

Mr Maurice Ostro
6 Elsworthy Terrace
Screening Assessment for a Pavilion

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0

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Prepared:

Seera Chara BEng (Hons) MSc
CEng MICE
Technical Director



**Checked &
Approved:**

Jason Monk BSc (Hons) CGeol FGS
Technical Director



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Contents

	Page
Executive Summary	i
Limitations and Exceptions	ii
1 Introduction	1
1.1 General	1
1.2 Terms of Reference	1
1.3 Proposed Development	1
2 The Site	2
2.1 Location and Description	2
2.2 Geology	2
2.3 Hydrogeology	2
2.4 Hydrology	3
2.5 Existing Site Drainage Information	3
3 Screening Assessment	4
3.1 Surface Flow and Flooding Screening Assessment.	4
3.2 Subterranean (groundwater) flow screening flowchart	4
3.3 Slope Stability Screening Assessment.	5
3.4 Appraisal of Potential Impacts	6
4 Conclusions and Recommendations	7
5 References	8

Figures

Figure 1: Site Location Plan

Appendices

Appendix A: Historic Borehole Logs

Appendix B: Existing Surface Water Drains

Executive Summary

Details	Summary of Main Text
Introduction	This report has been prepared on the instructions of Mr Maurice Ostro who is proposing to lower the permitted pavilion by constructing part of it below ground and reduce the plan area such that it becomes less intrusive.
Site description	The site comprises a level garden to the rear of 6 Elsworthy Terrace.
Environmental Setting	Strata comprising the London Clay (an aquiclude), described as stiff brown clay, are shown to underlie the site. The site is within a groundwater source protection zone. There are no significant watercourses/water features with 500m of the site. Barton's Lost Rivers of London indicate the presence of a buried watercourse some 260m to the west of the site.
Ground Investigation	
Ground Conditions Encountered	Historic borehole located some 90m to the west indicates the presence of made ground followed by thin band of Head Deposits followed by the London Clay.
Groundwater	Not encountered in the historic borehole.
Screening Assessment	
Surface Flow and Flooding	The assessment has not identified any surface flow and flooding issues at the site. However there will be beneficial impact from reduction in the volume of surface water run-off from site owing to the introduction of green roof in place of the existing hard standing.
Subterranean (groundwater) flow	The assessment has not identified any groundwater issues at the site.
Slope Stability	The near surface London Clay has a high potential for swelling and shrinkage as a result of seasonal moisture content change and through the influence of tree growth or removal. No other slopes are being created at the site and therefore the impact will be minimal.
Foundation Design	A review of foundation depths should be undertaken using BRE Digest 298, Low Rise Building Foundations and the pavilion wall will need to include void formers to resist potential swelling force and prevent instability.
Further Work	The effect of potential impacts are minor once mitigation measures are implemented and therefore it is considered that a detail Basement Impact Assessment is not required for this project.

Limitations and Exceptions

- 1 This report and its findings should be considered in relation to the terms and conditions proposed and scope of works agreed between MLM Consulting Engineers Ltd (MLM) and the client.
- 2 The Executive Summary, Conclusions and Recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon until considered in the context of the whole report and the development, if any, proposed.
- 3 The assessment and interpretation of contamination and associated risks are based on the scope of work agreed with the client and the report may not be sufficient to fully address contaminations or to allow detailed remediation design to proceed without further investigation and analysis.
- 4 Any assessments made in this report are based on the ground conditions as revealed by the exploratory holes and pits, together with the results of any field or laboratory testing undertaken and, where appropriate, other relevant data which may have been obtained for the sites including previous site investigation reports. There may be special conditions appertaining to the site, however, which have not been revealed by the investigation and which have not, therefore, been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available.
- 5 Interpretations and recommendations contained in the report represent our professional opinions, which were arrived at in accordance with currently accepted industry practices at the time of reporting and based on current legislation in force at that time.
- 6 Where the data available from previous site investigation reports, supplied by the Client, have been used, it has been assumed that the information is correct. No responsibility can be accepted by MLM for inaccuracies within the data supplied.
- 7 Whilst the report may express an opinion of possible configuration of strata between or beyond exploratory hole or pit locations, or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for the accuracy.
- 8 Comments on groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. It should be noted that groundwater levels can vary due to seasonal or other effects.
- 9 The copyright in this report and other plans and documents prepared by MLM is owned by them and no such report, plan or document may be reproduced, published or adapted without their written consent. Complete copies of this report may, however, be made and distributed by the Client as an expedient in dealing with matters related to its commission.
- 10 This report is prepared and written in the context of the proposals stated in the introduction to this report and should not be used in a differing context. Furthermore, new information, improved practices and legislation may necessitate an alteration to the report in whole or in part after its submission. Therefore, with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to us for re-assessment and, if necessary, re-appraisal.

