Weetwood Services Ltd (London)
0203 7575444
info@weetwood.net

Weetwood
Development • Planning • Environment

Proposed Residential Development

67 Dartmouth Road, Ruislip

Technical Note – Discharge of Planning Condition 7

Project ref:	3766
Prepared by:	Holly Nicholson MEng GMICE *Graduate Engineer* Geoff Waite BSc CEng C.WEM MICE MCIWEM *Consultant*
Approved by:	Geoff Waite BSc CEng C.WEM MICE MCIWEM *Consultant*
Date:	20 July 2020
Version:	Final v1.0

Introduction

1. This Technical Note has been prepared by Weetwood Services Ltd ('Weetwood') on behalf of G. Lisi Developments Ltd.

2. A detailed planning application (reference 30058/APP/2019/2106) for a part first floor, part two storey side/rear extension to allow for conversion of existing two storey dwelling in 2 x 2-bed dwellings with associated parking and amenity space, involving demolition of existing detached garage, was approved by The Council of the London Borough of Hillingdon on 23 August 2019.

3. Planning Condition 7 of the permission states:

   Within one month of commencement of works, a scheme for the provision of sustainable water management has been submitted to and approved in writing by the Local Planning Authority. The scheme shall clearly demonstrate that sustainable drainage systems (SUDS) have been incorporated into the designs of the development in accordance with the hierarchy set out in accordance with Policy 5.15 of the London Plan and will:

   i. provide information on all SuDs features including the method employed to delay and control the surface water discharged from the site and:

   ii. provide a management and maintenance plan for the lifetime of the development of arrangements to secure the operation of the scheme throughout its lifetime. Including appropriate details of Inspection regimes, appropriate performance specification. The scheme should also demonstrate the use of methods to minimise the use of potable water through water collection, reuse and recycling and will:

   iii. provide details of water collection facilities to capture excess rainwater; and how rain and grey water will be recycled and reused in the development.

   Thereafter the development shall be implemented and retained/maintained in accordance with these details for as long as the development remains in existence.

   REASON

   To ensure the development does not increase the risk of flooding in accordance with Policy OE8 Hillingdon Local Plan: Part Two Saved UDP Policies (November 2012) and London Plan (2016) Policy 5.12.

4. This Technical Note presents further details of the sustainable water management and surface water runoff arrangements for the site and accompanies an application to discharge planning condition 7.

Site Details

5. The approximately 0.05 ha site is located at the junction of Dartmouth Road and Cottingham Chase, Ruislip (see A The Ordnance Survey National Grid Reference of the site is TQ 104 861.

6. The development proposals are for the extension of the existing property and conversion into two separate dwellings (see **Annex 1** for the existing and proposed site layouts).

7. There are two waterbodies in the vicinity of the site. The Western Arm of Yeading Brook is located approximately 90m to the south of the site. It flows in a south easterly direction and is classified as a 'main river'.

8. Drain A is located approximately 135m to the west of the site and flows in a southerly direction to outfall into Yeading Brook. Drain A is classified as an 'ordinary watercourse'.

9. According to the Soilscapes maps produced by the National Soils Research Institute[1], soil conditions at the site and within the surrounding area are described as 'Slowly permeable seasonally wet loamy and clayey soils'.

10. The British Geological Survey[2] borehole records for boreholes located approximately 600m east, 570m south east and 500m south of the site show the ground conditions to be comprised of an initial layer of made ground followed by a mixture of firm and stiff clays. Ground water level were encountered at 9.70m and 7.0m below ground.

11. A topographic survey of the site was carried out by SESE Ltd in February 2016. Site levels lie between 37.845 m Above Ordnance Datum (m AOD) in the north of the site and reduce to 37.021 m AOD at the south of the site. The topographic survey is provided in **Annex 2**.

12. According to the London Borough of Hillingdon `Flood and Water Information Map', the site does not lie in a Critical Drainage Area.

Planning Policy

13. The London Borough of Hillingdon Local Plan Part 2 (Development Management Policies) was adopted on 16 January 2020. Policy DMEI 10 refers to Water Management, Efficiency and Quality. There are a number of sub-policies within this category although not all are relevant to conversions, change of use and refurbishment.

14. Sub-policy A) relates to new build developments and is not relevant for this site. Sub-policy B) relates to critical drainage areas and is also not relevant for this site. In addition sub-policy I) relates only to major development. The remaining sub-policies are relevant and are as follows:

    C) Rain gardens and non householder development should be designed to reduce surface water runoff rates to Greenfield runoff rates.

    D) Schemes for the use of SuDS must be accompanied by adequate arrangements for the management and maintenance of the measures used, with appropriate contributions made to the Council where necessary.

    E) Proposals that would fail to make adequate provision for the control and reduction of surface water runoff rates will be refused.

    F) Developments should be drained by SuDS system and must include appropriate methods to avoid pollution of the water environment. Preference should be given to utilising the drainage options in the SuDS hierarchy which remove the key pollutants that hinder improving water quality in Hillingdon. Major development should adopt a `treatment train' approach where water flows through different SuDS to ensure resilience in the system.

[1] Soilscapes www.landis.org.uk/soilscapes/

[2] www.bgs.ac.uk/data/boreholescans/home.html, Ref: TQ08NE90, TQ18NW58, TQ18NW135

G) All new development proposals (including refurbishments and conversions) will be required to include water efficiency measures, including the collection and reuse of rain water and grey water.

H) All new residential development should demonstrate water usage rates of no more than 105 litres/person/day.

J) All new development proposals will be required to demonstrate that there is sufficient capacity in the water and wastewater infrastructure network to support the proposed development. Where there is a capacity constraint the local planning authority will require the developer to provide a detailed water and/or drainage strategy to inform what infrastructure is required, where, when and how it will be delivered.

15. Policy 5.12 of the London Plan (2016) relates to flood risk management. This policy is not directly relevant to this site which lies in Flood Zone 1. Policy 5.13 relating to sustainable drainage, however, is relevant for the site. The policy states:

A Development should utilise sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:

1 store rainwater for later use

2 use infiltration techniques, such as porous surfaces in non-clay areas

3 attenuate rainwater in ponds or open water features for gradual release

4 attenuate rainwater by storing in tanks or sealed water features for gradual release

5 discharge rainwater direct to a watercourse

6 discharge rainwater to a surface water sewer/drain

7 discharge rainwater to the combined sewer.

Drainage should be designed and implemented in ways that deliver other policy objectives of this Plan, including water use efficiency and quality, biodiversity, amenity and recreation.

Drainage at the Existing Site

16. According to the topographic survey, the existing site comprises both hard standing (roof, paving and concrete) and grassed areas.

17. A copy of Thames Water's sewer records are provided in **Annex 3**. The area surrounding the site is served by public foul sewers and public surface water sewers.

18. The sewer records indicate there is a 375mm diameter surface water sewer running from north to south along Cottingham Chase. The surface water sewer is located close to the eastern boundary of the site. The sewer continues to run in a southerly direction to outfall into Yeading Brook approximately 90m from the site.

19. There are two manholes on the sewer records close to the eastern boundary of the site with reference 4102 and 5001. The cover levels of these manholes (37.98 m AOD and 36.94 m AOD respectively) correspond closely with the ground levels of the topographic survey. This gives confidence in the accuracy of the levels on the sewer records in the vicinity of the site. The invert levels of the surface water sewer in manhole references 4102 and 5001 are given as 36.78 m AOD and 36.20 m AOD respectively.

20. The overall site area is 513 m^2 of which 337 m^2 comprise impermeable surfaces.

21. There are three manhole covers within the site along with a surface water gully. The site owner has exposed and measured the existing surface water pipe which drains runoff from the site (see **Annex 4**). The pipe is 125 mm diameter and runs from north to south through the single storey extension at the east side of the main house. The invert of the pipe is 0.60 m below ground level at the rear (north side) of the single storey extension and 0.80 m below ground level at the front (south side) of the single storey extension.

22. Ground levels from the topographic survey at the upstream and downstream ends of this pipe are 37.45 m AOD and 37.10 m AOD respectively. The upstream and downstream invert levels of the pipe are 36.85 m AOD and 36.30 m AOD respectively. The pipe between these points is 10.6 m long giving a gradient of 1 in 19.3. The surface water drain turns to run east towards Cottingham Chase where it connects into the 375 mm diameter public surface water sewer.

23. The existing surface water runoff rates for the site have been calculated using the Modified Rational Method and are shown in **Table 1**. The calculations are based upon an impermeable area of 0.034 ha and calculation details are provided in **Annex 5**.

