



ODYSSEY

DEVELOPING JOURNEYS

**GROVE SERVICE STATION, OLD BATH
ROAD, CHARVIL, TWYFORD**

**FLOOD RISK ASSESSMENT AND
DRAINAGE STRATEGY**



**GROVE SERVICE STATION, OLD BATH ROAD, CHARVIL,
TWYFORD**

**FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY
ON BEHALF OF SPEEDY FUELS LTD**

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**DOCUMENT CONTROL SHEET**

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Project No. 24-210

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1.0 INTRODUCTION

1.1.1 Odyssey has been commissioned by Speedy Fuels Ltd to undertake a Flood Risk Assessment (FRA), incorporating a surface water and foul drainage strategy, to be submitted in association with a planning application for a proposed development at Grove Service Station in Twyford.

1.1.2 This report sets out the main flood risks to the site and those that may arise as a result of the development. It also demonstrates the principles of surface water management at the site.

1.1.3 This report comprises the following elements:

- **Section 2.0** reviews the existing site conditions including the geology, hydrology and existing drainage regime of the site.
- **Section 3.0** summarises relevant planning policy.
- **Section 4.0** provides a description of the development proposals.
- **Section 5.0** assesses the existing flood risk to the site.
- **Section 6.0** considers the Sequential and Exception Tests.
- **Section 7.0** summarises the surface water drainage strategy.
- **Section 8.0** summarises the foul drainage strategy.
- **Section 9.0** summarises and concludes this FRA.



2.0 EXISTING SITE CONDITIONS

2.1 *Location*

2.1.1 The 0.49 hectare (ha) site is located approximately 0.8 kilometres (km) to the north-west of Twyford railway station. The site is bounded by the A3032 Old Bath Road to the north, an access track to the east, trees and a lake to the south, and an existing tyre site to the west. The site currently comprises a service station and vehicle repair yard.

2.1.2 The Ordnance Survey grid reference for the site is 478170E, 176030N and the nearest postcode is RG10 9QJ. The site location plan is presented in **Appendix A**.

2.2 *Topography*

2.2.1 A topographical survey of the site was undertaken by Ground Surveys Ltd in July 2022. The survey shows the site generally falls from east to west, and the levels range from 36.31 metres Above Ordnance Datum (m AOD) to 35.65m AOD. The topographical data is presented in **Appendix B**.

2.3 *Geology and Hydrogeology*

2.3.1 British Geological Survey (BGS) online mapping (accessed February 2025) indicates the bedrock geology of the site comprises Seaford Chalk Formation and Newhaven Chalk Formation. The mapping also shows there are superficial deposits comprising Alluvium (clay, silt, sand and gravel). BGS mapping is presented in **Appendix C**.

2.3.2 Environment Agency (EA) online mapping indicates the nearest 'Main River' is the Old River, located approximately 15m to the east of the site, just beyond the access track.

2.3.3 BGS hydrogeology mapping shows the site lies within the White Chalk Subgroup, described as a "*highly productive aquifer*", and summarised as a "*principal aquifer in UK up to 450m thick and yielding 50 to 100 l/s from large diameter boreholes and up to 300 l/s from adited systems. Hard to very hard, good quality water*".

2.3.4 Groundwater mapping published by the EA indicates the site is located within Source Protection Zone III 'Total Catchment'.

2.3.5 The ground conditions near the site are recorded in BGS borehole scans. Scan SU77NE47 is located approximately 55m to the east of the site, and the ground conditions are recorded as:



- Ground Level (GL) to 0.61m below ground level (bgl) – Topsoil;
- 0.61m bgl to 1.37m bgl – Brown Clay;
- 1.37m bgl to 4.57m bgl – Coarse Gravel.

2.3.6 Scan SU77NE105 is located approximately 60m to the north-west of the site, and the ground conditions are recorded as:

- GL to 1.52m bgl – Topsoil and Clay;
- 1.52m bgl to 3.05m bgl – Gravel;
- 3.05m bgl to 3.35m bgl – Chalk.

2.4 Existing Drainage Regime

2.4.1 According to Thames Water sewer records, there are no public surface water sewers on site, or within the immediate vicinity of the site. The nearest public surface water sewers serve the existing residential area to the west, approximately 0.37km from the site.

2.4.2 The sewer records show there are no public foul sewers on site, or within the immediate vicinity of the site. The nearest public foul infrastructure comprises gravity foul sewers and rising mains which serve the existing residential area to the west of the site. The Thames Water sewer records are presented in **Appendix D**.

2.4.3 The topographical survey indicates the presence of existing inspection covers on site, however it is not clarified whether these form part of any existing drainage provisions.

2.4.4 As the developable area for this site is less than 50ha, the Institute of Hydrology (IoH) Report 124 Flood Estimation for Smaller Catchments (1994) method is suitable to estimate greenfield peak flow rates (50ha is used in the formula and the flow rate is linearly interpolated based on the ratio of the development area). This methodology is approved in the Construction Industry Research and Information Association (CIRIA) C753 The SuDS Manual; the parameters used are presented in **Table 2.1**.

Table 2.1: SuDS Parameters

Parameter	Value	Unit
SAAR	700	Millimetres (mm)
Soil Index	0.400	-
Region	6	-
Urban	0.000	-



2.4.5 **Table 2.2** summarises the greenfield discharge rates for the total proposed impermeable area within the site boundary (0.467ha). Supporting calculations are provided in **Appendix E**.

Table 2.2: Greenfield Surface Water Discharge Rates

Return Period	Existing Greenfield Discharge Rates from Site (litres per second (l/s))
QBAR	1.6
Q1	1.4
Q30	3.6
Q100	5.1

2.4.6 The Modified Rational Method was used to estimate the existing peak brownfield surface water runoff rates, based on the impermeable area of the site, as set out in **Table 2.3**. Rainfall intensities were obtained from the Flood Estimation Handbook (FEH) depth-duration-frequency estimates for a six-hour storm.

Table 2.3: Existing Brownfield Surface Water Discharge Rates

Return Period	Rainfall Intensity (mm per hour)	Existing Brownfield Discharge Rate (l/s)
Q1	21.6	28.0
Q2	28.1	36.5
Q30	55.2	71.7
Q100	69.3	89.9



3.0 PROPOSED DEVELOPMENT

3.1.1 The proposed development comprises a new compressed natural gas (CNG) heavy goods vehicle (HGV) refuelling site with 12 dispensing pumps, providing biogas vehicle fuel, and associated parking and infrastructure.

3.1.2 The proposed site layout is presented in **Appendix A** alongside the site location plan.



4.0 PLANNING POLICY

4.1 *Flood and Water Management Act (2010)*

4.1.1 The Flood and Water Management Act (FWMA) received royal assent on 8th April 2010. It was intended to implement Sir Michael Pitt's recommendations following the widespread summer floods of 2007. Guidance and information notes are published online by the Department for Environment, Food and Rural Affairs (Defra) to address a range of aspects concerning the Act.

4.1.2 The FWMA encourages the use of Sustainable Drainage Systems (SuDS) on development sites by removing the automatic right to connect to sewers.

4.1.3 The development proposals for the site considered by this report should adhere to the FWMA through the provision of SuDS as a fundamental component of the surface water drainage strategy.

4.2 *National Planning Policy Framework (2024)*

4.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies, and how these policies should be applied. Planning Practice Guidance (PPG) is available online and provides additional guidance to the NPPF, as well as providing links to relevant detailed documents. **Section 4.3** provides further detail on the PPG.

4.2.2 Paragraph 170 of the NPPF states "*Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.*"

4.2.3 Paragraph 172 of the NPPF states "*All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property.*"

4.2.4 Paragraph 181 of the NPPF states "*When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:*



- *within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- *the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- *it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- *any residual risk can be safely managed; and*
- *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.”*

4.2.5 In accordance with the NPPF, a site-specific FRA is required for sites within the following categories:

- In Flood Zone 1, all proposals involving:
 - Sites of one hectare or more.
 - Land which has been identified by the EA as having critical drainage problems.
 - Land identified in a strategic flood risk assessment (SFRA) as being at increased flood risk in the future.
 - Land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.
- All proposals for development in Flood Zones 2 and 3.

4.3 Planning Practice Guidance (2022)

4.3.1 The PPG provides additional direction to the NPPF, with details provided in each section of the document on how to conform to the NPPF.

4.3.2 All land in England is classified as falling into one of three main flood zones, with the zones referring to the probability of river or sea flooding, ignoring the existence of defences. The PPG identifies and describes the EA flood zones as:

- Flood Zone 1: Low probability – land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1% Annual Exceedance Probability (AEP)).
- Flood Zone 2: Medium probability – land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river or sea flooding (1% - 0.1% AEP).
- Flood Zone 3: High probability – land assessed as having a 1 in 100 or greater annual probability of river flooding ($\geq 1\%$ AEP), or a 1 in 200 or greater annual probability of sea flooding ($\geq 0.5\%$ AEP).



- Flood Zone 3b: The Functional Floodplain – land where water has to flow or be stored in times of flood (as identified by the LPAs in the SFRA).

4.3.3 The current PPG sets out the following drainage hierarchy that the discharge of surface water runoff should adhere to:

- Into the ground (infiltration).
- To a surface water body.
- To a surface water sewer, highway drain, or another drainage system.
- To a combined sewer.

4.4 *Wokingham Borough Core Strategy Development Plan Document*

4.4.1 Policy CP1 of the Wokingham Borough Core Strategy Development Plan Document states planning permission will be granted for development proposals that “*avoid increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater)*”.

4.5 *Twyford Neighbourhood Plan*

4.5.1 Policy TW10 of the Twyford Neighbourhood Plan addresses water infrastructure and flood risk. The policy states development proposals will be supported, provided it can be demonstrated that, where appropriate:

- i) *“The sewer network can accommodate the additional demand for sewerage disposal either in its existing form or through planned improvements to the system to ensure sufficient wastewater treatment is in place in advance of the first occupation of the development;”*
- ii) *“The Water Efficiency Standard of 110 litres per person per day as set out in the National Technical Standards will be achieved in new development to reduce the volume of wastewater entering the foul sewer;”*
- iii) *“Any development proposed in either flood zone 2 or flood zone 3, on sites over 1ha in flood zone 1, or in a dry island, must be accompanied by a site specific Flood Risk Assessment that demonstrates that proposals will not increase flood risk from fluvial flooding or any other form of flooding and takes opportunities to reduce flood risk where possible in accordance with national requirements; and”*
- iv) *“Managing flood risk must take account of the impacts of climate change over the lifetime of the development and have full regard to the requirements of TW13 on Sustainable Drainage Systems.”*



5.0 SOURCES OF FLOOD RISK

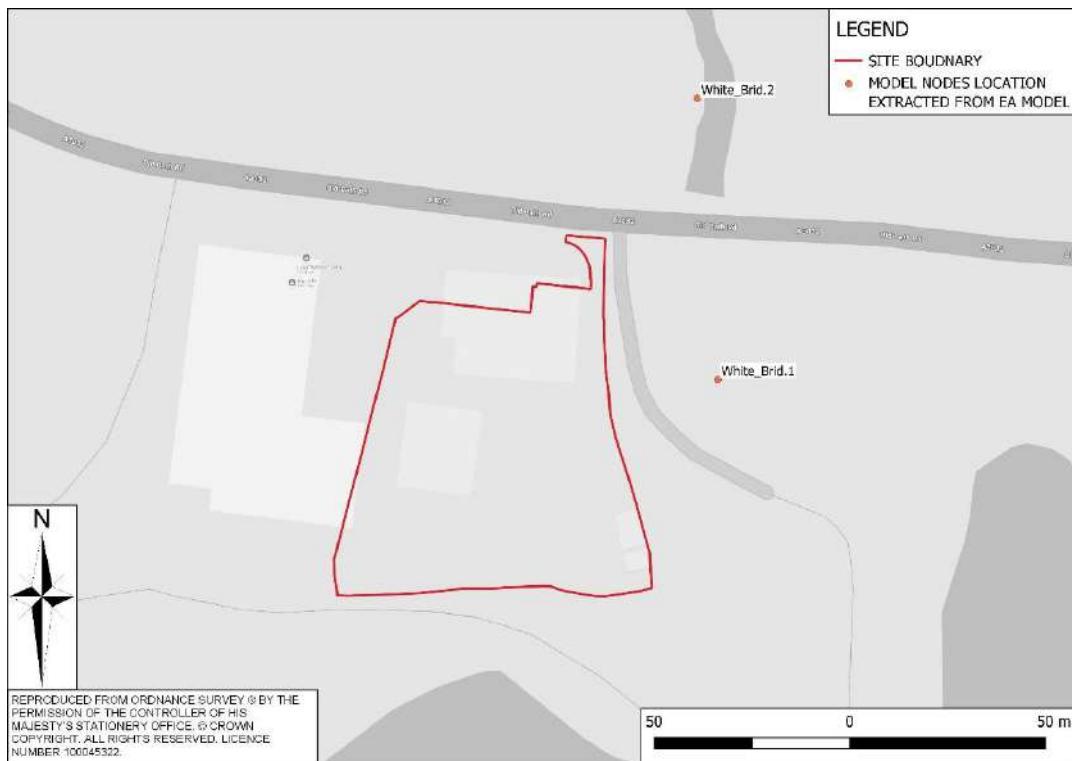
5.1 *Fluvial Flooding*

5.1.1 Fluvial flooding is caused by flows in rivers or streams exceeding the capacity of the river channel and spilling into the floodplain. Fluvial flooding can also occur on designated floodplain land after a period of heavy rainfall.

5.1.2 The EA Flood Map for Planning currently shows the central area of the site is located within Flood Zone 1, and the northern and southern extents are located within Flood Zone 2. There is a small area within the south-easternmost corner located within Flood Zone 3. The EA Flood Map for Planning is presented in **Appendix F**.

5.1.3 EA Product 6 data was obtained for the site, and modelled flood levels were extracted from the nearest nodes, as shown in **Figure 5.1**.

Figure 5.1: Location of 1D nodes



5.1.4 The modelled maximum water levels for a range of return periods are presented in **Table 5.1.**

**Table 5.1: Maximum Water Level (m AOD) at Node Location for Modelled Events**

Node	5% AEP	2% AEP	1% AEP	1% AEP + 20% Climate Change	0.1% AEP
White_Brid.1	35.01	35.11	35.19	35.32	35.74
White_Brid.2	34.99	35.1	35.18	35.29	35.66

5.1.5 The flood levels set out in **Table 5.1** show the existing site levels are set above all maximum water levels except for the 0.1% AEP, whereby a narrow area to the north-west of the site would be flooded. The site would be located outside the flood extents between the 5% AEP and 1% AEP plus 20% climate change scenarios. No land raising would be undertaken within the 0.1% AEP flood extents to the north-west of the site.

5.2 **Surface Water Flooding**

5.2.1 Surface water (pluvial) flooding is caused by rainfall levels exceeding the natural infiltration properties of the surrounding soils. Flooding can occur where there is a lack of a formalised drainage system, or as a result of a poorly designed or maintained sewer system. Flooding can also occur owing to the absence of a natural method of drainage such as watercourses or ditches, or where soil infiltration rates are low. Flooding often results in ponding of water at low points or when surface water flow routes are blocked by an obstruction.

5.2.2 The EA Long Term Flood Risk map shows the site is not currently at risk of surface water flooding, nor is it located within the climate change flood risk extents. A copy of the Long Term Flood Risk map is provided in **Appendix F**.

5.2.3 The risk of flooding from surface water should be considered low.

5.3 **Groundwater Flooding**

5.3.1 Groundwater flooding is caused by the emergence of water originating from sub-surface permeable strata. A groundwater flood event results from a rise in groundwater level sufficient for the water table to intersect the ground surface and inundate low lying land. Periods of prolonged rainfall may also be a cause of groundwater flooding, with aquifers and soils becoming saturated.

5.3.2 The EA Long Term Flood Risk service states “*flooding from groundwater is unlikely in this area.*”

5.3.3 The risk of flooding from groundwater should be considered low.



5.4 *Sewer Flooding*

5.4.1 Flooding can occur owing to the failure of existing foul or surface water drainage infrastructure. If flows within the drainage system exceed the designed capacity or foreign matter causes blockages, overflow to the surface can occur, leading to flooding.

5.4.2 The Wokingham Borough Council Level 1 SFRA states there have been 108 sewer flooding incidents recorded by Thames Water between January 2000 and May 2022 within the RG10 9 postcode area. The SFRA does not provide site-specific data within the wider postcode area.

5.4.3 Owing to the absence of public surface water and foul infrastructure within the immediate vicinity of the site, the risk of sewer flooding should be considered low.

5.5 *Flooding from Artificial Sources*

5.5.1 Failure and overtopping of reservoirs and navigable water bodies, and failure of water mains, constitute the primary means of flooding from artificial sources.

5.5.2 The EA Long Term Flood Risk service states “*flooding from reservoirs is unlikely in this area.*”

5.5.3 The risk of flooding from artificial sources should be considered low.



6.0 SURFACE WATER DRAINAGE STRATEGY

6.1 *Surface Water Drainage Strategy Requirements*

6.1.1 Any surface water drainage strategy must demonstrate the proposed development would be drained in a sustainable manner, commensurate with local and national policy. The NPPF requires that flood risk to land and property is not increased as a result of new development.

6.2 *Proposed Surface Water Drainage Strategy*

6.2.1 The proposed surface water drainage strategy described below is outlined in **Drawing 24-210-011**.

6.2.2 As set out in **Section 4.3**, the drainage hierarchy states the most-preferred method of surface water discharge is "*infiltration into the ground*". Owing to the typically impermeable potential clay superficial deposits, as well as the nature of the proposed site use, infiltration is deemed to be unfeasible.

6.2.3 The second most-preferred method of surface water discharge is "*to a surface water body*". The nearest watercourse to the site is the Old River, and it is therefore proposed that all surface water generated by the proposed development would be treated and attenuated on site using lined cellular storage, prior to discharging to the river.

6.2.4 The proposed levels have been designed so that all surface water runoff falls back towards the centre of the forecourt and away from the site boundary. An ACO/channel drain is proposed around the full perimeter of the tank storage area to collect the surface water runoff as well as any localised spills from the loading zones. The surface water is then conveyed to a petrol interceptor to be treated before the final discharge point, connecting to the river.

6.2.5 The specified petrol interceptor is a Klärgester AquaOil Full Retention Separator NSFA080. A full retention system has been proposed instead of a bypass interceptor as the system is located within a fuel depot which is a classed as a high-risk area. The full retention system offers a more reliable separating treatment as it treats the full flow of water to remove environmental contaminants such as oil, chemicals and solids. The interceptor also has capacity for 8000 Litres of silt and 800 Litres of oil, helping to deal with spills and ensuring all water is treated.

6.2.6 In the event of larger spills, additional secondary containment will be provided, as outlined below. For these cases the petrol interceptor will have an automatic oil detection cut off. If the system detects a large spillage or an increased rate passing through the system an isolation valve will



automatically cut off the system and ensure no oil/water will pass through, instead the oil will be held and dealt with on site. The cleanup strategy will be included within the Oil Spill Response Plan.

6.2.7 An oil spill response plan outlines the procedures in place to deal with any possible oil spills in order to minimise their effect on the environment. This is done by an extensive risk assessment, reviewing/testing the strategies in place to cleanup any spills and the roles and responsibilities for the operators.

