various roofs and the lightwell, and foul water), for the duration of the predicted surcharged flows in the sewer. If decking is used in the rear lightwell, then the area beneath the decking could be used for interception storage, deepened as necessary to provide adequate capacity, though it must be protected from backup of foul sewage. This temporary interception storage would require formal design to ensure satisfactory performance.

10.9 Mitigation

10.9.1 The following mitigation measures have been recommended in Sections 10.2-10.8:

- In the unlikely event that the excavations encounter a local deposit of more permeable soils which has remained undetected, then it is possible that an engineered groundwater bypass might be required (10.2.8).
- Any measures recommended by the arboricultural report proposed herein (see 10.4.13).
- Consideration should be given, under Party Wall Act protocols, to installation of transition underpins beneath all adjoining load-bearing walls to No.6 and, if the consented basement has not been constructed beneath No.10, the rear wall of the rear projection to No.10 (10.4.14).
- Flood resistance measures to protect against the Low risk of surface water flooding in part of the rear garden (see 10.8.6).
- Appropriate SuDS systems as mitigation for the anticipated small increase in paved surface area in the rear garden (see 10.8.8).
- Non-return valves and pumped above ground loop systems should be fitted on the drains serving the basement and lightwell, with associated temporary interception storage if necessary (see paragraph 10.8.11, 10.8.12).

11. Non-technical Summary – Stage 4

11.1 This summary considers only the primary findings of this assessment; the whole report should be read to obtain a full understanding of the matters considered.

11.2 A services search should be undertaken (10.1.3).

11.3 The proposed basement is considered acceptable in relation to the likely limited or nil flow of groundwater through the clays and silts of the Made Ground and the London Clay. There are no basements close enough to create any cumulative effect (10.2.1 to 10.2.7). In the unlikely event that the excavations encounter a local deposit of more permeable soils which has remained undetected, then it is possible that an engineered groundwater bypass might be required (10.2.8).

11.4 The highest recorded groundwater level in the standpipes was 2.47m bgl (and 1.70m bgl in the rear garden of No.10). A design groundwater level equal to ground level is recommended, which means that the basement must be able to resist buoyant uplift pressures (un-factored) which vary across the basement up to 29kPa (10.2.3, 10.2.8 to 10.2.10). The basement will need to be fully waterproofed (10.2.11, 10.2.12).

11.5 Water entries into the basement excavations are likely to be manageable by sump pumping (10.3.1). The clays onto which the underpins and the basement slab will bear must be blinded with concrete immediately following excavation and inspection (10.3.3).

11.6 There are no concerns regarding slope stability (10.4.1).

11.7 It is anticipated that the basement will be constructed using underpinning techniques and RC retaining walls in panels of limited width. Use of best practice methods and high stiffness temporary support systems, installed in a timely manner, will be crucial to the satisfactory control of ground movements around the basement (10.4.2 to 10.4.8). The serious structural damage to the rear projection, the significant damage to the front bay and all other structural damage must be fully repaired in accordance with recommendations from the appointed Structural Engineer before underpinning starts (10.4.5).

11.8 Various other guidance is provided in relation to the geotechnical design and construction of the basement's perimeter walls (10.4.10 to 10.4.12).

11.9 An arboricultural report is required regarding the trees in and around the rear garden (10.4.13). Good practice requires stepping up between footings at different depths, so consideration should be given to installing transition underpins beneath all adjoining load-bearing walls to No.6, and beneath the rear wall of No.10's rear projection, under Party Wall Act protocols (10.4.14).

11.10 The basement slab must be designed to accommodate swelling displacements/ pressures generated by heave of the underlying clays. A preliminary heave/settlement assessment has been undertaken (using PDISP software) which

predicted between 3mm of settlement and 4mm of heave beneath the underpins, and up to 6mm of heave below the basement slabs. However, only the preliminary predicted 4mm of post-construction incremental displacement is relevant to the design of the basement slab (Section 10.5).

11.11 Damage category assessments indicated that, provided best practice construction methods are employed, and provided that the structural damage to No .8 is repaired in advance, the worst case predicted deformation (in the internal transverse walls to the adjoining properties on both sides of No.8) is likely to fall within Burland Category 0, on or close to the boundary with Burland Category 1 termed 'very slight' (Section 10.6).

11.12 Condition surveys of the neighbouring properties should be commissioned and a programme of monitoring the adjoining structures should be established before the works start (Section 10.7).

11.13 The Environment Agency's maps show that the site is at negligible risk of flooding from rivers or the sea, and at no risk of flooding from reservoirs (10.8.1).

11.14 Agamemnon Road did flood in 2002, though probably only at its lower section. Agamemnon Road is also in Critical Drainage Area Group3_010 but is not in a Local Flood Risk Zone (10.8.3, 10.8.4).

