

Surface Water Drainage Calculation

**For
Twinham,
34 Hurst Road,
Hassocks,
East Sussex,
BN6 9NL**

**Date: October 2025
Project No: 63770 Rev04**



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Location Plan 1:1250@A1



Block Plan 1:500@A1

B | D

BELMONT DESIGNS
ARCHITECTURAL PRACTICE

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NOTES

DO NOT SCALE OFF THIS DRAWING.

CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED.
ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE.

Rev	Date	By	Amendment
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Client
Mr & Mrs J Bullivant

Site Address
**Land adjacent to Twinham
34 Hurst Road
Hassocks
BN6 9NL**

Project
**Proposed detached dwelling
with parking**

Drawing Title
**Proposed Location and
Block Plans - Planning**

Date	Scale	Drawn By	JM
Dec 2024	1:100@A1	Checked By	JTM
Job No	Dwg No	Rev	
B.043.24	05	*	

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A	26/02/2025	JM	Drainage
Rev	Date	By	Amendment

Client
Mr & Mrs J Bullivant

Site Address
Land adjacent to Twinham
34 Hurst Road
Hassocks
BN6 9NL

Project
Proposed detached dwelling
with parking

Drawing Title
Site Layout Plan - Planning

Date Dec 2024	Scale 1:100@A1	Drawn By JM
		Checked By JTM
Job No B043.24	Dwg No 01	Rev A

PROPOSED SITE LAYOUT PLAN



EXISTING 0.6m x 2.0m DEEP FOUL
SEWER DRAINING STATION
P.L. 61.20
BSL: 62.00(TBC)
DEPTH: 2.00m

NEW FW CONNECTION INTO
THE EXISTING FW MANHOLE
LEVEL 63.32
DEPTH: 2.00m

ASSUMED ROUTE OF THE EXISTING FW
RISING MAIN TO BE CONFIRMED ON
SITE BY THE CONTRACTOR PRIOR TO
CONSTRUCTION

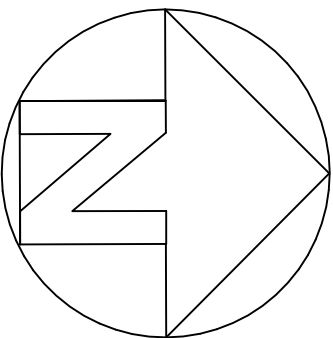
THE EXISTING FW RISING MAIN TO
BE MAINTAINED AND PROTECTED BY THE
CONTRACTOR DURING CONSTRUCTION

RAIN GARDEN
100mm PERFORATED
DISTRIBUTION DRAIN
RAISED BED
GRADE: 1.25
100% FWD (12.60m)
EXT - 100% FWD
EXT - 100% FWD

PERFECT FLOW CONTROL
DISCHARGE ORATE 0.4 L/S

ATTENUATION STORAGE TANK
Eas Versa Void Cellular Structure Modules
(500x500x600mm units)
CL 64.1 (TBC)
BOT 63.25 (TBC)
TONK SIZE 14.5x2.0x0.40m dp
Storage = 11.02 cum
Note: Greater strength units may be required
depending on the design and the manufacturer.

EXISTING FW RISING MAIN TO PRIVATE
DRAINAGE SYSTEM OF THE HAM SITE
PROPERTY TO BE MAINTAINED



KEY

- Soil Vent Pipe with Rodding Access
- RWP Rain Water Pipe with Rodding Access
- SS Slab Stack with Air Admission valve
- RE Rodding Eye
- CD Channel Drain
- SW - Existing Private Surface Water Sewer
- SW - Proposed Private Surface Water Sewer
- SW - Proposed Private Perforate Drain
- SW - Existing Public Surface Water Sewer
- FW - Existing Private Foul Water Sewer
- FW - Proposed Private Foul Water Sewer
- FW - Existing Public Foul Water Sewer
- FW - Existing Private Foul Water Pumping Main
- F6 Foul Manhole
- S6 Surface Water Manhole
- EX.FLIC Existing Private Foul Water Manhole
- Existing Private Foul Water Pumping Station
- SW Attenuation Tank
- SW Rain Garden

FOUL WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
F1	65.46	64.86	0.60	3	B125	
F2	64.85	64.20	0.65	3	B125	
F3	64.43	63.83	0.60	3	B125	TO EXISTING FW MH IL.63.26
SURFACE WATER MANHOLE SCHEDULE						
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE	COMMENTS
RE1	66.00	65.40	0.60	RODDING EYE	-	
S1	64.10	63.50	0.60	3	B125	TO ATTENUATION TANK
RE2	66.00	65.40	0.60	RODDING EYE	-	
S2	65.65	65.00	0.65	3	B125	
S3	64.10	63.50	0.60	3A SILT TRAP	B125	TO ATTENUATION TANK
S4	64.00	63.25	0.75	3B 600ø FLOW CONTROL MH	B125	TO RAIN GARDEN

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications. The Contractor is responsible for verifying all site dimensions before commencing works.

All dimensions are in millimetres unless noted otherwise.

This drawing has been produced electronically and may have been photo reduced or enlarged when printed or copied. Dimensions on this drawing shall be taken from the electronic file and not from the printed drawing. Any errors or omissions are to be reported to the engineer immediately.

Levels are in metres unless noted otherwise to Ordnance Survey datum.

The Contractor is responsible for the stability of the building whilst the works are in progress.

NOTES

- THIS DRAWING IS BASED ON DRAWING NO. B04.3.24 BY BELMONT DESIGNS ARCHITECTURE PRACTICE LIMITED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWING:
63770/11 DRAINAGE DETAILS SHEET 1 OF 2
63770/12 DRAINAGE DETAILS SHEET 2 OF 2
- CONTRACTOR IS TO TAKE NECESSARY PRECAUTIONS TO ENSURE THAT TRENCHES ARE KEPT CLEAR OF GROUND WATER DURING CONSTRUCTION.
- ALL DRAINAGE WORKS TO BE CARRIED OUT IN ACCORDANCE WITH 'SEWERS FOR ADOPTION' 7TH EDITION.
- ALL ADOPTED PIPEWORK TO BE 100% VITRIFIED CLAY UNLESS NOTED OTHERWISE.
- ALL PIPEWORK THROUGH WALLS TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS.
- ALL PIPEWORK UNDER ROADS WITH LESS THAN 900MM COVER TO HAVE 150MM CONCRETE SURROUND.
- MINIMUM GRADIENT TO DRAINS TO BE 1:40 FOR 110Ø OR 110Ø FW AND 1:100 FOR 110Ø SW.
- ALL ADOPTED PIPEWORK, DRAINAGE LATERALS OR PIPE CONNECTION TO THE PUBLIC SHALL BE VITRIFIED CLAY (VC) PIPE MATERIAL TO SOUTHERN WATER APPROVAL.
- POSITIONS OF MANHOLES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY. ACTUAL LOCATIONS TO BE FINALIZED ON SITE.
- PROVIDE CONCRETE LINTELS OVER OPENINGS WHERE PIPES PASS THROUGH WALLS. ALLOW FOR 150MM CLEARANCE ALL ROUND PIPE.

ALL DIMENSIONS AND LEVELS
TO BE CHECKED AND
CONFIRMED BY THE ARCHITECT
PRIOR TO CONSTRUCTION.

D	MENDED RAIN GARDEN DEPTH	29/10/25JS
C	MENDED SW DRAINAGE LAYOUT	04/08/25JS
B	MENDED SW DRAINAGE LAYOUT	07/08/25JS
A	MENDED DRAINAGE LAYOUT	05/06/25JS
O	ORIGINAL ISSUE	30/04/25JS
REV	DESCRIPTION	DATE BY

DIXON HURST

CONSULTING CIVIL & STRUCTURAL ENGINEERS

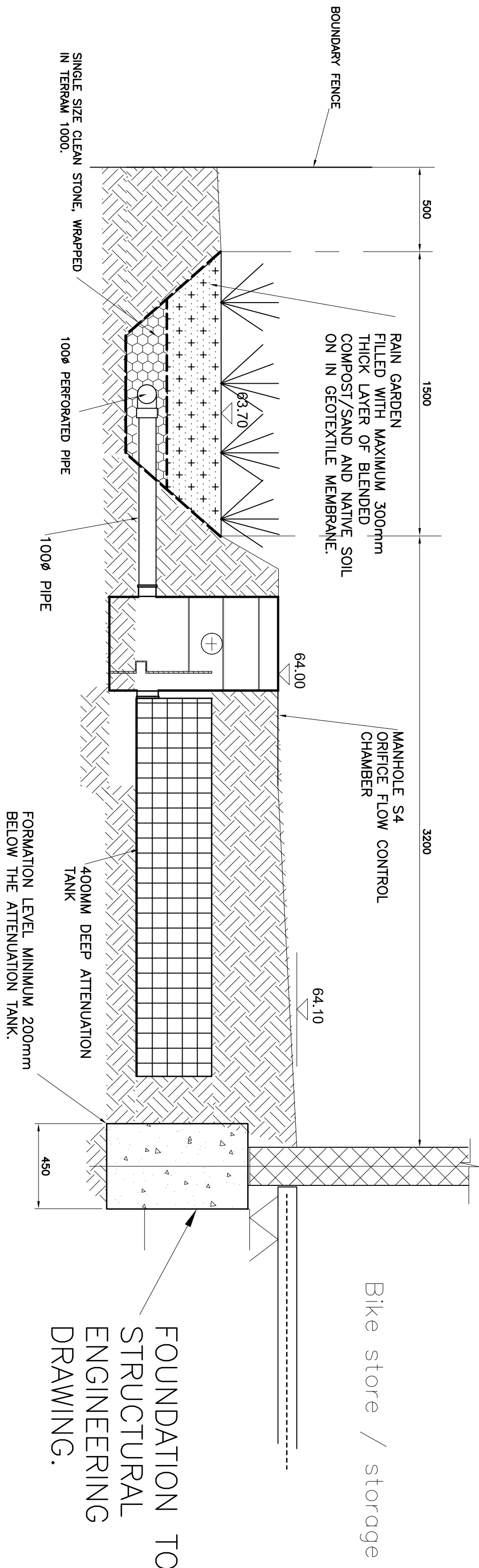
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LAND ADJACENT TO TWINHAM
34 HURST ROAD,
HASOCKS, BN6 9NL

DRAWING		
DRAWING NO.	63770 / 10	REV D
SCALE	1:125@ A1	DATE JULY 25
AutoCAD Ref: 63770-10.dwg	US	APPROVED

This drawing is produced using AutoCAD. Only written dimensions are to be respected.



SECTION THROUGH ATTENUATION TANK, FLOW CONTROL AND RAIN GARDEN

SCALE 1:20

FOUNDATION TO
STRUCTURAL
ENGINEERING
DRAWING.

Bike store / storage

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63770/10 DRAINAGE LAYOUT
63770/11 DRAINAGE DETAIL SHEET 1 OF 2
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0	ORIGINAL ISSUE	04/09/25	JS
REV	DESCRIPTION	DATE	BY

DIXON HURST

CONSULTING CIVIL & STRUCTURAL ENGINEERS

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CONTRACT

LAND ADJACENT TO TWINHAM
34 HURST ROAD,
HASSECKS, BN6 9NL

DRAINAGE

DRAINAGE DETAILS SHEET 2 OF 2

DRAWING No.	63770 / 11	REV	0	CHECKED
SCALE	1:20 @ A1	DATE	SEPT 25	
Autocad Ref: 63770--10.dwg		DRAWN	JS	APPROVED

AutoCAD Ref: 63770-10.dwg

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**LAND ADJACENT TO TWINHAM 34 HURST ROAD, HASSOCKS,
EAST SUSSEX, BN6 9NL.
PROPOSED MAINTENANCE & INSPECTION SCHEDULE FOR BELOW GROUND DRAINAGE
(FOUL WATER AND SURFACE WATER) INCLUDING SUSTAINABLE DRAINAGE SYSTEMS (SuDS)**

Item	Required Maintenance/Monitoring	Suggested Frequency	Responsibility
Foul Water Drainage	Check inspection chambers and manholes for damage, condition and function.	Every six months	Property Owner
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every ten years	Specialist
	Replace or repair malfunctioning parts or structures	As required	Specialist
Surface Water Drainage	Check inspection chambers and manholes for damage, condition and function	Every six months	Property Owner
	Undertake a CCTV drainage survey of the drainage network to establish condition.	Every ten years	Property Owner
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Gullies and Channel Drains	Check gullies and channel drains for damage, condition and function.	Every six months	Property Owner
	Remove sediment, oil/grease, litter and debris.	As necessary	Property Owner
	Replace or repair malfunctioning parts or structures.	As required	Specialist
Surface Water Soakaway	Check silt traps and inspection chambers, and note the rate of sediment accumulation.	Every month for the first year and then annually, or as conditions require	Property Owner
	Undertake a CCTV drainage survey of tanks and soakaway chambers. Note sediment build up and remove sediment/debris if present.	Every five years, or as conditions require	Specialist
Petrol Interceptor	Inspection in accordance with manufacturer's requirements.	Every six months	Specialist
	Full service and general inspection with separator system emptied.	Every 5 years	
Permeable Block Paving	Sweep clean of debris and inspect integrity of bedding grit. Replace bedding grit locally if required.	Every six months	Property Owner
	Lift blocks and remove bedding grit and replace and re-bed paving.	Full bedding replacement currently recommended by manufacturers every 20 years	Specialist
Bioretention areas	Inspect infiltration surfaces for silting and ponding, record drain down time to monitor performance.	Quarterly	Property Owner

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PROPOSED MAINTENANCE & INSPECTION SCHEDULE FOR BELOW GROUND DRAINAGE
(FOUL WATER AND SURFACE WATER) INCLUDING SUSTAINABLE DRAINAGE SYSTEMS (SuDS)**

General	Check underdrains are free flowing and inlets/outlets are blockage free.	Quarterly	Property Owner
	Assess plants for health and invasive weed growth replace/remove as necessary.	Quarterly	Property Owner
	Remove litter and general detritus.	Quarterly and after heavy storms	Property Owner
	Remove and replace filter medium and vegetation	As required – SuDS Manual recommends every 20 years	Specialist
	Remove sediment, litter, debris and vegetation from the surface of pathways areas	As necessary and after heavy rainfall	Property Owner
Flood Flow Routes	Ensure flood flow routes are not obstructed (i.e. lower lying portions of the land that will direct surface water runoff away from vulnerable assets in the event of drainage failure).	Every six months and during periods of heavy rainfall	Property Owner

NOTES

The property owners will be responsible for the implementation of the maintenance schedule for below ground drainage or appoint appropriate persons and/or sub-consultants that are qualified to undertake these operations.

Maintenance is to be carried out by the property owners or by a specialist contractor, as noted in Responsibility column above.

This maintenance schedule has been produced with reference to the guidelines outlined in 'The SuDS Manual' (CIRIA C753: 2015). The suggested frequency of maintenance is considered a guide, and should not replace the guidance from manufacturers of proprietary systems.

Refer to Engineering drawings for location and details of below ground drainage assets and SuDS features.

Half Drain Time : 220 minutes.

Storm Event	Rain (mm/hr)	Time-Peak (mins)
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Dixon Hurst Kemp		Page 2
Victoria Court 22 St Pancras West Sussex PO19 7GD	Twinham 34 Hurst Road Hass... Surface Water Drainage Attenuation Tank Design Rev02	
Date Oct 25	Designed by JS	
File Attenuation Tank Rev0...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.372	0.122	0.0	0.2	0.2	3.3	0 K
240 min Winter	63.376	0.126	0.0	0.2	0.2	3.5	0 K
360 min Winter	63.379	0.129	0.0	0.2	0.2	3.5	0 K
480 min Winter	63.379	0.129	0.0	0.2	0.2	3.5	0 K
600 min Winter	63.377	0.127	0.0	0.2	0.2	3.5	0 K
720 min Winter	63.374	0.124	0.0	0.2	0.2	3.4	0 K
960 min Winter	63.368	0.118	0.0	0.2	0.2	3.2	0 K
1440 min Winter	63.354	0.104	0.0	0.1	0.1	2.9	0 K
2160 min Winter	63.337	0.087	0.0	0.1	0.1	2.4	0 K
2880 min Winter	63.323	0.073	0.0	0.1	0.1	2.0	0 K
4320 min Winter	63.304	0.054	0.0	0.1	0.1	1.5	0 K
5760 min Winter	63.293	0.043	0.0	0.1	0.1	1.2	0 K
7200 min Winter	63.285	0.035	0.0	0.1	0.1	1.0	0 K
8640 min Winter	63.279	0.029	0.0	0.1	0.1	0.8	0 K
10080 min Winter	63.276	0.026	0.0	0.1	0.1	0.7	0 K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
180 min Winter	9.076	174
240 min Winter	7.499	198
360 min Winter	5.677	274
480 min Winter	4.658	352
600 min Winter	3.996	426
720 min Winter	3.526	500
960 min Winter	2.895	644
1440 min Winter	2.194	918
2160 min Winter	1.659	1308
2880 min Winter	1.362	1684
4320 min Winter	1.032	2424
5760 min Winter	0.848	3120
7200 min Winter	0.726	3824
8640 min Winter	0.639	4576
10080 min Winter	0.574	5240

Dixon Hurst Kemp		Page 3
Victoria Court 22 St Pancras West Sussex PO19 7GD	Twinham 34 Hurst Road Hass... Surface Water Drainage Attenuation Tank Design Rev02	
Date Oct 25	Designed by JS	
File Attenuation Tank Rev0...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	1	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.347	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.016

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.005	4-8	0.005	8-12	0.005

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Model Details

Storage is Online Cover Level (m) 64.100

Cellular Storage Structure

Invert Level (m) 63.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	29.0	29.0	0.500	0.0	42.2
0.400	29.0	42.2			

Orifice Outflow Control

Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 63.250

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Twinham 34 Hurst Road Hass... Surface Water Drainage Attenuation Tank Design Rev02	
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Elstree Computing Ltd	Source Control w.12.6	

Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 334 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	63.397	0.147	0.0	0.2	0.2	4.0	OK
30 min Summer	63.443	0.193	0.0	0.2	0.2	5.3	OK
60 min Summer	63.489	0.239	0.0	0.2	0.2	6.6	OK
120 min Summer	63.530	0.280	0.0	0.2	0.2	7.7	OK
180 min Summer	63.547	0.297	0.0	0.3	0.3	8.2	OK
240 min Summer	63.553	0.303	0.0	0.3	0.3	8.3	OK
360 min Summer	63.559	0.309	0.0	0.3	0.3	8.5	OK
480 min Summer	63.560	0.310	0.0	0.3	0.3	8.6	OK
600 min Summer	63.560	0.310	0.0	0.3	0.3	8.5	OK
720 min Summer	63.557	0.307	0.0	0.3	0.3	8.5	OK
960 min Summer	63.549	0.299	0.0	0.3	0.3	8.2	OK
1440 min Summer	63.529	0.279	0.0	0.2	0.2	7.7	OK
2160 min Summer	63.500	0.250	0.0	0.2	0.2	6.9	OK
2880 min Summer	63.473	0.223	0.0	0.2	0.2	6.2	OK
4320 min Summer	63.432	0.182	0.0	0.2	0.2	5.0	OK
5760 min Summer	63.402	0.152	0.0	0.2	0.2	4.2	OK
7200 min Summer	63.379	0.129	0.0	0.2	0.2	3.6	OK
8640 min Summer	63.362	0.112	0.0	0.2	0.2	3.1	OK
10080 min Summer	63.348	0.098	0.0	0.1	0.1	2.7	OK
15 min Winter	63.397	0.147	0.0	0.2	0.2	4.0	OK
30 min Winter	63.443	0.193	0.0	0.2	0.2	5.3	OK
60 min Winter	63.490	0.240	0.0	0.2	0.2	6.6	OK
120 min Winter	63.531	0.281	0.0	0.2	0.2	7.7	OK

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	105.082	26
30 min Summer	70.021	40
60 min Summer	44.676	68
120 min Summer	27.642	124
180 min Summer	20.622	182
240 min Summer	16.674	234
360 min Summer	12.359	290
480 min Summer	9.980	354
600 min Summer	8.449	422
720 min Summer	7.371	492
960 min Summer	5.939	628
1440 min Summer	4.374	902
2160 min Summer	3.217	1300
2880 min Summer	2.585	1684
4320 min Summer	1.896	2428
5760 min Summer	1.521	3176
7200 min Summer	1.282	3896
8640 min Summer	1.116	4592
10080 min Summer	0.992	5344
15 min Winter	105.082	26
30 min Winter	70.021	39
60 min Winter	44.676	68
120 min Winter	27.642	122

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Victoria Court 22 St Pancras West Sussex PO19 7GD	Twinham 34 Hurst Road Hass... Surface Water Drainage Attenuation Tank Design Rev02	
Date Oct 25	Designed by JS	
File Attenuation Tank Rev0...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.548	0.298	0.0	0.3	0.3	8.2	0 K
240 min Winter	63.555	0.305	0.0	0.3	0.3	8.4	0 K
360 min Winter	63.559	0.309	0.0	0.3	0.3	8.5	0 K
480 min Winter	63.559	0.309	0.0	0.3	0.3	8.5	0 K
600 min Winter	63.556	0.306	0.0	0.3	0.3	8.4	0 K
720 min Winter	63.551	0.301	0.0	0.3	0.3	8.3	0 K
960 min Winter	63.538	0.288	0.0	0.2	0.2	7.9	0 K
1440 min Winter	63.508	0.258	0.0	0.2	0.2	7.1	0 K
2160 min Winter	63.468	0.218	0.0	0.2	0.2	6.0	0 K
2880 min Winter	63.435	0.185	0.0	0.2	0.2	5.1	0 K
4320 min Winter	63.388	0.138	0.0	0.2	0.2	3.8	0 K
5760 min Winter	63.356	0.106	0.0	0.1	0.1	2.9	0 K
7200 min Winter	63.335	0.085	0.0	0.1	0.1	2.3	0 K
8640 min Winter	63.320	0.070	0.0	0.1	0.1	1.9	0 K
10080 min Winter	63.309	0.059	0.0	0.1	0.1	1.6	0 K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
180 min Winter	20.622	178
240 min Winter	16.674	234
360 min Winter	12.359	298
480 min Winter	9.980	372
600 min Winter	8.449	448
720 min Winter	7.371	526
960 min Winter	5.939	674
1440 min Winter	4.374	962
2160 min Winter	3.217	1368
2880 min Winter	2.585	1764
4320 min Winter	1.896	2512
5760 min Winter	1.521	3232
7200 min Winter	1.282	3968
8640 min Winter	1.116	4672
10080 min Winter	0.992	5352

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Elstree Computing Ltd	Source Control w.12.6	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.347	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.016

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.005	4-8	0.005	8-12	0.005

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Model Details

Storage is Online Cover Level (m) 64.100

Cellular Storage Structure

Invert Level (m) 63.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	29.0	29.0	0.500	0.0	42.2
0.400	29.0	42.2			

Orifice Outflow Control

Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 63.250

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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 374 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	63.441	0.191	0.0	0.2	0.2	5.3	OK
30 min Summer	63.504	0.254	0.0	0.2	0.2	7.0	OK
60 min Summer	63.568	0.318	0.0	0.3	0.3	8.8	OK
120 min Summer	63.624	0.374	0.0	0.3	0.3	10.3	OK
180 min Summer	63.646	0.396	0.0	0.3	0.3	10.9	OK
240 min Summer	63.655	0.405	0.0	0.3	0.3	11.2	OK
360 min Summer	63.661	0.411	0.0	0.3	0.3	11.3	OK
480 min Summer	63.663	0.413	0.0	0.3	0.3	11.3	OK
600 min Summer	63.661	0.411	0.0	0.3	0.3	11.3	OK
720 min Summer	63.657	0.407	0.0	0.3	0.3	11.2	OK
960 min Summer	63.647	0.397	0.0	0.3	0.3	10.9	OK
1440 min Summer	63.621	0.371	0.0	0.3	0.3	10.2	OK
2160 min Summer	63.581	0.331	0.0	0.3	0.3	9.1	OK
2880 min Summer	63.547	0.297	0.0	0.3	0.3	8.2	OK
4320 min Summer	63.492	0.242	0.0	0.2	0.2	6.7	OK
5760 min Summer	63.452	0.202	0.0	0.2	0.2	5.6	OK
7200 min Summer	63.421	0.171	0.0	0.2	0.2	4.7	OK
8640 min Summer	63.398	0.148	0.0	0.2	0.2	4.1	OK
10080 min Summer	63.379	0.129	0.0	0.2	0.2	3.6	OK
15 min Winter	63.441	0.191	0.0	0.2	0.2	5.3	OK
30 min Winter	63.504	0.254	0.0	0.2	0.2	7.0	OK
60 min Winter	63.568	0.318	0.0	0.3	0.3	8.8	OK
120 min Winter	63.625	0.375	0.0	0.3	0.3	10.3	OK

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	136.149	26
30 min Summer	91.587	40
60 min Summer	58.739	68
120 min Summer	36.305	126
180 min Summer	26.955	184
240 min Summer	21.679	240
360 min Summer	15.967	306
480 min Summer	12.831	368
600 min Summer	10.820	432
720 min Summer	9.407	500
960 min Summer	7.537	640
1440 min Summer	5.504	914
2160 min Summer	4.010	1320
2880 min Summer	3.199	1708
4320 min Summer	2.322	2468
5760 min Summer	1.848	3184
7200 min Summer	1.549	3904
8640 min Summer	1.341	4664
10080 min Summer	1.188	5352
15 min Winter	136.149	26
30 min Winter	91.587	40
60 min Winter	58.739	68
120 min Winter	36.305	124

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.648	0.398	0.0	0.3	0.3	11.0	0 K
240 min Winter	63.658	0.408	0.0	0.3	0.3	11.2	0 K
360 min Winter	63.663	0.413	0.0	0.3	0.3	11.3	0 K
480 min Winter	63.662	0.412	0.0	0.3	0.3	11.3	0 K
600 min Winter	63.658	0.408	0.0	0.3	0.3	11.2	0 K
720 min Winter	63.651	0.401	0.0	0.3	0.3	11.0	0 K
960 min Winter	63.635	0.385	0.0	0.3	0.3	10.6	0 K
1440 min Winter	63.597	0.347	0.0	0.3	0.3	9.6	0 K
2160 min Winter	63.545	0.295	0.0	0.3	0.3	8.1	0 K
2880 min Winter	63.502	0.252	0.0	0.2	0.2	6.9	0 K
4320 min Winter	63.438	0.188	0.0	0.2	0.2	5.2	0 K
5760 min Winter	63.395	0.145	0.0	0.2	0.2	4.0	0 K
7200 min Winter	63.365	0.115	0.0	0.2	0.2	3.2	0 K
8640 min Winter	63.344	0.094	0.0	0.1	0.1	2.6	0 K
10080 min Winter	63.329	0.079	0.0	0.1	0.1	2.2	0 K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
180 min Winter	26.955	180
240 min Winter	21.679	236
360 min Winter	15.967	336
480 min Winter	12.831	380
600 min Winter	10.820	458
720 min Winter	9.407	534
960 min Winter	7.537	686
1440 min Winter	5.504	976
2160 min Winter	4.010	1392
2880 min Winter	3.199	1792
4320 min Winter	2.322	2556
5760 min Winter	1.848	3288
7200 min Winter	1.549	4032
8640 min Winter	1.341	4688
10080 min Winter	1.188	5440

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.347	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.016

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.005	4-8	0.005	8-12	0.005

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Model Details

Storage is Online Cover Level (m) 64.100

Cellular Storage Structure

Invert Level (m) 63.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	29.0	29.0	0.500	0.0	42.2
0.400	29.0	42.2			

Orifice Outflow Control

Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 63.250

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Summary of Results for 1 year Return Period (+45%)

Half Drain Time : 29 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	63.135	0.035	0.0	0.0	0.0	0.1	OK
30 min Summer	63.141	0.041	0.0	0.0	0.0	0.1	OK
60 min Summer	63.145	0.045	0.0	0.0	0.0	0.1	OK
120 min Summer	63.146	0.046	0.0	0.0	0.0	0.1	OK
180 min Summer	63.144	0.044	0.0	0.0	0.0	0.1	OK
240 min Summer	63.142	0.042	0.0	0.0	0.0	0.1	OK
360 min Summer	63.137	0.037	0.0	0.0	0.0	0.1	OK
480 min Summer	63.134	0.034	0.0	0.0	0.0	0.1	OK
600 min Summer	63.131	0.031	0.0	0.0	0.0	0.1	OK
720 min Summer	63.128	0.028	0.0	0.0	0.0	0.1	OK
960 min Summer	63.125	0.025	0.0	0.0	0.0	0.1	OK
1440 min Summer	63.120	0.020	0.0	0.0	0.0	0.1	OK
2160 min Summer	63.116	0.016	0.0	0.0	0.0	0.0	OK
2880 min Summer	63.114	0.014	0.0	0.0	0.0	0.0	OK
4320 min Summer	63.111	0.011	0.0	0.0	0.0	0.0	OK
5760 min Summer	63.109	0.009	0.0	0.0	0.0	0.0	OK
7200 min Summer	63.108	0.008	0.0	0.0	0.0	0.0	OK
8640 min Summer	63.107	0.007	0.0	0.0	0.0	0.0	OK
10080 min Summer	63.106	0.006	0.0	0.0	0.0	0.0	OK
15 min Winter	63.135	0.035	0.0	0.0	0.0	0.1	OK
30 min Winter	63.141	0.041	0.0	0.0	0.0	0.1	OK
60 min Winter	63.144	0.044	0.0	0.0	0.0	0.1	OK
120 min Winter	63.143	0.043	0.0	0.0	0.0	0.1	OK

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	42.908	0.0	16
30 min Summer	28.573	0.0	25
60 min Summer	18.560	0.0	42
120 min Summer	11.840	0.0	76
180 min Summer	9.068	0.0	108
240 min Summer	7.491	0.0	140
360 min Summer	5.668	0.0	202
480 min Summer	4.650	0.0	264
600 min Summer	3.989	0.0	326
720 min Summer	3.519	0.0	386
960 min Summer	2.888	0.0	510
1440 min Summer	2.188	0.0	750
2160 min Summer	1.654	0.0	1104
2880 min Summer	1.357	0.0	1472
4320 min Summer	1.028	0.0	2200
5760 min Summer	0.845	0.0	2936
7200 min Summer	0.723	0.0	3672
8640 min Summer	0.637	0.0	4352
10080 min Summer	0.572	0.0	5056
15 min Winter	42.908	0.0	16
30 min Winter	28.573	0.0	26
60 min Winter	18.560	0.0	44
120 min Winter	11.840	0.0	80

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Summary of Results for 1 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.139	0.039	0.0	0.0	0.0	0.1	0 K
240 min Winter	63.136	0.036	0.0	0.0	0.0	0.1	0 K
360 min Winter	63.131	0.031	0.0	0.0	0.0	0.1	0 K
480 min Winter	63.127	0.027	0.0	0.0	0.0	0.1	0 K
600 min Winter	63.124	0.024	0.0	0.0	0.0	0.1	0 K
720 min Winter	63.122	0.022	0.0	0.0	0.0	0.1	0 K
960 min Winter	63.118	0.018	0.0	0.0	0.0	0.0	0 K
1440 min Winter	63.114	0.014	0.0	0.0	0.0	0.0	0 K
2160 min Winter	63.111	0.011	0.0	0.0	0.0	0.0	0 K
2880 min Winter	63.109	0.009	0.0	0.0	0.0	0.0	0 K
4320 min Winter	63.107	0.007	0.0	0.0	0.0	0.0	0 K
5760 min Winter	63.106	0.006	0.0	0.0	0.0	0.0	0 K
7200 min Winter	63.105	0.005	0.0	0.0	0.0	0.0	0 K
8640 min Winter	63.104	0.004	0.0	0.0	0.0	0.0	0 K
10080 min Winter	63.104	0.004	0.0	0.0	0.0	0.0	0 K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
180 min Winter	9.068	0.0	114
240 min Winter	7.491	0.0	146
360 min Winter	5.668	0.0	210
480 min Winter	4.650	0.0	272
600 min Winter	3.989	0.0	334
720 min Winter	3.519	0.0	392
960 min Winter	2.888	0.0	518
1440 min Winter	2.188	0.0	752
2160 min Winter	1.654	0.0	1128
2880 min Winter	1.357	0.0	1468
4320 min Winter	1.028	0.0	2248
5760 min Winter	0.845	0.0	2912
7200 min Winter	0.723	0.0	3744
8640 min Winter	0.637	0.0	4408
10080 min Winter	0.572	0.0	5240

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	1	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.348	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.001

Time (mins)	Area (ha)
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0-4	0.001
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Model Details

Storage is Online Cover Level (m) 63.700

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.04461	Diameter/Width (m)	1.1
Safety Factor	2.0	Length (m)	7.7
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	63.100		

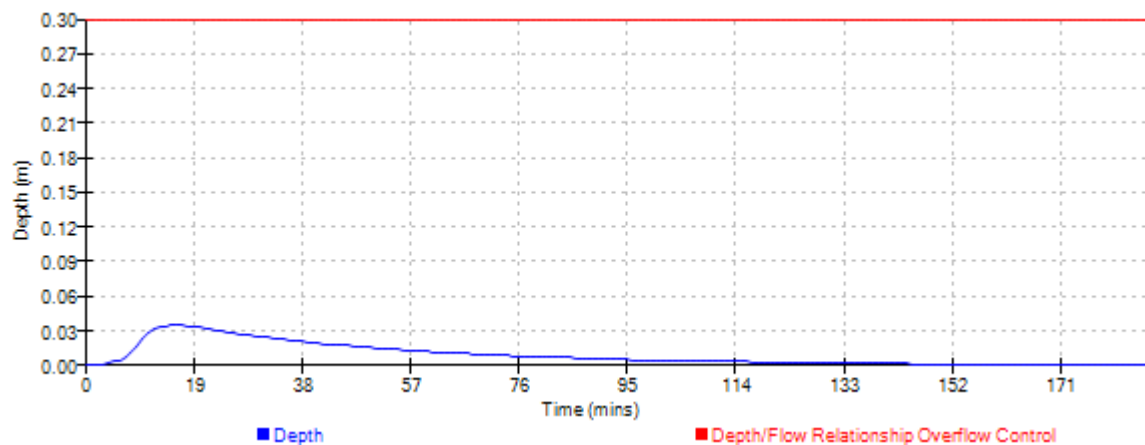
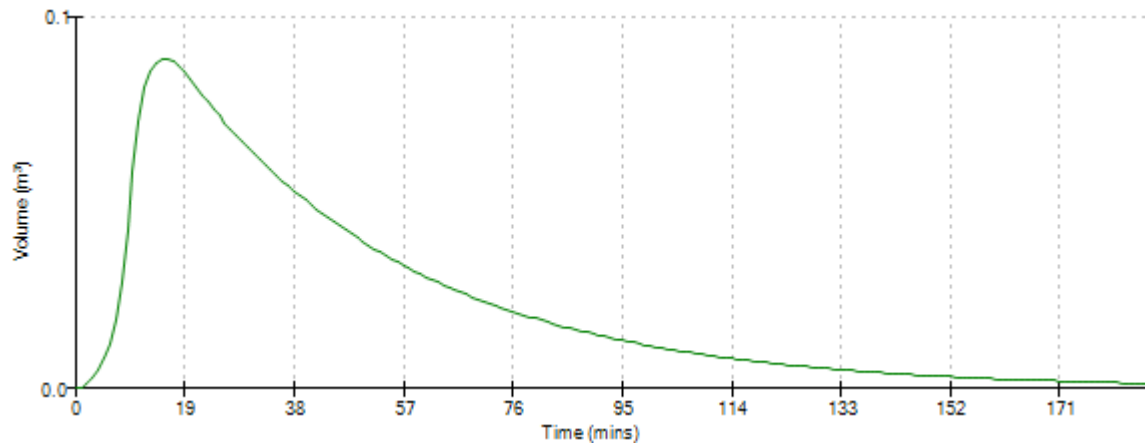
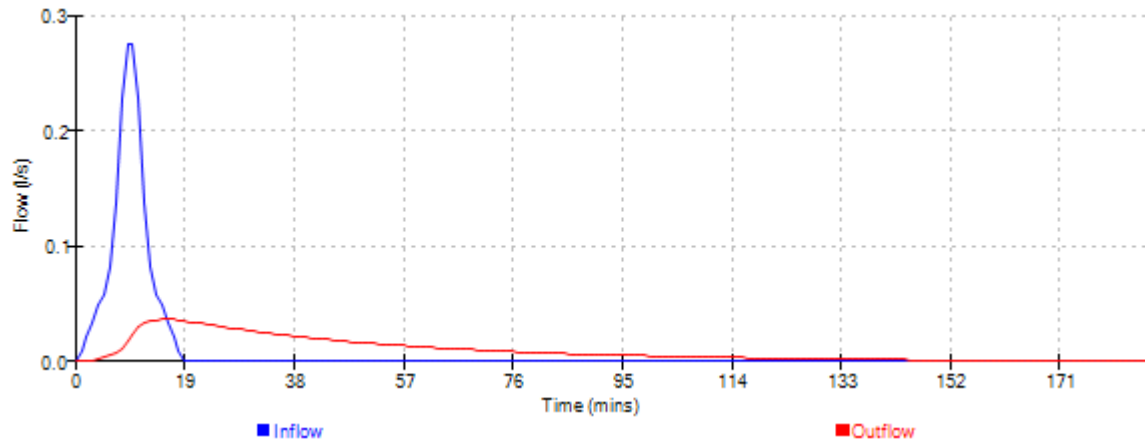
Depth/Flow Relationship Overflow Control

Invert Level (m) 63.400

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.600	0.0400

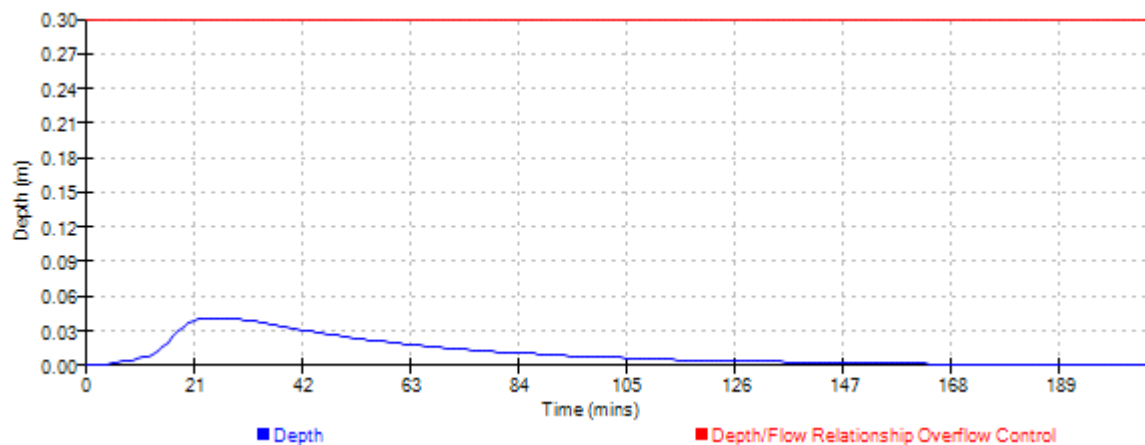
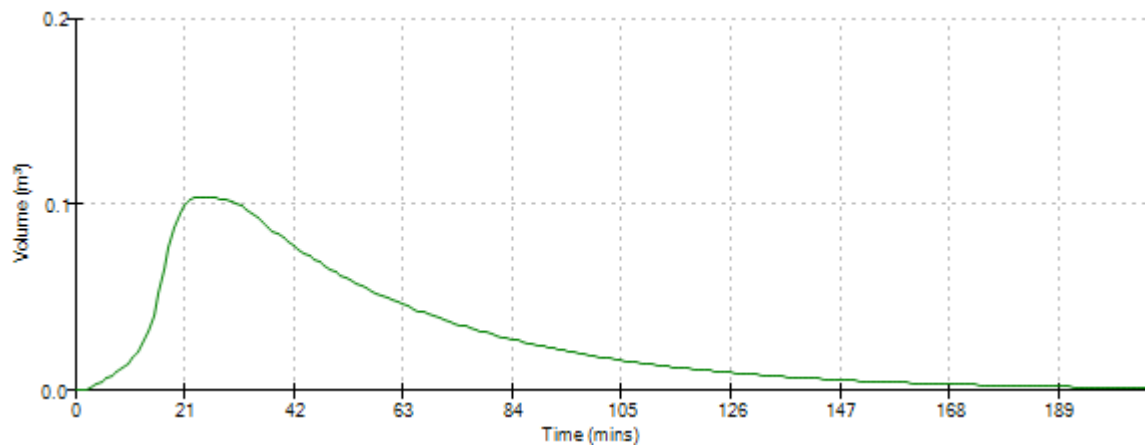
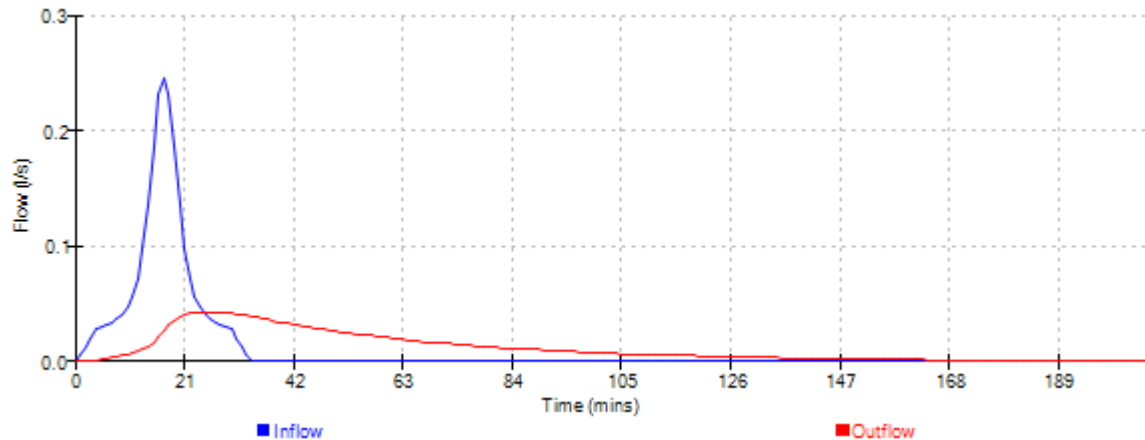
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Victoria Court	Hurst Road, Hassocks	
22 St Pancras	Surface Water Drainage	
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Event: 15 min Summer



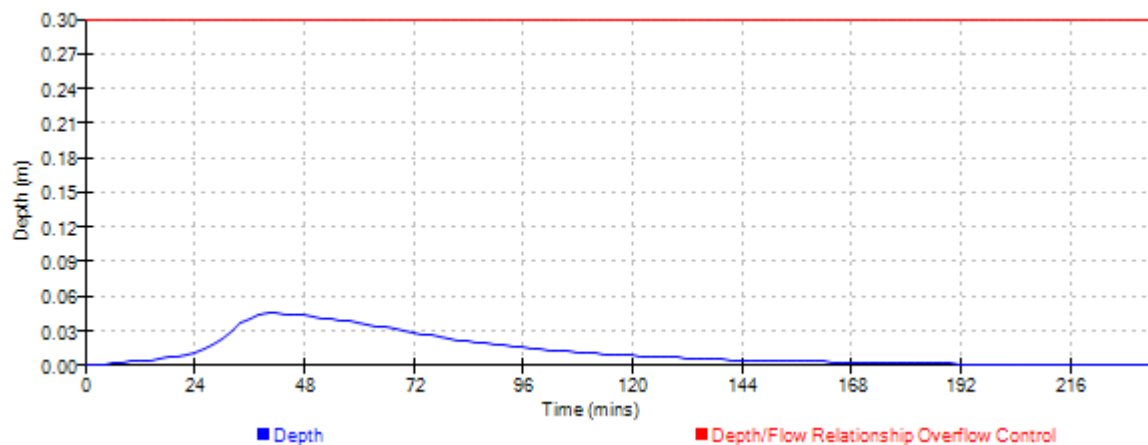
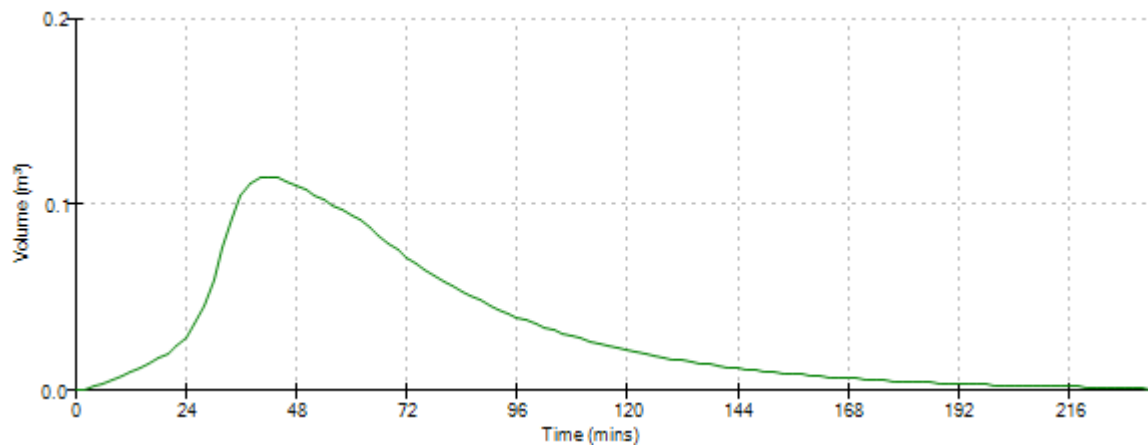
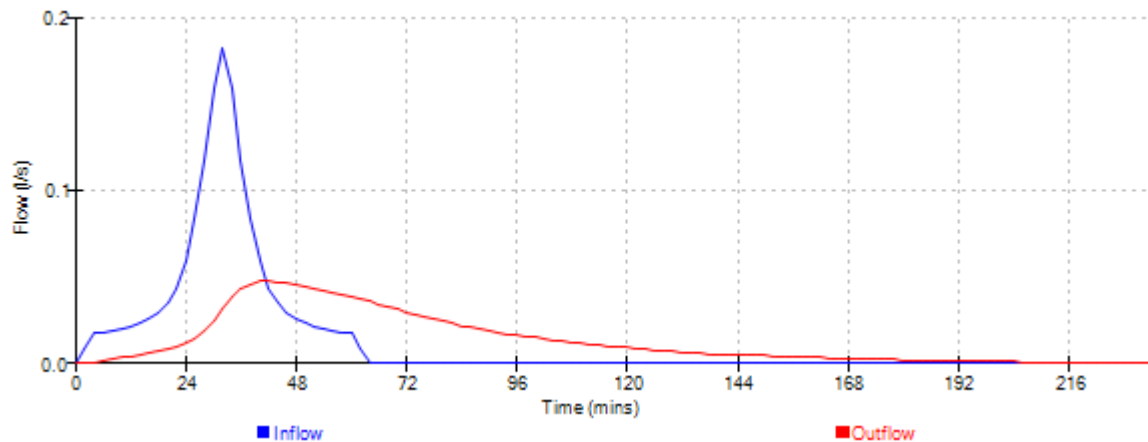
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Event: 30 min Summer

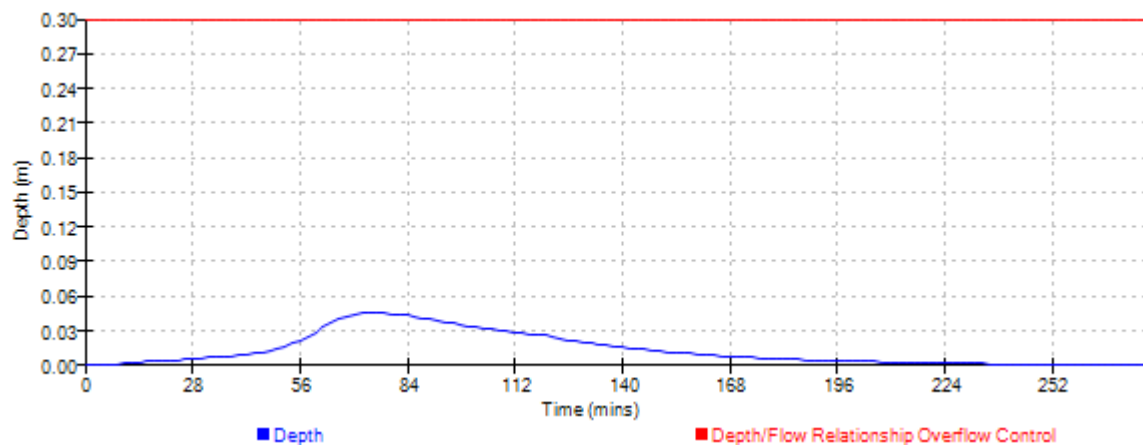
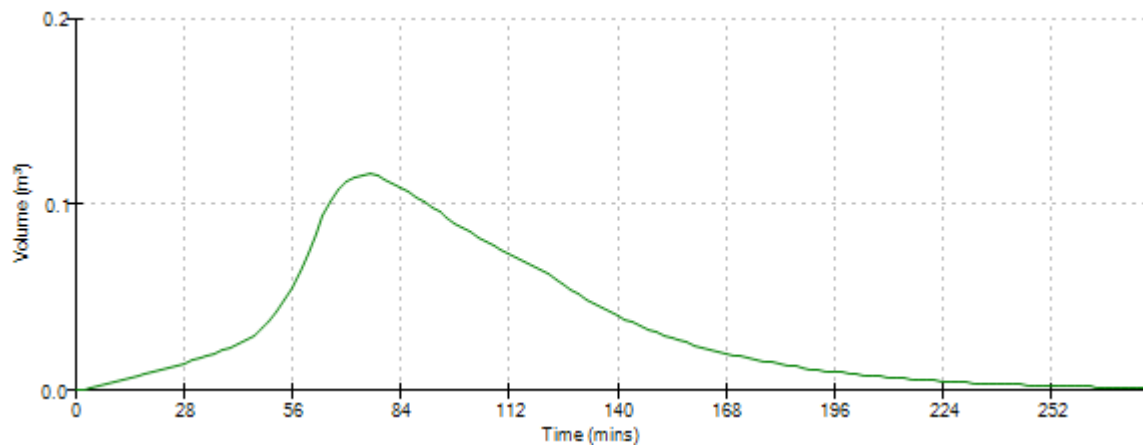
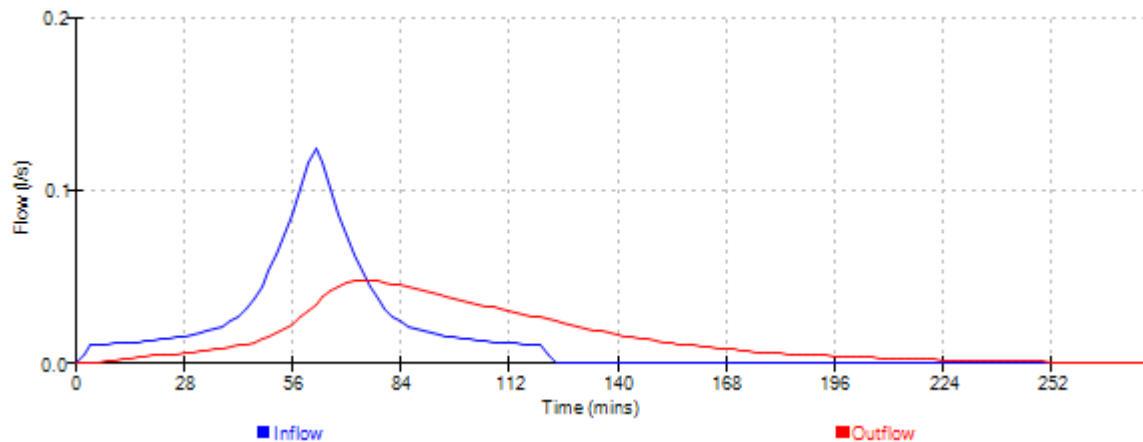


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Event: 60 min Summer

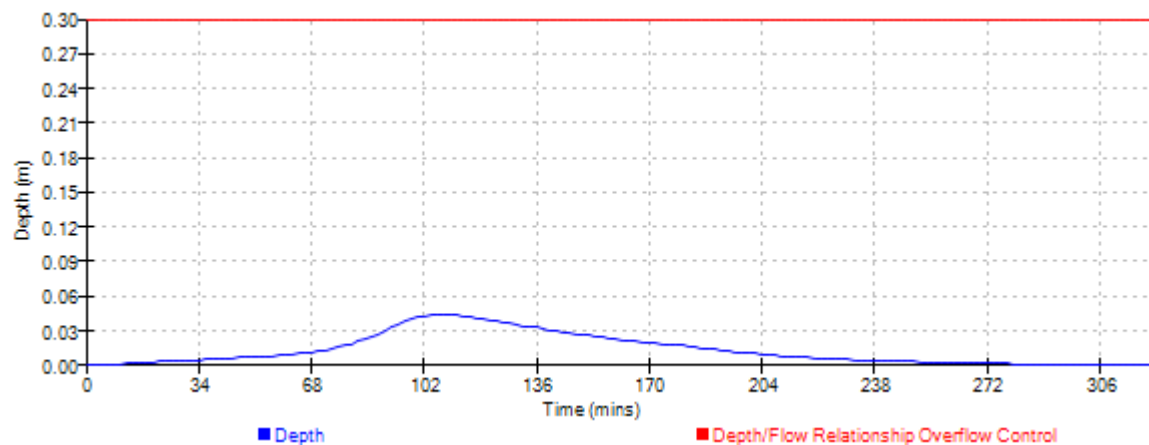
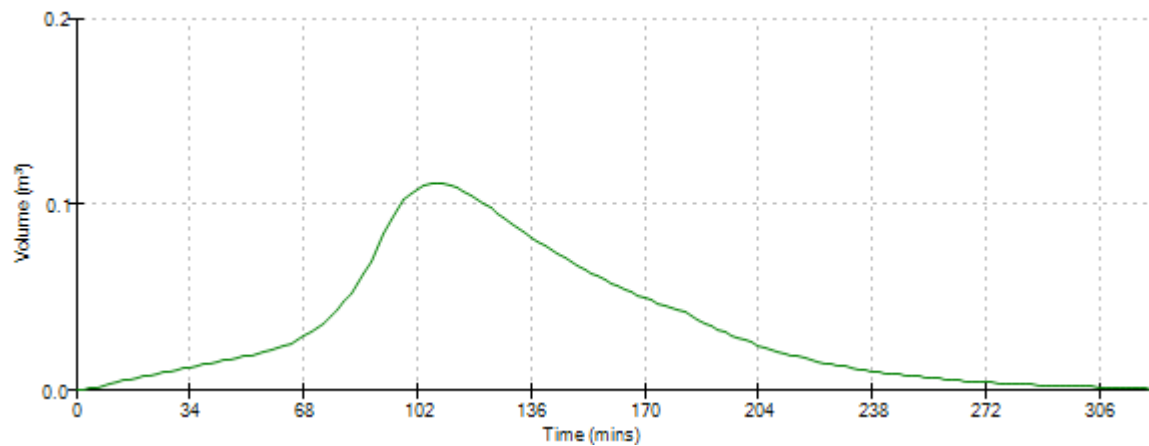
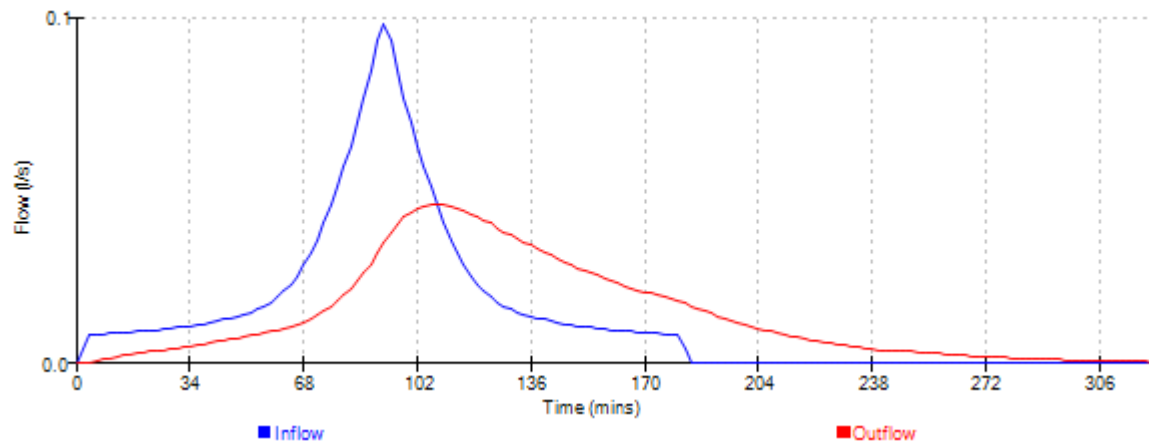


Event: 120 min Summer

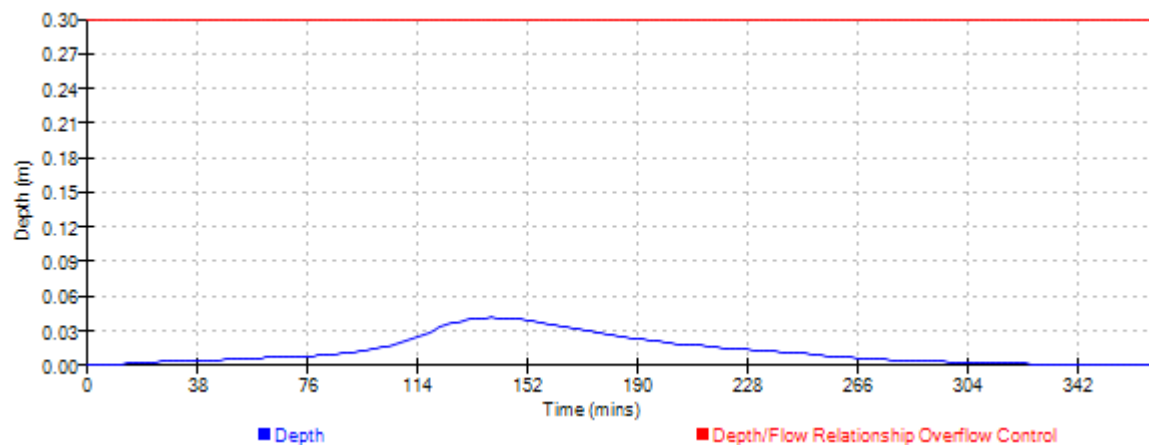
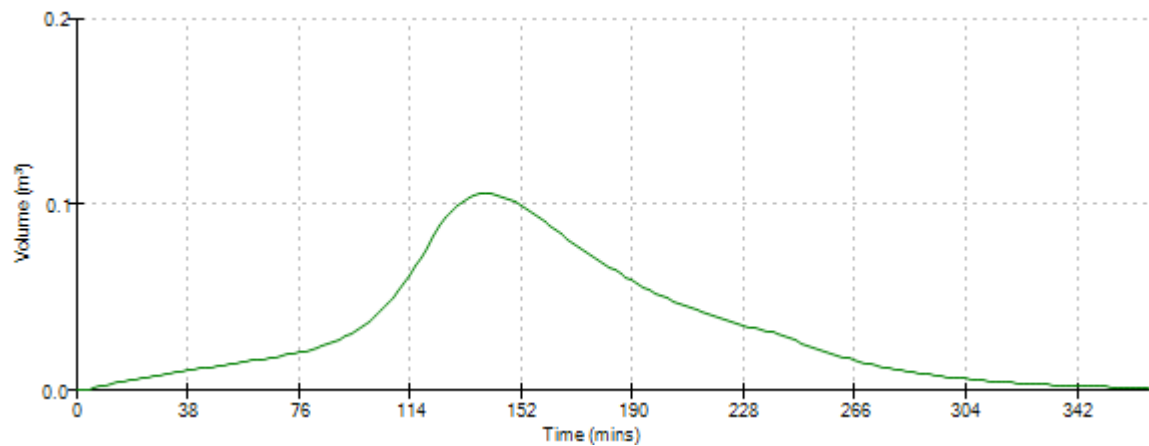
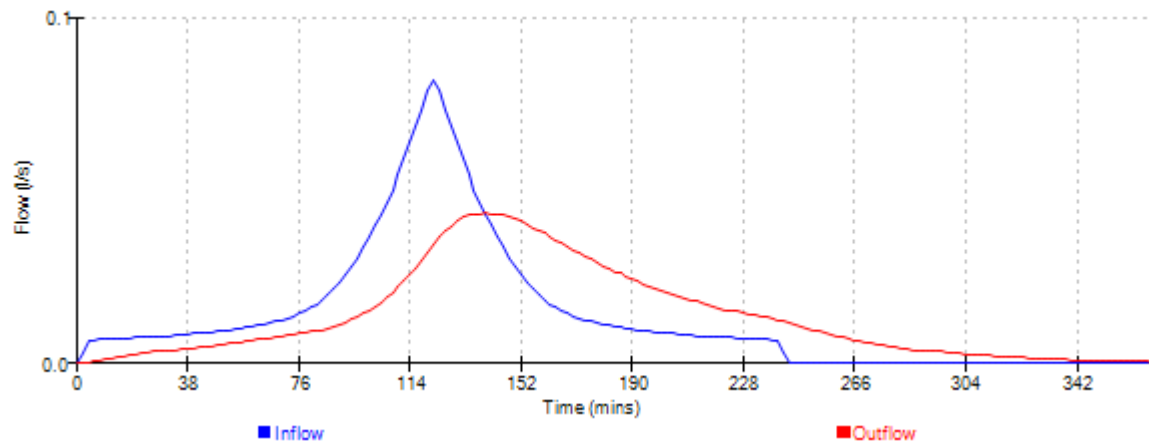


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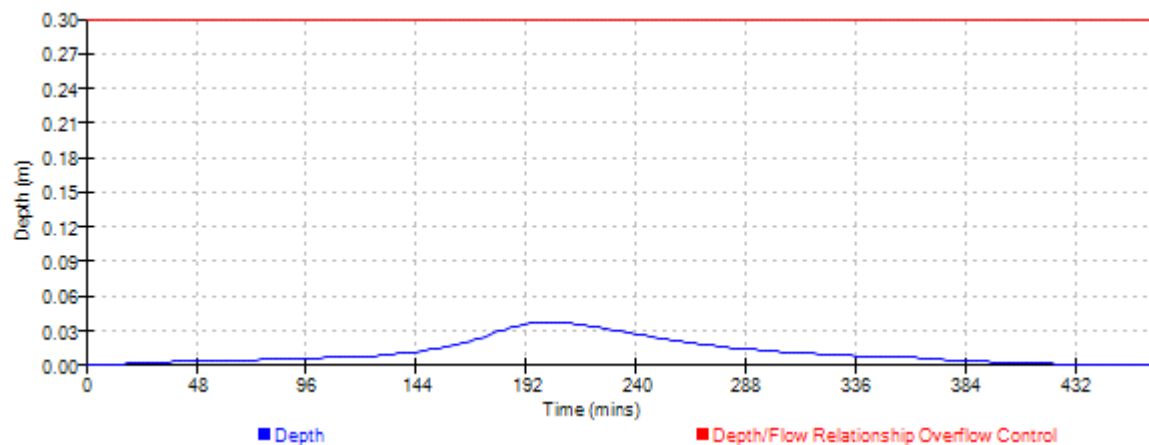
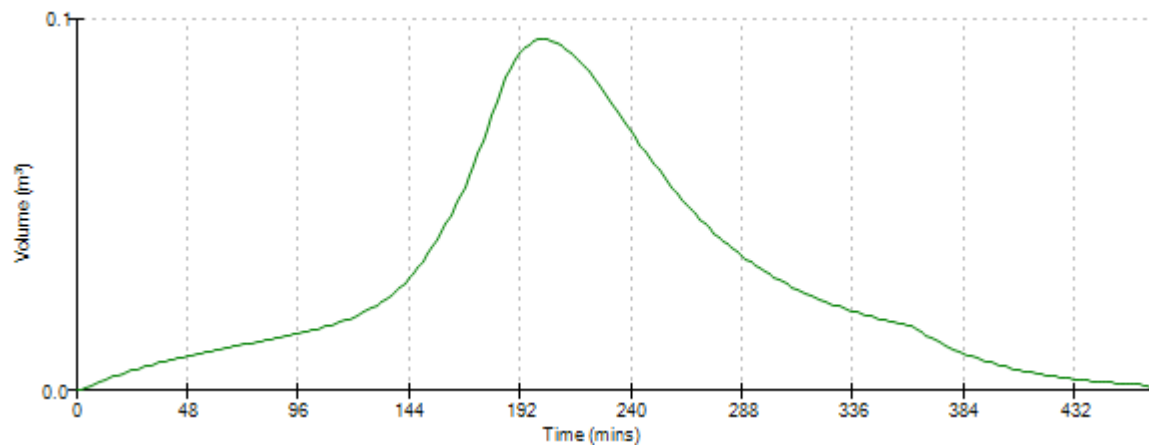
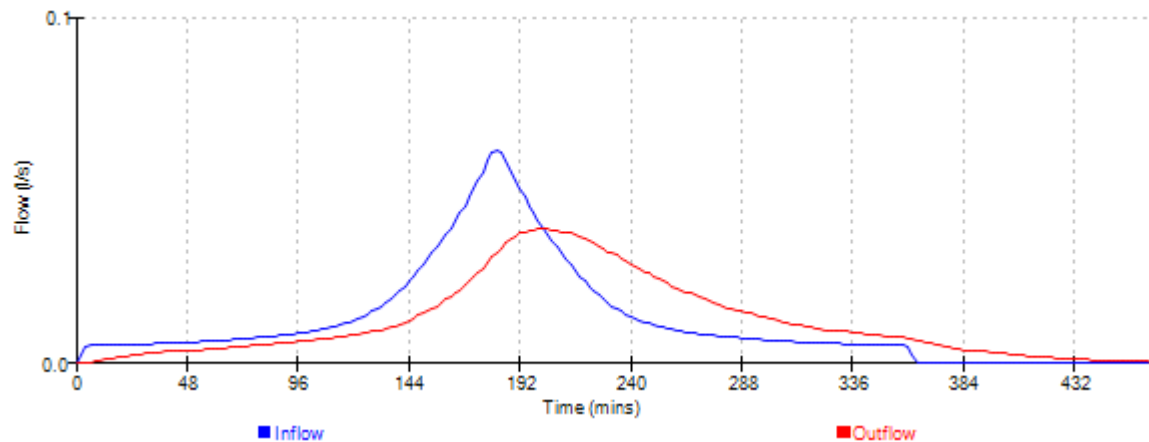
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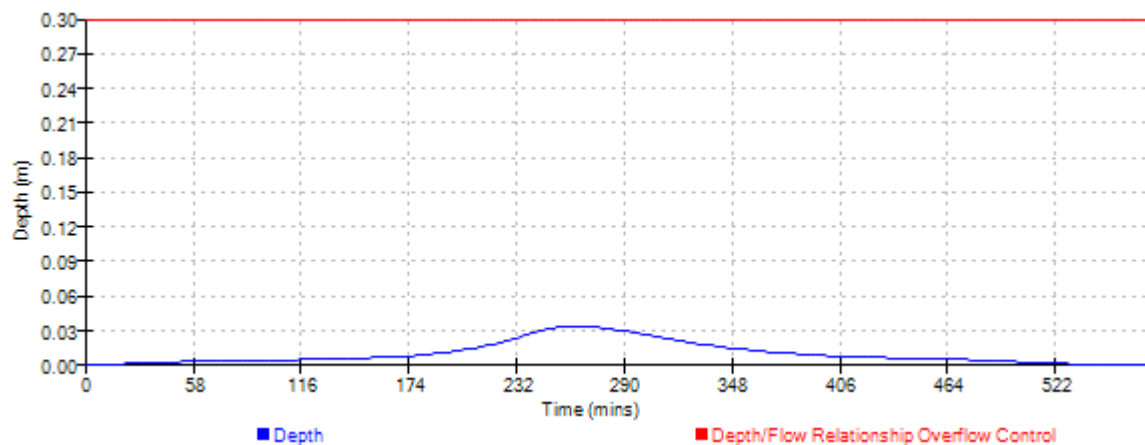
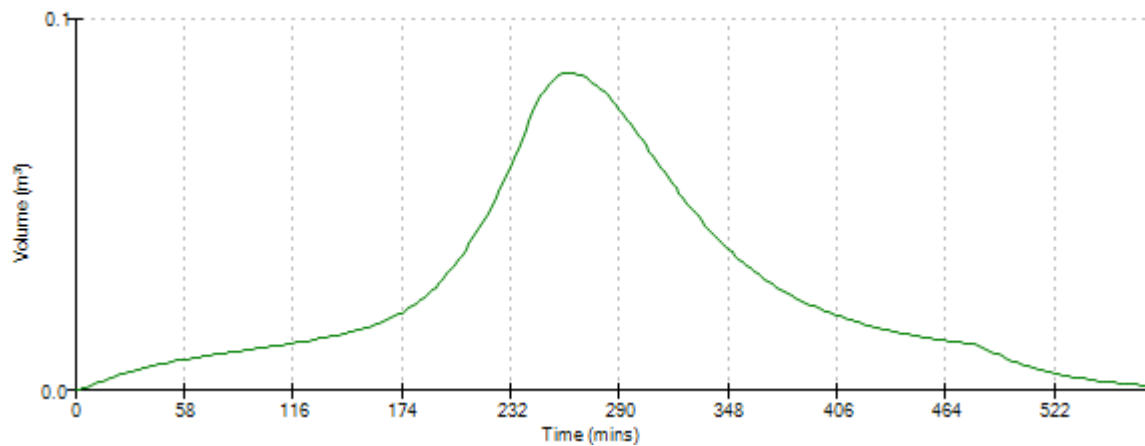
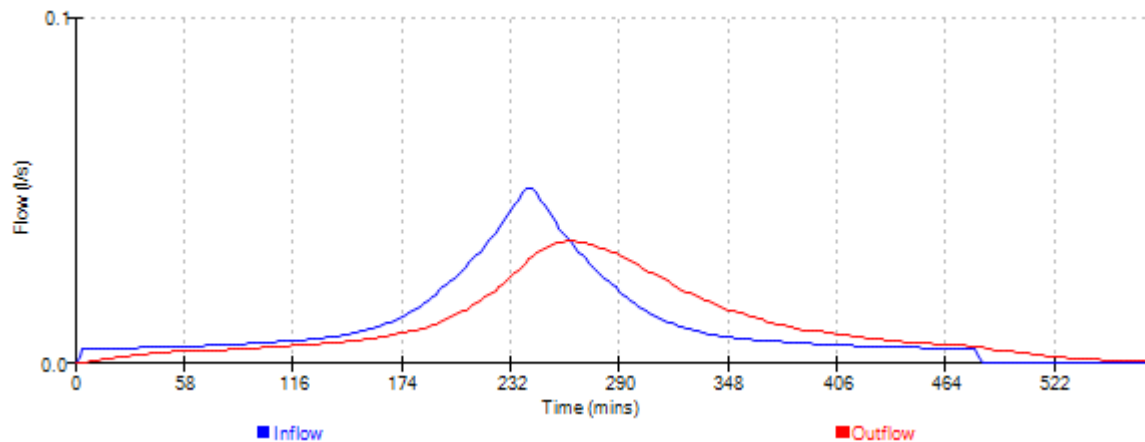
Event: 240 min Summer



Event: 360 min Summer

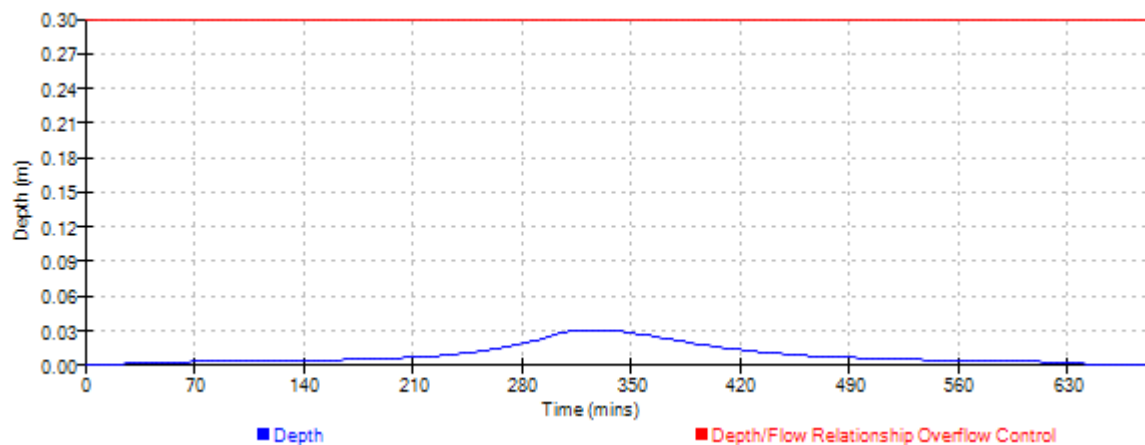
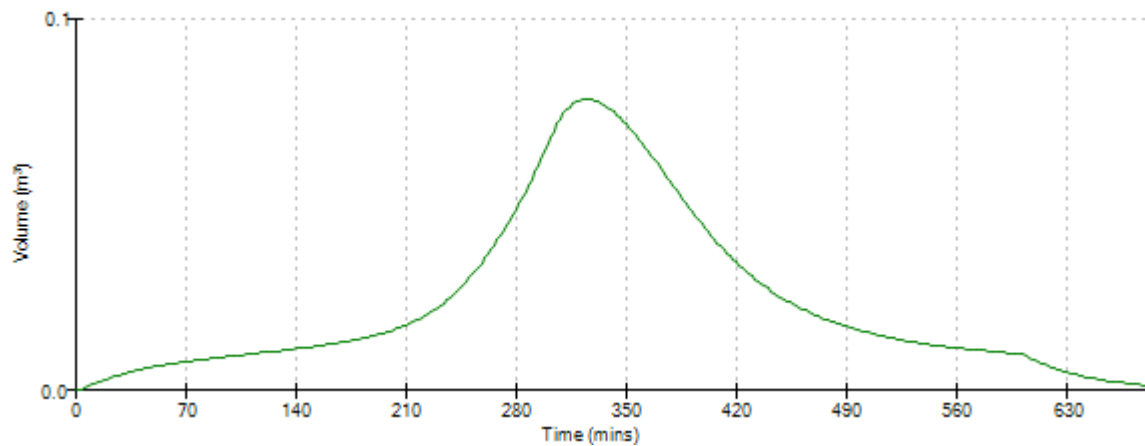
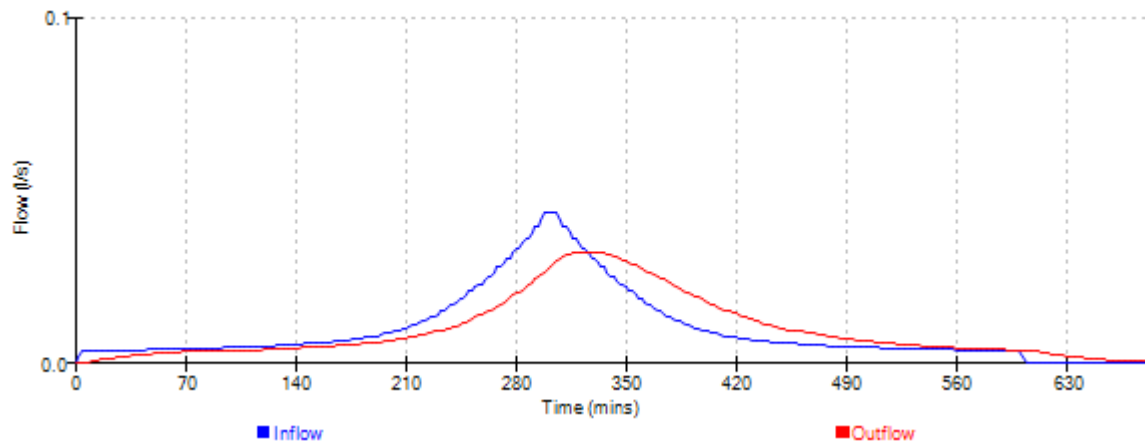


Event: 480 min Summer



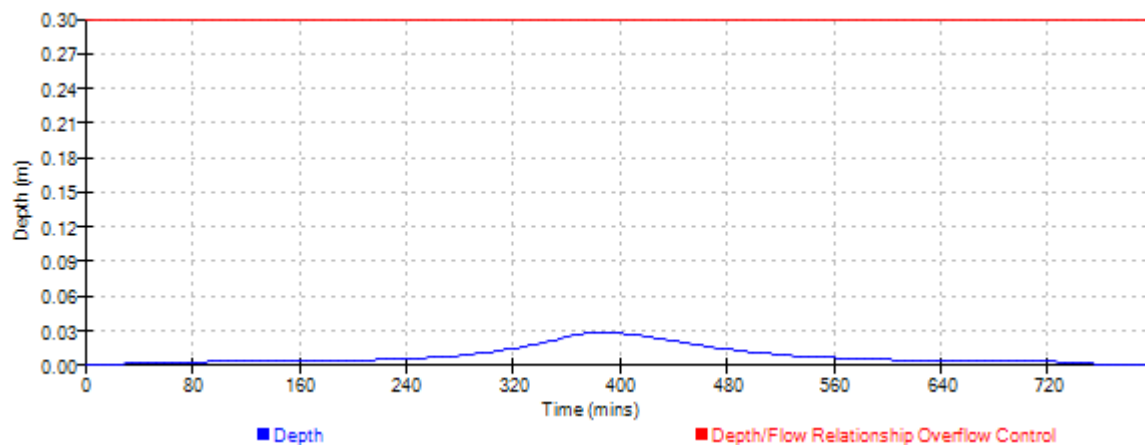
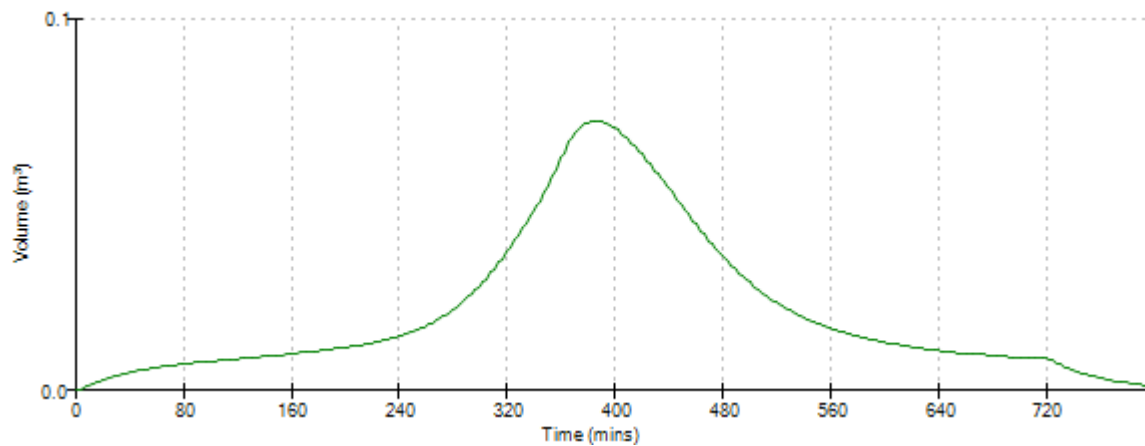
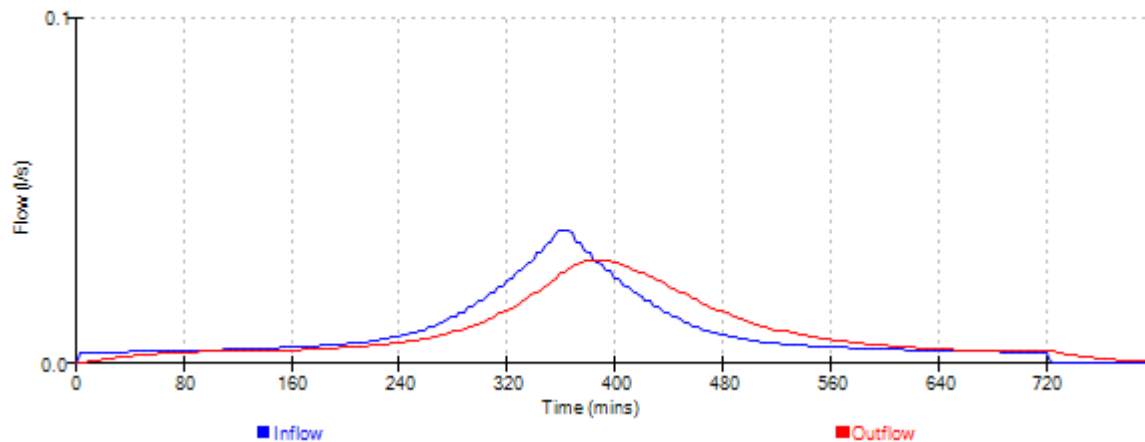
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Event: 600 min Summer



