## 2673 - 52 Avenue Road, NW8 6HS; Flood Risk Assessment & SuDS Strategy Report

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- D. Thames Water Pre-Planning Enquiry
- E. Inspection and Maintenance Strategy

Status:For ImDate:May 20Revision:PO1Job no:2673Prepared by:Niki ToApproved by:Carmet

For Information May 2022 PO1 2673 Niki Tourliadou Carmel Lennon

## HEYNE TILLETT STEEL

## 1. Introduction

This Flood Risk Assessment (FRA) and SuDS Strategy Report has been prepared by Heyne Tillett Steel to support the planning application submitted to the London Borough of Camden (LBC) in relation to the new development taking place at the 52 Avenue Road, NW8 6HS.

The report aims to incorporate and demonstrate compliance with the following national, regional and local planning policy guidance and statutory requirement as far as reasonably possible.

- + National Planning Policy Framework (2021)
- + London Plan (2021)
- + Camden Strategic Flood Risk Assessment (2014)
- + Camden Local Plan (2017)
- + Camden Planning Guidance, Water and Flooding (2019)
- + Surface Water Management Plan (2011)

## HEYNE TILLETT STEEL

## 2. Site Description

## 2.1 Site Location

The site is located within the London Borough of Camden. It is bounded to the south by Avenue Road and to the west by Elsworthy Road. To the north and to the east are residential buildings.

The total site area is 0.30 hectares. It is located at the National Grid reference TQ269837 and the full site address is 52 Avenue Road, NW8 6HS.

The site location and individual buildings can be seen in Image 1.

## 2.2 Existing Development

The site comprises two plots with double frontage on Avenue Road and separate access off Elsworthy Road. The site previously contained 2 villas to the south-west of the existing plots (Image 2). The rubble from the two original 1840s villas that were demolished was spread across the top layer of the site. The existing plots are unoccupied. The garden on the west side is overgrown with vegetation and largely inaccessible as are the external areas on the north and south borders (Image 3).

## 2.3 Proposed Development

The proposed development consists of the demolition of the existing plots and the construction of 12 new townhouses with a communal Health and Wellness Spa. The development is to provide eco/zero carbon credentials, private and communal landscaped gardens, concierge and 24hr gated security.

For the architectural proposals please refer to the planning drawings submitted with the application.







Image 3a -Existing plots





Image 2 - Site with pre-existing villas



Image 3c - Existing plots



AVENUE F

## 3. Flood Risk

In order to determine the risk of flooding for the development site, the Environment Agency (EA)'s website was referenced as well as LBC flood maps, including information contained in the Strategic Flood Risk Assessment (SFRA) and Surface Water Management Plan (SWMP).

## 3.1 Flood Risk from Rivers and/or the Sea

As shown in Image 4, the site lies in Flood Zone 1 which confirms that it is at low risk of flooding from rivers and the sea. Flood Zone 1 is defined as land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%). Therefore, flood risk from rivers or sea is considered low.

As the site lies in the Flood Zone 1, all development is appropriate and therefore the sequential and exception tests are not required.

## 3.2 Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when rainwater neither drains away through the in-situ drainage system nor soaks into the ground. Instead, it ponds locally or flows over the ground. Surface water flooding is typically associated with topographical low points.

The SFRA 'Updated Flood Maps for Surface Water Flooding' (Image 5) shows that the site is located in a critical drainage area (CDA); however, both this map and the EA flood maps (Image 6) confirm that the site is at low risk of surface water flooding. Furthermore, the SFRA 'Hazard: 1 in 1000-year flood event' map shows that the site has a moderate flood hazard rating (Image 7).

The development proposals include the provision of sustainable drainage systems (SuDS) which will provide a betterment of the surface water management at the site. Therefore, the surface water flood risk to the proposed development is considered low.



. . . . . . .



Image 4 - Risk from rivers or the sea (extract from EA website)



Image 5 - Flood Risk from Surface Water (SFRA map)





Image 6 - Flood risk from surface water (extract from EA website)

Image 7 - Hazard - 1 in 1000 year flood event

## 3.3 Flood Risk from Sewers

The SFRA contains maps for both internal and external sewer flooding. This is based on a water-company held register of properties which have experienced sewer flooding due to hydraulic overload, or properties which are 'at risk' of sewer flooding more frequently than once in 20 years

These show that the site is within an area with historical flooding events (Image 8 and Image 9).

The proposed development will introduce a lower ground floor (LGF) with a one-storey basement. Drainage from these areas will be pumped to the above-ground drainage and then to the existing gravity outfall to the public sewers, as will the drainage for the existing retained areas. Drainage from above ground level will be routed towards to the existing outfalls under gravity, to reduce the reliance on pumped discharge.

The most likely reason for sewer flooding onsite is due to capacity issues during heavy rainfalls within the public sewerage network. The development proposes to reduce surface water runoff rates, as indicated in Section 5.1, and thus will contribute towards reducing the risk of flooding from sewer within the neighbouring area.

Therefore, the flood risk from sewers is considered low.



Image 8 - Internal Sewer Flooding (SFRA)



Image 9 - External sewer flooding (SFRA)

## HEYNE TILLETT STEEL

## 3.4 Flood Risk from Artificial Sources

The Environment Agency flood maps were reviewed to assess the risk of flooding from reservoirs. The maps indicate that the site is not at risk from flooding from reservoirs (Image 10).

The closest watercourse is the Regent's Canal, 1.3 km south-west of the site. One of the branches of the historical River Fleet previously flowed approximately 150m - 200m to the east of the site (Image 11). This leads from the Hampstead Ponds on Hampstead Heath. The River Fleet became entirely enclosed in the 19th Century and is now fully incorporated into the Thames Water sewerage network, eventually out-falling into the River Thames under Blackfriars Bridge. There is no indication that this culverted watercourse is associated with increased flood-risk to the site.

The flood risk from artificial sources is therefore considered to be low.

## 3.5 Flood Risk from Groundwater

The SFRA contains a map showing historical records of groundwater flooding and areas of increased potential for elevated groundwater (Image 12). This shows that the site is not in or near an area of permeable superficial deposits, or of groundwater flooding incidents.

Waterproofing of the proposed basement structure is proposed in line with BS 8102. Therefore, the resulting risk of flooding from groundwater is considered to be low.

## 3.6 Summary

A thorough review of flood data published by the EA and LBC London was undertaken. This exercise confirmed that the proposed development is at low risk of flooding from all sources.



Image 11 - Surface Waterbodies





## 4. Existing Drainage Arrangements

## 4.1 Public Drainage Network

There are Thames Water combined public sewers beneath Avenue Road to the south and Elsworthy Road to the west. A 1372mm x 914mm trunk sewer falls south-east along Avenue Road, approximately 4.3m below ground level. There is a 940mm x 635mm sewer that begins beneath Elsworthy Road at a depth of approximately 6.2m below ground level, that falls from Thames Water manhole 0801 southwards and connects to the trunk sewer at Avenue Road.

A CCTV drainage survey will be undertaken at the site to confirm the existing sewer outfalls.

A copy of the sewer records is contained in Appendix A and an extract from it is shown below in Image 13.

## 4.2 Private Drainage Network

Assumed the site is served by pipes that discharge the surface and the foul water runoff to the combined sewer under Elsworthy Road.

There is no evidence or record of any attenuation on site, and it is assumed that the site discharges unattenuated. A site outflow rate of 201/s is calculated for the 1:100-year rainfall event.

A CCTV drainage survey will be undertaken at the site to confirm the arrangement and condition of the existing below-ground drainage.

## 4.3 Existing Surface Water Rates

The site has an area of approximately 0.042 ha (424.10m<sup>2</sup>) and is completely impermeable in the existing situation. The existing peak run-off has been calculated using the Modified Rational Method in accordance with the following formula:

### $Q = 3.61 C_{v} x i x A$

where  $C_{ij}$  is the volumetric runoff coefficient, A is the catchment area in hectares and i is the peak rainfall intensity in mm/hr which was obtained using FEH data and MicroDrainage software.

Table 1 summarises the existing (unattenuated) peak run-off rate for the 1:2-year, 1:30-year and 1:100-year rainfall events, as well as the 1:100-year event with 40% CC (climate change allowance).

Return period	Existing flowrate
1:2*-year	4.81/s
1:30-year	15.0/s
1:100-year	20.0/s
1:100-year + 40% CC	28.0 I/s

\*FEH data cannot be used to generate a 1 in 1 year rainfall event

Table 11 - Existing Surface Water Run-off Rates







## 5. Proposed Drainage Arrangements

It is intended to re-use the existing combined outfalls to the public sewer for proposed foul and surface water drainage. Separated foul and surface water networks will be provided to serve the new buildings, which will be designed in accordance with Building Regulations Part H.

## 5.1 Surface Water Drainage Proposals

Rainwater harvesting is proposed, using the capacity of the green blue roof on the terraces with a diverting valve to ensure storage is available during heavy rainfall events. Opportunities for infiltration are limited due to the urban location of the site and lack of suitable external space.

It is proposed to include shallow green blue roofs wherever possible on the terraces and a shallow blue roof above the basement in the external areas, with the outflow rate from these controlled as low as possible. Permeable paving is also proposed on external areas, where permitted by the existing trees.

The site will continue to discharge to the combined sewer as both watercourses and surface water sewers are not present near the site.