6.2.8 The total capacity within the oil tanks is 837,000 Litres. All tanks have a double bunded surface, therefore there is an outer layer that surrounds the inner tank offering two forms of protection. The outer skin collects any material lost from the inner container. The tanks will also be fitted with level detection monitors which will detect and issues with the tank and alert the operator before a larger spill could occur.

6.2.9 As well as this, secondary containment has also been provided through the reinforced concrete wall/bund. This is proposed around the full perimeter of the petrol forecourt, with a minimum upstand of 350mm. A ramp has been introduced on either side of the existing building to ensure there are no low points which could lead to any oil spills flowing out of the site. Details of the containment bund are shown on drawing **5104-24 (SK-10) – “Typical Retaining Wall Detail”**.

6.2.10 A spill assessment has been carried out by a third party, the results can be found on drawing number **5104-24-75 “Proposed Site Plan (Tank Farm Layouts/Volumes)”**.

6.2.11 The Health and Safety Executive COMAH guidance for secondary containment specifies the requirements for bunds - “Bunds should be sized to hold 110% of the maximum capacity of the largest tank or drum” or 25% of the aggregate capacity of tanks. Based on the 837,000 Litres stored on site, this requires a minimum capacity of either 143,000 Litres (110%) or 209,250 Litres (25%).

6.2.12 The blue hatch shows the area used to contain any potential spills. This is all within the service yard and provides capacity for 435,000 Litres, equal to 52% of the total capacity of the tanks. The concrete bund has also been designed to have 350mm freeboard to reduce any risk of spills overtopping the wall.

6.2.13 A combination of the above provides three layers of protection (Double bunded tanks, Secondary containment concrete bund, Petrol interceptor) from any potential spills on site.

6.2.14 The cellular storage would be designed to attenuate flows for all rainfall events up to the 1 in 100 year plus 40% climate change storm in line with the latest EA guidance.



6.2.15 The discharge rate from the site would be restricted to the Qbar greenfield rate for all events up to the 1 in 100 year plus 40% climate change storm, which would provide significant betterment compared to the existing scenario, as set out in **Table 6.1**.

Table 6.1: Existing and Proposed Surface Water Discharge Rates

Return Period	Existing Brownfield Discharge Rate (l/s)	Proposed Discharge Rate (l/s)
Q2	36.5	1.6
Q30	71.7	1.6
Q100	89.9	1.6
Q100 + 40% Climate Change	-	1.6

6.2.16 The supporting calculations are presented in **Appendix E**.

6.3 SuDS and Oil Interceptor Maintenance Requirements

6.3.1 Maintenance of the drainage system and SuDS features would be carried out in accordance with the manufacturer guidance and through an approved maintenance and management plan to minimise the residual risk of drainage system blockage.

6.3.2 Maintenance would be the responsibility of the operator to assign, however the “*operation and maintenance requirements for attenuation storage tanks*” table has been extracted from The SuDS Manual and presented in **Appendix G**.

6.3.3 Maintenance of the oil interceptor would be carried out in accordance with the manufacturer’s guidance however, the interceptor should be checked regularly, at least every six months in line with British Standards. The check should look for the amount of oil and silt build up, and that all the parts are working. The monitoring system will also alarm the operator if the oil/silt levels are high or if any parts of the interceptor are broken.

6.3.4 Once an inspection finds the oil interceptor needs emptying, an experienced waste removal company with a waste carriers licence will remove the contaminants from site and dispose of them at a permitted facility that can accept this type of waste.



7.0 FOUL DRAINAGE STRATEGY

7.1.1 There are no public foul sewers within the immediate vicinity of the site, and therefore connecting to a public network would not be feasible. It is therefore proposed that foul flows would be conveyed by gravity to an onsite packaged sewage treatment plant, and treated effluent would then be discharged to the river to the north-east of the site.

7.1.2 The sewage treatment plant and discharge would be designed in accordance with the EA requirements. The treatment plant would be located in an area suitable for vehicle access for safe maintenance. The foul drainage strategy is shown in **Drawing 24-210-011**.



8.0 SUMMARY AND CONCLUSIONS

8.1.1 Odyssey has been commissioned by Speedy Fuels Ltd to undertake an FRA, incorporating a surface water and foul drainage strategy, to be submitted in association with a planning application for a proposed development at Grove Service Station in Twyford.

8.1.2 The EA Flood Map for Planning currently shows the central area of the site is located within Flood Zone 1, and the northern and southern extents are located within Flood Zone 2. There is a small area within the south-easternmost corner located within Flood Zone 3. However, a review of the EA Product 6 data shows the site would be located outside the flood extents between the 5% AEP and 1% AEP plus 20% climate change scenarios. No land raising would be undertaken within the 0.1% AEP flood extents to the north-west of the site.

8.1.3 It is that surface water generated by the proposed development would be attenuated on site using lined cellular storage, prior to discharging to the river. The cellular storage would be designed to attenuate flows for all rainfall events up to the 1 in 100 year plus 40% climate change storm in line with the latest EA guidance.

8.1.4 The discharge rate from the site would be restricted to the Qbar greenfield rate for all events up to the 1 in 100 year plus 40% climate change storm, which would provide significant betterment compared to the existing scenario.

8.1.5 It is proposed that foul flows would be conveyed by gravity to an onsite packaged sewage treatment plant, and treated effluent would then be discharged to the river to the north-east of the site.

8.1.6 This FRA demonstrates the proposed development could be drained in a sustainable manner, commensurate with local and national policy.

DRAWINGS



APPENDIX A


Site Location Plan and Proposed Site Layout

Prince Bros, Grove Service Station, Old Bath Road, Charvil, Reading, RG10
9QJ



APPENDIX B

Topographical Survey



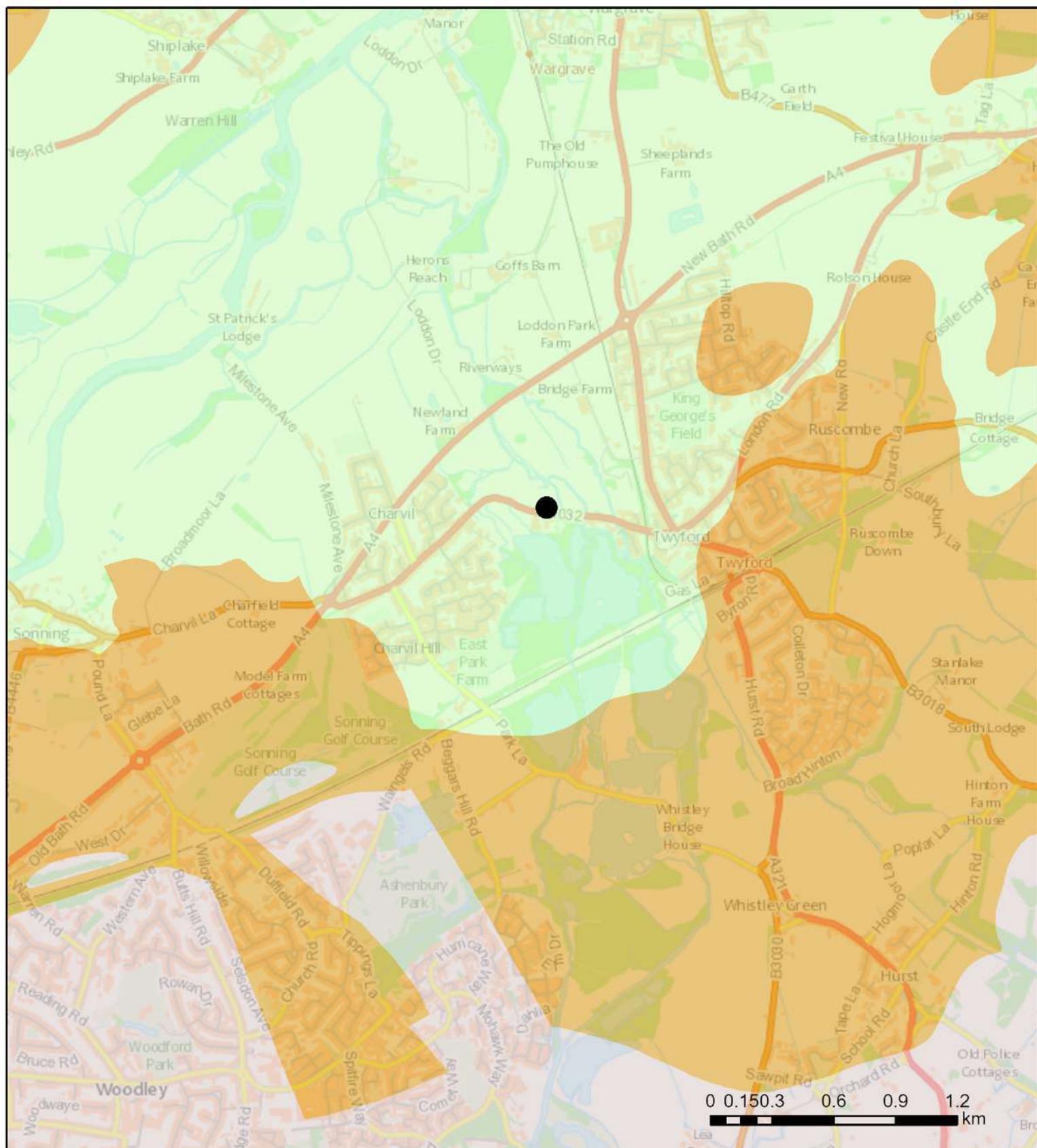
APPENDIX C

British Geological Survey Data

Bedrock Geology



British
Geological
Survey



Contains OS data © Crown Copyright and database right 2020

GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

Map Key

Bedrock geology 1:50,000 scale

- LONDON CLAY FORMATION - CLAY, SILT AND SAND
- SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK
- LAMBETH GROUP - CLAY, SILT AND SAND

Selection Results

SU 77 NE 147

7824 7601

For Survey use only

N. 10.

268/509

Licence No. 1/29/22

6643 XXX SW
OXON. LVII S.W.

State whether owner, tenant, builder,
contractor, consultant, etc.: **TE/ALT.**

RECORD OF WELL (SHAFT OR BORE)

At NEW SITE, OLD ZATH RD.

700 YDS. N.N.W. ST. MARY'S CHURCH.

Town or Village TUNSTED

County BERKSHIRE

Six-inch quarter sheet OXON. LVII S.W.

For PREMIX CONCRETE LTD.

State whether owner, tenant, builder,
contractor, consultant, etc.: **TE/ALT.**

Address (if different from above) 101 ELM HILL, ETON, OXFORD.

Level of ground surface
above sea-level (O.D.) c. 162 ft. If well-top is not at ground level, state how far above level, state how far below 1 ft.

SHAFT 15 ft.; diameter 12 ft.; Full details of headings (dimensions and directions)

BORE 15 ft.; diameter of bore: at top 12 ins.; at bottom 15 ins.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

10" LINING TILE LOWER 10FT SLOTTED.

Water struck at depths of 15 ft. below well-top.

Rest level of water 15 ft. below well-top. Suction at 12 ft. Yield on 2 hours' test
pumping at 2000 galls. per Hour with depression to 5 ft. below well-top.

Recovery to rest-level in 1 mins. Capacity of pump 3000 g.p.h. Date of measurements 17-1-61

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT

Make and/or type 1 Motive power 1

Capacity 1 gallons per hour. Suction at 1 ft.

Amount pumped 1000 galls. per day. Estimated consumption 1 galls. per week.

Well made by GUTHRIE AGRICULTURAL CO. LTD. Date of well 17-1-61

Information from

ADDITIONAL NOTES

ANALYSIS (please attach copy if available)

LICENCE NO. 29/22 Year REF. W.7/51B.

G.A. SECTION NO. 867.

drilled by O on 6' Bore. 30 SW/E. 28-3-61.

LOG OF STRATA OVERLEAF.

Geological Survey and Museum, South Kensington, London, S.W.7.	Section No.	Date Received	1" O.S. Map No.	Site marked on 1" Map	(use symbols) on 6' Bore
		16-2-61	0	0	

SU 77 NE 147

use only)
SICAL
ACATION

NATURE OF STRATA

If measurements start below
ground surface, state how far ..

THICKNESS

DEPTH

Feet Inches

Feet Inches

.. ..

.. ..

2 0 2 3

2 3 4 6

11 0 15 2

DRAFT { TOP 200
BROWN CLAY
CONCRETE 300ft

By
" "

EXACT SITE
OF WELL

RECORD OF WELL (SHAFT OR BORE)

At NEW SITE - OLD BATH RD.

700 YDS. N.NW. ST MARY'S CHURCH.

Town or Village TWYFORD.

SV 7824 7603 Licence No. 129/22

County BERKS

For PREMIX CONCRETE LTD. Six-inch quarter sheet BERKS XXX SW OXON LVII SN.

State whether owner, tenant, builder,

contractor, consultant, etc.:— TENANT.

Address (if different from above). LOWER WOOTTON BOARS HILL, OXFORD.

Level of ground surface If well-top is not at ground level, state how far above sea-level (O.D.) C. 122 ft. below .. ft.

SHAFT. ft.; diameter ft.; Full details of headings (dimensions and directions)

BORE. 15 ft.; diameter of bore: at top 10 ins.; at bottom 10 ins.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

10" LINING TUBE LOWER 10FT SLOTTED.

Water struck at depths of ft. below well-top.

TEST CONDITIONS Rest level of water 3'-3" above well-top. Suction at 12 ft. Yield on 2 hours' test pumping at 2000 gallons per hour with depression to 5'-1" ft. below well-top.

Recovery to rest-level in mins. Capacity of pump 3000 g.p.h. Date of measurements 19-1-61

NORMAL CONDITIONS DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type / Motive power /

Capacity / gallons per hour. Suction at / ft.

Amount pumped 8000 gallons per day. Estimated consumption / gallons per week.

Well made by GUTHRIE ALLSEYBROOK & CO. LTD Date of well JAN 1961

Information from

ADDITIONAL NOTES

ANALYSIS (please attach copy if available)

LICENCE NO 29/22 YOUR REF W.T / SMB.

G.A. SECTION NO 867.

Site by 0 on 6' Bats. 30 SW/E. 28. 1. 61.

LOG OF STRATA OVERLEAF.

Geological Survey and Museum, South Kensington, London, S.W.7.	Section 6.	Date Received	1:10,560 Map Site marked (use symbols) No. on "B" Map on 6' Map
		16.2.61	0 0

Premie Dr. Twyford. This bore is housed in a small pumphouse beside the gravel conveyor. The equipment is still in position. No aperture for L.W.L.

12/12/78

For your information
please 268/Jan
509
b1/1

5477/13

MINISTRY OF HOUSING AND LOCAL GOVERNMENT

SECTION 1A OF THE WATER ACT, 1945

LICENCE NO. 29/22

Thames Valley Area (Conservation of Water) Order, 1951

The Minister of Housing and Local Government, in exercise of his powers under section 14(6) of the Water Act, 1945, hereby licenses Premix Concrete, Limited to construct a borehole for the purpose of abstracting underground water at Old Bath Road, Twyford, Berkshire the situation of which is more particularly shown on the map annexed hereto and thereon marked 6, subject to the following conditions:-

1. The depth of the borehole shall not exceed 15 feet.
2. The capacity of the pump to be installed for abstracting water from the borehole shall not exceed 1,000 gallons per hour.
3. Except with the consent of the Minister given after like proceedings with respect to the publication and service of notices, and the making and hearing of objections, as apply to applications for licences under section 14(6) of the Water Act, 1945, not more than 8,000 gallons of water shall be abstracted from the borehole in any one day of 24 hours.
4. As soon as practicable a satisfactory meter shall be installed to measure the abstraction from the borehole, and readings of the said meter shall be taken and recorded to show the quantity of water abstracted in any one day of 24 hours.
5. Any officer authorised for the purpose of section 14(12)(a) of the Water Act, 1945, shall on request be permitted to inspect or transcribe records required to be kept by the last preceding condition and relating to any period not earlier than 5 years before the request is made.
6. If the borehole is not sunk within one year from the date of this licence, the licence shall cease to have effect.

GIVEN under the Official Seal of the

Minister of Housing and Local Government

this sixteenth day of January
nineteen hundred and sixty one.

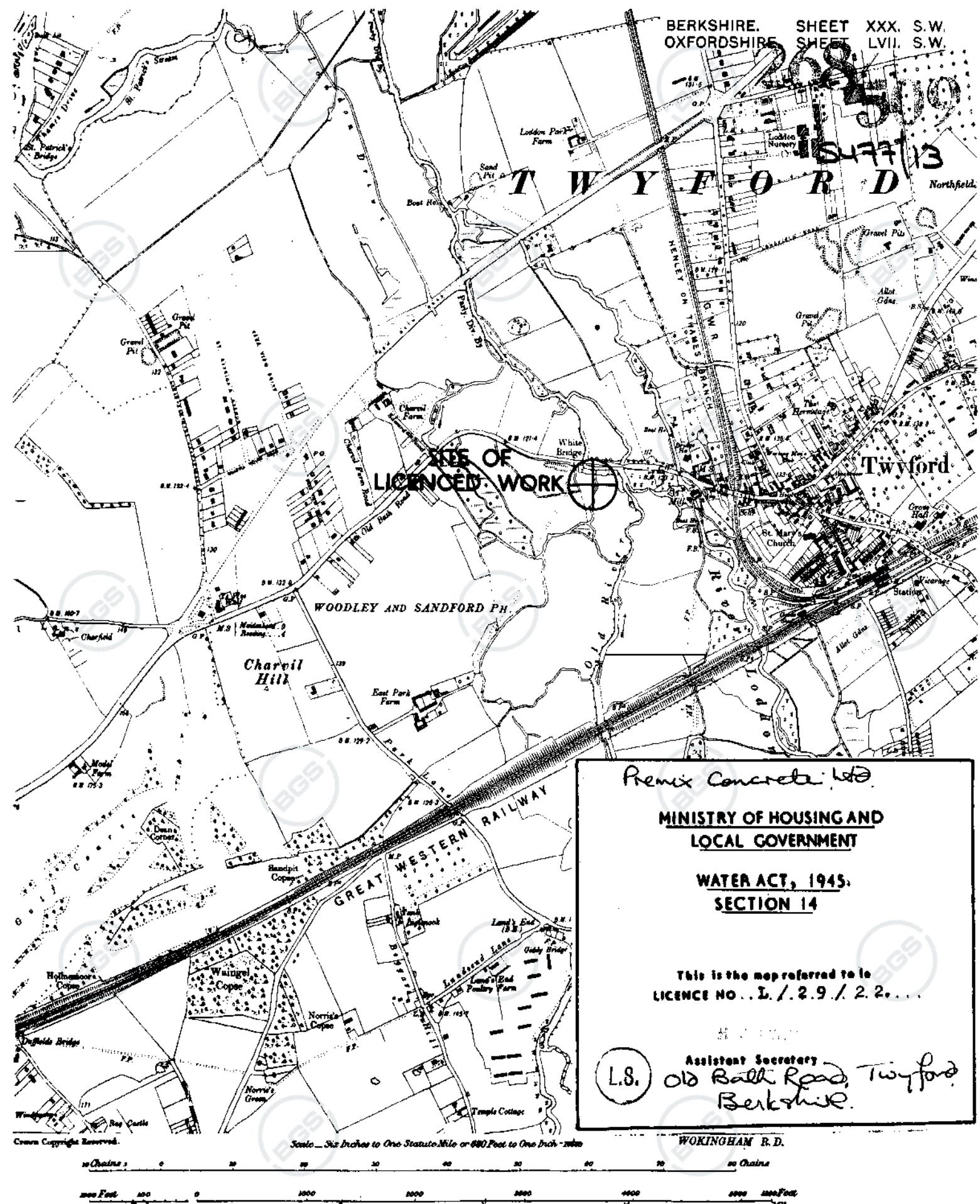
L.S.

