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West Sussex County Council
County Hall
Chichester
West Sussex
PO19 1RH

Date: 10 September 2025
Your Ref: DM/25/1593
Our Ref: DB/3071/001_Rev.1
Email: dayle@herringtonconsulting.co.uk

To whom it may concern

I am writing to provide you with a response to your comments for the site at **Woodlands Close And Land To The North Of Burleigh Lane, Crawley Down, RH10 4JZ**

Your comments are summarised below (in blue) followed by our response.

The Applicant has stated that they are considering the capture of surface water for external non potable reuse. We would advise that in accordance with the latest National Standards for SuDS this should be confirmed as part of the strategy in order to meet the SuDS hierarchy.

We confirm that water butts will be installed in each of the properties to reduce the reliance on potable water supplies for external use. The water butts have been included in the drawings.

Section 8.3 of the strategy states "Due to the gradient across the site, it may be necessary to incorporate check dams within the sub-base of any permeable paving systems, or swales." – we would need confirmation of this with cross sections of any proposed permeable paving system (with or without the above).

Indicative cross sections of the site have been included within the drawings and are enclosed to this letter.

Please can the Applicant provide more detail regarding maintenance access for the two attenuation basins. The Easterly basin in particular appears from the indicative plan to be constrained in terms of access. We would usually require a 3m buffer and suitable access for small plant in order to ensure repair and cyclical clearance/maintenance is possible.

The Eastern basin has been reshaped to allow for more space between the footpath for maintenance. Access buffers have been shown and labelled on the layout drawing. Please refer to the updated layout drawing enclosed within this letter. The Eastern basin can be accessed from the footpath or carpark, and the Western basin can be accessed from the footpath or road.

We note that the site location on the HR Wallingford greenfield tool is slightly north of the site, whilst it is not anticipated to have a significant effect please resubmit with a more centralised location in order to ensure parameters are correct.

A more centralised site location has been used for the HR Wallingford greenfield runoff calculations. SAAR and BFIHOST values had been taken from FEH point data for the site. The greenfield runoff results therefore remain the same. Please see the updated calculations enclosed within this letter.

Please may we have an updated version of the proposed drainage layout, with the topographical survey overlaid? This will assist us in determining the levels proposed will be practicable. Please also include invert levels for any drainage features, new or existing. As per point 3, it may also be beneficial to include the maintenance buffer zones for the basins on this plan.

The topographic survey has been added to the layout drawing. Invert and cover levels have been added to the drainage basins. Maintenance buffer zones for the basins are also now shown. Please refer to the updated layout drawing enclosed within this letter.

We will need to see modelling for a surcharged outfall.

As part of the FRA, an assessment was undertaken to test the capacity of the ditch. Based on this analysis, all the proposed SuDS are higher than the maximum water level expected during the design event (1 in 100yr+cc). As such, the outfall will not become surcharged during the design event.

For further clarity, the hydraulic model has been run assuming a constant level in the watercourse equal to the expected water level in the ditch during the design event. The results are attached to this letter and show that under this scenario, the proposed drainage system will still have sufficient capacity so manage all rainfall events up to and including the design event.

Under section 8.4 the Applicant states: "This permeable surfacing will be used for the hardstanding across the site and should, if possible, extend to the private driveways." We would encourage this wherever feasible for managing surface water as close to the source as practicable, as per Principle 1 of the National Standards for SuDS. This will also provide increased pollution control. In any event, please can the applicant provide a comparison of the potential pollution hazard indices against the proposed mitigation, as per the CIRIA SuDS manual.

Permeable surfacing has been added to the private driveways. Please refer to the updated layout drawing enclosed within this letter.

The Simple Index Approach included in the CIRIA SuDS manual has been used to analyse the pollution control provided by the proposed SuDS.

The proposed development has been classified as 'residential roof' and "individual property driveways, residential car parks and low traffic roads", which are considered to have "very low" and "low" pollution hazard levels. The "low" pollution hazard level indices have therefore been used.

All the runoff from the proposed development will be drained via the permeable surfacing system and the detention basins. The mitigation indices included in the CIRIA SuDS manual for these SuDS have been used.

The pollution indices have been compared to the mitigation indices for the proposed drainage system. The results have been summarised in Table 1 below and show that sufficient treatment has been provided.

		Total Suspended Solids (TSS)	Metals	Hydrocarbons
Pollution hazard indices		**0.5**	**0.4**	**0.4**
Mitigation Indices	Permeable Surfacing System	0.7	0.6	0.7
	Detention Basin (x 0.5)	0.25	0.25	0.3
	Total Mitigation	**0.95**	**0.85**	**1.0**
Comparison		Sufficient Treatment	Sufficient Treatment	Sufficient Treatment

Table 1 – Simple Index Calculation

I trust that the additional information provided in this letter addresses the concerns you have raised in regard to the drainage strategy. However, if you have any additional questions or concerns, please do not hesitate to contact me and I would be happy to discuss.

