

Land off Spitfire Road

Calne

Wiltshire

Surface Water Drainage Document

Planning Application Number PL/2026/00135

Conditions 8, 9, 10 and 11

April 2026



**Old School House
St John's Road
BATH, BA2 4AF
t: 01761 479950**

Document Control:

Project Number: 671

Project: Land off Spitfire Road, Calne, Wiltshire

Client: Allison Homes

Document Title: Surface Water Drainage Document

Author: Mark Headford

Revision: -

Status: For Discharge of Conditions 8, 9, 10 & 11

Control date: 13/04/2026

Record of Issue

Issue	Status	Author	Date	Check	Date	Authorised	Date
-	Planning Conditions	M Headford	13/04/2026	G Ballard	13/04/2026	G Ballard	13/04/2026

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1. Introduction

- 1.1. This Surface Water Drainage document has been prepared by Phoenix Design Partnership Limited on behalf of Allison Homes for submission and discharge of conditions 8, 9, 10 and 11 of the Outline Planning Consent reference PL/2023/10421 dated 17th February 2025.
- 1.2. An extract of the Drainage Conditions are include within Appendix A and quoted below for quick reference:

Conditions 8 states:-

Prior to commencement of development, calculations and associated plans which demonstrate that the required 20% betterment against greenfield rates has been achieved for all storm events between the 1 in 1-year and the 1 in 100-year return period storm events shall be submitted to the Local Planning Authority for approval in writing. The development shall be implemented in accordance with the approved calculations and associated plans.

Conditions 9 states:-

Prior to commencement of development, a plan shall be submitted to and approved in writing by the Local Planning Authority showing overland exceedance routes for flows in excess of the 1 in 100-year plus climate change (40%) rainfall event, demonstrating that exceedance flows will be wholly and safely managed on site and will not flood people and/or property. The development shall be implemented in accordance with the approved plan.

Conditions 10 states:-

Prior to commencement of development, a drainage layout drawing, which shows all inspection chamber references, and pipe numbers that correspond to the MicroDrainage outputs shall be submitted to the Local Planning Authority for approval in writing. The development shall be implemented in accordance with the approved layout drawing.

Conditions 11 states:-

Prior to the occupation of the first dwelling, an operation and maintenance plan that details the responsibilities of the management company and frequency of maintenance activities with regards to the constructed surface water drainage system shall be submitted to the Local Planning Authority for approval in writing. The plan shall be implemented in accordance with the approved details.

- 1.3. This report also addresses Wilshire County Council Drainage Officers Planning comment which is included within Appendix B for quick reference.
- 1.4. This Surface Water Drainage document should also be read in conjunction with the Phoenix Design Partnership Flood Risk Assessment dated 30th August 2022, submitted and approved under the Outline Planning Consent reference PL/2023/10421 dated 17th February 2025.

2. Surface Water Drainage Design

The surface water run-off from the Allison Homes site has been designed to drain to an existing attenuation pond prior to discharging to Abberd Brook. Refer to General Engineering layout drawing No. 671-P-100 enclosed within Appendix D.

Details of the existing pond is shown on drawing No. 130-113-C - Attenuation Pond Details enclosed within Appendix D.

The existing attenuation pond currently provides attenuation to the surface water run-off from the residential developments located to the west of Sandpit Lane planning reference 08/2438/OUT and part of the residential development to the south of Abberd lane and immediately west of Spitfire road, planning reference 13/2833/OUT. The drainage plans for serving these areas are shown on drawing Nos 130-111-E - Proposed Drainage Layout Sheet 1 of 2 and 130-112-C - Proposed Drainage Layout Sheet 2 of 2 enclosed within Appendix D.

The existing attenuation pond was designed to cater for the whole of the residential development located to the west of Spitfire Road, but due to site layout and levels only approximately 50% of this development area discharged to the existing attenuation pond. Therefore the existing attenuation pond has adequate spare capacity to cater for the proposed Allison Homes site.

3. Existing Greenfield Run-off Rates

The greenfield run-off rates for a **1 hectare site area** have been calculated within the approved Flood Risk Assessment and are shown below:-

Q1	(1 year existing green-field run-off)	=	4.0 l/s
Q30	(30 year existing green-field run-off)	=	9.8 l/s
Q100	(100 year existing green-field run-off)	=	12.4 l/s
Qbar	(mean annual green-field run-off, 2.3 years)	=	5.1 l/s

4. Allowable Greenfield Run-off Rates (Application Site)

Wiltshire County Council requires 20% betterment over the existing greenfield run-off rates for all storm return periods from the 1 year and up to the 1 in 100 year event. The existing greenfield run-off rates and the 20% betterment rate for the Allison Homes site (2.98 Hectares site area) is shown in Table 1 below:-

Table 1

Storm Return Period	Existing Greenfield Run-off Rate (l/s)	20% Betterment (l/s)
1	11.92	9.5
30	29.2	23
100	36.9	29.5

In order to prove that condition 8 can be discharged, the total existing greenfield run-off rates need to be added up for the two existing sites discharging to the existing attenuation pond and the proposed Local Centre (Robert Hitchins Site) planning reference PL/2023/10421 and the proposed Allison Homes Site.

As stated previously the existing residential developments currently discharging to the existing attenuation pond are the residential development located to the west of Sandpit Lane planning reference 08/2438/OUT (9.19 hectares) and part of the residential development to the south of Abberd lane and immediately west of Spitfire road, planning reference 13/2833/OUT (2.18 Hectares). The combined greenfield run-off rates for both sites and the proposed local centre is shown in table 2 below.

Table 2

	08/2438/OUT (9.19 hectares)	13/2833/OUT (2.18 hectares)	PL/2023/10421 (0.31 hectares)	
Storm Return Period	Existing Greenfield Run-off Rate (l/s)	Existing Greenfield Run-off Rate (l/s)	Existing Greenfield Run-off Rate (l/s)	Total Existing Greenfield Run-off Rates
1	36.76	8.72	1.24	46.7
30	90.0	21.36	3.03	114.3
100	113.9	27.03	3.84	144.7
Qbar	47.2	11.11	1.58	59.89

The total allowable greenfield run-off rates is the combination of the table 1 20% betterment rates plus the existing rates shown in table 2. This is summarised in table 3 below-

Table 3

Storm Return Period	Total Allowable Greenfield Run-off Rate (l/s)
1	56.2
30	137.3
100	174.2

In order to meet the surface water run-off for the existing 1 year event, the existing flow control device (hydro-brake) will be replaced. The new hydro-brake will be set to the 1 year greenfield run-off rate (56 l/s). This will provide significant betterment on the higher storm return periods, refer to Section 5 and also ensure that the original allowable discharge rate, Qbar rate of 47.2 l/s is maintained ($47.2 + 9.5 = 56.7$).

Original allowable greenfield rate for all storm return periods = 47.2 l/s (Qbar rate).

Allison Homes 1 yr 20% betterment rate = 9.5 l/s

Therefore restrict SW run-off to less than 56.7 l/s for all storm return periods between 1 and 100yr rate including climate change. (45%cc used in accordance with current guidance).

5. Micro-Drainage Simulations

The Micro-drainage model used within the FRA entitled “Land South of Abberd Lane, Calne” has been used and built upon to simulate the overall drainage network.

Please note that the original surface water drainage design serving the existing residential developments had 30% climate change allowance.

In order to allow for the 45% climate change for the proposed application site, the micro-drainage simulation has been run for 30% cc but additional area has been allowed for the proposed application site in the model to capture and allow for the 45% cc. The application site impermeable area has been added via a time area diagram directly onto the pond node at pipe number 1.030.

The results of the modelling are contained within Appendix E and summarised in table 4 below:

Attenuation Pond Simulation Results

(Top of existing pond = 73.5mAOD, Base Level = 71.08mAOD, 2.42m deep)

Table 4

Storm Event (years)	Discharge (l/s)	Overall Betterment (%)	Water Level (mAOD)	Attenuation Depth (mm)	Freeboard (mm)
1	53.6	24%	71.555	475	1945
30	53.6	63%	72.227	1147	1273
100	53.6	71%	72.559	1479	0.941
100+45% CC	55.9	69%	72.974	1894	526

The above results show that the discharge rates are below that shown in table 3 and prove that at least 20% betterment has been achieved for all storm return periods and even offers significant further betterment in the higher storm return periods.

The freeboard in the existing attenuation pond is greater than 0.3m for all events in accordance with current guidance.

6. Overland Flows/ Flood Exceedance Routing

As requested by the Wiltshire County Council drainage officer and to discharge condition 9, a plan showing the overland exceedance flood routes have been provided, refer to Drawing No. 671-P-510 - Flood Exceedance Routing contained within Appendix F.

Please note that the proposed surface water drainage system has been designed to cater for the 1 in 100 year plus 45% climate change without flooding occurring. In the unlikely event that a sewer becomes blocked, or fails or the capacity exceeded the proposed development has been designed to ensure flood routes are provided to convey and direct flows through the development without causing flood risk to existing or new properties.

7. Surface Water Drainage Management

The surface water sewers shown on drawing No. 671-P-100 enclosed within Appendix D, will be offered for adoption under a Section 104 Agreement in accordance with Design and Construction Guidance for foul and surface water Code for adoption agreements "the Code". All details will be subject to technical approval at the detailed design stage as part of the S104 process. The S104 may be with Wessex Water or a suitably accredited NAV operator.

Once S104 agreement has been reached, this agreement will be forwarded to Wiltshire County Council for their records.

8. Conclusions

- 8.1.** At least 20% betterment over existing greenfield run-off rates has been provided in accordance with Wiltshire County Council betterment policy in order to satisfy condition 8. Refer to Section 5, Table 4 showing a summary of the results.
- 8.2.** A plan showing the overland exceedance flood routes have been provided, refer to Drawing No. 671-P-510 - Flood Exceedance Routing contained within Appendix F in order to satisfy condition 9.
- 8.3.** Drainage layout plans and micro-drainage simulations have been provided, refer to Appendix D and Appendix E in order to satisfy Condition 10. Also refer Section 5, Table 4 showing a summary of the results.
- 8.4.** In order to satisfy condition 11, the surface water sewers will be offered for adoption under a Section 104 Agreement in accordance with Design and Construction Guidance for foul and surface water Code for adoption agreements "the Code". The S104 may be with Wessex Water or a suitably accredited NAV operator. Once S104 agreement has been reached, this agreement will be forwarded to Wiltshire County Council for their records.
- 8.5.** This Surface Water Drainage document and supporting evidence demonstrates that Conditions 8, 9, 10 and 11 have been met and that these conditions can be safely discharged.

Appendix A

Extract of Outline Drainage Planning Conditions

- k) a scheme for recycling/disposing of waste resulting from demolition and construction works;
- l) measures for the protection of the natural environment; and
- m) hours of construction, including deliveries.

The development shall be implemented in accordance with the approved details.

6. **Residential Travel Plan:** The development shall be carried out in accordance with the approved Residential Travel Plan (PFA Consulting, dated September 2022). The provisions and measures contained therein shall be implemented in full and those parts identified for implementation after occupation shall be implemented in accordance with the timetable contained therein and shall continue to be implemented if any part of the development remains occupied.
7. **Boundary with Abberd Fields Farm:** Prior to the occupation of any dwelling adjacent to Abberd Fields Farm, a scheme for the erection of a 2-metre high close boarded fence, including its location and specification, shall have been submitted to and approved in writing by the Local Planning Authority, and implemented in accordance with the approved details. It shall thereafter be retained for the lifetime of the residential development.
8. **Surface water:** Prior to commencement of development, calculations and associated plans which demonstrate that the required 20% betterment against greenfield rates has been achieved for all storm events between the 1 in 1-year and the 1 in 100-year return period storm events shall be submitted to the Local Planning Authority for approval in writing. The development shall be implemented in accordance with the approved calculations and associated plans.
9. **Surface water:** Prior to commencement of development, a plan shall be submitted to and approved in writing by the Local Planning Authority showing overland exceedance routes for flows in excess of the 1 in 100-year plus climate change (40%) rainfall event, demonstrating that exceedance flows will be wholly and safely managed on site and will not flood people and/or property. The development shall be implemented in accordance with the approved plan.
10. **Drainage layout:** Prior to commencement of development, a drainage layout drawing, which shows all inspection chamber references, and pipe numbers that correspond to the MicroDrainage outputs shall be submitted to the Local Planning Authority for approval in writing. The development shall be implemented in accordance with the approved layout drawing.
11. **Surface water drainage management:** Prior to the occupation of the first dwelling, an operation and maintenance plan that details the responsibilities of the management company and frequency of maintenance activities with regards to the constructed surface water drainage system shall be submitted to the Local Planning Authority for approval in writing. The plan shall be implemented in accordance with the approved details.
12. **Construction Management Plan:** Prior to commencement of development, a Construction Management Plan that details how surface water will be managed on site during construction shall be submitted to the Local Planning Authority for

Appendix B

Wiltshire County Council Drainage Officer Planning Comments

To:	Peter Crozier	From:	Drainage (Barney Taylor)
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Planning App Ref:	PL/2026/00135
Service Ref:	Drainage
Date:	09/02/2026

PROPOSAL

Demolition of existing structures and construction of 90 homes, with areas of open space, a play area, sustainable drainage infrastructure, internal roads, paths and parking areas, landscaping and associated works, plant and infrastructure and discharge of conditions 7 (boundary with Abberd Farm), 8 (Surface Water), 9 (Surface Water), 14 (Construction Ecological Management Plan), 15 (Landscape Ecological Management Plan), 16 (Lighting), 17 (Wildlife Features) and 18 (Noise Assessment) of outline planning permission PL/2022/07893

SITE LOCATION

Land off Spitfire Road, Calne. SN11 8TE

APPLICATION DOCUMENTS REVIEWED

- *Application Form*
- *Construction Ecological Management Plan*
- *Detailed Engineering – Sheet 1 & 2*
- *Flood Exceedance Routing*
- *General Engineering*
- *Location Plan*
- *Planning Layout*
- *Planning Statement*
- *Road and Sewer Long Sections*
- *PL/2022/07893 – Appeal – Appeal Decision*

Assessment

PL/2022/07893 has been supported with a Site-Specific Flood Risk Assessment (FRA). It should be noted that our comments below are reliant on the accuracy and completeness of the FRA and all documents submitted by the applicant, we do not take any responsibility for incorrect data or interpretation made by the authors.