R. J. EVAN

Assistant Secretary

Ministry of Housing and Local Government.

N.B. UNDER THE WATER ACT, 1945, IT IS AN OFFENCE PUNISHABLE BY FINE TO
CONTRAVENE ANY CONDITION ATTACHED TO THIS LICENCE.



Premix Concrete Ltd

MINISTRY OF HOUSING AND
LOCAL GOVERNMENT

WATER ACT, 1945.
SECTION 14

This is the map referred to in
LICENCE NO...L./.2.9./.2.2....

Assistant Secretary
Old Bath Road, Twyford,
Berkshire.

WOKINGHAM R.D.



A member of the Gold Fields Group

 Sheet No 3
Date 21/2/74
Location LODDON PARK FARM

 Amey Roadstone Corporation Limited
Group Technical Centre Chipping Sodbury Wootton St. Ives

Borehole log sheet

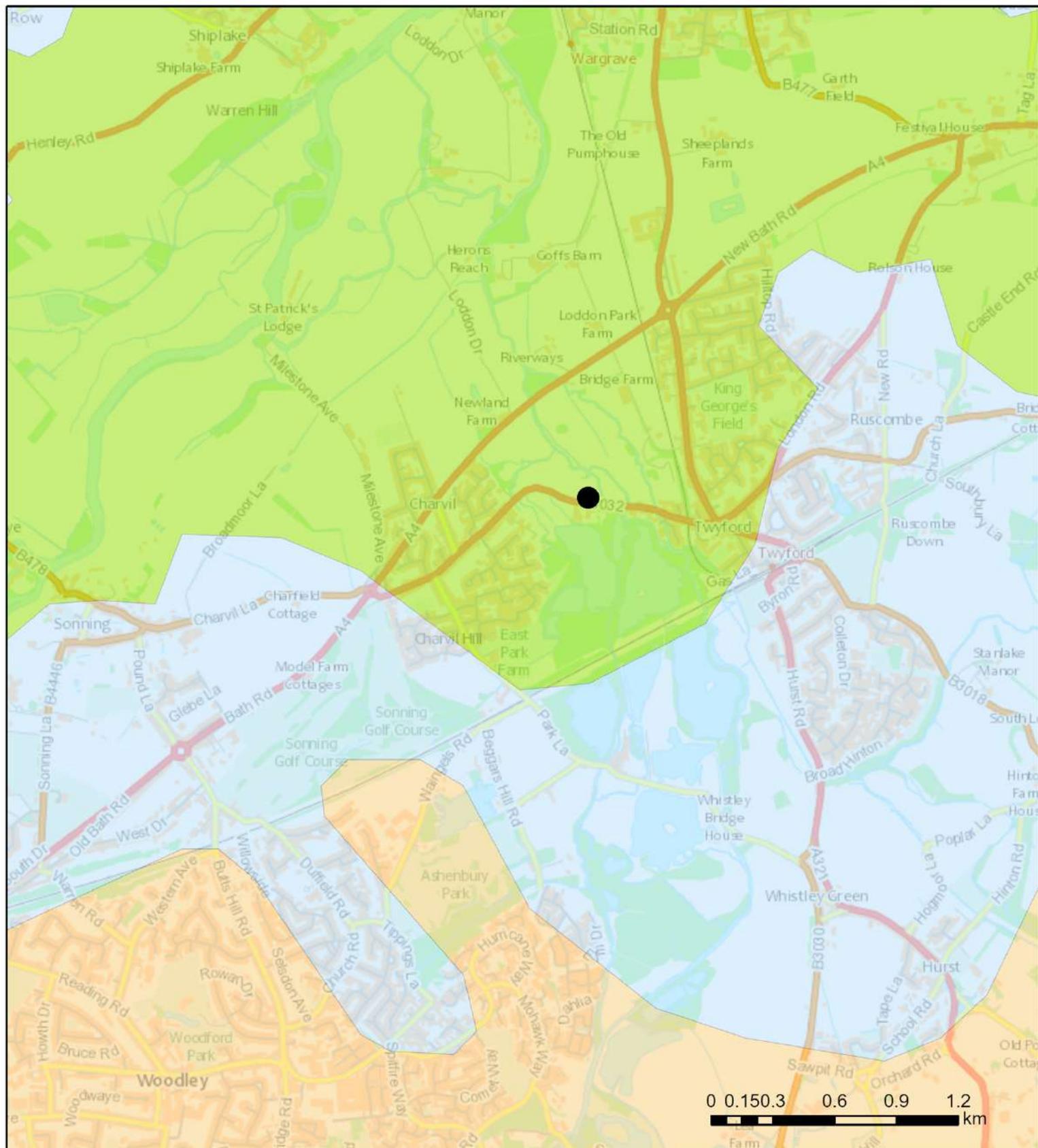
FORM P.747 A.R.C. PRINTING, FR

Bore hole	Depth	Thickness	Description	Water Table	Sample Depth
SUFFN 102					
7828	12' 0"-4' 6"	4' 6"	<u>Topsoil</u> <u>Clay</u> , sandy, loose rust brown becoming sandy and firm		
7713	4' 6"-9' 6"	5'	<u>Clay</u> pale brown with white chalk pebbles and occasional loose flints Sandy clay at 7', chalk pebbles at 8'	NO WATER	NO SAMPLE
	9' 6"-11'	1' 6"+	<u>Clay</u> and <u>Chalk</u>		
SUFFN 103	13' 0"-4'	4'	<u>Topsoil</u> <u>Clay</u> , dark brown, loose sandy becoming firm and sandy clay, medium brown in colour		
7811	4"-7'	3'	<u>Clay</u> pale cream brown sandy and loose with occasional flints and chalk pieces	NO	7"-11'
7712	7"-11'	4'	<u>Sand</u> very fine, clayey with occasional flints some upto 5"		
	11"-12'	1' +	<u>Chalk</u>		
SUFFN 104					
7798	14' 0"-6'	6'	<u>Topsoil</u> <u>Clay</u> loose firm, slightly sandy, rust brown with occasional flints		
7706	6"-9'	3'	<u>Sand</u> very fine, clayey almost a <u>Clay</u>	NO	NO SAMPLE
	9"-10'	1' +	<u>Clay</u> and <u>Chalk</u> white, soft		
SUFFN 105	15' 0"-5'	5'	<u>Topsoil</u> <u>Clay</u> sandy brown, occasional flints, loose increase of flints after 4' 6"		
7810	5"-10'	5'	<u>Gravel</u> , sandy, 40% Gravel. Mostly $\frac{1}{4}$ " down	NO	5"-9'
7614	10"-11'	1' +	<u>Chalk</u>	WATER	
SUFFN 106					
7808	16' 0"-5'	5'	<u>Topsoil</u> <u>Clay</u> , cream brown with flints and chalk pieces	NO	NO SAMPLE
7684	5"-5' 6"	6" +	loose large flints <u>Chalk</u>		
SUFFN 107					
7795	17' 0"-2' 6"	2' 6"	<u>Topsoil</u> <u>Clay</u> , brown, sandy		
7695	2' 6"-3' 6"	1' +	<u>Clay</u> and <u>Gravel</u> , loose	NO	NO SAMPLE
	3' 6"-5'	1' 6"	<u>Clay</u> cream brown, and flints and chalk fragments		
	5"-7' 6"	2' 6"	Sand very fine, clayey occasional flints	NO	

Hydrogeology



British
Geological
Survey



Contains OS data © Crown Copyright and database right 2020

GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

Map Key

Hydrogeology 1:625,000 scale

Aquifers with significant intergranular flow

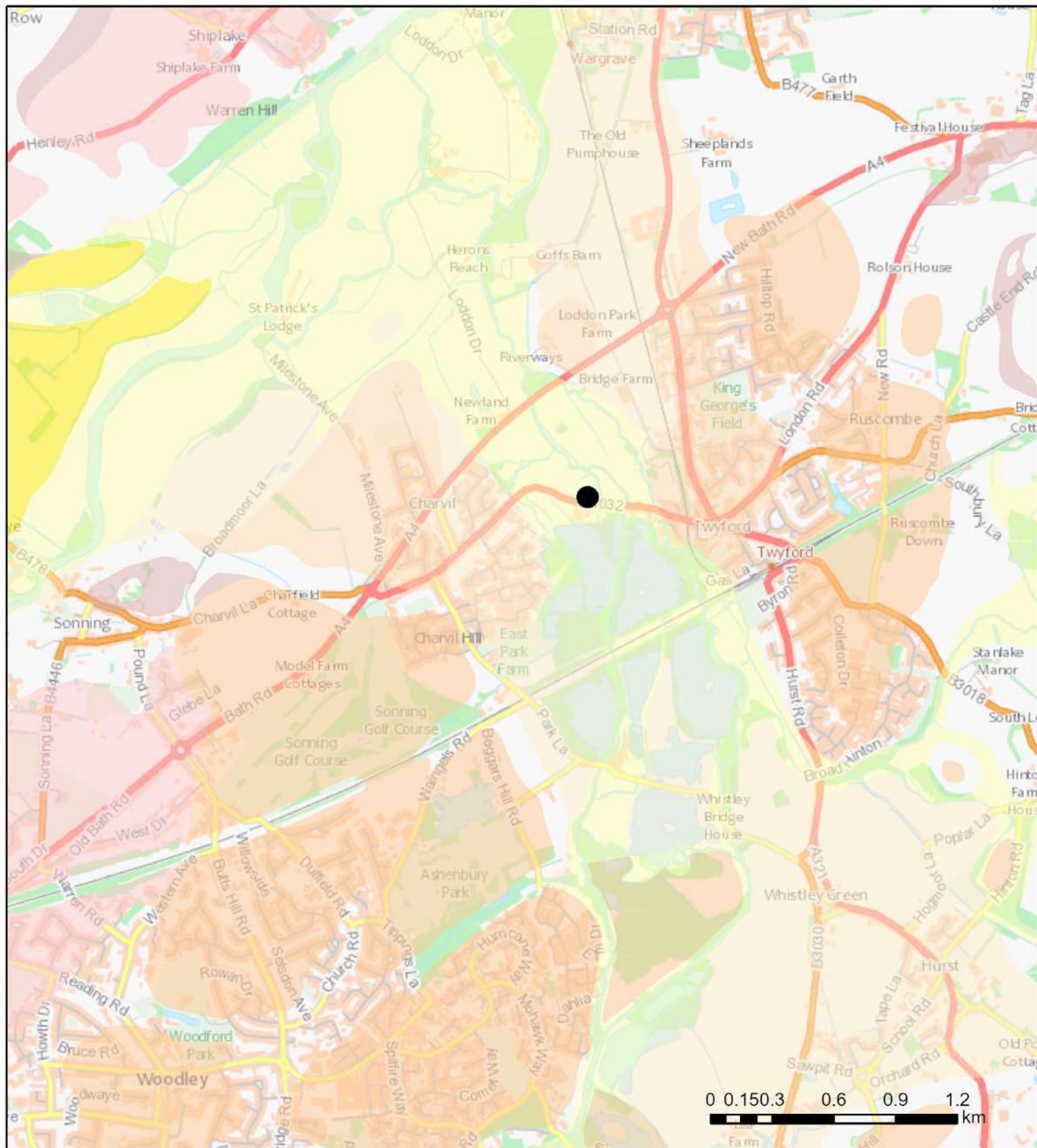
- Highly productive aquifer
- Moderately productive aquifer
- Low productivity aquifer

Aquifers in which flow is virtually all through fractures and other discontinuities

- Highly productive aquifer
- Moderately productive aquifer
- Low productivity aquifer
- Rocks with essentially no groundwater

Selection Results

Superficial Deposits



Map Key

Superficial deposits 1:50,000 scale

<u>KEMPTON PARK GRAVEL MEMBER - SAND AND GRAVEL</u>
<u>BOYN HILL GRAVEL MEMBER - SAND AND GRAVEL</u>
<u>ALLUVIUM - CLAY, SILT, SAND AND GRAVEL</u>
<u>TAPLOW GRAVEL MEMBER - SAND AND GRAVEL</u>
<u>BLACK PARK GRAVEL MEMBER - SAND AND GRAVEL</u>
<u>HEAD - CLAY, SILT, SAND AND GRAVEL</u>
<u>HEAD - GRAVEL, SAND, SILT AND CLAY</u>
<u>RIVER TERRACE DEPOSITS, 1 TO 2 - SAND AND GRAVEL</u>
<u>RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL</u>
<u>RIVER TERRACE DEPOSITS, 3 - SAND AND GRAVEL</u>
<u>RIVER TERRACE DEPOSITS, 4 - SAND AND GRAVEL</u>
<u>RIVER TERRACE DEPOSITS, 5 - SAND AND GRAVEL</u>
<u>WINTER HILL GRAVEL - SAND AND GRAVEL</u>
<u>LYNCH HILL GRAVEL MEMBER - SAND AND GRAVEL</u>
<u>ANGLEY SILT MEMBER - CLAY AND SILT</u>

Selection Results

APPENDIX D

Sewer Records

Asset Location Search



Property Searches

Odyssey Markides
Tuscany House Tuscany House

BASINGSTOKE
RG21 4AF

Search address supplied Prince Bros
Grove Service Station
Old Bath Road
Charvil
Reading
RG10 9QJ

Your reference 24-210

Our reference ALS/ALS Standard/2025_5113265

Search date 31 January 2025

Notification of Price Changes

From 1st April 2024 Thames Water Property Searches will be increasing the prices of its CON29DW Residential and Commercial searches along with the Asset Location Search. Costs will rise in line with RPI as per previous years, which is set at 6%.

Customers will be emailed with the new prices by February 28th 2024.

Any orders received with a higher payment prior to the 1st April 2024 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk



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



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



0800 009 4540

Asset Location Search



Property Searches

Search address supplied: Prince Bros, Grove Service Station, Old Bath Road, Charvil, Reading, RG10 9QJ

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 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

Asset Location Search



Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

SU7876SW
SU7876SE
SU7775NW
SU7775NE
SU7776SE
SU7875NE
SU7875NW

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.

Asset Location Search



Property Searches

The following quartiles have been printed as they fall within Thames' water area:

SU7876SW

SU7876SE

SU7775NW

SU7775NE

SU7776SE

SU7875NE

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.

The following quartiles have not been printed as they contain no assets:

SU7875NW

For your guidance:

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

Payment for this Search

A charge will be added to your suppliers account.

Asset Location Search



Property Searches

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

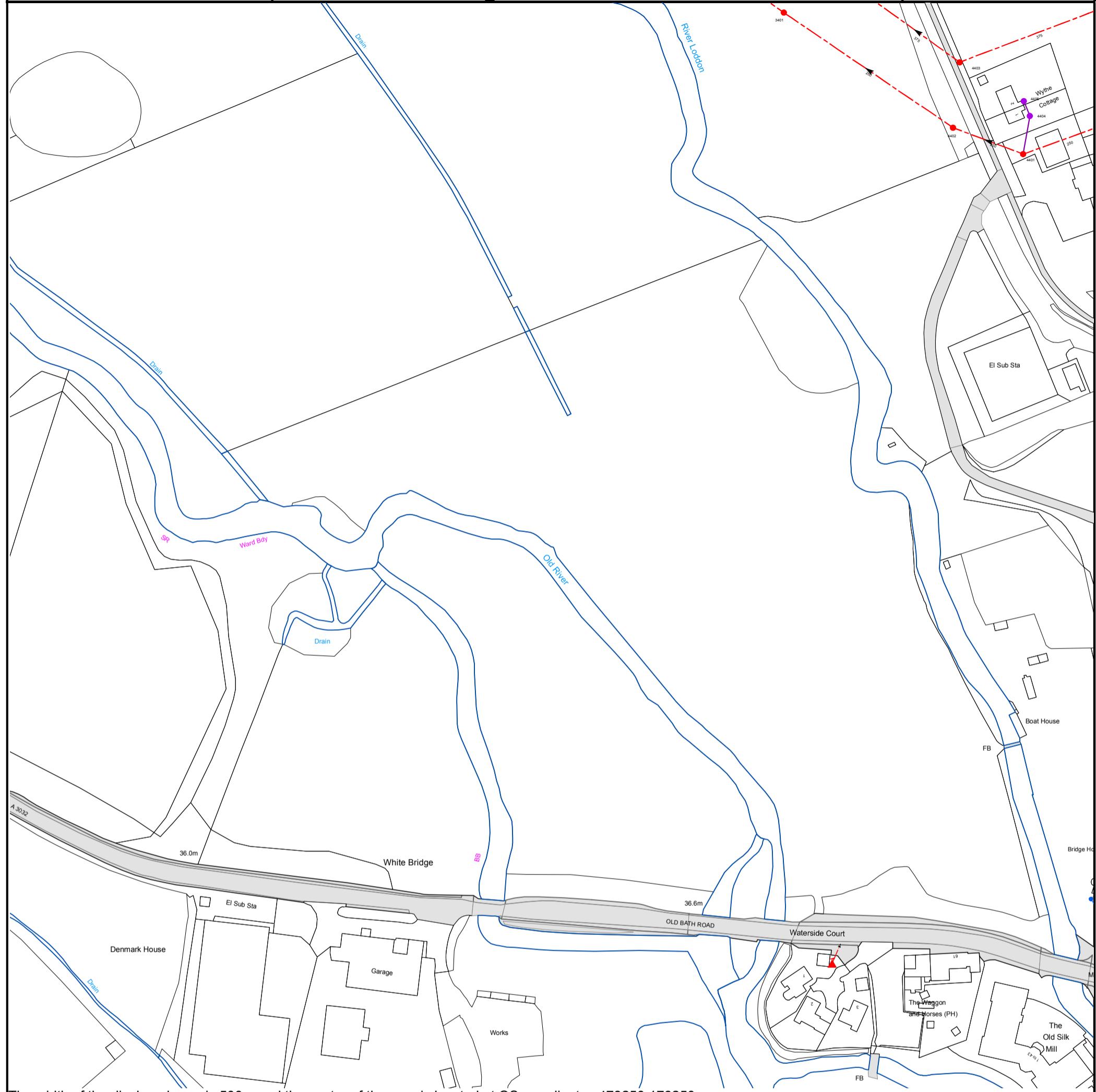
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

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 width of the displayed area is 500m and the centre of the map is located at OS coordinates 478250, 176250