1 Introduction

1.1 General

This report has been prepared by MLM Consulting Engineers Ltd (MLM) on the instructions of Mr Maurice Ostro who is proposing to lower the permitted pavilion by constructing part of it below ground and reduce the plan area such that it becomes less intrusive.

This report presents the findings of a Screening Assessment undertaken in accordance with the guidelines published by the London Borough of Camden (LBC) in support of the planning application.

1.2 Terms of Reference

The terms of reference for the work were set out in the MLM proposal 773521-FEE-ENV-001 dated 8 December 2015.

1.3 Proposed Development

The site has extant planning permission (London Borough of Camden planning reference 2014/4187/P) for the remodelling of the existing house and the construction of a garden pavilion at the rear of the garden. The details are shown on architect Cove burgess drawing reference 2143/0200.

It is understood that the proposed development will comprise the lowering of the floor and roof of the permitted pavilion floor by approximately 1.6m below current ground level as well as reducing the plan area of it. A green roof will be provided for the building.

2 The Site

2.1 Location and Description

The site is 6 Elsworthy Terrace, London. The proposed pavilion is to be located in the rear garden, and is approximately rectangular in shape measuring approximately 14m by 7.1m. It is bordered to the north, east and south by rear gardens of adjacent properties and to the west by the residential house of 6 Elsworthy Terrace. Primrose Hill Park is located 10.6m to the south of the site.

The proposed pavilion is located approximately 9.1m to the east of the existing house and 10.5m from 5 Elsworthy Terrace. The other nearest building is pavilion located at the rear garden of 23 Elsworthy Road.

The site is level and the surrounding area is flat at an approximate level of 49.2m AOD. The area covered by the footprint of the pavilion is covered by hardstanding. Primrose Hill slopes from the highest at the centre towards the site at a gradient of 1: 12.

The National Grid Reference for the approximate centre of the site is 527399,184035.

A location plan of the site is presented as Figure 1.

2.2 Geology

The geological map of the area shows the site to be underlain by the London Clay Formation. The Camden Geological, Hydrogeological and Hydrogeological Study (prepared Arup, on behalf of LBC) confirms that the site is only underlain by London Clay and there are no permeable strata near the surface.

A borehole drilled some 90m to the west of the site recorded made ground, overlying Head Deposits, with the London Clay at depth. Therefore the presence of Head deposits at the site cannot be discounted. The borehole logs are shown in Appendix A.

2.3 Hydrogeology

The Environment Agency website provides the following hydrogeological information:

Table 2.1 Aquifer Properties

Aspect	Designation	Description
Groundwater Source Protection Zone	SPZ2	Outer protection zone. Defined by a 400 day travel time from a point below the water table. This zone has a minimum radius of 250 or 500m around the source, depending on the size of the abstraction.
Aquifer Designation – Bedrock Deposit	Unproductive Strata	These are deposits with low permeability that have negligible significance for water supply or river base flow.

Groundwater was not encountered during the drilling of the borehole 90m to the west of the site.

2.4 Hydrology

There are no significant watercourses/water features within 500m of the site. Barton's Lost Rivers of London indicate the presence of a buried watercourse some 260m to the west of the site.

2.5 Existing Site Drainage Information

Thames Water drainage records indicate a sewer is running along Elsworthy Terrace and therefore it is assumed it is draining the site of foul and surface water. The details of the drains are shown in Appendix B.

The Environment Agency website indicates that the site is free from surface water flooding. This is confirmed by flood map enclosed within Camden Geological, Hydrogeological and Hydrogeological Study.

3 Screening Assessment

The Camden Geological, Hydrogeological and Hydrogeological Study compiled by Arup contains a list of questions within three flowcharts for surface water flow, groundwater flow and slope stability. The response to these questions are presented in the following sections.