The Camden SuDS Proforma has also been completed and acts as a summary for the evidence set out in this report. Refer to Appendix B for a copy of the proforma.

The London Plan and LBC policy require that surface water is managed in line with the sustainability hierarchy set out in Table 2. The surface water drainage network has been designed in coordination with the architect and aims to incorporate SuDS into the fabric of the building.

Priority was given to SuDS which provide multi-functional benefits and extensive coordination was undertaken to ensure that SuDS are incorporated into the building fabric. Table 2 presents the drainage hierarchy, taken from Policy SI13 of the London Plan, which shows which SuDS are proposed to be incorporated into the development.

Greenfield run-off rates have been calculated using the calculation tool available on www.uksuds.com and are 1.28 l/s for  $Q_{\rm bar}$  and 4.07 l/s for the 1 in 100-year rainfall event. Based on the LBC planning policy, it is proposed to reduce the peak surface water run-off rate as far as possible.

The SuDS elements which are being used for attenuation are outlined in detail in this section.

	SuDS Technique	Included	Examples
1	Rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)	✓	Blue-green roofs are proposed at roof level across a large part of the building as well as use of one of the blue roofs for rainwater harvesting.
2	Rainwater infiltration to ground at or close to source	×	There is no space for infiltration features It is therefore concluded that infiltration is not viable on the site.
3	Rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)	✓	Above the blue roofs, green roofs will have extensive build-ups which will also provide a level of rainwater attenuation.
4	Rainwater discharge direct to a watercourse (unless not appropriate)	×	The closest watercourse is the Regent's Canal, 1.3 km south-west of the site. The distance and location of the river from the site make discharge to the watercourse infeasible. It is therefore concluded that discharge to a watercourse is not practicable.
5	Controlled rainwater discharge to a surface water sewer or drain	×	There are no public surface water sewers within the vicinity of the site.
6	Controlled rainwater discharge to a combined sewer	✓	It is proposed to discharge surface water from SuDS features to the combined public sewers in Elsworthy Road via existing connections.

## HEYNE TILLETT STEEL

### Blue Roofs

A mix of blue roofs and blue green roofs are proposed at the site. Blue-green roofs are proposed at roof levels where possible, and blue roofs are proposed above the basement in the external areas.

The total area of blue roofs will be approximately 1098m<sup>2</sup>, and these will provide surface water attenuation for 1448m<sup>2</sup> of the building area.

The proposed catchments and areas of blue roofs are shown in Image 14.

Blue roof specialists (ACO) were engaged and provided preliminary calculations based on blue roof build-ups ranging from 85 mm to 165 mm. The controlled outflows from the upper roofs (Units 1-14) discharge to the blue roof above the basement, which attenuates this further to a total discharge rate from the blue roofs of 3.7 l/s for the 1 in 100-year rainfall event (+40% climate change).

A breakdown of depths and run-off rates is included in Table 3. The reduced run-off from the blue roofs will achieved using restricted outlets. Blue roof calculations are included within Appendix C.

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Roof No.	Location (roof type)	Catchment Area	Blue Roof Area	Blue Roof Depth	Run-off Rate
Unit 1	Roof terrace	83.3m <sup>2</sup>	68.7m <sup>2</sup>	85mm	0.35 l/s
Unit 2	Roof terrace	74.8m <sup>2</sup>	60.6m <sup>2</sup>	85mm	0.32 l/s
Unit 3	Roof terrace	74.8m <sup>2</sup>	60.6m <sup>2</sup>	85mm	0.32 l/s
Unit 4	Roof terrace	80.7m <sup>2</sup>	66.2m <sup>2</sup>	85mm	0.34 l/s
Unit 5	Roof terrace	63.15m <sup>2</sup>	49.5m <sup>2</sup>	85mm	0.29 l/s
Unit 6	Roof terrace	67.2m <sup>2</sup>	53.4m <sup>2</sup>	85mm	0.30 l/s
Unit 7	Roof terrace	67.2m <sup>2</sup>	53.4m <sup>2</sup>	85mm	0.30 l/s
Unit 8	Roof terrace	63.15m <sup>2</sup>	49.5m <sup>2</sup>	85mm	0.29 l/s
Unit 9	Roof terrace	80.7m <sup>2</sup>	66.2m <sup>2</sup>	85mm	0.34 l/s
Unit 10	Roof terrace	74.8m <sup>2</sup>	60.6m <sup>2</sup>	85mm	0.32 l/s
Unit 11	Roof terrace	74.8m <sup>2</sup>	60.6m <sup>2</sup>	85mm	0.32 l/s
Unit 12	Roof terrace	83.3m <sup>2</sup>	68.7m <sup>2</sup>	85mm	0.35 l/s
	Above basement	560m <sup>2</sup>	380m <sup>2</sup>	165mm	3.7 l/s
	Total	1448 m²	1098 m²		3.7 l/s

Permeable paving
Proposed soft landscape
Proposed green roofs
Unit 1 Blue roof
Unit 2 Blue roof
Unit 3 Blue roof
Unit 4 Blue roof
Unit 5 Blue roof
Unit 6 Blue roof
Unit 7 Blue roof
Unit & Blue coof

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Blue/ blue-green roof



Unit 11 Blue roof

Unit 12 Blue roof

Above basement Blue roof





### **Remaining Site**

It is proposed that permeable paving will provide in the remaining external areas of the site, where permitted by existing trees.

The peak flow rate for these areas in the 1:100-year storm event with 40% climate change event (CC) is 0.41/s.

This results in a peak discharge rate for the entire site of 4.10 l/s for the 1 in 100 rainfall event + 40% climate change allowance. This discharge will be to the existing outfalls into the Thames Water combined sewers. The proposed rate is equal to the greenfield run-off rate 4.1 l/s for the 1 in 100-year rainfall event.

## **Multi-Functional Benefits**

In accordance with the NPPG and the London Plan, the aim of the SuDS design has been to provide multi-functional benefits with a focus on water quality, biodiversity and amenity as well as reducing the peak run-off.

The inclusion of green-blue roofs at the site will provide biodiversity benefits and passive irrigation of green roofs above blue roof build-ups.

## Summary

A number of SuDS have been incorporated into the proposed development, in line with the requirements set out in the London Plan and LBC policy. Surface water at the site will be attenuated using a combination of blue and blue green roofs and porous paving.

A summary of the various run-off rates for the development are presented in Table 4. The SuDS interventions proposed result in a significant reduction to the peak surface water run-off from the development site.

Poturo		Run-off Rate		
Period	Greenfield	Existing (unmitigated)	Proposed	Reduction
Q <sub>2</sub>	1.1 l/s	4.81/s	0.9 I/s	81%
Q <sub>30</sub>	2.9 l/s	15.0/s	2.1 l/s	86%
Q <sub>100</sub>	4.1 l/s	20.0/s	3.2 I/s	84%
Q <sub>100+40%</sub>	-	28.0 l/s	4.1 l/s	85%

\*FEH data cannot be used to generate a 1 in 1 year rainfall event

Table 34 - Comparison of Existing and Proposed Run-off rates

## 5.2 Proposed Foul Water Drainage Strategy

Foul water drainage from ground floor level and above is proposed to be discharged by gravity to the existing outfall to the Thames Water sewers. The basement is proposed to be pumped to high level before connection to the above ground drainage and discharging by gravity.

Whilst the foul water rates may increase, the surface water discharge rates are decreasing significantly as shown in Table 4. Therefore the combined discharge rate will be lower than existing discharge rates. Therefore, no anticipated capacity issues in surrounding sewer network.

A pre-planning enquiry has been submitted to Thames Water to confirm there is capacity in the sewer network to accept the proposed flow rates (Appendix D).

## 5.3 Drainage 1 Strategy

A maintenance strategy has been compiled is included in Appendix E and is expected to be read in conjunction with this report.



## 5.3 Drainage Inspection and Maintenance

## 6. Conclusion

This FRA and SuDS Strategy report has been prepared in accordance with local and national planning policy and guidance documents including LBC's SFRA, the London Plan (2021) and the NPPF (2019). The proposed development complies with local and national planning policy on flood risk and sustainable drainage.

This report confirmed that the development site is at low risk from all sources of flooding.

The suitability of different SuDS techniques was assessed in accordance with requirements set out in the London Plan. Surface water attenuation will be provided in the form of blue green roofs and porous paving, to restrict the site discharge rate to 4.1 l/s for the 1:100 year storm event with 40% +CC, representing a significant reduction in peak run-off rates compared to the existing situation.

Thames Water confirmed there is capacity in the sewer network for the proposed flow rates (Appendix D).

## HEYNE TILLETT STEEL

# **Appendix A** Thames Water Asset Map





Search address supplied 52, AVENUE ROAD, LONDON, NW8 6HS

22 February 2021

25 February 2021

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Any new owner or occupier will need to contact Thames Water on 0800 316 9800 or log onto our website <u>www.thameswater.co.uk</u> and complete our online form to change the water and drainage services bills to their name.

