BROOKBANKS

10682 Banbury Oil Depot

Technical Note 3: Response to LLFA Drainage Comments: 25th February 2022
Date: 22nd April 2022

1 Introduction

1.1 This technical note reviews the comments provided by Oxfordshire County Council dated 16th March 2022 incorporating the comments from the Lead Local Flood Authority (LLFA) dated 25th February 2022. The LLFA comments seek further information and this technical note provides Brookbanks response to those comments. The LLFA comments are provided in **Appendix A**.

1.2 The LLFA commentary is noted in *italics* with Brookbanks response noted in blue.

2 LLFA Drainage Comments

2.1 *On the surface water drainage strategy, the impermeable areas are included however the 10% urban creep is not identified and how much this will be. State the impermeable area and also the impermeable area including 10% urban creep.*

2.2 This is a development located on an already urbanised site with 100% impermeably area, save for the sloping western river bank, which given falls would remain undevelopable. In addition, as this is an apartment block with ancillary ground floor uses, urban creep associated with paving of front gardens and rear gardens and extensions overtime would not be seen to apply here. Therefore, given the site is assessed as generally a 100% impermeable area in any case, urban creep is not considered a requirement. This proposal is outlined within Table 9-1 of the flood risk assessment.

2.3 *The outfall details is not clear, level information not provided and also where this outfall will drain to. Is the proposed development making use of the existing outfall?*

2.4 A copy of Thames Water's sewer records has determined that there is no part of their network within the Site boundary. There is a 300mm surface water sewer that flows along Tramway Road and discharges into the River Cherwell at approximately 87.35mAOD (see **Appendix B**)

2.5 If for some reason the existing surface water sewer can not be utilised, then a new headwall would be built within the development bounds (general location shown on Drawing 10682-DR-02A in the FRA) to allow the site to be discharged into the River Cherwell within the bounds of the development. Basically mimicking what would happen if connected to the Thames Water System.

2.6 *Surface water exceedance plan to be provided to demonstrate how the site currently drains.*

2.7 An exceedance flow route is illustrated on plan 10682-DR-02 A. The drainage strategy plan is located within

Appendix C of this note to illustrate the proposed surface water exceedance flow routes.

2.8 *Phasing plan to be provided to demonstrate the phasing for the future reserved matter. All phases should be able to stand alone and have adequate flood mitigation.*

2.9 Given the size of the development there will be no parcellation phasing and would be considered at this stage to be a singular contained development contract to be constructed as one project.

2.10 *Topography to be provided to show the existing drainage on site and how it currently drains.*

2.11 The site topography is shown on the drainage strategy plan (10682-DR-02 A) located in Appendix A of the flood risk assessment. **Appendix D** of this note also includes the topographic survey which illustrates the existing site levels and drainage features more clearly.

2.12 *Level information to be provided for the outfall and attenuation feature.*

2.13 The existing Thames Water's surface water sewer discharges at 87.35mAOD at manhole 1151 into a final manhole and headwall into the Ricer Cherwell, approximately 210m downstream of the site. Any outfalls into the Cherwell that are located within the site boundaries within the areas that were unreachable for survey are assumed to be at a similar invert level.

2.14 The invert levels of the attenuation feature will be around 87.90mAOD (2.4m below existing levels on site which are generally 90.3m. This allows for a 2m deep attenuation feature located 0.4m below existing ground level. This is above the level of the outfall to the River Cherwell as documented above therefore could be connected by gravity to either the existing system or through a new headwall within the site.

2.15 *Technical approval to be provided to connect the proposed development to the existing watercourse.*

2.16 Detailed and finalised invert levels for the attenuation structures and outfall levels will be provided at the reserved matters stage once all site surveys have been completed.

2.17 *Pro forma included however not filled out.*

2.18 The Pro forma has been attached as **Appendix E** of this note.

2.19 *Ground investigation report to be provided to confirm infiltration is not feasible and to identify potential contamination risks.*

2.20 The planning submission is seeking outline approval and therefore ground investigations have yet to be completed.

2.21 The British Geological Survey illustrates that the bedrock geology across the site is mudstone belonging to the Charmouth Mudstone Formation. Publicly available local borehole data shows that subject to varying thicknesses of made ground, the underlying strata is predominantly clays and therefore not considered appropriate for infiltration. it is reasonable to assume therefore that infiltration is unlikely to be viable.

