



create
CONSULTING
ENGINEERS LTD

APPENDICES

APPENDIX A

Asset location search



Property Searches

Create Consulting Engineers Ltd
NORWICH
NR3 1AF

Search address supplied 83
Chequers Road
Loughton
IG10 3QF

Your reference P18-1639

Our reference ALS/ALS Standard/2019_4061605

Search date 22 August 2019

Keeping you up-to-date

Notification of Price Changes

From 1 September 2018 Thames Water Property Searches will be increasing the price of its Asset Location Search in line with RPI at 3.23%.

For further details on the price increase please visit our website: www.thameswater-propertysearches.co.uk
Please note that any orders received with a higher payment prior to the 1 September 2018 will be non-refundable.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148



Search address supplied: 83, Chequers Road, Loughton, IG10 3QF

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

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 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.

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
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
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
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

The map displays a residential area with streets and buildings. Key features include:

- Streets:** CHEQUERS ROAD, LONGCROFT RISE, and a road labeled Km P 16.60.
- Buildings:** Numerous residential buildings are shown, many with numbers (e.g., 4803, 4801, 4804, 4701, 4702, 4703, 4705, 4704, 4707, 4706, 4708, 4709, 4710, 4711, 4712, 4713, 4714, 4715, 4716, 4717, 4718, 4719, 4720, 4721, 4722, 4723, 4724, 4725, 4726, 4727, 4728, 4729, 4730, 4731, 4732, 4733, 4734, 4735, 4736, 4737, 4738, 4739, 4740, 4741, 4742, 4743, 4744, 4745, 4746, 4747, 4748, 4749, 4750, 4751, 4752, 4753, 4754, 4755, 4756, 4757, 4758, 4759, 4760, 4761, 4762, 4763, 4764, 4765, 4766, 4767, 4768, 4769, 4770, 4771, 4772, 4773, 4774, 4775, 4776, 4777, 4778, 4779, 4780, 4781, 4782, 4783, 4784, 4785, 4786, 4787, 4788, 4789, 4790, 4791, 4792, 4793, 4794, 4795, 4796, 4797, 4798, 4799, 4800, 4801, 4802, 4803, 4804, 4805, 4806, 4807, 4808, 4809, 4810, 4811, 4812, 4813, 4814, 4815, 4816, 4817, 4818, 4819, 4820, 4821, 4822, 4823, 4824, 4825, 4826, 4827, 4828, 4829, 4830, 4831, 4832, 4833, 4834, 4835, 4836, 4837, 4838, 4839, 4840, 4841, 4842, 4843, 4844, 4845, 4846, 4847, 4848, 4849, 4850, 4851, 4852, 4853, 4854, 4855, 4856, 4857, 4858, 4859, 4860, 4861, 4862, 4863, 4864, 4865, 4866, 4867, 4868, 4869, 4870, 4871, 4872, 4873, 4874, 4875, 4876, 4877, 4878, 4879, 4880, 4881, 4882, 4883, 4884, 4885, 4886, 4887, 4888, 4889, 4890, 4891, 4892, 4893, 4894, 4895, 4896, 4897, 4898, 4899, 4900, 4901, 4902, 4903, 4904, 4905, 4906, 4907, 4908, 4909, 4910, 4911, 4912, 4913, 4914, 4915, 4916, 4917, 4918, 4919, 4920, 4921, 4922, 4923, 4924, 4925, 4926, 4927, 4928, 4929, 4930, 4931, 4932, 4933, 4934, 4935, 4936, 4937, 4938, 4939, 4940, 4941, 4942, 4943, 4944, 4945, 4946, 4947, 4948, 4949, 4950, 4951, 4952, 4953, 4954, 4955, 4956, 4957, 4958, 4959, 4960, 4961, 4962, 4963, 4964, 4965, 4966, 4967, 4968, 4969, 4970, 4971, 4972, 4973, 4974, 4975, 4976, 4977, 4978, 4979, 4980, 4981, 4982, 4983, 4984, 4985, 4986, 4987, 4988, 4989, 4990, 4991, 4992, 4993, 4994, 4995, 4996, 4997, 4998, 4999, 5000).
- Utility Lines:** Red dashed lines and blue dashed lines with various symbols (circles, squares, triangles) indicating specific points and distances.
- Labels:** 'El Sub Sta', 'Shelter', 'SM', '74 to 80 62 to 66', '61 to 54', '39 to 53', '16 to 23 4 to 7', '8 to 15 1 to 3', '100930', '225', '150', '32.9m', '44', '4803', '4801', '4804', '4701', '4702', '4703', '4705', '4704', '4707', '4706', '4708', '4709', '4710', '4711', '4712', '4713', '4714', '4715', '4716', '4717', '4718', '4719', '4720', '4721', '4722', '4723', '4724', '4725', '4726', '4727', '4728', '4729', '4730', '4731', '4732', '4733', '4734', '4735', '4736', '4737', '4738', '4739', '4740', '4741', '4742', '4743', '4744', '4745', '4746', '4747', '4748', '4749', '4750', '4751', '4752', '4753', '4754', '4755', '4756', '4757', '4758', '4759', '4760', '4761', '4762', '4763', '4764', '4765', '4766', '4767', '4768', '4769', '4770', '4771', '4772', '4773', '4774', '4775', '4776', '4777', '4778', '4779', '4780', '4781', '4782', '4783', '4784', '4785', '4786', '4787', '4788', '4789', '4790', '4791', '4792', '4793', '4794', '4795', '4796', '4797', '4798', '4799', '4800', '4801', '4802', '4803', '4804', '4805', '4806', '4807', '4808', '4809', '4810', '4811', '4812', '4813', '4814', '4815', '4816', '4817', '4818', '4819', '4820', '4821', '4822', '4823', '4824', '4825', '4826', '4827', '4828', '4829', '4830', '4831', '4832', '4833', '4834', '4835', '4836', '4837', '4838', '4839', '4840', '4841', '4842', '4843', '4844', '4845', '4846', '4847', '4848', '4849', '4850', '4851', '4852', '4853', '4854', '4855', '4856', '4857', '4858', '4859', '4860', '4861', '4862', '4863', '4864', '4865', '4866', '4867', '4868', '4869', '4870', '4871', '4872', '4873', '4874', '4875', '4876', '4877', '4878', '4879', '4880', '4881', '4882', '4883', '4884', '4885', '4886', '4887', '4888', '4889', '4890', '4891', '4892', '4893', '4894', '4895', '4896', '4897', '4898', '4899', '4900', '4901', '4902', '4903', '4904', '4905', '4906', '4907', '4908', '4909', '4910', '4911', '4912', '4913', '4914', '4915', '4916', '4917', '4918', '4919', '4920', '4921', '4922', '4923', '4924', '4925', '4926', '4927', '4928', '4929', '4930', '4931', '4932', '4933', '4934', '4935', '4936', '4937', '4938', '4939', '4940', '4941', '4942', '4943', '4944', '4945', '4946', '4947', '4948', '4949', '4950', '4951', '4952', '4953', '4954', '4955', '4956', '4957', '4958', '4959', '4960', '4961', '4962', '4963', '4964', '4965', '4966', '4967', '4968', '4969', '4970', '4971', '4972', '4973', '4974', '4975', '4976', '4977', '4978', '4979', '4980', '4981', '4982', '4983', '4984', '4985', '4986', '4987', '4988', '4989', '4990', '4991', '4992', '4993', '4994', '4995', '4996', '4997', '4998', '4999', '5000).

The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 543487,195802

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.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
391C	n/a	n/a
381A	n/a	n/a
4801	33.25	30.98
4803	33.12	31.3
4804	29.66	26.89
4802	29.54	26.46
4701	n/a	n/a
471D	n/a	n/a
4702	26.11	24.9
5805	27.24	24.75
5807	28.62	25.31
5708	26.78	24.53
5706	n/a	n/a
5707	25.75	24.54
5801	27.17	24.21
5803	28.61	24.85
5701	26.6	24.04
5705	n/a	n/a
5806	27.23	24.91
5802	27.25	24.38
5709	25.53	24.39
5808	29.46	27.68
5804	29.47	27.01
5713	24.82	23.81
581B	n/a	n/a
581A	n/a	n/a
571J	n/a	n/a
571I	n/a	n/a
571H	n/a	n/a
571G	n/a	n/a
571F	n/a	n/a
571B	n/a	n/a
5712	24.82	23.01
571C	n/a	n/a
571D	n/a	n/a
5711	24.3	22.67
5704	24.35	21.48
5710	24.51	22.1
5702	23.93	21.99
5703	24.15	20.75
571K	n/a	n/a
4706	28.8	27.84
4703	28.67	27.53
4705	26.94	25.4
4704	26.09	25.13
4707	25.53	24.02
471A	n/a	n/a
471B	n/a	n/a
471C	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
	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

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.

