



FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY
LAND IN EAST GRAFTON, SITE B, WILTSHIRE, SN8 3DB

GRID REFERENCE: SU254605

NOVEMBER 2025

JOB REFERENCE: P00259

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1.0 Introduction and Site Context

- 1.1 AAH Consultants have been commissioned to undertake a Flood Risk Assessment (FRA) and Drainage Strategy (DS) in support of a planning application for a multi-plot residential development on land in East Grafton (the 'Site').
- 1.2 A Flood Risk Assessment and Drainage Strategy is to be produced in accordance with the National Planning Policy Framework (July 2021), the Non-Statutory Technical Standards for SuDS (March 2015), the SuDS Manual C753 (2015), the Wiltshire Council Level 1 Strategic Flood Risk Assessment (SFRA) (November 2024) and Core Policy 67 relating to Flood Risk from the Wiltshire Core Strategy (January 2015).
- 1.3 The information presented is as follows:
- A background to the Site
 - An assessment of existing flood risk
 - Development proposals
 - Surface water management
 - Foul water management

The Site

- 1.4 The Site is located within the village of East Grafton, approximately 8 miles southeast of Marlborough town centre. The Site is accessed from a public highway (the A338) adjacent to the Site to the south and measures approximately 0.2Ha.
- 1.5 The Site lies within the administrative area of Wiltshire Council as Local Planning Authority (LPA) and Lead Local Flood Authority (LLFA), Thames Water as the water provider, and Southern Water as the sewerage company.

Topography

- 1.6 The Site is relatively planar with an overall fall from a high point at the southwest corner, where levels are approximately 154.3m above Ordnance Datum (AOD), to a low point at the northwest corner, where levels are circa 153.8m AOD.
- 1.7 Currently, the Site consists of open grassland, with hedges and trees forming the borders of the Site. A residential dwelling is present immediately to the north and east of the Site, open grassland exists to the west, and the A338 public highway borders the Site at the south. An aerial image of the Site is provided in **Figure 1** below.



Figure 1: Aerial image of the Site (Google Earth)

Geology

- 1.8 According to British Geological Society (BGS) 1:50,000 scale mapping, the Site is underlain by bedrock geology of Upper Greensand Formation - Sandstone. There are no recorded superficial deposits recorded for this Site.
- 1.9 A review of the LandIS® Soilscape viewer illustrates that the Site consists of '*freely draining slightly acid loamy soils*'. This indicates conditions suitable for infiltration.

Hydrogeology

- 1.10 According to BGS 1:625,000 scale mapping, the Site is underlain by the Upper Greensand Formation, a moderately productive aquifer summarised as Glauconitic sands yielding up to 25l/s and often in hydraulic continuity with overlying Chalk.
- 1.11 The Site is recorded as being underlain by a principal aquifer (Bedrock), and lies within an area mapped as having high groundwater vulnerability. The Site exists outside all groundwater source protection zones.

Hydrology

- 1.12 There are no watercourses within or adjacent to the Site boundary. The nearest watercourses are: 300m west of the Site, and 305m east of the Site. Both watercourses are unnamed, appear to route in a northerly direction, and seemingly converge at a single point 680m north of the Site – prior to adjoining Wilton Water, an 8 acre spring water-fed lake.

3.0 Existing Flood Risk

- 3.1 The National Planning Policy Framework (NPPF) sets strict tests to protect people and property from flood risk, which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed.
- 3.2 For the purposes of applying the National Planning Policy Framework, "flood risk" is a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea (fluvial flooding), directly from rainfall on the ground surface (surface water or pluvial flooding) and rising groundwater (groundwater flooding), overwhelmed sewers and drainage systems (sewer flooding), and from reservoirs, canals and lakes and other artificial sources (artificial flooding).
- 3.3 The following assesses the potential for flood risk from all sources to determine the overall flood risk to the Site.

Tidal and Fluvial Flood Risk

- 3.4 According to the Environment Agency's (EA) Flood Map for Planning service (**Figure 3**), the Site lies within Flood Zone 1 and is, therefore, at low risk of flooding from rivers and the sea.

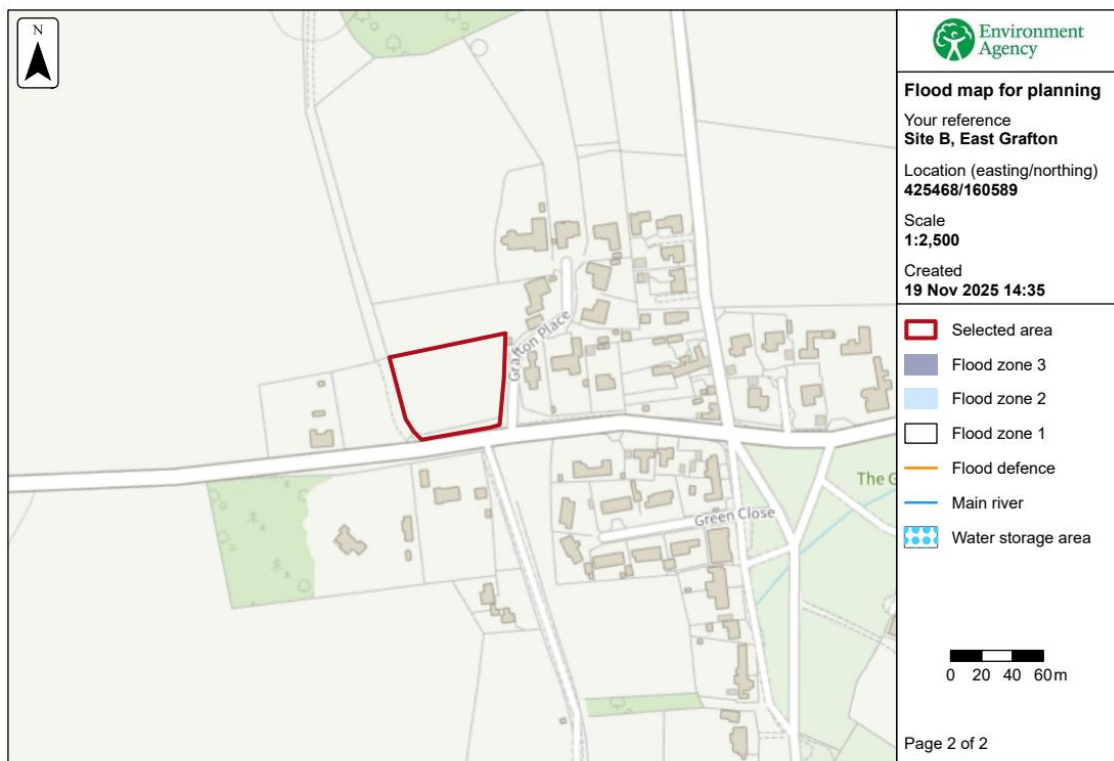


Figure 3: Environment Agency Flood Map for Planning (Site indicated in red)

- 3.5 The Site is not shown to be at risk of fluvial or tidal flooding in the present day, nor is it at risk in a future scenario (years 2070 to 2125) when an allowance for climate change has been applied. As illustrated in **Figure 4** below.

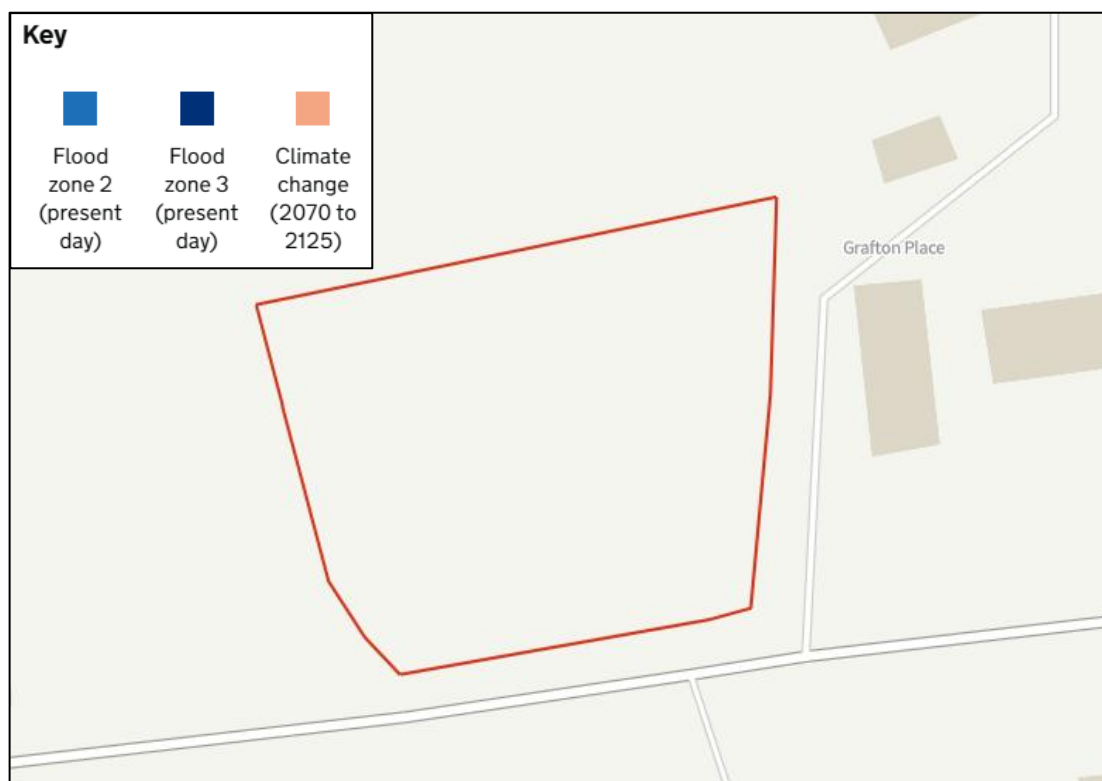
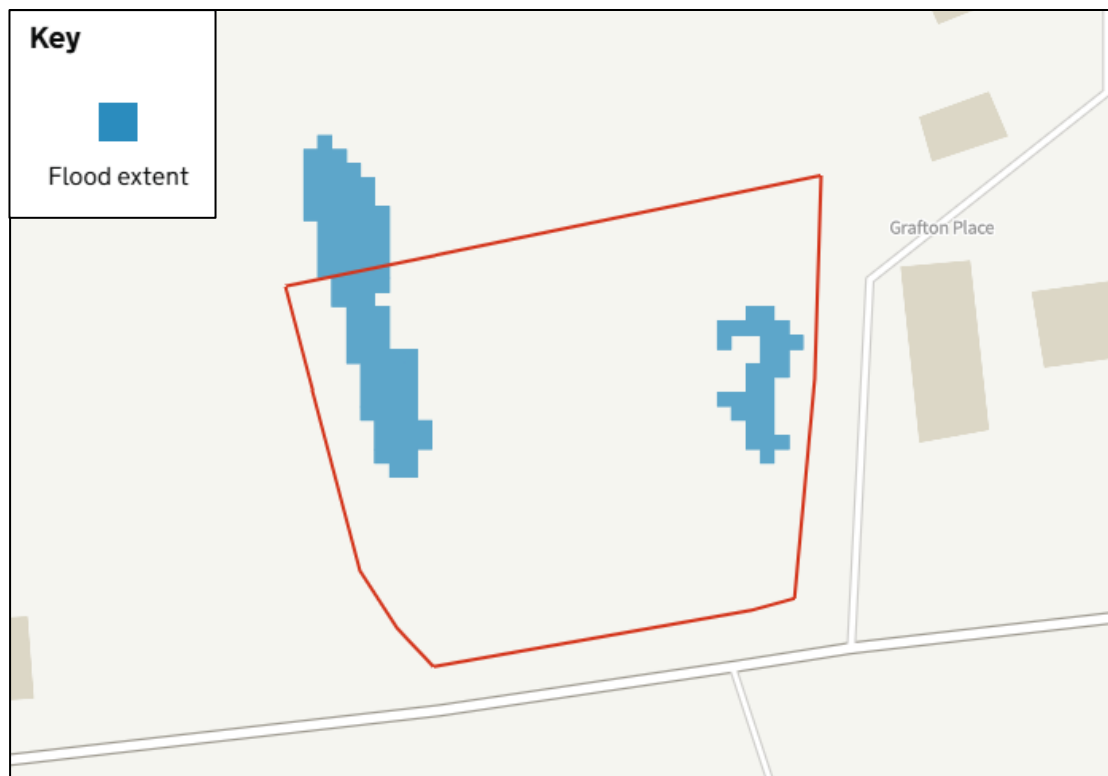


Figure 4: Environment Agency Flood Zone Map (Site indicated in red)

Pluvial and Sewer Flood Risk

- 3.6 Intense rainfall can create run-off, which temporarily overwhelms the capacity of the local drainage systems. Under these conditions, localised 'flash' flooding can occur. In addition, surface water can flood into the sewer networks and overload both the surface water and combined sewer networks. This type of flooding is especially problematic when these systems become overloaded simultaneously.
- 3.7 The EA flood map for surface water divides England and Wales into areas with a very low, low, medium and high risk of pluvial flooding. 'Very low' means that each year this area has a chance of flooding of less than 1 in 1000 (0.1%). 'Low' means that each year this area has a chance of flooding of between 1 in 1000 (0.1%) and 1 in 100 (1%), 'Medium' means that each year this area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) and 'High' means that each year this area has a chance of flooding of greater than 1 in 30 (3.3%).
- 3.8 According to the available data (**Figure 5**), pockets of land towards the east and northwestern boundaries are shown to be at high, medium and low risk from this source. The extent of the surface water flood risk coincides with topographical low spots, illustrated by the topographic

survey appended to this report as Appendix B, thus resulting in ponding at these locations. However, the EA flood maps illustrate this is to a depth of less than 20cm.



**Figure 5: Risk of Flooding from Surface Water - Annual Likelihood of Flooding: 1:100
(Site indicated in red)**

- 3.9 It is proposed that all surface water flows will be retained on Site for storm periods up to and including the 1 in 100 year event plus climate change allowance (CCA). In addition, surface water flows will be controlled at source through a sustainable surface water drainage strategy, and the sewer systems provided should be watertight and lined to prevent water ingress. As such, pluvial flood risk is deemed to be low and satisfactory.
- 3.10 Following receipt of sewer records from Thames Water, a foul water sewer is evidenced to be within the A338 public highway, which abuts the Site at its southern boundary. Level information for the public sewer illustrates that the sewer is at a depth of over 1m below ground. Additionally, any surface water flows generated by development within the area are to be disposed of via infiltration. As such, the risk of sewer flooding is expected to be low.
- 3.11 Non-return flap valves should be fitted downstream on any drainage outlets leaving the Site to further mitigate against the risk of sewer flooding.