Yours faithfully,

Dayle Brewitt BEng(Hons)
Drainage Engineer

Enclosed documents:

- Drainage Layout Plan
- Indicative Cross Section Details
- HR Wallingford Calculations
- Causeway Flow+ Calculations – Surcharged Outfall

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS AND THE SPECIFICATION.
2. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT BRITISH STANDARDS, EUROPEAN NORMS, CODES OF PRACTICE AND BUILDING PRACTICE.
3. ALL DIMENSIONS ARE TO BE CHECKED BY THE CONTRACTOR PRIOR TO STARTING THE WORKS ON SITE. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
4. ALL DRAINAGE SYSTEMS WILL NEED TO BE INSTALLED AND DESIGNED FOR SUITABLE LOADING REQUIREMENTS.
5. THE CONTRACTOR SHALL OBTAIN PRIOR APPROVAL AND ALL NECESSARY LICENCES FROM THE THE HIGHWAY AUTHORITY AND/OR SEWERAGE UNDERTAKER BEFORE CARRYING OUT ANY WORKS.
6. THIS DRAWING WAS PRODUCED FOR USE IN CONJUNCTION WITH A PLANNING SUBMISSION AND SHOULD NOT BE USED FOR OTHER PURPOSES. A MORE DETAILED DESIGN INCLUDING PRODUCT SPECIFICATIONS WILL NEED TO BE PRODUCED PRIOR TO CONSTRUCTION.

KEY:

- PERMEABLE PAVING
- DRAINAGE BASIN
- SURFACE WATER DRAIN
- SURFACE WATER MANHOLE
- FLOW CONTROL DEVICE
- BASIN INLET/OUTLET
- WATER BUTT

WEST DRAINAGE BASIN
TOTAL DEPTH: 1.3 m
AREA AT TOP OF BANK: 446 m²
BASIN SIDE SLOPE: 1:3
FREEBOARD: 0.3 m

FLOW CONTROL CHAMER
HYDROBRAKE
LIMITING DISCHARGE: 8.9 l/s

FLOW CONTROL CHAMER
HYDROBRAKE
LIMITING DISCHARGE: 5.2 l/s

EAST DRAINAGE BASIN
TOTAL DEPTH: 1.49 m
AREA AT TOP OF BANK: 216 m²
BASIN SIDE SLOPE: 1:3
FREEBOARD: 0.3 m

PERMEABLE PAVING
TO AVOID ROOT
PROTECTION AREA

INDICATIVE LOCATION
OF WATER BUTTS

3m MAINTENANCE ZONE FOR
SMALL PLANT AND MAINTENANCE
EQUIPMENT. ACCESS TO BASIN
VIA FOOTPATH OR MAIN ROAD.

1m MAINTENANCE ZONE FOR
SMALL PLANT AND MAINTENANCE
EQUIPMENT. ACCESS TO BASIN
VIA FOOTPATH OR THROUGH
CAR PARK.

FLOW CONTROL CHAMER
61mm ORIFICE PLATE

FLOW CONTROL CHAMER
86mm ORIFICE PLATE

EAST PERMEABLE PAVING
SUB-BASE DEPTH: 0.75m
AREA: 1364 m²
POROSITY: 0.95

WEST PERMEABLE PAVING
SUB-BASE DEPTH: 0.75 m
AREA: 2000 m²
POROSITY: 0.95

WATERCOURSE TO BE BRIDGED BY LARGE
BOX CULVERT/PORTAL FRAME. A MAMMAL
SHELVE CAN BE INCORPORATED INTO THE
DETAILED DESIGN OR ALTERNATIVELY A
HIGH LEVEL PIPE INCLUDED WITHIN THE
BANKS TO PERMIT NORTH-SOUTH TRAVEL
FOR WILDLIFE

PERMEABLE PAVING
WITHIN DRIVEWAYS
SUB-BASE DEPTH: 0.3 m
TOTAL AREA: 1500 m²
POROSITY: 0.3

PLAY
AREA
/LAP

Play
Area

ACORN AVENUE
WOODLANDS CLOSE
SYCAMORE LANE
ASH TREE STREET
HORNBEAM PLACE
CLOSE
SARANE
LODGE
HEDGEROWS
BURLEIGH
COTTAGE
BURLEIGH LANE
THYME
COTTAGE
SYCAMORE LANE

SCALE 1 : 500 @ A1
10 m 0 40 m

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Rev	Description	Author	Checked	Date
P2	Minor amendments	DB	EC	09/09/25
P1	First Issue	DB	SAH	30/05/25
P0	Constraints Plan	DB	SAH	15/04/25

