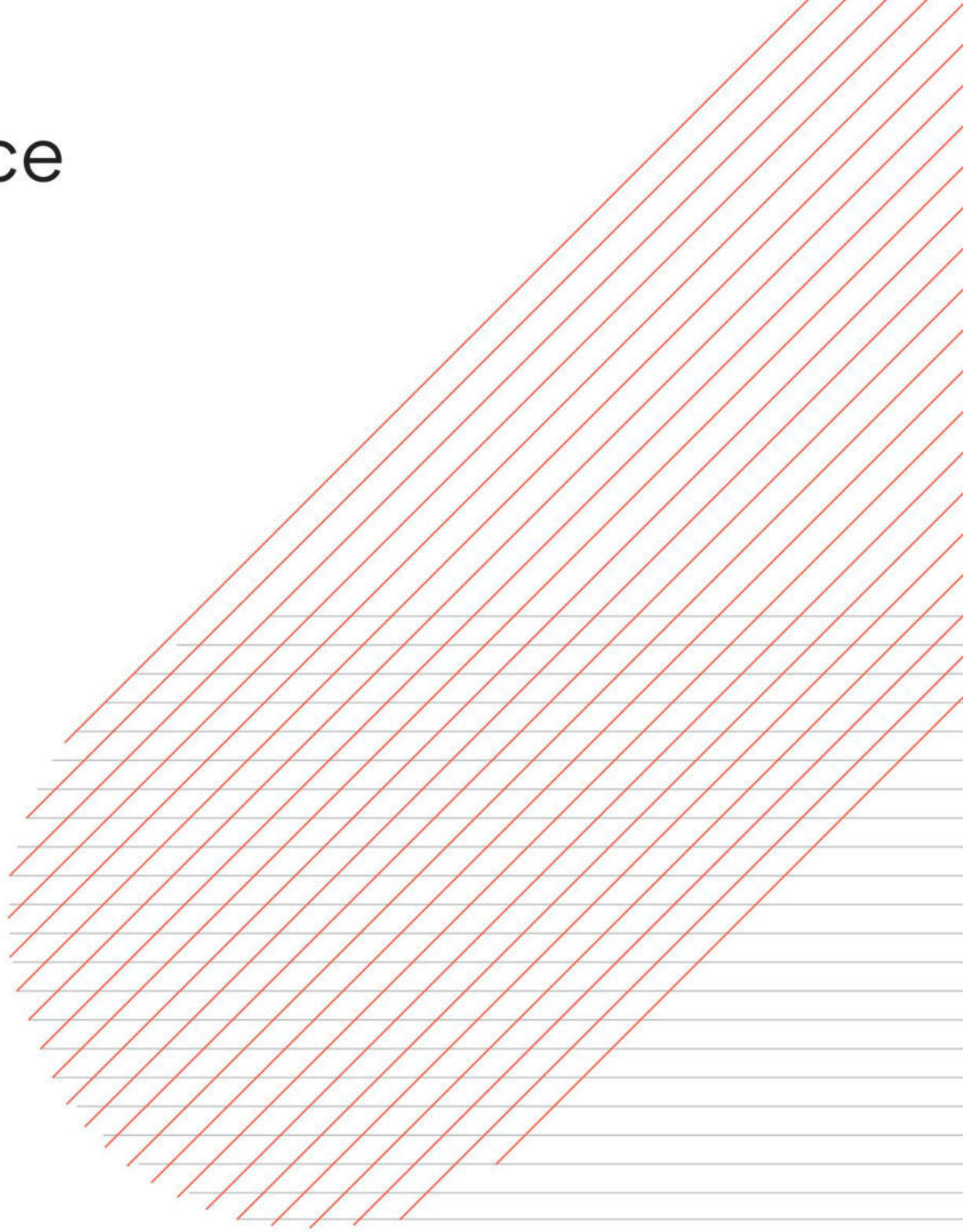




Welcome Break, Hinckley

Drainage Statement

HINCK-DCE-XX-XX-RP-C-0002

Welcome Break, Hinckley

Drainage Statement

DATE: September 2025
REPORT REF: HINCK-DCE-XX-XX-RP-C-0002
CLIENT: Welcome Break
ENGINEER: Dice Consulting Engineers Ltd
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Appendix A – Proposed Site Plan

Appendix B – Topographical Survey

Appendix C – Proposed Drainage Layout

Appendix D – Water Treatment Calculation

Appendix E – Surface Water Calculations

1. Introduction

This document has been prepared in support of the discharge of planning conditions and to evidence that the previously approved Flood Risk Assessment prepared by BWB Consulting (SCH-BWB-ZZ-XX-RP-YE-0001_FRA) remains applicable for use and the proposals in the updated scheme remain in accordance with the recommendations outlined in the previous Flood Risk Assessment.

1.1. Site Description

- 1.1.1. Dice Consulting Engineers Ltd. (Dice) has been commissioned by Welcome Break to produce a Drainage Strategy in support of a planning application for a proposed service station in Hinckley.

A copy of the proposed site plan can be seen in **Appendix A**.

- 1.1.2. The site is currently classified as greenfield and comprises predominantly grassland.

- 1.1.3. The total site red line boundary covers an approximate area of 5ha with an approx. development area of 2.50ha, 2.35ha of which is estimated to be impermeable.

A copy of the topographical survey can be found in **Appendix B**.

2. Flood Risk

Fluvial Sources

2.1.1. The site has been checked in accordance with the Indicative Flood Maps, which provide guidance on fluvial and tidal flood risk. The maps are shown in Figure 1 below.

