Cole Easdon

SURFACE WATER DRAINAGE STRATEGY

Proposed Residential Development, 18 – 19 Dianmer Close, Hook, Wiltshire on Behalf of Mrs Irfana Yasmeen

Date: October 2022
Issue No. 1



DOCUMENT ISSUE RECORD

Client: **Mrs Irfana Yasmeen**

Project: **Proposed Residential Development, 18 – 19 Dianmer Close, Hook, Wiltshire SN4 8EB**

Job Number: **8734**

Document Title: **Surface Water Drainage Strategy**

Issue No.	1			
Date	October 2022			
Description / Status	Draft for Client Comment			
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Technical Check	S. Starr BSc (Hons)			
Authorised	D Frosoni CEng MICE			
Document Check	C. Spanner BA (Hons)			

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The methodology adopted and the sources of information used by Cole Easdon Consultants Limited (CE) in providing its services are outlined within this Report. Any information provided by third parties and referred to herein has not been checked or verified by CE, unless otherwise expressly stated within this Report. This Report was checked and approved on the date shown in the Document Issue Record and the Report (including its base information, adopted parameters and assessment methodology) is therefore valid on this date. Circumstances, regulations, assessment methodology and professional standards do change which could subsequently affect the validity of this Report.

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1.0 INTRODUCTION

1.1 This *Surface Water Drainage Strategy* has been prepared by Cole Easdon (CE) on behalf of Mrs Irfana Yasmeen, in support of a planning application for the construction of 3 new residential dwellings at land to the rear of 18 and 19 Dianmer Close, Hook, Wiltshire SN4 8EB. Refer to CE Figure 8734/500 Figure 1 [*Site Location Plan*] in Appendix 1.

Development Proposals

1.2 Development proposals at the site comprise the demolition of the existing outbuildings on the site and the construction of 3 new residential dwellings, with associated access roadway, driveway, garages and gardens.

1.3 This study is based on information as provided within Drawing No. 09-1026-05A *[Proposed Drainage Layout]* (by John Turner Plan and Design). Refer to Appendix 5.

Need for Study

1.4 This Study has been prepared to demonstrate that surface water discharge from the development can be managed in a sustainable manner in line with the *National Planning Policy Framework (NPPF)* and its associated *Planning Practice Guidance (PPG)*.

Local Policy

1.5 This assessment also demonstrates that the proposals meet the requirements set out in Wiltshire Council's *Developer's Guidance Note – Flooding, Drainage and SuDS* (WC, undated) and *Control of Surface Water Discharges from New Developments – Betterment Policy Update* (WC, undated).

1.6 The Wiltshire Core Strategy (January 2015) states that '*there is a challenge to plan for sufficient new homes to be delivered in Wiltshire to address housing requirements'*. This development will contribute to meeting housing requirements for rural Wiltshire.

Scope of Study

1.7 In Section 2.0, we describe the characteristics of the proposed development site and surrounding area. In Section 3.0, we outline the proposed surface water drainage strategy. Finally, conclusions are presented in Section 4.0.

1.8 The following resources have been used for this study:

- Geological Map - British Geological Survey (BGS);

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- Groundwater Source Protection Zones Map – DEFRA Multi-Agency Geographic Information for the Countryside (MAGIC, accessed September 2022);
- Revised Climate Change Allowances (EA, March 2016, updated August 2022); and
- Thames Water Sewer Records (August 2022).

1.9 The following publicly available documents have also been reviewed as part of this assessment:

- Building Regulations 2015 – Approved Document H (Drainage and Waste Disposal);
- C753 The SuDS Manual (CIRIA, November 2015);
- Climate Strategy (WC, February 2022);
- Control of surface water discharges from new developments – Betterment policy update (WC, undated);
- Developer's Guidance Note – Flooding, Drainage and SuDS (WC, undated);
- National Planning Policy Framework (NPPF) (August 2022);
- Non-Statutory Technical Standards for Sustainable Drainage Systems (Defra, March 2015);
- Planning Practice Guidance (PPG) (July 2021);
- Rainfall Runoff Management for Developments (R&D Technical Report W5-074/A/TR/1 Revision E, Defra, June 2012); and
- Sewerage Sector Guidance (SSG), Version 1.0 (Water UK, October 2019);

1.10 The following abbreviations are used in this Report:

- AOD – Above Ordnance Datum;
- EA – Environment Agency;
- MAGIC – Multi-Agency Geographic Information for the Countryside;
- NPPF – National Planning Policy Framework;
- SuDS – Sustainable Drainage Systems; and
- WC – Wiltshire Council.

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2.0 THE EXISTING SITE

2.1 The development site currently comprises the gardens of two existing dwellings (18 and 19 Dianmer Close) and is approximately 1,945m^2 in area. An area of low density residential housing is indicated immediately south and east of the site, whilst the area immediately north and west of the site is indicated to be agricultural fields. Refer to CE Figure 8734/500 Figure 1 [*Site Location Plan*] in Appendix 1.

2.2 The site is located in the village of Hook, in north Wiltshire. The M4 motorway is indicated 200m south of the site, whilst the town of Royal Wootton Bassett is indicated 600m south of the site. The town of Swindon is indicated 2km east of the site at its closest point. The remainder of the surrounding area is rural, and mainly comprises agricultural fields.

Topographical Detail

2.3 No topographical survey is available for the site. Online mapping available from the British Geological Survey (OS Survey Terrain – 50DTM) indicates that the ground level at the centre of the site is 133.6m AOD, and that the site is relatively flat with a gentle fall from north-west to south-east.

Existing Ground Conditions

2.4 Records from the British Geological Survey indicate that the site is underlain by Mudstone of the Ampthill Clay Formation. No superficial deposits are indicated to be present beneath the site. Refer to CE Figure 8734/500 Figure 2 [*BGS Geology Map*] in Appendix 1. No ground investigation has been undertaken at the site.

Groundwater

2.5 Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) map shows that the site is located within a Groundwater Source Protection Zone 2 (Subsurface Activity), which is the area in which groundwater has a travel time of 400 days or less to an abstraction point. This relates to Chalk strata at depth, as the geology is Mudstone immediately below ground level. The depth to groundwater is currently unknown.

Nearby Watercourses/Drainage Features

2.6 A drainage ditch is indicated immediately west of the site. Refer to Drawing No. 09-1026-05A *[Proposed Drainage Layout]* (by John Turner Plan and Design) in Appendix 5. A drainage ditch is indicated 100m south of the site, whilst a well and a stream are indicated 200m east of the site. No Main Rivers are indicated in the vicinity of the site.

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Existing Drainage

2.7 Asset records obtained from Thames Water Utilities Ltd (TWU) indicate that no public surface or foul water sewers are present in the vicinity of the site. A private surface water pumping station is indicated 100m south of the site. Refer to sewer records in Appendix 2.

2.8 The site is currently greenfield, and comprises the gardens of two existing dwellings. Runoff from the existing site currently either infiltrates into the ground or enters the existing ditch at the site's western boundary as greenfield runoff.

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3.0 SURFACE WATER DRAINAGE STRATEGY

3.1 In order to mitigate flood risk posed by post development runoff, control measures will need to be considered within the site. This will ensure that surface water runoff is dealt with at source and flood risk is not increased elsewhere.

