Eastwood & Partners
CONSULTING ENGINEERS

BASEMENT IMPACT ASSESSMENT

1A WELL ROAD, LONDON, NW3 1LJ

FOR

TG STUDIO

ISSUE 1

36145-001 **October 2013**

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Job No.	:	36145
Report Status	:	ISSUE 1
Document Date	:	25 October 2013

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APPENDIX

1.0 INTRODUCTION

1.1 Terms of Reference

This report presents the findings of a Basement Impact Assessment carried out by Eastwood & Partners (Consulting Engineers) Ltd for, and on the instructions of, TG Studio. Any other parties using the information in this report do so at their own risk and any duty of care is excluded.

1.2 Context

Where the site of proposed development includes a new or extended basement, a general statement on meeting the terms of Camden Development Policy 27 is required. This needs to address the impact of the proposals on the following:

- Surface water flow, drainage and flooding;
- Groundwater flow; and
- Structural stability.

A description of the proposed development, which includes lateral extension of the existing basement, is provided in section 2.2.

1.3 Aims and Objectives

The aims and objectives of this assessment are to:

- Undertake a desktop study to assess the existing geological and hydrological conditions at the site and in the wider area in order to identify areas susceptible to instability (ground and water movement) and localised flooding;
- To provide a detailed engineering study, including through the use of trial pits, to assess local ground conditions, water movement, subsidence and drainage and potential impacts on adjoining/nearby properties;
- Identify suitable construction methods and mitigation measures for developments which may affect the stability of the host and neighbouring buildings and/or nearby structures, as well as hydrology (at the site and within the area), without placing additional pressure on other areas or on the local combined sewer network; and
- Devise a method for monitoring local ground conditions, water movement, subsidence and drainage.

1.4 Limitations of Investigation

Where assessments of site areas affected in particular ways are given, these are approximate.

All information, comments and opinions given in this report are based on the ground conditions encountered during the site work, on the results of laboratory testing carried out as part of the investigation and information gained from a historical, geological and environmental desk study. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata and water conditions between or below investigation points. It should also be noted that groundwater and gas levels vary due to seasonal or other effects, and may at times differ from those measured during the investigation.

2.0 THE SITE

2.1 Description of the Existing Development

The property comprises number 1a Well Road, which is located near the junction of New End and New End Square, in the borough of Camden, London. It can also be located by grid reference 526563, 185994.

The property is bounded to the north-east by Well Road and on all other sides by adjacent buildings.

The property is currently in use as living accommodation, with a bedroom and en-suite bathroom in the basement, living room, dining room and kitchen on the ground floor, bedroom and bathroom on the first floor, a living room and kitchen on the second floor and a bedroom and en-suite bathroom on the third floor.

2.2 Description of the Proposed Development

The proposals include an extension of the basement so that it covers the full footprint of the ground floor of the building. No deepening of the basement is proposed. Minor alterations are also then proposed to the remaining floors. The basement is not expected to extend below any landscaped areas, although the existing lightwell to the rear is to be deepened.

The existing walls will be underpinned and propped as required, as the new basement walls are constructed.

The proposed development is not expected to result in a change in the proportion of hard surfacing and more surface water than at present is not expected to be discharged to the ground i.e. infiltration drainage is not expected to be used.

2.3 History

Historical Ordnance Survey maps have been reviewed on the website old-maps.co.uk to assess the previous use of the site and surrounding area.

The earliest historical map, dated 1871, shows the layout of the streets in this area to be as present. The property of 1a, as well as the public house adjacent to the property, are also present. By 1895 buildings surround the property, as seen in the current day.

2.4 Geology

The geological map (Sheet 256 North London, 1:50,000 scale) and online viewer indicates the site to be underlain by the Claygate Member (clay, silt and sand). No superficial deposits are shown.

The British Geological Survey on-line borehole records identify a cable percussion borehole to have been completed very close to the property (TQ/28NE/98). This extended to 12.19 m below ground level. The ground conditions recorded were as follows:

- Silty sandy clay to 3.6 m; over
- Extremely wet, fine silty sand to 5.2 m; over
- Silt, silty sandy clay or mixture of silty sand and clay to the base.

2.5 Hydrogeology

The geology is classified as a Secondary A Aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The area occupied by the Secondary A Aquifer is relatively small and is surrounded by Unproductive Strata.

The borehole recorded that water was first met at 5 m below ground level. The proposed basement is therefore not expected to extend beneath the water table surface.

2.6 Hydrology

The nearest surface water feature appears to be a pond within Hampstead Heath, around 350 m north of the site. The nearest surface watercourse is a small stream, also within Hampstead Heath, around 500 m north-east of the site. Figure 14 of the Camden Geological, Hydrogeological and Hydrological Study confirms that the site is not within the Hampstead Heath surface water catchments and drainage. There is also no reason to suspect that the site is within 100 m of a well or potential spring line.

