

MH10	-	UNKNOWN UPSTREAM	-	Encrustation at joint [3 No.] Survey abandoned unable to pass scale in pipe
MH11	-	BRANCH A	-	Light scale from 4 o'clock to 8 o'clock
MH15	-	BRANCH A	-	Light scale from 4 o'clock to 8 o'clock
MH15	-	SEWER	-	Light scale from 4 o'clock to 8 o'clock
MH18	-	MH17	-	Light scale loose in pipe
MH18	-	BRANCH A	-	Survey abandoned unable to pass debris and scale in pipe
MH18	-	BRANCH B	-	Encrustation in pipe
MH23	-	UNKNOWN DOWNSTREAM	-	Medium scale 10% cross sectional area loss from 6 o'clock to 9 o'clock
MH23	-	UNKNOWN UPSTREAM	-	Light scale from 4 o'clock to 8 o'clock
MH25	-	BRANCH C	-	Survey abandoned unable to pass scale in pipe
MH22	-	BRANCH A	-	Medium scale 10% cross sectional area loss from 12 o'clock to 12 o'clock
MH27	-	SEWER	-	Light scale from 4 o'clock to 8 o'clock
IC1	-	UNKNOWN UPSTREAM	-	Light scale from 12 o'clock to 12 o'clock
MH25	-	BRANCH A	-	Light scale from 4 o'clock to 8 o'clock

Survey abandoned due to tight bends:-

MH28	-	BRANCH B	-	Survey abandoned unable to pass bend in pipe
------	---	----------	---	--

Anti-flood flaps were visible:-

MH9	-	SEWER	-	Anti-flood flap visible [jammed partly open, approx 30%]
MH27	-	SEWER	-	Anti-flood flap visible [jammed partly open approx 30%]

There was debris:-

MH4	-	UNKNOWN UPSTREAM	-	Survey abandoned unable to pass debris
MH5	-	BRANCH A	-	Debris 10% cross sectional area loss from 4 o'clock to 8 o'clock
MH6	-	SEWER	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock
MH7	-	UNKNOWN DOWNSTREAM	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock
MH8	-	UNKNOWN UPSTREAM	-	Debris 5% cross sectional area loss from 5 o'clock to 7 o'clock
MH9	-	VENT	-	Survey abandoned unable to pass debris
MH13	-	UNKNOWN DOWNSTREAM	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock
AC1	-	MH14	-	Survey abandoned unable to pass debris
MH15	-	UNKNOWN UPSTREAM	-	Debris 10% cross sectional area loss from 4 o'clock to 8 o'clock and debris in manhole
MH16	-	BRANCH A	-	Survey abandoned unable to pass debris
MH16	-	UNKNOWN UPSTREAM	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock

MH18	-	BRANCH A	-	Survey abandoned unable to pass debris and scale in pipe
MH18	-	BRANCH C	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock [assumed sealed pipe]
MH19	-	BRANCH A	-	Debris 10% cross sectional area loss from 4 o'clock to 8 o'clock - sealed pipe [assumed sealed pipe]
MH23	-	BRANCH B	-	Debris 5% cross sectional area loss from 4 o'clock to 8 o'clock
MH26	-	UNKNOWN UPSTREAM	-	Survey abandoned unable to pass debris – pipe sealed with plastic bag
MH26	-	BRANCH A	-	Survey abandoned unable to pass debris – pipe sealed with plastic bag
STBIG1	-	BRANCH B	-	Survey abandoned unable to pass debris
MH27	-	BRANCH B	-	Survey abandoned unable to pass debris

There were cracks and fractures:-

MH3	-	BRANCH A	-	Circumferential fracture
MH3	-	UNKNOWN DOWNSTREAM	-	Circumferential crack - 12 o'clock to 12 o'clock Multiple fractures/cracks - 12 o'clock to 12 o'clock
MH4	-	BRANCH A	-	Multiple cracks - 12 o'clock to 12 o'clock
MH4	-	SEWER	-	Longitudinal fracture - 2 o'clock Circumferential crack - 12 o'clock to 12 o'clock
MH4	-	UNKNOWN UPSTREAM	-	Circumferential fracture- 12 o'clock to 12 o'clock
MH6	-	SEWER	-	Circumferential fracture- 12 o'clock to 12 o'clock
MH7	-	BRANCH B	-	Circumferential crack- 12 o'clock to 12 o'clock
MH8	-	UNKNOWN DOWNSTREAM	-	Possible cracks at 0.18m at 10 o'clock
MH9	-	VENT	-	Multiple cracks - 12 o'clock to 12 o'clock
MH10	-	UNKNOWN UPSTREAM	-	Circumferential crack- 12 o'clock to 12 o'clock
MH15	-	SEWER	-	Circumferential crack- 12 o'clock to 12 o'clock [2No]. Circumferential crack - 9 o'clock to 12 o'clock
MH18	-	BRANCH D	-	Circumferential crack- 12 o'clock to 12 o'clock

There were broken/missing pipes:-

MH13-	-	UNKNOWN UPSTREAM	-	Pipe broken/missing – 9 o' to 6 o'clock
-------	---	------------------	---	---

There was standing water:-

MH3	-	UNKNOWN DOWNSTREAM	-	Water level 10% height/diameter
MH4	-	SEWER	-	Water level 10% height/diameter
MH4	-	UNKNOWN UPSTREAM	-	Water level 15% height/diameter
MH5	-	BRANCH A	-	Water level 5% height/diameter
MH16	-	UNKNOWN UPSTREAM	-	Water level 5% height/diameter