Appendix A – OCC Comments

OXFORDSHIRE COUNTY COUNCIL'S RESPONSE TO CONSULTATION ON THE FOLLOWING DEVELOPMENT PROPOSAL

District: Cherwell
Application no: 21/01119/OUT
Proposal: Outline planning application for the re-development of the Banbury Oil Depot to include the demolition/removal of buildings and other structures associated with the oil depot use and the erection of up to 143 apartments and up to 166m2 of community and/or retail and/or commercial space (Class Use E and/or F2) with all matters (relating to appearance landscaping, scale and layout) reserved except for access off Tramway Road
Location: Q8 Fuelcare, Tramway Rd, Banbury

Response date: 16th March 2022

This report sets out the officer views of Oxfordshire County Council (OCC) on the above proposal. These are set out by individual service area/technical discipline and include details of any planning conditions or Informatives that should be attached in the event that permission is granted and any obligations to be secured by way of a S106 agreement. Where considered appropriate, an overarching strategic commentary is also included. If the local County Council member has provided comments on the application these are provided as a separate attachment.

Application no: 21/01119/OUT
Location: Q8 Fuelcare, Tramway Rd, Banbury

Lead Local Flood Authority

Recommendation:

Objection

Key issues:

- Clarification required on the 10% urban creep.
- Outfall details not clear.
- Surface water exceedance plan to be provided.
- Phasing plan to be provided.
- Topography drawing to be provided.
- Indicative levels to be provided for the outfall and storage structure.
- Permission to connect proposed development to the existing watercourse.
- Pro forma form not filled out.
- Ground investigation report to be provided.

Detailed comments:

On the surface water drainage strategy the impermeable areas are included however the 10% urban creep is not identified and how much this will be. State the impermeable area and also the impermeable area including 10% urban creep.

The outfall details is not clear, level information not provided and also where this outfall will drain to. Is the proposed development making use of the existing outfall?

Surface water exceedance plan to be provided to demonstrate how the site currently drains.

Phasing plan to be provided to demonstrate the phasing for the future reserved matter. All phases should be able to stand alone and have adequate flood mitigation.

Topography to be provided to show the existing drainage on site and how it currently drains.

Level information to be provided for the outfall and attenuation feature.

Technical approval to be provided to connect the proposed development to the existing watercourse.

Pro forma included however not filled out.
Ground investigation report to be provided to confirm infiltration is not feasible and to identify potential contamination risks.

Officer's Name: Kabier Salam
Officer's Title: LLFA Planning Engineer
Date: 25 February 2022

Appendix B – Thames Water Sewer Records

Asset location search

Property Searches

Brookbanks Consulting Limited
Knights Court
6150Solihull Parkway
BIRMINGHAM
B37 7WY

Search address supplied OX16 5TD

Your reference 10682

Our reference ALS/ALS Standard/2022_4617850

Search date 31 March 2022

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: OX16 5TD

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 searchprovides 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 0800 009 4540, 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