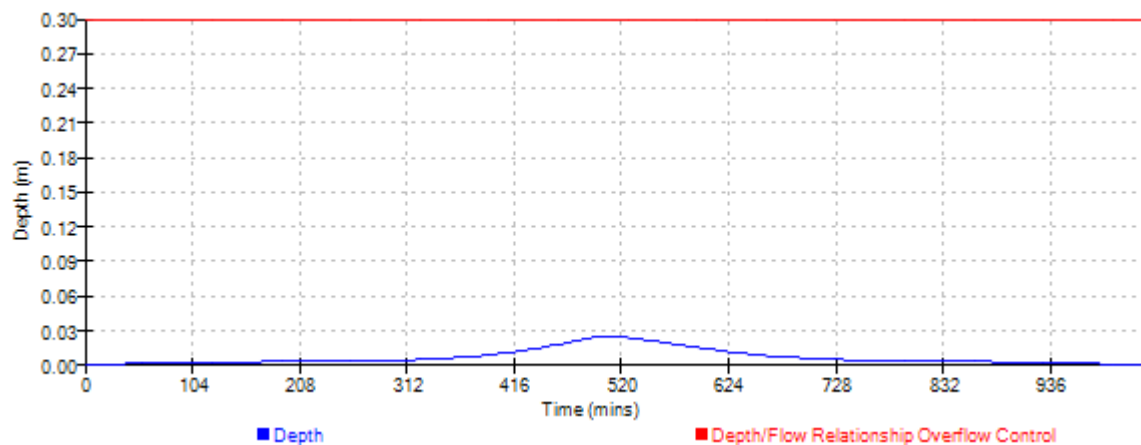
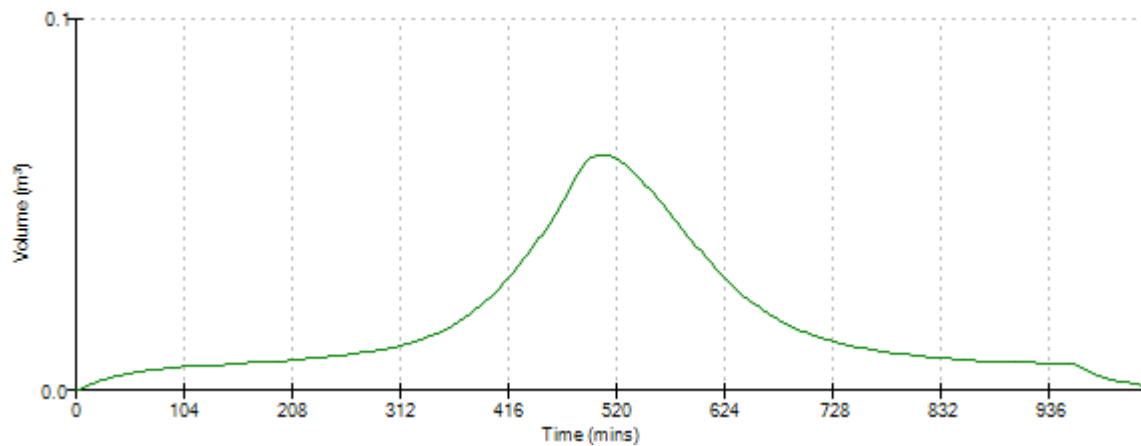
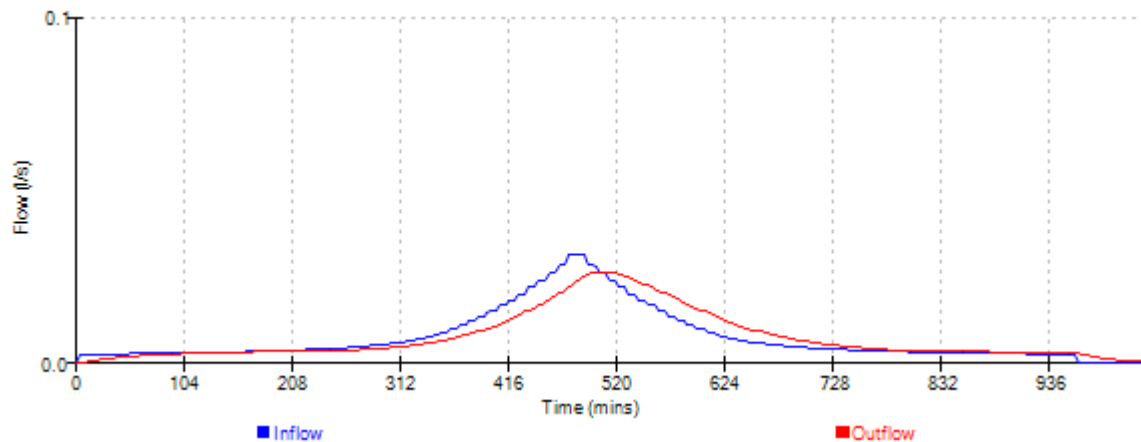
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Event: 720 min Summer



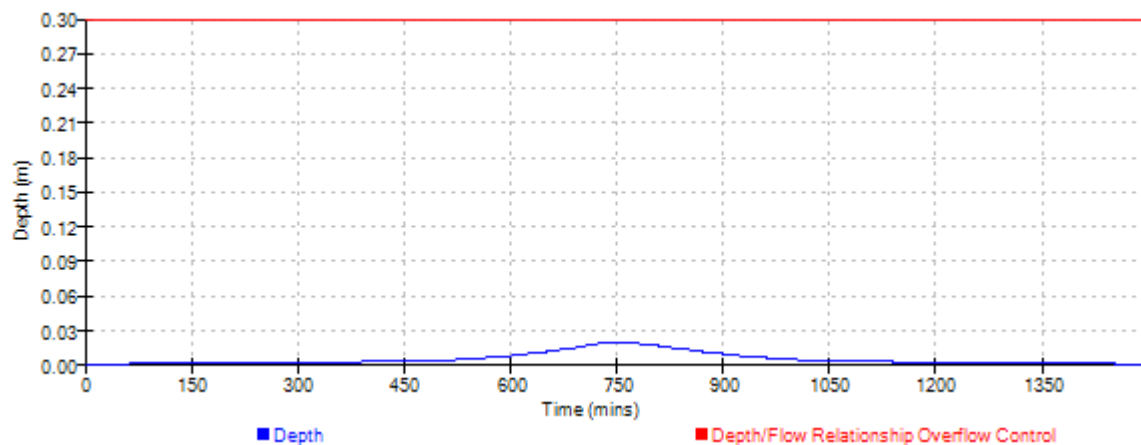
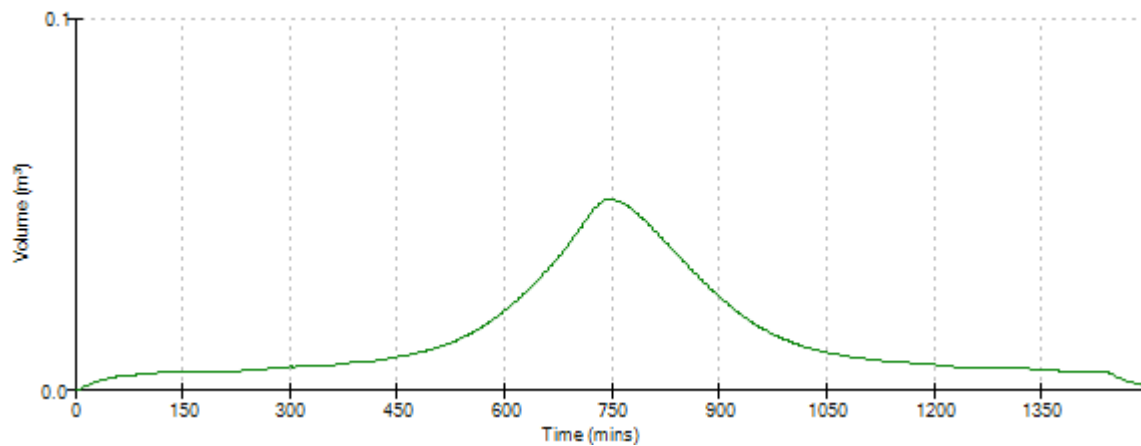
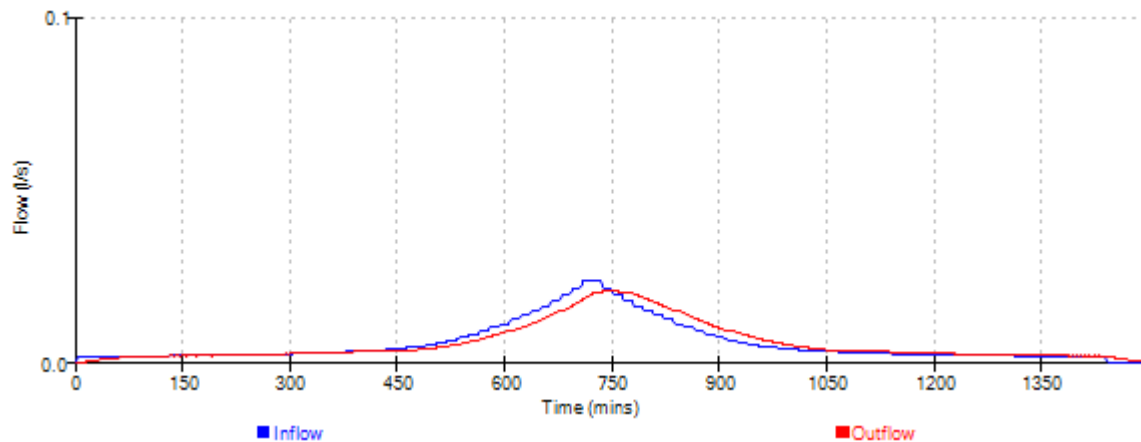
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Event: 960 min Summer



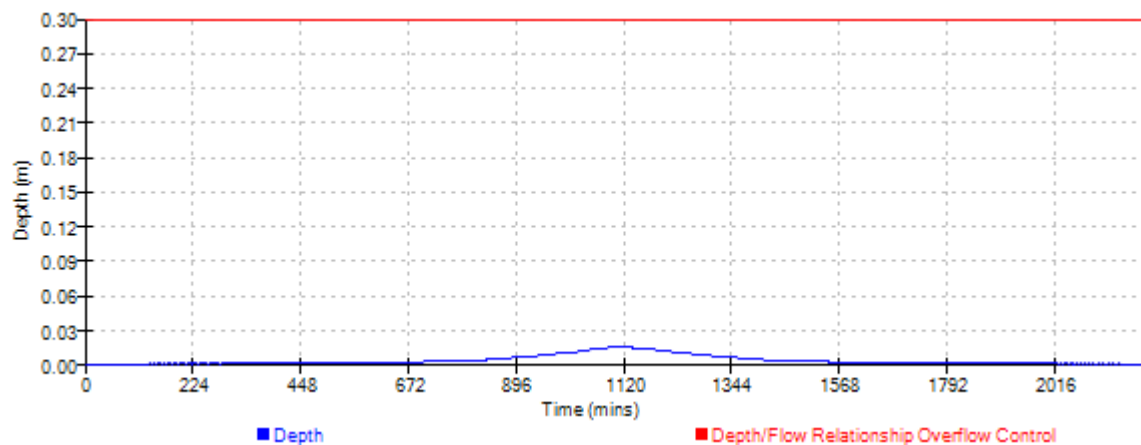
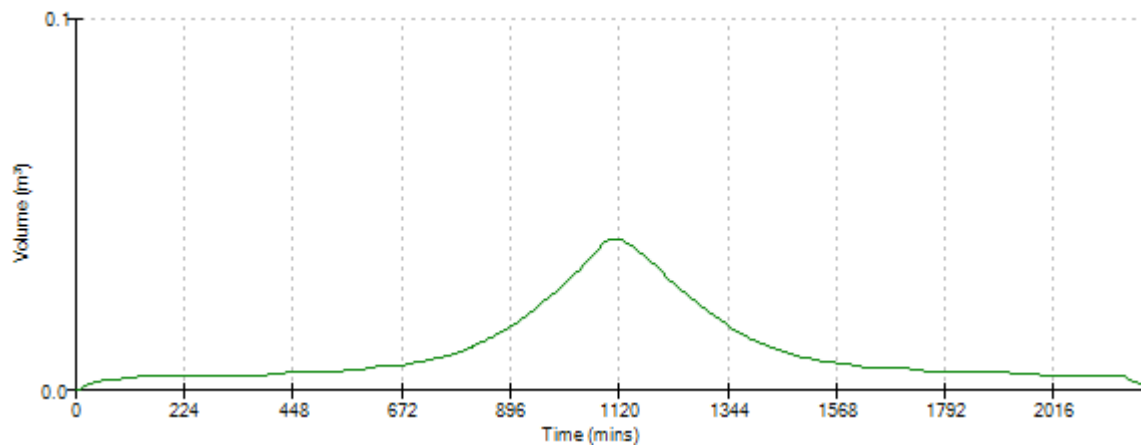
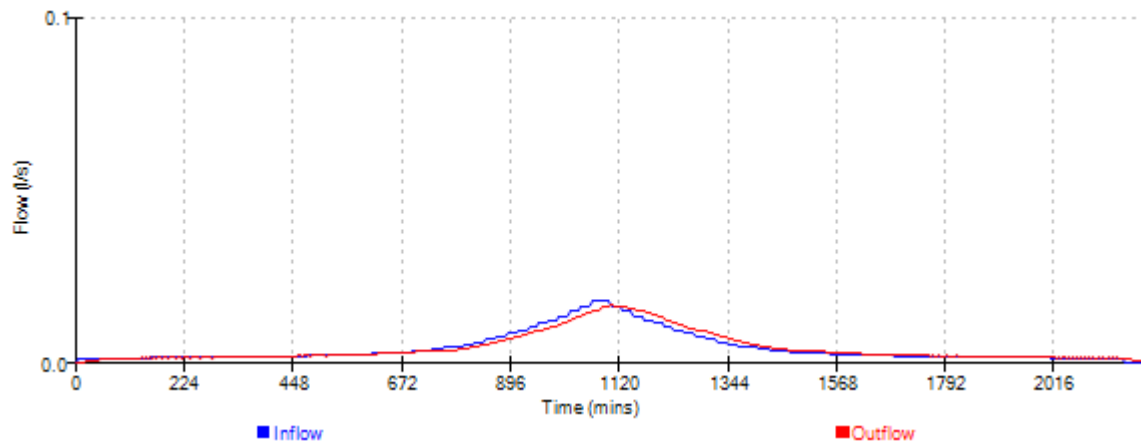
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File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 1440 min Summer



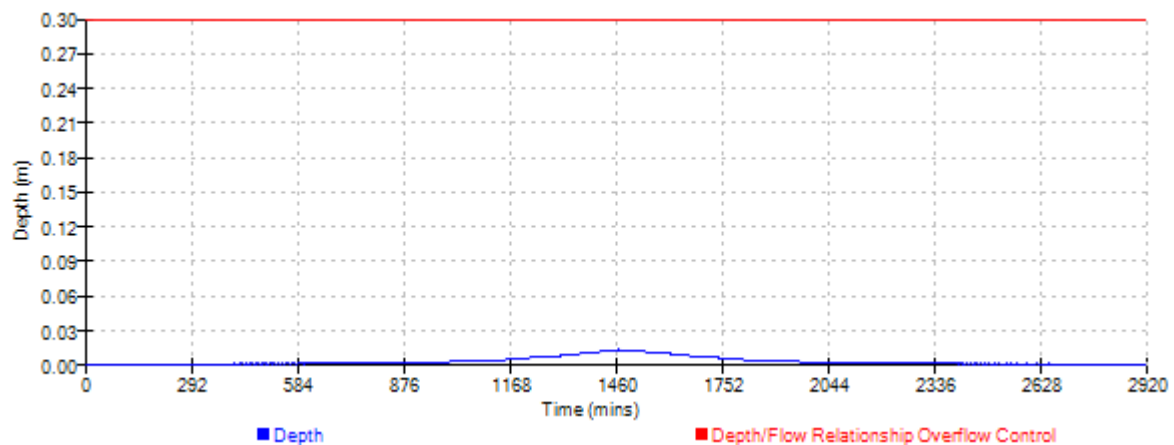
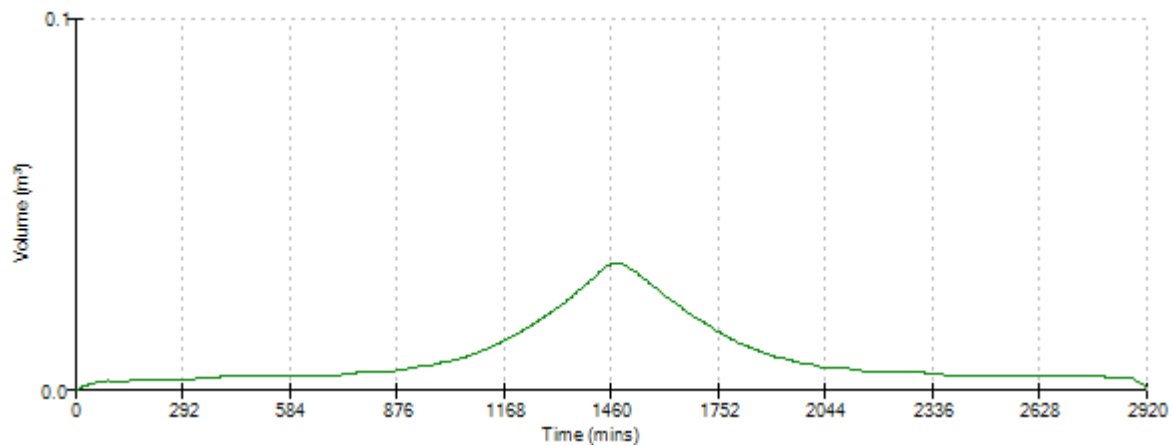
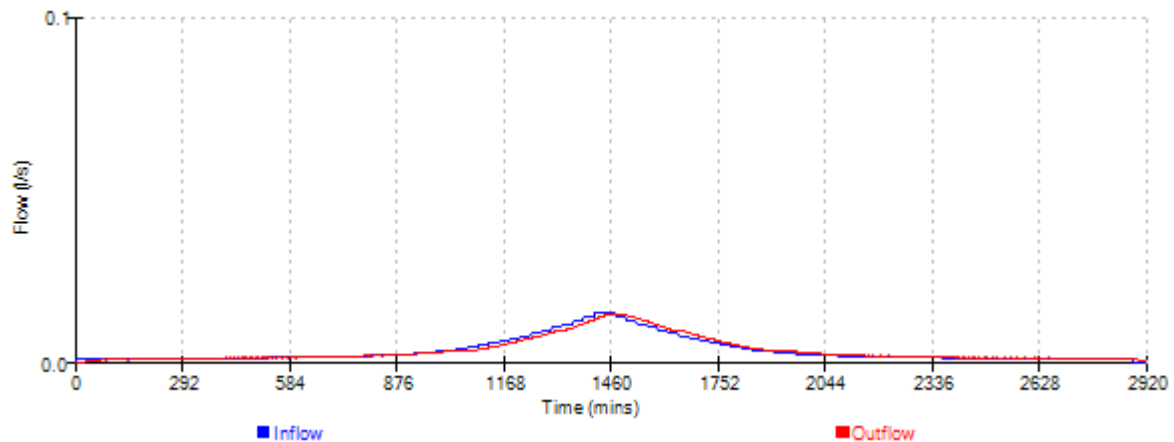
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Event: 2160 min Summer



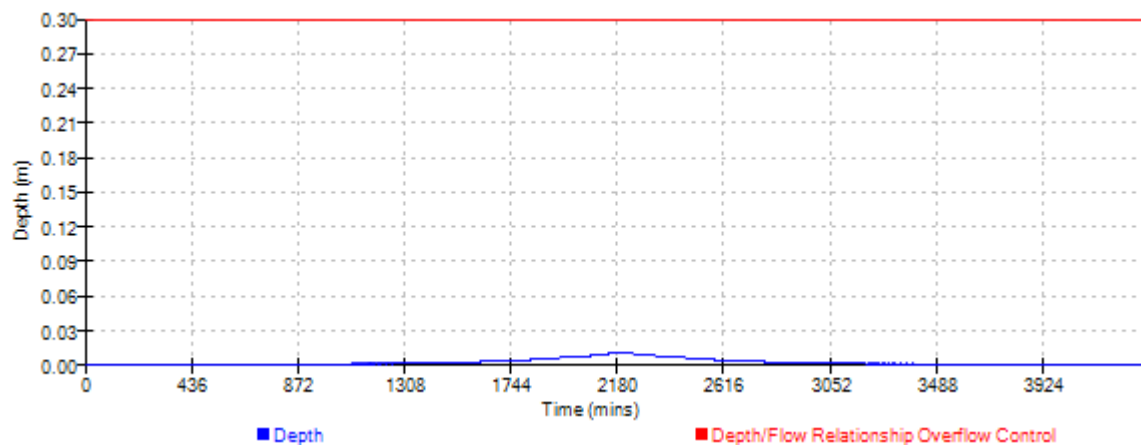
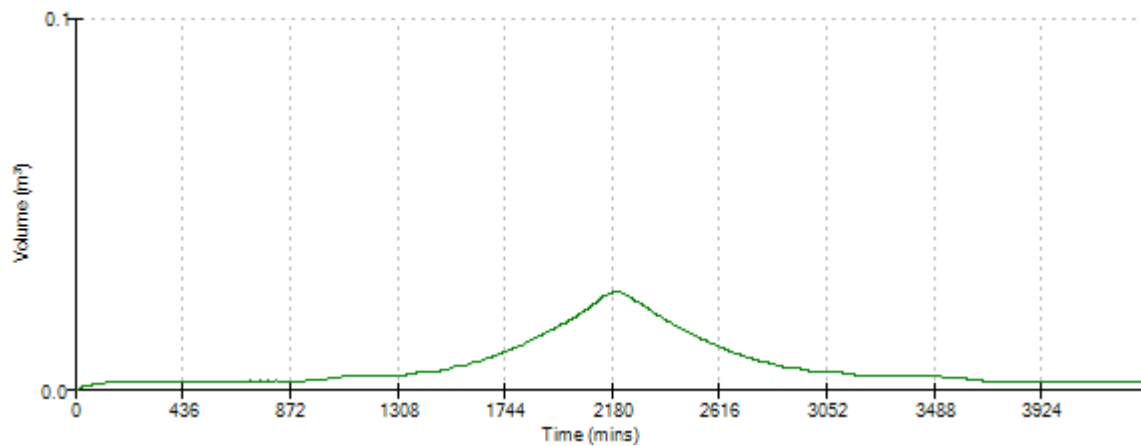
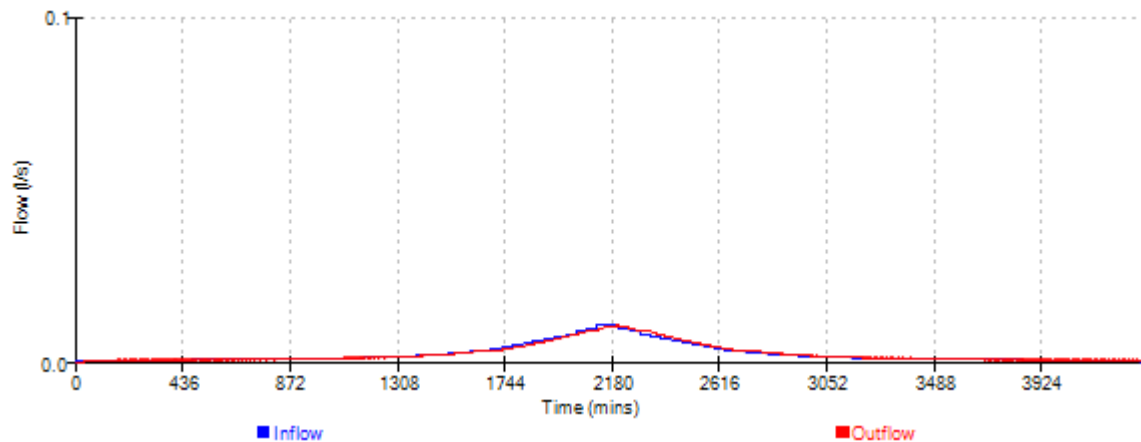
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Event: 2880 min Summer



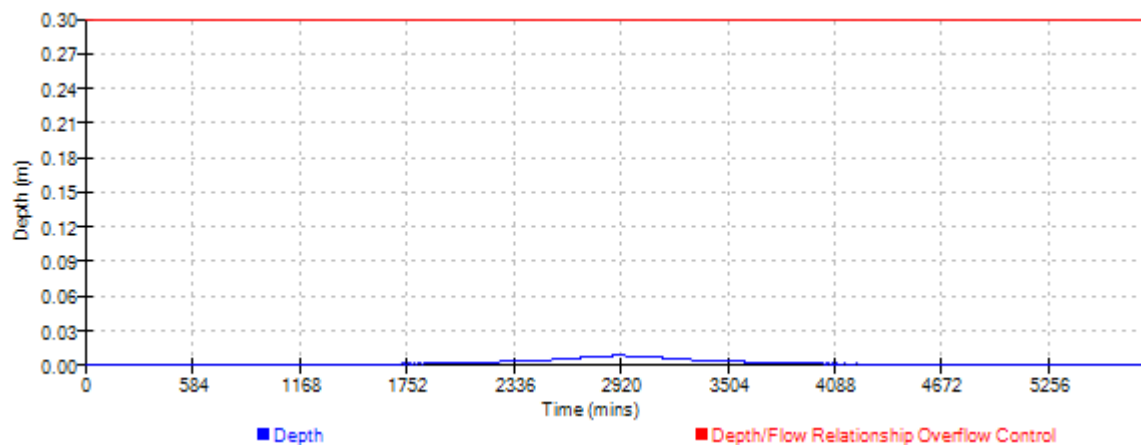
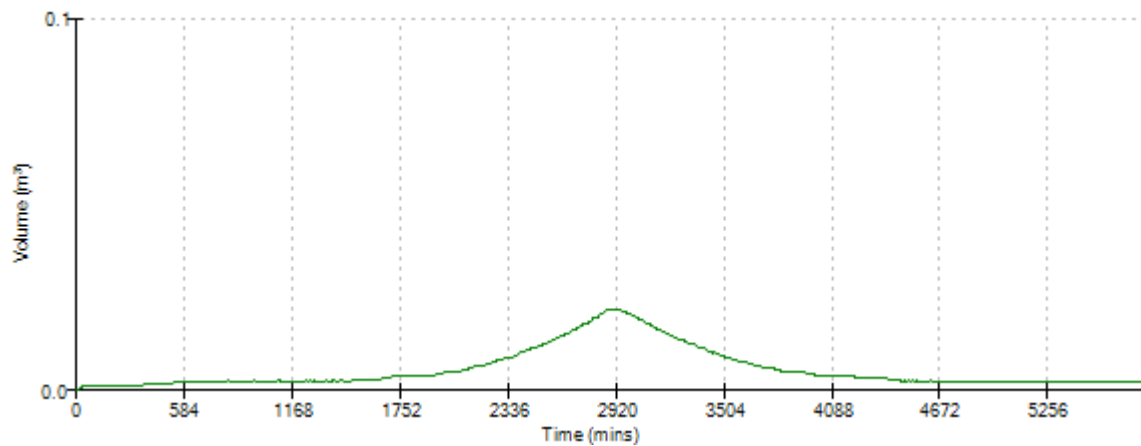
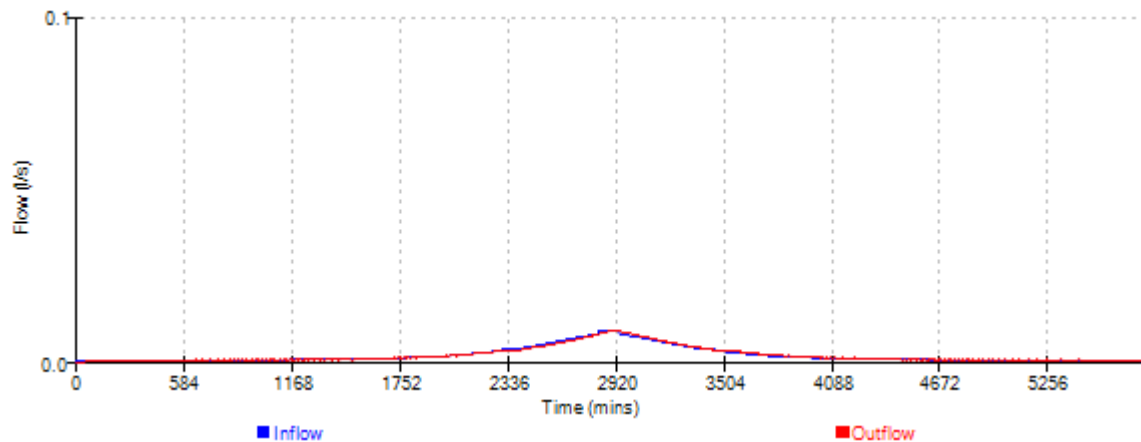
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Elstree Computing Ltd	Source Control w.12.6	

Event: 4320 min Summer



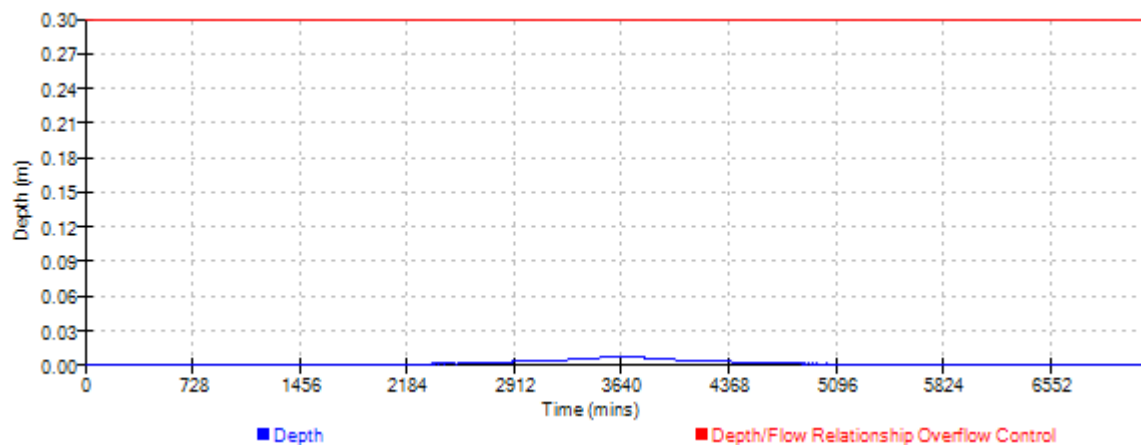
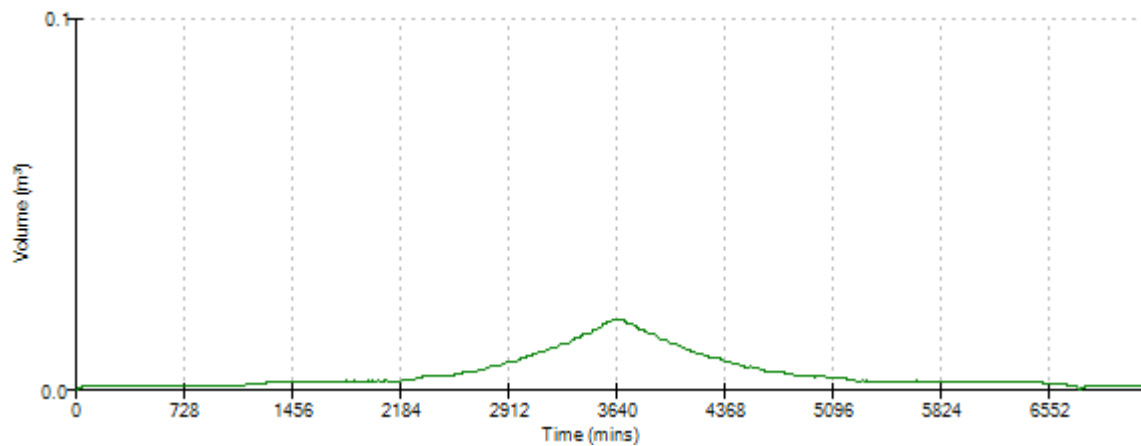
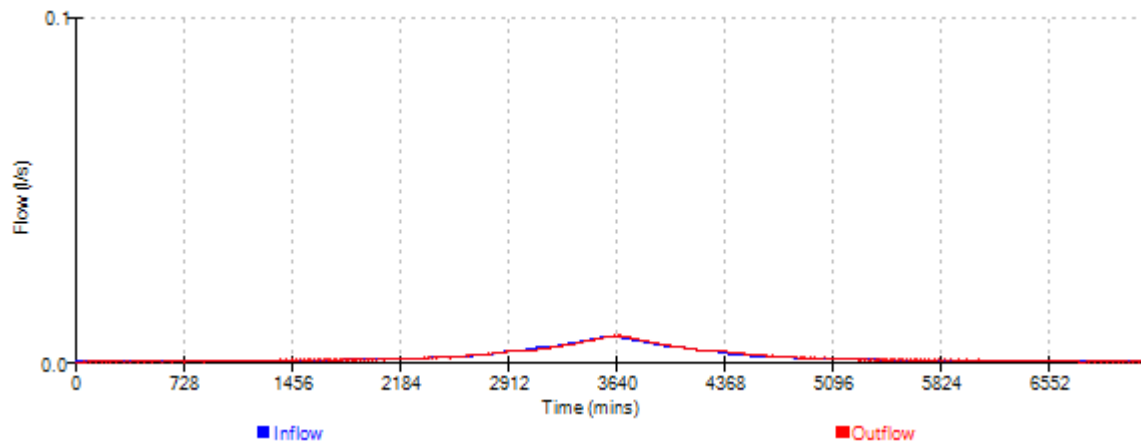
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Event: 5760 min Summer



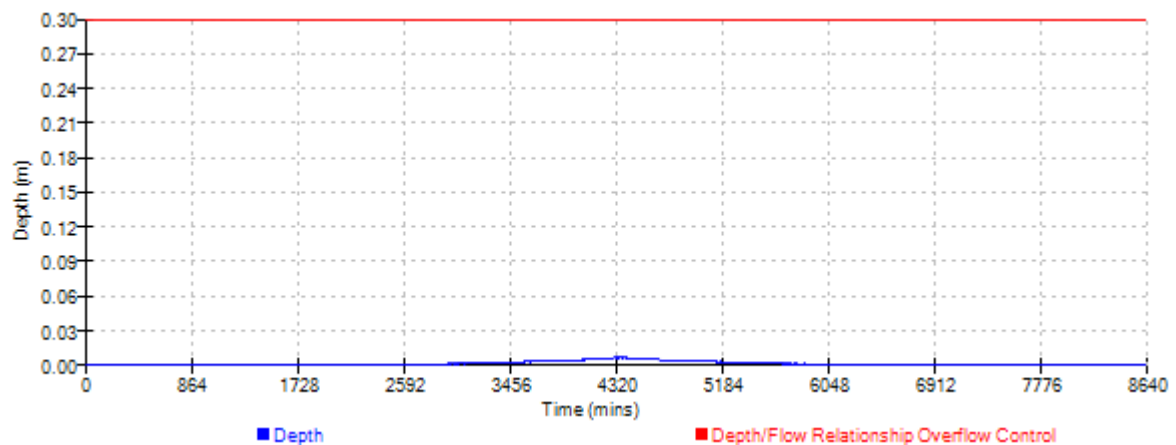
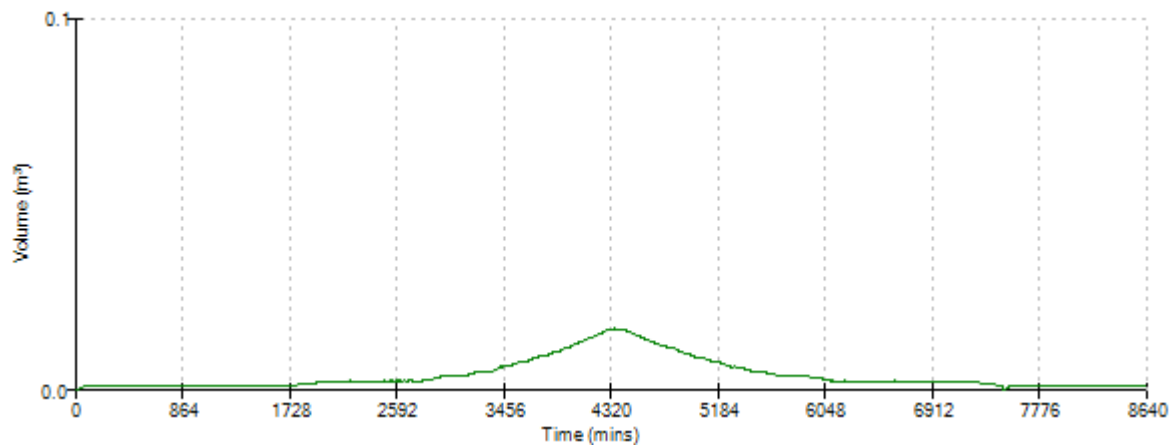
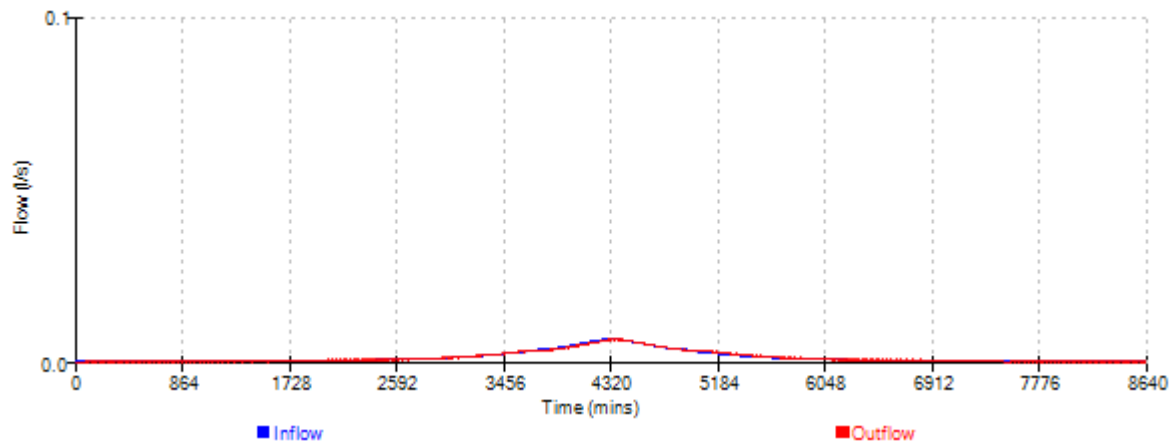
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Event: 7200 min Summer



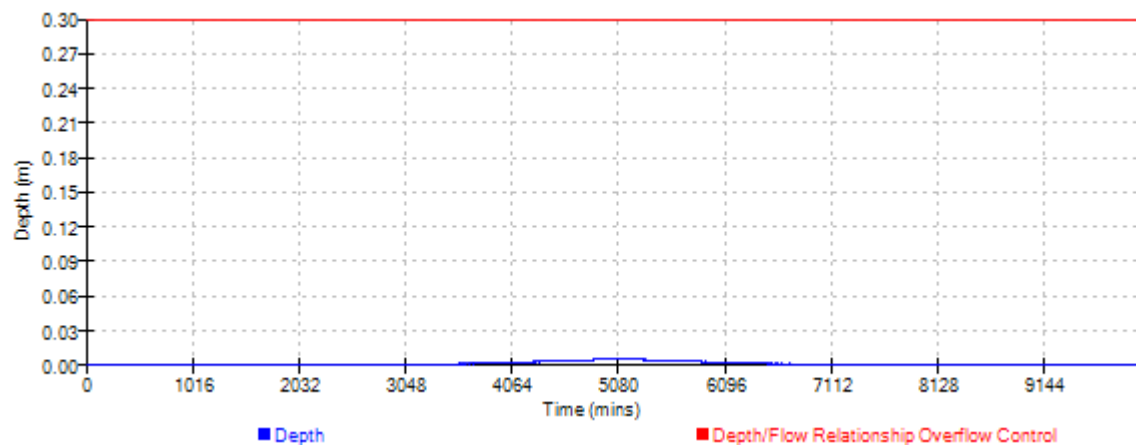
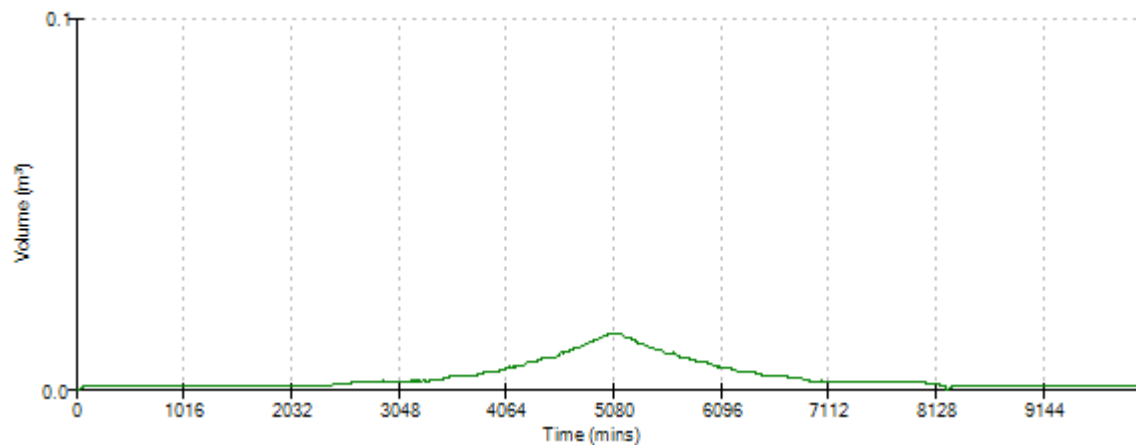
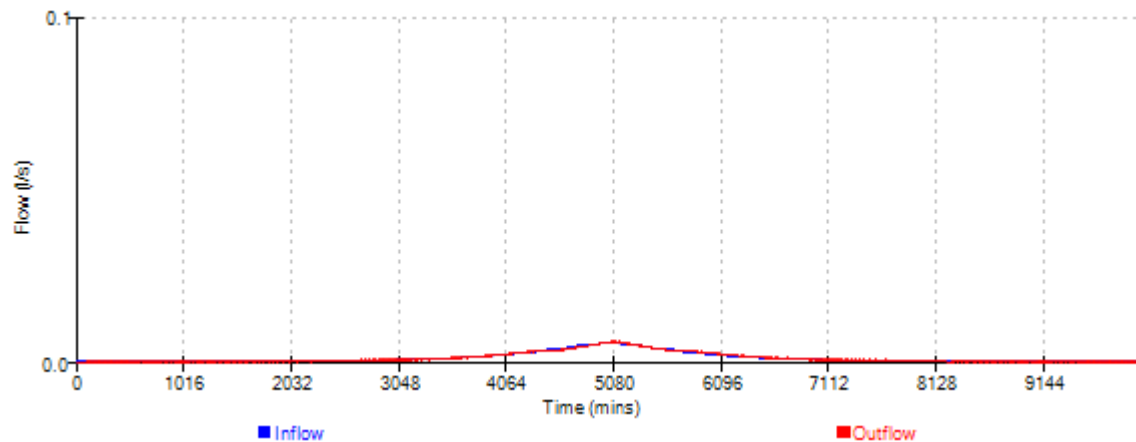
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Event: 8640 min Summer



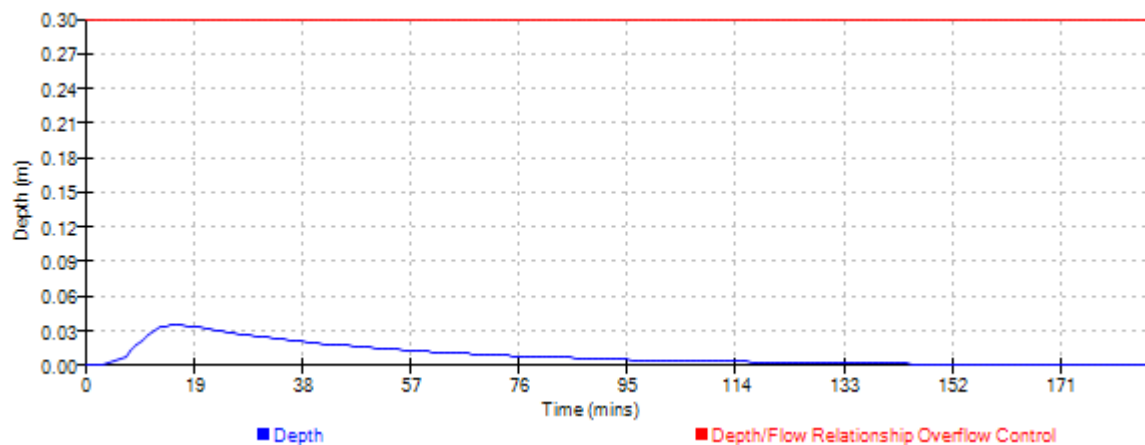
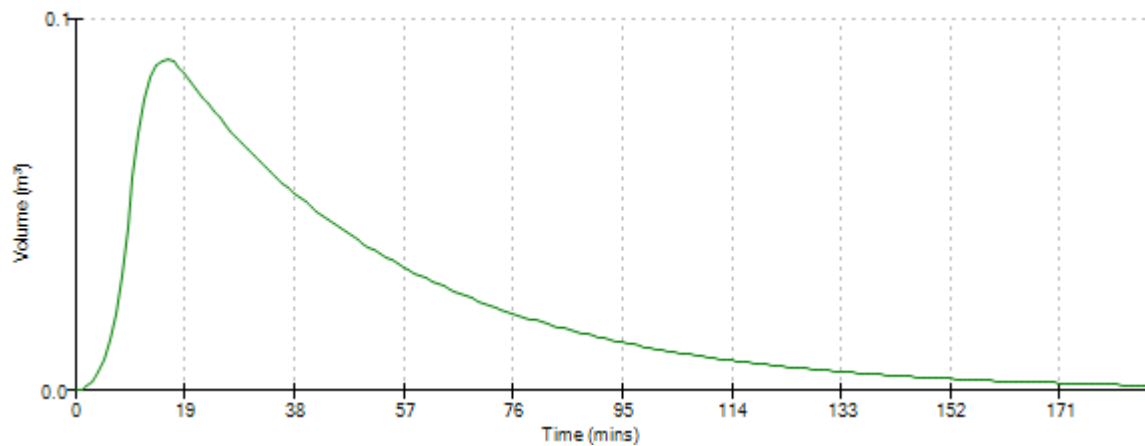
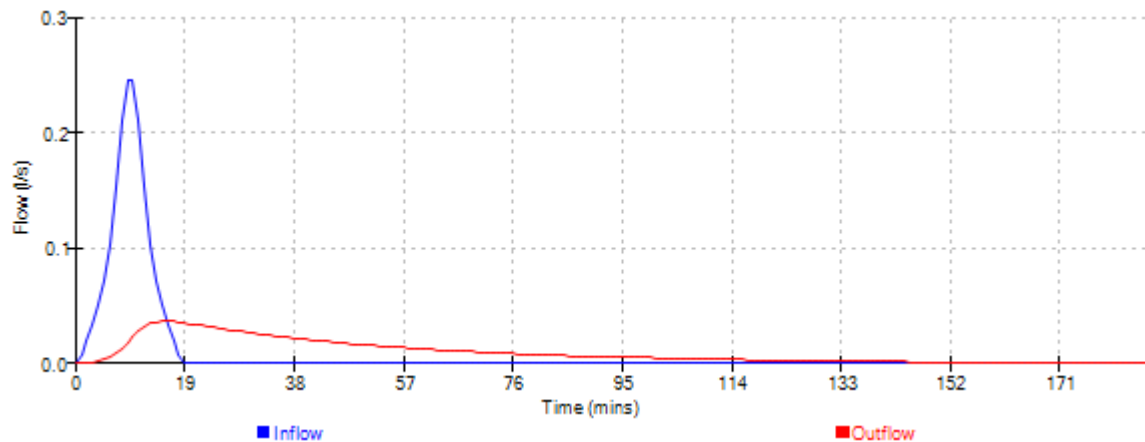
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Event: 10080 min Summer

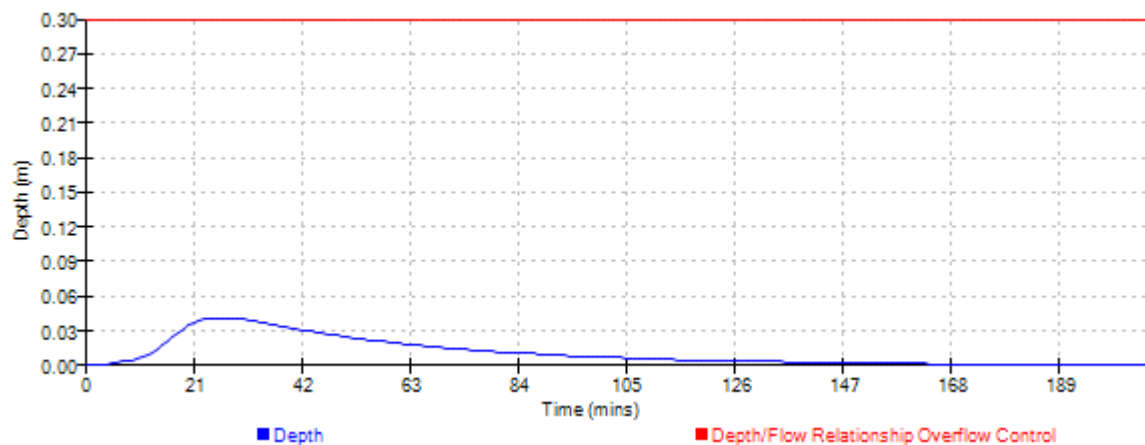
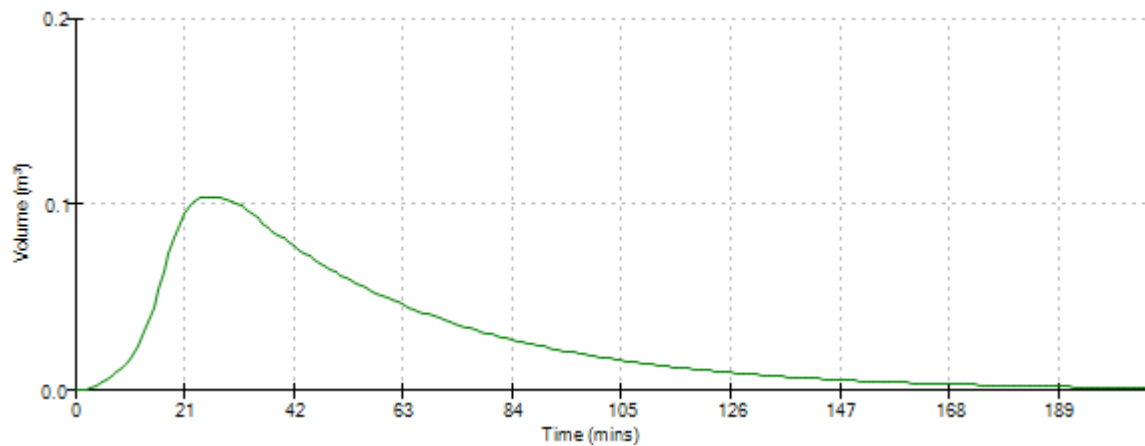
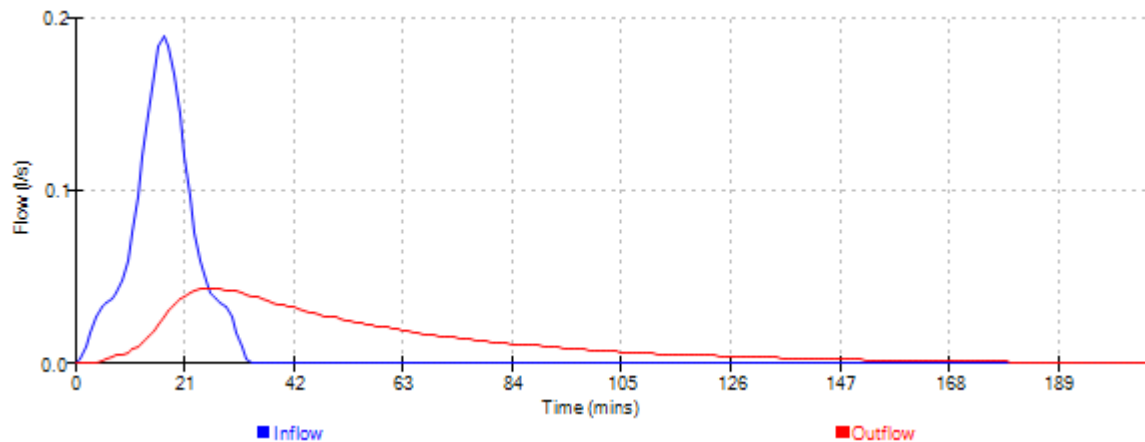


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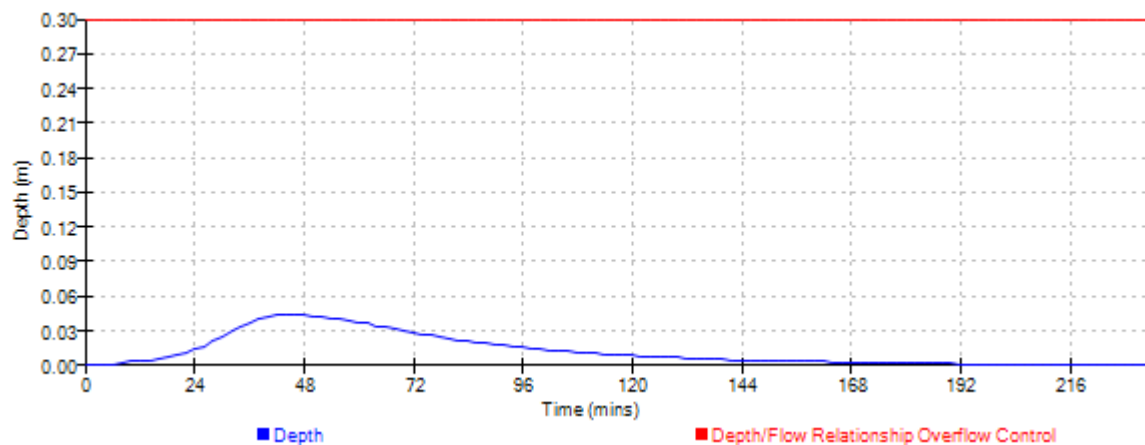
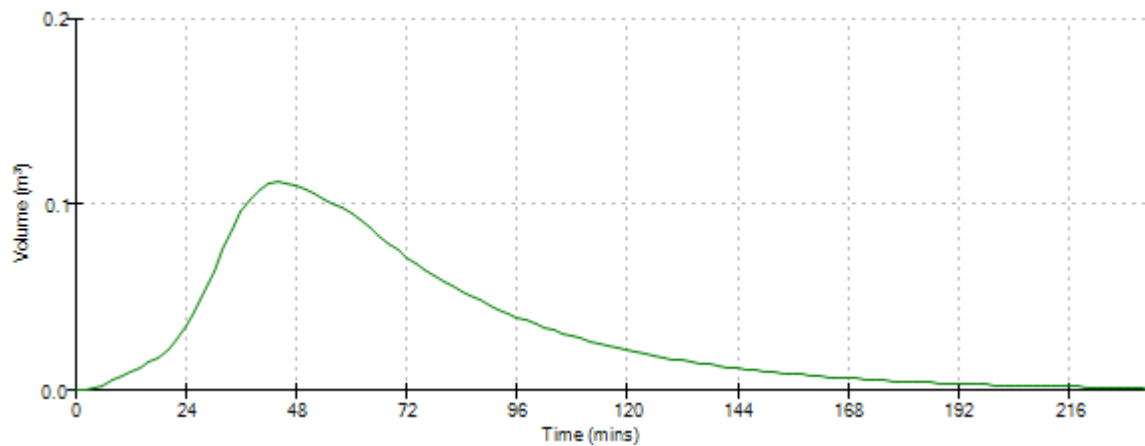
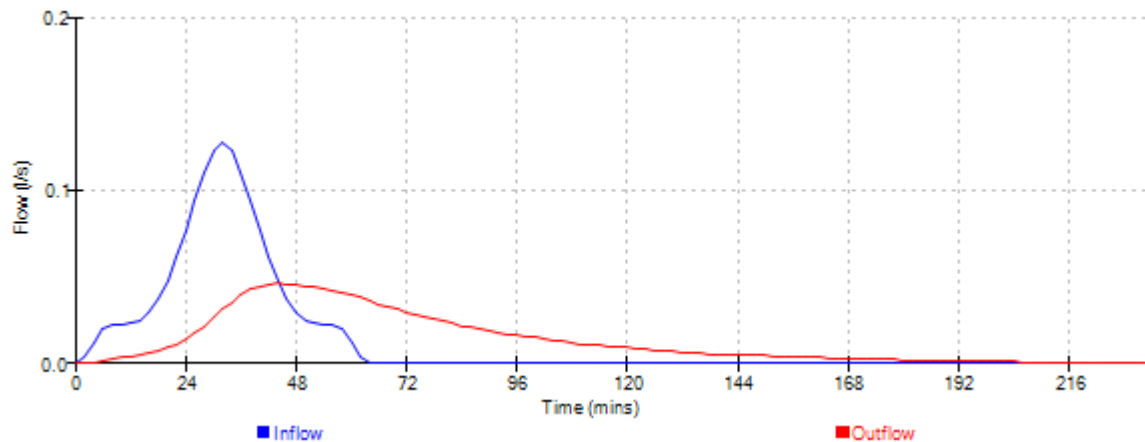
Event: 15 min Winter



Event: 30 min Winter

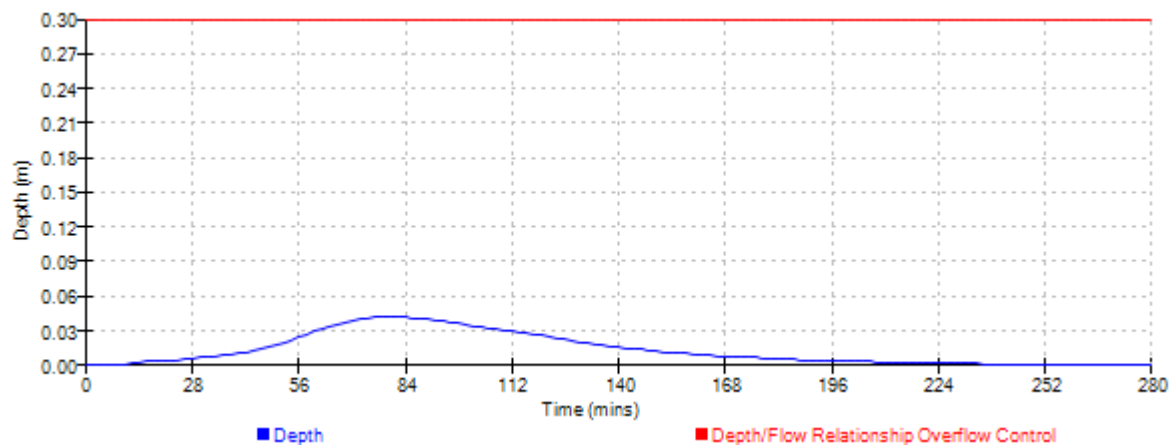
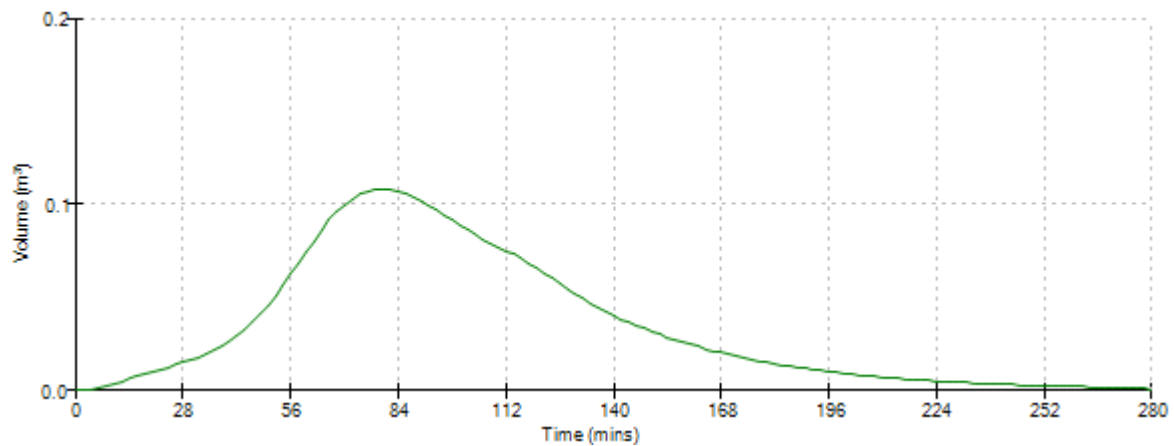
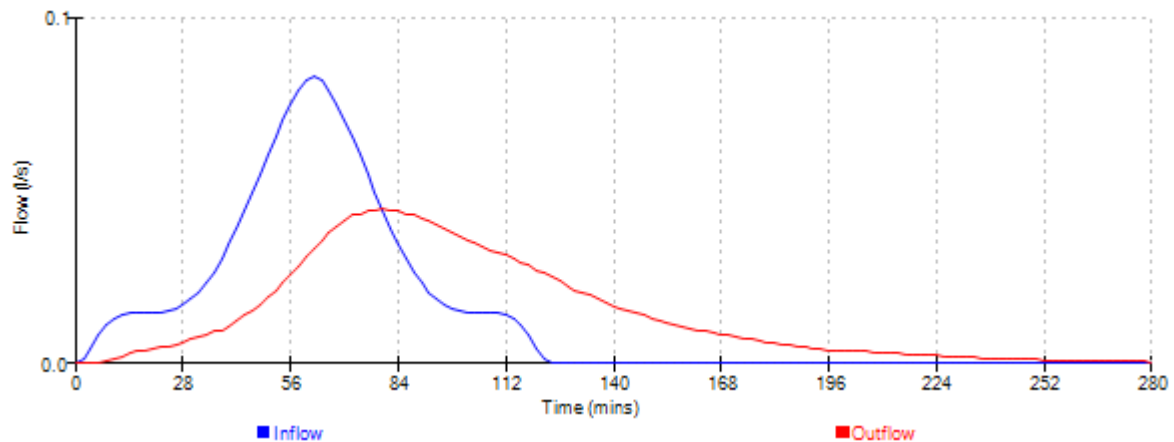


Event: 60 min winter

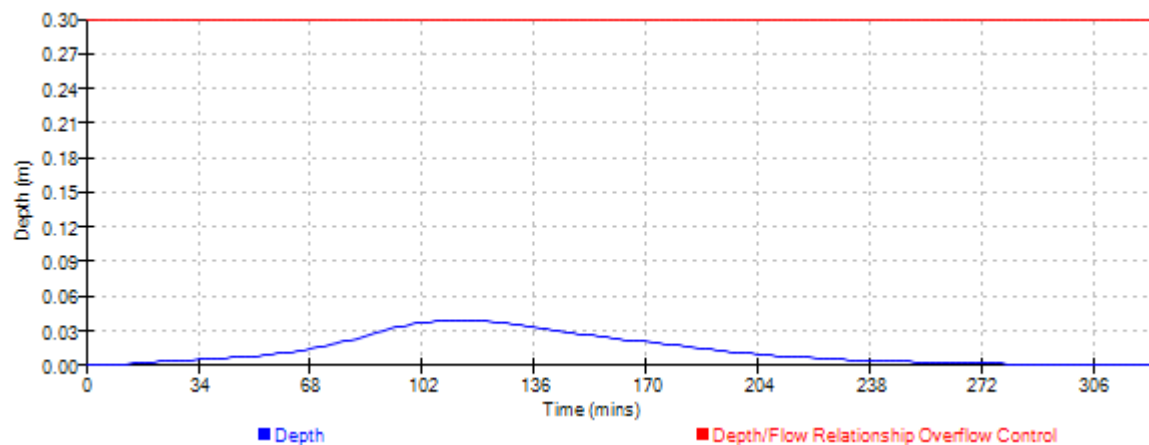
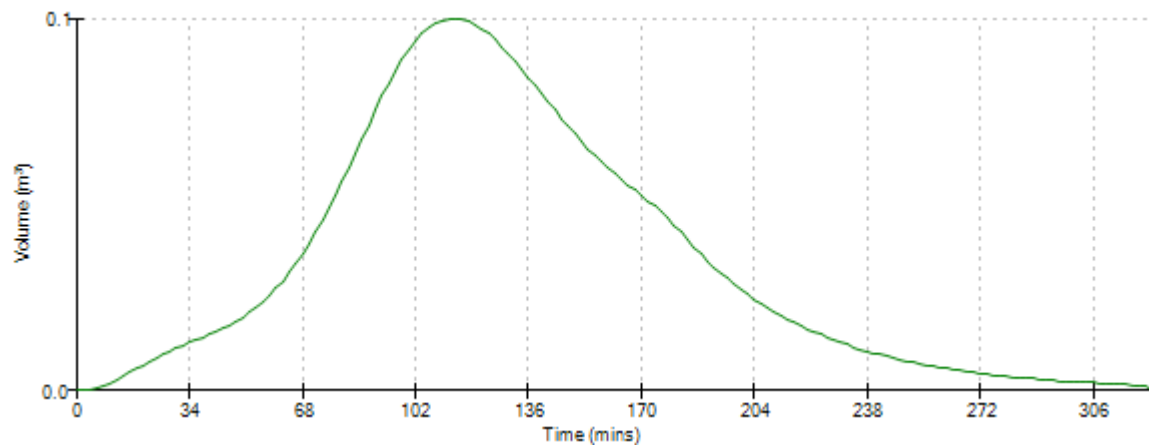
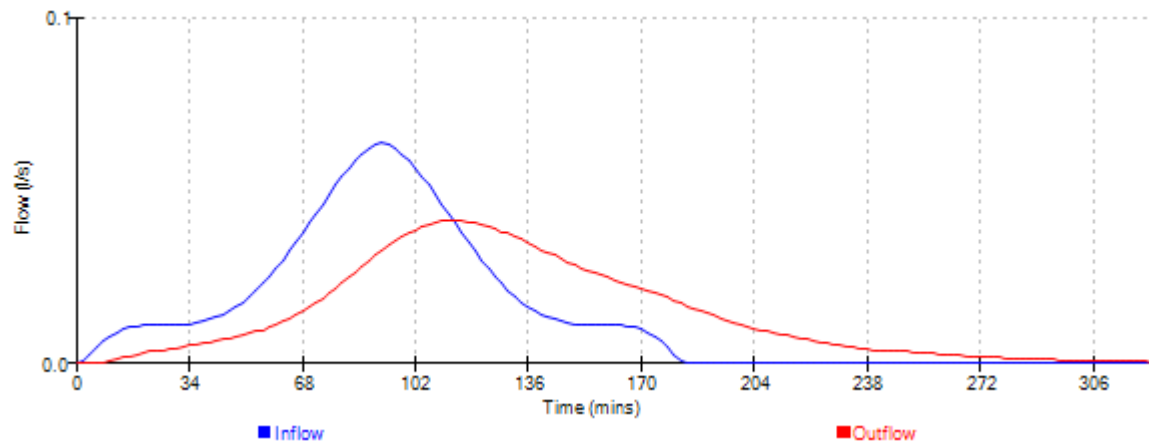


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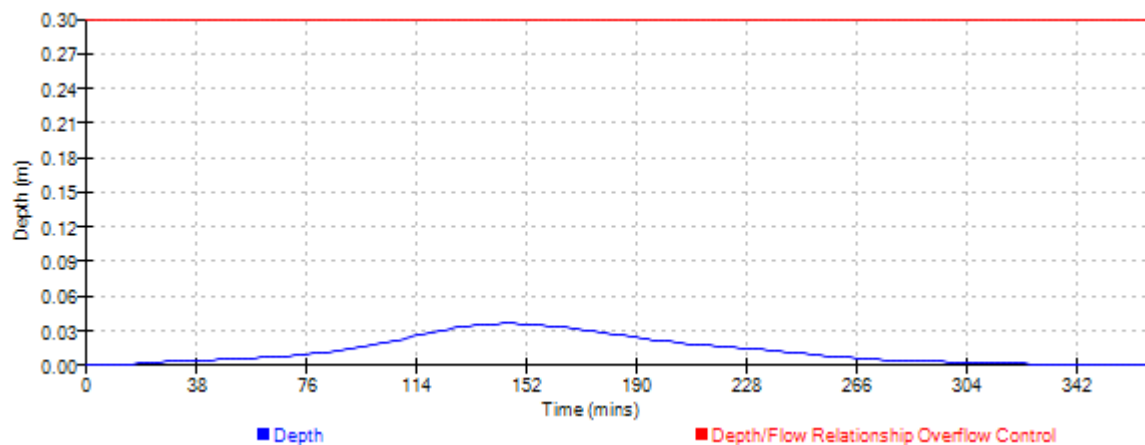
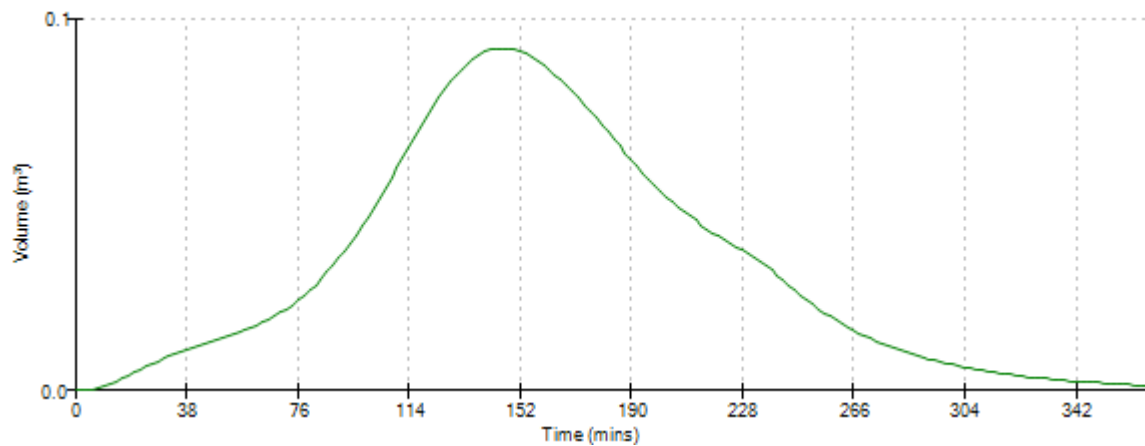
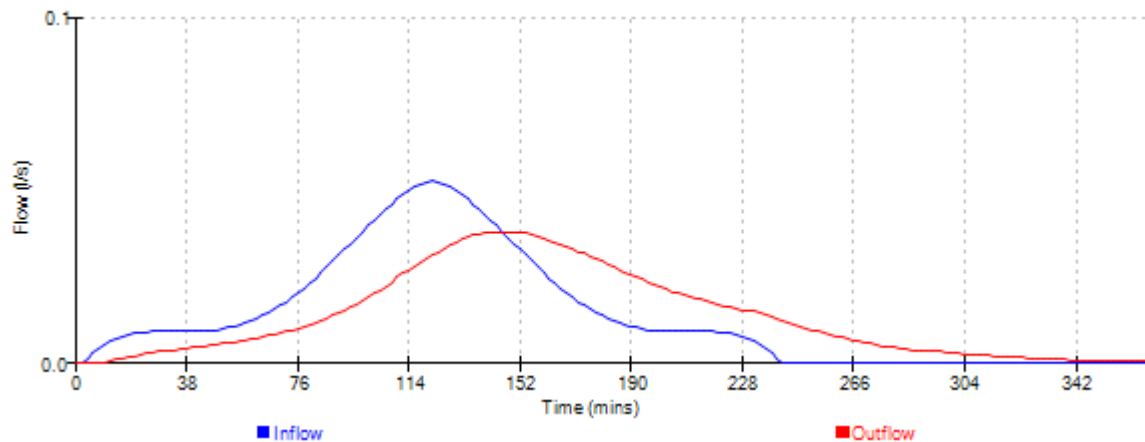
Event: 120 min Winter



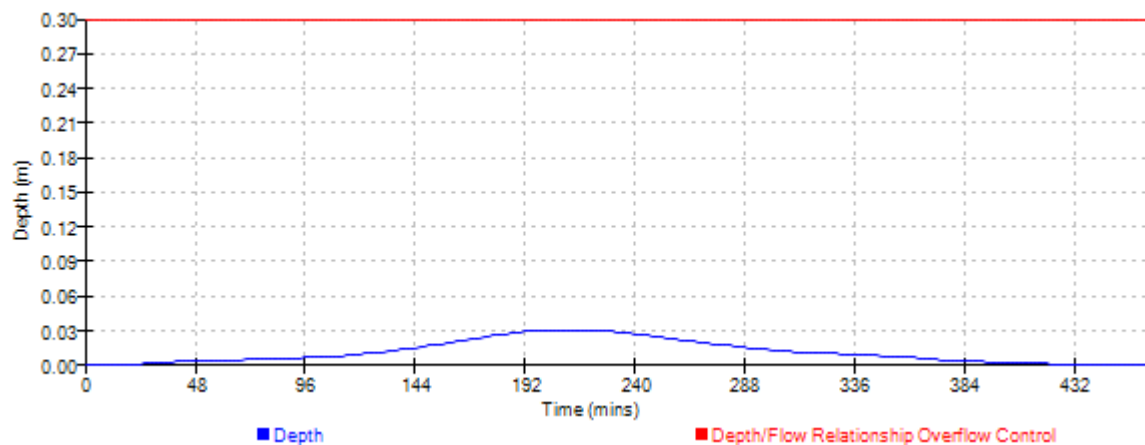
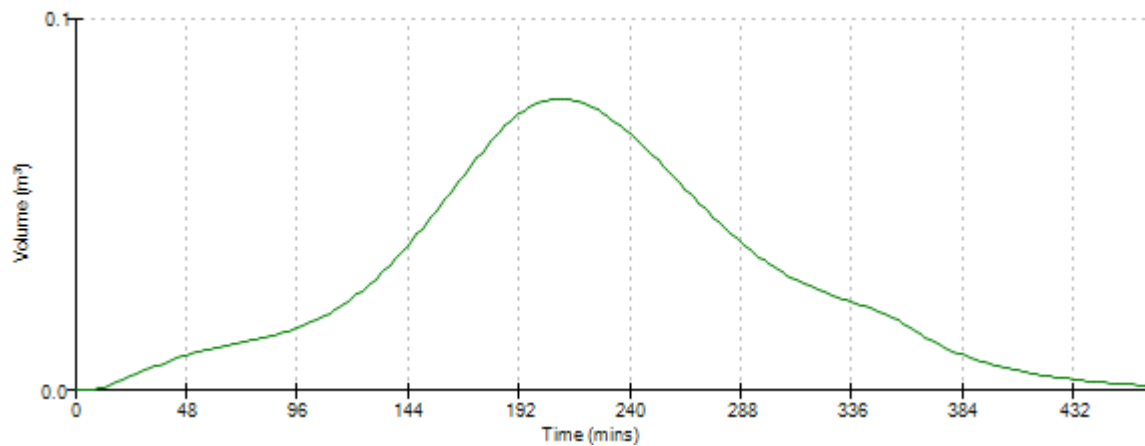
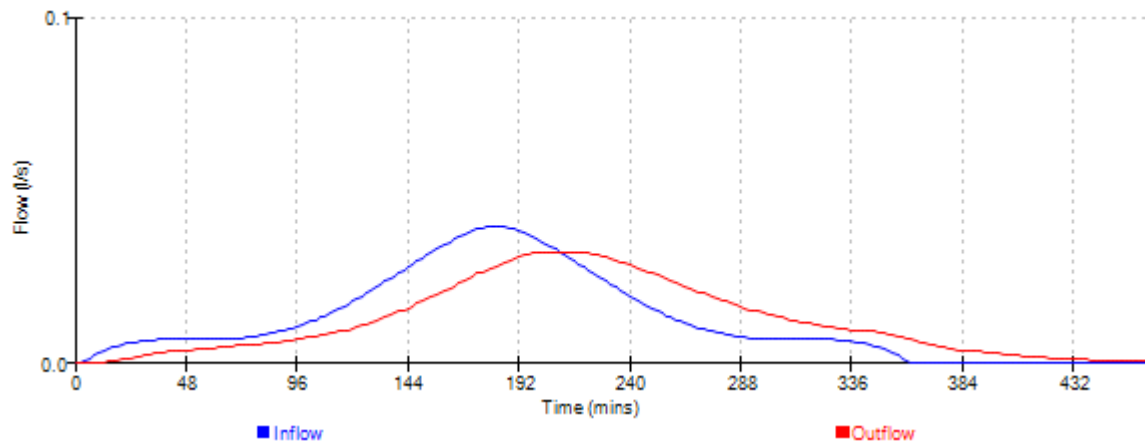
Event: 180 min Winter



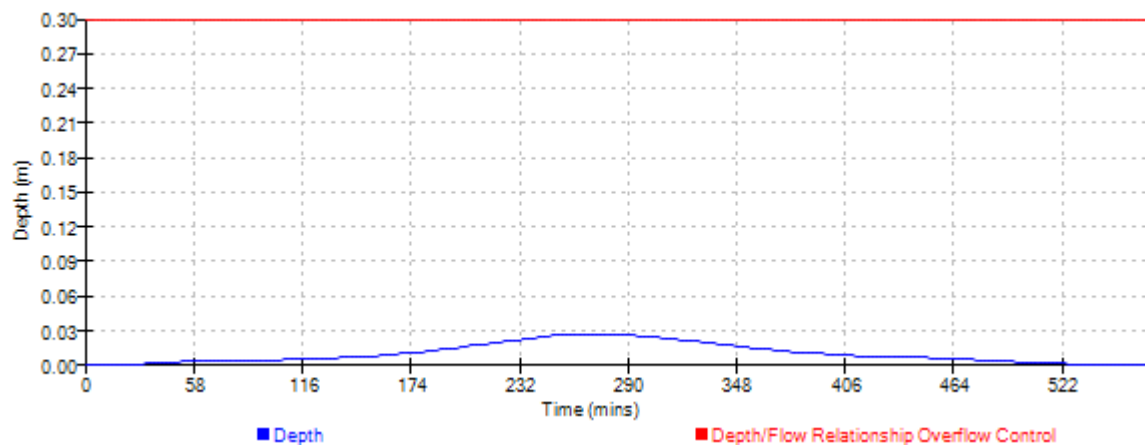
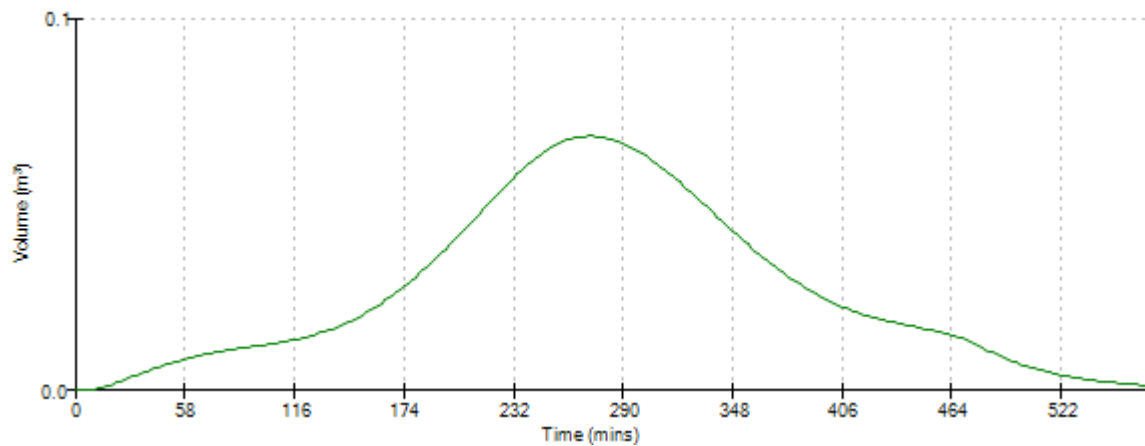
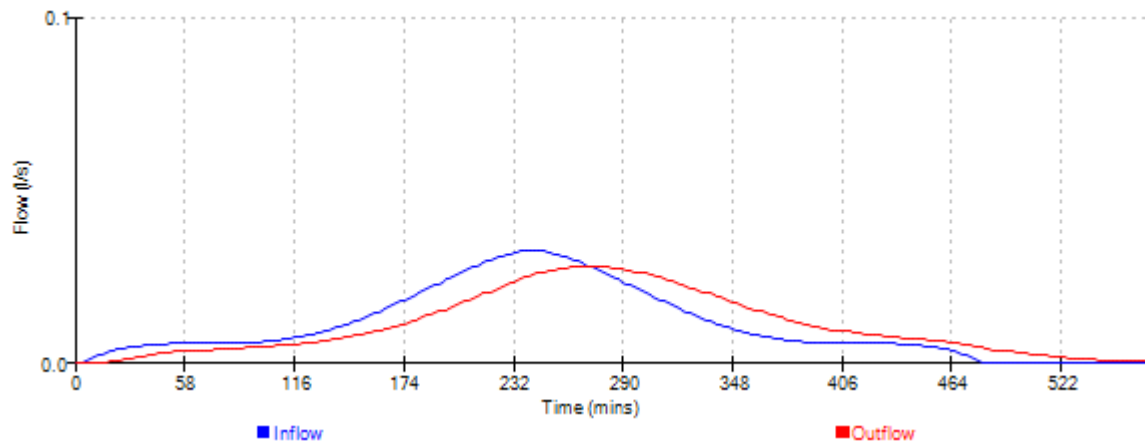
Event: 240 min Winter