There were visible repairs:-

MH5	-	UNKNOWN DOWNSTREAM	-	Access cut in and repaired at 10 o'clock
-----	---	-----------------------	---	--

There were displaced joints:-

MH3	-	UNKNOWN UPSTREAM	-	Displaced joint medium - assumed sealed pipe
MH6	-	SEWER	-	Displaced joint large and a kicked joint
MH22	-	SEWER	-	Displaced joint medium

There is a belly in the pipe:-

MH4	-	SEWER	-	Belly in pipe – holding water
-----	---	-------	---	-------------------------------

9.0 RECOMMENDATIONS

These recommendations are given as though the system is to be retained as now existing, without taking into account any future re-developments of which we are not aware. Therefore some recommendations may be superfluous.

The system should be fully cleaned and de-scaled and blockages removed.

Any runs which could not be surveyed or fully traced for any reason should be surveyed by CCTV for completion of the survey.

After cleaning, previously un-surveyed runs should be re-CCTV surveyed to verify their condition and any identified defects should be remedied.

Manhole covers which could not be opened should be opened by whatever means necessary, to enable completion of the survey. This could include breaking out the cover and frame:-

MH14 – [Unable to lift cover without damage to cover or tiling.
MH17 – [Unable to lift cover without damage to cover or tiling.
MH21 – located below a carpet
MH24 – located in a confined space with limited headroom

All manhole covers and frames which are to be retained should be cleaned, de-rusted, re-painted and re-bedded.

Manhole covers should be repaired or be replaced, including frames where necessary, as follows:-

MH1 - Replace 4 No. cover securing screws
MH9 - New cover and frame required
MH11 - New outer/upper cover required
MH15 - Replace 4 No. cover securing screws
MH20 - Replace 4 No. cover securing screws
MH23 - Cover requires replacement
MH22 - Corner of cover broken, replace cover

Defective manhole structures or finishes should be repaired including:-

MH4 – Break out and replace the split bricks and breaking off and replacing the cracked rendering or reconstruct manhole.

MH6 – The chamber has dropped by 50 to 75mm. Large cracks and fractures to chamber. Should be broken out and repaired or reconstructed. The reason why it has dropped should also be investigated and remedied.

All internal access chamber covers should be cleaned, rust removed, repainted and re-fitted with new gaskets.

All internal CI bolted access chamber covers at manholes should be replaced or repaired, including replacement of bolts, nuts, washers and gaskets where necessary, including:-

MH16 – New cover plate required to internal chamber, 6 No. studs, nuts, washers and a gasket are required.

MH22 – Inner chamber requires 8 No. studs, nuts, washers and a gasket.

MH28 – New cover plate required to internal chamber, 8 No. studs, nuts, washers and a gasket are required.

The rodding eye covers to interceptor rodding arms at MH4, MH15 & MH2 should be replaced with a new cover.

All missing rodding eye covers should be replaced. Screws should be replaced with drilling and re-tapping as necessary.

All gully covers should be cleaned, rust removed, repainted and re-installed and resealed. Missing screws should be replaced.

Missing screws at gully covers should be replaced, drilling and re-tapping may be necessary. Missing or damaged gully gratings should be replaced.

The buried gullies should be exposed to enable them and connections to them to be inspected and surveyed.

Obsolete or unused drain connections should be fully sealed at each end, including within the manhole to prevent their use as a rat refuge.

All defective pipe-work should be repaired or replaced as necessary, subsequent to cleaning and re-inspection. This includes the cracked and fractured pipes – As follows:-

There were cracks and fractures-

MH3	-	BRANCH A	-	Circumferential fracture
MH3	-	UNKNOWN DOWNSTREAM	-	Circumferential crack - 12 o'clock to 12 o'clock Multiple fractures/ cracks - 12 o'clock to 12 o'clock
MH4	-	BRANCH A	-	Multiple cracks - 12 o'clock to 12 o'clock
MH4	-	SEWER	-	Longitudinal fracture - 2 o'clock Circumferential crack - 12 o'clock to 12 o'clock
MH4	-	UNKNOWN UPSTREAM	-	Circumferential fracture- 12 o'clock to 12 o'clock
MH6	-	SEWER	-	Circumferential fracture- 12 o'clock to 12 o'clock

MH7	-	BRANCH B	-	Circumferential crack- 12 o'clock to 12 o'clock
MH8	-	UNKNOWN DOWNSTREAM	-	Possible cracks at 0.18m at 10 o'clock
MH9	-	VENT	-	Multiple cracks - 12 o'clock to 12 o'clock
MH10	-	UNKNOWN UPSTREAM	-	Circumferential crack- 12 o'clock to 12 o'clock
MH15	-	SEWER	-	Circumferential crack - 12 o'clock to 12 o'clock Circumferential crack - 9 o'clock to 12 o'clock
MH18	-	BRANCH D	-	Circumferential crack- 12 o'clock to 12 o'clock

There were broken/missing pipes:-

MH13-	-	UNKNOWN UPSTREAM	-	Pipe broken/missing – 9 o' to 6 o'clock
-------	---	---------------------	---	---

These repairs could be by excavation, replacement or possibly by relining subject to re-inspection after cleaning.

Note: The apparent heavy infestation of rats indicated by rat faeces in MH16, MH18, MH19 should be dealt with by pest controllers.