Table 1: Existing Site Surface Water Runoff Rates

Annual probability of rainfall event	Peak discharge for 0.034 ha impermeable area (l/s)
1:1	5.4
QBAR	6.9
1:30	12.7
1:100	16.1

Post Development Runoff Arrangements

24. Infiltration tests were carried out at the site on 2 and 3 June 2020 (see **Annex 6**). The pits drained very slowly and did not drain to 75% of their effective depth in over 13 hours. Soils at the site are not therefore considered suitable for the disposal of surface water runoff by infiltration means.

25. Water butts are proposed to the front and rear of the property to collect roof runoff via downpipes. Yeading Brook is located 90 m to the south of the site but a connection to the brook is not directly achievable. It is therefore proposed to direct surface water runoff to the Thames Water public surface water sewer to the east of the site using the existing surface water connection from the site.

26. According to the development proposals, the extent of grassed area to the rear of the property will be increased to 227 m^2. Some of this will be taken up by the cycle store (2 m^2) and a 7 m by 3 m patio (21 m^2). Post development impermeable areas are estimated as 325 m^2, a slight reduction on the present arrangements.

27. It is proposed that post development runoff rates will be reduced by at least 59% in comparison to existing rates in the 1:1, 1:30 and 1:100 annual probability events. An orifice is proposed to restrict the flows. The orifice has been sized at 50 mm, which is considered the minimum size for avoiding blockage.

28. The system has been modelled using the Detailed Design module of MicroDrainage; the parameters and results are provided in **Annex 7**. A summary of the proposed flow rates are provided in **Table 2**.

29. The proposed drainage layout is presented in **Annex 8**. Attenuation storage is provided in a geocellular tank, beneath the patio area to the rear of the property, 0.4 m deep and 12 m^2 in area, to be installed with an invert level of 36.90 m AOD. The tank will fill to a depth of 0.14 m in the 1:100 annual probability event plus 20% increase in flows to account for climate change (+20% CC). An area of hardstanding or decking patio may be installed on the ground above the geocellular tank.

Table 2: Proposed Discharge Rates

Annual probability of rainfall event	Peak discharge from site (l/s)	Reduction on existing discharge
1:1	2.2	59%
1:30	4.4	65%
1:100 + 20% CC	4.9	70%

30. A developer enquiry has been submitted to Thames Water for the proposed surface water runoff rates. Thames Water initially confirmed[3] (see **Annex 9**) that that post development flow rates should be restricted to 3.0 l/s. Weetwood subsequently asked Thames Water whether this rate applies to all events. Thames Water replied by email[4] (see **Annex 10**) stating that the rate of 3 l/s is applicable to the 1:3 annual probability event and that higher rates for the site (as proposed by Weetwood) are acceptable at the less probable events.

31. In accordance with Environment Agency guidance, a sensitivity analysis has been undertaken, to ensure that there would be no flooding of the drainage system in a 1:100 event plus 40% climate change. The results show that the flows are safely contained within the drainage system in this event (**Annex 11**).

32. In an exceedance event greater than the 1:100 + 40% CC event, the existing manhole chamber EX2 to the south (front) of the property may flood out, as it is the lowest point in the system. Flows from this manhole chamber would be towards Dartmouth Road and away from the proposed and existing properties. The flows may enter the surface water drainage system further downstream.

Surface Water Drainage and SUDS Maintenance

33. The surface water drainage elements shall remain the responsibility of the site owner. These should be maintained according to the maintenance schedule in **Table 3**.

Table 3: Maintenance Requirements

Schedule	Required action	Frequency
Gullies, Aco channels, manholes, inspection chambers and drains		
Regular maintenance	Remove litter and debris	Monthly
Occasional maintenance	Remove sediment from silt traps and sumps	Annually, or as required
Geocellular attenuation storage tank		
Regular maintenance	Inspect and identify any areas that are not operating correctly	Monthly for 3 months, then annually
	Remove debris from the catchment surface	Monthly
	Remove sediment from internal forebays	Annually, or as required
Remedial action	Repair inlet/outlet and vents	As required
Monitoring	Inspect catchpit manholes and note rate of sediment accumulation	Monthly in the first year and then annually
	Inspect inlet/outlet and vents to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years, or as required

[3] Letter from Thames Water to Weetwood, Reference Ds6075665, 13 July 2020

[4] Email from Thames Water Developer Services to Weetwood, 15 July 2020

Summary

34. This Technical Note has been prepared for G. Lisi Developments Ltd to accompany an application to discharge Planning Condition 7 for the site at 67 Dartmouth Road, Ruislip.

35. Surface water runoff from the existing site drains to the Thames Water public surface water sewer located in Cottingham Chase to the east of the property.

36. Infiltration testing has been carried out which confirms that the soils at the site are not suitable for the disposal of surface water runoff by infiltration means. There is no suitable watercourse in the vicinity of the site to which to make a direct connection of surface water from the site.

37. Water butts are proposed to the front and rear of the property to collect roof runoff via downpipes. It is proposed to direct the remaining surface water runoff from the site to the Thames Water public surface water sewer to the east of the site using the existing surface water connection from the site.

38. It is proposed to restrict post development surface water runoff rates by at least 59% in comparison with existing site runoff rates. The proposals will therefore reduce the impact on the receiving sewer. Thames Water have confirmed they have no objection to the proposed runoff rates.

39. The flow rate will be restricted by a 50mm diameter orifice. It is proposed to provide attenuation storage in the form of geocellular storage crates in the rear garden of the property.

40. The proposed drainage has been modelled using MicroDrainage and is shown not to flood in all durations and events up to an annual probability of 1:100 plus 40% climate change. A drainage layout drawing has been produced.

