CLFA DESIGN

Report Title

Drainage Technical Note

Project

CLFA137-Blind Lane, Southwick

Report Reference

CLFA137-CLFA-00-XX-DR-0661

Client

Wainhomes Severn Valley

Date

February 2026

REPORT CONTROL SHEET

Client:	Wainhomes Severn Valley
Project:	Blind Lane, Southwick
Job Number:	CLFA137
Report Title:	Drainage Technical Note
Report Reference:	CLFA137-CLFA-00-XX-DR-0661
Prepared By:	C LEDOUX
Reviewed and Authorised By:	F ALGUACIL MEng (Hons)

Revision	Date	Description	Prepared By	Authorised By
P01	01/12/25	FIRST ISSUE	C LEDOUX	F ALGUACIL
P02	14/01/26	SECOND ISSUE	C LEDOUX	F ALGUACIL
P03	17/02/26	IMP. AREAS	C LEDOUX	F ALGUACIL

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1. INTRODUCTION

Wainhomes Severn Valley have commissioned CLFA Design to produce a Drainage Technical Note to support the submission of a Full Planning Application for the proposed residential development at Blind Lane, Southwick.

This report provides a summary of the drainage strategy that will be followed and considers the Sustainable Urban Drainage Systems (SuDS) that have been used.

2. PROPOSED DRAINAGE STRATEGY

1.1. EXISTING DRAINAGE

According to the Wessex Water Asset Map (Appendix A), there is an existing 150mm diameter foul water sewer to the north-east of the site and a 600mm diameter surface water sewer across the site.

Both sewers have been traced using GPR equipment and the survey results can be seen in Appendix B.

1.2. SURFACE WATER PROPOSAL

When considering the surface water discharge, the standard hierarchical SUDS approach (shown below) should be followed:

1) Infiltration into the ground – Soakaway techniques not feasible. Refer to GI Extract in Appendix C.
2) **Discharge to a surface water body – Available**
3) Discharge to a surface water sewer or highways drain
4) Discharge to a combined sewer

Greenfield run off calculations have been undertaken in accordance with the IH124 method, and the results can be seen in Appendix D. Greenfield rates for the northern catchment are 1.6l/s for the 1 in 1 yr event and at 5l/s for the 1 in 100 yr event. Greenfield rates for the southern catchment are 4.9l/s for the 1 in 1 yr event and at 15.1l/s for the 1 in 100 yr event.

Greenfield volume calculations have also been undertaken for a 1 in 100 year, 6 hour storm and the results can be seen in Appendix E. The greenfield volume for the northern catchment is 29.007m³ and the greenfield volume for the southern catchment is 88.711m³.

Wiltshire's Council requirements regarding discharge rates and volumes are as follows:

1) Post development discharges from greenfield sites to provide 30% betterment over pre-development discharges for all storm events between the 1 in 1year and 1 in 100year return period.
2) The runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.
3) Attenuation features to either have 50% capacity available 24 hours after a 1 in 30-year + climate change storm event (i.e., half drain time < 1440mins) or have the capacity to store a subsequent 1 in 10-year storm event after a 1 in 30-year+ climate change storm event.

Compliance with Wiltshire Council Guidance has been checked in Table 1-Table *3* below:

Table 1. Condition 1 – 30% betterment over greenfield rates

Catchment	Greenfield rate 1 in 1 year event	Greenfield rate 1 in 100 year event	Discharge rate 1 in 1 year event	Discharge rate 1 in 100 year event	Betterment provided 1 in 1 year event	Betterment provided 1 in 100 year event
Northern Catchment	1.6 l/s	5 l/s	1 l/s	1 l/s	37%	80%
Southern Catchment	4.9 l/s	15.1 l/s	2.9 l/s	2.9 l/s	41%	81%
Total	6.5 l/s	20.4 l/s	3.9 l/s	3.9 l/s	39%	80.5%

Table 2. Condition 2 – Greenfield Volume

Catchment	Greenfield Volume (m^3)	Discharged volume 1 in 100 year, 6 hour rainfall event (m^3)	Condition met?
Northern Catchment	29.007	27.392	✓
Southern Catchment	88.711	87.908	✓
Total	117.718	115.300	✓

A copy of the 1 in 100 year, 6 hour rainfall event calculations are shown in Appendix F.

Table 3. Condition 3 – Half Drain Times

Storage feature	Half Drain Time < 1440mins for a 1 in 30cc event (cc-Climate change 45%)
Northern Catchment	✓
Southern Catchment	✓

A copy of the 1 in 30cc year calculations can be found in Appendix G. The full 1 in 1, 1 in 100 and 1 in 100cc year calculations can be found in Appendix H.

Attenuation will be provided in the form of attenuation ponds. A copy of the drainage strategy can be seen in Appendix I.

According to the CIRIA SuDS Manual (C753 Report, 2015) and to deliver adequate treatment, the selected SuDS component should have a total pollution index (for each contaminant type) that equals or exceeds the pollution hazard index (for each contaminant type). **Figure 1** shows that the proposed attenuation ponds will provide the required treatment for the new development.

TABLE 4.3 Minimum water quality management requirements for discharges to receiving surface waters and groundwater

Land use	Pollution hazard level	Requirements for discharge to surface waters, including coasts and estuaries[2]	Requirements for discharge to groundwater
Residential roofs	Very low	Removal of gross solids and sediments only	
Individual property driveways, roofs (excluding residential), residential car parks, low traffic roads (eg cul de sacs, home zones, general access roads), non-residential car parking with infrequent change (eg schools, offices)	Low	Simple index approach[3] *Note: extra measures may be required for discharges to protected resources[1]* **Total SuDS mitigation index ≥ pollution hazard index (for each contaminant type) (for each contaminant type)**	

Source: CIRIA SuDS Manual, page 63

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
	Total	0.7	0.6	0.45

Source: CIRIA SuDS Manual, page 568

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Source: CIRIA SuDS Manual, page 569

***Figure 1** - Calculation of pollution hazard*

It is also recommended that the drainage system is maintained following the recommendations in the table below:

Maintenance Schedule	Required Action	Typical Frequency	Maintenance Responsibilities
1 - Attenuation Ponds	Remove litter and debris	Monthly	By Management Company (TBC)
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required	
	Cut grass- meadow grass in and around basin	Half yearly (spring – before nesting season and autumn)	
	Manage other vegetation and remove nuisance plants	Monthly (at the start, then as required)	
	Inspect inlets, outlets and overflows for blockages and clear if required	Monthly	
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly	
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required	
	Check any mechanical devices	Annually	
	Tidy all dead growth before start of growing season	Annually	
	Remove sediments from inlets and outlet	Annually (or as required)	
	Reseed areas of poor vegetation growth	As required	
	Prune and trim any trees and remove cuttings	Every 2 years, or as required	
	Remove sediments from inlets, outlets and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream sources control is provided)	
	Repair erosion or other damage by reseeding re-turfing	As required	
	Repair/rehabilitation of inlets, outlets and overflows	As required	
	Relevel uneven surfaces and reinstate design levels	As required	

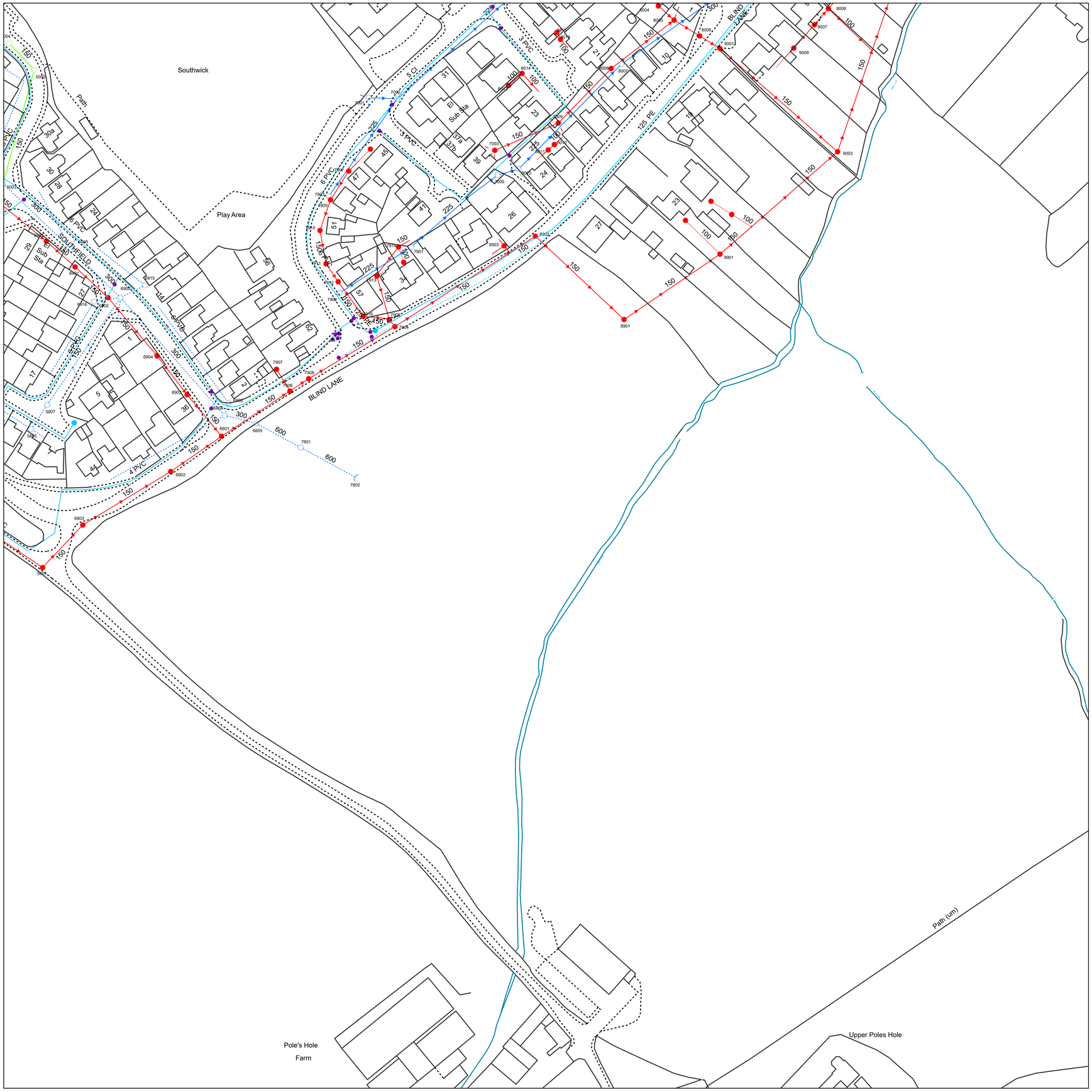
Maintenance Schedule	Required Action	Typical Frequency	Maintenance Responsibilities
2 –Drainage runs, chambers and flow control structures	Remove weeds and clear obstructions	Once a year or as required	Water Authority
	Monitor inspection chambers. Inspect silt accumulation rates and determine cleaning frequencies	Once a year or as required	

1.1. FOUL WATER PROPOSAL

Foul water effluents will be drained by gravity to an existing Wessex Water manhole (ID 8901) to the north-east of the site. Ground levels to the south and west of the site will need to be raised to achieve the existing outfall.

APPENDIX A – EXISTING WESSEX WATER ASSET MAP

ST85SW/ 94



WATER MAINS

- Distribution
- Washout
- Raw Water
- Abandoned
- Private

FITTINGS

- Hydrant
- Other

SEWERS

	STRATEGIC	PUBLIC	PRIVATE	SECTION 104
Foul				
Surface				
Combined				
Abandoned				

Colours generally indicate the use of the sewer/drain (i.e Red - Foul, Dark Blue - Surface, Magenta - Combined/Dual Use, Light Green - Highway Drain, Mid Green - Overflow). Some styles of line and symbol are shown on the key in sample/typical colours.

OTHER WESSEX PIPES

- Rising Mains
- Standby Rising Mains
- Effluent Disposal
- Overflow
- Syphon

NON-WESSEX / UNKNOWN

- Private Rising Mains
- Culverted Watercourse
- Highway Drain
- Use Unknown
- Status Unknown

STRUCTURES

- Manhole - Foul
- Manhole - Surface
- Manhole - Combined
- Inlet
- Outfall
- Lamphole
- Bifurcation - Foul
- Bifurcation - Surface
- Bifurcation - Combined
- Combined Sewage Overflow
- Pumping Station - Surface
- Pumping Stn - Foul/Combined
- Gully
- Vent Column
- Rodding Eye
- Catchpit
- Flushing Chamber
- Soakaway
- Non Return Valve
- Air Valve
- Hatch Box
- Washout

OTHER STRUCTURES

- Attenuation Tank
- Storage Tank
- Chamber
- Tunnel
- Interceptor

Information in this map is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. If you are proposing to build over or near Wessex Water's apparatus you should contact the Developer Services Team, tel: 01225 526333 or e-mail: developer.enquiries@wessexwater.co.uk to discuss your proposals. Details of assets within Wessex Water's land ownership are unavailable through this service.