CLIENT: Merrow Wood

PROJECT: Burleigh Lane, Crawley Down

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
1:500	3071	DB	SAH

HC DWG REF.: 3071_DWG_r2

DWG TITLE: INDICATE SURFACE WATER DRAINAGE LAYOUT PLAN

DWG No.: HC-3071-501

GENERAL NOTES

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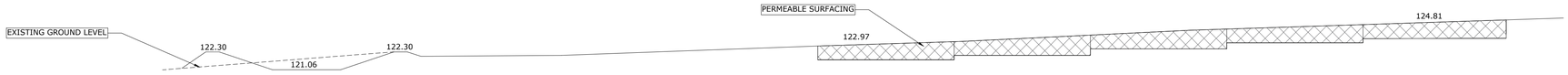
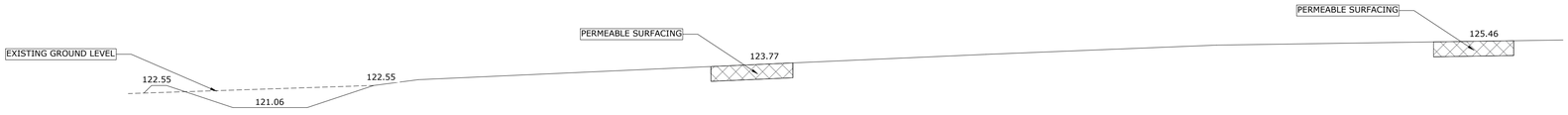


WEST CROSS SECTION

SCALE 1:200



EAST CROSS SECTION

SCALE 1:200

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Rev	Description	Author	Checked	Date
P0	First Issue	DB	EC	09/09/25

CLIENT: Merrow Wood

PROJECT: Burleigh Lane, Crawley Down

SCALE	PROJ REF	ORIGINATOR	CHECKED BY
1:200	3071	DB	EC

HC DWG REF: 3071_DWG_r2

DWG TITLE: INDICATIVE SECTIONS

DWG No.: HC-3071-503

Greenfield runoff rate estimation tool

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

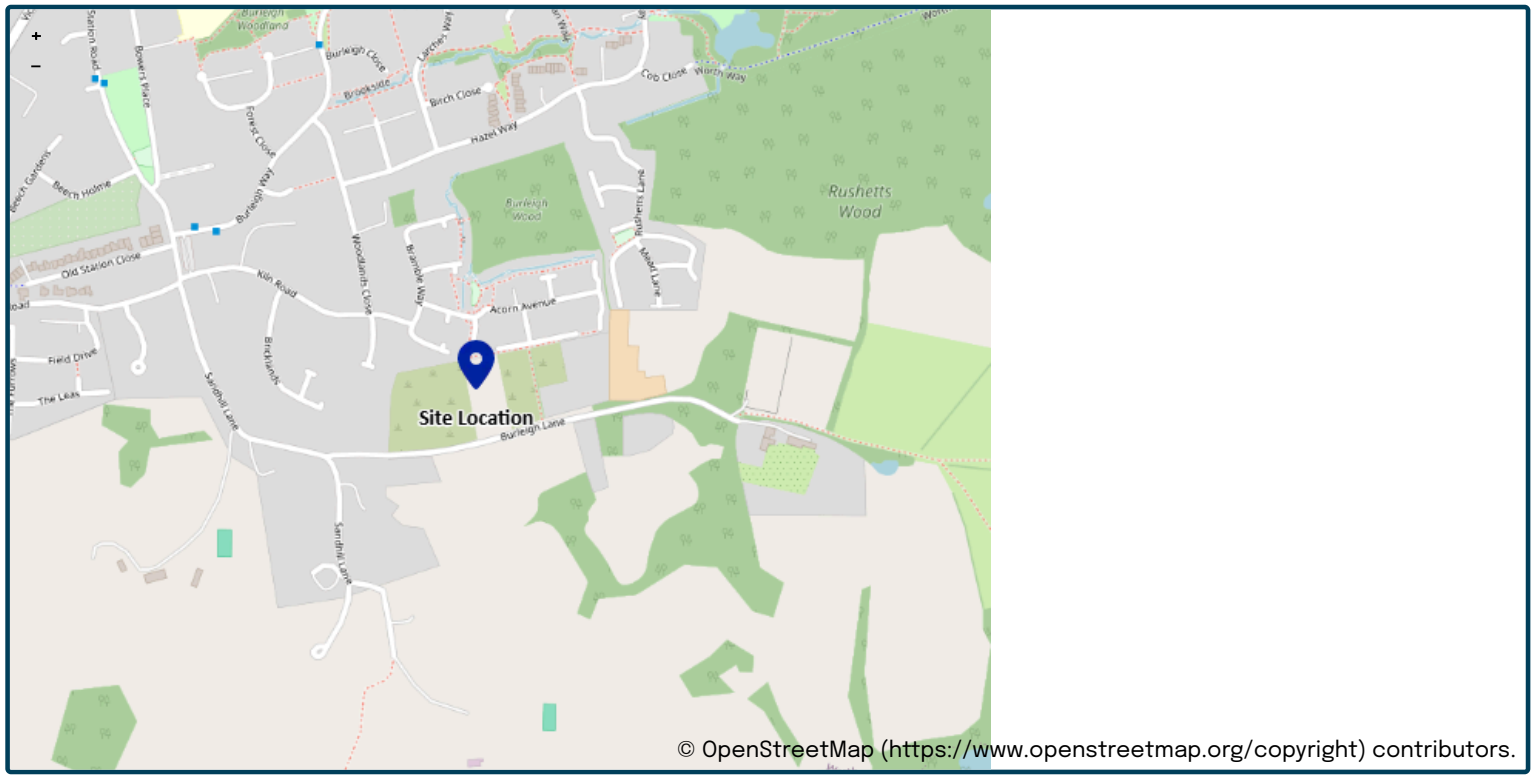
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	10/09/2025
Calculated by	Dayle
Reference	
Model version	2.1.2