The LLFA will not comment on conditions 7 (boundary with Abberd Farm), 14 (Construction Ecological Management Plan), 15 (Landscape Ecological Management Plan), 16 (Lighting), 17 (Wildlife Features) and 18 (Noise Assessment).

The applicant should note that conditions 10-12 will be of interest to the LLFA. We expect the applicant will provide the information for these conditions separately to this application.

ASSESSMENT OF THE PROPOSAL

Context

In 2025 The LLFA had the following conditions for which information was required before these could be discharged:

8. Surface water: Prior to commencement of development, calculations and associated plans which demonstrate that the required 20% betterment against greenfield rates has been achieved for all storm events between the 1 in 1-year and the 1 in 100-year return period storm events shall be submitted to the Local Planning Authority for approval in writing. The development shall be implemented in accordance with the approved calculations and associated plans.

9. Surface water: Prior to commencement of development, a plan shall be submitted to and approved in writing by the Local Planning Authority showing overland exceedance routes for flows in excess of the 1 in 100-year plus climate change (40%) rainfall event, demonstrating that exceedance flows will be wholly and safely managed on site and will not flood people and/or property. The development shall be implemented in accordance with the approved plan.

RECOMMENDATION: Condition 8 and 9 cannot be discharged until the following information is submitted and accepted by the LLFA:

- It is noted in the Detailed Engineering – Sheet 2 that the applicant has annotated the outfall from the existing attenuation pond, stating “existing hydrobrake to be replaced with a new hydrobrake to restrict flows to new greenfield run-off rate of 62l/s, refer to section 6.3.6 of approved FRA... PL/2022/07893”.

Referring to Section 6.3.6 of the FRA dated August 2022, it is apparent the applicant proposes to restrict flows to greenfield QBAR rate.

This is not agreeable to the LLFA. The applicant must demonstrate that post development discharges provide a minimum of 20% betterment over pre-development discharges for both peak flow and volume, for each of the 1 in 1, 30 and 100+cc rainfall events. Wiltshire Council's betterment policy can be found [here](#).

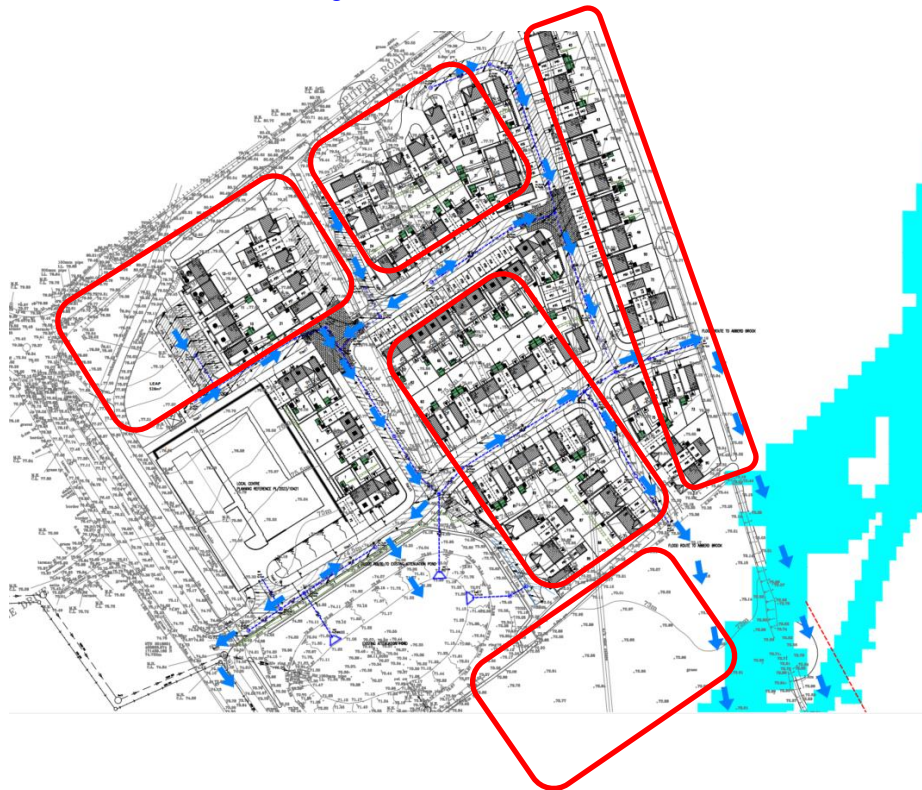
The applicant is recommended to provide a simple table of the pre-development greenfield rates, the proposed post-development discharge rate, and the betterment achieved for each rainfall event.

The applicant should note that Wiltshire Council now requires 30% betterment on pre-development greenfield rates. As Condition 8 stipulates 20% betterment on greenfield discharges, the LLFA will only require 20% betterment.

- It is noted the applicant has provided the Flood Exceedance Routing drawing, however the applicant has not provided sufficient detail to remove this condition.

The applicant must provide flood exceedance flow arrows across the extent of the development, including rear gardens, and not just along highways. The red outlines below represent where further exceedance routing arrows are required.

This information is required to demonstrate flood risk is safely managed to people & property, in line with the National Standards for SuDS: [Standard 3: management of extreme rainfall and flooding](#).



INFORMATIVES

Wiltshire Council is the land drainage authority under the Land Drainage Act 1991. Land drainage consent is required if a development proposes to discharge flow into an ordinary watercourse or carry out work within 8m of an ordinary watercourse.

An ordinary watercourse is a watercourse that does not form part of a main river. The term watercourse includes all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows.

Wiltshire Council's land drainage bylaws can be downloaded [here](#). The land drainage consent application form and guidance notes can be found on our website [here](#).

Prior to any works commencing on the upstream drainage network, the approved outfall structure and flow control device shall be fully constructed, tested, and commissioned. No discharge to the receiving system (including watercourses, waterbodies, sewers, or drains) shall occur until these measures are operational to ensure compliance with agreed discharge rates and prevent an increase in flood risk elsewhere.

Appendix C

Extract of FRA for Land South of Abberd Lane, Calne

The existing allowable surface water run-off rate from the residential development currently under construction was set to the Qbar greenfield run-off rate of 47.2 l/s. Please refer to Section 3.6.6 of the FRA prepared by Phoenix Design Partnership (PDP) for this development to the north, dated August 2011.

The existing Qbar greenfield run-off from catchment area 1 (2.188 ha) equates to 11.15 l/s ($5.1 \text{ l/s} \times 2.188$). Refer to Section 4.3 for existing greenfield run-off rates.

Therefore the total allowable surface water run-off rate from the existing attenuation pond equates to 58.3 l/s ($47.2 + 11.15$).

The existing Micro-drainage model used within the FRA prepared by PDP mentioned previously has been updated to include the impermeable areas from catchment areas 1, including retaining the existing Hydro-brake flow control device for the attenuation pond which is currently restricted to the 47.2 l/s. Micro-drainage simulations of the surface water network and attenuation pond is contained within Appendix G and shows no flooding for the 1 in 100 year plus 30% climate change allowance and with a maximum discharge rate of 45.9 l/s. Refer to Table 1 within Section 7.5 showing a summary of proposed flows and water levels within the existing attenuation pond. The proposed drainage connections will therefore not have a detrimental effect on the existing infrastructure.

Catchment Area 2

The surface water drainage within this area will drain to a new attenuation pond located within the lower section of the site.

The allowable surface water run-off from the proposed attenuation pond will be restricted to the Qbar greenfield run-off rate for this catchment area (2.154 ha) which equates to 10.9 l/s (2.154×5.1) for the 1 in 100 year + 30% CC storm return period. Refer to Section 4.3 for existing greenfield run-off rates.

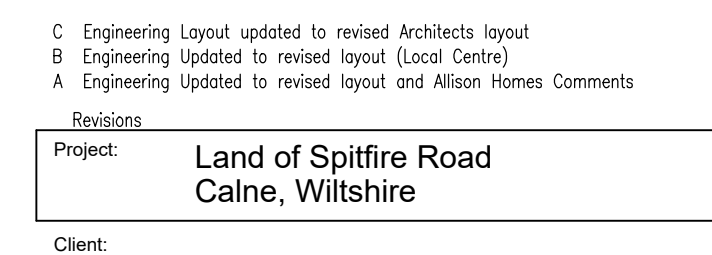
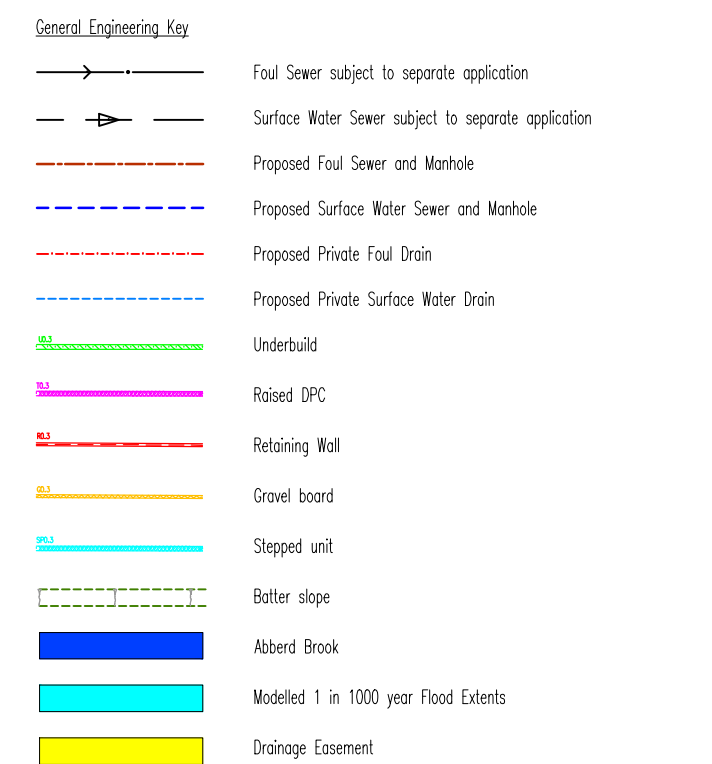
Micro-drainage simulations of the surface water network and attenuation pond is contained within Appendix H and shows no flooding for the 1 in 100 year plus 30% climate change allowance and with a maximum discharge rate of 10.2 l/s. Refer to Table 2 within Section 7.5 showing a summary of proposed flows and water levels within the proposed attenuation pond.

The private surface water drainage for the development will be designed in accordance with the Building Regulations Part H 2002.

It is intended to offer the surface water sewers to Wessex Water for adoption under a Section 104 Agreement in accordance with The Water Industries Act 1991. All details will be subject to technical approval at the detailed design stage as part of the S104 process.

Appendix D

Drainage Drawings



Drawing:	General Engineering		
Scale:	1:500	Date:	November 2025
		Drawn by:	MJH
Drawing No:	671-P-100	Rev:	C


PHOENIX DESIGN
Partnership Ltd.