3.1 Surface Flow and Flooding Screening Assessment

Table 3.1 Surface Flow and Flooding Screening from LBC Study

Question	MLM Response
1 Is the site within the catchment of the pond chains on Hampstead Heath?	No (The site is 2km from the Heath)
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?	Yes. The site is covered with hardstanding and the proposed green roof will reduce the surface water run-off from the site.
3 Will the proposed basement development result in change in the proportion of hard surfaced/paved areas?	Yes. There will be a reduction in the hard surface owing to the introduction of the green roof.
4 Will the proposed basement development result in changes to the profile of the inflows of surface water being received by adjacent properties or downstream watercourses?	No. The green roof will intercept majority of the run off and excess will be discharged in to public drainage.
5 Will the proposed basement result in changes in quality of surface water being received by adjacent properties or down stream	No. The ground is level and will not affect the surface water flow.
6 Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and Kings Cross, or is at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	No. The site is not near these areas and no groundwater was observed near the surface in the nearby borehole.

There will be beneficial impact on the surface water run off owing to the replacement of the hardstanding with green roof.

3.2 Subterranean (groundwater) flow screening flowchart

Table 3.2 Groundwater Screening from LBC Study

Question	MLM Response
1a Is the site located directly over an aquifer?	No. The site is located over London Clay, classified as Unproductive Strata
1b Will the proposed water table extend beneath the water table surface?	No. The site is underlain by clay and no perched water was observed in the nearby borehole.
2 Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No, the nearest water course is 260m from the site
3 Is the site within the catchment of the pond chains of Hampstead Heath?	No

Question	MLM Response
4 Will the proposed basement development result in change in the proportion of the hard surfaced/paved areas.	Yes. There will be reduction in the total area of hard standing owing to the introduction of green roof in place of the existing hardstanding.
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 (eg via soakways and or SUDS)?	No. Green roof will be provided.
6 Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?	No. Groundwater was not detected in the near surface soil layer.

The assessment has not identified any groundwater issues at the site.

3.3 Slope Stability Screening Assessment.

Table 3.3 Slope stability screening from LBC Study

Question	MLM Response
1 Does the existing site include slopes, natural or man-made greater than 7° (approximately 1 in 8)?	No, the site is level
2 Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7° (approximately 1 in 8)?	No, however the pavilion wall will be at the boundary and will be designed to resist lateral pressure.
3 Does the development neighbour land, including railway cuttings and the like with the slope greater than 7° (approximately 1 in 8)?	No. The surrounding land is mainly covered with gardens and public spaces.
4 Is the site within a wider hillside setting in which the general slope is greater than 7° (approximately 1 in 8)?	No. Primrose Hill has a gradient of 1:12, which is shallower than the given criteria.
5 Is London Clay the shallowest strata at the site?	Yes
6 Will any trees be felled as part of the proposed development and or are any works proposed within any tree protection zones where trees are to be retained?	No, only garden plants are located within the proposed footprint.
7 Is there a history of seasonal shrink swell subsidence in the local area, and or evidence of such effects at the site?	No
8 Is the site within 100m of a watercourse or a potential spring line.	No, the nearest water course is 260m from the site
9 Is the site within an area of previously worked ground?	No. None are shown on the British Geological Survey plan or Environment Agency website.
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
11 Is the site within 50m of the Hampstead Heath ponds?	No
12 Is the site within 5m of highway or pedestrian right of way?	No

Question	MLM Response
13 Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No
14 Is the site over (or within the exclusion zone of) any tunnels eg railway lines.	No. None are shown on the BGS and Ordnance Survey.

The assessment has identified that there is potential impact from underlying London Clay on the proposed building. The near surface London Clay has a high potential for swelling and shrinkage as a result of seasonal moisture content change and through the influence of tree growth or removal. A review of foundation depths should be undertaken using BRE Digest 298, Low Rise Building Foundations and the pavilion wall will need to include void formers to resist potential swelling force and prevent instability. No other slopes are being created at the site and therefore the impact will be minimal.

3.4 Appraisal of Potential Impacts

The screening assessment has identified the following potential impacts from the screening assessment:

- Beneficial impacts by the reduction in the volume of surface water run off owing to the replacement of the hardstanding with green roof.
- The underlying London Clay at the site has a high potential for swelling and shrinkage as a result of seasonal moisture content change and through the influence of tree growth or removal. The pavilion foundations and walls will need to be designed by a structural engineer.

4 Conclusions and Recommendations

The desk study has identified that the site is underlain mainly by London Clay and the presence of a thin mantle of Head Deposits cannot be discounted.