2.7 Land Stability

The area appears to slope to the south-east at between 1 in 10 to 15. Figure 16 of the Camden Geological, Hydrogeological and Hydrological Study does not show any significant slopes in the vicinity of the site.

The closest underground line is the Northern Line over 200 m west of the site. This is at a distance from the site which it would not be expected to have an impact.

The basement is considered will be founded below the depth where shrink-swell subsidence in the Claygate Member would be expected to be an issue.

Land/slope stability is therefore not considered will be a significant issue.

2.8 Flooding

The Environment Agency website indicates the site is not within or near a flood plain. Figure 15 of the Camden Geological, Hydrogeological and Hydrological Study also indicates that the site is not within an area with the potential to be at risk of surface water flooding. Well Road is also not a street recorded as flooding in 1975 or 2002.

The impermeable area at ground level is not being increased and therefore the new development would not be expected to significantly increase the risk of surface water flooding to this or any other neighbouring developments.

2.9 Sewers

We have obtained an Asset Location Search from Thames Water. A copy of this is provided in the Appendix. This indicates that there is a combined sewer within Well Road. This runs down the centre of the road, the invert level of this is around 102.4 m and it is therefore around 6 m deep.

There is also a water main in Well Road, as well as in the surrounding streets.

These are not expected to be impacted by the development or have any impact on it.

3.0 INTRUSIVE INVESTIGATION

3.1 Exploratory Holes

The intrusive investigation comprised the completion of three hand-excavated trial pits on 1 October 2013. These were undertaken within the basement to investigate the nature of the existing foundations, as well as the founding material. A plan showing the location of the trial pits is included in the Appendix, along with a copy of the logs.

Two of the pits were undertaken adjacent to external walls and one was undertaken adjacent to an internal wall. Each pit was taken to the base of the existing foundation and then terminated. The external walls of the basement were found to extend to between 0.07 m and 0.11 m below the existing basement floor level at which point brickwork was encountered, stepping out in single courses to depths of between 0.28 m and 0.32 m below the basement floor level. The concrete foundation was then encountered. This was found to be between 220 mm and 230 mm thick and extended between 200 mm and 270 mm out from the internal basement wall. The base of the footing was found at depths of 500 mm and 550 mm.

The internal wall was found to sit directly on the concrete floor slab which was noted as being 90 mm thick, with a 110 mm thick layer of brick hardcore underlying it.

The ground conditions were found to comprise concrete at the surface underlain by made ground of brick hardcore. This was found to a maximum depth of 0.55 m below the external walls, and a minimum depth of 0.2 m below the internal wall. Underlying the hardcore in TP1 and TP3, further made ground described as yellow/brown sand was encountered. The base of this was not proven. However, in TP2, natural ground of sandy, occasionally gravelly, clay was encountered to 0.48 m, underlain by green/grey and orange/brown clayey sand with occasional flint gravel.

3.2 Testing

3.2.1 Geotechnical Testing

One sample of sandy clay from TP2 at a depth of 0.35 m was sent for geotechnical testing to determine the volume change potential. A copy of the results is included in the Appendix. These demonstrate that the clay at this location is of low volume change potential.

3.2.2 Chemical Testing

Three samples of made ground and one sample of natural ground were sent for chemical testing. Each sample was tested for the following suite of contaminants:

Contaminant Type	Actual Contaminants
Metals/Metalloids	Arsenic, cadmium, chromium (III and VI), lead, mercury, nickel, selenium, copper and zinc
pH	pH
PAHs	Speciated polycyclic aromatic hydrocarbons
Sulphates	Water soluble sulphate, acid soluble sulphate, sulphur
Asbestos	Asbestos screen

A copy of the results are included in the Appendix, these were compared with the assessment criteria relating to a residential end use. This is considered to be a conservative end use for the proposed development, as significant landscaping is not proposed.

Lead was the only contaminant found to be elevated in one sample of the made ground with a concentration of 485 mg/kg recorded compared to the generic assessment concentration of 450 mg/kg.

The remaining concentrations of lead in the made ground were 284 mg/kg and 269 mg/kg, and the average concentration is 346 mg/kg. This is significantly lower than the assessment concentration and thus there is not considered to be a significant risk to human health. The concentrations would also not be expected to pose significant risks to construction workers during development, although they should be made aware of the elevated levels and appropriate measures such as washing their hands before eating should be adopted. No remediation measures are therefore considered necessary.

Water soluble sulphate results of less than 480 mg/l were recorded and the concentration of total sulphate results was 0.06% to 0.22%. This would result in a Design Sulphate Class of DS-1. The pH means that an Aggressive Chemical Environment for Concrete (ACEC) class AC-1 is suitable. Sulphate precautions would therefore not be required, although we consider that it would be prudent to include them for any cementitious products in contact with made ground.