Location

Site name	Burleigh Lane East Catchment
Site location	



Site easting (British National Grid)	535071
Site northing (British National Grid)	137240

Site details

Total site area (ha)	0.7516 ha

Greenfield runoff

Method

Method	FEH statistical

FEH statistical

	My value		Map value
SAAR (mm)	835 mm		839
BFIHOST	0.392		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	4.57 l/s		
QBar (FEH statistical) (l/s)	5.2 l/s		

Growth curve factors

	My value		Map value
Hydrological region	7		7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical
Flow rate 1 year (l/s)	4.4 l/s
Flow rate 2 year (l/s)	4.6 l/s
Flow rate 10 years (l/s)	8.4 l/s
Flow rate 30 years (l/s)	12.0 l/s
Flow rate 100 years (l/s)	16.6 l/s
Flow rate 200 years (l/s)	19.4 l/s

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

Disclaimer

Greenfield runoff rate estimation tool

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

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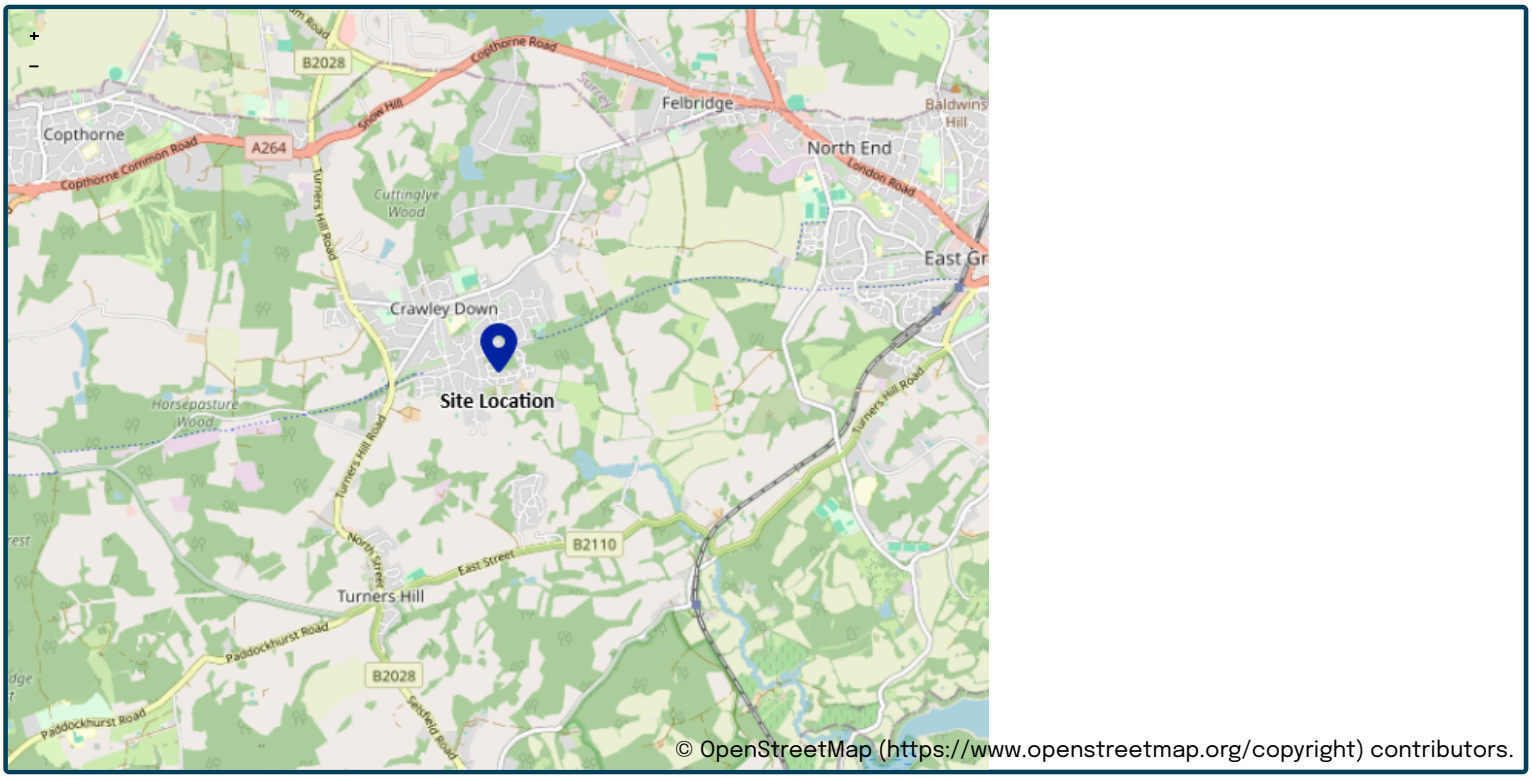
Project details