All access covers on high level or low level suspended pipe-work should be opened, cleaned, rust removed, repainted and re-fitted, including new gaskets.

All pipe-work which is to be retained should be tested by air or water for leaks.

Where a drain from an adjacent premise connects into a drainage system in a building under different ownership, the legal rights and responsibilities should be clearly defined. This would include the connection into MH3 at No. 47 Bedford Row from No.47A Bedford Row.

The anti-flood flap valves are jammed partly open on the outfalls from MH9 and MH27 to the public sewer; they should be cleaned and serviced, replaced or removed. This would be the responsibility of Thames Water.

The belly in the outfall from MH4 to the public sewer holds water and may possibly be a potential cause of blockages. This should be reviewed and considered after cleaning to decide whether it can be left as existing or whether reconstruction is advisable.

All assumed connections from pipes from above should be confirmed for purpose [foul or rainwater].

The CAD drawings should be updated once the system has been fully surveyed by CCTV to verify any unknown data.

The record drawing should be updated, preferably on CAD to record any changes due to refurbishment or from further investigations.

END OF TEXT

Appendix G

Thames Water Asset
Location Plan

Asset Location Search



Heyne Tillett Steel Limited
4

LONDON
EC1R 0DS

Search address supplied International P E N
Brownlow House 50-51
High Holborn
London
WC1V 6ER

Your reference 1501

Our reference ALS/ALS Standard/2016_3312769

Search date 26 April 2016

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



Asset Location Search



Search address supplied: International P E N, Brownlow House 50-51, High Holborn, London, WC1V 6ER

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

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

Asset Location Search



Centre on 0800 316 9800. The Customer Centre can 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

A charge will be added to your suppliers account.

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, budget estimates, diversions, 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
Vestern Road
Reading
RG1 8DB

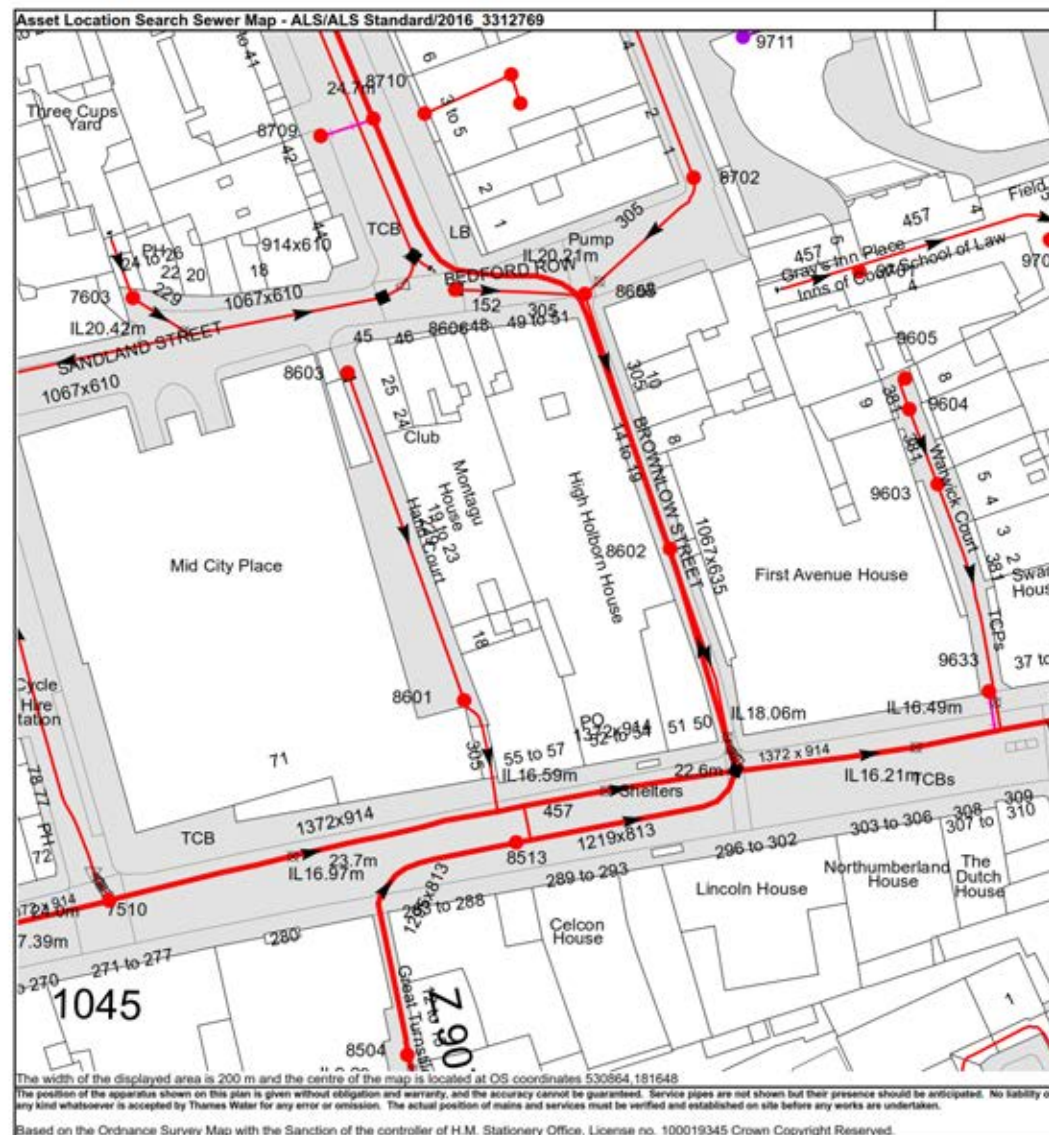
Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