Event: 360 min Winter

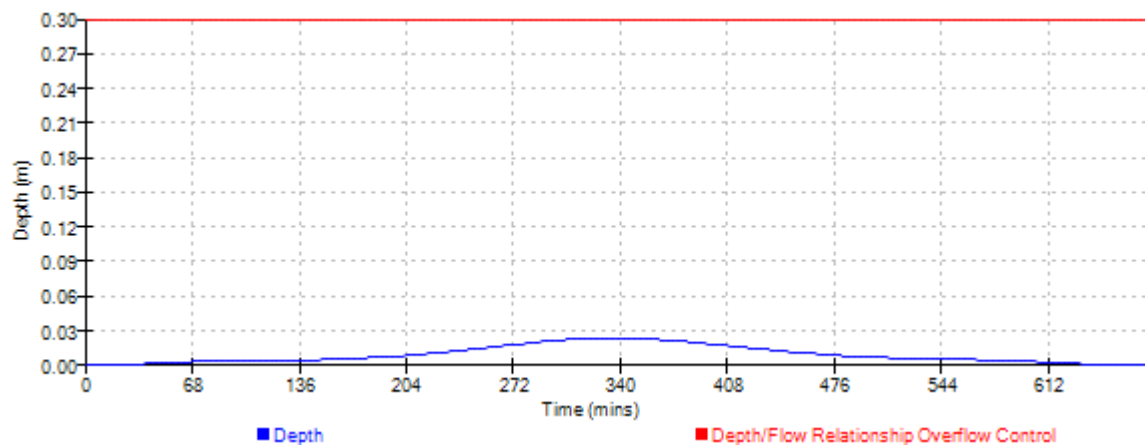
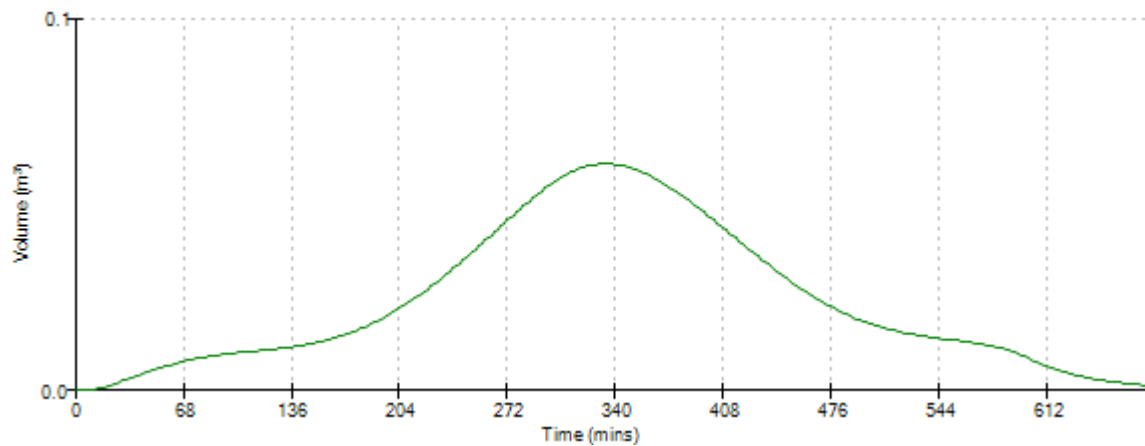
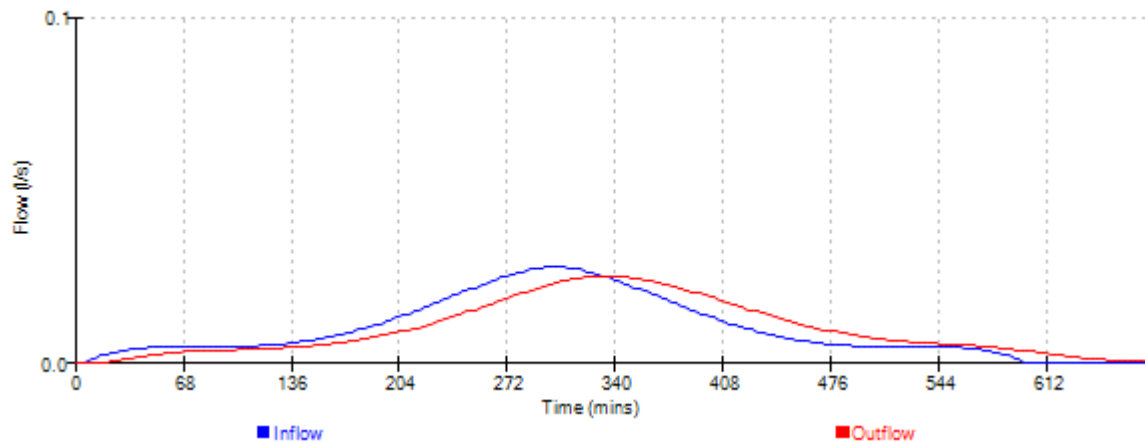


Event: 480 min Winter



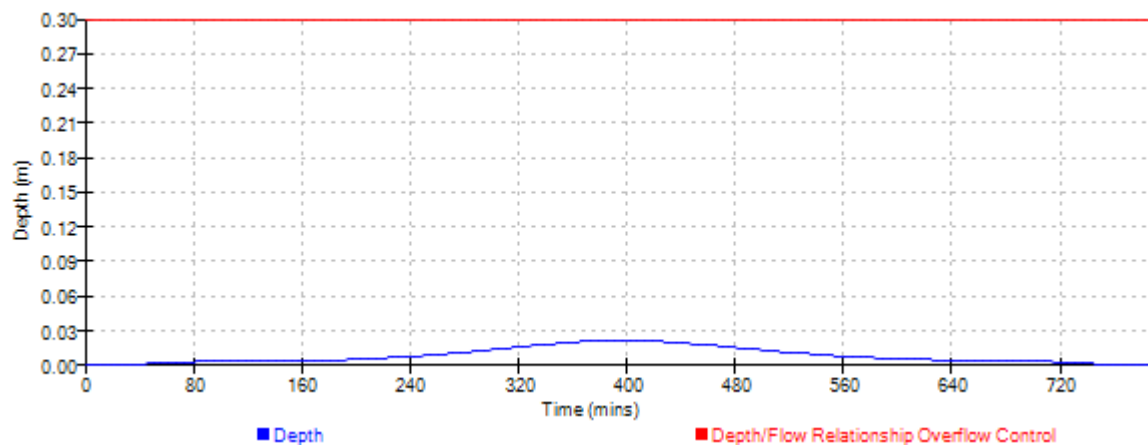
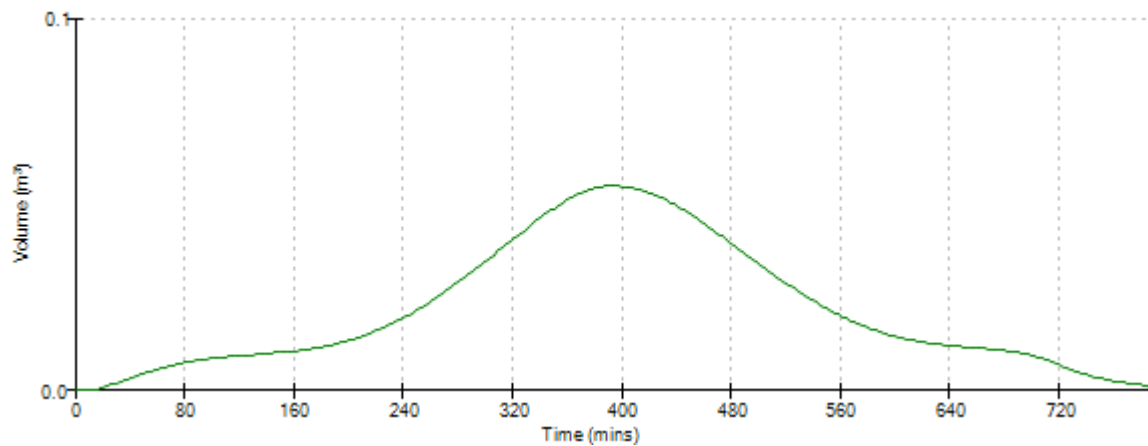
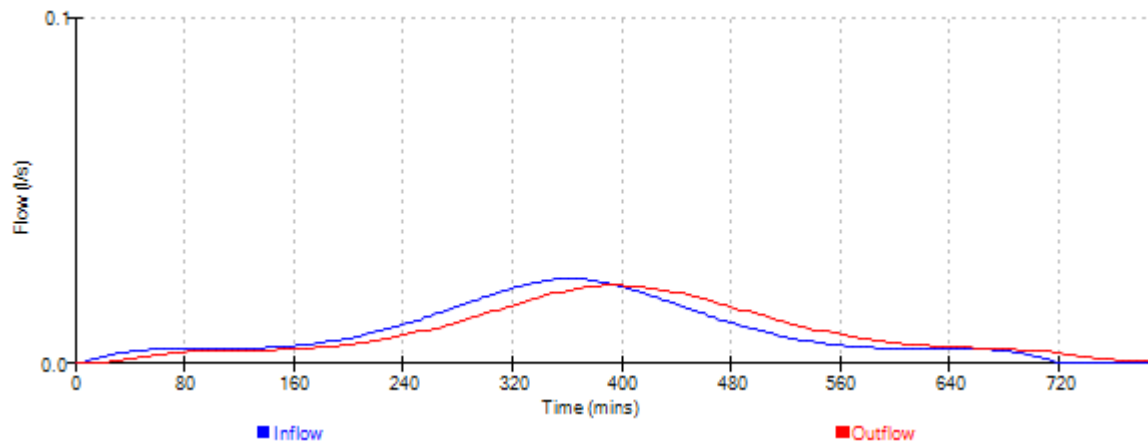
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Event: 600 min Winter



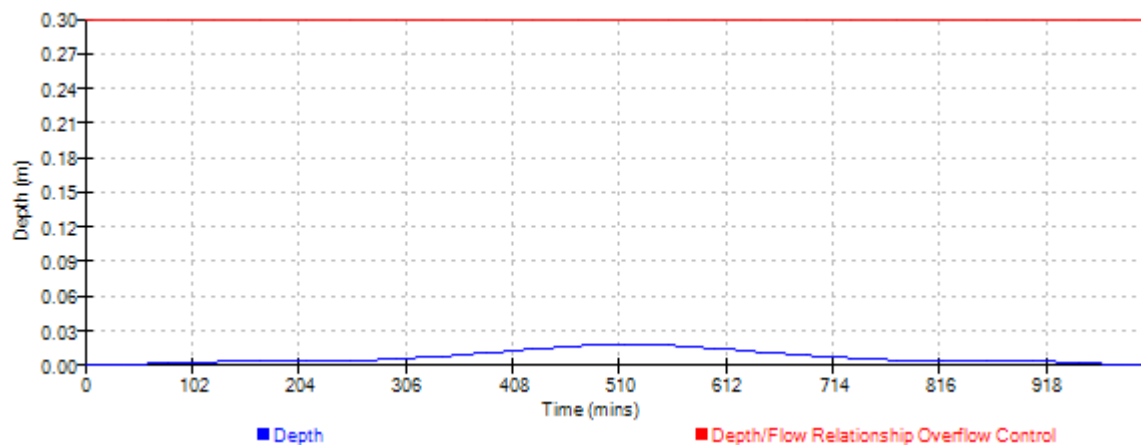
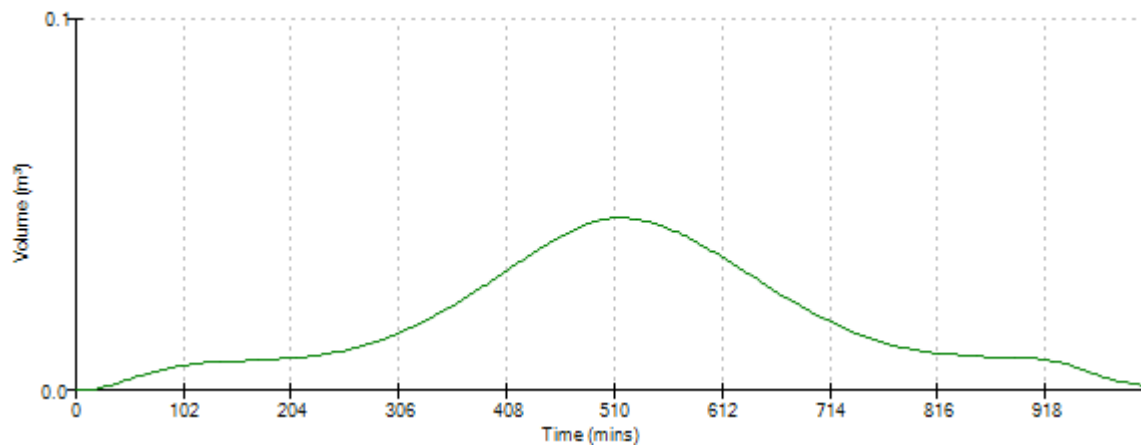
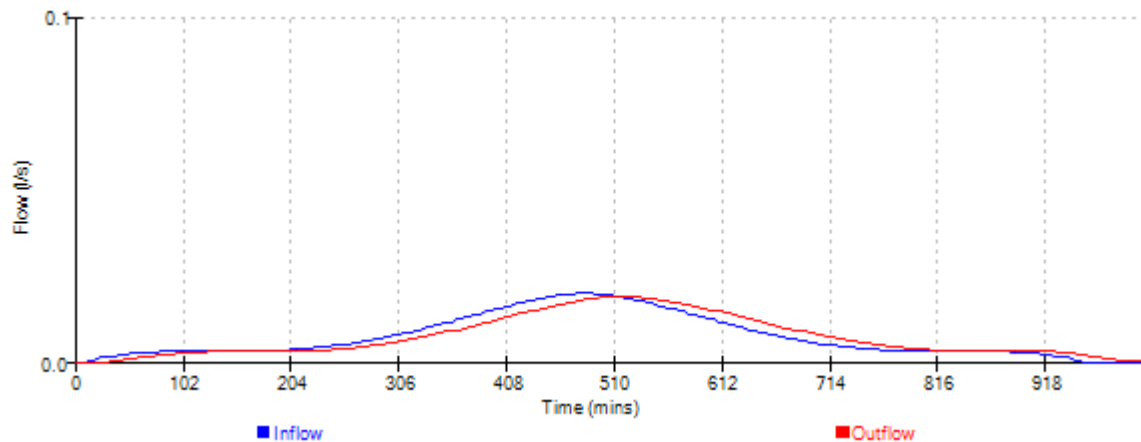
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Event: 720 min Winter



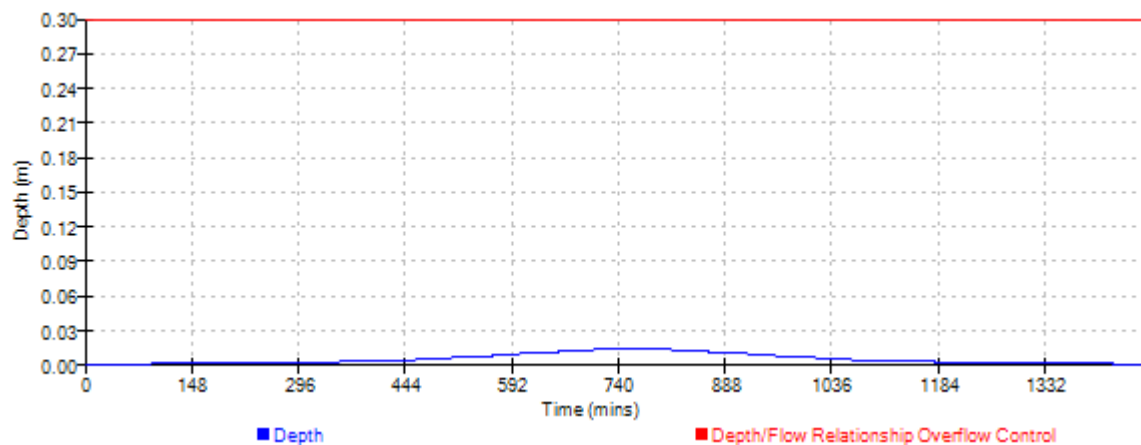
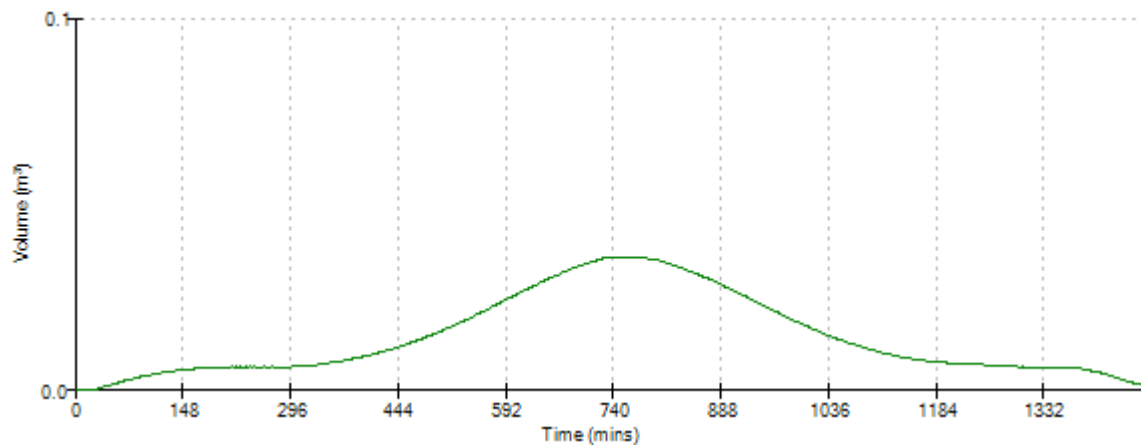
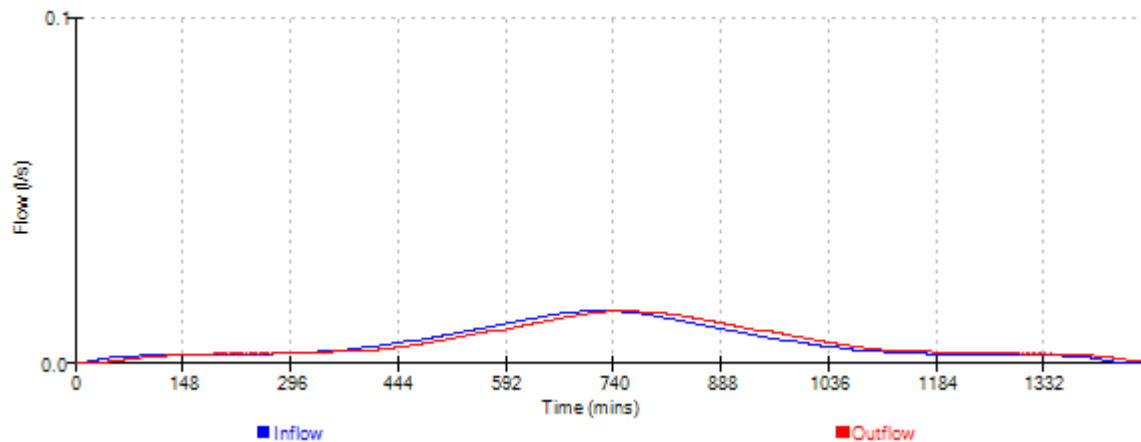
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Elstree Computing Ltd	Source Control w.12.6	

Event: 960 min Winter



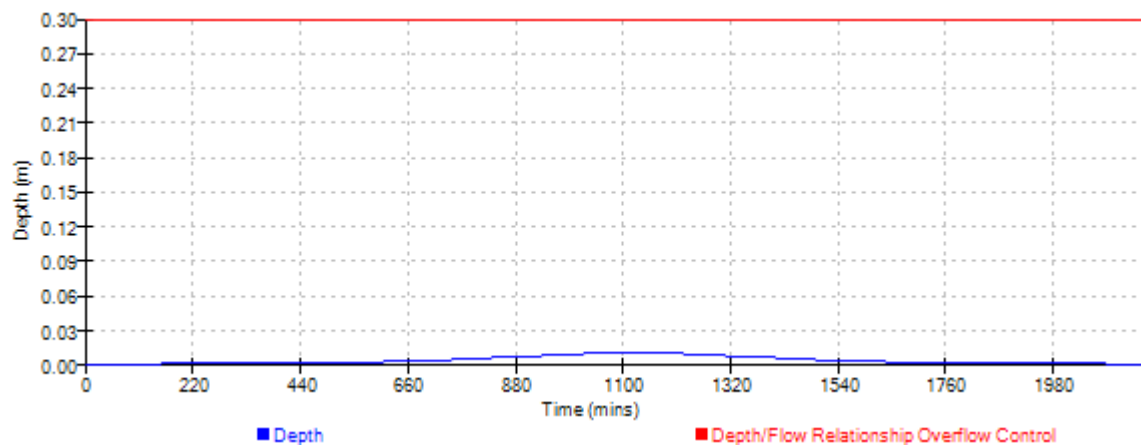
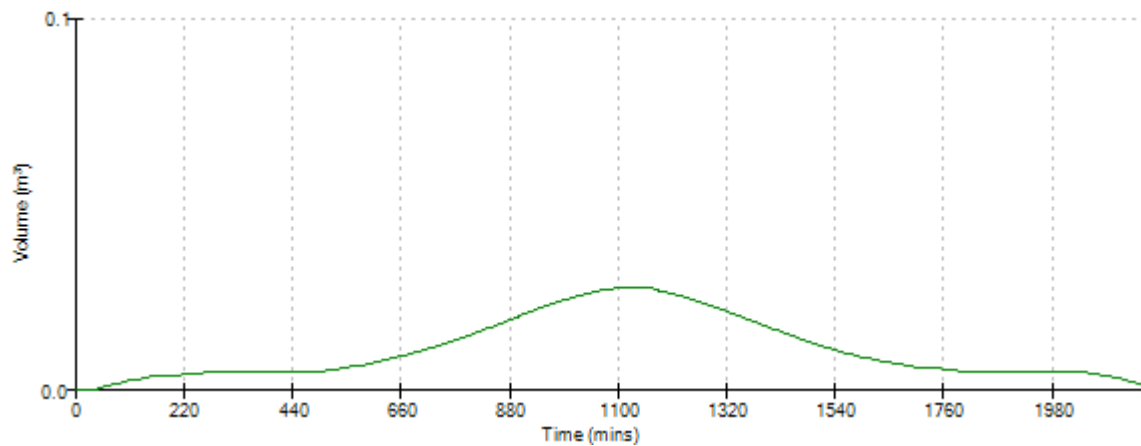
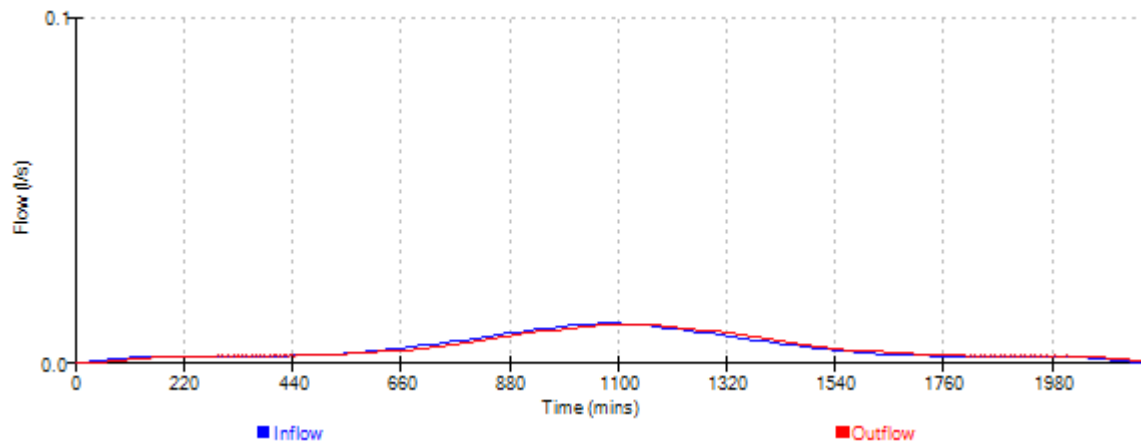
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Elstree Computing Ltd	Source Control w.12.6	

Event: 1440 min Winter



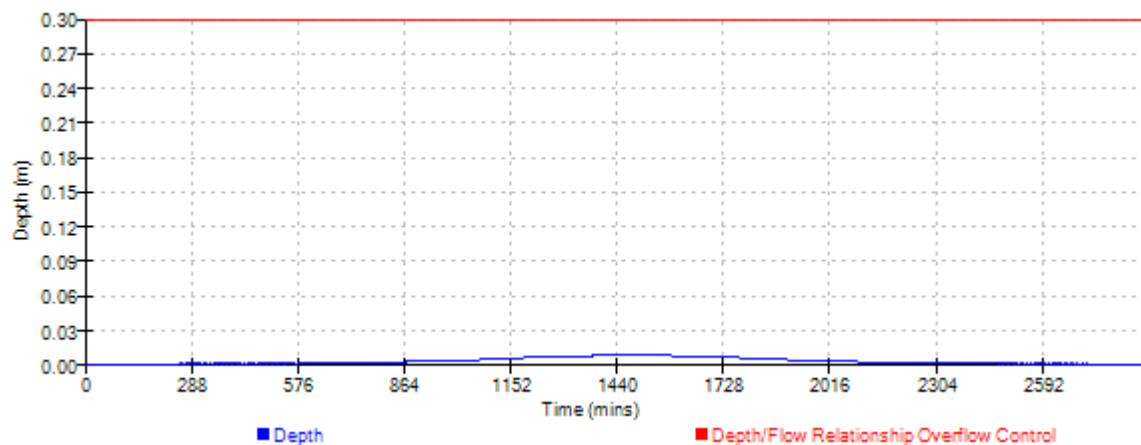
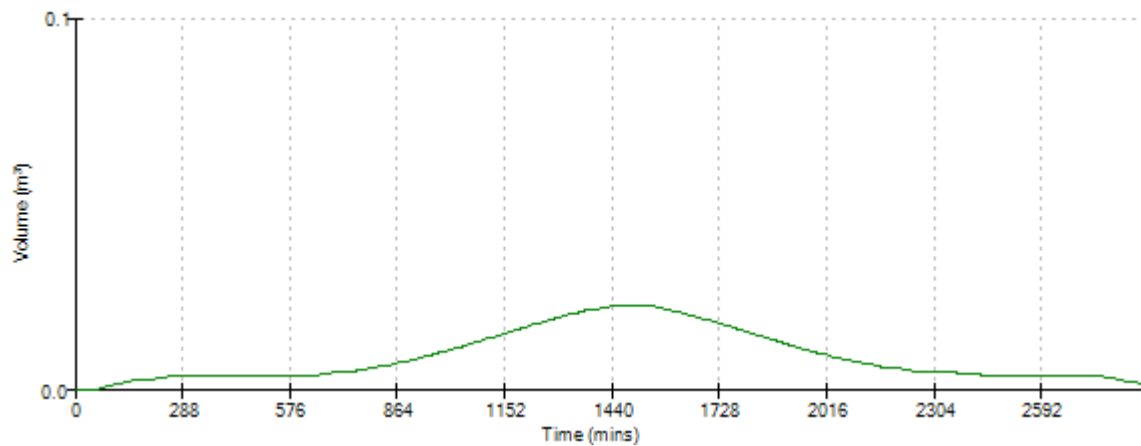
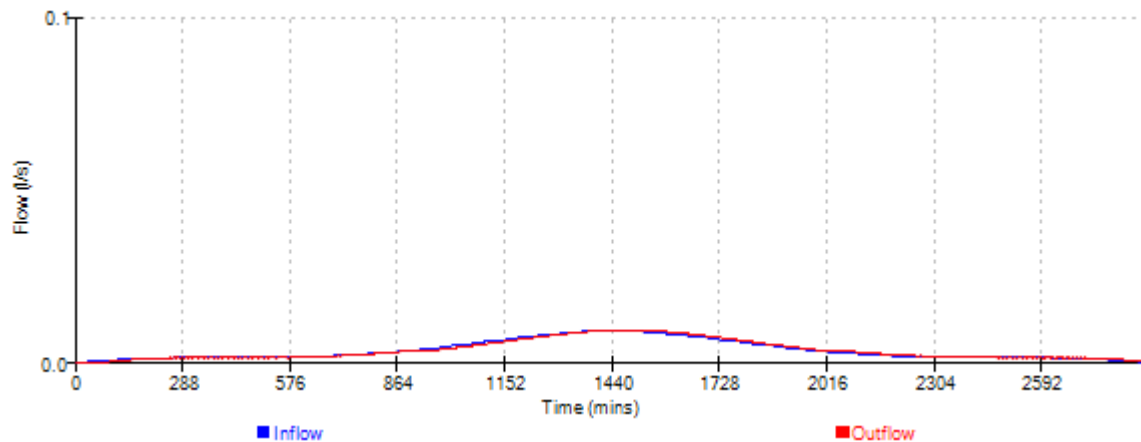
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Elstree Computing Ltd	Source Control w.12.6	

Event: 2160 min Winter



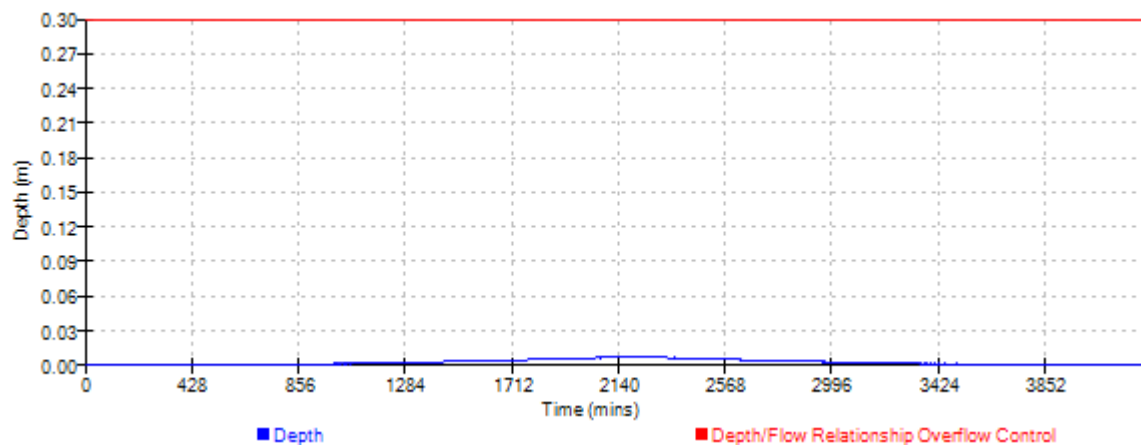
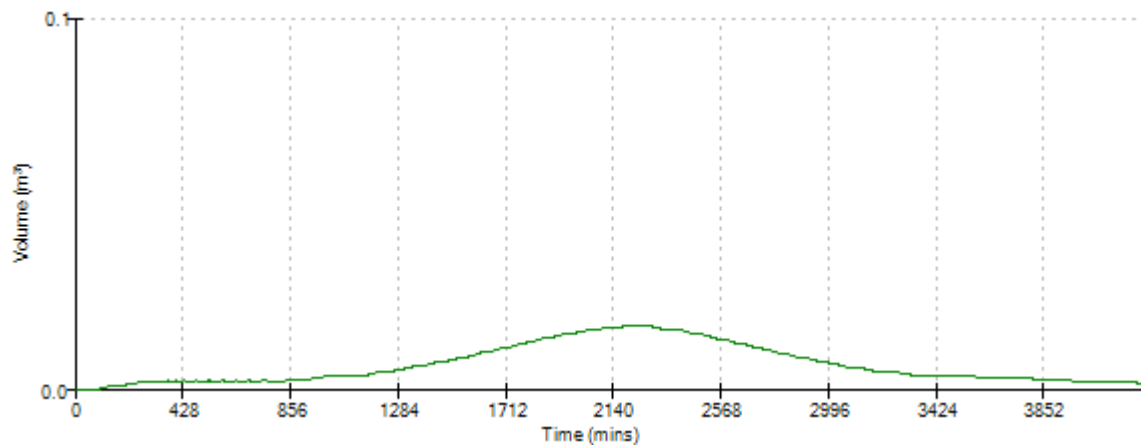
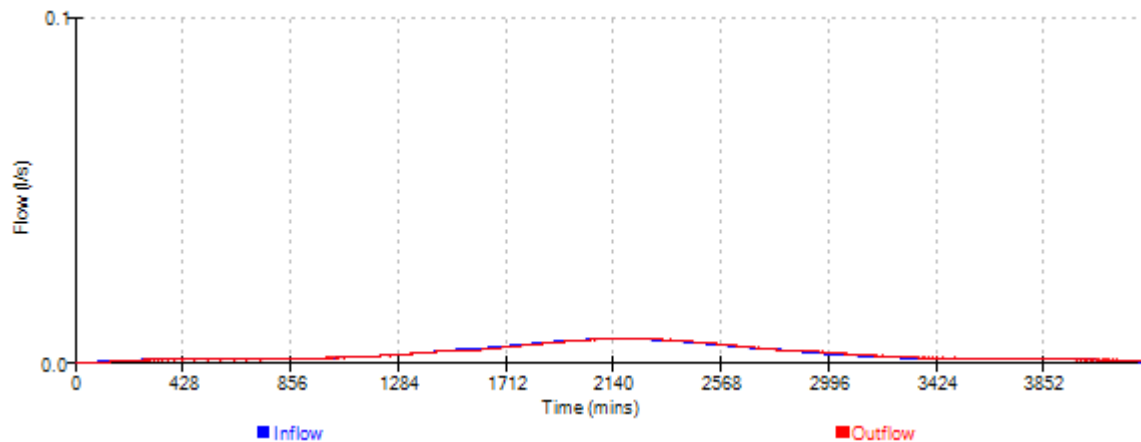
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File Rain Garden storage d...	Checked by	
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Event: 2880 min Winter



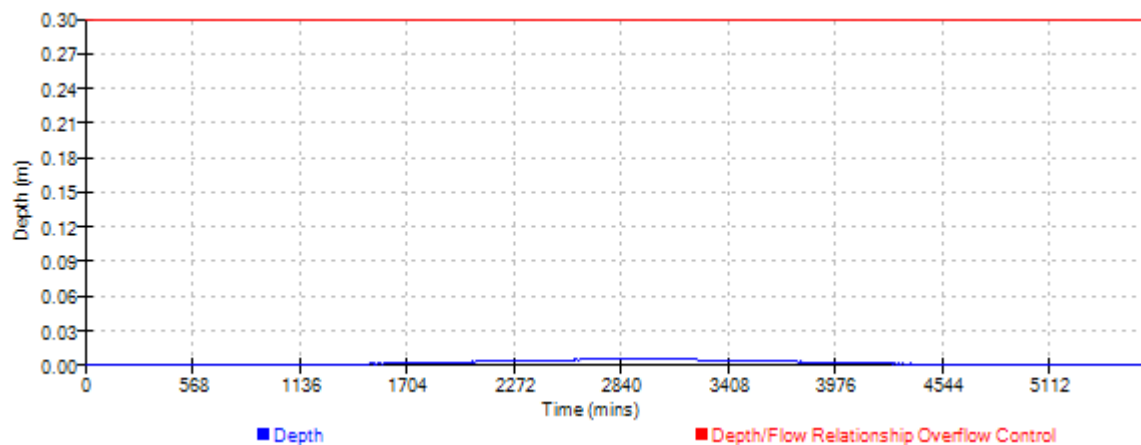
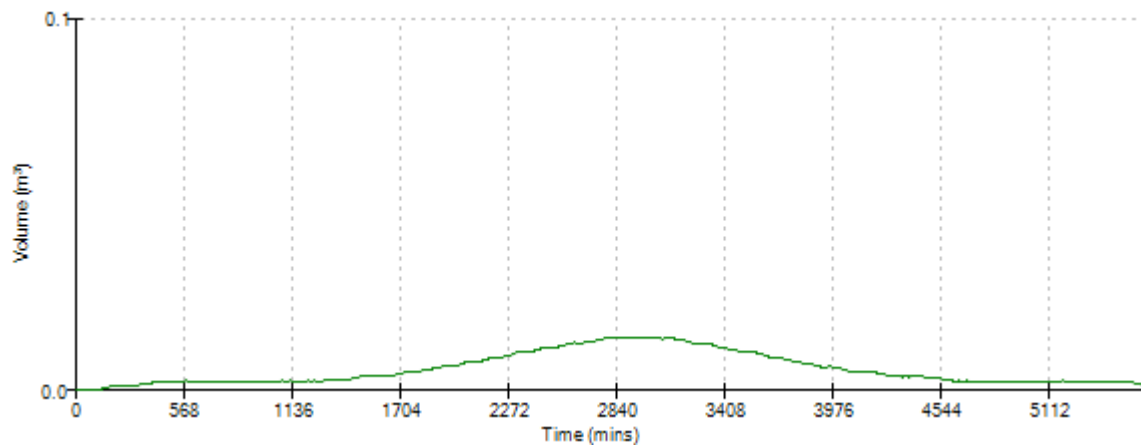
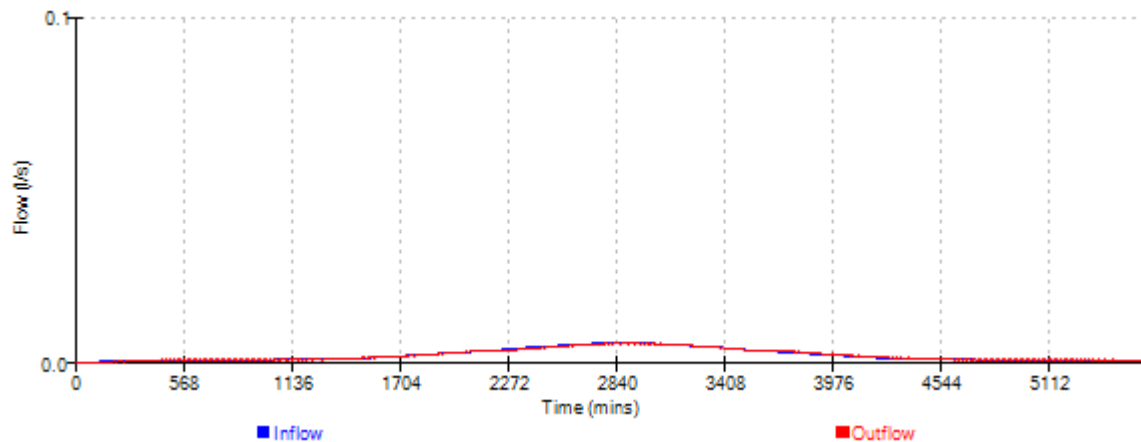
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Event: 4320 min Winter



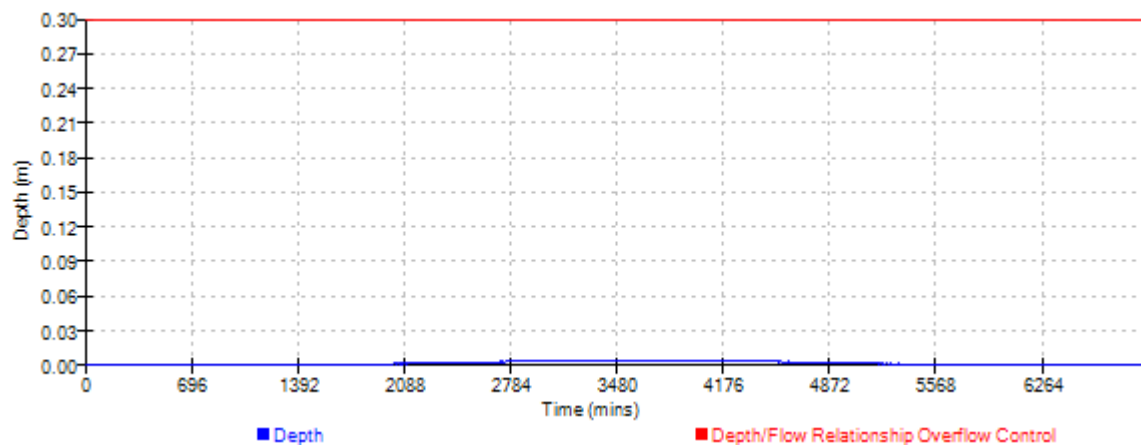
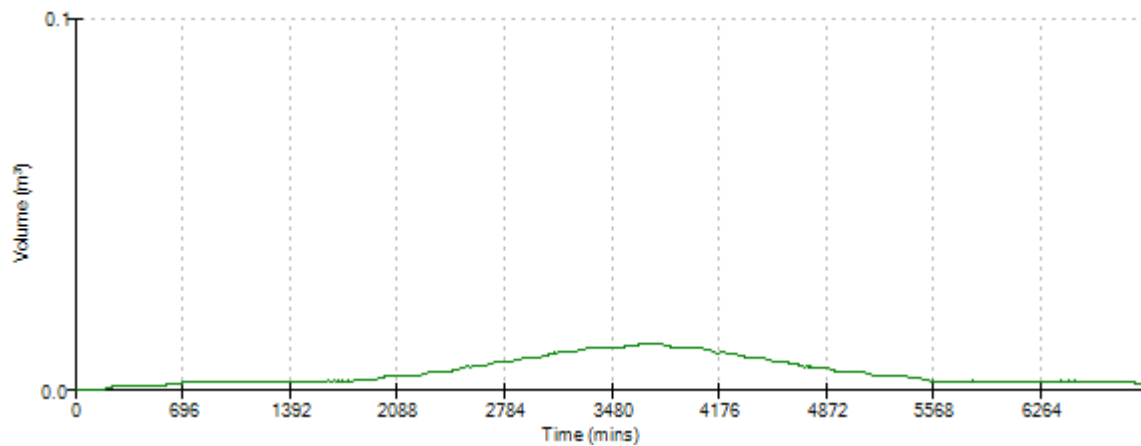
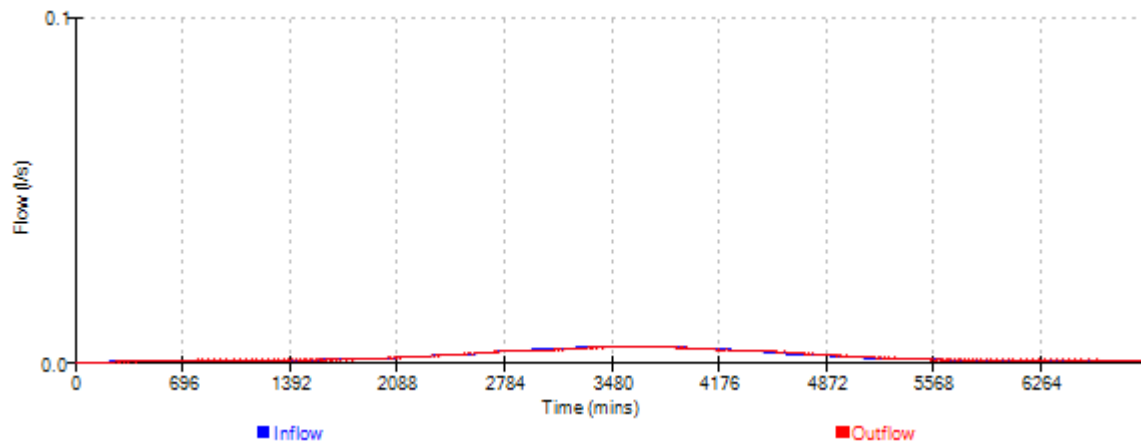
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Event: 5760 min Winter



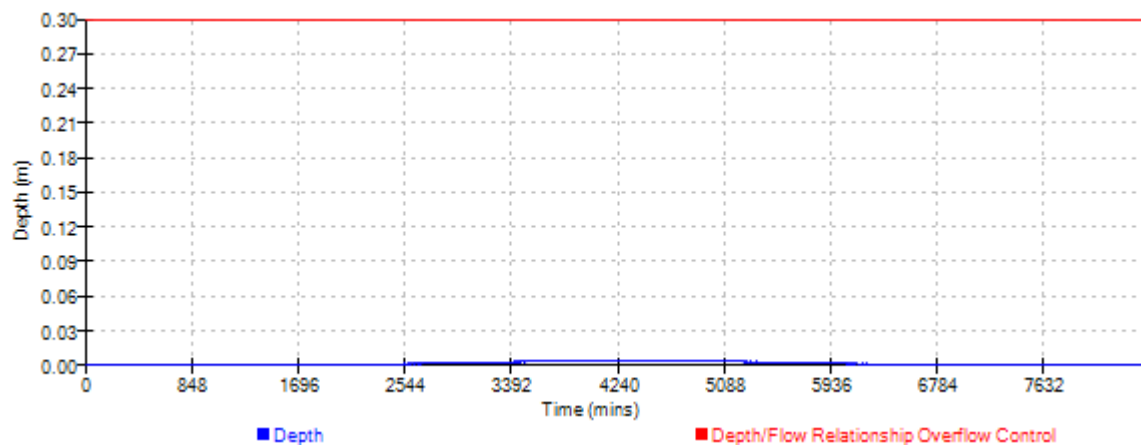
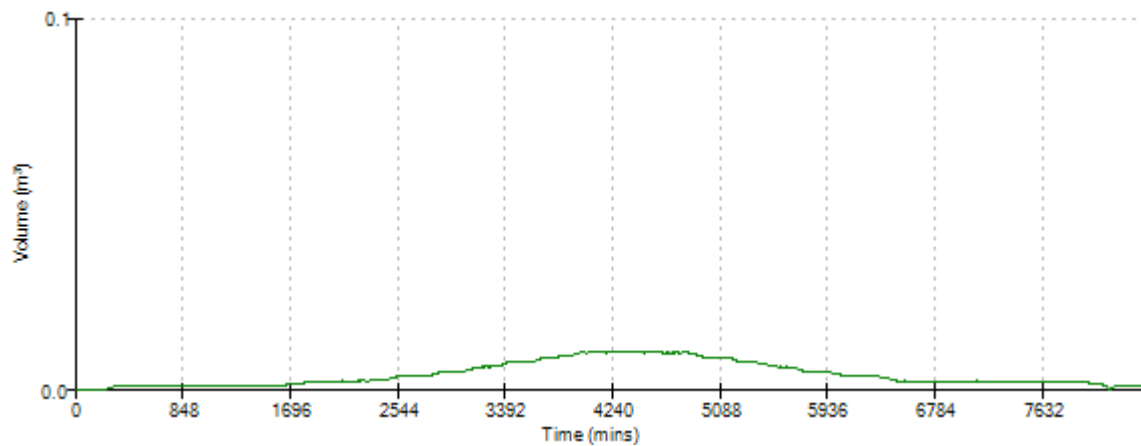
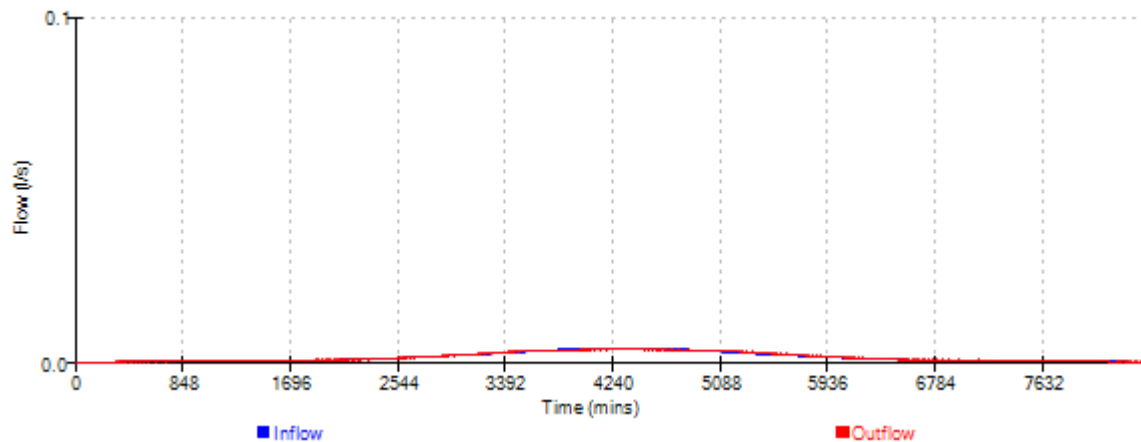
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Event: 7200 min Winter



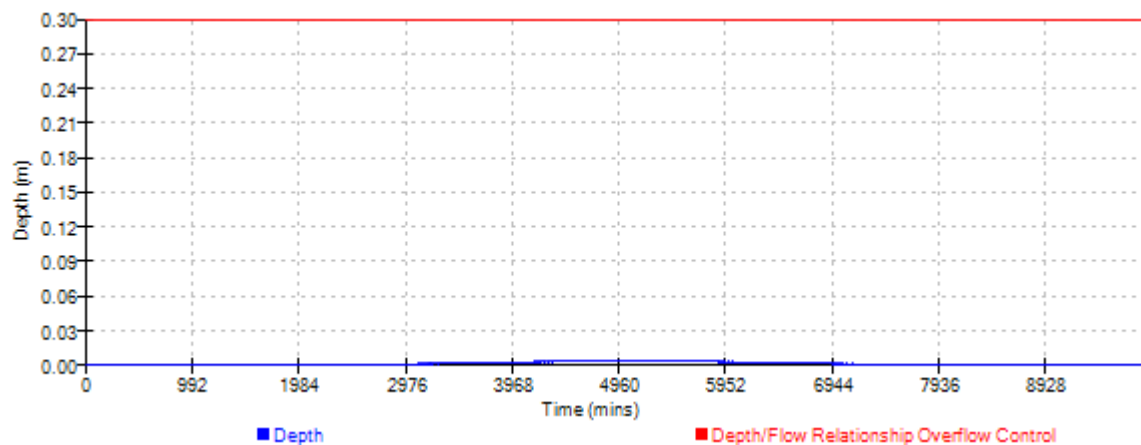
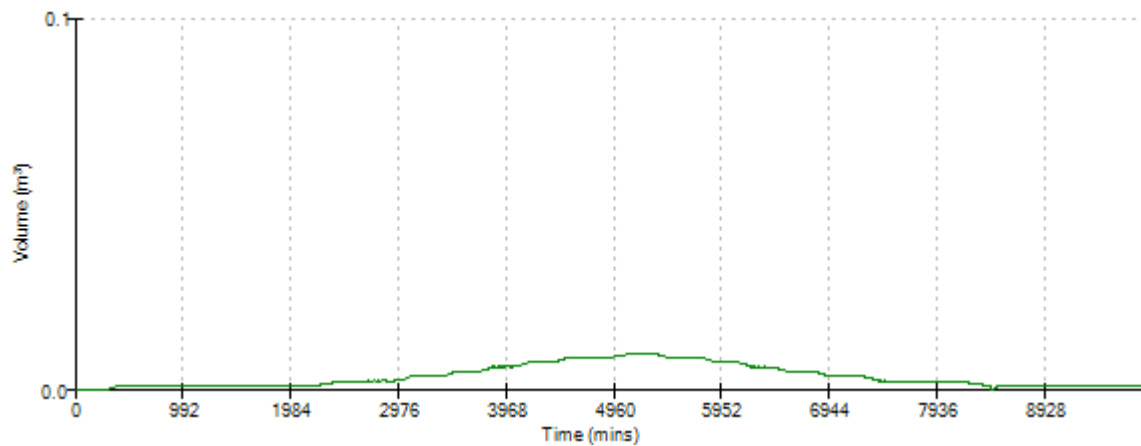
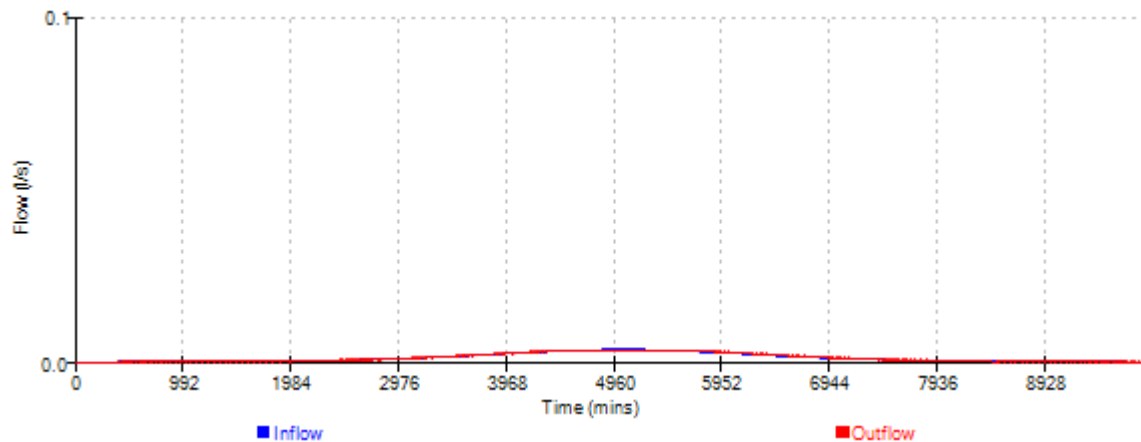
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Event: 8640 min Winter



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Event: 10080 min Winter



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Summary of Results for 30 year Return Period (+45%)

Half Drain Time : 57 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	63.190	0.090	0.1	0.0	0.1	0.2	0 K
30 min Summer	63.212	0.112	0.1	0.0	0.1	0.3	0 K
60 min Summer	63.226	0.126	0.1	0.0	0.1	0.3	0 K
120 min Summer	63.230	0.130	0.1	0.0	0.1	0.3	0 K
180 min Summer	63.225	0.125	0.1	0.0	0.1	0.3	0 K
240 min Summer	63.218	0.118	0.1	0.0	0.1	0.3	0 K
360 min Summer	63.203	0.103	0.1	0.0	0.1	0.3	0 K
480 min Summer	63.188	0.088	0.1	0.0	0.1	0.2	0 K
600 min Summer	63.176	0.076	0.1	0.0	0.1	0.2	0 K
720 min Summer	63.166	0.066	0.1	0.0	0.1	0.2	0 K
960 min Summer	63.151	0.051	0.1	0.0	0.1	0.1	0 K
1440 min Summer	63.140	0.040	0.0	0.0	0.0	0.1	0 K
2160 min Summer	63.131	0.031	0.0	0.0	0.0	0.1	0 K
2880 min Summer	63.126	0.026	0.0	0.0	0.0	0.1	0 K
4320 min Summer	63.119	0.019	0.0	0.0	0.0	0.0	0 K
5760 min Summer	63.116	0.016	0.0	0.0	0.0	0.0	0 K
7200 min Summer	63.113	0.013	0.0	0.0	0.0	0.0	0 K
8640 min Summer	63.112	0.012	0.0	0.0	0.0	0.0	0 K
10080 min Summer	63.110	0.010	0.0	0.0	0.0	0.0	0 K
15 min Winter	63.190	0.090	0.1	0.0	0.1	0.2	0 K
30 min Winter	63.212	0.112	0.1	0.0	0.1	0.3	0 K
60 min Winter	63.225	0.125	0.1	0.0	0.1	0.3	0 K
120 min Winter	63.226	0.126	0.1	0.0	0.1	0.3	0 K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	105.185	0.0	17
30 min Summer	70.056	0.0	31
60 min Summer	44.676	0.0	52
120 min Summer	27.629	0.0	86
180 min Summer	20.607	0.0	120
240 min Summer	16.658	0.0	154
360 min Summer	12.345	0.0	220
480 min Summer	9.967	0.0	282
600 min Summer	8.436	0.0	342
720 min Summer	7.359	0.0	398
960 min Summer	5.929	0.0	510
1440 min Summer	4.365	0.0	750
2160 min Summer	3.210	0.0	1104
2880 min Summer	2.578	0.0	1472
4320 min Summer	1.891	0.0	2204
5760 min Summer	1.516	0.0	2904
7200 min Summer	1.279	0.0	3672
8640 min Summer	1.112	0.0	4400
10080 min Summer	0.989	0.0	5136
15 min Winter	105.185	0.0	17
30 min Winter	70.056	0.0	31
60 min Winter	44.676	0.0	56
120 min Winter	27.629	0.0	90

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Summary of Results for 30 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.217	0.117	0.1	0.0	0.1	0.3	0 K
240 min Winter	63.205	0.105	0.1	0.0	0.1	0.3	0 K
360 min Winter	63.182	0.082	0.1	0.0	0.1	0.2	0 K
480 min Winter	63.163	0.063	0.1	0.0	0.1	0.2	0 K
600 min Winter	63.151	0.051	0.1	0.0	0.1	0.1	0 K
720 min Winter	63.145	0.045	0.0	0.0	0.0	0.1	0 K
960 min Winter	63.138	0.038	0.0	0.0	0.0	0.1	0 K
1440 min Winter	63.128	0.028	0.0	0.0	0.0	0.1	0 K
2160 min Winter	63.121	0.021	0.0	0.0	0.0	0.1	0 K
2880 min Winter	63.117	0.017	0.0	0.0	0.0	0.0	0 K
4320 min Winter	63.113	0.013	0.0	0.0	0.0	0.0	0 K
5760 min Winter	63.110	0.010	0.0	0.0	0.0	0.0	0 K
7200 min Winter	63.109	0.009	0.0	0.0	0.0	0.0	0 K
8640 min Winter	63.108	0.008	0.0	0.0	0.0	0.0	0 K
10080 min Winter	63.107	0.007	0.0	0.0	0.0	0.0	0 K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
180 min Winter	20.607	0.0	128
240 min Winter	16.658	0.0	164
360 min Winter	12.345	0.0	228
480 min Winter	9.967	0.0	286
600 min Winter	8.436	0.0	336
720 min Winter	7.359	0.0	394
960 min Winter	5.929	0.0	514
1440 min Winter	4.365	0.0	762
2160 min Winter	3.210	0.0	1104
2880 min Winter	2.578	0.0	1488
4320 min Winter	1.891	0.0	2164
5760 min Winter	1.516	0.0	2880
7200 min Winter	1.279	0.0	3600
8640 min Winter	1.112	0.0	4416
10080 min Winter	0.989	0.0	4960

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.348	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.001

Time (mins)	Area (ha)
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0-4	0.001
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Model Details

Storage is Online Cover Level (m) 63.700

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.04461	Diameter/Width (m)	1.1
Safety Factor	2.0	Length (m)	7.7
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	63.100		

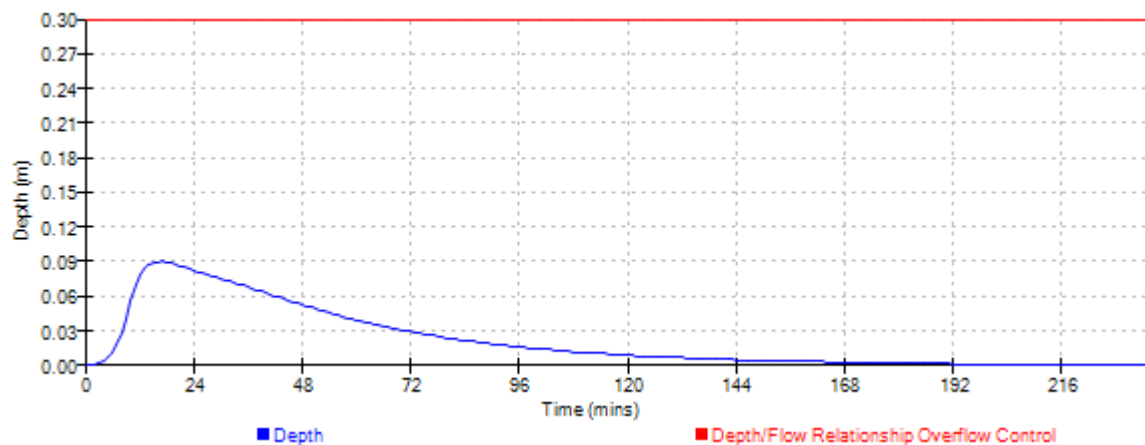
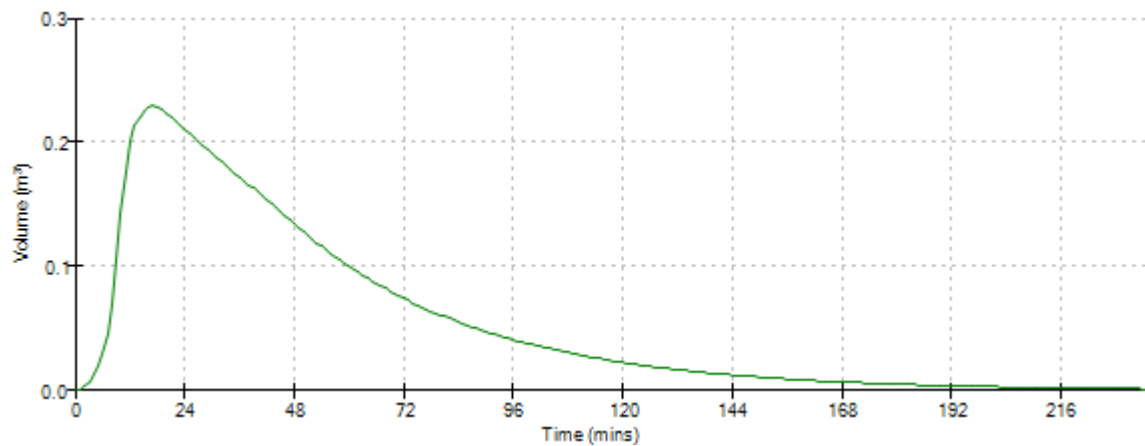
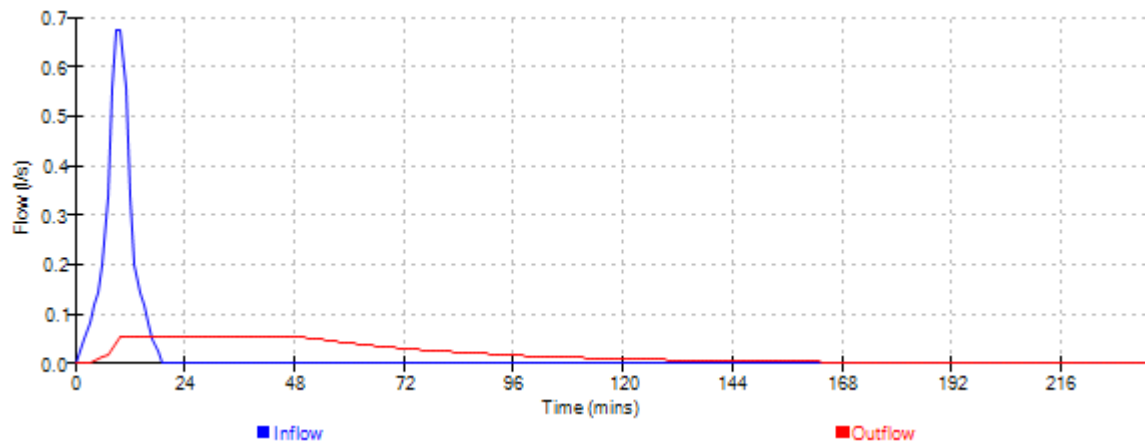
Depth/Flow Relationship Overflow Control

Invert Level (m) 63.400

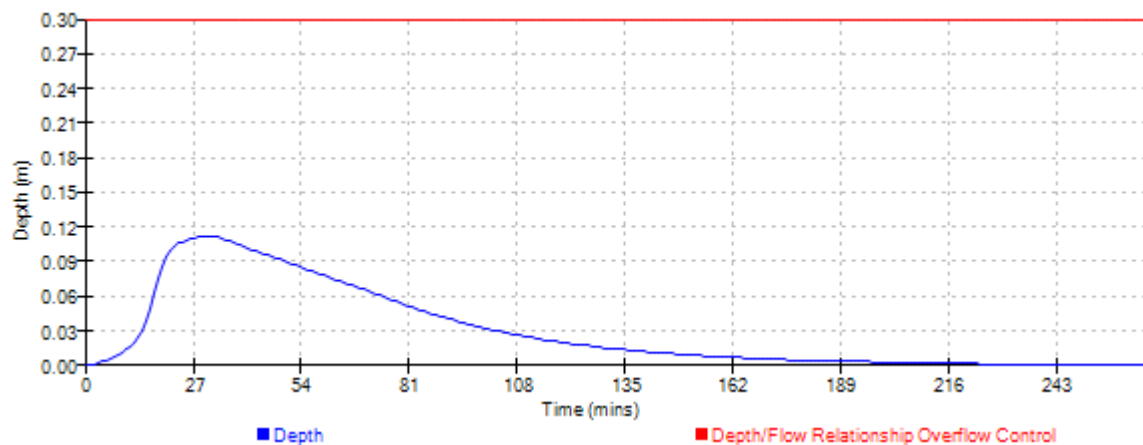
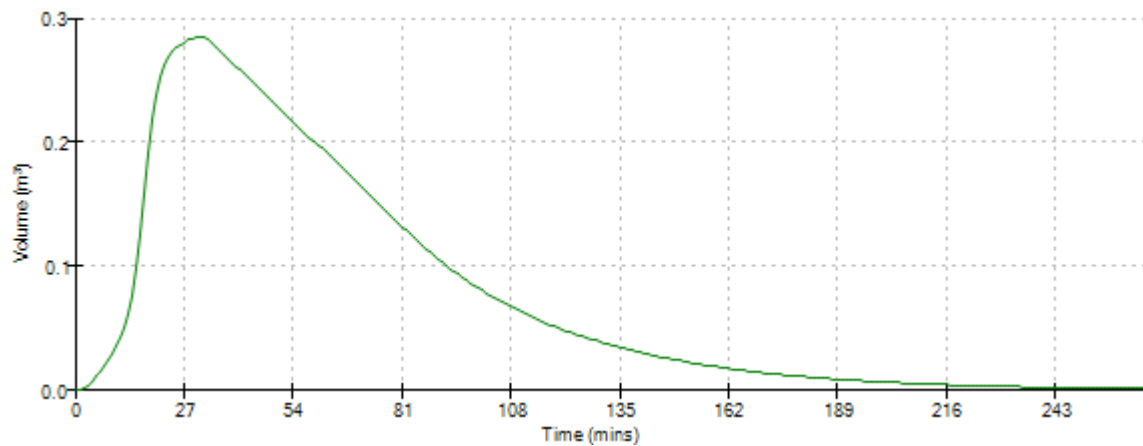
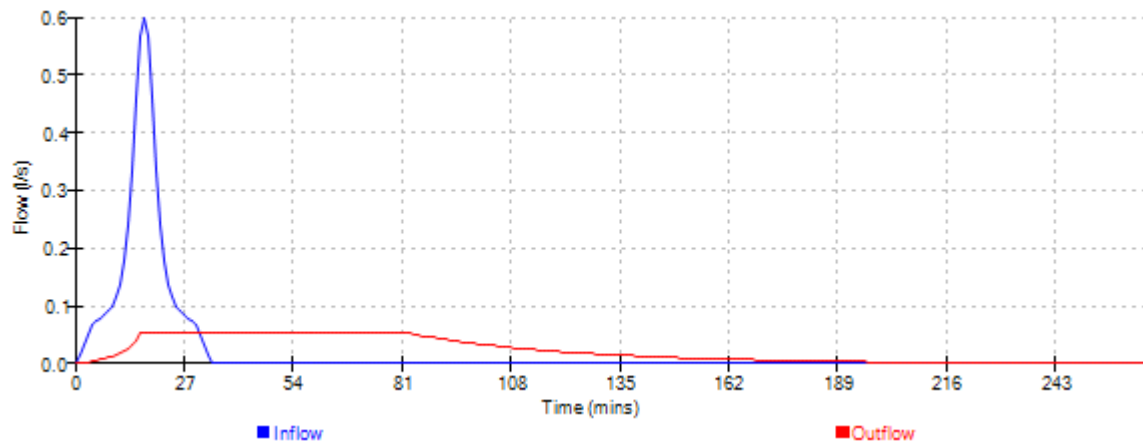
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
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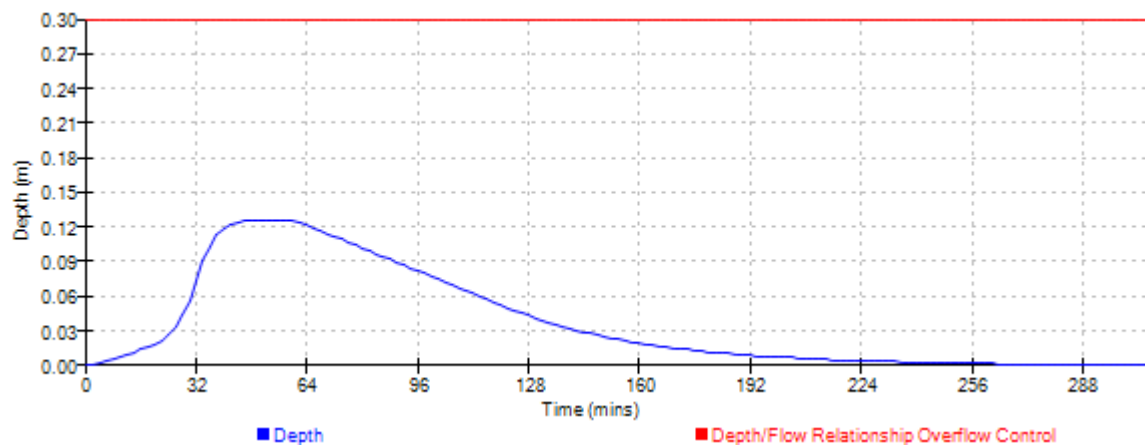
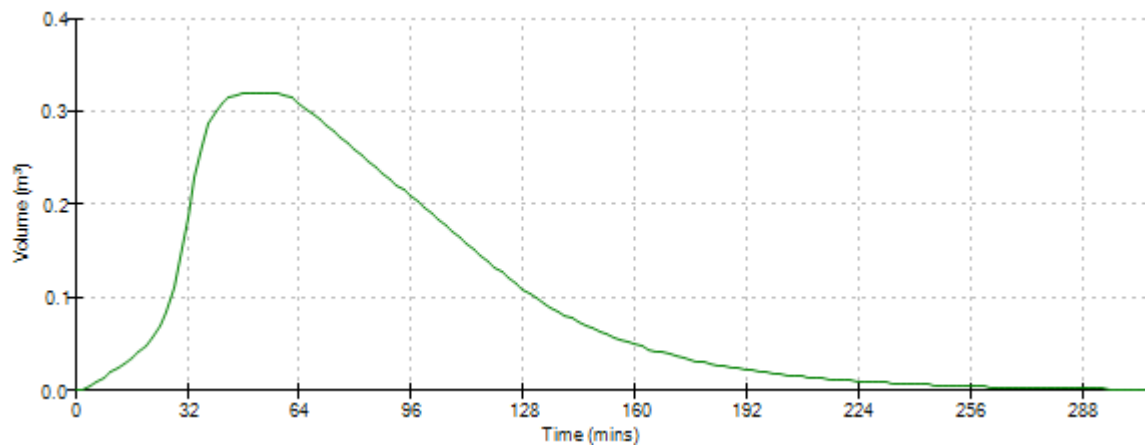
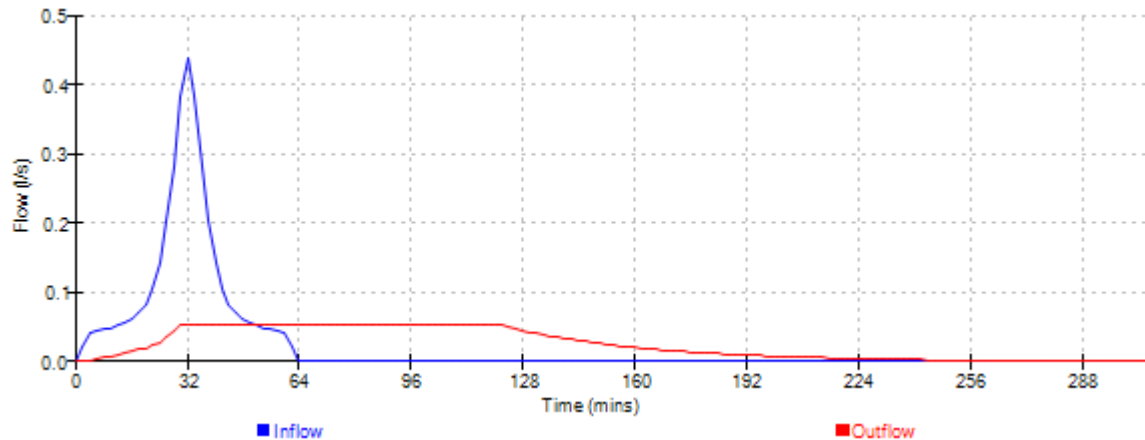
Event: 15 min Summer



Event: 30 min Summer

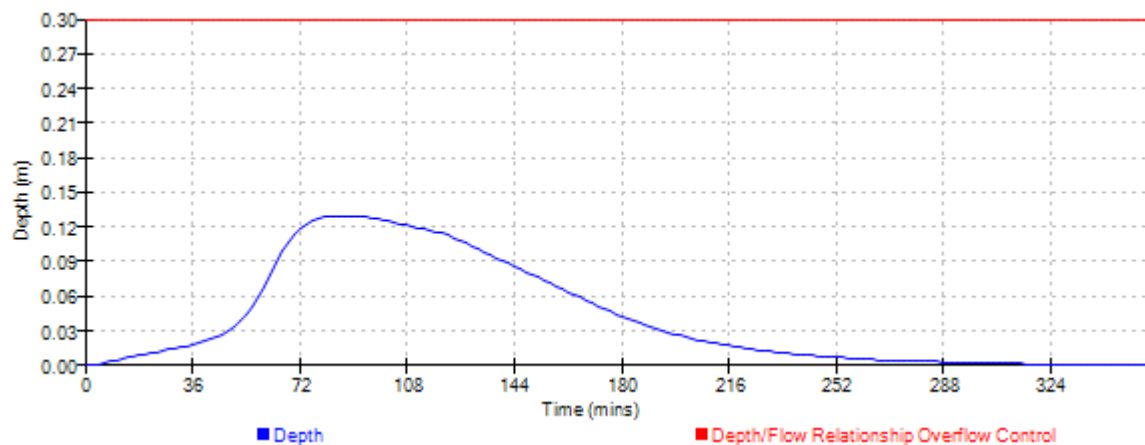
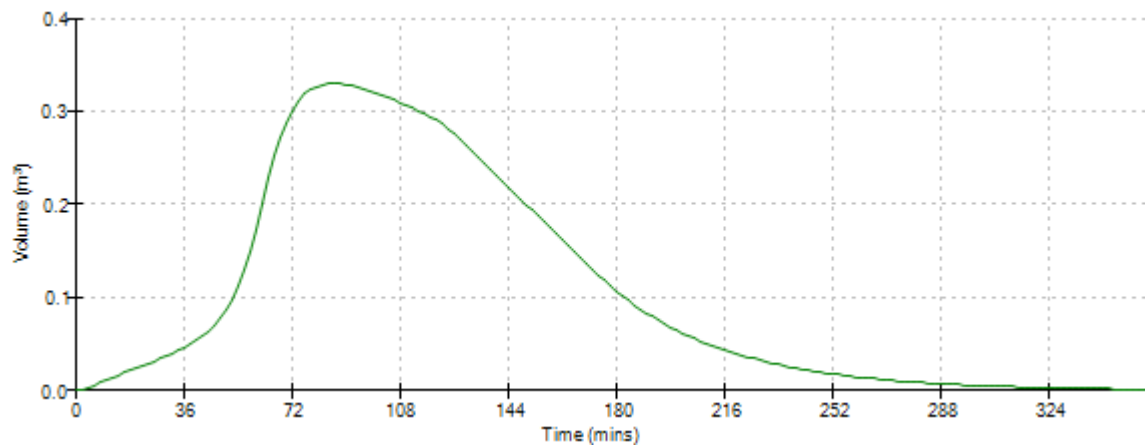
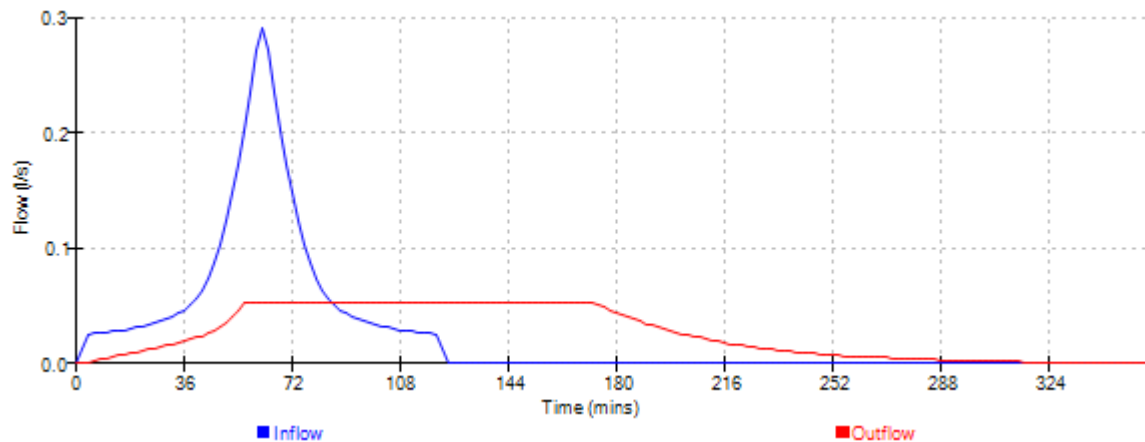


Event: 60 min Summer



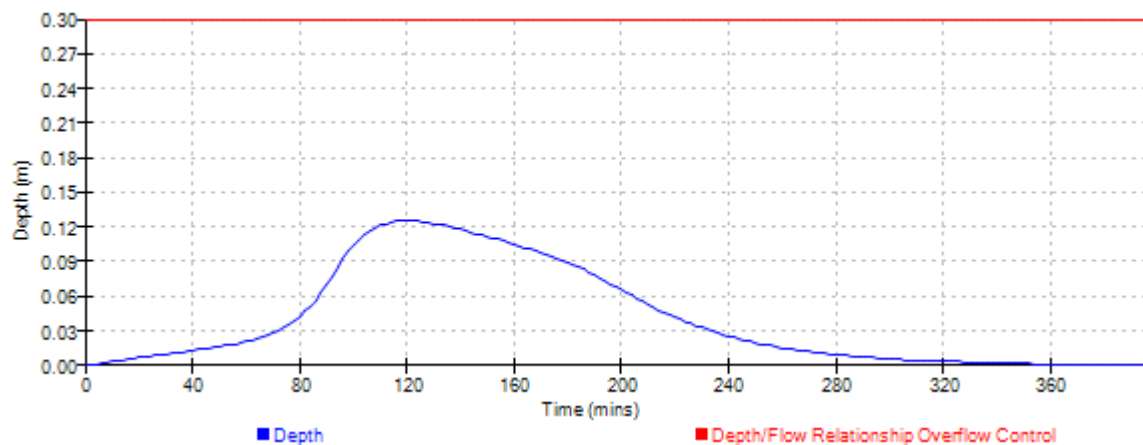
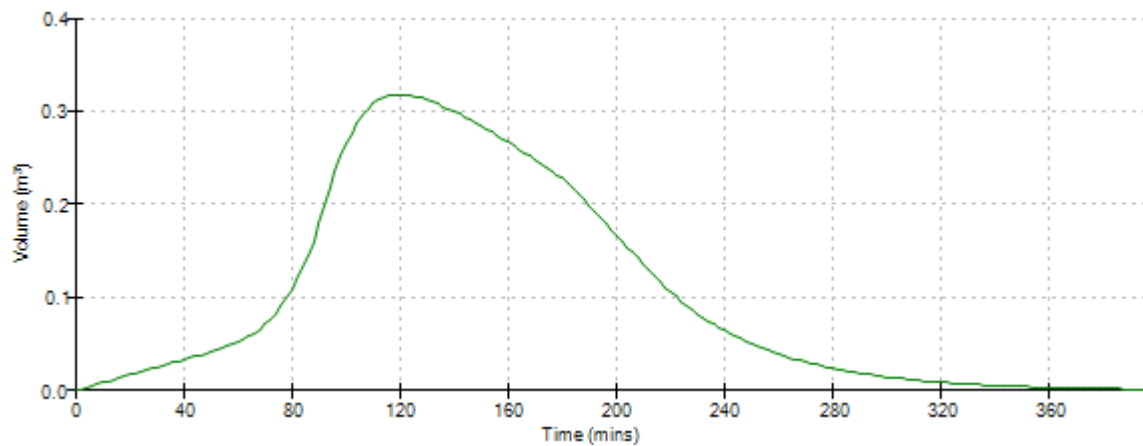
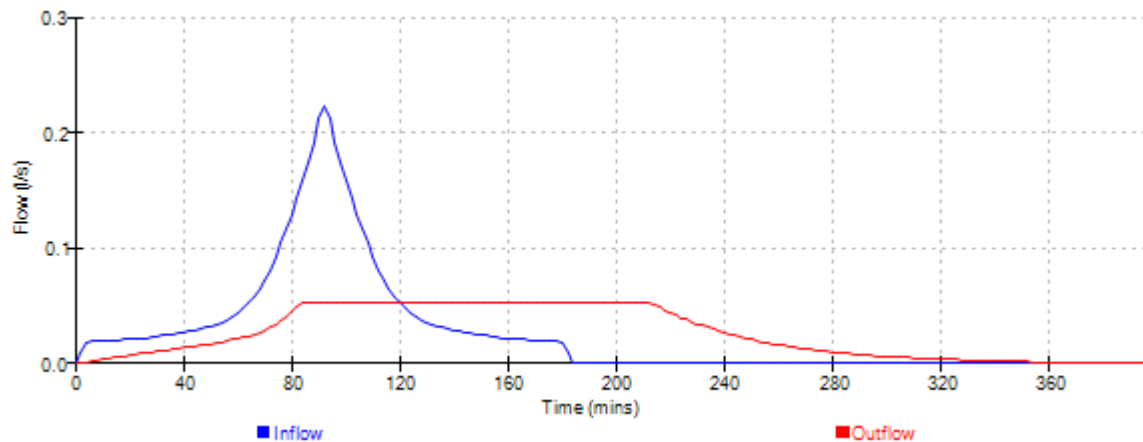
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Event: 120 min Summer