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

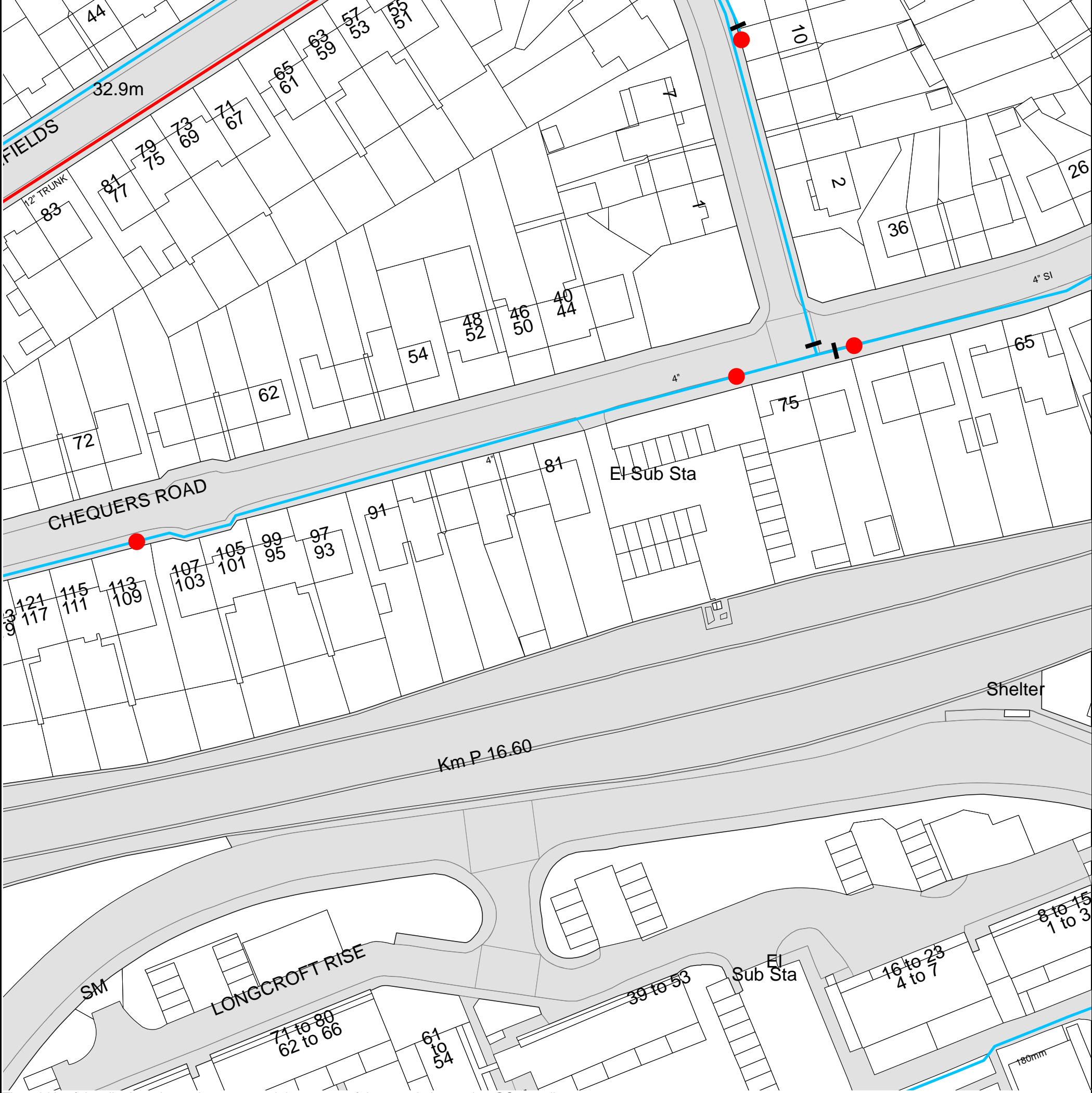
Lines denoting areas of underground surveys, etc.

	Agreement
	Operational Site
	Chamber
	Tunnel
	Conduit Bridge

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

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

- 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 070 9148.



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 543487, 195802.
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.
Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.



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: 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 her 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 / OSS	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 the Ombudsman finds that you have suffered actual loss and/or aggravation, distress or inconvenience 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
Web site: www.tpos.co.uk
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

APPENDIX B

Sewer Flooding

History Enquiry



Property
Searches

Create Consulting Engineers Ltd
Norwich Norwich
Princes Street

Search address supplied Chequers Road
Loughton
IG10 3PX

Your reference P18-1639

Our reference SFH/SFH Standard/2020_4144601

Received date **28 January 2020**

Search date **28 January 2020**



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148

Sewer Flooding

History Enquiry



Property
Searches

Search address supplied: Chequers Road,Loughton,IG10 3PX

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

- (i) any negligent or incorrect entry in the records searched;
- (ii) any negligent or incorrect interpretation of the records searched;
- (iii) and any negligent or incorrect recording of that interpretation in the search report
- (iv) compensation payments



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148

APPENDIX C



Kieron Osborn

Create Consulting Engineers
BIC114 – The MedBIC
Alan Cherry Drive
Chelmsford
Essex
CM1 1SQ



Our ref: DS6066848



0800 009 3921
Monday to Friday, 8am to 5pm

21st October 2019

Pre-planning enquiry: Confirmation of sufficient capacity

Site Address: Chequers Road (Site B), Loughton, Essex, IG10 3QF

Dear Mr Osborn,

Thank you for providing information on your development for 5 houses replacing the former garages at the above site.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewer capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

Please note that you must keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient sewerage capacity.

Surface Water

Please note that discharging surface water to the public sewer network should only be considered after all other methods of disposal have been investigated and proven to not be viable. In accordance with the Building Act 2000 Clause H3.3, positive connection to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. The disposal hierarchy being: 1st Soakaways; 2nd Watercourses; 3rd Sewers.

Only when it can be proven that soakage into the ground or a connection into an adjacent watercourse is not possible would we consider a restricted discharge into the public surface water sewer network.

Every attempt should be made to use flow attenuation and SUDS/storage to reduce the surface water discharge from the site as much as possible.

If they are consulted as part of any planning application, Thames Water's Planning team would ask to see why it is not practicable to attenuate the flows to Greenfield run-off rates i.e. 5l/s/hectare of the total site area. Should the policy above be followed, we would envisage no capacity concerns with regards to surface water for this site.

We would encourage techniques such as green roofs and/or permeable paving that restricts surface water discharge from your site.

Please note that the Local Planning authority may comment on surface water discharge under the planning process.

Please Note

There are existing public sewers crossing the site. New buildings will need to be kept between 3 and 6.5m away from existing sewer depending on the size and depth of the sewer. Alternatively, it may be possible for sewers to be diverted around the new development. If you wish us to review a diversion proposal please submit this via a Section 185 Diversion application. On some occasions it may be possible to abandon existing public sewers. Please contact us for further information on this process.

All connection requests are subject to a full Section 106 (Water Industry Act 1991) application before the Company can confirm approval to the connection itself. Please also note that capacity in the public sewerage system cannot be reserved. Please make sure you submit your connection application giving us at least 21 days' notice of the date you wish to make your new connection/s.

The discharge of non-domestic effluent is not permitted until a valid trade effluent consent has been issued by Thames Water. If anything other than domestic sewage is discharged into the public sewers without the above agreement an offence is committed and the applicant will be liable to the penalties contained in Section 109(1) (WIA 1991).

Applicants should contact Trade Effluent prior to seeking a connection approval, to discuss trade effluent consent and conditions of discharge. A Trade Effluent reference number should be obtained and included in the relevant box of the attached application form. The address for Trade Effluent is - Thames Water Utilities Limited, Waste Water Quality, Crossness Sewage Treatment Works, Belvedere Road, Abbeywood, London. SE2 9AQ. Alternatively you can telephone them on 020 8507 4321.

The views expressed by Thames Water in this letter are in response to this pre-planning enquiry at this time and do not represent our final views on any future planning applications made in relation to this site.

Yours sincerely,

Jonathan Shildrick BSc
Development Engineer
Developer Services

APPENDIX D

Claire Seymour

From: Jessica Jordan
Sent: 07 October 2020 15:29
To: 'Melisa Brushett'
Cc: Elen Wyatt; Graham Sinclair; Trevor Baker
Subject: RE: P18-1639 - Chequers Road Site B, Loughton - Pkg 1 - Ph 1

Hi Melisa,

No problem, thank you for reviewing and for getting back to me.

All noted.

In terms of the flood risk along Chequers Road; the points where the depths have been extracted are at low points in the LiDAR within the road, and these points are slightly lower than those at the top of the site. The site then proceeds to fall towards the railway line. Flood depths within Chequers Road range between 0.7 and 1.6 m. Depths across the site itself range from 0.9 m in the north western corner to 2.2 m in the south eastern corner of the site.

Hope that clears that query up but if not then please do not hesitate to contact me on the number below.

Kind regards

Jessica Jordan
Senior Hydrology and Water Consultant
Create Consulting Engineers Ltd
109-112 Temple Chambers | 3-7 Temple Avenue | London | EC4Y 0HP
T 020 7822 2300

From: Melisa Brushett [mailto:mbrushett@eppingforestdc.gov.uk]
Sent: 07 October 2020 11:21
To: Jessica Jordan
Cc: Elen Wyatt ; Graham Sinclair ; Trevor Baker
Subject: RE: P18-1639 - Chequers Road Site B, Loughton - Pkg 1 - Ph 1

Hi Jessica

Apologies for the delay getting back to you, we have had quite a busy few days.

Both Trevor and I have reviewed the information you supplied to us on the 24th following your phone call with him.

As the principle of the development has already been approved and with our involvement/ input over the last couple of years, we understand that the sacrificial space is to be maintained on the ground floor.

Whilst the raised FFL will remediate some of the surface water flood risk for the smaller events, even with the reviewed SWMP data produced by BMT, the site would still be inundated for the larger storm events. Therefore, we would of course expect to see the flood resilient construction techniques used for the buildings, allowing flood water to pass through unimpeded. These would need to be clearly set out for the purpose of planning approval.

I did note that in section 5.18 within the FRA, it refers to flood levels reaching 1600mm in chequers road to the north of the site, as the site is generally lower and considered at a higher risk, this would suggest much deeper levels on the site. Please could you check this, I suspect it may be a typo?

I hope this provides some help and guidance, if we can be of any further help please do contact either myself or Trevor.

Kind Regards,
Melisa

From: Trevor Baker <tjbaker@eppingforestdc.gov.uk>
Sent: 07 October 2020 08:44
To: 'Jessica Jordan' <Jessica.Jordan@createconsultingengineers.co.uk>
Cc: Melisa Brushett <mbrushett@eppingforestdc.gov.uk>; Elen Wyatt <Elen.Wyatt@createconsultingengineers.co.uk>; Graham Sinclair <Graham.Sinclair@createconsultingengineers.co.uk>
Subject: RE: P18-1639 - Chequers Road Site B, Loughton - Pkg 1 - Ph 1

Yep, we'll get back to you in a couple of hours.

Trevor

From: Jessica Jordan <Jessica.Jordan@createconsultingengineers.co.uk>
Sent: 06 October 2020 12:12
To: Trevor Baker <tjbaker@eppingforestdc.gov.uk>
Cc: Melisa Brushett <mbrushett@eppingforestdc.gov.uk>; Elen Wyatt <Elen.Wyatt@createconsultingengineers.co.uk>; Graham Sinclair <Graham.Sinclair@createconsultingengineers.co.uk>
Subject: RE: P18-1639 - Chequers Road Site B, Loughton - Pkg 1 - Ph 1

CAUTION: This Message originated outside of Epping Forest District Council. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Trevor,

Just wondering whether you and Melisa have had a chance to review the email below yet regarding the levels for Chequers Road B?