4.0 NON TECHNICAL SUMMARY

It is considered that the development, which will comprise the extension of the existing basement, will not have a significant impact on the following:

- Surface water flow, as the nearest surface water watercourse appears to be a small stream around 500 m north-east of the site;
- Flooding, as the site is not within a flood zone;
- Groundwater flow, as the groundwater table is expected to be below the depth of the basement.

Any impacts on structural stability of the host and neighbouring buildings, and also nearby structures, are considered will be mitigated through suitable construction methods. The basement is likely to be able to be founded on traditional strip or trenchfill footings. If piling is proposed, we recommend that this should be by a suitable low impact method such as continuous flight auger.

The old basement walls and existing house walls will need to be adequately propped from before demolition begins until the new construction is in place, so as to minimise the risk of ground movements affecting neighbouring properties or the street. It is likely that the permanent design will require the ground floor slab to prop the basement walls against the earth forces, so the temporary props must remain in place until after the ground floor slab has been cast.

It is not yet known whether the existing buildings either side have basements. If they do not, any walls that are right on the boundary will need to be underpinned in short lengths by traditional methods. To the front and rear the new excavations may need to be made within a suitable temporary retaining structure such as contiguous piles, or steel sheet piles installed using hydraulic methods so as to avoid excessive vibration. If the adjoining buildings already have basements at about the same level as that of the proposed development, it may be possible to just build up against them. This will of course be investigated fully and appropriate action be taken as part of the Party Wall Award process.

With the exception of vigilance during the construction for any potential issues, the monitoring of local ground conditions, water movement, subsidence and drainage is not considered would be required.

Appendix

Asset Location Search

Katherine Daddo-Langlois
Eastwood & Partners (Consulting Engineers) Ltd
St Andrews House
23 Kingsfield Road
SHEFFIELD
S11 9AS

Search address supplied 526570 186019
1 A
Well Road
London
NW3 1LJ

Your reference 36145 Well Road

Our reference ALS/ALS Standard/2013_2560247

Search date 30 August 2013

You are now able to order your Asset Location Search requests online by visiting www.thameswater-propertysearches.co.uk

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0845 070 9148
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Asset Location Search

Search address supplied: 526570 186019, 1 A, Well Road, London, NW3 1LJ

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

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Asset Location Search

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0845 920 0800. The Customer Centre can

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Asset Location Search

also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

An invoice is enclosed. Please send remittance to Thames Water Utilities Ltd., PO Box 3189, Slough, SL1 4WW.

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Asset Location Search

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

Should you require any further information regarding budget estimates, diversions or stopping up notices then please contact:

DevCon Team
Asset Investment
Thames Water
Maple Lodge STW
Denham Way
Rickmansworth
Hertfordshire
WD3 9SQ

Tel: 01923 898 072
Email: devcon.team@thameswater.co.uk

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I www.thameswater-propertysearches.co.uk