Wessex Water
YTL GROUP

Date: 20/06/2025
Centre: 383822E, 154837N
Scale: 1:884
(when printed at A1 size)

N W E S

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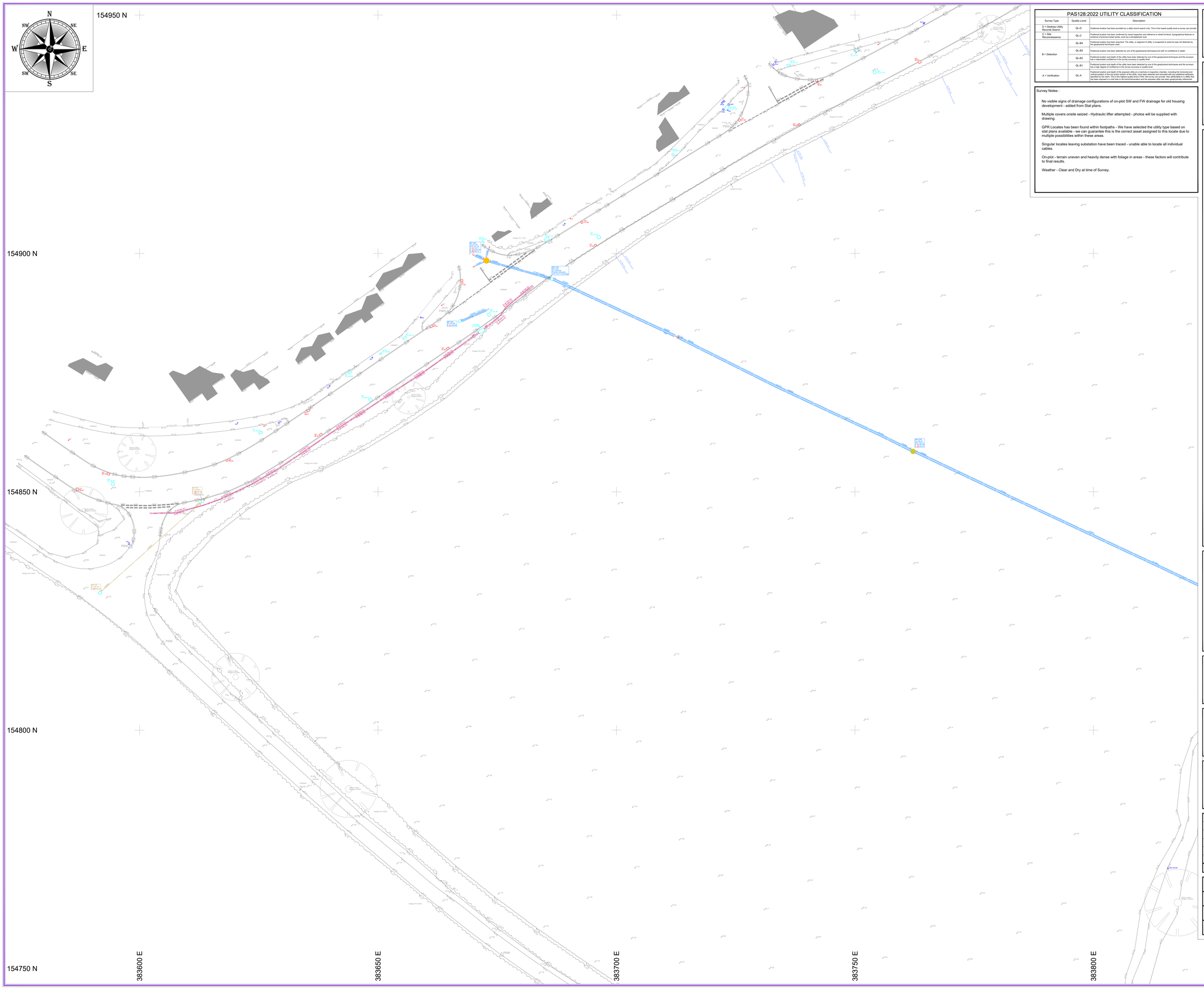
APPENDIX B – UTILITIES SURVEY



PAS128:2022 UTILITY CLASSIFICATION

Survey Type	Quality Level	Description
D = Desktop Utility Records Search	QL-D	Positional location has been provided by a utility record search only. This is the lowest quality level a survey can provide
C = Site Reconnaissance	QL-C	Positional location has been confirmed by visual inspection and reference to street furniture, topographical features or evidence of previous street works, such as a reinstatement scar
B = Detection	QL-B4	Positional location has been assumed. The utility, or segment of utility, is suspected to exist but was not detected by the geophysical techniques used
	QL-B3	Positional location has been detected by one of the geophysical techniques but with no confidence in depth.
	QL-B2	Positional location and depth of the utility have been detected by one of the geophysical techniques and the surveyor has a reasonable confidence in the survey accuracy or quality level
	QL-B1	Positional location and depth of the utility have been detected by one of the geophysical techniques and the surveyor has a high degree of confidence in the survey accuracy or quality level.
A = Verification	QL-A	Positional location and depth of the exposed utility at a manhole or inspection chamber, including the horizontal and vertical coordinates of the exposed utility, relative to the ground level, at a specified point, with a specified accuracy, as specified by the client. This is the highest quality level of PAS 128 survey can provide. Also attributable to a utility that has been exposed in a trial hole or slit trench/excavation and the exposed utility has been geophysically referenced.

Survey Notes :

No visible signs of drainage configurations of on-plot SW and FW drainage for old housing development - added from Stat plans.

Multiple covers onsite seized - Hydraulic lifter attempted - photos will be supplied with drawing.

GPR Locates has been found within footpaths - We have selected the utility type based on stat plans available - we can guarantee this is the correct asset assigned to this locate due to multiple possibilities within these areas.

Singular locates leaving substation have been traced - unable able to locate all individual cables.

On-plot - terrain uneven and heavily dense with foliage in areas - these factors will contribute to final results.

Weather - Clear and Dry at time of Survey.

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TOPOGRAPHICAL SURVEYS, PAS128 UTILITY SURVEYS, CCTV DRAINAGE SURVEYS, AS-BUILT SURVEYS, 3D LASER SCANNING, SETTING OUT.

3 Holly Close
Speedwell
Bristol
BS5 7XP

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07535 349090
louis.firth@pointsurveys.co.uk

Utility Notes :

1. Grid and elevation measurements are based on the OSGB36 National Datum, sourced from the National GPS network.
2. We work to a standard specification as recommended by the Royal Institute of Chartered Surveyors (RICS) for measured surveys of Land, Buildings and Utilities.
3. Drainage details have been ascertained without direct access to chambers. While diligent efforts have been made for accuracy, it's advisable to independently verify critical information for future planning.
4. Unless verified by tracing techniques, all sewer segments are assumed to be linear between chambers.

UTILITY KEY

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- CATV B1 (PAS128)
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- SERVICE DUCT B1 (PAS128)
- TRAFFIC B1 (PAS128)
- UNKNOWN B1 (PAS128)
- WATER B1 (PAS128)
- FOUL SEWER
- STORM SEWER
- 2025-04 Depth from GPR
- CAD 3D Depth from CATT Trace

100% Surveyed Underground Assets

UTILITY DISCLAIMER

Electromagnetic techniques, along with ground-penetrating radar, have been utilized to detect underground services. It's important to acknowledge that while these methods provide valuable insights, they are not infallible, and excavation is advised to confirm the identification, location, and depths of services. Complete assurance regarding underground services cannot be guaranteed.

Point Surveys Ltd does not verify whether a service is active or inactive, deferring this responsibility to the relevant service provider. As a result, all services are treated as active in our documentation. It's vital to understand that this drawing might not encompass all public services across the site, underscoring the need for a thorough desktop study to acquire all relevant service drawings, which should be used alongside our utility survey.

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CCTV & DRAINAGE

1. Survey to be read in conjunction with the CCTV Report.
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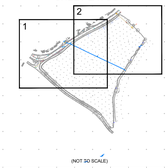
- (x) Indicates Downstream Pipe

ABBREVIATIONS

AC Acoustic Connection	IL Invert Level	SOF Soffit Level
AR Assumed Route	IC Inspection Cover	SOFd Soffit Depth
BD Backdrop	KO Kerb Outlet	SP Soil Pipe
Bd Base Depth	LP Lamp Post	SS Soil Stack
BL Base Level	MH Manhole	SV Stop Valve
CL Cover Level	NFI No Further Information	SVP Soil Vent Pipe
CP Catchpit	OSA Out of Survey Area	TFR Taken From Records
DCH Drainage Channel	PTG Pipe to Ground	TL Traffic Light
DP Down Pipe	PTS Pipe to Surface	TP Telegraph Pole
EOT End Of Trace	RE Rodding Eye	UTF Unable to Trace Further
EP Electric Pole	RS Rod Stop	UTL Unable to Locate
ER Earth Rod	RWP Rain Water Pipe	UTR Unable to Raise
FH Fire Hydrant	SA Survey Abandoned	UTS Unable to Survey
GV Gas Valve	Sd Silt Depth	UTT Unable to Trace
GY Gully	SL Silt Level	Wd Water Depth
Id Invert Depth	SP Soil Pipe	WL Water Level

SHEET LAYOUT



Project:

BLIND LANE

Client:

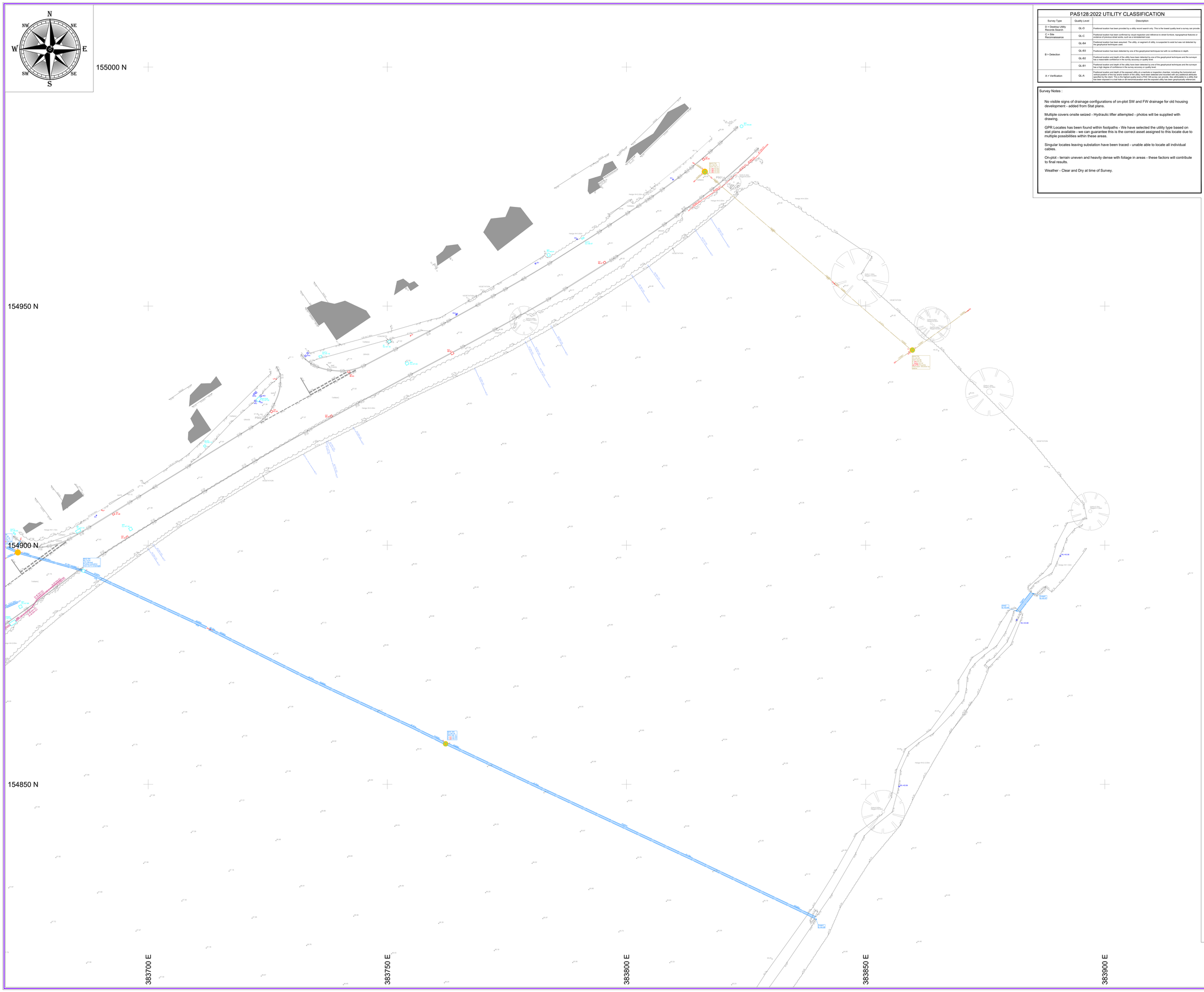
Wain HOMES

Title:

PAS128 Utility Survey & CCTV Drainage Survey

No.	Date	Drawing Revisions
R5		
R4		
R3		
R2		
R1	08/09/25	CCTV Drainage Survey added
R0	31/08/25	Utility & CCTV Drainage Survey

Job No.:	2265	Sheet No.:	1
Scale:	1:250	Date:	08/09/25
Surveyor:	LF	Revision:	R1
Status:	Complete	Approved:	LF



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- Depth from CAT Trace

Water B1 and Communications

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1500/BSI 1500/BSI

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ER Earth Rod	RWP Rain Water Pipe	UTR Unable to Raise
FH Fire Hydrant	SA Survey Abandoned	UTS Unable to Survey
GV Gas Valve	Sd Silt Depth	UTT Unable to Trace
GY Gully	SL Silt Level	Wd Water Depth
Id Invert Depth	SP Soil Pipe	WL Water Level

SHEET LAYOUT

1
2

(NOT 3D SCALE)

Project:

BLIND LANE

Client:

Wain HOMES

Title:

PAS128 Utility Survey & CCTV Drainage Survey

No.	Date	Drawing Revisions
R5		
R4		
R3		
R2		
R1	08/09/25	CCTV Drainage Survey added
R0	31/08/25	Utility & CCTV Drainage Survey

Job No.:	2265	Sheet No.:	2
Scale:	1:250	Date:	08/09/25
Surveyor:	LF	Revision:	R1
Status:	Complete	Approved:	LF

APPENDIX C – EXTRACT GROUND INVESTIGATION

P25-291
Blind Lane, Southwick

Desk Study and
Ground Investigation
Report

P25-291

Blind Lane, Southwick

Desk Study and Ground Investigation Report

For

Wain Homes

DATE: 9 September 2025

REV: P02

Document Reference & Control

Project Name:	**Blind Lane, Southwick**
Project Reference:	**P25-291**
Report Title:	**Combined Desk Study and Ground Investigation Report**
Client:	**Wain Homes**
Document Reference:	**Project Ref-RL-22-XX-RP-O-0005**
Report Status:	**P2**

Approval Status	Name & Position
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Approved by:	Chris Wilson BSc MCIWEM Principal Geo-Environmental Consultant

Revision Status	Date	Summary of Revision
P01	08/09/25	First Issue
P02	09/08/25	Topsoil reuse updated

Executive Summary

This presents the salient points of the report and should not be referred to in isolation.

Instruction	In June 2025 Wain Homes commissioned Rodgers Leask Ltd (RLL) to compile a Phase 1 Geo-environmental Desk Study (DS) and an intrusive ground investigation for a Site at Blind Lane, Southwick near Trowbridge in Wiltshire.
Proposed Development	The site is proposed to be developed for residential housing with associated private gardens public open space, highways and an attenuation pond.
Site Location and Description	The Site is located southeast of the A361, adjacent to Blind Lane in Southwick, and is approximately centred on National Grid Reference 383762E, 154835N. The Site postcode is BA14 9PA. It has an irregular shape and occupies an area of approximately 4.25 hectares. The land is currently in agricultural and use comprises a single field. Vehicular and pedestrian access to Site can be gained via a gate from Wesley Lane, located on the western site boundary.
History	Historical maps indicates that the Site has remained a greenfield for agricultural purposes from 1884 to present day, with the Lambrook Stream forming the eastern boundary. A footbridge was present from the late 19th century but was removed by 1992. However, no significant changes or developments have occurred on the Site. The surrounding area was primarily agricultural in the late 1800s, with Southwick Village, a school, and a brickworks located to the north and north-east. Over time, the brickworks became disused, and residential development gradually expanded around the Site, particularly to the north and north-east from the 1970s onward. Key developments included a Church of England primary school and supporting road infrastructure with no major developments occurring in the area since 2010.
Geology, Hydrogeology & Hydrology	Made Ground is not anticipated to be encountered on Site. According to published geological records, the southern portion of the Site is underlain by the Cornbrash Formation, which comprises limestone. The remainder of the Site is underlain by the Kellaway Formation, consisting of mudstone and sandstone. The Cornbrash formation, present in the southern portion of the Site, is classed as a Secondary A Aquifer. The Kellaways Formation is classified as an Unproductive Strata. A watercourse named the Lambrook Stream flows along the eastern boundary of the Site. The Lambrook forms as part of a wider drainage network, which extends to the northeast to the south of the Site.
Scope of Works	▪ A Phase 1 desk study to include a site walkover, a review of existing geo-environmental data such as historical maps, geological data, regulatory data and existing ground investigation data; ▪ Utilities mapping; ▪ Unexploded Ordnance (UXO) assessment;

	▪ An intrusive ground investigation in accordance with the scope of works set out in the above referenced fee proposal; ▪ Chemical and geotechnical testing; ▪ A generic quantitative risk assessment of the chemical status of the soils and groundwater in relation to the Conceptual Model; ▪ Assessment of the geotechnical ground conditions and recommendations for foundations, floor slabs, buried concrete, earthworks and abnormal ground related construction issues;
Ground Conditions Encountered	The following ground conditions were encountered during the works: ▪ TOPSOIL comprising light brown CLAY: encountered in all locations to a maximum depth of 0.30m bgl; ▪ KELLAWAYS FORMATION typically comprising firm to stiff grey orangish brown mottled CLAY: encountered in all locations to a maximum depth of 3.3m bgl; ▪ CORNBASH FORMATION comprising stiff dark bluish black CLAY: encountered in the majority of locations but base is not proven.
Contamination Issues	No visual or olfactory indications of contamination while carrying out the investigation.
Geotechnical Considerations	**Foundations:** The Site is suitable for traditional strip foundations. Deepening due to influence of existing or proposed trees will be required. **Floor Slabs:** It is understood that floor slabs are to be fully suspended. **Stability:** No instability was encountered during the investigation. **Soakaways:** Site should be positively drained. **Earthworks:** If cut and fill is proposed an earthworks specification will be required. **Pavement Design**: Preliminary CBR of 2-5%. **Waste Material:** No Made Ground was encountered. If Site-won material is required to be disposed to landfill it is likely to be classified as Non-Hazardous.
Mining	There are no records of mining on Site or within 500m. However, five records of historical surface ground workings were present on the Site, all relating to ponds shown on the historical maps between 1886 to 1956. No ponds are currently present on the Site.
Buried Concrete Classification	A Design Sulphate (DS) class of DS-1 and Aggressive Chemical Environment for Concrete (ACEC) class of AC-1 should be adopted for the site.
Recommendations for Further Works	▪ Discussion with the local water authority with regard to the requirement for protected water supply pipework; ▪ Update this report when a proposed development plan is available. There may be a requirement for additional ground investigation including deeper boreholes to confirm the design of traditional strip foundations; ▪ If any cut and fill is proposed, an Earthworks Specification will be required; ▪ A CL:AIRE approved Materials Management Plan (MMP) will be required for the re-use of soils on Site;

	▪ In-situ CBR testing will be required to inform road and hardstanding design. ▪ Undertake a tree survey; and ▪ Should there be a requirement to dispose of Made Ground from the site to landfill then WAC testing should be undertaken.

do occur, consideration will have to be given to the impact on foundation solution adopted.

9.4.4. Soakaways

Soakaway testing undertaken as part of the 2025 RLL ground investigation. As the test did not reach an effective depth of 25%, an infiltration rate could not be calculated. As such, soakaway drainage solutions are not considered appropriate for the Site at this stage.

9.5. Earthworks

Details of earthworks and finished floor levels were not available at the time of the investigation.

For any proposed earthworks, it is recommended that they are undertaken in a controlled manner using appropriate methods in accordance with an Engineer's Earthworks Specification in order to minimise the settlement of hardstanding areas and services where any additional fill is placed.

Materials should be placed in layers and proof-rolled in accordance with an Engineer's Specification. Formation levels should be thoroughly proof rolled prior to construction.

9.6. Preliminary Foundation Appraisal

It is understood that the Site is to be primarily developed for residential dwellings. At the time of reporting, no indicative foundation loading information has been provided.

No Made Ground or soft/unsuitable deposits were identified during the investigation. Therefore, it is not currently anticipated that alternative foundation solutions such as piled foundations, raft foundations, or vibro ground improvement will be required, unless there is a significant increase in proposed Site levels.

Foundations should be deepened to bear in the stiff, high strength clay of either the Kellaways Formation or the Cornbash Formation. It should be noted that the Cornbash Formation was not encountered in all exploratory hole locations and may be present at depths exceeding 3.0m bgl. However, it may not be required to reach the Cornbash Formation where the overlying Kellaways Formation demonstrates stiff, high strength clays. An indicative Undrained Shear Strength of 100 kN/m^2 should be achievable within either material. RLL recommend an allowance is made for light reinforcement if foundations span the Cornbrash and the Kellaway clays to minimise any potential differential settlement.

Appendix F:

Soakaway Test Results

	Permeability Test Location Information			
	Date: 31/07/2025	**By:**	RH	**Project Ref:**
	Project: Blind Lane, Southwick	**Approved:**	AJ	P25-291

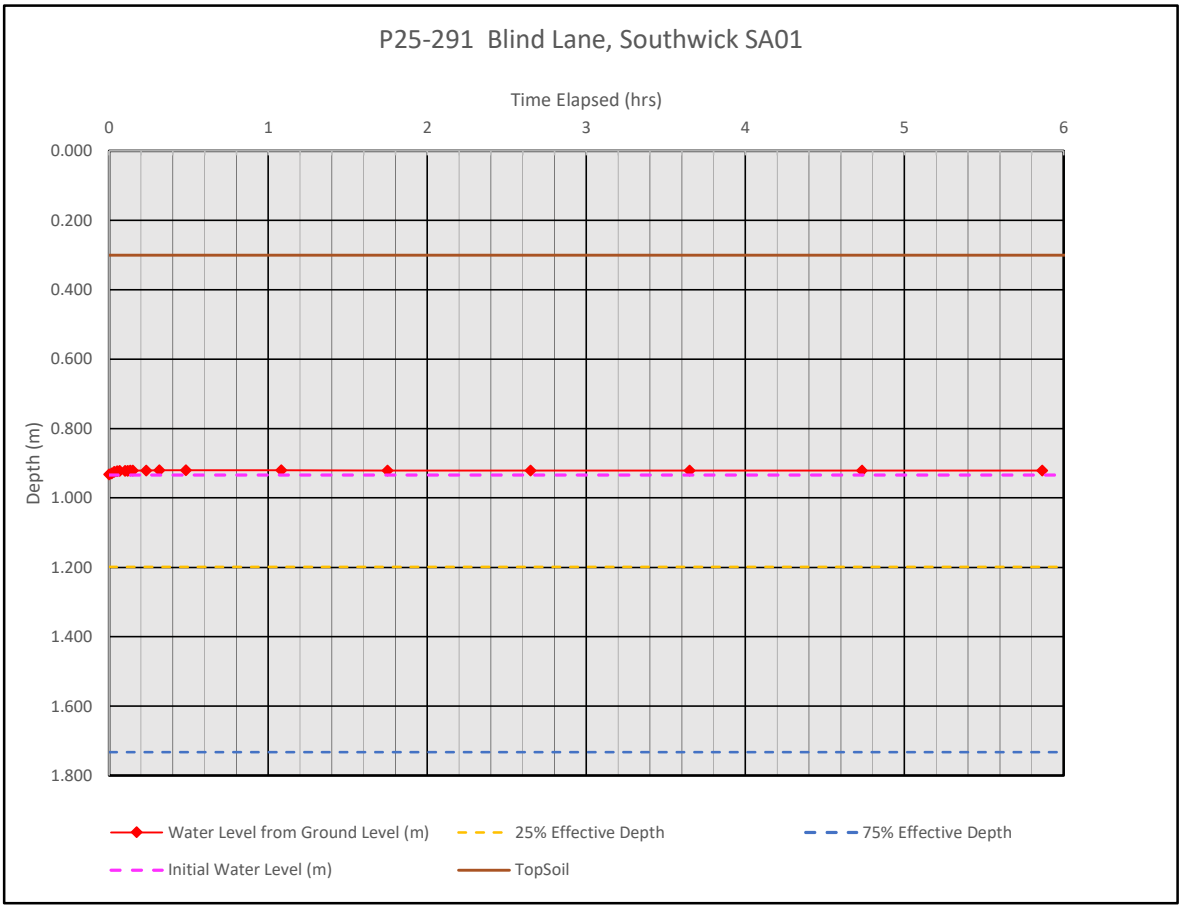
Location ID:	**SA01**
Effective Depth:	1.07
25% Effective Depth:	1.20
75% Effective Depth:	1.73