The screening assessment has identified potential impact associated with the London Clay having high potential for swelling and shrinkage as a result of seasonal moisture content change and through the influence of tree growth or removal. The impact is very minimal as no battered excavations or slopes are being constructed and the impact on the building will be mitigated by structural design. In addition there will be beneficial impact from reduction in the volume of surface water run-off from site owing to the introduction of green roof in place of the existing hard standing within the footprint of the proposed pavilion.

In summary, the effect of potential impacts are minor once mitigation measures are implemented and therefore it is considered that a detail Basement Impact Assessment is not required for this project.

5 References

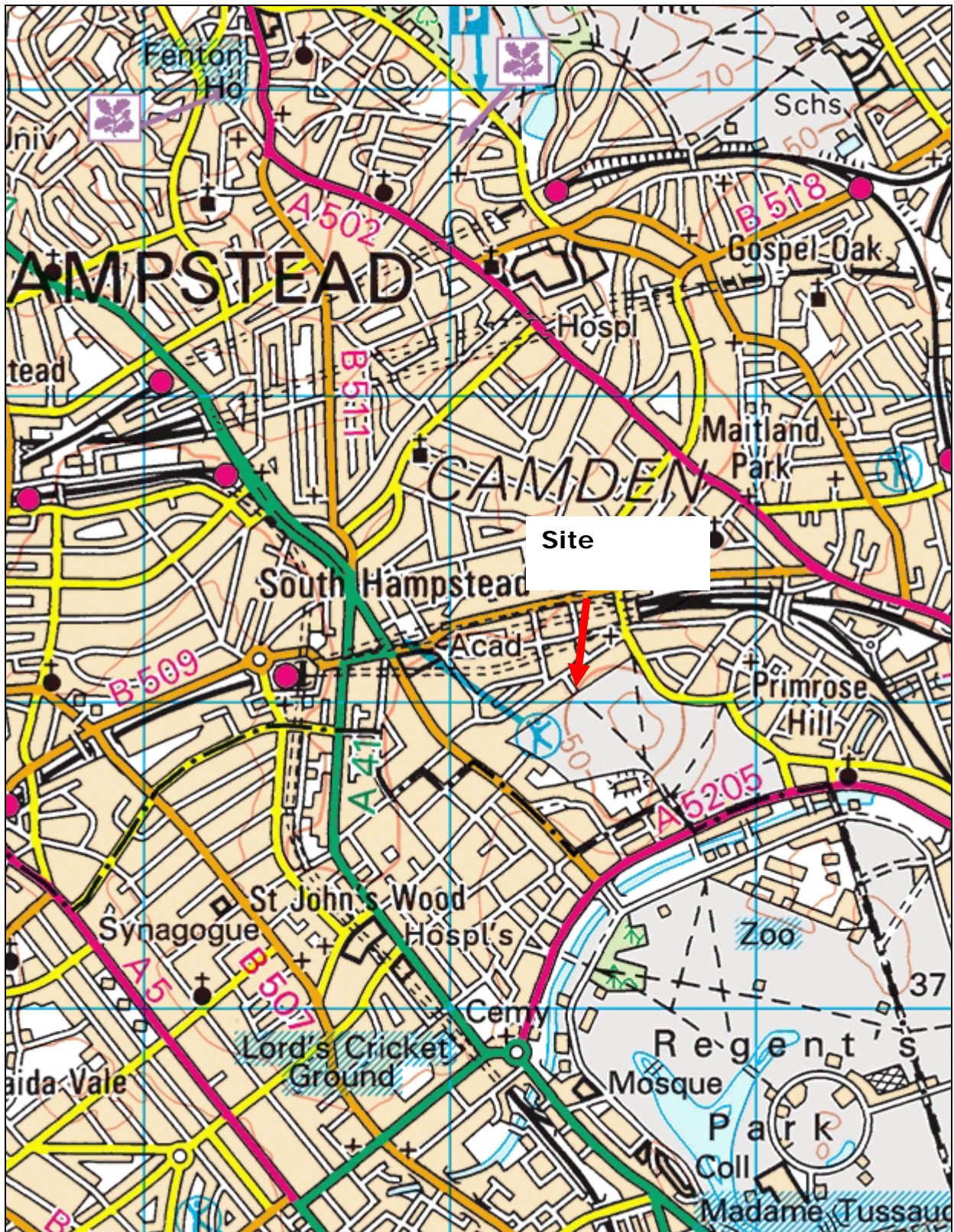
- 1 Arup (2010), Camden Geological, Hydrogeological and Hydrological Study, Guidance for Subterranean Development, London Borough of Camden. .
- 2 British Geological Survey (2006) Sheet 256 North London. 1:50,000 scale Geology Map, Solid and Drift Edition.
- 3 Building Research Establishment (1993) Building on shrinkable clay. BRE Digest 240 - Part 1.