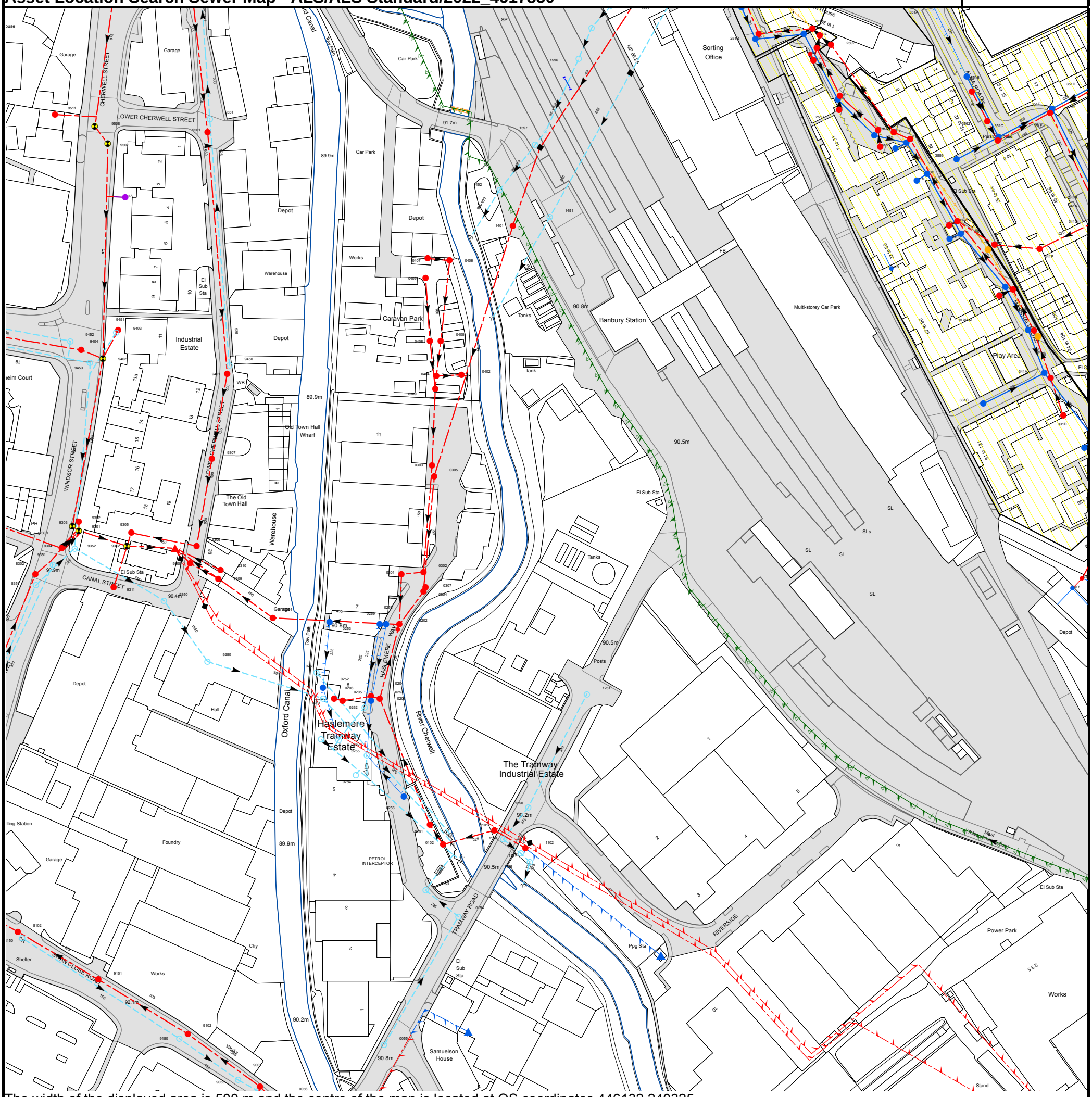
Clean Water queries

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

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4617850



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 446132,240325

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

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
251M	91.63	88.34
351C	93.135	90.382
251C	91.3	89.95
2510	91.4	88.41
251H	91.31	88.65
3562	93.199	90.087
351F	93.415	89.736
251J	91.43	89.16
351E	93.346	90.186
251D	91.3	90.15
251I	91.3	88.49
351D	93.435	90.193
3565	93.708	90.879
351H	93.713	91.557
351B	93.637	90.658
251P	n/a	n/a
252I	n/a	n/a
251K	91.36	88.31
2502	91.36	88.29
251L	91.5	88.26
251E	91.5	90.395
251S	91.54	88.289
351A	94.544	93.199
251O	n/a	n/a
241G	n/a	n/a
251A	91.61	90.56
251B	91.61	89.89
341M	n/a	n/a
341F	92.01	89.78
341H	91.44	89.14
341E	91.41	89.78
3556	92.52	91.098
341G	91.52	88.38
341D	91.45	89.67
341Q	92.65	88.567
3563	93.07	90.027
341J	91.5	89.92
341C	91.38	89.47
341I	91.36	89.26
341B	91.36	89.36
341K	91.37	89.42
341P	92	88.655
341N	92.603	89.421
9511	91.3	89.93
9508	90.99	88.21
9507	91.03	88.2
941A	n/a	n/a
9501	90.48	88.28
9551	90.57	88.2
0405	n/a	n/a
0408	91.83	90.39
0409	91.53	90.82
0406	n/a	n/a
0407	91.42	89.57
1401	90.85	86.53
1451	91.09	88.34
1452	91.09	87.43
151B	91.7	87.8
1597	n/a	n/a
1596	n/a	n/a
251F	91.7	90.535
251R	91.8	88.183
151A	90.2	88.57
251G	92.2	90.8
1552	91.04	88.72
9351	90.91	88.36
9304	90.9	87.49
9452	91.05	89.25
9303	90.89	87.18
9352	90.8	87.95
9301	90.9	87.07
9302	90.95	88.29
9404	91.1	88.28
9453	91.01	88.53
9402	91.19	87.78
9451	91.04	90.1
9403	90.94	89.03