11.15 The recent modelling of risk of flooding from surface water in the Camden SFRA and by the Environment predicted a Low flood risk within the rear gardens to No.8 and the adjoining properties, and a Low risk of surface water flooding on the adjacent part of Agamemnon Road's carriageway (10.8.4, 10.8.5). Recommendations are given for mitigation measures to increase the property's resistance to surface water flooding (10.8.6).

11.16 The basement will result in a slightly increased paved area; SuDS options for mitigating the resultant potential increase in surface water draining to the sewer system are listed (10.8.7 & 10.8.8).

11.17 Thames Water had have only a single record of flooding from public sewers affecting postcode area 'NW6 1', so the probability of future sewer flooding affecting No.10 is considered to be very low, provided that the sewer system is well maintained and appropriate flood resistance measures are implemented (10.8.9).

11.18 Non-return valves and pumped above-ground loop systems should be fitted to the drains serving the basement and gullies in the lightwell. Temporary interception storage may also be required, with sufficient capacity for the predicted maximum volume of discharges (from all sources) via the 'protected' outfall pipe(s), for the duration of the predicted surcharged flows in the sewer; formal design would be required (10.8.9 to 10.8.12).

11.19 Mitigation measures which have been recommended in Sections 10.2-10.8 are summarised in Section 10.9.

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NHBC (2018) NHBC Standards, Chapter 4.2, Building Near Trees.

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URS (2014) London Borough of Camden SFRA – Strategic Flood Risk Assessment. Final report.

Project:

8 Agamemnon Road, London, NW6 1DY

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Photo 1: Front elevation, looking south. Note the consistent gentle southerly fall of the Agamemnon Road carriageway, and the change in level between No's 8 and No.6. Houses on Hillfield Road are visible at the extreme left of the photo.

Photo 2: View of the front bay of No.8. Extensive crack damage is visible around the windows of the front bay, including in the side windows (not visible here).

Title:	**Photographs - Sheet 1**					Sheet	**A1**
Date:	22nd August 2018	Checked:	HB	Approved:	KRG	Scale :	NTS

Project:

8 Agamemnon Road, London, NW6 1DY

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Photo 3: At the front of the house, the amenity area is almost fully paved. Also shows steps up to the main front entrance porch and steps down to the cellar

Photo 4: Access to the existing basement store is via external stairs only.

Title:	**Photographs - Sheet 2**					Sheet	**A2**
Date:	22nd August 2018	Checked:	HB	Approved:	KRG	Scale :	NTS

Project:

8 Agamemnon Road, London, NW6 1DY

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Photo 5a (left): Rear of No.8, looking north-east, showing flank wall of rear projection and rear wall of main house.

Photo 5b (below): Closer view of crack damage between rear wall and rear projection.

Boundary fence between No.8 and No.6

Title:	**Photographs - Sheet 3**					Sheet	**A3**
Date:	22nd August 2018	Checked:	HB	Approved:	KRG	Scale :	NTS

Project:

8 Agamemnon Road, London, NW6 1DY

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Photo 6: Rear wall of rear projection, looking north-east. Crack damage is visible above and below every window.

Title:	**Photographs - Sheet 4**					Sheet	**A4**
Date:	22nd August 2018	Checked:	HB	Approved:	KRG	Scale :	NTS

Project:

8 Agamemnon Road, London, NW6 1DY

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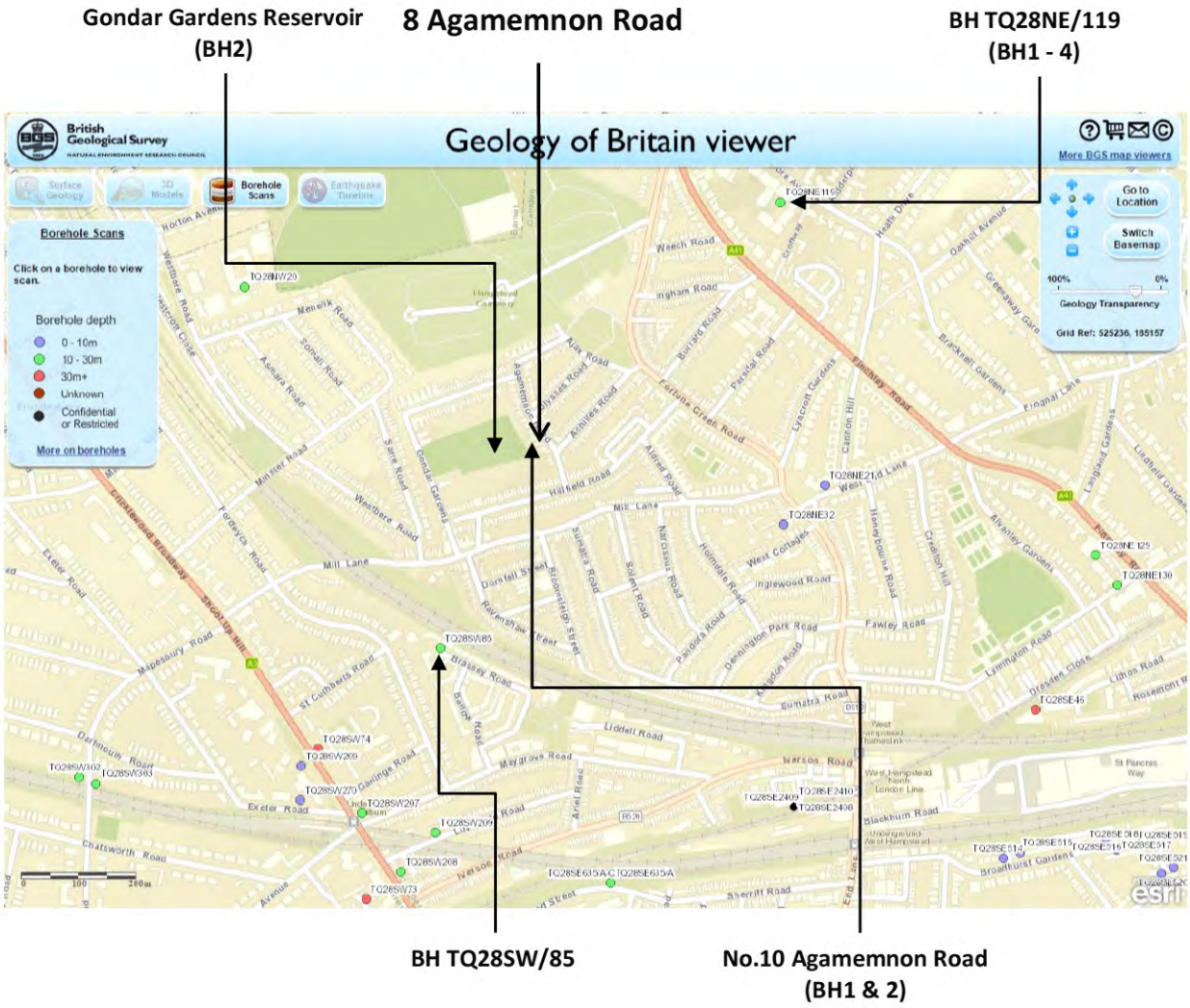

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Title:	**Location Plan of BGS and other Boreholes**					Sheet	**B1**
Date:	August 2018	Checked:	HB	Approved:	KRG	Scale :	NTS

Client: David Joseph Consulting	Scale: N.T.S.	Sheet No: 1 of 1	Weather: Fine	Date: 12.05.16
Site: 10 Agamemnon Road, London NW6 1DY	Job No: 6876	Borehole No: 1	Boring method: CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
G.L.	LEAN MIX CONCRETE	0.05							
0.05	MADE GROUND: dark brown silty clay with occasional gravel. Gravel is fine of subangular brick fragments.	0.25		D					0.5
0.3	Firm brown silty CLAY with occasional partings of orange sand. (Weathered LONDON CLAY FORMATION)			D	V	68 70			1.0
				D					1.5
				D	V	74 74			2.0
				D					2.5
	.....becoming stiff from 3.0m.			D	V	78 78			3.0
				D					3.5
		6.9		D	V	82 86			4.0
				D					4.5
				D	V	96 94			5.0
				D					5.5
				D	V	102 106			6.0
	.....becoming very stiff from 7.0m.			D	V	120+ 120+			7.0
7.2	Stiff fissured dark grey silty CLAY with partings of orange fine sand and occasional selenite crystials. (LONDON CLAY FORMATION)	0.9		D	V	120+ 120+			8.0
8.1	BOREHOLE ENDS AT 8.1m								

Drawn by: LS	Approved by: DB

Remarks: *Borehole "dry" and open on completion. 75mmØ plastic standpipe installed to 8m (2m plain pipe, 6m slotted pipe, 2m bentonite seal, 6m shingle surround bung, valve and plastic cover)*