Figures


Figure 1: Site Location Plan

Appendices

- Appendix A: Historic Borehole Logs
- Appendix B: Existing Surface Water Drains

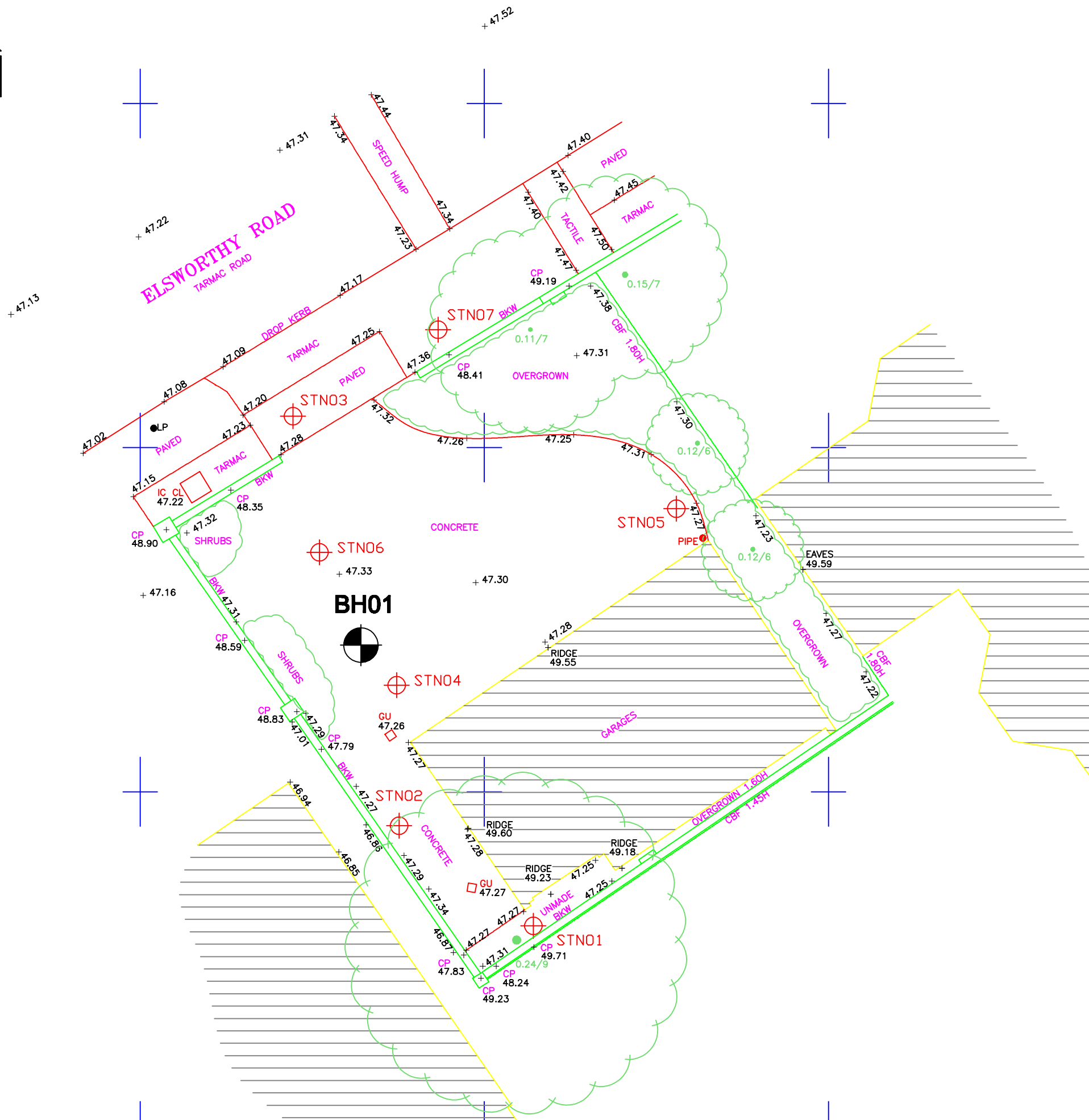


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 www.mlm.uk.com	Figure	1	Site Location Plan
	Project	6 Elsworthy Terrace	
	Project Ref	773521	
	Date	February 2016	

Appendix A

Historic Borehole Logs



Notes
 Reproduced from Drawing 94353.000, dated August 2010, supplied by the Engineer.