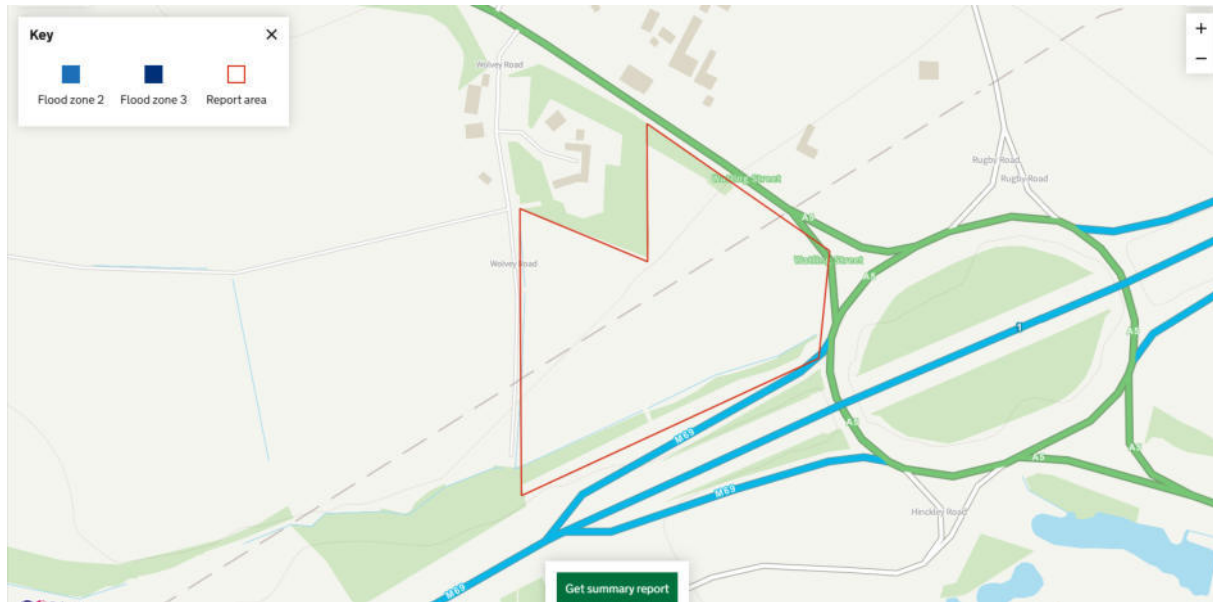


Figure 1 – Environment Agency Flood Map for Planning (Rivers and Sea)

2.1.2. The Indicative Flood Maps show that the site is located wholly within Flood Zone 1 and therefore has an annual probability of fluvial and tidal flooding of less than 1 in 1000 (<0.1%).

2.1.3. Based on this, the site is classified as being at low risk of flooding from tidal and/or fluvial sources.

Pluvial Sources

- 2.1.4. Pluvial flooding occurs when natural and engineered systems have insufficient capacity to deal with the volume of rainfall. Pluvial flooding can sometimes occur in urban areas during an extreme, high intensity, low duration summer rainfall event that overwhelms the local surface water drainage systems, or in rural areas during medium intensity, long duration events where saturated ground conditions prevent infiltration into the subsoil. This flood water would then be conveyed via overland flow routes dictated by the local topography.
- 2.1.5. The Environment Agency surface water flood maps show the site to be predominantly at very low risk from surface water flooding with small hotspots on the southern boundary, where the existing water course is. These are shown in Figure 2 below.

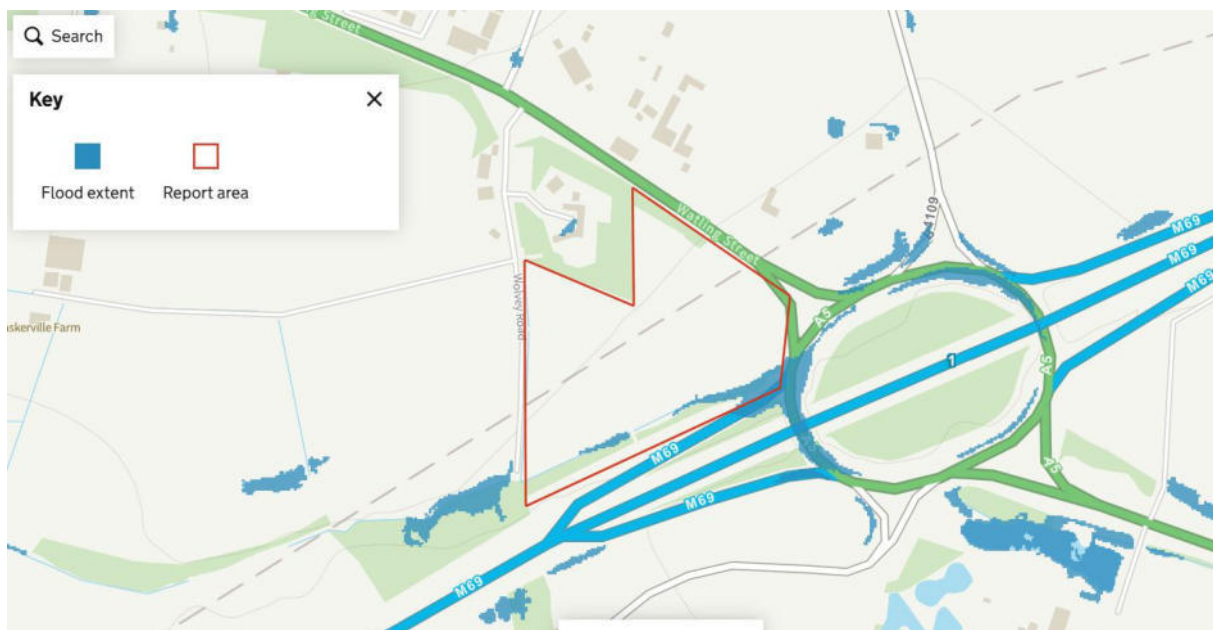


Figure 2 – Environment Agency Surface Water Flood Map

- 2.1.6. Based on the proposed development sitting outside these medium-low risk areas, the development can be classified as having low risk of flooding from Pluvial Sources.