3.2 The existing site comprises part of the gardens of two existing dwellings, and is approximately 1,945m^2 in area. The proposed development will comprise 942m^2 of impermeable area, with a corresponding increase in runoff. The additional runoff will be managed in accordance with sustainable drainage principles.

Drainage Hierarchy

3.3 The drainage strategy for the site has been prepared according to the drainage discharge hierarchy set out in *CIRIA C753 The SuDS Manual*, as follows:

1. Store rainwater for re-use;
2. Infiltration to the maximum extent that is practical;
3. Discharge to surface waters;
4. Discharge to surface water sewer; and
5. Discharge to combined sewer.

Water Management

3.4 Wiltshire Council's (WC) Climate Strategy (February 2022) includes the objective '*Natural water management – improving climate resilience by reducing flood risk and summer droughts, and reducing water use'*. In order to meet these wider requirements and mitigate future droughts in addition to floods, it is necessary to treat water as a resource.

Rainwater Harvesting

3.5 It is recommended that runoff from roof areas is collected in water butts and used for non-potable uses in the development, such as gardening. However, rainwater harvesting (RWH) has not been included in the drainage calculations for the proposed development, as it cannot be guaranteed that capacity will be available in the water butts when required. The use of RWH reduces the volume of runoff discharged to sewer and the volume of mains water required for the development, which contributes to sustainable water management.

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Infiltration Potential

3.6 The site is underlain by Mudstone of the Ampthill Clay Formation. Refer to CE Figure 8734/500 Figure 2 [*BGS Geology Map*] in Appendix 1. The impermeable nature of this underlying geology indicates that the site is considered to be unsuitable for infiltration drainage, and an attenuation based drainage strategy has been prepared.

Discharge to Surface Watercourse

3.7 A drainage ditch is indicated immediately west of the site. Refer to Drawing No. 09-1026-05A *[Proposed Drainage Layout]* (by John Turner Plan and Design) in Appendix 5. The depth and discharge point of this ditch is currently unknown. It is proposed to discharge post development runoff to this ditch, at greenfield runoff rates.

Greenfield Runoff Rates

3.8 The greenfield runoff rates for the area of the proposed dwellings, driveway, parking areas and patios have been calculated as 0.5 l/s for the 1 in 2 year rainfall event (QBAR), 1.2 l/s for the 1 in 30 year event and 1.7 l/s for the 1 in 100 year event. Refer to calculations in Appendix 3.

Proposed Discharge Rates

3.9 In accordance with WC's *Control of Surface Water Discharges from New Developments – Betterment Policy Update* (WC, undated), the post development runoff rate will be limited to 0.4 l/s, for all storms up to and including the 1:100 year storm, with a 45% allowance for future climate change. This represents a 20% betterment over the 1 in 2 year discharge rate (QBAR) of 0.5 l/s.

Urban Creep

3.10 In accordance with the *Developer's Guidance Note – Flooding, Drainage and SuDS* (WC, undated), the post development calculations include an additional 10% allowance for future urban creep, for the proposed roof and patio areas only. Therefore, all post development drainage calculations have been made on the basis of an impermeable area of 990m^2.

Attenuation SuDS

3.11 Runoff from the proposed dwellings, garages, driveways, parking areas and patios will be collected in tanked permeable pavement located beneath the proposed access and parking areas. Preliminary calculations indicate that 73.5m^3 of storage will be required to attenuate all of the runoff from a 1:100-year event, with a 45% allowance for future climate change. This can be provided within tanked permeable pavement with dimensions of 472m^2 x 0.52m deep

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(storage depth) x 0.3 (voids). Refer to calculations in Appendix 3 and CE Plan 8734/502 [*Proposed Surface Water Drainage Strategy*] in Appendix 4.

Discharge Location

3.12 Runoff from the proposed tanked permeable pavement will be discharged to the existing drainage ditch immediately west of the site.

3.13 The proposed SuDS has been designed to accommodate and dispose of runoff from all storms up to and including the 1:100-year storm with a 45% allowance for future climate change, in accordance with the latest EA guidance for Avon Bristol and North Somerset Streams Management Catchment, without flooding. All preliminary surface water drainage calculations have been undertaken using Micro Drainage software.

Table 3.1: Summary of Existing and Proposed Surface Water Discharge Rates

Developable area (m^2)		Discharge Point	Calculation Method	Discharge Rate (l/s)				Volume required (m^3)
				1:2yr	1:30 yr	1:100 yr	1:100yr +45%	
Existing	942	Greenfield runoff	ICP SuDS	0.5	1.2	1.7	-	-
Proposed[1]	990	To drainage ditch	Micro Drainage	<0.4	<0.4	0.4	0.4	73.5

1. Includes an additional allowance of 10% urban creep for proposed dwellings and patios.

Water Quality

3.14 Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA *C753 The SuDS Manual:*

1. Step 1 – Allocate suitable pollution hazard indices for the proposed land use.
2. Step 2 – Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index.

3.15 The highest pollution hazard level for the proposed land use is Low (residential car parks and low traffic roads). The pollution hazard indices for the proposed land uses are shown in Table 3.2 below.

Table 3.2: Pollution Hazard Indices for the Proposed Site (from Table 26.2 of CIRIA C753 The SuDS Manual)

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential car parks	Low	0.5	0.4	0.4

3.16 Runoff from the proposed parking areas will be discharged to ditch via a tanked permeable pavement. The Pollution Mitigation Indices for permeable pavements are greater than the Pollution Hazard Indices for residential car parks. Refer to Table 3.3 below. Therefore, the proposed tanked permeable sub-base will provide sufficient water quality treatment for the site prior to discharge to ditch.

Table 3.3: Pollution Mitigation Indices for Discharge to Surface Water from the Proposed Site (from Table 26.3 of CIRIA C753 The SuDS Manual)

SuDS Feature	Total suspended solids (TSS)	Metals	Hydrocarbons
Permeable paving	0.7	0.6	0.7

Design Exceedance

3.17 Should the on-site drainage system fail due to extreme rainfall events or blockage, flooding may occur within the site. Exceedance flooding would flow onto the landscaped areas adjacent to the SuDS or enter the existing ditch, without impacting upon the proposed development or adjacent sites. Refer to CE Plan 8734/502 [*Proposed Surface Water Drainage Strategy*] in Appendix 4.

Adoption and Maintenance

3.18 All surface water drainage devices will remain private, and will be the responsibility of the future property owners. It is recommended that the proposed tanked permeable pavement, flow control and all associated drainage pipework are maintained by a private management company on behalf of the future property owners.

3.19 A draft Maintenance Schedule is outlined in Table 3.4 below.

Permeable Pavement

3.20 Permeable surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. A brush and suction cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:

1. End of winter (April) – to collect winter debris.
2. Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
3. After autumn leaf fall (November).

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3.21 If reconstruction is necessary, the following procedure should be followed:

1. Lift surface layer and laying course.
2. Remove any geotextile filter layer.
3. Inspect sub-base and remove, wash and replace if required.
4. Renew any geotextile layer.
5. Renew laying course, jointing material and concrete block paving.

3.22 Materials removed from the voids or the layers below the surface of the paving may contain hazardous substances such as heavy metals and hydrocarbons which may need to be disposed of as controlled waste.