Key



Geotechnical Engineering Limited 

EXPLORATORY HOLE LOCATION PLAN

Client: MAURICE OSTRO

Site: ELSWORTHY ROAD, CAMDEN

Scale: SCALE UNKNOWN

CONTRACT	FIGURE
25136	1

BOREHOLE LOG



CLIENT MAURICE OSTRO

BH01

SITE ELSWORTHY ROAD, CAMDEN

Sheet 1 of 4

Start Date 3 February 2011 Easting 527306.4

Scale 1 : 50

End Date 4 February 2011 Northing 184024.3 Ground level 47.25mOD

Depth 30.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
03/02/11 0800hrs							Concrete (MADE GROUND)	0.10	47.15	
	1D*	0.30		Vo 1.0			Brown sandy clayey subangular to rounded fine to coarse brick, ash, concrete and siliceous GRAVEL (MADE GROUND)			
	2D*	0.50		Vo 0.0						
	3D	0.50					0.50m: Subangular concrete cobble.			
	4D*	1.00		Vo 0.0			0.60m: Subangular concrete cobble.			
		1.20 - 1.65		Nil	C 6		1.00 - 1.20m: locally soft slightly sandy gravelly clay	1.20	46.05	
	5B	1.20					Soft brown slightly sandy slightly gravelly clayey SILT. Gravel is subangular to subrounded fine to coarse siliceous.	1.40	45.85	
	6D	1.50					Soft brown mottled orangish brown slightly sandy CLAY.			
	7D	2.00						2.00	45.25	
	8U	2.00 - 2.45	2.00				Firm brown mottled bluish grey and orangish brown slightly sandy CLAY.			
	9D	2.50								
	10D	2.50 - 2.95	2.00	S 9			2.50 - 5.00m: Occasional fine gravel sized gypsum crystals.			
	11U	3.00 - 3.45	2.50							
	12D	3.50								
	13D	3.50 - 3.95	2.50	S 14						
	14U	4.00 - 4.45	2.50				4.00m: Becoming stiff.			
	15D	4.50								
	16D	4.50 - 4.95	2.50	S 14						
	17U	5.00 - 5.45	2.50					5.00	42.25	
	18D	5.50					Stiff indistinctly laminated locally fissured brown mottled orangish brown slightly sandy CLAY with occasional fine and medium gravel sized gypsum crystals.			
	19B	5.50								
	20D	6.50								
	21U	6.50 - 6.95	2.50							
	22D	7.00								
	23D	7.00 - 7.45	2.50	S 21						
	24D	7.50								
Continued Next Page								{8.00}		

EQUIPMENT: Light cable percussive (shell and auger) rig.
 METHOD: Hydraulic breaker 0.00-0.10m. Hand dug inspection pit 0.10-1.20m. Cable percussion (150mm) 1.20-30.00m.
 CASING: 150mm diam to 2.50m.
 BACKFILL: On completion, a standpipe piezometer (19mm) was installed with tip at 20.00m and a slotted standpipe (50mm) was installed to 2.00m, bentonite seal 30.00-20.00m, granular response zone 20.00-18.50m, bentonite seal 18.50-2.00m, granular response zone 2.00-0.50m, bentonite seal 0.50-0.15m, concrete and stopcock cover 0.15-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks
 Groundwater not encountered.



CONTRACT
25136

CHECKED

Geotechnical Engineering Ltd, Tel. 01452 527743 25136 GPJ TRIAL\JH.GPJ GEOTECH.GLB 16/03/2011 10:46:36 AD RE/ED/CT