3. Drainage Design Principles

- 3.1.1. The flood risk and drainage design requirements have been designed in accordance with the previously approved Flood Risk Assessment, prepared by BWB Consulting, reference SCH-BWB-ZZ-XX-RP-YE-001_FRA.
- 3.1.2. The primary flood risk generated by the new development is most likely to be the risk posed to others by surface water run-off.
- 3.1.3. Surface water arising from a developed site should, as far as practical, be managed sustainably to mimic the surface water flows arising from the undeveloped site.
- 3.1.4. Following the above, it is proposed that the surface water from the site discharges to the existing watercourse running along the south of the site. The proposed discharge rate into this sewer has been proposed at 11.1l/s, in accordance with the Qbar rate proposed by BWB within the initial planning submission.
- 3.1.5. A copy of the current proposed Drainage Layout for discharge of planning conditions can be seen in **Appendix C**.

Climate Change

- 3.1.6. Table 1 shows anticipated climate changes allowances for peak rainfall in the site location. For developments with a lifetime up to 2060, the '2050s' values need to be followed. For developments with a lifetime between 2061 and 2015, '2070s' values must be used.

River Soar Management Catchment	3.3% annual exceedance rainfall event		1% annual exceedance rainfall event	
	Central Allowance	Upper end Allowance	Central Allowance	Upper end Allowance
2050s	20%	35%	20%	40%
2070s	20%	35%	25%	40%

Table 1 – Copy of peak rainfall allowances in the area from Environment Agency 'Flood Risk Assessments – Climate change Allowances'

- 3.1.7. When considering the assumed 40-year lifetime of the development, the upper end allowances must be used.
- 3.1.8. Using Table 1 above, the calculations required for the site application include 35% and 40% allowance for climate change for the 1 in 30 year event and 1 in 100 year event respectively.

4. Drainage Strategy

4.1. General

- 4.1.1. The surface water drainage strategy consists of a surface water drainage network that will collect runoff from the proposed building roofs and the external hardstanding areas comprising an internal access road, car park and footpaths. Runoff from these areas will be collected by a network of surface water drainage features before ultimately discharging into the existing watercourse on the south boundary of the site at a rate of 11.1l/s. The proposed outfall and discharge rate will be subject to an agreement with the Local Planning Authority (LPA) and the Lead Local Flood Authority (LLFA).
- 4.1.2. The total proposed impermeable area has been calculated as approximately 2.35ha.
- 4.1.3. Causeway FLOW was used to model the proposed surface water system on site for the 1 in 100 years plus 40% climate change allowance, the 1 in 30 years plus 35% climate change allowance and the 1 in 1 year storm events. The total estimated attenuation volume required on site is approximately 1475m³ and is proposed to be stored within two attenuation tanks, located in the southwestern HGV parking area and the southern car parking area. It is proposed that the surface water network will remain private and will be maintained by the occupant's maintenance team on site.
- 4.1.4. Surface water treatment on site will be provided in the form of brown roofs, permeable paving, and proprietary treatment systems before the outfall to ensure a suitable level of treatment is incorporated throughout the site's entirety. The proposed treatment mitigation indices calculated in accordance with the Ciria SuDS Manual C753 are included in **Appendix D**.
- 4.1.5. Should the capacity of the drainage system and storage be exceeded, the excess flow will be diverted overland to follow the existing surface water flood route path, away from the buildings and towards the sites natural low points, simulating that of the pre-development flood route plan. This is only to be expected above the 100 year plus 40% climate change events, or in the extremely rare event of drainage system failure.

4.2. Surface Water Drainage Proposals

- 4.2.1. The proposed surface water drainage network is a gravity network that collects surface water from the building roof and external hardstanding areas.
- 4.2.2. The run-off from the access road will enter the drainage network via gullies, channel drains, and under-drained permeable paving before discharging into the existing watercourse to the south of the site. Utilising a single discharge to avoid drainage works in protected tree root zones.

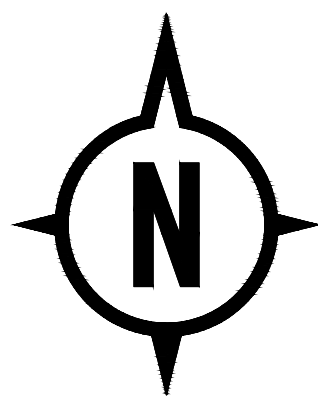
4.3. Foul Water Drainage Proposals:

- 4.3.1. The foul water drainage strategy proposes to discharge foul water flows generated from the development to the public foul water sewers within Watling Street.
- 4.3.2. The proposed site surface water and foul water drainage layout is shown in **Appendix C**.
- 4.3.3. The proposed drainage calculations are included in **Appendix E**.

4.4. Drainage Summary

- 4.4.4. The Drainage will collect foul and surface water from the site and discharge the foul into an existing manhole on Watling Street, and discharge the surface water to the existing watercourse at the south of the site.
- 4.4.5. The principles retained, include positioning proposals outside and above the flood extent, proposing discharge rates in relation to the agreed Qbar rate, and ensuring suitable pollution mitigation is provided for surface water runoff.