Groundwater Flood Risk

- 3.12 Groundwater flooding is most commonly caused by rainfall, which causes the groundwater table beneath a Site to rise and eventually exceed ground level. Groundwater flooding can also occur where the water table is sufficiently close to the Site surface that it inundates subterranean development. Like other sources of flooding, groundwater flooding will be affected by increased rainfall attributable to climate change.
- 3.13 In the unlikely event of groundwater emergence, the topography of the Site is such that the Development is situated higher than the surrounding ground levels to the northwest, and as such, would enable exceedance flows (as a result of groundwater emergence at the surface) to be conveyed away from the Development towards the western boundary, as per the historic situation. In addition, there are no proposals for subterranean development, which will reduce the likelihood of groundwater entering the Development.

Artificial Flood Risk

- 3.14 The EA's Risk of Flooding from Reservoirs' map indicates areas where peoples' lives would be in danger as a result of an uncontrolled release of water from a reservoir or static body of water. In terms of probability of occurrence, the EA acknowledges in their flood map annotations that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925, with all large reservoirs inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensures that reservoirs are regularly inspected and that essential safety work is carried out.
- 3.15 The EA Risk of Flooding from Reservoirs map (depicted in **Figure 6** below) indicates that the Site is not at risk from this source.



Figure 6: Environment Agency Flood Map for Reservoirs (Site indicated in red)

4.0 Surface Water Drainage

Existing Drainage

- 4.1 Historic mapping shows the Site has remained undeveloped since the late 1800s and likely earlier. As such, the likelihood of existing drainage infrastructure and other services being present at the Site is deemed to be low.

Surface Water Disposal Options

- 4.2 In accordance with Building Regulations Approved Document H and DEFRA's Non-Statutory Technical Standards for SuDS (Sustainable Drainage Systems), disposal of curtilage surface water run-off should be directed to the following, in order of preference:

- Infiltration to ground;
- Disposal to a watercourse;
- Disposal to a surface water sewer;
- Disposal to a combined sewer.

Infiltration

- 4.3 The ground conditions outlined in Section 1 of this report are indicative of conditions suitable for infiltration. As such, infiltration testing in accordance with BRE 365 was undertaken in June 2025 to determine the rate at which this may occur.
- 4.4 The test comprised three infiltration trials, each using 1,000 litres of water, carried out within a trial pit excavated to a depth of 1.5m. The results confirmed that infiltration is a suitable method for managing surface water run-off from the Site, with the calculated rates summarised in **Table 1**. The details of the infiltration tests are provided in Appendix C.

Table 1: Infiltration Test Results

Test No.	Infiltration Rate (m/s)	Infiltration Rate (m/hr)
1	1.72×10^{-4}	0.619
2	2.87×10^{-4}	1.03
3	3.72×10^{-4}	1.34

- 4.5 The lowest infiltration rate has been selected to inform the hydraulic design, ensuring a conservative approach and helping to mitigate any potential influence from the tests having been carried out during the summer months.

SuDS Management Train

- 4.6 The SuDS Manual C753 emphasises the multiple benefits that SuDS can provide.
- 4.7 The combined parking / driveway areas provide opportunities for collection, attenuation and treatment of surface water run-off. The hardstanding will be of a permeable construction, with the formation lined with a permeable geotextile to allow infiltration of flows to the ground whilst preventing the ingress of fine soil particles into the permeable sub-base. Ingress of fine soil particles into the permeable sub-base would otherwise reduce the available volume for the storage of surface water run-off. Where the sub-base forming the permeable surfacing abuts a structure, i.e. garages, the side should be lined with an impermeable geotextile to prevent ground instability in areas containing foundations.
- 4.8 Permeable surfacing provides water quality benefits by passively filtering suspended solids, hydrocarbons and heavy metals from the collected surface water.
- 4.9 Roof water from the proposed dwellings and garages is proposed to be collected through traditional rainwater downpipes and conveyed to interlinked, lined soakaways located within the confines of each plot. The lined soakaways are to be formed from 1.5m diameter manhole rings, and situated within a pit of porous granular fill measuring 2.0m wide x 2.0m long.
- 4.10 Roof water is generally clean and requires very little treatment. Catchpits should be strategically placed upstream of the infiltration features to reduce the risk of suspended solids from entering, otherwise resulting in potential blockages and reduced efficacy of the system.

Hydraulic Design

- 4.11 Preliminary hydraulic modelling using Causeway Flow hydraulic simulation software has been undertaken to provide initial sizing of the combined attenuation and infiltration features. The results demonstrate that there is sufficient space within the Site to accommodate surface water drainage systems and the associated volumes and infiltration areas.
- 4.12 The drainage system is required to function without any flooding of surface water for storm return periods up to and including 1 in 30 year and without any flood water leaving the site for storm return periods up to and including 1 in 100 year, plus an allowance for climate change. Climate change allowance has been specified based on the upper end of the total potential change anticipated for the '2070s', which equates to 40%.
- 4.13 Permeable surfacing and lined soakaways have been specified to meet storage requirements for the Site, and are proposed for the parking / driveway areas located within the frontage of the Site, and within grassed areas which form the rear gardens of each proposed dwelling. The

systems specified for the Site have been sized to attenuate flows up to and including a 1 in 100 year storm event plus an additional allowance for climate change. The storage volume required is approximately 34m³.

- 4.14 In accordance with Building Regulations Approved Document H, a minimum 5m offset has been specified from the external extents of the dwellings to the lined soakaways.
- 4.15 A drainage strategy meeting the above criteria is presented in Appendix D, with supporting hydraulic calculations in Appendix E.
- 4.16 In the event of a drainage system blockage or a storm in excess of the design parameters, there may not be sufficient capacity within the drainage system to accommodate collected surface water run-off below ground level or within the Site. Under these circumstances, minor flooding may be expected on-site, leading to overland flows being directed off the Site. Finished ground levels have been designed to direct overland flows away from building thresholds and follow the natural, pre-development flow paths for surface water.

Water Quality

- 4.17 The water quality treatment train has been determined based on the CIRIA SuDS Manual. The appraisal of the Development's characteristics and relevant SuDS components is presented below, demonstrating that the relevant indices have been met.

Minimum water quality management requirements for discharges to receiving surface waters and groundwater (SuDS Manual, 2015, Table 4.3)				
Land use	Pollution hazard level	Requirement for discharge to surface waters and groundwater		
Residential roofs	Very low	Removal of gross solids and sediments only		
Individual property driveways, residential car parks, low traffic roads...	Low	Simple index approach		
Pollution hazard indices for different land use classifications (SuDS Manual, 2015, Table 4.3)				
Land use	Pollution hazard level	Total suspended solids TSS	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home zones, general access roads)	Low	0.5	0.4	0.4
Indicative SuDS mitigation indices for discharges to groundwater (SuDS Manual, 2015, Table 26.4)				
Type of SuDS component		TSS	Metals	Hydrocarbons
Permeable paving		0.7	0.6	0.7
[Lined] Soakaways		0.3	0.5	0.6

Maintenance

- 4.18 Maintenance of SuDS is critical to achieve efficient functionality, long lasting performance, and reduced contamination risk to the Site and downstream. Regular inspections and checks can be undertaken by the Applicant; however, corrective maintenance and repairs may need to be undertaken by a competent professional. Maintenance responsibility should be placed with the Applicant or subsequent Homeowners.
- 4.19 The useful life and effective operation of SuDS components is related to the frequency of maintenance and the risk of sediment being introduced into the system.
- 4.20 Maintenance will usually be carried out manually, although suction tankers can be used for sediment and debris removal from large systems. If maintenance is not undertaken for extended periods, deposits may become hard-packed and more difficult to remove.
- 4.21 In exceptional circumstances where maintenance is not undertaken regularly, replacement of the entire SuDS may be required at significant cost and disruption and, ultimately, will lead to higher flood risk to the Development and the wider catchment.
- 4.22 An outline maintenance strategy and schedule for the proposed SuDS feature is provided in **Tables 2 and 3** below.

Table 2: Lined Soakaway Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	Annually
	Cleaning of gutters and any filters on downpipes.	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages.	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill if performance deteriorates or failure occurs.	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway).	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring.	Annually

Table 3: Permeable Surfacing Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers' recommendations – particular attention to be paid to areas where water runs directly onto pervious surface from adjacent impermeable areas as this is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial actions	Remediate any landscaping that, through vegetation maintenance or soil slip has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10-15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

5.0 Foul Water Drainage

- 5.1 Foul water from the development should be disposed of to the Thames Water foul water sewer within the A338, a public highway adjacent south of the proposed Site. This is in accordance with the hierarchy, as set out within Building Regulations H, which states;

An adequate system of drainage shall be provided to carry foul water from appliances within the building to one of the following, listed in order of priority:

- (a) a public sewer; or, where that is not reasonably practicable,*
- (b) a private sewer communicating with a public sewer; or, where that is not reasonably practicable,*
- (c) either a septic tank which has an appropriate form of secondary treatment or another wastewater treatment system; or, where that is not reasonably practicable,*
- (d) a cesspool.*

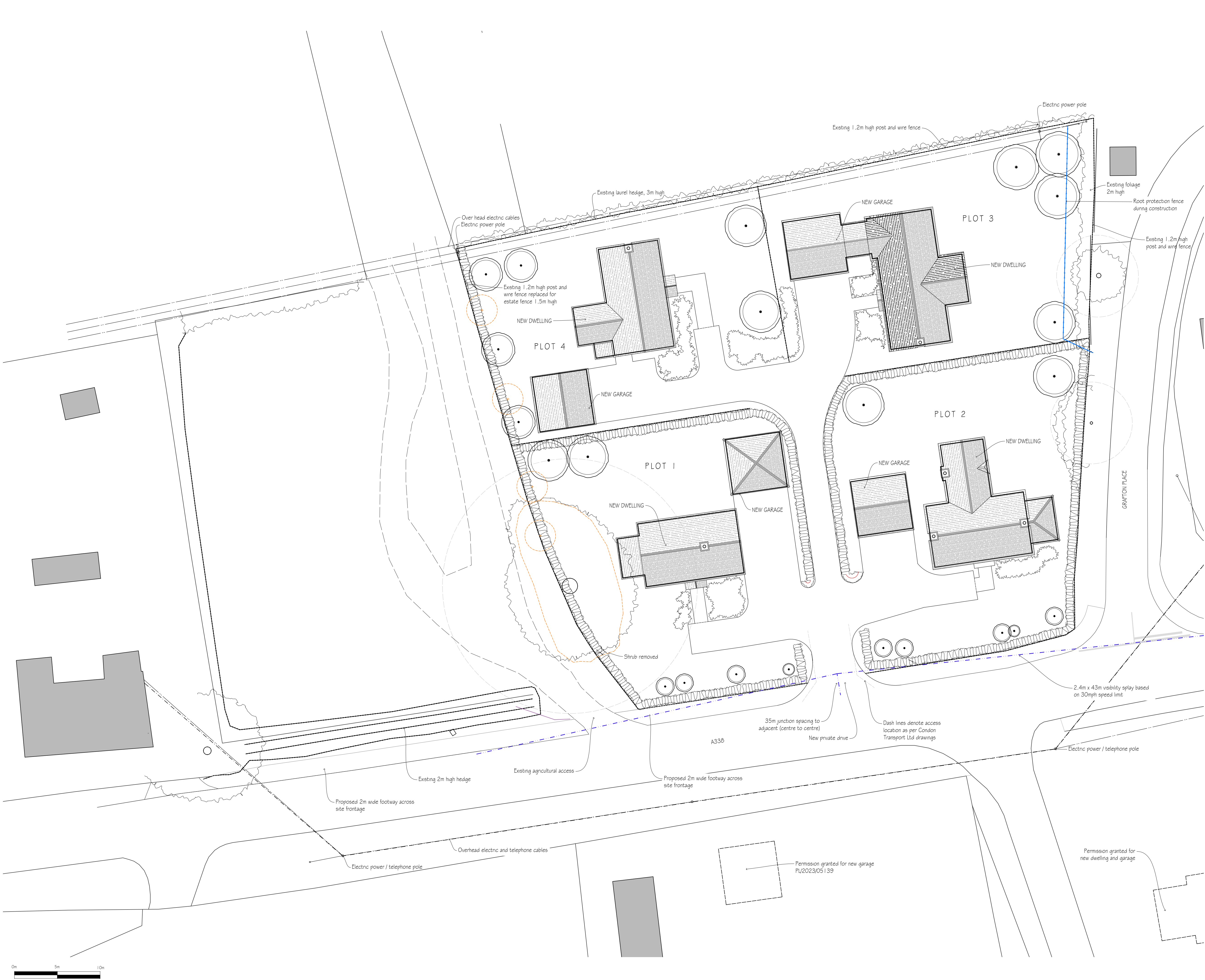
- 5.2 Public sewer records have been requested from Thames Water which confirms this approach and evidence that the depth of the public sewers is sufficient to achieve a gravity connection from the Site. The Thames Water sewer records have been appended to this report as Appendix G.
- 5.3 Prior to making a connection to the public sewer, a S106 Connection Agreement with Thames Water will need to be approved.