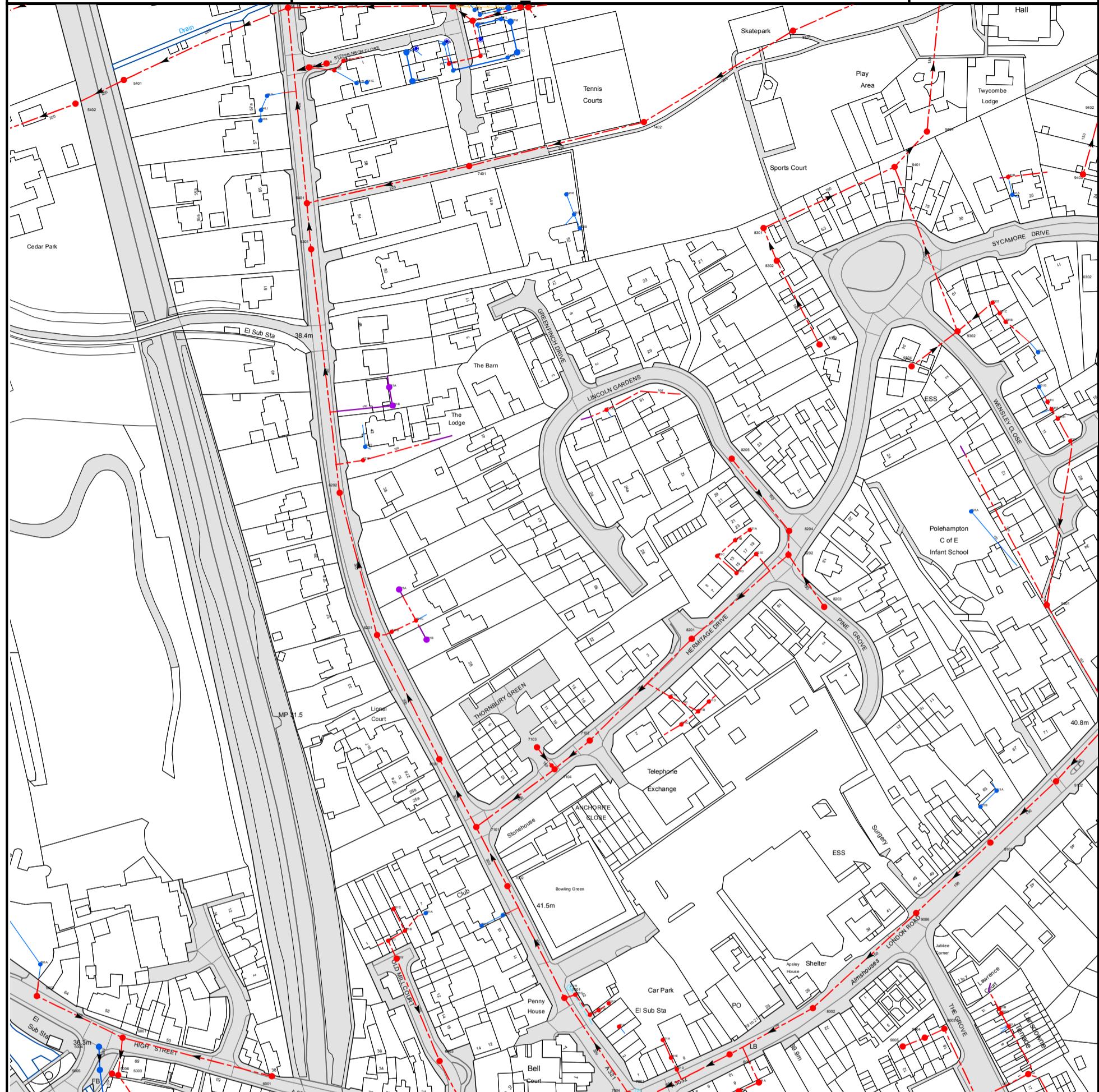
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

Based on the Ordnance Survey Map (2020) 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
4403	n/a	n/a
3401	35.06	32.89
4402	34.81	33.19
4401	34.9	33.2
4405	n/a	n/a
4404	n/a	n/a
401A	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.



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
911A	n/a	n/a
901B	n/a	n/a
901C	n/a	n/a
901A	n/a	n/a
9002	40.58	39.04
9102	40.88	38.5
9201	40.71	39.14
9301	40.72	39.76
931H	n/a	n/a
931F	n/a	n/a
931I	n/a	n/a
931G	n/a	n/a
931A	n/a	n/a
931B	n/a	n/a
931C	n/a	n/a
9303	40.22	n/a
0302	n/a	n/a
941A	n/a	n/a
941B	n/a	n/a
9403	n/a	n/a
8401	38.8	36.41
9404	41.45	37.25
9402	41	39.91
801A	n/a	n/a
801D	n/a	n/a
801E	n/a	n/a
8001	39.79	37.83
9005	n/a	n/a
9004	n/a	n/a
9003	n/a	n/a
8002	40.04	37.93
9006	n/a	n/a
9101	40.69	38.38
911B	n/a	n/a
811C	n/a	n/a
811B	n/a	n/a
811D	n/a	n/a
811A	n/a	n/a
8201	41.1	38.41
801B	n/a	n/a
701I	n/a	n/a
701F	n/a	n/a
701E	n/a	n/a
701D	n/a	n/a
701G	n/a	n/a
701H	n/a	n/a
6002	n/a	39.43
601D	n/a	n/a
601B	n/a	n/a
701B	n/a	n/a
701C	n/a	n/a
601A	n/a	n/a
601C	n/a	n/a
7002	41.53	37.26
7101	41.43	37.18
7104	41.32	37.81
6101	41.22	37.1
7103	41.4	39.75
7102	41.43	37.99
621B	n/a	n/a
6201	40.41	36.87
621D	n/a	n/a
6401	37.29	35.48
6301	37.72	35.72
6202	39.57	36.71
621F	n/a	n/a
621E	n/a	n/a
631A	n/a	n/a
631B	n/a	n/a
621A	n/a	n/a
621C	n/a	n/a
7401	38.17	35.93
741R	n/a	n/a
741Q	n/a	n/a
731B	n/a	n/a
731A	n/a	n/a
821C	n/a	n/a
8205	41.36	39.2
821B	n/a	n/a
821D	n/a	n/a
821A	n/a	n/a
821E	n/a	n/a
8301	40.22	37.82
8302	39.51	38.11
8202	40.63	38.71
8204	40.65	38.86
8303	40.55	39.65
8203	39.43	38.91
9401	41.36	37.46
9304	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9302	40.6	38.36
921A	n/a	n/a
7402	38.85	36.14
641D	36.8	36.28
641C	36.82	36.34
641H	n/a	n/a
741P	n/a	n/a
641E	n/a	n/a
641F	n/a	n/a
741D	n/a	n/a
641I	36.5	35.95
641B	n/a	n/a
741N	n/a	n/a
741E	n/a	n/a
741O	n/a	n/a
641G	n/a	n/a
641A	n/a	n/a
741K	n/a	n/a
741M	n/a	n/a
741C	37.15	35.257
741L	n/a	n/a
741I	n/a	n/a
741J	n/a	n/a
741G	n/a	n/a
741H	n/a	n/a
6402	36.25	34.15
7403	37.021	35.441
741B	37.1	35.415
741A	36.759	35.18
741F	n/a	n/a
5003	36.65	34.03
5006	36.1	34.07
5005	36.7	35.11
5004	36.61	35.24
5001	36.76	34.11
641K	n/a	n/a
641J	n/a	n/a
5402	35.57	33.82
641L	n/a	n/a
5401	n/a	n/a
5002	36.58	34.4
501A	n/a	n/a
7003	39.39	37.6
7004	39.38	37.57
7051	39.29	n/a
6001	40.17	n/a
6003	n/a	39.09
701A	n/a	n/a
7001	40.9	37.44

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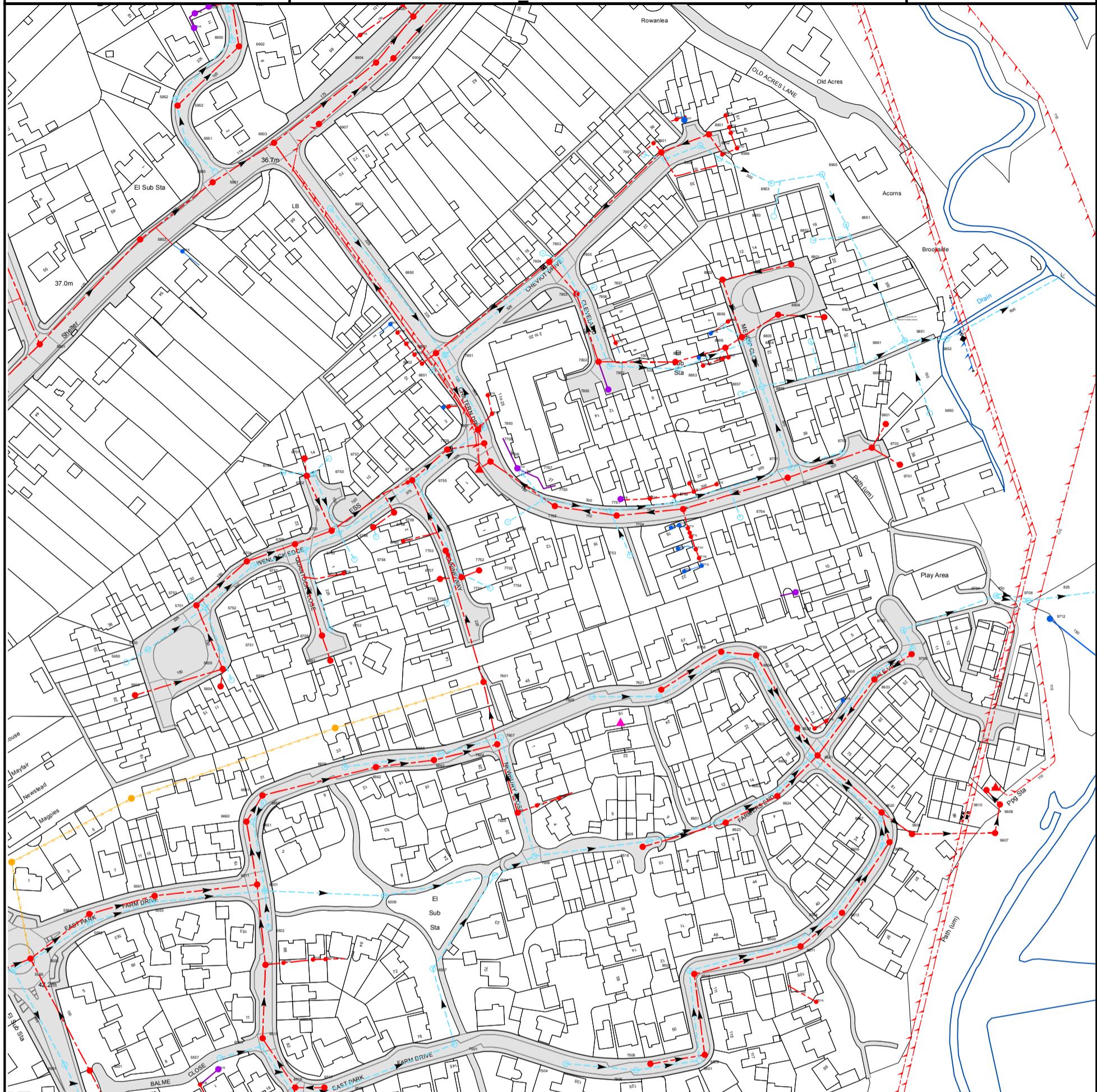
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 477250, 175750

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

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
1901	n/a	n/a
1801	39.49	37.74
2902	39.73	38.57
2901	39.76	38.33
291A	n/a	n/a
2903	39.75	38.23
2950	39.59	38.79
2904	39.58	37.91
2951	39.15	38.24
2952	39.08	n/a
391B	n/a	n/a
391D	n/a	n/a
391C	n/a	n/a
391E	n/a	n/a
4501	42.85	39.79
4553	42.7	40.78
451A	n/a	n/a
481A	n/a	n/a
381E	n/a	n/a
381A	n/a	n/a
4902	37.45	35.82
391A	n/a	n/a
4901	37.8	36.08
3550	49.6	46.18
3502	49	46.59
3551	48.91	45.92
3558	n/a	n/a
3503	48.17	46.27
3552	48.17	44.87
4502	47.43	45.65
4550	47.28	44.61
4503	46.7	45.12
4551	46.17	44.24
4504	44.45	42.67
4552	44.2	41.89
371I	n/a	n/a
381B	n/a	n/a
371B	n/a	n/a
361A	n/a	n/a
381H	n/a	n/a
371F	n/a	n/a
371D	n/a	n/a
371E	n/a	n/a
371C	n/a	n/a
381F	n/a	n/a
381D	n/a	n/a
381G	n/a	n/a
381C	n/a	n/a
4702	39.13	37.46
461C	n/a	n/a
461D	n/a	n/a
4701	38.61	36.89
4601	39.72	38.02
371H	n/a	n/a
371G	n/a	n/a
271G	n/a	n/a
271E	n/a	n/a
271F	n/a	n/a
271A	n/a	n/a
271B	n/a	n/a
271C	n/a	n/a
271D	n/a	n/a
371A	n/a	n/a
181C	n/a	n/a
181B	n/a	n/a
281E	n/a	n/a
181A	n/a	n/a
181D	n/a	n/a
281D	n/a	n/a
2501	n/a	n/a
3501	49.62	46.74
2502	n/a	n/a
1601	42.09	40.59
161A	n/a	n/a
2601	40.55	38.9
3701	39.94	38.36

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

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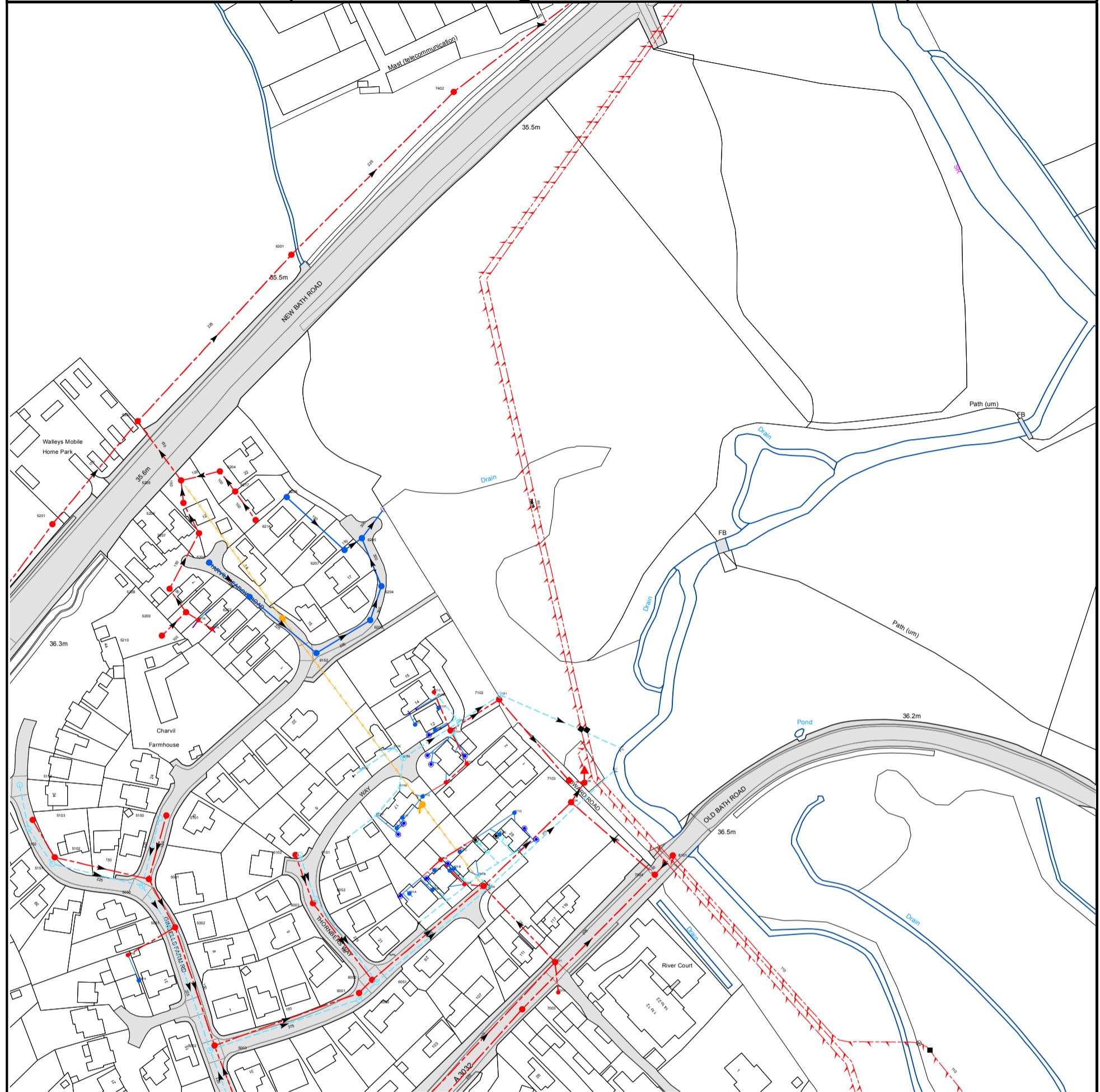
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6850	36.18	34.56
6952	36.61	34.99
5950	36.59	35.3
6903	36.67	34.65
6907	36.7	35.14
6904	36.46	34.51
6906	36.44	34.28
6902	36.11	34.31
6950	36.13	34.59
691A	n/a	n/a
6905	36.24	34.39
6951	35.98	34.36
691B	n/a	n/a
6901	35.96	34.11
7803	35.88	33.38
7856	35.92	34.02
7857	n/a	n/a
7804	35.95	33.3
7855	36.02	33.97
7853	35.98	34.45
7951	n/a	n/a
7901	35.99	33.99
791A	n/a	n/a
891C	n/a	n/a
891D	n/a	n/a
8953	35.4	34.28
8850	35.68	34.71
8804	35.72	34.12
8801	35.84	34.29
8852	35.69	34.49
8955	35.4	34.25
8803	35.88	34.28
8851	35.29	34.21
8702	35.95	33.7
8605	n/a	n/a
8751	35.99	34.09
871G	n/a	n/a
8629	n/a	n/a
8859	n/a	n/a
8603	n/a	n/a
8621	n/a	n/a
8752	35.8	34.28
8861	n/a	n/a
8860	n/a	n/a
8703	35.71	33.99
8633	n/a	n/a
8608	n/a	n/a
9801	35.69	34.39
9701	35.71	34.41
9703	n/a	n/a
9851	35.34	33.69
9709	n/a	n/a
9702	n/a	n/a
9850	35.54	34.44
9852	34.8	33.43
9610	n/a	n/a
9704	n/a	n/a
9708	n/a	n/a
9712	n/a	34.25
7505	n/a	n/a
7508	n/a	n/a
7504	n/a	n/a
8501	n/a	n/a
8509	n/a	n/a
851A	n/a	n/a
8510	n/a	n/a
8502	n/a	n/a
8511	n/a	n/a
8503	n/a	n/a
8504	n/a	n/a
8512	n/a	n/a
7504	n/a	n/a
7606	n/a	n/a
7618	n/a	n/a
8606	n/a	n/a
9603	n/a	n/a
7608	n/a	n/a
9606	n/a	n/a
9607	n/a	n/a
8623	n/a	n/a
8601	n/a	n/a
8607	n/a	n/a
7625	n/a	n/a
8620	n/a	n/a
761A	n/a	n/a
9608	n/a	n/a
761B	n/a	n/a
8624	n/a	n/a
8602	n/a	n/a
7624	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7607	n/a	n/a
7609	n/a	n/a
7610	n/a	n/a
7621	n/a	n/a
8604	n/a	n/a
8755	n/a	n/a
8759	n/a	n/a
8758	n/a	n/a
7754	n/a	n/a
871K	n/a	n/a
871G	n/a	n/a
871N	n/a	n/a
7753	36.06	34.78
871H	n/a	n/a
871J	n/a	n/a
871L	n/a	n/a
871I	n/a	n/a
771C	n/a	n/a
871M	n/a	n/a
7756	n/a	n/a
8754	n/a	n/a
7704	36.09	33.29
7751	36.08	34.34
8701	36.23	33.48
7705	35.9	33.15
8750	36.24	34.3
7750	35.88	34.38
771B	n/a	n/a
771A	n/a	n/a
871A	n/a	n/a
871D	n/a	n/a
871E	n/a	n/a
871F	n/a	n/a
7757	n/a	n/a
771D	n/a	n/a
7706	35.85	32.6
7850	35.83	34.13
781B	n/a	n/a
781A	n/a	n/a
8857	n/a	n/a
7892	n/a	n/a
8855	35.85	33.89
8853	35.77	33.99
7852	35.72	34.02
8807	35.75	33.8
7802	35.73	33.68
781C	n/a	n/a
8854	35.73	33.93
8805	35.71	33.97
881A	n/a	n/a
891F	n/a	n/a
891G	n/a	n/a
6756	n/a	n/a
6701	35.92	34.72
6702	36.11	34.51
6750	36.1	34.71
6757	n/a	n/a
681A	n/a	n/a
681B	n/a	n/a
681C	n/a	n/a
681D	n/a	n/a
6802	36.21	33.21
6851	36.2	34.62
6801	36.17	32.98
681E	n/a	n/a
7851	36.15	34.1
7709	35.76	32.71
781D	n/a	n/a
7801	35.88	32.72
7708	35.86	32.7
7702	35.8	34.2
6751	36.34	34.54
6704	36.35	34.38
6758	n/a	n/a
7703	35.7	32.89
6753	36.21	34.43
6706	36.25	34.25
671A	n/a	n/a
6760	n/a	n/a
6754	36.16	34.39
6703	36.19	34.11
6708	36.21	34.94
6709	36.07	34.82
6710	35.93	32.84
6755	35.92	34.22
6517	n/a	n/a
6516	n/a	n/a
6506	n/a	n/a
551A	n/a	n/a
5557	n/a	n/a
6503	n/a	n/a
7501	n/a	n/a
6515	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6507	n/a	n/a
6512	n/a	n/a
651D	n/a	n/a
651B	n/a	n/a
651C	n/a	n/a
6502	n/a	n/a
6509	n/a	n/a
6501	n/a	n/a
6511	n/a	n/a
6651	n/a	n/a
6660	n/a	n/a
6652	n/a	n/a
6661	n/a	n/a
6662	n/a	n/a
6656	n/a	n/a
6663	n/a	n/a
6655	n/a	n/a
5604	36.18	35.23
7601	35.73	33.14
6650	36.41	34.98
5605	36.6	34.98
6601	35.99	34.84
5751	36.53	34.89
6705	35.92	34.46
6752	35.91	34.49
5752	36.53	34.68
7755	n/a	n/a
6707	35.8	34.43
7701	35.65	34.09
671B	n/a	n/a
7752	35.7	34.64
5550	42.22	39.85
5551	42.08	39.29
5501	40.89	37.61
551C	n/a	n/a
551B	n/a	n/a
581A	n/a	n/a
5802	36.81	34.95
5901	36.72	34.73
5951	36.44	35.06
5902	36.4	34.7
5952	36.41	34.99
591A	n/a	n/a
591B	n/a	n/a
591C	n/a	n/a
5502	40.96	37.18
5801	37.16	35.49
5560	n/a	n/a
5552	n/a	n/a
5650	36.82	35.16
5603	36.79	35.29
5750	36.66	34.86
5553	n/a	n/a
5561	n/a	n/a
5753	n/a	n/a
5701	36.5	34.52
8950	36.01	34.55
881C	n/a	n/a
8952	35.93	34.48
881D	n/a	n/a
8901	35.94	34.22
8956	n/a	n/a
8802	35.87	34.17
891E	n/a	n/a
881E	n/a	n/a
8856	n/a	n/a
8806	35.54	33.84
891A	n/a	n/a
881B	n/a	n/a
881F	n/a	n/a
891B	n/a	n/a