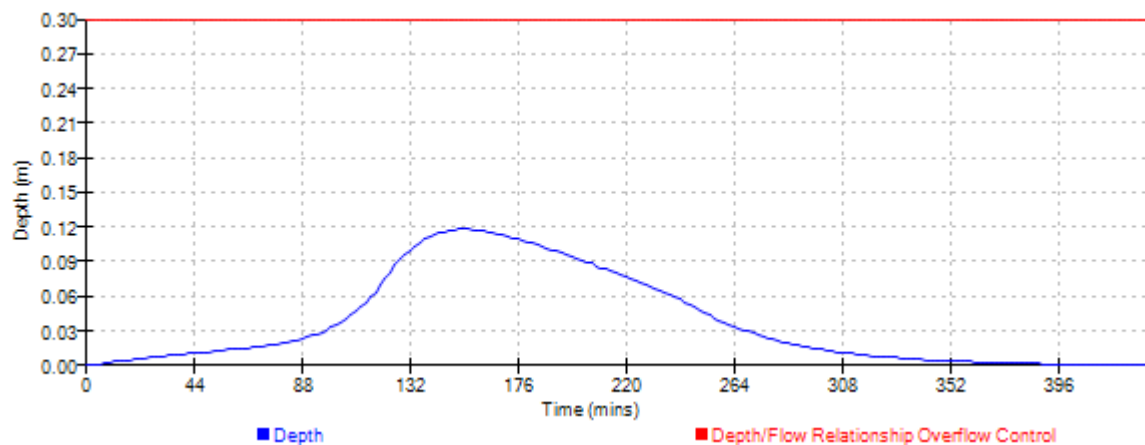
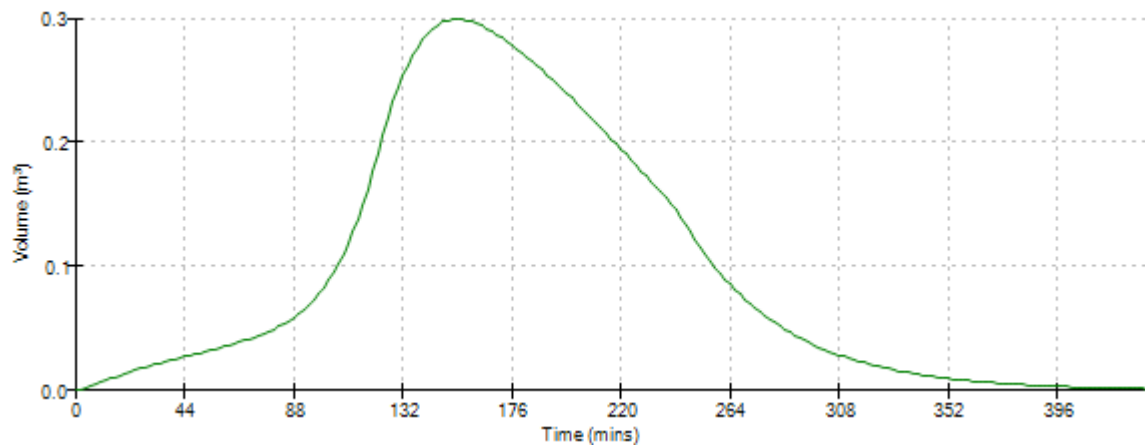
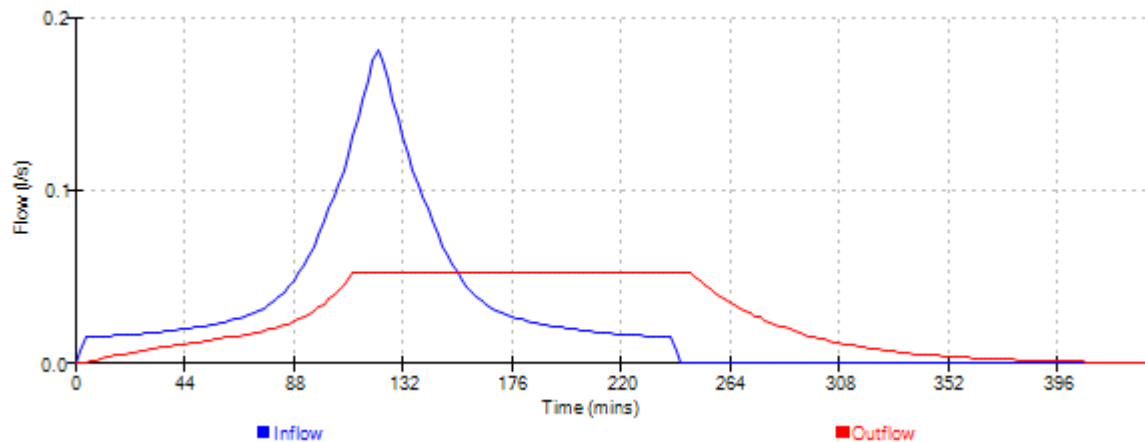


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Event: 180 min Summer

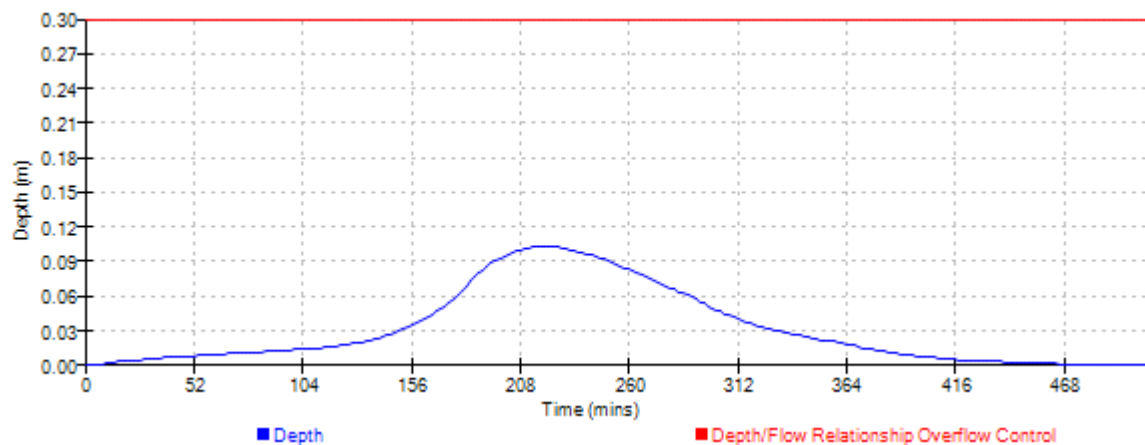
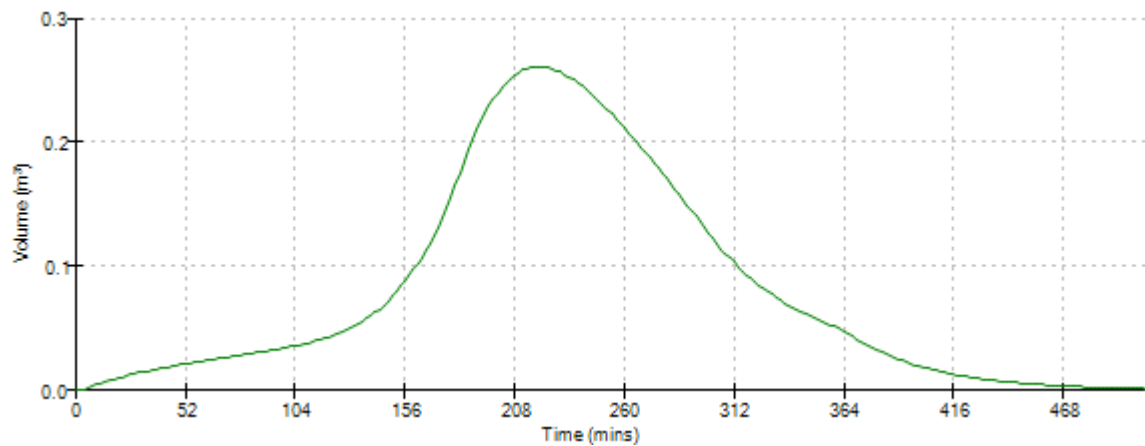
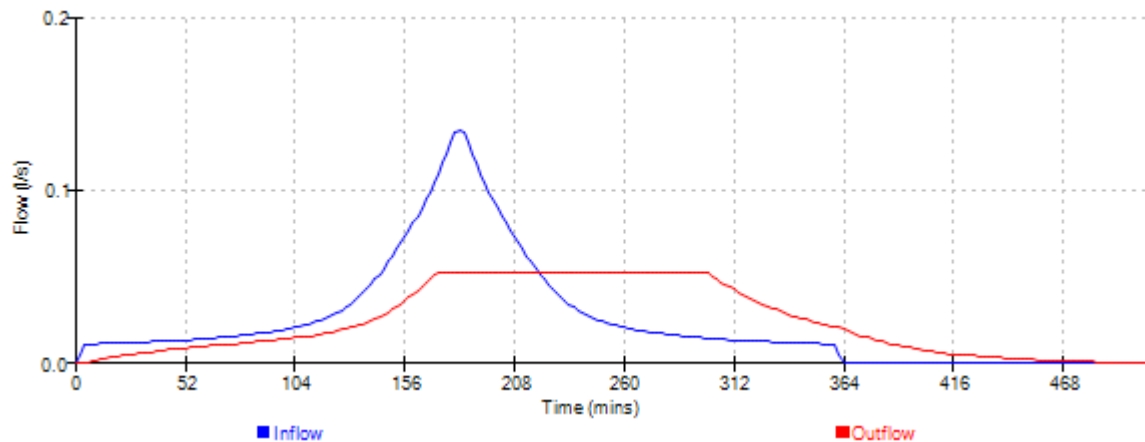


Event: 240 min Summer



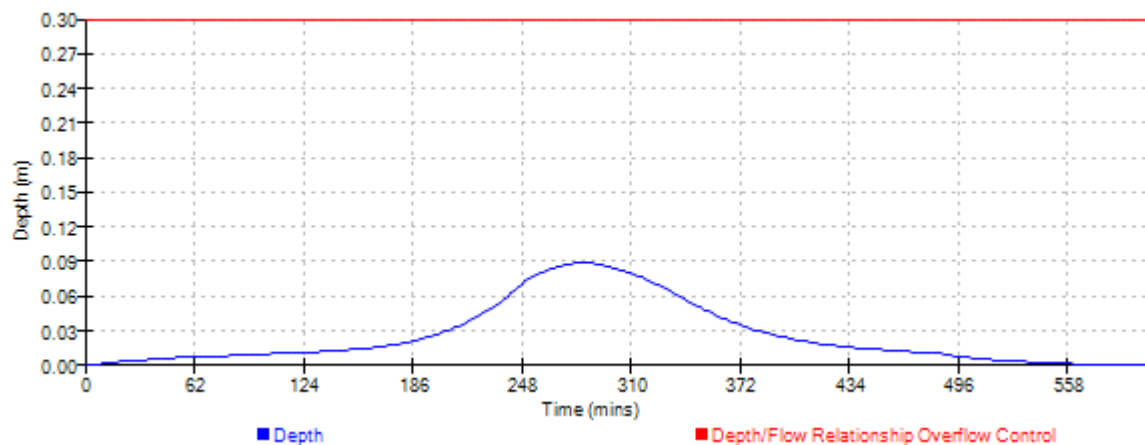
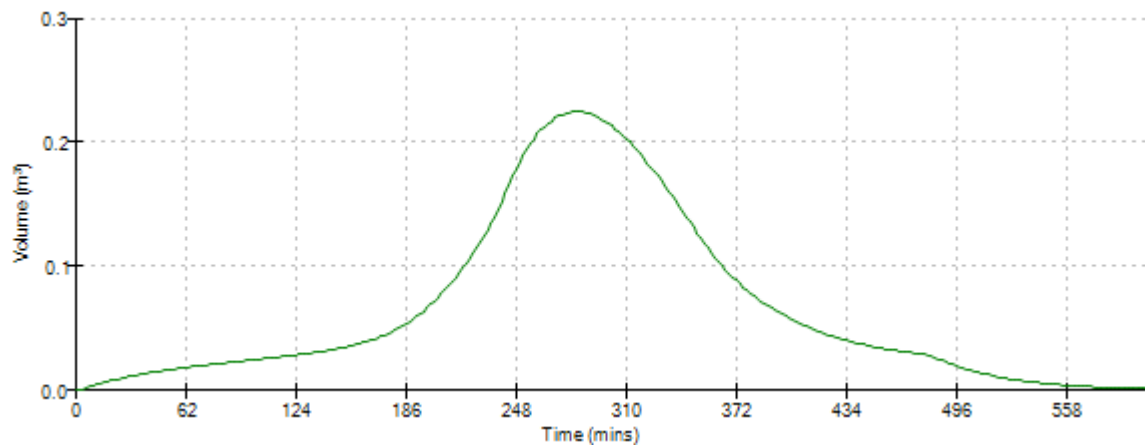
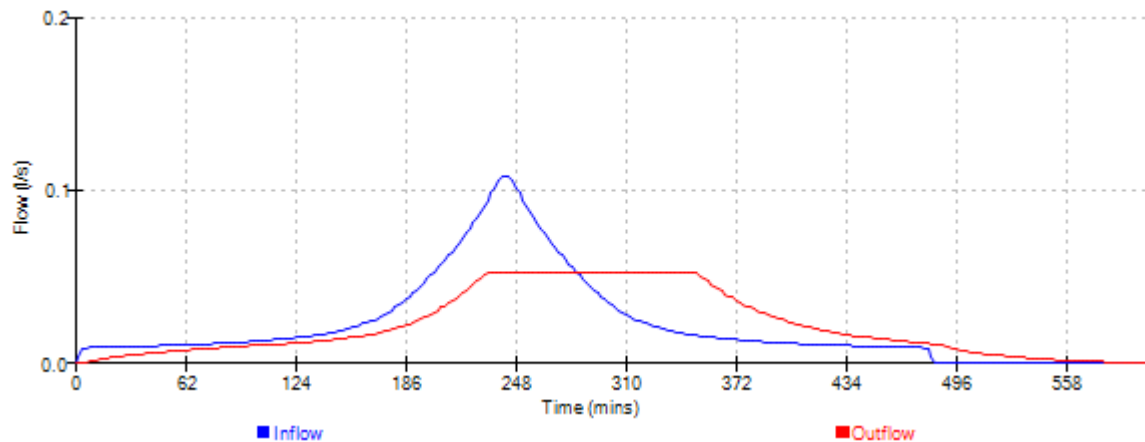
Dixon Hurst Kemp Victoria Court 22 St Pancras West Sussex PO19 7GD Date Oct 25 File Rain Garden storage d... Elstree Computing Ltd	Hurst Road, Hassocks Surface Water Drainage Rain Garden Design Rev03 Designed by JS Checked by Source Control w.12.6	Page 11 
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Event: 360 min Summer



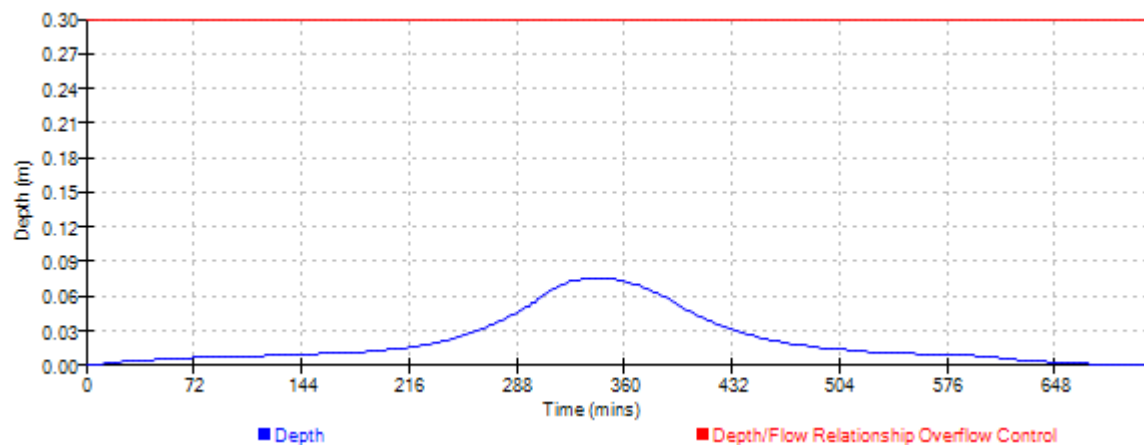
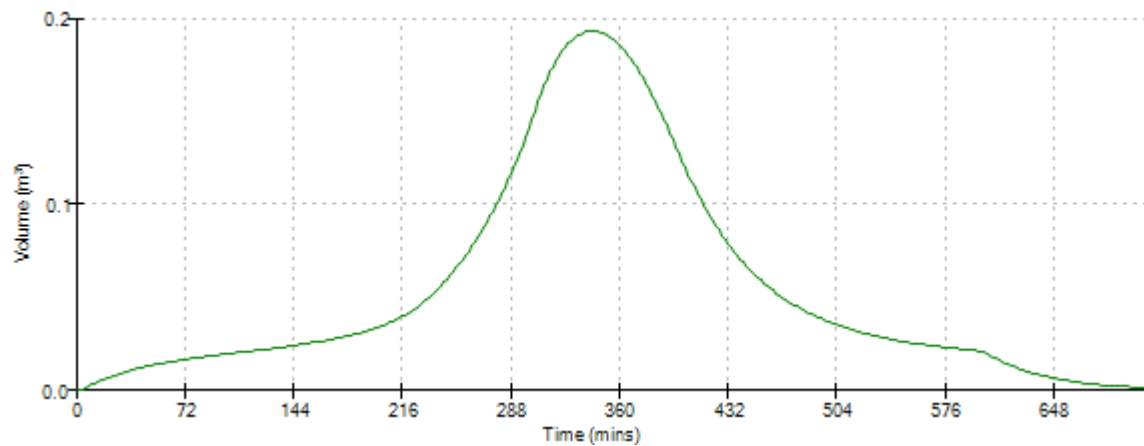
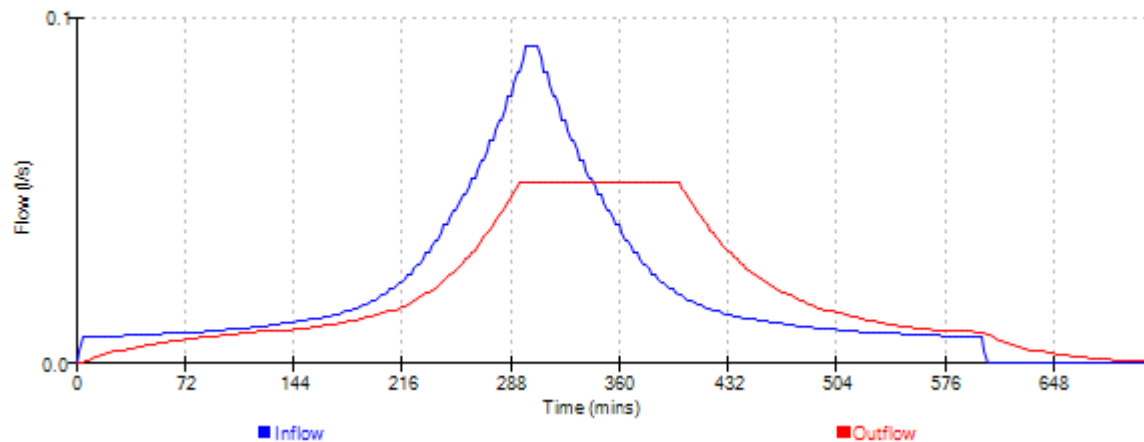
Dixon Hurst Kemp Victoria Court 22 St Pancras West Sussex PO19 7GD Date Oct 25 File Rain Garden storage d... Elstree Computing Ltd	Hurst Road, Hassocks Surface Water Drainage Rain Garden Design Rev03 Designed by JS Checked by Source Control w.12.6	Page 12 
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Event: 480 min Summer

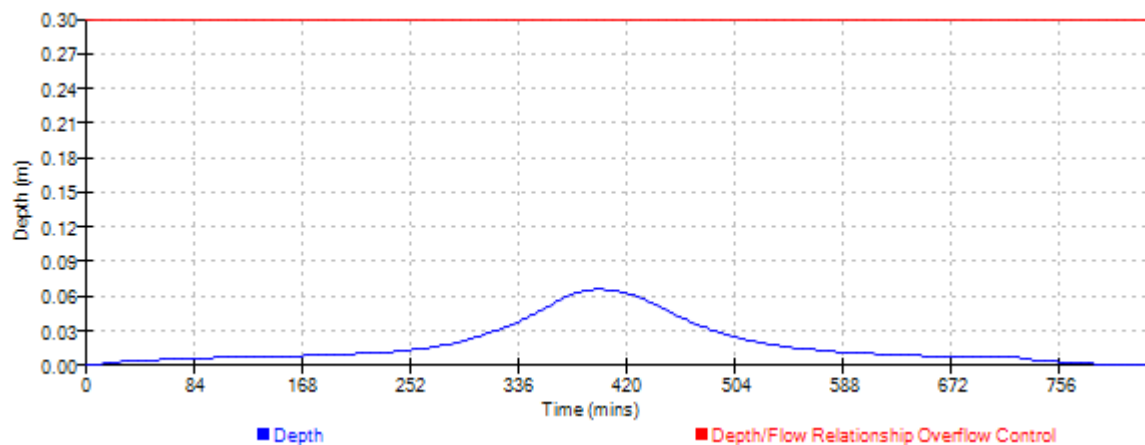
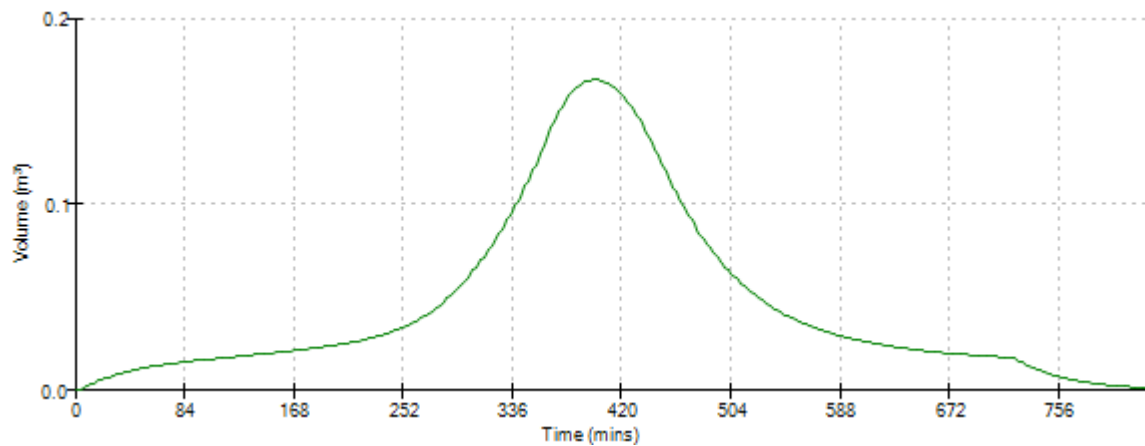
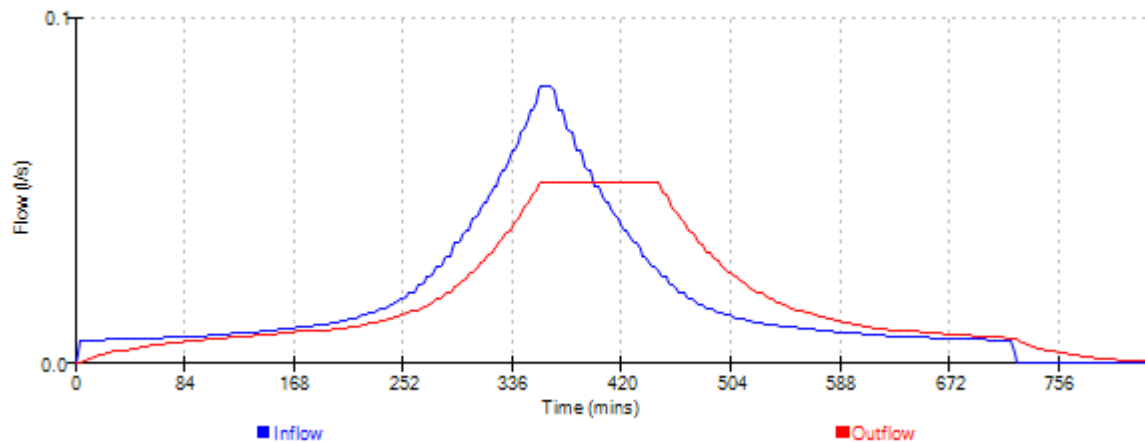


Dixon Hurst Kemp Victoria Court 22 St Pancras West Sussex PO19 7GD Date Oct 25 File Rain Garden storage d... Elstree Computing Ltd	Hurst Road, Hassocks Surface Water Drainage Rain Garden Design Rev03 Designed by JS Checked by Source Control w.12.6	Page 13 
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Event: 600 min Summer

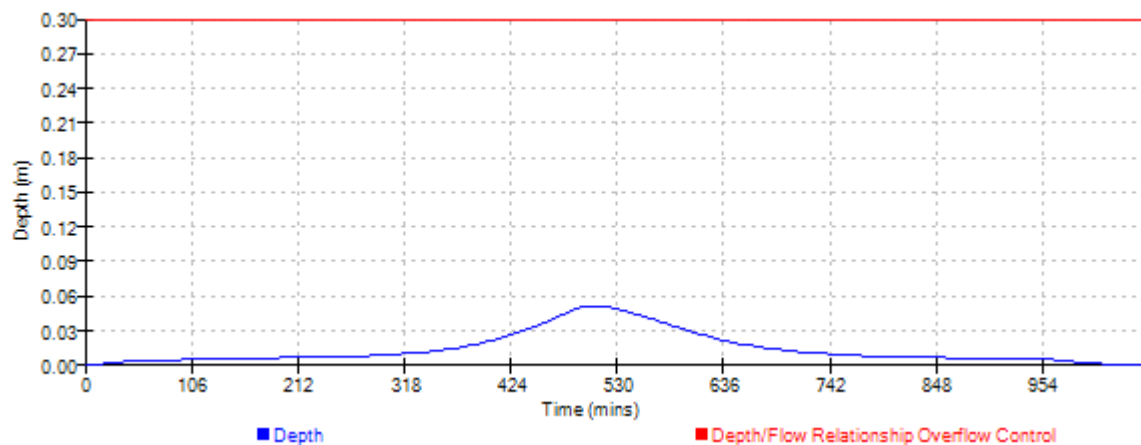
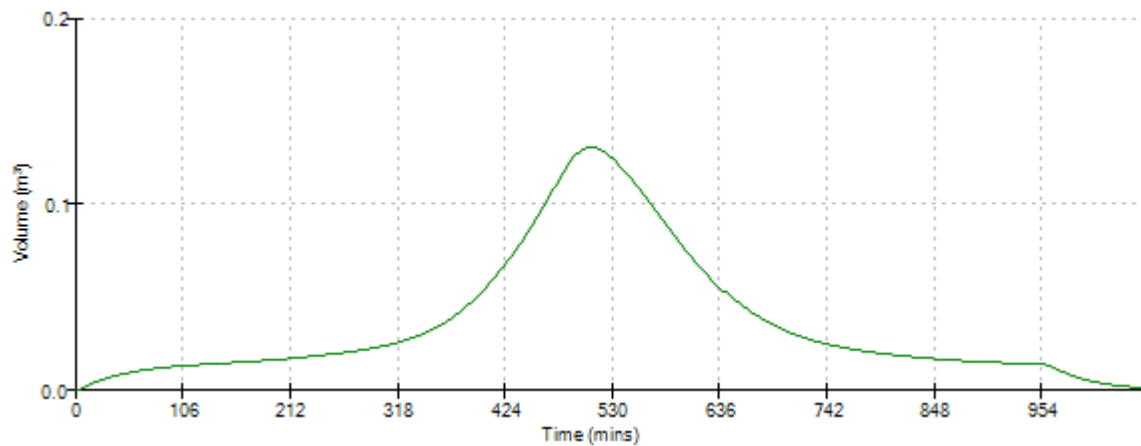
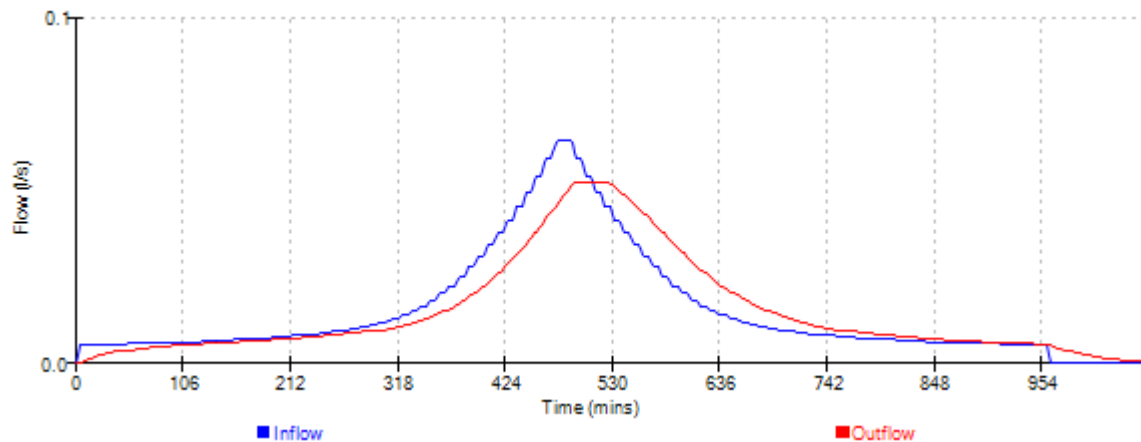


Event: 720 min Summer



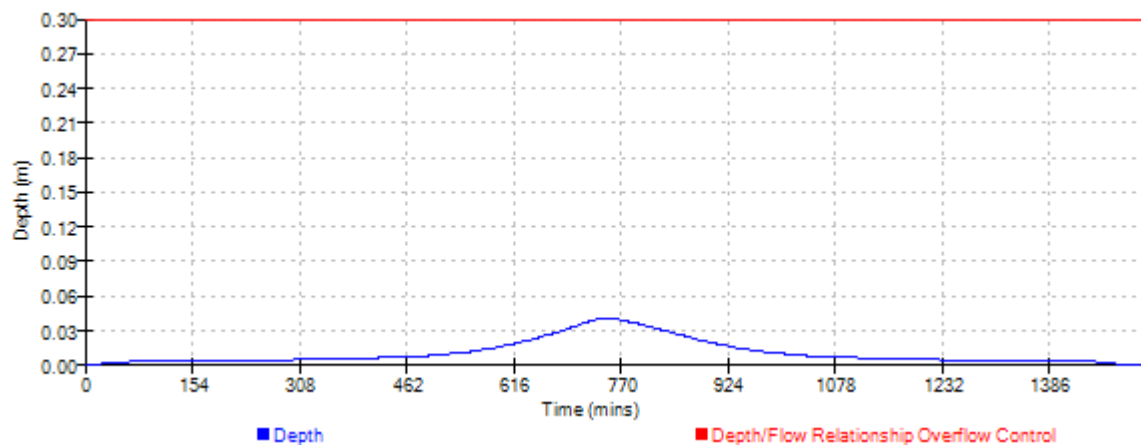
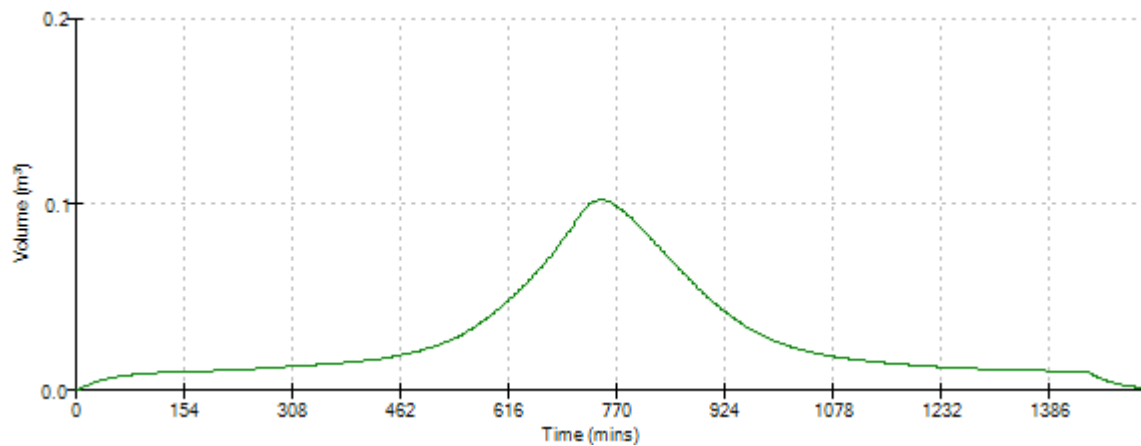
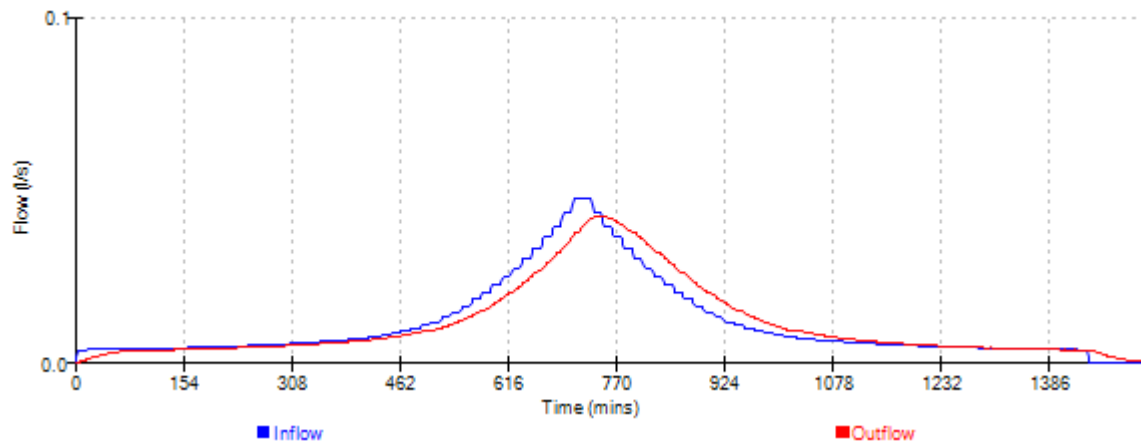
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Event: 960 min Summer



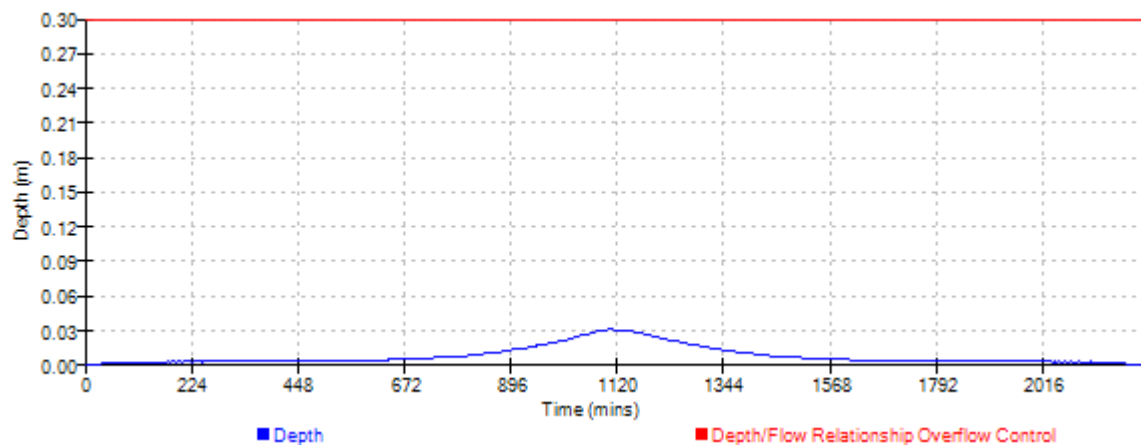
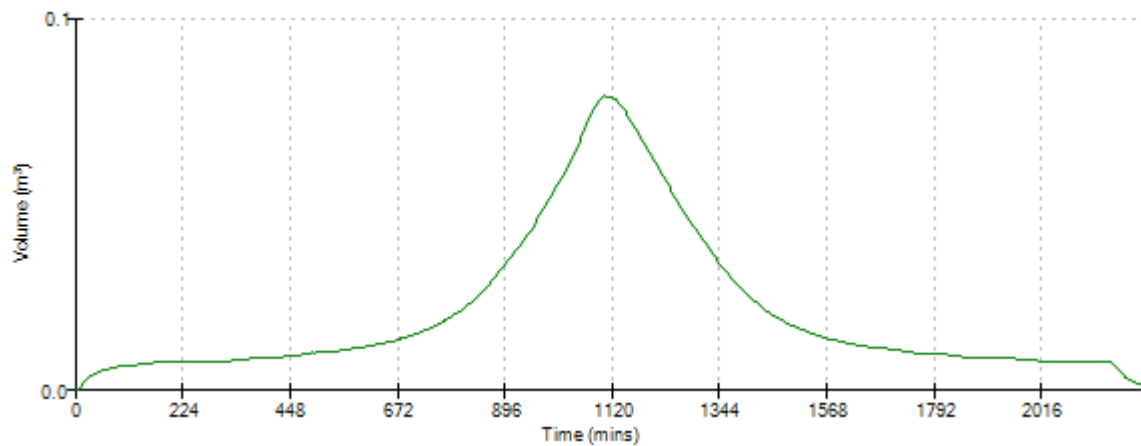
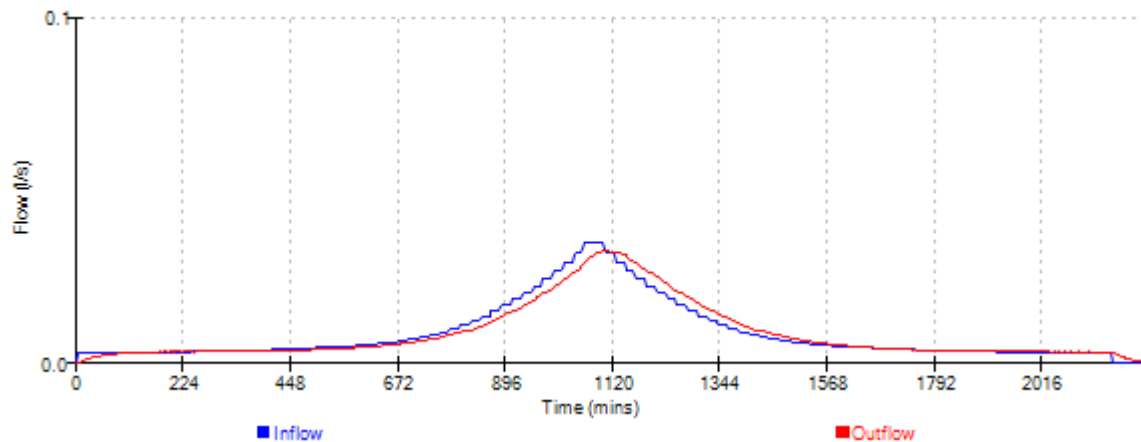
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West Sussex PO19 7GD	Rain Garden Design Rev03	
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Elstree Computing Ltd	Source Control w.12.6	

Event: 1440 min Summer



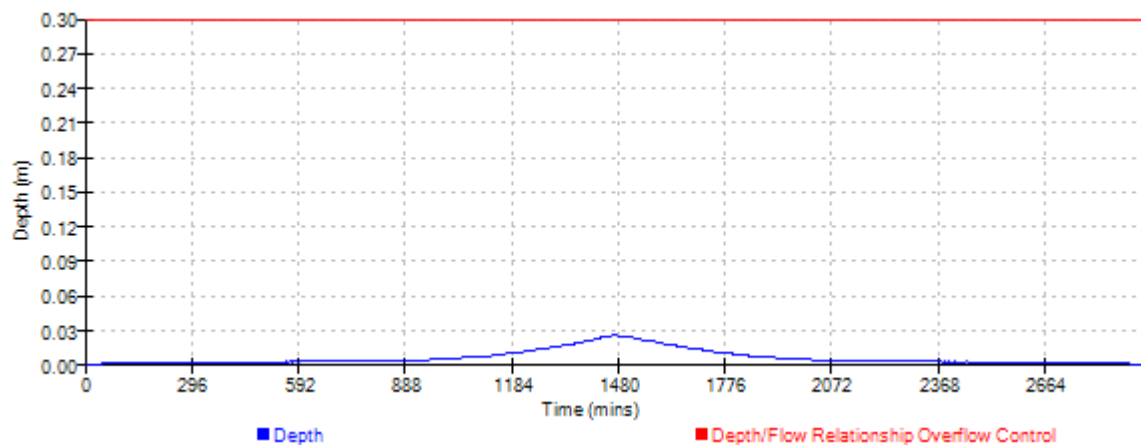
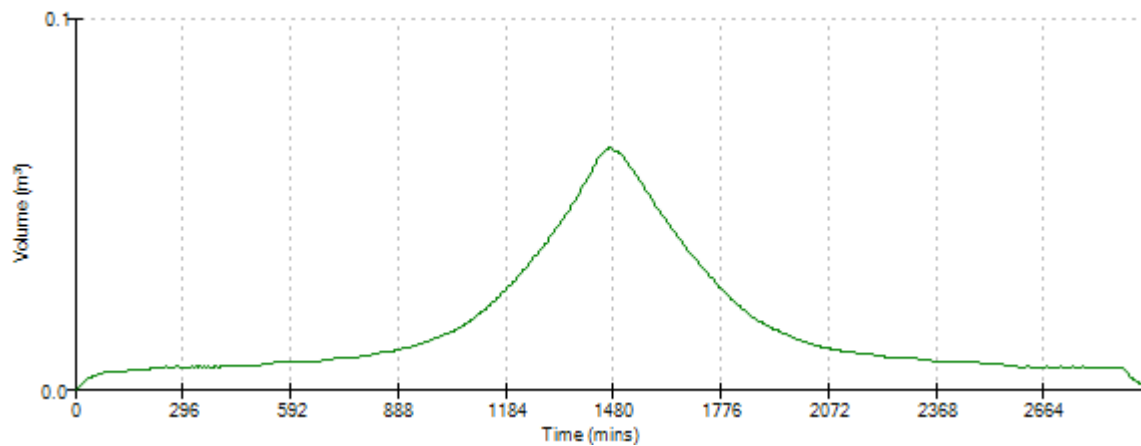
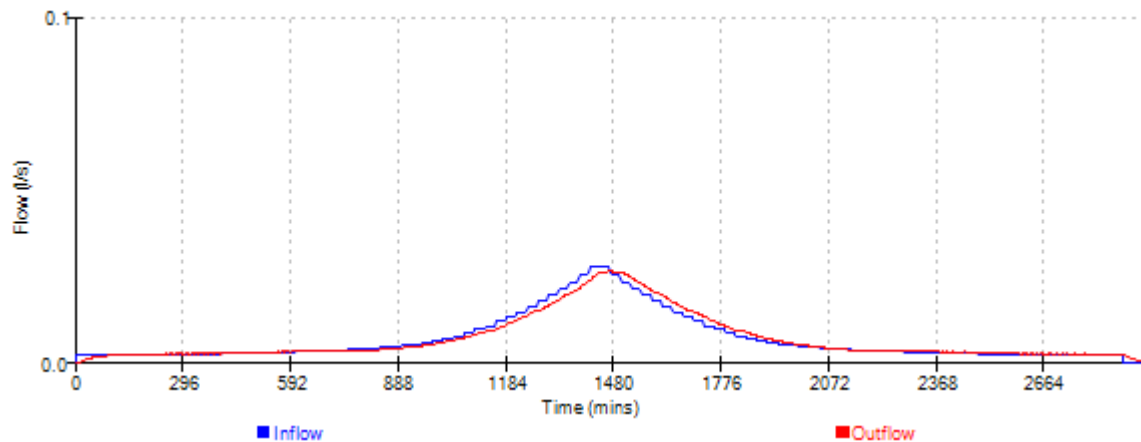
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Elstree Computing Ltd	Source Control w.12.6	

Event: 2160 min Summer



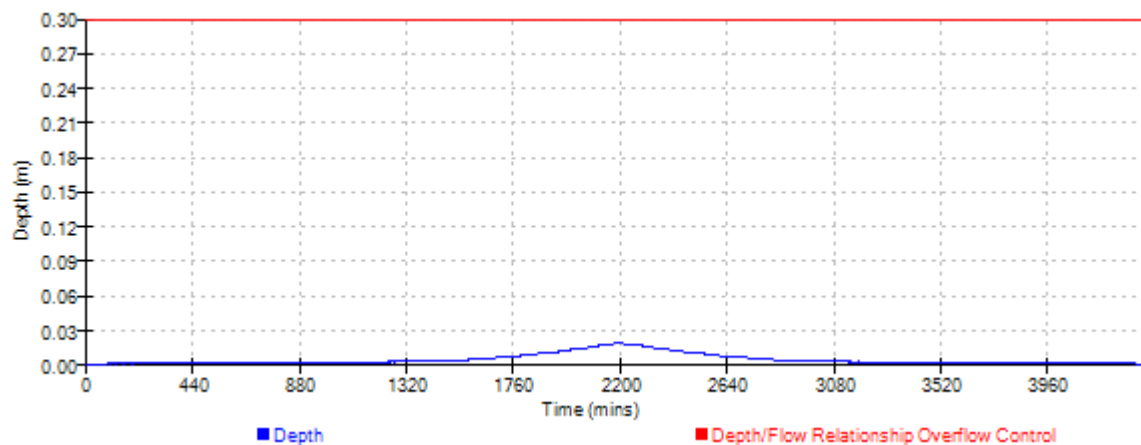
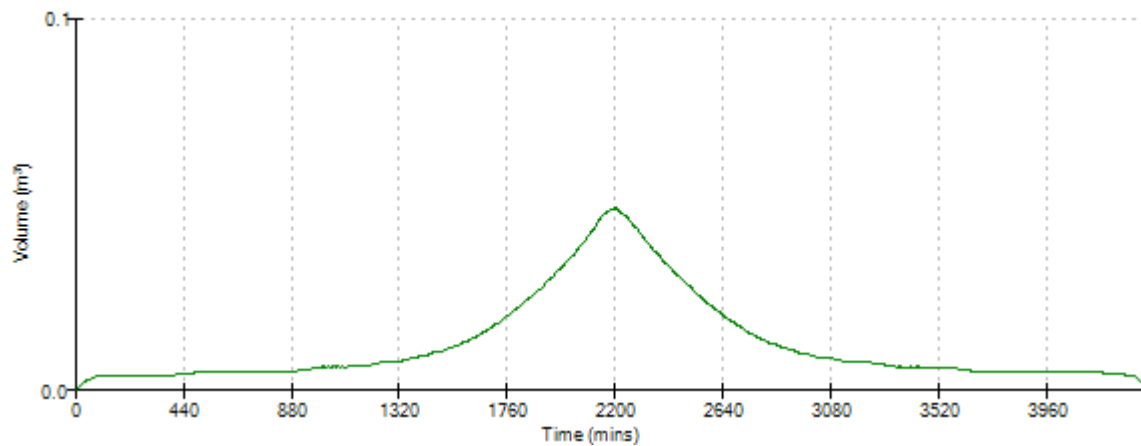
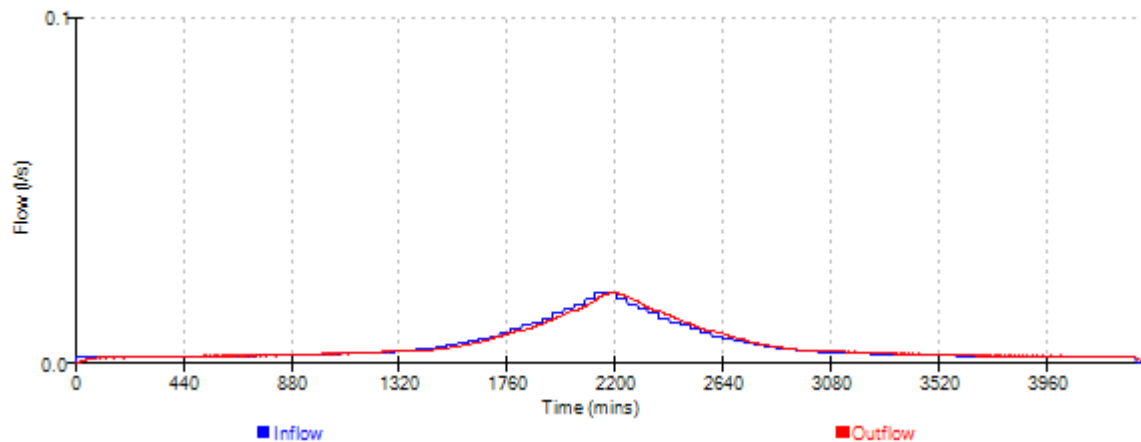
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West Sussex PO19 7GD	Rain Garden Design Rev03	
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File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 2880 min Summer



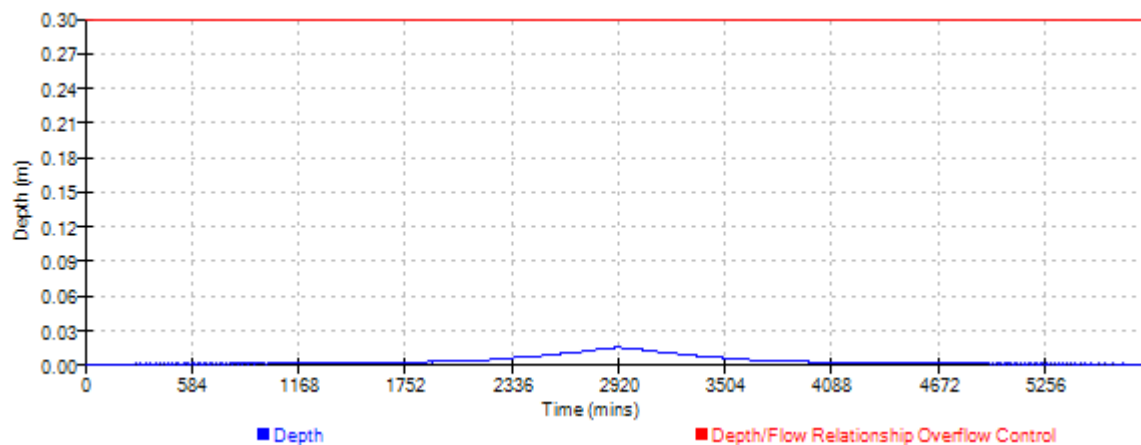
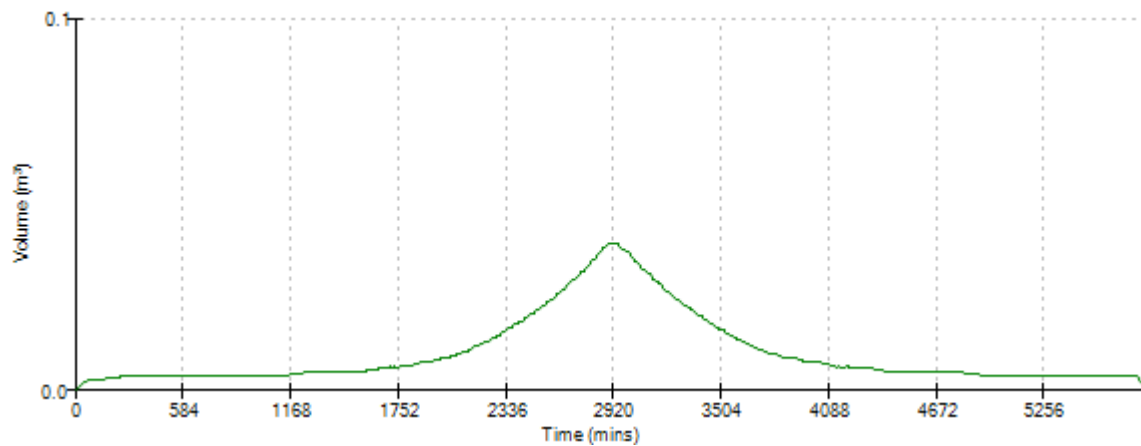
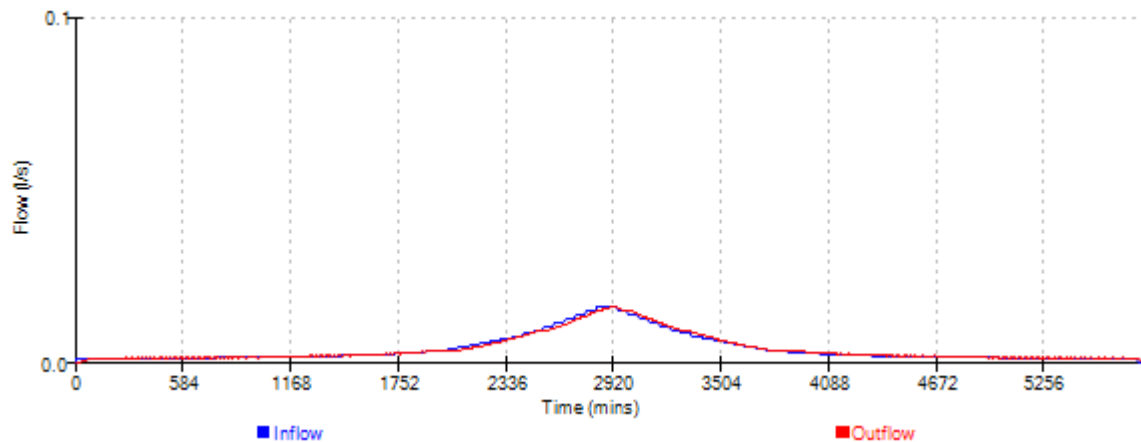
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West Sussex PO19 7GD	Rain Garden Design Rev03	
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File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 4320 min Summer



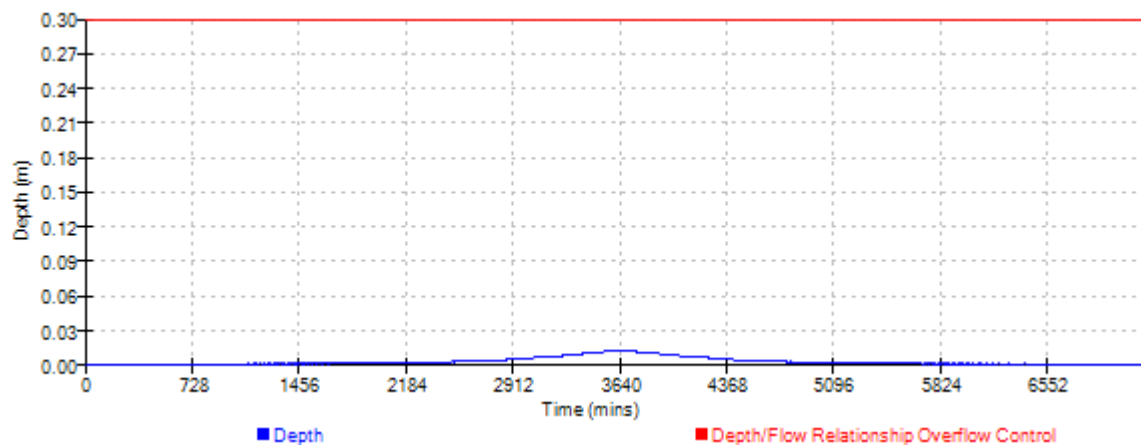
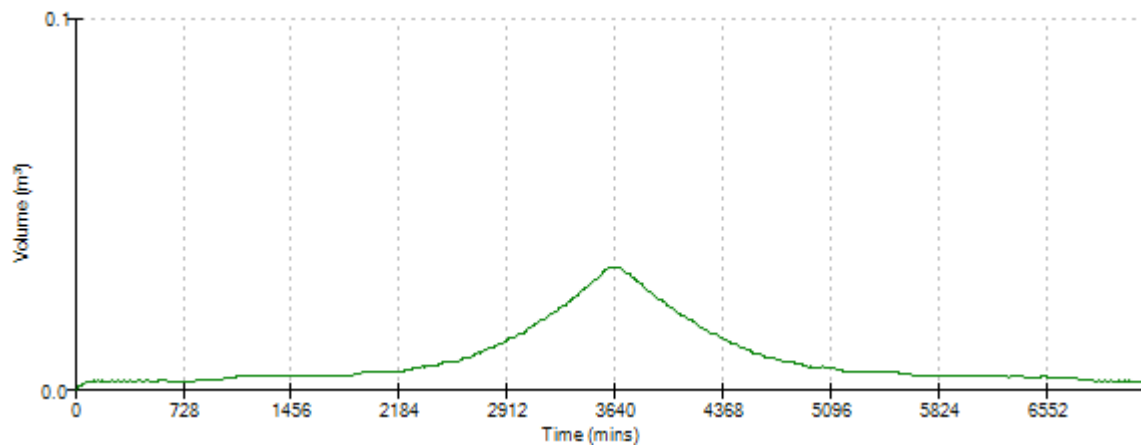
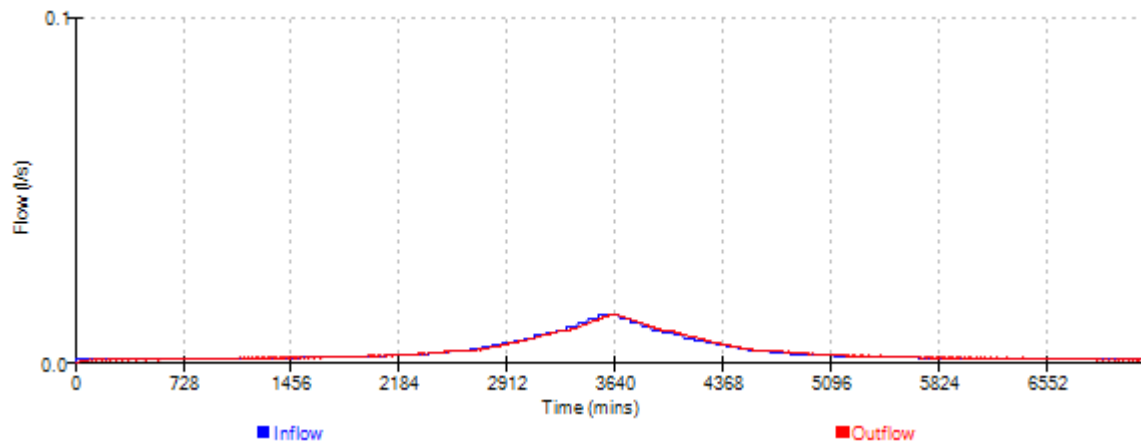
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File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 5760 min Summer



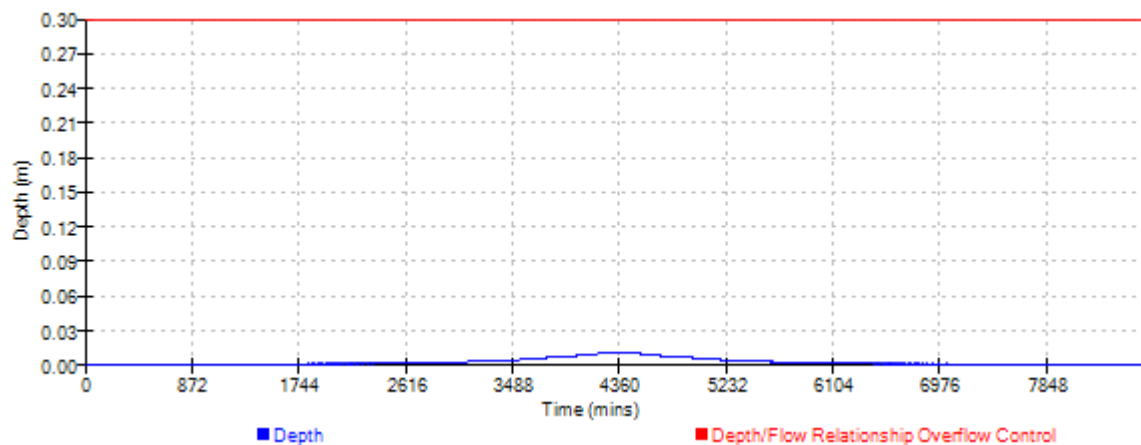
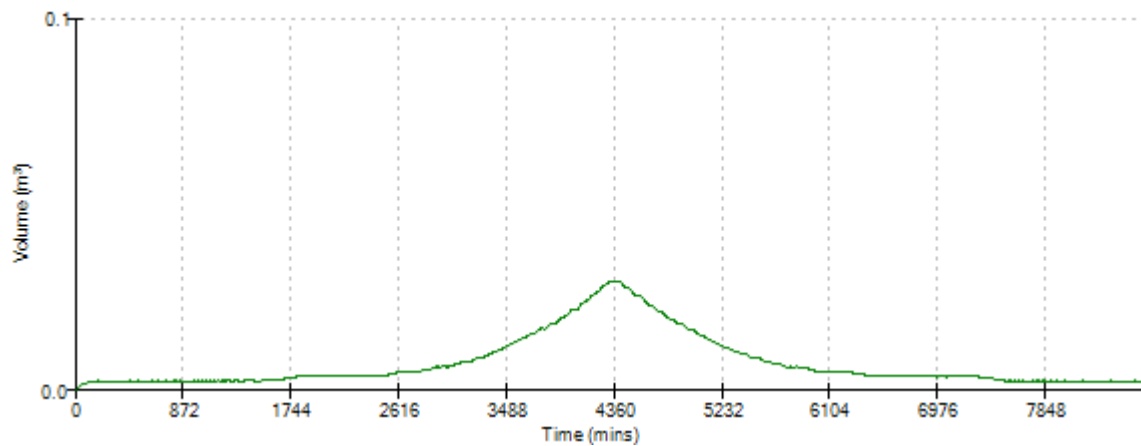
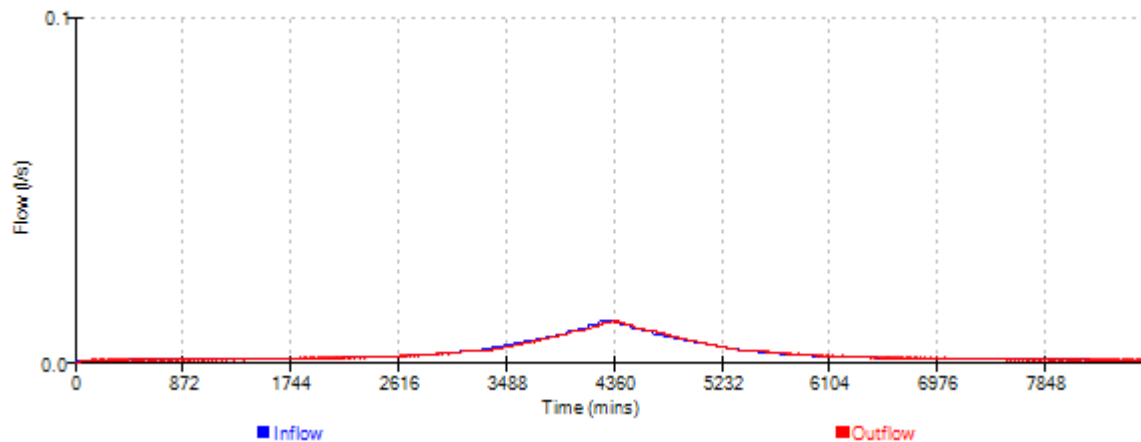
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Elstree Computing Ltd	Source Control w.12.6	

Event: 7200 min Summer



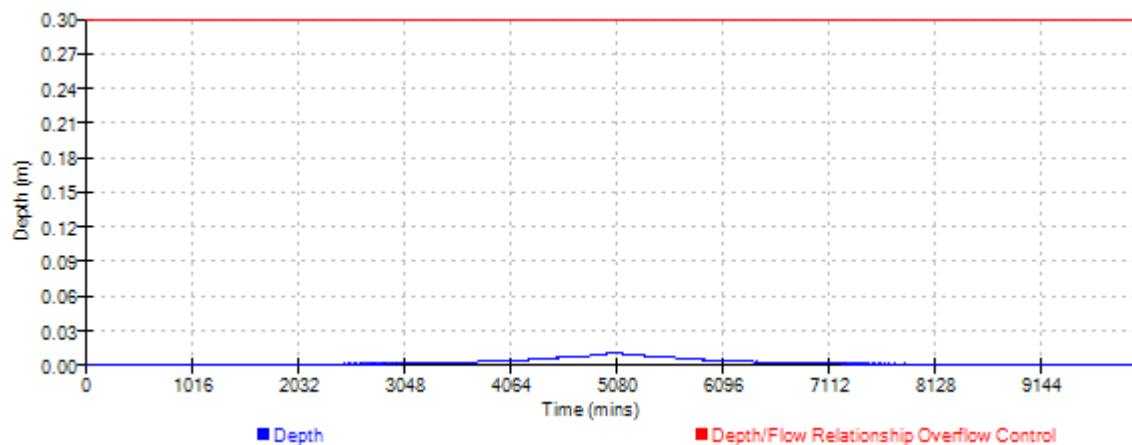
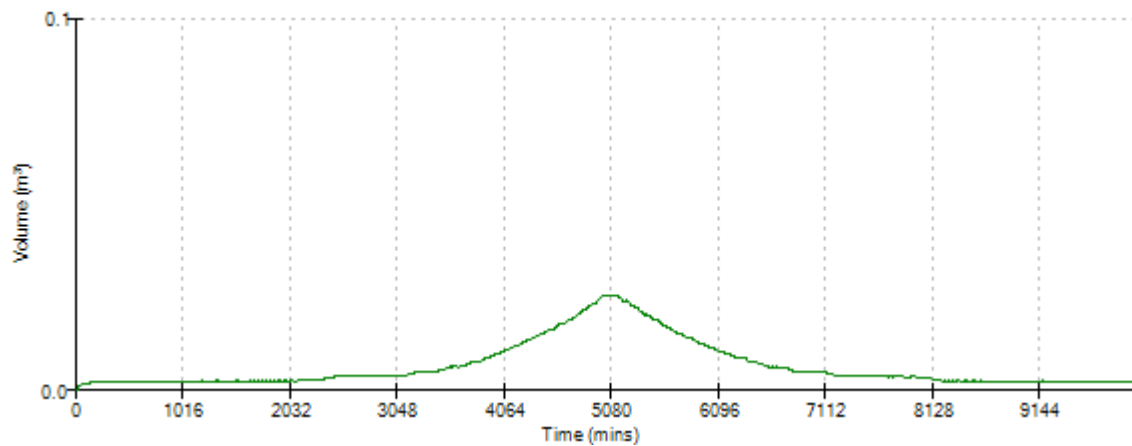
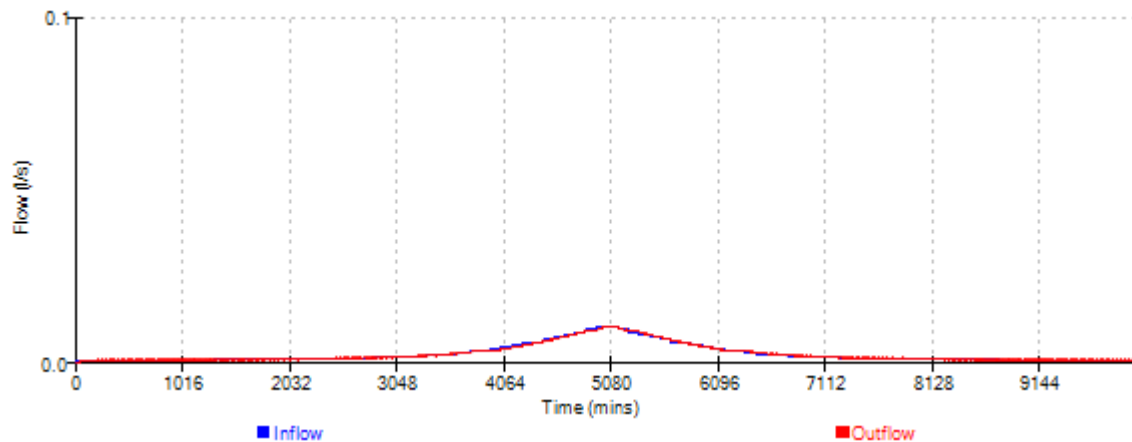
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Event: 8640 min Summer



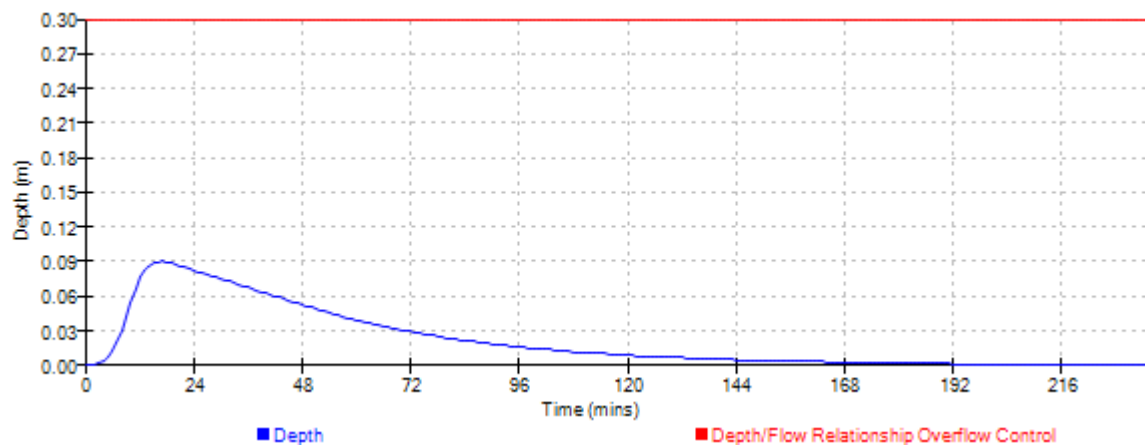
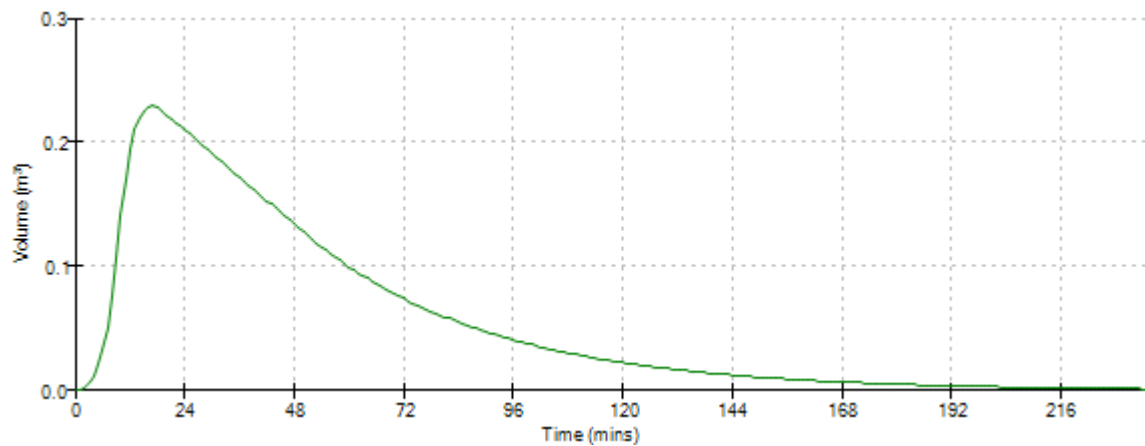
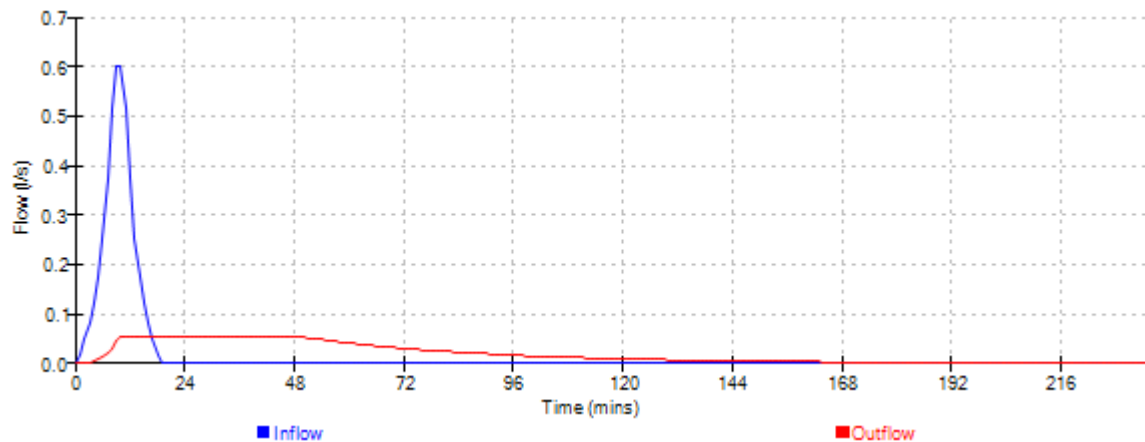
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Event: 10080 min Summer

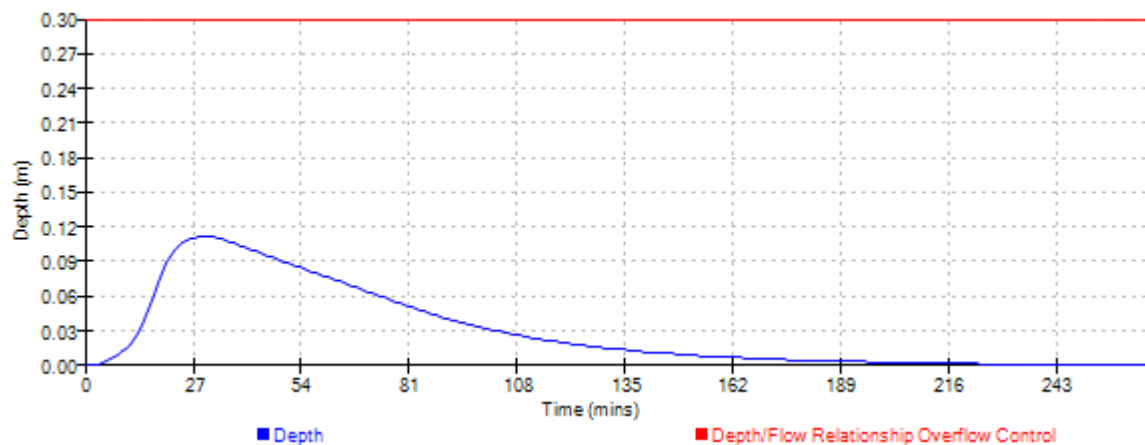
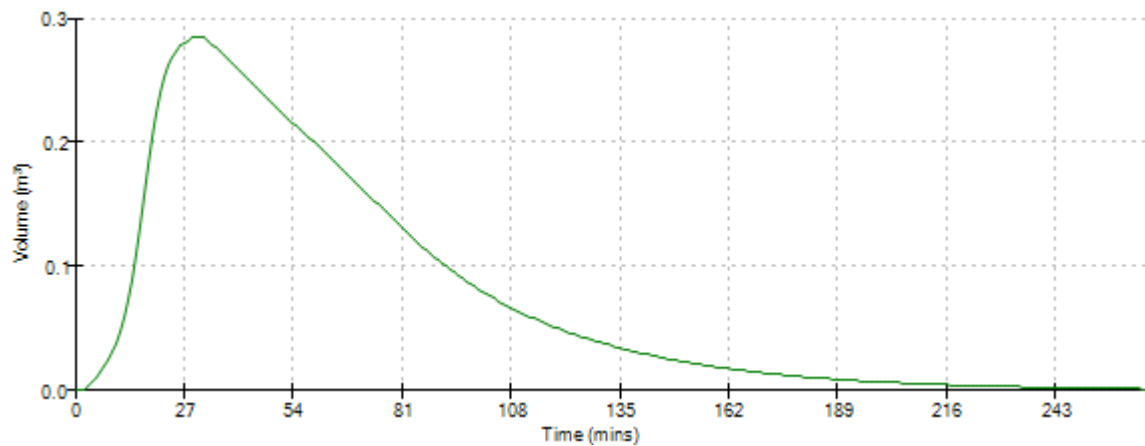
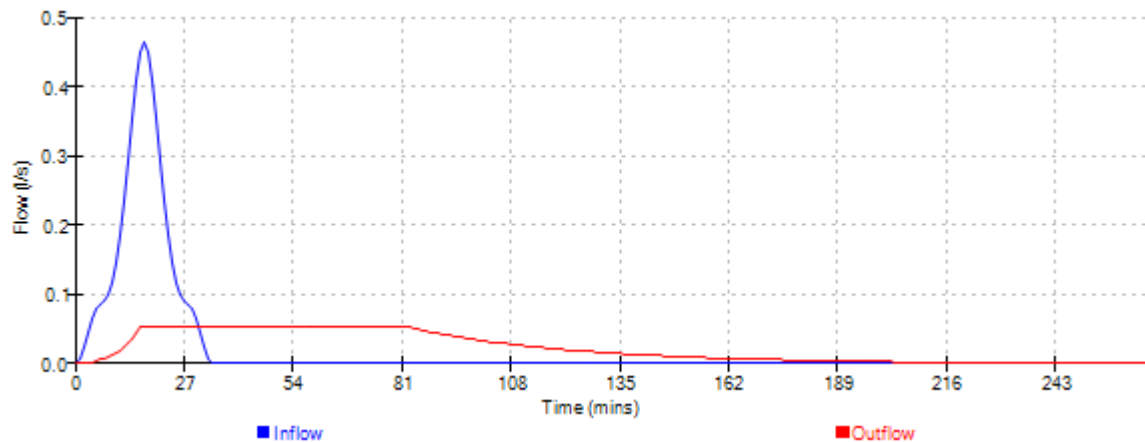


