

Surface water drainage strategy

To address Condition 5 on a planning Approval
for the new dwellings at

25 Henley Wood Road, Earley,
Wokingham, RG6 7EE

Prepared by

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Innervision Design Ltd

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Scope

Note: this report can only be assessed under the scope it is intended for as set out below:

Town and Country Planning Act 1990

The scope of this report includes the provision of supplementary information in relation to a planning application set under the provision of this Act and is intended to meet the requirements for “particulars” under Section 62; (3) & (4 A) of same.

The Town and Country Planning (Development Management Procedure) (England) Order 2015

The scope of this report includes the provision of supplementary information in relation to any related planning Condition set under the provision of this Order and is intended to meet the requirements for “particulars” under Section 27(b) of same.

Building Act 1984

Building Regulations 2010 and Statute control

This report **is not** provided in support of any application made under the Building Act 1984 or related Regulations.

Statement of conformity

While this report cannot therefore be lawfully assessed by any persons, in any capacity, for compliance with the above Building Regulations all drainage on this private site, both foul and SW will be subject to full compliance with Part H of the Building Regulations 2010 (as amended 2013).

Hence all construction details, SW runs, pipe diameters etc. as detailed in this report are designed to comply in full with the “Adequate provision” Requirement of Part H and are to be checked, inspected, tested and approved by the Building Control Body of the clients choice at the time of detailed design and construction.

SuDS design additional standards

All SuDS (Sustainable drainage system) on site will also be designed and installed in accordance with CIRIA 753 & CIRIA 768, para 182 of the NPPF, its supporting technical guidance and the DEFRA Non-Statutory Technical standards for sustainable drainage systems (2015).

1 Executive Summary

- A All surface water arising from the roof is attenuated and discharged at no greater than 2.0 l s^{-1} to the existing network.
- B All areas of hard standing on the site will be constructed using a permeable medium.
- C The project team have detailed “off line” rainwater butt(s) to collect water for external use.
- D All SuDS on site will be installed with full consideration to long term maintenance.

2 Introduction

2.1 Site location

The project is at 25 Henley Wood Road, Earley, Wokingham, RG6 7EE.

2.2 Development description

The Approval (222972) is "Full application for the proposed erection of 2 no. residential dwellings and associated parking, access, cycle and bin storage on side garden of existing residential dwelling".

All plans as those approved.

2.2.1 Condition 5

"Prior to the commencement of the development, details of the implementation, maintenance and management of the sustainable drainage scheme shall be submitted to and approved in writing by the local planning authority. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details.

Those details shall include a timetable for its implementation and a management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime."

2.3 Geology

Geological mapping data from within the vicinity indicate River Terrace Deposits, 4 - Sand and gravel. however this would require confirmation on site. If available on site, the superficial deposits will offer poor to good permeability.

2.4 Overview

The curtilage of the entire site encloses an area of approximately 293m² of which, pre-development, 0m² is classed as being impermeable. The new development increases the impermeable area from 0m² to 51m² (of which 51m² is roof area).

2.5 Greenfield estimation of peak rate of run-off

2.5.1 Methodology

To assess the minimum outfall rates then as a greenfield site and is less than 50 ha therefore run-off rate calculations have been carried out in accordance with the IH Report 124 'Flood estimation for small catchments'^[1]. The pro rata method on the size of catchment has been used.

2.5.2 Formula

For catchments less than 50ha:

$$Q_{BAR50ha} = 1.08 (50/100)^{0.89} * SAAR^{1.17} * SPR^{2.17} \quad (1)$$

$$Q_{BAR} = Q_{BAR50ha} * \frac{A}{50} \quad (2)$$

$$Q_{1yr} = Q_{BAR} * 0.85 \quad (3)$$

$$Q_{100yr} = Q_{BAR} * GC_{100} \quad (4)$$

2.5.3 Variables

Qbar/Qmed =0.85

SAAR = 616mm

Hydrological Region 6

Growth curve factors: 30 yr = 2.3; 100 yr = 3.19

SPR = 0.47

2.5.4 Calculations

$$\begin{aligned} Q_{BAR50ha} &= 1.08 * 0.5^{0.89} * 616^{1.17} * 0.47^{2.17} \\ &= 0.58 * 1835.73 * 0.19 \\ &= 207.86 \end{aligned}$$

Using Equation 2:

$$Q_{BAR} = \frac{207.86 * 0.03}{50}$$
$$= 0.12 \text{ l s}^{-1}$$

Using Equation 3:

$$Q_1 = 0.12 * 0.85$$
$$= 0.10 \text{ l s}^{-1}$$

Using Equation 4:

$$Q_{100} = 0.12 * 3.19$$
$$= 0.39 \text{ l s}^{-1}$$

2.5.5 Peak run-off rates

For the 1 year Return Period event the peak runoff calculates to 0.10 l s^{-1}

For the 30 year Return Period event the peak runoff calculates to 0.28 l s^{-1}

For the 100 year Return Period event the peak runoff calculates to 0.39 l s^{-1}

3 SuDS Principles

3.1 SuDS design philosophy

The CIRIA SuDS^[2] manual provides the design philosophy:

“SuDS design should, as much as possible, be based around the following:

- using surface water run-off as a resource
- managing rainwater close to where it falls
- managing run-off at the surface
- allowing rainwater to soak into the ground
- promoting evapotranspiration
- slowing and storing run-off to mimic natural run-off characteristics
- reducing contamination of run-off through pollution prevention and controlling the run-off at source
- treating run-off to reduce the risk of urban contaminants causing environmental pollution.”

3.2 Source control

- Sedum roofing.
- Infiltration devices. Typically soakaways.
- Rainwater harvesting.
- Bio-retention planting, rain gardens.
- Permeable paving, porous asphalt. These provide both infiltration and short term storage volumes thus reducing overall un-mitigated run-off volumes.

3.3 “End of pipe” solutions

To be considered only after implementation of the above options.

- Retention tanks with outfall controlled by hydraulic means to limiting discharge rates and volumes to discharge to existing SW flow pathways.

Sections 4.2 to 4.7 consider the viability of a range of these SuDS devices.

4 Appraisal of SuDS options

4.1 Site constraints impacting on SuDS

- Within 30m of Network Rail infrastructure thus preventing the use of soakaways.
- Extremely low pro rata greenfield run-off rate.
- Approved pitched roof.
- Approved site layout.
- No access to water courses or ditches.

4.2 Infiltration devices

Due to site constraints, as per Section 4.1, soakaways are not possible.

4.3 Bio-retention

Due to site constraints, bio-retention devices are not suited to this site.

4.4 Permeable hard standing

With reference to Section 3.1, permeable paving promotes the following SuDS design criteria:

- manages rainwater close to where it falls
- manages runoff at the surface
- allows rainwater to soak into the ground
- slows and stores run-off to mimic natural runoff characteristics
- treats runoff to reduce the risk of urban contaminants causing environmental pollution.