Date	10/09/2025
Calculated by	Dayle
Reference	
Model version	2.1.2

Location

Site name	Burleigh Lane West Catchment
Site location	



Site easting (British National Grid)	535071
Site northing (British National Grid)	137240

Site details

Total site area (ha)	1.2851 ha

Greenfield runoff

Method

Method	FEH statistical

FEH statistical

	My value		Map value
SAAR (mm)	835 mm		839
BFIHOST	0.392		
QMed-QBar conversion	1.136		1.136
QMed (l/s)	7.82 l/s		
QBar (FEH statistical) (l/s)	8.89 l/s		

Growth curve factors

	My value		Map value
Hydrological region	7		7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	FEH statistical
Flow rate 1 year (l/s)	7.6 l/s
Flow rate 2 year (l/s)	7.8 l/s
Flow rate 10 years (l/s)	14.4 l/s
Flow rate 30 years (l/s)	20.4 l/s
Flow rate 100 years (l/s)	28.3 l/s
Flow rate 200 years (l/s)	33.2 l/s

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

Disclaimer

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	0.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	200.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Inverts		
Time of Entry (mins)	4.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
West Impermeable Area	0.409	4.00	125.170	1350	-11.844	-23.156	2.170
West Permeable Pavings (Roads)	0.201	4.00	123.240		-11.745	-11.996	1.200
West Pond			122.302		-11.861	3.018	1.302
East Impermeable Area	0.258	4.00	125.170	1200	14.116	-22.361	0.870
East Permeable Paving (Roads)	0.155	4.00	124.590		14.125	-11.710	1.100
East Pond			122.550		14.217	1.409	1.490
Out into river			121.500	1200	1.280	14.009	0.600
Out			120.960	1200	1.077	23.736	0.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	West Impermeable Area	West Permeable Pavings (Roads)	11.160	0.600	123.000	122.040	0.960	11.6	375	4.03	170.4
1.001	West Permeable Pavings (Roads)	West Pond	15.014	0.600	122.040	121.000	1.040	14.4	375	4.09	170.4
1.002	West Pond	Out into river	17.131	0.600	121.060	120.960	0.100	171.3	150	4.46	170.4
2.000	East Impermeable Area	East Permeable Paving (Roads)	10.651	0.600	124.300	123.490	0.810	13.1	300	4.04	170.4
2.001	East Permeable Paving (Roads)	East Pond	13.119	0.600	123.490	122.000	1.490	8.8	300	4.08	170.4
2.002	East Pond	Out into river	18.059	0.600	121.060	120.960	0.100	180.6	150	4.49	170.4
1.003	Out into river	Out	9.729	0.600	120.900	120.460	0.440	22.1	300	4.53	170.4

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	5.338	589.6	251.9	1.795	0.825	0.409	0.0	171	5.137
1.001	4.789	528.9	375.7	0.825	0.927	0.610	0.0	234	5.178
1.002	0.765	13.5	375.7	1.092	0.390	0.610	0.0	150	0.779
2.000	4.358	308.0	158.9	0.570	0.800	0.258	0.0	153	4.388
2.001	5.328	376.6	254.3	0.800	0.250	0.413	0.0	181	5.702
2.002	0.744	13.2	254.3	1.340	0.390	0.413	0.0	150	0.758
1.003	3.357	237.3	630.0	0.300	0.200	1.023	0.0	300	3.400

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	11.160	11.6	375	Circular	125.170	123.000	1.795	123.240	122.040	0.825
1.001	15.014	14.4	375	Circular	123.240	122.040	0.825	122.302	121.000	0.927
1.002	17.131	171.3	150	Circular	122.302	121.060	1.092	121.500	120.960	0.390
2.000	10.651	13.1	300	Circular	125.170	124.300	0.570	124.590	123.490	0.800
2.001	13.119	8.8	300	Circular	124.590	123.490	0.800	122.550	122.000	0.250
2.002	18.059	180.6	150	Circular	122.550	121.060	1.340	121.500	120.960	0.390
1.003	9.729	22.1	300	Circular	121.500	120.900	0.300	120.960	120.460	0.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	West Impermeable Area	1350	Manhole	Adoptable	West Permeable Pavings (Roads)		Junction	
1.001	West Permeable Pavings (Roads)		Junction		West Pond		Junction	
1.002	West Pond		Junction		Out into river	1200	Manhole	Adoptable
2.000	East Impermeable Area	1200	Manhole	Adoptable	East Permeable Paving (Roads)		Junction	
2.001	East Permeable Paving (Roads)		Junction		East Pond		Junction	
2.002	East Pond		Junction		Out into river	1200	Manhole	Adoptable
1.003	Out into river	1200	Manhole	Adoptable	Out	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections		Link	IL (m)	Dia (mm)	Link Type
West Impermeable Area	-11.844	-23.156	125.170	2.170	1350	Manhole	Adoptable		0	1.000	123.000	375	Circular
West Permeable Pavings (Roads)	-11.745	-11.996	123.240	1.200		Junction			1	1.000	122.040	375	Circular
									0	1.001	122.040	375	Circular