Appendix A



Total Car Spaces - 272
inc:
DDA - 17 (inc EV)
EV- 36
Staff Parking - 18
Motorcycle Parking - 11

HGV Parking - 44
Coach Parking - 7
Caravan Parking - 10

Key

- Ownership boundary
- Site boundary
- Site Area 49,877.5sqm / 12.35acres
- Bitmac road finish
- Bitmac path finish
- Concrete pavours
- Concrete
- Concrete Apron
- Concrete Apron Double reinforced concrete to delivery stand
- Grasscrete
- Kerb
- Pin Kerb
- Trif Kerb
- Drop Kerb
- Stainless steel bollard
- Soft Landscaping
- Tree to be removed
- BWB Root Protection Area
- Tactile paving
- New LPS 1175 SR2 rated Paladin fence min height 2.0m
- 1.8m timber close boarded fence
- 2.2m timber acoustic fence as proposed by the Noise Impact Assessment
- Existing / proposed timber post and rail fence
- Suggested drainage route from Title Plan LT155479
- Non illuminated signage
- Non illuminated sign NO ENTRY / GIVE WAY
- Proposed Level
- Pedestrian Route
- Tactile paving and dropped kerbs at all appropriate points along the route to DDA standards within site demise

0m 10 20 30 40 50
Scale Bar

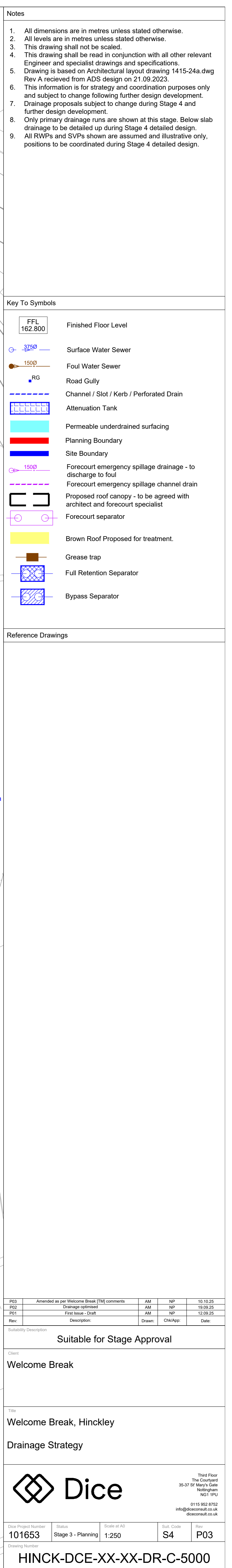


Appendix B

Not in scale



Appendix C



Appendix D

Train 1	Roof Run-off (low risk)		
Treatment Type	TSS	Metals	HC
Brownroof	0.5	0.6	0.6
SDS Aquaswirl	0.4	0.25	0.35
Total	0.9	0.85	0.95
Needs	0.3	0.2	0.05

Train 2A	General Access and Car Parking (KerbDrain only - medium risk)		
Treatment Type	TSS	Metals	HC
SPEL Stormceptor	0.8	0.6	0.9
SDS Aquaswirl	0.4	0.25	0.35
Total	1.2	0.85	1.25
Needs	0.7	0.6	0.7

Train 3	HGV Parked Run-off (high risk)		
Treatment Type	TSS	Metals	HC
SPEL Purceptor	0.8	0.6	0.99
SDS Aquaswirl	0.4	0.25	0.35
Total	1.2	0.85	1.34
Needs	0.8	0.8	0.9

Train 2B	General Access and Car Parking (On permeable - medium risk)		
Treatment Type	TSS	Metals	HC
Permeable Paving	0.7	0.6	0.7
SPEL Stormceptor	0.4	0.3	0.45
SDS Aquaswirl	0.25	0.15	0.25
Total	1.35	1.05	1.4
Needs	0.7	0.6	0.7

Appendix E

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	81.037	35.6	375	Circular	111.000	109.575	1.050	109.200	107.300	1.525
2.000	17.945	17945.0	375	Circular	108.900	107.301	1.224	109.200	107.300	1.525
1.001	16.236	72.2	450	Circular	109.200	107.225	1.525	109.500	107.000	2.050
3.000	23.027	21.4	225	Circular	109.500	108.300	0.975	109.500	107.225	2.050
1.002	17.148	34.3	450	Circular	109.500	107.000	2.050	109.500	106.500	2.550
1.003	70.088	0.0	450	Circular	109.500	106.500	2.550	108.900	106.500	1.950
4.000	45.500	227.5	450	Circular	109.050	107.550	1.050	109.200	107.350	1.400
4.001	67.435	245.2	450	Circular	109.200	107.350	1.400	109.300	107.075	1.775
5.000	34.552	36.4	150	Circular	111.375	110.025	1.200	110.800	109.075	1.575
6.000	16.128	25.8	150	Circular	111.000	109.700	1.150	110.800	109.075	1.575
5.001	23.833	17.3	225	Circular	110.800	109.000	1.575	109.750	107.625	1.900
5.002	15.729	48.4	450	Circular	109.750	107.400	1.900	109.300	107.075	1.775
4.002	7.740	51.6	450	Circular	109.300	107.075	1.775	109.350	106.925	1.975
4.003	19.176	45.1	450	Circular	109.350	106.925	1.975	109.175	106.500	2.225
4.004	10.000	0.0	450	Circular	109.175	106.500	2.225	108.900	106.500	1.950
4.005	10.509	0.0	450	Circular	108.900	106.500	1.950	108.900	106.500	1.950
1.004	4.687	0.0	450	Circular	108.900	106.500	1.950	109.275	106.500	2.325
1.005	26.666	35.6	450	Circular	109.275	106.500	2.325	109.200	105.750	3.000
7.000	33.604	51.7	225	Circular	109.200	108.450	0.525	109.200	107.800	1.175
7.001	21.320	53.3	225	Circular	109.200	107.800	1.175	109.375	107.400	1.750
7.002	15.149	86.6	225	Circular	109.375	107.400	1.750	109.400	107.225	1.950
8.000	31.795	78.9	225	Circular	109.200	108.150	0.825	109.200	107.747	1.228
8.001	3.686	78.4	225	Circular	109.200	107.747	1.228	109.200	107.700	1.275
8.002	16.086	33.9	225	Circular	109.200	107.700	1.275	109.400	107.225	1.950
7.003	8.279	82.8	300	Circular	109.400	107.150	1.950	109.200	107.050	1.850