6.0 Conclusion

- 6.1 A Flood Risk Assessment and Proposed Drainage Strategy has been produced in support of a multi-plot residential development within East Grafton, Wiltshire. The proposals include the erection of 4 dwellings, each with an associated garage, landscaping and access.
- 6.2 The surface water drainage design has been developed in accordance with the Non-Statutory Technical Standards for SuDS (March 2015), the SuDS Manual C753 (2015), the Wiltshire Council Level 1 Strategic Flood Risk Assessment (SFRA) (November 2024) and Core Policy 67 relating to Flood Risk from the Wiltshire Core Strategy (January 2015).
- 6.3 The foul water drainage design has been developed in accordance with the Building Regulations Approved Document H.
- 6.4 The Site lies within Flood Zone 1, and the Development is classed as 'more vulnerable'. As such, the Environment Agency's standing advice has been followed in undertaking the Flood Risk Assessment. There are no requirements for Sequential or Exception Tests.
- 6.5 The overall existing flood risk to the Site from all sources is considered to be low, with the exception of flood risk from surface water. Flooding from surface water appears to be localised ponding in two minor areas of the Site. It is expected that, through the provision of a SuDS based drainage strategy, flooding from surface water will be sufficiently mitigated to enable development.
- 6.6 It is intended that surface water will be disposed of via infiltration into the ground and will be attenuated within permeable paving (driveway) and lined soakaways (roofs). Infiltration testing has been undertaken to confirm the principles of this design and has confirmed there is sufficient space on Site to accommodate the required storage and infiltration features.
- 6.7 Foul water is to be disposed of to the foul water public sewer within the adjacent public highway, the A338. Sewer records received from Thames Water illustrate that a gravity connection from the Site is feasible.
- 6.8 A maintenance strategy has been provided, with the preferred strategy being that drainage systems will be maintained by the Applicants or subsequent Homeowners.
- 6.9 This Flood Risk Assessment concludes that the development will be safe for its lifetime, taking account of the vulnerability of its users without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

APPENDIX A

DEVELOPMENT PROPOSALS



- KEY
- New tree
 - Existing tree
 - Tree to be removed
 - Root Protection Area
 - New hedge
 - New planting
 - Cellular confinement system
 - Fence

NOTE: Drawing to be read in conjunction with Condon Drew Transport and Naturally Trees information.

B	-	HB	11.07.25
A	-	HB	07.07.25
revisions		initial	date

Contractors, Sub Contractors and Suppliers are to check all relevant dimensions and levels of site and buildings before commencing any shop drawings or building work.

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project
LAND IN EAST GRAFTON
East Grafton
Wiltshire SN8 3DB

drawing
Site Plan
planning

scale
1:200 @A1

drawn by
EG

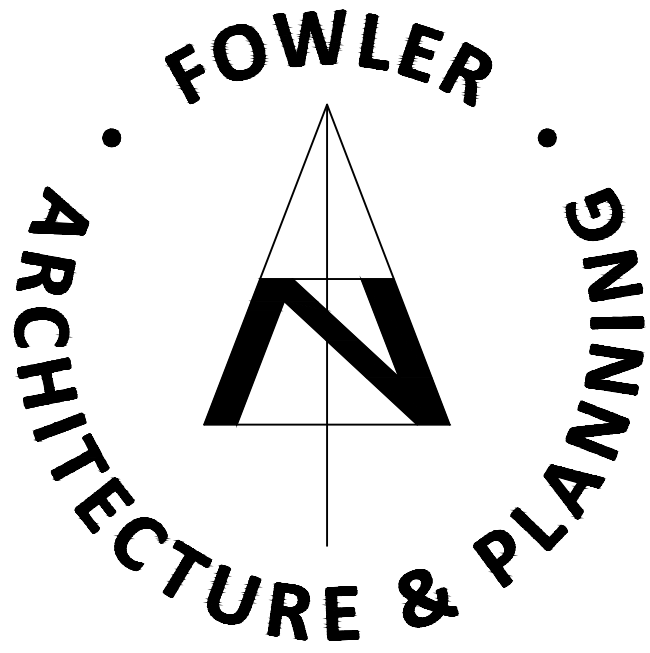
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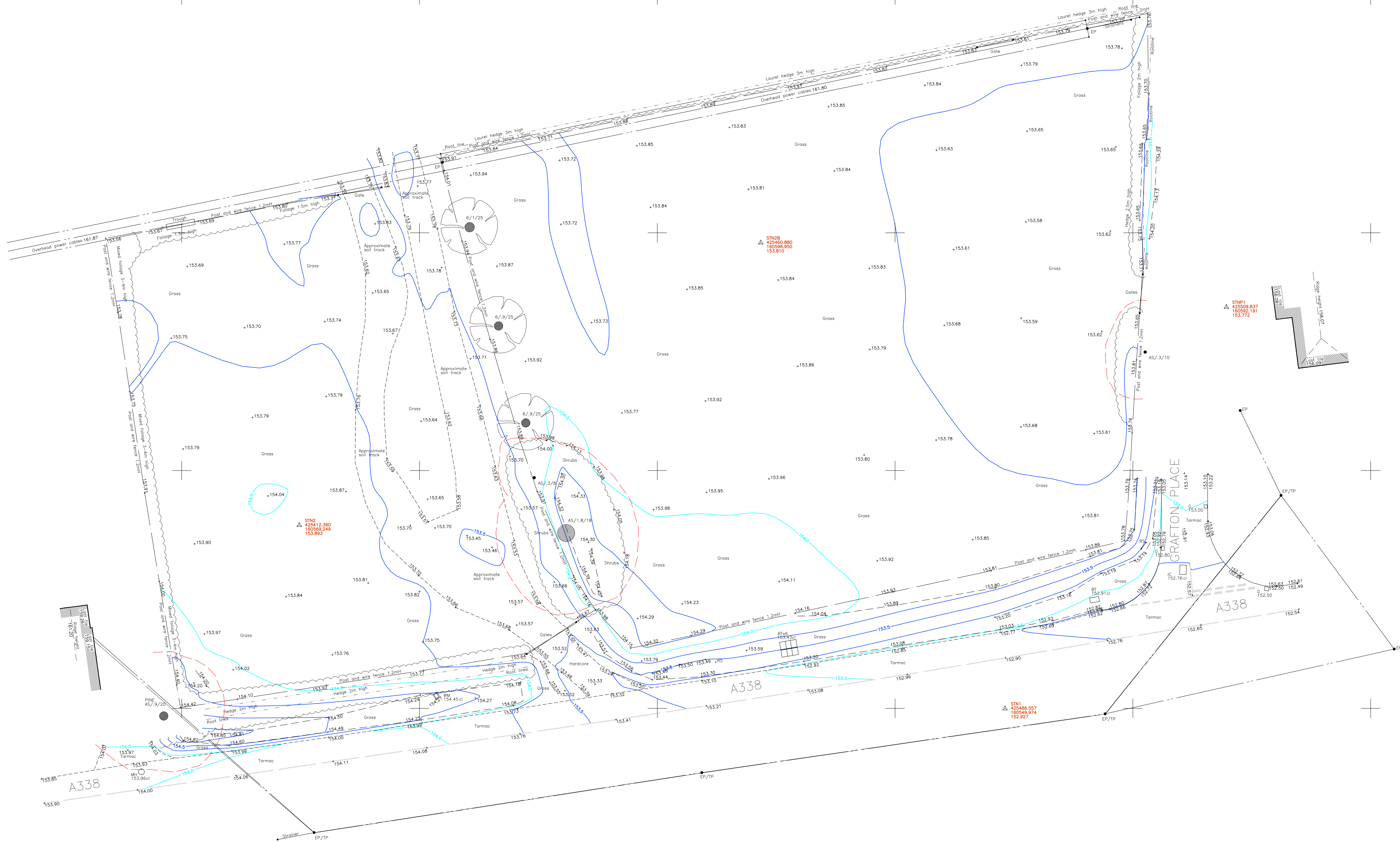
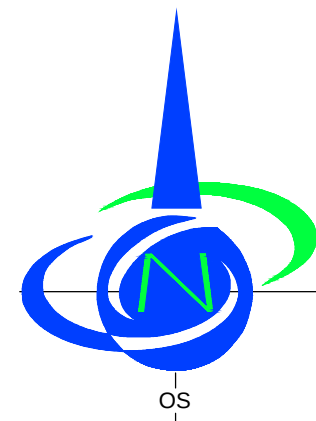
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APPENDIX B

TOPOGRAPHIC SURVEY



ASH	Ash	LP	London Plane
BAY	Bay	MAP	Maple
BEE	Beech	OAK	Oak
CB	Common Beech	POP	Poplar
CED	Cedar	RM	Red Maple
CHE	Cherry	RW	Redwood
CON	Coniferous	SB	Silver Birch
EUC	Eucalyptus	SER	Servier Tree
FI	Fir	SS	Scots Pine
HAW	Hawthorn	SVC	Sycamore
HAZ	Hazel	WAL	Walnut
HC	None Chestnut	WLL	Willow
HOL	Holly	WW	Weeping Willow
LAB	Laburnum	YEW	Yew
LAU	Laural	**MB	Multiple stems/shrubs
LI	Lime		Overall ds, shown

Tree Dimensions (average)
Spread/Trunk Dia/Height

Key			
AV	Air Valve	LP	Lamp Post
BL	Belford	M	Motor
BM	Bench Mark	MH	Manhole Cover
BO	Bonding Point	MS	Manhole
BT	BT Cover	Mile	Milestone
CATV	Cable Television Cover	RG	Ridge Valve
CC	Center	RS	Round Sign
CL	Cover Level	rip	Road Water Pipe
EP	Electric Power Pole	SC	Storm
EV	Electric Valve (air tapoff)	SK	Skid Mark
FH	Fire Hydrant	SWS	Street Water Sewer
FL	Flower Level	SV	Sign Valve
FR	Flower	sv	Sign Valve Pipe
FWS	Flow Water Sewer	TH	Threshold Level
GP	Gas Pipe	TL	Traffic Light
GV	Gas Valve	TP	Telephone Pole
IC	Inspection Chamber	UTL	Utility To Lift
IN	Inlet	VM	Water Meter
KG	Kerf Outlet	WO	Wash Out

Coordinate System

This survey has been oriented to the O.S. National Grid (OSGB36) via a global position system and the O.S. Active Network (OS Net) OSGB36. True OSGB36 coordinates have been established at STN2 E 425412.360 N 160569.249 ELEV 153.893 and a further OSGB36 point established to create a true O.S. bearing for angle orientation. All levels are based on O.S. Datum. A scale factor of 1:1 has been applied to the survey and therefore the coordinate system must be considered arbitrary.



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Project Name:
Land at East Grafton
A338, East Grafton, Marlborough, SN8 3DD

Drawing Title:

Topographical Survey

Client:
Folwer Architecture & Planning
Agent:

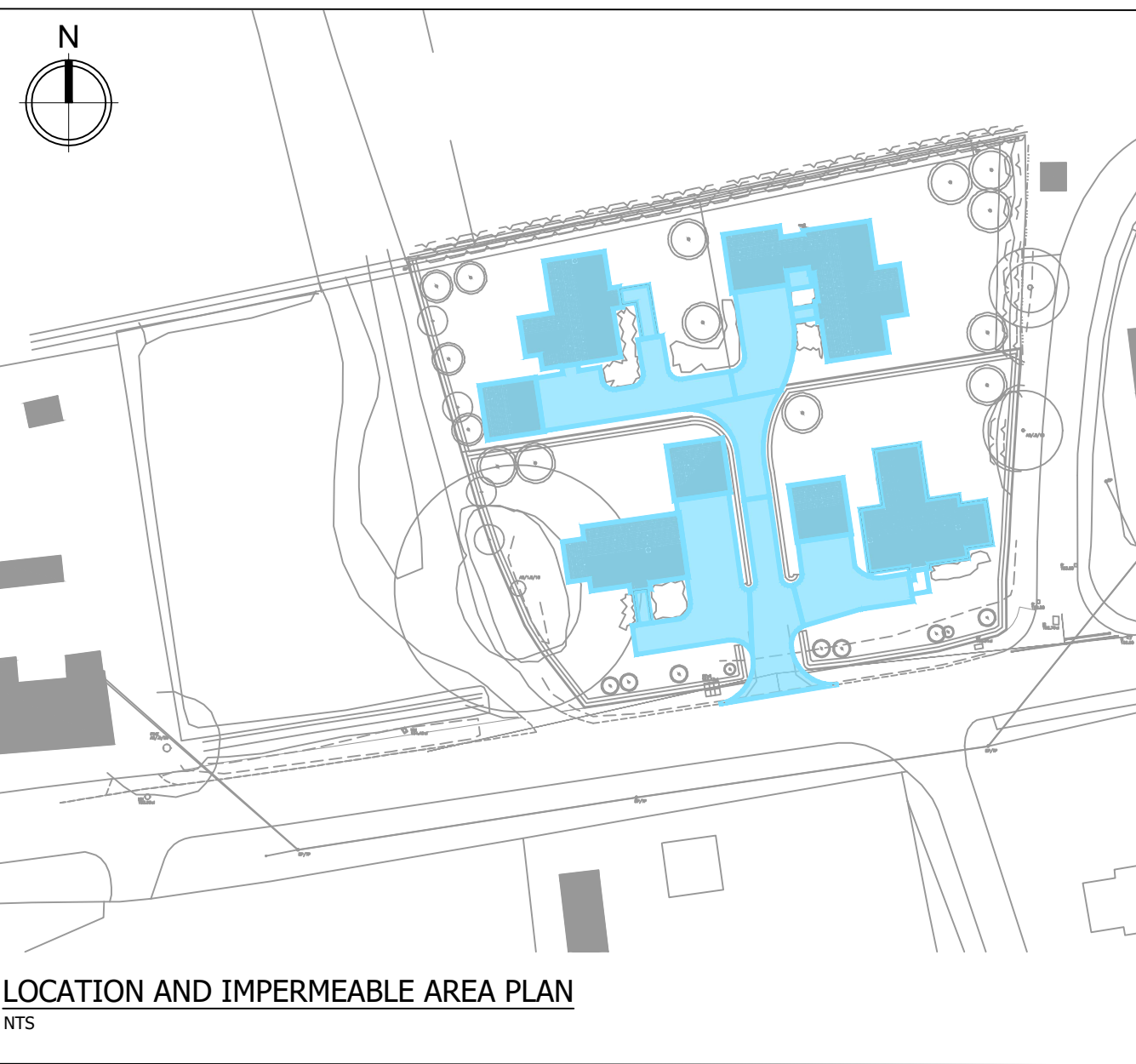
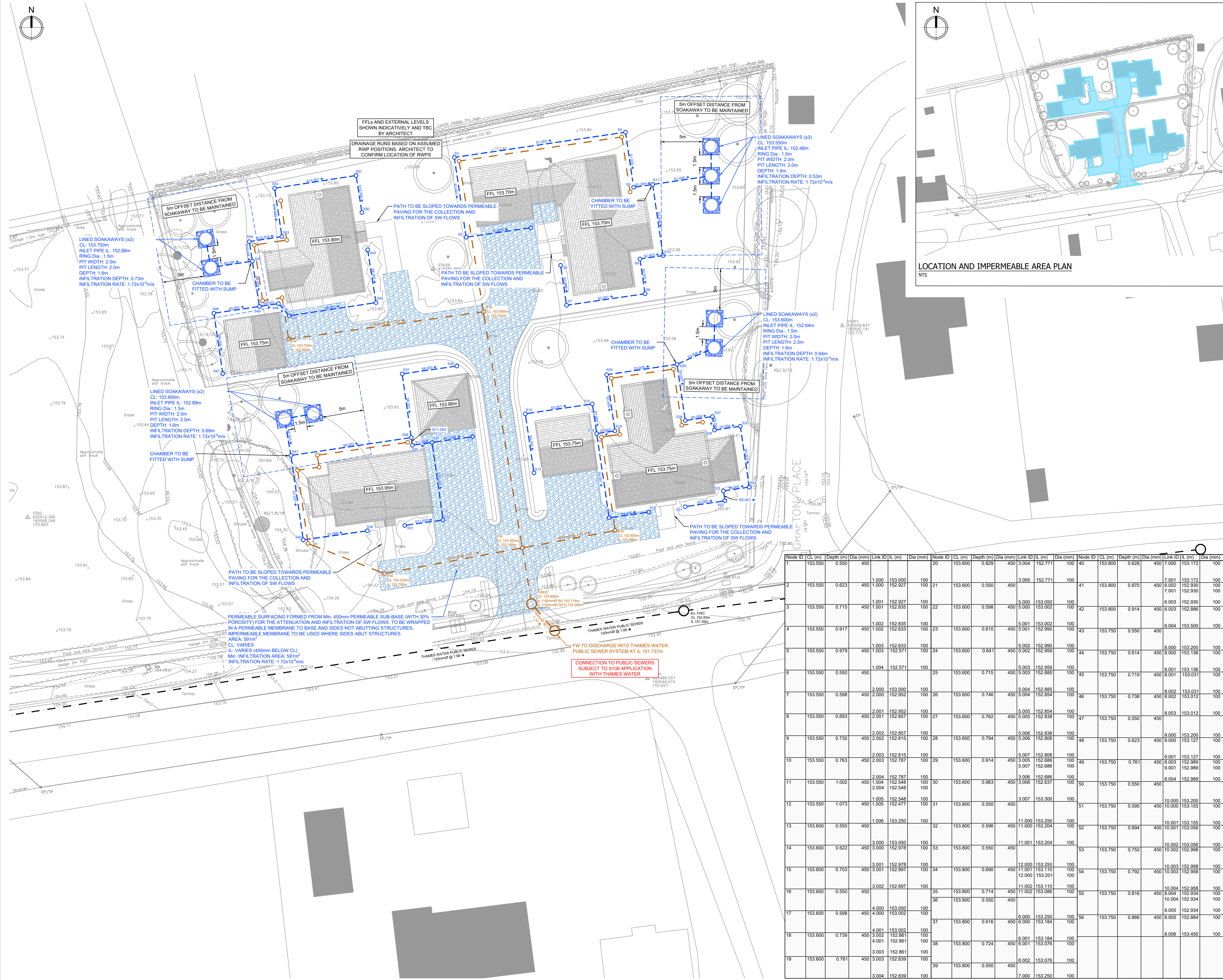
Date: 24th January 2025	Scale: 1:200 @A0	
Grid Orientation North GPS	Sheet ID MF582ngridTOPO	Rev None
Site Level Datum OS GPS	Surveyed By AH	Drawn By AH