Pipework and Catchpits

3.23 It is not envisaged that silt build up within the pipework systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six months) and silt removal (as necessary).

Flow Control

3.24 The flow controls should be inspected regularly for blockages and silt/ debris removed as necessary.

Table 3.4: Draft Maintenance Schedule for Elements of the Drainage Infrastructure

Drainage Element	Schedule	Maintenance Requirement	Frequency
Permeable Paving	Regular	Brushing and vacuuming over whole surface	Once a year, after autumn leaf fall
	Occasional	Removal of weeds	As required
Permeable Paving	Remedial	Remedial work to any depressions or cracked or broken blocks considered a hazard to end users or detrimental to performance	As required
		Rehabilitation of surface and upper sub-structure by remedial sweeping	Every 10 – 15 years, or as required
Pipework & Catchpits and Flow Control	Regular	▪ Inspect for accumulation of silt ▪ Inspect inlets, outlets and overflows for blockages ▪ Inspect for debris and litter	Every six months
	Occasional	▪ Remove debris and litter ▪ Remove silt	As required

Note: In addition to the above maintenance requirements, it is recommended that all drainage elements are inspected:

- Following the first storm event
- Monthly for the first 3 months following commissioning

4.0 DISCUSSIONS AND CONCLUSIONS

4.1 This *Surface Water Drainage Strategy* has been prepared by CE on behalf of Mrs Irfana Yasmeen, in respect of a planning application for construction of 3 new residential dwellings at land to the rear of 18 and 19 Dianmer Close, Hook, Wiltshire.

Surface Water Drainage Strategy

4.2 The drainage strategy for the site has been prepared according to the drainage discharge hierarchy set out in *CIRIA C753 The SuDS Manual.*

Rainwater Harvesting

4.3 It is recommended that runoff from roof areas is collected in water butts and used for non-potable uses in the development, such as gardening.

Infiltration Potential

4.4 The site is underlain by Mudstone of the Ampthill Clay Formation. The impermeable nature of the underlying geology indicates that the site is unsuitable for infiltration drainage, and an attenuation based drainage strategy has been prepared.

Discharge to Surface Watercourse

4.5 A drainage ditch is indicated immediately west of the site. It is proposed to discharge post development surface water runoff to this ditch.

Proposed Discharge Rates

4.6 It is proposed to limit post development runoff rates from the proposed site to 0.4 l/s, for all storms up to and including the 1:100 year storm, with a 45% allowance for future climate change. This represents a 20% betterment over the 1 in 2 year discharge rate (QBAR) of 0.5 l/s.

Attenuation SuDS

4.7 Runoff from the proposed dwellings, garages, driveways, parking areas and patios will be collected in tanked permeable pavement located beneath the proposed access and parking areas. Runoff from the proposed tanked permeable pavement will be discharged to the existing drainage ditch immediately west of the site.

4.8 The proposed SuDS system has been designed to accommodate and dispose of runoff from all storms up to and including the 1:100-year storm with a 45% allowance for future climate

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change, without flooding. All preliminary surface water drainage calculations have been undertaken using Micro Drainage software.

Water Quality

4.9 Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA *C753 The SuDS Manual*. The proposed tanked permeable pavement will provide sufficient water quality treatment, prior to discharge to ditch.

Design Exceedance

4.10 Should the on-site drainage system fail due to extreme rainfall events or blockage, flooding may occur within the site. Exceedance flows would be directed onto the landscaped areas adjacent to the proposed SuDS or enter the existing ditch, without impacting upon the proposed development or adjacent sites.

Adoption and Maintenance

4.11 All surface water drainage devices will remain private, and will be the responsibility of the future property owners. It is recommended that the proposed tanked permeable pavement, flow control and all associated drainage pipework are maintained by a private management company on behalf of the property owners.

4.12 This study has been undertaken in accordance with the principles set out in NPPF. We can conclude that providing the development adheres to the conditions advised in Paragraphs 4.1 to 4.11 above, the said development proposals can be accommodated without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Cole Easdon Consultants Limited
October 2022

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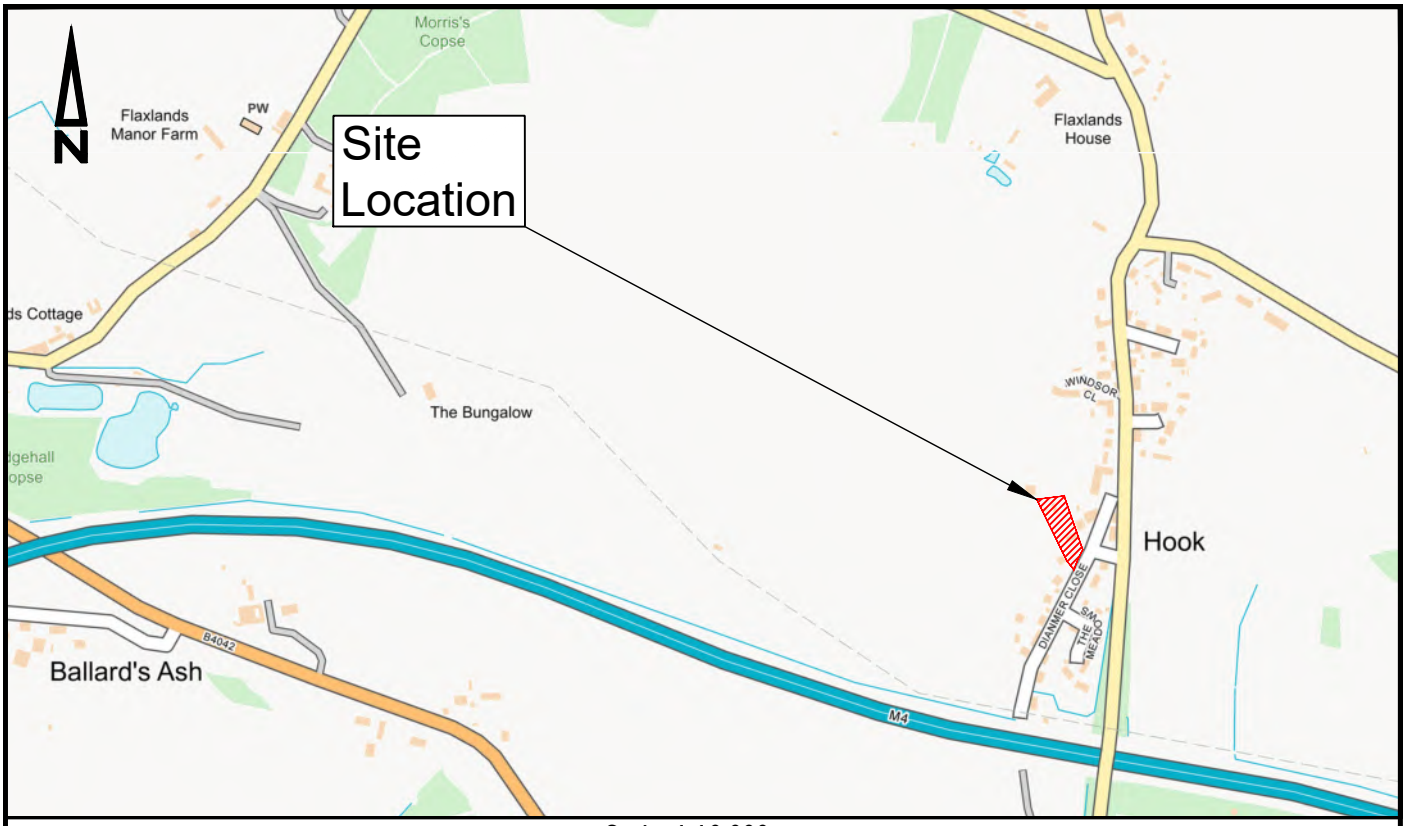
Appendix 1