Kind regards,

Jessica Jordan
Senior Hydrology and Water Consultant
Create Consulting Engineers Ltd

From: Jessica Jordan
Sent: 24 September 2020 17:24
To: 'Trevor Baker' <tjbaker@eppingforestdc.gov.uk>
Cc: Melisa Brushett <mbrushett@eppingforestdc.gov.uk>; Elen Wyatt <Elen.Wyatt@createconsultingengineers.co.uk>; Graham Sinclair <Graham.Sinclair@createconsultingengineers.co.uk>
Subject: P18-1639 - Chequers Road Site B, Loughton - Pkg 1 - Ph 1

Hi Trevor,

Thank you for your time on the phone earlier.

As discussed, please see attached the latest proposed levels at the Chequers B site. I have also attached our FRA for reference (the same one that you have previously reviewed). This is still pending the final plans and drainage layout.

The lower ground floor will be sacrificial and we have retained a corridor either side of the building to retain the surface water flow path as much as possible. The levels generally fall towards the east with the intention that smaller higher frequency events will be directed along this side of the site towards to south away from the building. The external levels fall away from the building entrances and the FFL of the ground floor is set at 22.270 mAOD which is raised slightly higher than the surrounding areas in order to direct the smaller events away from entering the building.

Any thoughts or concerns on the levels would be greatly appreciated. The architect drawings and drainage will then be finalised and resubmitted for you to review in full.

Kind regards,

Jessica Jordan
Senior Hydrology and Water Consultant
Create Consulting Engineers Ltd
109-112 Temple Chambers | 3-7 Temple Avenue | London | EC4Y 0HP
T 020 7822 2300



Create Consulting Engineers Ltd is a registered company in England and Wales No. 6830694
Registered Office: 25 Church Close, South Walsham, Norwich, NR13 6DW

This email and any files transmitted with it are intended solely for the use of the individual to whom they are addressed. If you have received this email in error then please notify the sender. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Create Consulting Engineers Ltd.

Although the company has taken all reasonable precautions to ensure no viruses are present in this email, Create Consulting Engineers Ltd cannot accept responsibility for any loss of damage arising from the use of this email or attachments.

Create Consulting Engineers is a registered company in England and Wales Number 6830694
Registered Office: 25 Church Close, South Walsham, Norwich, NR13 6DW

This email and any files transmitted with it are intended solely for the use of the individual to whom they are addressed. If you have received this email in error then please notify the sender. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Create Consulting Engineers Ltd.

Although the company has taken all reasonable precautions to ensure no viruses are present in this email, Create Consulting Engineers Ltd cannot accept responsibility for any loss of damage arising from the use of this email or attachments.

Create Consulting Engineers is a registered company in England and Wales Number 6830694
Registered Office: 25 Church Close, South Walsham, Norwich, NR13 6DW

Epping Forest District Council
www.eppingforestdc.gov.uk



Safer spaces is a council-led programme to help kickstart the local economy and reopen high streets in the Epping Forest district [Click Here to have your say on social distancing and safer spaces](#)



Our employees are working from home and have access to emails and telephones. We are doing everything we can to support our residents and local businesses. To avoid risk of cross-contamination please don't send items and correspondence through the post unless absolutely necessary. For up to date information and service updates go to our website at www.eppingforestdc.gov.uk. **Stay alert. Control the virus. Save lives.**

Disclaimer Epping Forest District Council

If you received this email by mistake, please let us know and delete it. We ask you to respect any confidential or private information in the email. Do not share it unless appropriate to do so. We take precautions to minimise risk but we cannot guarantee the safety, confidentiality and security of the internet. Please carry out your own virus checks on any attachments. We are not liable or bound by the content of this email. Our employees are fully responsible for the content of their emails and we expect them to remain within the law. However, the views expressed by our employees may not necessarily reflect the policies of Epping Forest District Council.

This email and any files transmitted with it are intended solely for the use of the individual to whom they are addressed. If you have received this email in error then please notify the sender. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Create Consulting Engineers Ltd.

Although the company has taken all reasonable precautions to ensure no viruses are present in this email, Create Consulting Engineers Ltd cannot accept responsibility for any loss of damage arising from the use of this email or attachments.

Create Consulting Engineers is a registered company in England and Wales Number 6830694
Registered Office: 25 Church Close, South Walsham, Norwich, NR13 6DW

This email and any files transmitted with it are intended solely for the use of the individual to whom they are addressed. If you have received this email in error then please notify the sender. Please note that any views or opinions presented in this email are solely those of the author and do not necessarily represent those of Create Consulting Engineers Ltd.

Although the company has taken all reasonable precautions to ensure no viruses are present in this email, Create Consulting Engineers Ltd cannot accept responsibility for any loss of damage arising from the use of this email or attachments.

Create Consulting Engineers is a registered company in England and Wales Number 6830694
Registered Office: 25 Church Close, South Walsham, Norwich, NR13 6DW

APPENDIX E

Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543516.20 - 195822.20

Hole Type
WS

Location: Loughton

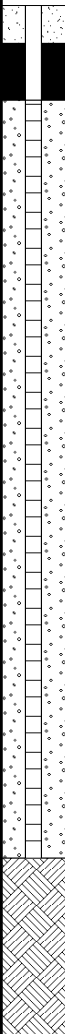

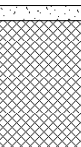
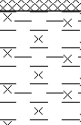
Level: 27.27

Scale
1:40

Client: Epping Forest District Council

Dates: 31/01/2020 -

Logged By
TB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.08			0.08	27.19		CONCRETE	
		0.60	ES					Grey brown to light brown slightly silty sandy subangular to subrounded fine to medium flint and quartzite gravel. With frequent fragments of brick and occasional clinker. MADE GROUND.	
		0.70 - 1.00	B					..becoming dark grey to black slightly gravelly clay. With fragments of brick	
		1.00 - 1.45	U	Ublow=14	0.80	26.47		Soft to firm grey brown mottled brown grey silty CLAY. WEATHERED LONDON CLAY.	1
		1.30	D						
		2.00							
		2.00 - 2.45	D	N=14 (2,3/3,3,4,4)					2
		3.00						..becoming firm and orange brown mottled grey. With grey veining	
		3.00 - 3.45	D	N=14 (2,2/3,3,4,4)				..becoming brown	3
		3.80	D						
		4.00						..with occasional silty laminations	4
		4.00 - 4.45	D	N=14 (2,2/3,4,3,4)					
		5.00							
		5.00 - 5.45	D	N=15 (2,3/4,3,4,4)					5
					5.45	21.82		End of borehole at 5.45 m	6
									7
									8

Remarks

- WS01 halted at 5.45m, target depth reached
- No groundwater encountered
- Monitoring standpipe installed to 4.5m

Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543514.10 - 195806.30

Hole Type
WS

Location: Loughton

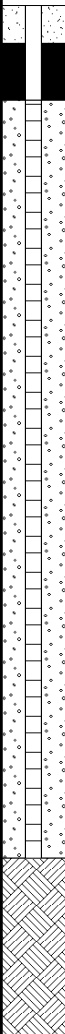


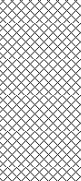




Level: 27.21

Scale
1:40

Client: Epping Forest District Council

Dates: 31/01/2020 -

Logged By
TB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10	27.11		CONCRETE	
		0.80	ES					Grey brown to dark grey slightly silty slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to medium flint with frequent fragments of brick and clinker. MADE GROUND. ..becoming brown. With half bricks ..becoming grey to dark grey slightly gravelly clay. With fragments of brick ..becoming black slightly silty gravelly fine to coarse sand. Gravel is angular fine to medium flint with fragments of brick ..becoming grey silty clay. With rare fragments of brick	1
		1.00		N=10 (3,3/2,3,2,3)					
		1.60	ES		1.50	25.71		Firm grey brown mottled brown silty CLAY. With rare subangular fine to coarse flint gravel. WEATHERED LONDON CLAY.	2
		1.90	D						
		2.00		N=11 (2,2/3,2,3,3)					
		2.00 - 2.45	D					..becoming brown. With grey veining. Gravel is subangular fine siltstone	
		3.00 - 3.45	U	Ublow=37				..with rare silty laminations. Gravel absent	3
		3.70 - 3.90	D						
		4.00		N=14 (2,2/3,3,4,4)					4
		4.00 - 4.45	D						
		5.00		N=19 (2,3/4,5,5,5)				..becoming firm to stiff	5
		5.00 - 5.45	D						
					5.45	21.76		End of borehole at 5.45 m	6
									7
									8

Remarks

- WS02 halted at 5.45m, target depth reached
- No groundwater encountered
- Monitoring standpipe installed to 4.5m

Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543519.90 - 195800.50

Hole Type
WS

Location: Loughton

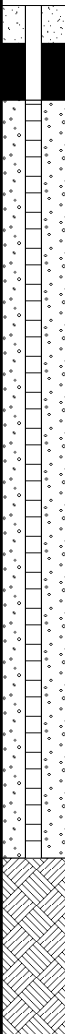

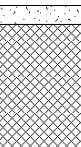
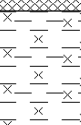
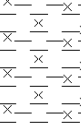
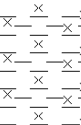
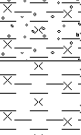
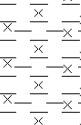
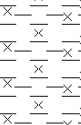
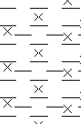



Level: 26.64

Scale
1:40

Client: Epping Forest District Council

Dates: 31/01/2020 -

Logged By
TB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10	26.54		CONCRETE	
		0.50	ES					Grey brown to dark grey slightly silty slightly gravelly fine to coarse sand. Gravel is angular to subrounded fine to medium flint with frequent fragments of brick and clinker. MADE GROUND.	
		0.85	ES		0.80	25.84		..becoming dark grey mottled black slightly sandy slightly gravelly clay. Gravel is subangular fine to medium flint with fragments of brick and clinker	
		1.00		N=10 (1,1/2,3,3,2)				Soft to firm grey brown mottled brown grey silty CLAY. WEATHERED LONDON CLAY.	1
		1.50	D					..becoming brown mottled orange brown	
		2.00 - 2.45	U	Ublow=19				..becoming firm and brown to orange brown	2
		3.00		N=16 (2,3/4,4,4,4)	2.85	23.79		Brown silty very gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. WEATHERED LONDON CLAY.	3
		3.00 - 3.45	D		3.20	23.44		Firm brown silty CLAY. WEATHERED LONDON CLAY.	
		4.00		N=14 (2,3/3,3,4,4)					4
		4.00 - 4.45	D					..becoming firm to stiff	5
		5.00		N=18 (1,3/4,5,5,4)					
		5.00 - 5.45	D						6
					5.45	21.19		End of borehole at 5.45 m	7
									8

Remarks

- WS03 halted at 5.45m, target depth reached
- No groundwater encountered
- Monitoring standpipe installed to 4.5m

Borehole Log

Borehole No.