4.4.1 Permeable paving

A 30% void ratio is assumed through a 350mm sub-base. This is appropriate for a DOT Type 3 Sub-base hence the storage capacity equates to circa 105mm per 1m² therefore based on a M6 100hr + cc storm of 87mm rainfall the paving offers, without any allowance for infiltration, a circa 1:1.2 drained volume:storage volume capacity. Hence there is no anticipated exceedance flow from the areas of permeable paving.

All permeable paving offers sufficient storage volume to accommodate the 5mm event.

Pollution mitigation indices

With Reference to Table 26.2 of the SuDS Manual, pollution hazard indices for:

Domestic driveways are 0.5 (TSS), 0.4 Metals & 0.4 Hydrocarbons.

Mitigation indices provided are: TSS 0.7, Metals 0.6, Hydrocarbons 0.7 = suitable for trafficked areas.

4.5 Rainwater harvesting

With reference to Section 3.1, Rainwater harvesting promotes the following SuDS design criteria:

- uses surface water runoff as a resource
- manages rainwater close to where it falls

and:

- stores rainwater for later use

4.5.1 For external use

Rain water harvesting / water butts: These provide additional, “off line”¹ SuDS, and are deemed a suitable SuDS component for small plots^[2], extract at Figure 1. The image shows a water butt in “off-line” configuration using a standard diverter.

¹The term “off-line” refers to the fact that a water butt is a harvesting device that is not “in-line” in the same manner that a pipe is in-line. Water is collected (harvested) until the water butt is full. When full, the rainwater continues down the rainwater pipe. Outflow from the tank is not “automatic” since this would negate the reason to harvest rainwater. Instead, manual drawdown occurs with the harvested water being used for external uses. Since a water butt may be full, the useful volume is not accounted for in storage and run-off calculations.



Figure 10.7 On-plot SuDS (courtesy Ilman Young, Robert Bray Associates)

There are many opportunities for small on-plot SuDS, such as downpipe reconnections to rain gardens, planted rills and water butts.

Figure 1: Use of water butts as provided in the SuDS manual

The collection and re-use of water can reduce run off volumes arising from roofs. The collected water, via readily available diverters (e.g. Web link: [Standard diverter example](#), as per Figure 2), being used for external uses.



Figure 2: Standard rainwater diverter

Rainwater butts can, in part, accommodate the 5mm event dependent on manual drawdown and evaporation.

4.6 Sedum/green/blue roofs.

Due to site constraints, as per Section 4.1, these are not viable.

4.7 “End of pipe” solutions

To be considered only after implementation of the above options.

- Retention tanks with outfall controlled by hydraulic means (e.g. hydrobrakes, pipe sizing, orifice plate etc.) to limiting rates and volumes to discharge to existing flow pathways.

5 Proposed Surface water disposal strategy

5.1 Outfall control

5.1.1 Pitched roof area

Surface water from the roofed areas will be directed to the existing SW network under hydraulic control with outfall rates limited to a 1 in 100 yr discharge rate of 2.0 ls^{-1} (Copy of Thames Water ALS at Appendix A).

5.1.2 Method to restrict discharge rate

Designed to accommodate all surface water arising from a design drained area of 51 m^2 requires a minimum attenuation volume of 1 m^3 . This can be achieved using an overall storage volume of 1 m^3 formed with a 0.4m overall unit depth. See Table 1.

Drained area	51m ²	
Urban Creep	1	
Designed drained area	51m ²	
Return periods considered	1yr, 30yr, 100yr	
Storm profiles used	50% Summer	75% Winter
Storm coeffs	a = 0.1, b = 0.815	a = 0.06, b = 1.026
Storm range, storm increments	From 5 minutes duration in further 2 min. intervals until critical storm reached	
Rainfall model	FEH 2022	
Critical design storm	30 mins, Winter	
Climate change	1.4	
Storm mean intensity	72.6mm.hr ⁻¹	
Design mean intensity	101.7mm.hr ⁻¹	
Storm peak intensity	185.6mm.hr ⁻¹	
Design peak intensity	259.8mm.hr ⁻¹	
Design maximum head	0.37m	
Calculated maximum head	0.35m	
Minimum attenuation volume required	1.33m ³	
Void ratio	95%	
Design attenuation volume	1.4m ³	(0.37m x 3.8m ²)
Provided attenuation volume	1.5m ³	(0.95 x 4m ² x 0.4m)
Factor of Safety	1.08	
1 in 1yr maximum outfall rate	0.96ls ⁻¹	(See Figure 8.)
1 in 30yr maximum outfall rate	1.71ls ⁻¹	(See Figure 9.)
1 in 100yr maximum outfall rate	2.04ls ⁻¹	(See Figure 10.)
1 in 100yr Time to peak	20 mins	
1 in 100yr Max head: Time to drop to 50%	0.11 hrs	
Outfall control method	40mm Orifice	CD = 0.62