The following records were searched in compiling this report: - the Map of Public Sewers, the Map of Waterworks, Water and Sewer billing records, Adoption of Public Sewer records, Building Over Public Sewer records, the Register of Properties subject to Internal Foul Flooding, the Register of Properties subject to Poor Water Pressure and the Drinking Water Register. Thames Water Utilities Ltd (TWUL), Clearwater Court, Vastern Road, Reading RG1 8DB, holds all of these

TWUL, trading as Property Searches, are responsible in respect of the following:-

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(ii) any negligent or incorrect interpretation of the records searched:

(iii) and any negligent or incorrect recording of that interpretation in the search report

#### (iv) compensation payments

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#### Residential The Law Society's CON29DW

Drainage & Water Enquiry



Questi	ion	Summary Answer
Maps		
1.1	Where relevant, please include a copy of an extract from the public sewer map.	Map Provided
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Map Provided
Draina	ge	
2.1	Does foul water from the property drain to a public sewer?	See Details
2.2	Does surface water from the property drain to a public sewer?	See Details
2.3	Is a surface water drainage charge payable?	See Details
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
2.4.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?	No
2.5	Does the public sewer map indicate any public sewer within 30.48 metres(100 feet) of any buildings within the property?	See Details
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the 50metres of any buildings within the property?	No
2.6	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	No
2.8	Is the building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?	Not At Risk
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	10.347 Kilometres
Water		
3.1	Is the property connected to mains water supply?	See Details
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No
3.3	Is any water main or service pipe serving or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
3.4	Is the property at risk of receiving low water pressure or flow?	See Details
3.5	What is the classification of the water supply for the property?	See Details
3.6	Please include details of the location of any water meter serving the property.	See Details
Charg	ing	
4.1.1	Who are the sewerage undertakers for the area?	Thames Water
4.1.2	Who are the water undertakers for the area?	Thames Water
4.2	Who bills the property for sewerage services?	Not Billed
4.3	Who bills the property for water services?	Not Billed
4.4	What is the current basis for charging for sewerage and/or water services at the property?	No Charge
4.5	Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?	No





#### Interpretation of CON29DW Drainage and Water Search

Appendix 1 contains definitions of terms and expressions used in this report

For your guidance:
 Thames Water Property Searches Complaints Procedure:
 Thames Water Property Searches offers a robust complaints procedure. Complaints can be made by telephone, in writing, by email (searches@thameswater.co.uk) or through our website (www.thameswater-propertysearches.co.uk)

As a minimum standard Thames Water Property Searches will:

- o endeayour to resolve any contact or complaint at the time of receipt. If this isn't
- or encededual to resolve any contract occupating at the time of receipt. In this isn't possible, we will advise of timescales;
   or investigate and research the matter in detail to identify the issue raised (in some cases third party consultation will be required);
   or provide a response to the customer within 10 working days of receipt of the
- complaint;
- o provide compensation, if no response or acknowledgment that we are investigating
- provide compensation, if no response of acknowledgment that we are investigating the case is given within 10 working days of receipt of the complaint;
   keep you informed of the progress and, depending on the scale of investigation required, update with new timescales as necessary;
   provide an amended search, free of charge, if required;
   provide a refund if we find your complaint to be justified; take the necessary action within our server to act theory charge. within our power to put things right.

If you want us to liaise with a third party on your behalf, just let us know.

If you are still not satisfied with the outcome provided we will refer the matter to a Senior nager for resolution who will respond again within 5 working days.

If you remain dissatisfied with our final response you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). Further information car be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk





## Drainage



T 0800 009 4540 E sea





#### 1.1 - Where relevant, please include a copy of an extract from the public sewer map.

A copy of an extract of the public sewer map is included, showing the public sewers, disposal mains and lateral drains in the vicinity of the property.

For your guidance:

Maps

- The Water Industry Act 1991 defines Public Sewers as those which Thames Water have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purposes only.
- 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
- Assets other than public sewers may be shown on the copy extract, for information
- 1.2 Where relevant, please include a copy of an extract from the map of waterworks.
  - A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.

#### For your guidance:

- . The "water mains" in this context are those, which are vested in and maintainable by the water company under statute.
- Assets other than public water mains may be shown on the plan, for information only.
- Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or
- 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.

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#### 2.1 - Does foul water from the property drain to a public sewer?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.

For your guidance:

 Water companies are not responsible for any private drains that connect the property to the public severage system and do not hold details of these. The property owner will normally have sole responsibility for private drains serving the property. These may pass through land outside the control of the seller and the buyer may wish to investigate whether separate rights If foul water does not drain to the public sewerage system, the property may have private

a contract of the property and it should be possible to estimate the likely length and route of any vicinity of the property and it should be possible to estimate the likely length and route of any

private drains and/or sewers connecting the property to the public sewerage system





#### 2.2 - Does surface water from the property drain to a public sewer?

Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the drainage proposals are checked with the developer. If he property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer

For your guidance

- Severage Undertakers are not responsible for any private drains that connect the property to the public severage system, and do not hold details of these.
  The property owner will normally have sole responsibility for private drains serving the
- property. These private drains may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their nspection, repair or renewal.
- inspection, repair or renewal.
  In some cases, 'Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system.
  At the time of privatisation in 1989, Sewerage Undertakers were sold with poorly-kept records of sewerage infrastructure. The records did not always show which properties were connected for surface water drainage purposes. Accordingly, billing records have been used to provide an answer for this element of the drainage and water search.
- Due to the potential indeguacy of Severage Undertakers' infrastructure records with respect to surface water drainage, it is the customer's responsibility to inform the Severage Undertaker that they do not receive the surface water drainage service. If on inspection, the buver finds that surface water from the property does not drain to a public sewer, then the operty may be eligible for a rebate of the surface water drainage charge. For further ormation, please contact Thames Water on Tel: 0800 316 9800, or refer to the website at www.thameswater.co.uk.
- If surface water from the property does not drain to the public sewerage system, the property may have private facilities in the form of a soakaway or private connection to a watercourse. • An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

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Drainage & Water Enguiry



#### 2.3 – Is a surface water drainage charge payable?

This enquiry appears to relate to a plot of land or a recently built property. It is was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Develope

For your guidance

- · If surface water from the property drains to a public sewer, then a surface water drainage charge is payable
- Where a surface water drainage charge is currently included in the property's water and severage bill but, on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. For further information, please contact Thames Water on Tel: 0800 316 9800 or refer to the website www.thameswater.co.uk.

## 2.4 – Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?

The public sewer map indicates that there are no public sewers, disposal mains or lateral drains within the boundaries of the property. However, from the 1st October 2011 there may be lateral drains and/or public sewers which are not recorded on the public sewer map but which may prevent or restrict development of the property.

#### For your guidance

- Thames Water has a statutory right of access to carry out work on its assets. Employees of Thames Water or its contractors may, therefore, need to enter the property to carry out work.
- Please note if the property was constructed after 1st July 2011 any severs and/or lateral drain within the boundary of the property are the responsibility of the householder.
  The approximate boundary of the property has been determined by reference to the Determined by the D
- The presence of a public sever running within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work. 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

## Residential

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## 2.4.1 – Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?

The public sewer map included indicates that there is no public pumping station within the boundaries of the property.

#### For your guidanc

- Private pumping stations installed before 1 July 2011 will be transferred into the ownership of the sewerage undertaker. • The appro
- the severage undertaker. The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied. • The presence of a public Pumping station running within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- Any private severs or lateral drains which are indicated on the extract of the public sever 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
- 2.5 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

The public sewer map indicates that there are no public sewers within 30.48 metres (100

However, from the 1st October 2011 many private severs were transferred into public ownership and may not be recorded on the public sever map and it is our professional opinion that if the property is connected to a foul sever it is likely that there will be a public sewer within 30.48 metres (100 feet) of any buildings within the property

#### For your guidance

- This is because there are no buildings from which to measure the distance to any public
- The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the local authority requiring a property to be connected to the public
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer 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

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#### Residential The Law Society's CON29DW Drainage & Water Enguiry



## 2.5.1 – Does the public sewer map indicate any public pumping station or any othe ancillary apparatus within 50 metres of any buildings within the property?

The public sewer map included indicates that there is no public pumping station within 50 metres of any buildings within the property.

- For your guidanc
- Private pumping stations installed before 1 July 2011 will be transferred into the ownership of the sewerage undertaker.
- The presence of a public pumping station within 50 metres of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer
- The measurement is estimated from the Ordnance Survey record, between the building(s) ithin the boundary of the property and the nearest public sewer
- 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
- 2.6 Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that Foul sewers serving the development, of which the property forms part are not the subject of an existing adoption agreement or an application for such an

The Surface Water sewer(s) and/or Surface Water lateral drain(s) are not the subject of an adoption agreement.

- For your guidance
- Any sewers and/or lateral drains within the boundary of the property are not the subject of an adoption agreement and remain the responsibility of the householder. Adoptable sewers are normally those situated in the public highway.
- This enquiry is of interest to purchases of new homes who will want to know whether or not the property will be linked to a public sewer.
  Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain
- the extent of private drains and sewers for which they will hold maintenance and renewal
- Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991 and meeting the requirements of 'Sewers for Adoption' 6<sup>th</sup> Edition.









2.7 – Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

There are no records in relation to any approval or consultation about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain. However, the sewerage undertaker might not be aware of a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.

For your guidance: • From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have been approved or consulted about any plans to erect a building or extension on the property over or in the inity of these.

· Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered

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## 2.8 – Is the building which is or forms part of the property at risk of internal flooding due to overloaded public sewers?