Unit 9, Westway Garage,
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Dwg Status: **PLANNING**



- LEGEND**
- ADOPTABLE FOLL SEWER & MANHOLE
 - ADOPTABLE PHASE 1 S&W FOLL SEWER & MANHOLE (UNDERTAKEN BY WESSEX WATER)
 - ADOPTABLE SURFACE WATER SEWER & MANHOLE
 - ADOPTABLE HIGHWAY DRAIN & MANHOLE
 - BACKDROP
 - HIGHWAY GULLY & CONNECTION
 - FUTURE FOLL RISING MAIN (UNDERTAKEN BY WESSEX WATER)
 - LAND DRAINAGE

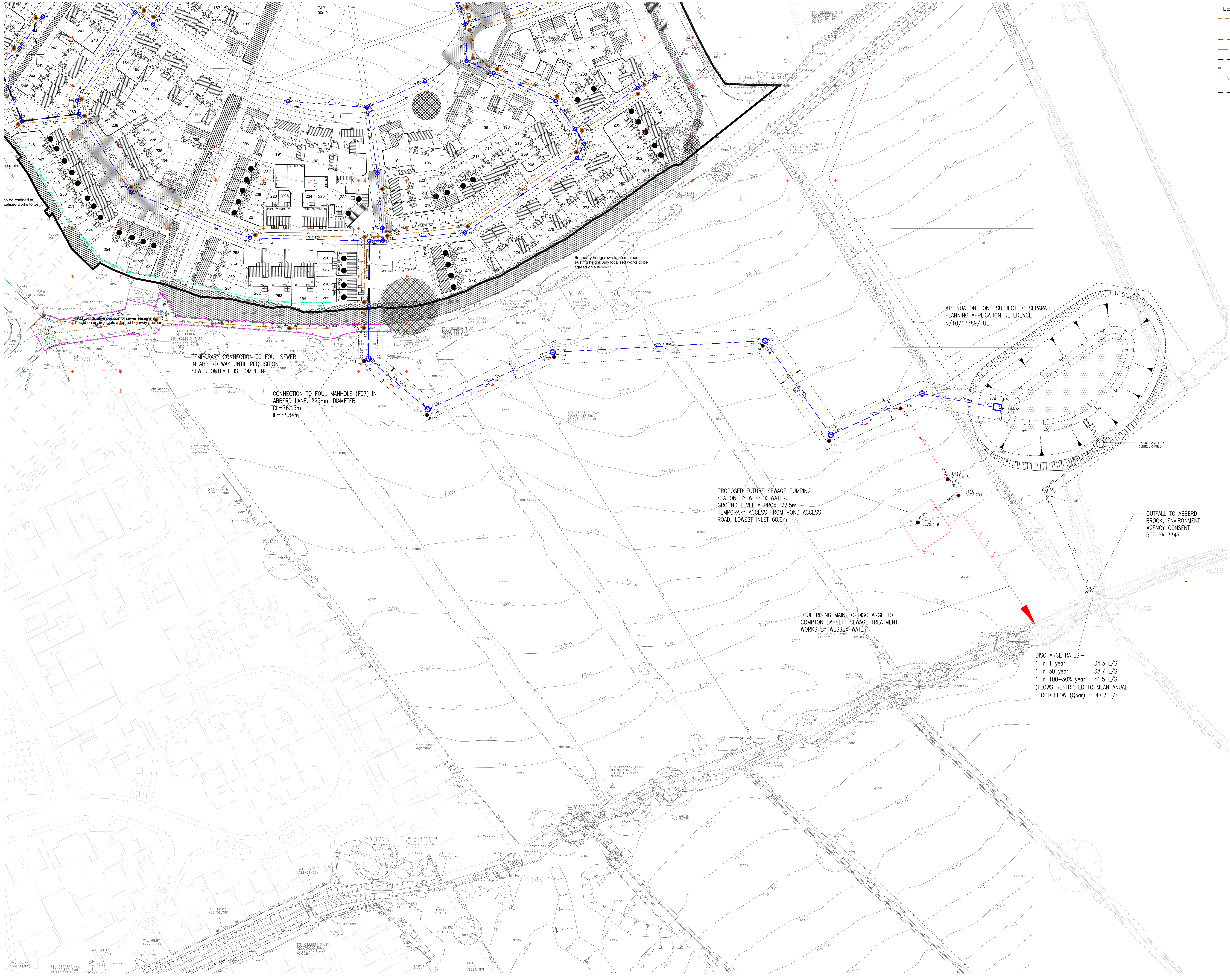
© 23/08/2011 (M&H) Layout updated to Site Waterplan PL01-4
© 06/08/2011 (M&H) Layout updated to Site Waterplan PL01-3
© 05/02/2011 (M&H) Layout updated to Site Waterplan 40
© 15/09/2010 (M&H) Pipe code references added to SW drainage network
A 21/01/2010 (M&H) Drainage Layout updated to full development phasing
Revisions:

Project:	Land East of Calne
Client:	Robert Hitchens Ltd.
Drawing:	Proposed Drainage Layout Sheet 1 of 2
Scale:	1:500 @ A3
Date:	16.07.2010
Drawn by:	MJH
Drawing No:	130-111
Rev:	E

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Drp Status: **FOR APPROVAL**



- LEGEND**
- ADOPTABLE FOUL SEWER & MANHOLE
 - ADOPTABLE PHASE 1 150mm FOUL SEWER & MANHOLE (UNDERTAKEN BY WESSEX WATER)
 - ADOPTABLE SURFACE WATER SEWER & MANHOLE
 - ADOPTABLE HIGHWAY DRAIN & MANHOLE
 - BACKDROP
 - HIGHWAY GULLY & CONNECTION
 - FUTURE FOUL RISING MAIN (UNDERTAKEN BY WESSEX WATER)
 - LAND DRAINAGE

Client: Land East of Calne

Client: Robert Hitchens Ltd.

Drawing: Proposed Drainage Layout Sheet 2 of 2

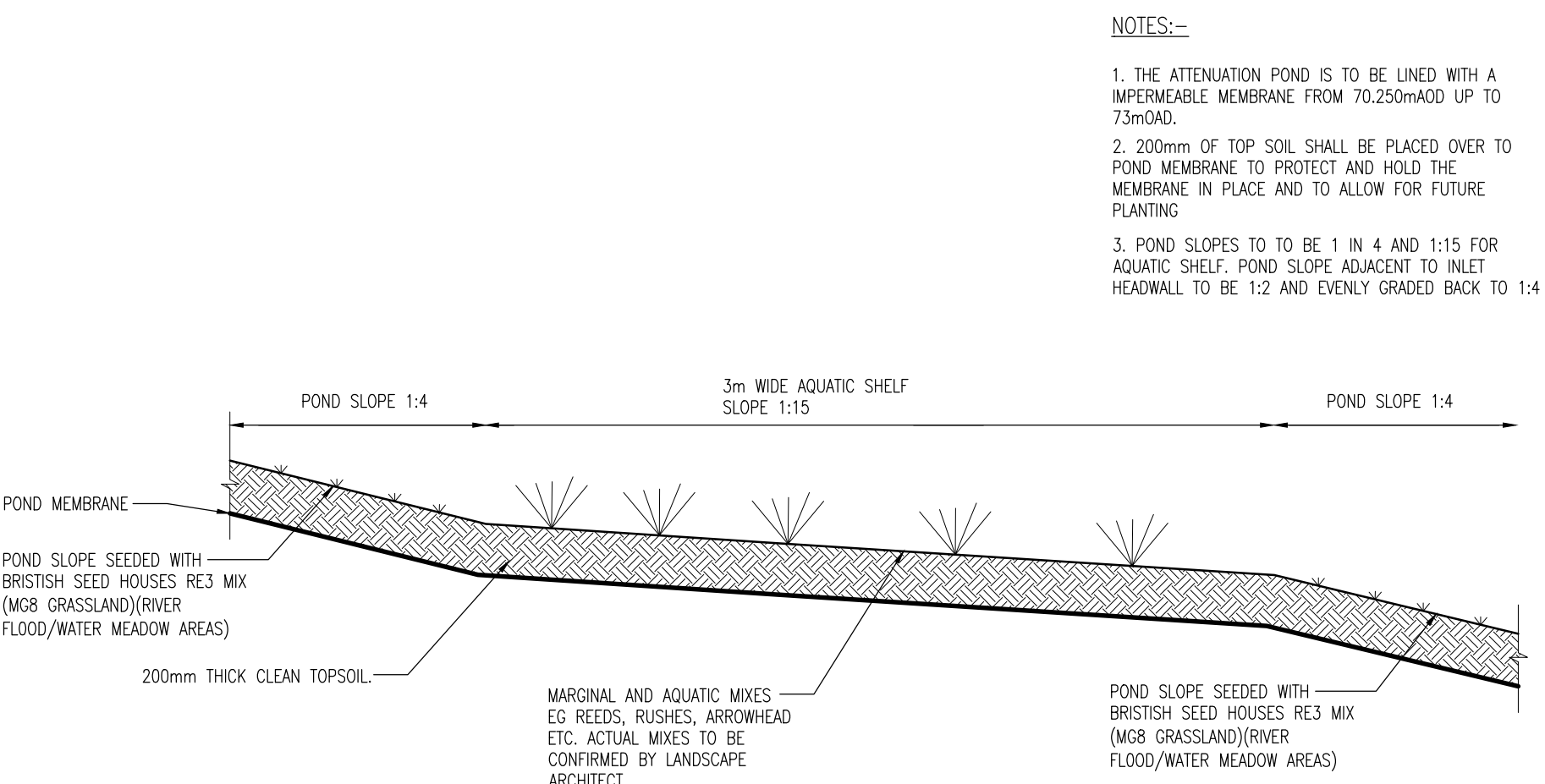
Scale: 1:500 @ A3 Date: 16.07.2010 Drawn by: MJH

Drawing No: 130-112 Rev: C

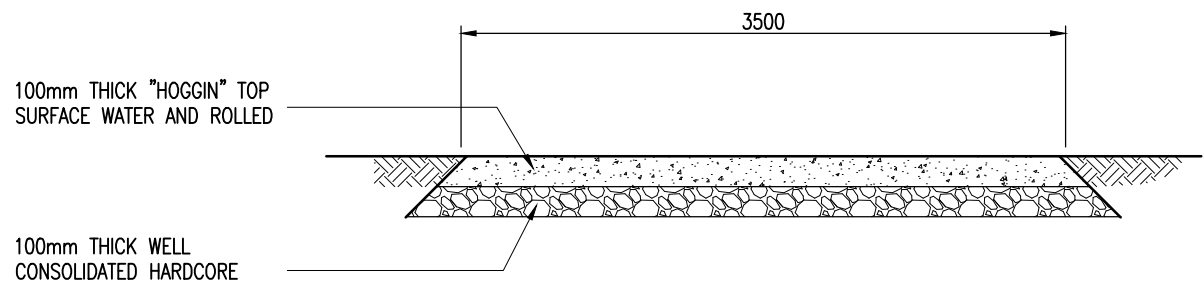
PHOENIX DESIGN Partnership Ltd. Unit 9, Westway Garage, Marksbury, Bath, BA2 9RH Tel: 01791 49900 Fax: 01791 47219 Email: enquiries@phoenixdesign.co.uk www.phoenixdesign.co.uk