WS04

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543501.90 - 195805.80

Hole Type
WS

Location: Loughton

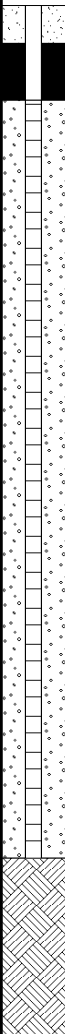

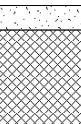
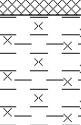
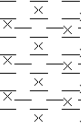
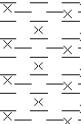
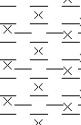
Level: 27.35

Scale
1:40

Client: Epping Forest District Council

Dates: 31/01/2020 -

Logged By
TB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.13			0.13	27.22		CONCRETE	
		0.40	ES					Dark grey to black slightly silty gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse flint with frequent fragments of brick and clinker. With whole bricks and cobble sized fragments of concrete. MADE GROUND.	
		0.75	ES		0.70	26.65		Soft grey brown silty CLAY. WEATHERED LONDON CLAY.	
		1.00		N=13 (3,2/3,3,3,4)					1
		1.00 - 1.45	D					..becoming firm	
		2.00		N=11 (1,3/2,3,3,3)				..becoming brown mottled orange brown. With grey veining	2
		2.00 - 2.45	D						
		3.00		N=13 (1,2/3,3,3,4)				..becoming brown	3
		3.00 - 3.45	D						
		4.00		N=13 (1,3/3,3,4,3)				..becoming firm to stiff	4
		4.00 - 4.45	D						
		5.00		N=18 (3,3/4,4,5,5)					5
		5.00 - 5.45	D						
					5.45	21.90		End of borehole at 5.45 m	6
									7
									8

Remarks

- WS04 halted at 5.45m, target depth reached
- No groundwater encountered
- Monitoring standpipe installed to 4.5m

Borehole Log

Borehole No.

WS05

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543508.60 - 195812.20

Hole Type
WS

Location: Loughton

Level: 27.42

Scale
1:40

Client: Epping Forest District Council

Dates: 31/01/2020 -

Logged By
TB

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10			0.10	27.32		CONCRETE	
		0.65			0.65	26.77		Grey brown to light brown slightly silty sandy subangular to subrounded fine to medium flint and quartzite gravel. With frequent fragments of brick and occasional clinker. MADE GROUND.	
		0.80	D					..becoming clayey	
		1.00 - 1.45	U	Ublow=19				Soft to firm grey brown to dark grey brown silty CLAY. WEATHERED LONDON CLAY.	1
		2.00							
		2.00 - 2.45	D	N=13 (2,2/3,3,3,4)					2
		3.00			2.80	24.62		..with 10cm gravelly band. Gravel is angular fine to medium flint	
		3.20 - 3.40	D	N=12 (1,1/3,2,3,4)	3.10	24.32		Firm brown silty very gravelly CLAY. Gravel is angular to subrounded fine to coarse flint. WEATHERED LONDON CLAY.	3
		4.00						Firm brown silty CLAY. With grey veining. WEATHERED LONDON CLAY.	
		4.00 - 4.45	D	N=12 (2,2/3,3,3,3)					4
		5.00						..becoming firm to stiff	5
		5.00 - 5.45	D	N=18 (3,4/4,4,5,5)	5.45	21.97		End of borehole at 5.45 m	6
									7
									8

Remarks

- WS05 halted at 5.45m, target depth reached
- No groundwater encountered
- Borehole backfilled with arisings

Trial Pit Log

Trialpit No

TP01

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543508.20 - 195799.60
Level: 26.93

Date
31/01/2020

Location: Loughton

Dimensions (m): 0.3

Client: Epping Forest District Council

Depth
0.90

0.3

Scale
1:20

Logged
TB

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10			0.10	26.83		CONCRETE	
							Brown gravelly sand. Gravel is angular to subrounded fine to coarse flint with frequent fragments of brick and whole bricks. MADE GROUND.	
	0.50	ES					...becoming slightly clayey	
				0.70	26.23		Soft grey brown mottled brown silty CLAY. With rare subangular fine to coarse flint gravel. WEATHERED LONDON CLAY.	
				0.90	26.03		End of pit at 0.90 m	

Remarks:

1. TP01 halted at 0.9m, target depth reached
2. No groundwater encountered
3. Trial pit backfilled with arisings

Stability: Stable



Trial Pit Log

Trialpit No

TP02

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543513.90 - 195792.80
Level: 26.73

Date
31/01/2020

Location: Loughton

Dimensions (m): 0.3







Scale
1:20

Client: Epping Forest District Council

Depth
0.90

0.3

Logged
TB

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.60	ES		0.07	26.66		CONCRETE	
							Brown gravelly sand. Gravel is angular to subrounded fine to coarse flint with frequent fragments of brick and whole bricks. MADE GROUND.	
							..becoming soft to firm brown gravelly clay. Gravel is subangular fine to coarse flint with fragments of brick	
							..becoming dark grey to black silty fine to coarse sand. With fragments of brick and half bricks	
				0.70	26.03		Soft grey brown mottled brown silty CLAY. With rare subangular fine to coarse flint gravel. WEATHERED LONDON CLAY.	
				0.90	25.83			
							End of pit at 0.90 m	

1

2

3

4

Remarks: 1. TP02 halted at 0.9m, target depth reached
2. No groundwater encountered
3. Trial pit backfilled with arisings

Stability: Stable



Trial Pit Log

Trialpit No

TP03

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 503504.10 - 195796.10

Level: 26.92

Date

31/01/2020

Location: Loughton

Dimensions
(m):

0.3

Depth
0.90


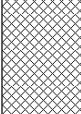
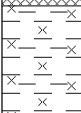

0.3

Scale

1:20

Logged
TB

Client: Epping Forest District Council

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.15	26.77		CONCRETE	
	0.50	ES					Grey brown mottled grey gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse flint with occasional fragments of brick. With concrete obstructions between 0.20m and 0.40m. MADE GROUND.	
	0.80	ES		0.60	26.32		Soft becoming firm green grey to dark grey silty CLAY. With rare angular to subangular fine to coarse flint. WEATHERED LONDON CLAY.	
				0.90	26.02		End of pit at 0.90 m	

1

2

3

4

Remarks: 1. TP03 halted at 0.9m, target depth reached
2. No groundwater encountered
3. Trial pit backfilled with arisings

Stability: Stable



Trial Pit Log

Trialpit No

TP04

Sheet 1 of 1

Project Name: Chequers Road (Site B)

Project No.
P18-1639

Co-ords: 543523.10 - 195805.00

Level: 26.71

Date

31/01/2020

Location: Loughton

Dimensions
(m):

0.3

Depth
1.00


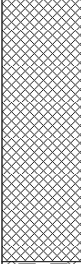


0.3

Scale

1:20

Logged
TB

Client: Epping Forest District Council

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10			0.10	26.61		CONCRETE	
							Brown mottled black gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse flint with fragments of brick. MADE GROUND. ..becoming grey brown mottled dark grey slightly clayey gravelly fine to coarse sand. Gravel is angular to subangular fine to medium flint with fragments of brick	
	0.80			0.80	25.91		Soft to firm grey brown mottled brown grey silty CLAY. With rare subangular fine to coarse flint gravel. WEATHERED LONDON CLAY.	
	1.00			1.00	25.71		End of pit at 1.00 m	1
								2
								3
								4

Remarks: 1. TP04 halted at 1.0m, target depth reached
2. No groundwater encountered
3. Trial pit backfilled with arisings

Stability: Stable



Trial Pit Log

Trialpit No

TP05

Sheet 1 of 1

Project Name: Chequers Road (Site B)

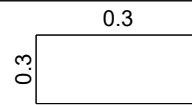
Project No.
P18-1639

Co-ords: 543519.80 - 195797.40
Level: 26.62

Date
31/01/2020

Location: Loughton

Dimensions (m):
Depth 1.00



Scale
1:20

Logged
TB

Client: Epping Forest District Council

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.15	26.47		CONCRETE
							Brown to dark grey brown gravelly sand. Gravel is angular to subrounded fine to coarse flint with frequent fragments of brick, whole bricks and boulder size fragments of concrete. MADE GROUND. <i>...with half and whole bricks</i>
				1.00	25.62		End of pit at 1.00 m

1
2
3
4

Remarks: 1. TP05 halted at 1.0m, concrete obstruction encountered
2. No groundwater encountered
3. Trial pit backfilled with arisings

Stability: Stable



APPENDIX F

Location : **Chequers B**

M5-60 : 19 mm

r : 0.425

Wallingford Method - maps

[\\cre001-net01\company data\Reference\Technical Library\wallingford](#)

For different durations,

From Table 1

Duration, D	Z1			
15 min	0.65	M5-15:	Z1 x M5-60	12.35 mm
30 min	0.82	M5-30:	Z1 x M5-60	15.58 mm
60 min	1	M5-60:	Z1 x M5-60	19.00 mm
6hr	1.51	M5-360:	Z1 x M5-60	28.69 mm

For different return intervals,

From Table 2*

Duration, D	M1	Z2	
		M30	M100
15 min	0.62	1.52	1.96
30 min	0.62	1.53	2.00
60 min	0.64	1.54	2.03
6 hr	0.68	1.51	1.97

Average point intensity, API = I/(D/60)