FIGURES

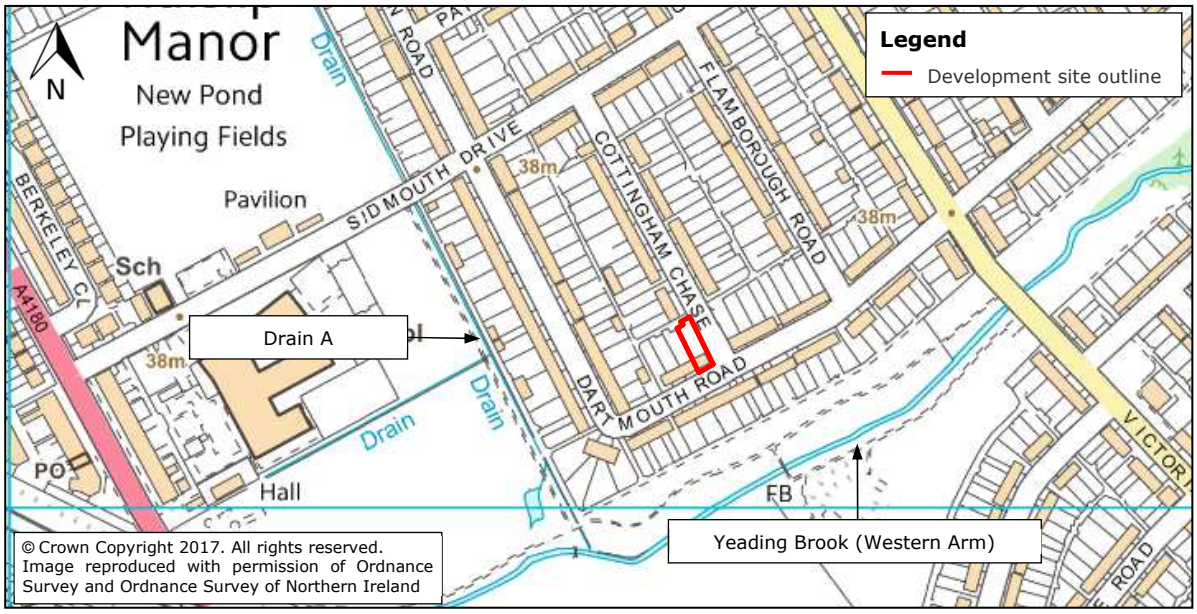
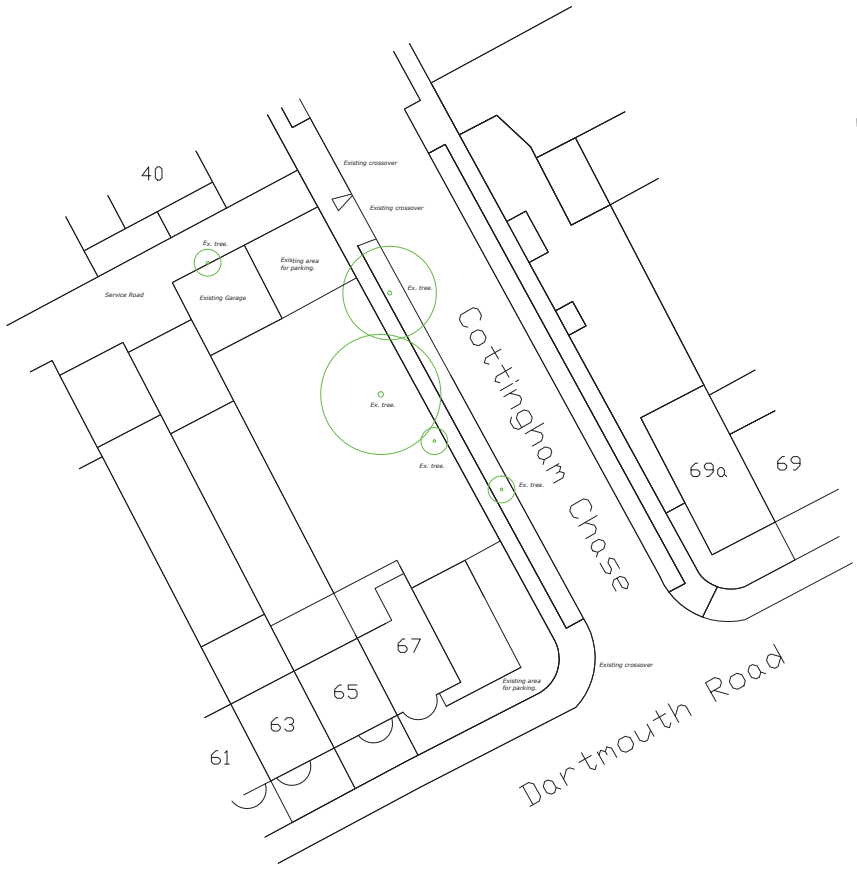
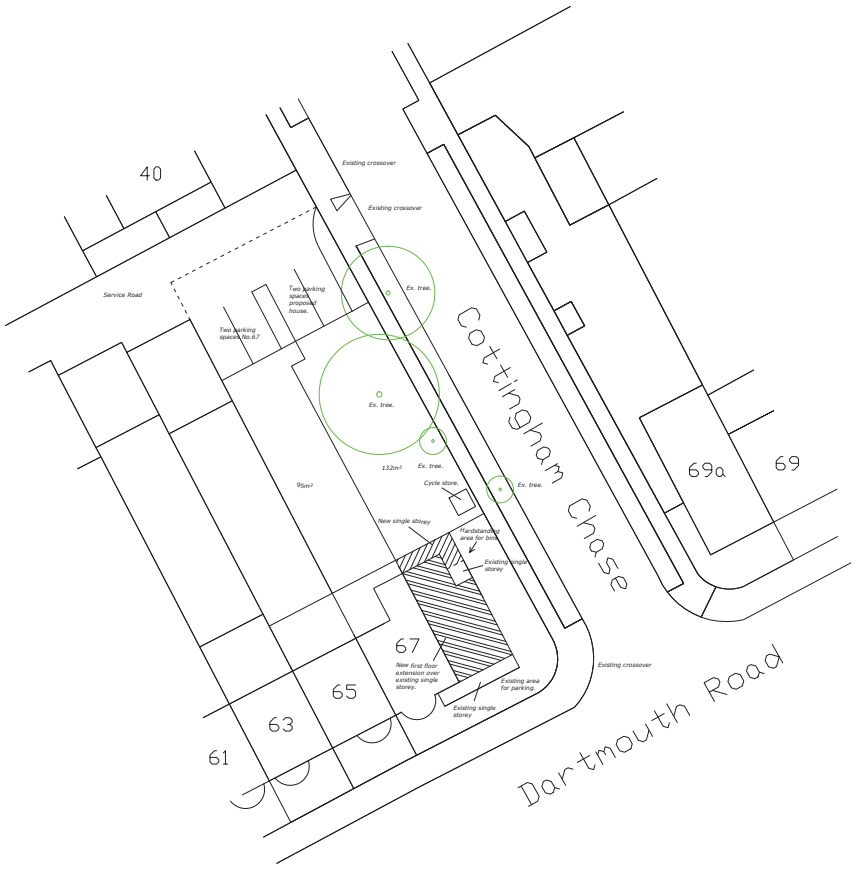


Figure 1: Site Location

ANNEX 1: EXISTING AND PROPOSED DEVELOPMENT LAYOUTS



Existing Site Plan



Proposed Site Plan

Existing & Proposed Site Plans

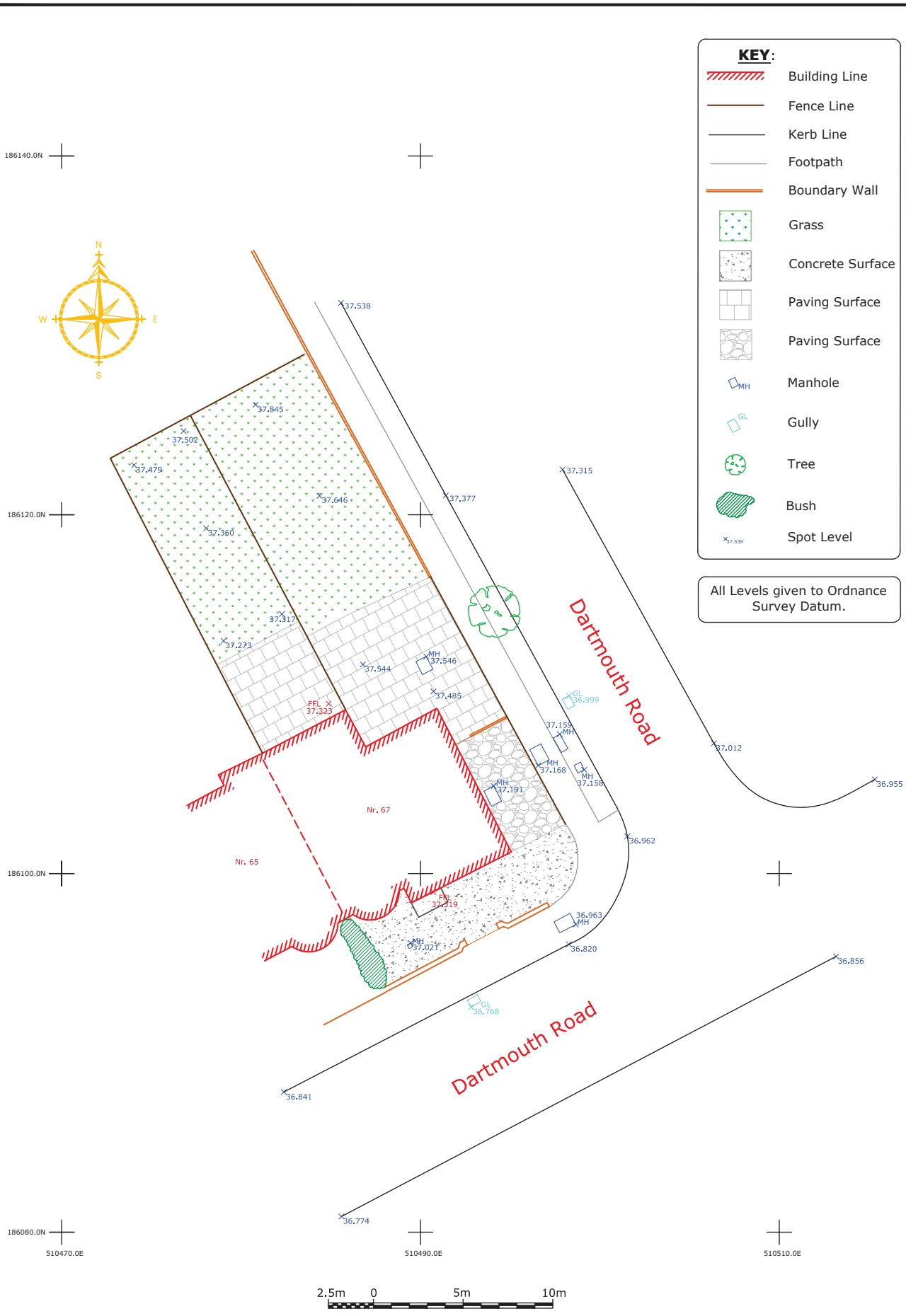
0 20m

67 DARTMOUTH ROAD , RUSILIP .

W J Macleod
ARCHITECT
70b High Street Northwood Middlesex HA6 1BL
phone 01923 840600

Drawing Number 16 / 3434 / 16	Revision
Date 6 / 3 / 19	Drawn by
Scale 1:200 @ A1	Draw Ref.

