Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2020_4202217





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:	1:7158	Comments:
Width:	2000m	
Printed By:	G1KANAGA	
Print Date:	24/06/2020	
Map Centre:	529942,182945	
Grid Reference:	TQ2982NE	

ALS Sewer Map Key



Sewer Fittings

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

Air Valve Dam Chase Fitting

Σ Meter

Π

0 Vent Column

Operational Controls

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

X Control Valve Ф Drop Pipe Ξ Ancillary Weir

End Items

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

いし Outfall

Undefined End

Inlet

Other Symbols

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

- Public/Private Pumping Station
- * Change of characteristic indicator (C.O.C.I.)
- Ø Invert Level
- < Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement **Operational Site** :::::: Chamber Tunnel Conduit Bridge

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



Notes:

hames

Water

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

2) All measurements on the plans are metric.

- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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

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

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



0 10 20 40 60 80



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hames ALS Water Map Key Water

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.
- Trunk Main: A main carrying water from a source of supply to a 16" treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- Supply Main: A supply main indicates that the water main is used 3" SUPPLY 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.
- Metered Pipe: A metered main indicates that the pipe in question 3" METERED 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')		

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General PurposeValve

Valves

- Undefined End
- \bigcirc Æ Manifold
- Customer Supply
- Fire Supply

Operational Sites



Other Symbols

Data Logger

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

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

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

Terms and Conditions

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

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- 2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
- 3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
- 4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
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- 6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
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- 8. A charge may be made at the discretion of the company for increased administration costs.

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Appendix J Utility drawings



NOTE	S

Existing Utility Survey Information is based on "2007s010 ref 6946.dwg" provided by Groundwise Searches August 2020.

LEGEND
Red Line Bo

Existing Tunnel

Red Line Boundary

Proposed Utility Diversions

Water Main to be diverted	<u> </u>
Combined Sewer to be abandoned	•X ∞X•
Abandoned Sewer to be removed	·X ∧€X•
BT to be diverted	·
Virgin Media to be diverted	·X vX•
Fibre Optics to be diverted	·X ™X•
Vodafone to be diverted	·
Colt to be diverted	·X जX•
instalcom to be diverted	•X •••
Telent to be diverted	• X TEL - X • •
Verizon to be diverted	
Electricity Cable to be diverted	·
Gas Main to be diverted	•X •X•

P01	14/08/20	RO	RO	TMcD		
For Information						
Issue	Date	Ву	Chkd	Appd		

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Civil

Drawing Status

P01

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Appendix K

Risk assessment methodology

K1 Risk assessment methodology

The potential risks to human health and environmental receptors have been considered in accordance with the current UK approach to contaminated land assessment, taking into consideration the available information on the construction and operational phases of the development.

The method for risk evaluation takes into consideration the magnitude of the potential severity of the risk, as well as the probability of the risk occurring. The risk characterisations have been assessed based on the qualitative method of interpretation set out in CIRIA guidance C552 [32] and NHBC/EA/CIEH risk classification methodology [33].

The method for risk evaluation involves the classification of the:

- Magnitude of the potential consequence (severity) of the risk occurring (refer to Table K1-1); and,
- magnitude of the probability (likelihood) of the risk occurring (refer to Table K1-2).

Classification	Definition			
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part IIA.			
	Short-term risk of pollution of a sensitive water resource.			
	Catastrophic damage to buildings or property.			
	A short-term risk to an ecosystem, or organism forming part of such ecosystem.			
Medium	Chronic damage to human health.			
	Pollution of a sensitive water resource.			
	A significant change to an ecosystem, or organism forming part of such ecosystem.			
Mild	Pollution of a non-sensitive water resource, such as non-classified groundwater.			
	Damage to buildings, structures and services.			
Minor	Harm, which may result in a financial loss, or expenditure to resolve.			
	Non-permanent effects to human health, which could easily be prevented by means such as personal protective clothing.			
	Easily repairable effects of damage to buildings, structures and services.			

Table K1-1 Classification of consequence

Classification	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long-term, or there is evidence at the receptor level of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible over the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is not certain that such an event would take place.
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Table K1-2 Classification of probability

Table K1-3 presents the risk assessment matrix and Table K1-4 defines the risk classifications.

		Consequence				
		Severe	Medium	Mild	Minor	
	High likelihood	Very high risk	High risk	Moderate risk	Moderate/ low risk	
Probability	Likely	High risk	Moderate risk	Moderate/ low risk	Low risk	
	Low likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk	
	Unlikely	Moderate/ low risk	Low risk	Very low risk	Very low risk	

Table K1-3 Comparison of consequence against probability

Risk classification	Description of risk
Very high	There is a high probability that severe harm could arise to a designated receptor from an identified contaminant linkage at the site without appropriate remediation action.
	OR there is evidence that severe harm to a designated receptor is currently happening.
	The risk, if realised, is likely to result in substantial liability.
High	Harm is likely to arise to a designated receptor from an identified contaminant linkage at the site without appropriate remediation action.
	Realisation of the fisk is fixely to present a substantial flability.
Moderate	It is possible that without appropriate remediation action, harm could arise to a designated receptor from an identified contaminant linkage. It is relatively unlikely that any such harm would be severe, and if any harm were to occur, it is more likely that such harm would be relatively mild.
Low	It is possible that harm could arise to a designated receptor from an identified contaminant linkage.
	It is likely that if any harm was realised, at worst any effects would be mild.
Very low	The presence of an identified contaminant linkage does not give rise to the potential to cause harm to a designated receptor.