9312	n/a	n/a
9305	90.91	87.76
9308	90.45	86.07
9306	90.46	87.88
9307	90.41	87.92
9401	90.49	88.05
9450	90.4	88.96
0301	90.85	89.05
0256	90.72	89.57
0304	90.75	n/a
0302	90.75	89.23
0307	90.77	86.83
0101	n/a	n/a
0303	90.83	90.03

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0305	90.73	86.33
0309	n/a	n/a
0404	91.7	89.82
0102	90.67	89.08
0402	91.81	89.67
1101	90.23	89.24
1152	90.15	87.49
1151	90.29	87.35
1102	90.61	89.41
1250	90.23	87.7
1251	90.45	88.4
331C	91.3	89.69
341A	91.36	89.23
341L	91.36	89.56
331D	91.33	89.68
331Y	n/a	n/a
331W	n/a	n/a
331A	91.38	89.16
331B	91.33	89.03
9052	91.46	90.45
9053	91.49	90.65
9150	91.82	90.78
9102	91.8	89.66
9101	92.27	89.46
8150	92.76	91.48
8102	92.8	89.31
9250	90.52	87.71
9350	90.61	87.88
9311	90.86	87.86
8351	91.13	89.41
9309	90.34	86.06
8302	91.08	88.46
9310	n/a	n/a
9001	91.45	90.2
0201	90.56	86.16
0263	n/a	n/a
0268	n/a	n/a
0252	90.94	89.46
0251	90.88	87.18
0253	90.75	89.57
0206	90.87	90.19
0250	90.87	89.27
0205	90.87	90.14
0254	90.87	89.53
0262	90.83	89.68
0255	90.73	89.18
0204	90.8	89.73
0257	90.74	89.33
0203	90.75	88.71
0259	90.94	89.76
0055	91.93	91.07
0258	90.93	89.63
0202	90.81	86.25
0154	90.5	89.26
0153	90.51	89.14
1156	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.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

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

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

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

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
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- 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.