	D min	Calculation	I mm	API mm/hr
M 1-15	15	M5-15*Z2(M1)	7.66	30.63
M 1-30	30	M5-30*Z2(M1)	9.66	19.32
M 1-60	30	M5-360*Z2(M1)	12.16	24.32
M1-360	360	M5-360*Z2(M1)	19.51	3.25
M 30-15	15	M5-15*Z2(M30)	18.77	75.09
M 30-30	30	M5-30*Z2(M30)	23.84	47.67
M 30-60	60	M5-60*Z2(M30)	29.26	29.26
M30-360	360	M5-360*Z2(M30)	43.32	7.22
M 100-15	15	M5-15*Z2(M100)	24.21	96.82
M 100-30	30	M5-30*Z2(M100)	31.16	62.32
M100-60	60	M5-60*Z2(M100)	38.57	38.57
M100-360	360	M5-360*Z2(M100)	56.52	9.42

Peak Runoff

Q=2.78CiA Rational Method, SUDS Manual Section 4.3.3

where:

(1) C = Cv Cr

Cv = 1 **

Cr = 1.3 constant value for design purposes

therefore , C = 1.3

(2) i = API, defined above

Q=2.78CiA

(3) A = areas measured for subcatchments

		Contributing Impermeable Area Ha	
	i mm/hr	Site	Per hectare
		0.095	1
M 1-15	30.63	10.52	110.69
M 1-30	19.32	6.63	69.82
M 1-60	24.32	8.35	69.82
M1-360	3.25	1.12	11.75
M 30-15	75.09	25.78	271.37
M 30-30	47.67	16.37	172.30

Table 1

Rainfall Duration D											
Minutes r	5	10	15	30	Hours 1	2	4	6	10	24	
0.12	0.22	0.34	0.45	0.67	1.00	1.48	2.17	2.75	3.70	6.00	
0.15	0.25	0.38	0.48	0.69	1.00	1.42	2.02	2.46	3.32	4.90	
0.18	0.27	0.41	0.51	0.71	1.00	1.36	1.86	2.25	2.86	4.30	
0.21	0.29	0.43	0.54	0.73	1.00	1.33	1.77	2.12	2.62	3.60	
0.24	0.31	0.46	0.56	0.75	1.00	1.30	1.71	2.00	2.40	3.35	
0.27	0.33	0.48	0.58	0.76	1.00	1.27	1.64	1.88	2.24	3.10	
0.30	0.34	0.49	0.59	0.77	1.00	1.25	1.57	1.78	2.12	2.84	
0.33	0.35	0.50	0.61	0.78	1.00	1.23	1.53	1.73	2.04	2.60	
0.36	0.36	0.51	0.62	0.79	1.00	1.22	1.48	1.67	1.90	2.42	
0.39	0.37	0.52	0.63	0.80	1.00	1.21	1.46	1.62	1.82	2.28	
0.42	0.38	0.53	0.64	0.81	1.00	1.20	1.42	1.57	1.74	2.16	
0.45	0.39	0.54	0.65	0.82	1.00	1.19	1.38	1.51	1.68	2.03	

Table 2 - England and Wales

Growth Factor Z2											
M5 rainfall	M1	M2	M3	M4	M5	M10	M20	M50	M100	M30 interpolated	
5.00	0.62	0.79	0.89	0.97	1.02	1.19	1.36	1.56	1.79	1.25	
10.00	0.61	0.79	0.90	0.97	1.03	1.22	1.41	1.65	1.91	1.49	
15.00	0.62	0.80	0.90	0.97	1.03	1.24	1.44	1.70	1.99	1.53	
20.00	0.64	0.81	0.90	0.97	1.03	1.24	1.45	1.73	2.03	1.54	
25.00	0.66	0.82	0.91	0.97	1.03	1.24	1.44	1.72	2.01	1.53	
30.00	0.68	0.83	0.91	0.97	1.03	1.22	1.42	1.70	1.97	1.51	
40.00	0.70	0.84	0.92	0.97	1.02	1.19	1.38	1.64	1.89	1.47	
50.00	0.72	0.85	0.93	0.98	1.02	1.17	1.34	1.58	1.81	1.42	
75.00	0.76	0.87	0.93	0.98	1.02	1.14	1.28	1.47	1.64	1.34	
100.00	0.78	0.88	0.94	0.98	1.02	1.13	1.25	1.40	1.54	1.30	
150.00	0.78	0.88	0.94	0.98	1.01	1.12	1.21	1.33	1.45	1.25	
200.00	0.78	0.88	0.94	0.98	1.01	1.11	1.19	1.30	1.40	1.23	

* The rainfall depths from cells E8-E11 are compared with the depths given in cells J29-J40 and Z2 interpolated accordingly for each return period

** Cv varies between 0.6 (rapidly draining soils) and 0.9 (heavy clay) with an average of 0.75 taken if ground conditions not known.
2.78*C= 3.614

		Contributing Impermeable Area Ha	
	i mm/hr	Site	Per hectare
		0.095	1
M 30-60	29.26	10.05	172.30
M30-360	7.22	2.48	26.09
M 100-15	96.82	33.24	349.92
M 100-30	62.32	21.40	225.22
M 100-60	38.57	13.24	225.22
M100-360	9.42	3.23	34.04

APPENDIX G

IoH 124 Calculation of Greenfield Runoff Rate

Date: 09/10/2020

By: EW

OS Location 543799 197406

SAAR 619 mm See Wallingford Map
 Site area = 50 ha Always assume 50ha and prorata for specific site
 0.5 km²
 Soil WRA Class 4 See Wallingford Map
 Soil Type SPR Value 0.45 Conversion to SPR

$$Q_{bar}_{rural} = 0.00108 \times (AREA)^{0.89} \times (SAAR)^{1.17} \times (SOIL)^{2.17}$$

$$Q_{bar-50ha} = 0.190 \text{ m}^3/\text{s}$$

From Regional Growth Curve Factor

Region: 6

Return period	1	2	5	10	25	30	50	100	500
Growth Factor	0.85	0.88	1.28	1.62	2.14	2.24	2.62	3.19	4.49

Q ₁ 50ha =	0.162 m ³ /s	=	161.69 l/s	=	3.234 l/s/ha
Q ₂ 50ha =	0.167 m ³ /s	=	167.39 l/s	=	3.348 l/s/ha
Q ₅ 50ha =	0.243 m ³ /s	=	243.48 l/s	=	4.870 l/s/ha
Q ₁₀ 50ha =	0.308 m ³ /s	=	308.16 l/s	=	6.163 l/s/ha
Q ₂₅ 50ha =	0.407 m ³ /s	=	407.07 l/s	=	8.141 l/s/ha
Q ₃₀ 50ha =	0.426 m ³ /s	=	426.09 l/s	=	8.522 l/s/ha
Q ₅₀ 50ha =	0.498 m ³ /s	=	498.38 l/s	=	9.968 l/s/ha
Q ₁₀₀ 50ha =	0.607 m ³ /s	=	606.80 l/s	=	12.136 l/s/ha
Q ₅₀₀ 50ha =	0.854 m ³ /s	=	854.09 l/s	=	17.082 l/s/ha


Factored for Development Impermeable Area


Site area = 0.05 ha


Q _{bar} site =	0.000 m ³ /s	=	0.2 l/s	=	3.8 l/s/ha
Q ₁ site =	0.000 m ³ /s	=	0.2 l/s	=	3.2 l/s/ha
Q ₂ site =	0.000 m ³ /s	=	0.2 l/s	=	3.3 l/s/ha
Q ₅ site =	0.000 m ³ /s	=	0.2 l/s	=	4.9 l/s/ha
Q ₁₀ site =	0.000 m ³ /s	=	0.3 l/s	=	6.2 l/s/ha
Q ₂₅ site =	0.000 m ³ /s	=	0.4 l/s	=	8.1 l/s/ha
Q ₃₀ site =	0.000 m ³ /s	=	0.4 l/s	=	8.5 l/s/ha
Q ₅₀ site =	0.000 m ³ /s	=	0.5 l/s	=	10.0 l/s/ha
Q ₁₀₀ site =	0.001 m ³ /s	=	0.6 l/s	=	12.1 l/s/ha
Q ₅₀₀ site =	0.001 m ³ /s	=	0.9 l/s	=	17.1 l/s/ha

Note: For greenfield site, the critical duration is generally not relevant and the prediction of the peak rate of runoff using IH124 does not require consideration of storm duration.