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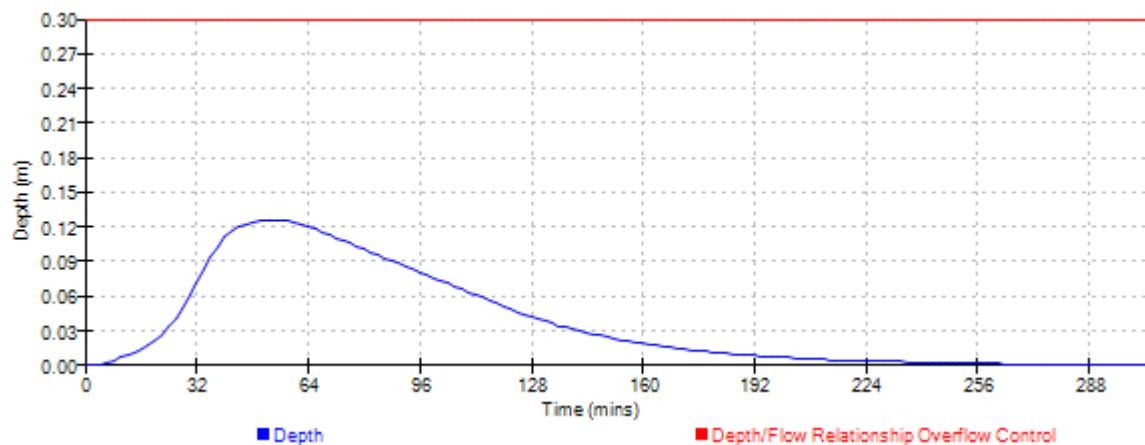
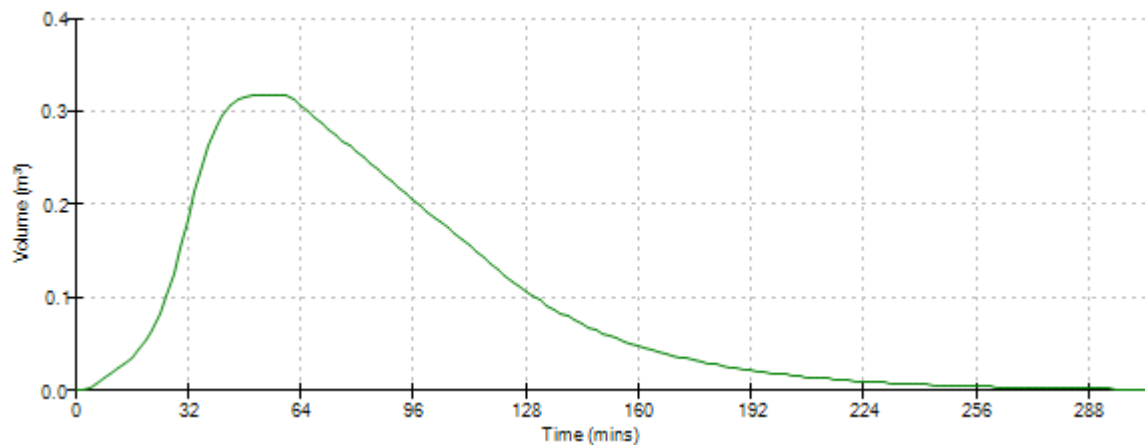
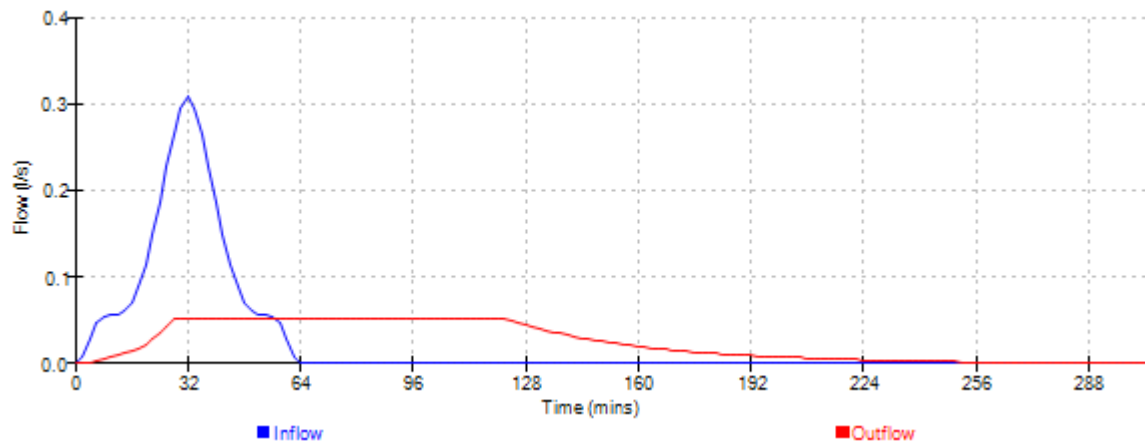
Event: 15 min Winter



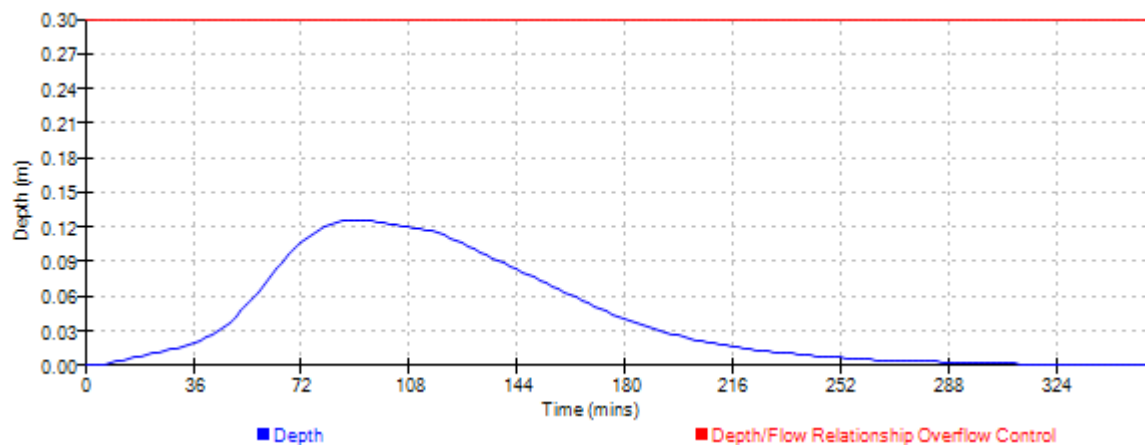
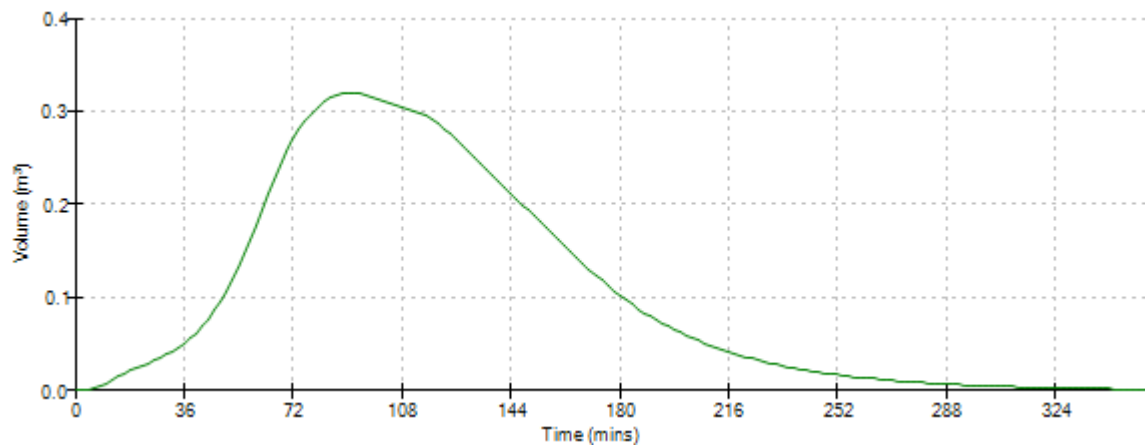
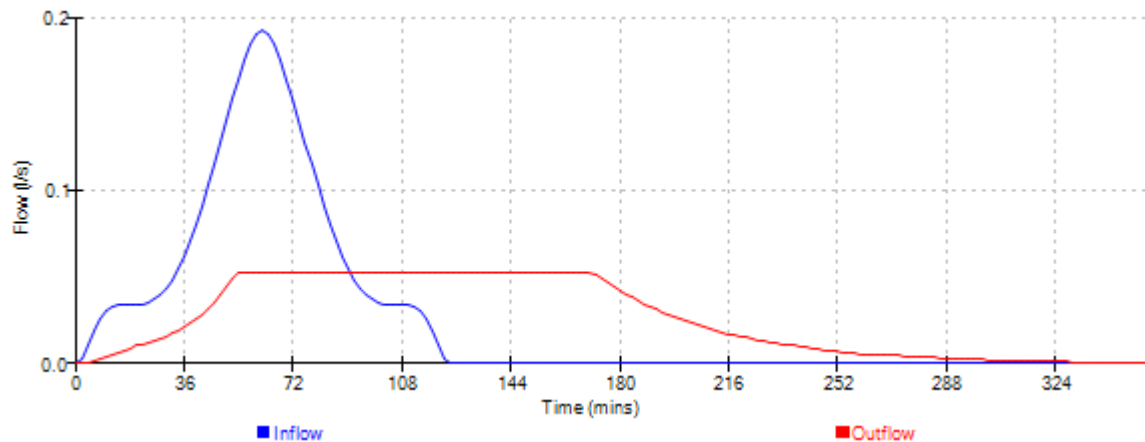
Event: 30 min Winter



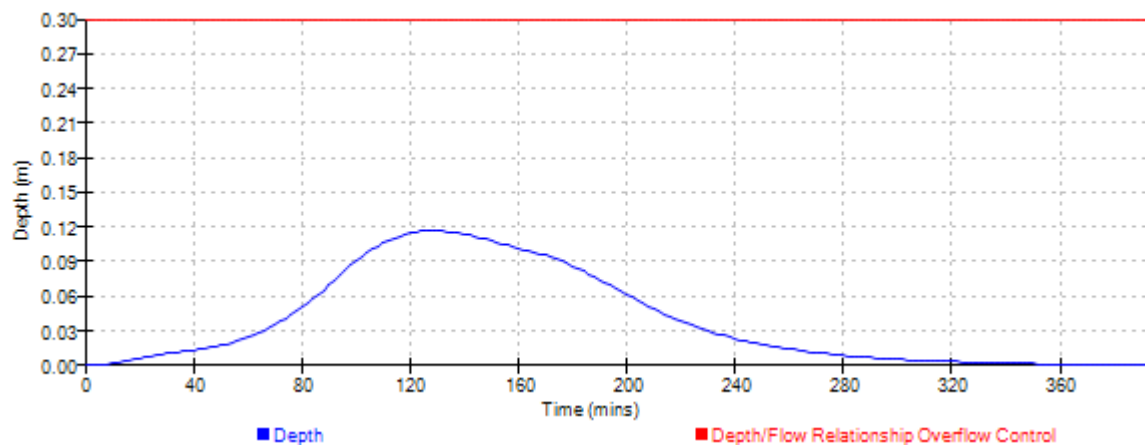
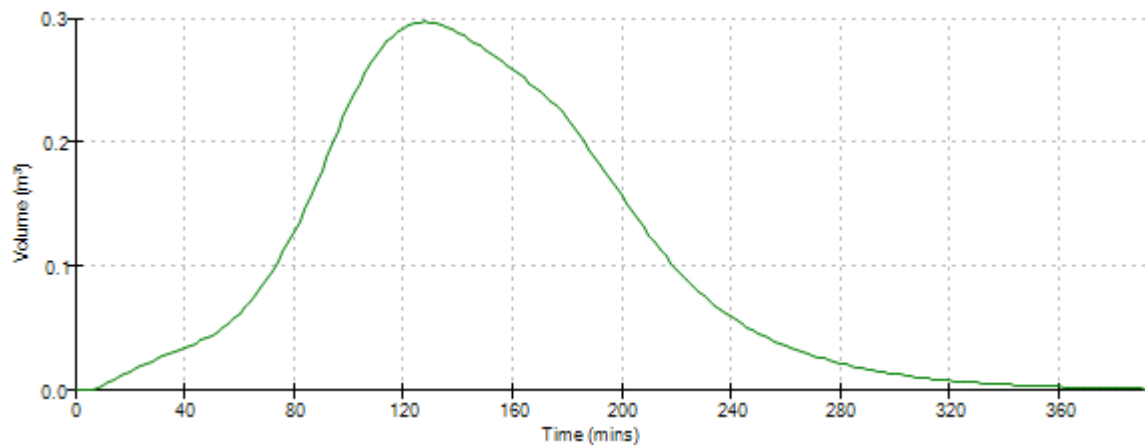
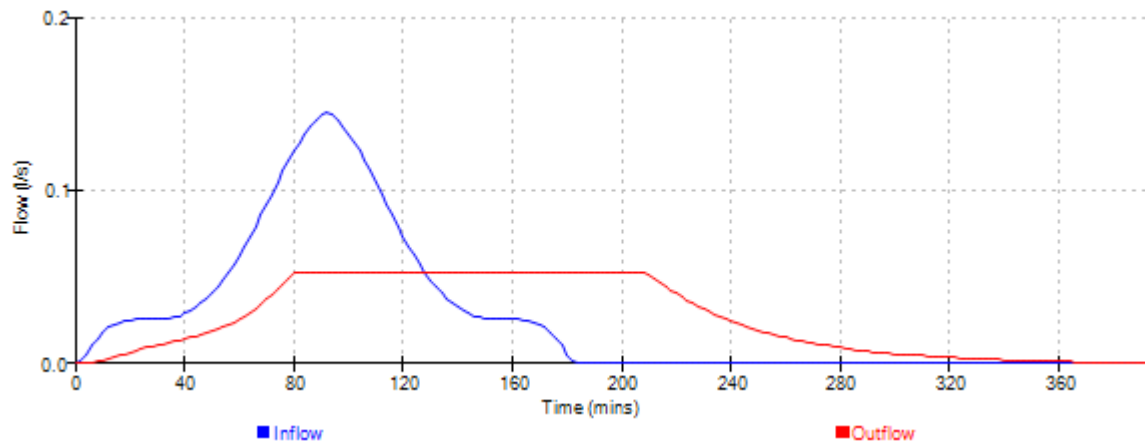
Event: 60 min winter



Event: 120 min Winter

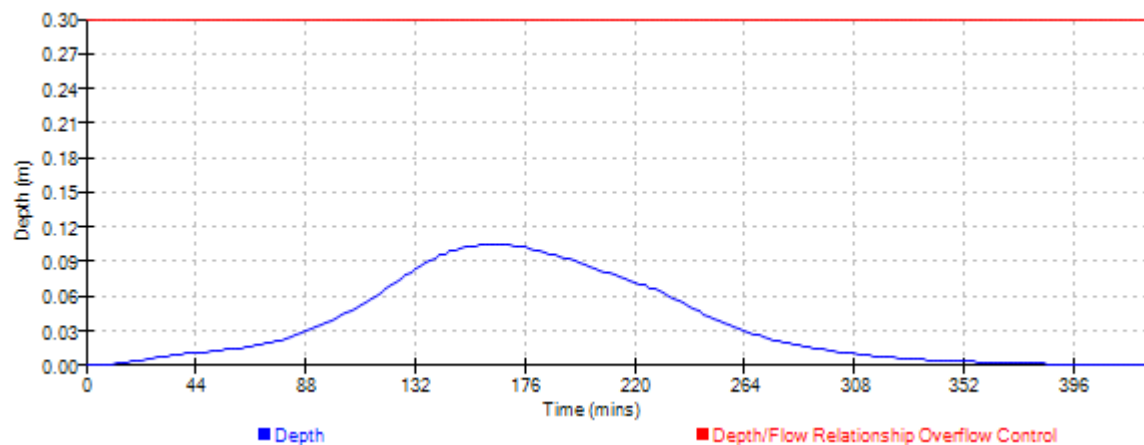
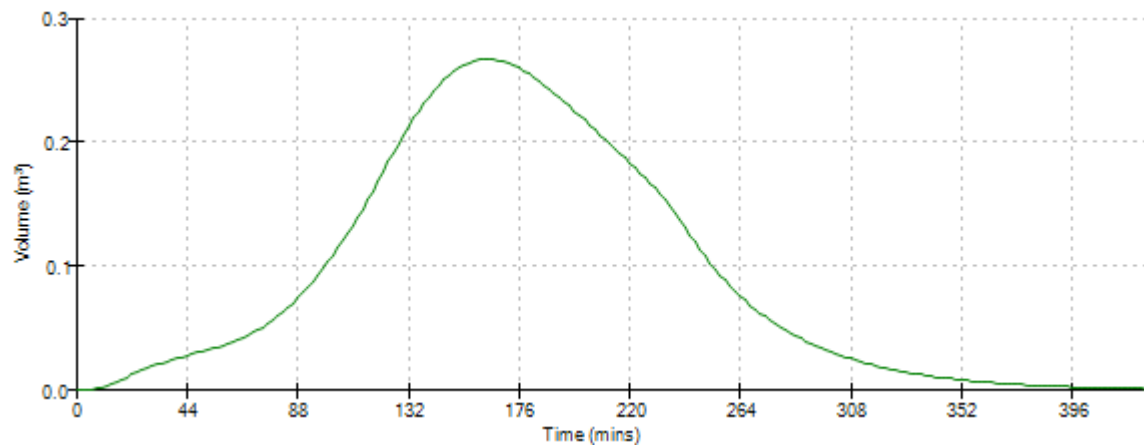
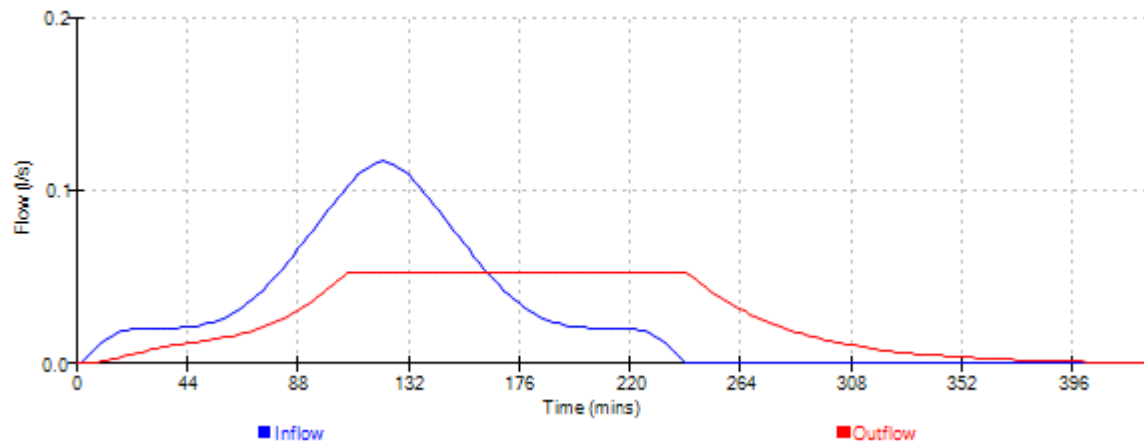


Event: 180 min Winter

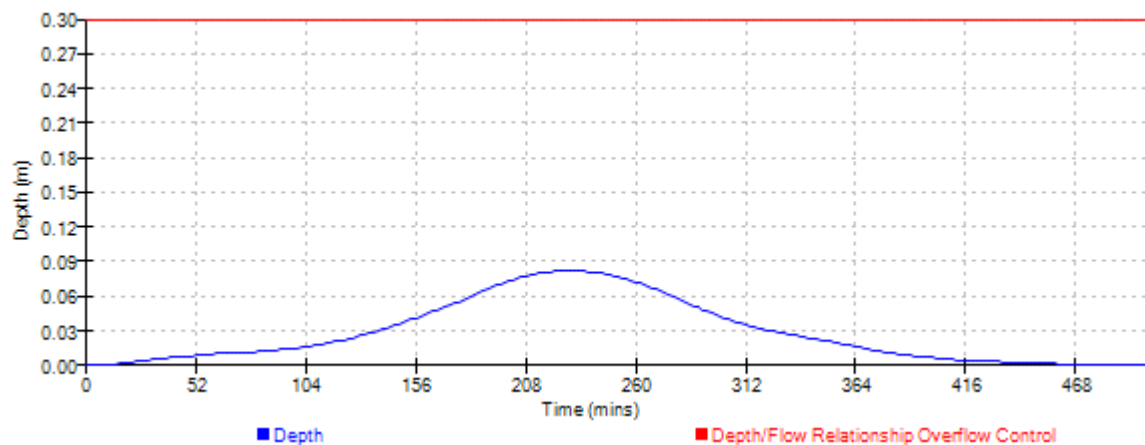
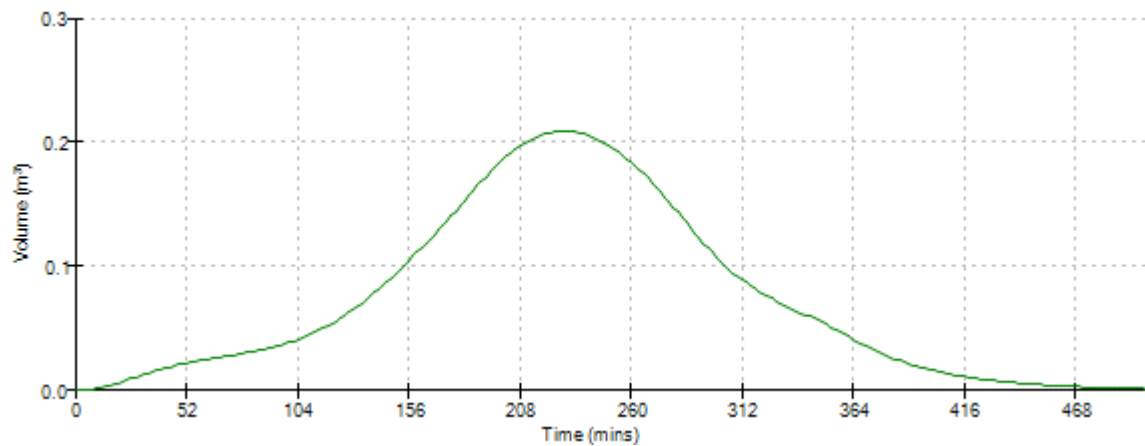
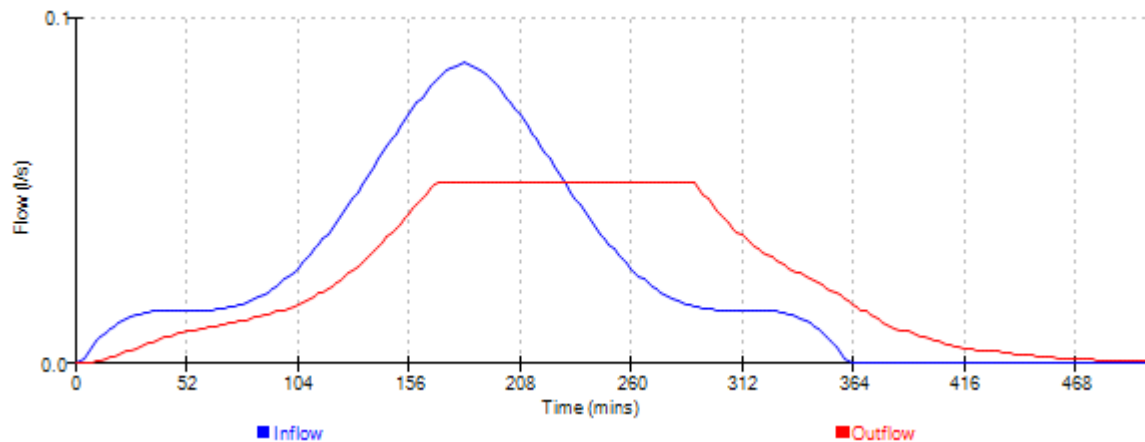


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Event: 240 min Winter

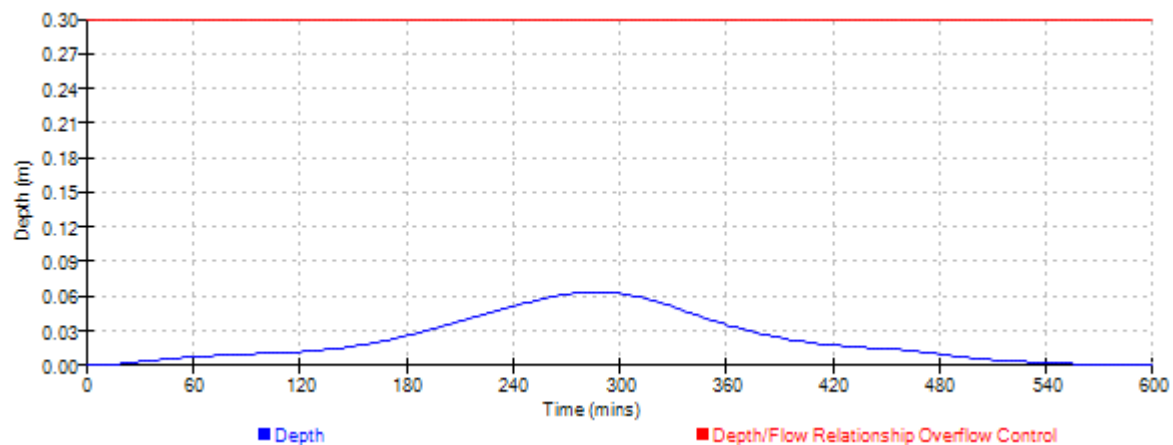
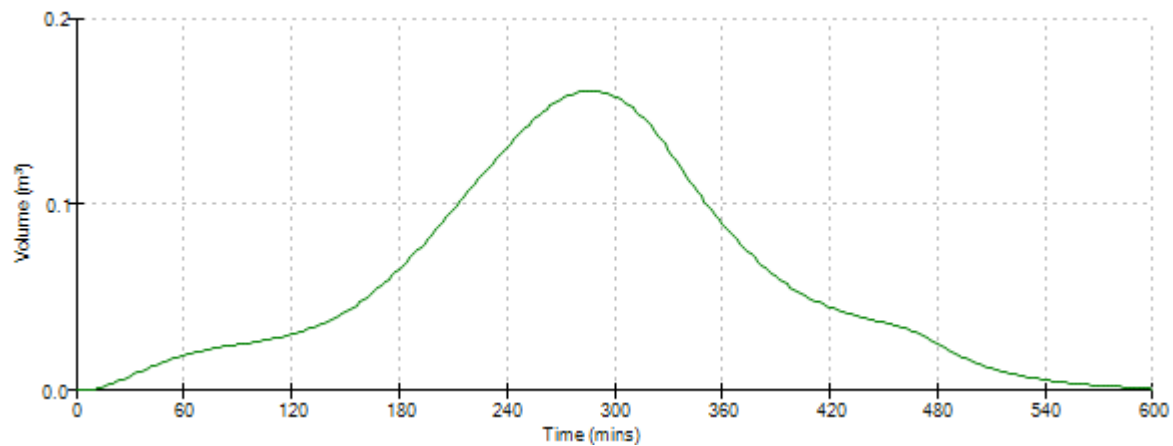
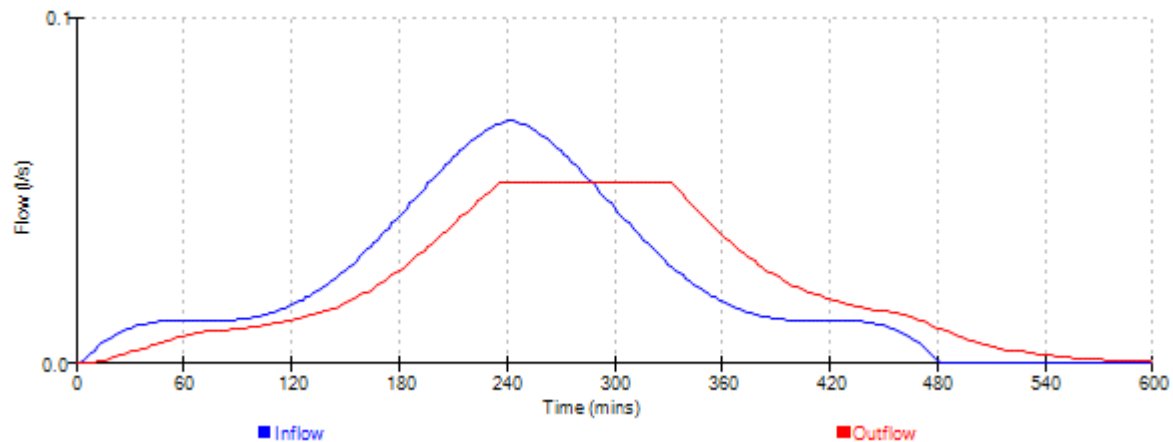


Event: 360 min Winter



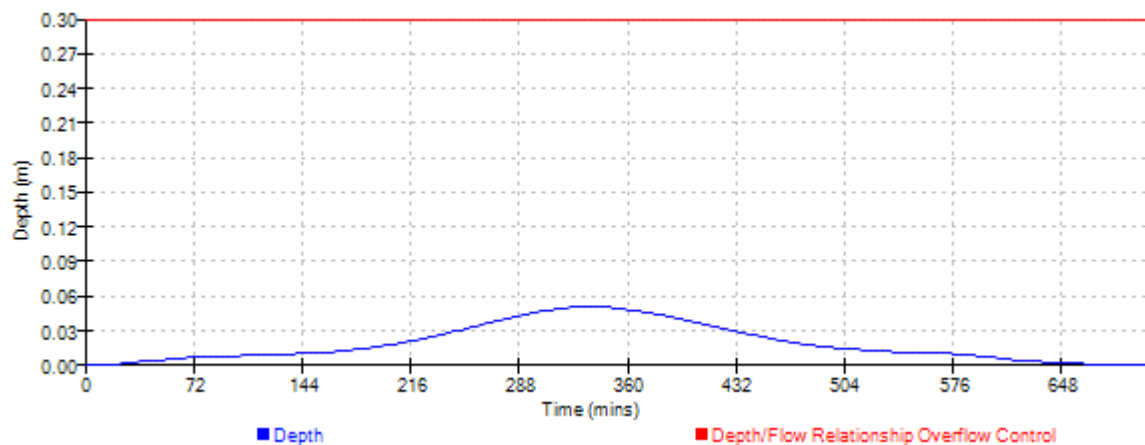
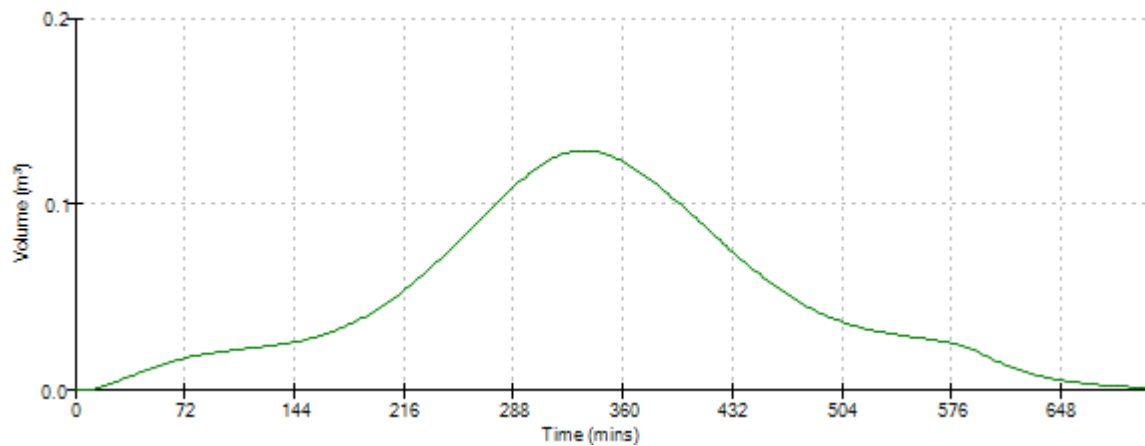
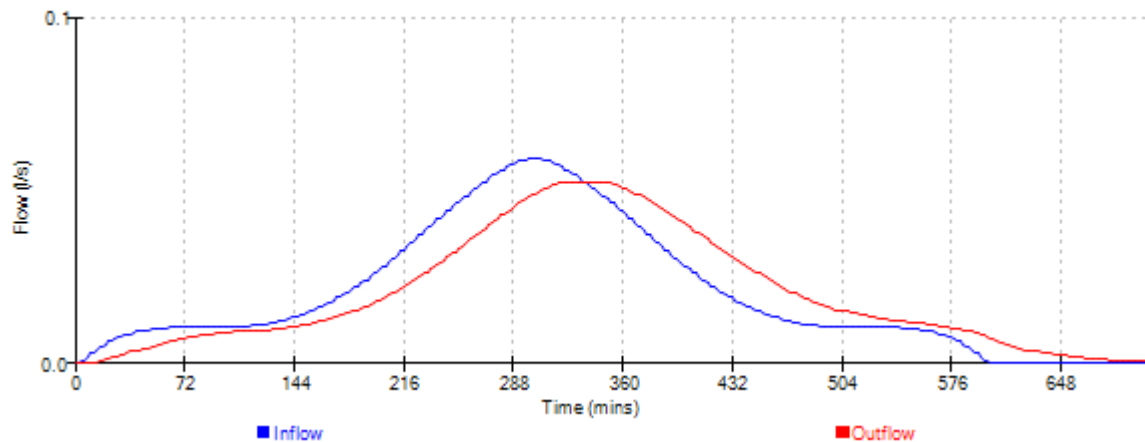
Dixon Hurst Kemp Victoria Court 22 St Pancras West Sussex PO19 7GD Date Oct 25 File Rain Garden storage d... Elstree Computing Ltd	Hurst Road, Hassocks Surface Water Drainage Rain Garden Design Rev03 Designed by JS Checked by Source Control w.12.6	Page 31 
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Event: 480 min Winter



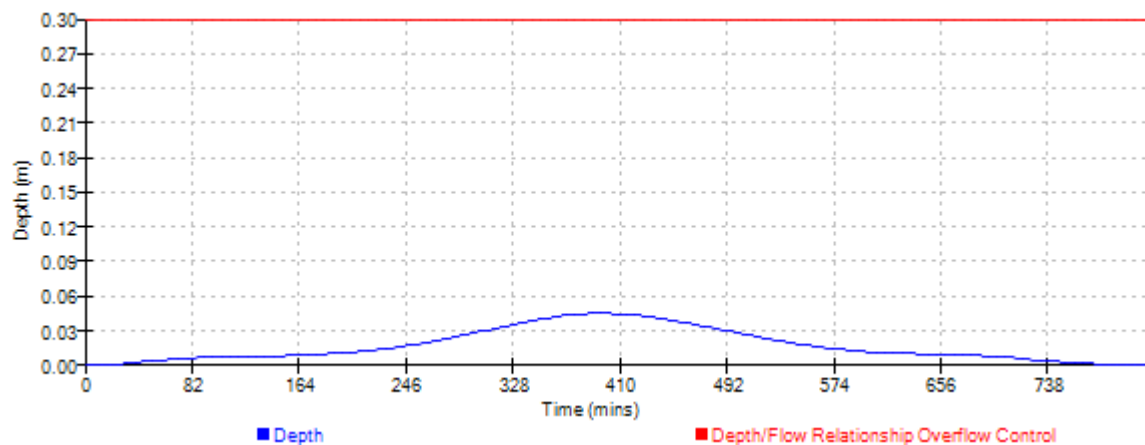
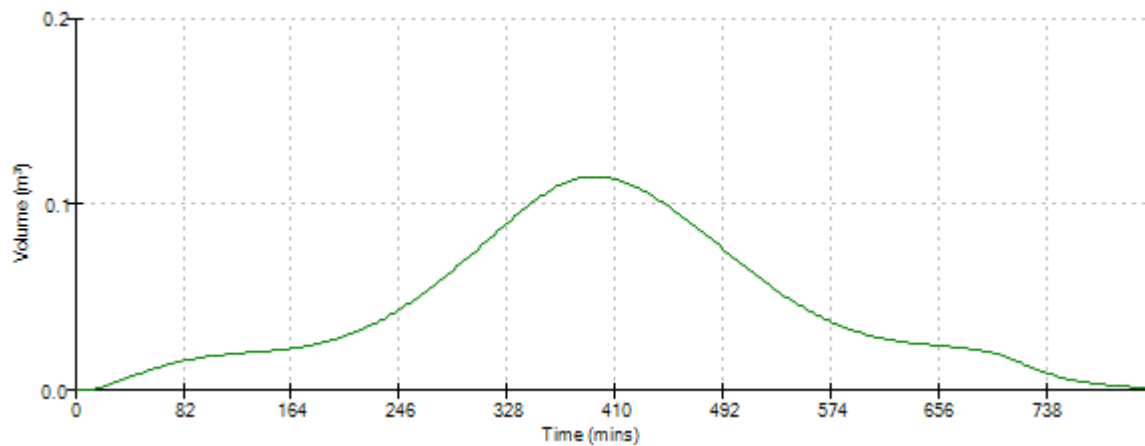
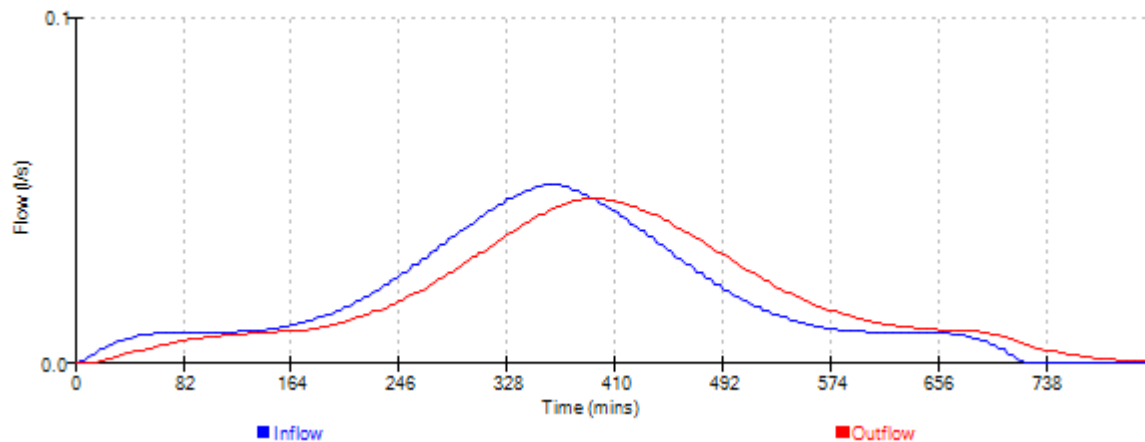
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Event: 600 min Winter

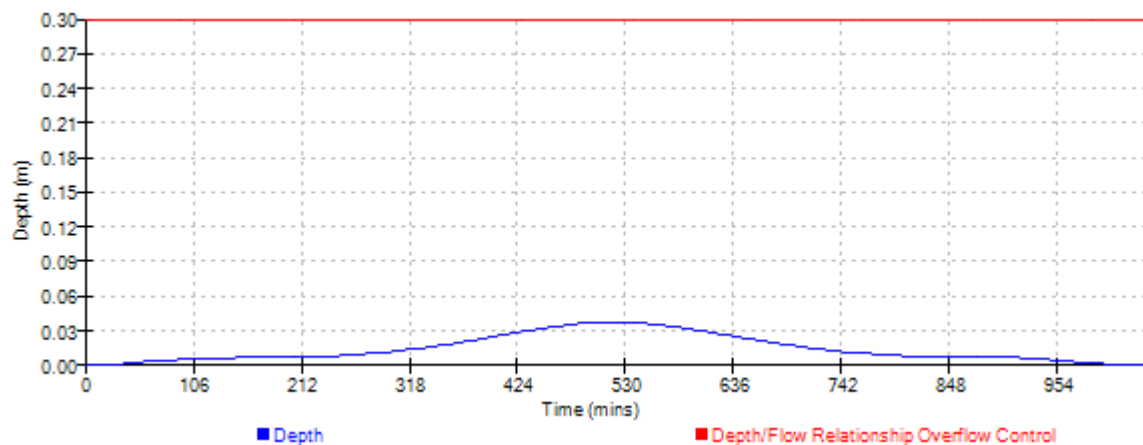
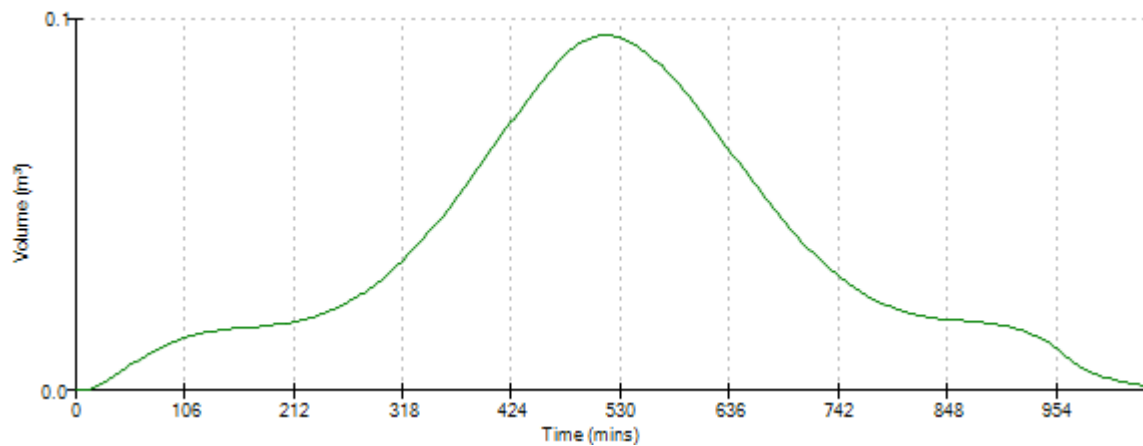
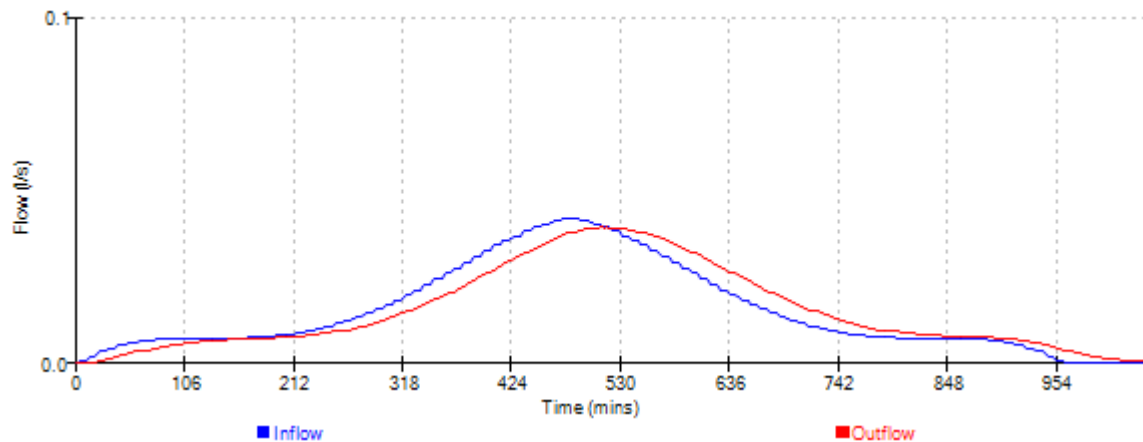


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Event: 720 min Winter

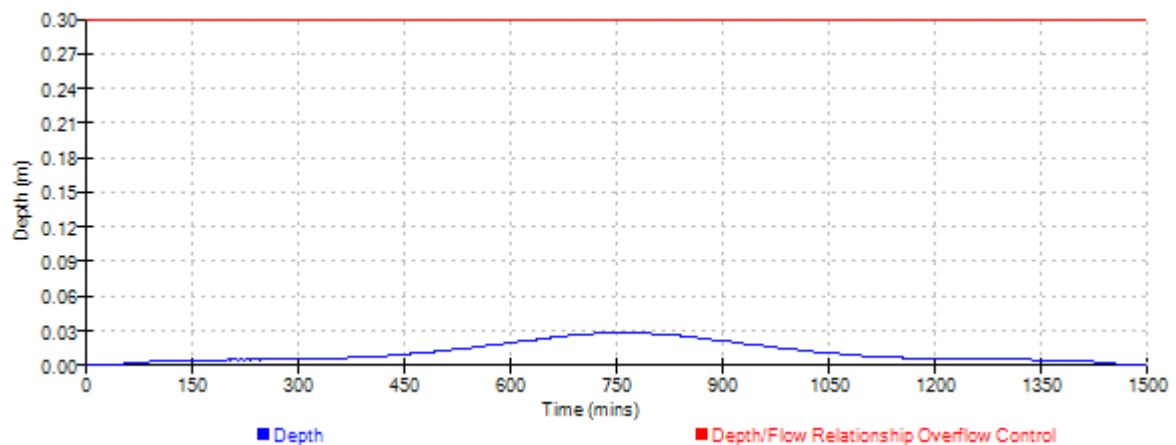
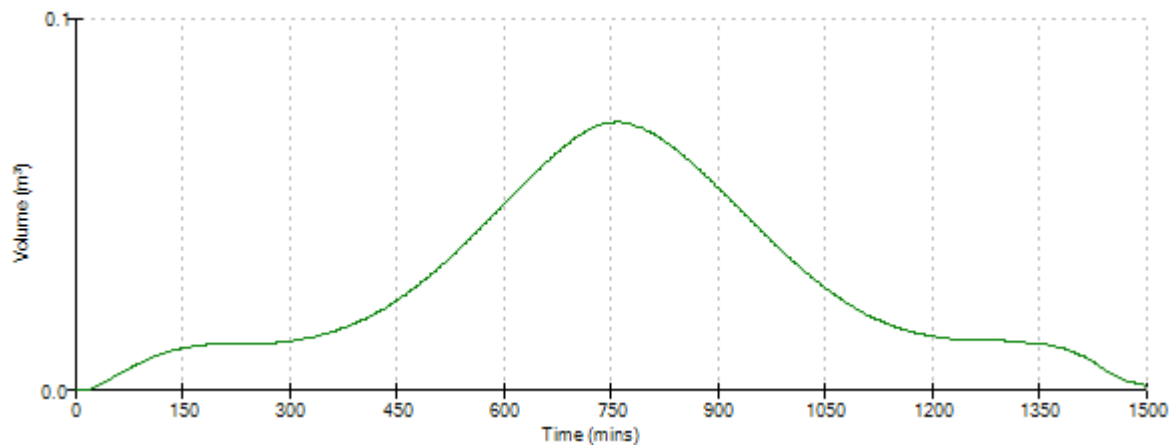
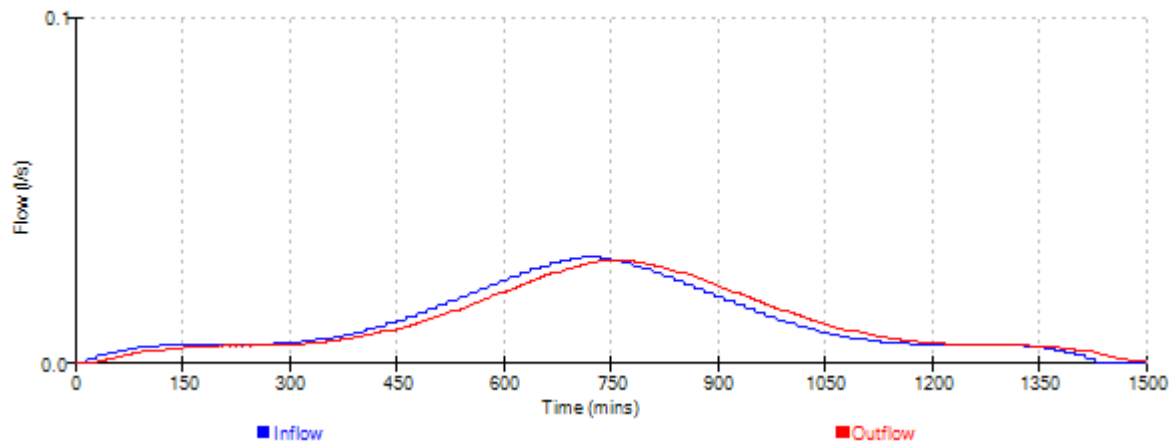


Event: 960 min Winter



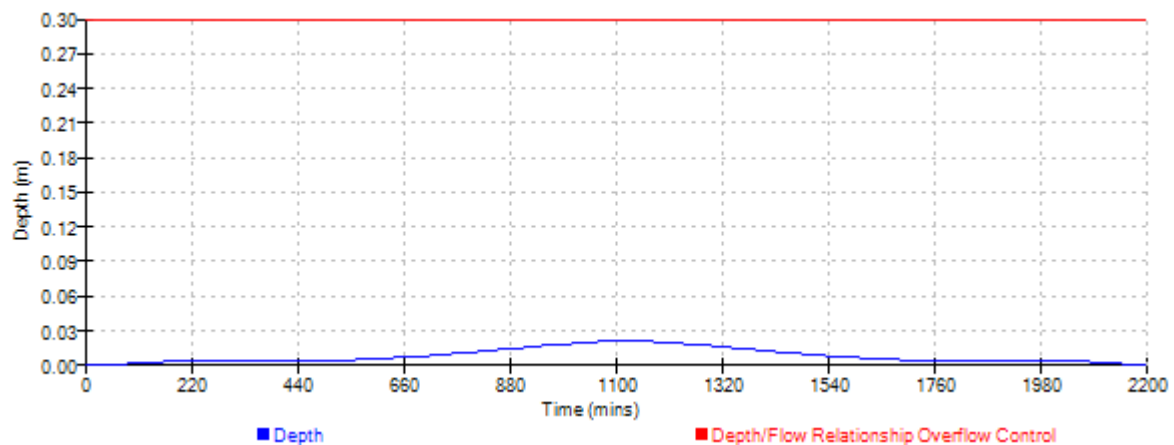
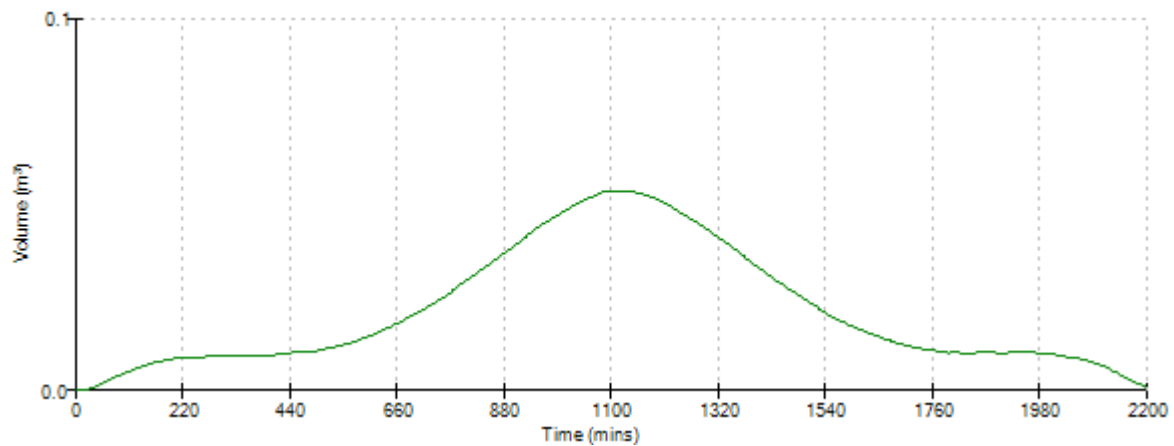
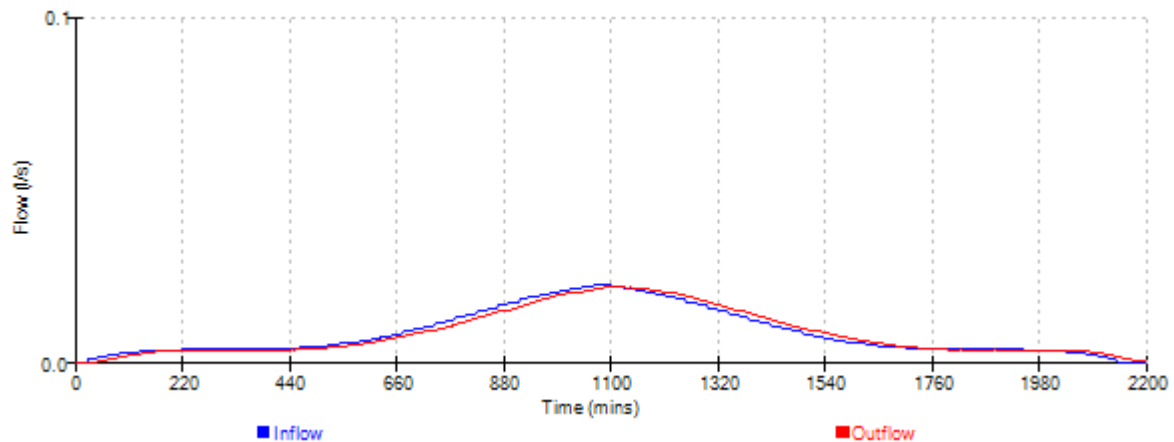
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Elstree Computing Ltd	Source Control w.12.6	

Event: 1440 min Winter



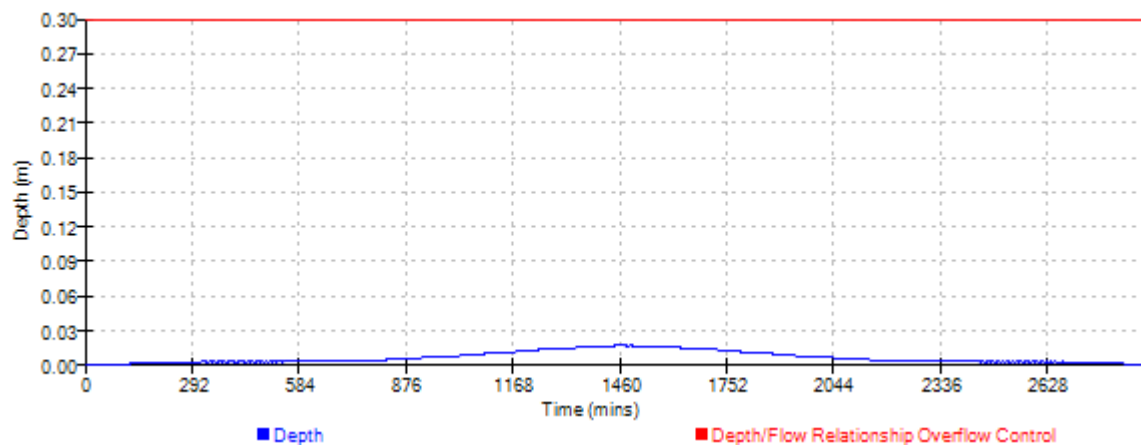
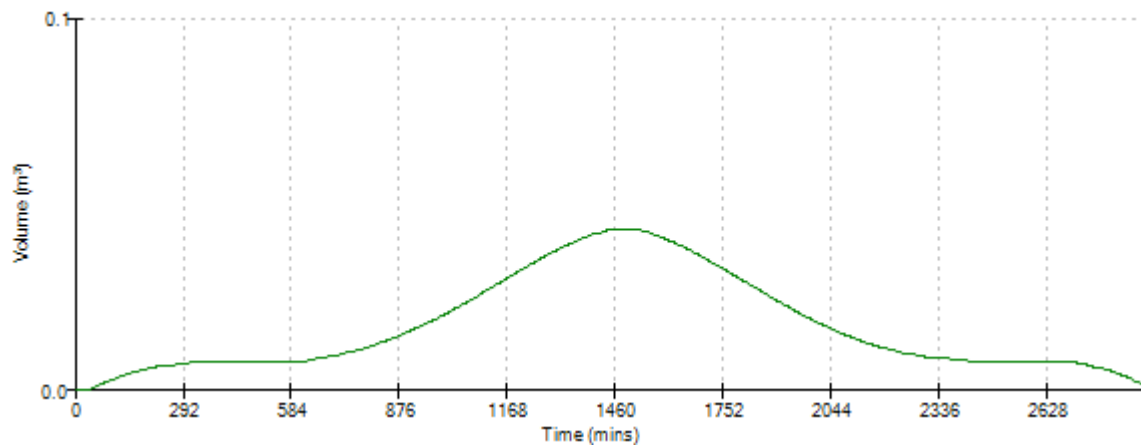
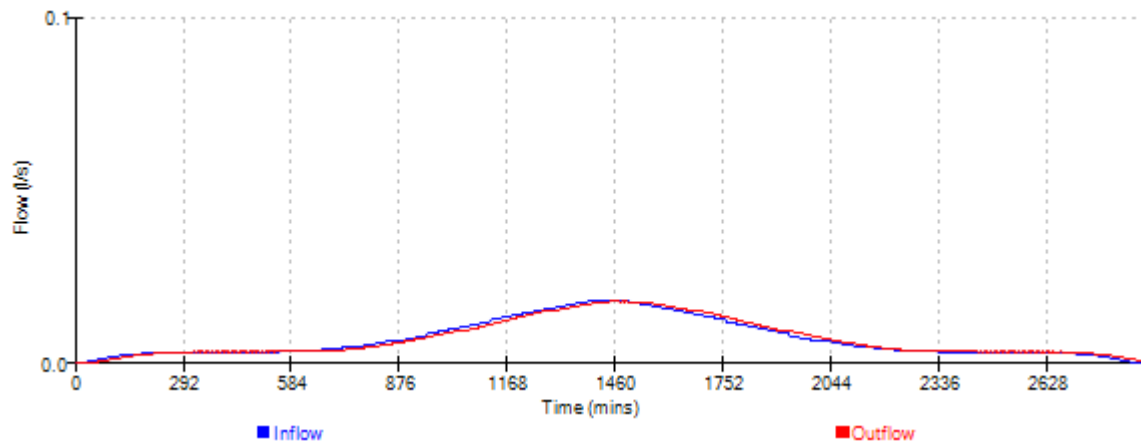
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Elstree Computing Ltd	Source Control w.12.6	

Event: 2160 min Winter



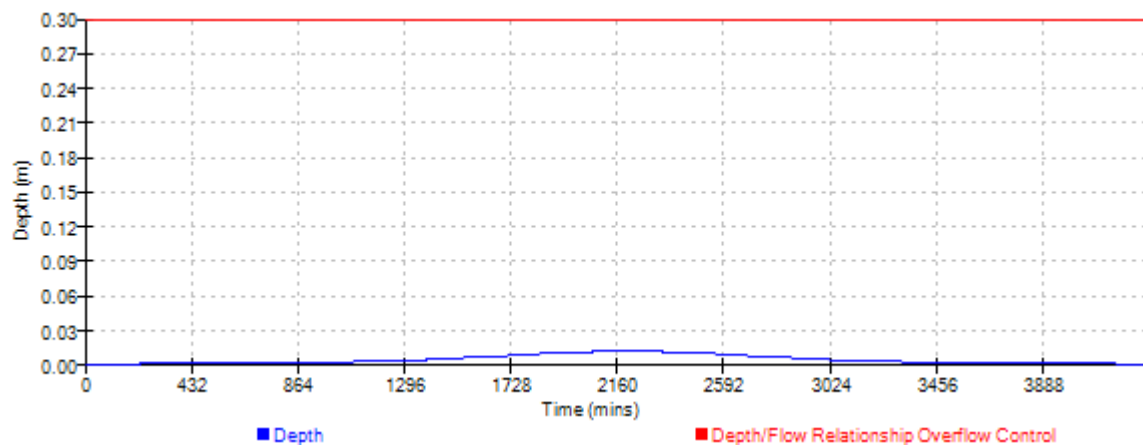
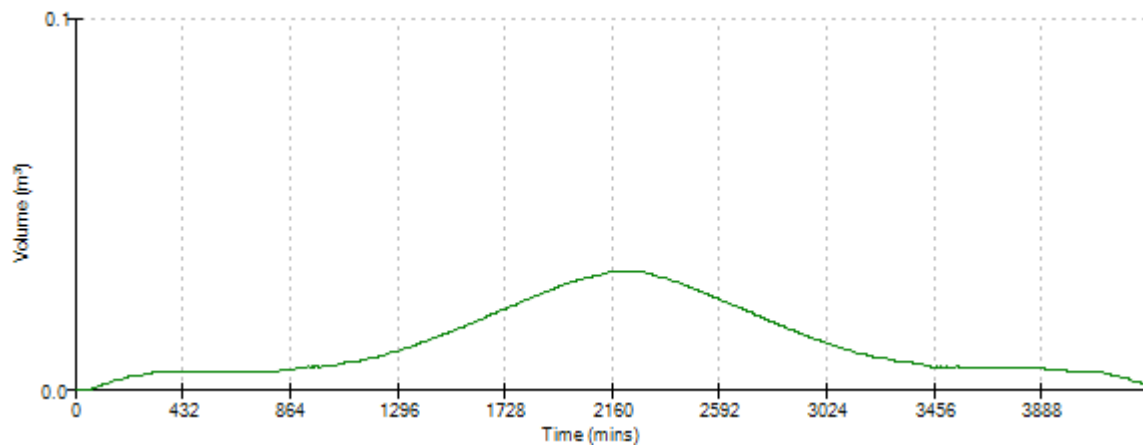
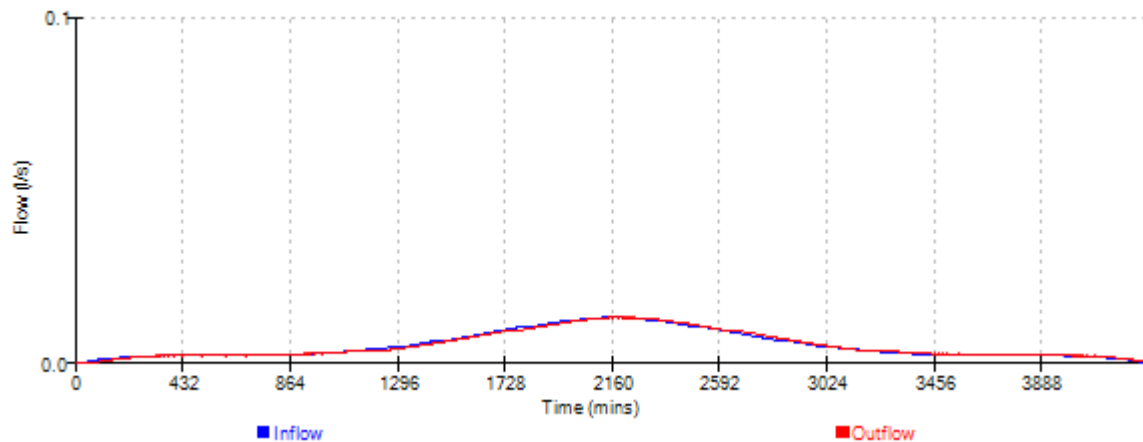
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Event: 2880 min Winter



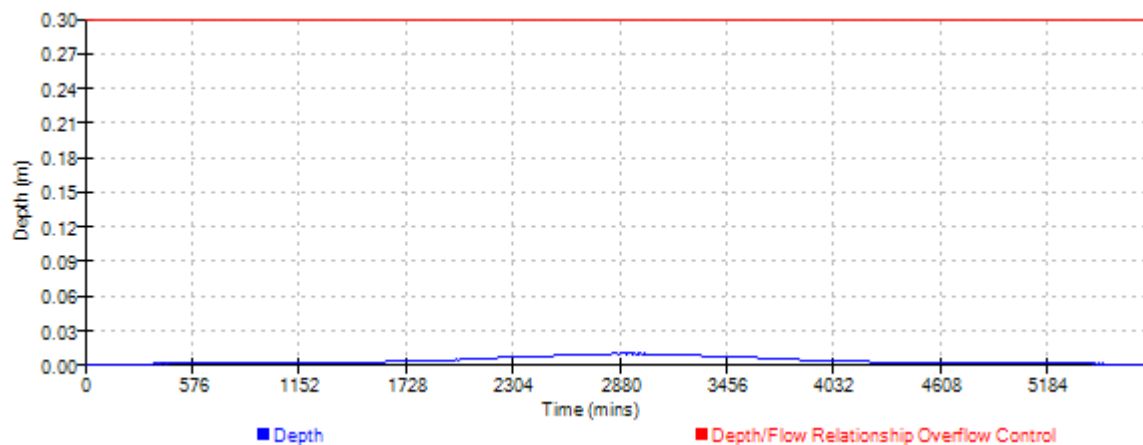
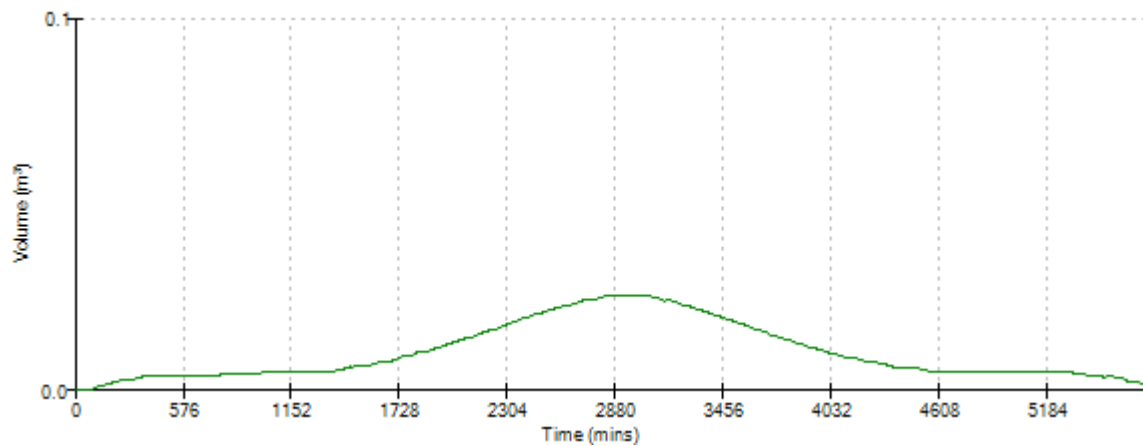
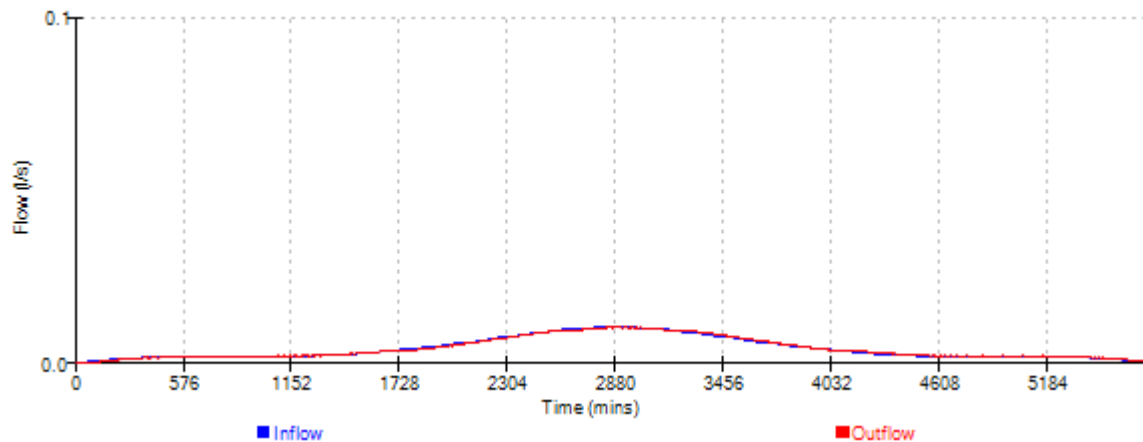
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Event: 4320 min Winter



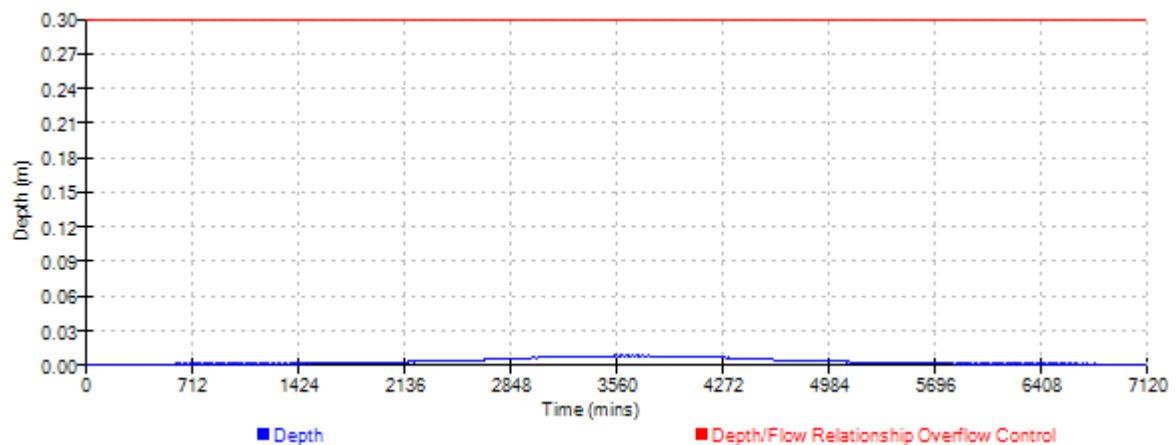
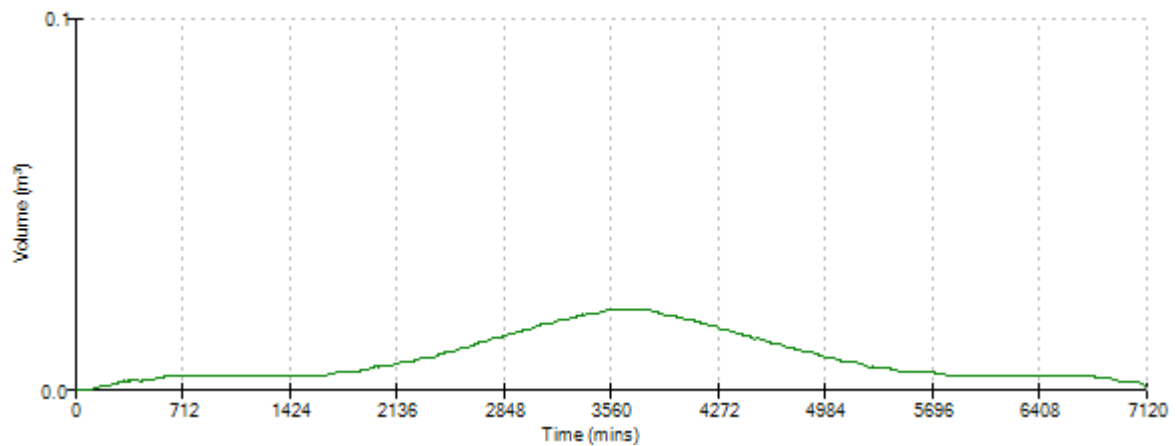
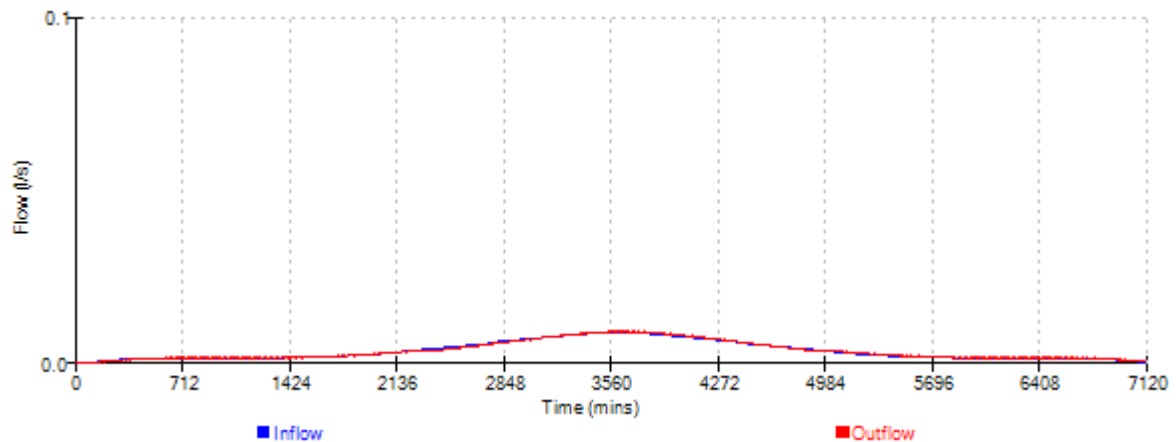
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Elstree Computing Ltd	Source Control w.12.6	

Event: 5760 min Winter



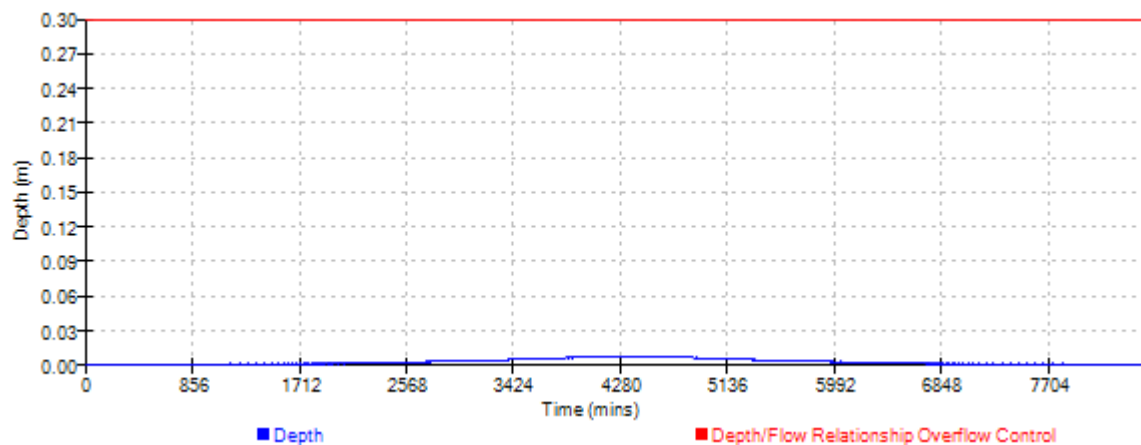
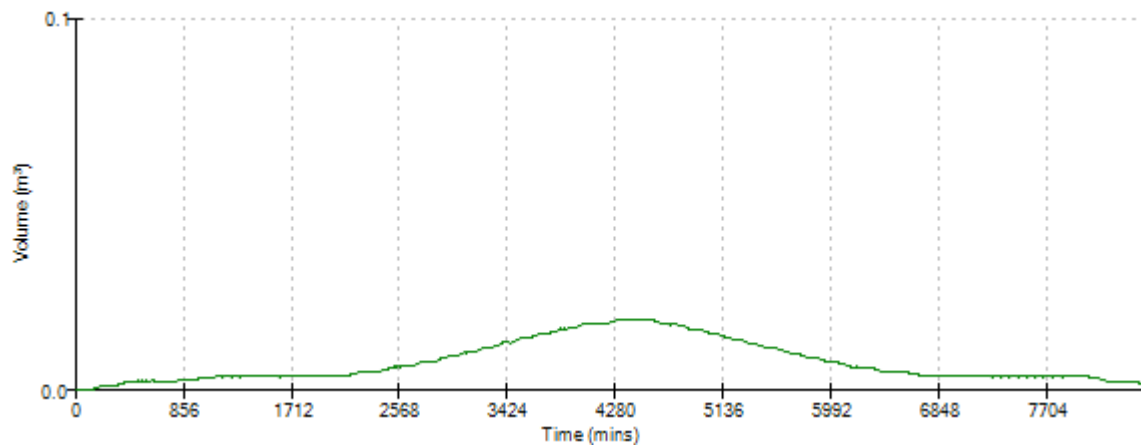
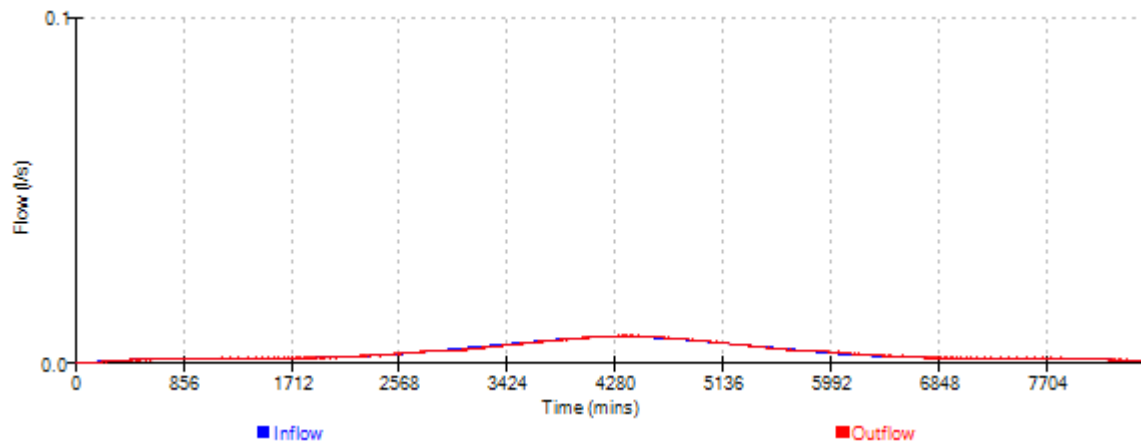
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Event: 7200 min Winter



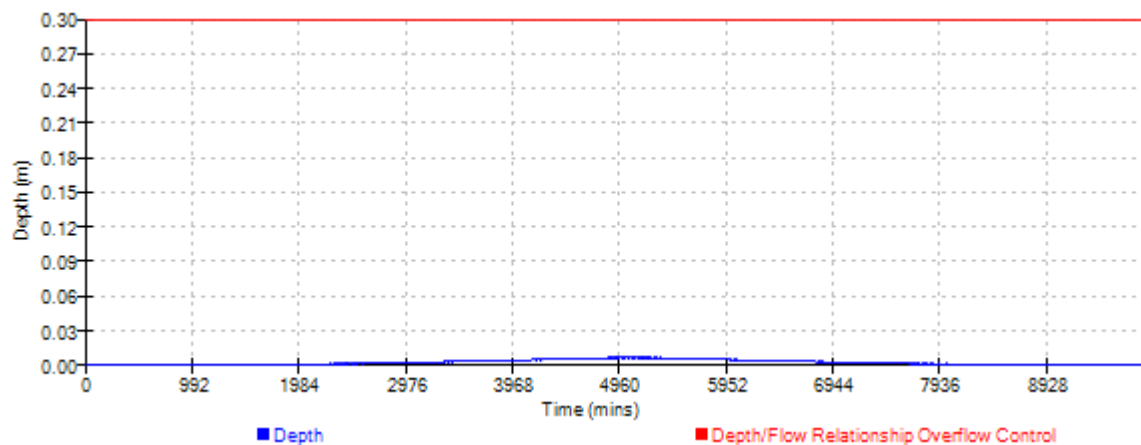
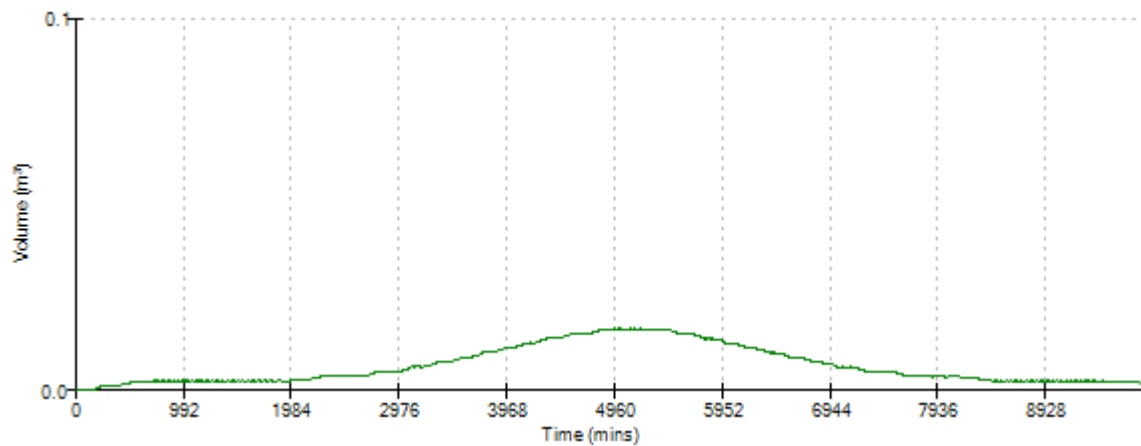
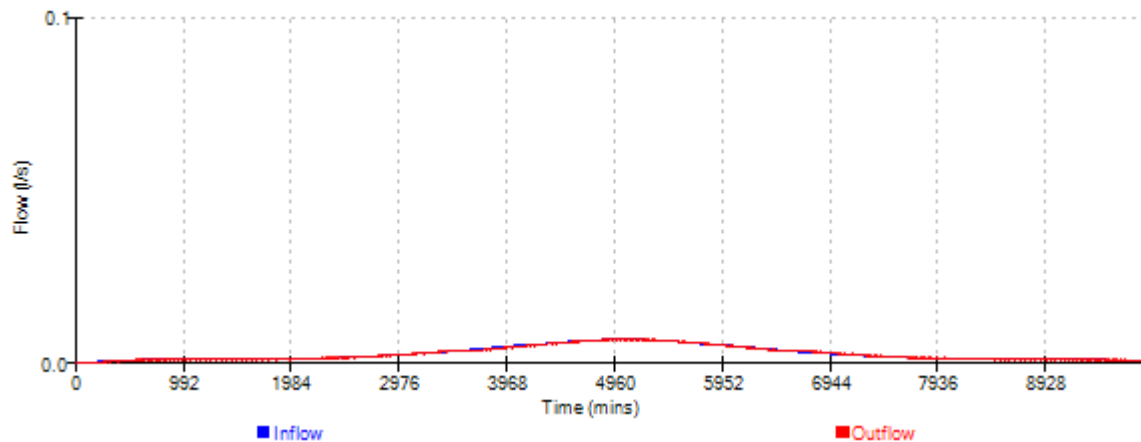
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Event: 8640 min Winter