- Inlet
- Outfall
- Undefined End

Other Symbols

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

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

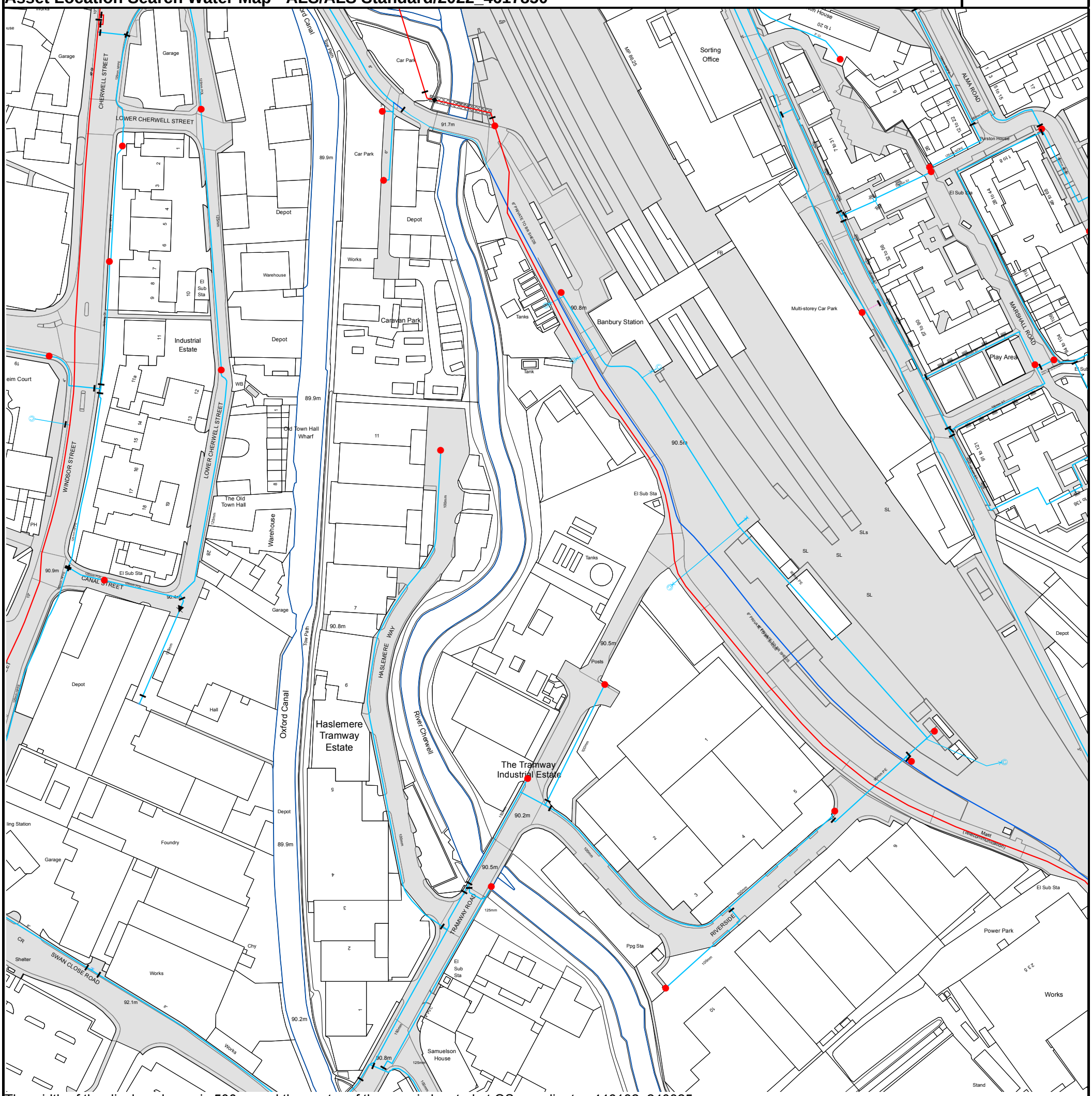
Ducts or Crossings

- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the 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 indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. 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, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2022_4617850



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 446132, 240325.

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.

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

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

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

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

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

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

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

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

PIPE DIAMETER	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

Casement: Ducts may contain high voltage cables. Please check with Thames Water.

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

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

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

Terms and Conditions

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

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

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

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 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 **0800 009 4540** 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.

Appendix C – Drainage Strategy Plan

Original Drawing Size A1

Construction Design and Management (CDM)
Key Residual Risks

Contractors entering the site should gain permission from the relevant land owners and/or principle contractor working on site at the time of entry. Contractors shall be responsible for carrying out their own risk assessments and for liaising with the relevant services companies and authorities. Listed below are Site Specific key risks associated with the project.

1) Overhead and underground services
2) Street Lighting Cables
3) Working adjacent to water courses and flood plain
4) Soft ground conditions
5) Working adjacent to live highways and railway line
6) Unchartered services
7) Existing buildings with potential asbestos hazards

NOTES:

1. Do not scale from this drawing.
2. All dimensions are in metres unless otherwise stated.
3. Brookbanks Consulting Ltd has prepared this drawing for the sole use of the client. The drawing may not be relied upon by any other party without the express agreement of the client and Brookbanks Consulting Ltd. Where any data supplied by the client or from other sources has been used, it has been assumed that the information is correct. No responsibility can be accepted by Brookbanks Consulting Ltd for inaccuracies in the data supplied by any other party. The drawing has been produced based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
4. No part of this drawing may be copied or duplicated without the express permission of Brookbanks Consulting Ltd.