Start Fill:	08:52:00	**Water Used (m3):**	1.92
End Fill:	14:45:00	**Water Volume at End of Fill (m3):**	1.92
Rate of Fill (m/s):	3.20E-02	**Rate of Infiltration During Fill (m/s):**	-6.00E-05
Elapsed Time to 25% Effective Depth (mins):	***NOT ACHIEVED***	**Depth of Topsoil (m):**	**N/A**
Elapsed Time to 75% Effective Depth (mins):	***NOT ACHIEVED***	**Depth of Subsoil (m):**	1

Date	Time	Water Level from Ground Level (m)	Elapsed Time (hrs)	Rate of Change of Water	Water Level (mOAD)
22/07/2025	08:52:00	0.934			
22/07/2025	08:53:00	0.932	0.0		
22/07/2025	08:54:00	0.930	0.0	0.00	-0.93
22/07/2025	08:55:00	0.925	0.0	0.00	-0.93
22/07/2025	08:56:00	0.923	0.0	0.00	-0.92
22/07/2025	08:57:00	0.922	0.1	0.00	-0.92
22/07/2025	08:59:00	0.922	0.1	0.00	-0.92
22/07/2025	09:00:00	0.922	0.1	0.00	-0.92
22/07/2025	09:01:00	0.921	0.1	0.00	-0.92
22/07/2025	09:02:00	0.921	0.1	0.00	-0.92
22/07/2025	09:07:00	0.921	0.2	0.00	-0.92
22/07/2025	09:12:00	0.920	0.3	0.00	-0.92
22/07/2025	09:22:00	0.920	0.5	0.00	-0.92
22/07/2025	09:58:00	0.920	1.1	0.00	-0.92
22/07/2025	10:38:00	0.921	1.8	0.00	-0.92
22/07/2025	11:32:00	0.921	2.7	0.00	-0.92
22/07/2025	12:32:00	0.921	3.7	0.00	-0.92
22/07/2025	13:37:00	0.921	4.7	0.00	-0.92
22/07/2025	14:45:00	0.921	5.9	0.00	-0.92

Permeability Test Location Information

Date:	31/07/2025	**By:**	RH	**Project Ref:**
Project:	Blind Lane, Southwick	**Approved:**	AJ	P25-291



Time for outflow between 75% and 25 % effective depth (secs):	#VALUE!

vol between 75% and 25% (m3):	0.9612

as50 m2	5.6448

f (m/s)	#VALUE!

	Permeability Test Location Information			
	Date: 31/07/2025	**By:**	RH	**Project Ref:**
	Project: Blind Lane, Southwick	**Approved:**	AJ	P25-291

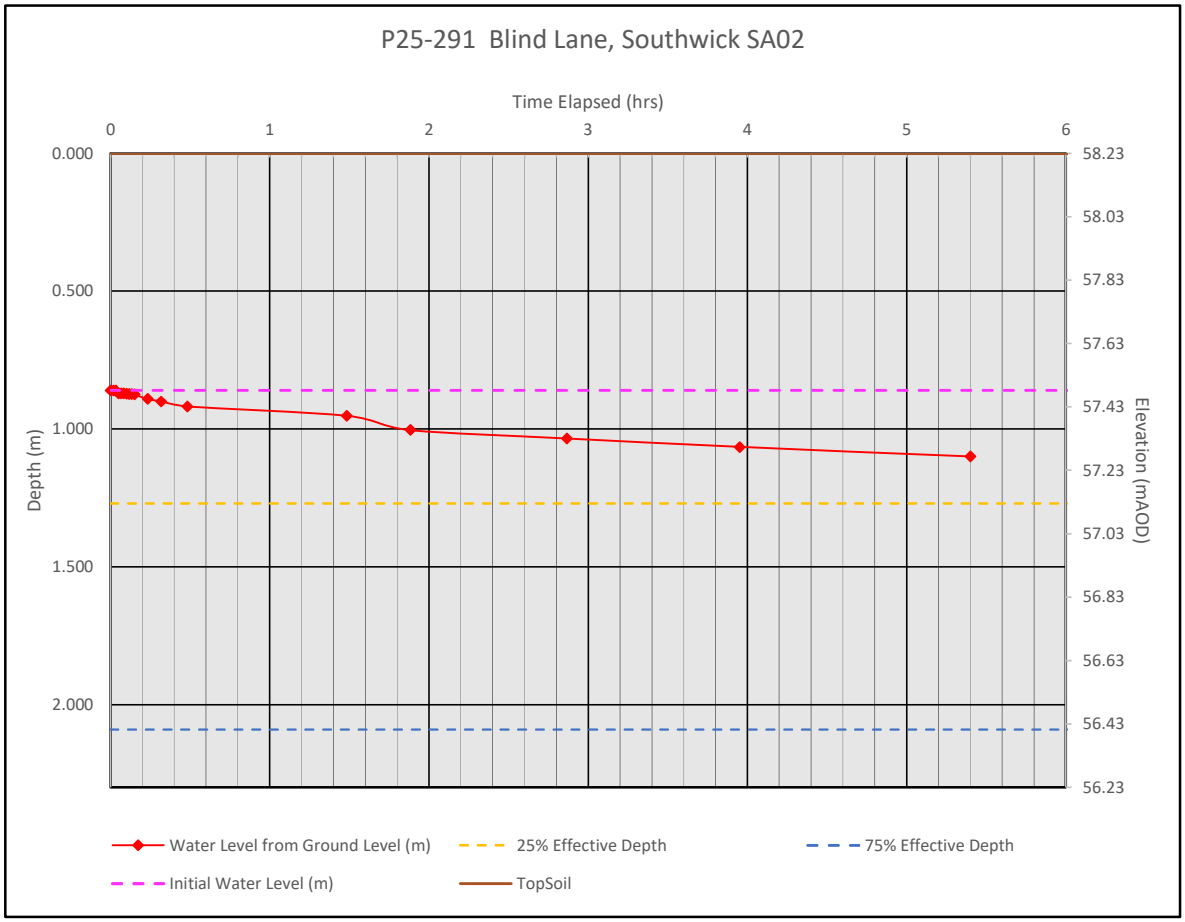
Location ID:	**SA02**
Effective Depth:	1.64
25% Effective Depth:	1.27
75% Effective Depth:	2.09

Start Fill:	09:36:00	**Water Used (m3):**	3.44
End Fill:	15:01:00	**Water Volume at End of Fill (m3):**	2.95
Rate of Fill (m/s):	1.76E-04	**Rate of Infiltration During Fill (m/s):**	2.50E-05
Elapsed Time to 25% Effective Depth (mins):	***NOT ACHIEVED***	**Depth of Topsoil (m):**	**N/A**
Elapsed Time to 75% Effective Depth (mins):	***NOT ACHIEVED***	**Depth of Subsoil (m):**	1

Date	Time	Water Level from Ground Level (m)	Elapsed Time (hrs)	Rate of Change of Water	Water Level (mOAD)
22/07/2025	09:36:00	0.860			
22/07/2025	09:37:00	0.860	0.0		
22/07/2025	09:38:00	0.861	0.0	0.00	-0.86
22/07/2025	09:39:00	0.861	0.0	0.00	-0.86
22/07/2025	09:40:00	0.871	0.1	0.01	-0.87
22/07/2025	09:41:00	0.871	0.1	0.00	-0.87
22/07/2025	09:42:00	0.871	0.1	0.00	-0.87
22/07/2025	09:43:00	0.872	0.1	0.00	-0.87
22/07/2025	09:44:00	0.873	0.1	0.00	-0.87
22/07/2025	09:45:00	0.873	0.1	0.00	-0.87
22/07/2025	09:46:00	0.875	0.2	0.00	-0.88
22/07/2025	09:51:00	0.891	0.2	0.00	-0.89
22/07/2025	09:56:00	0.900	0.3	0.00	-0.90
22/07/2025	10:06:00	0.918	0.5	0.00	-0.92
22/07/2025	11:06:00	0.952	1.5	0.00	-0.95
22/07/2025	11:30:00	1.004	1.9	0.00	-1.00
22/07/2025	12:29:00	1.034	2.9	0.00	-1.03
22/07/2025	13:34:00	1.065	4.0	0.00	-1.07
22/07/2025	15:01:00	1.100	5.4	0.00	-1.10

Permeability Test Location Information

Date:	31/07/2025	**By:**	RH	**Project Ref:**
Project:	Blind Lane, Southwick	**Approved:**	AJ	P25-291



Time for outflow between 75% and 25 % effective depth (secs):	#VALUE!
as50 m2	7.704

vol between 75% and 25% (m3):	1.476
f (m/s)	#VALUE!

APPENDIX D.1 – GREENFIELD RATES NORTHERN CATCHMENT

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

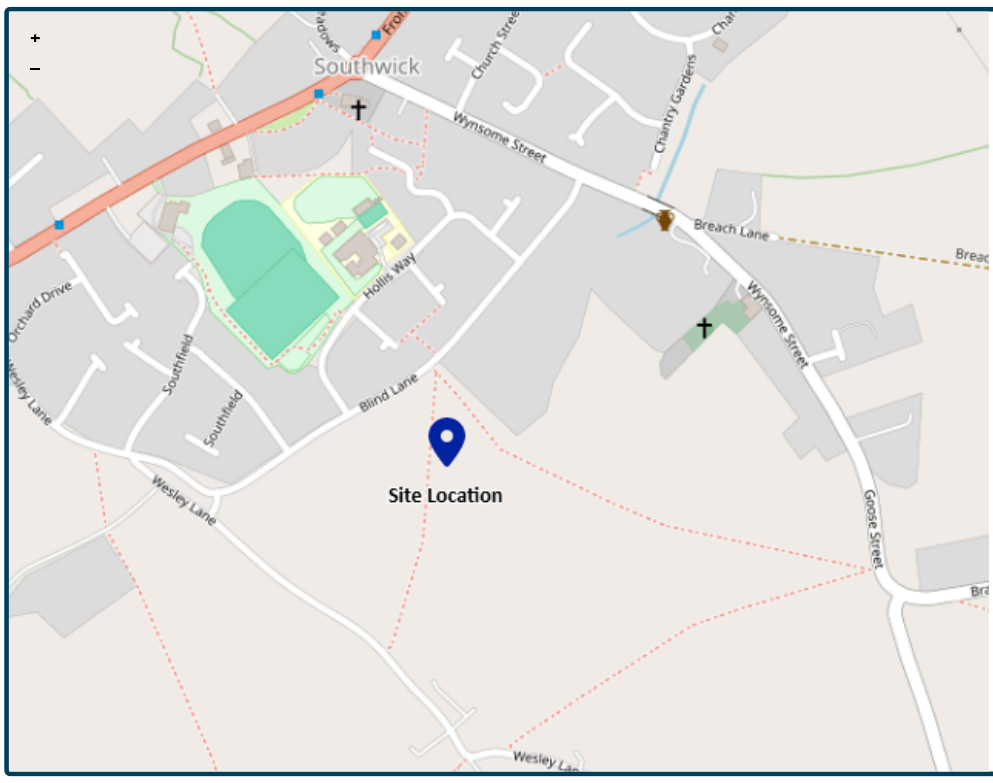
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	13/02/2026
Calculated by	
Reference	
Model version	2.2.2

Location

Site name	Blind Lane
Site location	Southwick



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Site easting (British National Grid)	383835
Site northing (British National Grid)	154853

Site details

Total site area (ha)	0.3951 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value	Map value
SAAR (mm)	750 mm	750
How should SPR be derived?	WRAP soil type	
WRAP soil type	4	4
SPR	0.47	
QBar (IH124) (l/s)	2.1 l/s	

Growth curve factors

	My value	Map value
Hydrological region	8	8
1 year growth factor	0.78	
2 year growth factor	0.93	
10 year growth factor	1.49	
30 year growth factor	1.95	
100 year growth factor	2.43	
200 year growth factor	2.78	

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Results

Method	IH124	
Flow rate 1 year (l/s)	1.6	l/s
Flow rate 2 year (l/s)	1.9	l/s
Flow rate 10 years (l/s)	3.1	l/s
Flow rate 30 years (l/s)	4.0	l/s
Flow rate 100 years (l/s)	5.0	l/s
Flow rate 200 years (l/s)	5.7	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.2) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