The property is not recorded as being at risk of internal flooding due to overloaded public

From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership It is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the

- For your guidance:
   For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes,
- A sever is "overloaded" when the flow from a storm is unable to pass through it due to a
  permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded
- "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally
- occupied and used for residential, public, commercial, business or industrial purposes.
  "At Risk" properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water severs due to overloading of the severage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company's reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register. · Properties may be at risk of flooding but not included on the Register where flooding incidents
- have not been reported to the Company Public Sewers are defined as those for which the Company holds statutory responsibility
- under the Water Industry Act 1991. It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains
- and the Company makes no comment upon this matter. For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk





#### 2.9 - Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

The nearest sewage treatment works is OLYMPIC PARK BLACKWATER PLANT which is 10.347 kilometres to the east of the property.

For your guidance

- The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated.
  The sewerage undertaker's records were inspected to determine the nearest sewage treatment works.
- It should be noted that there may be a private sewage treatment works closer than the one detailed above that has not been identified. • As a responsible utility operator, Thames Water Utilities seeks to manage the impact of odou
- from operational sewage works on the surrounding area. This is done in accordance with the Code of Practice on Odour Nuisance from Sewage Treatment Works issued via the Department of Environment, Food and Rural Affairs (DEFRA). This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment of those living close to works. However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit www.thameswater.co.uk

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The Law Society's CON29DW Drainage & Water Enquiry



#### 3.1 - Is the property connected to mains water supply?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that the water proposals are checked with the developer

- The Company does not keep details of private supplies. The situation should be checked with the current owner of the property
- 3.2 Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

The map of waterworks does not indicate any water mains, resource mains or discharge pipes within the boundaries of the property

For your guidance

- The boundary of the property has been determined by reference to the plan supplied. Where a plan was not supplied the Ordnance Survey Record was used. If the Water company mentioned in 4.1.2 is not Thames Water Utilities Ltd the boundary of the property has been determined by the Ordnance Survey.
  The presence of a public water main within the boundary of the property may restrict further
- development within it. Water companies have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- 3.3 Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreemen

#### For your guidance

This enquiry is of interest to purchasers of new homes who will want to know whether or not the property will be linked to the mains water supply.

## Residential

The Law Society's CON29DW Drainage & Water Enquiry



#### 3.4 - Is the property at risk of receiving low water pressure or flow?

Records confirm that the property is not recorded on a register kept by the water undertaker as being at risk of receiving low water pressure or flow

#### For your guidance

- The boundary of the property has been determined by reference to the plan supplied. Where a plan was not supplied the Ordnance Survey Record was used. "Low water pressure" means water pressure below the regulatory reference level, which is the
- minimum pressure when demand on the system is not abnormal Water Companies are required to include in the Regulatory Register that is presented annually to the Director General of Water Services, properties receiving pressure below the
- reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level) The reference level of service is a flow of 9 litres/minute at a pressure of 10metres / head on the customer's side of the outside stop valve (osv). The reference level of service must be
- applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served. For two properties, a flow of 18 litres/minute at a pressure of 10metres/head on the customers' side of the osv is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS806-3 or the Institute of Plumbing handbook.

  Allowable exclusions The Company is required to include in the Regulatory Register
- properties receiving pressure below the reference level, provided that allowable exclusions
- Isted below do not apply. Abnormal demand: This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Companies should exclude from the reported figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year companies may
- exclude, for each property, up to five days of low pressure caused by peak demand.
   Planned maintenance: Companies should not report low pressures caused by planned maintenance. It is not intended that companies identify the number of properties affected in each instance. However, companies must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance are actually ed by maintenance.
- · One-off incidents: This exclusion covers a number of causes of low pressure; mains bursts failures of company equipment (such as pressure reducing valves or booster pumps); firefighting; and action by a third party. However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded
- Denote they can be excluded Low-pressure incidents of short duration: Properties affected by low pressures, which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded from the reported figures. • Please contact your water company mentioned in Question 4.1.2 if you require further
- information on water pressure.

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#### Residential The Law Society's CON29DW Drainage & Water Enquiry





#### 3.5 - What is the classification of the water supply for the property?

The water supplied to the property has an average water hardness of 108.2mg/l calcium which is defined as HARD by ThamesWater

#### For your guidance:

- · Water hardness can be expressed in various indices for example the hardness settings for dishwashers are commonly expressed in Clark's degrees, but check with the manufacturer as there are also other units. The following table shows the normal ranges of hardness.
- Sample table for information only

Thames Water Hardness Category	Calcium (mg/l)	Calcium Carbonate (mg/l)	English Clarke degrees	French degrees	General/ German degrees
	0 to 40	0 to 100	0 to 7	0 to 10	0 to 5.6
Medium	41 to 80	101 to 200	8 to 14	11 to 20	5.7 to 11.2
Hard	Over 80	Over 200	Over 14	Over 20	over 11.2

#### 3.6 - Please include details of the location of any water meter serving the property.

This enquiry appears to relate to a plot of land or a recently built property. It is ended that drainage proposals are checked with the develope recom

#### For your guidance:

 Where a meter does not serve the property and the customer wishes to consider this method. of charging, they should contact the water undertakers mentioned in Question 4.1.2.

Payment for this Search

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Property

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Charging





#### 4.1.1 - Who is responsible for providing the sewerage services for the property?

Thames Water Utilities Limited, Clearwater Court, Reading, RG1 8DB is the sewerage undertaker for the area

4.1.2 - Who is responsible for providing the water services for the property?

Thames Water Utilities Limited, Clearwater Court, Reading, RG1 8DB is the water undertaker for the area

4.2 - Who bills the property for sewerage services?

The property is not billed for sewerage services.

4.3 - Who bills the property for water services?

The property is not billed for water services.

#### 4.4 - What is the current basis for charging for sewerage and/or water services at the property?

This enquiry appears to relate to a plot of land or a recently built property.

#### For your guidance:

 Records indicate that the Water Company does not levy charges to the property.Water and Records indicate that the Water Company Over not levy Orarges to the property water and sewerage companies' full charges are set out in their charges schemes which are available from the company free of charge upon request.
 The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection

for people who buy their water or sewerage services from a person or company instead of directly from a water or sewerage company. Details are available from the Office of Water Services (OFWAT) website is www.ofwat.gov.uk.

Where charges are given these are based on the data available at the time of the report.
 Where charges are given these are based on the data available at the time of the report.
 The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for:
 o Watering the garden other than by hand (this includes the use of sprinklers).

- Automatically replenishing a pond or swimming pool with a capacity greater than
- 10,000 litres. A bath with a capacity in excess of 230 litres.
- A reverse osmosis unit

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## 4.5 – Will the basis for charging for sewerage and water services at the property change as a consequence of a change of occupation?

Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the charging proposals are checked with the developer

#### For your guidance

Water and sewerage companies' full charges are set out in their charges schemes which are available from the company free of charge upon request.
The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection

for people who buy their water or severage services from a person or company instead of directly from a water or severage company. Details are available from the Office of Water

Services (OFWAT) website is www.ofwat.gov.uk. • It is policy to meter all new water connections. This would result in charges being levied according to the measured tariff. • The Company may install a meter at the premises where a buyer makes a change of use of

the property or where the buyer uses water for: o Watering the garden other than by hand (this includes the use of sprinklers).

o Automatically replenishing a pond or swimming pool with a capacity greater than 10 000 litres

A bath with a capacity in excess of 230 litres o A reverse osmosis unit

A charge will be added to your suppliers account

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping informati

All prices are in accordance with the standard terms of Property Searches: discounts are available, please contact us on 0800 009 4540 to obtain further details



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 with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.



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Notes:

## Residential Drainage & Water Search Sewer Key

#### Public Sewer Pipes (Operated & Maintained by Thames Water)

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

3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

2) All measurements on the plans are metric.



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

- Combined Sewer: Any combined sewer that is not owned by Thames Water.
- Gulley: A sewer designed to convey surface water from large roads, motorways, etc. to watercourses or to public surface water sewers. These sewers are generally maintained by the relevant highway authority.
- Culverted Watercourse: A watercourse running through a culvert or pipe which is the responsibility of the property owner or the Environment Agency
- Abandoned Sewer: A disused sewer. Usually filled with cement mixture or removed from the ground.

#### Other Symbols

- Undefined Ends: These symbols represent the point at which a pipe continues but no records of its position are currently held by Thames Water. These symbols are rare but may be found on any of the public sewer types.
- Public/Private Pumping Station: Foul or Surface water pumping station.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded. 5) 'na' or '0' on a manhole level indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0800 009 4540.



## Residential Drainage & Water Search Water Key

Public W	/ater Pipes (Operated & Maintained by Thames Water)
4"	<ul> <li>Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.</li> </ul>
16"	Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
3" SUPPLY	<ul> <li>Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.</li> </ul>
3" FIRE	<b> Fire Main:</b> Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
3" METERED	Metered Pipe: A metered pipe indicates that the pipe in question supplies water for a single property or group of properties and that the 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.
	<ul> <li>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.</li> </ul>

#### Depth of Water Pipes (Normal Cover)

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

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Pipe fittings and controls (Operated & Maintained by Thames Water) Hydrant: A point on a water main which is used by the fire services or operational purposes by Thames Water. Meter: Used to measure water flowing through a water main for domes metering or operational purposes by Thames Water. General Purpose Valve: Valves allowing control of water flow or pressure with the system - Air Valve: A valve which allows the release of trapped air within a water pipe. Other Water Pipes (Not Operated or Maintained by Thames Water) Private Main: Indicates that the water main in question is not owned by Tham

Water. These mains normally have text associated with them indicating t diameter and ownership of the pipe.