Table K1-4 Risk classifications

Appendix L Initial remediation strategy

L1 Initial remediation strategy

The extent of contamination at the site is not well defined due to the availability of only limited onsite ground investigation data. It is considered likely that some contamination will be present in the Made Ground due to previous site uses, particularly asbestos, hydrocarbons (e.g. PAH) and metals.

A remediation strategy is likely to be required (as part of the planning process) that identifies the requirements for remediation and risk management measures as part of the proposed redevelopment. The following sections provide initial considerations to be revised and developed at subsequent stages of the project.

L1.1 Remediation options appraisal

If significant contamination is identified there are a wide range of potential remediation technologies and options available and the selection process will depend on the type of contamination present, the ground conditions and development. If required a remediation options appraisal should be undertaken in accordance with Stage 2 of the LCRM guidance [29]. This will provide structure to the decision-making process, aid the selection of the most suitable remediation approach and should be beneficial to the process of gaining regulatory acceptance for the adopted approach.

To ensure remediation is based on sustainable principles the options appraisal should include criteria applicable to sustainable concepts as described in section 0 while still providing protection of health and the environment and within a reasonable budget.

L1.2 Sustainable remediation

The UK Sustainable Remediation Forum (SuRF-UK) has published a framework [34] (via CL:AIRE) for assessing sustainable remediation; describing how it links with the relevant regulatory guidance; the factors to be considered and describing sustainability appraisal tools to evaluate the wider benefits and impacts of remediation.

There is great benefit in early consideration of developing sustainable solutions in remediation options during the project. Remediation in its widest definition includes actions to assess potentially contaminated sites or break a source-pathway-receptor linkage and as such includes a wide range of risk management techniques. This approach complements the use of risk assessment and risk management in decision making for contaminated land management.

L1.3 Managing risk from asbestos

Where asbestos in soils are identified on the Site then the requirements described in the Control of Asbestos Regulations CAR 2012 [35], CIRIA C733 [36] and CAR-SOIL [37] should be adhered to where they apply.

An occupational risk assessment should be undertaken by a competent assessor (asbestos specialist) in accordance with CAR 2012 and the associated code of practice to determine the likely exposure resulting from the works and the level of protection and management required by CAR 2012. This will also identify if the works with asbestos will be licensed, notifiable non-licensed work or non-licensed work and what notifications and health surveillance is required.

Air monitoring should be undertaken during the works to confirm the absence of respirable fibres above the CAR 2012 action levels. A lower detection limit (than used for occupational monitoring), i.e. 0.00001 f/ml, for air monitoring at the boundary, may be appropriate (this is a recommendation from CIRIA C733).

L1.4 **Dust control**

Given the proximity of the public realm and adjacent neighbours, control of fugitive dust should be a priority. As a minimum the works should be undertaken in accordance with BRE The Control of Dust and Emissions from Construction and Demolition, Best Practice Guidance [38] and the following mitigation measures introduced to assist with control of dust generation:

- Access roads and stockpiles regularly damped down with water;
- All vehicles entering and leaving the site during the construction period should pass through a wheel washing facility;
- Vehicles used to transport materials and aggregates should be enclosed or tarpaulined;
- Local roads should be regularly cleaned;
- Vehicle movements should be kept to a minimum and vehicle speeds within the site limited;
- Dust generating equipment e.g. mobile crushing and screening equipment should be located to minimise potential nuisance impacts to receptors, as far as practicable;
- Handling areas should be kept as clean as practicable to avoid nuisance from dust;
- Dusty materials should be dampened down using water sprays in dry weather;
- Dust complaints should be investigated at the earliest opportunity and appropriate action taken to control the source or remedy the effect as appropriate; and,
- Additional measures may be required dependant on the results of the ground investigation, especially if asbestos is identified in soils.

L1.5 Protection of construction workers and neighbours

There is potential that materials contained within the Made Ground may pose a risk to construction workers in the short term. In addition, unidentified contamination may exist which may pose a risk. During the redevelopment of the site it will be necessary to implement measures to protect construction workers

and users of the adjacent sites and public realm from exposure to any contaminated material which is encountered.

Appropriate measures to protect construction workers may include training in and enforcement of hygiene procedures, use of personnel protective equipment (PPE), the implementation of dust control measures and a health and safety risk assessment.