Asset Location Search

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

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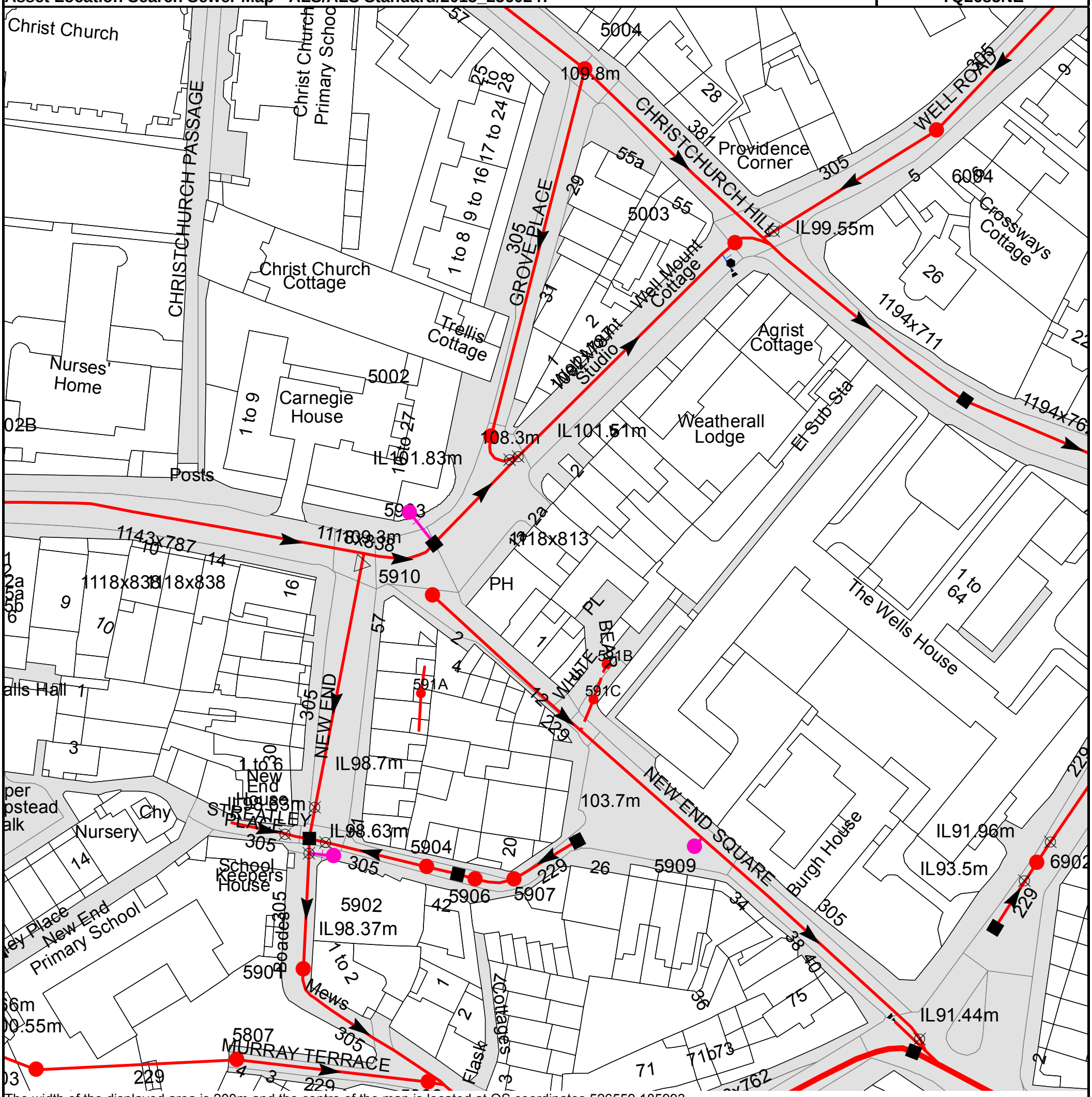
Asset Location Search Sewer Map - ALS/ALS Standard/2013_2560247	TQ2685NE



The width of the displayed area is 200m and the centre of the map is located at OS coordinates 526559,185993

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.

NB. 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
591C	n/a	n/a
591B	n/a	n/a
5901	100.27	96.41
5902	n/a	n/a
5903	n/a	n/a
591A	n/a	n/a
5904	n/a	n/a
5806	98.08	94.55
5910	108.28	103.25
5906	n/a	n/a
5002	108	102.77
5907	n/a	n/a
5909	n/a	n/a
5003	104.93	99.62
6004	106.97	101.98
6902	97.02	n/a
5004	109.24	103.92
4803	104.57	98.31
-	-	-
5807	99.87	96.73

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.

2) All measurements on the plans are metric.