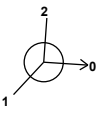
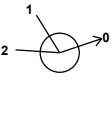
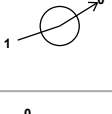
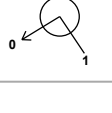
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S9	1500	Manhole	Adoptable	S11	1500	Manhole	Adoptable
2.000	S10	1500	Manhole	Adoptable	S11	1500	Manhole	Adoptable
1.001	S11	1500	Manhole	Adoptable	S13	1500	Manhole	Adoptable
3.000	S12	1350	Manhole	Adoptable	S13	1500	Manhole	Adoptable
1.002	S13	1500	Manhole	Adoptable	S14	1500	Manhole	Adoptable
1.003	S14	1500	Manhole	Adoptable	Junction 1	100	Manhole	Adoptable
4.000	S17	1500	Manhole	Adoptable	S16	1500	Manhole	Adoptable
4.001	S16	1500	Manhole	Adoptable	S23	1500	Manhole	Adoptable
5.000	S1	1200	Manhole	Adoptable	S3	1200	Manhole	Adoptable
6.000	S2	1200	Manhole	Adoptable	S3	1200	Manhole	Adoptable
5.001	S3	1200	Manhole	Adoptable	S5	1800	Manhole	Adoptable
5.002	S5	1800	Manhole	Adoptable	S23	1500	Manhole	Adoptable
4.002	S23	1500	Manhole	Adoptable	S24	1800	Manhole	Adoptable
4.003	S24	1800	Manhole	Adoptable	S27	1500	Manhole	Adoptable
4.004	S27	1500	Manhole	Adoptable	TANK	100	Manhole	Adoptable
4.005	TANK	100	Manhole	Adoptable	Junction 1	100	Manhole	Adoptable
1.004	Junction 1	100	Manhole	Adoptable	S26	1500	Manhole	Adoptable
1.005	S26	1500	Manhole	Adoptable	S19	1800	Manhole	Adoptable
7.000	SIC 4	600	Manhole	Adoptable	SIC 5	600	Manhole	Adoptable
7.001	SIC 5	600	Manhole	Adoptable	SIC 6	600	Manhole	Adoptable
7.002	SIC 6	600	Manhole	Adoptable	S6	1200	Manhole	Adoptable
8.000	SIC 1	600	Manhole	Adoptable	SIC 2	600	Manhole	Adoptable
8.001	SIC 2	600	Manhole	Adoptable	SIC 3	600	Manhole	Adoptable
8.002	SIC 3	600	Manhole	Adoptable	S6	1200	Manhole	Adoptable
7.003	S6	1200	Manhole	Adoptable	S19	1800	Manhole	Adoptable

Pipeline Schedule

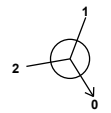
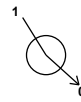
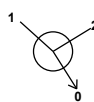
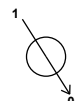
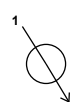
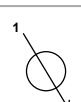
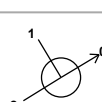
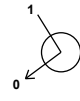
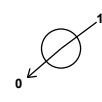
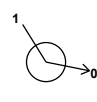
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1.006	2.491	49.8	225	Circular	109.200	105.750	3.225	109.100	105.700	3.175
1.007	10.746	68.4	225	Circular	109.100	105.700	3.175	107.000	105.543	1.232

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.006	S19	1800	Manhole	Adoptable	S20	1200	Manhole	Adoptable
1.007	S20	1200	Manhole	Adoptable	Outfall	1350	Manhole	Adoptable

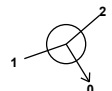
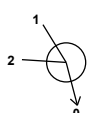
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S9	443124.815	291027.163	111.000	1.425	1500	 0	1.000	109.575	375
S10	443106.879	290933.202	108.900	1.599	1500	 0	2.000	107.301	375
S11	443119.116	290946.327	109.200	1.975	1500	 1 2	2.000	107.300	375
						0	1.000	107.300	375
						0	1.001	107.225	450
S12	443123.174	290964.833	109.500	1.200	1350	 0	3.000	108.300	225
S13	443135.318	290945.269	109.500	2.500	1500	 1 2	3.000	107.225	225
						0	1.001	107.000	450
						0	1.002	107.000	450
S14	443151.569	290950.741	109.500	3.000	1500	 1	1.002	106.500	450
						0	1.003	106.500	450
S17	443272.550	291019.579	109.050	1.500	1500	 0	4.000	107.550	450
S16	443247.196	291057.408	109.200	1.850	1500	 1	4.000	107.350	450
						0	4.001	107.350	450
S1	443131.328	291047.117	111.375	1.350	1200	 0	5.000	110.025	150
S2	443171.085	291068.095	111.000	1.300	1200	 0	6.000	109.700	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
S3	443165.374	291053.013	110.800	1.800	1200		1	6.000	109.075	150
							2	5.000	109.075	150
							0	5.001	109.000	225
S5	443177.971	291032.781	109.750	2.350	1800		1	5.001	107.625	225
							0	5.002	107.400	450
S23	443189.652	291022.248	109.300	2.225	1500		1	5.002	107.075	450
							2	4.001	107.075	450
							0	4.002	107.075	450
S24	443193.788	291015.706	109.350	2.425	1800		1	4.002	106.925	450
							0	4.003	106.925	450
S27	443204.036	290999.498	109.175	2.675	1500		1	4.003	106.500	450
							0	4.004	106.500	450
TANK	443205.778	290996.608	108.900	2.400	100		1	4.004	106.500	450
							0	4.005	106.500	450
Junction 1	443211.185	290987.596	108.900	2.400	100		1	4.005	106.500	450
							2	1.003	106.500	450
							0	1.004	106.500	450
S26	443215.203	290990.010	109.275	2.775	1500		1	1.004	106.500	450
							0	1.005	106.500	450
SIC 4	443248.340	291046.551	109.200	0.750	600					
							0	7.000	108.450	225
SIC 5	443266.078	291018.010	109.200	1.400	600		1	7.000	107.800	225
							0	7.001	107.800	225
SIC 6	443248.962	291005.299	109.375	1.975	600		1	7.001	107.400	225
							0	7.002	107.400	225
SIC 1	443201.891	291017.861	109.200	1.050	600					
							0	8.000	108.150	225
SIC 2	443218.674	290990.857	109.200	1.453	600		1	8.000	107.747	225
							0	8.001	107.747	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SIC 3	443222.288	290990.134	109.200	1.500	600		1	8.001	107.700	225
S6	443237.484	290995.412	109.400	2.250	1200		0	8.002	107.700	225
							1	8.002	107.225	225
							2	7.002	107.225	225
S19	443241.817	290988.358	109.200	3.450	1800		0	7.003	107.150	300
							1	7.003	107.050	300
							2	1.005	105.750	450
S20	443242.447	290985.947	109.100	3.400	1200		0	1.006	105.750	225
							1	1.006	105.700	225
							0	1.007	105.700	225
Outfall	443245.219	290975.565	107.000	1.457	1350		1	1.007	105.543	225