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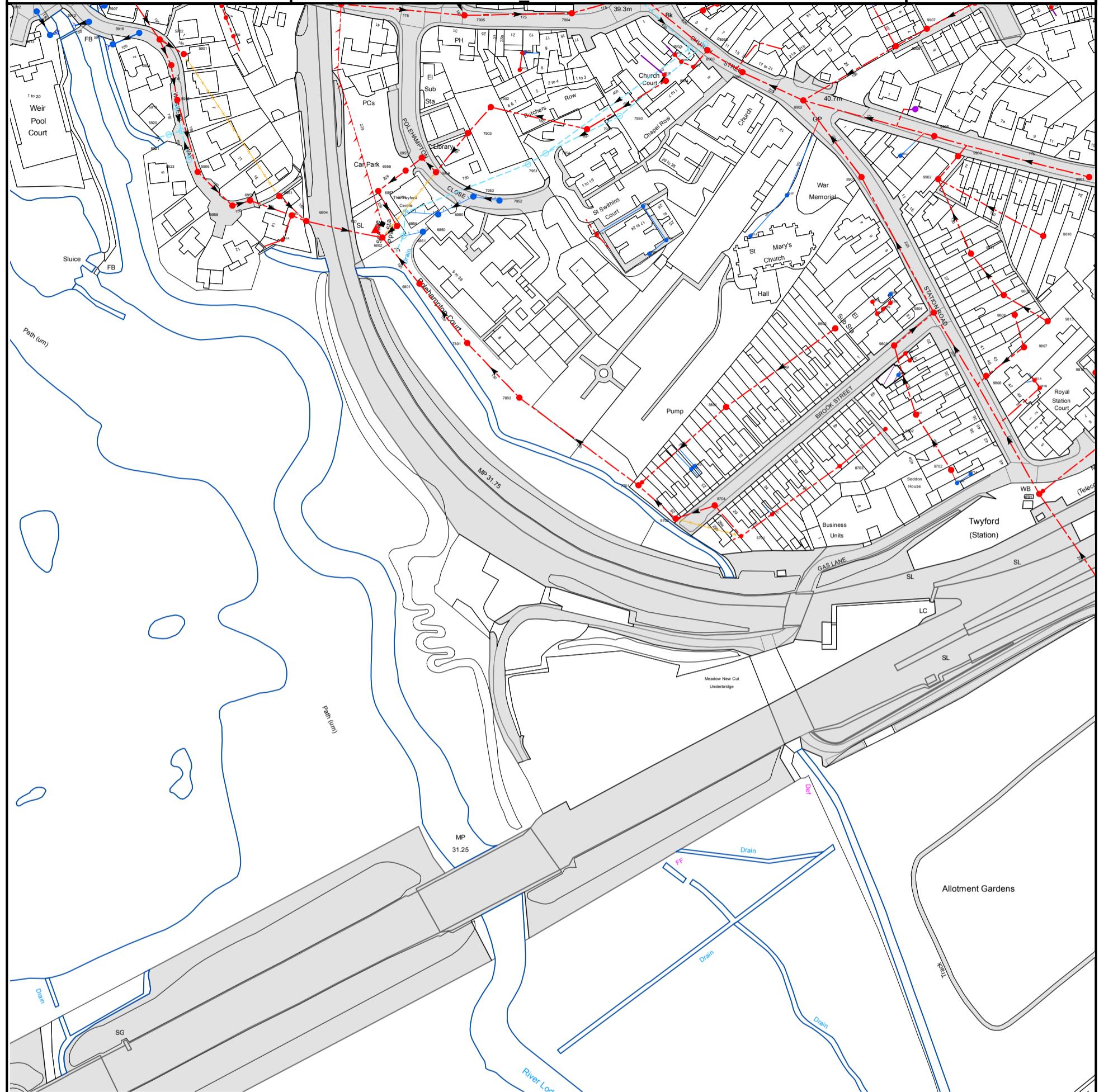
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5204	n/a	n/a
6217	n/a	n/a
6202	n/a	n/a
6214	n/a	n/a
6208	n/a	n/a
6301	35.48	32.48
6152	n/a	n/a
6207	n/a	n/a
611J	n/a	34.45
6205	n/a	n/a
6203	n/a	n/a
611O	n/a	34.6
6204	n/a	n/a
611K	n/a	34.3
611N	n/a	34.45
611I	n/a	n/a
6150	n/a	n/a
611L	n/a	34.5
611G	n/a	34.1
611C	n/a	33.5
611E	n/a	34.5
611M	n/a	34.3
611D	n/a	34.5
611F	n/a	33.8
7101	n/a	33.3
711H	n/a	34.2
7402	35.42	32.24
5153	36.75	35.4
5201	n/a	n/a
5301	35.55	32.7
5150	36.1	34.95
5210	n/a	n/a
5101	36.11	34.61
5208	n/a	n/a
5205	n/a	n/a
5206	n/a	n/a
5209	n/a	n/a
521B	n/a	n/a
5207	n/a	n/a
5202	n/a	n/a
521A	n/a	n/a
6050	35.71	33.14
6001	35.67	32.69
6051	35.6	33.11
6002	35.62	32.67
6003	35.77	33.47
6052	35.77	33.83
601A	n/a	34.6
601B	n/a	n/a
711A	n/a	n/a
611A	n/a	34.5
711B	n/a	n/a
611B	n/a	33.6
6102	35.91	33.84
6151	35.89	34.35
611H	n/a	34.5
7003	36.01	33.83
701D	n/a	n/a
7001	36.03	33.91
7050	34.84	33.09
7002	34.75	32.3
701A	n/a	33.35
701B	n/a	34.25
7004	36.18	33.38
711C	n/a	34.5
711E	n/a	34.4
711D	n/a	34.4
7104	35.2	n/a
7106	n/a	n/a
7103	n/a	n/a
711F	n/a	33.65
711G	n/a	n/a
7102	n/a	n/a
7151	n/a	n/a
5052	35.8	33.97
5003	35.76	33.49
501A	n/a	n/a
501B	n/a	n/a
5002	35.8	34.07
5051	35.8	34.35
5050	35.92	34.5
5001	35.89	34.19
5151	36.26	34.86
5102	36.29	34.54
5152	36.58	35.23
5103	36.54	34.83
8101	n/a	33.8

Manhole Reference	Manhole Cover Level	Manhole Invert Level
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Asset Location Search Sewer Map - ALS/ALS Standard/2025 5113265

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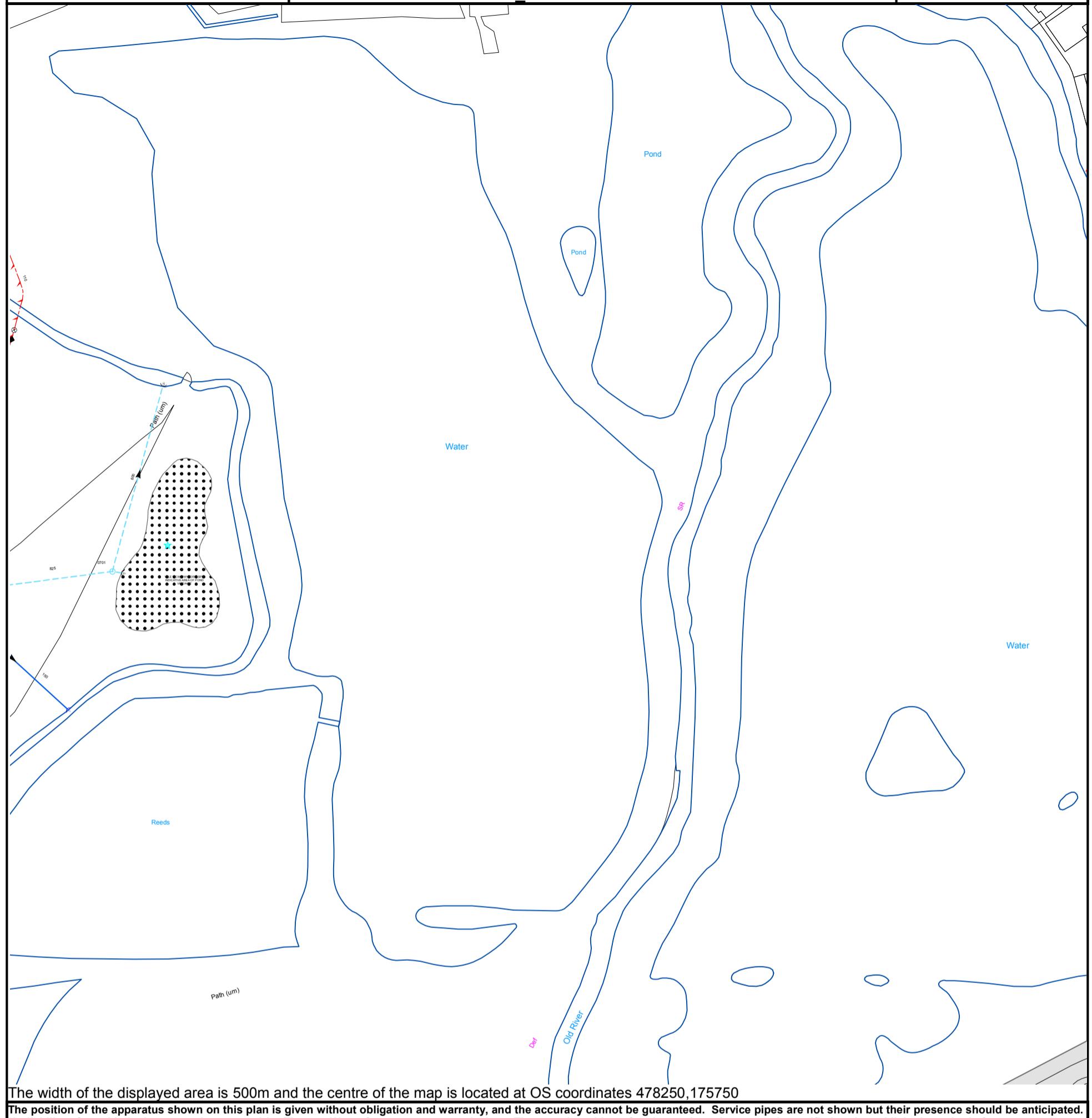


NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
991A	n/a	n/a
791D	n/a	n/a
791C	n/a	n/a
791B	n/a	n/a
791E	n/a	n/a
891C	n/a	n/a
891D	n/a	n/a
8951	39.53	37.91
891E	n/a	n/a
891B	n/a	n/a
8950	39.59	36.84
8903	39.56	37.86
891A	n/a	n/a
8905	n/a	n/a
8902	40.64	38.24
891G	n/a	n/a
9908	41.61	38.56
991B	n/a	n/a
9907	40.96	38.61
9906	40.55	38.78
6958	36.93	33.27
6959	36.96	33.21
5906	36.75	33.43
5923	36.73	35.32
5921	36.55	35.07
5920	36.86	35.15
5919	37.09	35.29
5905	37.18	33.69
5904	37.32	33.82
5901	37.01	33.85
5917	36.7	34.92
5902	37.3	33.91
691B	n/a	n/a
5913	36.15	34.95
5916	37.22	35.09
5910	37.03	35.07
691A	n/a	n/a
591A	n/a	n/a
5907	36.5	34.91
5912	36.6	35.09
981A	n/a	n/a
9806	42.24	40.19
981E	n/a	n/a
9812	n/a	n/a
9807	43.51	41.41
9813	n/a	n/a
9808	42.92	41.68
9809	43.15	36.47
9811	n/a	n/a
9810	43.07	41.89
9901	43.56	41.97
9701	42.45	39.86
971A	n/a	n/a
981B	n/a	n/a
8701	36.55	34.55
8702	35.8	34.33
871C	n/a	n/a
8704	36.36	34.44
971B	n/a	n/a
9702	41.31	40.39
871A	n/a	n/a
871B	n/a	n/a
8703	n/a	n/a
9802	42.1	40.85
9801	42.18	39.96
8801	38.89	37.36
981H	n/a	n/a
981C	n/a	n/a
981D	n/a	n/a
9803	42.28	39.65
8802	43.2	41.78
881C	n/a	n/a
9804	42.1	39.35
881B	n/a	n/a
981G	n/a	n/a
881D	n/a	n/a
981F	n/a	n/a
881E	n/a	n/a
881A	n/a	n/a
891F	n/a	n/a
9902	42.68	41.18
8901	41.73	39.18
9903	42.61	41.09
991C	n/a	n/a
9905	42.06	40.31
6961	n/a	n/a
681A	n/a	n/a
6960	37.09	33.06
6804	37.09	n/a
6957	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6802	35.71	33.06
6856	n/a	n/a
6851	35.87	34.46
6951	36.25	34.77
6956	n/a	n/a
6801	35.7	33.56
6955	n/a	n/a
6850	35.98	34.94
6954	n/a	n/a
6950	36.3	35.42
7801	35.88	33.75
7903	37.44	35.29
7953	36.65	35.81
7952	36.89	36
7802	n/a	n/a
7951	37.76	35.86
7954	37.74	35.97
7901	38.1	36.4
781A	n/a	n/a
7701	36.08	34.18
791A	n/a	n/a
781B	n/a	n/a
7950	38.91	36.51
7902	37.77	35.78
8904	38.89	37.15
7905	40.76	38.84
7904	39.64	37.92
6902	43.31	n/a

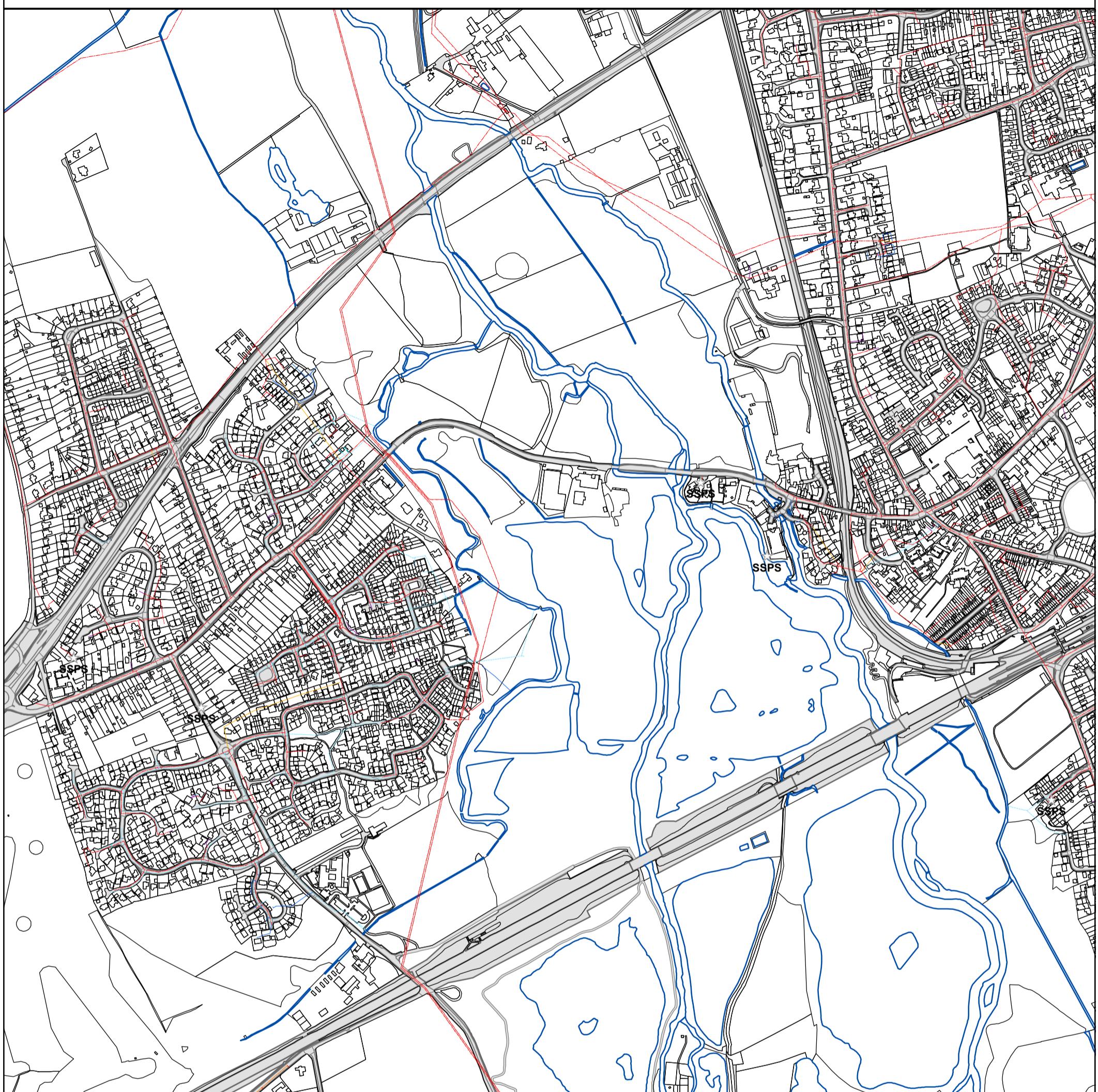
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0701	n/a	33.36