Key: GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

Client: David Joseph Consulting	Scale: N.T.S.	Sheet No: 1 of 1	Weather: Fine	Date: 11.05.16
Site: 10 Agamemnon Road, London NW6 1DY	Job No: 6876	Borehole No: 2	Boring method: CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
G.L.	PAVING SLABS	0.2							
0.2	LEAN MIX CONCRETE	0.2					No roots observed.		
0.4	MADE GROUND: brown silty clay with occasional gravel and rare fine gravel size selinite crystals. Gravel is fine of subangular pyrite, brick, clinker-like, lime mortar and concrete fragments. Rare wood chippings.	0.6		D					0.5
				D	V	60 64			1.0
				D					1.5
1.0	Firm brown mottled grey silty slightly organic CLAY with occasional partings of orange sand and rare fine gravel size selenite crystals. (HEAD DEPOSITS)	2.7		D	V	68 72			2.0
				D					2.5
				D	V	76 80			3.0
				D					3.5
3.7	Stiff orange-brown and grey mottled silty CLAY with occasional partings of orange and brown sand and silt. (Weathered LONDON CLAY FORMATION)	3.4		D	V	82 84			4.0
				D					4.5
				D	V	94 96			5.0
				D					5.5
				D	V	104 104			6.0
				D	V	120+ 120+			7.0
7.1	Very stiff fissured grey silty CLAY with occasional partings of grey silt and frequent selenite crystals. (LONDON CLAY FORMATION)	1.0		D	V	120+ 120+			8.0
8.1	BOREHOLE ENDS AT 8.1m								

Drawn by: LS **Approved by:** DB

Remarks: *Borehole "dry" and open on completion. 75mmØ plastic pipe installed to 8m (2m plain pipe, 6m slotted pipe, 2m bentonite seal, 6m shingle surround, bung, valve and plastic cover.*

Key: GL Ground Level
D Small Disturbed Sample
V Pilcon Vane (kPa)

BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**1** of **6**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
						Grass / Topsoil.	79.64	0.20	
0.50	1	D				Firm brown silty CLAY with occasional fine gravel sized brick fragment and pockets of silt. (MADE GROUND)			
1.00	2	D							
1.50-1.95	3	SPT	N=9					(2.80)	
2.00	4	D							
2.50-2.95	5	UT	13 blows						
							76.84	3.00	
3.00	6	D				Firm brown mottled pale brown and grey silty CLAY with occasional black mottling, rare fine gravel sized brick fragment and decayed root fibres. (MADE GROUND)			
3.50-3.95	7	SPT	N=8						
4.00	8	D							
4.50-4.95	9	UT	16 blows					(3.00)	
5.00	10	D							
							73.84	6.00	
6.00-6.45	11	SPT	N=18			Stiff high to very high strength brown mottled grey and pale brown silty CLAY. With occasional partings of orange brown silt and frequent fine gravel sized selenite crystals. (LONDON CLAY FORMATION)			
6.75	12	D				. . . At 7.0mbgl, clay is fissured. Fissures are extremely close randomly orientated with occasional grey staining.		(2.00)	
7.50-7.95	13	UT	33 blows						
							71.84	8.00	
8.00	14	D				Stiff high strength fissured brown CLAY. With abundant fine gravel sized selenite crystals. Fissures are very close, randomly orientated. (LONDON CLAY FORMATION)			

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

1. Inspection Pit Excavated from GL to 1.2mbgl. Position cleared using GPR.
2. Borehole drilled using 150mm casing and tools. Casing installed to 5.00mbgl.
3. Groundwater not encountered during drilling. Borehole dry on completion. Slurry noted in the borehole on the morning of 3rd day, at a

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**2** of **6**

Samples and In-situ Tests				Water	Backfill & Instru-mentation	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
Depth	No	Type	Results						
9.00-9.45	15	SPT	N=21			Stiff high strength fissured brown CLAY. With abundant fine gravel sized selenite crystals. Fissures are very close, randomly orientated. (LONDON CLAY FORMATION) *(stratum copied from 8.00m from previous sheet)* . . . At 9.0mbgl, partings of orange brown silt and fine brown sand.			
9.75	16	D							
10.50-10.95	17	UT	35 blows					(5.00)	
11.00	18	D							
12.00-12.45	19	SPT	N=23						
12.75	20	D					66.84	13.00	
13.40	21	D				Very stiff very high strength dark brownish grey silty CLAY. With abundant partings and pockets of orange brown silt. (LONDON CLAY FORMATION)			
13.50-13.95	22	UT	44 blows						
14.00	23	D						(2.00)	
15.00-15.45	24	SPT	N=27				64.84	15.00	
15.75	25	D				Very stiff high to very high strength fissured dark brownish grey silty CLAY. With traces of mica and occasional partings of fine grey sand. Fissures are very closely spaced, sub-horizontal and occasional sub-vertical. (LONDON CLAY FORMATION)			
16.50-16.95	26	UT	52 blows						
17.00	27	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

depth 23.00mbgl and 4th day at 37.20mbgl.

4. Borehole backfilled with arisings from 50.00mbgl to 15.00mbgl. Standpipe installed to 12.00mbgl, with 2.0m response zone from 11.00mbgl to 13.00mbgl.