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Node Type	MH Type	Connections	Link	IL (m)	Dia (mm)	Link Type
West Pond	-11.861	3.018	122.302	1.302		Junction		1	1.001	121.000	375	Circular
								0	1.002	121.060	150	Circular
East Impermeable Area	14.116	-22.361	125.170	0.870	1200	Manhole	Adoptable	0	2.000	124.300	300	Circular
East Permeable Paving (Roads)	14.125	-11.710	124.590	1.100		Junction		1	2.000	123.490	300	Circular
								0	2.001	123.490	300	Circular
East Pond	14.217	1.409	122.550	1.490		Junction		1	2.001	122.000	300	Circular
								0	2.002	121.060	150	Circular
Out into river	1.280	14.009	121.500	0.600	1200	Manhole	Adoptable	1	2.002	120.960	150	Circular
								2	1.002	120.960	150	Circular
								0	1.003	120.900	300	Circular
Out	1.077	23.736	120.960	0.500	1200	Manhole	Adoptable	1	1.003	120.460	300	Circular

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	10080	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	30	45	10	0
2	0	0	0	50	0	0	0
10	0	0	0	100	0	0	0
30	0	0	0	100	45	10	0

Node Out Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		

Applies to All storms

Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.604	10080	0.604

Node West Pond Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	121.000	Product Number	CTL-SHE-0134-8900-1302-8900
Design Depth (m)	1.302	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	8.9	Min Node Diameter (mm)	1500

Node East Pond Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	121.000	Product Number	CTL-SHE-0099-5200-1550-5200
Design Depth (m)	1.550	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.2	Min Node Diameter (mm)	1200

Node West Permeable Pavings (Roads) Online Orifice Control

Flap Valve	x	Invert Level (m)	122.040	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.086		

Node East Permeable Paving (Roads) Online Orifice Control

Flap Valve	x	Invert Level (m)	123.490	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.061		

Node West Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	121.060
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	600

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	152.1	0.0	0.300	206.2	0.0	0.600	268.5	0.0	0.900	339.0	0.0	1.200	417.6	0.0
0.100	169.2	0.0	0.400	226.0	0.0	0.700	291.0	0.0	1.000	364.3	0.0	1.300	445.6	0.0
0.200	187.5	0.0	0.500	246.9	0.0	0.800	314.5	0.0	1.100	390.4	0.0			

Node East Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	121.060
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	900

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	45.3	0.0	0.300	69.5	0.0	0.600	98.8	0.0	0.900	133.2	0.0	1.200	172.8	0.0	1.490	216.0	0.0
0.100	52.8	0.0	0.400	78.7	0.0	0.700	109.7	0.0	1.000	145.8	0.0	1.300	187.1	0.0			
0.200	60.9	0.0	0.500	88.5	0.0	0.800	121.2	0.0	1.100	159.1	0.0	1.400	202.1	0.0			

Node West Permeable Pavings (Roads) Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Pit Width (m)	10.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	122.040	Pit Length (m)	100.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	750	Depth (m)	0.750		

Node East Permeable Paving (Roads) Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Pit Width (m)	6.820	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	123.490	Pit Length (m)	100.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	1020	Depth (m)	0.750		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.092	0.092	53.5	0.1318	0.0000	OK
720 minute summer	West Permeable Pavings (Roads)	465	122.148	0.108	14.2	102.6646	0.0000	OK
960 minute summer	West Pond	705	121.197	0.197	3.9	22.5354	0.0000	OK
15 minute summer	East Impermeable Area	9	124.381	0.081	33.8	0.0912	0.0000	OK
960 minute summer	East Permeable Paving (Roads)	630	123.601	0.111	8.0	72.1081	0.0000	OK
960 minute summer	East Pond	660	121.174	0.114	2.2	5.6581	0.0000	OK
180 minute winter	Out into river	124	121.065	0.165	3.9	0.1865	0.0000	OK
15 minute summer	Out	1	121.064	0.604	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	53.6	5.633	0.091	0.1260	
720 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	3.9	0.211	0.007	0.4562	
960 minute summer	West Pond	1.002	Out into river	3.7	0.393	0.272	0.1596	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	33.9	4.766	0.110	0.0888	
960 minute summer	East Permeable Paving (Roads)	2.001	East Pond	2.2	1.463	0.006	0.0198	
960 minute summer	East Pond	2.002	Out into river	2.2	0.259	0.167	0.1533	
180 minute winter	Out into river	1.003	Out	3.9	0.064	0.017	0.5355	163.5