Scale: 1:10,000



Scale: 1:250,000

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Job Title:
Proposed Residential Development
18 - 19 Dianmer Close
Hook, Wiltshire SN4 8EB

Client:
Mrs Irfana Yasmeen

Drawing Status:

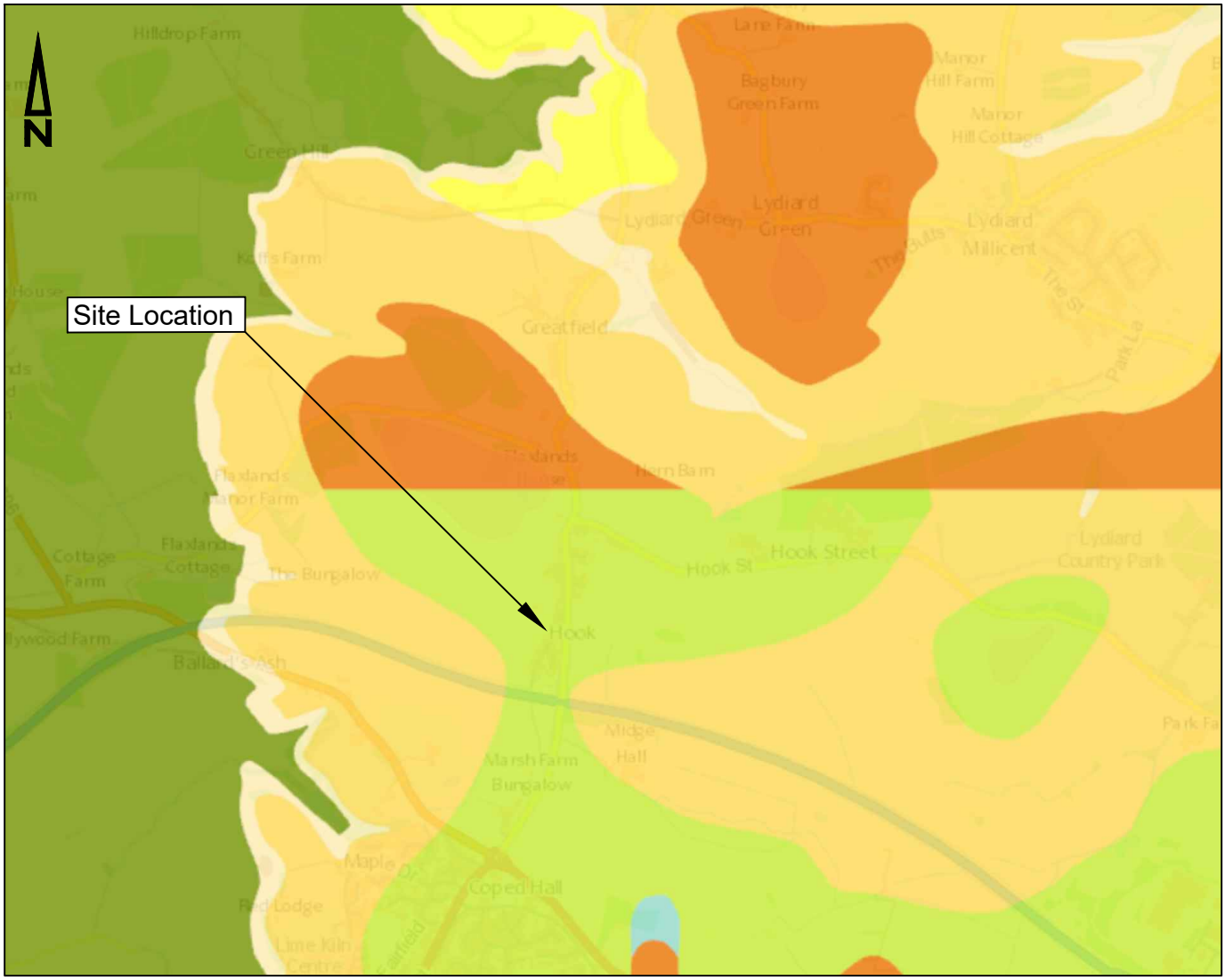
FOR COMMENT	
FOR PLANNING	X
FOR TENDER	
FOR APPROVAL	
FOR CONSTRUCTION	
AS BUILT	

CONSTRUCTION AT CLIENT AND/OR CONTRACTOR RISK

Drawing Title:
Site Location Plan

Drawn By	Date Drawn	Scale
HP	October 2022	As Shown (A4)

Checked By	Drawing No.	Revision
DF	8734/500 Figure 1	



Key:

Mudstone
(Ampthill Clay Formation)

Contains British Geological Survey materials © NERC (2022)

No.	By	Date	Revision Details

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Job Title:
Proposed Residential Development
18 - 19 Dianmer Close
Hook, near Swindon
Wiltshire SN4 8EB

Client:
Mrs Irfana Yasmeen

Drawing Status:

CONSTRUCTION AT CLIENT AND/OR CONTRACTOR RISK		
	FOR COMMENT	
	FOR PLANNING	X
	FOR TENDER	
	FOR APPROVAL	
	FOR CONSTRUCTION	
	AS BUILT	

Drawing Title:
BGS Geology Map

Drawn By	Date Drawn	Scale
HP	October 2022	NTS @ A4

Checked By	Drawing No.	Revision
DF	8734/500 Figure 2	

Appendix 2

Asset location search

Property Searches

Cole Easdon Consultants Limited
Unit 2 York House
Edison Park
SWINDON
SN3 3RB

Search address supplied 18-19
Dianmer Close
Hook
Wiltshire
SN4 8EB

Your reference (8734) Dianmer Close Hook Royal Wootton Bassett

Our reference ALS/ALS Standard/2022_4707841

Search date 24 August 2022

Knowledge of features below the surface is essential for every development

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

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

Contact us to find out more.