APPENDIX C

INFILTRATION TEST RESULTS

APPENDIX D

PROPOSED DRAINAGE LAYOUT



Notes:

- This drawing to be read in conjunction with all relevant architects and engineers drawings and specifications.
- Levels shown are metres above ordnance datum, dimensions are in millimetres, unless noted otherwise. Positions of reps and discharge stacks are shown indicatively and are assumed based on preliminary floor layouts.
- HEALTH AND SAFETY
- All work shall be carried out in accordance with all pertinent health and safety regulations.
- Existing below ground services are to be accurately located prior to excavation. Appropriate clearances and methods as required by the asset owners guidance shall be maintained to avoid strikes, damage or undermining.

Key:

- Proposed Surface Water Sewer (All pipework to be 100mmØ @ 1:100 UNO)
- Proposed Permeable Surfacing (To be wrapped with a Permeable Geotextile where appropriate)
- Proposed Foul Water Sewer (All pipework to be 100mmØ @ 1:80 UNO)
- Thames Water Foul Water Sewer
- Proposed Impermeable Area

Abbreviations:

D	Demarcation
C	Chamber
Ex	Existing
SW	Surface Water
FW	Foul Water
CL	Cover Level
IL	Invert Level
UNO	Unless Noted Otherwise
PP	Package Treatment Plant
GEA	Or Equivalent Approved
UNO	Unless Noted Otherwise

Node ID	CL (m)	Depth (m)	Dia (mm)	Link ID	IL (m)	Dia (mm)	Node ID	CL (m)	Depth (m)	Dia (mm)	Link ID	IL (m)	Dia (mm)	Node ID	CL (m)	Depth (m)	Dia (mm)	Link ID	IL (m)	Dia (mm)
1	153.550	0.550	450	1.000	153.000	100	20	153.600	0.829	450	3.004	152.771	100	40	153.800	0.628	450	7.000	153.172	100
2	153.550	0.623	450	1.000	152.927	100	21	153.600	0.550	450	5.000	153.050	100	41	153.800	0.870	450	6.002	152.930	100
3	153.550	0.715	450	1.001	152.927	100	22	153.600	0.598	450	5.000	153.002	100	42	153.800	0.914	450	6.003	152.930	100
4	153.550	0.917	450	1.002	152.835	100	23	153.600	0.610	450	5.001	153.002	100	43	153.750	0.550	450	6.004	153.500	100
5	153.550	0.979	450	1.003	152.633	100	24	153.600	0.641	450	5.002	152.959	100	44	153.750	0.614	450	8.000	153.200	100
6	153.550	0.550	450	1.004	152.571	100	25	153.600	0.715	450	5.003	152.885	100	45	153.750	0.719	450	8.001	153.136	100
7	153.550	0.598	450	2.000	152.952	100	26	153.600	0.746	450	5.004	152.854	100	46	153.750	0.738	450	8.002	153.031	100
8	153.550	0.693	450	2.001	152.952	100	27	153.600	0.762	450	5.005	152.838	100	47	153.750	0.550	450	8.003	153.012	100
9	153.550	0.735	450	2.002	152.857	100	28	153.600	0.794	450	5.006	152.838	100	48	153.750	0.623	450	9.000	153.127	100
10	153.550	0.763	450	2.003	152.787	100	29	153.600	0.914	450	5.007	152.806	100	49	153.750	0.761	450	9.001	153.127	100
11	153.550	1.002	450	2.004	152.548	100	30	153.600	0.963	450	3.006	152.686	100	50	153.750	0.550	450	8.004	152.989	100
12	153.550	1.073	450	1.005	152.477	100	31	153.800	0.550	450	11.000	153.250	100	51	153.750	0.595	450	10.000	153.155	100
13	153.600	0.550	450	1.006	153.250	100	32	153.800	0.596	450	11.000	153.204	100	52	153.750	0.694	450	10.001	153.155	100
14	153.600	0.622	450	3.000	153.050	100	33	153.800	0.550	450	11.001	153.204	100	53	153.750	0.752	450	10.002	153.056	100
15	153.600	0.703	450	3.001	152.978	100	34	153.800	0.690	450	12.000	153.250	100	54	153.750	0.792	450	10.003	152.998	100
16	153.600	0.550	450	3.002	152.897	100	35	153.800	0.714	450	11.002	153.110	100	55	153.750	0.816	450	10.004	152.958	100
17	153.600	0.598	450	4.000	153.050	100	36	153.800	0.550	450	6.000	153.184	100	56	153.750	0.866	450	8.005	152.934	100
18	153.600	0.739	450	4.001	153.002	100	37	153.800	0.616	450	6.001	153.184	100				8.005	152.884	100	
19	153.600	0.761	450	3.003	152.861	100	38	153.800	0.724	450	6.002	153.076	100				8.006	153.450	100	
				3.004	152.839	100	39	153.800	0.550	450	7.000	153.250	100							

Site Address
Land at East Grafton [Site B],
Wiltshire,
SN8 3DB

Purpose of Issue
For Approval

Drawing Title
Proposed Drainage Layout

AAH consultants

1 BAR LANE
NORTH YORKSHIRE
YO1 6JU
TEL: 01904 897276
EMAIL: INFO@AAHPLANNING.COM

AAHCONSULTANTS.CO.UK

APPENDIX E

SURFACE WATER HYDRAULIC CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	3.000
CV	1.000	Preferred Cover Depth (m)	0.450
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1		5.00	153.550	450	425472.580	160603.932	0.550
2	0.005	5.00	153.550	450	425465.343	160602.863	0.623
3			153.550	450	425463.996	160611.918	0.715
4	0.005	5.00	153.550	450	425483.991	160614.868	0.917
5			153.550	450	425484.888	160608.763	0.979
6	0.005	5.00	153.550	450	425476.156	160599.428	0.550
7			153.550	450	425476.867	160594.642	0.598
8	0.005	5.00	153.550	450	425486.258	160596.023	0.693
9			153.550	450	425485.652	160600.182	0.735
10	0.005	5.00	153.550	450	425488.418	160600.586	0.763
11			153.550	450	425487.166	160609.099	1.002
12			153.550	450	425494.184	160610.178	1.073
13	0.002	5.00	153.600	450	425472.960	160574.568	0.550
14			153.600	450	425471.922	160581.648	0.622
15	0.002	5.00	153.600	450	425479.945	160582.826	0.703
16	0.004	5.00	153.600	450	425486.706	160569.886	0.550
17			153.600	450	425481.957	160569.185	0.598
18			153.600	450	425480.472	160579.278	0.739
19			153.600	450	425482.658	160579.599	0.761
20	0.004	5.00	153.600	450	425481.669	160586.328	0.829
21	0.004	5.00	153.600	450	425491.063	160570.528	0.550
22			153.600	450	425495.812	160571.249	0.598
23			153.600	450	425495.640	160572.418	0.610
24			153.600	450	425498.731	160572.870	0.641
25			153.600	450	425497.659	160580.154	0.715
26			153.600	450	425494.558	160579.697	0.746
27	0.004	5.00	153.600	450	425494.322	160581.321	0.762
28			153.600	450	425491.110	160580.840	0.794
29			153.600	450	425490.079	160587.567	0.914
30			153.600	450	425494.516	160589.544	0.963
31		5.00	153.800	450	425457.493	160568.283	0.550
32	0.003	5.00	153.800	450	425462.080	160568.940	0.596
33	0.002	5.00	153.800	450	425465.633	160578.915	0.550
34			153.800	450	425460.761	160578.220	0.690
35	0.003	5.00	153.800	450	425458.406	160577.884	0.714
36	0.001	5.00	153.800	450	425463.734	160587.365	0.550
37			153.800	450	425457.188	160586.430	0.616
38	0.001	5.00	153.800	450	425458.272	160578.800	0.724
39		5.00	153.800	450	425453.020	160567.642	0.550
40	0.003	5.00	153.800	450	425445.345	160566.554	0.628

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
41	0.003	5.00	153.800	450	425443.872	160576.662	0.870
42			153.800	450	425443.106	160580.960	0.914
43		5.00	153.750	450	425453.061	160601.282	0.550
44	0.003	5.00	153.750	450	425454.048	160594.957	0.614
45	0.003	5.00	153.750	450	425443.650	160593.384	0.719
46	0.005	5.00	153.750	450	425442.396	160594.835	0.738
47	0.005	5.00	153.750	450	425435.714	160586.479	0.550
48			153.750	450	425434.652	160593.689	0.623
49			153.750	450	425440.099	160594.498	0.761
50		5.00	153.750	450	425452.368	160605.742	0.550
51	0.003	5.00	153.750	450	425451.671	160610.177	0.595
52	0.003	5.00	153.750	450	425441.916	160608.647	0.694
53			153.750	450	425442.797	160602.868	0.752
54			153.750	450	425438.889	160602.258	0.792
55			153.750	450	425439.252	160599.924	0.816
56			153.750	450	425434.303	160599.125	0.866
57	0.009	5.00	153.550		425470.305	160597.135	0.150
57_OUT			153.550		425464.100	160596.155	0.213
58	0.014	5.00	153.750		425446.837	160589.651	0.150
58_OUT			153.750		425451.664	160590.382	0.199
59	0.011	5.00	153.900		425469.640	160571.551	0.150
59_OUT			153.900		425470.342	160566.772	0.198
60	0.005	5.00	153.800		425467.440	160590.333	0.150
60_OUT			153.800		425467.956	160585.816	0.195
61	0.015	5.00	153.800		425453.760	160562.045	0.150
61_OUT			153.800		425458.087	160562.746	0.194
62	0.009	5.00	153.600		425478.278	160570.320	0.150
62_OUT			153.600		425479.128	160566.556	0.189
30_OUT			153.600		425497.820	160589.815	0.333
42_OUT			153.800		425437.655	160580.563	0.355
56_OUT			153.750		425430.599	160598.661	0.337
12_OUT			153.550		425497.019	160610.384	0.328