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0 45 90 180 270 360
Meters

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Width: 2000m	
Printed By: ASUJI	
Print Date: 31/01/2025	
Map Centre: 478099,175922	
Grid Reference: SU7875NW	

ALS/ALS Standard/2025_5113265

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
011A		
2403		
2903	39.75	38.23
2001	39.47	36.72
1801	39.49	37.74
2950	39.59	38.79
2901	39.76	38.33
2201	39.45	38.13
2502		
2902	39.73	38.57
7756		
5753		
9852	34.8	33.43
8860		
2501	34.79	32.89
7857		
7804	35.95	33.3
7855	36.02	33.97
7103		
8851	35.29	34.21
9709		
9702		
5501	35.68	33.88
5352		
6708	36.21	34.94
6662		
2601	34.84	32.92
6507		
8854	35.73	33.93
8759		
5355		
7402	35.42	32.24
7250	38.52	36.88
6509		
8510		
8952	35.93	34.48
4401	34.9	33.2
8755		
5205		
6956		
7951	37.76	35.86
0603		
7802	35.73	33.68
7892		
5802	39.05	36.17
6401	37.29	35.48
3401	35.06	32.89
6961		
3306		
4902	37.45	35.82
5752	36.53	34.68
6660		
6651		
6511		
6661		
6652		
7625		
7702	35.8	34.2
8859		
8852	35.69	34.49
6508		
3501	49.62	46.74
6851	35.87	34.46
9304		
9801	42.18	39.96
9907	40.96	38.61
9905	42.06	40.31
9502		
9702	41.31	40.39
4305		
5603	36.79	35.29
5802	36.81	34.95
6755	35.92	34.22
8623		
5552		
5002	36.58	34.4
8856		
7954	37.74	35.97
7001	40.9	37.44
7903	37.44	35.29
7101	41.43	37.18

REFERENCE	COVER LEVEL	INVERT LEVEL
1002	39.8	37.01
2408		
2801	34.17	32.29
1901		
1001	40.18	37.52
1701	34.17	32.57
1702	34.13	32.45
2501		
2404		
7607		
5951	36.44	35.06
9850	35.54	34.44
8861		
8703	35.71	33.99
7609		
6756		
7705	35.9	33.15
7504		
9703		
9851	35.34	33.69
9606		
2503	34.75	32.59
5501	40.89	37.61
6002	35.62	32.67
6051	35.6	33.11
6904	36.46	34.51
6851	36.2	34.62
8805	35.71	33.97
8604		
5952	36.41	34.99
5902	36.4	34.7
7501		
7752	35.7	34.64
8502		
8501		
8901	35.94	34.22
4405		
8857		
4404		
7802		
5803	38.61	37.26
4802	38.41	37.54
7751	36.08	34.34
7852	35.72	34.02
6804	37.09	
3501	35.48	33.38
6001	40.17	
3310		
4301		
5701	36.5	34.52
5052	35.8	33.97
6704	36.35	34.38
6751	36.34	34.54
6503		
6515		
6501		
7003	36.01	33.83
8501	34.86	
8603		
3001	39.21	37.47
6856		
3701	39.94	38.36
6951	36.25	34.77
9006		
9404	41.45	37.25
9804	42.1	39.35
9902	42.68	41.18
9501	38.23	36.79
4503	46.7	45.12
5403	41	38.9
5301	35.55	32.7
5050	35.92	34.5
8806	35.54	33.84
5560		
7905	40.76	38.84
5502	35.72	33.82
7803	39.14	38.13
7104	41.32	37.81
0805	45.04	43.46
7953	36.65	35.81
9808	42.92	41.68

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REFERENCE	COVER LEVEL	INVERT LEVEL
9807	43.51	41.41
9504	37.96	36.7
9701	42.45	39.86
9201	40.71	39.14
8629		
9802	42.1	40.85
9803	42.28	39.65
4550	47.28	44.61
5650	36.82	35.16
6905	36.24	34.39
8953	35.4	34.28
8624		
8602		
7401	38.17	35.93
8758		
9503	38.58	36.82
9102	40.88	38.5
9702	45.18	43.16
9403		
6957		
8901	41.73	39.18
8605		
8751	35.99	34.09
5001	35.89	34.19
5401	39.77	38.07
5561		
5150	36.1	34.95
5354		
5405	41.11	39.64
6801	36.17	32.98
6655		
7703	35.7	32.89
7709	35.76	32.71
6906	36.44	34.28
0602	36.26	32.21
4403		
6902	39.04	36.84
6101	41.22	37.1
6603		
9806	42.24	40.19
2302		
5002	35.8	34.07
6507		
6801	35.7	33.56
6850	35.98	34.94
9302	40.6	38.36
9811		
2002	39.15	36.4
2405		
2102	39.83	37.91
4101	37.59	35.84
4551	46.17	44.24
4601	39.72	38.02
5153	36.75	35.4
6415		
6403		
6702	36.11	34.51
6001	35.67	32.69
8701	40.49	38.71
8701	36.55	34.55
3316		
3552	48.17	44.87
3304		
3409		
3312		
5551	42.08	39.29
6752	35.91	34.49
6758		
6750	36.1	34.71
8750	36.24	34.3
8853	35.77	33.99
8804	40.63	38.97
3406		
3558		
6907	36.7	35.14
6406		
7608		
7610		
7901	35.99	33.99
9607		
9608		

REFERENCE	COVER LEVEL	INVERT LEVEL
9803	45.74	44.52
9802	46.04	44.32
9810	43.07	41.89
7701	35.65	34.09
8511		
9401	41.36	37.46
9908	41.61	38.56
5402	40.82	38.29
6710	35.93	32.84
8601		
8850	35.68	34.71
8804	35.72	34.12
7801	35.88	33.75
8956		
9813		
9505	37.87	36.73
9601	39.03	37.45
9301	40.72	39.76
6201	40.41	36.87
6802	35.71	33.06
8702	35.95	33.7
8801	35.84	34.29
8503		
5750	36.66	34.86
5553		
5452	40.29	38.16
4502	47.43	45.65
5455	41	38.4
5101	36.11	34.61
6707	35.8	34.43
7851	36.15	34.1
7755		
8855	35.85	33.89
6709	36.07	34.82
4402	34.81	33.19
4801	38.91	38.11
6950	36.3	35.42
6003		39.09
9906	40.55	38.78
9101	40.69	38.38
5051	35.8	34.35
6902	43.31	
9809	43.15	36.47
6955		
9701	42.63	40.32
9903	42.61	41.09
2407		
2402		
2409		
2904	39.58	37.91
4701	38.61	36.89
4306		
4303		
6506		
5152	36.58	35.23
6753	36.21	34.43
6050	35.71	33.14
6351	38.99	37.07
8205	41.36	39.2
8905		
3411		
3201	39.17	36.62
3502	49	46.59
3405		
5550	42.22	39.85
5404	42.11	40.93
6703	36.19	34.11
6003	35.77	33.47
6052	35.77	33.83
8807	35.75	33.8
8501	37.85	36.1
8301	40.22	37.82
3410		
5102	36.29	34.54
6754	36.16	34.39
6656		
7004	36.18	33.38
7621		
8950	36.01	34.55
9704		
6202	39.57	36.71

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REFERENCE	COVER LEVEL	INVERT LEVEL
6959	36.96	33.21
8203	39.43	38.91
8702	41.47	39.44
8201	41.1	38.41
8903	39.56	37.86
5151	36.26	34.86
6414		
6705	35.92	34.46
6757		
6952	36.61	34.99
7501	35.36	31.96
7505		
7951		
6901	38.82	36.57
6958	36.93	33.27
8805	40.23	38.68
3551	48.91	45.92
8703		
3802		
8801	38.89	37.36
5502	40.96	37.18
8302	39.51	38.11
8204	40.65	38.86
7051	39.29	
7003	39.39	37.6
8902	40.64	38.24
5351		
5901	37.01	33.85
7103	41.4	39.75
3801	34.43	32.18
2201		
4401		
5920	36.86	35.15
5901	39.32	36.25
0405		
0402	40.48	
0504	40.81	39.01
0401	40.51	40.08
4302		
7950	38.91	36.51
4901	37.8	36.08
3403		
5921	36.55	35.07
5905	37.18	33.69
7602	39.44	36.83
7102	41.43	37.99
7901	39.64	38.18
0501	39.07	37.24
0602	43.63	40.36
0810		
6951	35.98	34.36
6950	36.13	34.59
0501	43.85	40.9
0508		
0505	38.61	37.26
4402		
6902	36.11	34.31
7624		
7706	35.85	32.6
8955	35.4	34.25
8512		
8608		
8620		
9801	35.69	34.39
1601	35.38	32.09
6413		
6706	36.25	34.25
6401		
7803	35.88	33.38
5402	35.57	33.82
3401		
4504	44.45	42.67
0502	42.43	40.61
0205	42.03	39.26
0802	45.74	44.72
3305		
3550	49.6	46.18
0701	43.23	40.09
0807	44.35	42.92
0502	38.62	36.97
4307		

REFERENCE	COVER LEVEL	INVERT LEVEL
6601	38.38	35.07
8802	43.2	41.78
8951	39.53	37.91
8950	39.59	36.84
5353		
5201		
6405		
6517		
6601	35.99	34.84
7704	36.09	33.29
7753	36.06	34.78
7618		
6301	37.72	35.72
6701	38.69	35.65
6502	37.1	34.91
8702	35.8	34.33
3303		
3301		
8704	36.36	34.44
3202	39.58	36.33
5103	36.54	34.83
8202	40.63	38.71
8401	38.8	36.41
7701	36.08	34.18
8904	38.89	37.15
8303	40.55	39.65
5801	37.16	35.49
7701	39.42	37.58
7801	39.3	37.89
2406		
2952	39.08	
2502	34.9	33.15
5906	36.75	33.43
5801	38.76	35.97
0303		
0406		
0404	40.22	
4552	44.2	41.89
4308		
7004	39.38	37.57
7002	41.53	37.26
3404		
5904	37.32	33.82
7904	39.64	37.92
7901	38.1	36.4
7601	39.49	37.05
0403	40.3	38.19
0401	39.53	35.43
0804	43.96	41.93
3402		
6650	36.41	34.98
6901	35.96	34.11
0202	42.26	40.8
0504	38.6	37.31
3311		
6402		
6404		
7754		
7504		
8504		
8752	35.8	34.28
8607		
8606		
8621		
6301	35.48	32.48
6102	35.91	33.84
6516		
6151	35.89	34.35
7856	35.92	34.02
3307		
3408		
0803	45.24	44.44
0901	48.94	46.79
0702	43.72	41.95
0806	45.74	43.73
3313		
4501	42.85	39.79
0402	37.78	35.25
0802	47.46	45.69
4102		
5901	36.72	34.73

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REFERENCE	COVER LEVEL	INVERT LEVEL
5003	35.76	33.49
5557		
5350	39.69	37.44
4001	38	36.68
6502		
6412		
7251	38.62	36.8
7850	35.83	34.13
2601	40.55	38.9
2004		
7606		
7750	35.88	34.38
5001	36.76	34.11
9701	35.71	34.41
3101	38.76	36.15
0801	48.17	46.27
0503	41.84	39.94
7902	37.77	35.78
9402	41	39.91
0301	40.07	39.02
0503	38.55	36.92
3315		
5916	37.22	35.09
5005	36.7	35.11
5917	36.7	34.92
871M		
871H		
771C		
871K		
581B		
871H		
601C		
871D		
911B		
461D		
101B		
501A		
981F		
981H		
891D		
8101		33.8
781C		
6509		
6510		
581F		
581H		
3407		
5451	41.15	38.72
5751	36.53	34.89
7402	38.85	36.14
6954		
7802		
3503	48.17	46.27
9901	43.56	41.97
1602	35.06	32.77
8754		
6350		
0703	35.59	32.3
8001	39.79	37.83
741B	37.1	35.415
6501	36.21	34.13
271G		
4702	39.13	37.46
7102		
371C		
9601	35.58	
5202		
6208		
5912	36.6	35.09
5913	36.15	34.95
6205		
9712		34.25
651F		
651E		35.14
801B		
6760		
5923	36.73	35.32
6214		
5206		
9005		
5209		

REFERENCE	COVER LEVEL	INVERT LEVEL
5950	36.59	35.3
5604	36.18	35.23
5605	36.6	34.98
4553	42.7	40.78
6903	36.67	34.65
7601	35.73	33.14
7708	35.86	32.7
6802	36.21	33.21
2951	39.15	38.24
7757		
7853	35.98	34.45
8633		
5401		
9801	35.77	34.16
5902	37.3	33.91
0601	43.64	40.6
7952	36.89	36
9812		
0302		
0101	41.13	38.65
2003		
3309		
5004	36.61	35.24
5907	36.5	34.91
871L		
871G		
871I		
871J		
581A		
871N		
991B		
601A		
871F		
461C		
101A		
101C		
501B		
981G		
891C		
891E		
581D		
581E		
6511		
6506		
581G		
7508		
671B		
0102	41.46	38.8
0801	45.7	44.65
9603		
9708		
4304		
6602	38.84	35.27
0701		33.36
6850	36.18	34.56
5450	41.2	40.11
271F		
991A		
8002	40.04	37.93
7403	37.021	35.441
6402	36.25	34.15
8509		
311A		
371D		
371B		
9701	35.02	33.27
6202		
5910	37.03	35.07
6204		
6152		
6203		
6207		
651D		
5006	36.1	34.07
5919	37.09	35.29
2301		
8803	35.88	34.28
3308		
5208		
6701	35.92	34.72
5207		

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REFERENCE	COVER LEVEL	INVERT LEVEL
0509		
5204		
9003		
801A		
891B		
3301	39.09	37.69
931B		
821B		
821D		
891F		
891A		
891D		
891E		
341A		
5003	36.65	34.03
6663		
9610		
371A		
7104	35.2	
621C		
371G		
061B		
621B		
581C		
541B		
541D		
441B		
271D		
271A		
271B		
391A		
771B		
211B		
6960	37.09	33.06
671E	38.59	37.39
501A		
631B		
921A		
081A		
081B		
211A		
551A		
391B		
291A		
321B		
371E		
701D		
741A	36.759	35.18
641A		
751A		
741G		
641F		
741O		
641H		
741H		
641B		
641C	36.82	36.34
751C		
741J		
741L		
741P		
381C		
9002	40.58	39.04
781A		
7801	35.88	32.72
851A		
671I		
981B		
081D		
981A		
871A		
871F		
871D		
671J		
971B		
981D		
881F		
781B		
781A		
671G	38.7	35.9
671H	38.45	37.3

REFERENCE	COVER LEVEL	INVERT LEVEL
6217		
9004		
5210		
891A		
2301	39.65	38.5
881A		
821A		
821C		
881A		
671A		
891C		
781A		
441A		
341B		
8802	35.87	34.17
3302		
3314		
7106		
621A		
621D		
371H		
061C		
0601	35.63	31.97
541A		
541C		
451A		
681A		
2401		
871E		
271C		
381A		
871A		
771A		
2101	39.7	37.95
401A		
631A		
981A		
091A		
091B		
091C		
391D		
551B		
391C		
321A		
371F		
7001	36.03	33.91
981B		
741C	37.15	35.257
741D		
741F		
641D	36.8	36.28
741N		
751D		
641I	36.5	35.95
741E		
641E		
751B		
741I		
741K		
741M		
641G		
731A		
081A	9.75	
781B		
571A		
581A		
9801	45.99	43.71
081E		
081C		
871B		
871G		
871E		
871C		
971A		
981C		
881E		
881G		
881H		
991C		
301A		
671F	38.63	37

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REFERENCE	COVER LEVEL	INVERT LEVEL
201B		
301B		
7151		
7101		33.3
601B		
711A		
711C		34.5
711D		34.4
611C		33.5
611E		34.5
611F		33.8
611H		34.5
611J		34.45
611L		34.5
711H		34.2
611O		34.6
6150		
7002	34.75	32.3
711G		
761A		
981D		
651B		
881I		
991B		
991C		
9804	42.98	41.33
8803	41.64	39.2
881B		
6512		
931C		
651D		
1601	42.09	40.59
381B		
8701	36.23	33.48
081B		
6002		39.43
601D		
981F		
981G		
881D		
781D		
741R		
891B		
9401	36.5	35.27
041B	37.4	35.58
801E		
871G		
961A		
961C		
331A		
041E		
781B		
791A		
061A		
061C		
591A		
691B		
901C		
181A		
881B		
381E		
381G		
381H		
931H		
821E		
641J		
641L		
871B		
881D		
881F		
871C		
701C		
301C		
231A		
701E		
701G		
781F		
311C		
311E		
591A		
591C		

REFERENCE	COVER LEVEL	INVERT LEVEL
201C		
911A		
7050	34.84	33.09
601A		34.6
611A		34.5
711B		
701A		33.35
711E		34.4
611D		34.5
711F		33.65
611G		34.1
701B		34.25
611K		34.3
611M		34.3
611N		34.45
0201	41.49	38.91
611B		33.6
611I		
761B		
981C		
8801	42.17	40.39
981E		
991A		
091D		
651C		
9903	42.8	41.72
8802	41.88	39.39
881C		
9303	40.22	
931A		
161A		
901A		
371I		
081C		
981E		
601B		
881C		
741Q		
881B		
271E		
731B		
781E		
041C		
041A	38.26	35.82
801D		
701A		
971A		
961B		
781C		
041D		
051A		
881E		
041F		
061B		
931F		
691A		
901B		
041G		
881A		
381D		
381F		
481A		
931G		
931I		
061D		
641K		
871A		
881C		
881E		
791A		
701B		
431A		
311B		
701D		
701F		
701H		
581I		
311D		
311F		
591B		
891G		

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REFERENCE	COVER LEVEL	INVERT LEVEL
551C		
321C		37.75
771A		
811A		
811C		
681C		
681B		
391E		
651G		
231C		
181D		
681E		
791C		
521B		
041J		
621E		
771D		
791E		
021B		
661B		
691A		
521G	43.28	41.61
531E	43.41	41.58
521D	43.6	41.9
531K	42.2	40.55
521E	43.4	41.99
531B	41.85	40.59
531F	43.53	41.31
521B	43.76	41.8
531I	41.64	40.33
531A	41.61	40.4
521L	43.54	41.24
522C		
522A		
531Z		
521P		
621B		
532B		
621O		
531U		
521T		
621P		
521Q		
631C		
621D		
621M		
621A		
521Y		
521S		
522B		
521Z		
621L		
532A		
521R		
621G		
521O		
532C		
521U		
521X		
521M		
532I		
621X	39.5	37.32
621U		
532F		
621T		
522I		
621R		
532E		
532M		
522H		
532N		
621V		
061H		
061I		
061F		
281E		
941A		
041K		
441E		
441J		
441H		

REFERENCE	COVER LEVEL	INVERT LEVEL
541E		
321D		
181B		
811B		
811D		
681D		
681A		
181C		
651H		
701I		
781D		
791B		
791D		
521A		
041I		
621F		
361A		
021A		
661A		
691B		
521F	43.28	42.08
521C	44.03	42.05
531H	41.61	40.11
531D	42.83	41.1
521J	43.76	41.12
531G	42.99	41.41
531C	42.32	40.67
521I	43.02	41.56
521A	43.8	41.7
521K	43.8	41.21
521H	43.36	41.47
531J	41.85	40.44
532D		
531P		
621E		
531V		
621F		
621C		
531T		
531O		
531Y		
531X		
631D		
621K		
531L		
621I		
621Q		
621H		
531S		
621N		
621J		
521W		
631A		
521V		
531N		
531W		
631B		
531Q		
531M		
532J		
621S		
621Y		
522F		
522D		
631F		
522G		
532H		
522E		
532L		
532O		
532G		
621W		
061G		
061E		
281D		
981H		
941B		
441K		
441C		
441D		
441F		

ALS/ALS Standard/2025_5113265

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
441G		
891G		
241B		
241D		
241E		
861B		
221A		

REFERENCE	COVER LEVEL	INVERT LEVEL
441I		
891F		
241A		
241C		
861A		
861C		



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

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.