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Dwg Status: FOR APPROVAL



AQUATIC SHELF DETAIL
SCALE 1:25



STRAINING POSTS AT MAX. SPACING 150m OR CHANGES IN DIRECTION

POSTS AT MAX. SPACING 2100

75x75x2100 POST

75x75x1650 POST

2.5mm DIA. LINE WIRE TO BS4102

175 DIA. x 2100 POST

Bottom Strand

Strand Wire

900 in Poor Soils

450

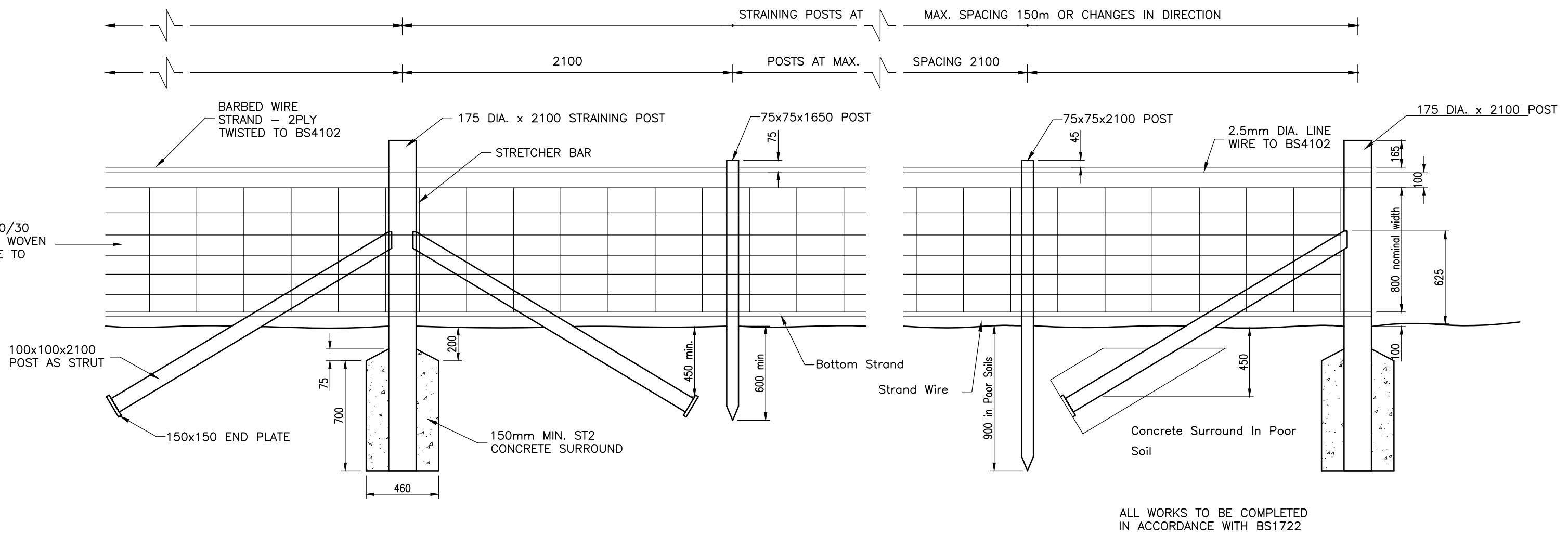
625

800 nominal width

100

150

Concrete Surround in Poor Soil



Technical drawing of a gate assembly. The drawing shows a side view of a gate with a height of 1700mm and a width of 3600mm. The gate is supported by two vertical posts, each with a height of 1700mm. The gate is made of a material that complies with BS3470:1975. The gate is surrounded by a 150mm MIN. ST2 CONCRETE SURROUND. The drawing includes dimensions for the gate's height (1700mm), width (3600mm), and the concrete surround (150mm MIN. ST2 CONCRETE SURROUND). The gate is supported by two vertical posts, each with a height of 1700mm. The gate is made of a material that complies with BS3470:1975. The gate is surrounded by a 150mm MIN. ST2 CONCRETE SURROUND.

SPRING CATCH, HEAD STRAP AND
DRIVE CATCH IRONMONGERY TO
BE GALVANISED TO BS EN 1461

DESCRIPTION OF TIMBER MATERIALS	SIZE
HANGING POST	200x200x2100mm Long
SHUTTING POST	175x175x2100mm Long
HANGING STILE	125x75mm
SHUTTING STILE	75x75mm
TOP & BOTTOM RAIL	125x75mm TAPERING TO 75x75mm
ALL OTHER RAILS	75x25mm
BRACING	75x25mm

C	Pond setting out points added
B	Water levels on pond section S1 amended for 1, 30 & 100 yr storms Attenuation pond details note amended
A	Inlet headwall to pond changed to meet Wessex Water Requirements
Revisions	

Project: Land East of Calne

Client: **Robert Hitchens Ltd.** 

Drawing: **Attenuation Pond Details**
Attenuation Pond & Associated Sewers

Scale: As Shown @ A1 Date: 22.07.2010 Drawn by: MJH

Drawing No. 130-113 Rev. C


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Drg. Status: PRELIMINARY

Appendix E

Micro-Drainage Simulations

Phoenix Design Partnership Ltd

Unit 9 Westway Business Centre
Marksbury
Bath, BA2 9HN

Date 31/03/2026 15:44
File 558 - SW Network plus 45...

Innovyze

Land Off Spitfire Road
SW Drainage Network

Designed by MJH
Checked by

Network 2020.1.3

Micro Drainage

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW NETWORK-D.SWS

Pipe Sizes SW NETWORK-D Manhole Sizes SW NETWORK-D

FSR Rainfall Model - England and Wales

Return Period (years)

2

M5-60 (mm)

20.000

Ratio R

0.400

Maximum Rainfall (mm/hr)

100

Maximum Time of Concentration (mins)

30

Foul Sewage (l/s/ha)

0.000

Volumetric Runoff Coeff.

0.750

PIMP (%)

100

Add Flow / Climate Change (%)

0

Minimum Backdrop Height (m)

0.000

Maximum Backdrop Height (m)

0.000

Min Design Depth for Optimisation (m)

1.200

Min Vel for Auto Design only (m/s)

1.00

Min Slope for Optimisation (1:X)

500

Designed with Level Soffits

Network Design Table for SW NETWORK-D.SWS

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	24.697	0.250	98.8	0.037	5.00	0.0	0.600	o	225	Pipe/Conduit	U
1.001	25.339	0.169	150.0	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit	U
1.002	23.073	0.231	100.0	0.054	0.00	0.0	0.600	o	225	Pipe/Conduit	U
1.003	7.871	0.087	90.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	U
1.004	8.164	0.095	86.4	0.035	0.00	0.0	0.600	o	225	Pipe/Conduit	U
1.005	34.029	1.648	20.6	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	U
1.006	33.889	1.213	27.9	0.077	0.00	0.0	0.600	o	300	Pipe/Conduit	U
1.007	17.485	1.187	14.7	0.138	0.00	0.0	0.600	o	300	Pipe/Conduit	U
2.000	16.823	0.172	97.8	0.051	5.00	0.0	0.600	o	225	Pipe/Conduit	U

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	68.45	5.31	86.954	0.037	0.0	0.0	0.0	1.32	52.3	6.9
1.001	66.32	5.71	86.704	0.069	0.0	0.0	0.0	1.07	42.4	12.4
1.002	64.83	6.00	86.535	0.123	0.0	0.0	0.0	1.31	52.0	21.6
1.003	64.36	6.10	86.304	0.123	0.0	0.0	0.0	1.37	54.6	21.6
1.004	63.90	6.20	86.218	0.158	0.0	0.0	0.0	1.41	56.0	27.3
1.005	63.13	6.36	86.048	0.205	0.0	0.0	0.0	3.48	245.7	35.0
1.006	62.27	6.55	84.400	0.282	0.0	0.0	0.0	2.99	211.1	47.6
1.007	61.95	6.62	83.187	0.420	0.0	0.0	0.0	4.12	291.0	70.5
2.000	69.02	5.21	82.675	0.051	0.0	0.0	0.0	1.32	52.6	9.5

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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN	Land Off Spitfire Road SW Drainage Network	
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Innovyze	Network 2020.1.3	

Network Design Table for SW NETWORK-D.SWS

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
2.001	27.823	0.286	97.3	0.105	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	20.998	0.142	147.9	0.115	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.008	24.557	0.122	201.3	0.048	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.009	10.085	0.033	305.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	65.479	3.075	21.3	0.052	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	6.916	0.182	38.0	0.054	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.002	59.075	1.157	51.1	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.003	8.241	0.958	8.6	0.055	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.010	46.201	0.757	61.0	0.070	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.011	10.049	0.417	24.1	0.069	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	61.926	0.412	150.3	0.102	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.012	15.546	0.440	35.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.013	12.404	0.124	100.0	0.028	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.014	28.510	0.527	54.1	0.060	0.00	0.0	0.600	o	525	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)
2.001	67.09	5.56	82.503	0.156	0.0	0.0	0.0	1.33	52.7	28.3
2.002	65.68	5.83	82.142	0.271	0.0	0.0	0.0	1.29	91.2	48.2
1.008	60.71	6.91	81.850	0.739	0.0	0.0	0.0	1.43	227.3	121.5
1.009	60.10	7.05	81.728	0.739	0.0	0.0	0.0	1.16	184.1	121.5
3.000	68.06	5.38	87.292	0.052	0.0	0.0	0.0	2.85	113.2	9.6
3.001	67.77	5.44	84.217	0.106	0.0	0.0	0.0	2.13	84.6	19.5
3.002	64.98	5.97	84.035	0.137	0.0	0.0	0.0	1.83	73.0	24.1
3.003	64.82	6.00	82.878	0.192	0.0	0.0	0.0	4.49	178.5	33.7
1.010	58.91	7.35	81.695	1.001	0.0	0.0	0.0	2.61	414.5	159.7
1.011	58.75	7.39	80.938	1.070	0.0	0.0	0.0	4.16	660.8	170.2
4.000	65.00	5.97	81.158	0.102	0.0	0.0	0.0	1.06	42.3	18.0
1.012	58.45	7.46	80.521	1.172	0.0	0.0	0.0	3.43	545.4	185.5
1.013	58.06	7.56	80.081	1.200	0.0	0.0	0.0	2.03	323.3	188.7
1.014	57.48	7.72	79.882	1.260	0.0	0.0	0.0	3.05	660.3	196.1

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Network Design Table for SW NETWORK-D.SWS

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
1.015	14.423	0.518	27.8	0.059	0.00	0.0	0.600	o	525	Pipe/Conduit	
5.000	8.972	0.890	10.1	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	31.351	0.131	239.3	0.075	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.016	7.172	0.036	199.2	0.024	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.017	6.430	0.026	247.3	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.018	56.828	1.075	52.9	0.074	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.019	34.512	0.562	61.4	0.196	0.00	0.0	0.600	o	525	Pipe/Conduit	
6.000	32.076	0.214	149.9	0.056	5.00	0.0	0.600	o	150	Pipe/Conduit	
7.000	28.066	1.684	16.7	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
6.001	22.786	0.404	56.4	0.007	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.002	27.735	1.401	19.8	0.069	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.003	5.219	0.189	27.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.020	5.698	0.094	60.6	0.014	0.00	0.0	0.600	o	525	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)
1.015	57.27	7.78	79.355	1.319	0.0	0.0	0.0	4.26	921.5	204.6
5.000	70.04	5.04	78.865	0.036	0.0	0.0	0.0	4.15	164.8	6.8
5.001	67.15	5.55	77.900	0.111	0.0	0.0	0.0	1.01	71.5	20.2
1.016	56.99	7.85	77.544	1.454	0.0	0.0	0.0	1.58	342.8	224.4
1.017	56.71	7.93	77.508	1.454	0.0	0.0	0.0	1.42	307.4	224.4
1.018	55.63	8.23	77.482	1.528	0.0	0.0	0.0	3.09	668.0	230.2
1.019	54.94	8.43	76.407	1.724	0.0	0.0	0.0	2.86	619.6	256.5
6.000	66.61	5.65	78.428	0.056	0.0	0.0	0.0	0.82	14.5	10.1
7.000	69.16	5.19	79.898	0.032	0.0	0.0	0.0	2.48	43.8	6.0
6.001	65.49	5.87	78.139	0.095	0.0	0.0	0.0	1.75	69.4	16.8
6.002	64.71	6.03	77.735	0.164	0.0	0.0	0.0	2.95	117.5	28.7
6.003	64.54	6.06	76.334	0.164	0.0	0.0	0.0	2.50	99.4	28.7
1.020	54.83	8.47	75.845	1.902	0.0	0.0	0.0	2.88	623.6	282.4

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Network Design Table for SW NETWORK-D.SWS

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
8.000	20.250	0.596	34.0	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
8.001	16.428	0.750	21.9	0.036	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.002	36.876	1.637	22.5	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
8.003	28.015	1.237	22.6	0.098	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	17.016	0.333	51.1	0.072	5.00	0.0	0.600	o	150	Pipe/Conduit	
8.004	45.059	1.683	26.8	0.042	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.005	19.979	0.793	25.2	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.006	45.162	2.106	21.4	0.093	0.00	0.0	0.600	o	450	Pipe/Conduit	
10.000	10.585	0.504	21.0	0.058	5.00	0.0	0.600	o	150	Pipe/Conduit	
10.001	44.233	2.087	21.2	0.023	0.00	0.0	0.600	o	150	Pipe/Conduit	
10.002	75.232	2.935	25.6	0.188	0.00	0.0	0.600	o	225	Pipe/Conduit	
10.003	10.539	0.352	29.9	0.159	0.00	0.0	0.600	o	375	Pipe/Conduit	
10.004	19.230	0.631	30.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
10.005	12.086	0.326	37.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
10.006	5.947	0.077	77.2	0.070	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)
8.000	69.12	5.19	86.277	0.040	0.0	0.0	0.0	1.73	30.6	7.5
8.001	68.41	5.32	85.681	0.076	0.0	0.0	0.0	2.16	38.2	14.1
8.002	67.19	5.54	84.856	0.104	0.0	0.0	0.0	2.77	110.1	18.9
8.003	66.30	5.71	83.219	0.202	0.0	0.0	0.0	2.76	109.8	36.3
9.000	69.09	5.20	82.390	0.072	0.0	0.0	0.0	1.41	24.9	13.5
8.004	65.05	5.96	81.907	0.316	0.0	0.0	0.0	3.05	215.6	55.7
8.005	64.53	6.06	80.224	0.354	0.0	0.0	0.0	3.15	222.3	61.9
8.006	63.71	6.24	79.281	0.447	0.0	0.0	0.0	4.41	700.7	77.1
10.000	69.79	5.08	84.594	0.058	0.0	0.0	0.0	2.21	39.0	11.0
10.001	67.89	5.42	84.090	0.081	0.0	0.0	0.0	2.20	38.8	14.9
10.002	65.35	5.90	81.928	0.269	0.0	0.0	0.0	2.59	103.2	47.6
10.003	65.09	5.95	78.843	0.428	0.0	0.0	0.0	3.32	366.9	75.4
10.004	64.61	6.05	78.491	0.428	0.0	0.0	0.0	3.29	363.7	75.4
10.005	64.28	6.12	77.860	0.428	0.0	0.0	0.0	2.98	329.6	75.4
10.006	64.07	6.16	77.459	0.498	0.0	0.0	0.0	2.32	368.2	86.4