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Event: 10080 min Winter



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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 74 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	63.220	0.120	0.1	0.0	0.1	0.3	0 K
30 min Summer	63.253	0.153	0.1	0.0	0.1	0.4	0 K
60 min Summer	63.276	0.176	0.1	0.0	0.1	0.4	0 K
120 min Summer	63.284	0.184	0.1	0.0	0.1	0.5	0 K
180 min Summer	63.280	0.180	0.1	0.0	0.1	0.5	0 K
240 min Summer	63.271	0.171	0.1	0.0	0.1	0.4	0 K
360 min Summer	63.254	0.154	0.1	0.0	0.1	0.4	0 K
480 min Summer	63.236	0.136	0.1	0.0	0.1	0.3	0 K
600 min Summer	63.219	0.119	0.1	0.0	0.1	0.3	0 K
720 min Summer	63.204	0.104	0.1	0.0	0.1	0.3	0 K
960 min Summer	63.180	0.080	0.1	0.0	0.1	0.2	0 K
1440 min Summer	63.151	0.051	0.1	0.0	0.1	0.1	0 K
2160 min Summer	63.139	0.039	0.0	0.0	0.0	0.1	0 K
2880 min Summer	63.132	0.032	0.0	0.0	0.0	0.1	0 K
4320 min Summer	63.124	0.024	0.0	0.0	0.0	0.1	0 K
5760 min Summer	63.119	0.019	0.0	0.0	0.0	0.0	0 K
7200 min Summer	63.116	0.016	0.0	0.0	0.0	0.0	0 K
8640 min Summer	63.114	0.014	0.0	0.0	0.0	0.0	0 K
10080 min Summer	63.112	0.012	0.0	0.0	0.0	0.0	0 K
15 min Winter	63.220	0.120	0.1	0.0	0.1	0.3	0 K
30 min Winter	63.253	0.153	0.1	0.0	0.1	0.4	0 K
60 min Winter	63.277	0.177	0.1	0.0	0.1	0.4	0 K
120 min Winter	63.282	0.182	0.1	0.0	0.1	0.5	0 K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
15 min Summer	136.286	0.0	17
30 min Summer	91.635	0.0	32
60 min Summer	58.739	0.0	60
120 min Summer	36.288	0.0	92
180 min Summer	26.937	0.0	126
240 min Summer	21.660	0.0	160
360 min Summer	15.950	0.0	228
480 min Summer	12.815	0.0	294
600 min Summer	10.804	0.0	356
720 min Summer	9.393	0.0	418
960 min Summer	7.524	0.0	532
1440 min Summer	5.493	0.0	750
2160 min Summer	4.002	0.0	1104
2880 min Summer	3.192	0.0	1472
4320 min Summer	2.316	0.0	2204
5760 min Summer	1.843	0.0	2936
7200 min Summer	1.545	0.0	3672
8640 min Summer	1.338	0.0	4408
10080 min Summer	1.184	0.0	5136
15 min Winter	136.286	0.0	17
30 min Winter	91.635	0.0	31
60 min Winter	58.739	0.0	58
120 min Winter	36.288	0.0	96

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	63.274	0.174	0.1	0.0	0.1	0.4	0 K
240 min Winter	63.260	0.160	0.1	0.0	0.1	0.4	0 K
360 min Winter	63.233	0.133	0.1	0.0	0.1	0.3	0 K
480 min Winter	63.207	0.107	0.1	0.0	0.1	0.3	0 K
600 min Winter	63.185	0.085	0.1	0.0	0.1	0.2	0 K
720 min Winter	63.166	0.066	0.1	0.0	0.1	0.2	0 K
960 min Winter	63.148	0.048	0.1	0.0	0.1	0.1	0 K
1440 min Winter	63.136	0.036	0.0	0.0	0.0	0.1	0 K
2160 min Winter	63.126	0.026	0.0	0.0	0.0	0.1	0 K
2880 min Winter	63.121	0.021	0.0	0.0	0.0	0.1	0 K
4320 min Winter	63.116	0.016	0.0	0.0	0.0	0.0	0 K
5760 min Winter	63.112	0.012	0.0	0.0	0.0	0.0	0 K
7200 min Winter	63.110	0.010	0.0	0.0	0.0	0.0	0 K
8640 min Winter	63.109	0.009	0.0	0.0	0.0	0.0	0 K
10080 min Winter	63.108	0.008	0.0	0.0	0.0	0.0	0 K

Storm Event	Rain (mm/hr)	Overflow Volume (m³)	Time-Peak (mins)
180 min Winter	26.937	0.0	134
240 min Winter	21.660	0.0	172
360 min Winter	15.950	0.0	242
480 min Winter	12.815	0.0	308
600 min Winter	10.804	0.0	368
720 min Winter	9.393	0.0	420
960 min Winter	7.524	0.0	512
1440 min Winter	5.493	0.0	752
2160 min Winter	4.002	0.0	1124
2880 min Winter	3.192	0.0	1468
4320 min Winter	2.316	0.0	2216
5760 min Winter	1.843	0.0	2944
7200 min Winter	1.545	0.0	3680
8640 min Winter	1.338	0.0	4424
10080 min Winter	1.184	0.0	5056

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.348	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+45

Time / Area Diagram

Total Area (ha) 0.001

Time (mins)	Area (ha)
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0-4	0.001
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Model Details

Storage is Online Cover Level (m) 63.700

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.04461	Diameter/Width (m)	1.1
Safety Factor	2.0	Length (m)	7.7
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	63.100		

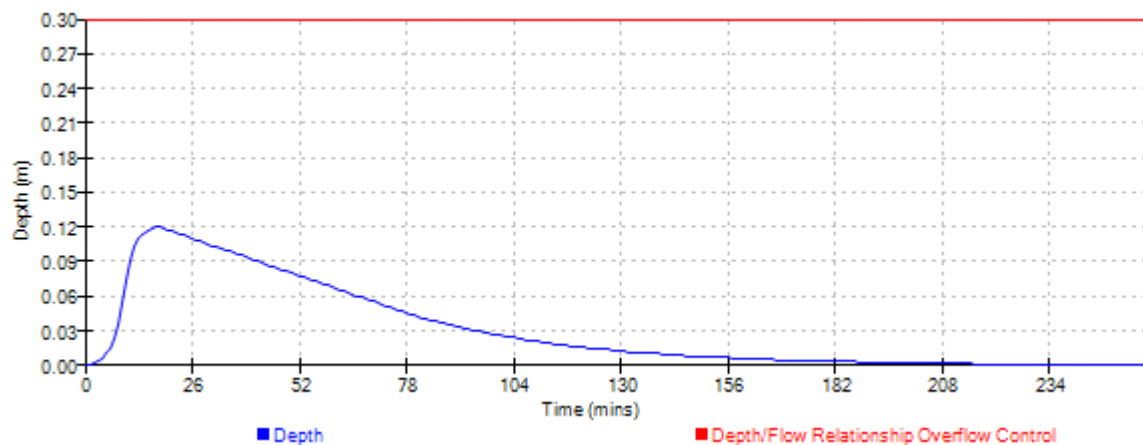
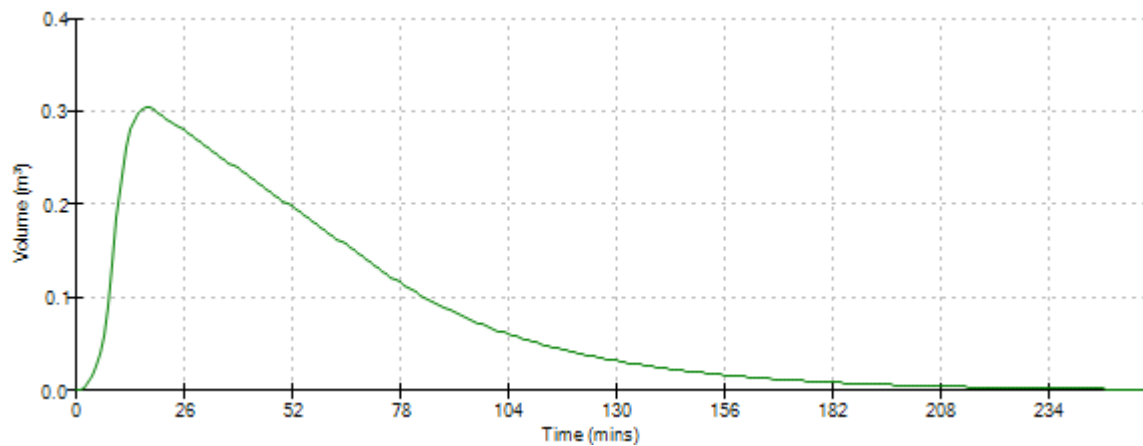
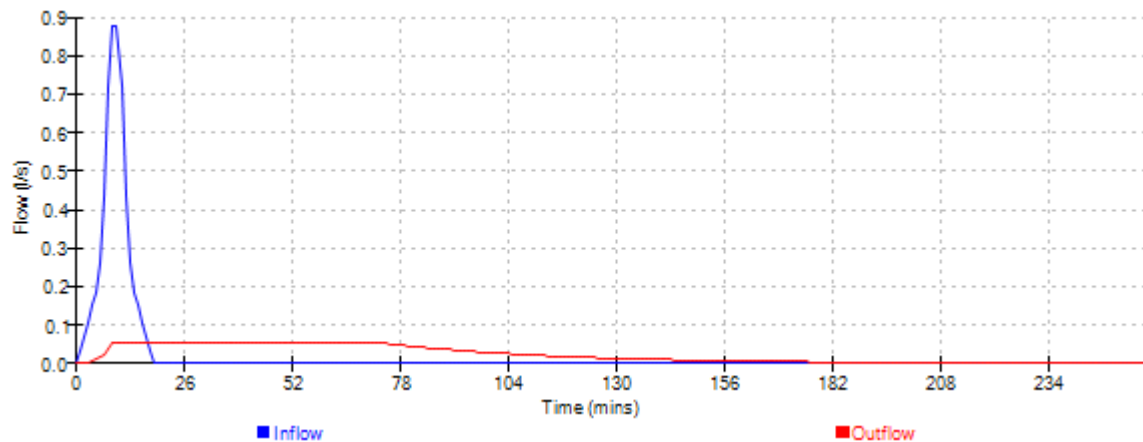
Depth/Flow Relationship Overflow Control

Invert Level (m) 63.400

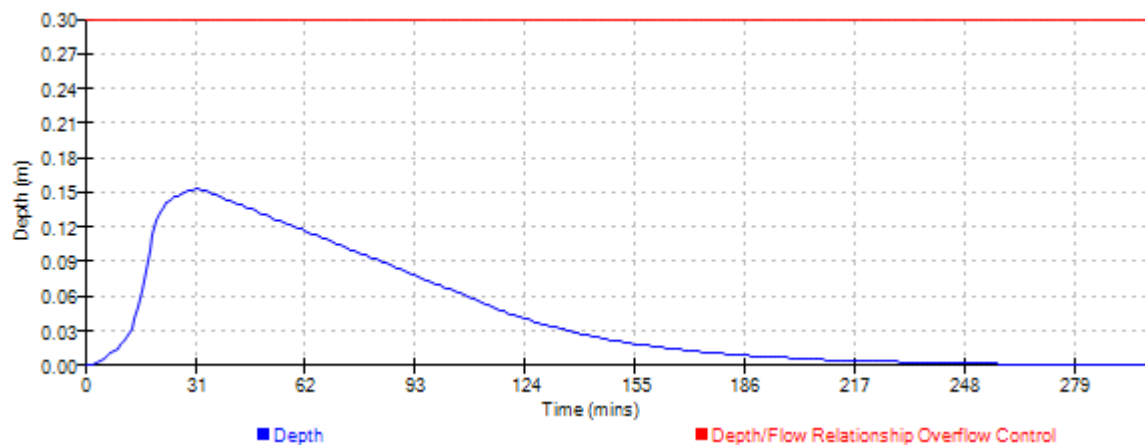
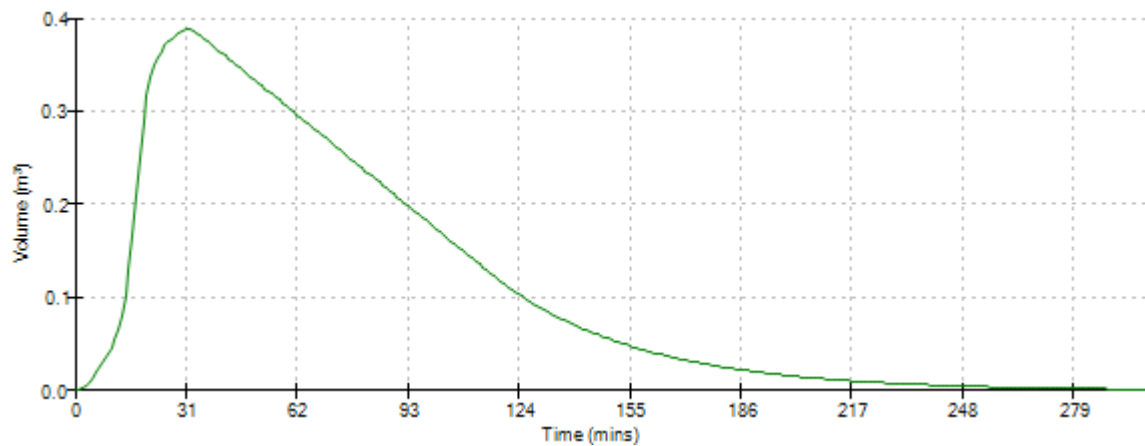
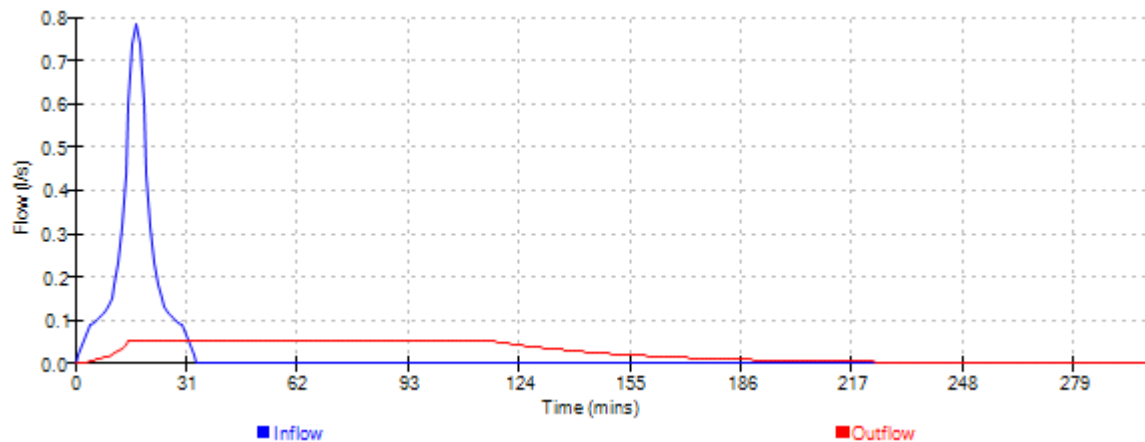
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
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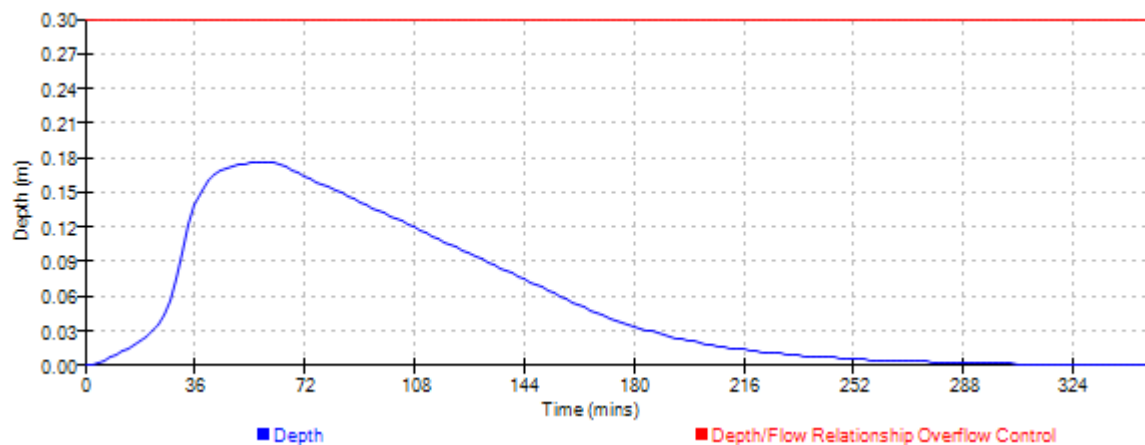
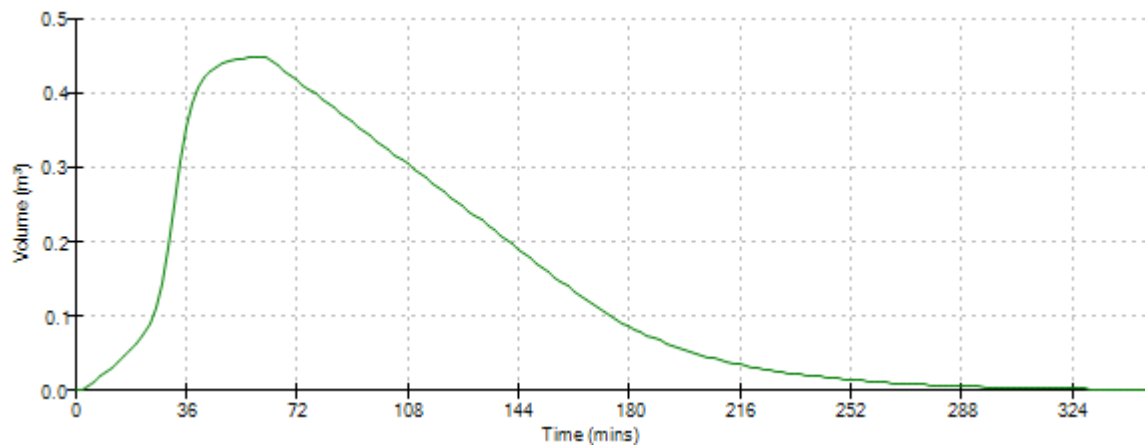
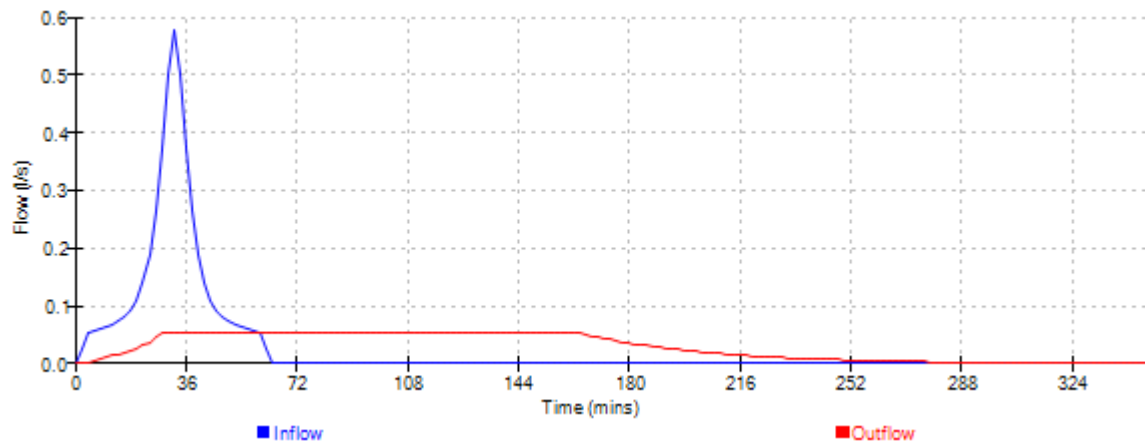
Event: 15 min Summer



Event: 30 min Summer

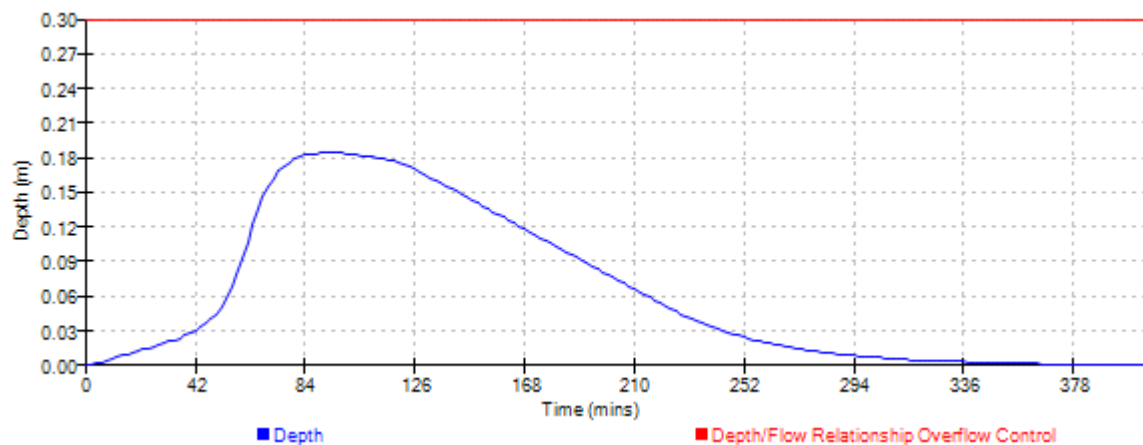
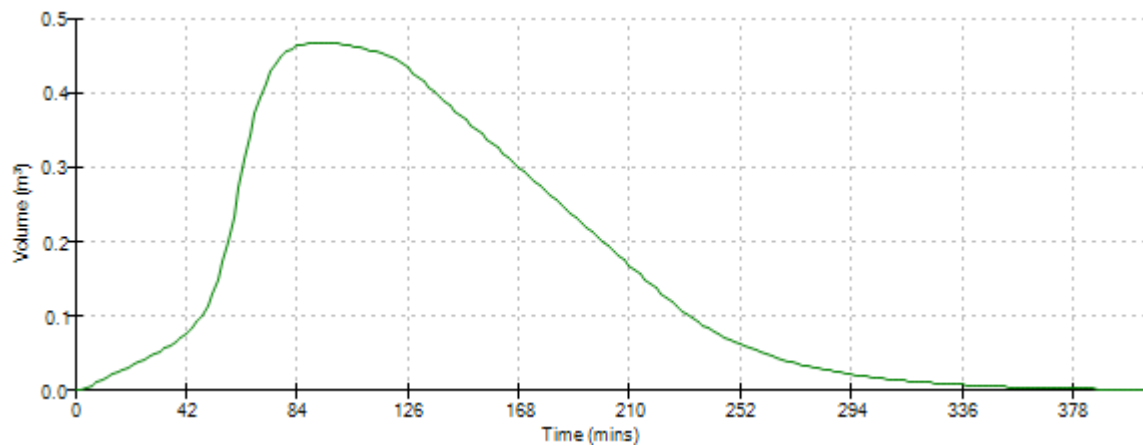
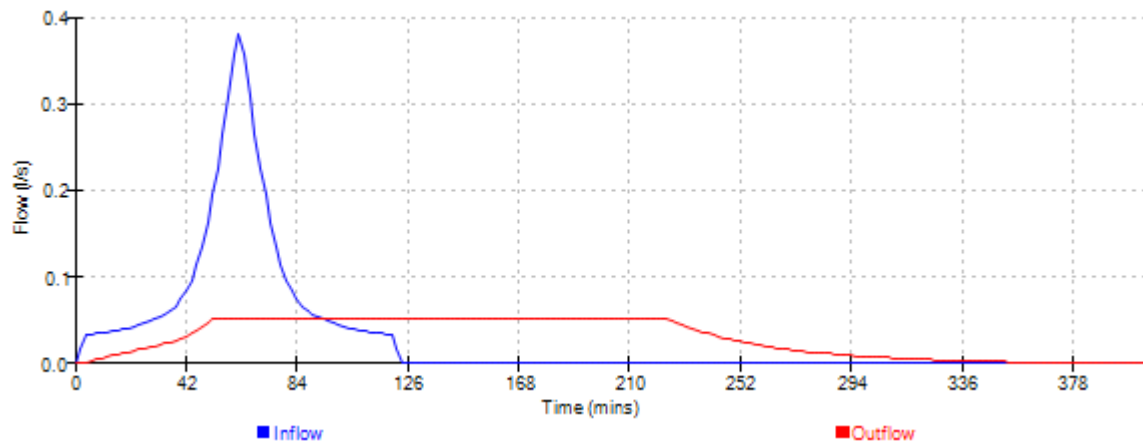


Event: 60 min Summer



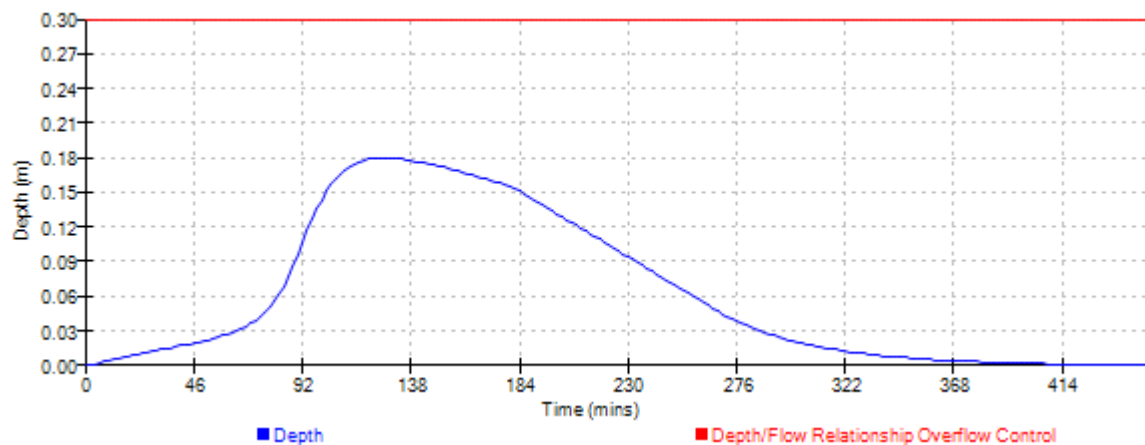
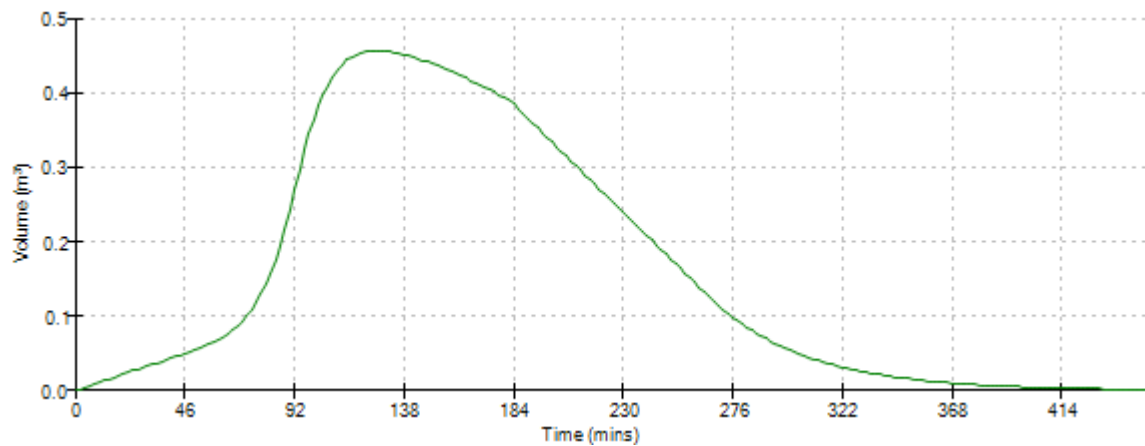
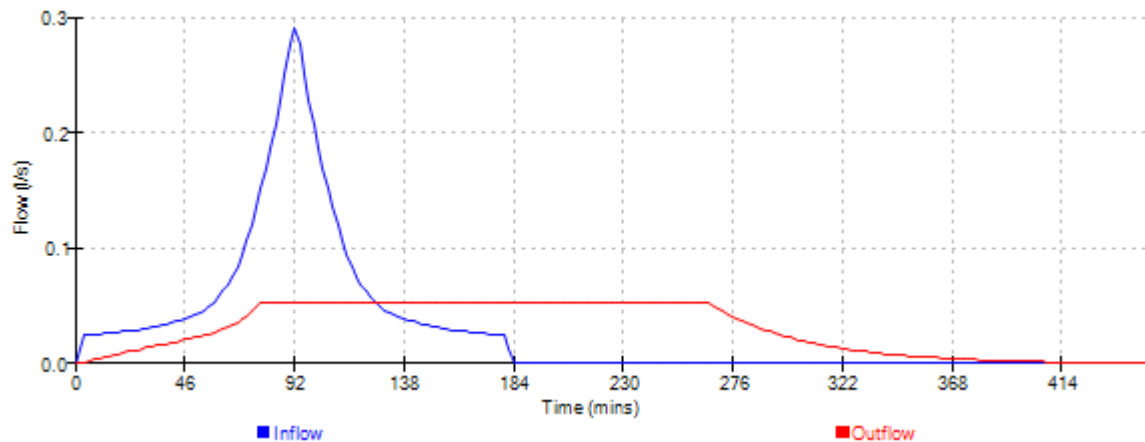
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Event: 120 min Summer

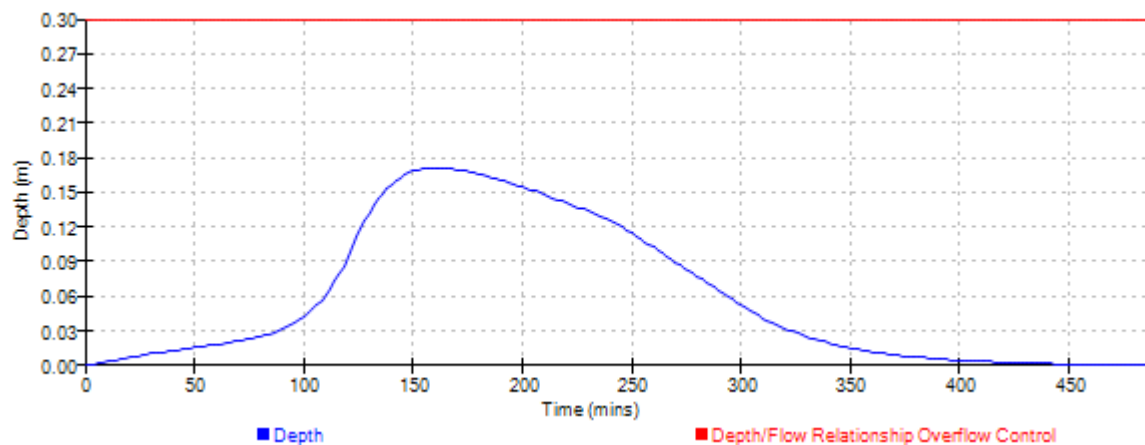
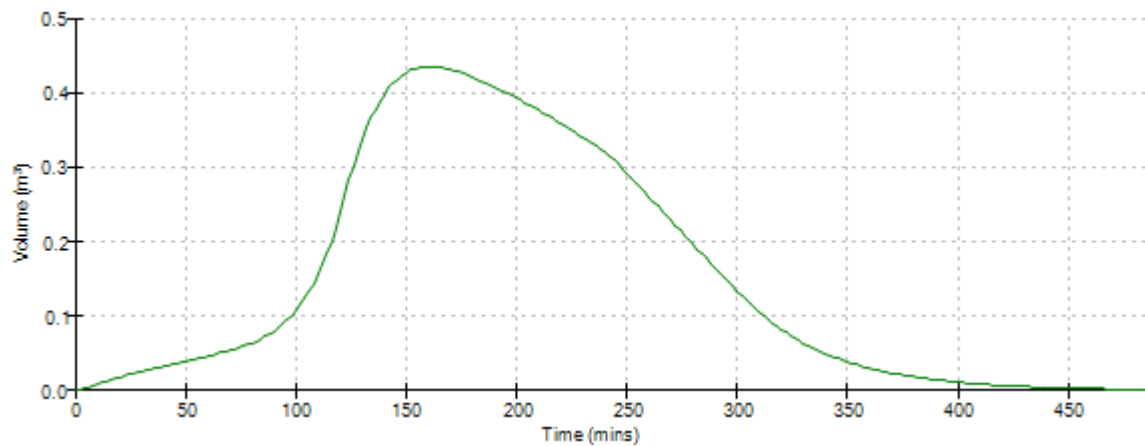
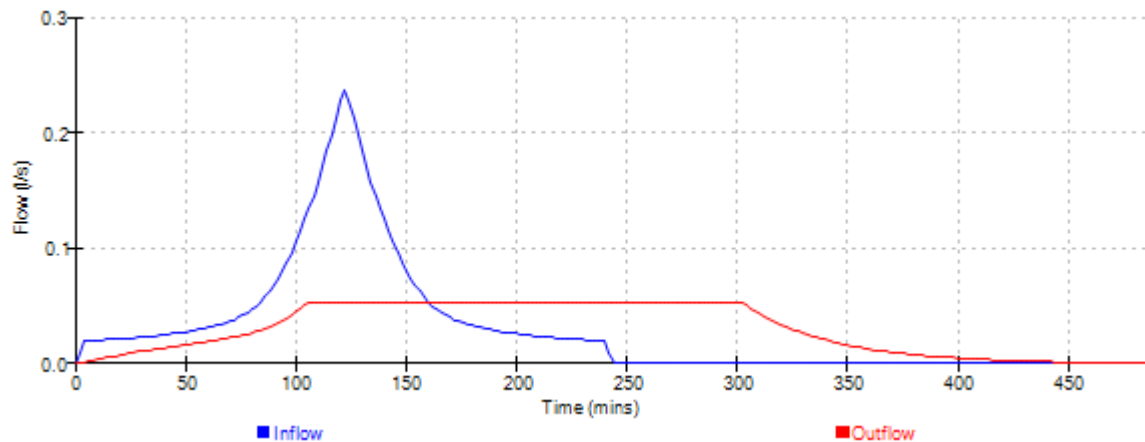


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Event: 180 min Summer

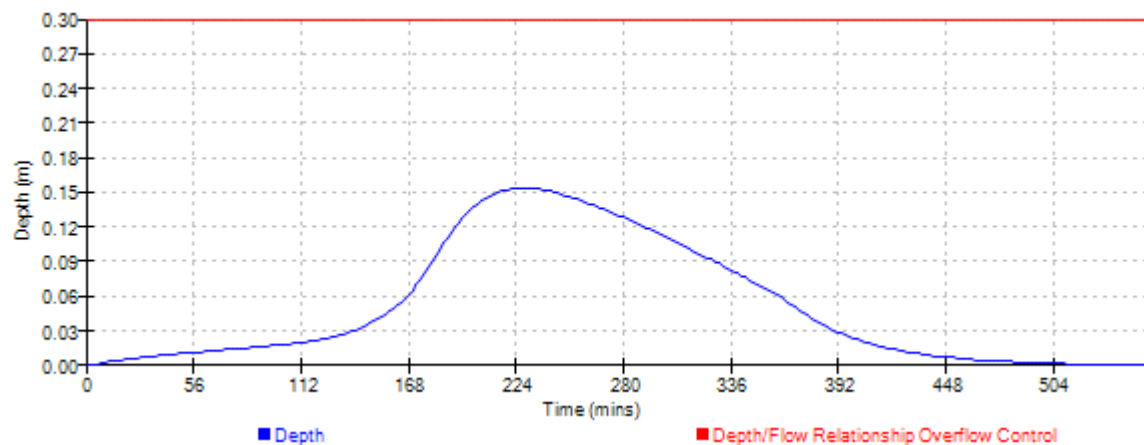
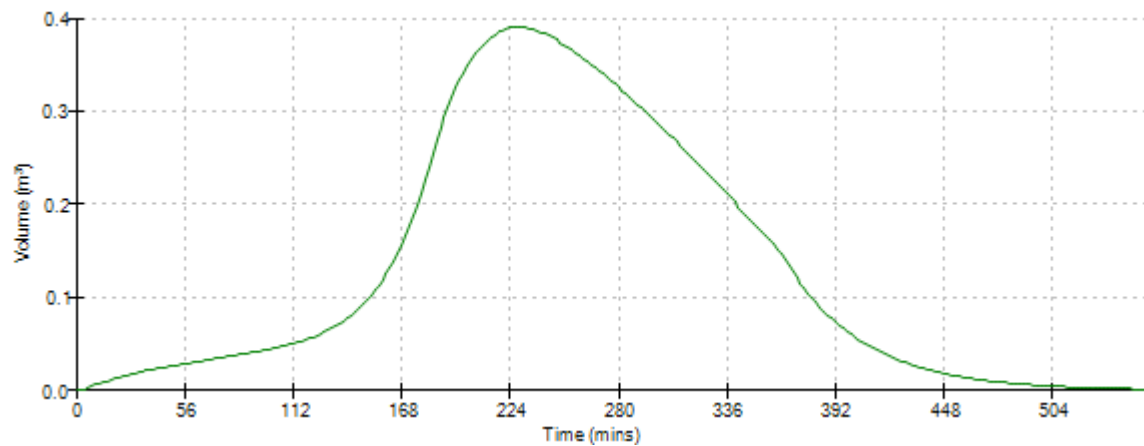
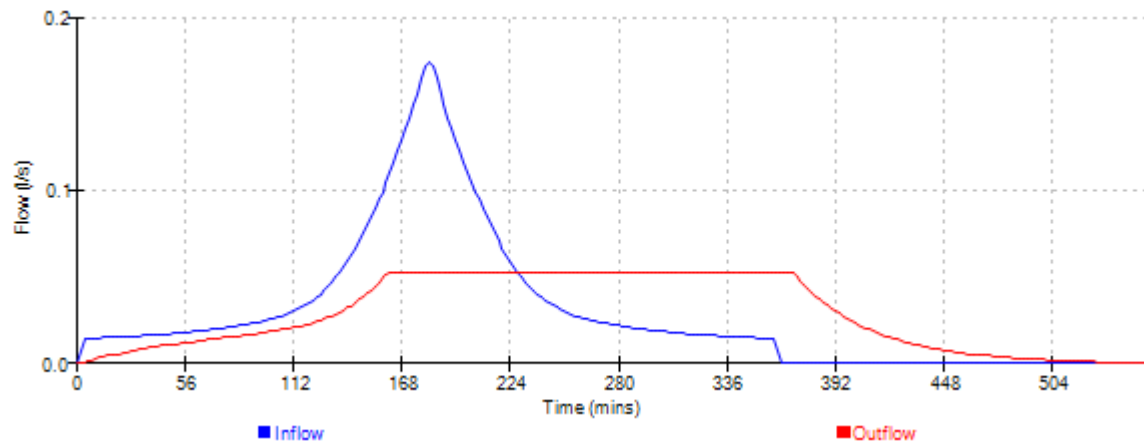


Event: 240 min Summer



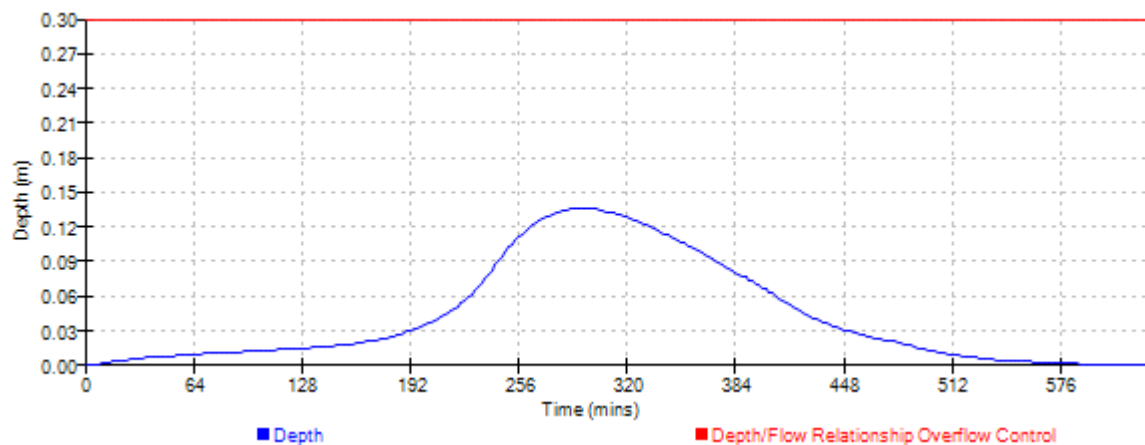
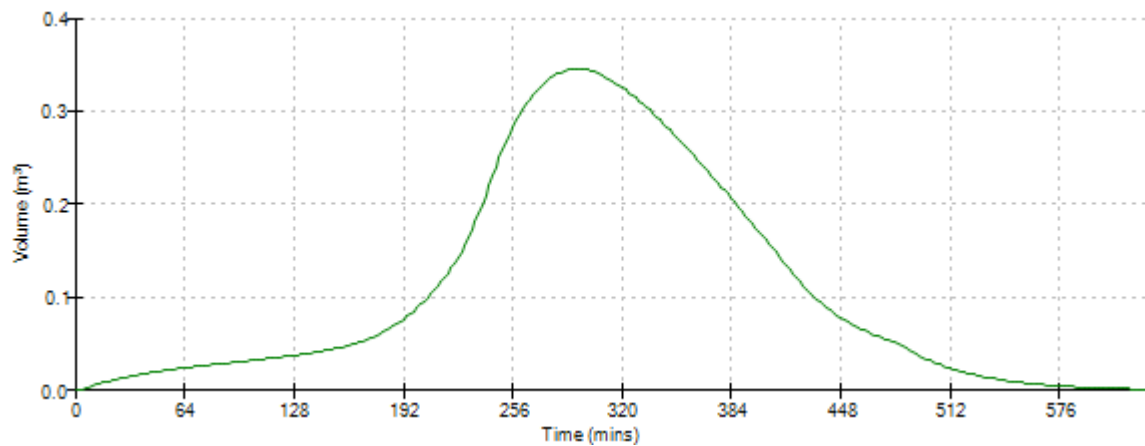
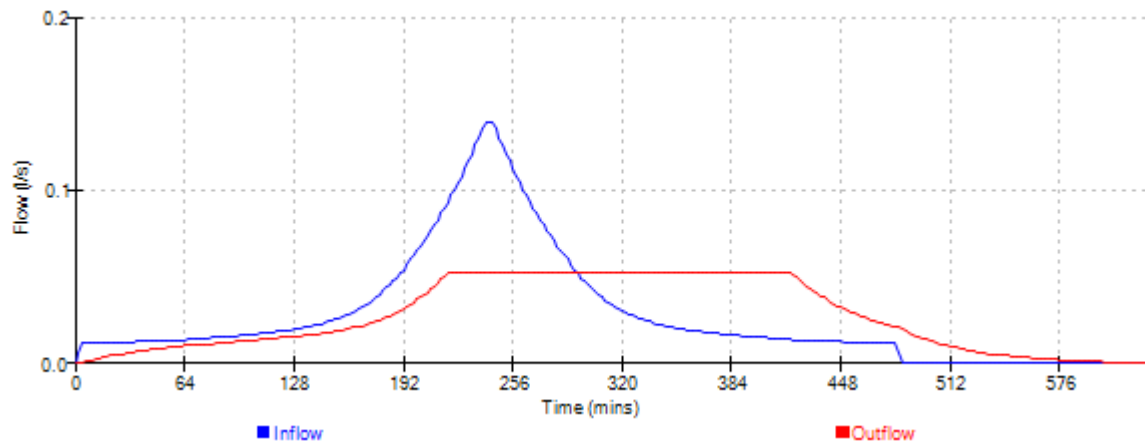
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Event: 360 min Summer

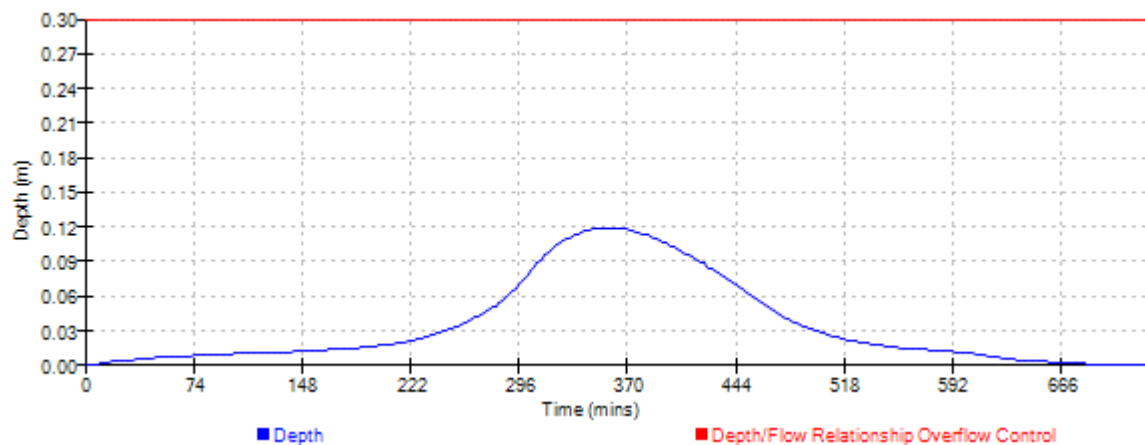
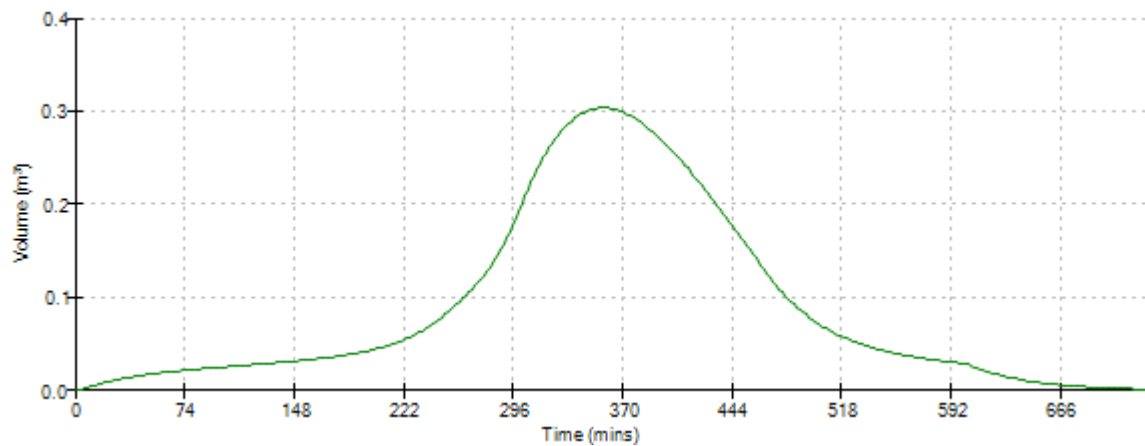
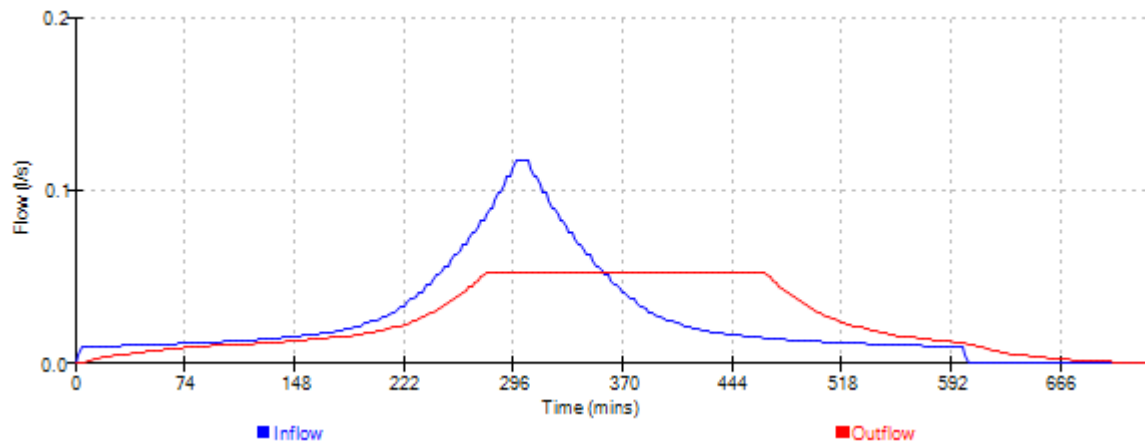


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Event: 480 min Summer

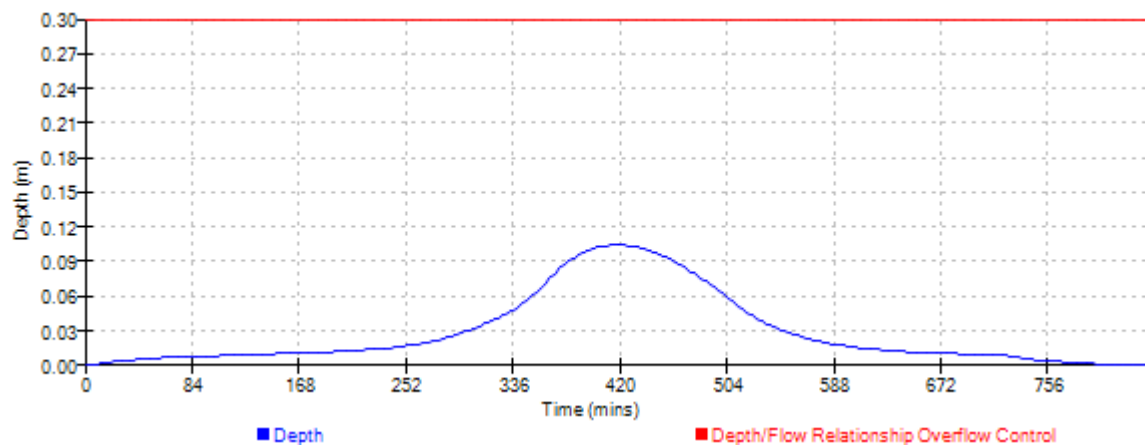
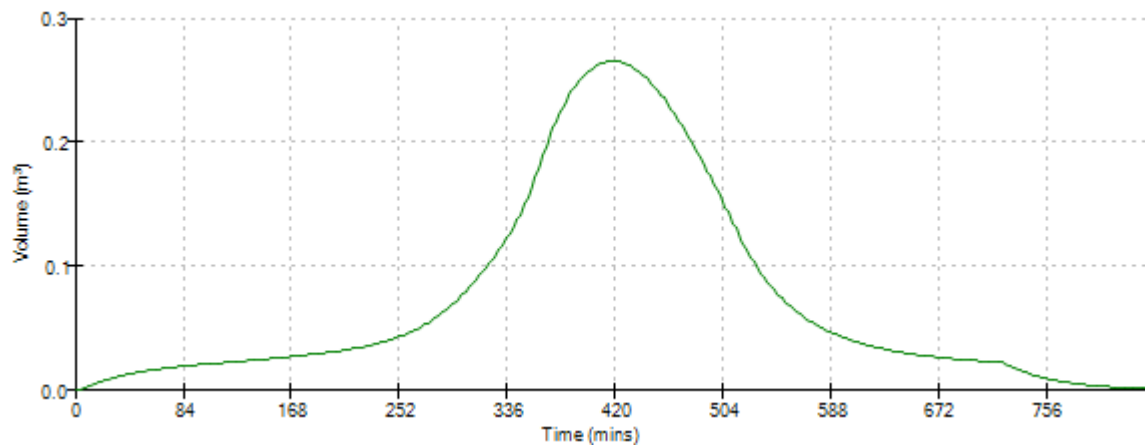
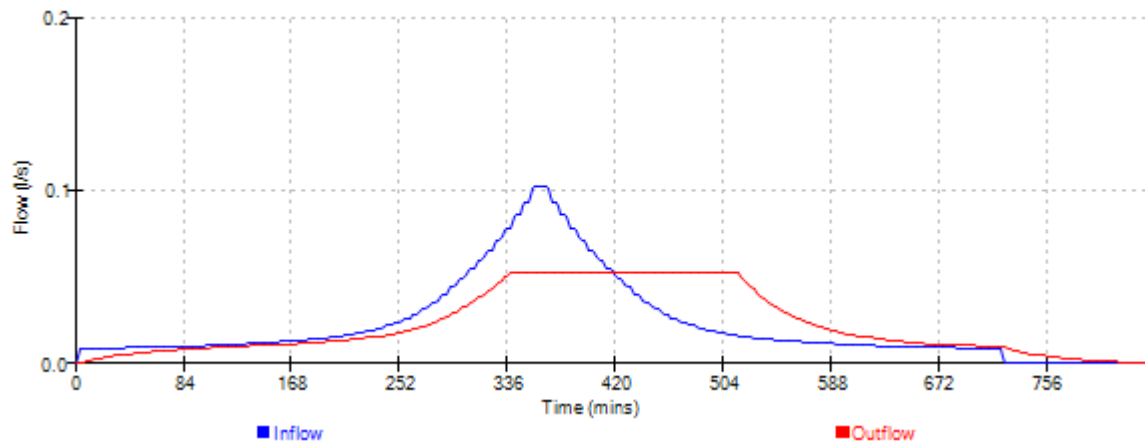


Event: 600 min Summer



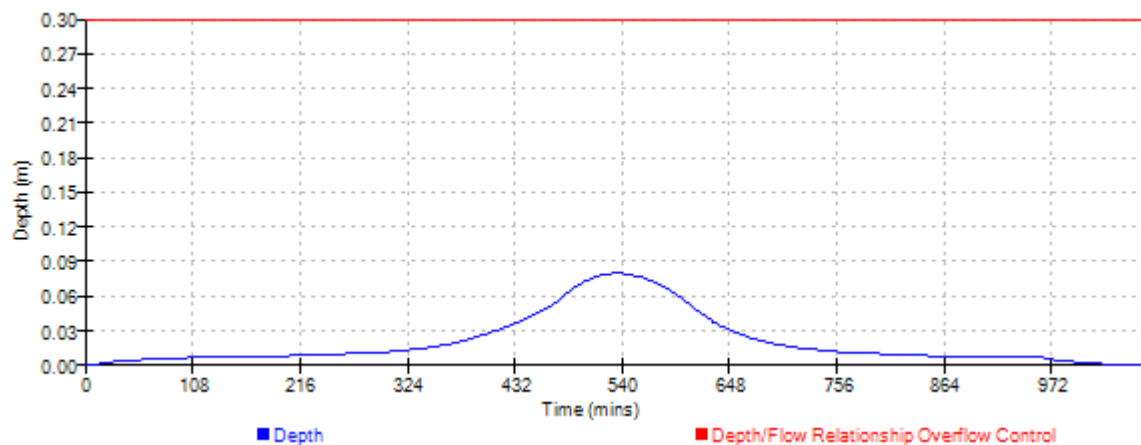
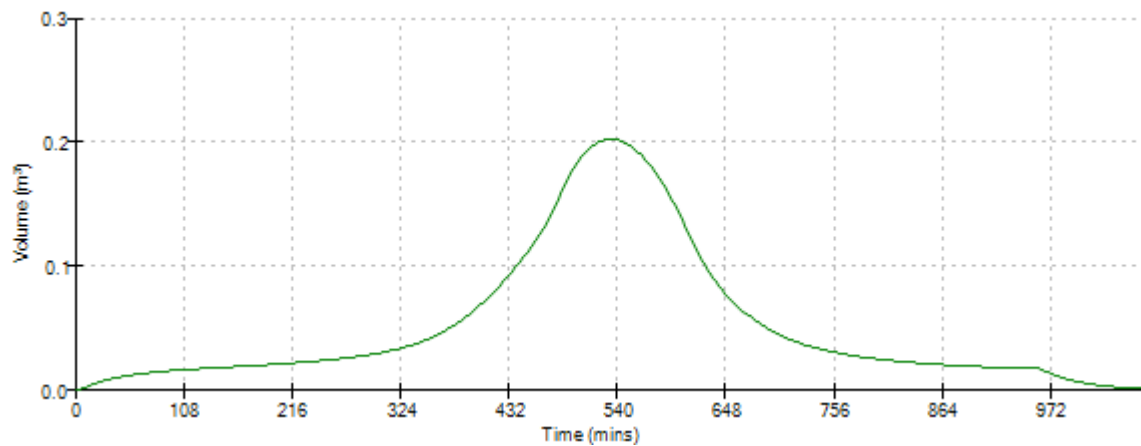
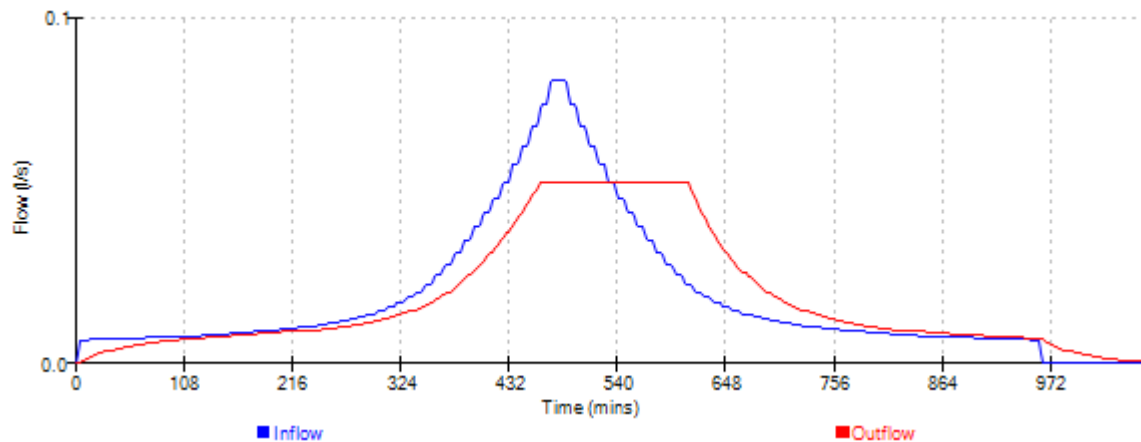
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Event: 720 min Summer



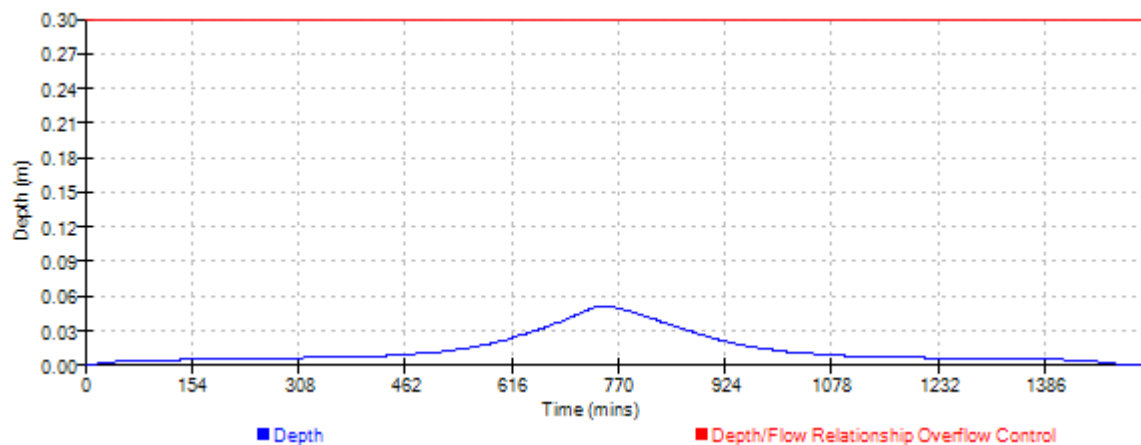
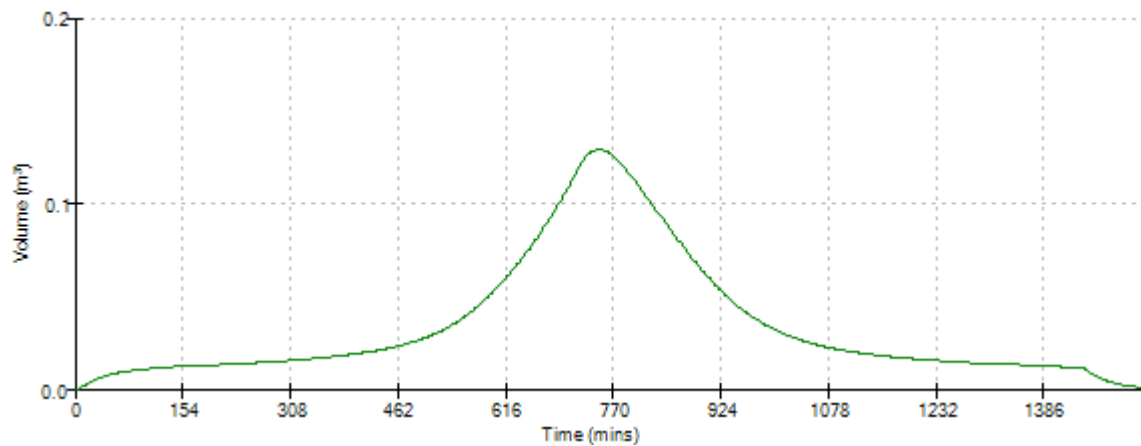
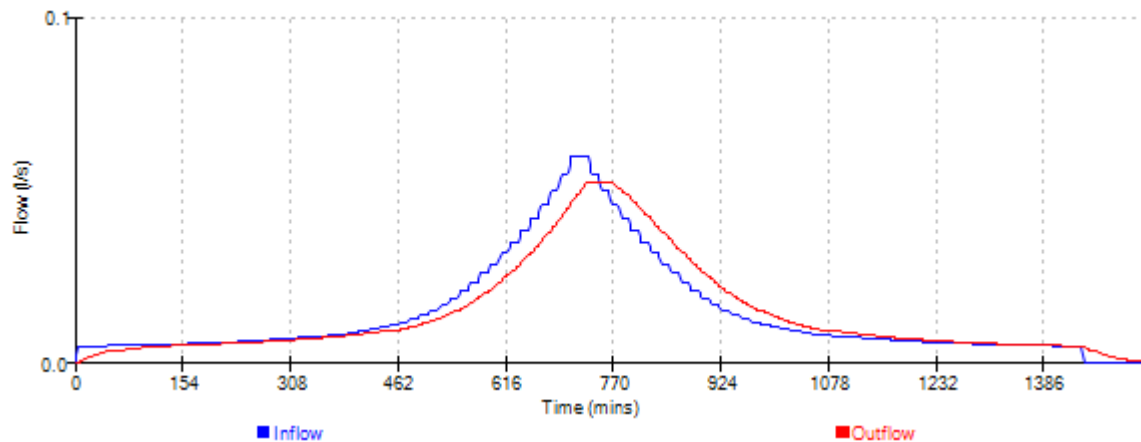
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Event: 960 min Summer



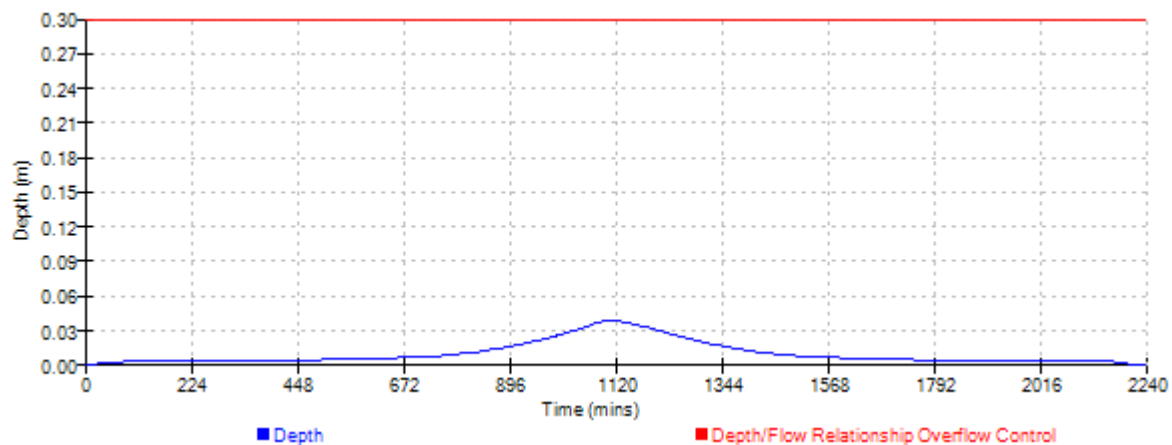
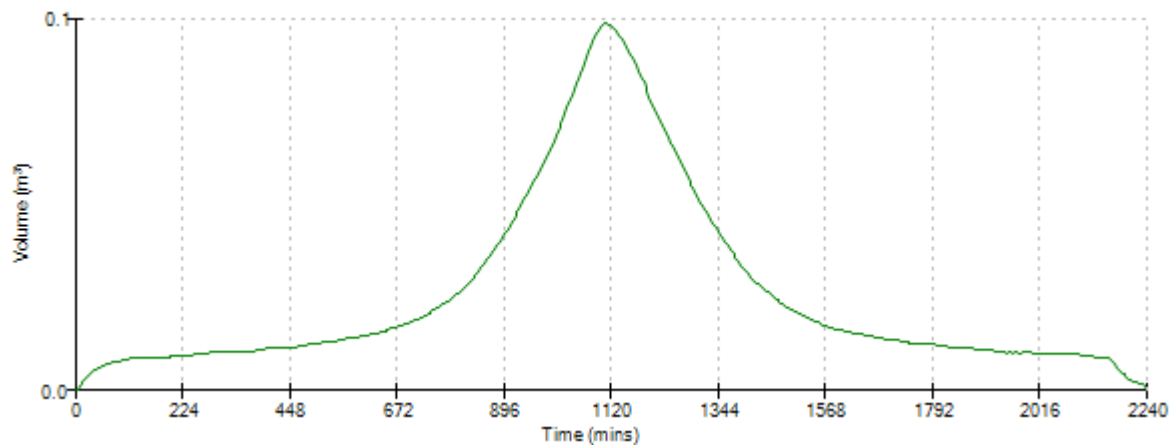
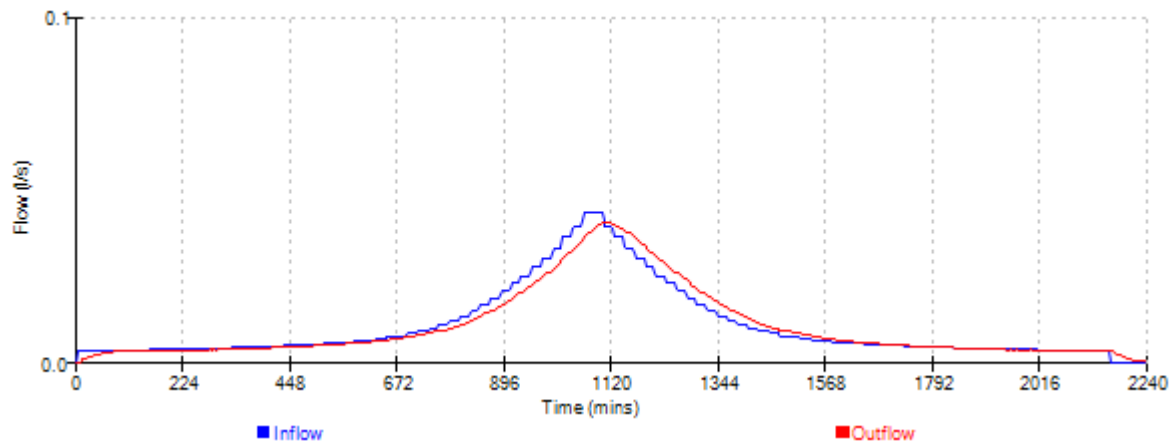
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Event: 1440 min Summer



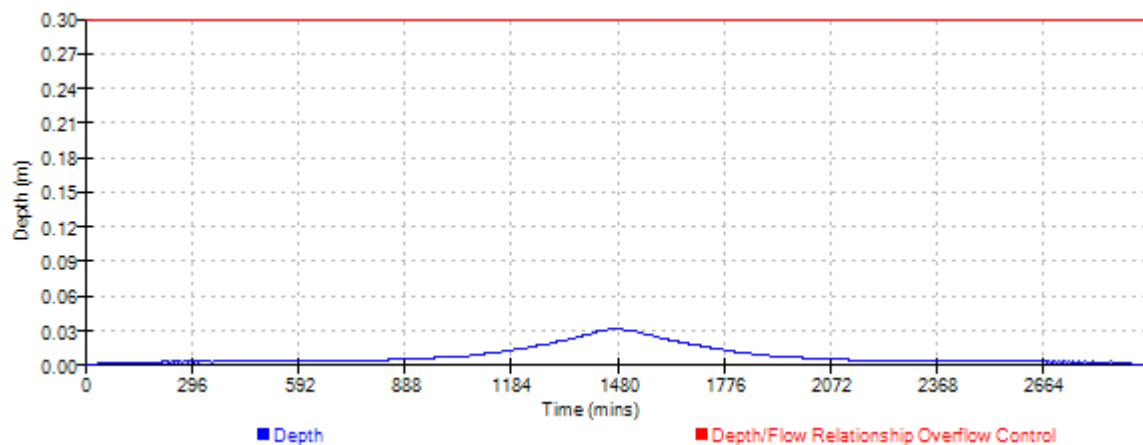
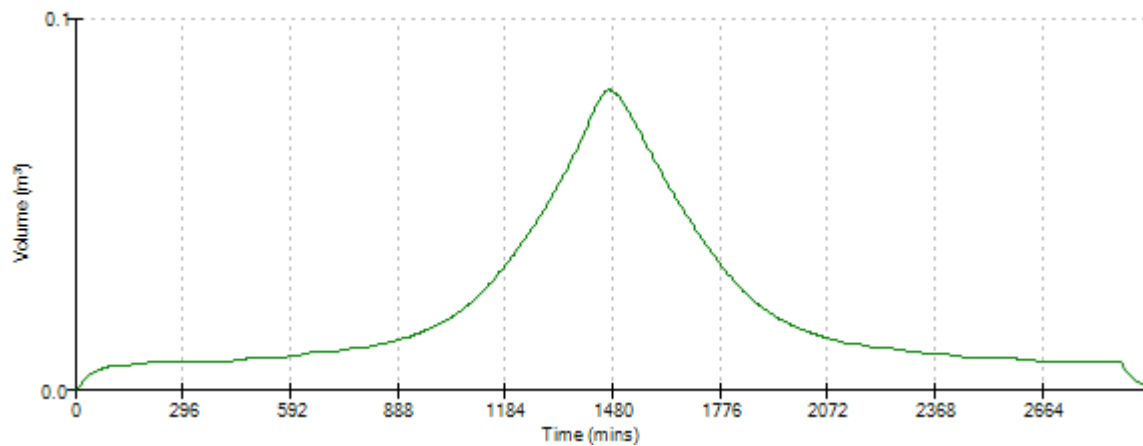
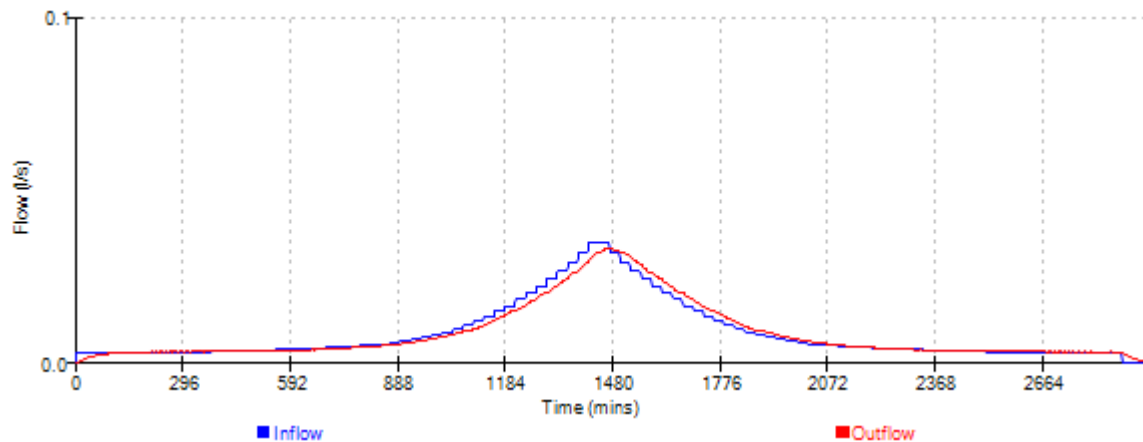
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Event: 2160 min Summer



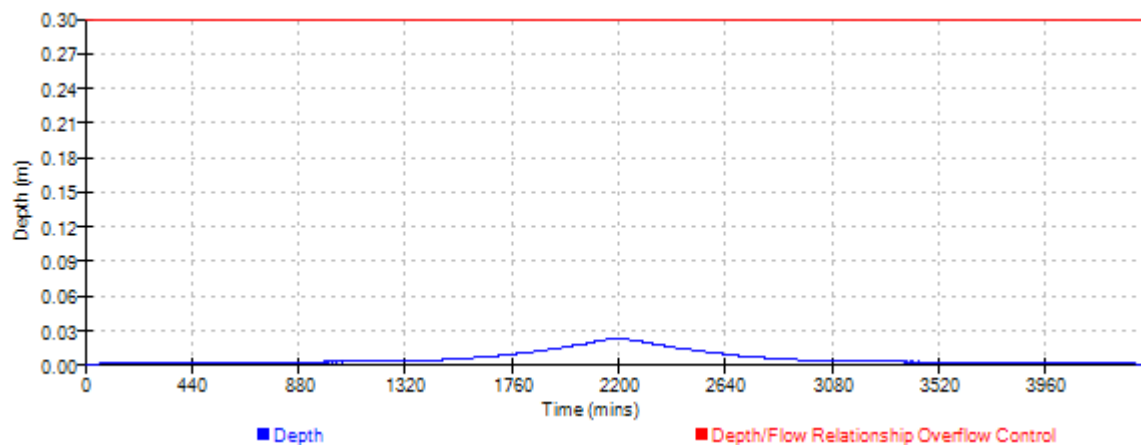
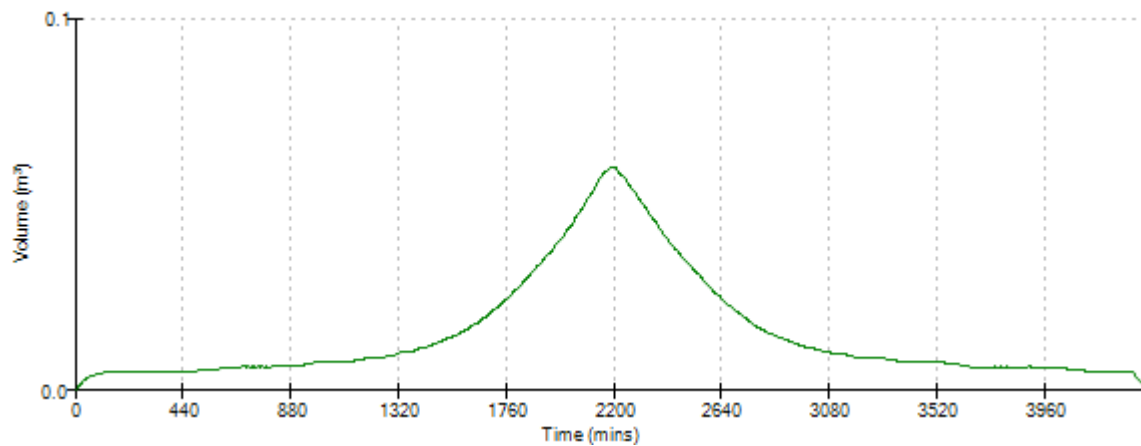
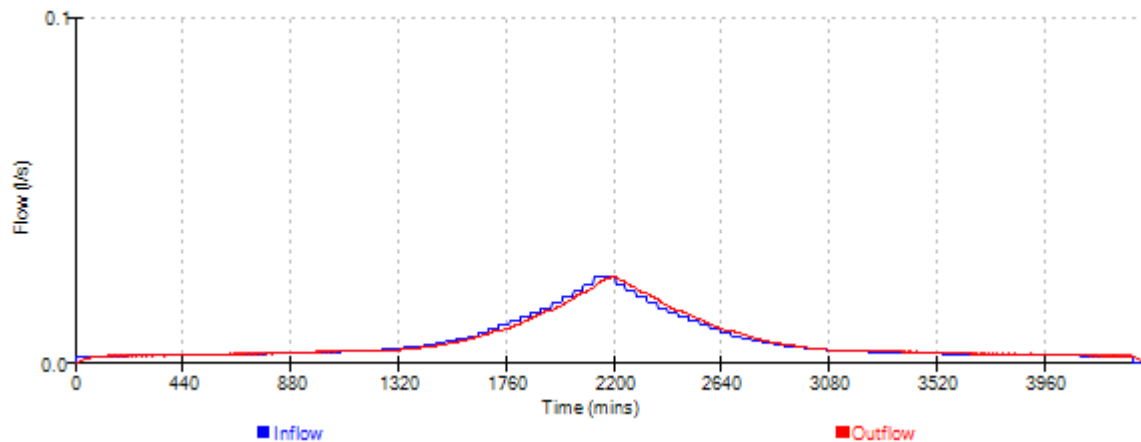
Dixon Hurst Kemp Victoria Court 22 St Pancras West Sussex PO19 7GD Date Oct 25 File Rain Garden storage d... Elstree Computing Ltd	Hurst Road, Hassocks Surface Water Drainage Rain Garden Design Rev03 Designed by JS Checked by Source Control w.12.6	Page 18 
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Event: 2880 min Summer



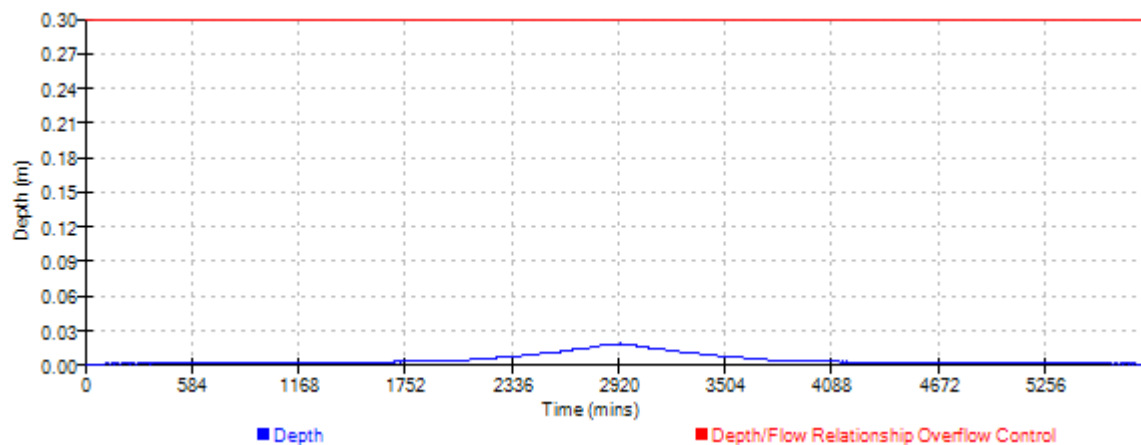
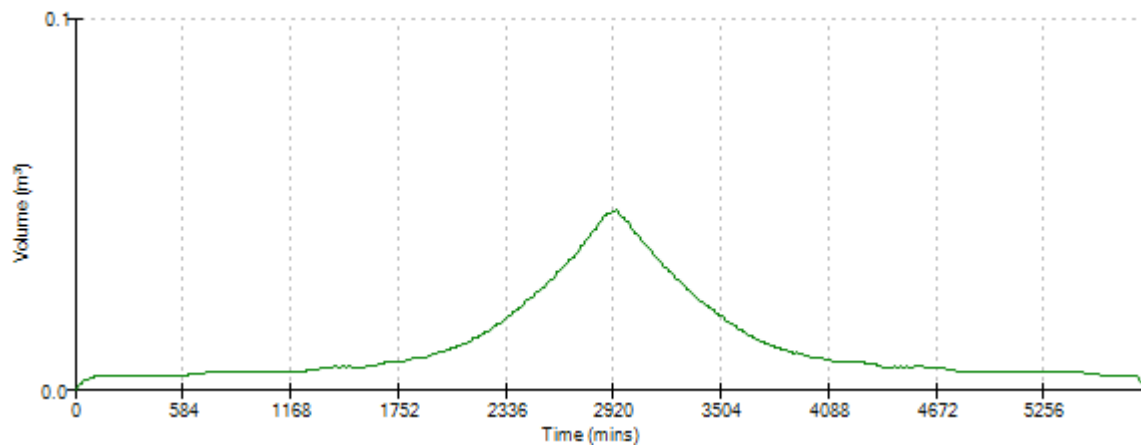
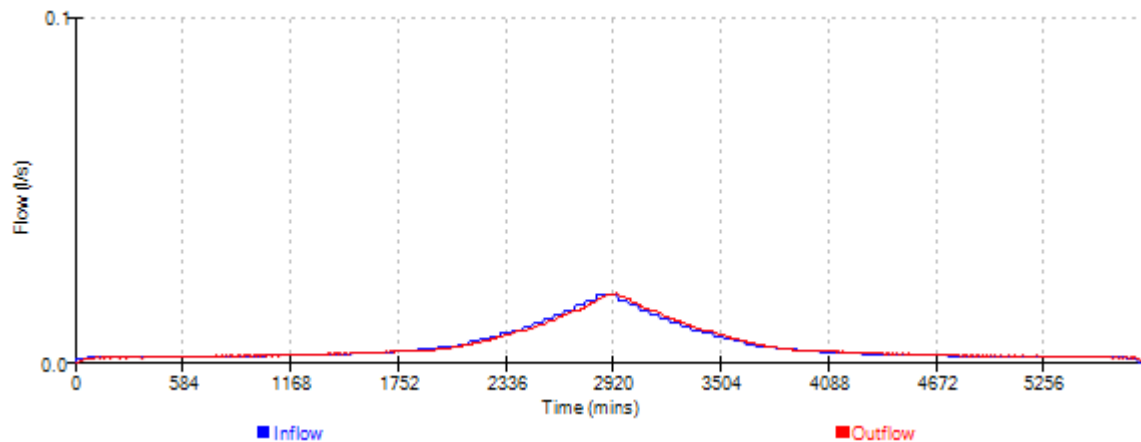
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Elstree Computing Ltd	Source Control w.12.6	