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	7.316	0.600	153.000	152.927	0.073	100.0	100	5.16	49.8
1.001	2	3	9.155	0.600	152.927	152.835	0.092	100.0	100	5.36	49.0
1.002	3	4	20.211	0.600	152.835	152.633	0.202	100.0	100	5.80	47.4
1.003	4	5	6.171	0.600	152.633	152.571	0.062	100.0	100	5.93	46.8
1.004	5	11	2.303	0.600	152.571	152.548	0.023	100.0	100	5.98	46.7
2.000	6	7	4.839	0.600	153.000	152.952	0.048	100.0	100	5.10	50.0
2.001	7	8	9.492	0.600	152.952	152.857	0.095	100.0	100	5.31	49.2
2.002	8	9	4.203	0.600	152.857	152.815	0.042	100.0	100	5.40	48.9
2.003	9	10	2.795	0.600	152.815	152.787	0.028	100.0	100	5.46	48.6
2.004	10	11	8.605	0.600	152.787	152.548	0.239	36.0	100	5.57	48.2
1.005	11	12	7.100	0.600	152.548	152.477	0.071	100.0	100	6.13	46.2
3.000	13	14	7.156	0.600	153.050	152.978	0.072	100.0	100	5.16	49.8
3.001	14	15	8.109	0.600	152.978	152.897	0.081	100.0	100	5.33	49.1
3.002	15	18	3.587	0.600	152.897	152.861	0.036	100.0	100	5.41	48.8
4.000	16	17	4.800	0.600	153.050	153.002	0.048	100.0	100	5.10	50.0
4.001	17	18	10.202	0.600	153.002	152.861	0.141	72.4	100	5.29	49.3
3.003	18	19	2.209	0.600	152.861	152.839	0.022	100.0	100	5.46	48.7
3.004	19	20	6.801	0.600	152.839	152.771	0.068	100.0	100	5.60	48.1
3.005	20	29	8.501	0.600	152.771	152.686	0.085	100.0	100	5.79	47.4
5.000	21	22	4.803	0.600	153.050	153.002	0.048	100.0	100	5.10	50.0
5.001	22	23	1.182	0.600	153.002	152.990	0.012	100.0	100	5.13	49.9
5.002	23	24	3.124	0.600	152.990	152.959	0.031	100.0	100	5.20	49.6
5.003	24	25	7.362	0.600	152.959	152.885	0.074	100.0	100	5.36	49.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.769	6.0	0.0	0.450	0.523	0.000	0.0	0	0.000
1.001	0.769	6.0	0.9	0.523	0.615	0.005	0.0	26	0.551
1.002	0.769	6.0	0.9	0.615	0.817	0.005	0.0	25	0.541
1.003	0.769	6.0	1.7	0.817	0.879	0.010	0.0	36	0.660
1.004	0.769	6.0	1.7	0.879	0.902	0.010	0.0	36	0.660
2.000	0.769	6.0	0.9	0.450	0.498	0.005	0.0	26	0.551
2.001	0.769	6.0	0.9	0.498	0.593	0.005	0.0	26	0.551
2.002	0.769	6.0	1.8	0.593	0.635	0.010	0.0	37	0.667
2.003	0.769	6.0	1.8	0.635	0.663	0.010	0.0	37	0.667
2.004	1.289	10.1	2.6	0.663	0.902	0.015	0.0	35	1.083
1.005	0.769	6.0	4.2	0.902	0.973	0.025	0.0	61	0.830
3.000	0.769	6.0	0.4	0.450	0.522	0.002	0.0	17	0.420
3.001	0.769	6.0	0.4	0.522	0.603	0.002	0.0	17	0.420
3.002	0.769	6.0	0.7	0.603	0.639	0.004	0.0	23	0.511
4.000	0.769	6.0	0.7	0.450	0.498	0.004	0.0	23	0.511
4.001	0.906	7.1	0.7	0.498	0.639	0.004	0.0	21	0.578
3.003	0.769	6.0	1.4	0.639	0.661	0.008	0.0	33	0.629
3.004	0.769	6.0	1.4	0.661	0.729	0.008	0.0	32	0.621
3.005	0.769	6.0	2.1	0.729	0.814	0.012	0.0	40	0.695
5.000	0.769	6.0	0.7	0.450	0.498	0.004	0.0	23	0.511
5.001	0.769	6.0	0.7	0.498	0.510	0.004	0.0	23	0.511
5.002	0.769	6.0	0.7	0.510	0.541	0.004	0.0	23	0.511
5.003	0.769	6.0	0.7	0.541	0.615	0.004	0.0	23	0.511

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.004	25	26	3.134	0.600	152.885	152.854	0.031	100.0	100	5.43	48.8
5.005	26	27	1.641	0.600	152.854	152.838	0.016	100.0	100	5.46	48.6
5.006	27	28	3.248	0.600	152.838	152.806	0.032	100.0	100	5.53	48.4
5.007	28	29	6.806	0.600	152.806	152.686	0.120	56.7	100	5.64	47.9
3.006	29	30	4.858	0.600	152.686	152.637	0.049	100.0	100	5.89	47.0
6.000	31	32	4.634	0.600	153.250	153.204	0.046	100.0	100	5.10	50.0
6.001	32	34	9.373	0.600	153.204	153.110	0.094	100.0	100	5.30	49.2
7.000	33	34	4.921	0.600	153.250	153.201	0.049	100.0	100	5.11	50.0
6.002	34	35	2.379	0.600	153.110	153.086	0.024	100.0	100	5.36	49.0
6.003	35	38	1.000	0.600	153.086	153.076	0.010	100.0	100	5.38	49.0
8.000	36	37	6.612	0.600	153.250	153.184	0.066	100.0	100	5.14	49.9
8.001	37	38	7.707	0.600	153.184	153.076	0.108	71.4	100	5.28	49.3
6.004	38	41	14.558	0.600	153.076	152.930	0.146	100.0	100	5.69	47.8
9.000	39	40	7.752	0.600	153.250	153.172	0.078	100.0	100	5.17	49.8
9.001	40	41	10.215	0.600	153.172	152.930	0.242	42.2	100	5.31	49.2
6.005	41	42	4.366	0.600	152.930	152.886	0.044	100.0	100	5.79	47.4
10.000	43	44	6.402	0.600	153.200	153.136	0.064	100.0	100	5.14	49.9
10.001	44	45	10.516	0.600	153.136	153.031	0.105	100.0	100	5.37	49.0
10.002	45	46	1.918	0.600	153.031	153.012	0.019	100.0	100	5.41	48.8
10.003	46	49	2.322	0.600	153.012	152.989	0.023	100.0	100	5.46	48.6
11.000	47	48	7.288	0.600	153.200	153.127	0.073	100.0	100	5.16	49.8
11.001	48	49	5.507	0.600	153.127	152.989	0.138	39.9	100	5.23	49.5

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.004	0.769	6.0	0.7	0.615	0.646	0.004	0.0	23	0.511
5.005	0.769	6.0	0.7	0.646	0.662	0.004	0.0	23	0.511
5.006	0.769	6.0	1.4	0.662	0.694	0.008	0.0	32	0.621
5.007	1.025	8.0	1.4	0.694	0.814	0.008	0.0	28	0.760
3.006	0.769	6.0	3.4	0.814	0.863	0.020	0.0	54	0.790
6.000	0.769	6.0	0.0	0.450	0.496	0.000	0.0	0	0.000
6.001	0.769	6.0	0.5	0.496	0.590	0.003	0.0	20	0.468
7.000	0.769	6.0	0.4	0.450	0.499	0.002	0.0	17	0.420
6.002	0.769	6.0	0.9	0.590	0.614	0.005	0.0	26	0.551
6.003	0.769	6.0	1.4	0.614	0.624	0.008	0.0	33	0.629
8.000	0.769	6.0	0.2	0.450	0.516	0.001	0.0	12	0.339
8.001	0.912	7.2	0.2	0.516	0.624	0.001	0.0	11	0.386
6.004	0.769	6.0	1.7	0.624	0.770	0.010	0.0	36	0.660
9.000	0.769	6.0	0.0	0.450	0.528	0.000	0.0	0	0.000
9.001	1.190	9.3	0.5	0.528	0.770	0.003	0.0	16	0.633
6.005	0.769	6.0	2.7	0.770	0.814	0.016	0.0	47	0.750
10.000	0.769	6.0	0.0	0.450	0.514	0.000	0.0	0	0.000
10.001	0.769	6.0	0.5	0.514	0.619	0.003	0.0	20	0.468
10.002	0.769	6.0	1.1	0.619	0.638	0.006	0.0	29	0.579
10.003	0.769	6.0	1.9	0.638	0.661	0.011	0.0	39	0.682
11.000	0.769	6.0	0.9	0.450	0.523	0.005	0.0	26	0.551
11.001	1.224	9.6	0.9	0.523	0.661	0.005	0.0	21	0.765

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
10.004	49	55	5.492	0.600	152.989	152.934	0.055	100.0	100	5.58	48.2
12.000	50	51	4.489	0.600	153.200	153.155	0.045	100.0	100	5.10	50.0
12.001	51	52	9.874	0.600	153.155	153.056	0.099	100.0	100	5.31	49.2
12.002	52	53	5.846	0.600	153.056	152.998	0.058	100.0	100	5.44	48.7
12.003	53	54	3.955	0.600	152.998	152.958	0.040	100.0	100	5.52	48.4
12.004	54	55	2.362	0.600	152.958	152.934	0.024	98.4	100	5.57	48.2
10.005	55	56	5.013	0.600	152.934	152.884	0.050	100.0	100	5.69	47.8
13.000	57	57_OUT	6.282	0.600	153.400	153.337	0.063	100.0	100	5.14	49.9
14.000	58	58_OUT	4.882	0.600	153.600	153.551	0.049	100.0	100	5.11	50.0
15.000	59	59_OUT	4.830	0.600	153.750	153.702	0.048	100.0	100	5.10	50.0
16.000	60	60_OUT	4.546	0.600	153.650	153.605	0.045	100.0	100	5.10	50.0
17.000	61	61_OUT	4.383	0.600	153.650	153.606	0.044	100.0	100	5.10	50.0
18.000	62	62_OUT	3.859	0.600	153.450	153.411	0.039	100.0	100	5.08	50.0
3.007	30	30_OUT	3.315	0.600	153.300	153.267	0.033	100.0	100	5.97	46.7
6.006	42	42_OUT	5.465	0.600	153.500	153.445	0.055	100.0	100	5.91	46.9
10.006	56	56_OUT	3.733	0.600	153.450	153.413	0.037	100.0	100	5.77	47.5
1.006	12	12_OUT	2.842	0.600	153.250	153.222	0.028	100.0	100	6.19	46.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
10.004	0.769	6.0	2.8	0.661	0.716	0.016	0.0	48	0.756
12.000	0.769	6.0	0.0	0.450	0.495	0.000	0.0	0	0.000
12.001	0.769	6.0	0.5	0.495	0.594	0.003	0.0	20	0.468
12.002	0.769	6.0	1.1	0.594	0.652	0.006	0.0	29	0.579
12.003	0.769	6.0	1.0	0.652	0.692	0.006	0.0	29	0.579
12.004	0.775	6.1	1.0	0.692	0.716	0.006	0.0	28	0.574
10.005	0.769	6.0	3.8	0.716	0.766	0.022	0.0	57	0.812
13.000	0.769	6.0	1.6	0.050	0.113	0.009	0.0	36	0.653
14.000	0.769	6.0	2.5	0.050	0.099	0.014	0.0	45	0.733
15.000	0.769	6.0	2.0	0.050	0.098	0.011	0.0	39	0.689
16.000	0.769	6.0	0.9	0.050	0.095	0.005	0.0	26	0.551
17.000	0.769	6.0	2.7	0.050	0.094	0.015	0.0	47	0.750
18.000	0.769	6.0	1.6	0.050	0.089	0.009	0.0	36	0.653
3.007	0.769	6.0	3.4	0.200	0.233	0.020	0.0	54	0.790
6.006	0.769	6.0	2.7	0.200	0.255	0.016	0.0	47	0.750
10.006	0.769	6.0	3.8	0.200	0.237	0.022	0.0	57	0.812
1.006	0.769	6.0	4.2	0.200	0.228	0.025	0.0	61	0.830

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	10	0

Node 12 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	151.950	Pit Length (m)	2.000
Side Inf Coefficient (m/hr)	0.61900	Time to half empty (mins)	72	Depth (m)	1.600
Safety Factor	2.0	Ring Diameter (m)	1.500	Inf Depth (m)	0.527
Porosity	0.30	Pit Width (m)	2.000	Number Required	3

Node 30 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	52.000	Pit Length (m)	2.000
Side Inf Coefficient (m/hr)	0.61900	Time to half empty (mins)	97	Depth (m)	1.600
Safety Factor	2.0	Ring Diameter (m)	1.500	Inf Depth (m)	0.637
Porosity	0.30	Pit Width (m)	2.000	Number Required	2

Node 42 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	152.200	Pit Length (m)	2.000
Side Inf Coefficient (m/hr)	0.61900	Time to half empty (mins)	62	Depth (m)	1.600
Safety Factor	2.0	Ring Diameter (m)	1.500	Inf Depth (m)	0.686
Porosity	0.30	Pit Width (m)	2.000	Number Required	2

Node 56 Lined Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	152.150	Pit Length (m)	2.000
Side Inf Coefficient (m/hr)	0.61900	Time to half empty (mins)	88	Depth (m)	1.600
Safety Factor	2.0	Ring Diameter (m)	1.500	Inf Depth (m)	0.734
Porosity	0.30	Pit Width (m)	2.000	Number Required	2

Node 57 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.100	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	9.000	Inf Depth (m)	
Porosity	0.30	Length (m)	9.000		

Node 58 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.300	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	11.000	Inf Depth (m)	
Porosity	0.30	Length (m)	11.000		

Node 59 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.450	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 60 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.350	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.30	Length (m)	7.000		

Node 61 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.350	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	12.000	Inf Depth (m)	
Porosity	0.30	Length (m)	12.000		

Node 62 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.61900	Invert Level (m)	153.150	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.450
Safety Factor	2.0	Width (m)	9.000	Inf Depth (m)	
Porosity	0.30	Length (m)	9.000		