ANNEX 2: TOPOGRAPHIC SURVEY



NOTES:
IF IN DOUBT ASK!
DO NOT SCALE

– 12.02.16 FOR COMMENTS

SESE LIMITED
STRUCTURAL & CIVIL ENGINEERS
174 CALEDONIAN ROAD
London N1 0SQ
Tel : 020 7278 0778
Fax : 020 7278 0765

Project: Graham Lisi
67 Dartmouth Road
Topographic Survey

Drg No.	Scale	Drawn	Rev.	Date	Checked
P1094-S150	-	AL	-	12/02/16	AS

ANNEX 3: SEWER RECORDS

Asset location search

Property Searches

Weetwood Services Ltd
Suite 1 Park House
Broncoed Business Park
MOLD
CH7 1HP

Search address supplied 67
Dartmouth Road
Ruislip
HA4 0DE

Your reference 3766

Our reference ALS/ALS Standard/2020_4196630

Search date 10 June 2020

Knowledge of features below the surface is essential for every development

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

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

Contact us to find out more.

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

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

0845 070 9148

Asset location search

Property Searches

Search address supplied: 67, Dartmouth Road, Ruislip, HA4 0DE

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

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

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

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

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

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

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

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

For your guidance:

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

Clean Water Services

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

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ
Tel: 0345 3572401

Asset location search

Property Searches

For your guidance:

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

Payment for this Search

A charge will be added to your suppliers account.

Asset location search

Property Searches

Further contacts:

Waste Water queries

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

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

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

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

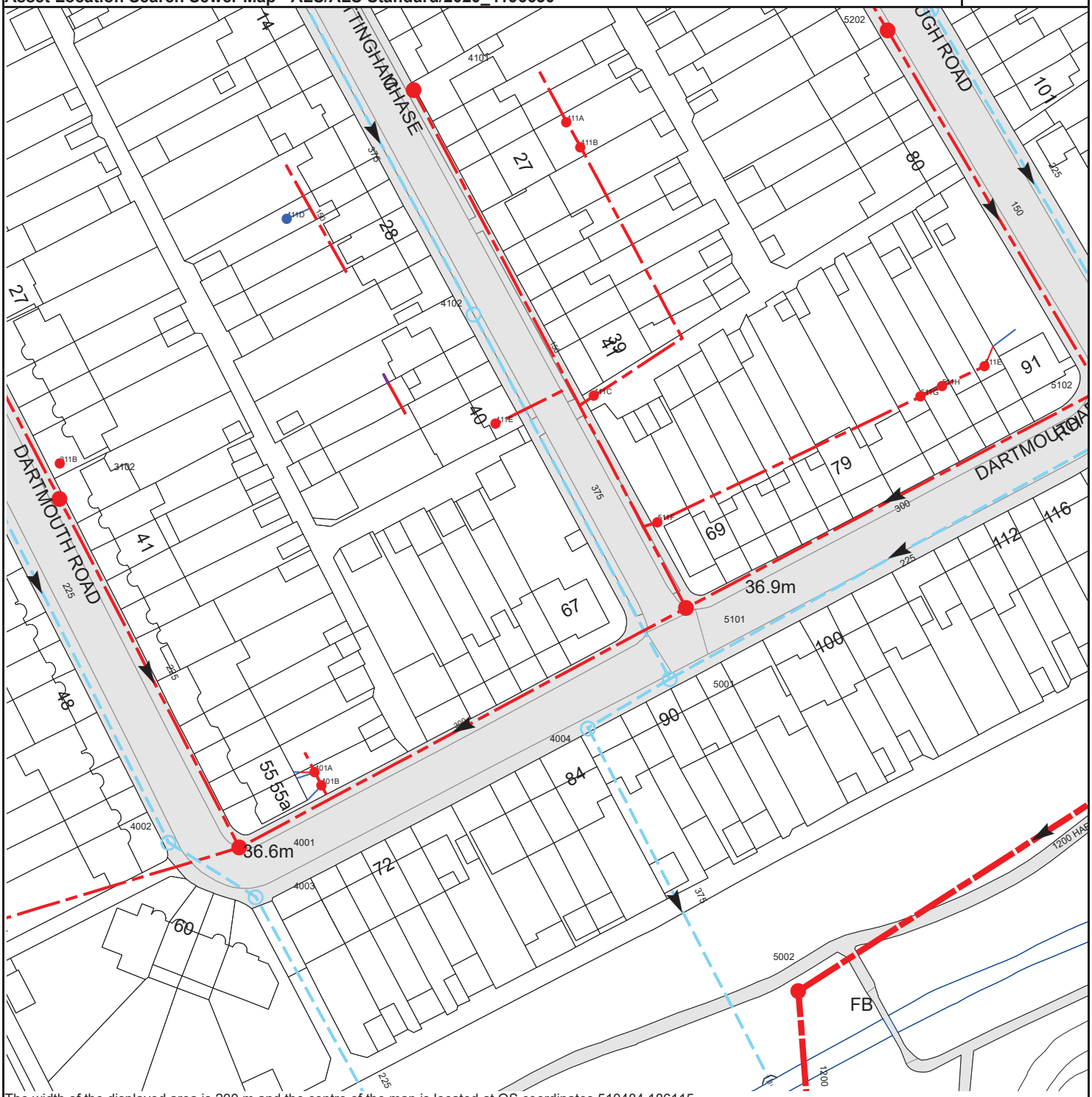
Clean Water queries

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

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

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

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4196630



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 510484,186115

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
401B	n/a	n/a
401A	n/a	n/a
4004	36.9	36.08
5001	36.94	36.2
5101	36.96	33.72
511F	n/a	n/a
3102	37.41	35.24
311B	n/a	n/a
411E	n/a	n/a
511G	n/a	n/a
411C	n/a	n/a
511H	n/a	n/a
511E	n/a	n/a
4102	37.98	36.78
411D	n/a	n/a
411B	n/a	n/a
411A	n/a	n/a
4101	38.43	36.37
5202	38.26	36.21
5204	38.2	37.3
4002	36.8	36.07
4001	36.58	33.41
4003	36.76	35.94
5002	36.89	32.03

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

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

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

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

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

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

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

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

Control Valve

Drop Pipe

Ancillary

Weir

End Items

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

Outfall

Undefined End

Inlet

Other Symbols

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

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

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

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

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

2) All measurements on the plans are metric.

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

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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

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

Terms and Conditions

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

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

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

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

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

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

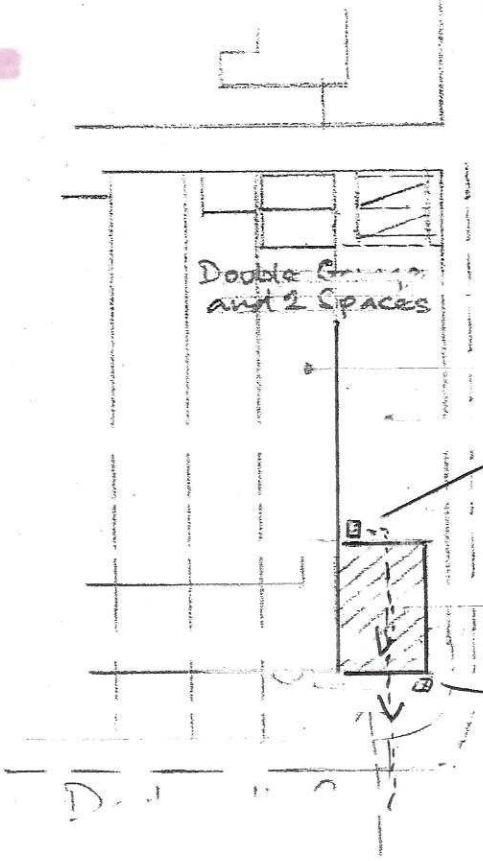
Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