Table 1: Storage volume design summary

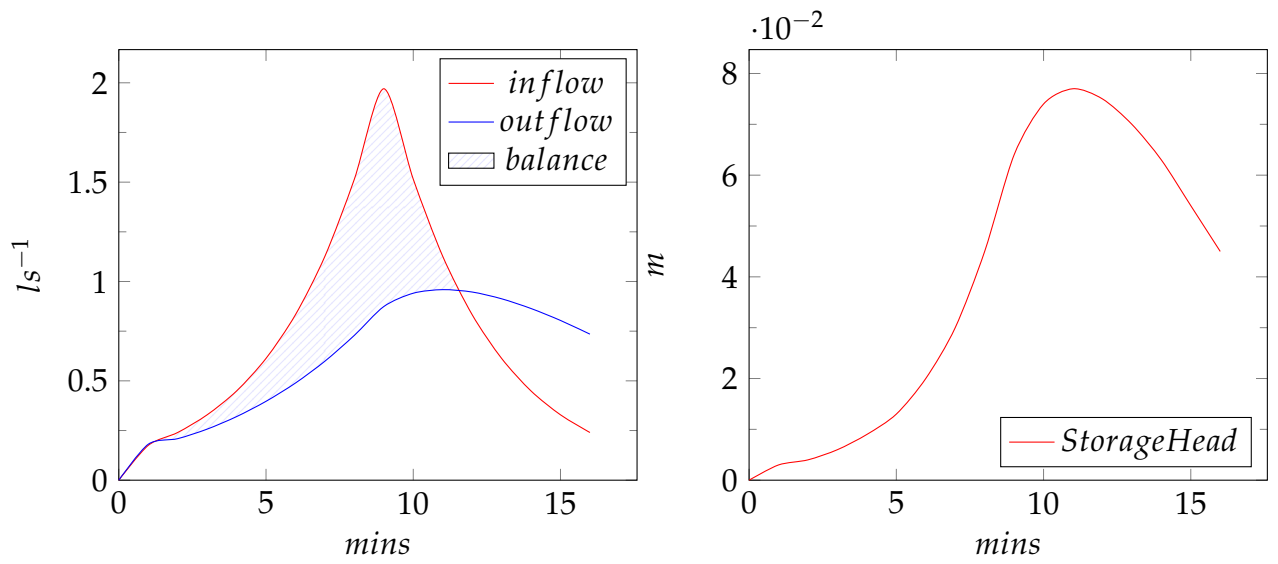


Figure 3: 1 in 1 year critical storm event

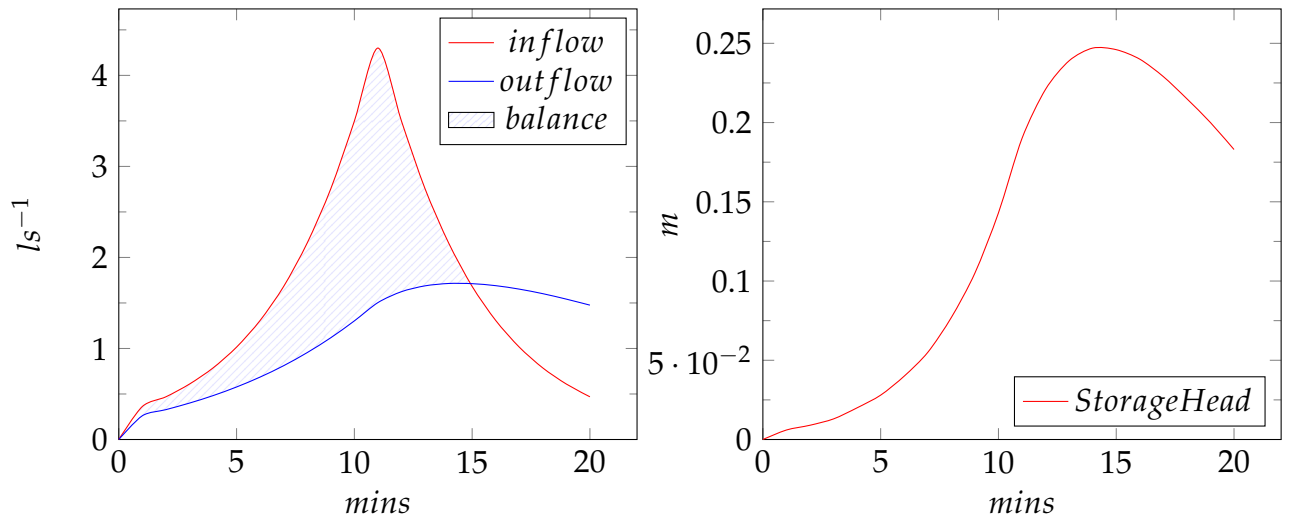


Figure 4: 1 in 30 year critical storm event

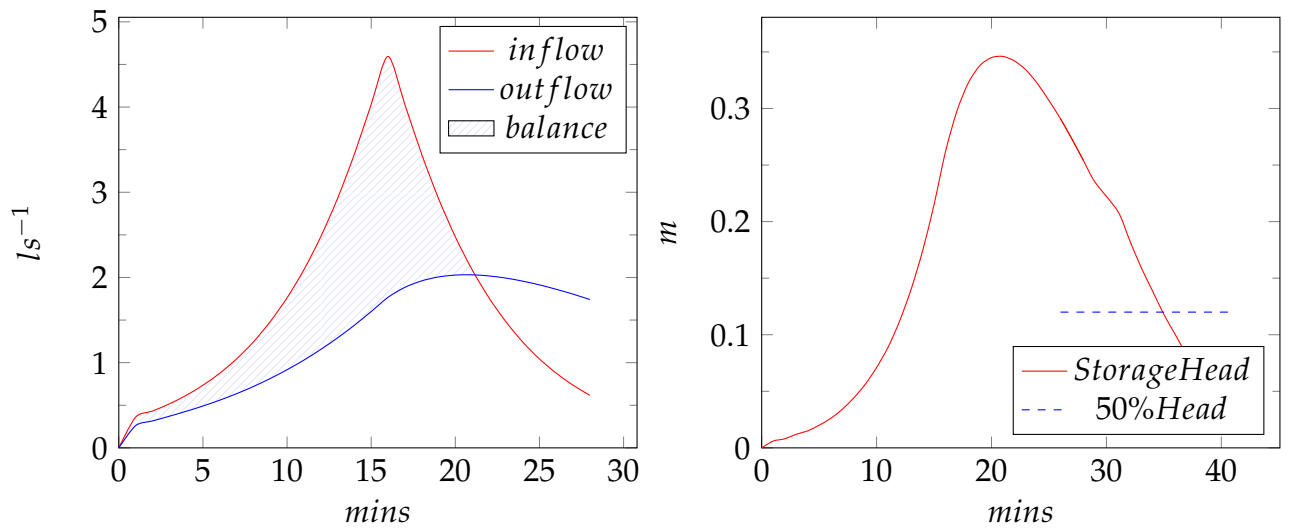


Figure 5: 1 in 100 year critical storm event

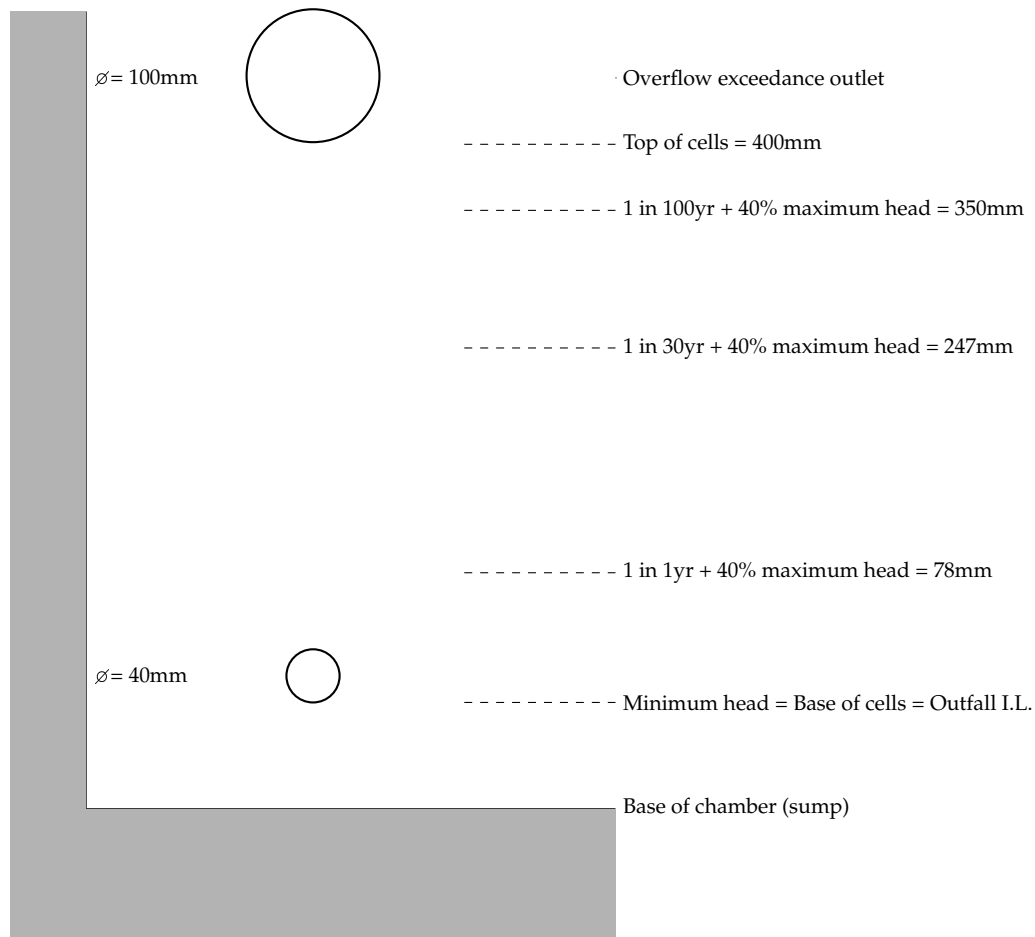


Figure 6: Orifice arrangement in control chamber

This can be achieved using a commercially available attenuation cells and protected orifice control device - see Appendix B. This unit incorporates a higher level 100mm