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	1440
M5-60 (mm)	20.200	Additional Storage (m³/ha)	0.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Node S19 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	105.750	Product Number	CTL-SHE-0134-1110-2250-1110
Design Depth (m)	2.250	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	11.1	Min Node Diameter (mm)	1500

Node S14 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	106.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	1425

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	450.4	450.4	1.500	450.4	563.2	1.501	0.0	563.2

Node S10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	107.301
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	585

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	126.0	126.0	0.750	126.0	155.8	0.751	0.0	155.8

Node S17 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	107.550
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	3

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	0.0	0.0	0.500	333.0	182.9	0.851	0.0	197.3
0.499	0.0	0.0	0.850	333.0	197.3			

Node S27 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	106.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	1425

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	521.6	521.6	1.500	521.6	643.0	1.501	0.0	643.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S9	10	109.719	0.144	104.5	0.2544	0.0000	OK
30 minute winter	S10	23	107.456	0.155	41.4	18.8706	0.0000	OK
15 minute winter	S11	11	107.408	0.183	109.0	0.3239	0.0000	OK
15 minute winter	S12	10	108.324	0.024	2.6	0.0337	0.0000	OK
15 minute winter	S13	6	107.194	0.194	122.6	0.3426	0.0000	OK
360 minute winter	S14	344	106.860	0.360	24.5	154.7308	0.0000	OK
15 minute winter	S17	10	107.694	0.144	49.8	0.2542	0.0000	OK
15 minute winter	S16	11	107.568	0.218	99.0	0.3859	0.0000	OK
15 minute winter	S1	10	110.070	0.045	5.9	0.0514	0.0000	OK
15 minute summer	S2	1	109.700	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S3	11	109.033	0.033	5.7	0.0374	0.0000	OK
15 minute winter	S5	10	107.475	0.075	29.4	0.1918	0.0000	OK
15 minute winter	S23	8	107.431	0.356	167.5	0.6286	0.0000	OK
15 minute winter	S24	8	107.353	0.428	199.1	1.0899	0.0000	OK
360 minute winter	S27	344	106.860	0.360	29.0	188.4552	0.0000	OK
360 minute winter	TANK	344	106.860	0.360	6.7	0.0029	0.0000	OK
360 minute winter	Junction 1	344	106.860	0.360	10.1	0.0029	0.0000	OK
360 minute winter	S26	344	106.860	0.360	10.1	0.6359	0.0000	OK
15 minute winter	SIC 4	10	108.501	0.051	8.3	0.0144	0.0000	OK
15 minute winter	SIC 5	10	107.892	0.092	24.4	0.0260	0.0000	OK
15 minute winter	SIC 6	11	107.510	0.110	24.1	0.0310	0.0000	OK
15 minute winter	SIC 1	10	108.207	0.057	8.3	0.0160	0.0000	OK
15 minute winter	SIC 2	10	107.812	0.065	8.2	0.0183	0.0000	OK
15 minute winter	SIC 3	10	107.767	0.067	16.3	0.0191	0.0000	OK
15 minute winter	S6	11	107.292	0.142	44.7	0.1610	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S9	1.000	S11	101.9	2.676	0.303	3.0916	
30 minute winter	S10	2.000	S11	22.2	0.650	1.592	0.6163	
15 minute winter	S11	1.001	S13	108.3	1.883	0.284	0.9809	
15 minute winter	S12	3.000	S13	2.5	1.161	0.022	0.0500	
15 minute winter	S13	1.002	S14	123.1	3.480	0.222	0.6443	
30 minute winter	S14	1.003	Junction 1	-16.1	-0.322	-0.101	5.3734	
15 minute winter	S17	4.000	S16	48.9	0.847	0.229	2.7104	
15 minute winter	S16	4.001	S23	95.9	1.159	0.466	6.3106	
15 minute winter	S1	5.000	S3	5.7	1.285	0.193	0.1536	
15 minute summer	S2	6.000	S3	0.0	0.000	0.000	0.0000	
15 minute winter	S3	5.001	S5	5.7	1.598	0.046	0.0852	
15 minute winter	S5	5.002	S23	29.1	0.545	0.063	1.1674	
15 minute winter	S23	4.002	S24	172.0	1.935	0.381	1.1226	
15 minute winter	S24	4.003	S27	215.2	3.572	0.446	1.5118	
15 minute winter	S27	4.004	TANK	-18.4	-0.530	-0.115	0.5394	
15 minute winter	TANK	4.005	Junction 1	-19.1	-0.444	-0.120	0.5490	
15 minute winter	Junction 1	1.004	S26	-33.5	0.824	-0.211	0.2431	
15 minute winter	S26	1.005	S19	-32.3	-0.279	-0.059	2.8607	
15 minute winter	SIC 4	7.000	SIC 5	8.2	0.759	0.113	0.3686	
15 minute winter	SIC 5	7.001	SIC 6	24.1	1.400	0.337	0.3668	
15 minute winter	SIC 6	7.002	S6	23.9	1.305	0.428	0.2779	
15 minute winter	SIC 1	8.000	SIC 2	8.2	0.953	0.140	0.2738	
15 minute winter	SIC 2	8.001	SIC 3	8.1	0.845	0.137	0.0358	
15 minute winter	SIC 3	8.002	S6	16.3	1.637	0.182	0.1601	
15 minute winter	S6	7.003	S19	44.8	1.480	0.366	0.2504	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	S19	344	106.860	1.110	14.5	2.8241	0.0000	SURCHARGED
120 minute winter	S20	54	105.766	0.066	10.4	0.0741	0.0000	OK
180 minute summer	Outfall	552	105.605	0.062	10.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute summer	S19	1.006	S20	10.4	1.058	0.141	0.0246	
180 minute summer	S20	1.007	Outfall	10.4	1.136	0.166	0.0989	367.6