BOREHOLE LOG



CLIENT MAURICE OSTRO

BH01

SITE ELSWORTHY ROAD, CAMDEN

Sheet 2 of 4

Start Date 3 February 2011 Easting 527306.4

Scale 1 : 50

End Date 4 February 2011 Northing 184024.3 Ground level 47.25mOD

Depth 30.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
	25U	8.00 - 8.45	2.50							
	26D	8.50								
	27D	8.50 - 8.95	2.50	S 23						
	28D	9.50								
	29U	9.50 - 9.95	2.50							
	30D	10.00								
	31D	10.00 - 10.45	2.50	S 21						
	32B	10.00								
	33D	10.50								
	34U	11.00 - 11.45	2.50							
	35D	11.50					11.20m: Driller notes claystone cobble within U100 samples tube	11.30	35.95	
	36D	11.50 - 11.95	2.50	S 27			Stiff to very stiff thinly laminated fissured greyish brown silty CLAY with occasional fine to coarse sand sized gastropod fossils and frequent 2mm thick silt partings.			
	37D	12.50					12.50m: Subangular pyrite nodules.			
	38U	12.50 - 12.95	2.50							
	39D	13.00								
	40D	13.00 - 13.45	2.50	S 31						
	41D	13.50					13.50 - 19.00m: Abundant 2mm and 5mm thick fissures.			
	42U	14.00 - 14.45	2.50							
	43D	14.50								
	44D	14.50 - 14.95	2.50	S 27						
	45D	15.50								
	46U	15.50 - 15.95	2.50				15.50 - 19.50m: Slightly sandy.			
	47D	16.00								
	48D	16.00 - 16.45	2.50	S 28			16.00 - 19.50m: Occasional fine sand sized gypsum crystals.			
	49D	16.50								
	50U	17.00 - 17.45	2.50							
	51D	17.50								
	52D	17.50 - 17.95	2.50	S 26						

Continued Next Page

{18.00}

Geotechnical Engineering Ltd, Tel. 01452 527743 25136.GPJ TRIAL.JH.GPJ GEOTECH.GLB 16/03/2011 10:46:36 AD RE/ED/CT

water strike (m)	casing (m)	rose to (m)	time to rise (m)	remarks
				Groundwater not encountered.



CONTRACT	CHECKED
25136	

BOREHOLE LOG



CLIENT MAURICE OSTRO

BH01

SITE ELSWORTHY ROAD, CAMDEN

Sheet 3 of 4

Start Date 3 February 2011 Easting 527306.4

Scale 1 : 50

End Date 4 February 2011 Northing 184024.3 Ground level 47.25mOD

Depth 30.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
	53D	18.00								
	54U	18.50 - 18.95	2.50							
	55D	19.00								
	56D	19.00 - 19.45	2.50	S 30			19.00 - 23.00m: Abundant subvertical and subhorizontal smooth planar fissures.			
	57D	19.50								
03/02/11 1700hrs Dry	58U	20.00 - 20.45	2.50							
04/02/11 0800hrs Dry	59D	20.50								
	60D	20.50 - 20.95	2.50	S 30						
	61B	20.50 - 21.00								
	62D	21.50								
	63U	21.50 - 21.95	2.50							
	64D	22.00								
	65D	22.00 - 22.45	2.50	S 32						
	66D	22.50								
	67U	23.00 - 23.45	2.50							
	68D	23.50						23.50	23.75	
	69D	23.50 - 23.95	2.50	S 33			Very stiff thinly laminated fissured greyish brown slightly sandy silty CLAY with occasional fine sand sized gypsum crystals and abundant 5-10mm randomly orientated fissures.			
	70D	24.50								
	71U	24.50 - 24.95	2.50							
	72D	25.00								
	73D	25.00 - 25.45	2.50	S 35			25.00 - 27.50m: Occasional fine gravel sized gastropod fossils.			
	74D	25.50								
	75U	26.00 - 26.45	2.50							
	76D	26.50								
	77D	26.50 - 26.95	2.50	S 41						
	78D	27.50								
	79U	27.50 - 27.95								
	80D	28.00								

Continued Next Page

{28.00}

Geotechnical Engineering Ltd, Tel. 01452 527743 25136 GPJ TRIAL\JH.GPJ GEOTECH.GLB 16/03/2011 10:46:37 AD RE/ED/CT

water strike (m)	casing (m)	rose to (m)	time to rise (m)	remarks
				Groundwater not encountered.



CONTRACT
25136

CHECKED

BOREHOLE LOG



CLIENT MAURICE OSTRO

BH01

SITE ELSWORTHY ROAD, CAMDEN

Sheet 4 of 4

Start Date 3 February 2011 Easting 527306.4

Scale 1 : 50

End Date 4 February 2011 Northing 184024.3 Ground level 47.25mOD

Depth 30.00 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
04/02/11 1400hrs Dry	81D	28.00 - 28.45	2.50	S 31						
	82D	28.50								
	83U	29.00 - 29.45	2.50							
	84D	29.50								
	85D	29.50 - 29.62	2.50	S*375			29.50m: Driller notes possible claystone.			
	86B	29.50								
							Borehole completed at 30.00m.	30.00	17.25	