Mitigation measures that should be used to counter the identified potential impacts of construction should be incorporated into the Contractor's Method Statements and Health and Safety Plans and include:

- Procedures and protocols to prevent construction workers, visitors and neighbours from being exposed to contaminated materials;
- Monitoring of excavation works to identify unforeseen areas of contamination;
- Gas monitoring of confined spaces, together with appropriate supervision and Confined Space Entry (CSE) training for site personnel;
- Systems to record and monitor the movement and deposition of waste materials leaving or being transported to other parts of the site; and,
- Limiting dust generation during excavation and handling of potentially contaminated materials.

L1.6 Waste management

Surplus excavated soils requiring disposal or offsite treatment, or recycling should be disposed of in accordance with current waste management regulations and guidance. It is necessary to carry out waste classification and compliance testing in line with current regulations prior to export from site. It is now a legal requirement to treat wastes before disposal. Treatment may occur on site or alternatively offsite treatment facilities may be utilised. This may also minimise the amount of hazardous waste and maximise the quality of inert waste for disposal or reuse.

Prior to works commencing on site the Contractor should develop a Site Waste Management Plan (SWMP) for the removal, transportation and disposal of all waste materials resulting from excavations. The Contractor should investigate opportunities to maximise the recycling potential of demolition and construction materials. Recyclable materials such as metals, timber and cardboard should be segregated and stored separately.

All residual waste should be removed from site by permitted carriers to suitable permitted disposal sites. Further waste classification testing and waste acceptance criteria testing may be required by the Contractor to allow materials to be suitably classified and disposed of.

L1.7 Imported materials

Topsoil, subsoil and engineered fill imported for use at the site (or generated from site won soils) should be certified as chemically suitable for purpose. Samples of imported topsoil and secondary aggregates should be taken in-situ and scheduled

for laboratory testing to verify certification. All supplier and verification chemical results should be collated by the Contractor for inclusion in the remediation verification report.

L1.8 Soil materials for service trenches

The UK Water Industry Research Ltd (UKWIR) has published a series of Booklets regarding pipe selection on brownfield sites [39]. In addition to the guidance written in the published booklets, a computer database has been developed that details the identity, likely combinations, effects and trigger levels for pipeline protection from contaminants found on brownfield development sites.

Thames Water should be consulted regarding the pipe material specification of potable water supply pipes. It is possible that they will require precautions associated with any contamination identified on the site.

L1.9 Watching brief

A watching brief should be maintained through the works. The procedure for dealing with any previously unidentified significant contamination should be set out within the remediation strategy. The watching brief should be documented, reported on during progress meetings, and compiled in a verification report. The watching brief should not necessarily involve specialist personnel (dependant on the findings of the ground investigation and further assessment), but it should be defined on site, communicated to staff involved in the ground works (toolbox talks etc.) and reported on.

If any unidentified areas of significantly contaminated soils are encountered during the development, the Contaminated Land Officer (CLO) (or alternative Local Authority representative) should be informed and the methodology for dealing with such material agreed in writing.

L1.10 Decommissioning of monitoring wells

Unless there is a specific requirement to monitor groundwater or land gas during construction, all monitoring wells installed on the site during the ground investigation should be decommissioned prior to development. Where required these boreholes would be decommissioned in line with the EA guidance [40] to ensure that no preferential flow pathways, from the surface and Made Ground to the underlying aquifers, are created during the development works. This should be undertaken before any significant ground works take place.

L1.11 Regulator liaison / planning requirements

Pre-commencement planning conditions are likely to include tiered contamination risk assessment including a scope of ground investigation and a remediation strategy. Post commencement conditions are likely to include approval of a remediation verification report. Where possible early engagement with the regulators is recommended to discuss the approach to contamination risk assessment and remediation. It would be appropriate (and may be a specific requirement) here for the scope of ground investigation to be discussed and agreed with the CLO (or alternative local authority representative) before commencement.

The remediation strategy will require prior agreement with the CLO, and the CLO will be notified prior to any remediation and/or enabling works at the site. Liaison with the CLO may be required during enabling/construction works if, for example, unexpected contamination is encountered. A verification report will also need to be prepared for submission to the local authority to demonstrate completion of works in accordance with the agreed remediation strategy.

L1.12 Verification report

A verification report will be required following completion of remediation and/or development works. The verification report should be sufficient to demonstrate that verification requirements identified within the remediation strategy (or separate verification plan if applicable) have been met. Typically, a verification report may include the following items:

- Details of works carried out and contamination encountered during investigation;
- Details and justification of any changes from the original remediation strategy;
- Lines of evidence to demonstrate the success of specific remediation (if required);
- Demonstration of compliance and description of validation methods;
- Laboratory and in-situ testing results;
- Monitoring results for groundwater and gases;
- Summary data plots and tables relating to clean up criteria;
- Photographic and other media records;
- Waste management details and records;
- Ongoing environmental monitoring or works to be carried out;
- Details of any unexpected contamination and how it was dealt with;
- Details of any onward long-term monitoring methodology (where required) in accordance with the relevant planning conditions; and,
- Description of final site conditions.

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