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Innovyze	Network 2020.1.3	

Network Design Table for SW NETWORK-D.SWS

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
10.007	29.386	0.207	142.0	0.117	0.00	0.0	0.600	o	525	Pipe/Conduit	
8.007	25.553	0.378	67.6	0.101	0.00	0.0	0.600	o	525	Pipe/Conduit	
8.008	21.921	0.517	42.4	0.042	0.00	0.0	0.600	o	525	Pipe/Conduit	
8.009	78.097	1.730	45.1	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
8.010	25.922	0.208	124.6	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	
11.000	16.523	0.715	23.1	0.064	5.00	0.0	0.600	o	150	Pipe/Conduit	
11.001	11.296	1.177	9.6	0.012	0.00	0.0	0.600	o	225	Pipe/Conduit	
8.011	24.960	0.121	206.3	0.061	0.00	0.0	0.600	o	675	Pipe/Conduit	
8.012	24.037	0.120	200.3	0.023	0.00	0.0	0.600	o	675	Pipe/Conduit	
12.000	41.752	2.067	20.2	0.091	5.00	0.0	0.600	o	225	Pipe/Conduit	
12.001	9.018	0.173	52.1	0.056	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.002	25.203	0.168	150.0	0.024	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.000	10.515	0.471	22.3	0.095	5.00	0.0	0.600	o	150	Pipe/Conduit	
13.001	40.269	2.043	19.7	0.094	0.00	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)
10.007	62.85	6.42	77.307	0.615	0.0	0.0	0.0	1.88	406.5	104.7
8.007	62.14	6.58	77.100	1.163	0.0	0.0	0.0	2.73	590.4	195.7
8.008	61.67	6.68	76.722	1.205	0.0	0.0	0.0	3.45	746.2	201.3
8.009	60.01	7.07	76.205	1.205	0.0	0.0	0.0	3.34	723.1	201.3
8.010	59.27	7.26	74.325	1.205	0.0	0.0	0.0	2.35	839.7	201.3
11.000	69.49	5.13	76.534	0.064	0.0	0.0	0.0	2.10	37.2	12.0
11.001	69.23	5.18	75.744	0.076	0.0	0.0	0.0	4.25	168.9	14.3
8.011	58.37	7.48	74.117	1.342	0.0	0.0	0.0	1.82	651.7	212.1
8.012	57.54	7.70	73.996	1.365	0.0	0.0	0.0	1.85	661.4	212.7
12.000	68.88	5.24	80.390	0.091	0.0	0.0	0.0	2.92	116.3	17.0
12.001	68.41	5.32	78.323	0.147	0.0	0.0	0.0	1.82	72.2	27.2
12.002	66.64	5.65	78.075	0.171	0.0	0.0	0.0	1.28	90.6	30.9
13.000	69.78	5.08	80.866	0.095	0.0	0.0	0.0	2.14	37.8	18.0
13.001	68.48	5.31	80.320	0.189	0.0	0.0	0.0	2.96	117.7	35.1

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Innovyze	Network 2020.1.3	

Network Design Table for SW NETWORK-D.SWS

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
13.002	8.934	0.295	30.3	0.119	0.00	0.0	0.600	o	300	Pipe/Conduit	
12.003	44.356	2.093	21.2	0.069	0.00	0.0	0.600	o	300	Pipe/Conduit	
12.004	5.635	0.200	28.2	0.048	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.013	39.410	0.816	48.3	0.070	0.00	0.0	0.600	o	750	Pipe/Conduit	
8.014	53.506	0.268	199.6	0.211	0.00	0.0	0.600	o	750	Pipe/Conduit	
8.015	50.074	0.200	250.4	0.224	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.021	27.367	0.068	400.1	0.012	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.022	22.081	0.055	401.5	0.048	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.023	32.608	0.082	397.7	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.024	57.696	0.144	400.7	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.025	89.163	0.223	399.8	0.262	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.026	48.159	0.120	401.3	0.262	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.027	42.045	0.211	199.3	0.262	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.028	30.615	0.083	368.9	0.262	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.029	40.543	0.150	270.3	0.262	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.030	8.861	0.120	73.8	0.297	0.00	0.0	0.600	o	375	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)
13.002	68.19	5.36	78.202	0.308	0.0	0.0	0.0	2.87	202.7	56.9
12.003	65.53	5.86	77.907	0.548	0.0	0.0	0.0	3.43	242.5	97.2
12.004	65.40	5.89	75.664	0.596	0.0	0.0	0.0	3.84	611.0	105.6
8.013	56.94	7.86	73.801	2.031	0.0	0.0	0.0	4.03	1781.7	313.2
8.014	55.35	8.32	72.985	2.242	0.0	0.0	0.0	1.98	873.4	336.1
8.015	53.78	8.79	72.717	2.466	0.0	0.0	0.0	1.76	779.3	359.2
1.021	52.88	9.08	72.367	4.380	0.0	0.0	0.0	1.56	992.6	627.3
1.022	52.18	9.32	72.299	4.428	0.0	0.0	0.0	1.56	990.9	627.3
1.023	51.20	9.66	72.243	4.428	0.0	0.0	0.0	1.57	995.6	627.3
1.024	49.54	10.28	72.161	4.428	0.0	0.0	0.0	1.56	991.9	627.3
1.025	47.42	11.15	71.867	4.690	0.0	0.0	0.0	1.72	1486.9	627.3
1.026	46.36	11.61	71.644	4.952	0.0	0.0	0.0	1.71	1484.2	627.3
1.027	45.73	11.90	71.524	5.214	0.0	0.0	0.0	2.44	2110.9	645.8
1.028	45.13	12.19	71.313	5.476	0.0	0.0	0.0	1.79	1548.6	669.3
1.029	44.47	12.51	71.230	5.738	0.0	0.0	0.0	2.09	1810.9	691.1
1.030	69.85	5.07	71.080	0.000	56.0	0.0	0.0	2.11	233.1	56.0

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Innovyze	Network 2020.1.3	

Network Design Table for SW NETWORK-D.SWS

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
1.031	30.130	0.190	158.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.032	45.985	0.180	255.5	0.000	0.00	0.0	0.600	o	375	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)
1.031	67.86	5.42	70.960	0.000	56.0	0.0	0.0	1.44	158.6	56.0
1.032	64.37	6.10	70.770	0.000	56.0	0.0	0.0	1.13	124.7	56.0

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Online Controls for SW NETWORK-D.SWS

Hydro-Brake® Optimum Manhole: 80, DS/PN: 1.031, Volume (m³): 14.7

Unit Reference	MD-CHE-0276-5600-2000-5600
Design Head (m)	2.000
Design Flow (l/s)	56.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	No
Diameter (mm)	276
Invert Level (m)	70.960
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	56.0	Kick-Flo®	0.730	34.8
Flush-Flo™	0.540	55.9	Mean Flow over Head Range	-	41.7

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	7.1	1.200	43.6	3.000	68.3	7.000	103.6
0.200	23.1	1.400	47.0	3.500	73.7	7.500	107.2
0.300	37.3	1.600	50.2	4.000	78.7	8.000	110.6
0.400	47.5	1.800	53.1	4.500	83.4	8.500	114.0
0.500	54.9	2.000	56.0	5.000	87.8	9.000	117.2
0.600	50.6	2.200	58.7	5.500	92.0	9.500	120.4
0.800	35.7	2.400	61.2	6.000	96.0		
1.000	39.8	2.600	63.7	6.500	99.9		

Time Area Diagram at Pipe Number 1.030 for SW NETWORK-D.SWS

Total Area (ha) 2.000

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:	From:	To:
0	4 0.500	4	8 0.500	8	12 0.500	12	16 0.500

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

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

Synthetic Rainfall Details

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

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1
 Climate Change (%) 0

									Water	Surcharged	
	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.		(m)	(m)
1.000	1	15 Winter	1	+0%						87.003	-0.176
1.001	2	15 Winter	1	+0%						86.777	-0.152
1.002	3	15 Winter	1	+0%						86.622	-0.138
1.003	4	15 Winter	1	+0%						86.398	-0.131
1.004	5	15 Winter	1	+0%						86.322	-0.120
1.005	6	15 Winter	1	+0%						86.114	-0.234
1.006	7	15 Winter	1	+0%						84.483	-0.217
1.007	8	15 Winter	1	+0%						83.277	-0.210
2.000	H1	15 Winter	1	+0%						82.734	-0.166
2.001	9	15 Winter	1	+0%						82.602	-0.126
2.002	10	15 Winter	1	+0%						82.276	-0.166
1.008	11	15 Winter	1	+0%						82.072	-0.228
1.009	12	15 Winter	1	+0%						82.001	-0.177
3.000	13	15 Winter	1	+0%						87.330	-0.187
3.001	14	15 Winter	1	+0%						84.290	-0.152

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Flooded		Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Cap.					
1.000	1	0.000	0.11			5.1	OK	
1.001	2	0.000	0.23			8.9	OK	
1.002	3	0.000	0.32			15.1	OK	
1.003	4	0.000	0.36			15.0	OK	
1.004	5	0.000	0.44			18.9	OK	
1.005	6	0.000	0.11			24.3	OK	
1.006	7	0.000	0.17			33.0	OK	
1.007	8	0.000	0.20			48.9	OK	
2.000	H1	0.000	0.15			7.1	OK	
2.001	9	0.000	0.40			19.4	OK	
2.002	10	0.000	0.41			32.9	OK	
1.008	11	0.000	0.45			86.1	OK	
1.009	12	0.000	0.68			86.4	OK	
3.000	13	0.000	0.06			7.1	OK	
3.001	14	0.000	0.22			13.5	OK	

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<u>Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS</u>										
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
3.002	15	15 Winter	1	+0%					84.111	-0.149
3.003	16	15 Winter	1	+0%					82.940	-0.163
1.010	17	15 Winter	1	+0%					81.867	-0.278
1.011	18	15 Winter	1	+0%					81.119	-0.269
4.000	19	15 Winter	1	+0%					81.250	-0.133
1.012	20	15 Winter	1	+0%					80.709	-0.262
1.013	21	15 Winter	1	+0%					80.361	-0.170
1.014	22	15 Winter	1	+0%					80.066	-0.341
1.015	23	15 Winter	1	+0%					79.542	-0.338
5.000	24	15 Winter	1	+0%					78.893	-0.197
5.001	25	15 Winter	1	+0%					77.994	-0.206
1.016	26	15 Winter	1	+0%					77.929	-0.140
1.017	27	15 Winter	1	+0%					77.905	-0.128
1.018	28	15 Winter	1	+0%					77.672	-0.335
1.019	29	15 Winter	1	+0%					76.624	-0.308
6.000	30	15 Winter	1	+0%					78.509	-0.069
7.000	31	15 Winter	1	+0%					79.931	-0.117
6.001	32	15 Winter	1	+0%					78.208	-0.156
6.002	33	15 Winter	1	+0%					77.802	-0.158
6.003	33A	15 Winter	1	+0%					76.425	-0.134
1.020	34	15 Winter	1	+0%					76.211	-0.159
8.000	35	15 Winter	1	+0%					86.322	-0.105
8.001	36	15 Winter	1	+0%					85.735	-0.096
8.002	37	15 Winter	1	+0%					84.909	-0.172
8.003	38	15 Winter	1	+0%					83.294	-0.150
9.000	39	15 Winter	1	+0%					82.459	-0.081
8.004	40	15 Winter	1	+0%					81.997	-0.210
8.005	41	15 Winter	1	+0%					80.321	-0.203
8.006	42	15 Winter	1	+0%					79.371	-0.360
10.000	43	15 Winter	1	+0%					84.643	-0.101
10.001	44	15 Winter	1	+0%					84.145	-0.095
10.002	45	15 Winter	1	+0%					82.017	-0.136
10.003	46	15 Winter	1	+0%					78.963	-0.255
10.004	47	15 Winter	1	+0%					78.595	-0.271
10.005	47A	15 Winter	1	+0%					77.981	-0.254
10.006	48	15 Winter	1	+0%					77.643	-0.266
10.007	49	15 Winter	1	+0%					77.472	-0.360
8.007	50	15 Winter	1	+0%					77.294	-0.331
8.008	51	15 Winter	1	+0%					76.903	-0.344
8.009	52	15 Winter	1	+0%					76.369	-0.361
8.010	53	15 Winter	1	+0%					74.550	-0.450
11.000	54	15 Winter	1	+0%					76.586	-0.098
11.001	55	15 Winter	1	+0%					75.784	-0.185
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
11.001	55	0.000	0.07		10.2	OK	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
8.011	56	15 Winter	1	+0%					74.387
8.012	57	15 Winter	1	+0%					74.267
12.000	59	15 Winter	1	+0%					80.441
12.001	60	15 Winter	1	+0%					78.412
12.002	61	15 Winter	1	+0%					78.182
13.000	62	15 Winter	1	+0%					80.931
13.001	63	15 Winter	1	+0%					80.391
13.002	64	15 Winter	1	+0%					78.311
12.003	65	15 Winter	1	+0%					78.020
12.004	66	15 Winter	1	+0%					75.830
8.013	67	15 Winter	1	+0%					74.003
8.014	68	15 Winter	1	+0%					73.285
8.015	69	15 Winter	1	+0%					73.056
1.021	70	15 Winter	1	+0%					72.920
1.022	71	15 Winter	1	+0%					72.842
1.023	72	15 Winter	1	+0%					72.753
1.024	73	15 Winter	1	+0%					72.637
1.025	74	15 Winter	1	+0%					72.298
1.026	75	15 Winter	1	+0%					72.092
1.027	76	15 Winter	1	+0%					71.925
1.028	77	15 Winter	1	+0%					71.774
1.029	78	15 Winter	1	+0%					71.636
1.030	79	240 Winter	1	+0%	1/60 Summer				71.576
1.031	80	240 Winter	1	+0%	1/15 Winter				71.555
1.032	81	480 Winter	1	+0%					70.950