diameter overflow pipe to route exceedance flows under system failure events.

The attenuation cells will be fully tanked and vented and installed in off-line configuration as per the typical detail at Figure 7.

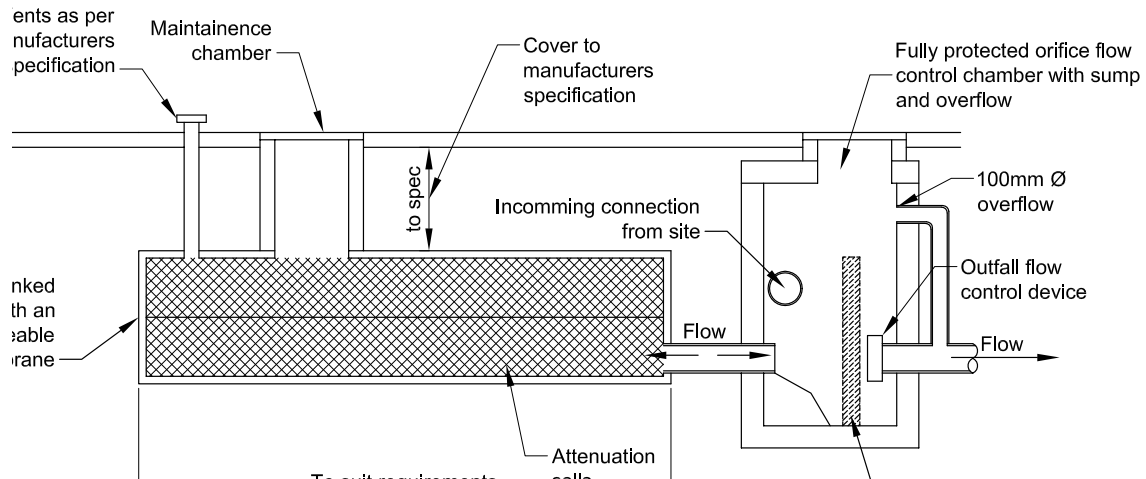


Figure 7: Typical off-line attenuation layout

5.1.3 Consent to discharge

Developer pack at Appendix A

5.2 Permeable hard standing

5.2.1 Permeable paving

All areas of hard standing on the site will be constructed using a permeable medium on a DOT/MOT 3 sub-base (refer to Section 4.4.1).

5.2.2 Capacity check

Infiltration rates on the site are expected to be no worse than $1 \times 10^{-5} \text{ ms}^{-1}$ which equals 36 mm.hr^{-1} . A factor of safety of 5 is used which reduces this to 7 mm.hr^{-1} . Over 75 m^2 plan area, 7 mm.hr^{-1} equates to a total outflow rate of 0.150 ls^{-1}

Calculation based on CIRIA C753: Eq.25.1 where $h_{\text{max}} = D(Ri-q)/n$.

Designed to accommodate all surface water arising requires a sub-base with an attenuation capacity of 4.6 m^3 per 75 m^2 drained area.

Duration (mins)	Intensity (mmhr ⁻¹) + 40% CC	Inflow, m ³ (A)	Outflow, m ³ (B)	Balance volume required (A-B), m ³
5	154.73	0.97	0.05	0.9
10	154.73	1.93	0.09	1.8
15	154.73	2.90	0.14	2.8
30	101.67	3.81	0.27	3.5
60	63.85	4.79	0.54	4.2
120	38.04	5.71	1.08	4.6
240	22.17	6.65	2.16	4.5
360	15.96	7.18	3.24	3.9
600	10.41	7.81	5.40	2.4
700	9.13	7.99	6.30	1.7
1440	4.88	8.78	12.96	0.0

Table 2: Balance volume required within sub-base for a range of 1 in 100yr + 40% CC storm durations based on an outfall rate of 0.150ls⁻¹ per 75m² drained area.

This can be achieved by using a 0.35m deep, 30% void ratio, DoT Type 3 sub-base (see Table 3).

Unit area	75m ²	
R	1	C753: $R = A_D / A_b$
Return periods considered	1yr, 30yr, 100yr	
Storm profiles used	50% Summer	75% Winter
Storm coeffs	a = 0.1, b = 0.815	a = 0.06, b = 1.026
Storm range, storm increments	From 5 minutes duration in further 2 min. intervals until critical storm reached	
Rainfall model	FEH 2022	
Critical design storm	166 mins, Winter	
Climate change	1.4	
Factor of Safety	5	
Storm mean intensity	21.2mm.hr ⁻¹	
Design mean intensity	29.6mm.hr ⁻¹	CIRIA C753: i
Calculated maximum head	0.20m	CIIRA C753: h _{max}
Sub-base attenuation volume required per 75m ²	4.58m ³	
Void ratio	30%	CIRIA C753: n
Sub-base attenuation volume provided per 75m ²	8m ³	(0.3 x 75m ² x 0.35m)
Based on a minimum infiltration rate of 7 mmhr ⁻¹		CIRIA C753: q
1 in 1yr min. outfall rate per 75m ²	0.150ls ⁻¹	(See Figure 8.)
1 in 30yr min. outfall rate per 75m ²	0.150ls ⁻¹	(See Figure 9.)
1 in 100yr min. outfall rate per 75m ²	0.150ls ⁻¹	(See Figure 10.)
1 in 100yr Time to peak	157 mins	
1 in 100yr Max head: Time to drop to 50%	5.66 hrs	
Outfall control method	Base Infiltration - Type A	