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APPENDIX D.2 – GREENFIELD RATES SOUTHERN CATCHMENT

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

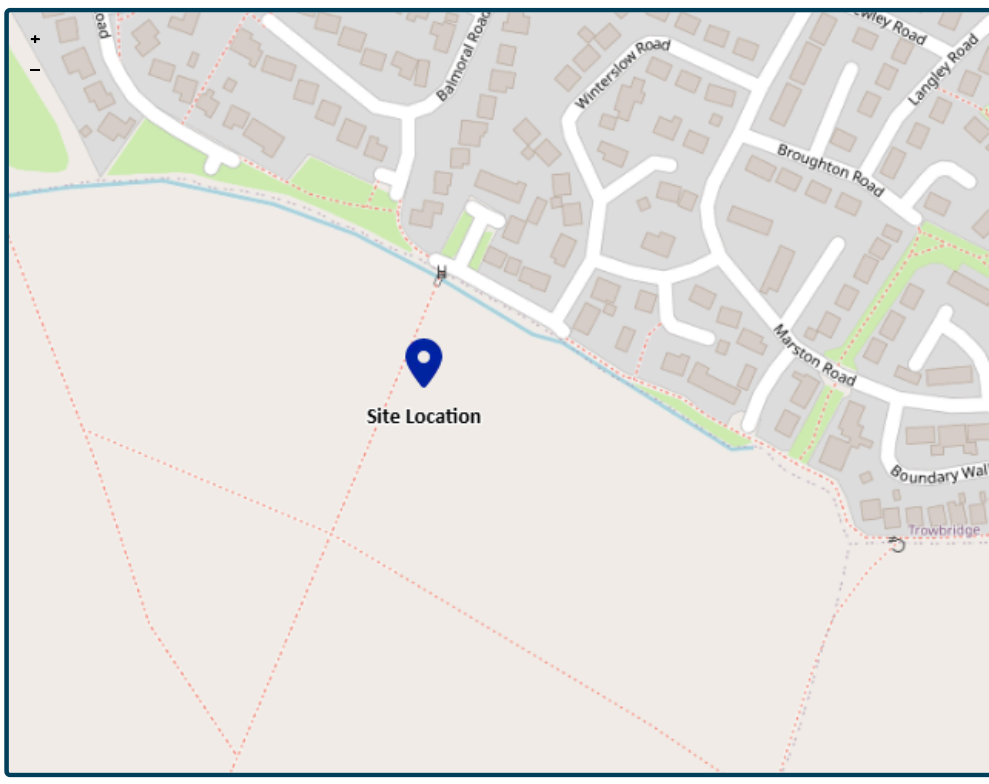
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	17/02/2026
Calculated by	
Reference	
Model version	2.2.2

Location

Site name	Blind Lane
Site location	Southwick



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Site easting (British National Grid)	384827
Site northing (British National Grid)	155925

Site details

Total site area (ha)	1.212	ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	738	mm	738
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	6.2	l/s	

Growth curve factors

	My value	Map value
Hydrological region	8	8
1 year growth factor	0.78	
2 year growth factor	0.93	
10 year growth factor	1.49	
30 year growth factor	1.95	
100 year growth factor	2.43	
200 year growth factor	2.78	

Results

Method	IH124	
Flow rate 1 year (l/s)	4.9	l/s
Flow rate 2 year (l/s)	5.8	l/s
Flow rate 10 years (l/s)	9.3	l/s
Flow rate 30 years (l/s)	12.1	l/s
Flow rate 100 years (l/s)	15.1	l/s
Flow rate 200 years (l/s)	17.3	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

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APPENDIX E.1 – GREENFIELD VOLUME NORTHERN CATCHMENT

Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	20.900
Ratio R	0.350
Areal Reduction Factor	1.00
Area (ha)	0.395
SAAR (mm)	733
CWI	109.258
Urban	0.000
SPR	10.000

Results

Percentage Runoff (%)	10.74
Greenfield Runoff Volume (m^3)	29.007

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APPENDIX E.2 – GREENFIELD VOLUME SOUTHERN CATCHMENT

Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	20.900
Ratio R	0.350
Areal Reduction Factor	1.00
Area (ha)	1.208
SAAR (mm)	733
CWI	109.258
Urban	0.000
SPR	10.000

Results

Percentage Runoff (%)	10.74
Greenfield Runoff Volume (m^3)	88.711

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APPENDIX F.1 – MICRODRAINAGE CALCULATIONS 1 IN 100 YEAR 6 HOUR STORM. NORTHERN CATCHMENT

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 3

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	21.000	Add Flow / Climate Change (%)	0
Ratio R	0.360	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Surface Network 3

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.299	4-8	0.164

Total Area Contributing (ha) = 0.463

Total Pipe Volume (m³) = 7.896

Network Design Table for Surface Network 3

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	47.037	0.352	133.6	0.064	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	23.061	0.154	149.8	0.159	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	37.457	0.596	62.8	0.042	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.000	28.746	0.369	78.0	0.079	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.69	44.826	0.064	0.0	0.0	0.0	1.13	44.9	8.7
1.001	50.00	5.99	44.400	0.223	0.0	0.0	0.0	1.28	90.6	30.2
1.002	50.00	6.31	44.246	0.265	0.0	0.0	0.0	1.99	140.4	35.9
2.000	50.00	5.32	44.017	0.079	0.0	0.0	0.0	1.48	58.9	10.7

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Network Design Table for Surface Network 3

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.003	34.251	0.180	190.3	0.119	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.003	50.00	7.10	43.650	0.463	0.0	0.0	0.0	0.73	12.8«	62.7

Free Flowing Outfall Details for Surface Network 3

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.003	Northern Outfall	44.270	43.470	0.000	0	0

Simulation Criteria for Surface Network 3

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	21.000	Storm Duration (mins)	30
Ratio R	0.360		

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Online Controls for Surface Network 3

Hydro-Brake® Optimum Manhole: Northern Pond, DS/PN: 1.003, Volume (m³): 6.1

Unit Reference	MD-SHE-0047-1200-1450-1200
Design Head (m)	1.450
Design Flow (l/s)	1.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	47
Invert Level (m)	43.650
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.450	1.2
Flush-Flo™	0.205	0.8
Kick-Flo®	0.419	0.7
Mean Flow over Head Range	-	0.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.8	1.200	1.1	3.000	1.7	7.000	2.5
0.200	0.8	1.400	1.2	3.500	1.8	7.500	2.5
0.300	0.8	1.600	1.3	4.000	1.9	8.000	2.6
0.400	0.7	1.800	1.3	4.500	2.0	8.500	2.7
0.500	0.7	2.000	1.4	5.000	2.1	9.000	2.8
0.600	0.8	2.200	1.4	5.500	2.2	9.500	2.8
0.800	0.9	2.400	1.5	6.000	2.3		
1.000	1.0	2.600	1.6	6.500	2.4		

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Storage Structures for Surface Network 3

Tank or Pond Manhole: Northern Pond, DS/PN: 1.003

Invert Level (m) 43.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	276.2	0.500	380.6	1.000	501.1	1.500	637.2
0.100	295.6	0.600	403.5	1.100	527.0	1.600	666.3
0.200	315.9	0.700	426.9	1.200	553.6	1.700	696.0
0.300	336.8	0.800	451.0	1.300	580.9		
0.400	358.4	0.900	475.7	1.400	608.7		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 360
Return Period(s) (years) 100
Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SN1	360 Summer	100	+0%				
1.001	SN2	360 Summer	100	+0%				
1.002	SN3	360 Winter	100	+0%				
2.000	SN4	360 Winter	100	+0%	100/360 Summer			
1.003	Northern Pond	360 Winter	100	+0%	100/360 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SN1	44.880	-0.171	0.000	0.13			5.7	OK
1.001	SN2	44.500	-0.199	0.000	0.25			19.9	OK
1.002	SN3	44.347	-0.199	0.000	0.14			17.6	OK
2.000	SN4	44.347	0.105	0.000	0.09			5.2	SURCHARGED
1.003	Northern Pond	44.346	0.546	0.000	0.07			0.9	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

PN	US/MH Name	Level Exceeded
1.000	SN1	
1.001	SN2	
1.002	SN3	
2.000	SN4	
1.003	Northern Pond	

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APPENDIX F.2 – MICRODRAINAGE CALCULATIONS 1 IN 100 YEAR 6 HOUR STORM. SOUTHERN CATCHMENT

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 2

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	21.000	Add Flow / Climate Change (%)	0
Ratio R	0.360	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Surface Network 2

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.397	4-8	0.792	8-12	0.025

Total Area Contributing (ha) = 1.214

Total Pipe Volume (m³) = 49.699

Network Design Table for Surface Network 2

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	23.101	0.329	70.2	0.148	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	36.678	0.386	95.0	0.051	0.00	0.0	0.600	o	400	Pipe/Conduit	
1.002	31.377	0.399	78.6	0.083	0.00	0.0	0.600	o	400	Pipe/Conduit	
1.003	15.079	0.163	92.5	0.121	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.25	46.779	0.148	0.0	0.0	0.0	1.56	62.1	20.0
1.001	50.00	5.56	46.450	0.199	0.0	0.0	0.0	1.94	243.4	26.9
1.002	50.00	5.81	46.064	0.282	0.0	0.0	0.0	2.13	267.7	38.2
1.003	50.00	5.93	45.615	0.403	0.0	0.0	0.0	2.11	336.3	54.6

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Network Design Table for Surface Network 2

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	29.242	0.289	101.2	0.099	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	15.722	0.160	98.3	0.043	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	14.221	0.141	100.9	0.033	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	17.937	0.273	65.7	0.058	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	18.120	0.072	251.7	0.038	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	14.838	0.173	85.8	0.084	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.009	57.395	0.423	135.7	0.013	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.010	24.076	0.161	149.5	0.077	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	17.895	0.267	67.1	0.086	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	16.351	0.109	150.0	0.074	5.00	0.0	0.600	o	300	Pipe/Conduit	
3.001	49.350	0.530	93.1	0.119	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.002	35.048	0.836	41.9	0.055	0.00	0.0	0.600	o	400	Pipe/Conduit	
5.000	23.829	0.494	48.2	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.011	19.649	0.025	786.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.012	18.393	0.125	147.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
2.000	50.00	5.37	45.965	0.099	0.0	0.0	0.0	1.30	51.7	13.4
1.004	50.00	6.05	45.452	0.545	0.0	0.0	0.0	2.05	326.2	73.8
1.005	50.00	6.17	45.292	0.578	0.0	0.0	0.0	2.02	322.0	78.3
1.006	50.00	6.29	45.151	0.636	0.0	0.0	0.0	2.51	399.4	86.1
1.007	50.00	6.53	44.878	0.674	0.0	0.0	0.0	1.28	203.1	91.3
1.008	50.00	6.64	44.806	0.758	0.0	0.0	0.0	2.20	349.3	102.6
1.009	50.00	7.19	44.633	0.771	0.0	0.0	0.0	1.74	277.3	104.4
1.010	50.00	7.43	44.211	0.848	0.0	0.0	0.0	1.66	264.1	114.8
3.000	50.00	5.19	45.858	0.086	0.0	0.0	0.0	1.60	63.6	11.6
4.000	50.00	5.21	45.625	0.074	0.0	0.0	0.0	1.28	90.6	10.0
3.001	50.00	5.72	45.516	0.279	0.0	0.0	0.0	1.63	115.2	37.8
3.002	50.00	5.92	44.886	0.334	0.0	0.0	0.0	2.92	367.2	45.2
5.000	50.00	5.27	44.794	0.032	0.0	0.0	0.0	1.45	25.7	4.3
1.011	50.00	8.36	44.050	1.214	0.0	0.0	0.0	0.35	6.2«	164.4
1.012	50.00	8.73	44.025	1.214	0.0	0.0	0.0	0.83	14.6«	164.4

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Free Flowing Outfall Details for Surface Network 2

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.012	Southern Outfall	44.643	43.900	0.000	0	0

Simulation Criteria for Surface Network 2

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	21.000	Storm Duration (mins)	30
Ratio R	0.360		

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Online Controls for Surface Network 2

Hydro-Brake® Optimum Manhole: SS13-FC, DS/PN: 1.012, Volume (m³): 5.9

Unit Reference	MD-SHE-0070-2900-1925-2900
Design Head (m)	1.925
Design Flow (l/s)	2.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	70
Invert Level (m)	44.025
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.925	2.9
Flush-Flo™	0.309	2.1
Kick-Flo®	0.624	1.7
Mean Flow over Head Range	-	2.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.8	1.200	2.3	3.000	3.6	7.000	5.3
0.200	2.1	1.400	2.5	3.500	3.8	7.500	5.5
0.300	2.1	1.600	2.7	4.000	4.1	8.000	5.6
0.400	2.1	1.800	2.8	4.500	4.3	8.500	5.8
0.500	2.0	2.000	2.9	5.000	4.5	9.000	6.0
0.600	1.8	2.200	3.1	5.500	4.7	9.500	6.1
0.800	1.9	2.400	3.2	6.000	4.9		
1.000	2.1	2.600	3.3	6.500	5.1		