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

#### Note:

Most private pipe work and assets i.e. stopcocks, are not shown on our plans (in t past this information had not been recorded).

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#### Appendix 1 - terms and expressions in this report

"the 1991 Act" means the Water Industry Act 1991(1): "the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(2); "the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(3); "adoption agreement" means an agreement made or to be made under section 51A(1) or 104(1) of the 1991 Act(4); "bond" means a surety granted by a developer who is a party to an adoption agreement;

"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;

"calendar year" means the twelve months ending with 31st December;

"discharge pipe" means a pipe from which discharges are made or are to be made under section 165(1) of the 1991 Act;

"disposal main" means (subject to section 219(2) of the 1991 Act) any outfall pipe or other pipe which-

(a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person: and

(b) is not a public sewer;

"drain" means (subject to section 219(2) of the 1991 Act) a drain used for the drainage of one building or of any buildings or yards appurtenant to buildings within the same curtilage;

"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;

"financial year" means the twelve months ending with 31st March;

"lateral drain" means-

(a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate: or

(b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under section 102 of the 1991 Act or in an agreement made under section 104 of that Act(5);

"licensed water supplier" means a company which is the holder for the time being of a water supply licence under section 17A(1) of the 1991 Act(6);

"maintenance period" means the period so specified in an adoption agreement as a period of time-

(a) from the date of issue of a certificate by a sewerage undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and

(b) until the date that private sewer or lateral drain is vested in the sewerage undertaker;

"map of waterworks" means the map made available under section 198(3) of the 1991 Act(7) in relation to the information specified in subsection (1A);

"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a sewerage undertaker:

"public sewer" means, subject to section 106(1A) of the 1991 Act(8), a sewer for the time being vested in a sewerage undertaker in its capacity as such, whether vested in that undertaker-

(a) by virtue of a scheme under Schedule 2 to the Water Act 1989(9);

(b) by virtue of a scheme under Schedule 2 to the 1991 Act(10);

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(c) under section 179 of the 1991 Act(11); or

(d) otherwise:

"public sewer map" means the map made available under section 199(5) of the 1991 Act(12); "resource main" means (subject to section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of-

(a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or

(b) giving or taking a supply of water in bulk;

"sewerage services" includes the collection and disposal of foul and surface water and any other services which are required to be provided by a sewerage undertaker for the purpose of carrying out its functions;

"sewerage undertaker" means the company appointed to be the sewerage undertaker under section 6(1) of the 1991 Act for the area in which the property is or will be situated;

"surface water" includes water from roofs and other impermeable surfaces within the curtilage of the property;

"water main" means (subject to section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water undertaker, which is used or to be used by a water undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;

"water meter" means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;

"water supplier" means the company supplying water in the water supply zone, whether a water undertaker or licensed water supplier; "water supply zones" in relation to a calendar year means the names and areas designated by a water undertaker within its area of

supply that are to be its water supply zones for that year; and

"water undertaker" means the company appointed to be the water undertaker under section 6(1) of the 1991 Act for the area in which the property is or will be situated.

In this report, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.

(2) S.I. 2000/3184. These Regulations apply in relation to England.

(1) 1991 c. 56.

(3) S.I. 2001/3911. These Regulations apply in relation to Wales.

(4) Section 51A is inserted by section 92(2) of the Water Act 2003 (c. 37). Section 104(1) is amended by section 96(4) of that Act.

(5) To which there are various amendments made by sections 102 and 104 by section 96 of the Water Act 2003.

(6) Inserted by section 56 of and Schedule 4 to the Water Act 2003.

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(7) Subsection (1A) is inserted by section 92(5) of the Water Act 2003.

(8) Section 106(1A) is inserted by section 99 of the Water Act 2003.

(9) 1989 c. 15.

(10) To which there are various amendments made by section 101(1) of and Schedule 8 to the Water Act 2003.

(11) To which there are various amendments made by section 101(1) of and Schedule 8 to the Water Act 2003.

(12) Section 199 is amended by section 97(1) and (8) of the Water Act 2003.

#### CON29DW DRAINAGE & WATER ENQUIRY (DOMESTIC) TERMS AND CONDITIONS

The Customer and the Client are asked to note these terms, which govern the basis on which the drainage and water report is supplied.

#### **Definitions**

"Apparatus" means the public assets shown on the Company's map keys relevant to the Report.

"Client" means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.

"Company" means the company who produces the Report, being Thames Water Utilities Limited, a company registered in England and Wales with company number 02366661 and whose registered office is at Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB.

"Customer" means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client. "Order" means any request completed by the Customer requesting the Report from the Company

"Property" means the address or location supplied by the Customer in the Order.

"Report" means the drainage and/or water report prepared by the Company in respect of the Property, including any maps provided as part of such reports.

- Agreement
- 1.1 The Company agrees to supply the Report to the Customer and the Client subject to these terms and conditions. The scope and limitations of the Report are described in clause 2 of these terms Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing these terms to the attention of the Client.
- 1.2 The Customer and the Client agree that the placing of an Order for a Report and the subsequent provision of a copy of the Report to the Client indicates their acceptance of these terms.
- 2. The Report

Whilst the Company will use reasonable care and skill in producing the Report, it is provided to the Customer and the Client on the basis that they acknowledge and agree to the following:-

- 2.1 The information contained in the Report can change on a regular basis so the Company cannot be responsible to the Customer or the Client for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.
- 2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as a substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained
- 2.3 The information contained in the Report is based upon the accuracy of the address supplied by the Customer or Client when placing the Order.
- 2.4 The Report provides information as to the indicative location and connection of existing services and other information in relation to drainage and water enquiries and should not be relied on for any other purpose.
- 2.5 The Report is produced only for use in relation to individual domestic property transactions which require the provision of drainage and water information and cannot be used for commercial development of domestic properties, development of land or commercial properties for intended occupation by third parties. Where a Report is required for commercial development of domestic properties, development of land or commercial properties for intended occupation by parties, the Customer can order a different report, and different terms shall apply.
- 2.6 The customer shall only use the Report for the purpose for which it is supplied in accordance with these terms.
- 2.7 In providing the Customer with the Report, the Company shall comply with the Drainage & Water Searches Network (DWSN) Standards.
- **Disclaimers**
- 3.1 Without prejudice to any other terms set out herein, the Company accepts responsibility for any inaccuracy in the location of Apparatus, or missing Apparatus contained in the maps within the Report provided that such inaccuracies or errors arise as a direct result of the negligence of the Company and the existence of which the Company should reasonably have been aware.

- 3.2 For the purposes of the Report, the Company will not seek to rely on any statements and/or disclaimer shown on any maps which seeks to limit its liability in relation to the accuracy and/or location of Apparatus where any inaccuracies or errors arise as a direct result of the negligence of the Company and the existence of which the Company should reasonably have been aware.
- Liability
- The Company shall not be liable to the Customer or Client in contract, 4.1 tort, negligence, breach of statutory duty, misrepresentation or otherwise for any inaccuracies, mistakes or omissions in the Report unless any such liability arises as a direct consequence of the Company's negligence and the existence of which the Company should reasonably have been aware.
- 4.2 Notwithstanding clause 4.1 above, the Company shall accept liability for (a) death or personal injury arising from its negligence, (b) fraud or fraudulent misrepresentation, and (c) any other liability which cannot be excluded or limited by law.
- 4.3 Subject to clause 4.2 above, the Company's total liability to the Customer or Client, whether for breach of contract, tort, negligence, breach of statutory duty, misrepresentation or otherwise, arising under or in connection with these terms and conditions and/or the provision of a Report shall be limited to £10 million in aggregate.

#### Copyright and Confidentiality

- The Customer and the Client acknowledge that the Report is 5.1 confidential and is intended for the personal use of the Client. The copyright and any other intellectual property rights in the Report shall remain the property of the Company and/or its licensors. No intellectual or other property rights are transferred or licensed to the Customer or the Client except to the extent expressly provided in these terms.
- The Customer or Client is entitled to make copies of the Report for 5.2 their own internal purposes, but may only copy Ordnance Survey mapping or data contained in or attached to the Report if they have an appropriate licence from the originating source of that mapping or data
- 5.3 The Customer and the Client agree (in respect of both the original and any copies made) to respect and not to alter any trademark, copyright notice or other property marking which appears on the Report
- The maps contained in the Report are protected by Crown Copyright 54 and must not be used for any purpose outside the context of the Report.
- The enquiries in the Report are protected by copyright by the Law 55 Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.
- 5.6 The Customer and the Client agree to indemnify the Company against any losses, costs, claims and damage suffered by the Company as a result of any breach by either of them of the terms of clauses 5.1 to 5.5 inclusive
- Payment
- 6.1 Unless otherwise stated all prices are inclusive of VAT. The Customer shall pay for the price of the Report specified by the Company, without any set off, deduction or counterclaim. Unless otherwise agreed between the parties, the Company must receive payment for the Report in full before the Report is produced. Where the parties agree that payment is not required in advance, the Customer must pay for the Report in full within 14 days of the date of the invoice, unless otherwise agreed in writing between the parties.
- 7. Cancellation Rights As a consumer
- 7.1 Where the Customer is an individual consumer (and not acting for purposes wholly or mainly relating to his or her trade, business, craft or profession), the Customer has specific legal rights relating to cancellation of any Order the Customer may place. The Customer may cancel his or her Order at any time within 14 days after the day on which the contract is entered into ("Cancellation Period").