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S9	10	109.836	0.261	267.8	0.4608	0.0000	OK
15 minute winter	S10	13	107.657	0.356	147.9	43.2690	0.0000	OK
15 minute winter	S11	11	107.599	0.374	310.0	0.6612	0.0000	OK
15 minute winter	S12	10	108.337	0.037	6.6	0.0525	0.0000	OK
720 minute winter	S13	705	107.590	0.590	38.2	1.0426	0.0000	SURCHARGED
720 minute winter	S14	705	107.590	1.090	43.5	468.3142	0.0000	SURCHARGED
15 minute winter	S17	12	108.172	0.622	127.8	13.3383	0.0000	SURCHARGED
15 minute winter	S16	11	108.119	0.769	234.5	1.3586	0.0000	SURCHARGED
15 minute winter	S1	10	110.102	0.077	15.1	0.0872	0.0000	OK
15 minute summer	S2	1	109.700	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S3	10	109.052	0.052	14.8	0.0586	0.0000	OK
15 minute winter	S5	9	107.904	0.504	75.5	1.2822	0.0000	SURCHARGED
15 minute winter	S23	9	107.882	0.807	390.8	1.4260	0.0000	SURCHARGED
15 minute winter	S24	9	107.667	0.742	457.7	1.8880	0.0000	SURCHARGED
720 minute winter	S27	705	107.590	1.090	42.4	570.4332	0.0000	SURCHARGED
720 minute winter	TANK	705	107.590	1.090	6.6	0.0087	0.0000	SURCHARGED
720 minute winter	Junction 1	705	107.590	1.090	11.2	0.0087	0.0000	SURCHARGED
720 minute winter	S26	705	107.590	1.090	11.3	1.9256	0.0000	SURCHARGED
15 minute winter	SIC 4	10	108.533	0.082	21.2	0.0233	0.0000	OK
15 minute winter	SIC 5	11	107.989	0.189	62.5	0.0535	0.0000	OK
15 minute winter	SIC 6	11	107.697	0.297	60.5	0.0839	0.0000	SURCHARGED
15 minute winter	SIC 1	10	108.244	0.094	21.2	0.0265	0.0000	OK
15 minute winter	SIC 2	10	107.860	0.113	21.0	0.0321	0.0000	OK
15 minute winter	SIC 3	10	107.810	0.110	41.9	0.0310	0.0000	OK
720 minute winter	S6	705	107.590	0.439	9.4	0.4970	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S9	1.000	S11	267.0	3.242	0.794	6.8640	
15 minute winter	S10	2.000	S11	101.1	1.117	7.251	1.7947	
15 minute winter	S11	1.001	S13	307.0	2.411	0.806	2.1312	
15 minute winter	S12	3.000	S13	6.5	1.302	0.058	0.3713	
15 minute winter	S13	1.002	S14	345.4	3.905	0.624	1.7995	
30 minute winter	S14	1.003	Junction 1	-71.3	-0.503	-0.449	11.1050	
15 minute winter	S17	4.000	S16	182.9	1.154	0.856	7.2092	
15 minute winter	S16	4.001	S23	239.0	1.519	1.162	10.6846	
15 minute winter	S1	5.000	S3	14.8	1.650	0.499	0.3094	
15 minute summer	S2	6.000	S3	0.0	0.000	0.000	0.0000	
15 minute winter	S3	5.001	S5	14.7	1.906	0.117	0.5559	
15 minute winter	S5	5.002	S23	77.4	0.643	0.166	2.4922	
15 minute winter	S23	4.002	S24	392.3	2.476	0.870	1.2264	
15 minute winter	S24	4.003	S27	461.5	3.708	0.957	2.6228	
15 minute winter	S27	4.004	TANK	-57.8	-1.010	-0.363	1.5844	
15 minute winter	TANK	4.005	Junction 1	-59.6	-0.712	-0.375	1.6651	
15 minute winter	Junction 1	1.004	S26	-111.2	-1.189	-0.699	0.7426	
15 minute winter	S26	1.005	S19	-104.2	-0.692	-0.192	4.2251	
15 minute winter	SIC 4	7.000	SIC 5	21.0	0.889	0.290	0.8130	
15 minute winter	SIC 5	7.001	SIC 6	60.5	1.615	0.847	0.8034	
15 minute winter	SIC 6	7.002	S6	60.7	1.527	1.086	0.5889	
15 minute winter	SIC 1	8.000	SIC 2	21.0	1.179	0.358	0.5663	
15 minute winter	SIC 2	8.001	SIC 3	20.7	1.075	0.352	0.0722	
15 minute winter	SIC 3	8.002	S6	41.7	1.614	0.465	0.4573	
15 minute winter	S6	7.003	S19	113.6	1.797	0.930	0.5177	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
720 minute winter	S19	705	107.589	1.839	14.3	4.6814	0.0000	SURCHARGED
120 minute summer	S20	42	105.766	0.066	10.4	0.0741	0.0000	OK
15 minute winter	Outfall	714	105.605	0.062	10.4	0.0000	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
60 minute summer	S19	1.006	S20	10.4	1.058	0.141	0.0246	