Event: 4320 min Summer



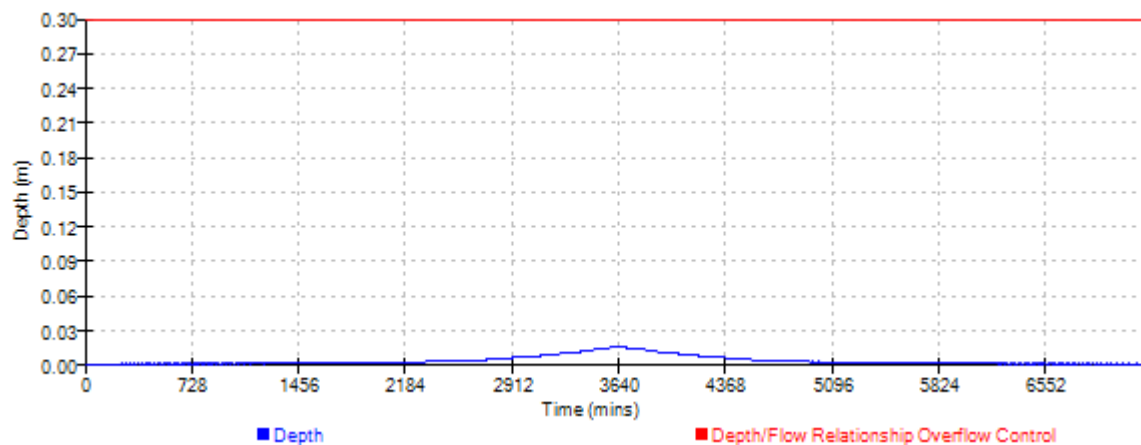
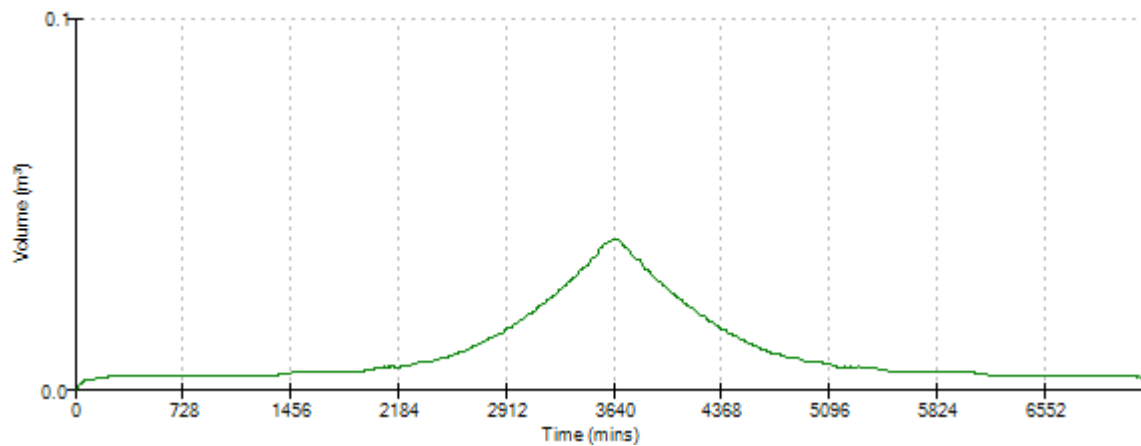
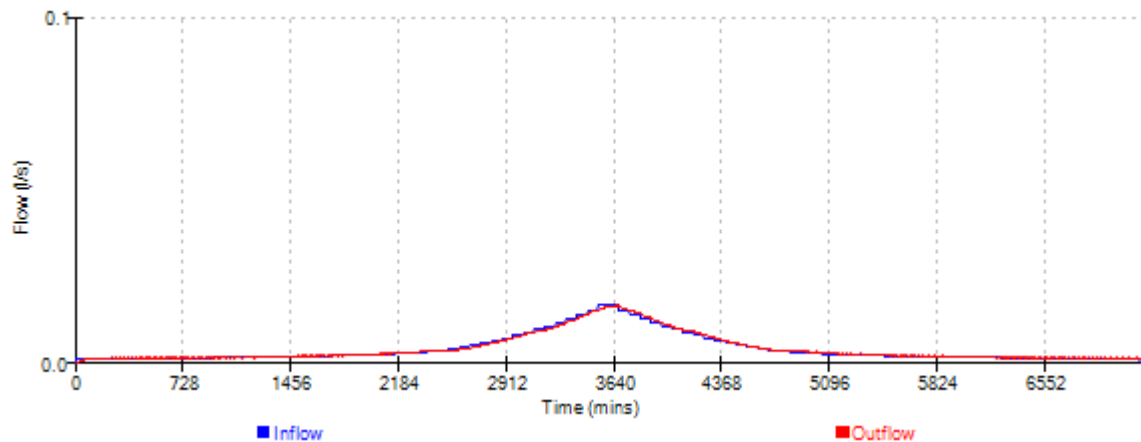
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22 St Pancras	Surface Water Drainage	
West Sussex PO19 7GD	Rain Garden Design Rev03	
Date Oct 25	Designed by JS	
File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 5760 min Summer



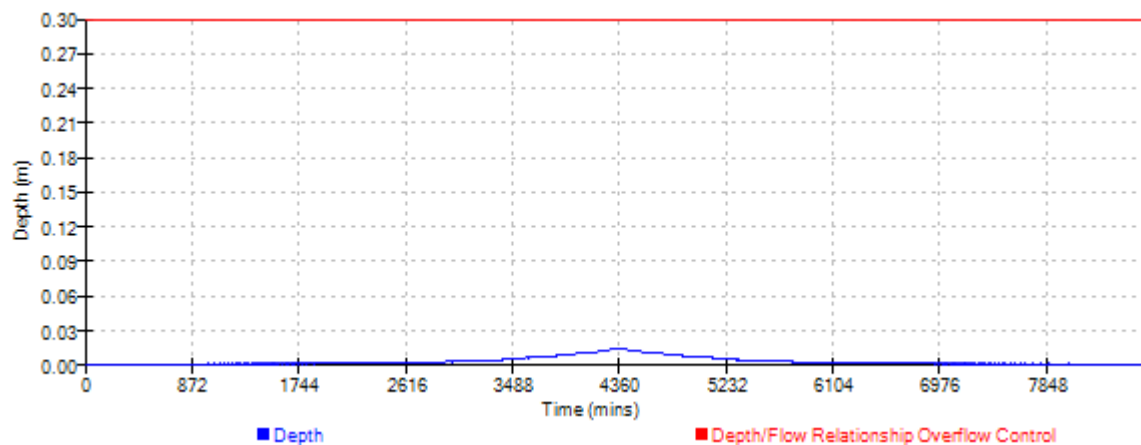
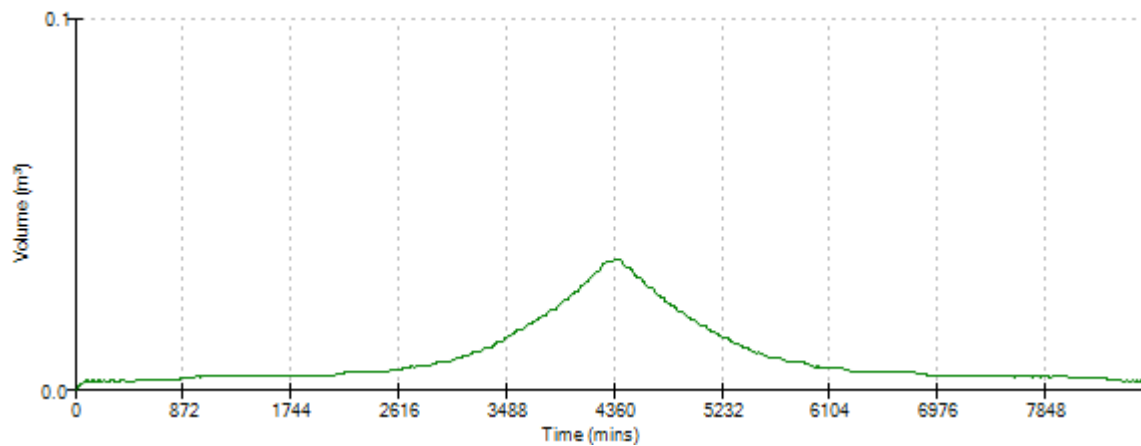
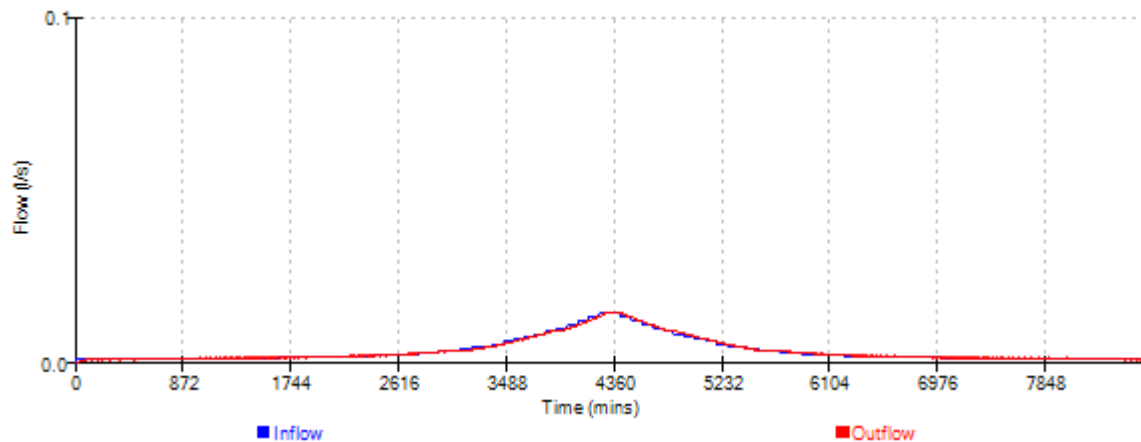
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22 St Pancras	Surface Water Drainage	
West Sussex PO19 7GD	Rain Garden Design Rev03	
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File Rain Garden storage d...	Checked by	
Elstree Computing Ltd	Source Control w.12.6	

Event: 7200 min Summer



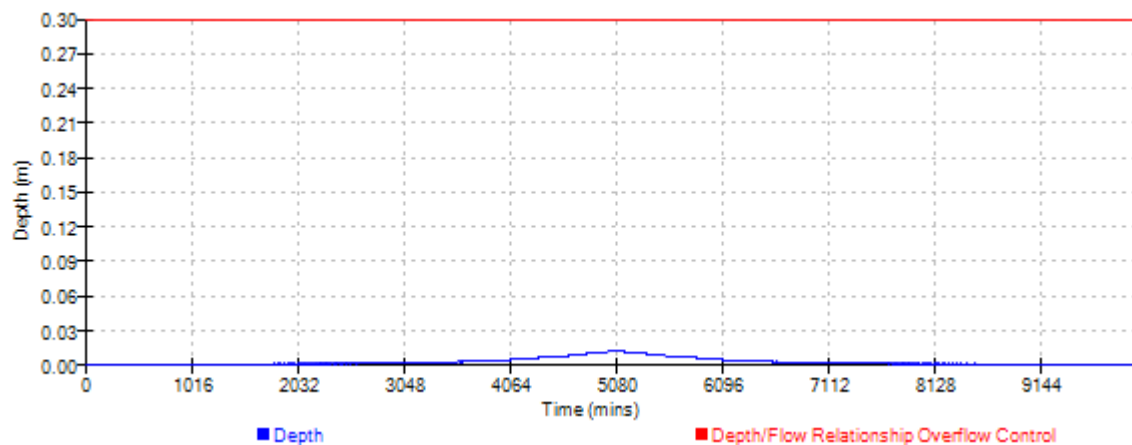
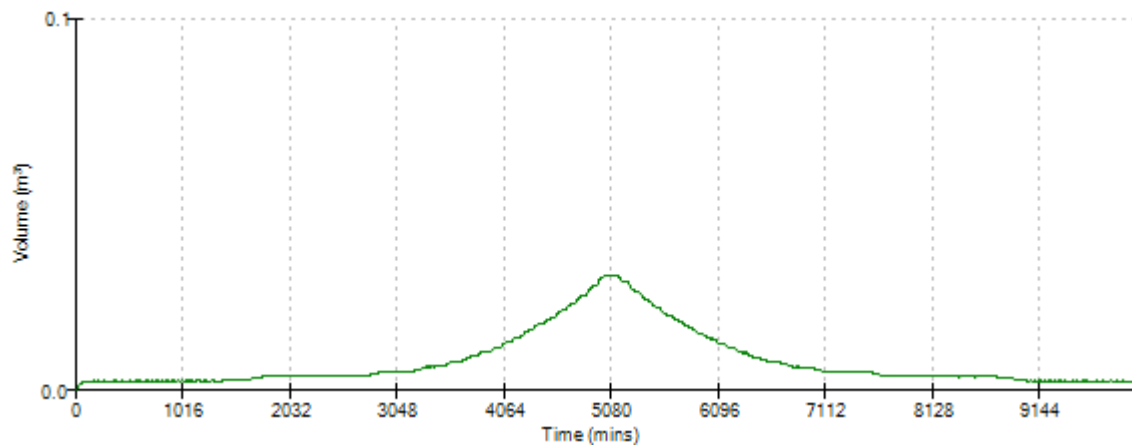
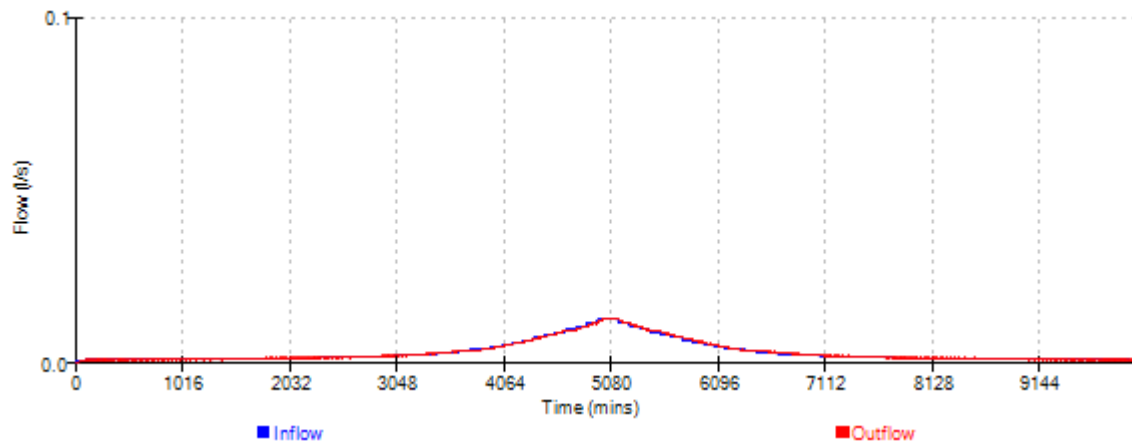
Dixon Hurst Kemp		Page 22
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Elstree Computing Ltd	Source Control w.12.6	

Event: 8640 min Summer



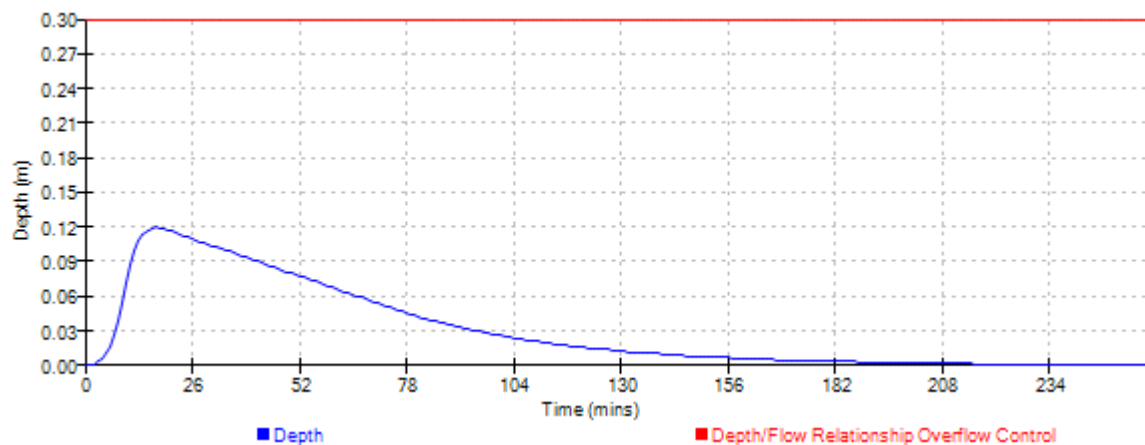
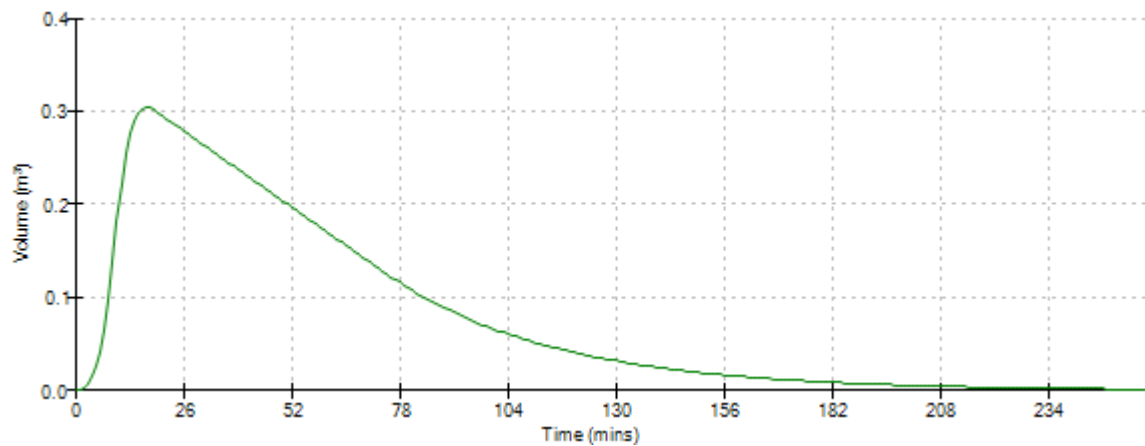
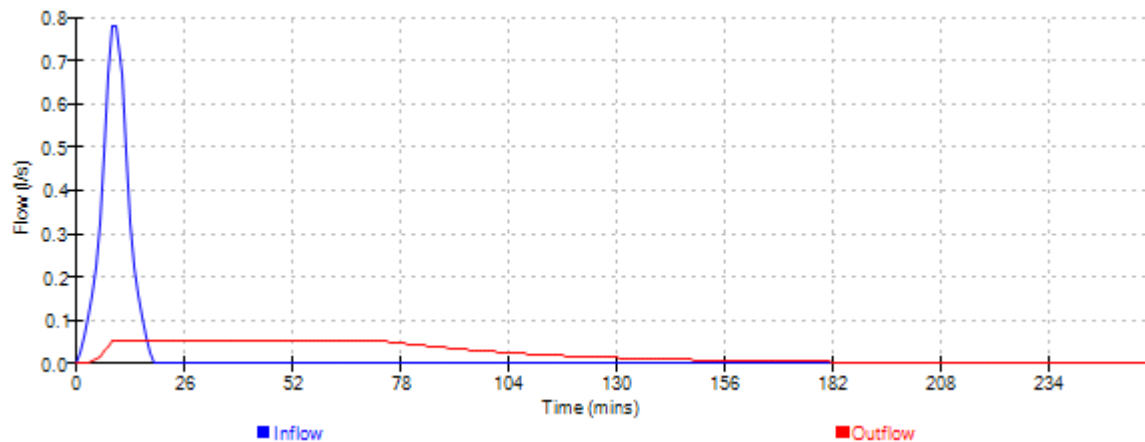
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Event: 10080 min Summer

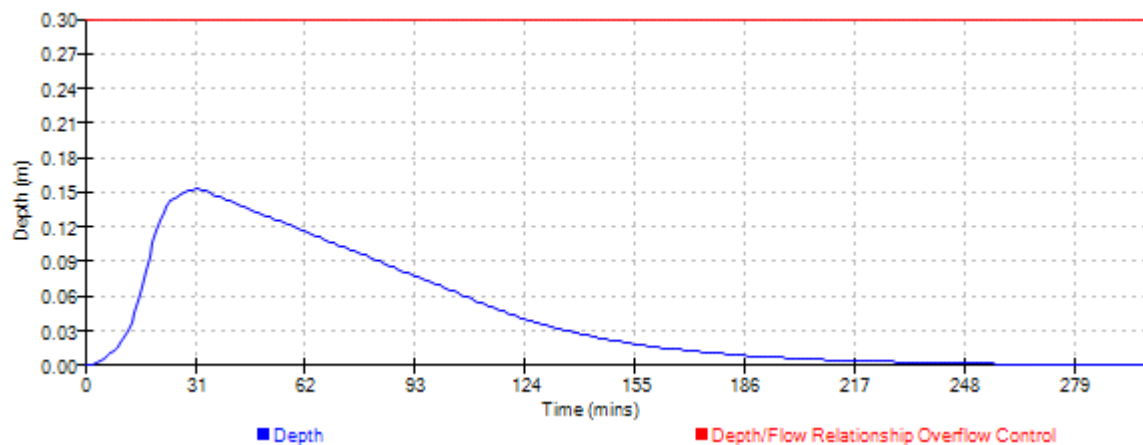
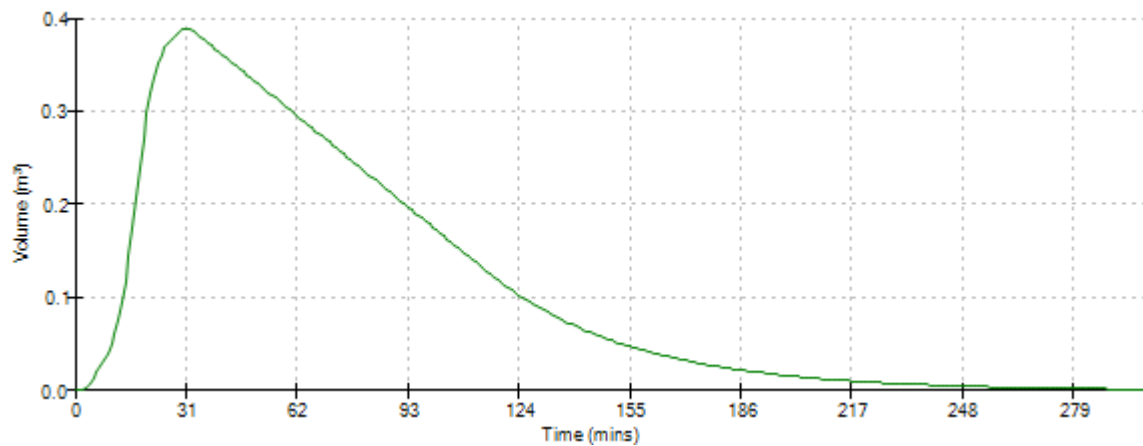
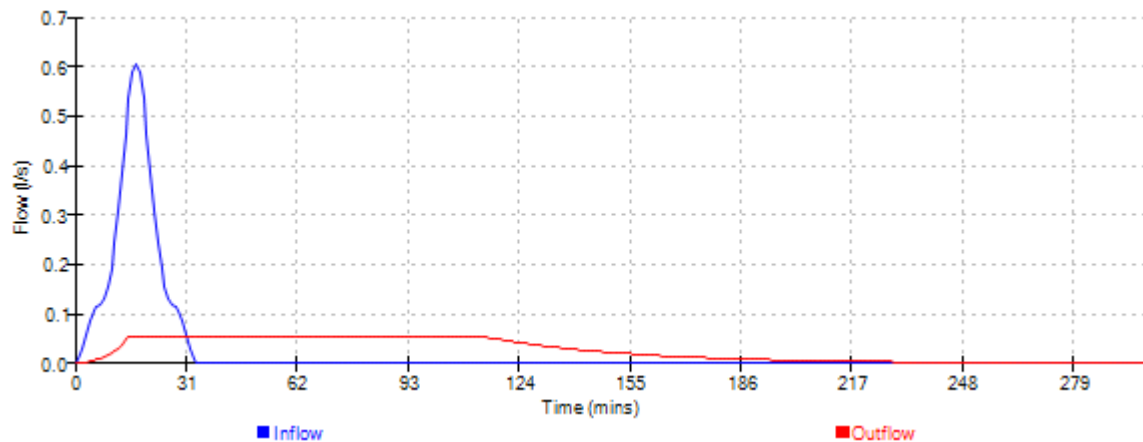


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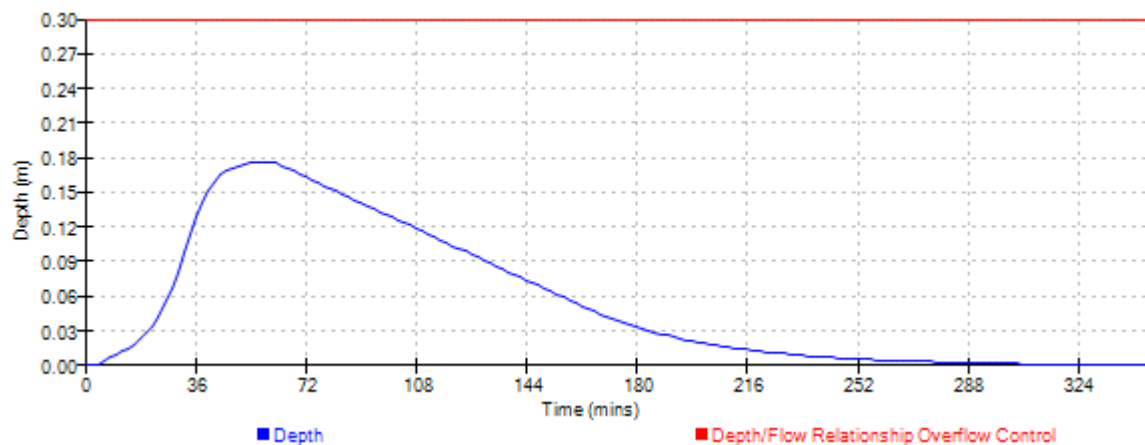
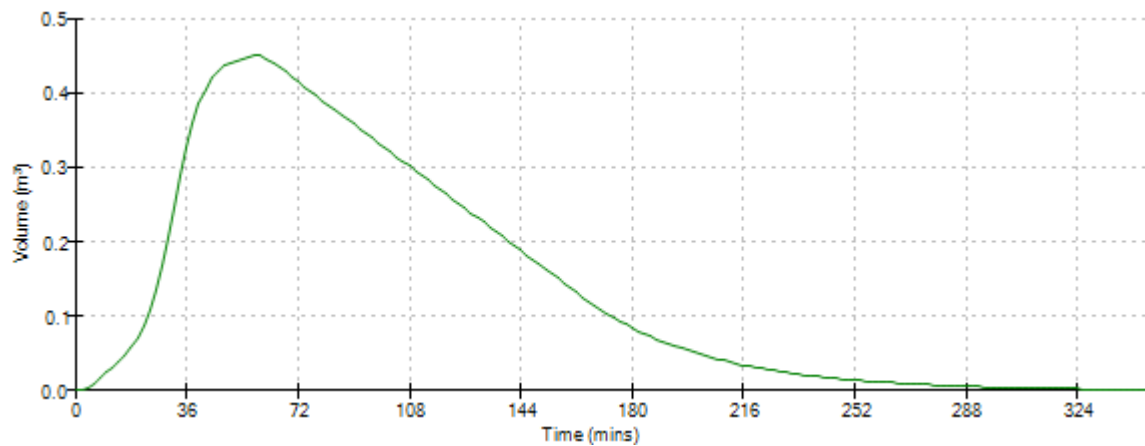
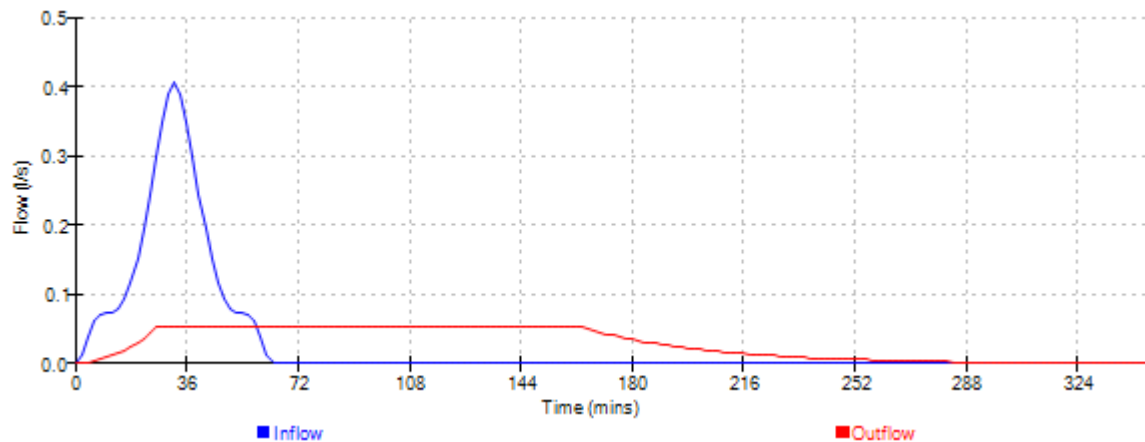
Event: 15 min Winter



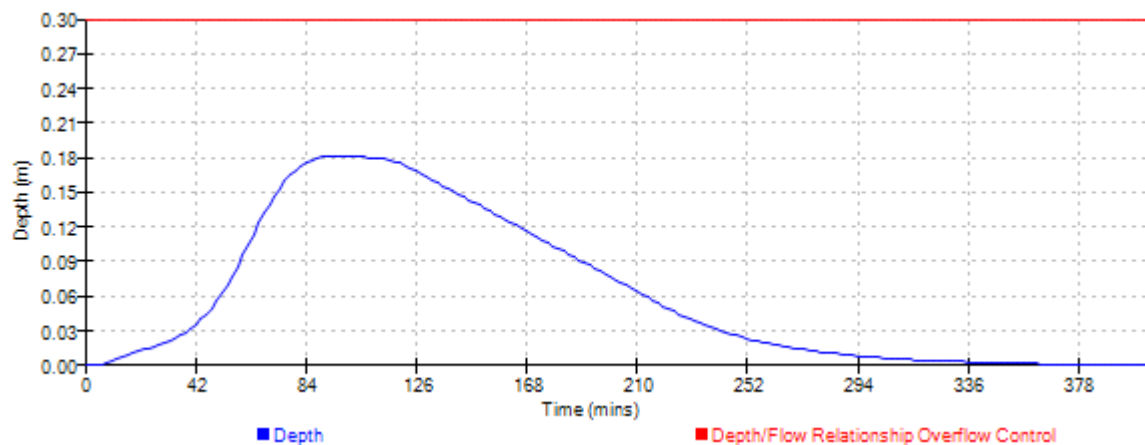
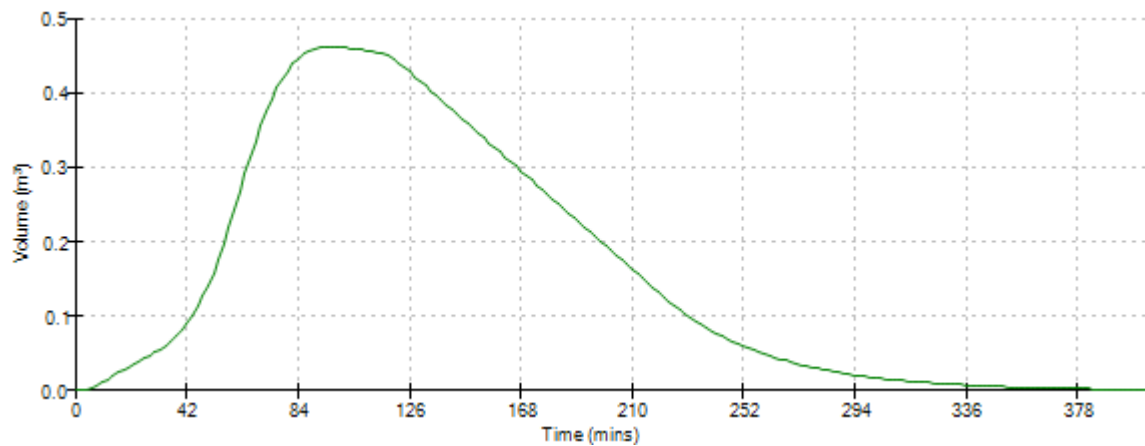
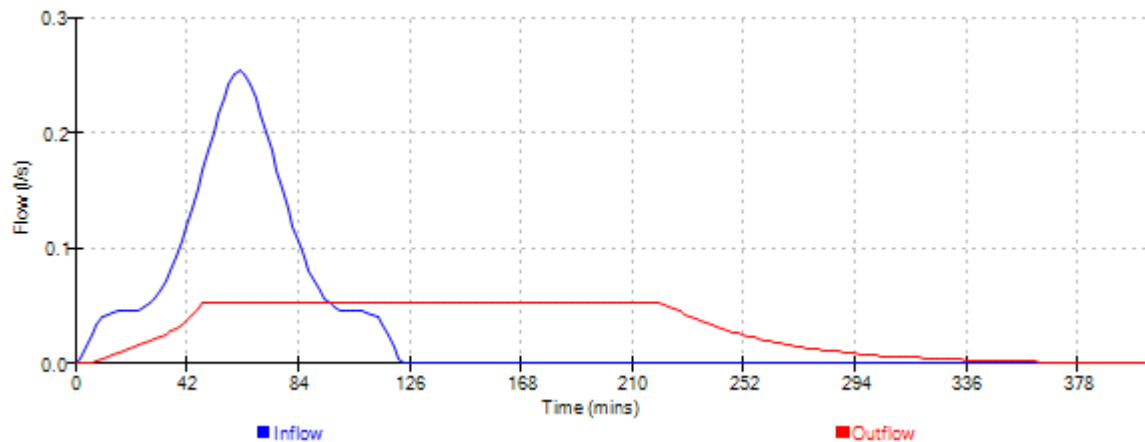
Event: 30 min winter



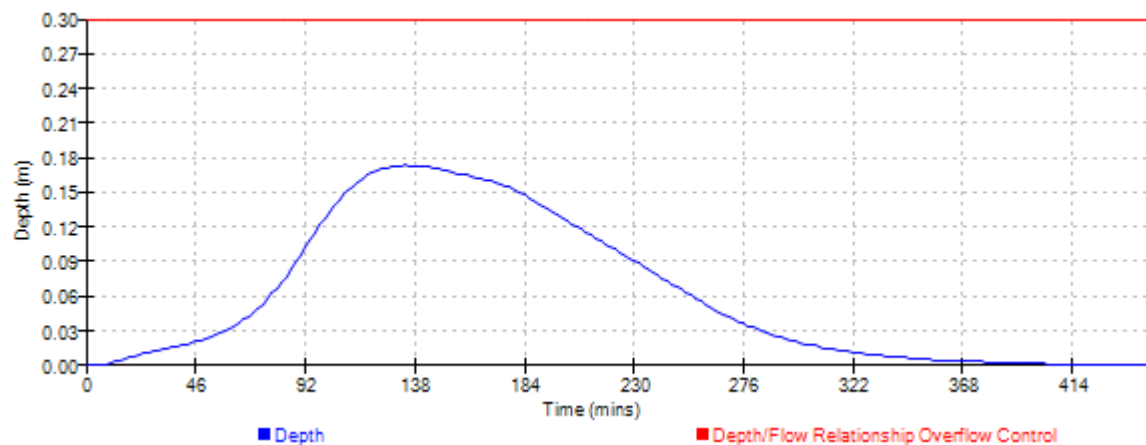
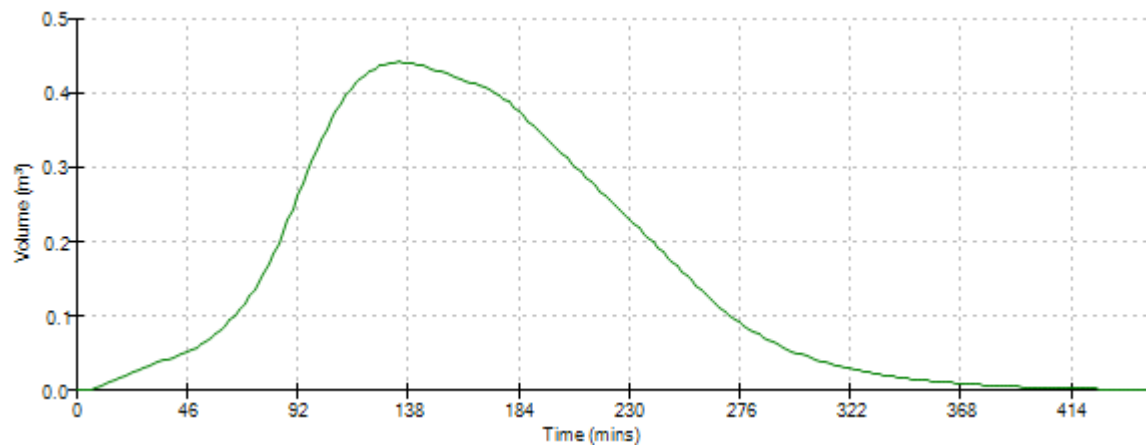
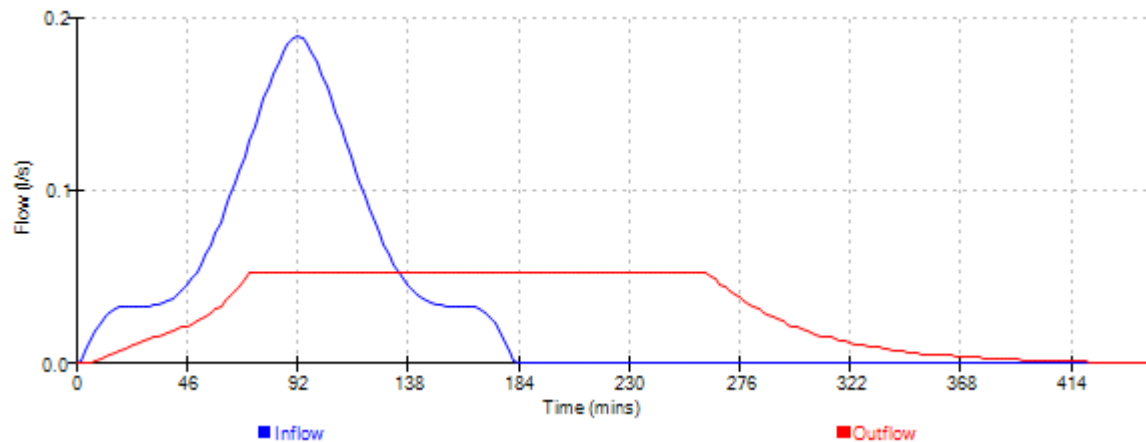
Event: 60 min winter



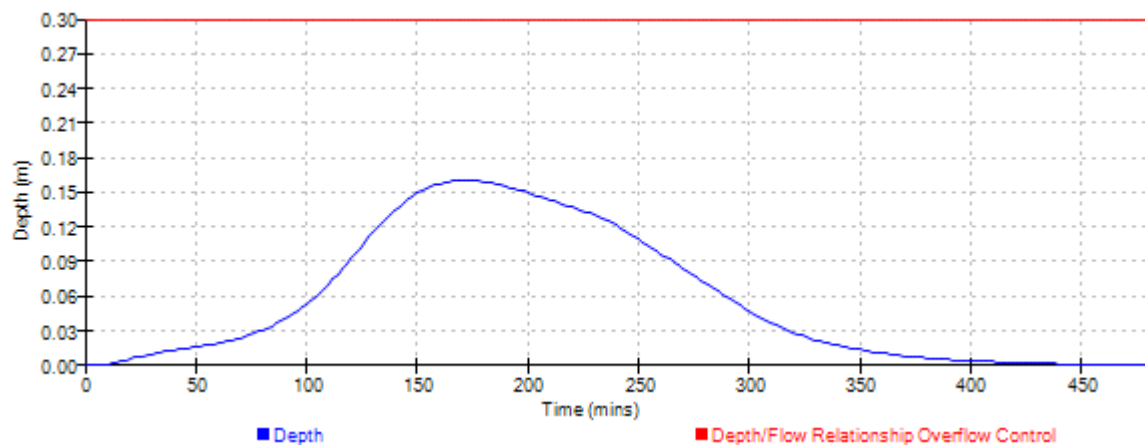
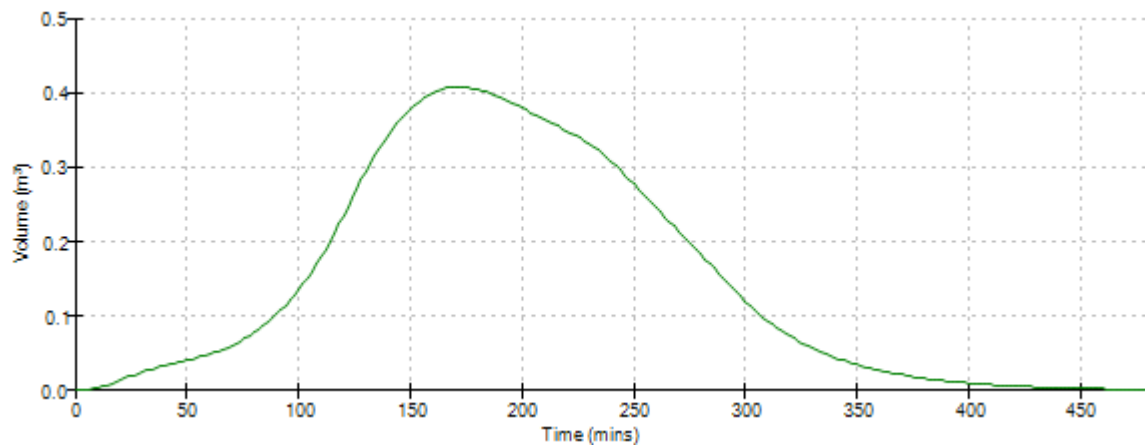
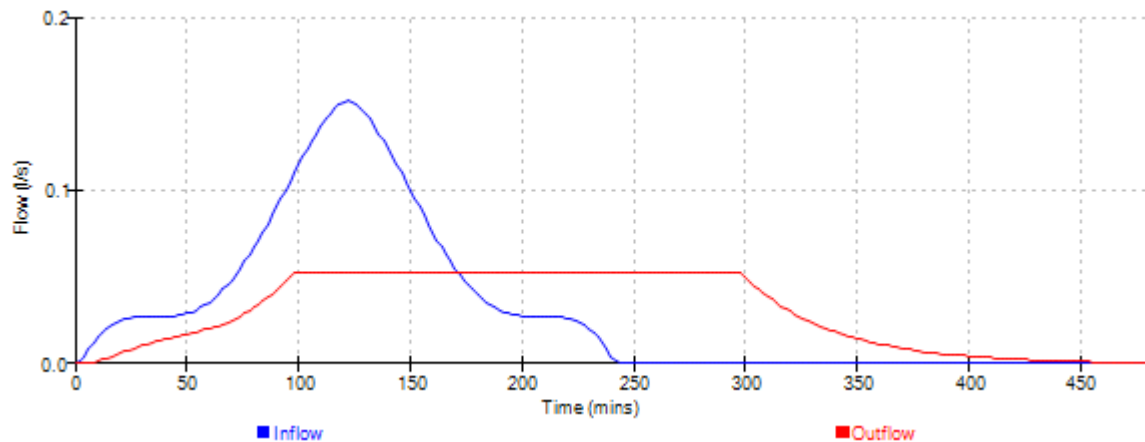
Event: 120 min Winter



Event: 180 min Winter

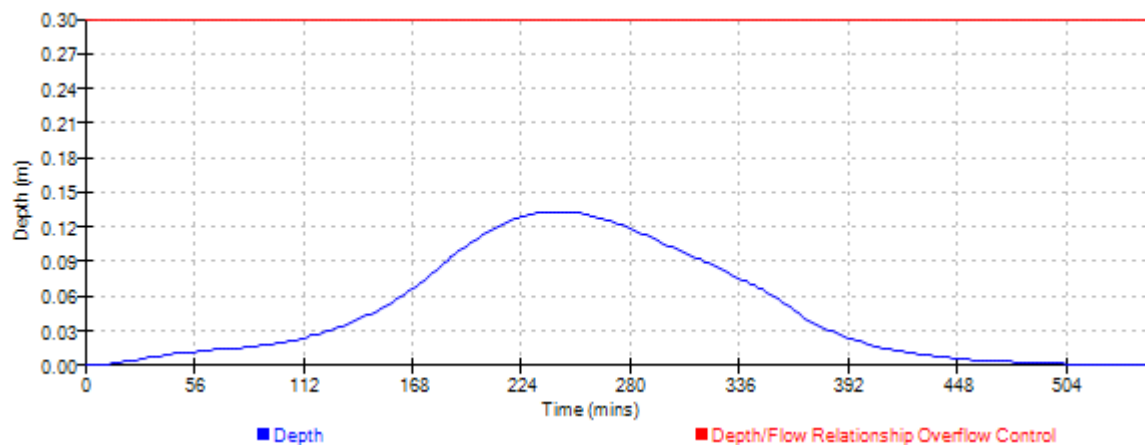
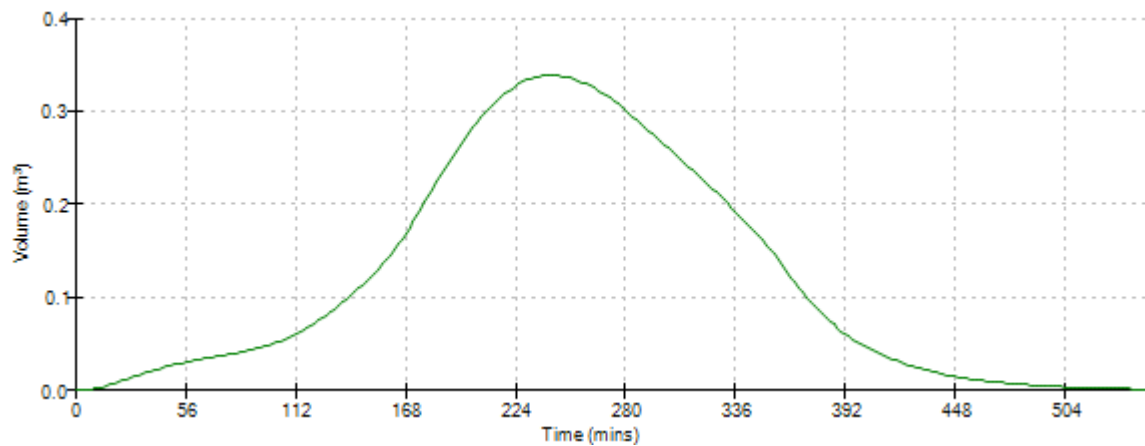
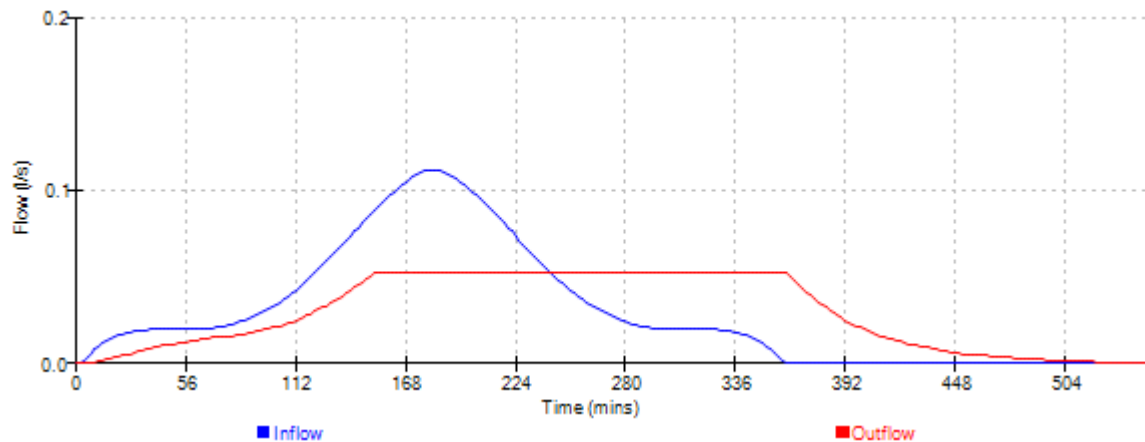


Event: 240 min Winter

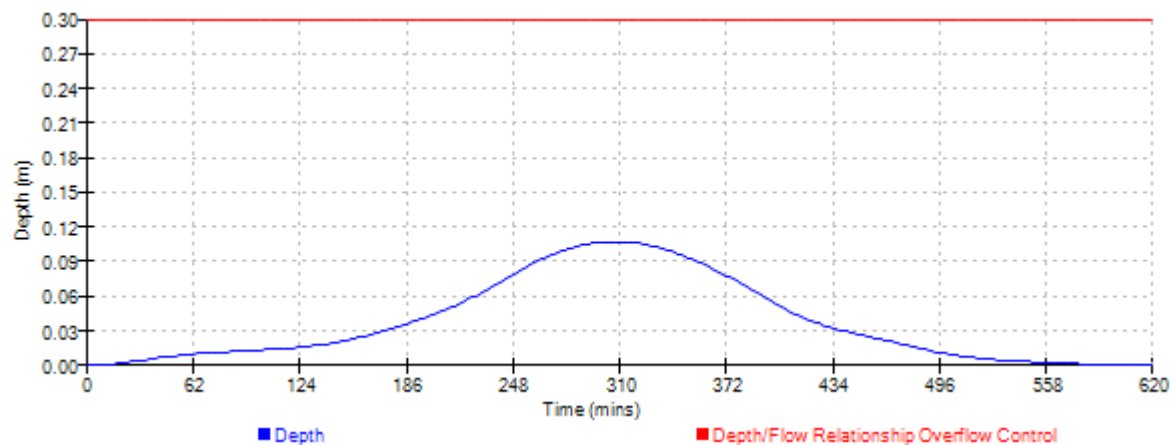
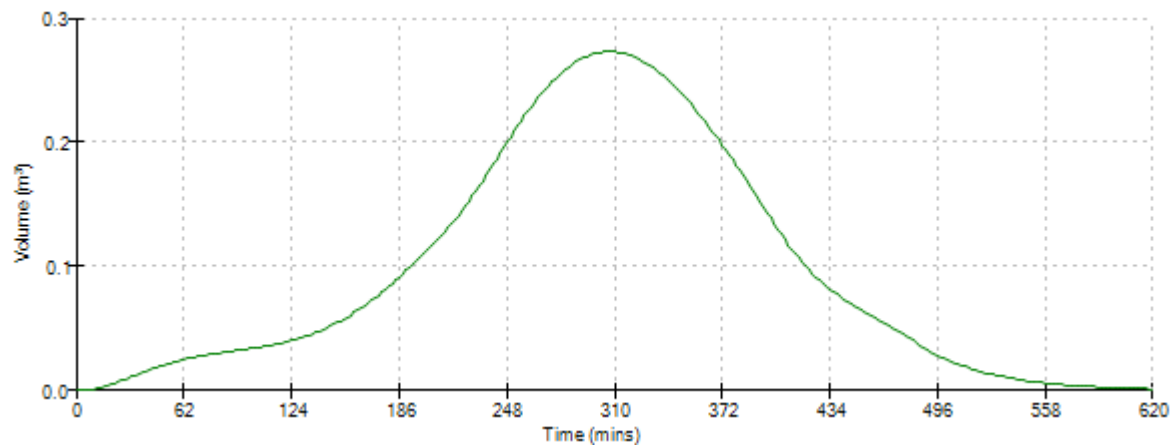
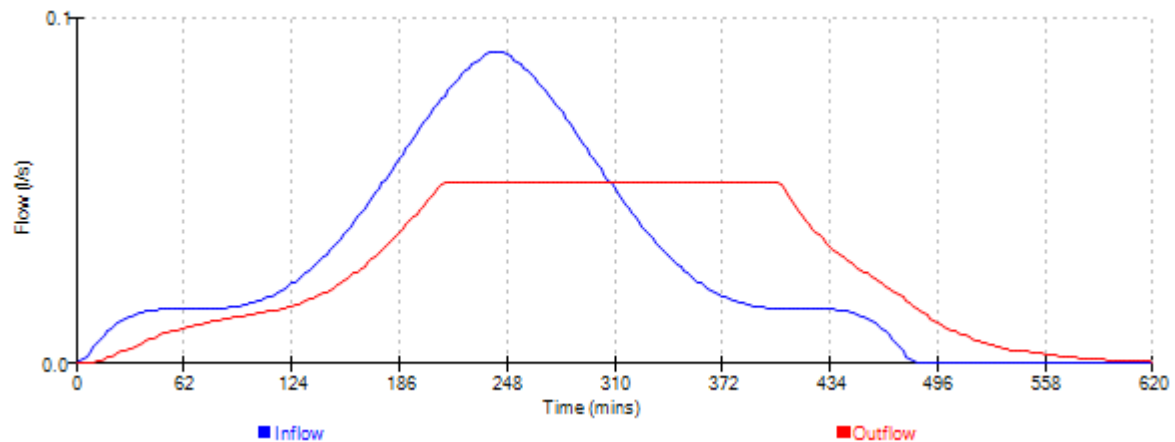


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Event: 360 min Winter

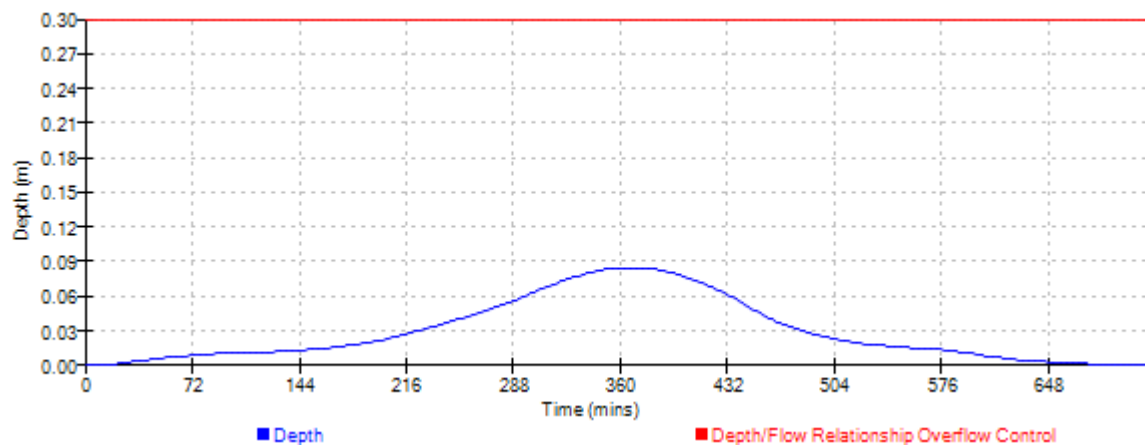
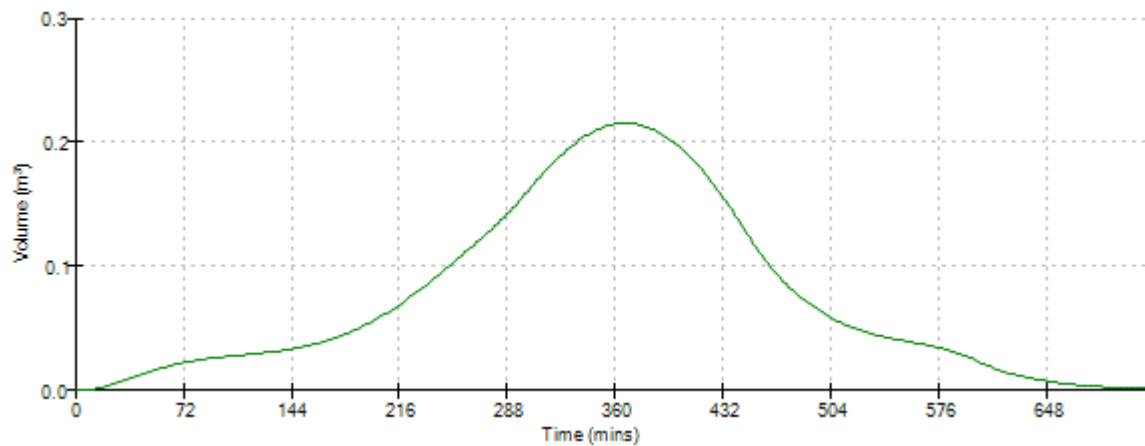
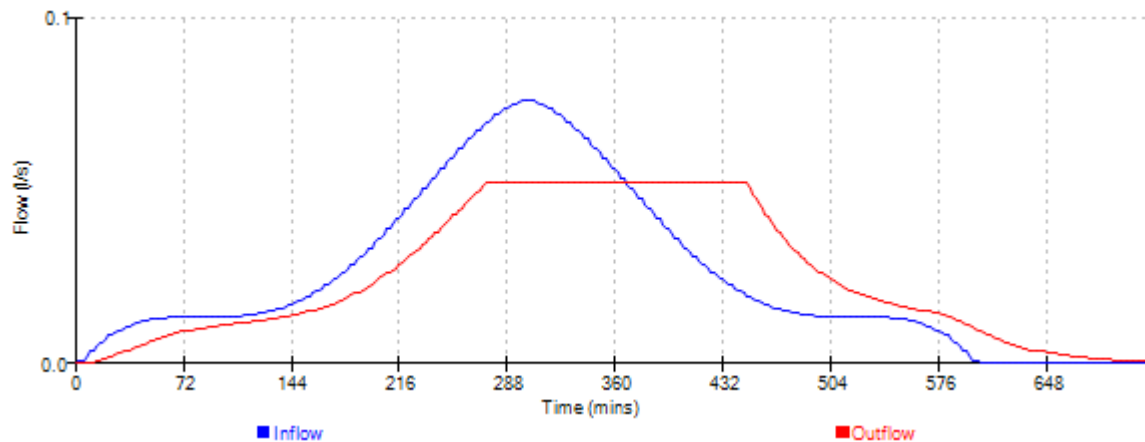


Event: 480 min Winter

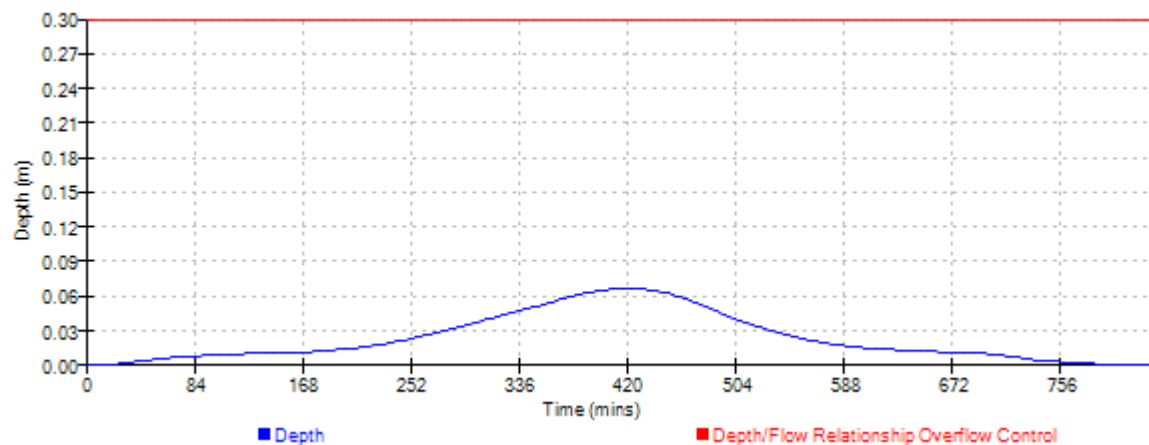
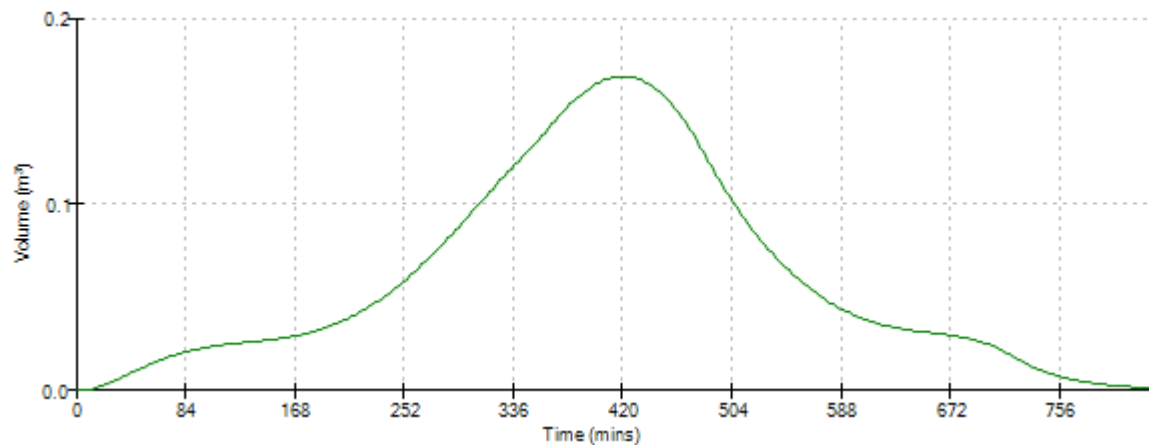
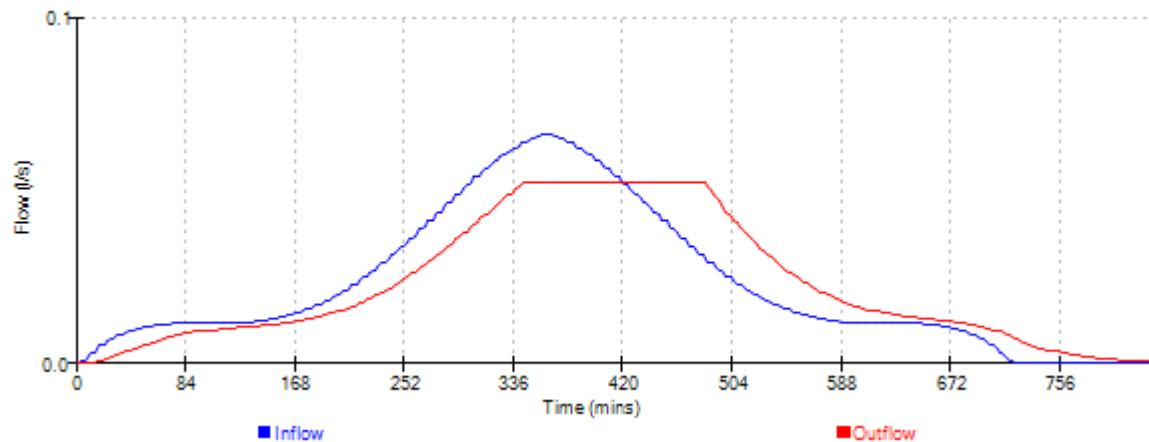


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Event: 600 min Winter

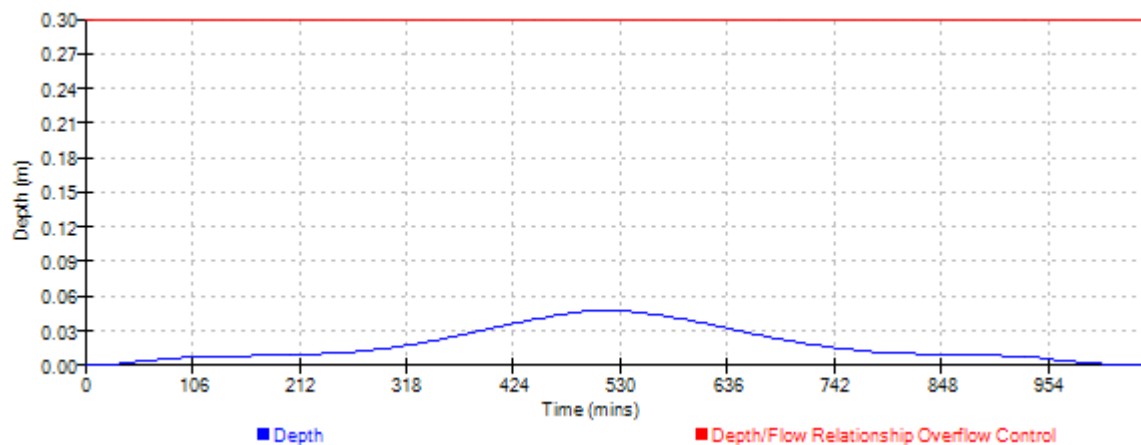
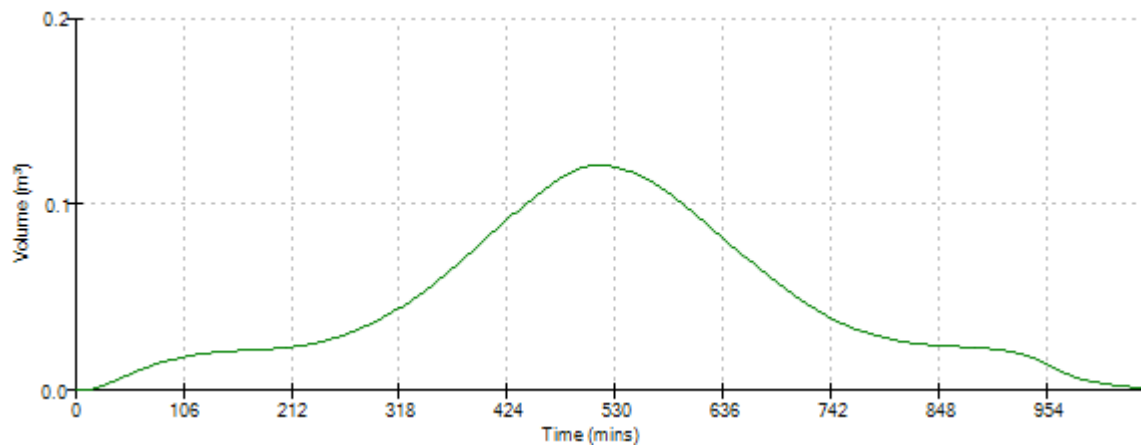
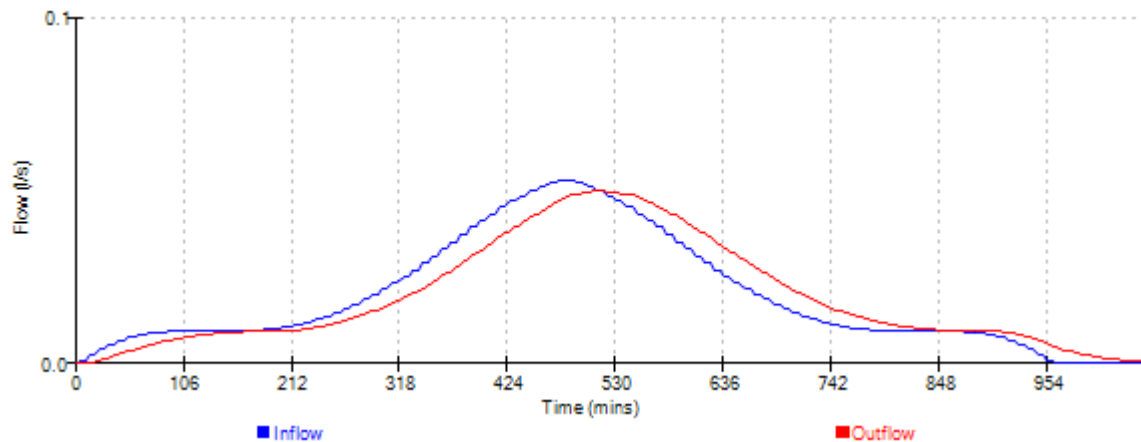


Event: 720 min Winter

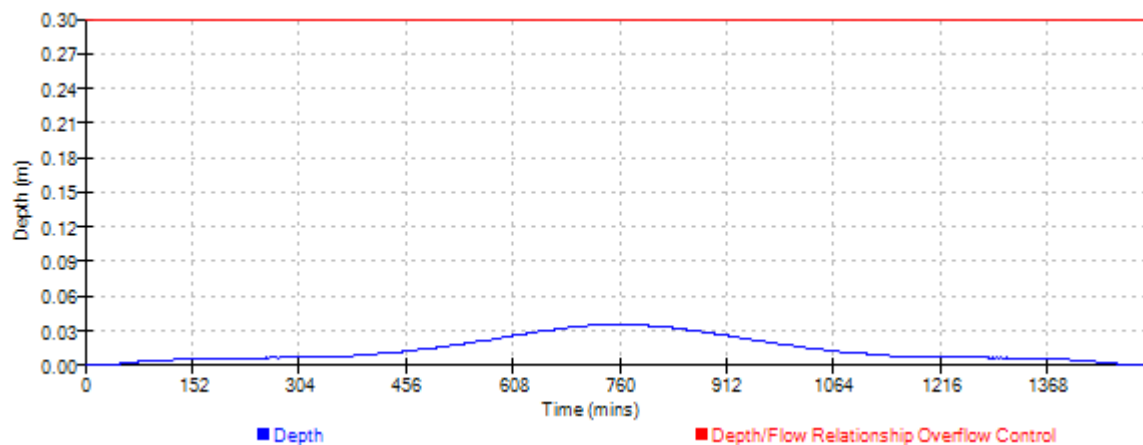
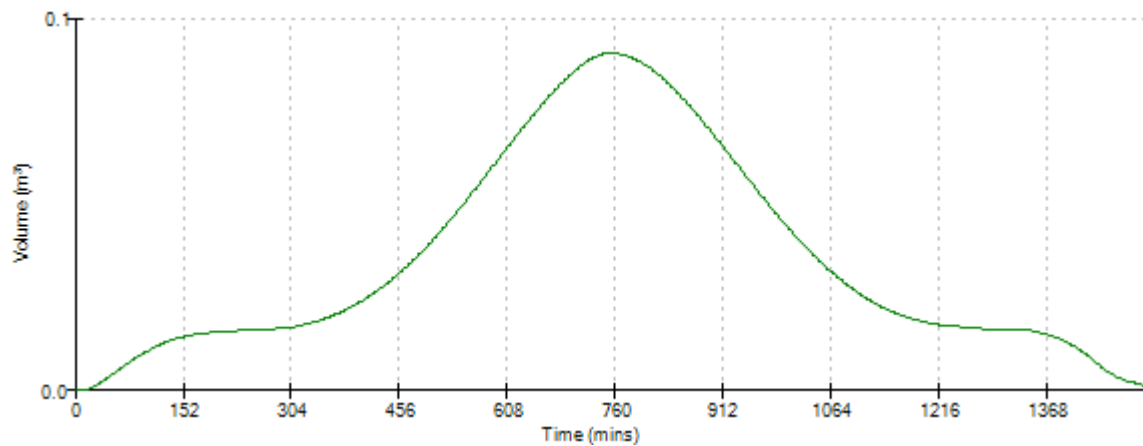
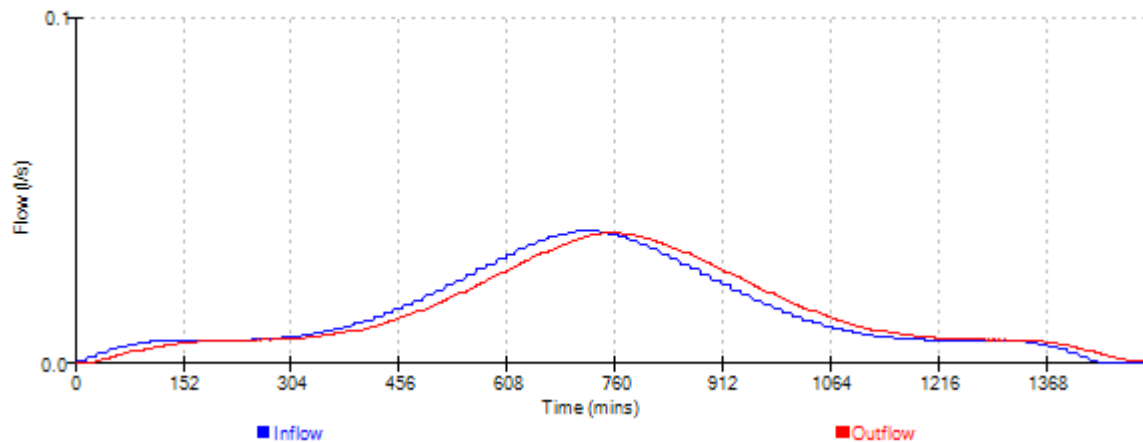


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Event: 960 min Winter

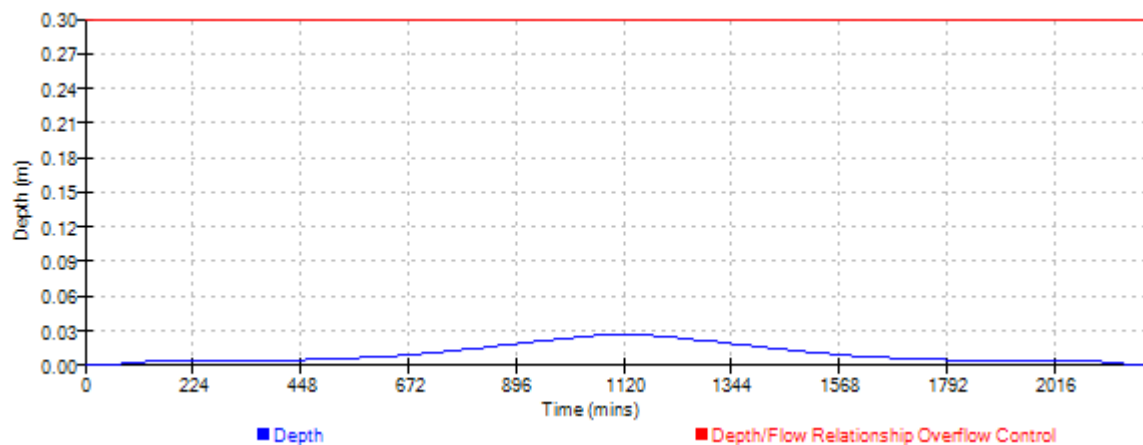
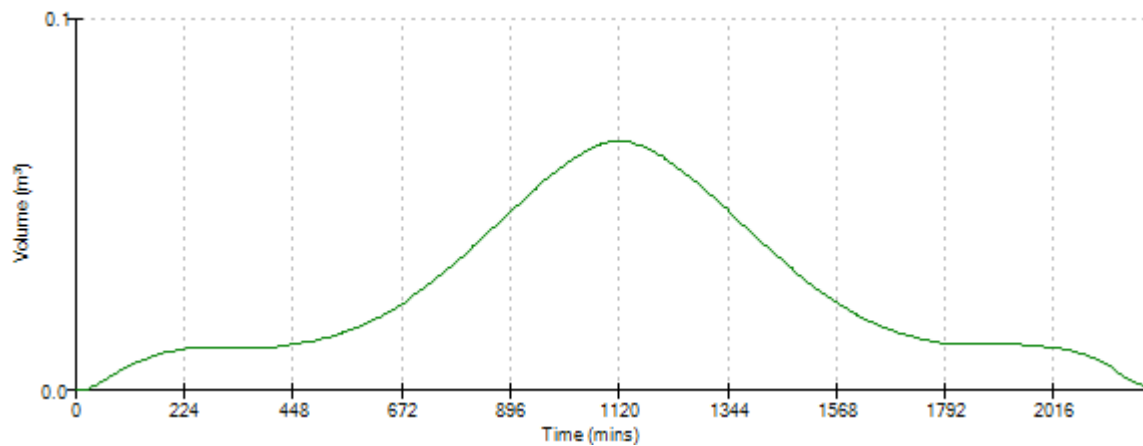
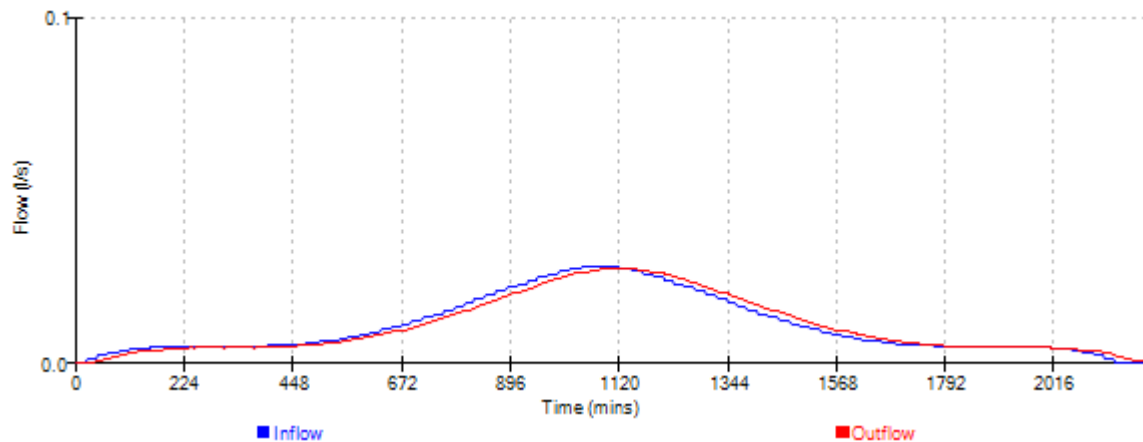


Event: 1440 min Winter



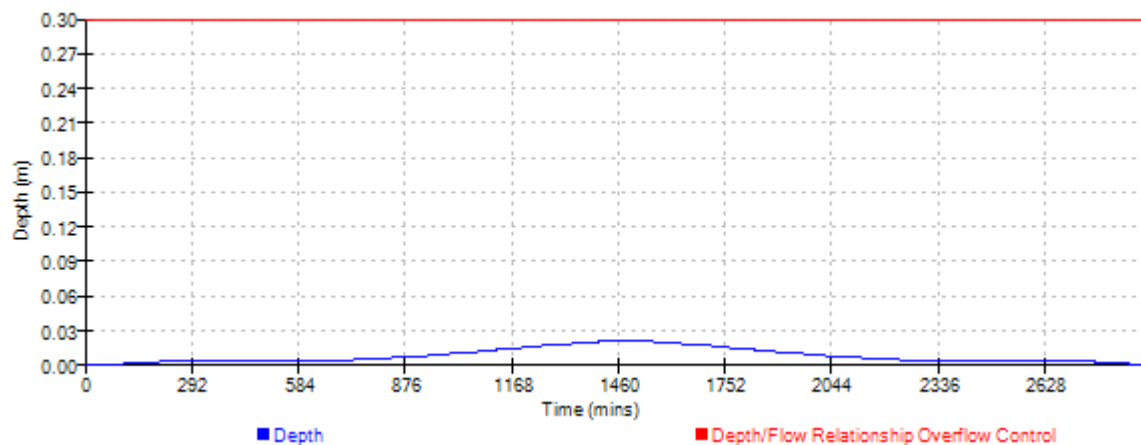
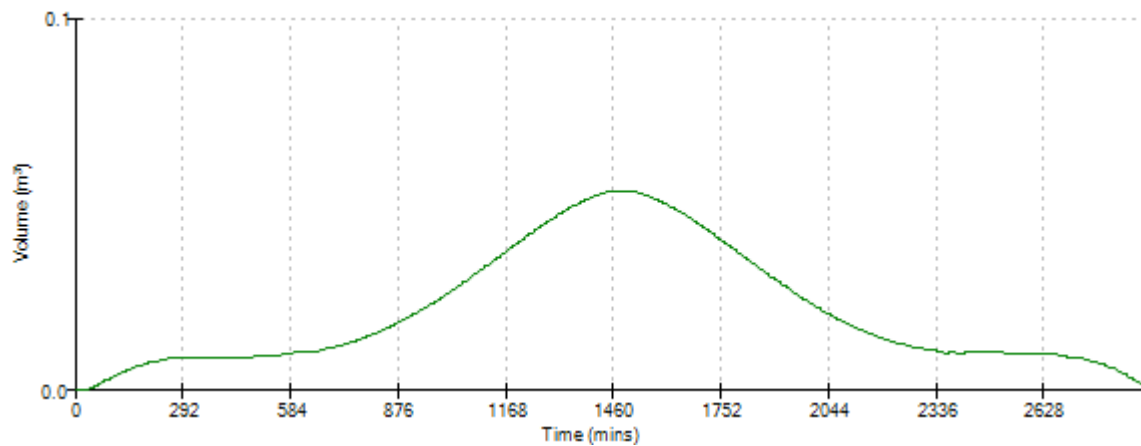
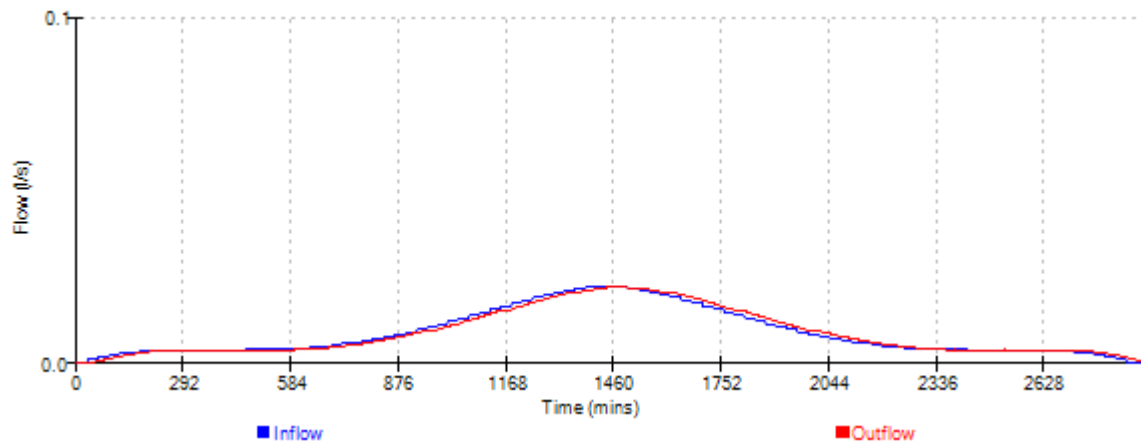
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Event: 2160 min Winter