ANNEX 4: EXISTING DRAINAGE DETAILS

Location Plan 1:1250

Existing RW Layout

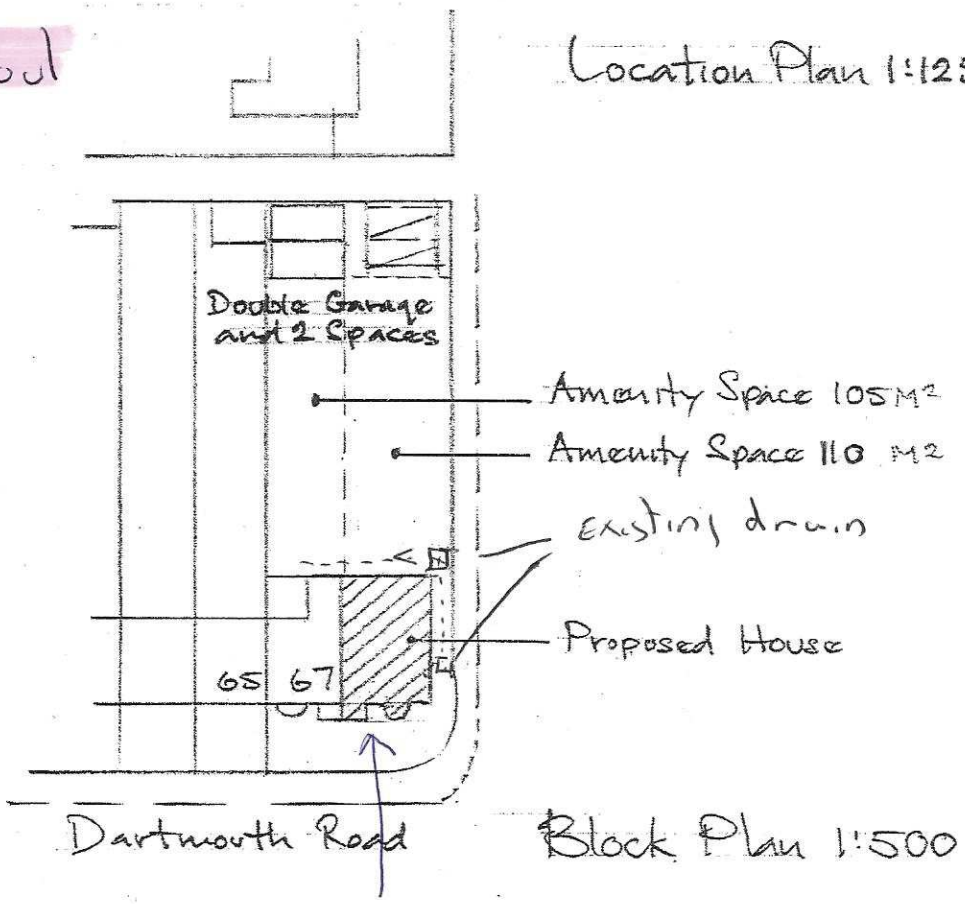


Site Plans

SITE

Existing foul

Location Plan 1:1250



Block Plan 1:500

Site Plans

SITE: 67 Dartmouth Road • Ruislip • Middx

BUILDING SERVICES Architectural Designers & Surveyors Uxbridge (01895) 811177	DRAWN: AMF	SCALE: —	DATE: Sep 08
	DRAWING No. 08/242/00 A		

ANNEX 5: EXISTING SITE RUNOFF RATES

The peak discharge rates of surface water runoff from the impermeable areas at the site have been calculated based on the Modified Rational Method[5].

The following parameters have been obtained from the maps in Volume 3 of the Wallingford Procedure:

M5-60 minute rainfall depth:	20.0 mm
Ratio of M5-60 to M5-2 day rainfall:	0.42
Average Annual Rainfall:	750 mm
Winter Rain Acceptance Potential/ Soil Type :	0.45/Type 4
The Urban Catchment Wetness Index (UCWI) value:	80.0

A time of concentration of 5 minutes has been used comprising a time of entry of 4 minutes and a time of flow of 1 minute.

A rainfall estimation calculation has been carried out to convert the M5-60 minute rainfall to the 5-minute duration rainfall for the 1:1, 1:2, 1:30 and 1:100 annual probability rainfall events. The calculated rainfall intensities for these events are 56.3, 72.2, 132.8 and 168.0 mm/hr respectively.

The flow rate as given by the Modified Rational Method is:

$Q=2.78 \times C_v \times C_r \times$ rainfall intensity x impermeable area

where:

C_v is the volumetric runoff coefficient = P_r/PIMP = 0.78
where P_r is Percentage Runoff and PIMP is Percentage Impermeable Area
C_r is the routing coefficient = 1.3
Impermeable Area = 0.034 ha

The peak discharges of surface runoff from impermeable areas of the existing site are shown in the table below:

Peak Runoff Rates

Annual probability of rainfall event	Peak discharge for 0.034 ha impermeable area (l/s)
1:1	5.4
QBAR	6.9
1:30	12.7
1:100	16.1

[5] The Wallingford Procedure, Volume 4, 1981

ANNEX 6: INFILTRATION TEST RESULTS

The Brownfield Consultancy
Woodstock
Memorial Road
Fenny Compton.
CV47 2XU

Your Ref:

Our Ref: BC519 L.001 / JT

G. Lisi Developments Ltd
6 Howletts Lane
Ruislip
Middlesex
HA4 7RW

4th June 2020

Dear Graham

NO.67 DARTMOUTH ROAD, RUISLIP. HA4 0DE
Soakaway Testing

The Brownfield Consultancy was commissioned by Lisi Construction to undertake trial pit soakaway testing in accordance with BRE 365 at the above site. The fieldwork was on 2nd and 3rd June 2020.

The site is located approximately 2km south of the centre of Ruislip and currently comprises of a recently constructed 2 storey, 2 bedroom dwelling attached to No. 67 Dartmouth Road. The soakaway tests were undertaken in the rear garden of the new property. Development proposals and an exploratory hole location plan are presented in Appendix A.

1. FIELDWORK

Two pits were excavated with a mechanical excavator on the afternoon and evening of the 2nd June 2020 with a mechanical excavator. The pits were denoted SA1 and SA2. The pit dimensions were carefully measured and then filled with clean water. The time for the water to drain was then measured.

An initial depth reading was taken on the evening of the 2nd June. We returned to site on 3rd June and undertook further depth specific readings. Photographs of the trial pits are presented below:-

SA1 Exploratory Hole

SA2 Exploratory Hole

The Brownfield Consultancy
Woodstock
Memorial Road
Fenny Compton.
CV47 2XU

2. GROUND CONDITIONS

Referring to the BGS Geoindex the anticipated geology at the site is Lambeth Group described as:-

Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate.

Our findings confirmed the published geology. A summary of the strata encountered during the investigation is described below but for full details reference should be made to the exploratory hole logs presented in Appendix B.

Made Ground
Made Ground/Topsoil was encountered in both exploratory holes to depths of 0.20-0.30m. Materials comprised dark brown Topsoil with fragments of red brick.

Lambeth Group
The Lambeth Group was encountered in both trial pit locations and comprised brown slightly gravelly CLAY with occasional cobbles and patches of brown sand. Gravel comprised chalk and flint; cobbles comprised flint.

Groundwater
Groundwater was not encountered in the trial pits.

3. SOAKAWAY DRAINAGE

In test location SA1, the water level drained 0.48m over 1036 minutes (17 hours and 16 minutes). In SA2, the water level drained 0.35m in 796 minutes (13 hours and 16 minutes). The pits did not drain to greater than 75% of their effective depth which is a requirement under BRE 365. The full results of soakaway testing are presented in Appendix C.

In conclusion the soils below the site are not considered suitable for infiltration and alternative drainage methods should be explored.

We trust the above is satisfactory for your purposes. Should you have any queries please do not hesitate to contact me.

Yours sincerely

Jim Twaddle CGeol
Director

Encl.

Appendix A	*Exploratory Hole Location Plan*
Appendix B	*Exploratory Hole Logs*
Appendix C	*Soakaway Test Calculations*

APPENDIX A

Exploratory Hole Location Plan

No. 67 DARTMOUTH ROAD, RUISLIP

EXPLORATORY HOLE LOCATION PLAN

APPENDIX B

Exploratory Hole Logs

Brownfield Consultancy
The Cottage, Mill Lane
Fenny Compton, CV47 2YF
Phone: 07852881086

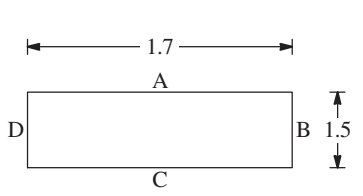
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
No. 67 Dartmouth Road, Ruislip. HA4 0DE				SA1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC519	03-06-20			
Contractor				Sheet
The Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.20			Dark brown TOPSOIL with traces of red brick. Roots and rootlets. (MADE GROUND)			
0.20-1.50			Firm fissured brown slightly gravelly CLAY with a low cobble content. Gravel is subangular to rounded fine to coarse flint and chalk. Cobbles are flint. Patches of brown sand.			
			1.35 Locally gravelly.			
1.50			Trial pit terminated.			

Shoring/Support:
Stability: Sides stable



GENERAL REMARKS

Soakaway test undertaken in accordance with BRE 365.