- 7.2 To exercise the right to cancel, the Customer must inform the Company in writing of his or her decision to cancel this contract.
- 7.3 Where the Customer is ordering a Report as a consumer, due to the Customer's cancellation rights, the Company will not process the Order or provide the Report to the Customer before the end of the Cancellation Period unless the Customer provides his or her express consent and acknowledges that he or she will lose the right to cancel the contract under regulation 29(1) of the Consumer Contracts (Information, Cancellation, and Additional Charges) Regulations 2013
- 7.4 In addition to these rights, where the Company is able to, it will cancel any Order in accordance with its cancellation policy, which can be found on the Company's website.

#### As a business

- 7.5 The Cancellation Period does not apply to the Customer's Order if the Customer is placing the Order wholly or mainly for purposes relating to their trade, business, craft or profession.
- 7.6 If the Customer cancels the Order other than in accordance with this clause the Customer may be liable for fees as detailed in the Company's cancellation policy which can be found on the Company's

#### 8. Complaints

- 8.1 The Company's complaints procedure is available on the Company's
- 8.2 If the Customer follows the Company's complaints procedure but is dissatisfied with the response, the Customer may refer the complaint for consideration under The Property Ombudsman Scheme (TPOs). Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4WW, DX 151280 Slough 13 T 0800 009 4540 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4WW, DX 151280 Slough 13 T 0800 009 4540 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

TERMS AND CONDITIONS

## CON29DW DRAINAGE & WATER ENQUIRY (DOMESTIC)

#### General

- These terms are the only terms and conditions that shall apply to any Order and the provision of a Report by the Company to the Custome and shall constitute the entire agreement between the Customer and the Company and supersede replace and extinguish any previous arrangement, understanding or agreement between the parties relating to such Report.
- 9.2 In the event of any conflict of inconsistency between any information on the Company's website describing the features of the Report and these terms, then these terms shall prevail.
- 9.3 Where the Customer is acting wholly or mainly in the normal course of his or her trade, business, craft or profession, the Client is entitled to the benefit of these terms. Save as provided in this clause 9.3, it is not intended that any other person who is not a party to these terms has any right to enforce any term of these terms under the Contracts (Rights of Third Parties) Act 1999.
- 9.4 If any provision of these terms is or becomes invalid or unenforceable. it will be taken to be removed from the rest of these terms to the extent that it is invalid or unenforceable. No other provision of these terms shall be affected.
- 9.5  $\,$  These terms shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.
- 9.6 Nothing in these terms and conditions shall in any way restrict the Customer or the Client's statutory or any other rights of access to the information contained in the Report

#### These Terms & Conditions are available in larger print for those with impaired vision

#### Payment 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.
- Provision of service will be in accordance with all legal requirements and published TWUL policies.
   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 <b>0800 009 4540</b> 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 <b>90478703</b> Sort code <b>60-00-01</b> and your invoice number	Made payable to ' <b>Thames</b> 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 B SuDS Proforma



## GREATER LONDON AUTHORITY



	Project / Site Name (including sub- catchment / stage / phase where appropriate)	52 Avenue Road, NW8 6HS			
	Address & post code	52 Avenue Road, NW8 6HS			
	OS Grid ref (Easting Northing)	E 527014			
	US Und Per. (Lasting, Northing)	N 183854			
tails	LPA reference (if applicable)				
1. Project & Site De	Brief description of proposed work	The proposed development consists of the demolition of the existing plots and the construction of 12 new townhouses with a communal Health and Wellness Spa			
	Total site Area	3000 m <sup>2</sup>			
	Total existing impervious area	424.1 m <sup>2</sup>			
	Total proposed impervious area	3000 m <sup>2</sup>			
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Yes: CDA Group3_005			
	Existing drainage connection type and location	Combined outfalls to combined sewers under Elsworthy Road.			
	Designer Name	N Tourliadou			
	Designer Position	Civil Engineer			
	Designer Company	Heyne Tillet Steel			

	2a. Infiltration Feasibility						
	Superficial geology classification	Sands & gravels					
	Bedrock geology classification		Clay				
	Site infiltration rate	N/A	m/s				
	Depth to groundwater level	N/A	m beio level	w grouna			
	Is infiltration feasible?		No				
	2b. Drainage Hierarchy						
		Feasible (Y/N)	Proposed (Y/N)				
2011	1 store rainwater for later use	Y	Y				
ופרירים	2 use infiltration techniques, such a surfaces in non-clay areas	Ν	Ν				
	3 attenuate rainwater in ponds or features for gradual release	Y	Y				
	4 attenuate rainwater by storing in sealed water features for gradual re	Ν	Ν				
i	5 discharge rainwater direct to a w	Ν	Ν				
	6 discharge rainwater to a surface sewer/drain	Ν	Ν				
	7 discharge rainwater to the comb	Y	Y				
	2c. Proposed Discharge Details						
	Proposed discharge location	wer in Elswortl	ny Road				
	Has the owner/regulator of the discharge location been consulted?	Pre-plar subn	nning enquiry l nitted and acco	nas been epted			



## GREATER LONDON AUTHORITY

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	3a. Discharge Rat	tes & Required Sto	orage			
		Greenfield (GF) runoff rate (l/s)	Existing discharge rate (I/s)	Required storage for GF rate (m <sup>3</sup> )	Proposed discharge rate (I/s)	
	Qbar	1.3	$\geq$	$\ge$	$\ge$	
	1 in 1	1.1	4.8	75	0.9	
	1 in 30	2.9	15	145	2.1	
	1 in 100	4.1	20	205	3.2	
	1 in 100 + CC		$\geq$	310	4.1	
	Climate change a	llowance used	40%			
ge Strategy	3b. Principal Met Control	hod of Flow	Blue Roofs, Permeable Paving			
	3c. Proposed SuD	S Measures				
Drainag			Catchment area (m²)	Plan area (m²)	Storage vol. (m <sup>3</sup> )	
3. I	Rainwater harves	ting	0	$\ge$	0	
	Infiltration system	าร	0	$\sim$	0	
	Green roofs		0	0	0	
	Blue roofs		1448	1098	111	
	Filter strips		0	0	0	
	Filter drains		0	0	0	
	Bioretention / tre	e pits	0	0	0	
	Pervious paveme	nts	1500	1385	207	
	Swales		0	0	0	
	Basins/ponds		0	0	0	
	Attenuation tanks	6	0	$\geq$	0	
	Total		2948	2483	318	

4	a. Discharge & Drainage Strategy	Page/section of drainage report		
l f i	nfiltration feasibility (2a) – geotechnical factual and interpretive reports, including nfiltration results	Section 3.5		
(	Drainage hierarchy (2b)	Section 5.1		
ł	Proposed discharge details (2c) – utility plans, correspondence / approval from pwner/regulator of discharge location	Section 5.1		
[ 	Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 5.1, Appendix C		
F (	Proposed SuDS measures & specifications 3b)	Section 5.1		
4	b. Other Supporting Details	Page/section of drainage report		
(	Detailed Development Layout	Image 14		
[ i	Detailed drainage design drawings, ncluding exceedance flow routes	Image 14		
(	Detailed landscaping plans			
ſ	Maintenance strategy	Appendix E		
[	Demonstration of how the proposed SuDS measures improve:			
á	a) water quality of the runoff?	Section 5.1		
ł	b) biodiversity?	Section 5.1		
(	c) amenity?	Section 5.1		