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	153.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	10	152.952	0.025	0.8	0.0040	0.0000	OK
15 minute summer	3	11	152.860	0.024	0.8	0.0039	0.0000	OK
15 minute summer	4	11	152.669	0.036	1.6	0.0058	0.0000	OK
15 minute summer	5	12	152.614	0.043	1.6	0.0068	0.0000	OK
15 minute summer	6	10	153.026	0.026	0.8	0.0041	0.0000	OK
15 minute summer	7	11	152.977	0.025	0.8	0.0039	0.0000	OK
15 minute summer	8	11	152.894	0.037	1.6	0.0060	0.0000	OK
15 minute summer	9	11	152.853	0.038	1.6	0.0060	0.0000	OK
15 minute summer	10	11	152.820	0.033	2.4	0.0053	0.0000	OK
15 minute summer	11	12	152.610	0.062	3.9	0.0099	0.0000	OK
30 minute summer	12	25	152.102	-0.376	3.8	1.1073	0.0000	OK
15 minute summer	13	9	153.066	0.016	0.3	0.0025	0.0000	OK
15 minute summer	14	12	152.993	0.015	0.3	0.0024	0.0000	OK
15 minute summer	15	12	152.918	0.021	0.6	0.0034	0.0000	OK
15 minute summer	16	10	153.074	0.023	0.7	0.0037	0.0000	OK
15 minute summer	17	11	153.023	0.021	0.7	0.0033	0.0000	OK
15 minute summer	18	11	152.894	0.033	1.2	0.0053	0.0000	OK
15 minute summer	19	12	152.870	0.031	1.2	0.0050	0.0000	OK
15 minute summer	20	11	152.809	0.038	1.8	0.0060	0.0000	OK
15 minute summer	21	10	153.073	0.023	0.7	0.0037	0.0000	OK
15 minute summer	22	11	153.027	0.025	0.7	0.0039	0.0000	OK
15 minute summer	23	11	153.013	0.023	0.7	0.0037	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	0.0	0.000	0.000	0.0057	
15 minute summer	2	1.001	3	0.8	0.548	0.133	0.0138	
15 minute summer	3	1.002	4	0.8	0.395	0.131	0.0409	
15 minute summer	4	1.003	5	1.6	0.582	0.261	0.0177	
15 minute summer	5	1.004	11	1.6	0.374	0.258	0.0096	
15 minute summer	6	2.000	7	0.8	0.531	0.133	0.0074	
15 minute summer	7	2.001	8	0.8	0.387	0.132	0.0198	
15 minute summer	8	2.002	9	1.6	0.594	0.264	0.0113	
15 minute summer	9	2.003	10	1.6	0.642	0.263	0.0069	
15 minute summer	10	2.004	11	2.4	0.683	0.235	0.0315	
15 minute summer	11	1.005	12	3.9	0.788	0.644	0.0350	
30 minute summer	12	1.006	12_OUT	0.0	0.000	0.000	0.0000	0.0
30 minute summer	12	Infiltration		1.3				
15 minute summer	13	3.000	14	0.3	0.426	0.050	0.0054	
15 minute summer	14	3.001	15	0.3	0.310	0.050	0.0079	
15 minute summer	15	3.002	18	0.6	0.365	0.099	0.0063	
15 minute summer	16	4.000	17	0.7	0.532	0.110	0.0060	
15 minute summer	17	4.001	18	0.7	0.390	0.092	0.0175	
15 minute summer	18	3.003	19	1.2	0.566	0.203	0.0048	
15 minute summer	19	3.004	20	1.2	0.522	0.202	0.0163	
15 minute summer	20	3.005	29	1.8	0.565	0.294	0.0284	
15 minute summer	21	5.000	22	0.7	0.476	0.110	0.0067	
15 minute summer	22	5.001	23	0.7	0.460	0.108	0.0017	
15 minute summer	23	5.002	24	0.6	0.489	0.108	0.0042	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	24	11	152.981	0.022	0.6	0.0035	0.0000	OK
15 minute summer	25	12	152.908	0.023	0.6	0.0037	0.0000	OK
15 minute summer	26	13	152.878	0.024	0.6	0.0038	0.0000	OK
30 minute summer	27	19	152.869	0.031	1.1	0.0049	0.0000	OK
15 minute winter	28	12	152.831	0.025	1.1	0.0039	0.0000	OK
15 minute summer	29	12	152.737	0.051	2.8	0.0081	0.0000	OK
30 minute summer	30	26	52.174	-100.463	2.8	0.8461	0.0000	OK
15 minute summer	31	1	153.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	32	11	153.223	0.019	0.5	0.0031	0.0000	OK
15 minute summer	33	12	153.266	0.016	0.3	0.0025	0.0000	OK
15 minute summer	34	11	153.136	0.026	0.8	0.0041	0.0000	OK
15 minute summer	35	11	153.123	0.037	1.3	0.0059	0.0000	OK
15 minute summer	36	11	153.263	0.013	0.2	0.0021	0.0000	OK
15 minute summer	37	11	153.195	0.011	0.2	0.0018	0.0000	OK
15 minute summer	38	11	153.111	0.035	1.7	0.0056	0.0000	OK
15 minute summer	39	1	153.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	40	11	153.188	0.016	0.5	0.0025	0.0000	OK
15 minute summer	41	11	152.979	0.048	2.6	0.0077	0.0000	OK
30 minute summer	42	24	152.333	-0.553	2.4	0.6472	0.0000	OK
15 minute summer	43	1	153.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	44	11	153.155	0.019	0.5	0.0031	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	24	5.003	25	0.6	0.534	0.105	0.0097	
15 minute summer	25	5.004	26	0.6	0.491	0.105	0.0043	
15 minute summer	26	5.005	27	0.6	0.372	0.101	0.0028	
30 minute summer	27	5.006	28	1.1	0.623	0.183	0.0058	
15 minute winter	28	5.007	29	1.1	0.398	0.134	0.0187	
15 minute summer	29	3.006	30	2.8	0.723	0.461	0.0187	
30 minute summer	30	3.007	30_OUT	0.0	0.000	0.000	0.0000	0.0
30 minute summer	30	Infiltration		0.9				
15 minute summer	31	6.000	32	0.0	0.000	0.000	0.0025	
15 minute summer	32	6.001	34	0.5	0.378	0.083	0.0125	
15 minute summer	33	7.000	34	0.3	0.395	0.050	0.0037	
15 minute summer	34	6.002	35	0.8	0.379	0.132	0.0050	
15 minute summer	35	6.003	38	1.3	0.520	0.212	0.0025	
15 minute summer	36	8.000	37	0.2	0.399	0.033	0.0035	
15 minute summer	37	8.001	38	0.2	0.134	0.026	0.0113	
15 minute summer	38	6.004	41	1.6	0.521	0.268	0.0453	
15 minute summer	39	9.000	40	0.0	0.000	0.000	0.0031	
15 minute summer	40	9.001	41	0.5	0.290	0.053	0.0232	
15 minute summer	41	6.005	42	2.5	0.705	0.417	0.0156	
30 minute summer	42	6.006	42_OUT	0.0	0.000	0.000	0.0000	0.0
30 minute summer	42	Infiltration		0.9				
15 minute summer	43	10.000	44	0.0	0.000	0.000	0.0034	
15 minute summer	44	10.001	45	0.5	0.325	0.083	0.0167	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	45	11	153.062	0.031	1.0	0.0050	0.0000	OK
15 minute summer	46	11	153.055	0.043	1.8	0.0069	0.0000	OK
15 minute summer	47	10	153.226	0.026	0.8	0.0041	0.0000	OK
15 minute summer	48	11	153.147	0.020	0.8	0.0031	0.0000	OK
15 minute summer	49	11	153.038	0.049	2.6	0.0078	0.0000	OK
15 minute summer	50	1	153.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	51	11	153.174	0.019	0.5	0.0031	0.0000	OK
15 minute summer	52	11	153.085	0.028	1.0	0.0045	0.0000	OK
15 minute summer	53	11	153.027	0.029	1.0	0.0046	0.0000	OK
15 minute summer	54	12	152.994	0.036	1.0	0.0057	0.0000	OK
15 minute summer	55	12	152.994	0.059	3.5	0.0095	0.0000	OK
30 minute summer	56	25	152.366	-0.518	3.4	1.0537	0.0000	OK

15 minute summer	57	11	153.118	-0.282	1.5	0.0466	0.0000	OK
15 minute summer	57_OUT	1	153.337	0.000	0.0	0.0000	0.0000	OK
15 minute summer	58	11	153.324	-0.276	2.4	0.0944	0.0000	OK
15 minute summer	58_OUT	1	153.551	0.000	0.0	0.0000	0.0000	OK
15 minute summer	59	11	153.471	-0.279	1.9	0.0666	0.0000	OK
15 minute summer	59_OUT	1	153.702	0.000	0.0	0.0000	0.0000	OK
15 minute summer	60	11	153.363	-0.287	0.8	0.0195	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	45	10.002	46	1.0	0.371	0.164	0.0051	
15 minute summer	46	10.003	49	1.8	0.504	0.295	0.0082	
15 minute summer	47	11.000	48	0.8	0.601	0.133	0.0098	
15 minute summer	48	11.001	49	0.8	0.356	0.083	0.0134	
15 minute summer	49	10.004	55	2.6	0.610	0.425	0.0235	
15 minute summer	50	12.000	51	0.0	0.000	0.000	0.0024	
15 minute summer	51	12.001	52	0.5	0.347	0.083	0.0143	
15 minute summer	52	12.002	53	1.0	0.542	0.165	0.0108	
15 minute summer	53	12.003	54	1.0	0.528	0.164	0.0085	
15 minute summer	54	12.004	55	1.0	0.283	0.160	0.0087	
15 minute summer	55	10.005	56	3.5	0.763	0.584	0.0232	
30 minute summer	56	10.006	56_OUT	0.0	0.000	0.000	0.0000	0.0
30 minute summer	56	Infiltration		1.0				
15 minute summer	57	13.000	57_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	57	Infiltration		1.4				
15 minute summer	58	14.000	58_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	58	Infiltration		2.2				
15 minute summer	59	15.000	59_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	59	Infiltration		1.8				
15 minute summer	60	16.000	60_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	60	Infiltration		0.8				

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60_OUT	1	153.605	0.000	0.0	0.0000	0.0000	OK
15 minute summer	61	11	153.373	-0.277	2.5	0.0954	0.0000	OK
15 minute summer	61_OUT	1	153.606	0.000	0.0	0.0000	0.0000	OK
15 minute summer	62	11	153.168	-0.282	1.5	0.0466	0.0000	OK
15 minute summer	62_OUT	1	153.411	0.000	0.0	0.0000	0.0000	OK
15 minute summer	30_OUT	1	153.267	0.000	0.0	0.0000	0.0000	OK
15 minute summer	42_OUT	1	153.445	0.000	0.0	0.0000	0.0000	OK
15 minute summer	56_OUT	1	153.413	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12_OUT	1	153.222	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	61	17.000	61_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	61	Infiltration		2.3				
15 minute summer	62	18.000	62_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	62	Infiltration		1.4				

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	153.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	2	10	152.972	0.045	2.4	0.0072	0.0000	OK
15 minute summer	3	11	152.878	0.043	2.4	0.0069	0.0000	OK
15 minute summer	4	12	152.829	0.196	4.7	0.0311	0.0000	SURCHARGED
15 minute summer	5	13	152.800	0.229	3.7	0.0365	0.0000	SURCHARGED
15 minute summer	6	10	153.047	0.047	2.4	0.0074	0.0000	OK
15 minute summer	7	11	152.995	0.043	2.4	0.0069	0.0000	OK
15 minute summer	8	11	152.934	0.077	4.7	0.0122	0.0000	OK
15 minute summer	9	12	152.895	0.080	4.7	0.0127	0.0000	OK
15 minute summer	10	12	152.873	0.086	6.9	0.0137	0.0000	OK
15 minute summer	11	13	152.786	0.238	9.6	0.0379	0.0000	SURCHARGED
60 minute summer	12	44	152.592	0.115	7.6	4.4794	0.0000	OK
15 minute summer	13	10	153.078	0.028	1.0	0.0045	0.0000	OK
15 minute summer	14	11	153.005	0.027	1.0	0.0043	0.0000	OK
15 minute summer	15	11	152.938	0.041	1.9	0.0065	0.0000	OK
15 minute summer	16	11	153.091	0.041	1.9	0.0065	0.0000	OK
15 minute summer	17	11	153.037	0.035	1.9	0.0056	0.0000	OK
15 minute summer	18	12	152.934	0.073	3.8	0.0116	0.0000	OK
15 minute summer	19	12	152.924	0.085	3.6	0.0134	0.0000	OK
15 minute summer	20	12	152.904	0.133	5.4	0.0211	0.0000	SURCHARGED
15 minute summer	21	11	153.091	0.041	1.9	0.0066	0.0000	OK
15 minute summer	22	11	153.047	0.045	1.9	0.0072	0.0000	OK
15 minute summer	23	11	153.032	0.042	1.9	0.0067	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	0.0	0.000	0.000	0.0126	
15 minute summer	2	1.001	3	2.4	0.714	0.392	0.0304	
15 minute summer	3	1.002	4	2.4	0.490	0.390	0.1119	
15 minute summer	4	1.003	5	3.7	0.618	0.616	0.0483	
15 minute summer	5	1.004	11	4.0	0.515	0.667	0.0180	
15 minute summer	6	2.000	7	2.4	0.697	0.393	0.0165	
15 minute summer	7	2.001	8	2.3	0.486	0.389	0.0460	
15 minute summer	8	2.002	9	4.7	0.741	0.771	0.0275	
15 minute summer	9	2.003	10	4.6	0.783	0.756	0.0193	
15 minute summer	10	2.004	11	6.6	0.901	0.649	0.0644	
15 minute summer	11	1.005	12	9.4	1.205	1.561	0.0548	
60 minute summer	12	1.006	12_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	12	Infiltration		2.1				
15 minute summer	13	3.000	14	1.0	0.562	0.160	0.0123	
15 minute summer	14	3.001	15	1.0	0.407	0.158	0.0192	
15 minute summer	15	3.002	18	1.9	0.450	0.313	0.0162	
15 minute summer	16	4.000	17	1.9	0.698	0.315	0.0131	
15 minute summer	17	4.001	18	1.9	0.503	0.267	0.0429	
15 minute summer	18	3.003	19	3.6	0.725	0.592	0.0146	
15 minute summer	19	3.004	20	3.5	0.607	0.576	0.0506	
15 minute summer	20	3.005	29	4.6	0.668	0.770	0.0665	
15 minute summer	21	5.000	22	1.9	0.603	0.315	0.0156	
15 minute summer	22	5.001	23	1.9	0.583	0.314	0.0039	
15 minute summer	23	5.002	24	1.9	0.630	0.313	0.0094	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	24	11	152.999	0.040	1.9	0.0063	0.0000	OK
15 minute summer	25	12	152.928	0.043	1.9	0.0068	0.0000	OK
15 minute summer	26	12	152.905	0.051	1.9	0.0081	0.0000	OK
15 minute summer	27	11	152.899	0.061	3.7	0.0096	0.0000	OK
15 minute summer	28	12	152.859	0.053	3.6	0.0084	0.0000	OK
15 minute summer	29	12	152.840	0.154	8.1	0.0245	0.0000	SURCHARGED
60 minute summer	30	46	52.819	-99.818	6.4	3.7503	0.0000	OK
15 minute summer	31	1	153.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	32	10	153.238	0.033	1.5	0.0053	0.0000	OK
15 minute summer	33	10	153.278	0.028	1.0	0.0045	0.0000	OK
15 minute summer	34	11	153.167	0.057	2.4	0.0090	0.0000	OK
15 minute summer	35	11	153.160	0.074	3.8	0.0118	0.0000	OK
15 minute summer	36	10	153.270	0.020	0.5	0.0032	0.0000	OK
15 minute summer	37	11	153.202	0.018	0.5	0.0028	0.0000	OK
15 minute summer	38	11	153.143	0.067	4.8	0.0107	0.0000	OK
15 minute summer	39	1	153.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	40	10	153.199	0.027	1.5	0.0043	0.0000	OK
15 minute summer	41	11	153.061	0.131	7.5	0.0208	0.0000	SURCHARGED
60 minute summer	42	44	152.781	-0.105	5.2	2.8305	0.0000	OK
15 minute summer	43	1	153.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	44	12	153.183	0.047	1.5	0.0074	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	24	5.003	25	1.9	0.623	0.312	0.0224	
15 minute summer	25	5.004	26	1.9	0.521	0.311	0.0113	
15 minute summer	26	5.005	27	1.9	0.458	0.315	0.0073	
15 minute summer	27	5.006	28	3.6	0.846	0.603	0.0147	
15 minute summer	28	5.007	29	3.5	0.526	0.431	0.0408	
15 minute summer	29	3.006	30	8.0	1.024	1.326	0.0369	
60 minute summer	30	3.007	30_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	30	Infiltration		1.6				
15 minute summer	31	6.000	32	0.0	0.000	0.000	0.0053	
15 minute summer	32	6.001	34	1.5	0.458	0.242	0.0320	
15 minute summer	33	7.000	34	1.0	0.547	0.159	0.0087	
15 minute summer	34	6.002	35	2.4	0.442	0.394	0.0128	
15 minute summer	35	6.003	38	3.8	0.652	0.622	0.0059	
15 minute summer	36	8.000	37	0.5	0.497	0.083	0.0068	
15 minute summer	37	8.001	38	0.5	0.161	0.070	0.0252	
15 minute summer	38	6.004	41	4.7	0.634	0.770	0.0976	
15 minute summer	39	9.000	40	0.0	0.000	0.000	0.0066	
15 minute summer	40	9.001	41	1.5	0.340	0.157	0.0486	
15 minute summer	41	6.005	42	7.3	0.938	1.211	0.0328	
60 minute summer	42	6.006	42_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	42	Infiltration		1.5				
15 minute summer	43	10.000	44	0.0	0.000	0.000	0.0115	
15 minute summer	44	10.001	45	1.5	0.361	0.242	0.0601	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	45	12	153.179	0.148	3.0	0.0235	0.0000	SURCHARGED
15 minute summer	46	12	153.175	0.163	4.5	0.0258	0.0000	SURCHARGED
15 minute summer	47	10	153.246	0.046	2.4	0.0074	0.0000	OK
15 minute summer	48	10	153.161	0.034	2.4	0.0054	0.0000	OK
15 minute summer	49	12	153.158	0.169	6.4	0.0269	0.0000	SURCHARGED
15 minute summer	50	1	153.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	51	10	153.189	0.033	1.5	0.0053	0.0000	OK
15 minute summer	52	10	153.109	0.053	3.0	0.0084	0.0000	OK
15 minute summer	53	12	153.101	0.103	3.0	0.0164	0.0000	SURCHARGED
15 minute summer	54	12	153.094	0.136	2.4	0.0216	0.0000	SURCHARGED
15 minute summer	55	12	153.089	0.155	8.0	0.0246	0.0000	SURCHARGED
60 minute summer	56	44	153.021	0.137	6.6	4.0831	0.0000	OK