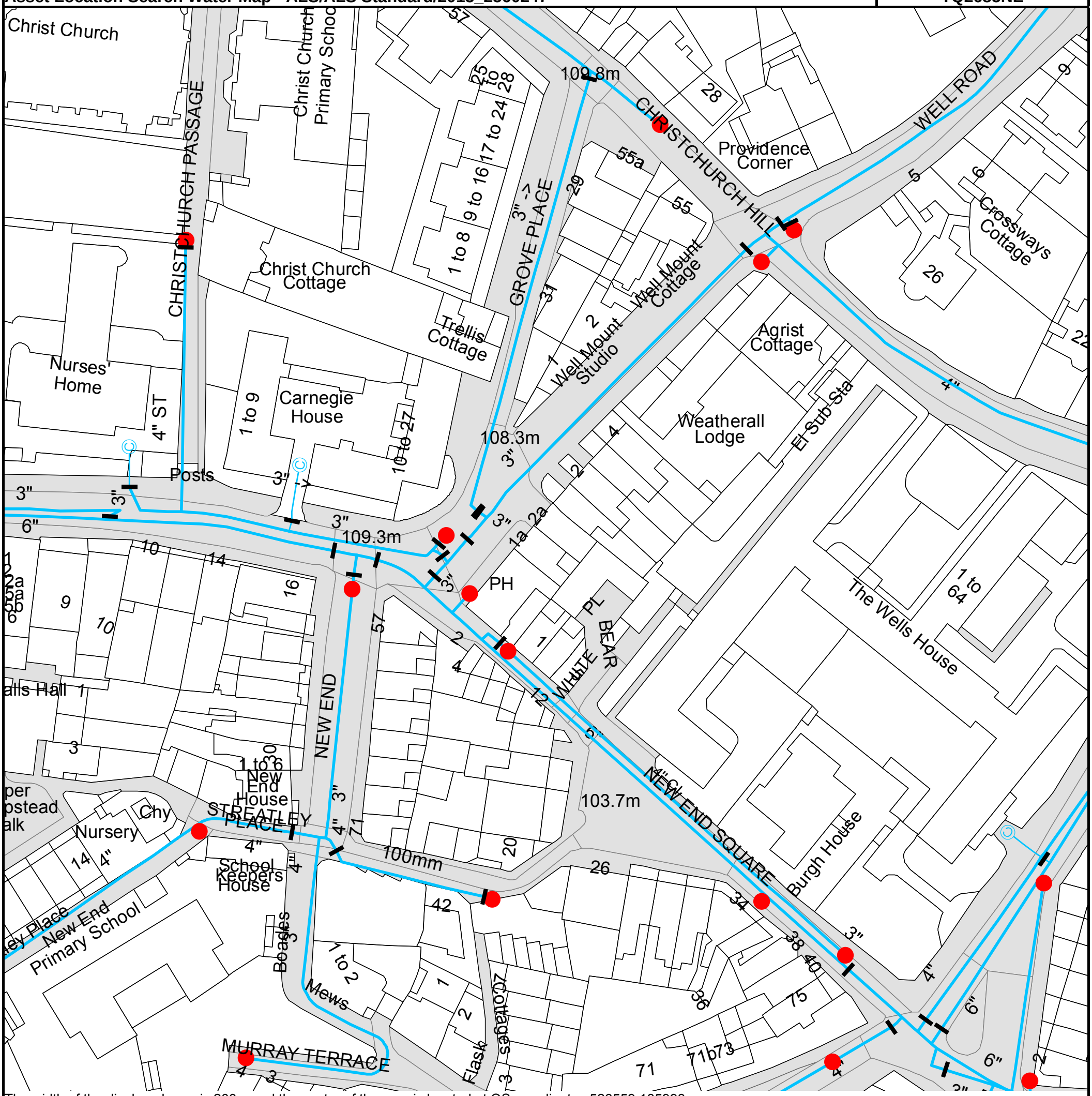
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

5) 'na' or '0' on a manhole level indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Asset Location Search Water Map - ALS/ALS Standard/2013_2560247	TQ2685NE



The width of the displayed area is 200m and the centre of the map is located at OS coordinates 526559,185993

ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0845 9200 800.

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to him at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS.	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Search Code

IMPORTANT CONSUMER PROTECTION INFORMATION

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- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practise and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

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Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

AP GEOTECHNICS
T 01932 848460
F 01932 851255
E mail@apgeotechnics.co.uk

Site	Trial Pit Number
1A WELL ROAD, LONDON NW3 1LJ	TP1

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location	**Dates**	**Engineer**	**Sheet**
	See site plan	01/10/2013		1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08)	CONCRETE floor slab		
					0.08	MADE GROUND: Red brown sandy brick hardcore		
0.20	B1							
0.20	C1							
					(0.47)			
					0.55			
0.55	B2				(0.01)	MADE GROUND: Yellow brown sand		
0.55	C2				0.56			
						Complete at 0.56m		