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Storage Structures for Surface Network 2

Tank or Pond Manhole: Southern Pond, DS/PN: 1.011

Invert Level (m) 44.050

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	467.1	2.200	1172.3

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 360
Return Period(s) (years) 100
Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SS1	360 Summer	100	+0%				
1.001	SS2	360 Summer	100	+0%				
1.002	SS3	360 Summer	100	+0%				
1.003	SS4	360 Summer	100	+0%				
2.000	SS5	360 Summer	100	+0%				
1.004	SS6	360 Summer	100	+0%				
1.005	SS7	360 Summer	100	+0%				
1.006	SS8	360 Summer	100	+0%				
1.007	SS9	360 Winter	100	+0%				
1.008	SS10	360 Winter	100	+0%				
1.009	SS11	360 Winter	100	+0%				
1.010	SS12	360 Winter	100	+0%	100/360 Summer			
3.000	SS17	360 Summer	100	+0%				
4.000	SS14	360 Summer	100	+0%				
3.001	SS15	360 Summer	100	+0%				
3.002	SS16	360 Winter	100	+0%				
5.000	SS18	360 Winter	100	+0%	100/360 Summer			
1.011	Southern Pond	360 Winter	100	+0%	100/360 Summer			
1.012	SS13-FC	360 Winter	100	+0%	100/360 Summer			

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SS1	46.852	-0.152	0.000	0.23			13.2	OK
1.001	SS2	46.526	-0.324	0.000	0.08			17.8	OK
1.002	SS3	46.151	-0.313	0.000	0.11			25.2	OK
1.003	SS4	45.734	-0.331	0.000	0.16			35.9	OK
2.000	SS5	46.030	-0.160	0.000	0.18			8.8	OK
1.004	SS6	45.593	-0.309	0.000	0.22			48.6	OK
1.005	SS7	45.442	-0.300	0.000	0.24			51.6	OK
1.006	SS8	45.284	-0.317	0.000	0.19			56.7	OK
1.007	SS9	45.086	-0.242	0.000	0.28			44.8	OK
1.008	SS10	45.084	-0.172	0.000	0.21			50.3	OK
1.009	SS11	45.082	-0.001	0.000	0.20			51.2	OK
1.010	SS12	45.080	0.419	0.000	0.24			53.6	SURCHARGED
3.000	SS17	45.913	-0.170	0.000	0.13			7.7	OK
4.000	SS14	45.684	-0.241	0.000	0.09			6.6	OK
3.001	SS15	45.613	-0.203	0.000	0.23			24.9	OK
3.002	SS16	45.078	-0.208	0.000	0.07			22.2	OK
5.000	SS18	45.078	0.134	0.000	0.09			2.1	SURCHARGED
1.011	Southern Pond	45.078	0.878	0.000	0.49			2.6	SURCHARGED
1.012	SS13-FC	45.088	0.913	0.000	0.16			2.2	SURCHARGED

PN	US/MH Name	Level Exceeded
1.000	SS1	
1.001	SS2	
1.002	SS3	
1.003	SS4	
2.000	SS5	
1.004	SS6	
1.005	SS7	
1.006	SS8	
1.007	SS9	
1.008	SS10	
1.009	SS11	
1.010	SS12	
3.000	SS17	
4.000	SS14	
3.001	SS15	
3.002	SS16	
5.000	SS18	
1.011	Southern Pond	
1.012	SS13-FC	

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APPENDIX G.1 – MICRODRAINAGE CALCULATIONS 1 IN 30CC EVENT. NORTHERN CATCHMENT

Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.360
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	21.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	30
Climate Change (%)	45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.003	Northern Pond	2160 Winter	30	+45%	30/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.003	Northern Pond	44.576	0.776	0.000	0.08			1.0	SURCHARGED

PN	US/MH Name	Level Exceeded
1.003	Northern Pond	

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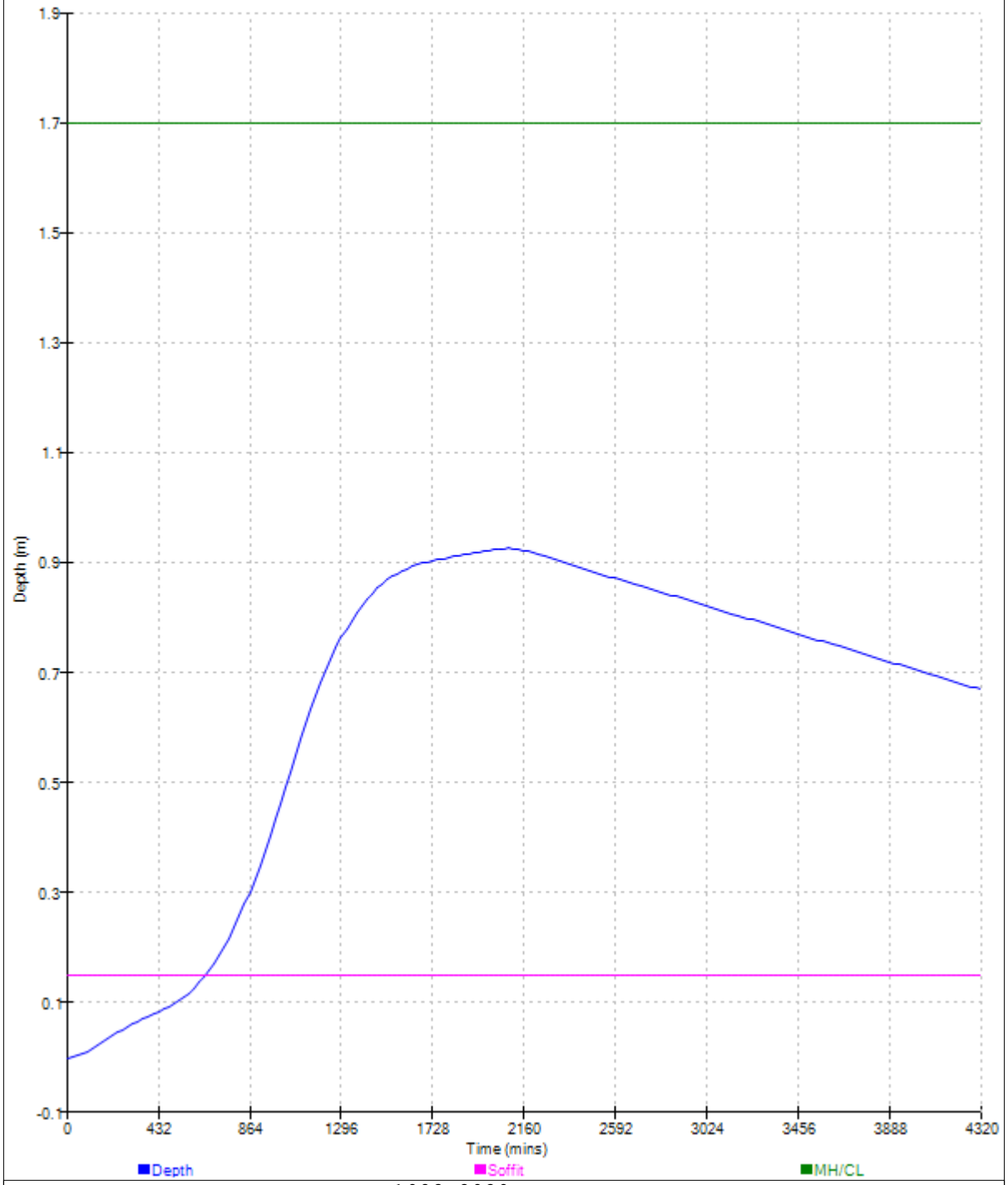
Graphs for Pipe 1.003 US/MH Northern Pond (Surface Network 3)
2160 minute 30 year Winter I+45%
Status: SURCHARGED



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APPENDIX G.2 – MICRODRAINAGE CALCULATIONS 1 IN 30CC EVENT. SOUTHERN CATCHMENT

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 30
Climate Change (%) 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.011	Southern Pond	2160 Winter	30	+45%	30/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.011	Southern Pond	45.414	1.214	0.000	0.50			2.6	SURCHARGED

PN	US/MH Name	Level Exceeded
1.011	Southern Pond	

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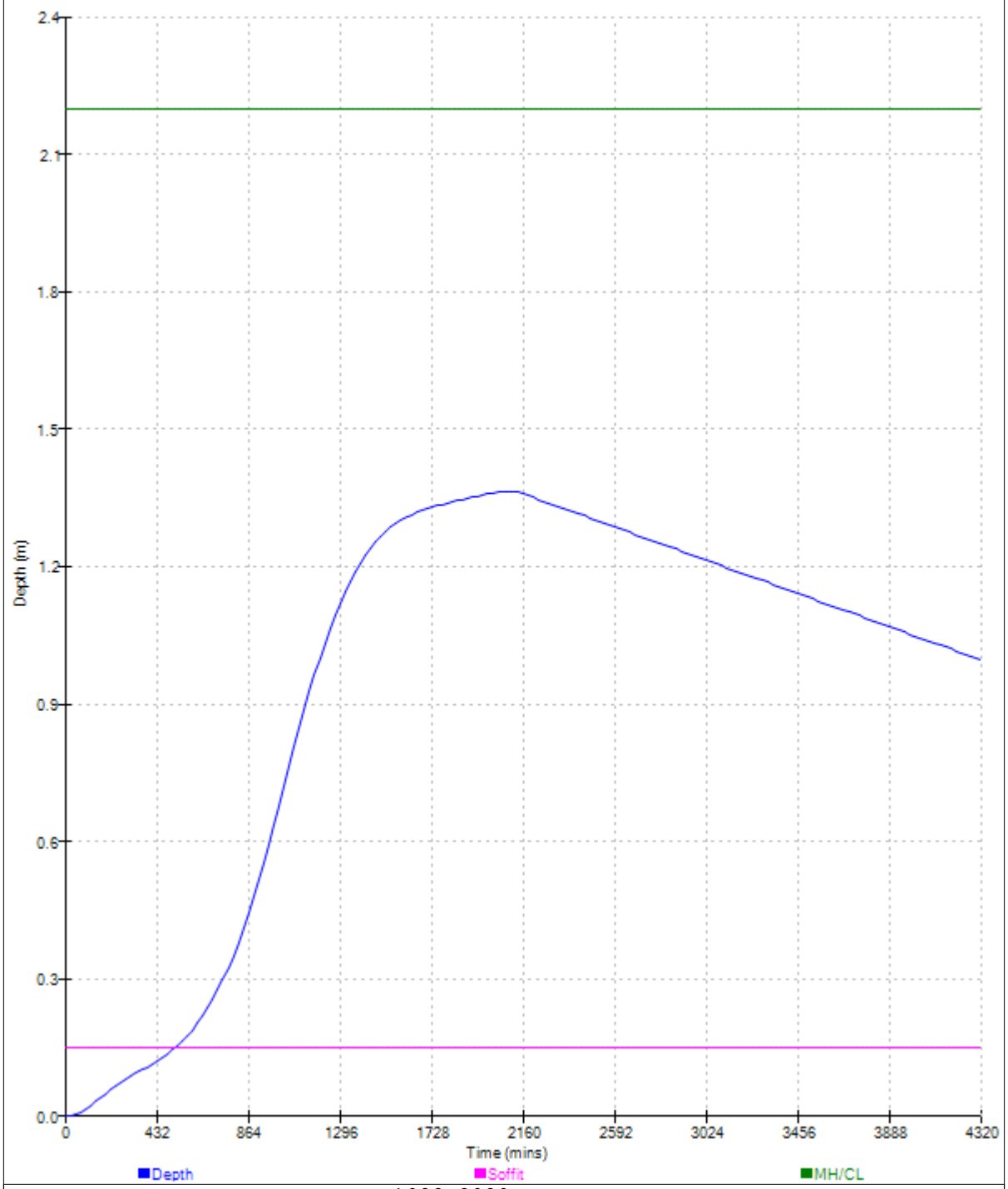
Graphs for Pipe 1.011 US/MH Southern Pond (Surface Network 2)
2160 minute 30 year Winter I+45%
Status: SURCHARGED



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APPENDIX H.1 – MICRODRAINAGE CALCULATIONS 1 IN 1, 1 IN 100 AND 1 IN 100CC YEAR EVENTS. NORTHERN CATCHMENT

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 100
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
1.000	SN1	15 Winter	1	+0%			
1.001	SN2	15 Winter	1	+0%	100/15 Summer		
1.002	SN3	15 Winter	1	+0%			
2.000	SN4	15 Winter	1	+0%	100/180 Winter		
1.003	Northern Pond	1440 Winter	1	+0%	1/60 Summer		