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

Other Symbols

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

	Change of Characteristic Indicator
	Public / Private Pumping Station

Summit

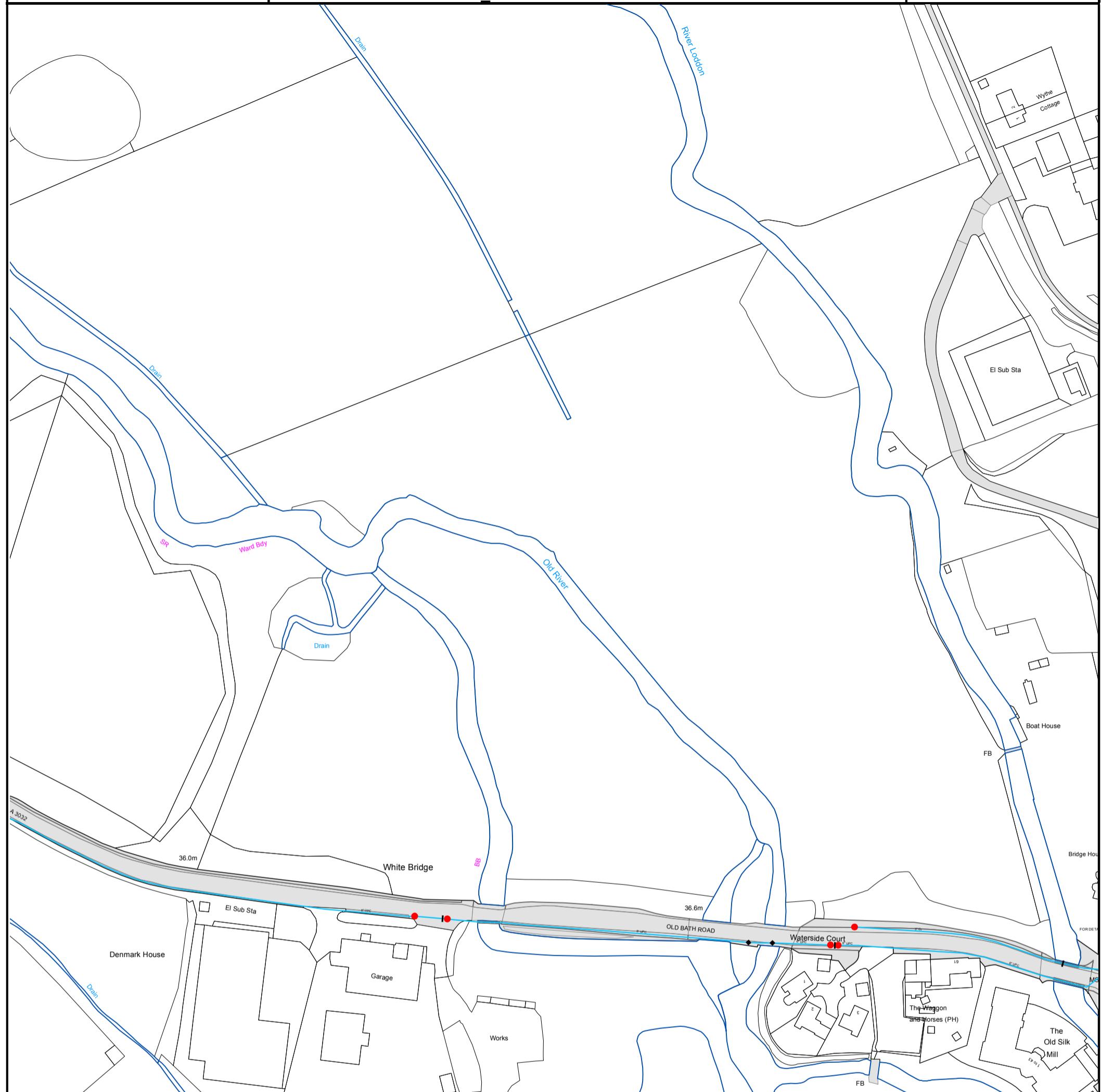
Areas

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	



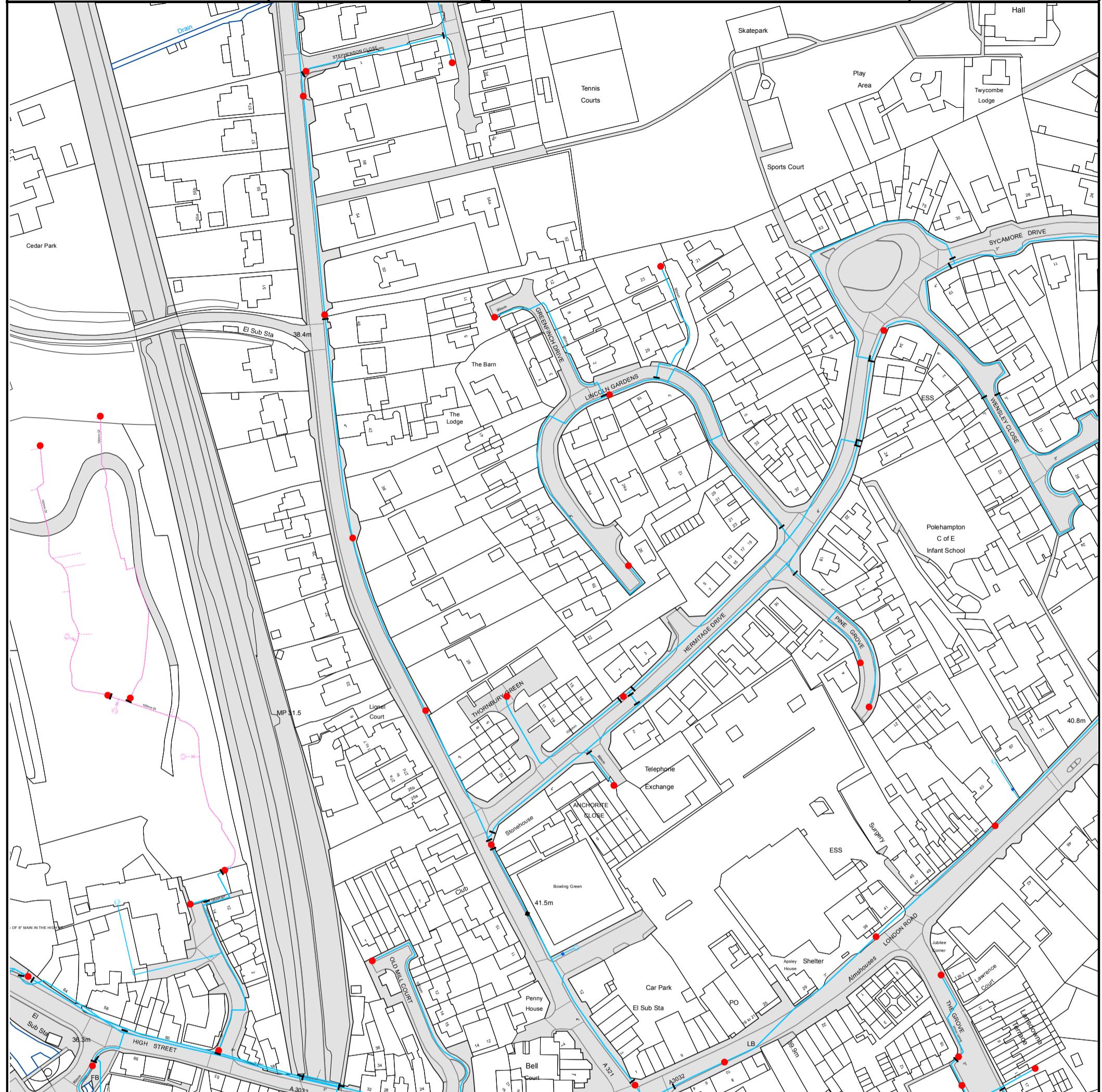
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 478250,176250

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

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Asset Location Search Water Map - ALS/ALS Standard/2025 5113265

SU7876SE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 478750,176250

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Asset Location Search Water Map - ALS/ALS Standard/2025 5113265

SU7775NW



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 477250, 175750

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

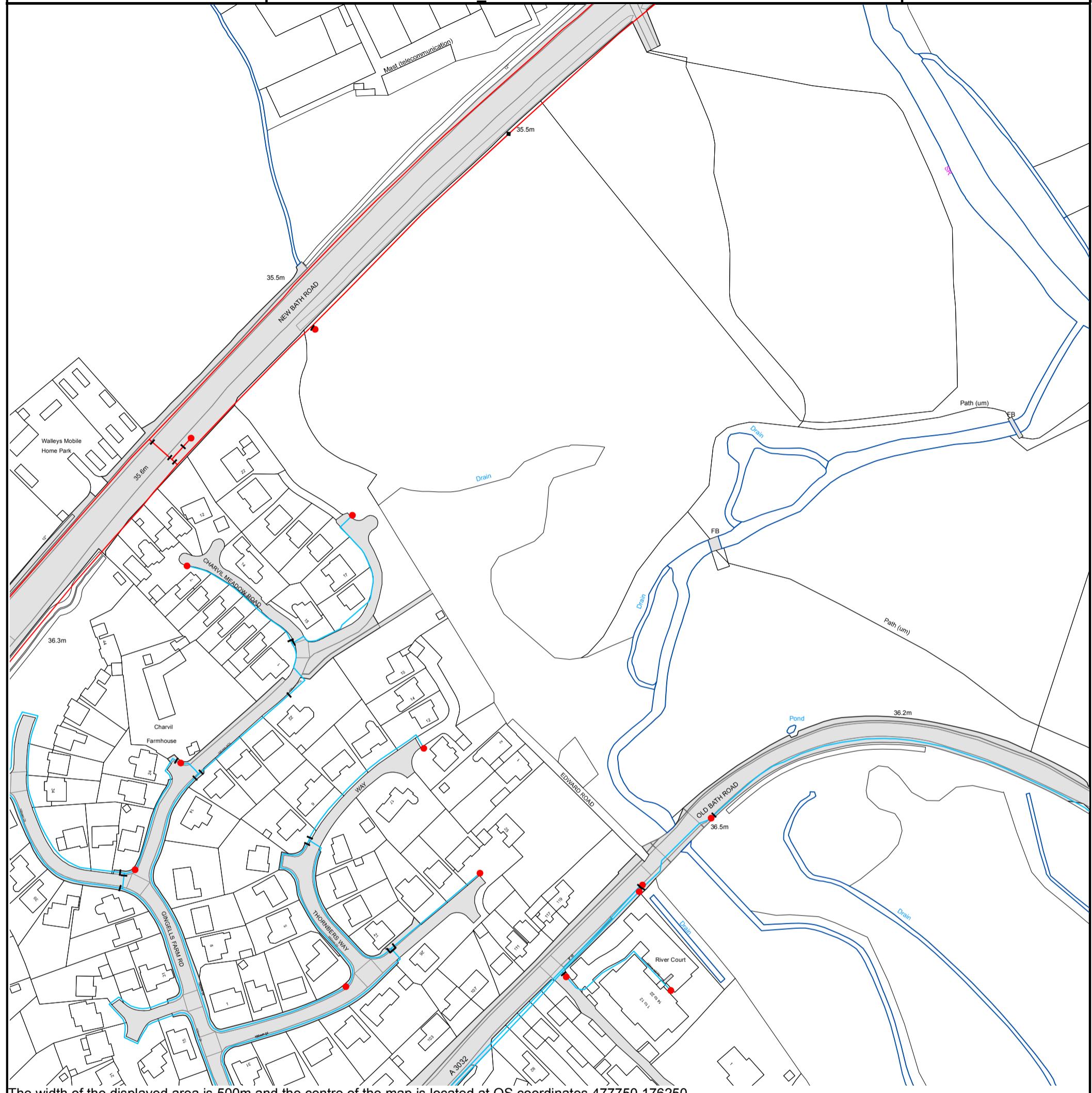
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 477750,175750

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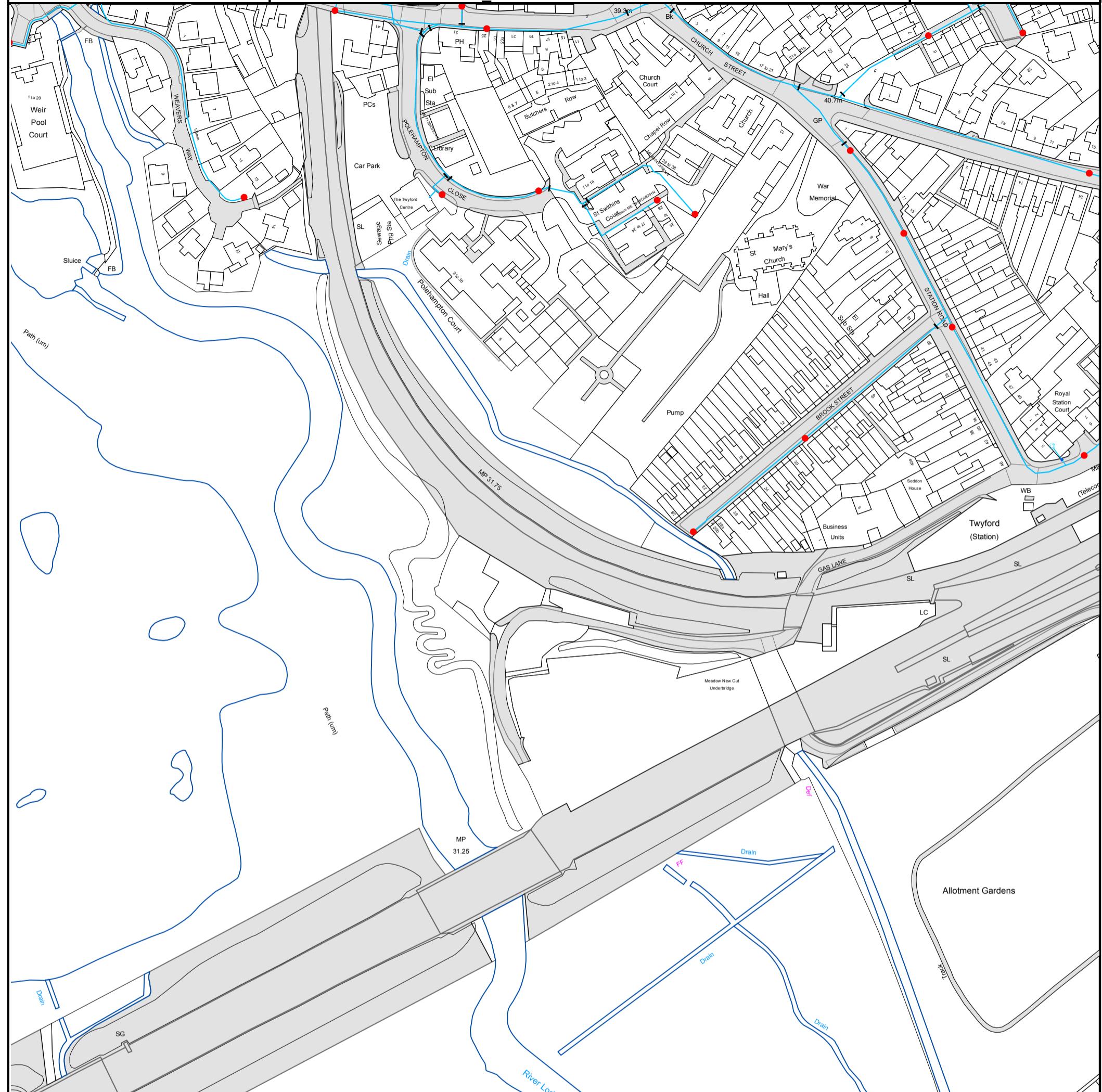


The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

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Asset Location Search Water Map - ALS/ALS Standard/2025 5113265

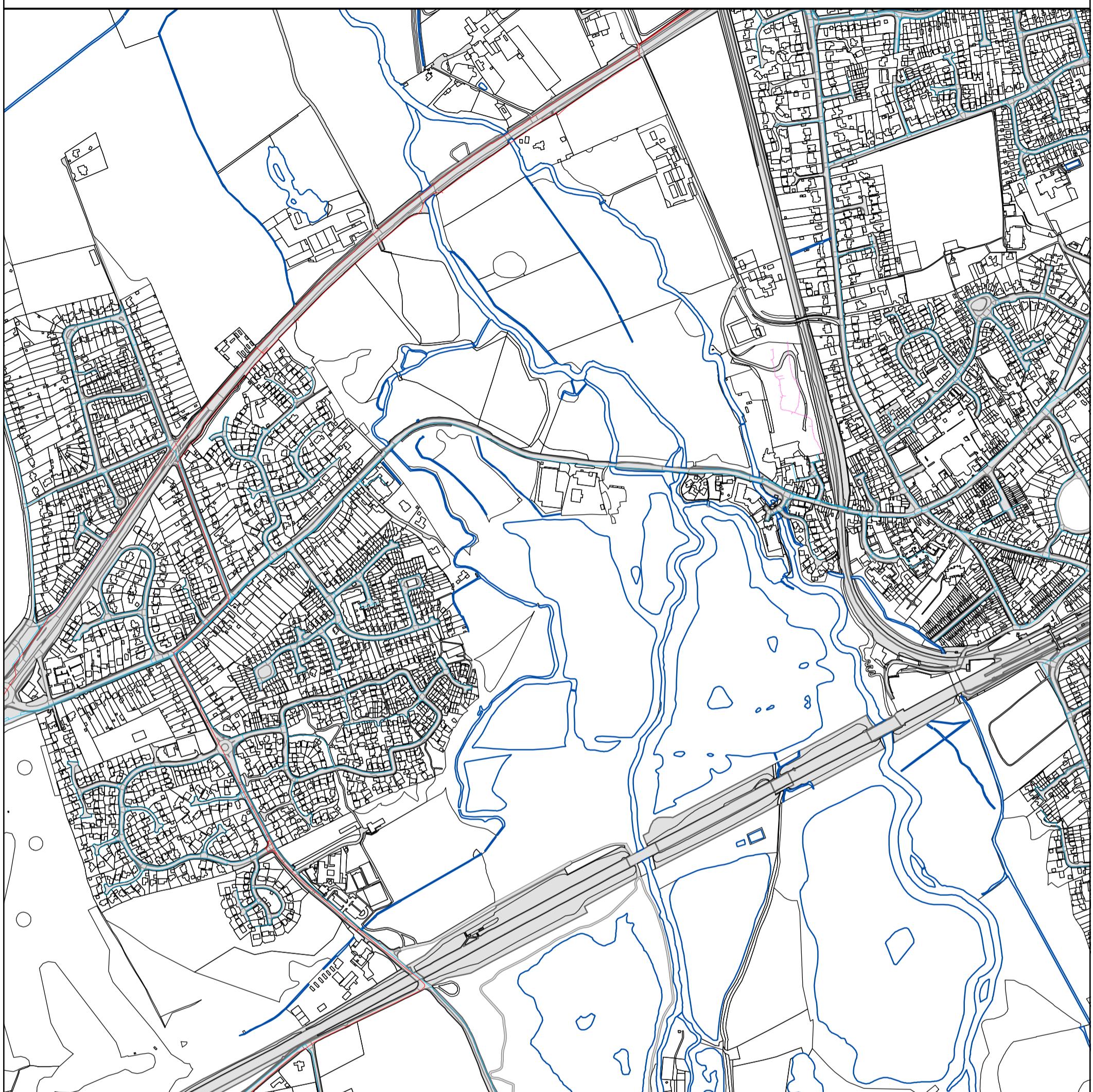
SU7875NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 478750, 175750

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

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0 45 90 180 270 360
Meters

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 before any works are undertaken. Crown copyright Reserved

Scale: 1:7161	Comments:
Width: 2000m	
Printed By: ASuji	
Print Date: 31/01/2025	
Map Centre: 478099,175922	
Grid Reference: SU7875NW	



Asset Location Search - Water 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
- 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:** 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.