APPENDIX H

Create Consulting Engineers Ltd						Page 1																																																																																																																																																																																																																																																																																			
BIC108 - The MedBIC Alan Cherry Drive Chelmsford, CM1 15Q			Chequers Road - Site B Loughton EFDC																																																																																																																																																																																																																																																																																						
Date 29/09/2020 File Source Control - 29.09....			Designed by EC Checked by BA																																																																																																																																																																																																																																																																																						
Innovyze			Source Control 2018.1.1																																																																																																																																																																																																																																																																																						
<p style="text-align: center;"><u>Summary of Results for 100 year Return Period (+40%)</u></p> <p style="text-align: center;">Half Drain Time : 92 minutes.</p> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>25.993</td><td>0.493</td><td>0.0</td><td>2.0</td><td>2.0</td><td>12.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>26.112</td><td>0.612</td><td>0.0</td><td>2.0</td><td>2.0</td><td>15.7</td><td>O K</td></tr><tr><td>60 min Summer</td><td>26.179</td><td>0.679</td><td>0.0</td><td>2.0</td><td>2.0</td><td>17.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>26.222</td><td>0.722</td><td>0.0</td><td>2.0</td><td>2.0</td><td>18.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>26.216</td><td>0.716</td><td>0.0</td><td>2.0</td><td>2.0</td><td>18.4</td><td>O K</td></tr><tr><td>240 min Summer</td><td>26.192</td><td>0.692</td><td>0.0</td><td>2.0</td><td>2.0</td><td>17.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>26.122</td><td>0.622</td><td>0.0</td><td>2.0</td><td>2.0</td><td>16.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>26.038</td><td>0.538</td><td>0.0</td><td>2.0</td><td>2.0</td><td>13.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>25.942</td><td>0.442</td><td>0.0</td><td>2.0</td><td>2.0</td><td>11.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>25.864</td><td>0.364</td><td>0.0</td><td>2.0</td><td>2.0</td><td>9.3</td><td>O K</td></tr><tr><td>960 min Summer</td><td>25.746</td><td>0.246</td><td>0.0</td><td>2.0</td><td>2.0</td><td>6.3</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>25.627</td><td>0.127</td><td>0.0</td><td>1.8</td><td>1.8</td><td>3.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>25.578</td><td>0.078</td><td>0.0</td><td>1.5</td><td>1.5</td><td>2.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>25.562</td><td>0.062</td><td>0.0</td><td>1.2</td><td>1.2</td><td>1.6</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>25.548</td><td>0.048</td><td>0.0</td><td>0.8</td><td>0.8</td><td>1.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>25.541</td><td>0.041</td><td>0.0</td><td>0.6</td><td>0.6</td><td>1.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>25.537</td><td>0.037</td><td>0.0</td><td>0.5</td><td>0.5</td><td>1.0</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>25.534</td><td>0.034</td><td>0.0</td><td>0.5</td><td>0.5</td><td>0.9</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>25.532</td><td>0.032</td><td>0.0</td><td>0.4</td><td>0.4</td><td>0.8</td><td>O K</td></tr><tr><td>15 min Winter</td><td>26.060</td><td>0.560</td><td>0.0</td><td>2.0</td><td>2.0</td><td>14.4</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>152.880</td><td>0.0</td><td>14.3</td><td>21</td></tr><tr><td>30 min Summer</td><td>98.840</td><td>0.0</td><td>18.5</td><td>34</td></tr><tr><td>60 min Summer</td><td>60.900</td><td>0.0</td><td>22.8</td><td>62</td></tr><tr><td>120 min Summer</td><td>38.570</td><td>0.0</td><td>28.9</td><td>100</td></tr><tr><td>180 min Summer</td><td>29.069</td><td>0.0</td><td>32.7</td><td>132</td></tr><tr><td>240 min Summer</td><td>23.555</td><td>0.0</td><td>35.3</td><td>168</td></tr><tr><td>360 min Summer</td><td>17.220</td><td>0.0</td><td>38.7</td><td>238</td></tr><tr><td>480 min Summer</td><td>13.644</td><td>0.0</td><td>40.9</td><td>308</td></tr><tr><td>600 min Summer</td><td>11.331</td><td>0.0</td><td>42.5</td><td>364</td></tr><tr><td>720 min Summer</td><td>9.707</td><td>0.0</td><td>43.7</td><td>424</td></tr><tr><td>960 min Summer</td><td>7.564</td><td>0.0</td><td>45.4</td><td>534</td></tr><tr><td>1440 min Summer</td><td>5.285</td><td>0.0</td><td>47.6</td><td>756</td></tr><tr><td>2160 min Summer</td><td>3.682</td><td>0.0</td><td>49.7</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>2.855</td><td>0.0</td><td>51.4</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>2.010</td><td>0.0</td><td>54.2</td><td>2188</td></tr><tr><td>5760 min Summer</td><td>1.578</td><td>0.0</td><td>56.8</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.318</td><td>0.0</td><td>59.3</td><td>3608</td></tr><tr><td>8640 min Summer</td><td>1.144</td><td>0.0</td><td>61.8</td><td>4336</td></tr><tr><td>10080 min Summer</td><td>1.020</td><td>0.0</td><td>64.2</td><td>5064</td></tr><tr><td>15 min Winter</td><td>152.880</td><td>0.0</td><td>16.0</td><td>21</td></tr></table>									Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	25.993	0.493	0.0	2.0	2.0	12.6	O K	30 min Summer	26.112	0.612	0.0	2.0	2.0	15.7	O K	60 min Summer	26.179	0.679	0.0	2.0	2.0	17.4	O K	120 min Summer	26.222	0.722	0.0	2.0	2.0	18.5	O K	180 min Summer	26.216	0.716	0.0	2.0	2.0	18.4	O K	240 min Summer	26.192	0.692	0.0	2.0	2.0	17.7	O K	360 min Summer	26.122	0.622	0.0	2.0	2.0	16.0	O K	480 min Summer	26.038	0.538	0.0	2.0	2.0	13.8	O K	600 min Summer	25.942	0.442	0.0	2.0	2.0	11.3	O K	720 min Summer	25.864	0.364	0.0	2.0	2.0	9.3	O K	960 min Summer	25.746	0.246	0.0	2.0	2.0	6.3	O K	1440 min Summer	25.627	0.127	0.0	1.8	1.8	3.2	O K	2160 min Summer	25.578	0.078	0.0	1.5	1.5	2.0	O K	2880 min Summer	25.562	0.062	0.0	1.2	1.2	1.6	O K	4320 min Summer	25.548	0.048	0.0	0.8	0.8	1.2	O K	5760 min Summer	25.541	0.041	0.0	0.6	0.6	1.1	O K	7200 min Summer	25.537	0.037	0.0	0.5	0.5	1.0	O K	8640 min Summer	25.534	0.034	0.0	0.5	0.5	0.9	O K	10080 min Summer	25.532	0.032	0.0	0.4	0.4	0.8	O K	15 min Winter	26.060	0.560	0.0	2.0	2.0	14.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	152.880	0.0	14.3	21	30 min Summer	98.840	0.0	18.5	34	60 min Summer	60.900	0.0	22.8	62	120 min Summer	38.570	0.0	28.9	100	180 min Summer	29.069	0.0	32.7	132	240 min Summer	23.555	0.0	35.3	168	360 min Summer	17.220	0.0	38.7	238	480 min Summer	13.644	0.0	40.9	308	600 min Summer	11.331	0.0	42.5	364	720 min Summer	9.707	0.0	43.7	424	960 min Summer	7.564	0.0	45.4	534	1440 min Summer	5.285	0.0	47.6	756	2160 min Summer	3.682	0.0	49.7	1104	2880 min Summer	2.855	0.0	51.4	1468	4320 min Summer	2.010	0.0	54.2	2188	5760 min Summer	1.578	0.0	56.8	2936	7200 min Summer	1.318	0.0	59.3	3608	8640 min Summer	1.144	0.0	61.8	4336	10080 min Summer	1.020	0.0	64.2	5064	15 min Winter	152.880	0.0	16.0	21
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																																																																																		
15 min Summer	25.993	0.493	0.0	2.0	2.0	12.6	O K																																																																																																																																																																																																																																																																																		
30 min Summer	26.112	0.612	0.0	2.0	2.0	15.7	O K																																																																																																																																																																																																																																																																																		
60 min Summer	26.179	0.679	0.0	2.0	2.0	17.4	O K																																																																																																																																																																																																																																																																																		
120 min Summer	26.222	0.722	0.0	2.0	2.0	18.5	O K																																																																																																																																																																																																																																																																																		
180 min Summer	26.216	0.716	0.0	2.0	2.0	18.4	O K																																																																																																																																																																																																																																																																																		
240 min Summer	26.192	0.692	0.0	2.0	2.0	17.7	O K																																																																																																																																																																																																																																																																																		
360 min Summer	26.122	0.622	0.0	2.0	2.0	16.0	O K																																																																																																																																																																																																																																																																																		
480 min Summer	26.038	0.538	0.0	2.0	2.0	13.8	O K																																																																																																																																																																																																																																																																																		
600 min Summer	25.942	0.442	0.0	2.0	2.0	11.3	O K																																																																																																																																																																																																																																																																																		
720 min Summer	25.864	0.364	0.0	2.0	2.0	9.3	O K																																																																																																																																																																																																																																																																																		
960 min Summer	25.746	0.246	0.0	2.0	2.0	6.3	O K																																																																																																																																																																																																																																																																																		
1440 min Summer	25.627	0.127	0.0	1.8	1.8	3.2	O K																																																																																																																																																																																																																																																																																		
2160 min Summer	25.578	0.078	0.0	1.5	1.5	2.0	O K																																																																																																																																																																																																																																																																																		
2880 min Summer	25.562	0.062	0.0	1.2	1.2	1.6	O K																																																																																																																																																																																																																																																																																		
4320 min Summer	25.548	0.048	0.0	0.8	0.8	1.2	O K																																																																																																																																																																																																																																																																																		
5760 min Summer	25.541	0.041	0.0	0.6	0.6	1.1	O K																																																																																																																																																																																																																																																																																		
7200 min Summer	25.537	0.037	0.0	0.5	0.5	1.0	O K																																																																																																																																																																																																																																																																																		
8640 min Summer	25.534	0.034	0.0	0.5	0.5	0.9	O K																																																																																																																																																																																																																																																																																		
10080 min Summer	25.532	0.032	0.0	0.4	0.4	0.8	O K																																																																																																																																																																																																																																																																																		
15 min Winter	26.060	0.560	0.0	2.0	2.0	14.4	O K																																																																																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																																																																																					
15 min Summer	152.880	0.0	14.3	21																																																																																																																																																																																																																																																																																					
30 min Summer	98.840	0.0	18.5	34																																																																																																																																																																																																																																																																																					
60 min Summer	60.900	0.0	22.8	62																																																																																																																																																																																																																																																																																					
120 min Summer	38.570	0.0	28.9	100																																																																																																																																																																																																																																																																																					
180 min Summer	29.069	0.0	32.7	132																																																																																																																																																																																																																																																																																					
240 min Summer	23.555	0.0	35.3	168																																																																																																																																																																																																																																																																																					
360 min Summer	17.220	0.0	38.7	238																																																																																																																																																																																																																																																																																					
480 min Summer	13.644	0.0	40.9	308																																																																																																																																																																																																																																																																																					
600 min Summer	11.331	0.0	42.5	364																																																																																																																																																																																																																																																																																					
720 min Summer	9.707	0.0	43.7	424																																																																																																																																																																																																																																																																																					
960 min Summer	7.564	0.0	45.4	534																																																																																																																																																																																																																																																																																					
1440 min Summer	5.285	0.0	47.6	756																																																																																																																																																																																																																																																																																					
2160 min Summer	3.682	0.0	49.7	1104																																																																																																																																																																																																																																																																																					
2880 min Summer	2.855	0.0	51.4	1468																																																																																																																																																																																																																																																																																					
4320 min Summer	2.010	0.0	54.2	2188																																																																																																																																																																																																																																																																																					
5760 min Summer	1.578	0.0	56.8	2936																																																																																																																																																																																																																																																																																					
7200 min Summer	1.318	0.0	59.3	3608																																																																																																																																																																																																																																																																																					
8640 min Summer	1.144	0.0	61.8	4336																																																																																																																																																																																																																																																																																					
10080 min Summer	1.020	0.0	64.2	5064																																																																																																																																																																																																																																																																																					
15 min Winter	152.880	0.0	16.0	21																																																																																																																																																																																																																																																																																					
©1982-2018 Innovyze																																																																																																																																																																																																																																																																																									