All dimensions in metres Scale 1:25	Client G. Lisi Developments Ltd	Method/ Plant Used Mini-excavator	Logged By JT

Brownfield Consultancy
The Cottage, Mill Lane
Fenny Compton, CV47 2YF
Phone: 07852881086

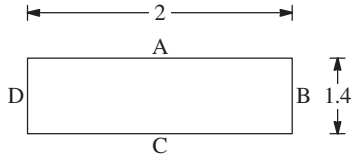
TRIAL PIT LOG

The Brownfield Consultancy

Project				TRIAL PIT No
No. 67 Dartmouth Road, Ruislip. HA4 0DE				SA2
Job No	Date	Ground Level (m)	Co-Ordinates ()	
BC519	03-06-20			
Contractor				Sheet
The Brownfield Consultancy Ltd				1 of 1

STRATA				SAMPLES & TESTS		
				Depth	No	Remarks/Tests
Depth	No		DESCRIPTION			
0.00-0.30			Dark brown TOPSOIL with traces of red brick. Roots and rootlets. (MADE GROUND)			
0.30-1.00			Firm fissured brown slightly gravelly CLAY with a low cobble content. Gravel is subangular to rounded fine to coarse flint and chalk. Cobbles are flint. Patches of brown sand.			
1.00			Trial pit terminated.			

Shoring/Support:
Stability: Sides stable



GENERAL REMARKS

Soakaway test undertaken in accordance with BRE 365.

All dimensions in metres Scale 1:25	Client G. Lisi Developments Ltd	Method/ Plant Used Mini-excavator	Logged By JT

APPENDIX C

Soakaway Calculation Sheets

The Brownfield Consultancy	**SOIL INFILTRATION TEST**
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** 67 Dartmouth Road, Ruislip **Project No:** BC519

Test Location: SA 1 Test No: 1 Date: 03.06.20

Water level during test

Time mins	Depth m bgl
0	0.300
960	0.480
980	0.480
1015	0.480
1036	0.480

Trial pit dimensions

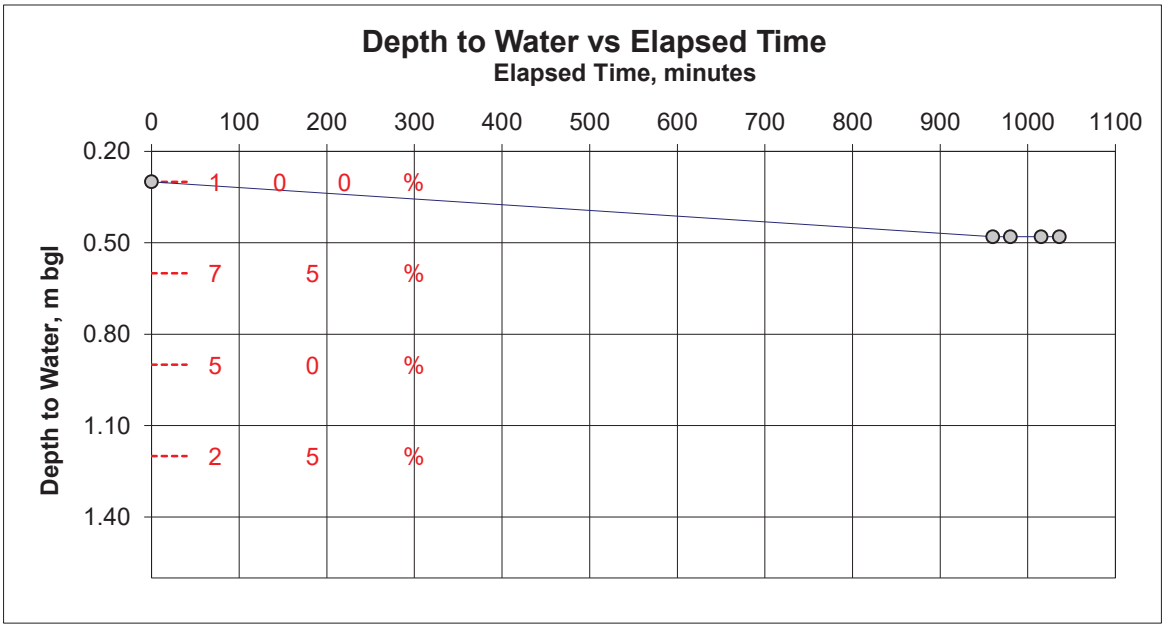
depth (m)	1.50
length (m)	1.70
width (m)	1.50

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate
Vp = volume of water from 75% to 25% effective depth
αp = Internal surface area at 50% effective depth
tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins) 0
time at 25% effective depth (mins) 0
(from graph)

Calculated Soil Infiltration Rate = - m/sec



The Brownfield Consultancy	**SOIL INFILTRATION TEST**
Woodstock **Memorial Road** **Fenny Compton** **CV47 2XU** **Tel: 07852881086**	**Project:** 67 Dartmouth Road, Ruislip **Project No:** BC519

Test Location: SA2 Test No: 1 Date: 03.06.20

Water level during test

Time mins	Depth m bgl
0	0.300
720	0.350
740	0.350
776	0.350
796	0.350

Trial pit dimensions

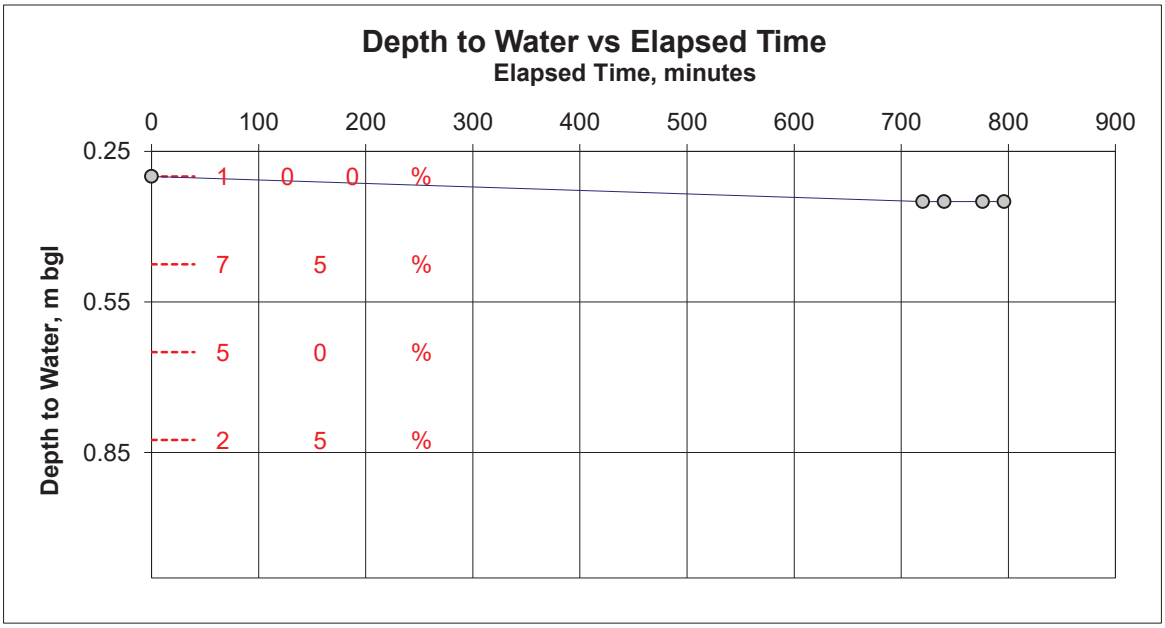
depth (m)	1.00
length (m)	2.00
width (m)	1.40

$$f = \frac{V_p}{\alpha_p \times t_p}$$

f = soil infiltration rate
Vp = volume of water from 75% to 25% effective depth
αp = Internal surface area at 50% effective depth
tp = time for the water level to fall from 75% to 25% effective depth

time at 75% effective depth (mins) 0
time at 25% effective depth (mins) 0
(from graph)

Calculated Soil Infiltration Rate = - m/sec



Registered Office:-

The Brownfield Consultancy
Woodstock
Memorial Road
Fenny Compton
CV47 2XU

Company No: 8143932

Jim.twaddle@brownfieldconsultancy.co.uk

Tel: 07852 881086

ANNEX 7: MICRO DRAINAGE RESULTS

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	MH1	37.800	37.050	0.600	Open Manhole	900
1.001	o	150	MH2 - Tank	37.540	36.900	0.490	Open Manhole	900
2.000	o	150	EX1a	37.550	36.950	0.450	Open Manhole	900
1.002	o	150	EX1	37.450	36.850	0.450	Open Manhole	900
1.003	o	150	EX2	37.100	36.300	0.650	Open Manhole	1200
1.004	o	150	MH3 - Flow control	37.150	36.180	0.820	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	18.367	122.4	MH2 - Tank	37.540	36.900	0.490	Open Manhole	900
1.001	3.917	78.3	EX1	37.450	36.850	0.450	Open Manhole	900
2.000	3.185	31.9	EX1	37.450	36.850	0.450	Open Manhole	900
1.002	10.675	19.4	EX2	37.100	36.300	0.650	Open Manhole	1200
1.003	3.499	29.2	MH3 - Flow control	37.150	36.180	0.820	Open Manhole	1200
1.004	3.499	29.2		37.160	36.060	0.950	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.008	0.008	0.008
1.001	User	-	100	0.010	0.010	0.010
2.000	User	-	100	0.011	0.011	0.011
1.002	-	-	100	0.000	0.000	0.000
1.003	User	-	100	0.005	0.005	0.005
1.004	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.033	0.033	0.033