15 minute summer	57	12	153.148	-0.252	4.4	0.3101	0.0000	OK
15 minute summer	57_OUT	1	153.337	0.000	0.0	0.0000	0.0000	OK
15 minute summer	58	12	153.358	-0.242	6.8	0.5636	0.0000	OK
15 minute summer	58_OUT	1	153.551	0.000	0.0	0.0000	0.0000	OK
15 minute summer	59	12	153.502	-0.248	5.3	0.4021	0.0000	OK
15 minute summer	59_OUT	1	153.702	0.000	0.0	0.0000	0.0000	OK
15 minute summer	60	11	153.385	-0.265	2.4	0.1336	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	45	10.002	46	2.2	0.359	0.363	0.0150	
15 minute summer	46	10.003	49	4.0	0.573	0.669	0.0182	
15 minute summer	47	11.000	48	2.4	0.812	0.393	0.0214	
15 minute summer	48	11.001	49	2.4	0.426	0.245	0.0279	
15 minute summer	49	10.004	55	5.9	0.750	0.972	0.0430	
15 minute summer	50	12.000	51	0.0	0.000	0.000	0.0052	
15 minute summer	51	12.001	52	1.5	0.467	0.242	0.0319	
15 minute summer	52	12.002	53	3.0	0.689	0.489	0.0343	
15 minute summer	53	12.003	54	2.4	0.541	0.401	0.0309	
15 minute summer	54	12.004	55	2.2	0.320	0.357	0.0185	
15 minute summer	55	10.005	56	8.0	1.020	1.321	0.0381	
60 minute summer	56	10.006	56_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	56	Infiltration		1.7				
15 minute summer	57	13.000	57_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	57	Infiltration		3.7				
15 minute summer	58	14.000	58_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	58	Infiltration		5.5				
15 minute summer	59	15.000	59_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	59	Infiltration		4.4				
15 minute summer	60	16.000	60_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	60	Infiltration		2.1				

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60_OUT	1	153.605	0.000	0.0	0.0000	0.0000	OK
15 minute summer	61	12	153.408	-0.242	7.3	0.6003	0.0000	OK
15 minute summer	61_OUT	1	153.606	0.000	0.0	0.0000	0.0000	OK
15 minute summer	62	12	153.198	-0.252	4.4	0.3101	0.0000	OK
15 minute summer	62_OUT	1	153.411	0.000	0.0	0.0000	0.0000	OK
15 minute summer	30_OUT	1	153.267	0.000	0.0	0.0000	0.0000	OK
15 minute summer	42_OUT	1	153.445	0.000	0.0	0.0000	0.0000	OK
15 minute summer	56_OUT	1	153.413	0.000	0.0	0.0000	0.0000	OK
15 minute summer	12_OUT	1	153.222	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	61	17.000	61_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	61	Infiltration		5.9				
15 minute summer	62	18.000	62_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	62	Infiltration		3.7				

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	1	54	153.172	0.172	0.6	0.0273	0.0000	SURCHARGED
60 minute winter	2	54	153.172	0.245	2.4	0.0389	0.0000	SURCHARGED
60 minute winter	3	54	153.171	0.336	2.5	0.0535	0.0000	SURCHARGED
60 minute winter	4	54	153.170	0.537	4.7	0.0854	0.0000	SURCHARGED
60 minute winter	5	54	153.168	0.597	4.1	0.0950	0.0000	SURCHARGED
15 minute summer	6	13	153.283	0.283	4.8	0.0451	0.0000	FLOOD RISK
15 minute summer	7	13	153.272	0.320	4.3	0.0508	0.0000	FLOOD RISK
15 minute summer	8	13	153.247	0.390	6.9	0.0619	0.0000	SURCHARGED
15 minute summer	9	13	153.200	0.385	5.7	0.0612	0.0000	SURCHARGED
60 minute winter	10	53	153.173	0.386	6.6	0.0613	0.0000	SURCHARGED
60 minute winter	11	54	153.168	0.620	9.7	0.0985	0.0000	SURCHARGED
60 minute winter	12	55	153.156	0.679	9.5	7.5607	0.0000	OK

15 minute summer	13	13	153.123	0.073	1.9	0.0117	0.0000	OK
15 minute summer	14	13	153.122	0.144	2.0	0.0229	0.0000	SURCHARGED
15 minute summer	15	13	153.119	0.222	3.4	0.0354	0.0000	SURCHARGED
15 minute summer	16	13	153.136	0.086	3.9	0.0137	0.0000	OK
15 minute summer	17	13	153.130	0.128	3.8	0.0204	0.0000	SURCHARGED
15 minute summer	18	13	153.115	0.254	4.7	0.0403	0.0000	SURCHARGED
15 minute summer	19	13	153.097	0.258	4.1	0.0411	0.0000	SURCHARGED
15 minute summer	20	12	153.059	0.288	7.0	0.0458	0.0000	SURCHARGED
15 minute summer	21	10	153.115	0.065	3.9	0.0104	0.0000	OK
15 minute summer	22	11	153.074	0.072	3.8	0.0114	0.0000	OK
15 minute summer	23	13	153.067	0.077	3.7	0.0123	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	1	1.000	2	-0.6	-0.131	-0.092	0.0572	
60 minute winter	2	1.001	3	2.5	0.710	0.412	0.0716	
60 minute winter	3	1.002	4	2.3	0.475	0.385	0.1581	
60 minute winter	4	1.003	5	4.1	0.562	0.680	0.0483	
60 minute winter	5	1.004	11	3.8	0.489	0.634	0.0180	
15 minute summer	6	2.000	7	4.3	0.789	0.711	0.0379	
15 minute summer	7	2.001	8	3.0	0.508	0.505	0.0743	
15 minute summer	8	2.002	9	5.7	0.775	0.939	0.0329	
15 minute summer	9	2.003	10	5.6	0.736	0.929	0.0219	
60 minute winter	10	2.004	11	6.3	0.838	0.619	0.0673	
60 minute winter	11	1.005	12	9.5	1.209	1.567	0.0556	
60 minute winter	12	1.006	12_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	12	Infiltration		2.1				
15 minute summer	13	3.000	14	1.9	0.661	0.320	0.0500	
15 minute summer	14	3.001	15	1.6	0.407	0.264	0.0634	
15 minute summer	15	3.002	18	2.2	0.474	0.359	0.0281	
15 minute summer	16	4.000	17	3.8	0.823	0.634	0.0360	
15 minute summer	17	4.001	18	3.4	0.571	0.474	0.0798	
15 minute summer	18	3.003	19	4.1	0.774	0.682	0.0173	
15 minute summer	19	3.004	20	4.5	0.582	0.743	0.0532	
15 minute summer	20	3.005	29	6.3	0.810	1.050	0.0665	
15 minute summer	21	5.000	22	3.8	0.685	0.637	0.0272	
15 minute summer	22	5.001	23	3.7	0.671	0.621	0.0073	
15 minute summer	23	5.002	24	3.7	0.735	0.609	0.0224	

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	24	13	153.062	0.103	3.7	0.0164	0.0000	SURCHARGED
15 minute summer	25	13	153.046	0.161	3.7	0.0255	0.0000	SURCHARGED
15 minute summer	26	13	153.037	0.183	2.7	0.0290	0.0000	SURCHARGED
15 minute summer	27	13	153.030	0.192	5.6	0.0305	0.0000	SURCHARGED
15 minute summer	28	13	153.000	0.194	5.0	0.0309	0.0000	SURCHARGED
15 minute summer	29	13	152.946	0.260	11.0	0.0414	0.0000	SURCHARGED
60 minute winter	30	60	56.885	-95.752	8.7	6.5104	0.0000	OK
15 minute summer	31	13	153.338	0.088	1.0	0.0139	0.0000	OK
15 minute summer	32	13	153.337	0.133	2.9	0.0211	0.0000	SURCHARGED
60 minute summer	33	47	153.333	0.083	1.4	0.0131	0.0000	OK
60 minute summer	34	47	153.333	0.222	3.3	0.0354	0.0000	SURCHARGED
60 minute summer	35	47	153.332	0.246	4.9	0.0392	0.0000	SURCHARGED
60 minute summer	36	47	153.332	0.082	0.7	0.0130	0.0000	OK
60 minute summer	37	47	153.332	0.148	0.9	0.0235	0.0000	SURCHARGED
60 minute summer	38	47	153.332	0.256	5.4	0.0407	0.0000	SURCHARGED
60 minute summer	39	47	153.327	0.077	0.6	0.0123	0.0000	OK
60 minute summer	40	48	153.327	0.155	2.0	0.0246	0.0000	SURCHARGED
60 minute summer	41	47	153.327	0.397	8.9	0.0631	0.0000	SURCHARGED
60 minute summer	42	47	153.322	0.436	8.7	4.9553	0.0000	OK
60 minute winter	43	57	153.466	0.266	0.7	0.0423	0.0000	FLOOD RISK
60 minute winter	44	57	153.466	0.330	1.5	0.0525	0.0000	FLOOD RISK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	24	5.003	25	3.7	0.692	0.611	0.0576	
15 minute summer	25	5.004	26	2.7	0.501	0.450	0.0245	
15 minute summer	26	5.005	27	3.0	0.391	0.503	0.0128	
15 minute summer	27	5.006	28	5.0	0.873	0.832	0.0254	
15 minute summer	28	5.007	29	4.7	0.602	0.586	0.0533	
15 minute summer	29	3.006	30	10.9	1.394	1.806	0.0376	
60 minute winter	30	3.007	30_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute winter	30	Infiltration		1.6				
15 minute summer	31	6.000	32	-1.0	-0.200	-0.159	0.0350	
15 minute summer	32	6.001	34	2.7	0.506	0.440	0.0733	
60 minute summer	33	7.000	34	1.4	0.601	0.231	0.0363	
60 minute summer	34	6.002	35	2.9	0.438	0.473	0.0186	
60 minute summer	35	6.003	38	4.7	0.652	0.770	0.0078	
60 minute summer	36	8.000	37	0.7	0.530	0.120	0.0486	
60 minute summer	37	8.001	38	0.6	0.155	0.088	0.0603	
60 minute summer	38	6.004	41	4.9	0.629	0.809	0.1139	
60 minute summer	39	9.000	40	-0.6	-0.130	-0.094	0.0554	
60 minute summer	40	9.001	41	2.0	0.338	0.214	0.0799	
60 minute summer	41	6.005	42	8.7	1.113	1.442	0.0342	
60 minute summer	42	6.006	42_OUT	0.0	0.000	0.000	0.0000	0.0
60 minute summer	42	Infiltration		1.6				
60 minute winter	43	10.000	44	-0.7	-0.141	-0.111	0.0501	
60 minute winter	44	10.001	45	1.3	0.339	0.209	0.0823	