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
1.000	SN1		44.896	-0.155	0.000	0.21			8.8
1.001	SN2		44.522	-0.178	0.000	0.35			27.7
1.002	SN3		44.347	-0.199	0.000	0.25			32.4
2.000	SN4		44.086	-0.156	0.000	0.20			11.0
1.003	Northern Pond		43.954	0.154	0.000	0.07			0.8

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

PN	US/MH Name	Status	Level Exceeded
1.000	SN1	OK	
1.001	SN2	OK	
1.002	SN3	OK	
2.000	SN4	OK	
1.003	Northern Pond	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 100
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
1.000	SN1	15 Winter	100	+0%			
1.001	SN2	15 Winter	100	+0%	100/15 Summer		
1.002	SN3	15 Winter	100	+0%			
2.000	SN4	2160 Winter	100	+0%	100/180 Winter		
1.003	Northern Pond	2160 Winter	100	+0%	1/60 Summer		

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
1.000	SN1		44.962	-0.089	0.000	0.66			28.2
1.001	SN2		44.780	0.080	0.000	1.24			99.5
1.002	SN3		44.471	-0.075	0.000	0.90			117.3
2.000	SN4		44.453	0.211	0.000	0.02			1.3
1.003	Northern Pond		44.454	0.654	0.000	0.07			0.9

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

PN	US/MH Name	Status	Level Exceeded
1.000	SN1	OK	
1.001	SN2	SURCHARGED	
1.002	SN3	OK	
2.000	SN4	SURCHARGED	
1.003	Northern Pond	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	SN1	15 Winter	100	+45%	100/15 Summer			
1.001	SN2	15 Winter	100	+45%	100/15 Summer			
1.002	SN3	15 Winter	100	+45%	100/15 Summer			
2.000	SN4	2160 Winter	100	+45%	100/60 Summer			
1.003	Northern Pond	2160 Winter	100	+45%	100/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SN1	45.473	0.422	0.000	0.90			38.7	SURCHARGED
1.001	SN2	45.193	0.494	0.000	1.62			129.8	SURCHARGED
1.002	SN3	44.782	0.236	0.000	1.18			153.4	SURCHARGED
2.000	SN4	44.774	0.532	0.000	0.03			1.8	SURCHARGED
1.003	Northern Pond	44.774	0.974	0.000	0.09			1.1	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 3

PN	US/MH Name	Level Exceeded
1.000	SN1	
1.001	SN2	
1.002	SN3	
2.000	SN4	
1.003	Northern Pond	

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APPENDIX H.2 – MICRODRAINAGE CALCULATIONS 1 IN 1, 1 IN 100 AND 1 IN 100CC YEAR EVENTS. SOUTHERN CATCHMENT

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 100
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
1.000	SS1	15 Winter	1	+0%	100/15 Summer		
1.001	SS2	15 Winter	1	+0%			
1.002	SS3	15 Winter	1	+0%			
1.003	SS4	15 Winter	1	+0%	100/15 Summer		
2.000	SS5	15 Winter	1	+0%	100/15 Summer		
1.004	SS6	15 Winter	1	+0%	100/15 Summer		
1.005	SS7	15 Winter	1	+0%	100/15 Summer		
1.006	SS8	15 Winter	1	+0%	100/15 Summer		
1.007	SS9	15 Winter	1	+0%	100/15 Summer		
1.008	SS10	15 Winter	1	+0%	100/15 Summer		
1.009	SS11	15 Winter	1	+0%	100/15 Summer		
1.010	SS12	1440 Winter	1	+0%	100/15 Summer		
3.000	SS17	15 Winter	1	+0%			
4.000	SS14	15 Winter	1	+0%	100/15 Winter		
3.001	SS15	15 Winter	1	+0%	100/15 Summer		
3.002	SS16	15 Winter	1	+0%			
5.000	SS18	15 Winter	1	+0%	100/180 Winter		
1.011	Southern Pond	1440 Winter	1	+0%	1/15 Winter		
1.012	SS13-FC	240 Winter	1	+0%	1/15 Summer		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
1.000	SS1		46.874	-0.130	0.000	0.37			20.8
1.001	SS2		46.544	-0.306	0.000	0.12			26.8
1.002	SS3		46.169	-0.295	0.000	0.16			36.8
1.003	SS4		45.759	-0.306	0.000	0.22			51.0
2.000	SS5		46.048	-0.142	0.000	0.29			13.8
1.004	SS6		45.623	-0.279	0.000	0.31			69.9
1.005	SS7		45.475	-0.267	0.000	0.35			73.2
1.006	SS8		45.311	-0.290	0.000	0.27			79.7
1.007	SS9		45.110	-0.218	0.000	0.52			84.2
1.008	SS10		45.002	-0.254	0.000	0.40			93.0
1.009	SS11		44.822	-0.261	0.000	0.37			93.3
1.010	SS12		44.496	-0.165	0.000	0.03			7.6
3.000	SS17		45.929	-0.154	0.000	0.21			12.1
4.000	SS14		45.699	-0.226	0.000	0.14			10.4
3.001	SS15		45.637	-0.179	0.000	0.34			36.9
3.002	SS16		44.982	-0.304	0.000	0.13			43.4
5.000	SS18		44.838	-0.106	0.000	0.18			4.5
1.011	Southern Pond		44.495	0.295	0.000	0.43			2.2
1.012	SS13-FC		44.573	0.398	0.000	0.16			2.1

PN	US/MH Name	Status	Level Exceeded
1.000	SS1	OK	
1.001	SS2	OK	
1.002	SS3	OK	
1.003	SS4	OK	
2.000	SS5	OK	
1.004	SS6	OK	
1.005	SS7	OK	
1.006	SS8	OK	
1.007	SS9	OK	
1.008	SS10	OK	
1.009	SS11	OK	
1.010	SS12	OK	
3.000	SS17	OK	
4.000	SS14	OK	
3.001	SS15	OK	
3.002	SS16	OK	
5.000	SS18	OK	
1.011	Southern Pond	SURCHARGED	
1.012	SS13-FC	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 100
Climate Change (%) 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
1.000	SS1	15 Winter	100	+0%	100/15 Summer		
1.001	SS2	15 Winter	100	+0%			
1.002	SS3	15 Winter	100	+0%			
1.003	SS4	15 Winter	100	+0%	100/15 Summer		
2.000	SS5	15 Winter	100	+0%	100/15 Summer		
1.004	SS6	15 Winter	100	+0%	100/15 Summer		
1.005	SS7	15 Winter	100	+0%	100/15 Summer		
1.006	SS8	15 Winter	100	+0%	100/15 Summer		
1.007	SS9	15 Winter	100	+0%	100/15 Summer		
1.008	SS10	15 Winter	100	+0%	100/15 Summer		
1.009	SS11	2160 Winter	100	+0%	100/15 Summer		
1.010	SS12	2160 Winter	100	+0%	100/15 Summer		
3.000	SS17	15 Winter	100	+0%			
4.000	SS14	15 Winter	100	+0%	100/15 Winter		
3.001	SS15	15 Winter	100	+0%	100/15 Summer		
3.002	SS16	2160 Winter	100	+0%			
5.000	SS18	2160 Winter	100	+0%	100/180 Winter		
1.011	Southern Pond	2160 Winter	100	+0%	1/15 Winter		
1.012	SS13-FC	1440 Winter	100	+0%	1/15 Summer		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
1.000	SS1		47.103	0.099	0.000	1.14			65.1
1.001	SS2		46.628	-0.222	0.000	0.40			87.0
1.002	SS3		46.273	-0.191	0.000	0.52			123.2
1.003	SS4		46.137	0.072	0.000	0.71			161.0
2.000	SS5		46.254	0.064	0.000	0.89			42.7
1.004	SS6		46.082	0.180	0.000	0.91			206.1
1.005	SS7		45.955	0.213	0.000	1.00			212.1
1.006	SS8		45.817	0.216	0.000	0.78			229.8
1.007	SS9		45.651	0.323	0.000	1.50			241.5
1.008	SS10		45.466	0.210	0.000	1.15			269.4
1.009	SS11		45.244	0.161	0.000	0.05			12.6
1.010	SS12		45.244	0.583	0.000	0.06			13.4
3.000	SS17		46.016	-0.067	0.000	0.67			38.0
4.000	SS14		45.937	0.012	0.000	0.42			31.9
3.001	SS15		45.907	0.091	0.000	1.08			117.3
3.002	SS16		45.244	-0.042	0.000	0.02			5.5
5.000	SS18		45.244	0.300	0.000	0.02			0.5
1.011	Southern Pond		45.244	1.044	0.000	0.43			2.2
1.012	SS13-FC		45.236	1.061	0.000	0.17			2.3

PN	US/MH Name	Status	Level Exceeded
1.000	SS1	SURCHARGED	
1.001	SS2	OK	
1.002	SS3	OK	
1.003	SS4	SURCHARGED	
2.000	SS5	SURCHARGED	
1.004	SS6	SURCHARGED	
1.005	SS7	SURCHARGED	
1.006	SS8	SURCHARGED	
1.007	SS9	SURCHARGED	
1.008	SS10	SURCHARGED	
1.009	SS11	SURCHARGED	
1.010	SS12	SURCHARGED	
3.000	SS17	OK	
4.000	SS14	SURCHARGED	
3.001	SS15	SURCHARGED	
3.002	SS16	OK	
5.000	SS18	SURCHARGED	
1.011	Southern Pond	SURCHARGED	
1.012	SS13-FC	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 21.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
1.000	SS1	15 Winter	100	+45%	100/15 Summer		
1.001	SS2	15 Winter	100	+45%	100/15 Summer		
1.002	SS3	15 Winter	100	+45%	100/15 Summer		
1.003	SS4	15 Winter	100	+45%	100/15 Summer		
2.000	SS5	15 Winter	100	+45%	100/15 Summer		
1.004	SS6	15 Winter	100	+45%	100/15 Summer		
1.005	SS7	15 Winter	100	+45%	100/15 Summer		
1.006	SS8	15 Winter	100	+45%	100/15 Summer		
1.007	SS9	15 Winter	100	+45%	100/15 Summer		
1.008	SS10	15 Winter	100	+45%	100/15 Summer		
1.009	SS11	2880 Winter	100	+45%	100/15 Summer		
1.010	SS12	2880 Winter	100	+45%	100/15 Summer		
3.000	SS17	15 Winter	100	+45%	100/15 Summer		
4.000	SS14	15 Winter	100	+45%	100/15 Summer		
3.001	SS15	15 Winter	100	+45%	100/15 Summer		
3.002	SS16	2880 Winter	100	+45%	100/180 Winter		
5.000	SS18	2880 Winter	100	+45%	100/60 Summer		
1.011	Southern Pond	2880 Winter	100	+45%	100/15 Summer		
1.012	SS13-FC	2160 Winter	100	+45%	100/15 Summer		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 2

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
1.000	SS1		47.863	0.859	0.000	1.49			84.7
1.001	SS2		47.296	0.446	0.000	0.49			105.9
1.002	SS3		47.221	0.757	0.000	0.58			137.6
1.003	SS4		47.098	1.033	0.000	0.81			184.1
2.000	SS5		47.295	1.105	0.000	1.00			48.3
1.004	SS6		46.995	1.093	0.000	1.11			249.5
1.005	SS7		46.801	1.059	0.000	1.24			262.4
1.006	SS8		46.586	0.985	0.000	0.97			285.7
1.007	SS9		46.329	1.001	0.000	1.86			299.8
1.008	SS10		46.043	0.787	0.000	1.42			333.6
1.009	SS11		45.711	0.628	0.000	0.06			14.1
1.010	SS12		45.710	1.049	0.000	0.07			15.5
3.000	SS17		46.685	0.602	0.000	0.91			52.0
4.000	SS14		46.513	0.588	0.000	0.58			44.9
3.001	SS15		46.471	0.655	0.000	1.47			159.9
3.002	SS16		45.709	0.423	0.000	0.02			6.3
5.000	SS18		45.709	0.765	0.000	0.02			0.6
1.011	Southern Pond		45.709	1.509	0.000	0.51			2.6
1.012	SS13-FC		45.701	1.526	0.000	0.20			2.7

PN	US/MH Name	Status	Level Exceeded
1.000	SS1	SURCHARGED	
1.001	SS2	SURCHARGED	
1.002	SS3	SURCHARGED	
1.003	SS4	FLOOD RISK	
2.000	SS5	FLOOD RISK	
1.004	SS6	FLOOD RISK	
1.005	SS7	FLOOD RISK	
1.006	SS8	FLOOD RISK	
1.007	SS9	FLOOD RISK	
1.008	SS10	SURCHARGED	
1.009	SS11	SURCHARGED	
1.010	SS12	SURCHARGED	
3.000	SS17	SURCHARGED	
4.000	SS14	SURCHARGED	
3.001	SS15	SURCHARGED	
3.002	SS16	SURCHARGED	
5.000	SS18	SURCHARGED	
1.011	Southern Pond	SURCHARGED	
1.012	SS13-FC	SURCHARGED	