Table 3: Summary of sub-base attenuation capacity

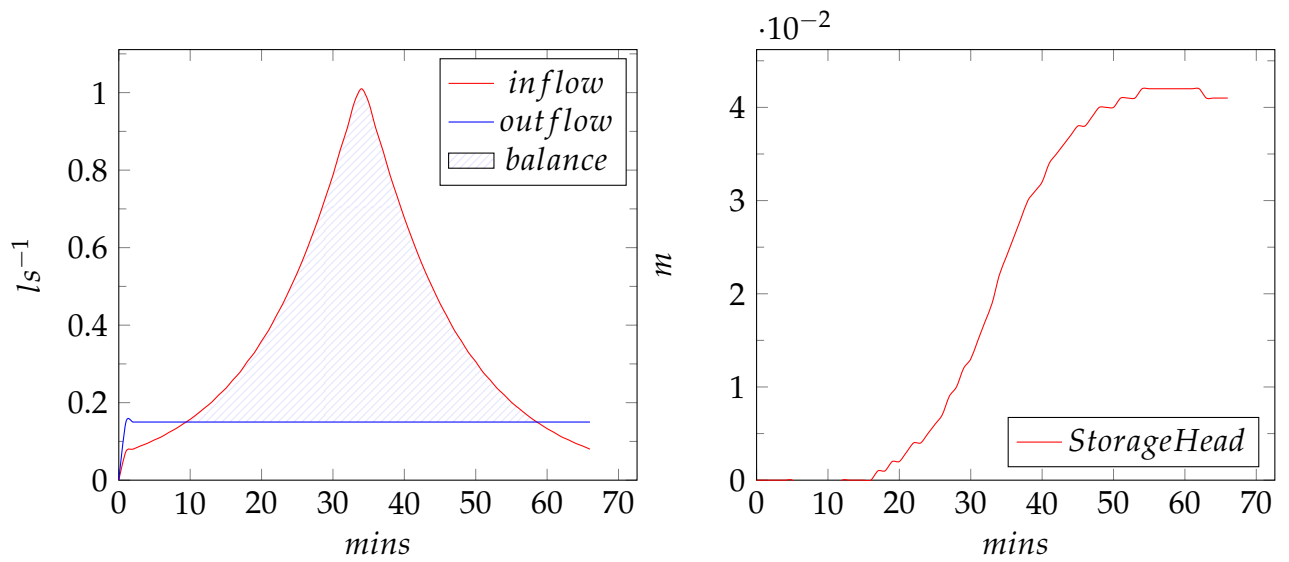


Figure 8: 1 in 1 year critical storm event

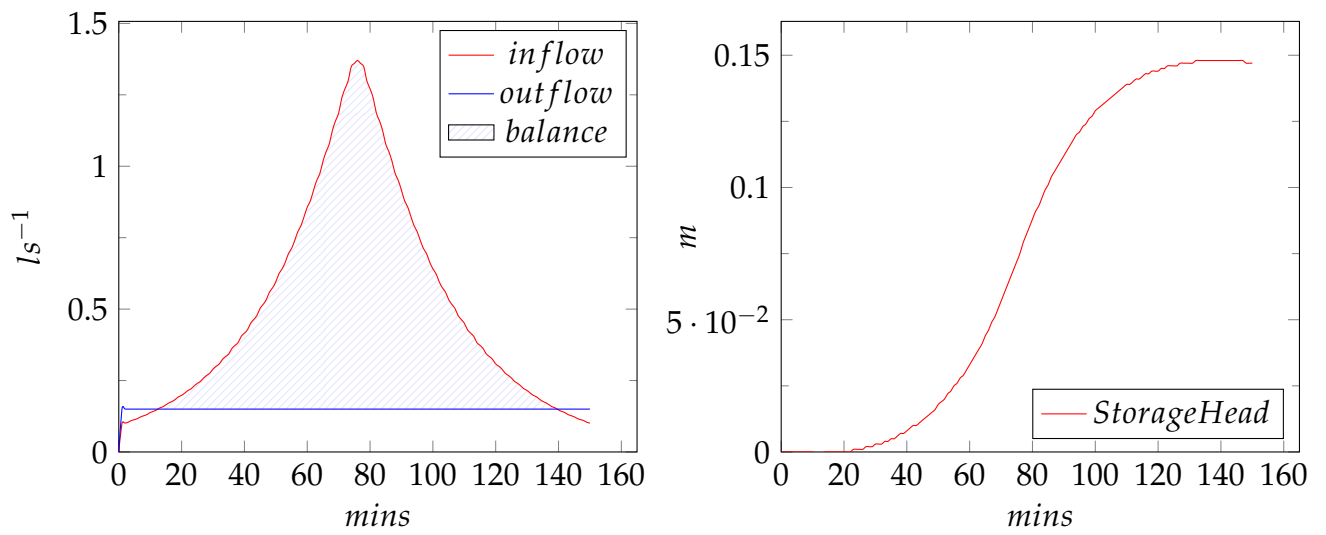


Figure 9: 1 in 30 year critical storm event

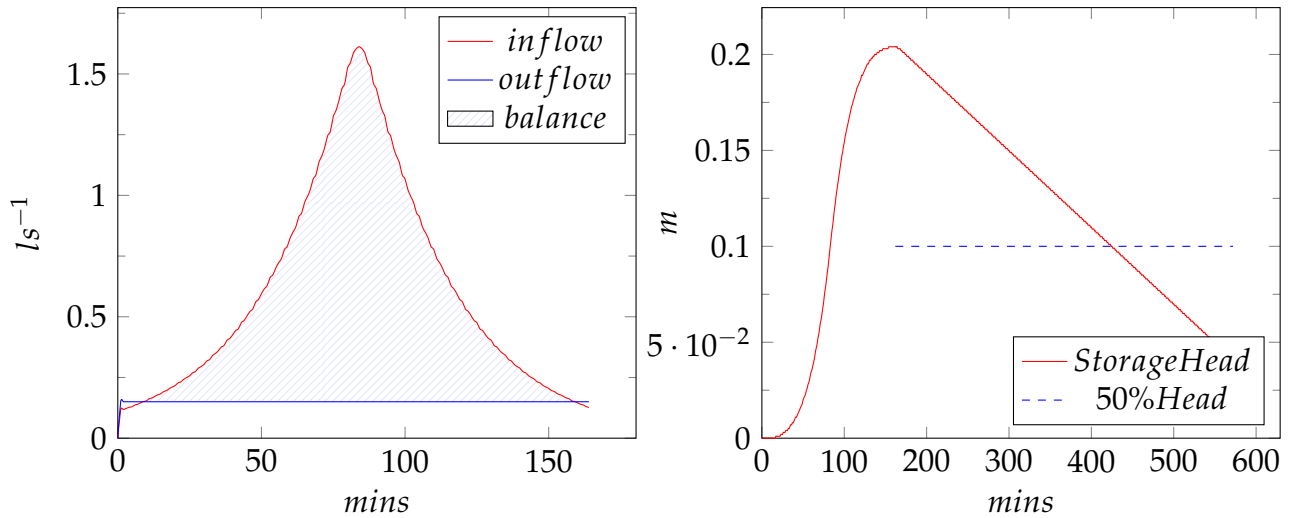


Figure 10: 1 in 100 year critical storm event

The areas of permeable paving are primarily disconnected from the proposed SW network on site, i.e. they are not primarily designed to drain to the soakaway. Surface water retained in the sub-base matrix is lost through evaporation and infiltration at shallow depths, into the surrounding naturally fissured sub-soils (due to action of freeze-thaw, roots, earthworms and the proposed local re-grading following any site clearance). In doing so it mimics as close as possible the natural hydrological process of water falling onto the ground and finding natural flow paths for dispersion.