Create Consulting Engineers Ltd						Page 2	
BIC108 - The MedBIC Alan Cherry Drive Chelmsford, CM1 15Q				Chequers Road - Site B Loughton EFDC			
Date 29/09/2020				Designed by EC			
File Source Control - 29.09....				Checked by BA			
Innovyze				Source Control 2018.1.1			
<p align="center"><u>Summary of Results for 100 year Return Period (+40%)</u></p>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	26.195	0.695	0.0	2.0	2.0	17.8	O K
60 min Winter	26.279	0.779	0.0	2.0	2.0	20.0	O K
120 min Winter	26.359	0.859	0.0	2.0	2.0	21.3	O K
180 min Winter	26.328	0.828	0.0	2.0	2.0	21.1	O K
240 min Winter	26.285	0.785	0.0	2.0	2.0	20.1	O K
360 min Winter	26.180	0.680	0.0	2.0	2.0	17.4	O K
480 min Winter	26.056	0.556	0.0	2.0	2.0	14.3	O K
600 min Winter	25.909	0.409	0.0	2.0	2.0	10.5	O K
720 min Winter	25.801	0.301	0.0	2.0	2.0	7.7	O K
960 min Winter	25.665	0.165	0.0	1.9	1.9	4.2	O K
1440 min Winter	25.582	0.082	0.0	1.5	1.5	2.1	O K
2160 min Winter	25.559	0.059	0.0	1.1	1.1	1.5	O K
2880 min Winter	25.549	0.049	0.0	0.8	0.8	1.3	O K
4320 min Winter	25.539	0.039	0.0	0.6	0.6	1.0	O K
5760 min Winter	25.534	0.034	0.0	0.5	0.5	0.9	O K
7200 min Winter	25.531	0.031	0.0	0.4	0.4	0.8	O K
8640 min Winter	25.529	0.029	0.0	0.3	0.3	0.7	O K
10080 min Winter	25.527	0.027	0.0	0.3	0.3	0.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	98.840	0.0	20.7	34			
60 min Winter	60.900	0.0	25.6	62			
120 min Winter	38.570	0.0	32.4	106			
180 min Winter	29.069	0.0	36.6	142			
240 min Winter	23.555	0.0	39.6	180			
360 min Winter	17.220	0.0	43.4	256			
480 min Winter	13.644	0.0	45.8	332			
600 min Winter	11.331	0.0	47.6	386			
720 min Winter	9.707	0.0	48.9	442			
960 min Winter	7.564	0.0	50.8	542			
1440 min Winter	5.285	0.0	53.3	742			
2160 min Winter	3.682	0.0	55.7	1100			
2880 min Winter	2.855	0.0	57.6	1472			
4320 min Winter	2.010	0.0	60.8	2204			
5760 min Winter	1.578	0.0	63.6	2848			
7200 min Winter	1.318	0.0	66.4	3640			
8640 min Winter	1.144	0.0	69.2	4488			
10080 min Winter	1.020	0.0	71.9	4944			
©1982-2018 Innovyze							

Create Consulting Engineers Ltd		Page 4
BIC108 - The MedBIC Alan Cherry Drive Chelmsford, CM1 15Q	Chequers Road - Site B Loughton EFDC	
Date 29/09/2020 File Source Control - 29.09....	Designed by EC Checked by BA	
Innovyze Source Control 2018.1.1		

Model Details

Storage is Online Cover Level (m) 26.870

Cellular Storage Structure

Invert Level (m) 25.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	27.0	27.0	0.900	0.0	43.8
0.800	27.0	43.8			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0069-2000-0850-2000
Design Head (m) 0.850
Design Flow (l/s) 2.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 69
Invert Level (m) 25.500
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

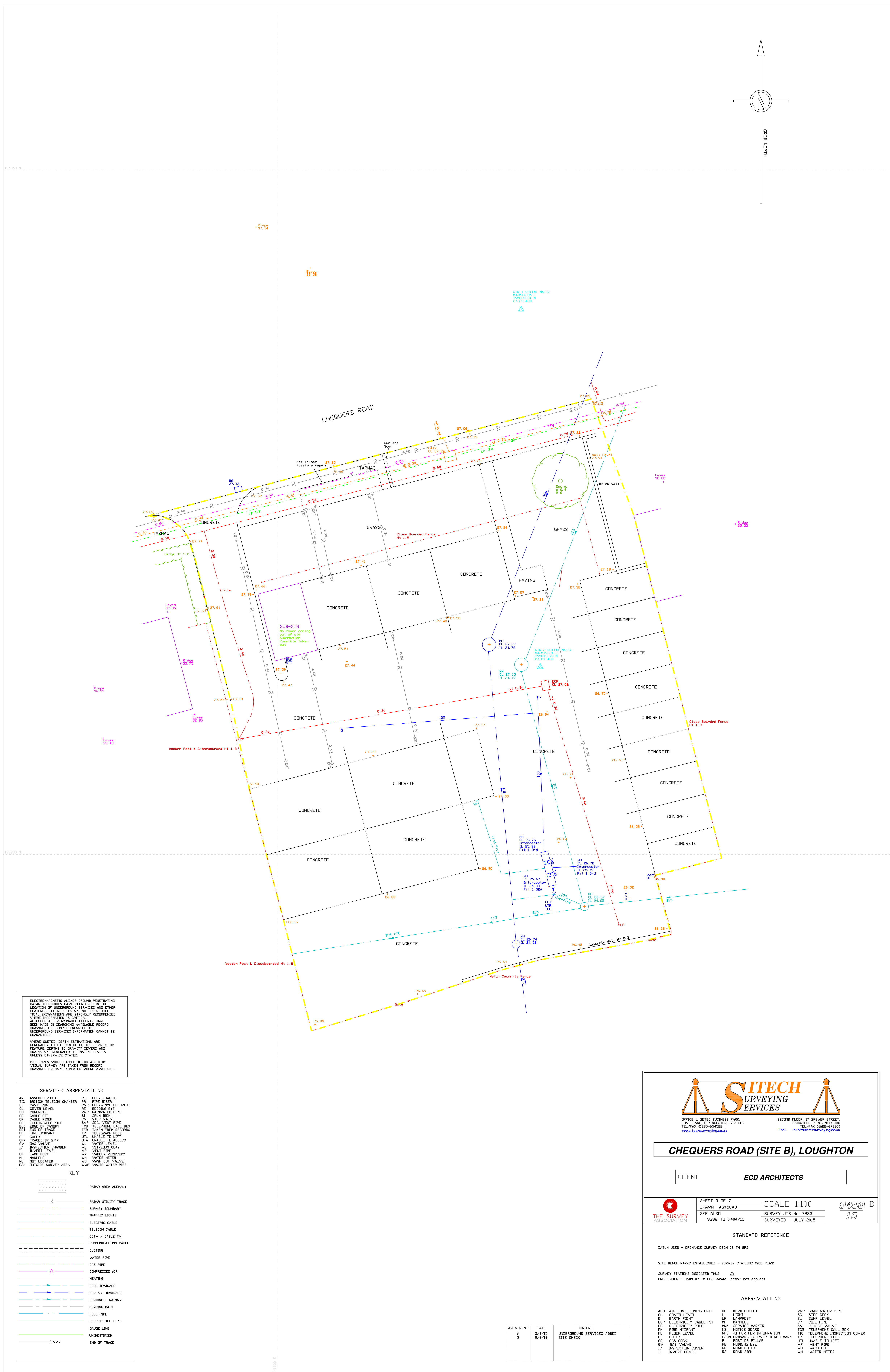
Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.850	2.0
Flush-Flo™	0.257	2.0
Kick-Flo®	0.535	1.6
Mean Flow over Head Range	-	1.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.7	1.200	2.3	3.000	3.6	7.000	5.3
0.200	2.0	1.400	2.5	3.500	3.8	7.500	5.5
0.300	2.0	1.600	2.7	4.000	4.1	8.000	5.7
0.400	1.9	1.800	2.8	4.500	4.3	8.500	5.8
0.500	1.7	2.000	3.0	5.000	4.5	9.000	6.0
0.600	1.7	2.200	3.1	5.500	4.7	9.500	6.1
0.800	1.9	2.400	3.2	6.000	4.9		
1.000	2.2	2.600	3.3	6.500	5.1		

©1982-2018 Innovyze

PLANS



CHEQUERS ROAD

18

75

DRAFT

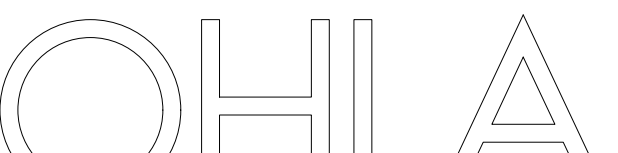
Legend:

- Site boundary, tbc
- Existing level to be retained (33.600)
- Proposed level (33.800)
- Existing tree or tree group to be removed. See tree survey information by MWA.
- Proposed tree. Root barriers as required to prevent root growth within easements
- Proposed informal shrub & herbaceous planting
- Proposed shrub & herbaceous planting to curtilage
- Proposed lawn
- PCC flag paving to undercroft & communal rear garden
- Poured concrete surfacing to be confirmed
- PCC small format block paving, permeable and/or non-permeable to be confirmed
- Resin-bonded aggregate
- Bark chippings
- Accessible parking bay
- Flush kerb
- Upland kerb
- 1.8m high timber & concrete fence with 300mm timber trellis above
- 2.1m high secure steel railing & access gates, details tbc
- 215mm brick retaining plinth wall to retain locally as required. Br match adjacent proposed building
- Fixed timber seating blocks
- Existing lighting column to be removed
- Provision for future electric vehicle charging point, tbc
- Modular timber pergola, steel footings
- Steel & timber bench, details tbc
- Steel & timber table & long benches, details tbc
- Provision for future electric vehicle charging point, tbc
- Full height hit-and-miss brickwork, to be confirmed
- Playable grass & earth landforms, extents shown approximately, details tbc
- Extent of easement