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**3** of **6**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
18.00	28	D				Very stiff high to very high strength fissured dark brownish grey silty CLAY. With traces of mica and occasional partings of fine grey sand. Fissures are very closely spaced, sub-horizontal and occasional sub-vertical. (LONDON CLAY FORMATION) *(stratum copied from 15.00m from previous sheet)*			
18.75-19.20	29	SPT	N=31						
19.50-19.95	30	UT	56 blows						
20.00	31	D							
21.00-21.45	32	SPT	N=36						
21.75	33	D				. . . At 21.75mbgl, fine gravel sized shell fragments and and bioturbation markings.			
22.50-22.95	34	UT	62 blows						
23.00	35	D							
24.00-24.45	36	SPT	N=40					(18.00)	
24.75	37	D							
25.50-25.95	38	UT	70 blows						
26.00	39	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**4** of **6**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
27.00-27.45	40	SPT	N=46			Very stiff high to very high strength fissured dark brownish grey silty CLAY. With traces of mica and occasional partings of fine grey sand. Fissures are very closely spaced, sub-horizontal and occasional sub-vertical. (LONDON CLAY FORMATION) *(stratum copied from 15.00m from previous sheet)*			
27.75	41	D							
28.50-28.95	42	UT	78 blows						
29.00	43	D							
30.00-30.36	44	SPT	N=56*						
30.75	45	D				. . . At 30.75mbgl, medium to coarse gravel sized fragments of claystone.			
31.50-31.95	46	UT	88 blows						
32.00	47	D					46.84	33.00	
33.00-33.39	48	SPT	N=62*			Very stiff very high strength fissured dark grey, locally brownish grey, silty CLAY. With brown silt partings, traces of mica, and rare forams. Fissures are very closely spaced, randomly orientated. (LONDON CLAY FORMATION)			
33.75	49	D							
34.50-34.95	50	UT	91 blows						
35.00	51	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**5** of **6**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
36.00-36.38	52	SPT	N=67*			Very stiff very high strength fissured dark grey, locally brownish grey, silty CLAY. With brown silt partings, traces of mica, and rare forams. Fissures are very closely spaced, randomly orientated. (LONDON CLAY FORMATION) *(stratum copied from 33.00m from previous sheet)*			
36.75	53	D							
37.50-37.95	54	UT	93 blows						
38.00	55	D							
39.00-39.40	56	SPT	N=61*						
39.76	57	D							
40.50-40.95	58	UT	97 blows						
41.00	59	D						(17.00)	
42.00-42.41	60	SPT	N=58*			. . . From 42.00mbgl fissures horizontal and sub-vertical.			
42.75	61	D							
43.50-43.90	62	SPT	N=61*						
44.26	63	D							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	AGS

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_017 PrjVersion: v8_06 - Core+Logs - 002 | Log CABLE PERCUSSION LOG - A4P | 371487_GONDAR GARDENS.GPJ - v8_06
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437500, Fax: 01442 437550, Web: www.rsk.co.uk. | 08/05/17 - 14:48 | HKL1

BOREHOLE LOG

Contract:	Client:	Borehole:
Gondar Gardens	**Watemans**	**BH2**

Contract Ref:	Start:	Ground Level (m AOD):	National Grid Co-ordinate:	Sheet:
371487	End: **13.03.17**	**79.84**	**E:524865.4 N:185300.3**	**6** of **6**

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results						
45.00-45.38	64	SPT	N=67*			Very stiff very high strength fissured dark grey, locally brownish grey, silty CLAY. With brown silt partings, traces of mica, and rare forams. Fissures are very closely spaced, randomly orientated. (LONDON CLAY FORMATION) *(stratum copied from 33.00m from previous sheet)*			
45.75	65	D							
46.50-46.88	66	SPT	N=77*						
47.25	67	D							
48.00-48.30	68	SPT	N=100*						
48.75	69	D							
49.50-49.88	70	SPT	N=67*						
50.00	71	D					29.84	50.00	
						Borehole completed at 50.00mbgl.			

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:50**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Cable percussion	**Dando 150 (cut down)**	**Mark Taylor**	**MKentish**	

GINT_LIBRARY_V8_06.GLB LibVersion: v8_06_017 PrjVersion: v8_06 - Core+Logs - 002 | Log CABLE PERCUSSION LOG - A4P | 371487_GONDAR GARDENS.GPJ - v8_06.
RSK Environment Ltd, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, HP3 9RT. Tel: 01442 437550, Fax: 01442 437500, Web: www.rsk.co.uk. | 08/05/17 - 14:48 | HKL1

D/141·1/1.

DATE	AMENDMENTS	SIGNED

SITE PLAN

Scale:- 1/1250

REFERENCE PLAN TQ 2684 N.W

TQ28SW/85

24798996

256.

BOREHOLE SUNK 8TH JULY 1964.
DIAMETER OF BOREHOLE 6"
NO MOVEMENT OF GROUND WATER DISCOVERED
DURING DRILLING OPERATIONS.
SEE SITE INVESTIGATION REPORT No 6953/14
MADE BY MESSRS TERRESEARCH LTD.