Exceedance flows (flows over the $1.2 \times M1006hr + CC$ event) will be conveyed at the surface via channels (as Figure 11) to the proposed SW drains.

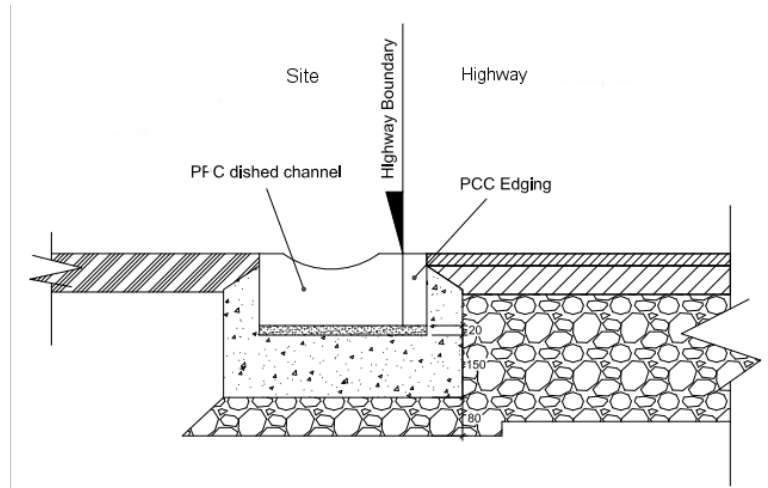


Figure 11: Channel drain at site entrance.

5.3 Rainwater harvesting

5.3.1 For external use

The project team have shown an “off line” rainwater butts to collect water for external use and to reduce potable water demand.

5.4 Vegetation Expansion

All landscaping will be colonised with greater and more expansive vegetation such as shrubs and trees, increasing interception and reducing run-off rates, where surface water will be dissipated through evapotranspiration and infiltration.

All domestic planting can accommodate the 5mm event. There is no anticipated exceedance flows from areas of domestic planting.

6 Design

6.1 Indicative layout

Refer to Appendix C.

6.2 Pipe sizing

Flow will be conveyed via 100mm diameter drainage runs laid at no less than 1:80 falls giving a maximum design capacity of 6.6ls⁻¹(Part H design chart, Figure 12).

1 in 100yr max mean intensity storm = 110mmhr⁻¹

Drained area to one pipe = 25m²

Required pipe capacity = $25 \times 0.11 / 3.6 = 0.8 \text{ ls}^{-1}$

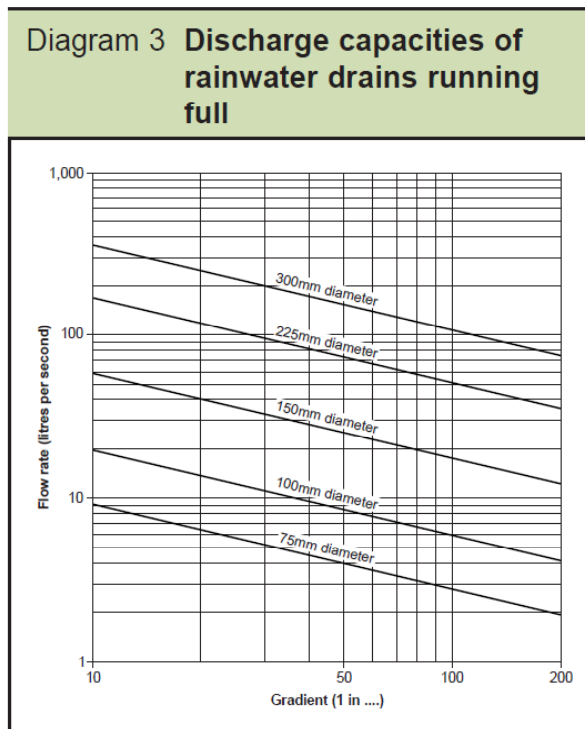


Figure 12: Part H drainage design chart

6.3 Timetable for implementation

6.3.1 Site clearing phase

During the site clearing phase, rainwater will be managed in line with the requirements under the CDM regulations using existing SW gullies with measures in place to prevent contaminants entering the network (sand bag bunds etc).

Any existing redundant SW drains will then be grubbed out and capped off.

6.3.2 Construction phase

The Type 3 sub-base will be laid early in the project and protected with either 50mm wearing course or 100mm sacrificial crushed concrete over a geotextile material so as to allow site access.

Flow control devices and the attenuation cells will be installed early in the project under the remit of the ground-works operations.

Areas of landscaping and boundary planting will be undertaken as the project nears completion.

6.3.3 Post construction phase

Either the 50mm wearing course will be core drilled (100mm diam) at 1m staggered centres with core holes filled with 19mm stone, or the sacrificial layer of crushed concrete and geotextile removed to exposed a clean type 3 prior to local repair and laying of pavement over.

Permeable paving will only be installed when all construction activities are either complete, or near completion so as to minimise blockage of the surface.

Water butts will be installed prior to final completion as part of the final landscaping.

7 Maintenance of SuDS

Ultimate responsibility for the long term maintenance with SuDS in this environment lay with the land owner/management company.

All SuDS on site will be installed with full consideration to long term maintenance. The following guidance applies:

7.1 Pervious pavements

The maintenance plan for permeable paving will include:

- Monthly litter removal;
- Bi-Annual jet washing/sweeping as/if required.
- Annual inspection and repairs as/if required.

7.2 Inspection/control chambers

The maintenance plan for areas of geocellular systems will include:

- Regular² inspection of silt traps, IC's, pipework and pre-treatment devices (safe access provision required)
- Removal of sediments and debris as required.

Access points are required so as to be able to use a suction tanker on an annual basis.

7.3 Vegetation expansion

The maintenance plan for any garden planting will include:

- Monthly inspections until vegetation is established;
- Six monthly inspections after the vegetation has become established;
- Monthly litter removal.

²Six monthly or after a period of heavy or prolonged rainfall

7.4 Water butts

A maintenance plan for water butts should include:

- Regular inspection of silt traps and filters.
- Removal of sediments and debris as required.

8 Summary

All surface water arising can be managed on site. Exceedance flows and flows arising from system failure can be managed on site. Run-off rates are controlled to as low an outfall rate as is currently technically feasible and proportionate to the nature and scale of the development whilst minimising the risk of blockage.

The use of SuDS techniques on site, as detailed above and when installed in line with best practice (I.e. CIRIA 753 & CIRIA 768), will mitigate and treat the run-off volumes in line with the core policies.

Signed:



Dr Robin Saunders CEng, C. Build E, MCABE, BEng(Hons), PhD

Date: 3rd June, 2025

References

- [1] DCW Marshall & AC Bayliss. Flood estimation for small catchments. Technical Report No. 124, Institute of Hydrology, June 1994.
- [2] CIRIA. The SUDS manual. Technical report, CIRIA, 2015.