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.004		37.160	36.060	0.000	0	0

Online Controls for Storm

Orifice Manhole: MH3 - Flow control, DS/PN: 1.004, Volume (m³): 1.1

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 36.180

Storage Structures for Storm

Cellular Storage Manhole: MH2 - Tank, DS/PN: 1.001

Invert Level (m) 36.900 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	20.0	0.0	0.400	20.0	0.0	0.401	1.0	0.0	0.640	1.0	0.0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	MH1	15 minute 1 year Winter I+0%	37.800	37.077	-0.123	0.000	0.07		1.1	OK
1.001	MH2 - Tank	30 minute 1 year Winter I+0%	37.540	36.931	-0.119	0.000	0.09		1.3	OK
2.000	EX1a	15 minute 1 year Winter I+0%	37.550	36.977	-0.123	0.000	0.08		1.5	OK
1.002	EX1	15 minute 1 year Winter I+0%	37.450	36.875	-0.125	0.000	0.06		2.4	OK
1.003	EX2	30 minute 1 year Winter I+0%	37.100	36.390	-0.060	0.000	0.11		2.4	OK
1.004	MH3 - Flow control	30 minute 1 year Winter I+0%	37.150	36.387	0.057	0.000	0.10		2.2	SURCHARGED

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	MH1	15 minute 30 year Winter I+0%	37.800	37.093	-0.107	0.000	0.18		2.7	OK
1.001	MH2 - Tank	15 minute 30 year Winter I+0%	37.540	36.959	-0.091	0.000	0.32		4.5	OK
2.000	EX1a	15 minute 30 year Winter I+0%	37.550	36.994	-0.106	0.000	0.19		3.7	OK
1.002	EX1	30 minute 30 year Winter I+0%	37.450	36.953	-0.047	0.000	0.18		6.7	OK
1.003	EX2	15 minute 30 year Winter I+0%	37.100	36.943	0.493	0.000	0.28		6.0	FLOOD RISK
1.004	MH3 - Flow control	15 minute 30 year Winter I+0%	37.150	36.938	0.608	0.000	0.21		4.4	FLOOD RISK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

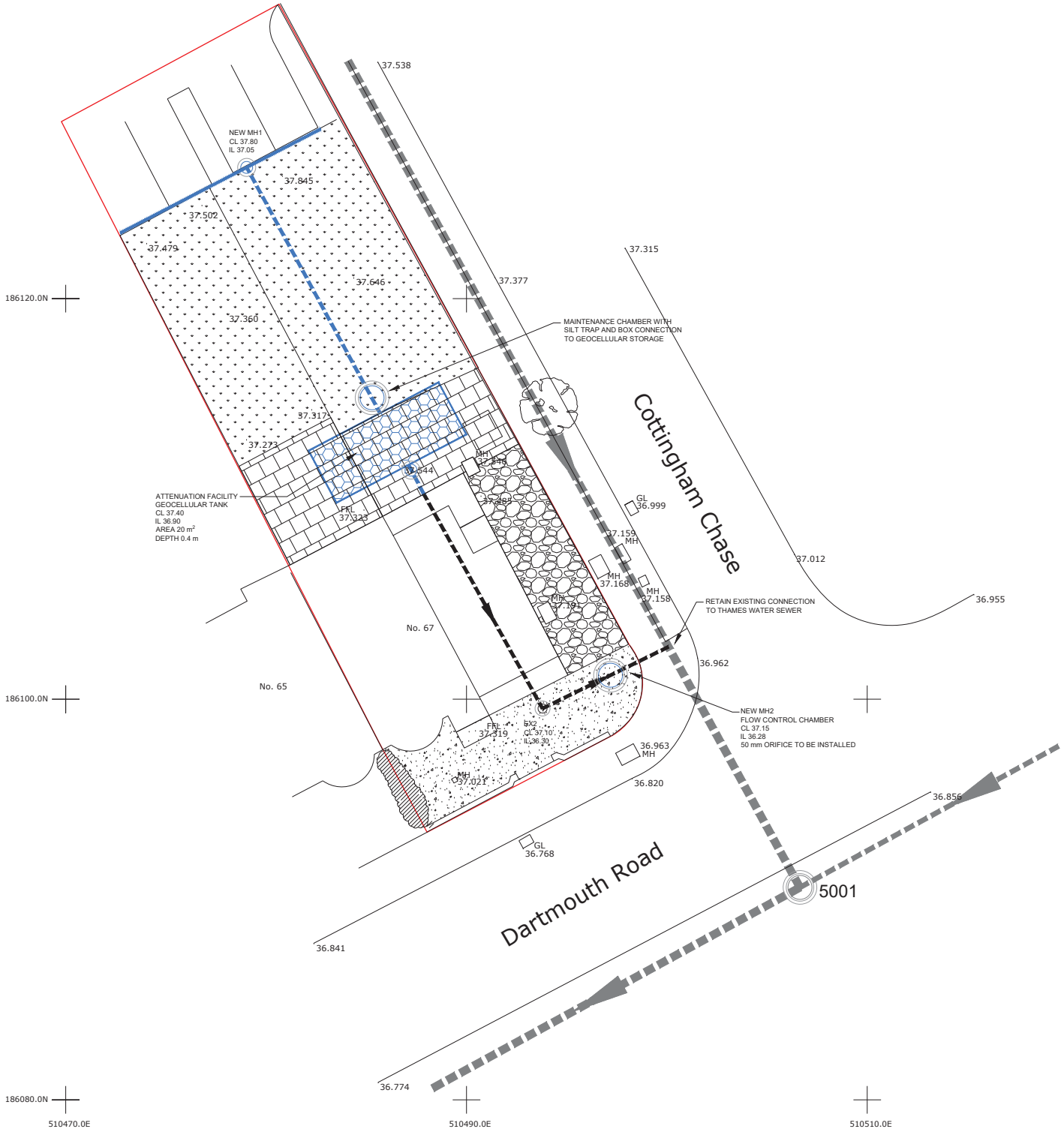
Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	MH1	15 minute 100 year Winter I+20%	37.800	37.104	-0.096	0.000	0.28		4.2	OK
1.001	MH2 - Tank	30 minute 100 year Winter I+20%	37.540	37.061	0.011	0.000	0.33		4.6	SURCHARGED
2.000	EX1a	30 minute 100 year Winter I+20%	37.550	37.059	-0.041	0.000	0.22		4.4	OK
1.002	EX1	30 minute 100 year Winter I+20%	37.450	37.057	0.057	0.000	0.23		8.5	SURCHARGED
1.003	EX2	30 minute 100 year Winter I+20%	37.100	37.042	0.592	0.000	0.32		6.9	FLOOD RISK
1.004	MH3 - Flow control	30 minute 100 year Winter I+20%	37.150	37.035	0.705	0.000	0.22		4.8	FLOOD RISK

ANNEX 8: PROPOSED SURFACE WATER DRAINAGE LAYOUT



NOTES

1. This drawing to be read in conjunction with all relevant Weetwood drawings.

LEGEND

DRAINAGE KEY

- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE SURFACE WATER SEWER
- EXISTING PUBLIC SURFACE WATER MANHOLE
- EXISTING PRIVATE SURFACE WATER PPIC/MANHOLE
- PROPOSED PRIVATE SURFACE WATER PPIC/MANHOLE
- CHANNEL DRAIN (ACO RAINDRAIN WITH B125 GRATING OR SIMILAR APPROVED)
- SITE BOUNDARY

Rev	Date	Description	Drawn	Check
P2	09.07.20	MAINTENANCE CHAMBER MOVED	HN	GW
P1	09.07.20	FIRST ISSUE	HN	GW

Weetwood
Development • Planning • Environment
70 Cowcross Street
London EC1M 6EJ
Tel 0203 757 5444
Fax 01352 756314
info@weetwood.net
www.weetwood.net

Client
G LISI DEVELOPMENT LTD

Drawing Status
PRELIMINARY

Date
JULY 2020

Scale (A1)
1:100

Drawn
HN

Checked
GW

Project
67 DARTMOUTH ROAD
RUISLIP

Project No
3766

Title
DRAINAGE LAYOUT

Drawing No
C100

Revision
P2

ANNEX 9: THAMES WATER CONSULTATION RESPONSE 13 JULY 2020

Miss H Nicholson
Weetwood Services Ltd
70 Cowcross Street
London EC1M 6EJ

Our ref: DS6075665

0800 009 3921
Monday to Friday, 8am to 5pm

13th July 2020

Pre-planning enquiry: Wastewater Capacity check

Dear Miss Nicholson

Thank you for providing details of your development with the Pre-Planning application dated 8th July 20 for development @ 67 Dartmouth Road Ruislip HA4 0DE

Existing brownfld site ,developed to { One Dwelling } as per your above application.