DETAILS OF STRATA ENCOUNTERED

Scale:- 1/4" to 1'

LONDON BOROUGH OF BRENT

SITE INVESTIGATION WORK AT MAPESBURY ROAD WILLESDEN

C. W. STEEDMAN, A.M.I.C.E., M.I.R.W.E., M.T.P.I., M.R.San.I.
BOROUGH ENGINEER & SURVEYOR.

DATE APRIL '65

DESIGNED		TRACING No. T/141·1/1
DRAWN	A.D.H.D.	
TRACED	B.H.	DRAWING No. D/141·1/1.
CHECKED		

1063 Wt. 22438/0384 10m 7/45 (51) F.&S.

RECORD OF SHAFT OR BORE FOR MINERALS

(For Survey use only)
1-inch Map Registered No.
TQ28NW/20
2443.8558
256

Name and Number of Shaft or Bore West Hampstead School.

For Messrs. L.C.C. Education Dept.

6-inch Map Registered No. TQ 28 NW/20.

Town or Village

County Six-inch quarter sheet

Exact site

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

Purpose for which made

Level at which shaft bore commenced relative to O.D. State if shaft bore is up, down, horizontal or inclined; in latter cases give angle of inclination and direction

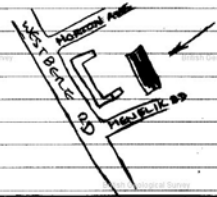
Made by

Information from Date of Sinking 1960

Specimens

Additional Notes in Space Overleaf

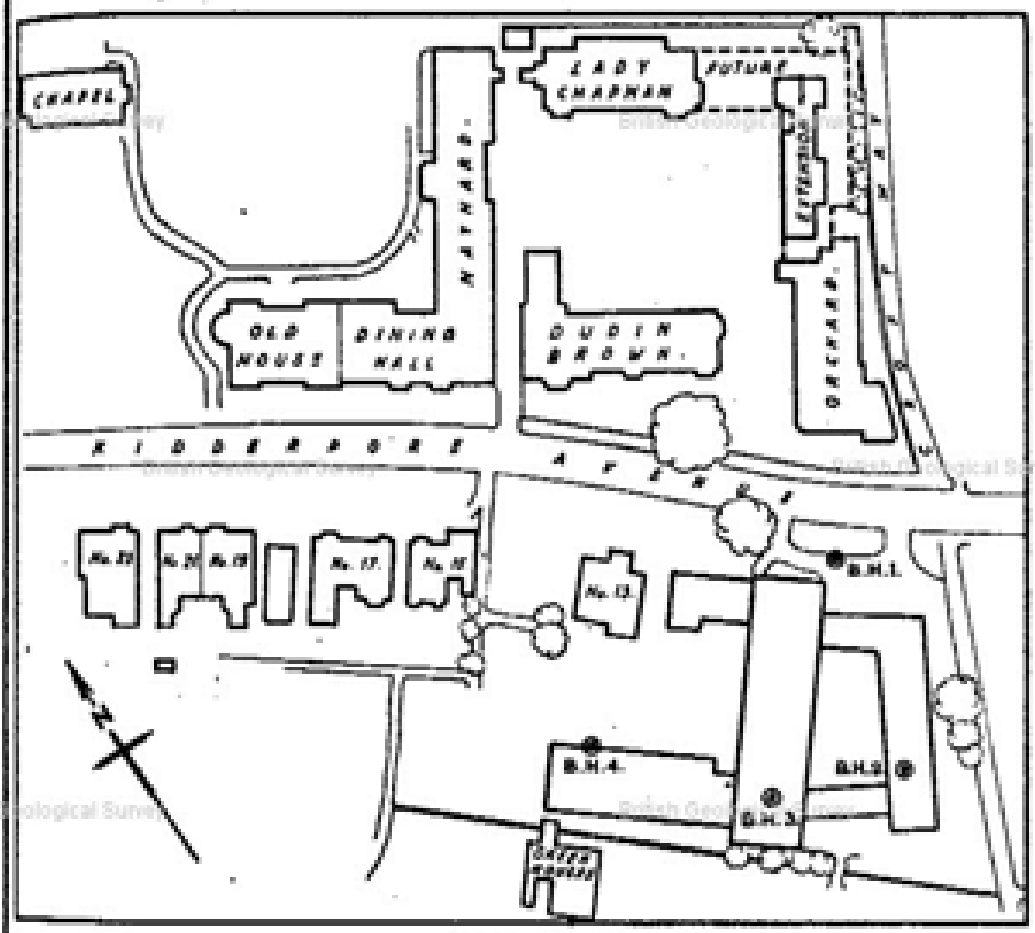
For Survey use only) Geological Classification	NATURE OF STRATA	Thickness	Depth
	no. 1.		
	Topsoil	6	6
	Brown fissured clay LC (M)	23 -	23 6
	Blue fissured clay LC	1 6	25 -
	no. 2A.		
	Topsoil	1 -	1 -
	Brown mottled clay LC (M)	1 -	2 -
	Brown fissured clay LC (M)	21 6	23 6
	Blue fissured clay LC	1 6	25 -
	no. 3.		
	Topsoil	6	6
	Brown mottled clay LC (M)	1 -	1 6
	Brown fissured clay	21 6	23 -
	Blue fissured clay LC	2 -	25 -
	no. 4.		
	Topsoil	6	6
	Brown fissured clay LC (M)	23 -	23 6
	Blue fissured clay LC	6 6	40 -