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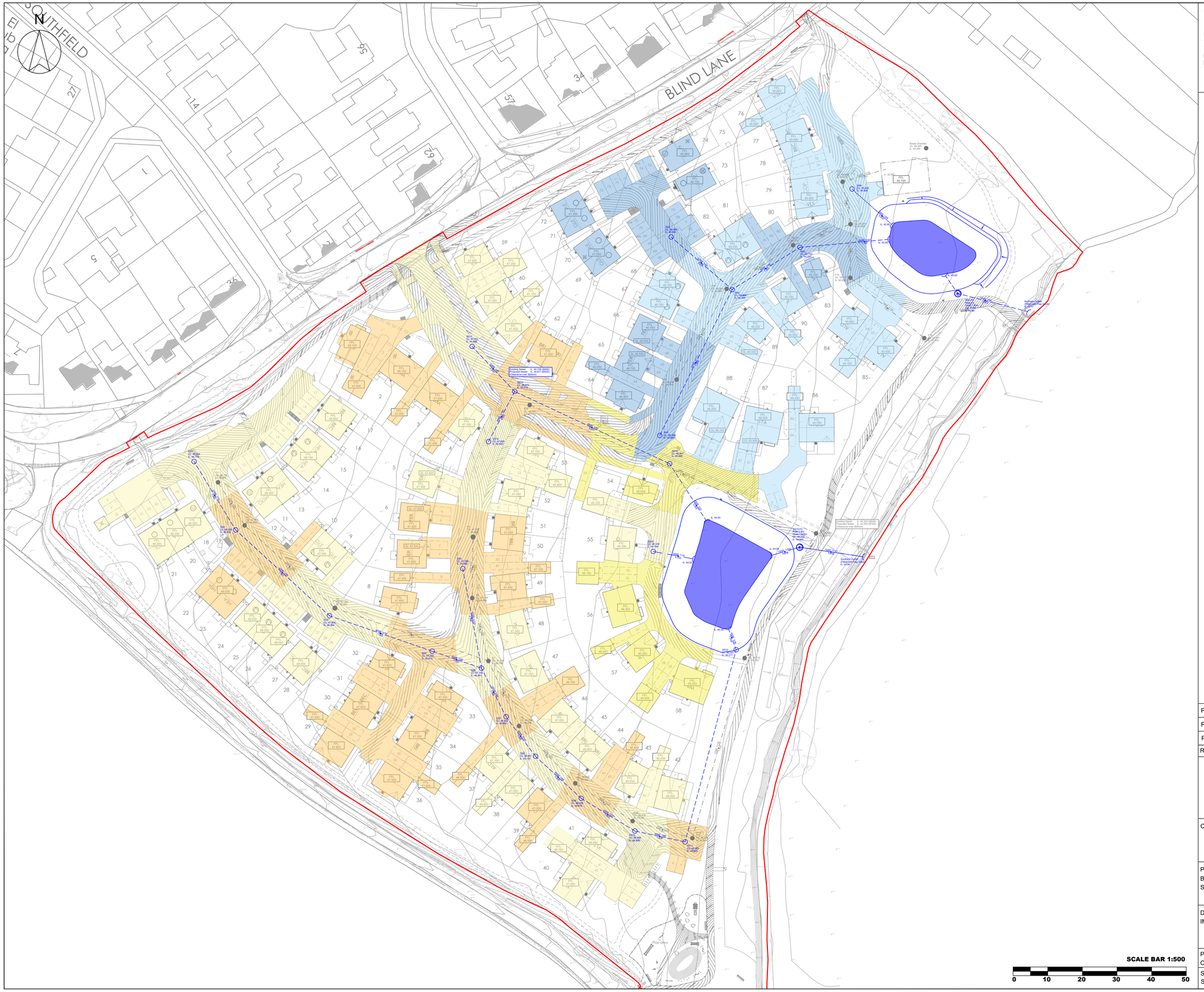
APPENDIX I – DRAINAGE STRATEGY



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CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE.

THE CONTRACTORS MUST REFER TO THE EXISTING SERVICES INFORMATION, DESIGNER´S RISK ASSESSMENT AND RESIDUAL RISKS IN THE CONTRACT DOCUMENTATION.

THIS SYMBOL IS USED TO HIGHLIGHT INSTANCES OF RISK WITHIN THE CONSTRUCTION PROCESS.

THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN BASED UPON THE SITE LAYOUT:

RECEIVED ON:

MANHOLE CATCHMENT		
MANHOLE ID	IMPERMEABLE AREA (m^2)	INCLUDING URBAN CREEP 10% (m^2)
SOUTHERN CATCHMENT		
SS1	1424	1477
SS2	503	515
SS3	796	828
SS4	1169	1213
SS5	949	986
SS6	412	428
SS7	333	333
SS8	550	579
SS9	374	379
SS10	815	842
SS11	130	130
SS12	739	765
SS13-FC	0	0
SS14	713	738
SS15	1154	1187
SS16	542	547
SS17	839	857
SS18	311	319
TOTAL	**11706**	**12079**
NORTHERN CATCHMENT		
SN1	682	703
SN2	844	878
SN3	436	441
SN4	877	903
SN5-FC	980	1026
TOTAL	**3819**	**3951**

REV	DESCRIPTION	BY	APP	DATE
P03	SITE LAYOUT UPDATES - ROADS	CL	FA	17/02/26
P02	LEVELS STRATEGY UPDATES	CL	FA	14/01/26
P01	FIRST ISSUE	CL	FA	01/12/25

CLFA DESIGN

71-75 Shelton Street, Covent Garden
London, WC2H 9JQ

CLIENT:
Wain HOMES

PROJECT:
BLIND LANE
SOUTHWICK

DRAWING:
IMPERMEABLE AREAS PLAN

PROJECT NUMBER:	DRAWING NUMBER:	
CLFA137	CLFA137-CLFA-00-XX-DR-C-0681	
STATUS: S2	SCALE @ A1 1:500	REV: P03

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THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN BASED UPON THE SITE LAYOUT:

RECEIVED ON:

REV	DESCRIPTION	BY	APP	DATE
P02	SITE LAYOUT UPDATES - ROADS	CL	FA	17/02/26
P01	FIRST ISSUE	CL	FA	14/01/25

CLFA DESIGN

71-75 Shelton Street, Covent Garden
London, WC2H 9JQ

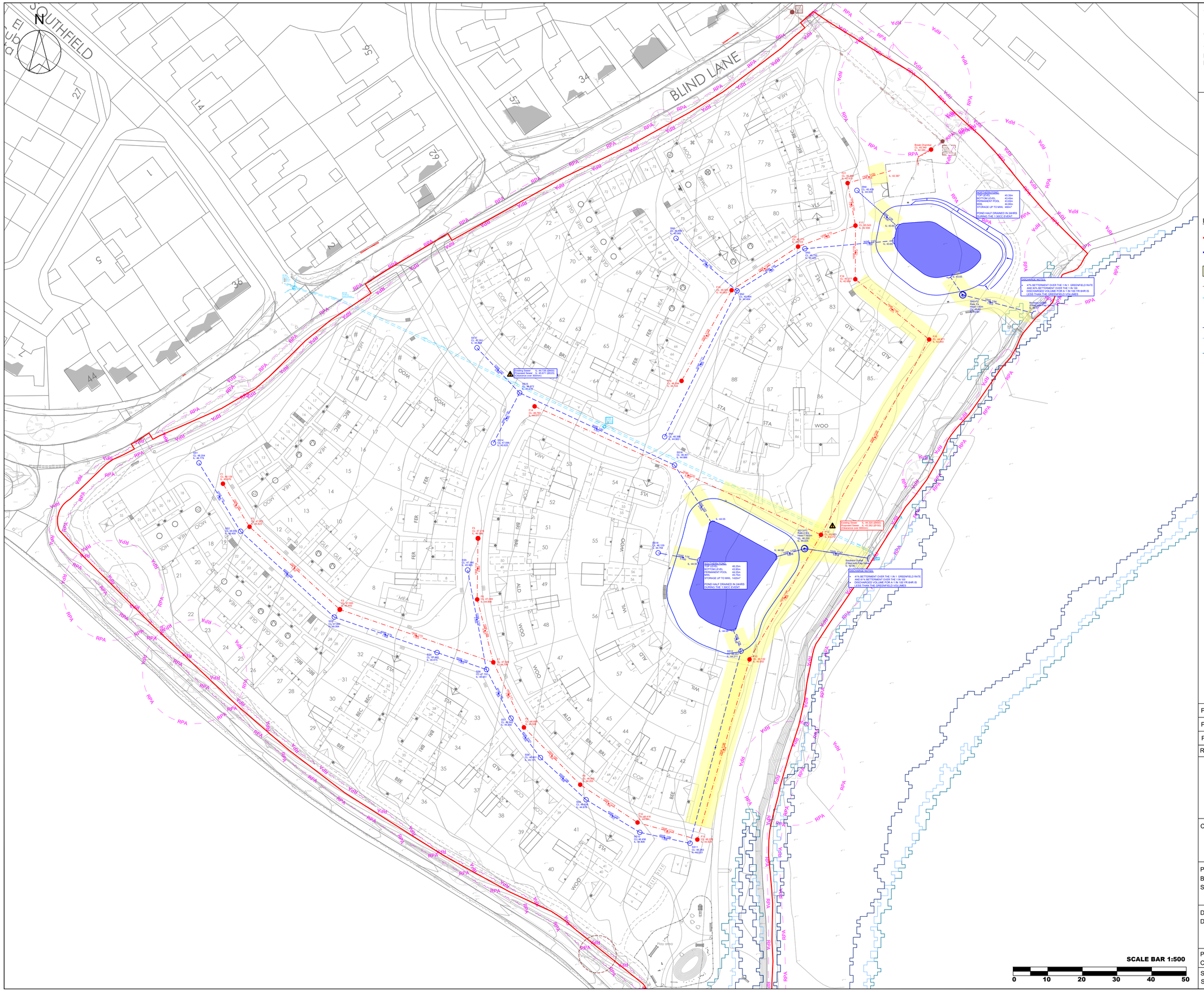
CLIENT:

Wain HOMES

PROJECT:
BLIND LANE
SOUTHWICK

DRAWING:
DRAINAGE EXCEEDANCE PLAN

PROJECT NUMBER:	DRAWING NUMBER:	
CLFA137	CLFA137XXX-CLFA-00-XX-DR-C-0695	
STATUS: S2	SCALE @ A1 1:500	REV: P02



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THIS SYMBOL IS USED TO HIGHLIGHT INSTANCES OF RISK WITHIN THE CONSTRUCTION PROCESS.

THE INFORMATION SHOWN ON THIS DRAWING HAS BEEN BASED UPON THE SITE LAYOUT:

RECEIVED ON:

GENERAL NOTES:

1. Do not scale this drawing.
2. All levels are shown in metres above Ordnance Datum (m AOD).
3. Contractor to verify dimmensions on site.
4. This drawing is to be read in conjunction with the relevant Architect's, Engineer's and specialist manufacture's drawings, reports and specifications.

DRAINAGE WORKS:

1. All drainage to be laid soffit to soffit unless otherwise shown.
2. All drainage for adoption is to comply with the Design and Construction Guidance (DCG). All private drainage is to comply with the current Building Regulations, BS EN-752 Drain and Sewer systems outside buildings and other relevant British Standards and Codes of Practice.

LEGEND:

- PROPOSED ADOPTABLE S104 FOUL SEWER
- PROPOSED ADOPTABLE S104 SURFACE WATER SEWER
- ADOPTABLE SEWER EASEMENT (3m min unless otherwise shown)
- EXISTING FOUL SEWER
- EXISTING SURFACE SEWER
- EXISTING TREE ROUTE PROTECTION AREA
- 1 IN 30 YEAR FLOOD OUTLINE
- 1 IN 100 YEAR FLOOD OUTLINE
- 1 IN 100CC YEAR FLOOD OUTLINE (CC - CLIMATE CHANGE 26%)

REV	DESCRIPTION	BY	APP	DATE
P03	SITE LAYOUT UPDATES - ROADS	CL	FA	17/02/26
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CLFA DESIGN

71-75 Shelton Street, Covent Garden
London, WC2H 9JQ

CLIENT:

Wain HOMES

PROJECT:
BLIND LANE
SOUTHWICK

DRAWING:
DRAINAGE STRATEGY FOR PLANNING

PROJECT NUMBER:	DRAWING NUMBER:	
CLFA137	CLFA137-CLFA-00-XX-DR-C-0512	
STATUS: S2	SCALE @ A1 1:500	REV: P03