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
8.011	56	-0.405	0.000	0.33			155.7	OK	
8.012	57	-0.404	0.000	0.34			157.9	OK	
12.000	59	-0.174	0.000	0.11			12.7	OK	
12.001	60	-0.136	0.000	0.33			19.1	OK	
12.002	61	-0.193	0.000	0.27			22.1	OK	
13.000	62	-0.085	0.000	0.39			13.2	OK	
13.001	63	-0.154	0.000	0.22			24.2	OK	
13.002	64	-0.191	0.000	0.28			38.1	OK	
12.003	65	-0.187	0.000	0.30			68.6	OK	
12.004	66	-0.284	0.000	0.29			74.3	OK	
8.013	67	-0.548	0.000	0.16			228.7	OK	
8.014	68	-0.450	0.000	0.33			248.1	OK	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Flooded		Flow / Overflow		Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Cap.	(l/s)	Time (mins)	Flow (l/s)		
8.015	69	-0.411	0.000	0.40			260.2	OK	
1.021	70	-0.347	0.000	0.63			454.9	OK	
1.022	71	-0.357	0.000	0.67			457.0	OK	
1.023	72	-0.391	0.000	0.61			455.3	OK	
1.024	73	-0.424	0.000	0.54			449.0	OK	
1.025	74	-0.619	0.000	0.35			445.7	OK	
1.026	75	-0.602	0.000	0.38			438.4	OK	
1.027	76	-0.649	0.000	0.31			439.0	OK	
1.028	77	-0.589	0.000	0.40			437.6	OK	
1.029	78	-0.644	0.000	0.32			434.6	OK	
1.030	79	0.121	0.000	0.40			54.0	SURCHARGED	
1.031	80	0.220	0.000	0.38			53.6	SURCHARGED	
1.032	81	-0.195	0.000	0.47			53.6	OK	

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<u>Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS</u>																																																																																																																																																																																													
<u>Simulation Criteria</u>																																																																																																																																																																																													
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 Coefficient		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 Offline Controls		0		Number of Time/Area Diagrams 1																																																																																																																																																																																					
Number of Online Controls		1		Number of Storage Structures		1		Number of Real Time Controls 0																																																																																																																																																																																					
<u>Synthetic Rainfall Details</u>																																																																																																																																																																																													
Rainfall Model		FSR		Ratio R		0.400																																																																																																																																																																																							
Region		England and Wales		Cv (Summer)		0.750																																																																																																																																																																																							
M5-60 (mm)		20.000		Cv (Winter)		0.840																																																																																																																																																																																							
Margin for Flood Risk Warning (mm)								300.0																																																																																																																																																																																					
Analysis Timestep		2.5 Second		Increment (Extended)																																																																																																																																																																																									
DTS Status								OFF																																																																																																																																																																																					
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Inertia Status								OFF																																																																																																																																																																																					
Profile(s)								Summer and Winter																																																																																																																																																																																					
Duration(s) (mins)		15, 30, 60, 120, 240, 360, 480, 960, 1440																																																																																																																																																																																											
Return Period(s) (years)								30																																																																																																																																																																																					
Climate Change (%)								0																																																																																																																																																																																					
<table><tr><td></td><td>US/MH</td><td></td><td>Return</td><td>Climate</td><td>First (X)</td><td>First (Y)</td><td>First (Z)</td><td>Overflow</td><td>Water</td></tr><tr><td>PN</td><td>Name</td><td>Storm</td><td>Period</td><td>Change</td><td>Surcharge</td><td>Flood</td><td>Overflow</td><td>Act.</td><td>Level</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>(m)</td></tr><tr><td>1.000</td><td>1</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>87.032</td></tr><tr><td>1.001</td><td>2</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>86.833</td></tr><tr><td>1.002</td><td>3</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>86.728</td></tr><tr><td>1.003</td><td>4</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>86.566</td></tr><tr><td>1.004</td><td>5</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>86.467</td></tr><tr><td>1.005</td><td>6</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>86.159</td></tr><tr><td>1.006</td><td>7</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>84.547</td></tr><tr><td>1.007</td><td>8</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>83.350</td></tr><tr><td>2.000</td><td>H1</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>82.956</td></tr><tr><td>2.001</td><td>9</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>82.924</td></tr><tr><td>2.002</td><td>10</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>82.644</td></tr><tr><td>1.008</td><td>11</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>82.490</td></tr><tr><td>1.009</td><td>12</td><td>15 Winter</td><td>30</td><td>+0%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>82.297</td></tr><tr><td>3.000</td><td>13</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>87.353</td></tr><tr><td>3.001</td><td>14</td><td>15 Winter</td><td>30</td><td>+0%</td><td></td><td></td><td></td><td></td><td>84.346</td></tr></table>											US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level										(m)	1.000	1	15 Winter	30	+0%					87.032	1.001	2	15 Winter	30	+0%					86.833	1.002	3	15 Winter	30	+0%					86.728	1.003	4	15 Winter	30	+0%	30/15 Summer				86.566	1.004	5	15 Winter	30	+0%	30/15 Summer				86.467	1.005	6	15 Winter	30	+0%					86.159	1.006	7	15 Winter	30	+0%					84.547	1.007	8	15 Winter	30	+0%					83.350	2.000	H1	15 Winter	30	+0%	30/15 Summer				82.956	2.001	9	15 Winter	30	+0%	30/15 Summer				82.924	2.002	10	15 Winter	30	+0%	30/15 Summer				82.644	1.008	11	15 Winter	30	+0%	30/15 Summer				82.490	1.009	12	15 Winter	30	+0%	30/15 Summer				82.297	3.000	13	15 Winter	30	+0%					87.353	3.001	14	15 Winter	30	+0%					84.346
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water																																																																																																																																																																																				
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1.003	4	15 Winter	30	+0%	30/15 Summer				86.566																																																																																																																																																																																				
1.004	5	15 Winter	30	+0%	30/15 Summer				86.467																																																																																																																																																																																				
1.005	6	15 Winter	30	+0%					86.159																																																																																																																																																																																				
1.006	7	15 Winter	30	+0%					84.547																																																																																																																																																																																				
1.007	8	15 Winter	30	+0%					83.350																																																																																																																																																																																				
2.000	H1	15 Winter	30	+0%	30/15 Summer				82.956																																																																																																																																																																																				
2.001	9	15 Winter	30	+0%	30/15 Summer				82.924																																																																																																																																																																																				
2.002	10	15 Winter	30	+0%	30/15 Summer				82.644																																																																																																																																																																																				
1.008	11	15 Winter	30	+0%	30/15 Summer				82.490																																																																																																																																																																																				
1.009	12	15 Winter	30	+0%	30/15 Summer				82.297																																																																																																																																																																																				
3.000	13	15 Winter	30	+0%					87.353																																																																																																																																																																																				
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Cap.	(l/s)	Time (mins)	Flow (l/s)		
1.000	1	-0.147	0.000	0.26			12.5	OK	
1.001	2	-0.096	0.000	0.60			23.5	OK	
1.002	3	-0.032	0.000	0.85			40.4	OK	
1.003	4	0.037	0.000	0.96			40.0	SURCHARGED	
1.004	5	0.024	0.000	1.15			49.9	SURCHARGED	
1.005	6	-0.189	0.000	0.29			64.7	OK	
1.006	7	-0.153	0.000	0.46			90.0	OK	
1.007	8	-0.137	0.000	0.56			139.6	OK	
2.000	H1	0.056	0.000	0.37			17.3	SURCHARGED	
2.001	9	0.196	0.000	0.99			48.3	SURCHARGED	
2.002	10	0.202	0.000	1.04			83.5	SURCHARGED	
1.008	11	0.190	0.000	1.24			235.1	SURCHARGED	
1.009	12	0.119	0.000	1.85			235.1	SURCHARGED	
3.000	13	-0.164	0.000	0.16			17.4	OK	
3.001	14	-0.096	0.000	0.61			36.9	OK	

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Land Off Spitfire Road
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.002	15	-0.087	0.000	0.67			46.8	OK	
3.003	16	-0.113	0.000	0.48			65.8	OK	
1.010	17	-0.126	0.000	0.86			321.2	OK	
1.011	18	0.105	0.000	0.89			323.1	SURCHARGED	
4.000	19	-0.015	0.000	0.80			32.6	OK	
1.012	20	0.204	0.000	0.93			348.4	SURCHARGED	
1.013	21	0.257	0.000	1.79			355.0	SURCHARGED	
1.014	22	-0.208	0.000	0.67			366.1	OK	
1.015	23	-0.203	0.000	0.68			377.1	OK	
5.000	24	-0.179	0.000	0.09			12.3	OK	
5.001	25	0.437	0.000	0.51			33.3	SURCHARGED	
1.016	26	0.485	0.000	2.00			408.9	SURCHARGED	
1.017	27	0.233	0.000	2.31			408.8	SURCHARGED	
1.018	28	-0.198	0.000	0.70			422.6	OK	
1.019	29	0.165	0.000	0.86			456.4	SURCHARGED	
6.000	30	0.140	0.000	1.27			17.7	SURCHARGED	
7.000	31	-0.098	0.000	0.26			10.9	OK	
6.001	32	-0.115	0.000	0.48			30.2	OK	
6.002	33	-0.111	0.000	0.49			53.7	OK	
6.003	33A	0.255	0.000	0.83			51.0	SURCHARGED	
1.020	34	0.303	0.000	2.01			499.0	SURCHARGED	
8.000	35	-0.077	0.000	0.47			13.6	OK	
8.001	36	-0.051	0.000	0.75			26.6	OK	
8.002	37	-0.132	0.000	0.35			36.8	OK	
8.003	38	-0.084	0.000	0.71			72.4	OK	
9.000	39	0.015	0.000	1.03			23.8	SURCHARGED	
8.004	40	-0.140	0.000	0.55			110.7	OK	
8.005	41	-0.124	0.000	0.64			124.1	OK	
8.006	42	-0.297	0.000	0.25			157.3	OK	
10.000	43	-0.068	0.000	0.57			19.8	OK	
10.001	44	-0.052	0.000	0.73			27.7	OK	
10.002	45	-0.049	0.000	0.94			94.3	OK	
10.003	46	-0.151	0.000	0.65			151.4	OK	
10.004	47	-0.186	0.000	0.50			150.2	OK	
10.005	47A	-0.146	0.000	0.67			149.7	OK	
10.006	48	-0.006	0.000	1.00			169.0	OK	
10.007	49	-0.224	0.000	0.61			207.5	OK	
8.007	50	-0.149	0.000	0.84			398.1	OK	
8.008	51	-0.182	0.000	0.75			414.3	OK	
8.009	52	-0.228	0.000	0.61			407.2	OK	
8.010	53	-0.251	0.000	0.70			407.2	OK	
11.000	54	-0.063	0.000	0.63			21.8	OK	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
11.001	55	-0.160	0.000	0.18		26.0	OK	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
8.011	56	15 Winter	30	+0%					74.645
8.012	57	15 Winter	30	+0%					74.524
12.000	59	15 Winter	30	+0%					80.471
12.001	60	15 Winter	30	+0%					78.488
12.002	61	15 Winter	30	+0%					78.270
13.000	62	15 Winter	30	+0%					80.983
13.001	63	15 Winter	30	+0%					80.446
13.002	64	15 Winter	30	+0%					78.409
12.003	65	15 Winter	30	+0%					78.122
12.004	66	15 Winter	30	+0%					75.981
8.013	67	15 Winter	30	+0%					74.240
8.014	68	15 Winter	30	+0%	30/15 Summer				74.130
8.015	69	15 Winter	30	+0%	30/15 Summer				73.972
1.021	70	15 Winter	30	+0%	30/15 Summer				73.815
1.022	71	15 Winter	30	+0%	30/15 Summer				73.590
1.023	72	15 Winter	30	+0%	30/15 Summer				73.358
1.024	73	15 Winter	30	+0%	30/15 Summer				73.122
1.025	74	480 Winter	30	+0%					72.639
1.026	75	360 Winter	30	+0%					72.559
1.027	76	480 Winter	30	+0%					72.468
1.028	77	240 Winter	30	+0%	30/240 Winter				72.363
1.029	78	240 Winter	30	+0%					72.280
1.030	79	360 Winter	30	+0%	30/15 Summer				72.249
1.031	80	360 Winter	30	+0%	30/15 Summer				72.227
1.032	81	1440 Winter	30	+0%					70.950