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

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: 18-19, Dianmer Close, Hook, Wiltshire, SN4 8EB

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

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

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

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

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

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

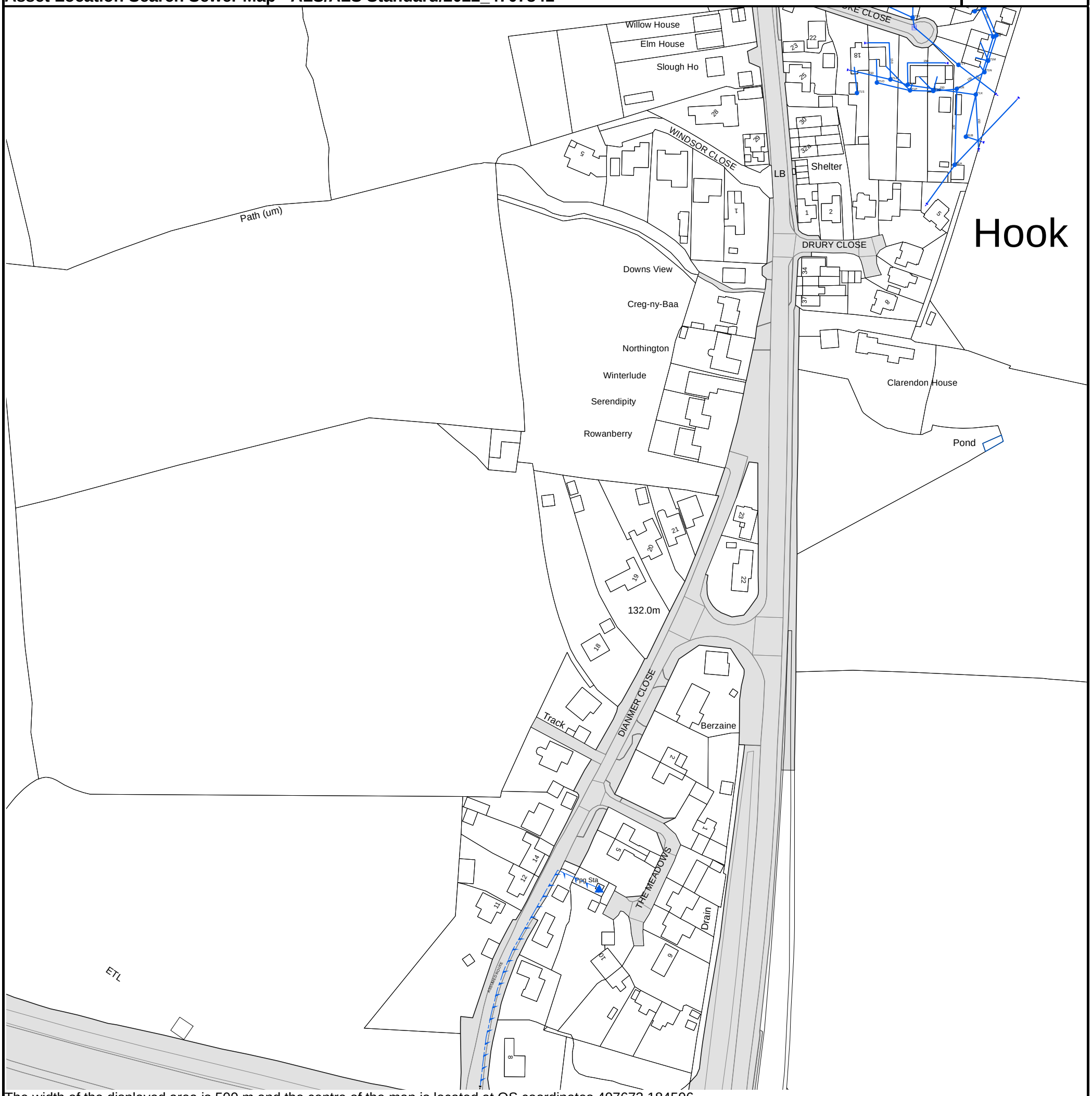
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

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

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4707841



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 407673,184506

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
871W	n/a	n/a
871L	457.51	453.8
871U	n/a	n/a
871J	n/a	n/a
871T	n/a	n/a
871S	454.2	452.39
871O	459.3	452.29
871Z	n/a	n/a
871Y	n/a	n/a
871P	453.29	451.29
871Q	n/a	n/a
861A	n/a	n/a
871R	454.97	448.79
871V	n/a	n/a
861B	n/a	n/a
871X	n/a	n/a
871N	456.74	451.9
871M	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.

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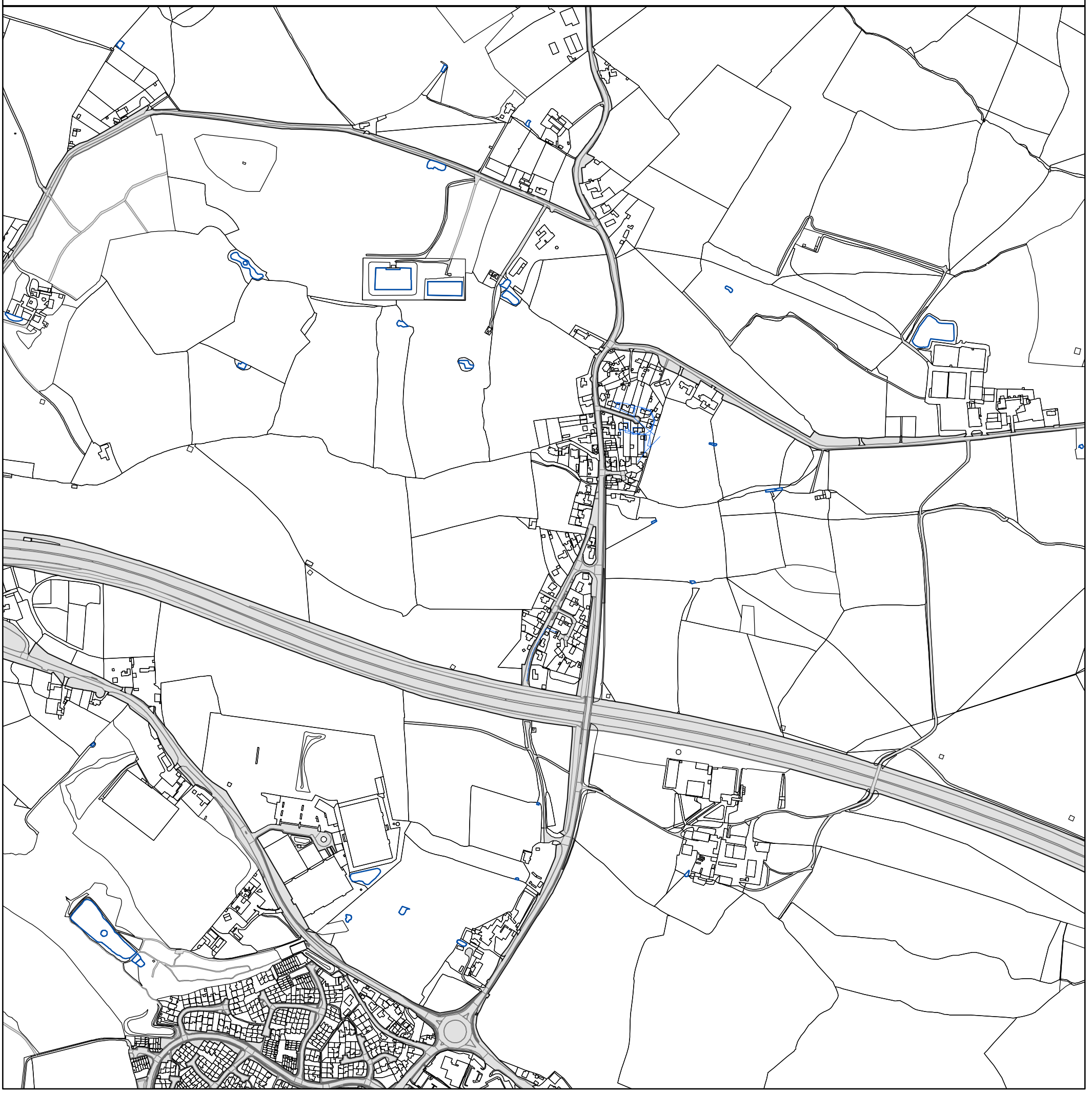
ALS/ALS Standard/2022_4707841