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
Vestern Road
Reading
RG1 8DB

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



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
9701	22.47	18.41
9605	n/a	n/a
9604	22.76	18.8
9603	22.96	18.33
9633	22.14	n/a
9702	n/a	n/a
7510	24.18	n/a
7603	24.91	20.92
8709	n/a	n/a
8603	24.68	21.15
8710	n/a	n/a
8504	23.49	20.05
87BG	n/a	n/a
8606	24.6	20.63
8601	23.79	19.34
87BF	n/a	n/a
8513	23.03	9.26
87BE	n/a	n/a
8605	23.87	19.98
8602	23.09	19.08
8702	23.78	20.87
9711	n/a	n/a

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.



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**
- Stem Relief**
- Vent Pipe**
- Proposed Thames Surface Water Sewer**
- Gallery**
- Surface Water Rising Man**
- Sludge Rising Man**
- Vacuum**
- Trunk Foul**
- Trunk Combined**
- Bio-solids (Sludge)**
- Proposed Thames Water Foul Sewer**
- Foul Rising Man**
- Combined Rising Man**
- Proposed Thames Water Rising Man**

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**
- Dren 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**
- Auxiliary**
- 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**

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) 'not' or 'N' 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 millimetres. 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 570 9148.

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, UK 151280 Slough 13
T 0845 570 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

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**

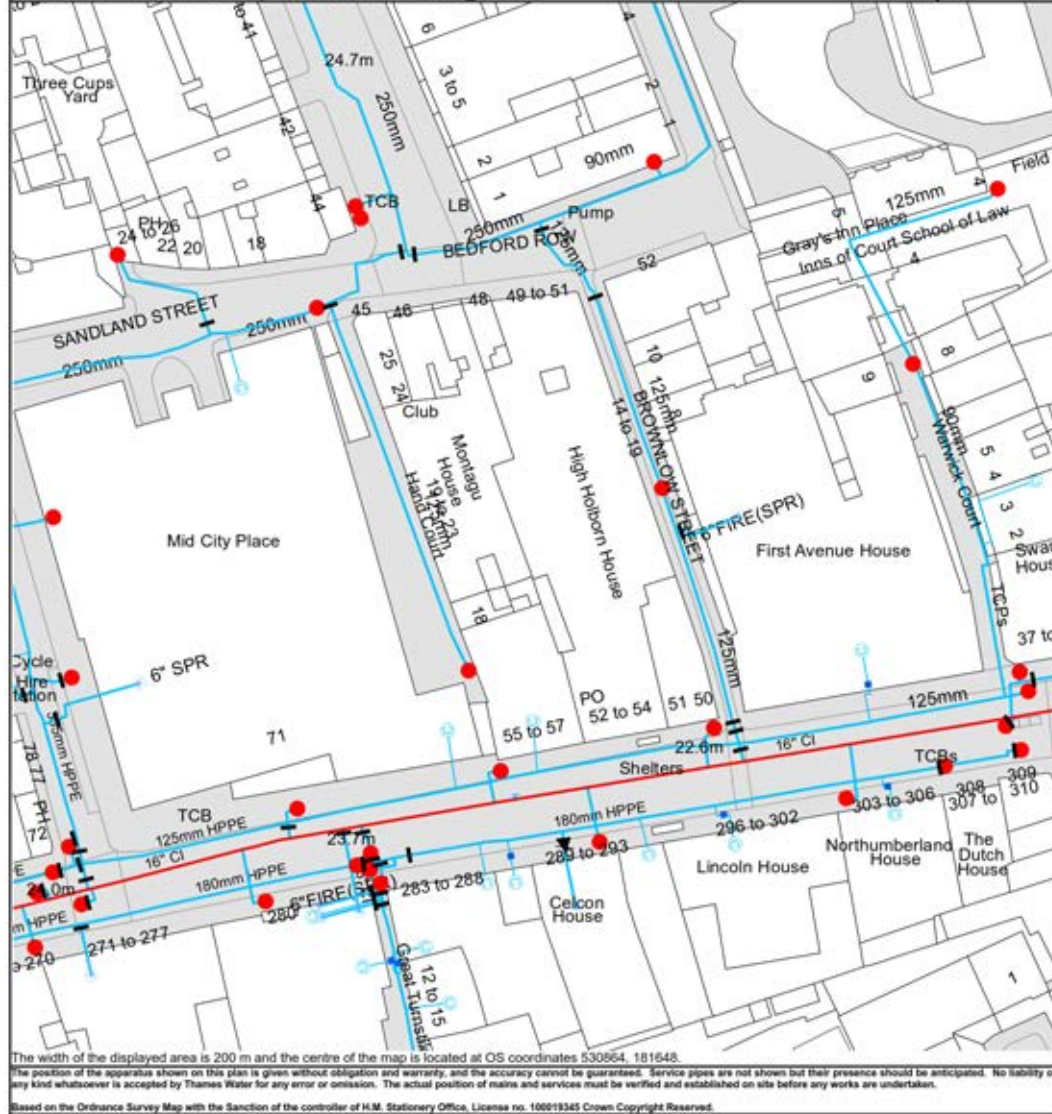
Areas

Lines denoting areas of underground surveys, etc.