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
8.011	56	-0.147	0.000	0.96			447.4	OK	
8.012	57	-0.147	0.000	0.95			444.0	OK	
12.000	59	-0.144	0.000	0.28			31.1	OK	
12.001	60	-0.060	0.000	0.87			51.2	OK	
12.002	61	-0.105	0.000	0.73			58.9	OK	
13.000	62	-0.033	0.000	0.96			32.3	OK	
13.001	63	-0.099	0.000	0.59			66.4	OK	
13.002	64	-0.093	0.000	0.81			109.6	OK	
12.003	65	-0.085	0.000	0.85			191.9	OK	
12.004	66	-0.133	0.000	0.82			207.2	OK	
8.013	67	-0.311	0.000	0.45			639.4	OK	
8.014	68	0.395	0.000	0.79			591.6	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
8.015	69	0.505	0.000	0.92			608.0	SURCHARGED	
1.021	70	0.548	0.000	1.53			1093.5	SURCHARGED	
1.022	71	0.391	0.000	1.62			1096.0	SURCHARGED	
1.023	72	0.214	0.000	1.45			1087.2	SURCHARGED	
1.024	73	0.061	0.000	1.29			1069.8	SURCHARGED	
1.025	74	-0.278	0.000	0.14			177.3	OK	
1.026	75	-0.135	0.000	0.20			228.8	OK	
1.027	76	-0.106	0.000	0.13			188.7	OK	
1.028	77	0.000	0.000	0.30			329.9	SURCHARGED	
1.029	78	0.000	0.000	0.25			337.4	OK	
1.030	79	0.794	0.000	0.40			54.2	SURCHARGED	
1.031	80	0.892	0.000	0.38			53.6	SURCHARGED	
1.032	81	-0.195	0.000	0.47			53.6	OK	

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<u>Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS</u>									
<u>Simulation Criteria</u>									
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 Coefficient		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 Offline Controls		0		Number of Time/Area Diagrams	1
Number of Online Controls		1		Number of Storage Structures		1		Number of Real Time Controls	0
<u>Synthetic Rainfall Details</u>									
Rainfall Model		FSR		Ratio R		0.400			
Region		England and Wales		Cv (Summer)		0.750			
M5-60 (mm)		20.000		Cv (Winter)		0.840			
Margin for Flood Risk Warning (mm)						300.0			
Analysis Timestep		2.5		Second Increment (Extended)					
DTS Status						OFF			
DVD Status						ON			
Inertia Status						OFF			
Profile(s)						Summer and Winter			
Duration(s) (mins)		15, 30, 60, 120, 240, 360, 480, 960, 1440							
Return Period(s) (years)						100			
Climate Change (%)						0			
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level
									(m)
1.000	1	15 Winter	100	+0%					87.045
1.001	2	15 Winter	100	+0%	100/15 Summer				86.963
1.002	3	15 Winter	100	+0%	100/15 Summer				86.875
1.003	4	15 Winter	100	+0%	100/15 Summer				86.641
1.004	5	15 Winter	100	+0%	100/15 Summer				86.527
1.005	6	15 Winter	100	+0%					86.173
1.006	7	15 Winter	100	+0%					84.569
1.007	8	15 Winter	100	+0%	100/15 Winter				83.521
2.000	H1	15 Winter	100	+0%	100/15 Summer				83.625
2.001	9	15 Winter	100	+0%	100/15 Summer				83.592
2.002	10	15 Winter	100	+0%	100/15 Summer				83.251
1.008	11	15 Winter	100	+0%	100/15 Summer				83.053
1.009	12	15 Winter	100	+0%	100/15 Summer				82.817
3.000	13	15 Winter	100	+0%					87.362
3.001	14	15 Winter	100	+0%					84.372
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged		Flooded		Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)				
1.000	1	-0.134	0.000	0.34			16.2	OK	
1.001	2	0.034	0.000	0.69			27.1	SURCHARGED	
1.002	3	0.115	0.000	1.00			47.6	SURCHARGED	
1.003	4	0.111	0.000	1.16			48.1	SURCHARGED	
1.004	5	0.085	0.000	1.40			60.5	SURCHARGED	
1.005	6	-0.175	0.000	0.35			79.8	OK	
1.006	7	-0.131	0.000	0.58			113.1	OK	
1.007	8	0.034	0.000	0.70			175.1	SURCHARGED	
2.000	H1	0.725	0.000	0.45			21.0	SURCHARGED	
2.001	9	0.864	0.000	1.09			53.3	SURCHARGED	
2.002	10	0.809	0.000	1.19			95.1	SURCHARGED	
1.008	11	0.753	0.000	1.45			276.3	SURCHARGED	
1.009	12	0.639	0.000	2.10			267.1	SURCHARGED	
3.000	13	-0.155	0.000	0.21			22.7	OK	
3.001	14	-0.070	0.000	0.80			47.9	OK	

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Innovyze	Network 2020.1.3	

Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
11.001	55	-0.151	0.000	0.24			33.7	OK	

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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN	Land Off Spitfire Road SW Drainage Network	
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File 558 - SW Network plus 45...	Checked by	
Innovyze	Network 2020.1.3	

Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

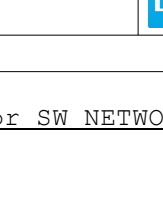
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
8.011	56	15 Winter	100	+0%	100/15 Summer				75.318
8.012	57	15 Winter	100	+0%	100/15 Summer				75.180
12.000	59	15 Winter	100	+0%					80.484
12.001	60	15 Winter	100	+0%	100/15 Summer				78.601
12.002	61	15 Winter	100	+0%	100/15 Winter				78.390
13.000	62	15 Winter	100	+0%	100/15 Summer				81.195
13.001	63	15 Winter	100	+0%					80.466
13.002	64	15 Winter	100	+0%	100/15 Summer				78.533
12.003	65	15 Winter	100	+0%	100/15 Summer				78.256
12.004	66	15 Winter	100	+0%					76.023
8.013	67	15 Winter	100	+0%	100/15 Summer				75.041
8.014	68	15 Winter	100	+0%	100/15 Summer				74.742
8.015	69	15 Winter	100	+0%	100/15 Summer				74.515
1.021	70	15 Winter	100	+0%	100/15 Summer				74.263
1.022	71	15 Winter	100	+0%	100/15 Summer				73.932
1.023	72	15 Winter	100	+0%	100/15 Summer				73.589
1.024	73	15 Winter	100	+0%	100/15 Summer				73.241
1.025	74	15 Winter	100	+0%					72.858
1.026	75	360 Winter	100	+0%					72.694
1.027	76	360 Winter	100	+0%	100/360 Winter				72.587
1.028	77	360 Winter	100	+0%	100/120 Winter				72.585
1.029	78	360 Winter	100	+0%	100/60 Winter				72.583
1.030	79	360 Winter	100	+0%	100/15 Summer				72.580
1.031	80	360 Winter	100	+0%	100/15 Summer				72.559
1.032	81	1440 Winter	100	+0%					70.950

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
8.011	56	0.526	0.000	1.05			488.2	SURCHARGED	
8.012	57	0.509	0.000	1.01			471.7	SURCHARGED	
12.000	59	-0.131	0.000	0.37			40.4	OK	
12.001	60	0.053	0.000	1.12			65.4	SURCHARGED	
12.002	61	0.015	0.000	0.90			73.1	SURCHARGED	
13.000	62	0.179	0.000	1.17			39.7	SURCHARGED	
13.001	63	-0.079	0.000	0.73			81.7	OK	
13.002	64	0.031	0.000	0.98			133.5	SURCHARGED	
12.003	65	0.049	0.000	1.01			230.0	SURCHARGED	
12.004	66	-0.091	0.000	0.99			249.7	OK	
8.013	67	0.490	0.000	0.49			687.2	SURCHARGED	
8.014	68	1.007	0.000	0.97			725.2	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
8.015	69	1.048	0.000	1.12			738.1	SURCHARGED	
1.021	70	0.996	0.000	1.85			1327.5	SURCHARGED	
1.022	71	0.733	0.000	1.96			1327.7	SURCHARGED	
1.023	72	0.445	0.000	1.76			1320.5	SURCHARGED	
1.024	73	0.179	0.000	1.57			1302.9	SURCHARGED	
1.025	74	-0.059	0.000	0.98			1260.2	OK	
1.026	75	0.000	0.000	0.24			281.3	OK	
1.027	76	0.013	0.000	0.20			286.5	SURCHARGED	
1.028	77	0.222	0.000	0.27			291.6	SURCHARGED	
1.029	78	0.303	0.000	0.22			299.5	SURCHARGED	
1.030	79	1.125	0.000	0.40			54.2	SURCHARGED	
1.031	80	1.224	0.000	0.38			53.6	SURCHARGED	
1.032	81	-0.195	0.000	0.47			53.6	OK	

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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

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

Synthetic Rainfall Details

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

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	100
Climate Change (%)	30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+30%	100/15 Summer				87.344
1.001	2	15 Winter	100	+30%	100/15 Summer				87.302
1.002	3	15 Winter	100	+30%	100/15 Summer				87.175
1.003	4	15 Winter	100	+30%	100/15 Summer				86.808
1.004	5	15 Winter	100	+30%	100/15 Summer				86.633
1.005	6	15 Winter	100	+30%					86.190
1.006	7	15 Winter	100	+30%	100/15 Summer				84.980
1.007	8	15 Winter	100	+30%	100/15 Summer				84.479
2.000	H1	15 Winter	100	+30%	100/15 Summer	100/15 Summer			84.316
2.001	9	15 Winter	100	+30%	100/15 Summer				84.353
2.002	10	15 Winter	100	+30%	100/15 Summer				84.110
1.008	11	15 Winter	100	+30%	100/15 Summer				83.866
1.009	12	15 Winter	100	+30%	100/15 Summer				83.579
3.000	13	15 Winter	100	+30%					87.372
3.001	14	15 Winter	100	+30%	100/15 Summer				84.684

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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN	Land Off Spitfire Road SW Drainage Network	
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File 558 - SW Network plus 45...	Checked by	
Innovyze	Network 2020.1.3	

Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged		Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow	Volume						
1.000	1	0.165	0.000	0.40					19.2	SURCHARGED	
1.001	2	0.373	0.000	0.87					34.0	SURCHARGED	
1.002	3	0.415	0.000	1.22					58.3	SURCHARGED	
1.003	4	0.279	0.000	1.43					59.4	SURCHARGED	
1.004	5	0.190	0.000	1.73					74.9	SURCHARGED	
1.005	6	-0.158	0.000	0.44					99.9	OK	
1.006	7	0.280	0.000	0.71					137.5	SURCHARGED	
1.007	8	0.992	0.000	0.74					185.5	SURCHARGED	
2.000	H1	1.416	2.988	0.91					42.7	FLOOD	2
2.001	9	1.625	0.000	1.35					66.0	FLOOD RISK	
2.002	10	1.668	0.000	1.35					108.1	SURCHARGED	
1.008	11	1.566	0.000	1.59					302.3	SURCHARGED	
1.009	12	1.401	0.000	2.34					297.6	SURCHARGED	
3.000	13	-0.145	0.000	0.27					29.5	OK	
3.001	14	0.242	0.000	0.95					56.9	SURCHARGED	