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
Width:	2000m
Printed By:	Skrishna1
Print Date:	24/08/2022
Map Centre:	407673,184506
Grid Reference:	SU0784NE

Comments:

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

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

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

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

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

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

Sewer Fittings

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

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

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

- Inlet
- Outfall
- Undefined End

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

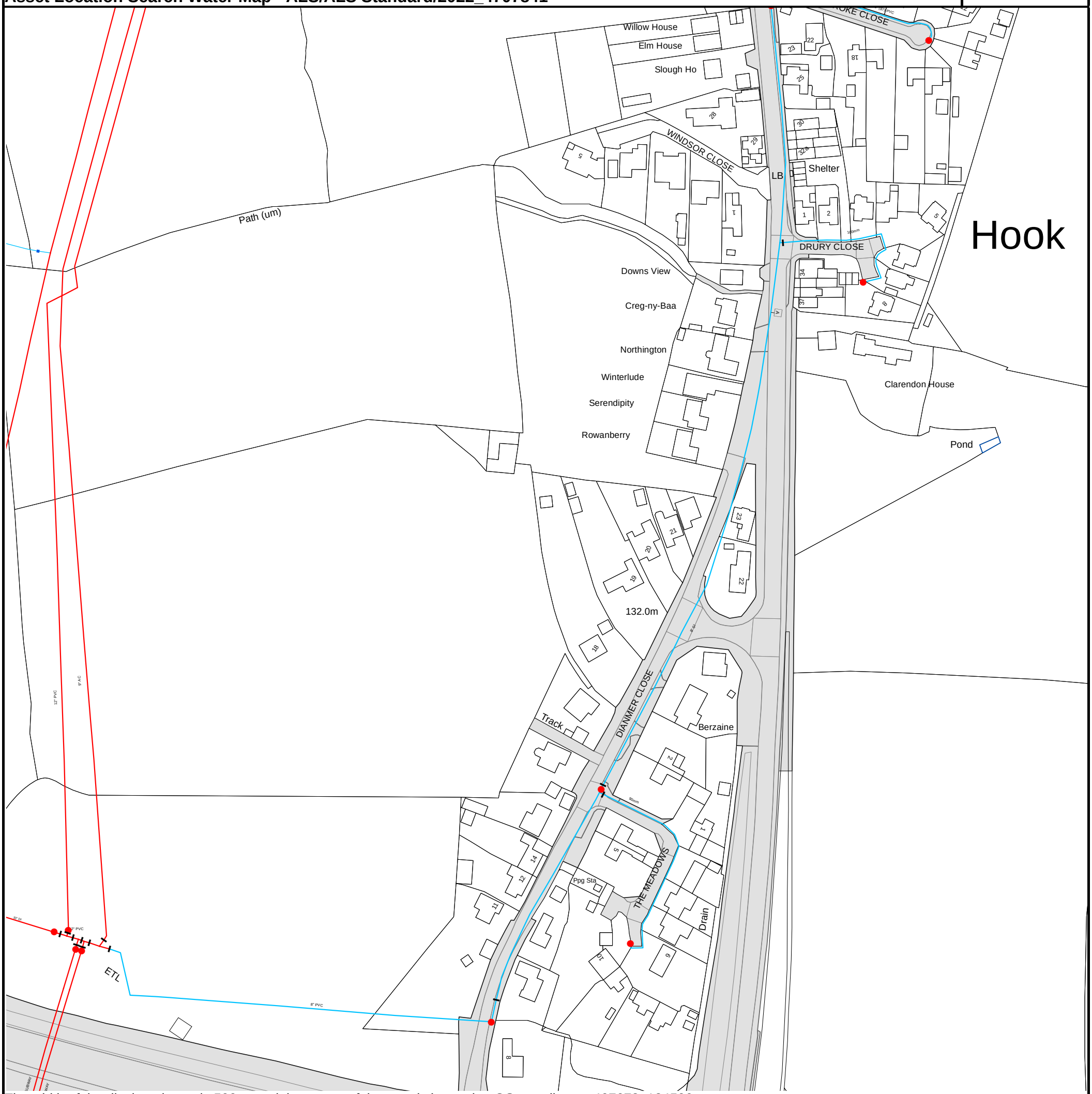
Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2022_4707841



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 407673, 184506.

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 Key

Water Pipes (Operated & Maintained by Thames Water)

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

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

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

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

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

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

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

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

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

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

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

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

Terms and Conditions

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

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

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

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

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If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

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

Appendix 3

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 1784 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	132.959	0.169	0.0	0.3	0.3	24.0	O K
30 min Summer	133.016	0.226	0.0	0.3	0.3	32.1	O K
60 min Summer	133.075	0.285	0.0	0.3	0.3	40.4	O K
120 min Summer	133.133	0.343	0.0	0.3	0.3	48.5	O K
180 min Summer	133.164	0.374	0.0	0.3	0.3	52.9	O K
240 min Summer	133.183	0.393	0.0	0.3	0.3	55.7	O K
360 min Summer	133.208	0.418	0.0	0.3	0.3	59.2	O K
480 min Summer	133.224	0.434	0.0	0.3	0.3	61.4	O K
600 min Summer	133.233	0.443	0.0	0.4	0.4	62.8	O K
720 min Summer	133.239	0.449	0.0	0.4	0.4	63.6	O K
960 min Summer	133.243	0.453	0.0	0.4	0.4	64.1	O K
1440 min Summer	133.236	0.446	0.0	0.4	0.4	63.1	O K
2160 min Summer	133.219	0.429	0.0	0.3	0.3	60.8	O K
2880 min Summer	133.202	0.412	0.0	0.3	0.3	58.3	O K
4320 min Summer	133.167	0.377	0.0	0.3	0.3	53.3	O K
5760 min Summer	133.133	0.343	0.0	0.3	0.3	48.5	O K
7200 min Summer	133.100	0.310	0.0	0.3	0.3	43.9	O K
8640 min Summer	133.064	0.274	0.0	0.3	0.3	38.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	143.087	0.0	22.2	19
30 min Summer	93.944	0.0	27.6	34
60 min Summer	58.739	0.0	40.2	64
120 min Summer	35.469	0.0	48.3	124
180 min Summer	26.047	0.0	52.3	184
240 min Summer	20.795	0.0	54.0	244
360 min Summer	15.106	0.0	54.5	362
480 min Summer	12.038	0.0	54.2	482
600 min Summer	10.086	0.0	53.7	602
720 min Summer	8.725	0.0	53.2	722
960 min Summer	6.936	0.0	52.2	960
1440 min Summer	5.012	0.0	50.1	1340
2160 min Summer	3.615	0.0	90.9	1688
2880 min Summer	2.864	0.0	94.6	2072
4320 min Summer	2.060	0.0	90.4	2896
5760 min Summer	1.629	0.0	107.9	3744
7200 min Summer	1.357	0.0	111.2	4544
8640 min Summer	1.169	0.0	113.8	5352