- Agreement**
- Operational Site**
- Chamber**
- Tunnel**
- Corral Bridge**

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

- Foul Sewer**
- Surface Water Sewer**
- Combined Sewer**
- Gully**
- Culverted Watercourse**
- Proposed**
- Abandoned Sewer**



ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

- Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 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.
- Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 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

Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 6")
600mm and bigger (24" plus)	1200mm (4')

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4BW, DX 151280 Slough 13
T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

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 water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates 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 0800 316 9800

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

This search has been produced by Thames Water Property Searches, Clearwater Court, Vastern Road, Reading RG1 8DB, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- 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

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award compensation of up to £5,000 to you if he finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

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



Your ref:
Our ref: IP04176/20403/INP/AI/C116/1820889

Siún O'Brien
Heyne Tillett Steel
4 Pear Tree Court
London
EC1R 0DS

London Underground
Infrastructure Protection

3rd Floor
Albany House
55 Broadway
London SW1H 0BD

www.tfl.gov.uk/tube

20th April 2017

Dear Siún,

High Holborn Estate Redevelopment – Letter of No Objection in Principle.

Further to our recent discussions, and submission of drawings and sketches (1508/SK/001 Rev- and SI-C116, appended to this letter), I can confirm that London Underground has no objection in principle to the works outlined within the documents.

No further information is required from you at this stage, and no review will be required of any detailed designs or methodology.

However, should the nature of the proposed work change in future then this will require a further review by the Infrastructure Protection team.

Yours sincerely

Andy Illingworth
Outside Parties Engineer
Email: AndyIllingworth@tfl.gov.uk
Direct line: 020 7126 3760

Copy to: Project File

London Underground Limited
trading as London Underground
whose registered office is
55 Broadway
London SW1H 0BD

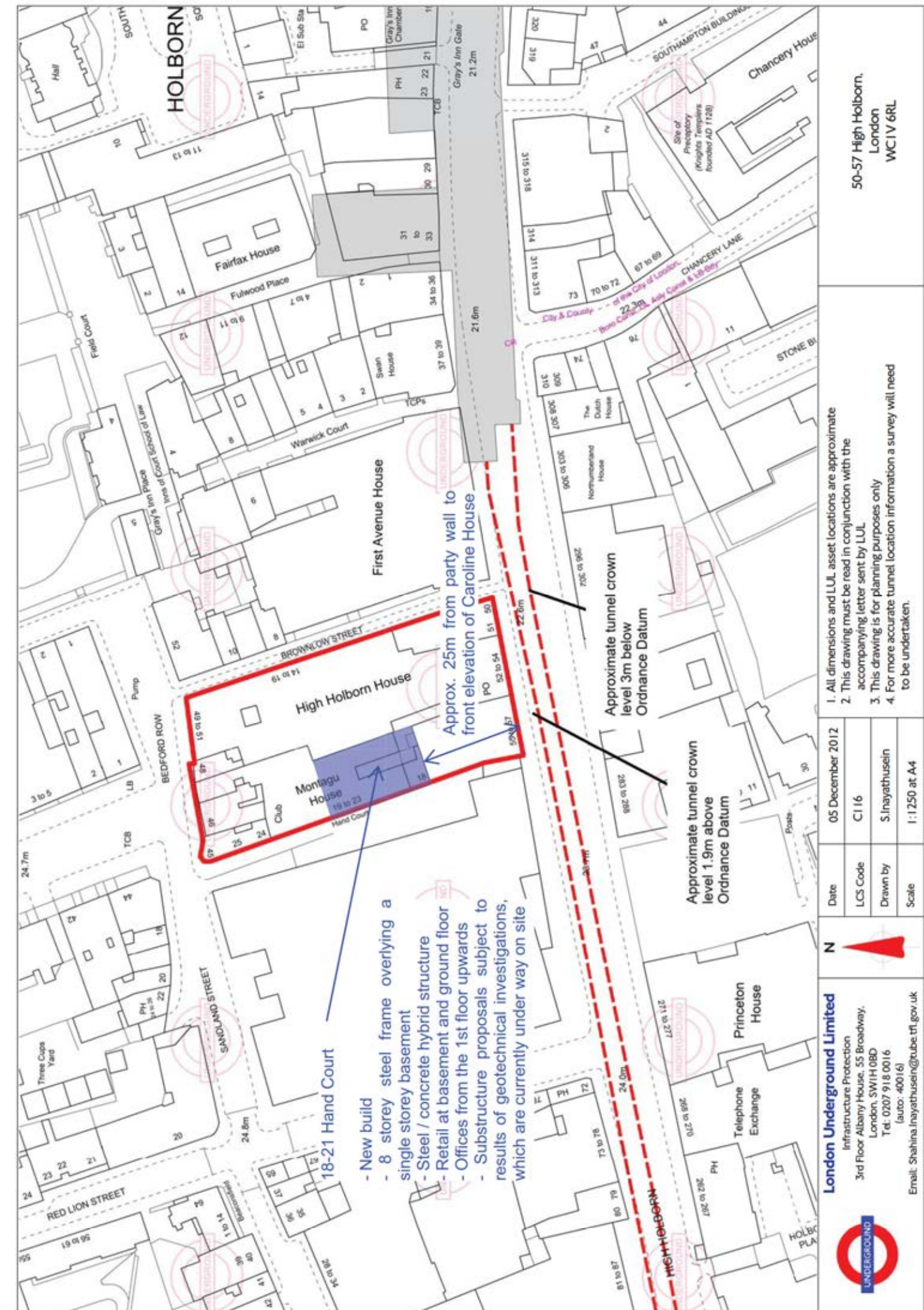
Registered in England and Wales
Company number 1900907

VAT number 238 7244 46

London Underground Limited is
a company controlled by a local
authority within the meaning of
Part V Local Government and
Housing Act 1989. The controlling
authority is Transport for London.