Continued Overleaf

Geological Survey and Museum, South Kensington, London, S.W.7.	Date received	Correspondence File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map	on 6" Map

Fig. 6.



SCALE:- 1:1000

BOREHOLE	DEPTH Ft.	GROUND LEVEL Ft.	LONDON CLAY Ft.	WATER LEVEL Ft.	TRIAXIAL TEST RESULTS: SAMPLE DEPTH Ft.	SHEAR STRENGTH OR COHESION (C) lb/sq ft.	ANGLE OF SHEARING RESISTANCE (φ)°
1	50·5	71·3	32·7	31·3	5	(i) 2250	0
					18	(ii) 3580	
					21	(iii) 3080	0
					41	(iv) 2898	
2	35·0	82·0	48·0	37·5	-	-	-
3	30·0	82·3	47·3	38·4	7	(i) 720	0
					18	(ii) 1960	
					26	(i) 1800	0
4	35·0	88·1	51·1	42·9	18	(i) 1920	0
					33	(ii) 3230	

NOTE: ALL LEVELS REFERRED TO CLIENT'S DATUM WHICH IS 326·46 ft. ABOVE O.D.

LOC. 3117. WESTFIELD COLLEGE,
HAMPSTEAD N.W.3.
PLAN SHOWING BOREHOLES POSITIONS
ON SITE OF NEW SCIENCE BUILDING.

SOIL MECHANICS LTD.
63, OLD CHURCH STREET,
LONDON, S.W.3

Fig. 1

BOREHOLE LOG

LOCATION NO. 3117 Westfield College, Hampstead, N.W.3.

CARRIED OUT FOR Council of Westfield College.

BOREHOLE NO. 1 DIAMETER : 8 Inch

GROUND LEVEL : 71.7 above Client's arbitrary datum DATE : 14th to 16th March, 1959

Description	Reduced Level	Legend	Sample	Depth	Thickness	Wc %
	+71.7			0'0"		
Rubble, clinker and gravel MADE GROUND	+69.9		1	1'9"	1'9"	
			2			26
Firm mottled grey and brown sandy clayey SILT becoming brown and more sandy below 7 ft. (CLAYGATE BEDS)			3			24
			4			25
			5		12'9"	24
			6			25
	+57.2		7	14'6"		24
Firm becoming stiff light grey-brown sandy clayey silt, more clayey below 17 ft. (Probably Claygate Beds)			8		4'6"	30
	+52.7		9	19'0"		26
Stiff dark grey silty CLAY only slightly fissured and very stiff below 40 ft. Fine gypsum throughout. (LONDON CLAY)			10			29
			11			25
			12			29
			13			27
			14		31'6"	26
			15			25
			16			25
			17			24
			18			25
			19			25
			20			25
			△ 22			
	+21.2		21	50'6"		29
	END OF BOREHOLE					

Water Level Observations

Date	Time	Depth of Borehole	Depth of Casing	Depth to water
14.3.59	0130	14'6"	14'6"	7'4"
17.3.59	0730	50'6"	-	20'6

Scale: 1 in. = 5 ft. • Disturbed Sample ▮ Core Sample △ Water Sample

SOIL MECHANICS LTD., 64 OLD CHURCH ST., S.W.3

Fig. 2

BOREHOLE LOG

LOCATION NO. 3117 Westfield College, Hampstead

CARRIED OUT FOR Council of Westfield College.