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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN				Land Off Spitfire Road SW Drainage Network					
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Innovyze				Network 2020.1.3					
<u>Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS</u>									
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
3.002	15 15	Winter	100	+30%	100/15 Summer				84.555
3.003	16 15	Winter	100	+30%	100/15 Summer				83.657
1.010	17 15	Winter	100	+30%	100/15 Summer				83.312
1.011	18 15	Winter	100	+30%	100/15 Summer				82.433
4.000	19 15	Winter	100	+30%	100/15 Summer				82.368
1.012	20 15	Winter	100	+30%	100/15 Summer				81.856
1.013	21 15	Winter	100	+30%	100/15 Summer				81.164
1.014	22 15	Winter	100	+30%	100/15 Winter				80.469
1.015	23 15	Winter	100	+30%	100/15 Winter				80.053
5.000	24 15	Winter	100	+30%	100/15 Summer				79.729
5.001	25 15	Winter	100	+30%	100/15 Summer				79.715
1.016	26 15	Winter	100	+30%	100/15 Summer				79.628
1.017	27 15	Winter	100	+30%	100/15 Summer				79.141
1.018	28 15	Winter	100	+30%	100/15 Summer				78.667
1.019	29 15	Winter	100	+30%	100/15 Summer				77.795
6.000	30 15	Winter	100	+30%	100/15 Summer				79.281
7.000	31 15	Winter	100	+30%					79.968
6.001	32 15	Winter	100	+30%					78.291
6.002	33 15	Winter	100	+30%	100/15 Summer				78.062
6.003	33A 15	Winter	100	+30%	100/15 Summer				77.344
1.020	34 15	Winter	100	+30%	100/15 Summer				77.053
8.000	35 15	Winter	100	+30%	100/15 Winter				86.429
8.001	36 15	Winter	100	+30%	100/15 Summer				86.094
8.002	37 15	Winter	100	+30%					84.977
8.003	38 15	Winter	100	+30%	100/15 Summer				83.687
9.000	39 15	Winter	100	+30%	100/15 Summer				83.110
8.004	40 15	Winter	100	+30%					82.122
8.005	41 15	Winter	100	+30%					80.471
8.006	42 15	Winter	100	+30%					79.478
10.000	43 15	Winter	100	+30%	100/15 Summer				85.263
10.001	44 15	Winter	100	+30%	100/15 Summer				84.997
10.002	45 15	Winter	100	+30%	100/15 Summer	100/15 Summer			83.353
10.003	46 15	Winter	100	+30%					79.126
10.004	47 15	Winter	100	+30%					78.793
10.005	47A 15	Winter	100	+30%	100/15 Summer				78.516
10.006	48 15	Winter	100	+30%	100/15 Summer				78.282
10.007	49 15	Winter	100	+30%	100/15 Summer				78.149
8.007	50 15	Winter	100	+30%	100/15 Summer				78.005
8.008	51 15	Winter	100	+30%	100/15 Summer				77.582
8.009	52 15	Winter	100	+30%	100/15 Summer				77.177
8.010	53 15	Winter	100	+30%	100/15 Summer				76.317
11.000	54 15	Winter	100	+30%	100/15 Winter				76.735
11.001	55 15	Winter	100	+30%	100/15 Winter				76.186
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
11.001	55	0.217	0.000	0.30		42.2	SURCHARGED	

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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN	Land Off Spitfire Road SW Drainage Network	
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File 558 - SW Network plus 45...	Checked by	
Innovyze	Network 2020.1.3	

Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
8.011	56	15 Winter	100	+30%	100/15 Summer				76.158
8.012	57	15 Winter	100	+30%	100/15 Summer				76.005
12.000	59	15 Winter	100	+30%					80.500
12.001	60	15 Winter	100	+30%	100/15 Summer				79.449
12.002	61	15 Winter	100	+30%	100/15 Summer				79.174
13.000	62	15 Winter	100	+30%	100/15 Summer				81.659
13.001	63	15 Winter	100	+30%	100/15 Summer				80.733
13.002	64	15 Winter	100	+30%	100/15 Summer				79.345
12.003	65	15 Winter	100	+30%	100/15 Summer				78.995
12.004	66	15 Winter	100	+30%	100/15 Summer				76.153
8.013	67	15 Winter	100	+30%	100/15 Summer				75.847
8.014	68	15 Winter	100	+30%	100/15 Summer				75.540
8.015	69	15 Winter	100	+30%	100/15 Summer				75.219
1.021	70	15 Winter	100	+30%	100/15 Summer				74.880
1.022	71	30 Winter	100	+30%	100/15 Summer				74.490
1.023	72	30 Winter	100	+30%	100/15 Summer				74.129
1.024	73	30 Winter	100	+30%	100/15 Summer				73.756
1.025	74	30 Winter	100	+30%	100/15 Summer				73.360
1.026	75	30 Winter	100	+30%	100/15 Summer				73.086
1.027	76	480 Winter	100	+30%	100/15 Winter				73.006
1.028	77	480 Winter	100	+30%	100/15 Winter				73.004
1.029	78	480 Winter	100	+30%	100/15 Winter				73.001
1.030	79	480 Winter	100	+30%	100/15 Summer				72.998
1.031	80	480 Winter	100	+30%	100/15 Summer				72.974
1.032	81	480 Winter	100	+30%					70.955

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
8.011	56	1.366	0.000	1.09			507.7	SURCHARGED	
8.012	57	1.334	0.000	1.10			512.3	SURCHARGED	
12.000	59	-0.115	0.000	0.47			52.5	OK	
12.001	60	0.901	0.000	1.24			72.7	FLOOD RISK	
12.002	61	0.799	0.000	1.04			84.6	SURCHARGED	
13.000	62	0.643	0.000	1.42			47.9	SURCHARGED	
13.001	63	0.188	0.000	0.86			96.2	SURCHARGED	
13.002	64	0.843	0.000	1.10			149.0	SURCHARGED	
12.003	65	0.788	0.000	1.16			262.6	SURCHARGED	
12.004	66	0.039	0.000	1.13			284.6	SURCHARGED	
8.013	67	1.296	0.000	0.56			787.2	SURCHARGED	
8.014	68	1.805	0.000	1.12			835.9	SURCHARGED	

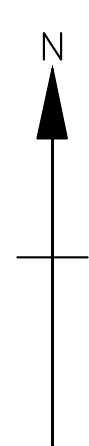
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Unit 9 Westway Business Centre Marksbury Bath, BA2 9HN	Land Off Spitfire Road SW Drainage Network	
Date 31/03/2026 15:30	Designed by MJH	
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Summary of Critical Results by Maximum Level (Rank 1) for SW NETWORK-D.SWS

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)						
8.015	69	1.752	0.000	1.35			887.2	SURCHARGED	
1.021	70	1.613	0.000	2.17			1554.4	SURCHARGED	
1.022	71	1.291	0.000	2.23			1507.8	SURCHARGED	
1.023	72	0.986	0.000	2.01			1500.4	SURCHARGED	
1.024	73	0.694	0.000	1.80			1489.0	SURCHARGED	
1.025	74	0.443	0.000	1.17			1500.5	SURCHARGED	
1.026	75	0.392	0.000	1.30			1508.1	SURCHARGED	
1.027	76	0.432	0.000	0.24			331.6	SURCHARGED	
1.028	77	0.641	0.000	0.32			348.0	SURCHARGED	
1.029	78	0.721	0.000	0.27			364.3	SURCHARGED	
1.030	79	1.543	0.000	0.41			55.9	SURCHARGED	
1.031	80	1.639	0.000	0.40			55.9	SURCHARGED	
1.032	81	-0.190	0.000	0.49			55.9	OK	

Appendix F

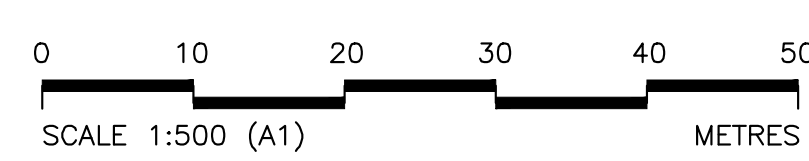
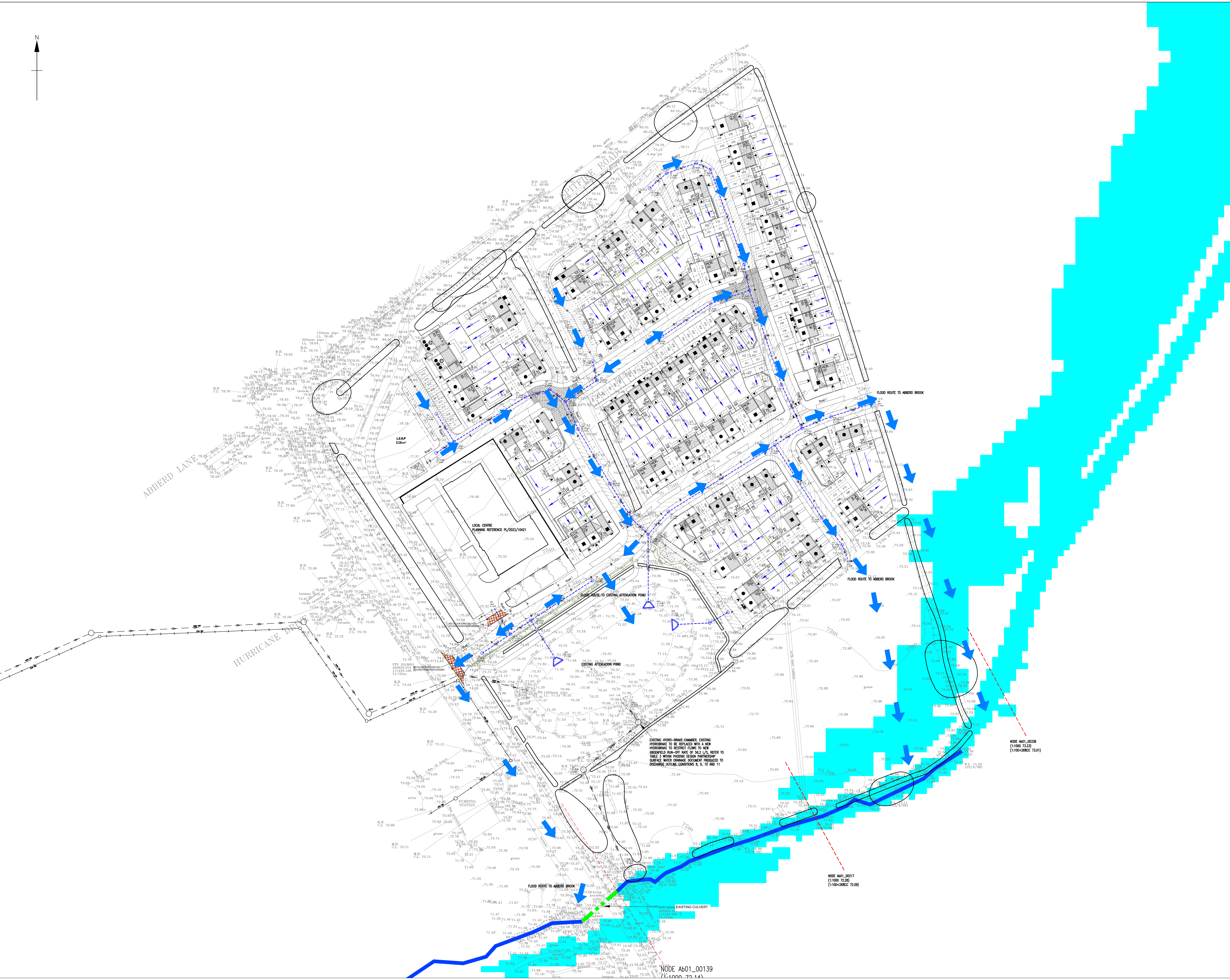
Overland Flood Exceedance Routing Plan



LEGEND

- EXISTING WATERCOURSE
- FLOOD EXCEEDANCE ROUTE
- DIRECTION OF OVERLAND FLOW IN GARDENS

PLEASE NOTE:-
THE PROPOSED SURFACE WATER DRAINAGE SYSTEM WILL
BEEN DESIGNED FOR THE 1 IN 100 YR PLUS 40% CLIMATE
CHANGE WITHOUT ANY FLOODING OCCURRING. THE FLOOD
ROUTES SHOWN ARE TO PROVE THAT NO PROPERTY WILL BE
AFFECTED IN THE UNLIKELY EVENT OF ANY LOCALISED
BLOCKAGE OR FAILURE OF THE SYSTEM OCCURRING.



C Engineering Updated to revised layout and garden flow routes
B Engineering Updated to revised layout (Local Centra)
A Engineering Updated to revised layout and design notes comments
Revisions
Project: Land of Spittire Road, Calne, Wiltshire
Client:

Drawing: Flood Exceedance Routing
Scale: 1:500 Date: November 2025 Drawn by: MJH
Drawing No: 671-P-510 Rev: C

PHOENIX DESIGN
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Rule 7: Use Three Meter Corners
Business Plan: Upper Road, Portlifford,
CH27 5BE, W. Glos GL54 0PT
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Dwg Status: PLANNING