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.114	0.114	82.7	0.1629	0.0000	OK
720 minute summer	West Permeable Pavings (Roads)	480	122.178	0.138	18.2	130.9350	0.0000	OK
720 minute summer	West Pond	585	121.214	0.214	4.8	25.5386	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.400	0.100	52.2	0.1127	0.0000	OK
720 minute summer	East Permeable Paving (Roads)	495	123.633	0.143	12.3	92.5634	0.0000	OK
720 minute summer	East Pond	540	121.186	0.126	2.6	6.3386	0.0000	OK
120 minute summer	Out into river	92	121.065	0.165	4.6	0.1869	0.0000	OK
15 minute summer	Out	1	121.064	0.604	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	82.8	6.132	0.140	0.1752	
720 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	4.8	0.217	0.009	0.5102	
720 minute summer	West Pond	1.002	Out into river	4.5	0.455	0.330	0.1668	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	52.3	5.159	0.170	0.1241	
720 minute summer	East Permeable Paving (Roads)	2.001	East Pond	2.6	1.539	0.007	0.0222	
720 minute summer	East Pond	2.002	Out into river	2.6	0.296	0.196	0.1577	
120 minute summer	Out into river	1.003	Out	4.6	0.075	0.020	0.5361	185.6

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.161	0.161	164.9	0.2310	0.0000	OK
480 minute summer	West Permeable Pavings (Roads)	344	122.259	0.219	39.4	208.4436	0.0000	OK
720 minute summer	West Pond	600	121.252	0.252	6.5	32.4326	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.442	0.142	104.0	0.1604	0.0000	OK
600 minute summer	East Permeable Paving (Roads)	450	123.719	0.229	21.6	148.3826	0.0000	OK
600 minute summer	East Pond	510	121.217	0.157	3.5	8.0861	0.0000	SURCHARGED
60 minute summer	Out into river	54	121.066	0.166	6.2	0.1876	0.0000	OK
15 minute summer	Out	1	121.064	0.604	3.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	165.1	6.861	0.280	0.3048	
480 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	6.5	0.261	0.012	0.6176	
720 minute summer	West Pond	1.002	Out into river	6.2	0.578	0.456	0.1818	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	104.1	5.759	0.338	0.2182	
600 minute summer	East Permeable Paving (Roads)	2.001	East Pond	3.5	1.681	0.009	0.0270	
600 minute summer	East Pond	2.002	Out into river	3.4	0.371	0.261	0.1670	
60 minute summer	Out into river	1.003	Out	6.2	0.100	0.026	0.5369	253.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.187	0.187	215.8	0.2670	0.0000	OK
600 minute summer	West Permeable Pavings (Roads)	420	122.319	0.279	40.3	265.1813	0.0000	OK
960 minute summer	West Pond	750	121.278	0.278	7.5	37.3099	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.465	0.165	136.1	0.1861	0.0000	OK
720 minute summer	East Permeable Paving (Roads)	525	123.785	0.295	24.2	190.8418	0.0000	OK
720 minute summer	East Pond	600	121.240	0.180	4.0	9.4321	0.0000	SURCHARGED
30 minute summer	Out into river	39	121.066	0.166	6.5	0.1880	0.0000	OK
15 minute summer	Out	1	121.064	0.604	5.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	216.0	7.137	0.366	0.3834	
600 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	7.5	0.236	0.014	0.6866	
960 minute summer	West Pond	1.002	Out into river	7.2	0.644	0.532	0.1904	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	136.3	5.970	0.442	0.2761	
720 minute summer	East Permeable Paving (Roads)	2.001	East Pond	4.0	1.756	0.011	0.0298	
720 minute summer	East Pond	2.002	Out into river	4.0	0.413	0.300	0.1723	
30 minute summer	Out into river	1.003	Out	6.5	0.106	0.028	0.5374	269.7

Results for 30 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.246	0.246	344.2	0.3522	0.0000	OK
720 minute summer	West Permeable Pavings (Roads)	510	122.502	0.462	57.1	439.0630	0.0000	SURCHARGED
960 minute summer	West Pond	1005	121.427	0.427	10.0	68.0031	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.521	0.221	217.1	0.2499	0.0000	OK
960 minute summer	East Permeable Paving (Roads)	690	123.982	0.492	31.7	318.4720	0.0000	SURCHARGED
960 minute summer	East Pond	1005	121.425	0.365	5.3	21.8121	0.0000	SURCHARGED
30 minute winter	Out into river	36	121.066	0.166	9.2	0.1882	0.0000	OK
15 minute summer	Out	1	121.064	0.604	7.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	344.5	7.507	0.584	0.5838	
720 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	10.0	0.231	0.019	0.8670	
960 minute summer	West Pond	1.002	Out into river	8.7	0.731	0.647	0.2046	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	217.3	6.218	0.706	0.4253	
960 minute summer	East Permeable Paving (Roads)	2.001	East Pond	5.3	1.917	0.014	0.0361	
960 minute summer	East Pond	2.002	Out into river	4.9	0.487	0.375	0.1820	
30 minute winter	Out into river	1.003	Out	9.2	0.148	0.039	0.5377	432.1