Plan

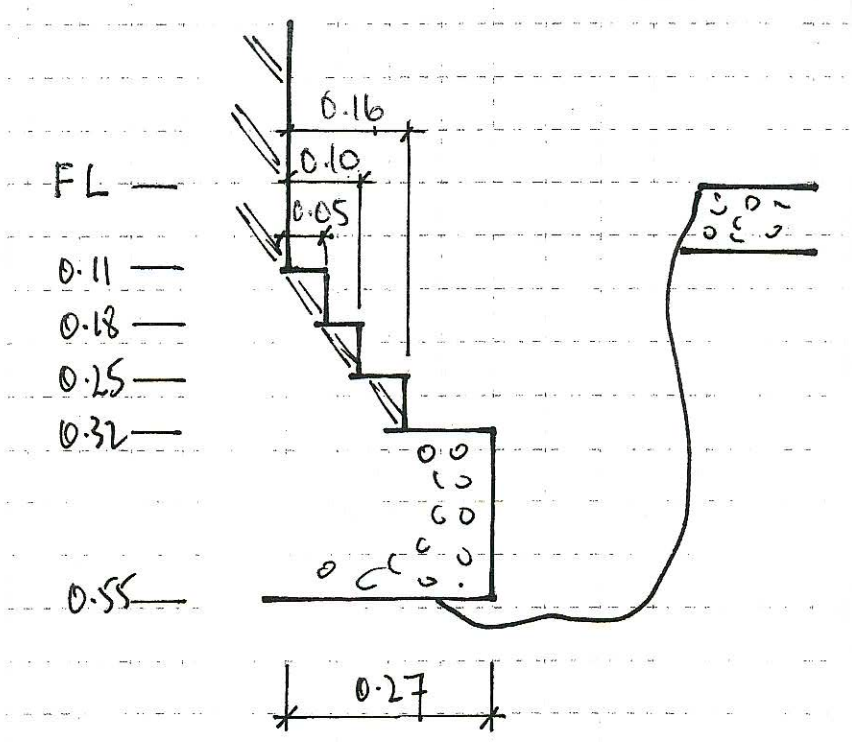
Remarks

Pit dry
Backfilled with arisings

Scale (approx)	Logged By	Figure No.
1:10	LJS	3983.TP1

AP GEOTECHNICS	T 01932 848460 F 01932 851255 E mail@apgeotechnics.co.uk	Site 1A WELL ROAD, LONDON NW3 1LJ	Trial Pit Number TP1

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location See site plan	**Dates** 01/10/2013	**Engineer**	**Sheet** 2/2



Foundations to both walls identical

	Scale (approx)	Logged By	Figure No.
	1:10	LJS	3983.TP1

AP GEOTECHNICS
T 01932 848460
F 01932 851255
E mail@apgeotechnics.co.uk

Site	Trial Pit Number
1A WELL ROAD, LONDON NW3 1LJ	TP2

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location	**Dates**	**Engineer**	**Sheet**
	See site plan	01/10/2013		1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.08) 0.08	CONCRETE floor slab		
					(0.24)	MADE GROUND: Red brown sandy brick hardcore		
0.25	B1							
0.25	C1				0.32			
0.35	B2					Orange brown and pale green grey sandy CLAY with occasional sub rounded coarse flint gravel		
0.35	C2				(0.16)			
					0.48 (0.04) 0.52	Pale green grey and orange brown clayey SAND with occasional sub rounded medium flint gravel		
0.52	C3							
0.52	B3					Complete at 0.52m		

Plan

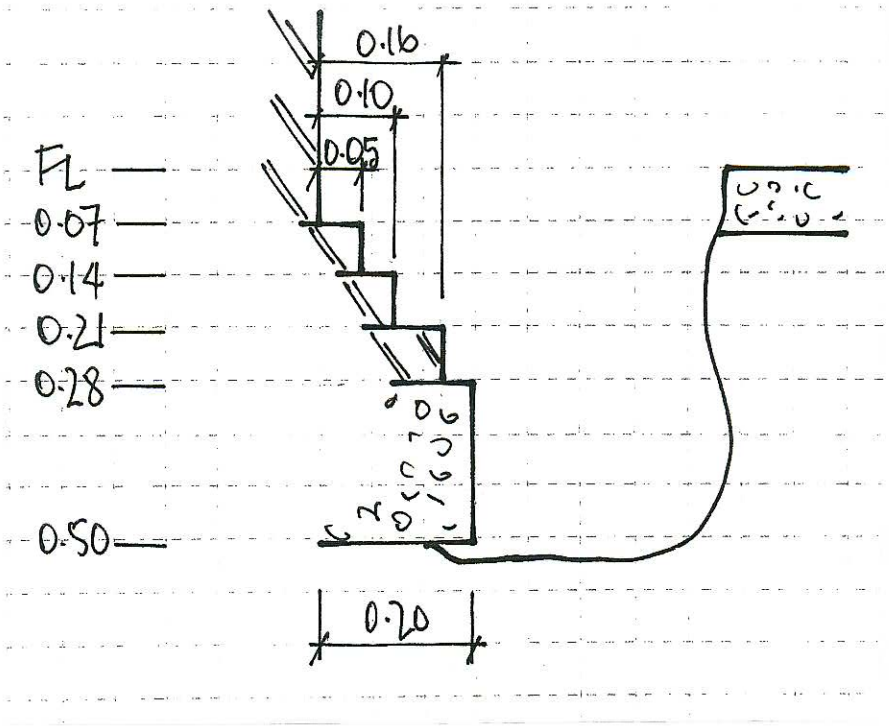
Remarks

Pit dry
Backfilled with arisings

Scale (approx)	Logged By	Figure No.
1:10	LJS	3983.TP2

AP GEOTECHNICS	T 01932 848460 F 01932 851255 E mail@apgeotechnics.co.uk	Site 1A WELL ROAD, LONDON NW3 1LJ	Trial Pit Number TP2

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location See site plan	**Dates** 01/10/2013	**Engineer**	**Sheet** 2/2