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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.
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3. All invoices are strictly due for payment within 14 days of the 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.
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5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
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If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

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 0300 034 2222 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
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email <u>ps.billing@thameswater.co.uk</u>	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

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

APPENDIX E

Drainage Calculations

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
	Tank 1	0.467	5.00	36.010		54.736	54.768	2.000
	1.000 - Hydrobrake			36.010	1200	58.050	58.667	2.039
	1.001			36.010	1200	64.329	59.566	2.087
	1.002			36.010	1200	65.961	93.259	2.344
	1.003 - OUTFALL			36.010	1200	86.584	93.385	2.460

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	Tank 1	1.000 - Hydrobrake	5.117	0.600	34.010	33.971	0.039	131.3	300	5.06	50.0
1.001	1.000 - Hydrobrake	1.001	6.343	0.600	33.971	33.923	0.048	131.3	300	5.14	50.0
1.002	1.001	1.002	33.733	0.600	33.923	33.666	0.257	131.3	300	5.55	50.0
1.003	1.002	1.003 - OUTFALL	15.196	0.600	33.666	33.550	0.116	131.3	300	5.73	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.370	96.9	63.3	1.700	1.739	0.467	0.0	177	1.458
1.001	1.370	96.9	63.3	1.739	1.787	0.467	0.0	177	1.458
1.002	1.370	96.9	63.3	1.787	2.044	0.467	0.0	177	1.458
1.003	1.370	96.9	63.3	2.044	2.160	0.467	0.0	177	1.458

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	0.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	2880	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node 1.000 - Hydrobrake Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.001	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0062-1600-0839-1600
Invert Level (m)	33.971	Min Outlet Diameter (m)	0.075
Design Depth (m)	0.839	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.6		

Node Tank 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	34.010
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	2580

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	580.0	0.0	0.800	580.0	0.0	0.801	0.0	0.0	2.000	0.0	0.0

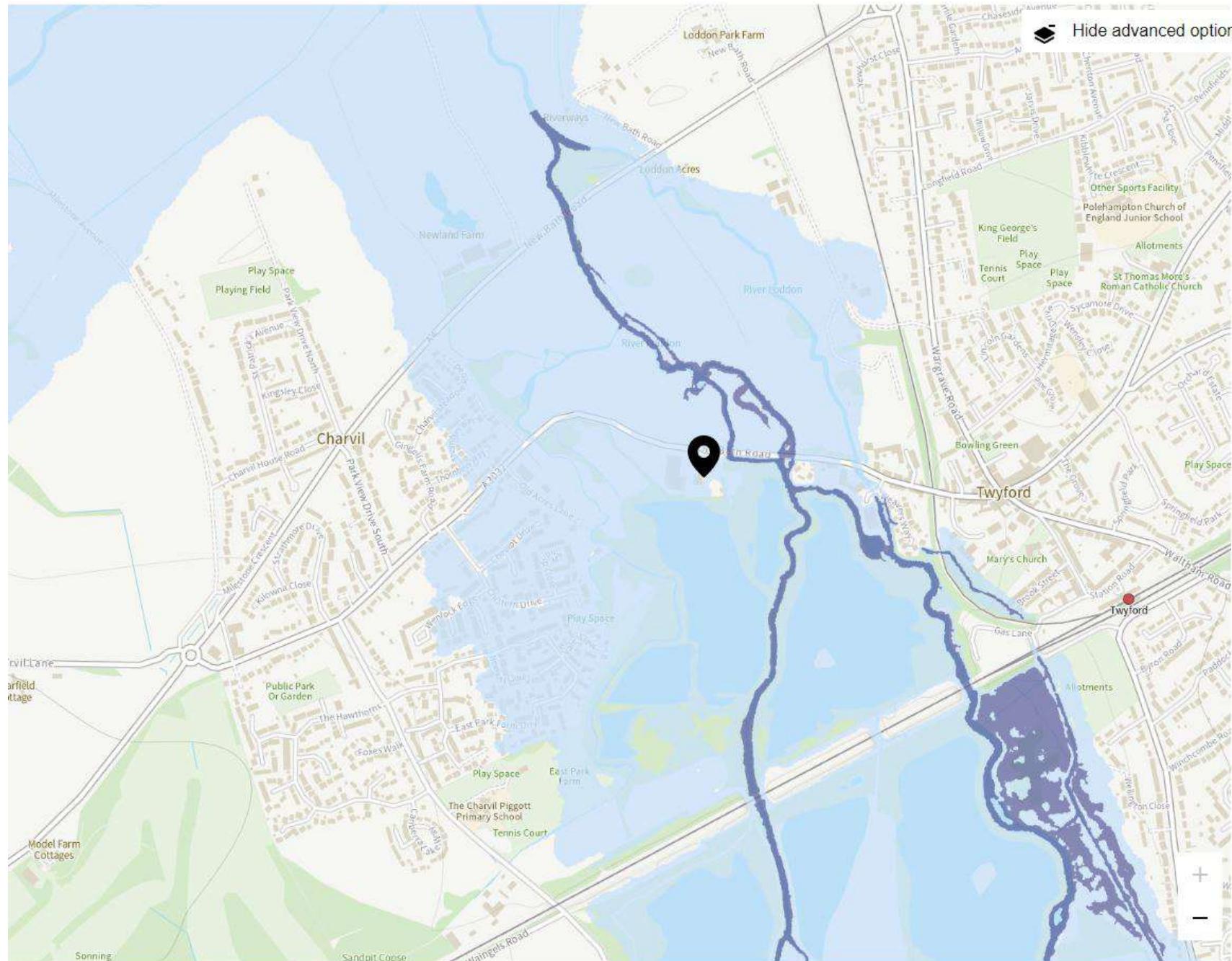
Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node	Flood Vol (m³)	Flood (m³)	Status
1440 minute winter	Tank 1	1410	34.809	0.799	16.2	440.2716	0.0000	0.0000	SURCHARGED
1440 minute winter	1.000 - Hydrobrake	1410	34.809	0.838	6.7	0.9478	0.0000	0.0000	SURCHARGED
30 minute winter	1.001	733	33.950	0.027	1.6	0.0304	0.0000	0.0000	OK
960 minute summer	1.002	3795	33.693	0.027	1.6	0.0307	0.0000	0.0000	OK
30 minute winter	1.003 - OUTFALL	734	33.577	0.027	1.6	0.0000	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	Tank 1	1.000	1.000 - Hydrobrake	6.7	0.381	0.069	0.3603	
1440 minute winter	1.000 - Hydrobrake	Hydro-Brake®	1.001	1.6				
30 minute winter	1.001	1.002	1.002	1.6	0.529	0.017	0.1051	
960 minute summer	1.002	1.003	1.003 - OUTFALL	1.6	0.516	0.017	0.0472	327.7

APPENDIX F

Flood Mapping



Hide advanced option

Key

Surface water

- Extent
- Depth
- Velocity

Rivers and the sea

- Extent

Reservoirs

- Extent
- When river levels are normal
- When there is also flooding from rivers

Map details

- Show flooding
- Selected address

Pause to updates of flood risk data

We have [paused updates to information about flood risk](#) from rivers and the sea and surface water while we get ready for new data.

Flood map for planning

Your reference
24-210

Location (easting/northing)
478167/176031

Created
18 Dec 2024 16:34

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2024 OS AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



Environment
Agency

Flood map for planning

Your reference

24-210

Location (easting/northing)

478167/176031

Scale

1:10000

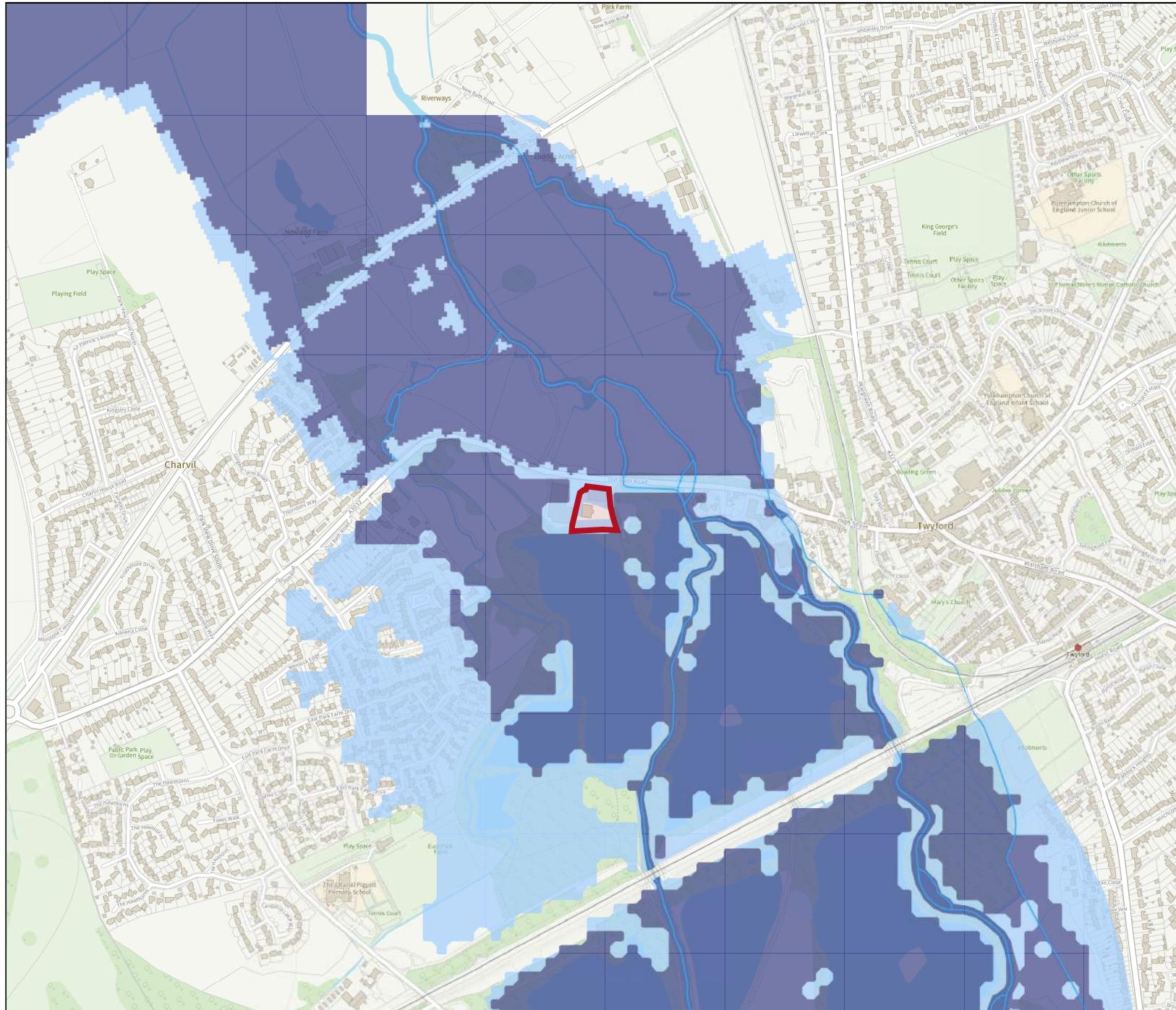
Created

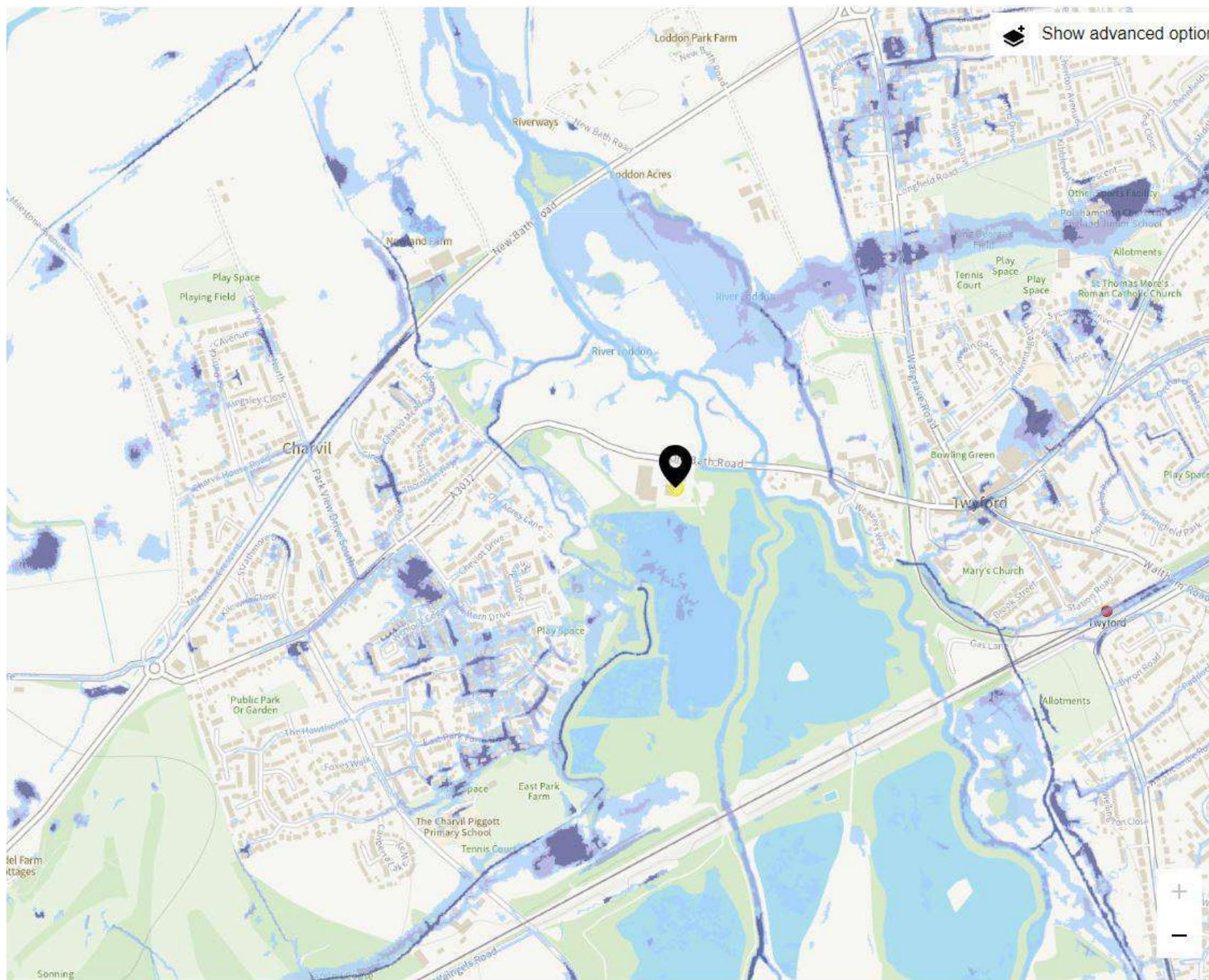
18 Dec 2024 16:34

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 100 200 300m

Page 2 of 2





Show advanced option

Surface water

Extent

High

More than 3.3% chance each year

Medium

Between 1% and 3.3% chance each year

Low

Between 0.1% and 1% chance each year

Depth

Map details

Show flooding

Selected address

15m boundary

Pause to updates of flood risk data

We have [paused updates to](#) information about flood risk from rivers and the sea and surface water while we get ready for new data.

APPENDIX G

SuDS Operation and Maintenance Requirements

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

21.14 REFERENCES

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TABLE 14.2 An example of operation and maintenance requirements for a proprietary treatment system

Maintenance schedule	Required action	Typical frequency
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months

should be undertaken whenever access for maintenance is required. Removal of oil, silt and other pollutants must be in accordance with the appropriate waste management legislation.

Maintenance responsibility for all systems should be placed with an appropriate organisation, and Maintenance Plans and schedules should be developed during the design phase.

- ▶ Further detail on the preparation of maintenance specifications and schedules of work is given in [Chapter 32](#).

Table 14.2 provides guidance on the type of operation and maintenance schedule that may be appropriate for a proprietary treatment system. The list of actions is not exhaustive and some actions may not always be required.

CDM 2015 requires designers to ensure that all maintenance risks have been identified, eliminated, reduced and/or controlled where appropriate. This information will be required as part of the health and safety file.

- ▶ Generic health and safety guidance is presented in [Chapter 36](#).

14.12.2 Oil water separators

Specific requirements for oil/water separators are provided in PPG3 (EA/SEPA/EHSNI, 2006). The following items should be undertaken every six months as a minimum:

- check volume of sludge
- check thickness of light liquid
- check function of automatic closure device
- empty the separator, if required
- check the coalescing material and clean or change if necessary (class 1 only)
- check the function of the warning device (if fitted)

General inspection of the integrity of oil/water separators should occur at a maximum frequency of five years, and should cover the following:

- watertightness of system