KEY:

- Red Line Boundary
- Catchment Boundary
- Underground Storage
- Proposed Outfall Location
- Exceedance Flow

A	Updated Masterplan	KM	JK	JK	18.01.22
-	First Issue	KM	JK	JK	22.10.21

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Motor Fuel Ltd

Banbury Oil Depot
Banbury

Illustrative Surface Water Drainage Strategy

Status		Status Date
Draft		JAN 2022
Drawn	**Checked**	**Date**
KM	JK	22.12.21
Scale	**Number**	**Rev**
1:500	10682-DR-02	A

0 10 20 30 40 50
METRES

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR COMMENCE SITE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT HIS OWN RISK.

Appendix D – Site Topography Plan

NOTES

GENERAL NOTES :-

ALL LEVELS ARE IN METRES DERIVED FROM GPS TRANSFORMATION.
GRID COORDINATES ARE ORDNANCE SURVEY NATIONAL GRID DERIVED FROM GPS TRANSFORMATION. GPS COORDINATES AND LEVELS SET AT STS1 (NO SCALE FACTOR APPLIED)

THIS DRAWING HAS BEEN PRODUCED WITH A PLOT SCALE ACCURACY OF 1:200

SERVICE COVERS INDICATED WHERE VISIBLE. PIPE INVERTS / DETAILS SURVEYED FROM SURFACE INSPECTION ONLY. GENERALLY DAMAGED COVERS AND COVERS WITHIN HIGHWAYS WILL NOT BE LIFTED

TREE SPECIES SHOULD BE CONFIRMED BY TREE SPECIALIST IF CRITICAL.

OVERHEAD CABLES ARE INDICATED USING REMOTE SURVEY METHODS AND ARE SUBJECT TO SEASONAL VARIATION, AND SHOULD BE TREATED AS APPROXIMATE.

SERVICE COVERS LOCATED UNDER PARKED VEHICLES/MOBILE STRUCTURES MAYBE OMITTED. BURIED SERVICE COVERS WILL NOT BE INDICATED.

TOPOGRAPHICAL SURVEY/UTILITY KEY :-

(ht) – height
● – manhole
⊗ – pipe stop
o/g – above ground
o/r – assumed route
b/d – back drop
bb – bellaho beacon
bd – back drop
bl – bed level
bot – bottom
bos – bottom of shaft
bt – telecom
c/b fence – closeboard fence
cd – cable duct
cdw – cable television
cl – cover level
cl – ceiling level
cr – cable riser
cwa – combined water sewer
d/chan – drainage channel
ejb – electric junction box
ent – entrance
eot – end of trace
ep – electric pole
f – field level
f/bed – flower bed
fh – fire hydrant
fl – floor level
fs – fire switch
fwa – foul water sewer
g – gully
g/run – gully run
h/bm – hobmole
h/chestnut – horse chestnut
h/thorn – hawthorn
ic – inspection cover
il – invert level
ir – inspection
int – interceptor
lp – lamp post
mc – manhole cover
mkr – marker
o/h – over head
ol – off lot
oas – off survey area
OSBM – ordnance survey bench mark
p & r fence – post & rail fence
pd – pd depth
pg – pipe gate
pig – pipe to ground
pfs – pipe to surface
pm – pipe marker
ret wall – retaining wall
rs – road sign
rwp – rain water pipe
s/birch – silver birch
sap – sapling
sap – sapling
sec fence – security fence
sc – service chamber
sl – spot light
sp – soil pipe
sp – spot level
sv – stop valve
svp – soil vent pipe
swa – storm water sewer
TBM – temporary bench mark
tc – tennis court
tl – threshold level
toc – top of cdg
tod – top of drain
tot – top of tank
tp – telecom pole
tr – trial hole
t/b – trench bar
u/s – underside
ul – unable to lift
ulr – unable to rod
ult – unable to trace
utl – unable to trace
vp – vent pipe
w/c – water closed chamber
wl – water level
wm – water meter
wp – waste pipe
wr – water riser