## Appendix C Proposed Surface Water Flow-Rates



Heyne Till	Lett	Steel	-							Page 1
l Pear Tre	ee C	ourt			52 Av	enue Roac	l, NW8 6I	HS		
London					Por	Porous Paving				
C1R 0DS					1:1	00-vear	even	t. + 40%	t CC	Micco
	5/20	22 20.	56		Dee	ianed k				
ale 03/00		22 20. D			Des.	i yneu i				Drainac
11e 20220	1203	_Perme	eable		Che	скеа ру	7 CS			
PVSolutio	ons				Sou	rce Cor	ntrol	2020.1		
	Su	ummary	of R	esults	s for 1	<u>00 yea</u>	<u>Retu</u>	irn Per:	iod (+	40%)
				Half	Drain Ti	me : 472	3 minut	ces.		
	Sto	rm	Max	Max	Max	1	ſax	Max	Max	Status
	Eve	nt	Level	Depth	Infiltra	tion Cor	ntrol Σ	Outflow	Volume	
			(m)	(m)	(1/s	) (1	L/s)	(l/s)	(m³)	
1 5	m	C11mmo	0 1 1 0	0 1 / 0		0.0	0.2	0.0	61 =	
10	min	Summer	0.148	0.148		0.0	0.2	0.2	80.8	0 K
50 60	min	Summor	0.100	0.100		0.0	0.3	0.3	00.0 00.7	Flood Rick
120	min	Summer	0.240	0.240		0.0	0.3	0.3	129.8	Flood Risk
180	min	Summor	0.315	0.356		0.0	0.0	0.0	1/7 9	Flood Risk
240	min	Summor	0.336	0.386		0.0	0.4	0.1	160 3	Flood Risk
360	min	Summor	0.300	0.000		0.0	0.4	0.1	175 7	Flood Risk
480	min	Summor	0.425	0.425		0.0	0.4	0.4	194 7	Flood Risk
400	min	Summor	0.445	0.445		0.0	0.4	0.4	104.7	Flood Rick
720	min	Summor	0.450	0.450		0.0	0.4	0.4	101 0	Flood Risk
720	min	Summer	0.407	0.407		0.0	0.4	0.4	107 0	Flood Dick
900	III III min	Gumman	0.4//	0.4//		0.0	0.4	0.4	100 0	Flood Risk
1440	min min	Summer	0.481	0.481		0.0	0.4	0.4	199.0	Flood Risk
2160	min	Summer	0.4/3	0.473		0.0	0.4	0.4	190.4	Flood RISK
2880	min	Summer	0.460	0.460		0.0	0.4	0.4	190.9	Flood Risk
4320	min	Summer	0.435	0.435		0.0	0.4	0.4	170.0	Flood RISK
5/60	min	Summer	0.418	0.418		0.0	0.4	0.4	1/3./	Flood Risk
15	min	Winter	0.148	0.148		0.0	0.2	0.2	00.0	O K
30	min	Winter	0.195	0.195		0.0	0.3	0.3	80.8	U K
6U 120	min	Winter	0.240	0.240		0.0	0.3	0.3	120 0	Flood Risk
120	111	WINCEL	0.515	0.515		0.0	0.5	0.5	129.0	FIOOU KISK
			Stor	rm	Rain	Flooded	Discha	arge Time	-Peak	
			Ever	nt	(mm/hr)	Volume (m³)	Volu (m³	me (m )	ins)	
		1	.5 min	Summer	183.120	0.0	1	17.7	27	
		3	0 min	Summer	117.572	0.0	2	20.6	42	
		6	0 min	Summer	71.666	0.0	4	13.4	72	
		1 0	o min	Cummor	16 172	0.0	5	50 4	1 2 2	

30 min Summer 117.572       0.0       20.6       42         60 min Summer 71.666       0.0       43.4       72         120 min Summer 46.172       0.0       50.4       132         180 min Summer 35.042       0.0       54.0       192         240 min Summer 28.515       0.0       56.2       250         360 min Summer 20.965       0.0       58.5       370         480 min Summer 16.651       0.0       59.4       490         600 min Summer 11.858       0.0       59.7       610         720 min Summer 11.858       0.0       59.5       728         960 min Summer 4.473       0.0       10.5       2164         280 min Summer 3.451       0.0       10.5       2164         280 min Summer 1.864       0.0       105.8       2880         4320 min Summer 1.864       0.0       184.7       4256         15 min Winter 183.120       0.0       17.7       27         30 min Winter 117.572       0.0       20.6       41         60 min Winter 71.666       0.0       43.4       72         120 min Winter 46.172       0.0       50.4       130	10	111211	Dunnier	100.120	0.0	± / • /	2,
60 min Summer       71.666       0.0       43.4       72         120 min Summer       46.172       0.0       50.4       132         180 min Summer       35.042       0.0       54.0       192         240 min Summer       28.515       0.0       56.2       250         360 min Summer       20.965       0.0       58.5       370         480 min Summer       16.651       0.0       59.4       490         600 min Summer       13.840       0.0       59.7       610         720 min Summer       11.858       0.0       59.5       728         960 min Summer       9.234       0.0       58.5       968         1440 min Summer       6.445       0.0       55.3       1446         2160 min Summer       3.451       0.0       105.8       2880         4320 min Summer       1.864       0.0       184.7       4256         15 min Winter       183.120       0.0       17.7       27         30 min Winter       117.572       0.0       20.6       41         60 min Winter       71.666       0.0       43.4       72         120 min Winter       46.172       0.0       50.4	30	min	Summer	117.572	0.0	20.6	42
120 min Summer       46.172       0.0       50.4       132         180 min Summer       35.042       0.0       54.0       192         240 min Summer       28.515       0.0       56.2       250         360 min Summer       20.965       0.0       58.5       370         480 min Summer       16.651       0.0       59.4       490         600 min Summer       13.840       0.0       59.7       610         720 min Summer       11.858       0.0       59.5       728         960 min Summer       9.234       0.0       58.5       968         1440 min Summer       6.445       0.0       55.3       1446         2160 min Summer       3.451       0.0       10.5       2164         2880 min Summer       3.451       0.0       105.8       2880         4320 min Summer       1.864       0.0       184.7       4256         15 min Winter       183.120       0.0       17.7       27         30 min Winter       117.572       0.0       20.6       41         60 min Winter       71.666       0.0       43.4       72         120 min Winter       46.172       0.0       50.4 <td>60</td> <td>min</td> <td>Summer</td> <td>71.666</td> <td>0.0</td> <td>43.4</td> <td>72</td>	60	min	Summer	71.666	0.0	43.4	72
180 min Summer       35.042       0.0       54.0       192         240 min Summer       28.515       0.0       56.2       250         360 min Summer       20.965       0.0       58.5       370         480 min Summer       16.651       0.0       59.4       490         600 min Summer       13.840       0.0       59.7       610         720 min Summer       11.858       0.0       59.5       728         960 min Summer       9.234       0.0       58.5       968         1440 min Summer       6.445       0.0       55.3       1446         2160 min Summer       3.451       0.0       10.5       2164         2880 min Summer       3.451       0.0       105.8       2880         4320 min Summer       1.864       0.0       184.7       4256         15 min Winter       183.120       0.0       17.7       27         30 min Winter       117.572       0.0       20.6       41         60 min Winter       71.666       0.0       43.4       72         120 min Winter       71.666       0.0       50.4       130	120	min	Summer	46.172	0.0	50.4	132
240 min Summer       28.515       0.0       56.2       250         360 min Summer       20.965       0.0       58.5       370         480 min Summer       16.651       0.0       59.4       490         600 min Summer       13.840       0.0       59.7       610         720 min Summer       11.858       0.0       59.5       728         960 min Summer       9.234       0.0       58.5       968         1440 min Summer       6.445       0.0       55.3       1446         2160 min Summer       4.473       0.0       110.5       2164         2880 min Summer       3.451       0.0       105.8       2880         4320 min Summer       1.864       0.0       184.7       4256         15 min Winter       183.120       0.0       17.7       27         30 min Winter       117.572       0.0       20.6       41         60 min Winter       71.666       0.0       43.4       72         120 min Winter       46.172       0.0       50.4       130	180	min	Summer	35.042	0.0	54.0	192
360 min Summer       20.965       0.0       58.5       370         480 min Summer       16.651       0.0       59.4       490         600 min Summer       13.840       0.0       59.7       610         720 min Summer       11.858       0.0       59.5       728         960 min Summer       9.234       0.0       58.5       968         1440 min Summer       6.445       0.0       55.3       1446         2160 min Summer       4.473       0.0       110.5       2164         2880 min Summer       3.451       0.0       105.8       2880         4320 min Summer       1.864       0.0       184.7       4256         15 min Winter       183.120       0.0       17.7       27         30 min Winter       117.572       0.0       20.6       41         60 min Winter       71.666       0.0       43.4       72         120 min Winter       46.172       0.0       50.4       130	240	min	Summer	28.515	0.0	56.2	250
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Heyne Tillett Steel		Page 2
4 Pear Tree Court	52 Avenue Road, NW8 6HS	
London	Porous Paving	
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File 20220503_Permeable	Checked by CS	Diginarie
RPvsolutions	Source Control 2020.1	

Summary of Results for 100 year Return Period (+40%)

	Storr Event	m t	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (1/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180	min V	Winter	0.356	0.356	0.0	0.4	0.4	148.0	Flood Risk
240	min V	Winter	0.386	0.386	0.0	0.4	0.4	160.3	Flood Risk
360	min V	Winter	0.423	0.423	0.0	0.4	0.4	175.8	Flood Risk
480	min V	Winter	0.445	0.445	0.0	0.4	0.4	184.8	Flood Risk
600	min V	Winter	0.459	0.459	0.0	0.4	0.4	190.4	Flood Risk
720	min V	Winter	0.468	0.468	0.0	0.4	0.4	194.1	Flood Risk
960	min V	Winter	0.477	0.477	0.0	0.4	0.4	198.0	Flood Risk
1440	min V	Winter	0.482	0.482	0.0	0.4	0.4	200.0	Flood Risk
2160	min V	Winter	0.475	0.475	0.0	0.4	0.4	197.1	Flood Risk
2880	min V	Winter	0.463	0.463	0.0	0.4	0.4	192.2	Flood Risk
4320	min V	Winter	0.435	0.435	0.0	0.4	0.4	180.7	Flood Risk
5760	min V	Winter	0.416	0.416	0.0	0.4	0.4	172.7	Flood Risk

	Stor Ever	rm it	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180	min	Winter	35.042	0.0	54.0	188
240	min	Winter	28.515	0.0	56.2	248
360	min	Winter	20.965	0.0	58.5	364
480	min	Winter	16.651	0.0	59.5	482
600	min	Winter	13.840	0.0	59.7	600
720	min	Winter	11.858	0.0	59.6	718
960	min	Winter	9.234	0.0	58.6	952
1440	min	Winter	6.445	0.0	55.5	1416
2160	min	Winter	4.473	0.0	110.6	2100
2880	min	Winter	3.451	0.0	106.0	2764
4320	min	Winter	2.401	0.0	94.9	3892
5760	min	Winter	1.864	0.0	185.1	4440