15 minute winter	S20	1.007	Outfall	10.4	1.136	0.166	0.0989	477.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S9	11	110.412	0.837	360.6	1.4791	0.0000	SURCHARGED
720 minute winter	S10	705	107.993	0.692	14.6	84.0058	0.0000	SURCHARGED
720 minute winter	S11	705	107.993	0.768	42.7	1.3563	0.0000	SURCHARGED
15 minute winter	S12	10	108.342	0.042	8.9	0.0607	0.0000	OK
720 minute winter	S13	705	107.993	0.993	46.5	1.7538	0.0000	SURCHARGED
720 minute winter	S14	705	107.993	1.493	46.1	641.2554	0.0000	SURCHARGED
15 minute winter	S17	12	109.002	1.452	180.5	37.6300	0.0000	FLOOD RISK
15 minute winter	S16	12	108.860	1.510	273.2	2.6688	0.0000	SURCHARGED
15 minute winter	S1	10	110.118	0.093	20.3	0.1055	0.0000	OK
15 minute summer	S2	1	109.700	0.000	0.0	0.0000	0.0000	OK
15 minute winter	S3	10	109.060	0.060	19.9	0.0680	0.0000	OK
15 minute winter	S5	12	108.320	0.920	101.7	2.3403	0.0000	SURCHARGED
15 minute winter	S23	12	108.293	1.217	492.6	2.1513	0.0000	SURCHARGED
720 minute winter	S24	705	107.993	1.067	111.6	2.7168	0.0000	SURCHARGED
720 minute winter	S27	705	107.992	1.492	67.5	781.0948	0.0000	SURCHARGED
720 minute winter	TANK	705	107.992	1.492	6.3	0.0119	0.0000	SURCHARGED
720 minute winter	Junction 1	705	107.992	1.492	10.7	0.0119	0.0000	SURCHARGED
720 minute winter	S26	705	107.992	1.492	10.7	2.6367	0.0000	SURCHARGED
15 minute winter	SIC 4	11	108.716	0.266	28.6	0.0754	0.0000	SURCHARGED
15 minute winter	SIC 5	11	108.610	0.810	78.8	0.2293	0.0000	SURCHARGED
15 minute winter	SIC 6	11	108.028	0.628	76.5	0.1777	0.0000	SURCHARGED
15 minute winter	SIC 1	10	108.261	0.111	28.6	0.0315	0.0000	OK
720 minute winter	SIC 2	705	107.992	0.245	2.2	0.0693	0.0000	SURCHARGED
720 minute winter	SIC 3	705	107.992	0.292	4.4	0.0826	0.0000	SURCHARGED
720 minute winter	S6	705	107.992	0.842	12.3	0.9521	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S9	1.000	S11	348.8	3.354	1.037	8.9381	
15 minute winter	S10	2.000	S11	163.4	1.486	11.726	1.9793	
15 minute winter	S11	1.001	S13	386.6	2.470	1.015	2.4268	
15 minute winter	S12	3.000	S13	8.8	1.045	0.078	0.4800	
15 minute winter	S13	1.002	S14	426.6	4.015	0.771	2.4302	
30 minute winter	S14	1.003	Junction 1	-80.4	-0.535	-0.506	11.1050	
15 minute summer	S17	4.000	S16	217.0	1.369	1.015	7.2092	
15 minute winter	S16	4.001	S23	281.3	1.776	1.367	10.6846	
15 minute winter	S1	5.000	S3	19.9	1.764	0.672	0.3894	
15 minute summer	S2	6.000	S3	0.0	0.000	0.000	0.0000	
15 minute winter	S3	5.001	S5	19.8	1.708	0.157	0.5753	
15 minute winter	S5	5.002	S23	98.7	0.699	0.212	2.4922	
15 minute winter	S23	4.002	S24	497.2	3.138	1.103	1.2264	
15 minute winter	S24	4.003	S27	578.0	3.983	1.198	3.0383	
15 minute winter	S27	4.004	TANK	-72.5	-1.140	-0.456	1.5844	
15 minute winter	TANK	4.005	Junction 1	-75.2	-0.794	-0.473	1.6651	
15 minute winter	Junction 1	1.004	S26	-146.5	-1.284	-0.921	0.7426	
15 minute winter	S26	1.005	S19	-137.3	-0.877	-0.253	4.2251	
15 minute winter	SIC 4	7.000	SIC 5	27.8	0.893	0.383	1.3365	
15 minute winter	SIC 5	7.001	SIC 6	76.5	1.923	1.071	0.8479	
15 minute winter	SIC 6	7.002	S6	75.9	1.908	1.357	0.6025	
15 minute winter	SIC 1	8.000	SIC 2	28.3	1.224	0.484	0.7471	
15 minute winter	SIC 2	8.001	SIC 3	27.7	1.091	0.472	0.1037	
15 minute winter	SIC 3	8.002	S6	55.5	1.638	0.619	0.5519	
15 minute winter	S6	7.003	S19	146.6	2.083	1.200	0.5746	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	S19	705	107.992	2.242	12.7	5.7055	0.0000	SURCHARGED
720 minute winter	S20	705	105.767	0.067	10.9	0.0759	0.0000	OK
720 minute winter	Outfall	705	105.606	0.063	10.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	S19	1.006	S20	10.9	1.068	0.148	0.0255	
720 minute winter	S20	1.007	Outfall	10.9	1.149	0.174	0.1022	1243.2