Results for 50 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.197	0.197	238.6	0.2825	0.0000	OK
960 minute summer	West Permeable Pavings (Roads)	630	122.360	0.320	33.6	303.5827	0.0000	OK
960 minute summer	West Pond	780	121.296	0.296	8.1	40.8989	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.474	0.174	150.5	0.1973	0.0000	OK
1440 minute summer	East Permeable Paving (Roads)	960	123.833	0.343	16.8	221.9974	0.0000	SURCHARGED
1440 minute summer	East Pond	1080	121.271	0.211	4.3	11.3012	0.0000	SURCHARGED
60 minute summer	Out into river	49	121.066	0.166	8.3	0.1878	0.0000	OK
15 minute summer	Out	1	121.064	0.604	5.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	238.8	7.231	0.405	0.4186	
960 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	8.1	0.209	0.015	0.7343	
960 minute summer	West Pond	1.002	Out into river	7.8	0.680	0.575	0.1952	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	150.7	6.038	0.489	0.3022	
1440 minute summer	East Permeable Paving (Roads)	2.001	East Pond	4.3	1.802	0.012	0.0316	
1440 minute summer	East Pond	2.002	Out into river	4.3	0.436	0.323	0.1753	
60 minute summer	Out into river	1.003	Out	8.3	0.134	0.035	0.5372	371.8

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.213	0.213	271.7	0.3045	0.0000	OK
1440 minute summer	West Permeable Pavings (Roads)	930	122.444	0.404	31.2	384.1973	0.0000	SURCHARGED
1440 minute summer	West Pond	1200	121.372	0.372	9.3	56.0628	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.489	0.189	171.4	0.2134	0.0000	OK
1440 minute summer	East Permeable Paving (Roads)	960	123.931	0.441	21.1	285.6223	0.0000	SURCHARGED
1440 minute summer	East Pond	1200	121.362	0.302	5.0	17.3007	0.0000	SURCHARGED
15 minute winter	Out into river	32	121.066	0.166	6.4	0.1880	0.0000	OK
15 minute summer	Out	1	121.064	0.604	6.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	272.0	7.342	0.461	0.4701	
1440 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	9.3	0.202	0.018	0.8620	
1440 minute summer	West Pond	1.002	Out into river	8.5	0.718	0.628	0.2019	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	171.6	6.116	0.557	0.3403	
1440 minute summer	East Permeable Paving (Roads)	2.001	East Pond	5.0	1.882	0.013	0.0347	
1440 minute summer	East Pond	2.002	Out into river	4.8	0.474	0.362	0.1803	
15 minute winter	Out into river	1.003	Out	6.4	0.103	0.027	0.5374	262.1

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.97%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	West Impermeable Area	9	123.290	0.290	433.4	0.4145	0.0000	OK
1440 minute summer	West Permeable Pavings (Roads)	960	122.727	0.687	49.8	652.1848	0.0000	SURCHARGED
2160 minute summer	West Pond	2400	121.948	0.948	12.1	211.6254	0.0000	SURCHARGED
15 minute summer	East Impermeable Area	9	124.572	0.272	273.4	0.3081	0.0000	OK
1440 minute summer	East Permeable Paving (Roads)	990	124.238	0.747	33.8	484.3048	0.0000	SURCHARGED
2160 minute summer	East Pond	2580	122.249	1.189	6.5	120.8630	0.0000	SURCHARGED
30 minute winter	Out into river	33	121.067	0.167	10.7	0.1885	0.0000	OK
15 minute summer	Out	1	121.064	0.604	9.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	West Impermeable Area	1.000	West Permeable Pavings (Roads)	433.7	7.600	0.736	0.7269	
1440 minute summer	West Permeable Pavings (Roads)	1.001	West Pond	12.4	0.213	0.023	0.8739	
2160 minute summer	West Pond	1.002	Out into river	8.9	0.738	0.658	0.2061	
15 minute summer	East Impermeable Area	2.000	East Permeable Paving (Roads)	273.7	6.224	0.889	0.5357	
1440 minute summer	East Permeable Paving (Roads)	2.001	East Pond	6.6	2.052	0.017	0.3282	
2160 minute summer	East Pond	2.002	Out into river	5.1	0.497	0.384	0.1831	
30 minute winter	Out into river	1.003	Out	10.7	0.173	0.045	0.5380	549.1