A Thames Water

A.1 ALS

Asset location
search



Property
Searches

JLT PROPERTY

READING
RG20 XA

Search address supplied 25
Henley Wood Road
Earley
Reading
RG6 7EE

Your reference Henley wood road

Our reference ALS/ALS Standard/2022_4758700

Search date 1 December 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



Search address supplied: 25, Henley Wood Road, Earley, Reading, RG6 7EE

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



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.

Asset location search



Property Searches

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

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
8754	50.98	50
8702	51.53	50.16
8759	n/a	n/a
8751	n/a	n/a
8855	n/a	n/a
8854	n/a	n/a
8851	48.75	46.77
8852	48.68	46.9
8801	48.64	46.97
8850	49.92	48.21
881A	n/a	n/a
771B	51.04	49.2
6709	50.59	49.28
7754	50.22	48.56
7750	n/a	n/a
771C	n/a	n/a
7702	50.81	48.36
771D	n/a	n/a
7755	n/a	n/a
6707	50.53	49.3
7703	50.53	48.14
7753	50.43	48.32
7752	49.91	48.38
7751	n/a	n/a
7852	n/a	n/a
7801	51.38	47.94
781A	n/a	n/a
781B	n/a	n/a
7850	53.76	50.85
781C	n/a	n/a
7605	53.5	50.69
7704	50.75	49.04
7705	50.35	48.94
7701	51.28	48.83
871C	52.72	50.9
8755	51.86	51.06
8756	52.63	51.75
871D	53.21	51.46
861D	53.6	51.67
8757	53.11	52.2
871G	n/a	n/a
8607	53.7	52.4
871H	n/a	n/a
871I	n/a	n/a
8608	53.86	52.62
861C	53.8	52
871F	n/a	n/a
871E	n/a	n/a
8701	51.85	51.43
6756	50.58	48.76
6711	50.6	49.1

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



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

- Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
- Surface Water Sewer:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
- Combined Sewer:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
- Storm Sewer**
- Sludge Sewer**
- Foul Trunk Sewer**
- Surface Trunk Sewer**
- Combined Trunk Sewer**
- Foul Rising Main**
- Surface Water Rising Main**
- Combined Rising Main**
- Vacuum**
- Thames Water Proposed**
- Vent Pipe**
- Gallery**

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

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

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**

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

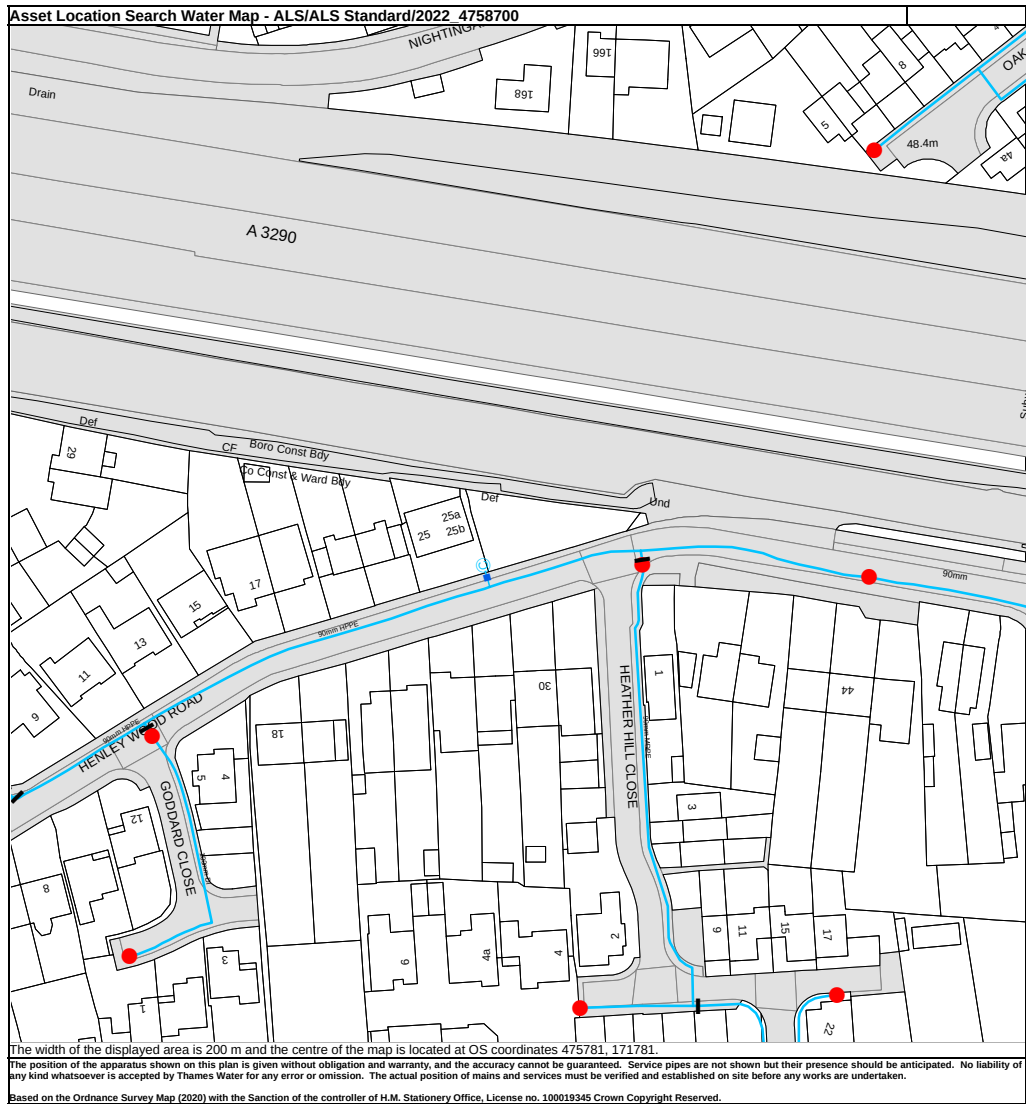
Lines denoting areas of underground surveys, etc.

- Agreement**
- Chamber**
- Operational Site**

Ducts or Crossings

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

- Casement**
- Conduit Bridge**
- Subway**
- Tunnel**





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' 6")
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 areas. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

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

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

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

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

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

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

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 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.

A.2 Developer pack

Application for a pre- development enquiry

Application form

You can go to our website thameswater.co.uk/buildover and apply online or complete this form and return to Thames Water, Developer Services, Clearwater Court, Vastern Road, Reading RG1 8DB



Guidance notes

Pre development enquiries are designed to aid developers and their consultants in understanding the impact of their proposed development on Thames Water sewerage network.

You may also use this application form to enable early discussion/meeting on planning issues such as Flood Risk Assessments, capacity checks, drainage strategies and pre S104 application layouts.

Once we have received your application Thames Water will undertake a simple desktop study to determine your sites impact on our network and identify if any detailed further analysis or modelling is required.

Please note, that all relevant sections of the application must be fully completed, as insufficient information will result in your application being returned to you, which will result in your response being delayed.