BOREHOLE NO. 2 DIAMETER: 8 inches

GROUND LEVEL: 62.0 ft. above DATE: 19th March, 1959
Ollants arbitrary datum

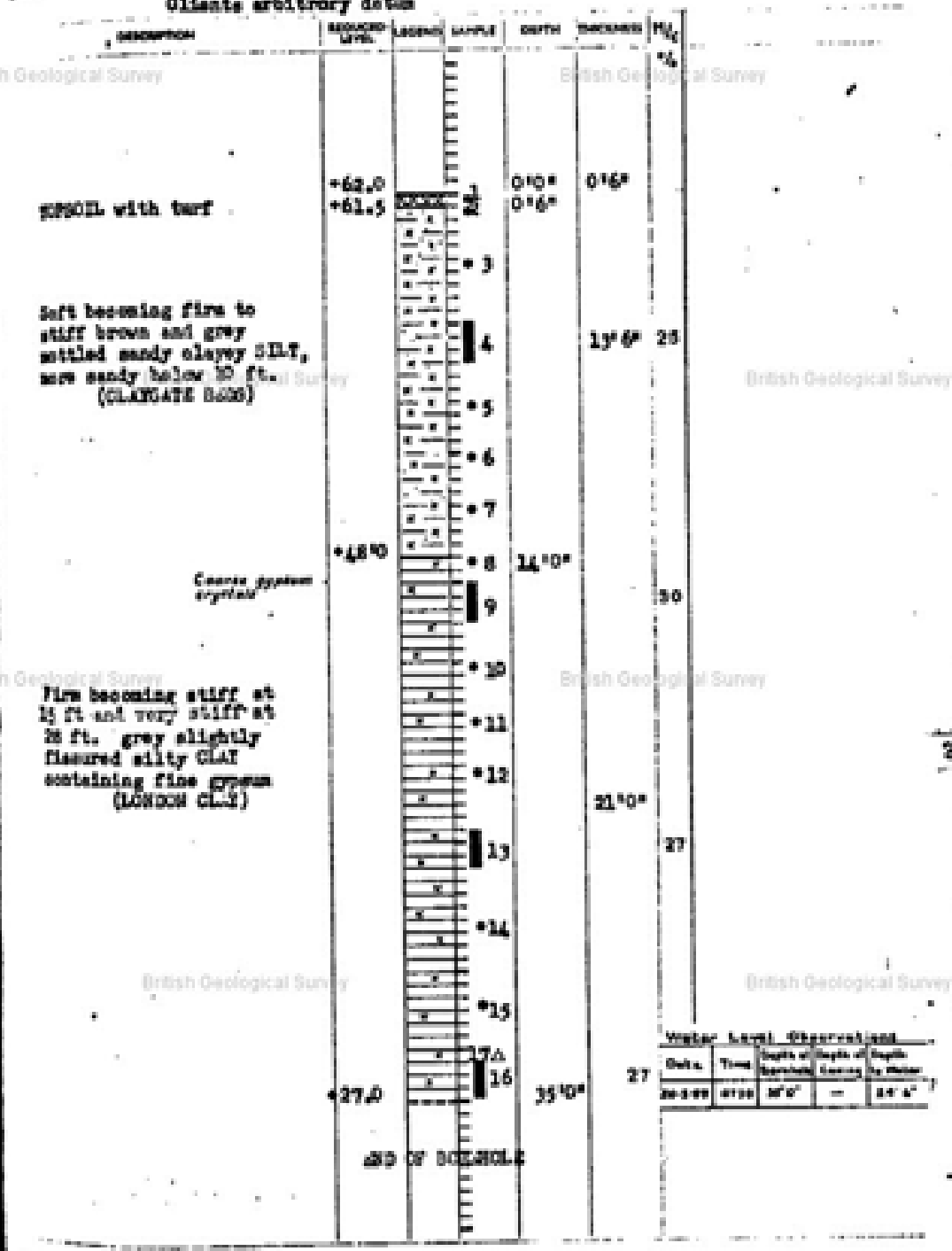


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Fig. 3

BOREHOLE LOG

LOCATION NO. 3117 Westfield College

CARRIED OUT FOR Council of Westfield College

BOREHOLE NO. 3 DIAMETER : 8 inches

GROUND LEVEL : 62.3 ft. above clients arbitrary datum DATE : 20th and 21st March, 1959

Description	Reduced Level	Legend	Sample	Depth	Thickness	%
						%
Soil with turf	+62.3		1	0'10"	1'10"	
	+61.3		2	1'0"		
			⊙ S1			
Firm becoming stiff brown and grey mottled sandy silty CLAY. Very sandy at 3 ft. 6 in. (PLATEAU BEDS)			3			
			4		14'0"	28
			5			
			6			
	+47.3		7	15'0"		29
			△ S7			
			8			
			9			
			10			
Stiff grey slightly fissured silty CLAY with fine gypsum (LONDON CLAY)			11			20
			12			
			13		35'0"	
			14			
			15			
Patch fine gypsum 39 ft. and 1 large septarian nodule.			16			29
			17			
			18			
			19			
			20			
	+12.3		21	50'0"		
				15 2/4		
END OF BOREHOLE						

Water Level Observations

Date	Time	Depth of Borehole	Depth of Casing	Depth to Water
21-3-59	0730	41'0"	39'0"	6'4"

Scale: 1 in. = 5 ft. • Disturbed Sample ▮ Core Sample △ Water Sample

SOIL MECHANICS LTD., 65 OLD CHURCH ST., S.W.3.

3119
3120
3123
3124