Geotechnical Engineering Ltd, Tel. 01452 527743 25136.GPJ TRIAL.JH.GPJ GEOTECH.GLB 16/03/2011 10:46:37 AD RE/ED/CT

water strike (m)	casing (m)	rose to (m)	time to rise (m)	remarks		CONTRACT	CHECKED
				Groundwater not encountered.		25136	

STANDARD PENETRATION TEST



CLIENT MAURICE OSTRO

SITE ELSWORTHY ROAD, CAMDEN

borehole no.	borehole depth (m)	bottom depth (m)	casing depth (m)	water level (m)	seating drive		test drive				test type	N	energy ratio (%)
					blows	pen (mm)	blows		pen (mm)				
BH01	1.20	1.65	Nil	Dry	1 1	75 75	1 1 2 2	75 75 75 75	C	6	67		
BH01	2.50	2.95	2.00	Dry	1 1	75 75	2 2 2 3	75 75 75 75	S	9	67		
BH01	3.50	3.95	2.50	Dry	1 2	75 75	2 3 4 5	75 75 75 75	S	14	67		
BH01	4.50	4.95	2.50	Dry	2 2	75 75	3 4 4 3	75 75 75 75	S	14	67		
BH01	7.00	7.45	2.50	Dry	2 3	75 75	4 5 6 6	75 75 75 75	S	21	67		
BH01	8.50	8.95	2.50	Dry	3 3	75 75	5 6 6 6	75 75 75 75	S	23	67		
BH01	10.00	10.45	2.50	Dry	3 4	75 75	4 5 6 6	75 75 75 75	S	21	67		
BH01	11.50	11.95	2.50	Dry	4 4	75 75	5 6 8 8	75 75 75 75	S	27	67		
BH01	13.00	13.45	2.50	Dry	6 6	75 75	6 7 9 9	75 75 75 75	S	31	67		
BH01	14.50	14.95	2.50	Dry	4 5	75 75	6 6 7 8	75 75 75 75	S	27	67		
BH01	16.00	16.45	2.50	Dry	4 5	75 75	6 7 7 8	75 75 75 75	S	28	67		
BH01	17.50	17.95	2.50	Dry	3 5	75 75	6 6 7 7	75 75 75 75	S	26	67		
BH01	19.00	19.45	2.50	Dry	4 4	75 75	6 8 8 8	75 75 75 75	S	30	67		
BH01	20.50	20.95	2.50	Dry	4 5	75 75	6 7 8 9	75 75 75 75	S	30	67		
BH01	22.00	22.45	2.50	Dry	5 6	75 75	7 8 8 9	75 75 75 75	S	32	67		
BH01	23.50	23.95	2.50	Dry	4 5	75 75	7 8 9 9	75 75 75 75	S	33	67		
BH01	25.00	25.45	2.50	Dry	5 6	75 75	8 9 9 9	75 75 75 75	S	35	67		
BH01	26.50	26.95	2.50	Dry	6 7	75 75	9 10 11 11	75 75 75 75	S	41	67		
BH01	28.00	28.45	2.50	Dry	5 6	75 75	7 8 8 8	75 75 75 75	S	31	67		
BH01	29.50	29.62	2.50	Dry	25	75	50	40	S	375	67		

notes:

1. Test carried out in general accordance with BS EN ISO 22476-3:2005
2. N values have not been subjected to any correction.
3. Test carried out using split spoon S, solid cone C.
4. Where full test drive not completed, linearly extrapolated N value reported.
5. <1 Denotes hammer self weight penetration (sank under own weight).
6. ** Denotes no effective penetration.

CONTRACT	CHECKED
25136	

Appendix B

Existing Surface Water Drains



The width of the displayed area is 200m and the centre of the map is located at OS coordinates 527327,184011
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.
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N/A. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
21CI	n/a	n/a
21CJ	n/a	n/a
2103	n/a	n/a
2903	46.26	43.11
29AI	n/a	n/a
29BJ	n/a	n/a
20BH	n/a	n/a
20BC	n/a	n/a
29BI	n/a	n/a
29BA	n/a	n/a
20AI	n/a	n/a
29CA	n/a	n/a
29BH	n/a	n/a
20BB	n/a	n/a
20BA	n/a	n/a
29BG	n/a	n/a
20AJ	n/a	n/a
2002	47.08	44.03
29BF	n/a	n/a
39AD	n/a	n/a
3002	n/a	n/a
-	-	-
3001	49.54	46.77

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.