MAYOR OF LONDON



1. All dimensions and LUL asset locations are approximate
2. This drawing must be read in conjunction with the accompanying letter sent by LUL
3. This drawing is for planning purposes only
4. For more accurate tunnel location information a survey will need to be undertaken.

Date	05 December 2012
LCS Code	C1 I6
Drawn by	S. Inayathusein
Scale	1:1250 at A4

London Underground Limited
Infrastructure Protection
3rd Floor Albany House, 55 Broadway,
London, SW1H 0BD
Tel: 0207 918 0016
(auto: 40016)
Email: Shahina.Inayathusein@tfl.gov.uk



50-57 High Holborn,
London
WC1V 6RL

Job No. : 1508
High Holborn Estate

Summary of Structural Proposals and Investigations Required

Dwg. : 1508 / SK / 001 Rev -
Date : 18/04/16
Eng. : S.O'Brien

General Site Investigations / Searches

- Extensive archive searches:-
 - A. Building Control and Planning, Camden Council
 - B. London Metropolitan Archives
 - London Underground
 - Crossrail
 - Thames Water

2. 18-21 Hand Court

Design Proposals

- Demolition of existing structure
- Construction of new 6 storey superstructure over single storey basement
- Increased massing at ground floor towards the rear
- Retail proposed at basement and ground floor
- Office proposed from 1st to 5th floors

Investigations Required

A. Minor Opening Up Works / Site Investigations - Stage 1 Pre-Application

- Extent of existing basement
- Party wall construction details / interfaces
- Scope, tender and manage Phase 1 Geotechnical and Contamination Desktop Study

B. Investigations - Stage 2 Planning

- Trial pits to determine construction type, size and depth of existing foundations to party walls
- Extensive geotechnical investigations and analysis by others
- CCTV survey of existing below ground drainage

Deliverables

A. Stage 1 Pre-Application

- Indicative existing and proposed structural arrangement sketches
- Initial review of SuDS requirements

B. Stage 2 Planning

- Fully coordinated structural scheme design drawings
- Basement Impact Assessment
- Flood Risk Assessment
- Thames Water Pre-development Enquiry
- Surface Water Management Plan and initial drainage scheme design

1. Brownlow House

Design Proposals

- Maintain office use from 1st floor upwards with retail unit retained at ground floor
- Conversion of basement from retail to gym - CHANGE OF USE
- CAT A fit out of all office floors from the 1st floor upwards
- New office entrance at ground floor
- Single storey rooftop extension at 5th floor, building line to be an extension of existing mansard structure
(Note: Existing roof level steps at rear, therefore 2 storey extension required locally, adjacent to stair and lift core)
- Infill lightwell from 1st to 4th floors

Investigations Required

A. Minor Opening Up Works - Stage 1 Pre-Application

- General construction details i.e. frame and slab construction type
- Structural arrangement of typical office floor
- Identification of stability elements

B. Investigations - Stage 2 Planning

- Trial pits to determine construction type, size and depth of existing foundations
- Column investigations generally to determine section sizes and capacity to support additional loads
- Column investigations to edge columns adjacent to lightwell to determine section sizes and capacity to support lightwell infill structure
- Beam and slab investigations at 1st floor and roof to determine construction details and capacity for office loading
- Investigations to confirm mansard connection details and excess capacity
- Vertical and horizontal ties to masonry piers, if applicable

Deliverables

A. Stage 1 Pre-Application

- Indicative existing and proposed structural arrangement sketches

B. Stage 2 Planning

- Structural scheme design drawings

3. 22-23 Hand Court

Design Proposals

- Conversion of basement and ground floor from office to retail - CHANGE OF USE
- Conversion of 1st floor rear only from office to residential - CHANGE OF USE
- Maintain residential use from 1st to 4th floors
- Modifications to ground floor frontage

Investigations Required

A. Minor Opening Up Works - Stage 1 Pre-Application

- General construction details i.e. frame and slab construction type
- Structural arrangement details at basement and ground floor

B. Investigations - Stage 2 Planning

- Column investigations at basement to determine section sizes and capacity to support additional loads for retail use
- Beam and slab investigations at ground floor to determine construction details and capacity for retail loading

Deliverables

A. Stage 1 Pre-Application

- Indicative existing and proposed structural arrangement sketches

B. Stage 2 Planning

- Structural scheme design drawings

4. 45 Bedford Row

Design Proposals

- CAT A fit out of all office floors from the 1st floor upwards including rationalisation of office core
- Conversion of basement and ground floor from office to retail - CHANGE OF USE
- Single storey rooftop extension at 5th floor rear only, building line to be an extension of existing mansard structure
- Modifications to ground floor frontage

Investigations Required

A. Minor Opening Up Works - Stage 1 Pre-Application

- General construction details i.e. frame and slab construction type
- Structural arrangement of typical office floor
- Identification of stability elements

B. Investigations - Stage 2 Planning

- Trial pits to determine construction type, size and depth of existing foundations
- Column investigations generally to determine section sizes and capacity to support additional loads
- Beam and slab investigations at ground and 5th floors to determine construction details and capacity for retail and office loading
- Investigations to confirm mansard connection details and excess capacity

Deliverables

A. Stage 1 Pre-Application

- Indicative existing and proposed structural arrangement sketches

B. Stage 2 Planning

- Structural scheme design drawings

GENERAL NOTES.