Scale: 0 2 4 6 8 10m

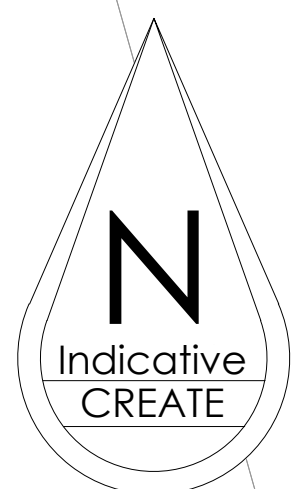
North Arrow: N

REV	DATE	DRAWN	PURPOSE	<div>SHEET NOTES</div> <div>Do not scale this drawing. All dimensions in millimetres. All dimensions indicative only. All dimensions must be checked on site and any discrepancies verified with the landscape architect. Drawing based on survey information by others. Drawing to be read with all other issued information. Refer architect's information for all architectural elements. All footings, foundations & structural elements to engineer's design & specification Refer to engineer's information for all engineering elements Any discrepancies between the drawings and site conditions be brought to the attention of the contract administrator and/or landscape architect for review.</div>	CLIENT	DRAWING TITLE	DATE		
P1	2020-09-18	JH	Prelim issue		Epping Forest District Council	Landscape general arrangement	2020-09-18		
P2	2020-09-21	JH	Revised levels strategy		PROJECT	SCALE	DRAWING NUMBER	REVISION	
P3	2020-09-22	JH	Revised levels, undercroft arrangement & misc minor other		House Building Programme	1:100 @ A1	2118-P-1501	P3	
					ADDRESS	DRAWN	CHECKED	DRAWING ISSUE	
				Chequers Road B, Loughton	JH	HO	STAGE 3 - PLANNING		



Chartered Landscape Architects
6 Marlborough Place
Brighton
BN1 1UB
www.ohla.co.uk
07887 650818

EFDC HOUSE BUILDING PROGRAMME, CHEQUERS ROAD , SITE B



- NOTES:**
1. THE DETAILS DEPICTED ON THIS DRAWING ARE THE COPYRIGHT TO CREATE CONSULTING ENGINEERS LTD AND MAY NOT BE REPRODUCED WITHOUT PERMISSION. THIS DRAWING MUST NOT BE RE-USED, LOANED OR COPIED WITHOUT THE CONSENT. ERRORS, OMISSIONS AND DISCREPANCIES SHOULD BE REPORTED TO THE ORIGINATOR IMMEDIATELY.
 2. DRAWING BASED ON SITECH SURVEY SERVICES TOPOGRAPHICAL SURVEY DRAWING NUMBER 9400B-15 [ORDNANCE SURVEY OSGM 02 IM GPS]
 3. ALL DIMENSIONS TO BE CHECKED BEFORE SITE OR OFF-SITE FABRICATION BY THE CONTRACTOR, HIS SUB-CONTRACTOR OR SUPPLIER.
 4. DO NOT SCALE PLANS - USE FIGURE OR GRID DIMENSIONS WHERE GIVEN, ANY DEVIATION FROM THE DRAWING IS TO BE REPORTED TO THE ORIGINATOR IMMEDIATELY.
 5. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
 6. ALL LEVELS ARE IN METRES ABOVE ORDNANCE SURVEY DATUM.
 7. PROPOSED DRAINAGE RUNS ARE INDICATIVE AND ARE SUBJECT TO DETAILED DESIGN.
 8. REFER TO DRAWINGS 1639-CCE-00-00-DR-D-55-P-0304 & 1639-CCE-00-00-DR-D-55-P-0305 FOR PRIVATE DRAINAGE STANDARD DETAILS.
 9. STRUCTURE, STRUCTURAL MEMBERS & GEOTECHNICAL INVESTIGATIONS ARE TO BE CARRIED OUT & APPROVED BY THE APPPOINTED STRUCTURAL ENGINEER, ANY DEVIATIONS TO THESE ELEMENTS ARE TO BE REPORTED TO THE APPPOINTED CONSULTANT IMMEDIATELY.
 10. NO WORKS TO BE UNDERTAKEN ON EXISTING TOW SEWERS UNTIL APPROVAL AND FORMAL LEGAL AGREEMENT SIGNED.
 11. RELEVANT LICENCES/AGREEMENTS TO BE ACQUIRED BY CONTRACTOR.

CHEQUERS ROAD

Ø100 PERFORATED PIPE TO COLLECT
WATER FROM THE PERMEABLE PAVING (S
DRAWING 1639-CCE-00-00-DR-D-45-P-030
FOR DETAILS) TO BE LAID 450mm BELOW
GROUND & ABOVE THE PROPOSED 1000

Ø100 PERFORATED PIPE TO COLLECT WATER FROM THE PERMEABLE PAVING (SEE DRAWING 1639-CCE-00-00-DR-D-45-P-0303 FOR DETAILS) TO BE LAID 450mm BELOW GROUND & ABOVE THE PROPOSED 100Ø SW PIPE.

Ø100 PERFORATED PIPE TO COLLECT
WATER FROM THE PERMEABLE PAVING (SEE
DRAWING 1639-CCE-00-00-DR-D-45-P-030
FOR DETAILS) TO BE LAID 450mm BELOW
GROUND & ABOVE THE PROPOSED 1000
SW PIPE

PROPOSED RODDING EYE

CL
- PROPOSED MANHOLE TO
BE CONSTRUCTED ONTO
EXISTING FOUL WATER
DRAINAGE RUN

PROPOSED 1200Ø MH
CL 27.38
IL 24.242

— FOUL EASEMENT TO BE 1.0m
FROM ANY FOUNDATION TO
THE EDGE OF THE SEWER

— PROPOSE
TO BE DIV
SHOWN.

SW EASEMENT TO BE MIN. 1.0m -
FROM FOUNDATION TO THE
EDGE OF THE SEWER

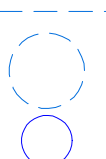















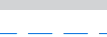
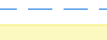


PROPOSED MH
IL 24.69

PROPOSED MANHOLE TO
BE CONSTRUCTED ONTO
EXTENDED SURFACE WATER
DRAINAGE RUN
IL 24.69

6.0m X 4.5m X 0.8m CELLULAR CRATE TO
ACCOMMODATE THE 1 IN 100 +40%CC
STORM EVENT.
MIN CL 26.88
IL 25.50

Ø1200mmCATCHPIT MANHOLE.
HYDROBRAKE MD-SHE-0069-2000-0850-2000
OR SIMILAR TO LIMIT DISCHARGE TO 2 L/S.
PLEASE CONTACT HYDRO INTERNATIONAL
FOR HYDROBRAKE DETAILS.
CL 26.88
IL 25.50

KEY:

- | | |
|---|--|
|  | PROPOSED SURFACE WATER PIPE |
|  | PROPOSED SURFACE WATER MANHOLE |
|  | EXISTING THAMES WATER SURFACE WATER MANHOLE |
|  | EXISTING THAMES WATER SURFACE WATER PIPE |
|  | PROPOSED 975 RAIN WATER PIPE |
|  | PROPOSED B125 RAIN DRAIN ACO DRAIN (OR SIMILAR) |
|  | PROPOSED TANKED PERMEABLE PAVING |
|  | PROPOSED EXTENDED TW 9750 SEWER (DIRECTION TO BE MAINTAINED) |
|  | PROPOSED INTERNAL FLOOR DRAIN WITHIN GROUND FLOOR ROOMS |
|  | PROPOSED FOUL WATER PIPE |
|  | PROPOSED FOUL WATER 460MMØ INSPECTION CHAMBER |
|  | PROPOSED SOIL VENT PIPE |
|  | PROPOSED FOUL WATER MANHOLE |
|  | EXISTING THAMES WATER FOUL PIPE |
|  | PROPOSED DIVERTED FOUL PIPE |
|  | PROPOSED BUILDING BOUNDARY |
|  | PROPOSED AQUACELL CORE GEOCELLULAR CRATE OR SIMILAR |
|  | THAMES WATER EASEMENT |
|  | EXISTING NETWORK TO BE REMOVED |
|  | PROPOSED 100Ø PERFORATED PIPE TO COLLECT WATER FROM PERMEABLE PAVING |

P04	30.10.20	STRUCTURAL / DRAINAGE CLASHING REVISED	EC	BA
P03	29.10.20	INTERNAL GULLIES ADDED	EC	BA
P02	09.10.20	REVISED LANDSCAPE AND ARCHITECT'S GA's	EC	BA
REV	DATE	DESCRIPTION	DRAWN	CHECKED

CLIENTE



Epping Forest District Council
Civic Offices
323 High Street, Epping,
CM16 4BZ



Studio 3 Blue Lion Place
London SE1 4PU
t: 020 7939 7500
f: 020 7939 7501
e: ecda@ecda.co.uk
w: www.ecda.co.uk

PROJECT
EFDC HOUSE BUILDING PROGRAMME
CHEQUERS ROAD LOUGHTON PACKAGE B

DRAWING TITLE
PRELIMINARY DRAINAGE STRATEGY
BUILDOVER OPTION

DATE	DESIGNED	DRAWN	CHECKED	SCALE(S)
29.09.20	EC	KO	BA	1:100 @A1



NORWICH LONDON CHELMSFORD GLASGOW
15 PRINCES STREET,
NORWICH,
NORFOLK, NR3 1AF,
TEL: 01603 877010

DRAWING STATUS

FOR INFORMATION

PROJ	ORIG	ZONE	LEVEL	TYPE	ROLE	CLASS	PRESEN.	NUMBER	STATUS	REVISIO
1639	CCE	00	00	DR	D	55	P	0301	S2	P04

PRELIMINARY DRAINAGE STRATEGY
Scale : 1:100

Create Consulting Engineers accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions are to be worked to. **COPYRIGHT © RESERVED**

PRELIMINARY DRAINAGE STRATEGY

W:\2.0 NEW PROJECTS\2018\P18-1639 - CHEQUERS ROAD LOUGHTON PACKAGE B\3.0 CIVILS\1639-CCE-00-00-DR-D-55-P-0301-S2-P04 - PRELIMINARY DRAINAGE STRATEGY