	Scale (approx)	Logged By	Figure No.
	1:10	LJS	3983.TP2

AP GEOTECHNICS
T 01932 848460
F 01932 851255
E mail@apgeotechnics.co.uk

Site	Trial Pit Number
1A WELL ROAD, LONDON NW3 1LJ	TP3

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location	**Dates**	**Engineer**	**Sheet**
	See site plan	01/10/2013		1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.09) 0.09	CONCRETE floor slab		
					(0.11) 0.20	MADE GROUND:- Red brown sandy brick hardcore		
0.20	B1				(0.04) 0.24	MADE GROUND: Yellow brown sand		
0.20	C1					Complete at 0.24m		

Plan

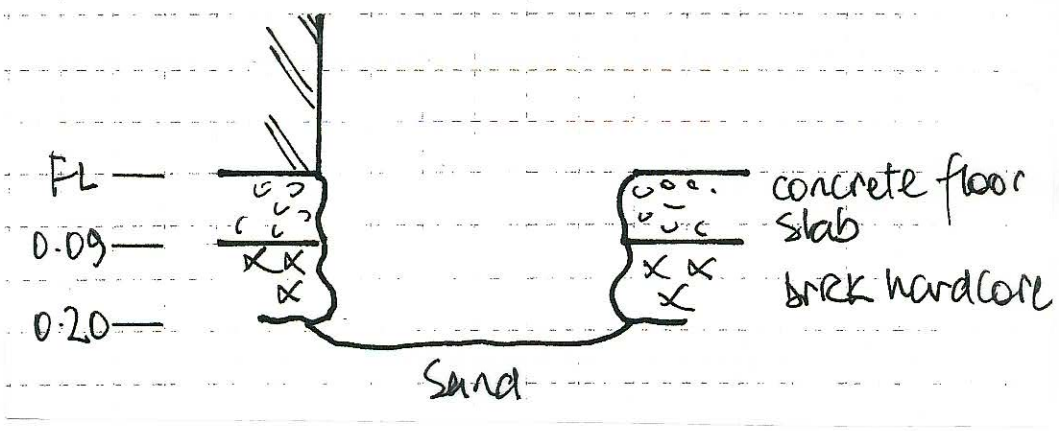
Remarks

Pit dry
Backfilled with arisings

Scale (approx)	Logged By	Figure No.
1:10	LJS	3983.TP3

AP GEOTECHNICS	T 01932 848460 F 01932 851255 E mail@apgeotechnics.co.uk	Site 1A WELL ROAD, LONDON NW3 1LJ	Trial Pit Number TP3

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit			Eastwood & Partners	3983
	Location See site plan	**Dates** 01/10/2013	**Engineer**	**Sheet** 2/2



	Scale (approx)	Logged By	Figure No.
	1:10	LJS	3983.TP3

1A Well Road,
London NW3 1LT

Sketch of trial pit locations

Not to scale

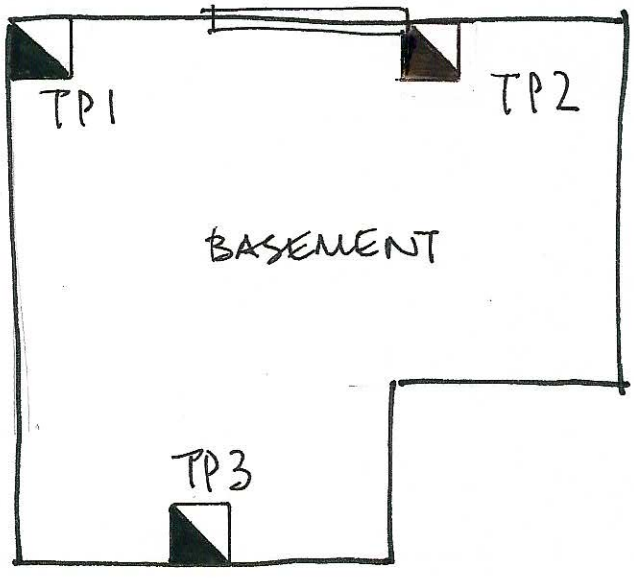


Figure 1

SUMMARY OF GEOTECHNICAL TESTS

Project: 1A WELL ROAD, LONDON
Client: Eastwood and Partners

Project No: 3893
Sheet No: 1/1

Location	Sample No	Depth m	Description	CLASSIFICATION							TRIAXIAL COMPRESSION - TOTAL STRESS							CHEMICAL		
				Natural Moisture Content %	Liquid Limit %	Plastic Limit %	Plast. Index %	Passing 425µm %	Mod. Plast. Index %	Class	Type	Moisture Content %	Bulk Density Mg/m³	Radial Stress kPa	Deviator Stress kPa	Cohesion cu, kPa assuming Øu = 0	Cohesion cu, kPa Øu, deg	Sulphate (SO4) Water g/l	Sulphate (SO4) Soil (Sol) g/l	pH
TP1		0.20	MADE GROUND																0.48	10.8
TP2		0.25	MADE GROUND																0.31	9.6
TP2		0.35	Orange brown and pale green sandy CLAY	20	34	15	19	74	14	CL										
TP2		0.52	Pale green grey and orange brown clayey SAND																0.07	8.3
TP3		0.20	MADE GROUND																0.09	10.6