All dimensions to be checked on site prior to commencement of any works, and/or preparation of any shop drawings.

Sizes of and dimensions to any structural elements are indicative only. See structural engineers drawings for actual sizes / dimensions.

Sizes of and dimensions to any service elements are indicative only. See service engineers drawings for actual sizes and dimensions.

This drawing to be read in conjunction with all other Architect's drawings, specifications and other Consultants' information.

All proprietary systems shown on this drawing are to be installed strictly in accordance with the Manufacturers/Suppliers recommended details.

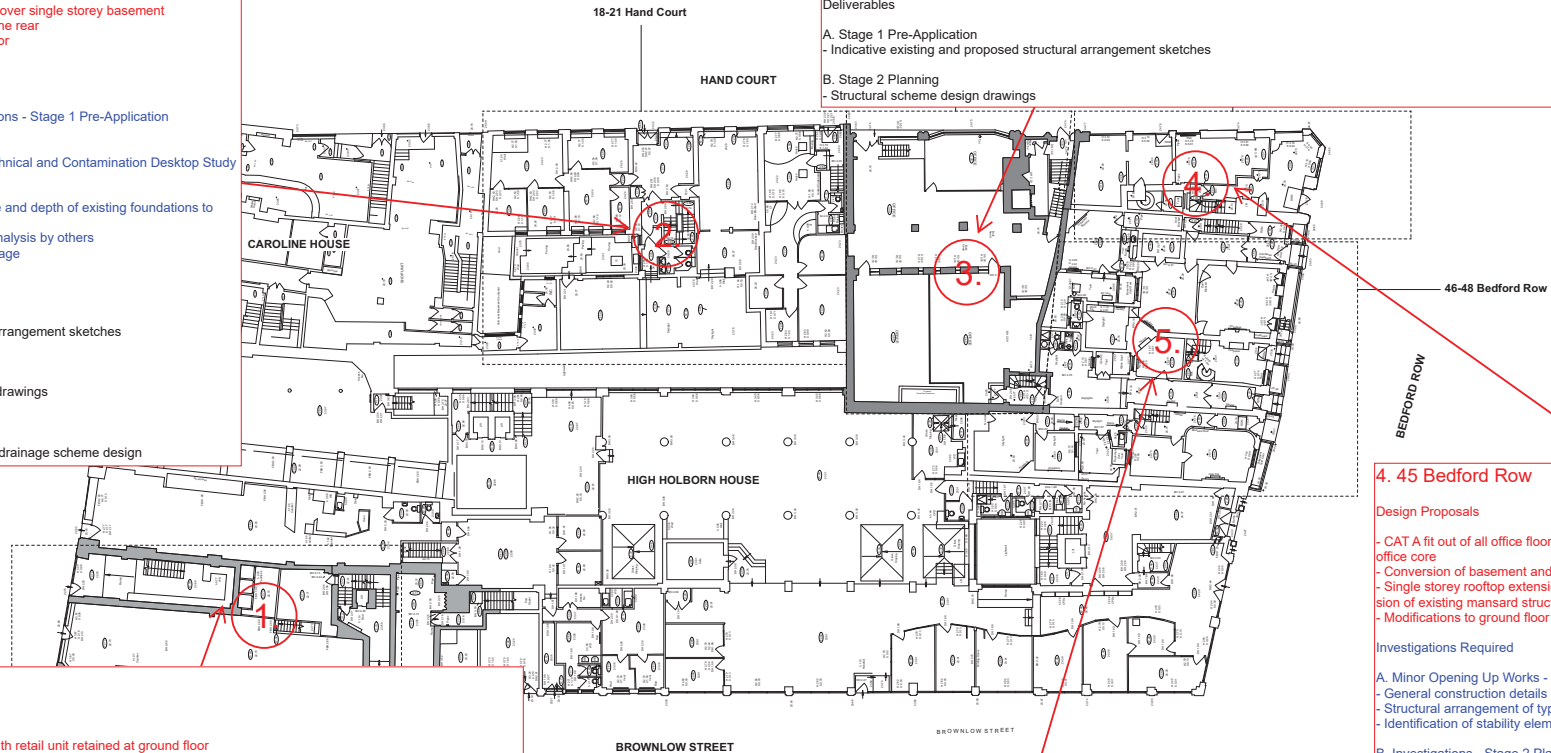
Any discrepancies between information shown on this drawing and any other contract information or manufacturers/suppliers recommendations is to be brought to the attention of the Architect

DO NOT SCALE FROM THIS DRAWING.

NOTES.