Heyne Tillett Steel		Page 3					
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Ra	infall Details						
Rainfall Mod Return Period (year	el FEH s) 100						
FEH Rainfall Versi	on 2013						
Site Locati	on GB 527010 183847 TQ 27010 83847						
Data Ty Summer Stor	pe Point						
Winter Stor	ms Yes						
Cv (Summe	r) 1.000						
Cv (Winte Shortest Storm (min	r) 1.000 s) 15						
Longest Storm (min	s) 5760						
Climate Change	8 +40						
<u> </u>	ne area Diagram						
Tot	al Area (ha) 0.150						
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RPvsolutions	Source Control 2020.1	•

#### <u>Model Details</u>

Storage is Online Cover Level (m) 0.500

#### <u>Porous Car Park Structure</u>

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	37.2
Membrane Percolation (mm/hr)	1000	Length (m)	37.2
Max Percolation (l/s)	384.4	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	0.000	Cap Volume Depth (m)	0.500

#### Orifice Outflow Control

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 0.000  $\,$ 

# **Appendix D** Thames Water Pre-Planning Enquiry





Heyne Tillett Steel

Niki Tourliadou 16 Chart Street Hackney London N1 6DD



15 November 2021

## Pre-planning enquiry: Confirmation of sufficient capacity

#### Site: 52 Avenue Road London NW8 6HP

Dear Niki.

Thank you for providing information on your development.

Proposed site: Flats (14 units) to replace the existing single property

Proposed foul water discharge by gravity into 940mm x 635mm combined water sewer in Elsworthy Road, manhole 0801. Proposed surface water discharge by gravity into combined water 1372mm x 914mm trunk sewer in Avenue Road (maximum 4.07 l/s)

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

#### **Foul Water**

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

#### Surface Water

Please note that while there is sufficient capacity, a direct connection to the trunk sewer in Avenue road is not permitted and you will be required to connect to a local non-trunk sewer.

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

When developing a site, policy SI 13 of the London Plan states "Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:"

The disposal hierarchy being:

- 1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
- 2. rainwater infiltration to ground at or close to source
- green roofs, rain gardens)
- 4. rainwater discharge direct to a watercourse (unless not appropriate)
- 5. controlled rainwater discharge to a surface water sewer or drain
- 6. controlled rainwater discharge to a combined sewer

Where connection to the public sewerage network is still required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA's best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a total of 4.07 l/s, then Thames Water would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information.

#### **Trade Effluent**

Please be advised a Trade Effluent consent will be required to discharge trade effluent into the public sewer. Trade effluent can be best described as anything other than domestic sewage (toilet, bath or sink waste and groundwater) or uncontaminated surface water and roof drainage (rainwater). Applications should be made at https://www.thameswater.co.uk/wholesale/tradeeffluent and for enquiries, please contact our trade effluent team by phone on 0203 577 9200 or via email at trade.effluent@thameswater.co.uk .

#### **Diversion**

Where there are existing public sewers crossing the site new buildings will need to be kept between 3 and 6.5m away from existing sewer depending on the size and depth of the sewer. Alternatively, it may be possible for sewers to be diverted around the new development. If you wish us to review a diversion proposal, please submit this via a Section 185 Diversion application. On some occasions it may be possible to abandon existing public sewers. Please contact us for further information on this process.

#### **Source Protection Zone**

The development site boundary falls within a Source Protection Zone for groundwater abstraction. These zones may be at particular risk from polluting activities on or below the land surface. To prevent pollution, the Environment Agency and Thames Water (or other local water undertaker) will use a tiered, risk-based approach to regulate activities that may impact groundwater resources, this may potentially affect your drainage or surface water strategies where deep or infiltration systems are proposed. The applicant is encouraged to read the



3. rainwater attenuation in green infrastructure features for gradual release (for example



Environment Agency's approach to groundwater protection (available at <u>https://www.gov.uk/government/publications/groundwater-protection-position-statements</u> and may wish to discuss the full implications for their development with a suitably qualified environmental consultant.

#### What happens next?

Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you have any further questions, please contact me on 0800 009 3921.

Kind Regards,

**James Kitching** 

Technical Co-ordinator – Sewer Connections Mobile: 07747 647876 Office: 0800 009 3921

developer.services@thameswater.co.uk

Get advice on making your sewer connection correctly at <u>connectright.org.uk</u>

Clearwater Court, Vastern Road, Reading, RG1 8DB Find us online at <u>developers.thameswater.co.uk</u>

# **Appendix E** Inspection and Maintenance Strategy



### 2673 – 52 Avenue Road, London 17<sup>th</sup> December 2021

### Inspection and Maintenance Plan

HEYNE TILLETT STEEL

This document has been prepared to support the inspection and maintenance of the proposed below ground drainage at 52 Avenue Road. The drainage network comprises surface and foul water drainage systems:

- Surface water network will route all the rainwater towards existing outfalls to the Thames Water combined sewers. A combination of blue-green roofs and permeable paving will collect rainwater falling on the site.
- Foul network from above ground level will be routed towards the public sewer network under gravity.

In accordance with CIRIA C625 it is recommended that a private SuDS maintenance agreement is agreed as a simple contract between the property owner/ tenant (customer) and the maintenance provider (the maintainer). It is mainly to facilitate continuing maintenance of the SuDS that are in private ownership. The maintenance requirements are in accordance with the CIRIA C753 SuDS Manual 2015. The following Drainage / SuDS measures are proposed within the development:

#### - General Drainage:

Maintenance Period	Maintenance Task	Frequency	
	Inspect and identify areas that are not operating correctly. If required, take remedial action.	Monthly	
Regular	Inspect surface structures and covers removing obstructions and silt as necessary.		
maintenance	Check there is no physical damage.	Monthly or as required	
	Remove overgrown vegetation 1m min. around structures and keep hard aprons free from silt and debris.		
	Remove sediment from pre-treatment structures (e.g. gullies, channels silt traps) and non-return valves.	Six-monthly or as required after large storm events	
Occasional Maintenance	Remove cover and inspect inside, ensuring water is flowing freely and that the exit route for water is unobstructed.	Annually or as required	
	Remove debris and silt.	after large storm events.	
	Undertake inspection after leaf fall in autumn.		
Remedial Actions	Repair/rehabilitation of inlets, outlets, overflows and vents.	As required	
Monitoring	Inspect all manholes, inspection chambers, inlets, outlets, overflows and vents to ensure they are in good condition and operating as designed.	Annually or after large storms.	

#### - Inlets, Outlets, and Inspection Chambers:

Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Inspect surface structures and covers removing obstructions and silt as necessary.	Monthly or as required

	Check there is no physical damage. Remove overgrown vegetation 1m min. around structures and keep hard aprons free from silt and debris.	
	Remove cover and inspect inside, ensuring water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in autumn.	Annually
Occasional Maintenance	Check topsoil levels are 20mm above edges off baskets and chambers to avoid mower damage.	As necessary
Remedial	Unpack stone in basket features and unblock or repair and repack stone as design detail as necessary.	As required
Work	Repair physical damage is necessary.	Astequired

#### Permeable paving system:

Maintenance Period	Maintenance Task	Frequency	
Regular maintenance	Inspect for sediment and debris in the inlet chambers and trim any roots that may be causing blockages	Annually or as required based on inspections	
	Cleaning of gutters and any filters on downpipes		
	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or as required,	
Occasional maintenance	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required, based on inspections	
Remedial Actions	Remedial work to any depressions, rutting, cracked or broken blocks considered detrimental to the permeable paving performance	As required	
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (	
	Initial inspection	Monthly for three months after installation	
Monitoring	Inspect inspection chambers and note rate of sediment accumulation and establish appropriate brushing frequencies.	Monthly in the first year and then annually	
	Inspect for evidence of poor operation and/or week growth - if required, take remedial action	Annually	

#### - Green / Blue / Brown Roofs:

Maintenance Period	Maintenance Task	Frequency	
Regular Maintenance	During establishment, replace dead plants as required (for 12 months following installation).	Monthly	
	Mow grasses (where required) and remove resultant clippings.		
	Remove fallen leaves and debris from deciduous plant foliage.		
	Remove nuisance and invasive vegetation, including weeds.		
	Remove debris & litter to prevent clogging of inlet drains and interference with plant growth.	Six Monthly	
	Noxious weed treatment (3 times a year).	]	
	Replace dead plants as required (typically in the Autumn).	Annually	

4 Pear Tree Court, London EC1R 0DS 020 7870 8050

hts.uk.com

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Occasional Maintenance	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes, and roof structure for proper operation, integrity of waterproofing and structural stability, act where required.	
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources, act where required.	
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system, act where required.	
	Inspect underside of roof for evidence of leakage, act where required.	
	Inspect and document the presence of wildlife.	
Remedial Action	Inspect and carry out essential recovery works to return the feature to full working order.	Following all significant storm events

Reference shall be made to CIRIA publication C753 (The SuDS Manual) and to the relevant maintenance guidance from the products manufacturers.

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