Note: Soil Classification based upon unmodified Plasticity Index

CONTAMINANTS IN SOIL

Project: 1A WELL ROAD, LONDON
Client: Eastwood and Partners

Project No: 3983
Sheet No: 1/1

Location	Sample	Depth	Arsenic	Cadmium	Chromium	Lead	Mercury	Nickel	Copper	Zinc	Selenium	Boron	Chromium	Sulphur	Organic	TPH by GCMS						Sulphate	pH
		m			trivalent		inorganic					water sol.	hexavalent	elemental	content, %	C8 - C10	C10 - C12	C12 - C16	C16 - C21	C21 - C35	Total C8 - C40	% as SO4	value
TP1		0.20	13.9	<0.5	20	284	<0.5	13	55	66	<0.5	0.9	<2	<10							<5	0.2	10.8
TP2		0.25	14.7	<0.5	23	269	<0.5	12	31	60	<0.5	1.7	<2	<10							<5	0.22	9.6
TP2		0.52	10.7	<0.5	41	28	<0.5	18	11	52	<0.5	1.0	<2	<10							<5	0.07	8.3
TP3		0.20	14.2	2.5	25	485	<0.5	13	105	86	<0.5	1.2	<2	<10							<5	0.06	10.6
GAC[1]	residential			3	627				2330	3750		291	4.3										
	commercial			348	8840				71700	665000		192000	35										
CLEA[2]	residential		32				170	130			350												
	commercial		640				3600	1800			13000												

Notes

1. LQM/CIEH GAC given at 1% soil organic matter
2. CLEA SGVs given at 6% soil organic matter

All units are mg/kg dry weight of soil unless otherwise stated, except for pH which is dimensionless

Exceptions denoted thus: Residential XX
Commercial XX

CONTAMINANTS IN SOIL

Project: 1A WELL ROAD, LONDON
Client: Eastwood and Partners

Project No: 3983
Sheet No: 1/1

Speciated Polyaromatic Hydrocarbons by GCMS													
Location	TP1	TP2	TP2	TP3								LQM/CIEH GAC[3]	
Sample													
Depth, m	0.20	0.25	0.52	0.20								residential	allotments	commercial
Determinand	Concentration, mg/kg												
PAH													
Naphthalene	<0.1	<0.1	<0.1	<0.1								1.5	4.1	200
Acenaphthylene	<0.1	<0.1	<0.1	<0.1								170	28	84000
Acenaphthene	<0.1	0.1	<0.1	<0.1								210	34	85000
Fluorene	<0.1	<0.1	<0.1	<0.1								160	27	64000
Phenanthrene	0.3	0.3	<0.1	0.2								92	16	22000
Anthracene	<0.1	<0.1	<0.1	<.0.1								2300	380	530000
Fluoranthene	0.6	0.5	<0.1	0.4								260	52	23000
Pyrene	0.5	0.4	<0.1	0.2								560	110	54000
Benzo(a)anthracene	0.5	0.4	<0.1	0.1								3.1	2.5	90
Chrysene	0.7	0.5	<0.1	2.0								6.0	2.6	140
Benzo(b)fluoranthene	0.7	0.5	<0.1	0.2								5.6	3.5	100
Benzo(k)fluoranthene	0.6	0.4	<0.1	0.2								8.5	6.8	140
Benzo(a)pyrene	0.7	0.4	<0.1	0.1								0.83	0.6	14
Indeno(123-cd)pyrene	0.6	0.5	<0.1	0.1								3.2	1.8	60
Dibenzo(ah)anthracene	0.1	0.1	<0.1	<0.1								0.76	0.76	13
Benzo(ghi)perylene	0.3	0.4	<0.1	<0.1								44	70	650
Total PAH	**5.5**	**4.5**	**<0.1**	**1.9**										

Notes

1. Total PAH = Sum of EPA16 identified components
2. The results are expressed as mg/kg dry weight soil after correction for moisture content
3. GAC given at 1% soil organic matter

Exceptions denoted thus: Residential XX
Commercial XX

CONTAMINANTS IN SOIL

Project: 1A WELL ROAD, LONDON
Client: Eastwood and Partners

Project No: 3983
Sheet No: 1/1

Location	Sample	Depth	Asbestos identification		
		m	Description of matrix	Overall percentage of asbestos identified (approx.)	Type of asbestos identified
TP1		0.20	MADE GROUND		None identified
TP2		0.25	MADE GROUND		None identified
TP2		0.52	Clayey SAND		None identified
TP3		0.20	MADE GROUND		None identified