Area Outside Project Scope

xxx Existing ceiling heights



Appendix H

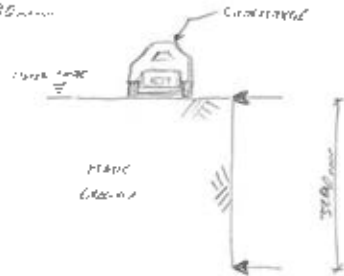
Structural Calculations

Job	High Holborn Estate - 18-21 Hand Court	Date	02-05-18
Title	RC Hand Court Retaining Wall	Rev	2
Job No	1508	Sheet	1
		Rev	



Linker (Jall) -->

Span = 3295 mm



Soil Pressure -->

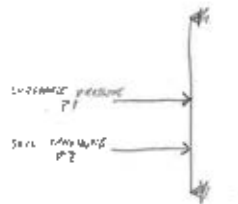
Soil Pressure --> Unit weight of soil, $\rho = 21 \text{ kN/m}^3$ (assumed)
 Instantaneous angle of friction, $\phi = 9.8^\circ$
 Coefficient of active pressure, $K_a = \frac{1 - \sin 9.8^\circ}{1 + \sin 9.8^\circ} = 0.36$
 Result of retaining pile, $Z = 3.29 \text{ m}$

Active pressure, $p_a = 21 \times 0.36 \times 5.79 = 24.9 \text{ kN/m}^2$

Surcharge --> Imposed load = 5 kN/m^2

Pressure = $5 \times 3.29 = 16.5 \text{ kN/m}^2$

Loading -->



Assume 1000 mm of soil on surface

$P_1 = 16.5 \text{ kN/m}^2$ @ 1.65 m

$P_2 = (24.9 \times 0.5 \times 3.29) = 41.0 \text{ kN}$ @ 1.10 m

$P_{max} = 54.4 \text{ kN}$

$V_{max} = 41 \text{ kN}$

From above --> 100 mm deep with 12 mm ϕ bars @ 170 mm c/c

Job	High Holborn Estate - 18-21 Hand Court	Date	09.04.18
Title	RC Hand Court Retaining Wall	Eng	SL
Job No	1508	Sheet No	2
		Rev	-



Section Properties

$b =$	1000 mm
$h =$	250 mm
$d =$	211 mm
$f_{ck} =$	35 N/mm ²
$f_y =$	500 N/mm ²
$f_{yv} =$	500 N/mm ²

Reinforcement Properties

Cover =	25 mm
Tension $\phi =$	12 mm
Tension no. =	6
$A_s =$	679 mm ²
Shear $\phi =$	8 mm
Legs =	2
Spacing =	200 mm
$A_{sv}/S_v =$	0.50

Bending

$M_{Ed} =$	54 kNm
$K =$	0.035
$z =$	200 mm
$A_{sreq} =$	619 mm ²

$V_{Ed} =$	49 kN
$V_c =$	1.5
$C_{Rd,c} =$	0.12 N/mm ²
$k =$	1.97

Assuming all tension reinforcement is anchored at supports

$\rho_1 =$	0.003216
$\sigma_{cp} =$	0 Amend formulas below if not 0
$v_{min} =$	0.574098
$V_{Rd,c} =$	111991 N > V_{Ed} therefore shear reinforcement not required

Shear

Compression Capacity of Compression Strut

$\theta =$	21.8 °
$v_1 =$	0.516
$\alpha_{cc} =$	0.85
$f_{cd} =$	19.83

$V_{Ed,max} = 707345 \text{ N} > V_{Ed} \text{ OK}$

Diameter and Spacing of Links

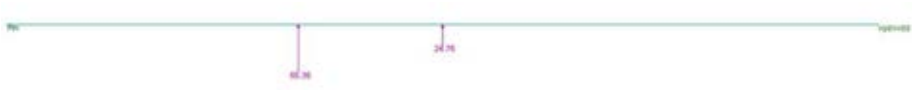
$A_{sv}/S_{vreq} =$	0.225
---------------------	-------

Liner Wall Structure – GSA Analysis



Inputs

ULS Loading as per hand calculation



Outputs

Bending Moment



Shear

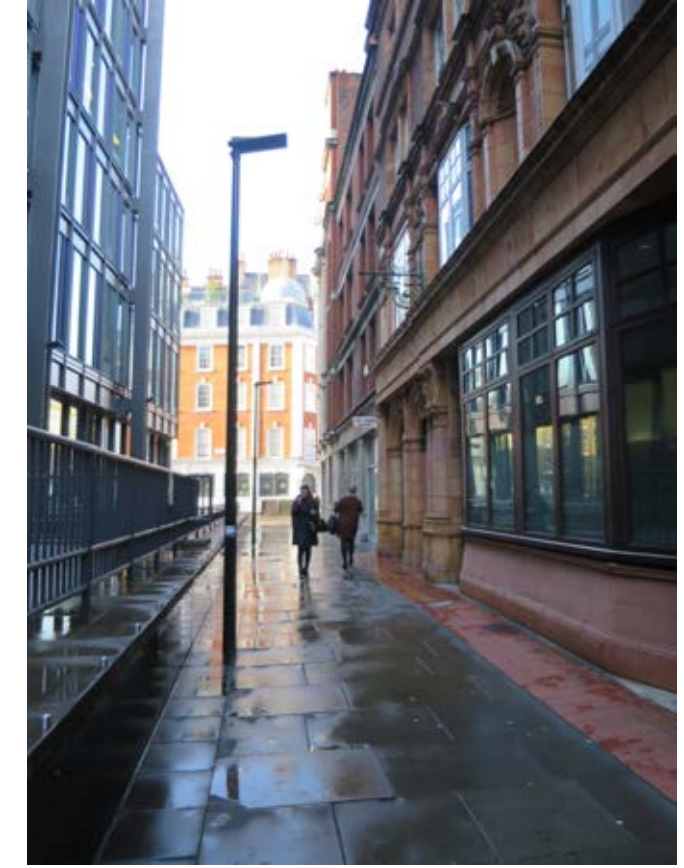


Appendix I

Site Photographs



18-21 Hand Court - Site Photographs



18-21 Hand Court - Site Photographs