SURVEY CONTROL :-

STATION	EASTINGS	NORTHINGS	LEVEL
ST01	446146.037	240245.324	90.417
ST02	446079.230	240141.608	90.834
ST03	446133.899	240289.541	90.298
ST04	446171.204	240306.199	90.478
ST05	446191.075	240342.141	90.510
ST06	446161.798	240396.354	90.788
ST07	446114.221	240277.556	90.171
ST08	446171.320	240313.696	90.329
ST10	446057.330	240253.543	90.549
ST11	446060.523	240279.270	90.658

SHEET LAYOUT :-

SQ–SHEET 36481/1

SQ–SHEET 36481/2

UTILITY SURVEY KEY :-

HATCHED AREA
BOREHOLE
CPT
TRIAL PIT
HAND PIT
WINDOW SAMPLE

ELECTRIC CABLE
WATER PIPE
FOUL SEWER
STORM SEWER
COMBINED SEWER
GAS PIPE
CABLE TELEVISION
DATA CABLE
TELECOM CABLE
GAS PIPE
UNIDENTIFIED SERVICE
CATV
CCTV
TRAFFIC LIGHT
INFILL FILL
VENT
FUEL PIPE
GAUGE LINES
PIPE
ASSUMED ROUTE
TRACE FROM RECORDS

DISCLAIMER :-

Electromagnetic techniques have been used in the location of underground services. The results are not infallible and trial excavations should be carried out to confirm the presence and precise location of underground services where these are critical. The completeness of the underground services information cannot be guaranteed.

This method of survey does not differentiate between live and dead services, and as such all services should be treated as live. This drawing may not include the location of all services in the area. Further information on underground services should be obtained from the appropriate utility company and used in conjunction with this drawing.

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TSA Standards – "Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate."

UTILITY NOTES

NORTH

0 2 4 8 12 16 20

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Tel: 01926 812811 Fax: 01926 812812
E–Mail: mail@midlandsurvey.co.uk
www.midlandsurvey.co.uk

Client	FRAMPTONS PLANNING
Project	BANBURY OIL DEPOT, BANBURY
Title	TOPOGRAPHICAL SURVEY
Date	AUGUST 2020
Scale	1:200@A0
Dwg No	36481 / 1
Surveyor	S.J.M./D.G
Checked	J.Y

Revisions

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www.midlandsurvey.co.uk

Client FRAMPTONS PLANNING

Project BANBURY OIL DEPOT, BANBURY

Title TOPOGRAPHICAL SURVEY

Date AUGUST 2020

Scale 1:200@A0

Dwg No 36481 / 2

Surveyor S.J.M/D.G

Checked J.Y

Revisions

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THE SURVEY ASSOCIATION

Appendix E – Pro Forma

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

This form identifies the information required by Oxfordshire County Council LLFA to enable technical assessment of flows and volumes determined as part of drainage / SuDS calculations.

*Note : * means delete as appropriate; Numbers in brackets refer to accompanying notes.*

SITE DETAILS

1.1 Planning application reference: 21/01119/OUT

1.2 Site name: Banbury Oil Depot

1.3 Total application site area (1 0.87 ha

1.4 Is the site located in a CDA or LFRZ N

1.5 Is the site located in a SPZ N

VOLUME AND FLOW DESIGN INPUTS

2.1 Site area which is positively drained by SuDS (2 0m^2

2.2 Impermeable area drained pre development (3 ..... 0.87m^2

2.3 Impermeable area drained post development (3 ..... 0.51m^2

2.4 Additional impermeable area N/A

2.5 Predevelopment use (4 Brownfield

2.6 Method of discharge (5 Waterbody

2.7 Infiltration rate (where applicable) N/A

2.8 Influencing factors on infiltration

2.9 Depth to highest known ground water table Not Known

2.10 Coefficient of runoff (Cv) (6 0.75 - summer 0.84 - winter

2.11 Justification for Cv used: National standard

2.12 FEH rainfall data used (Note that FSR is no longer the preferred rainfall calculation method) Y

2.13 Will storage be subject to surcharge by elevated water levels in watercourse/ sewer N 2.14 Invert level at outlet (invert level of final flow control (detailed design poin, nearby Thames Sewer outfalls at circa 87.35)

2.15 Design level used for surcharge water level at point of discharge (detailed design point)

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

CALCULATION OUTPUTS

Sections 3 and 4 refer to site where storage is provided by attenuation and/or partial infiltration. Where all flows are infiltrated to ground omit Sections 3 -5 and complete Section 6.