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, in liaison with TW Asset Planners.

Foul

If your proposals progress in line with the details you've provided as above, we're pleased to confirm that there will be sufficient sewerage capacity in the nearest TW foul sewer network to serve your foul discharges from your development, provided it is by gravity.

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 and has to be investigated again.

Surface Water
When developing a site, policy 5.13 of the London Plan and Policy 3.4 of the Supplementary Planning Guidance (Sustainable Design And Construction) states that every attempt should be made to use flow attenuation and SuDS/Storage to reduce the surface water discharge from the site as much as possible.

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.

The disposal hierarchy being:

1. store rainwater for later use.
2. use infiltration techniques where possible.
3. attenuate rainwater in ponds or open water features for gradual release.
4. attenuate rainwater by storing in tanks or sealed water features for gradual release.
5. discharge rainwater direct to a watercourse.
6. discharge rainwater to a surface water sewer/drain.
7. discharge rainwater to the combined sewer.
8. discharge rainwater to the foul 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 3 l/s to TW surface water sewer , then Thames Water would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information. At the appropriate time, you will have to apply for a S106 connection application to DS Connection team

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.

Please note that you must 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 sewerage capacity.

What happens next?

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

If you've any further questions, please contact me.

Yours sincerely

Siva Sivarajan

Developer Services- Wastewater Adoptions Engineer
Office:0203 577 7752 Mobile: 07747842608
siva.sivarajan@thameswater.co.uk

Thames Water Utilities Ltd, Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB
Find us online at developers.thameswater.co.uk

TW Int ref : DTS 50848

ANNEX 10: THAMES WATER FOLLOW UP EMAIL 15 JULY 2020

Geoff Waite

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 15 July 2020 16:35
To: Holly Nicholson
Subject: RE: RE: 67 Dartmouth Road Ruislip - 3766 - Pre-development enquiry

Dear Holly

i refer to your email detailing the attenuated flows corresponding to the diffrent scenarios; As per my consent letter sent on 13th July 20' consentng 3 l/s attnuated is acceptable; The flows as per your email below for the lower probability events with higher Rp is acceptable

regards

Siva Sivarajan
Developer Services- Wastewater Adoptions Engineer
Office:0203 577 7752 Mobile: 07747642603
siva.sivarajan@thameswater.co.uk

Thames Water Utilities Ltd, Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB
Find us online at developers.thameswater.co.uk

Original Text

From: Holly Nicholson <Holly.Nicholson@weetwood.net>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
CC:
Sent: 13.07.20 14:58:54
Subject: RE: 67 Dartmouth Road Ruislip - 3766 - Pre-development enquiry

---

<color="salmon">

Hi Siva,

Thanks for your email. In our proposals, we have suggested the use of an orifice. Unlike a hydrobrake, the orifice restricts flow inour flow rate would be restricted to 3.0 l/s, as permitted in your letter, for all rainfall events up to and including an event with an annual probability of 1 in 3, a "1 in 3 year" rainfall event. For all events with a lower probability (higher rainfall intensity) than this, the peak flow rate would be higher than 3.0 l/s, up to a maximum peak rate of 4.9 l/s in the 1 in 100 year event, plus 20% allowance for climate change.
please could you let me know if this is acceptable? **YES; ACCEPTABLE TO TW**

Kind regards,
Holly

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 13 July 2020 11:53
To: Holly Nicholson <Holly.Nicholson@weetwood.net>
Subject: RE: 67 Dartmouth Road Ruislip - 3766 - Pre-development enquiry [Filed 13 Jul 2020 12:55]

response attched

regards

Siva Sivarajan
Developer Services- Wastewater Adoptions Engineer
Office:0203 577 7752 Mobile: 07747642603
siva.sivarajan@thameswater.co.uk

Thames Water Utilities Ltd, Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB
Find us online at developers.thameswater.co.uk

Get advice on making your sewer connection correctly at connectright.org.uk

Original Text

From: Holly Nicholson <Holly.Nicholson@weetwood.net>
To: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
CC:
Sent: 08.07.20 18:30:20
Subject: 67 Dartmouth Road Ruislip - 3766 - Pre-development enquiry

---

<color="salmon">

Good morning,

I am writing with regards to the above named site. It is proposed to retain the existing property at the site, and build another property beside it. The proposals have been granted planning permission with conditions, one of which is preparing a drainage strategy. I have been appointed to prepare the drainage strategy, and have used the approach set out below.

All surface water from the site to pass through a flow control chamber, which has a 50 mm orifice, before discharging to the DN375 surface water sewer in Cottingham Chase. The orifice restricts the flows by at least 50% of the existing rates. The existing calculated rates for the 1:1, 1:30 and 1:100 annual probability events are 5.2, 12.3 and 15.6 l/s respectively. The proposed rates have been reduced to 2.2, 4.4 and 4.9 l/s for the same events. This represents a decrease of 58%, 64% and 69% on the existing rates.

I have not been appointed to prepare a foul sewage drainage assessment, but it is my understanding that the foul flows are proposed to utilise the existing connection into the Thames Water foul sewer.

Please let me know if these proposals are acceptable.

Kind regards,
Holly

Holly Nicholson
Civil Engineer
holly.nicholson@weetwood.net

COVID-19 statement: Our priority is always the health, safety and wellbeing of our staff, partners and clients. We are taking all necessary measures to ensure that we reduce the risk of exposure to infection. We operate a resilient IT system. All our staff are able to work from home whilst maintaining full access to all the specialist software packages we use to deliver services to our clients. Our general policy is that staff will not undertake non-essential travel. We are able conduct meetings virtually, either by telephone or using Skype/Team. We continue to assess the situation and we will update our policies and guidance accordingly. Visit our website to see our updated position. Take care and be safe.

Weetwood
Development • Planning • Environment
70 Cowcross Street, London, EC1M 6EJ
T 07526 984 095 **W** www.weetwood.net

Offices also at
Park House, Ffordd Byrnwr Gwair, Mold, CH7 1FQ (**T** 01352 700 045) &
Suite C22 Joseph's Well, Hanover Walk, Leeds, LS3 1AB (**T** 0113 244 1377)

Visit us online www.thameswater.co.uk , follow us on twitter www.twitter.com/thameswater or find us on www.facebook.com/thameswater. We're happy to help you 24/7.

Thames Water Limited (company number 2366623) and Thames Water Utilities Limited (company number 2366661) are companies registered in England and Wales, both are registered at Clearwater Court, Vastern Road, Reading, Berkshire RG1 8DB. This email is confidential and is intended only for the use of the person it was sent to. Any views or opinions in this email are those of the author and don't necessarily represent those of Thames Water Limited or its subsidiaries. If you aren't the intended recipient of this email, please don't copy, use, forward or disclose its contents to any other person – please destroy and delete the message and any attachments from your system.

ANNEX 11: MICRO DRAINAGE RESULTS - SENSITIVITY

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480
Return Period(s) (years) 100
Climate Change (%) 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	MH1	30 minute 100 year Winter I+40%	37.800	37.119	-0.081	0.000	0.26		3.9	OK
1.001	MH2 - Tank	30 minute 100 year Winter I+40%	37.540	37.112	0.062	0.000	0.36		5.0	SURCHARGED
2.000	EX1a	30 minute 100 year Winter I+40%	37.550	37.111	0.011	0.000	0.25		4.9	SURCHARGED
1.002	EX1	30 minute 100 year Winter I+40%	37.450	37.108	0.108	0.000	0.24		8.7	SURCHARGED
1.003	EX2	30 minute 100 year Winter I+40%	37.100	37.093	0.643	0.000	0.33		7.3	FLOOD RISK
1.004	MH3 - Flow control	30 minute 100 year Winter I+40%	37.150	37.085	0.755	0.000	0.23		4.9	FLOOD RISK

Weetwood

Development • Planning • Environment

Delivering client focussed services from offices in Leeds, London and Mold

Flood Risk Assessments
Flood Consequences Assessments
Surface Water Drainage
Foul Water Drainage
Environmental Impact Assessments
River Realignment and Restoration
Water Framework Directive Assessments
Environmental Permit and Land Drainage Applications
Sequential, Justification and Exception Tests
Utility Assessments
Expert Witness and Planning Appeals
Discharge of Planning Conditions

www.weetwood.net