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
10080 min Summer	133.031	0.241	0.0	0.3	0.3	34.1	O K
15 min Winter	132.982	0.192	0.0	0.3	0.3	27.1	O K
30 min Winter	133.046	0.256	0.0	0.3	0.3	36.2	O K
60 min Winter	133.112	0.322	0.0	0.3	0.3	45.6	O K
120 min Winter	133.177	0.387	0.0	0.3	0.3	54.8	O K
180 min Winter	133.212	0.422	0.0	0.3	0.3	59.8	O K
240 min Winter	133.235	0.445	0.0	0.4	0.4	62.9	O K
360 min Winter	133.264	0.474	0.0	0.4	0.4	67.1	O K
480 min Winter	133.282	0.492	0.0	0.4	0.4	69.7	O K
600 min Winter	133.294	0.504	0.0	0.4	0.4	71.4	O K
720 min Winter	133.302	0.512	0.0	0.4	0.4	72.5	Flood Risk
960 min Winter	133.309	0.519	0.0	0.4	0.4	73.5	Flood Risk
1440 min Winter	133.306	0.516	0.0	0.4	0.4	73.1	Flood Risk
2160 min Winter	133.284	0.494	0.0	0.4	0.4	69.9	O K
2880 min Winter	133.262	0.472	0.0	0.4	0.4	66.9	O K
4320 min Winter	133.214	0.424	0.0	0.3	0.3	60.1	O K
5760 min Winter	133.166	0.376	0.0	0.3	0.3	53.2	O K
7200 min Winter	133.118	0.328	0.0	0.3	0.3	46.4	O K
8640 min Winter	133.064	0.274	0.0	0.3	0.3	38.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.030	0.0	115.6	6048
15 min Winter	143.087	0.0	24.7	19
30 min Winter	93.944	0.0	28.6	34
60 min Winter	58.739	0.0	45.1	64
120 min Winter	35.469	0.0	53.1	122
180 min Winter	26.047	0.0	55.2	180
240 min Winter	20.795	0.0	55.5	240
360 min Winter	15.106	0.0	55.3	358
480 min Winter	12.038	0.0	55.0	474
600 min Winter	10.086	0.0	54.7	590
720 min Winter	8.725	0.0	54.4	706
960 min Winter	6.936	0.0	53.8	932
1440 min Winter	5.012	0.0	52.9	1370
2160 min Winter	3.615	0.0	101.5	1772
2880 min Winter	2.864	0.0	102.8	2196
4320 min Winter	2.060	0.0	94.6	3116
5760 min Winter	1.629	0.0	121.8	4040
7200 min Winter	1.357	0.0	125.8	4904
8640 min Winter	1.169	0.0	128.8	5784

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
10080 min Winter	133.013	0.223	0.0	0.3	0.3	31.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Winter	1.030	0.0	131.2	6448

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.099

Time (mins) From:	To:	Area (ha)
0	4	0.099

Time Area Diagram

Total Area (ha) 0.000

Time (mins) From:	To:	Area (ha)
0	4	0.000

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Model Details

Storage is Online Cover Level (m) 133.600

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	47.2
Max Percolation (l/s)	131.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	132.790	Cap Volume Depth (m)	0.600

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0032-4000-0600-4000
Design Head (m)	0.600
Design Flow (l/s)	0.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	32
Invert Level (m)	132.790
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.600	0.4	Kick-Flo®	0.287	0.3
Flush-Flo™	0.143	0.3	Mean Flow over Head Range	-	0.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.3	1.200	0.5	3.000	0.8	7.000	1.2
0.200	0.3	1.400	0.6	3.500	0.9	7.500	1.2
0.300	0.3	1.600	0.6	4.000	0.9	8.000	1.3
0.400	0.3	1.800	0.6	4.500	1.0	8.500	1.3
0.500	0.4	2.000	0.7	5.000	1.0	9.000	1.4
0.600	0.4	2.200	0.7	5.500	1.1	9.500	1.4
0.800	0.5	2.400	0.7	6.000	1.1		
1.000	0.5	2.600	0.8	6.500	1.1		

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ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 SAAR (mm) 717 Urban 0.000
Area (ha) 0.095 Soil 0.500 Region Number Region 6

Results l/s

QBAR Rural 0.5
QBAR Urban 0.5

Q100 years 1.7

Q1 year 0.5
Q30 years 1.2
Q100 years 1.7

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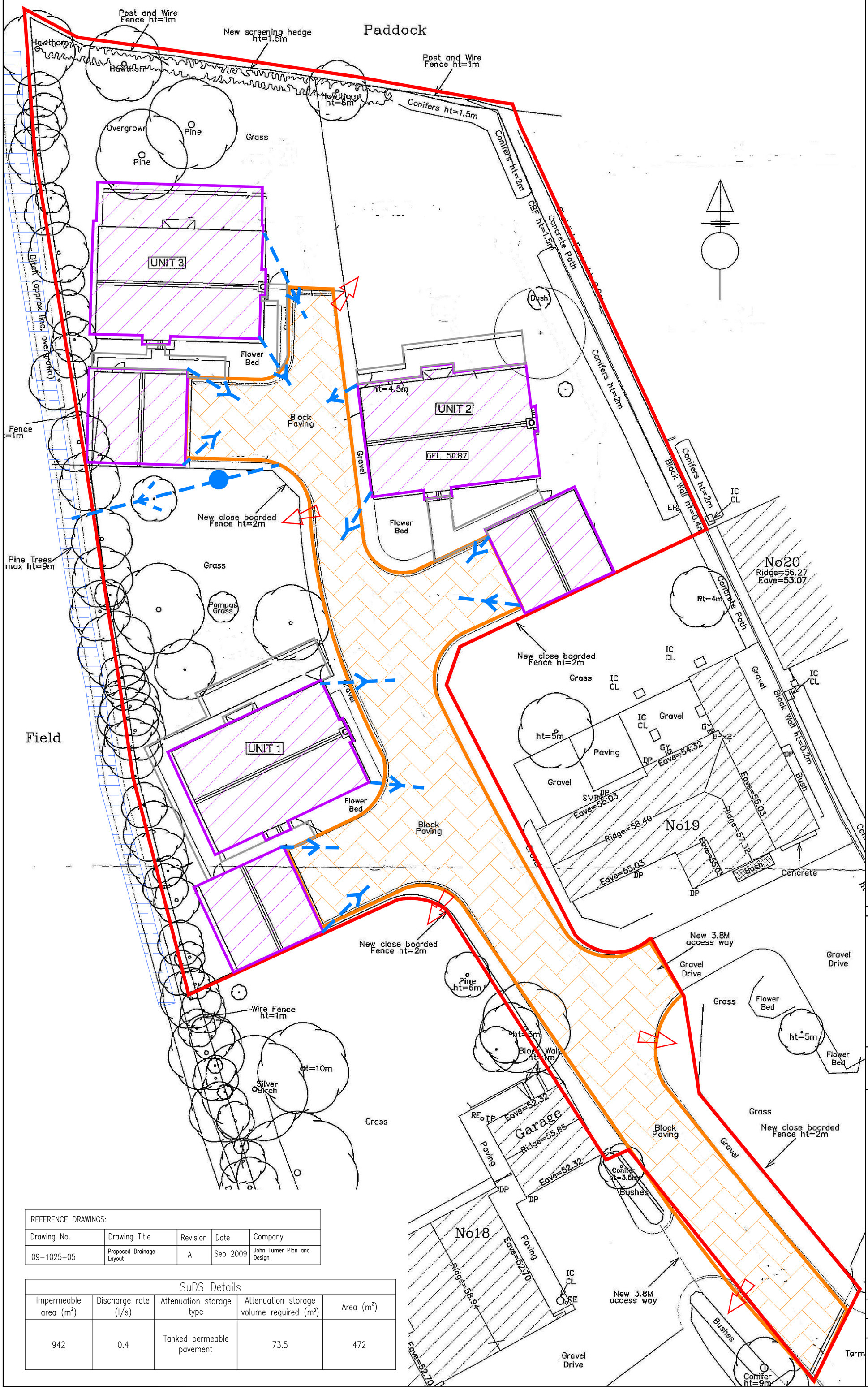
Appendix 4