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	45	58	153.466	0.435	2.6	0.0691	0.0000	FLOOD RISK
60 minute winter	46	58	153.466	0.454	4.4	0.0721	0.0000	FLOOD RISK
60 minute winter	47	58	153.466	0.266	2.4	0.0422	0.0000	FLOOD RISK
60 minute winter	48	58	153.465	0.338	2.4	0.0538	0.0000	FLOOD RISK
60 minute winter	49	58	153.465	0.476	6.3	0.0757	0.0000	FLOOD RISK
60 minute winter	50	57	153.463	0.263	0.7	0.0418	0.0000	FLOOD RISK
60 minute winter	51	57	153.463	0.308	1.5	0.0489	0.0000	FLOOD RISK
60 minute winter	52	57	153.463	0.406	3.0	0.0646	0.0000	FLOOD RISK
60 minute winter	53	58	153.462	0.464	2.7	0.0738	0.0000	FLOOD RISK
60 minute winter	54	58	153.462	0.504	2.3	0.0801	0.0000	FLOOD RISK
60 minute winter	55	58	153.462	0.528	7.9	0.0839	0.0000	FLOOD RISK
60 minute winter	56	58	153.456	0.572	7.6	5.6898	0.0000	OK

15 minute summer 57 12 153.183 -0.217 8.7 0.9338 0.0000 OK

15 minute summer 57_OUT 1 153.337 0.000 0.0 0.0000 0.0000 OK

15 minute summer 58 12 153.399 -0.201 13.5 1.6338 0.0000 OK

15 minute summer 58_OUT 1 153.551 0.000 0.0 0.0000 0.0000 OK

15 minute summer 59 12 153.539 -0.211 10.6 1.1921 0.0000 OK

15 minute summer 59_OUT 1 153.702 0.000 0.0 0.0000 0.0000 OK

15 minute summer 60 12 153.414 -0.236 4.8 0.4282 0.0000 OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	45	10.002	46	2.1	0.380	0.350	0.0150	
60 minute winter	46	10.003	49	4.1	0.548	0.685	0.0182	
60 minute winter	47	11.000	48	2.4	0.802	0.404	0.0570	
60 minute winter	48	11.001	49	2.3	0.378	0.234	0.0431	
60 minute winter	49	10.004	55	5.9	0.751	0.974	0.0430	
60 minute winter	50	12.000	51	-0.7	-0.200	-0.123	0.0351	
60 minute winter	51	12.001	52	1.5	0.473	0.248	0.0773	
60 minute winter	52	12.002	53	2.7	0.645	0.449	0.0457	
60 minute winter	53	12.003	54	2.3	0.508	0.377	0.0309	
60 minute winter	54	12.004	55	2.0	0.282	0.332	0.0185	
60 minute winter	55	10.005	56	7.6	0.975	1.262	0.0392	
60 minute winter	56	10.006	56_OUT	0.0	0.212	0.006	0.0007	0.0
60 minute winter	56	Infiltration		1.7				
15 minute summer	57	13.000	57_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	57	Infiltration		6.4				
15 minute summer	58	14.000	58_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	58	Infiltration		9.4				
15 minute summer	59	15.000	59_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	59	Infiltration		7.6				
15 minute summer	60	16.000	60_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	60	Infiltration		3.8				

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60_OUT	1	153.605	0.000	0.0	0.0000	0.0000	OK
15 minute summer	61	12	153.448	-0.202	14.4	1.7290	0.0000	OK
15 minute summer	61_OUT	1	153.606	0.000	0.0	0.0000	0.0000	OK
15 minute summer	62	12	153.233	-0.217	8.7	0.9338	0.0000	OK
15 minute summer	62_OUT	1	153.411	0.000	0.0	0.0000	0.0000	OK
15 minute summer	30_OUT	1	153.267	0.000	0.0	0.0000	0.0000	OK
15 minute summer	42_OUT	1	153.445	0.000	0.0	0.0000	0.0000	OK
60 minute winter	56_OUT	58	153.419	0.006	0.0	0.0000	0.0000	OK
15 minute summer	12_OUT	1	153.222	0.000	0.0	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	61	17.000	61_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	61	Infiltration		10.1				
15 minute summer	62	18.000	62_OUT	0.0	0.000	0.000	0.0000	0.0
15 minute summer	62	Infiltration		6.4				

APPENDIX F

THAMES WATER SEWER RECORDS

AAH Consultants
BAR LANE STUDIOS, 1 BAR LANE
YORK
YO1 6JU

Search address supplied Site B, East Grafton
A338
East Grafton
Wiltshire
SN8 3DB

Your reference Site B East Grafton

Our reference ALS/ALS Standard/2025_5254038

Search date 17 November 2025

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .



Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB



property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches



0800 009 4540

Search address supplied: Site B, East Grafton, A338, East Grafton, Wiltshire, SN8 3DB

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

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

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk

Web: thameswater.co.uk/propertysearches

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. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

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

Clean Water Services

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

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies. For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.



For your guidance:

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

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. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

If you have any questions regarding sewer connections, budget estimates, diversions or building over 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

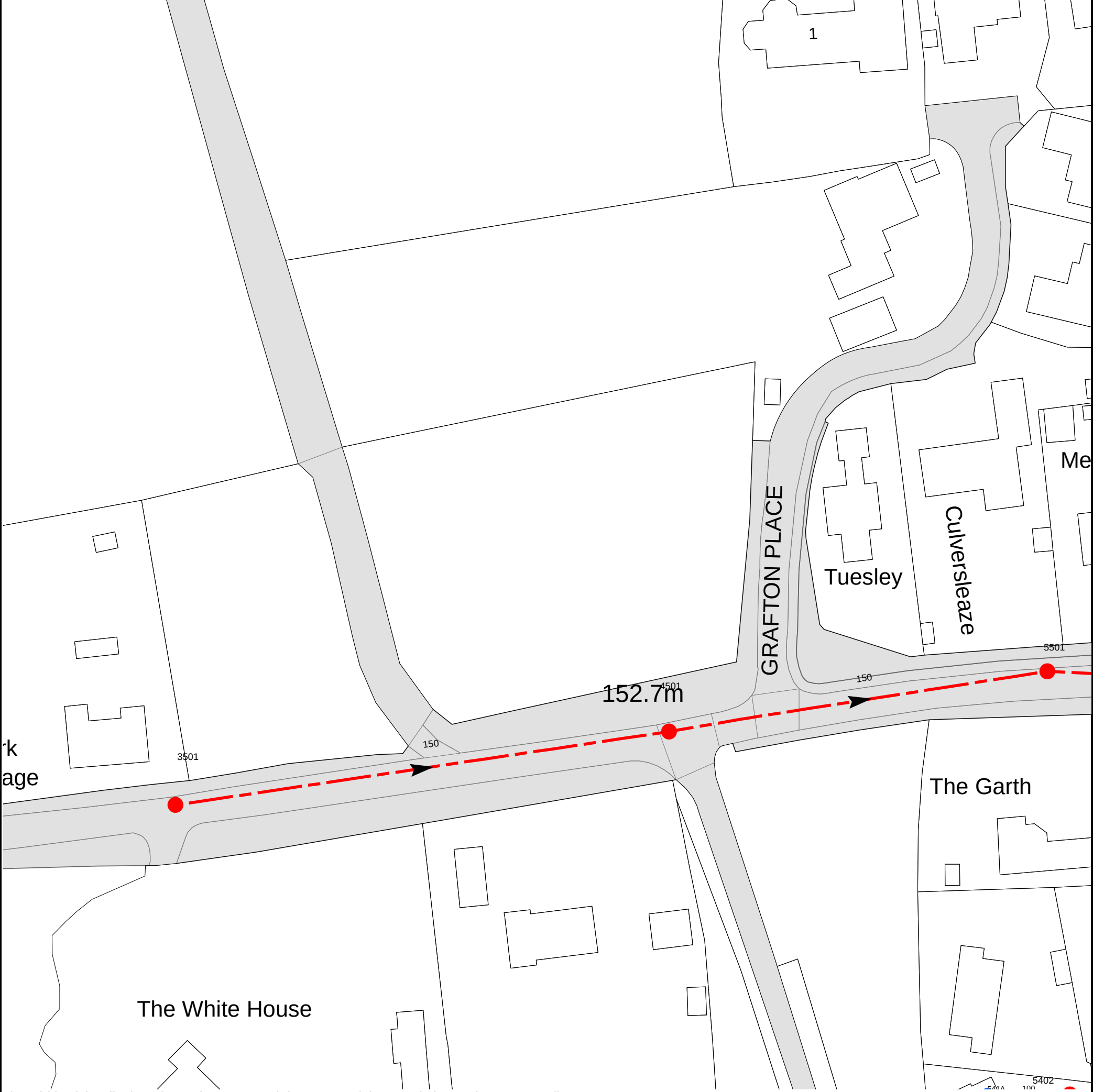
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water 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



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 425465,160591
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 (2024) with the Sanction of the controller of H.M. Stationery Office, License no. AC0000849556 Crown Copyright Reserved.

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3501	153.97	152.56
4501	152.83	151.59
5501	152.37	150.81
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.		



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

Scale: 1:1789
Width: 500m
Printed By: SAsbok1
Print Date: 18/11/2025
Map Centre: 425469,160577
Grid Reference: SU2560NW

Comments:

ALS/ALS Standard/2025_5254038

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
3501	153.97	152.56
5501	152.37	150.81
6502	152.07	150.27
6602		
6501	151.88	149.72
6401	151.33	149.55
6551	151.88	151.08
6402	152.61	151.59
6504	152.06	151.02
5401	152.85	151.84
641B		

REFERENCE	COVER LEVEL	INVERT LEVEL
4501	152.83	151.59
5402	153.37	152.29
6601	153.08	151.4
6503	151.87	150.32
6505		
6301	153.13	151.33
5601		
6550	151.74	150.81
641A		
541A		



Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

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

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

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

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

	Air Valve		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

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

	Ancillary		Drop Pipe
	Control Valve		Weir

End Items

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

	Inlet		Outfall
	Undefined End		

Other Symbols

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

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

Areas

Lines denoting areas of underground surveys, etc.

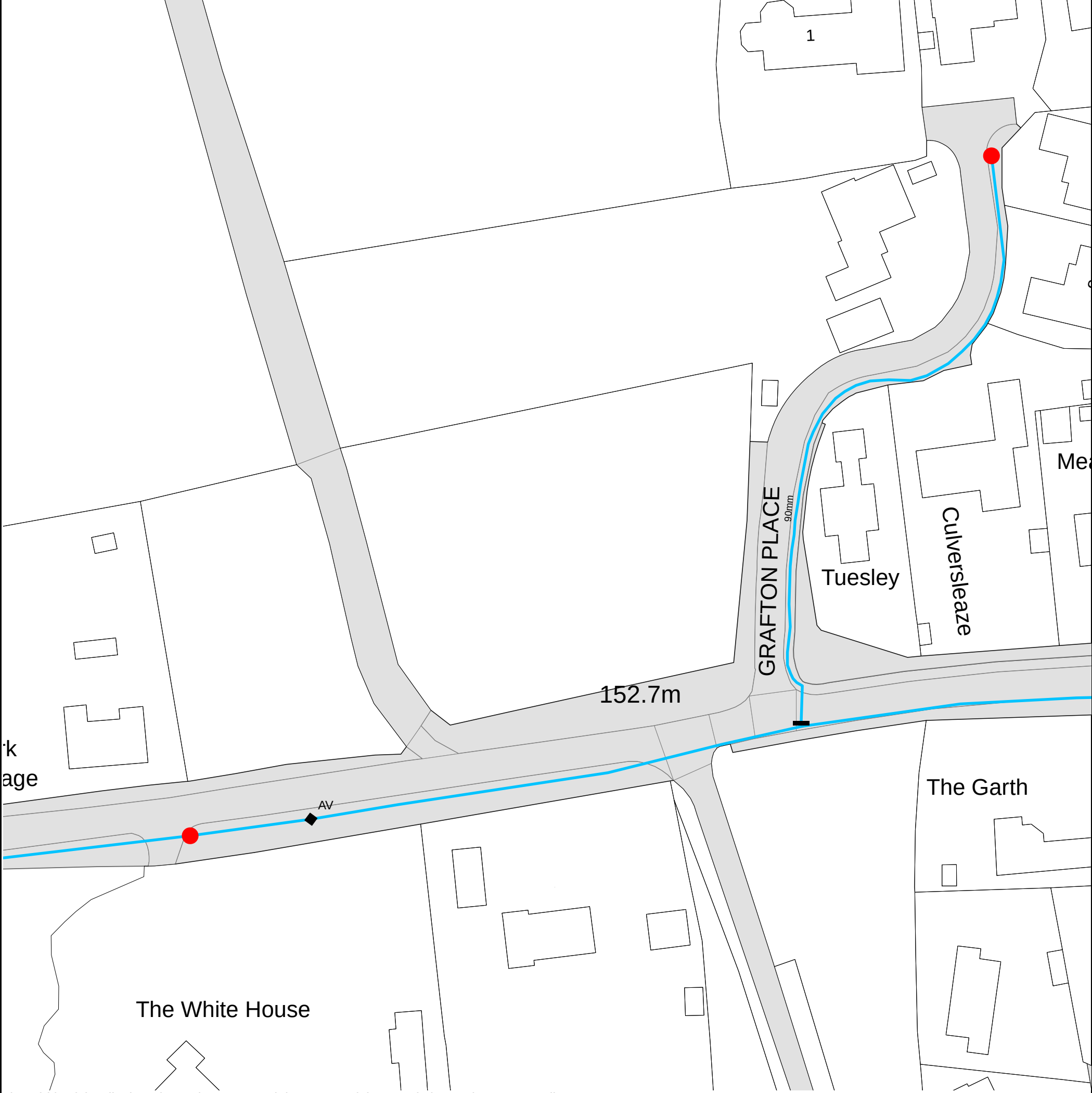
	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

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

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



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 425465, 160591.
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 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** **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- 3" FIRE** **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 3" METERED** **Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

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

Valves

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

Hydrants

- Single Hydrant

Meters

- Meter

End Items

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

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

Operational Sites

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

Other Symbols

- Data Logger
- Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

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

- Other Water Company Main:** Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.