Applicant Details

Please provide the full name, address and contact details of the person or company making the Pre-development enquiry.

All applications must be paid for prior to any response being answered. Please send your cheque, with the amount (including VAT), to Thames Water Limited with the accompanying fully completed application to:

Thames Water
Developer Services
Clearwater Court
Vastern Road
Reading
Berkshire RG1 8DB

Development site details

The site must hold a comprehensive address, scaled location plan and site layout (if available) which will assist in determining the location of proposed connection points. A 12 figure grid reference highlighting the centre point of the site will also be helpful to us if an address is difficult to determine.

The type, number of units and size of the development will assist us.

We require information on the history of the site, therefore, if the site is Brownfield ie. land identified for redevelopment, then please let us know if the site has sewerage connections and what was previously occupying the site.

Proposed development and flows

Please indicate the proposed discharge rates for surface water and foul discharge in litres per second (l/s).

Checklist and declaration

Ensure that you have fully completed all relevant sections of the application. Please print your name, sign and date the application form and enclose:

- a scaled location plan
- a scaled site layout
- payment of the required fee of £398 + VAT

What happens next?

- Once we have received your fully completed application form we will provide you with the following response to your application:
- A preliminary assessment of any restrictions and potential connection points to the existing sewerage network.
- A preliminary assessment of any reinforcement works that will be required to service the development.
- Details of any protective measures for sewerage assets which may require diversion or easements.

We will endeavor to respond to you within 15 working days of receipt of your application providing it is not necessary to carry out further investigation works.

If further analysis is required, involving detailed modelling and site investigation (depth loggers, rain gauges or flow monitors) we are able to provide you with a scope, estimated cost and timeframe for undertaking a formal impact study for the price of £400 + VAT. Once completed this study would include a full report detailing the impact and recommendations/network improvements required to alleviate any increased flood risk.

Application for a pre-development enquiry

Please complete all sections of this form in BLOCK CAPITALS



About the person applying

This is the person we'll contact about the application and will receive all correspondence. This can be the property owner or someone acting on their behalf.

Are you applying as?

An individual ☐

or

A company ☐

'An individual' is a homeowner and 'A company' is an agent/architect/builder etc acting on behalf of the homeowner

Company name

Title

Mr ☐

Mrs ☐

Ms ☐

Miss ☐

Dr. ☐

Other:

First name(s)

Last name



Applicant contact details

We'll use these details to get in touch with you about your application.

Preferred contact number

Alternative number

Email address

Full postal address

Address line 1:

Address line 2:

Town:

County:

Postcode:



Nominated contact

Who should we contact to process your application?

Applicant ☐

Someone else ☐

(Please tick one)

If someone else:

Title

Mr ☐

Mrs ☐

Ms ☐

Miss ☐

Dr. ☐

Other:

First name(s)

Continued...

Last name			
Preferred contact number			
Alternative number			
Email address			
Full postal address	Address line 1:		
	Address line 2:		
	Town:		
	County:		Postcode:



Invoices

Who should we send invoices to?

Applicant ☐ Nominated contact ☐ Someone else ☐

If someone else:

Title	Mr ☐	Mrs ☐	Ms ☐	Miss ☐	Dr. ☐	Other:
First name(s)						
Last name						
Full postal address	Address line 1:					
	Address line 2:					
	Town:					
	County:		Postcode:			
Email address						



Where the work is taking place

What is the address of the property being connected?

Same as applicant ☐ Same as the nominated contact ☐ Somewhere else ☐

If somewhere else:

Site name	
-----------	----------------------

Continued...

Full postal address

Address line 1:

Address line 2:

Town:

County:

Postcode:



About the site

What is your local authority?

Ordnance survey grid ref

What is the site currently used for?

Greenfield/agricultural ☐ Industry ☐ Housing ☐ Landfill ☐ Other ☐

VAT development classification

New build house or flat ☐

Relevant residential or charitable ☐

Commercial, existing or other ☐

Listed ☐

Conversion ☐

Mixed ☐



Location of existing connection

Does the site already have any of these sewerage connections?

Foul water

Yes ☐ No ☐

If yes:

Current discharge rate

Litres per second

Size of existing site

Number of units/hectares

Location of existing connection?

Surface water

Yes ☐ No ☐

If yes:

Current discharge rate

Litres per second

Size of existing site

Number of units/hectares

Location of existing connection?



Your proposed development

Type of development	Greenfield/agricultural ☐	Industry ☐	Housing ☐	Landfill ☐	Mixed ☐
Preferred foul water connection point					
Preferred surface water connection point					
Size of proposed development		Number of units/hectares			
Proposed foul water discharge rate		Litres per second			
Proposed surface water discharge rate		Litres per second			
How will development flows reach the connection point?	Pumped ☐	Gravity ☐			
Trade effluent agreement required?	Yes ☐	No ☐	Don't know ☐		
If Yes, Trade effluent reference number					



Planning status

Is the development identified in the local plan?	Yes ☐	No ☐	Don't know ☐	If Yes, reference number	
Does the development have outlined planning permission?	Yes ☐	No ☐	Don't know ☐	If Yes, reference number	
Does the development have full planning permission?	Yes ☐	No ☐	Don't know ☐	If Yes, reference number	
Does the development have building regulation permission?	Yes ☐	No ☐	Don't know ☐		



Enclose your documents

All drawings must be of suitable detail and have a drawing reference number on them.

What we need from you to process your application:

Site plan	This should show the site with nearby buildings, roads and any sewers.
Development plan	This should show proposed layout of new development buildings, roads and sewers.
Site drainage plan	This should show all proposed sewers, pipe sizes and gradients.



Checklist and Declaration

I have completed the application form and enclose the following information:

- Application fee of £398 + VAT
- A scaled location plan ie. site plans showing existing and proposed layouts.
- The development site drainage plan.

Declaration

I agree, that for the purposes of the Water Industry Act 2003 and the Data Protection Act 1998, the information provided in this form and in any accompanying documents, may be held on a computer and processed by Thames Water Ltd and its servants and agents for all purposes connected with the Company's statutory water and sewerage undertakings.

Print name	
Position within company	
Company	
Date	
Signature	

Getting in touch with us

For enquiries regarding this application or any other questions relating to your building or development work please contact us on:



thameswater.co.uk/developerservices



developer.services@thameswater.co.uk



0800 009 3921
Monday - Friday 8.00am-5.00pm



Thames Water, Developer Services, Clearwater Court,
Vastern Road, Reading, Berkshire RG1 8DB

If you have any other questions for Thames Water



thameswater.co.uk



0800 980 8800

- Queries relating to your bill
- Change of address
- Meter readings

Minicom service if you are deaf or hard of hearing 0800 316 6899

0800 316 9800

- For emergencies
- Other non-billing enquiries
- Literature

Minicom service if you are deaf or hard of hearing 0800 316 9898

To contact us from abroad +44 1793 366011



Thames Water, PO Box 286, Swindon, SN38 2RA



This leaflet can be supplied in braille or audio-tape upon request.

129611 04/15



C.2 Overview