N

Surface Water Drainage Strategy

Runoff from the proposed dwellings, driveway, parking areas and patios will be collected and piped to tanked permeable pavement located beneath the proposed driveway and parking areas. From there, it will be discharged to the existing ditch immediately west of the site, at a maximum rate of 0.4 l/s, for all storms up to and including the 1:100 year storm, with a 45% allowance for future climate change. This represents 20% betterment over the current 1 in 2 year greenfield runoff rate from the site.



KEY

- Site boundary
- Existing ditch
- Proposed buildings (385m²)
- Proposed tanked permeable pavement (472m²)
- Proposed patios and footpaths (85m²)
- Proposed surface water drainage pipework
- Proposed flow control chamber
- Design exceedance flow route

Notes:

1. All levels are referenced to a local datum.
2. All dimensions are in metres unless otherwise stated.
3. This drainage strategy is indicative only and is subject to detailed design.

REFERENCE DRAWINGS:				
Drawing No.	Drawing Title	Revision	Date	Company
09-1025-05	Proposed Drainage Layout	A	Sep 2009	John Turner Plan and Design

SuDS Details				
Impermeable area (m²)	Discharge rate (l/s)	Attenuation storage type	Attenuation storage volume required (m³)	Area (m²)
942	0.4	Tanked permeable pavement	73.5	472

No.	By	Date	Revision Details

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Cole Easdon
01793 619 965 | cec@ColeEasdon.com | www.ColeEasdon.com

Client
Mrs Irfana Yasmeen

Job Title
Proposed Residential Development
18 - 19 Dianmer Close
Hook
Wiltshire SN4 8EB

Drawing Title
Proposed Surface Water Drainage Strategy

Drawing Status:

FOR COMMENT	FOR PLANNING	FOR TENDER	FOR APPROVAL	FOR CONSTRUCTION	AS BUILT
	X				

CONSTRUCTION AT CLIENT / CONTRACTOR RISK

Designed by:	Drawn by:	Checked by:
HP	HP	DF

Date: October 2022
Scale: 1:125@A1, 1:250@A3

Drg. No. 8734/502
Rev.

Appendix 5

09/01300

Paddock

Post and Wire Fence ht=1m

New screening hedge ht=1.5m

Hawthorn

Hawthorn

Post and Wire Fence ht=1m

Hawthorn ht=6m

Conifers ht=1.5m

Conifers ht=2m

Overgrown

Pine

Pine

Grass

Soakaway

0 1 2 3 4 5 10 15 20 25

Scale in metres

New 100dia. FW sewer at 1:50 fall

Soakaway

CBF ht=1.5m

Concrete Path

Chainlink Fence ht=0.9m

Levels to Local Datum

UNIT 3

Ditch (approx line, overgrown)

Soakaway

Bush

Gravel

Flower Bed

Conifers ht=2m

ht=4.5m

UNIT 2

Wire Fence ht=1m

Block Paving

GFL 50.87

Gravel

Soakaway

Block Wall ht=0.4m

IC CL

Flower Bed

New close boarded Fence ht=2m

Pine Trees max ht=9m

Grass

No20

Ridge=56.27

Eave=53.07

Pampas Grass

Soakaway

New 100dia. FW sewer at 1:50 fall

ht=4m

Concrete Path

Gravel

New close boarded Fence ht=2m

IC CL

Grass

IC CL

Field

IC CL

Gravel

Block Wall ht=0.2m

ht=5m

UNIT 1

Paving

GY

DP x2

DP

Eave=54.32

Gravel

Flower Bed

SVP

DP

Eave=55.03

Bush

Block Paving

Ridge=58.49

No19

Ridge=57.33

Eave=55.03

Gravel

Eave=55.03

Eave=55.03

Bush

Soakaway

DP

DP

Concrete

Conifers ht=2m

Block Wall ht=0.65m

New close boarded Fence ht=2m

Pine ht=6m

New 3.8M access way

Gravel Drive

Gravel Drive

Bushes ht=3.5m

Wire Fence ht=1m

ht=6m

Block Walls ht=1m

Grass

Flower Bed

ht=5m

Flower Bed

New screening hedge ht=1.5m

MH CL

Block Wall ht=0.65m

Grass

ht=10m

Silver Birch

Grass

Grass

ht=7m

SC

Existing access way closed

New close boarded Fence ht=2m

Block Paving

Gravel

RE

DP

Eave=52.32

Garage

Ridge=55.85

Eave=52.32

Paving

Conifer ht=3.5m

Bushes

DP

DP

No18

Ridge=58.94

Eave=52.70

Paving

Hedge ht=2m

Grass

DP

IC CL

RE

Patio (paving)

New 3.8M access way

Bushes

Gravel Drive

Tarmac

Dianmer Close

Conifer ht=9m

Grass

RF ht=1.2m

New Lawn

New 100dia. FW sewer connected to LA sewer

New screening hedge ht=1.5m

LP

TP BT

A 25.09.09 Unit 2 repositioned

Rev.

Closed Board Fence ht=1.7m

Wire Fence ht=1m

ht=8m

Grass

ht=3m

Existing access way closed

Pine Trees max ht=7.5m

New Lawn

Stone Wall ht=1.8m

Grass

BT

Ditch

Closed Board Fence ht=1.7m

No17

Ridge=57.46

Eave=54.68

Existing access way closed

IC CL

FW sewer of 100 dia.PVC drain laid at 1:50 fall and connected to LA sewer

SW drainage from roofs of 100 dia.PVC drain discharging into 1500 dia. Soakaways (Soakaways minimum of 5000 away from building structures

Driveway to drain through"Priora" Permeable paving blocks (by Marshalls of Halifax)

Project: NEW HOUSES AT 18 & 19 DIANMER CLOSE, HOOK WOOTTON BASSET. SN4 8EA		
Drawing Title: PROPOSED DRAINAGE LAYOUT		
Drawn: JT	Date: SEPTEMBER 2009	Scale: 1:200 @A2
Drawing No. 09 1026 05 A		

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30 SEP 09

ADDITIONAL