3.0 Defining rate of runoff from the site

3.2 Max. discharge for 1 in 1 year rainfall 3.79/s/ha, 3.30l/s for the site

3.2 Max. discharge for Qmed rainfall

3.3 Max. discharge for 1 in 30 year rainfall 10.26l/s/ha, 8.93l/s for the site

3.4 Max. discharge for 1 in 100 year rainfall 14.22l/s/ha, 12.37l/s for the site

3.5 Max. discharge for 1 in 100 year plus 40%CC QBAR has been used 3.88l/s for the site

4.0 Attenuation storage to manage peak runoff rates from the site

4.1 Storage - 1 in 1 year 79m^3 (of developed impermeable area)

4.2 Storage - 1in 30 year (7) 175.3m^3

4.3 Storage - 1in 100 year (8) 201.3^3

4.4 Storage - 1in 100 year plus 40%CC (9) 450.9m3

5.0 Controlling volume of runoff from the site

5.1 Pre development runoff volume(10) 727.9m^3 for the site

5.2 Post development runoff volume (unmitigated) N/A

5.3 Volume to be controlled/does not leave site (5.2-5.1). N/A

5.4 Volume control provided by

Interception losses(11)	.....m3
Rain harvesting(12)	.....m3
Infiltration (even at very low rates)	.....m3
Separate area designated as long term storage(13)	.....m3

5.5 Total volume control (sum of inputs for 5.4) 450.9m3

6.0 Site storage volumes (full infiltration only)

6.1 Storage - 1in 30 year (7)

6.2 Storage - 1 in 100 year plus CC (9)

SuDS Flows and Volumes - LLFA Technical Assessment Pro-forma

Notes

1. All area with the proposed application site boundary to be included.
2. The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.
3. Impermeable area should be measured pre and post development. Impermeable surfaces includes, roofs, pavements, driveways and paths where runoff is conveyed to the drainage system.
4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to GF status in all instances. The design statement and drawings explain/ demonstrate how flows will be managed from the site.
5. Runoff may be discharge via one or a number of means.
6. Sewers for Adoption 6th Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the application should justify the selection of Cv.
7. Storage for the 1 in 30 year must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.
8. Runoff generated from rainfall events up to the 1 in 100 year will not be allowed to leave the site in an uncontrolled way. Temporary flooding of specified areas to shallow depths (150-300mm) may be permitted in agreement with the LLFA.
9. Climate change is specified as 40% increase to rainfall intensity, unless otherwise agreed with the LLFA / EA.
10. To be determined using the 100 year return period 6 hour duration rainfall event.
11. Where Source Control is provided Interception losses will occur. An allowance of 5mm rainfall depth can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of subcatchments and source control techniques.
12. Please refer to Rain harvesting BS for guidance on available storage.
13. Flow diverted to Long term storage areas should be infiltrated to the ground, or where this is not possible, discharged to the receiving water at slow flow rates (maximum 2 l/s/ha). LT storage would not be allowed to empty directly back into attenuation storage and would be expected to drain away over 5-10 days. Typically LT storage may be provided on multi-functional open space or sacrificial car parking areas.
14. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Storm sewers are designed for pipe full capacity for 1 in 1 to 1 in 5 year return period. Beyond this, the pipe network will usually be in conditions of surcharge. Where information cannot be gathered from Thames Water, engineering judgement should be used to evaluate potential impact (using sensitivity analysis for example).
15. In controlling the volume of runoff the total volume from mitigation measures should be greater than or equal to the additional volume generated.

Design and Credit to: McCloy Consulting Ltd