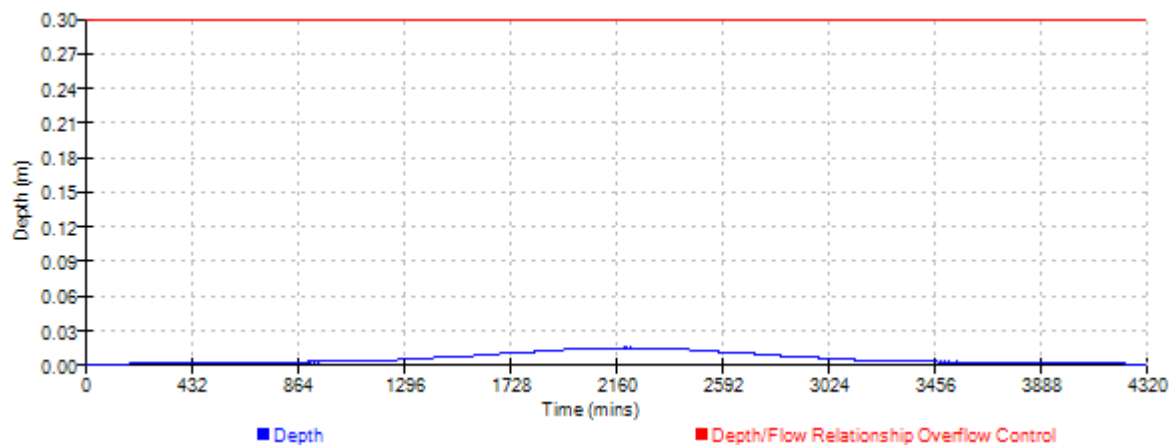
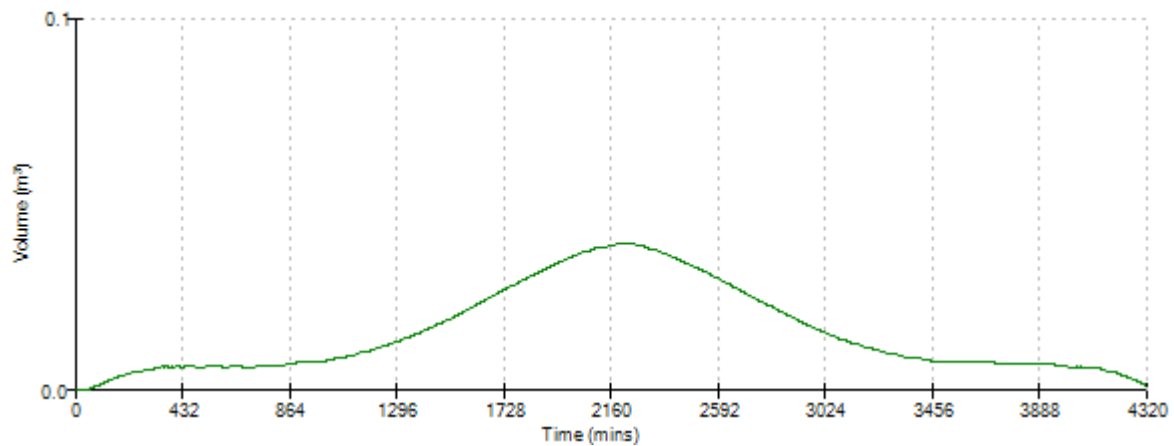
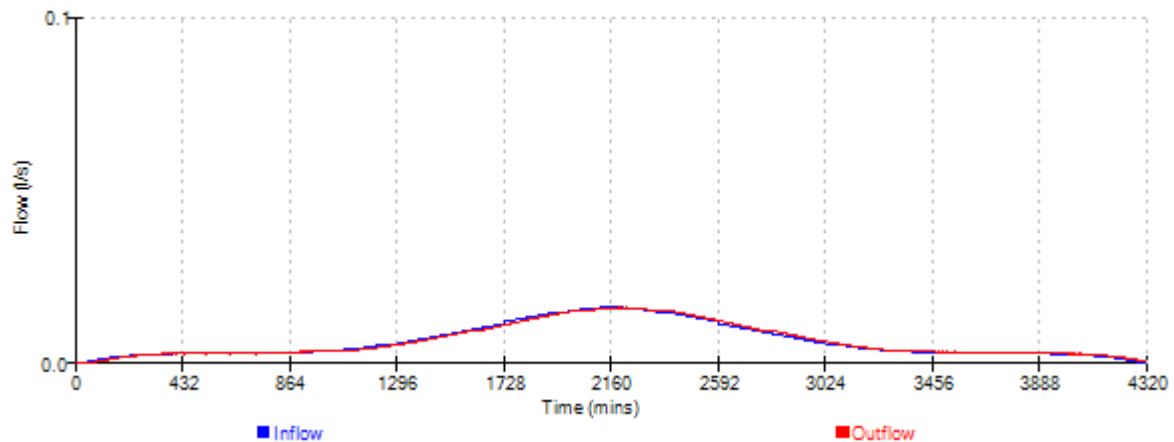
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Event: 2880 min Winter



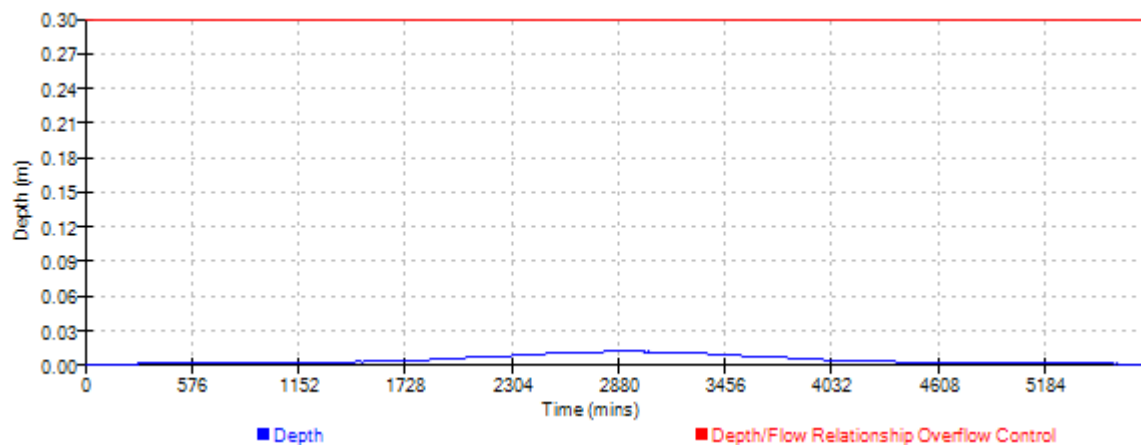
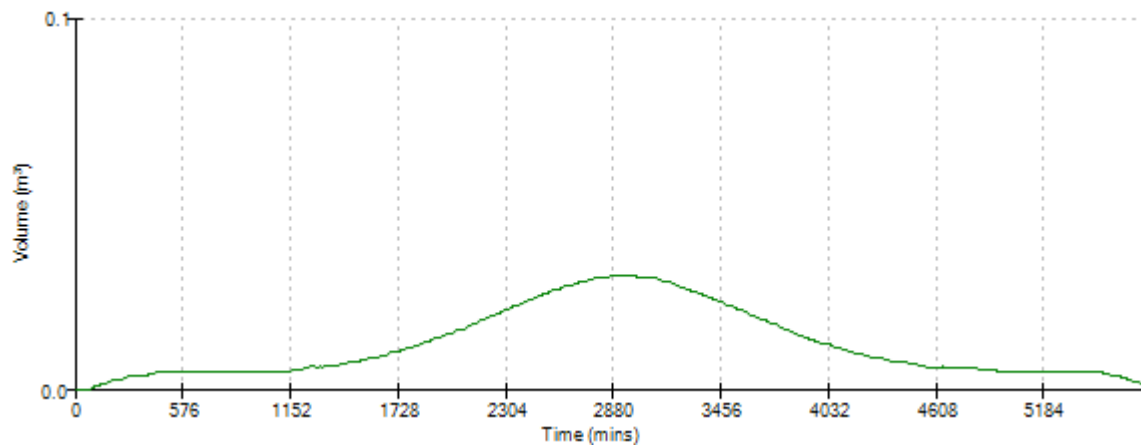
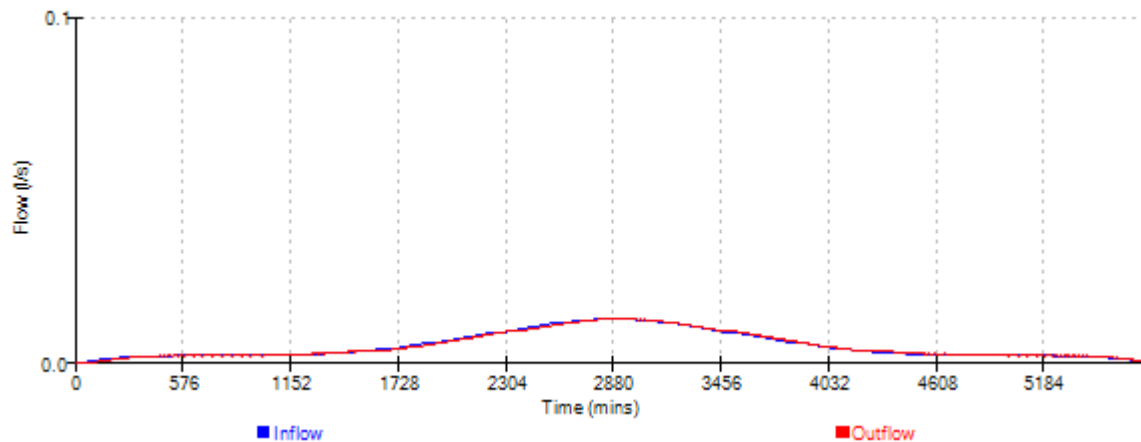
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Elstree Computing Ltd	Source Control w.12.6	

Event: 4320 min Winter



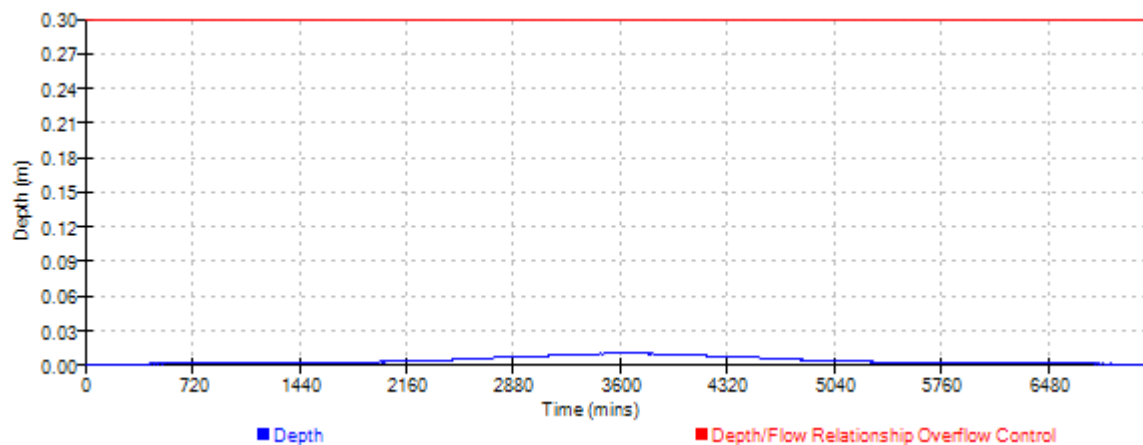
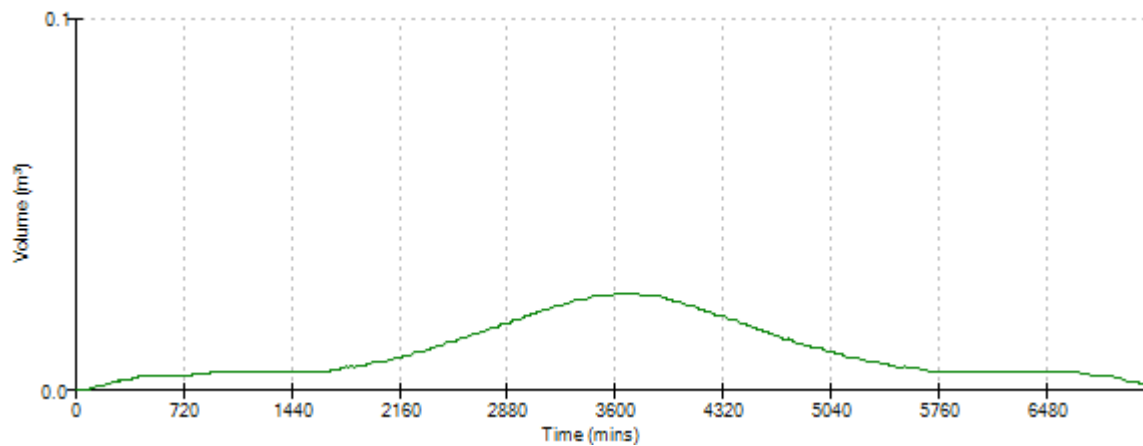
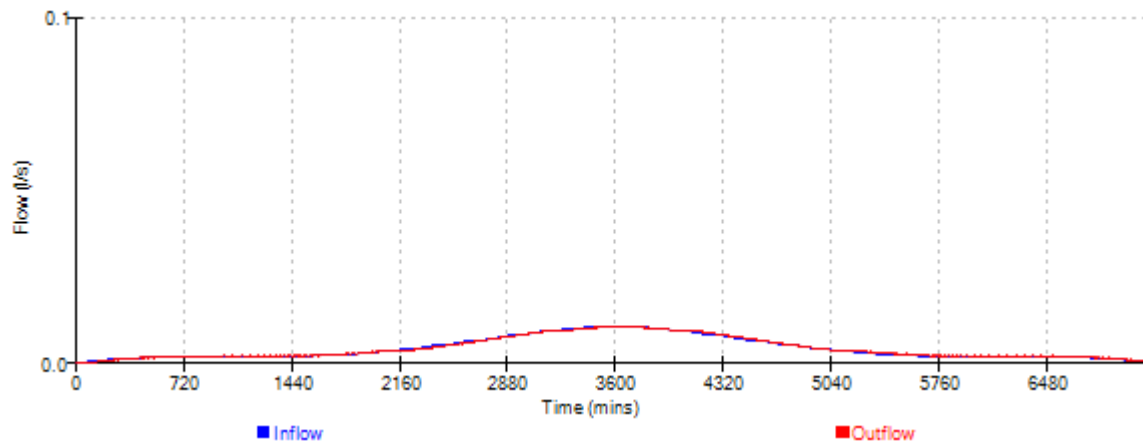
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Event: 5760 min Winter



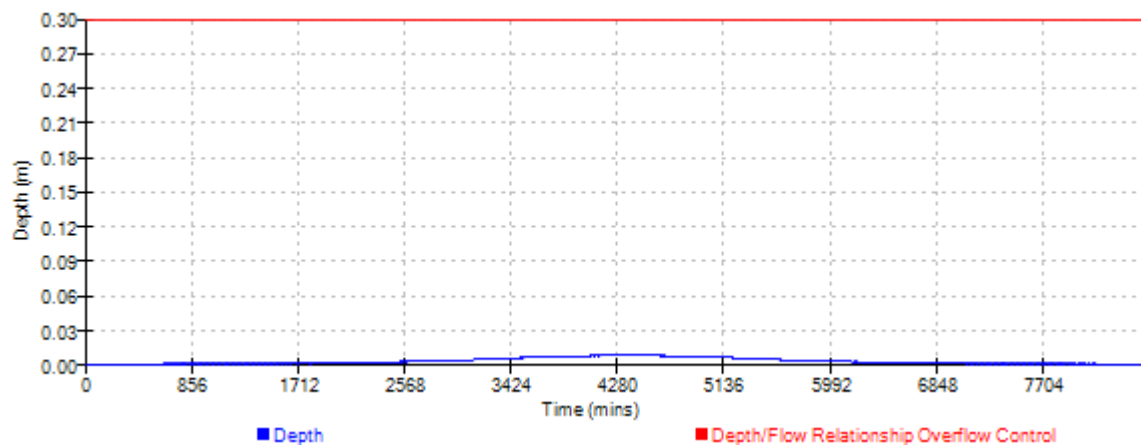
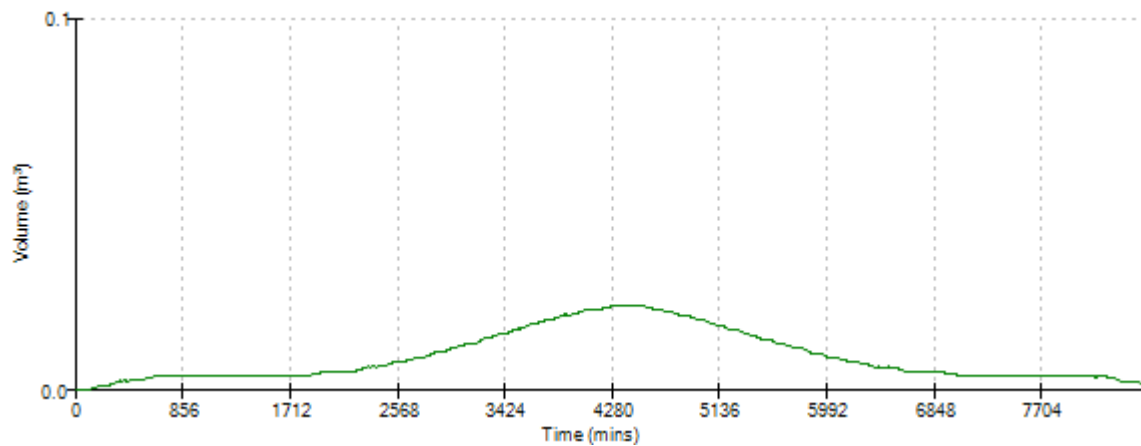
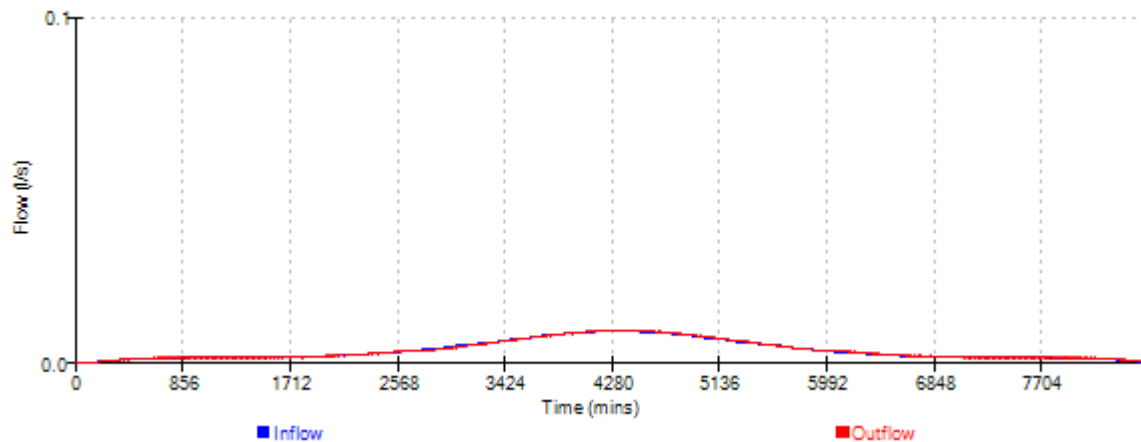
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Elstree Computing Ltd	Source Control w.12.6	

Event: 7200 min Winter



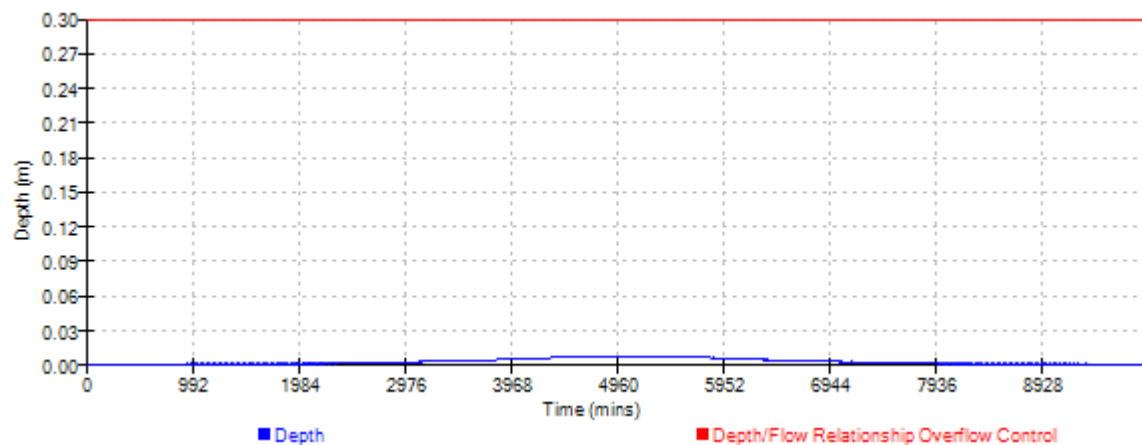
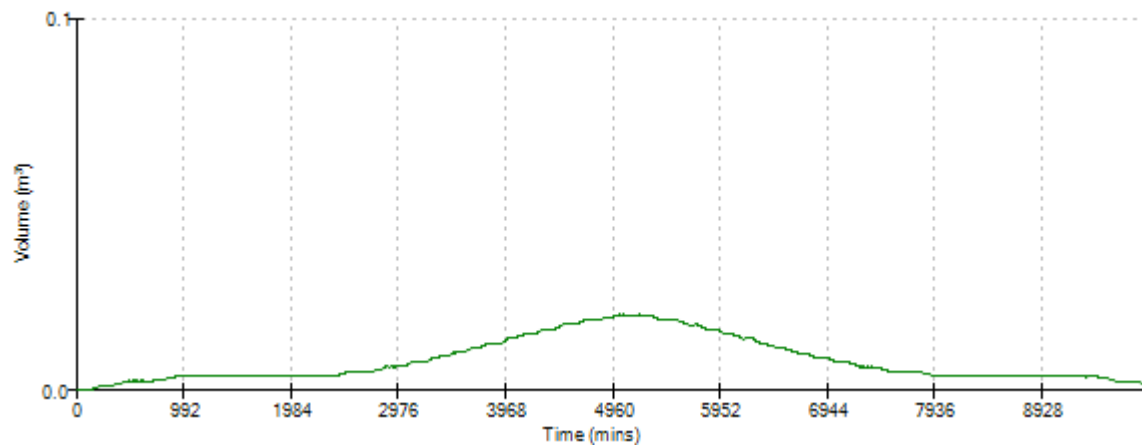
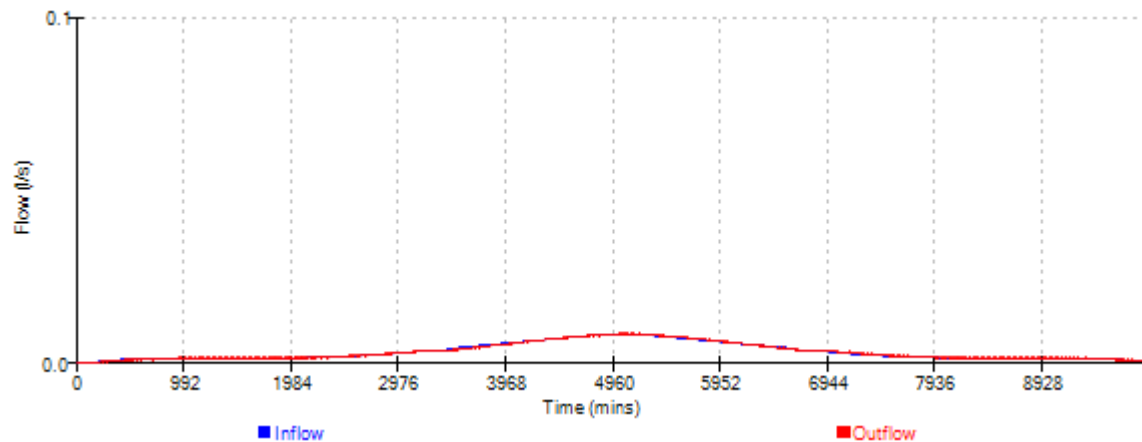
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Event: 8640 min Winter



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Event: 10080 min Winter



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Elstree Computing Ltd	Network W.12.6	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole	450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole	600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole	450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole	600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole	600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
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1.004	Dummy	64.000	63.223	63.230	450	450
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Run Time (mins)	240
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	4

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Storm Duration (mins)	120
Ratio R	0.343		

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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4. DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden. DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 120 minute 100 year Summer (Storm)

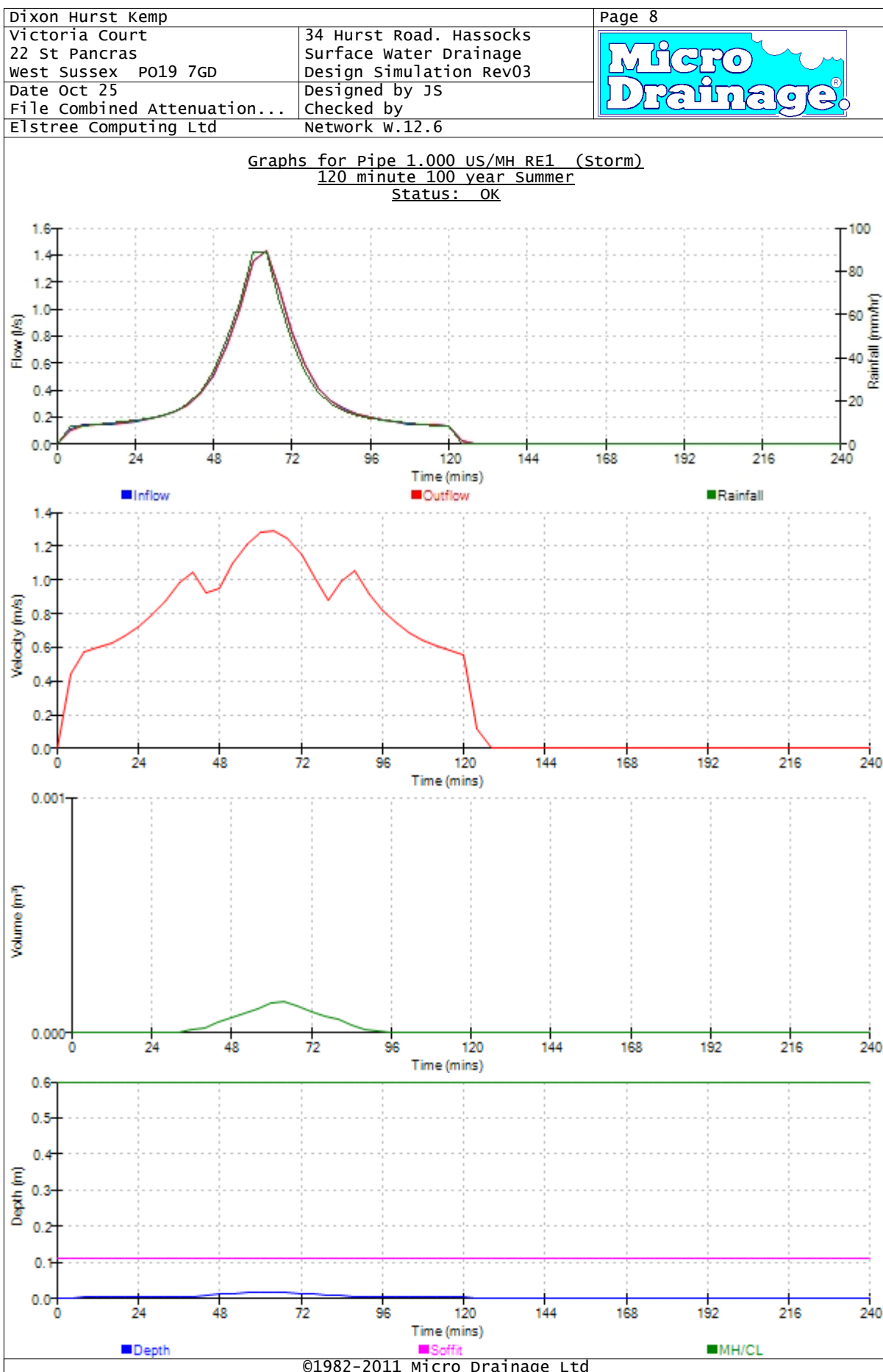
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.419	-0.091	0.000	0.07	0.0	1.4	OK
1.001	S1	65.024	-0.086	0.000	0.11	0.0	2.9	OK
1.002	S2	63.880	-0.080	0.000	0.17	0.0	2.8	OK
2.000	RE2	65.417	-0.093	0.000	0.06	0.0	1.4	OK
2.001	S3	63.532	-0.078	0.000	0.19	0.0	2.9	OK
1.003	S4	63.382	-0.028	0.000	0.01	0.0	0.2	OK
1.004	Rain Garden	63.350	-0.043	0.000	0.00	0.0	0.0	OK

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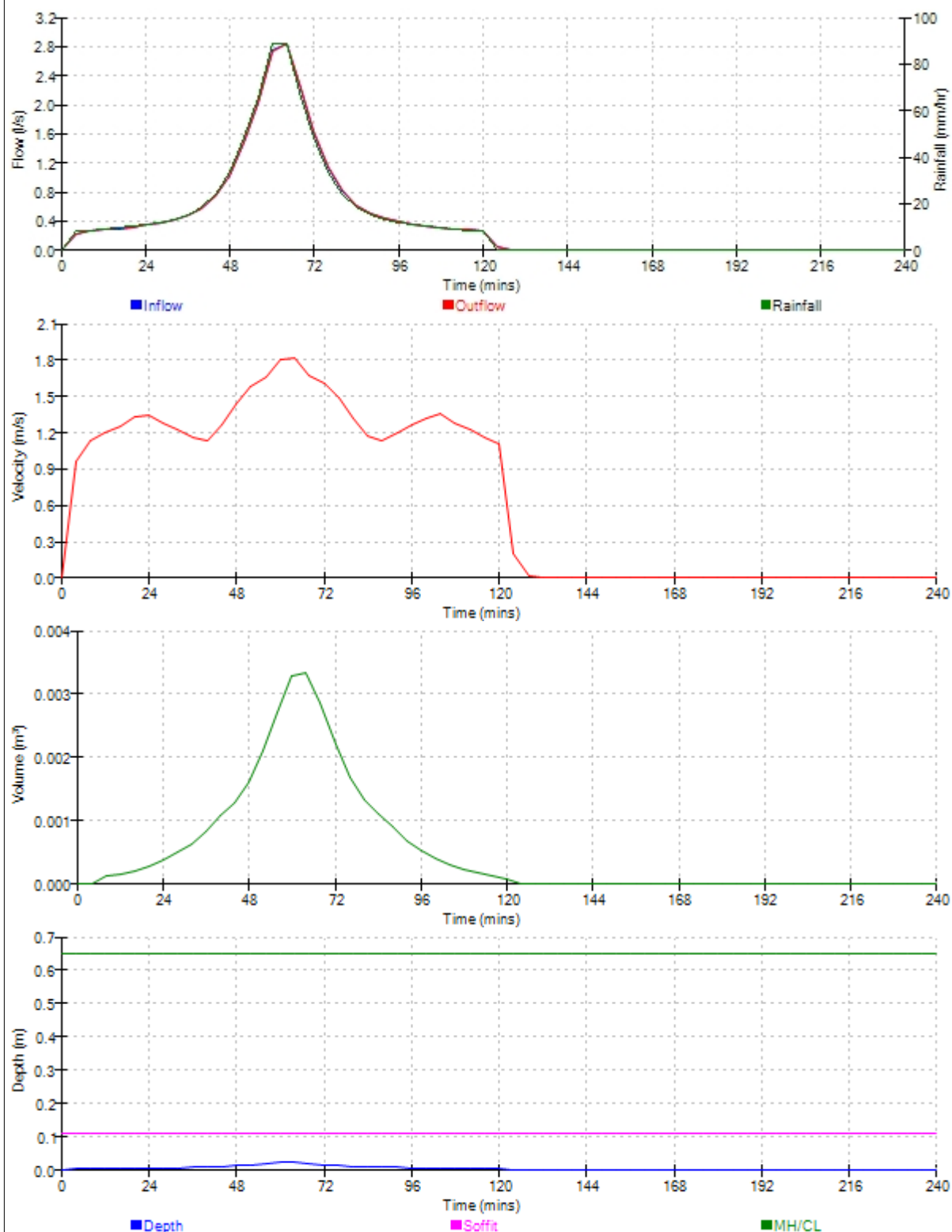
Rainfall Hyetograph for 120 minute 100 year Summer (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
4	8.228	28	12.041	52	48.313	76	33.689	100	10.987
8	8.654	32	13.345	56	65.923	80	24.031	104	10.159
12	9.081	36	15.176	60	88.650	84	18.513	108	9.482
16	9.482	40	18.513	64	88.650	88	15.176	112	9.081
20	10.159	44	24.031	68	65.923	92	13.345	116	8.654
24	10.987	48	33.689	72	48.314	96	12.041	120	8.228



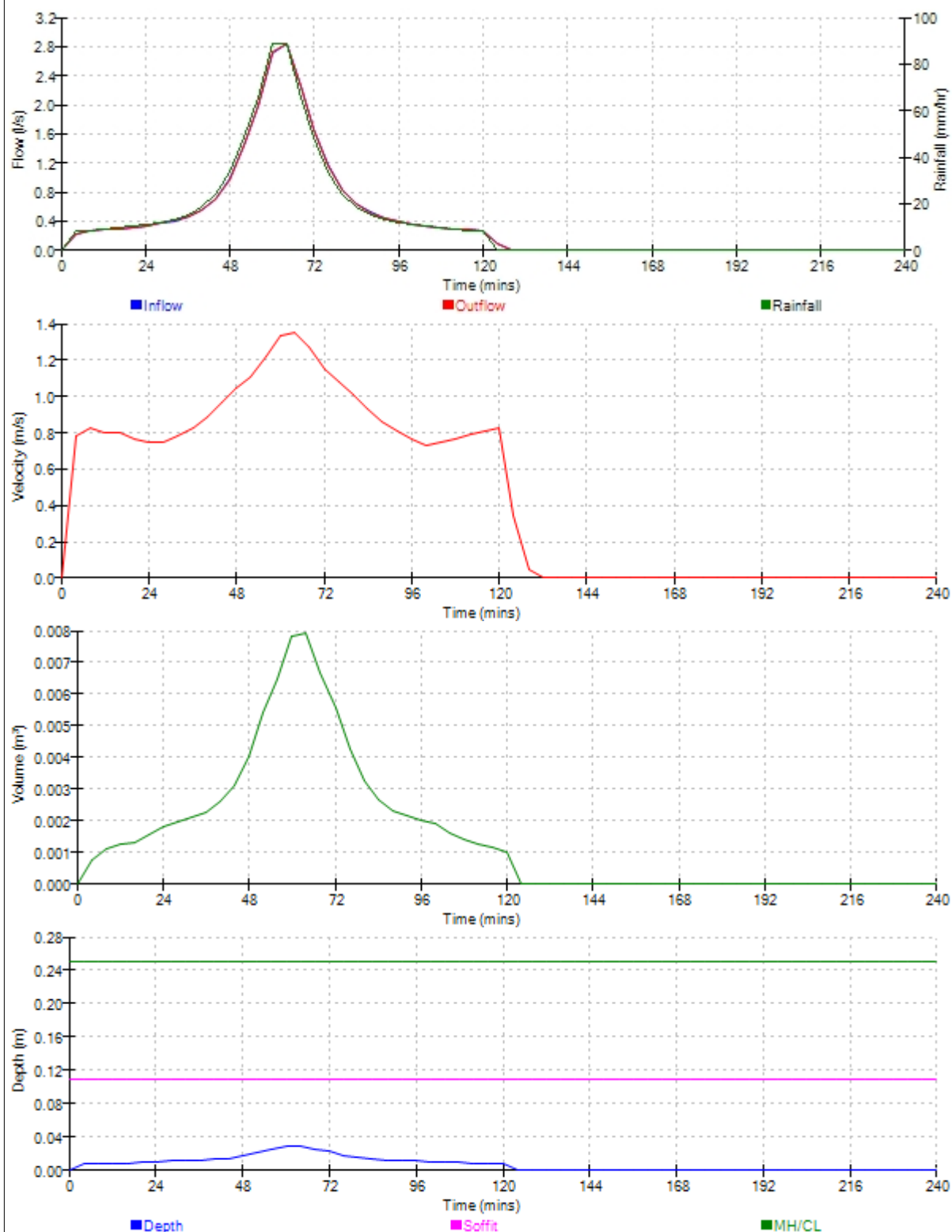
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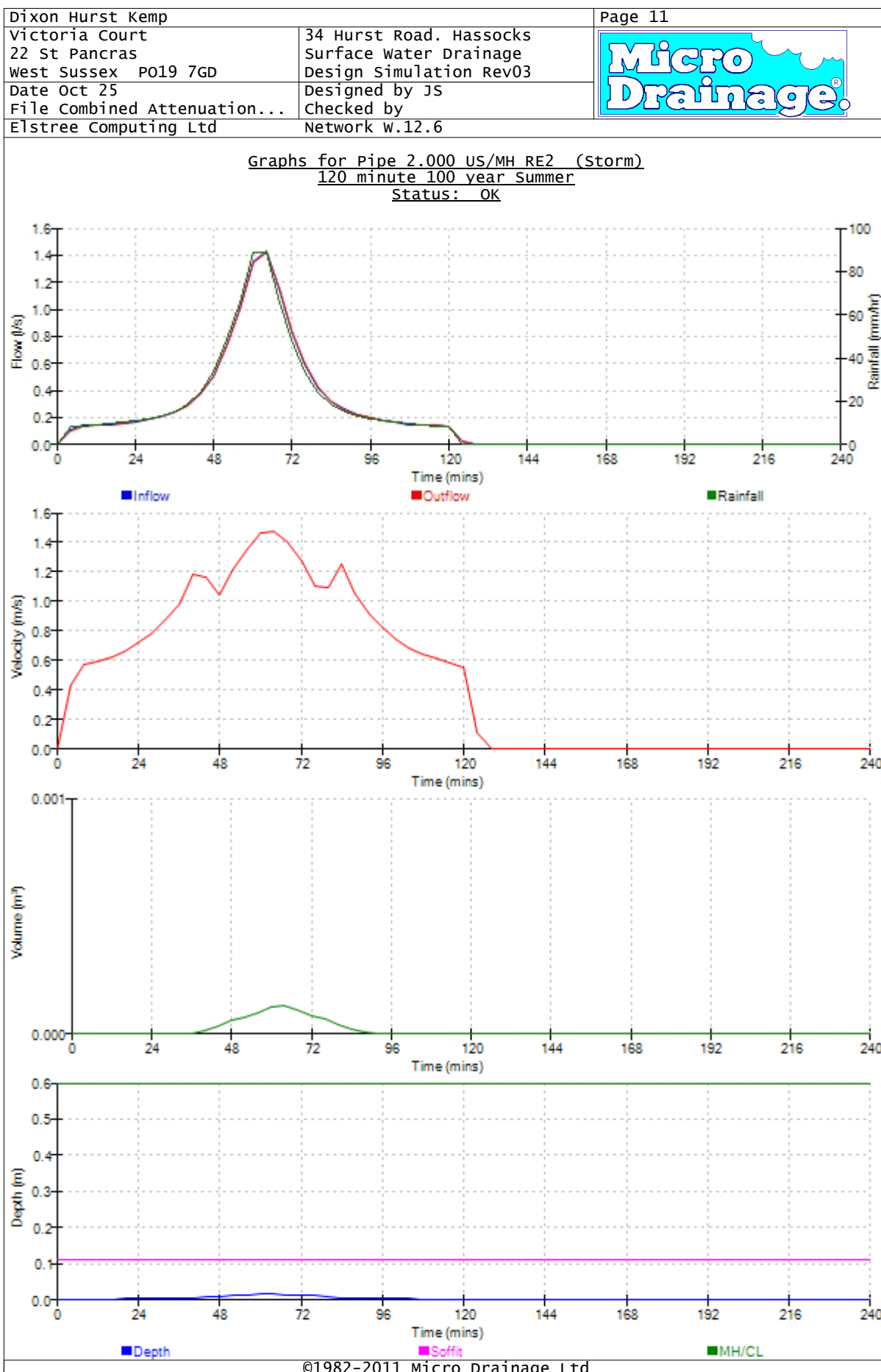
Graphs for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year Summer
Status: OK



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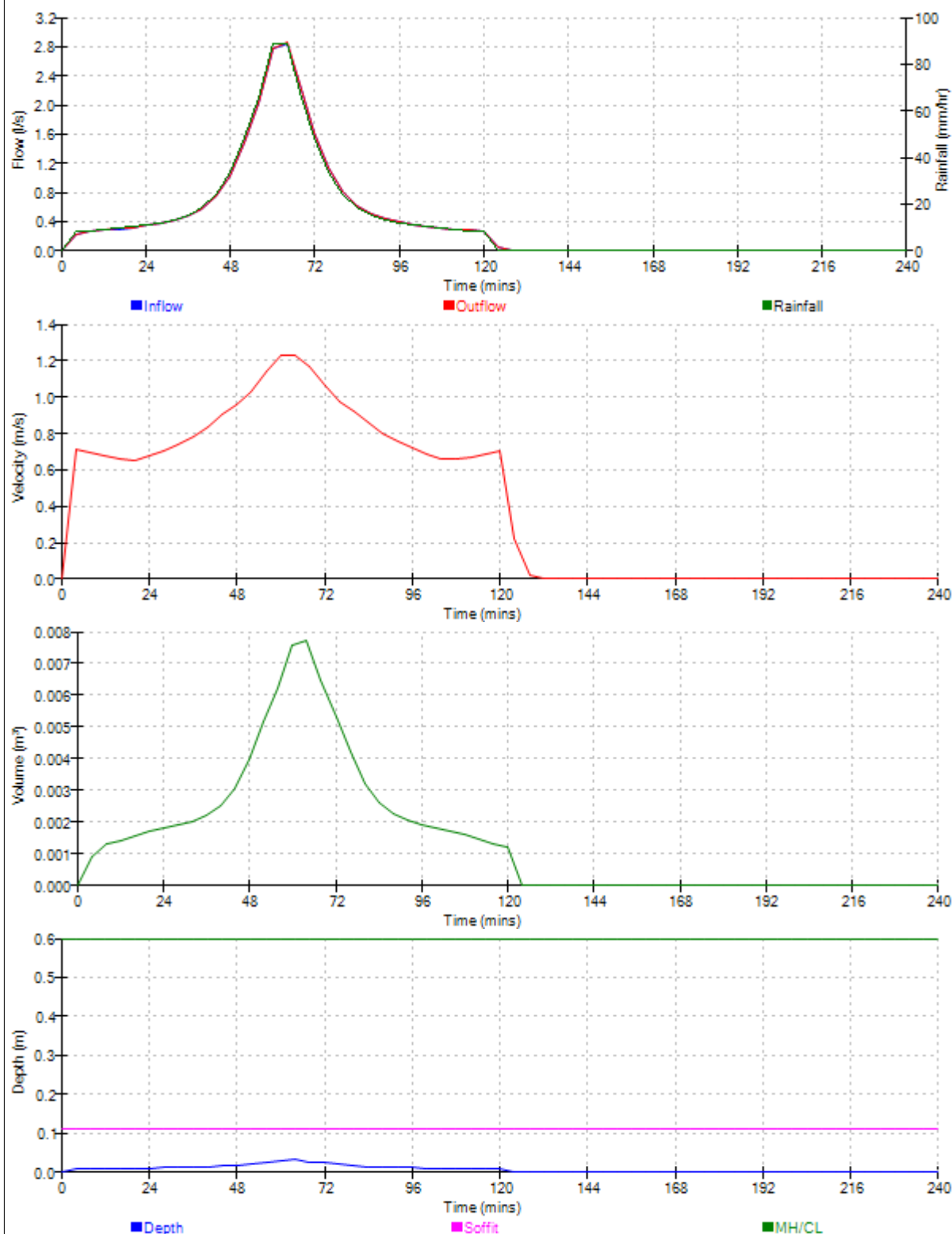
Graphs for Pipe 1.002 US/MH S2 (Storm)
120 minute 100 year Summer
Status: OK





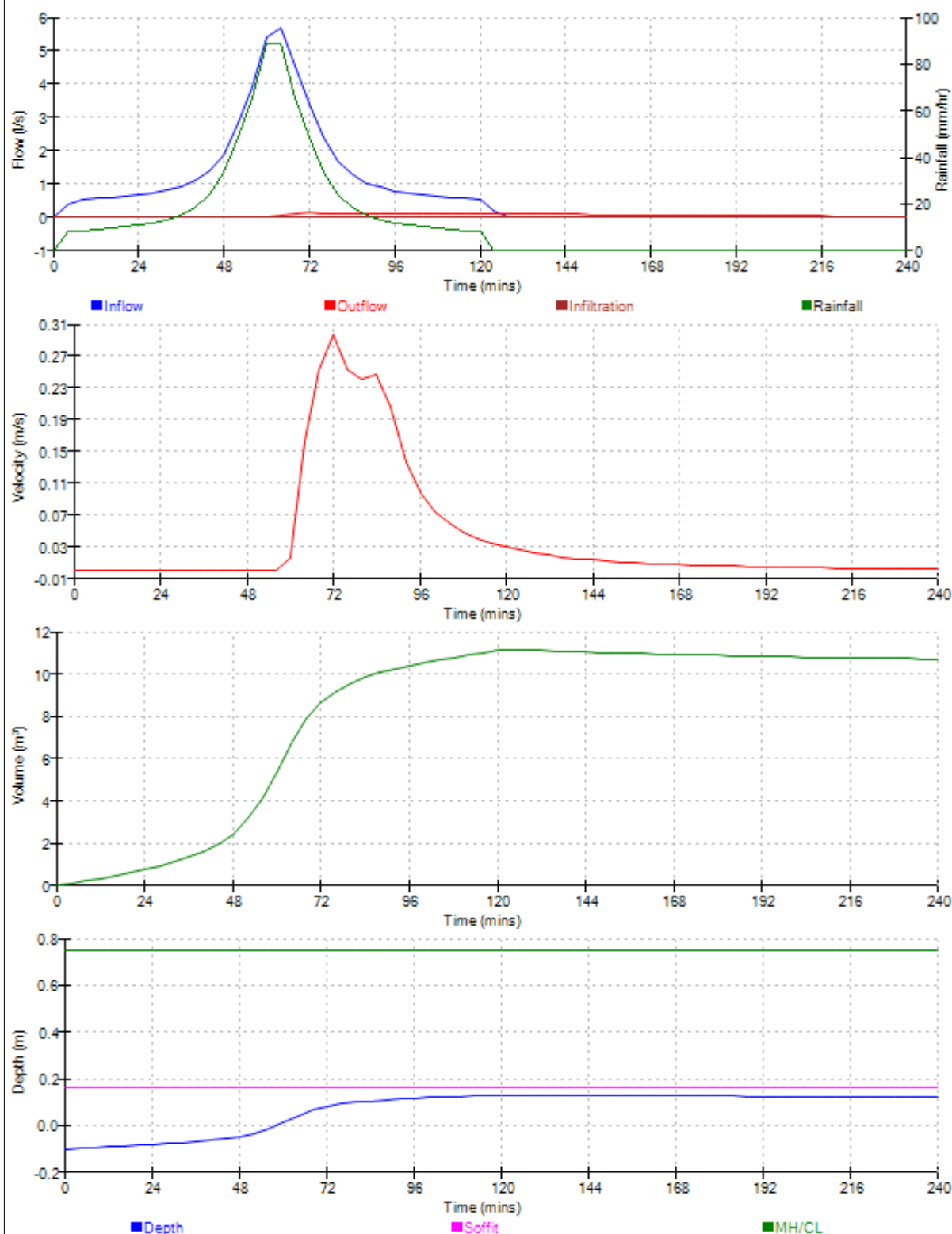
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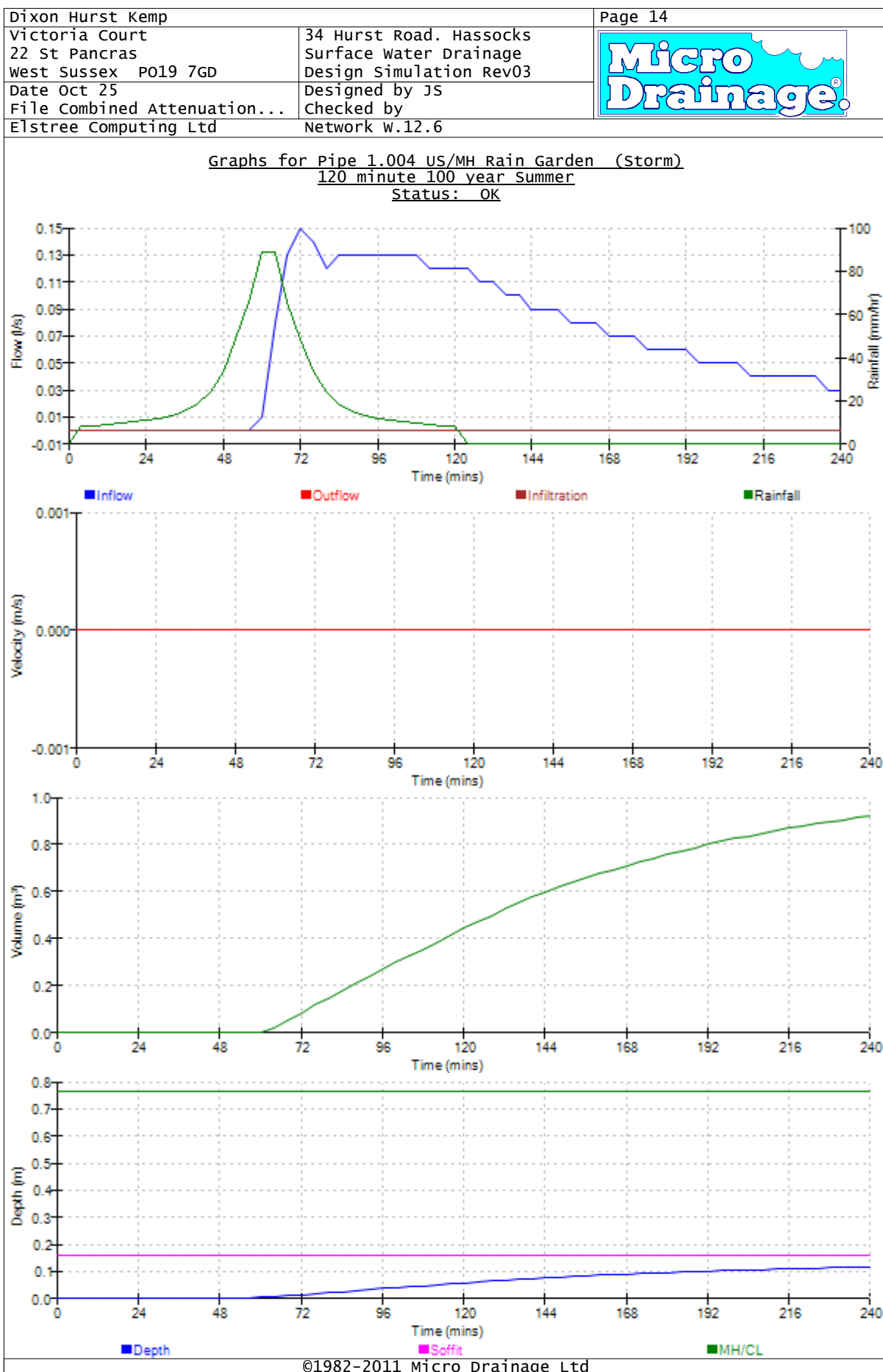
Graphs for Pipe 2.001 US/MH S3 (Storm)
120 minute 100 year Summer
Status: OK



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Graphs for Pipe 1.003 US/MH S4 (Storm)
120 minute 100 year Summer
Status: OK





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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.400	65.000	-0.110	0.0	0.0	0.0
228	65.400	65.000	-0.110	0.0	0.0	0.0
232	65.400	65.000	-0.110	0.0	0.0	0.0
236	65.400	65.000	-0.110	0.0	0.0	0.0
240	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
4	65.005	63.857	-0.105	0.0	1.0	0.2
8	65.006	63.859	-0.104	0.0	1.1	0.3
12	65.006	63.859	-0.104	0.0	1.2	0.3
16	65.006	63.859	-0.104	0.0	1.3	0.3
20	65.007	63.860	-0.103	0.0	1.3	0.3
24	65.007	63.861	-0.103	0.0	1.3	0.3
28	65.008	63.861	-0.102	0.0	1.3	0.4
32	65.009	63.862	-0.101	0.0	1.2	0.4
36	65.010	63.862	-0.100	0.0	1.2	0.5
40	65.011	63.863	-0.099	0.0	1.1	0.6
44	65.012	63.865	-0.098	0.0	1.3	0.7
48	65.014	63.868	-0.096	0.0	1.4	1.0
52	65.017	63.872	-0.093	0.0	1.6	1.5
56	65.021	63.875	-0.089	0.0	1.7	2.0
60	65.024	63.880	-0.086	0.0	1.8	2.7
64	65.024	63.880	-0.086	0.0	1.8	2.9
68	65.022	63.876	-0.088	0.0	1.7	2.2
72	65.018	63.873	-0.092	0.0	1.6	1.7
76	65.015	63.868	-0.095	0.0	1.5	1.2
80	65.013	63.865	-0.097	0.0	1.3	0.8
84	65.011	63.863	-0.099	0.0	1.2	0.6
88	65.010	63.862	-0.100	0.0	1.1	0.5
92	65.009	63.862	-0.101	0.0	1.2	0.4
96	65.008	63.861	-0.102	0.0	1.3	0.4
100	65.007	63.861	-0.103	0.0	1.3	0.4
104	65.007	63.860	-0.103	0.0	1.4	0.3
108	65.006	63.859	-0.104	0.0	1.3	0.3
112	65.006	63.859	-0.104	0.0	1.2	0.3
116	65.006	63.859	-0.104	0.0	1.2	0.3
120	65.005	63.858	-0.105	0.0	1.1	0.3
124	65.001	63.851	-0.109	0.0	0.2	0.0
128	65.000	63.850	-0.110	0.0	0.0	0.0
132	65.000	63.850	-0.110	0.0	0.0	0.0
136	65.000	63.850	-0.110	0.0	0.0	0.0
140	65.000	63.850	-0.110	0.0	0.0	0.0
144	65.000	63.850	-0.110	0.0	0.0	0.0
148	65.000	63.850	-0.110	0.0	0.0	0.0
152	65.000	63.850	-0.110	0.0	0.0	0.0
156	65.000	63.850	-0.110	0.0	0.0	0.0
160	65.000	63.850	-0.110	0.0	0.0	0.0
164	65.000	63.850	-0.110	0.0	0.0	0.0
168	65.000	63.850	-0.110	0.0	0.0	0.0
172	65.000	63.850	-0.110	0.0	0.0	0.0
176	65.000	63.850	-0.110	0.0	0.0	0.0
180	65.000	63.850	-0.110	0.0	0.0	0.0
184	65.000	63.850	-0.110	0.0	0.0	0.0
188	65.000	63.850	-0.110	0.0	0.0	0.0
192	65.000	63.850	-0.110	0.0	0.0	0.0
196	65.000	63.850	-0.110	0.0	0.0	0.0
200	65.000	63.850	-0.110	0.0	0.0	0.0
204	65.000	63.850	-0.110	0.0	0.0	0.0
208	65.000	63.850	-0.110	0.0	0.0	0.0
212	65.000	63.850	-0.110	0.0	0.0	0.0
216	65.000	63.850	-0.110	0.0	0.0	0.0
220	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.000	63.850	-0.110	0.0	0.0	0.0
228	65.000	63.850	-0.110	0.0	0.0	0.0
232	65.000	63.850	-0.110	0.0	0.0	0.0
236	65.000	63.850	-0.110	0.0	0.0	0.0
240	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.850	63.374	-0.110	0.0	0.0	0.0
228	63.850	63.373	-0.110	0.0	0.0	0.0
232	63.850	63.373	-0.110	0.0	0.0	0.0
236	63.850	63.373	-0.110	0.0	0.0	0.0
240	63.850	63.373	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)

120 minute 100 year Summer

Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.400	63.500	-0.110	0.0	0.0	0.0
228	65.400	63.500	-0.110	0.0	0.0	0.0
232	65.400	63.500	-0.110	0.0	0.0	0.0
236	65.400	63.500	-0.110	0.0	0.0	0.0
240	65.400	63.500	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.500	63.374	-0.110	0.0	0.0	0.0
228	63.500	63.373	-0.110	0.0	0.0	0.0
232	63.500	63.373	-0.110	0.0	0.0	0.0
236	63.500	63.373	-0.110	0.0	0.0	0.0
240	63.500	63.373	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.374	63.346	-0.036	0.0	0.0	0.0
228	63.373	63.347	-0.037	0.0	0.0	0.0
232	63.373	63.348	-0.037	0.0	0.0	0.0
236	63.373	63.349	-0.037	0.0	0.0	0.0
240	63.373	63.350	-0.037	0.0	0.0	0.0

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Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
120 minute 100 year Summer
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.346	63.239	-0.047	0.0	0.0	0.0
228	63.347	63.239	-0.046	0.0	0.0	0.0
232	63.348	63.239	-0.045	0.0	0.0	0.0
236	63.349	63.239	-0.044	0.0	0.0	0.0
240	63.350	63.239	-0.043	0.0	0.0	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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PIPELINE SCHEDULES for Storm									
Upstream Manhole									
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)	
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole		110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole		450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole		600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole		110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole		600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000	
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100	
Downstream Manhole									
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)	
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole		450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole		600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000	
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole		600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000	
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100	
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450	
Free Flowing Outfall Details for Storm									
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)			
1.004	Dummy	64.000	63.223	63.230	450	450			
Simulation Criteria for Storm									
Volumetric Runoff Coeff		1.000	Foul Sewage per hectare (l/s)		0.000				
Areal Reduction Factor		1.000	Additional Flow - % of Total Flow		45.000				
Hot Start (mins)		0	MADD Factor * 10m³/ha Storage		2.000				
Hot Start Level (mm)		0	Run Time (mins)		240				
Manhole Headloss Coeff (Global)		0.500	Output Interval (mins)		4				
Number of Input Hydrographs		0	Number of Storage Structures		2				
Number of Online Controls		2	Number of Time/Area Diagrams		0				
Number of Offline Controls		0							
Synthetic Rainfall Details									
Rainfall Model		FSR		Profile Type		Winter			
Return Period (years)		100		Cv (Summer)		1.000			
Region		England and Wales		Cv (Winter)		1.000			
M5-60 (mm)		20.000		Storm Duration (mins)		120			
Ratio R		0.343							
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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4. DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden. DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 120 minute 100 year Winter (Storm)

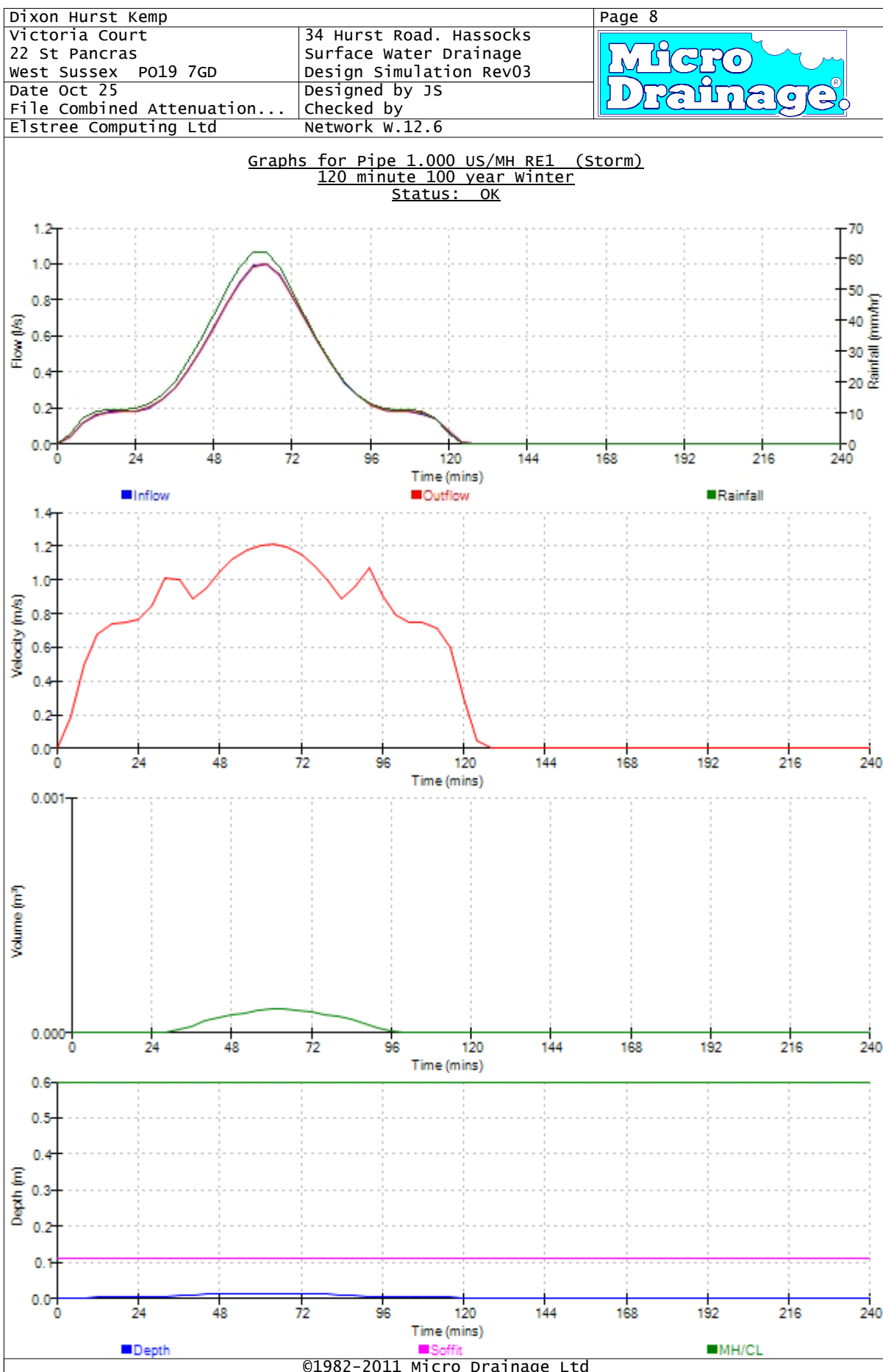
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.416	-0.094	0.000	0.05	0.0	1.0	OK
1.001	S1	65.020	-0.090	0.000	0.08	0.0	2.0	OK
1.002	S2	63.875	-0.085	0.000	0.12	0.0	2.0	OK
2.000	RE2	65.414	-0.096	0.000	0.04	0.0	1.0	OK
2.001	S3	63.526	-0.084	0.000	0.13	0.0	2.0	OK
1.003	S4	63.382	-0.028	0.000	0.01	0.0	0.1	OK
1.004	Rain Garden	63.349	-0.044	0.000	0.00	0.0	0.0	OK

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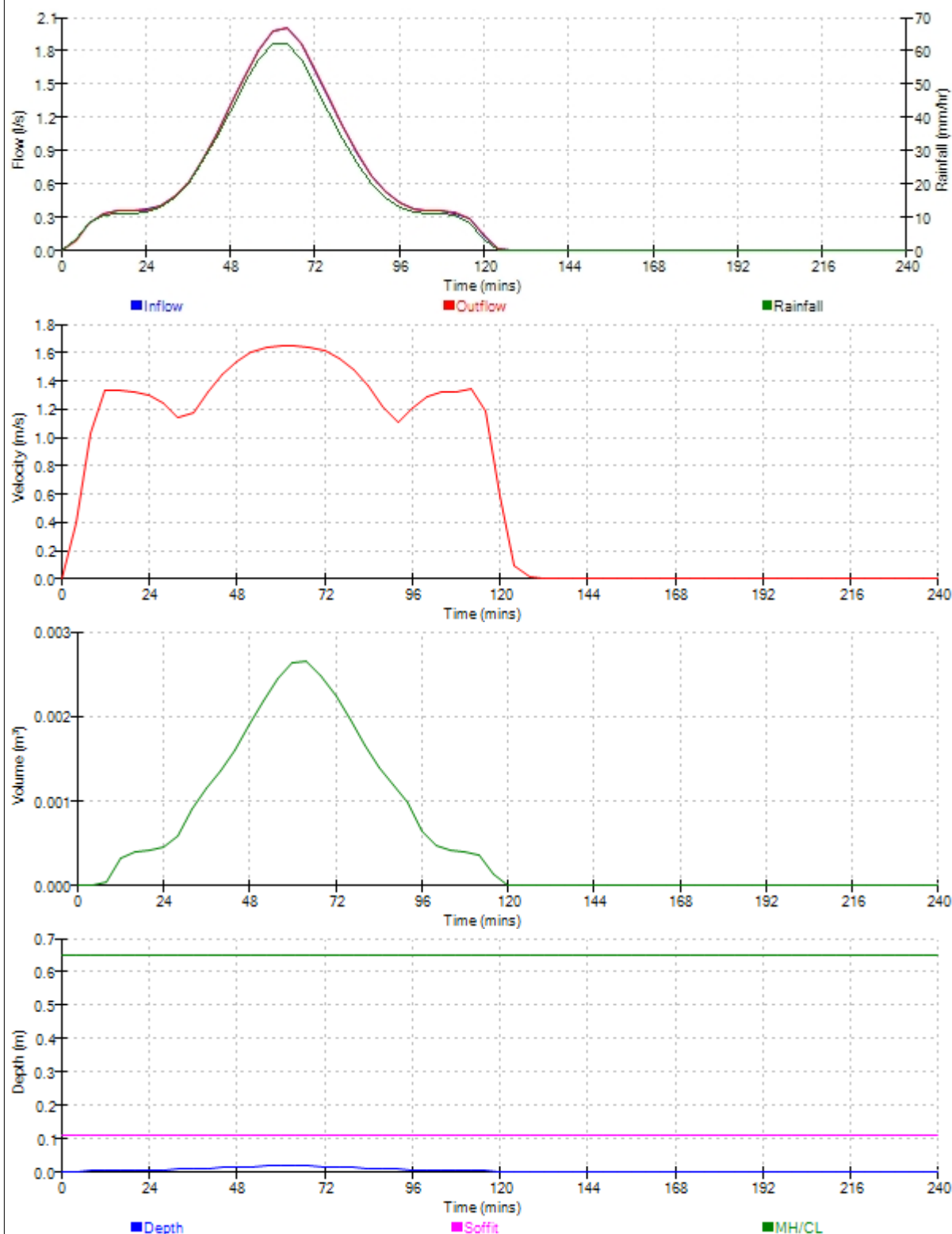
Rainfall Hyetograph for 120 minute 100 year Winter (Storm)

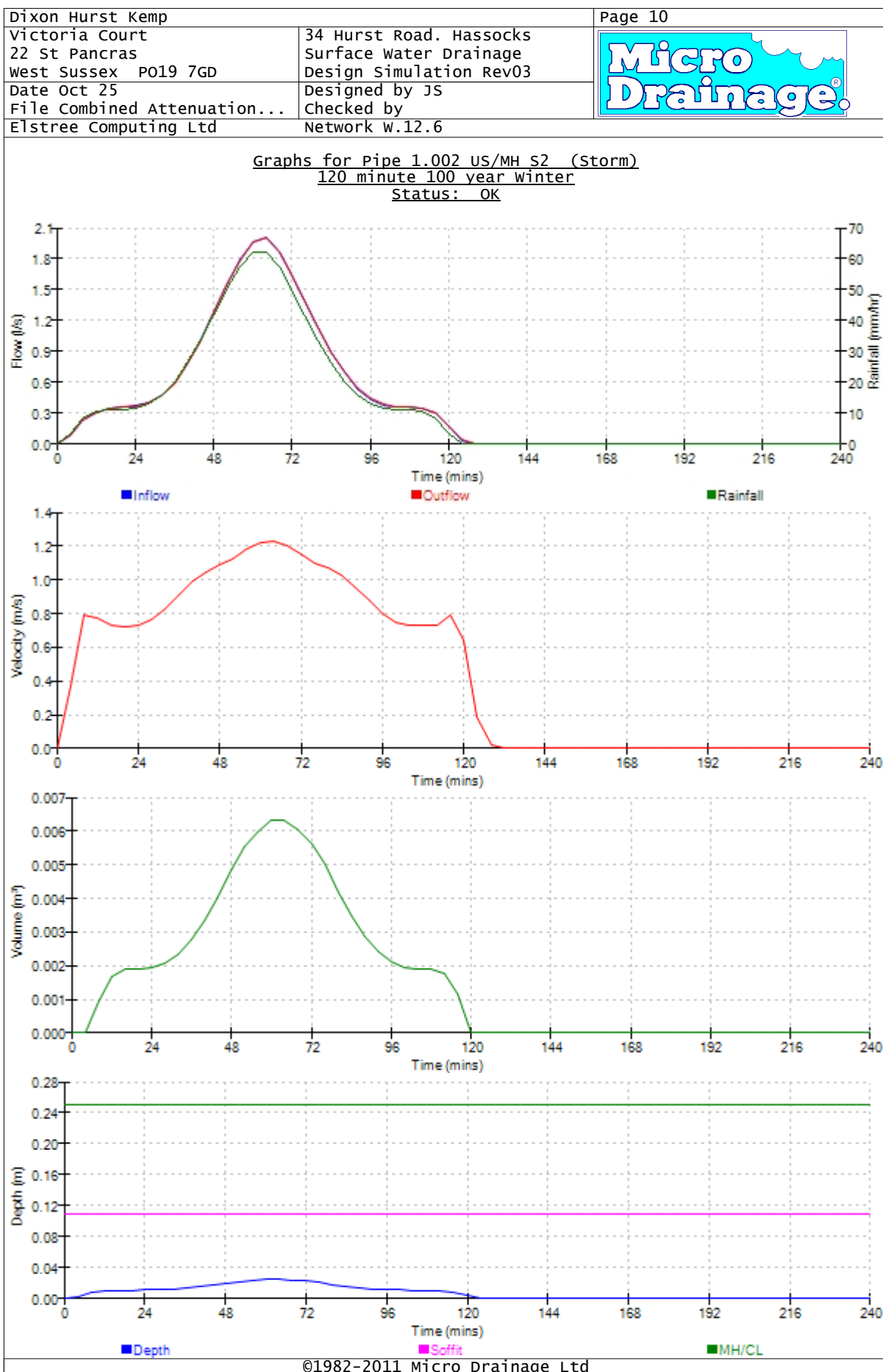
Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
4	3.455	28	12.958	52	49.979	76	41.649	100	11.533
8	8.489	32	15.779	56	57.134	80	33.609	104	11.168
12	10.632	36	20.179	60	62.210	84	26.336	108	11.164
16	11.164	40	26.336	64	62.210	88	20.179	112	10.632
20	11.168	44	33.609	68	57.134	92	15.779	116	8.489
24	11.533	48	41.649	72	49.979	96	12.958	120	3.455

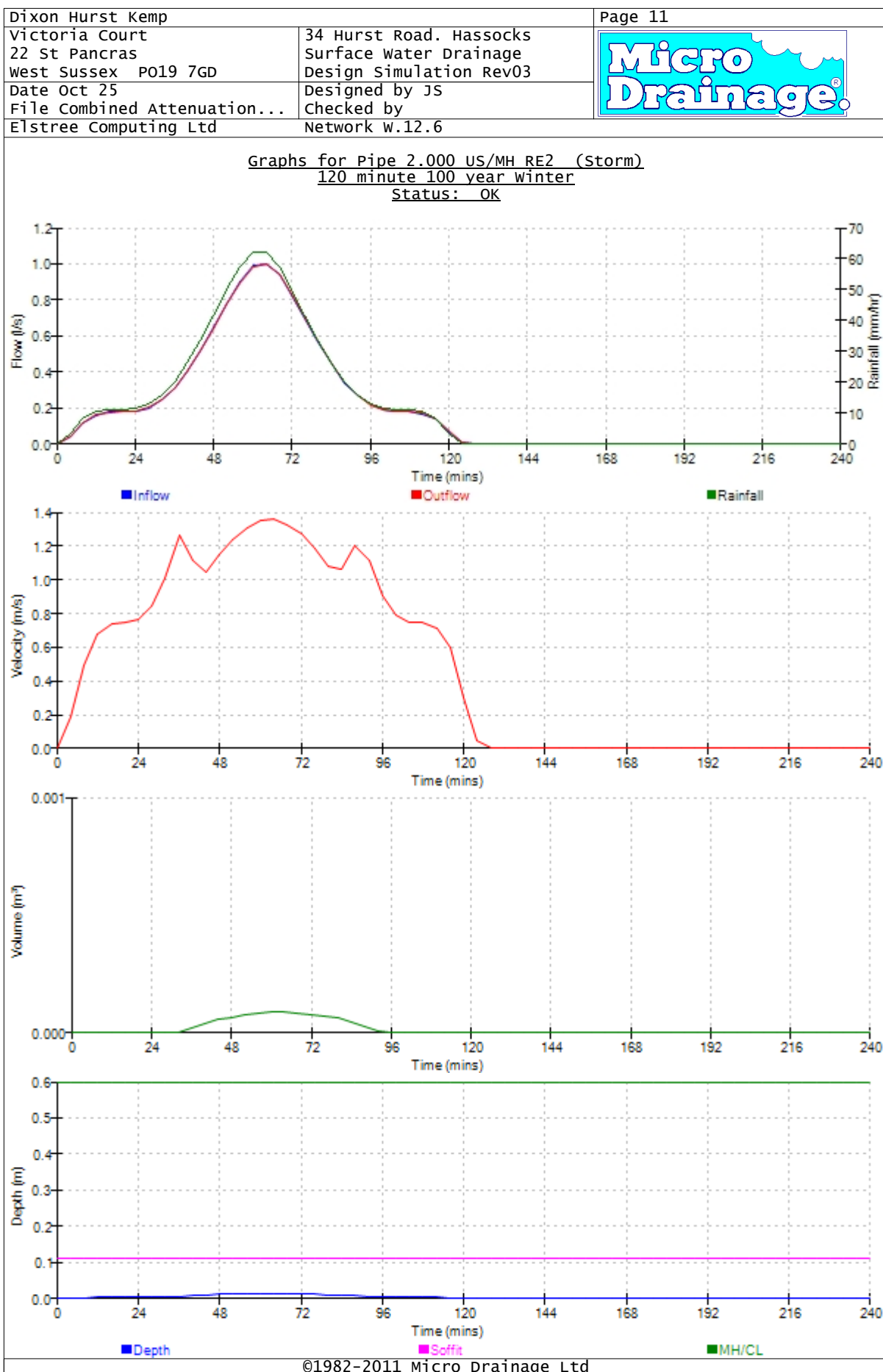


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Graphs for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year winter
Status: OK

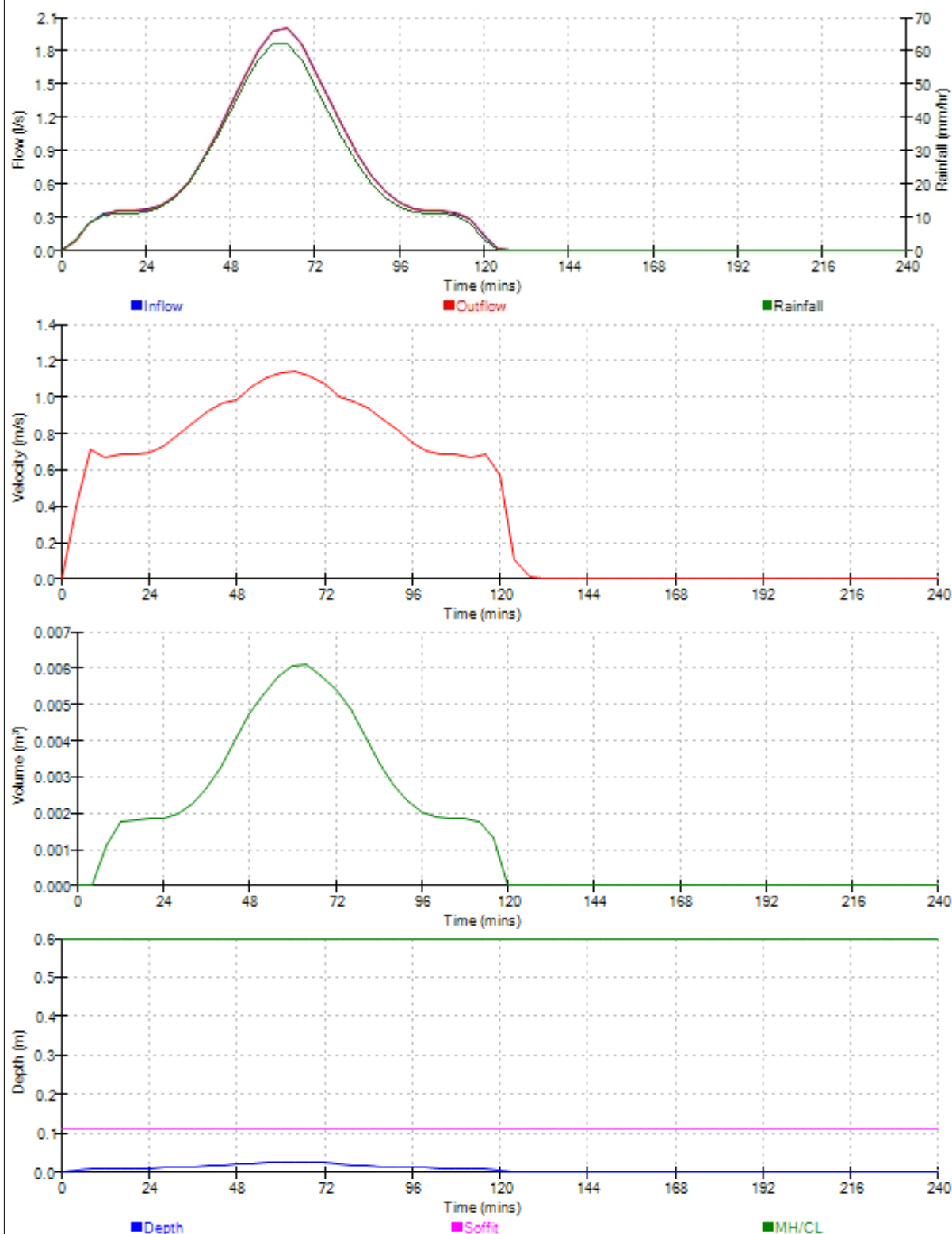






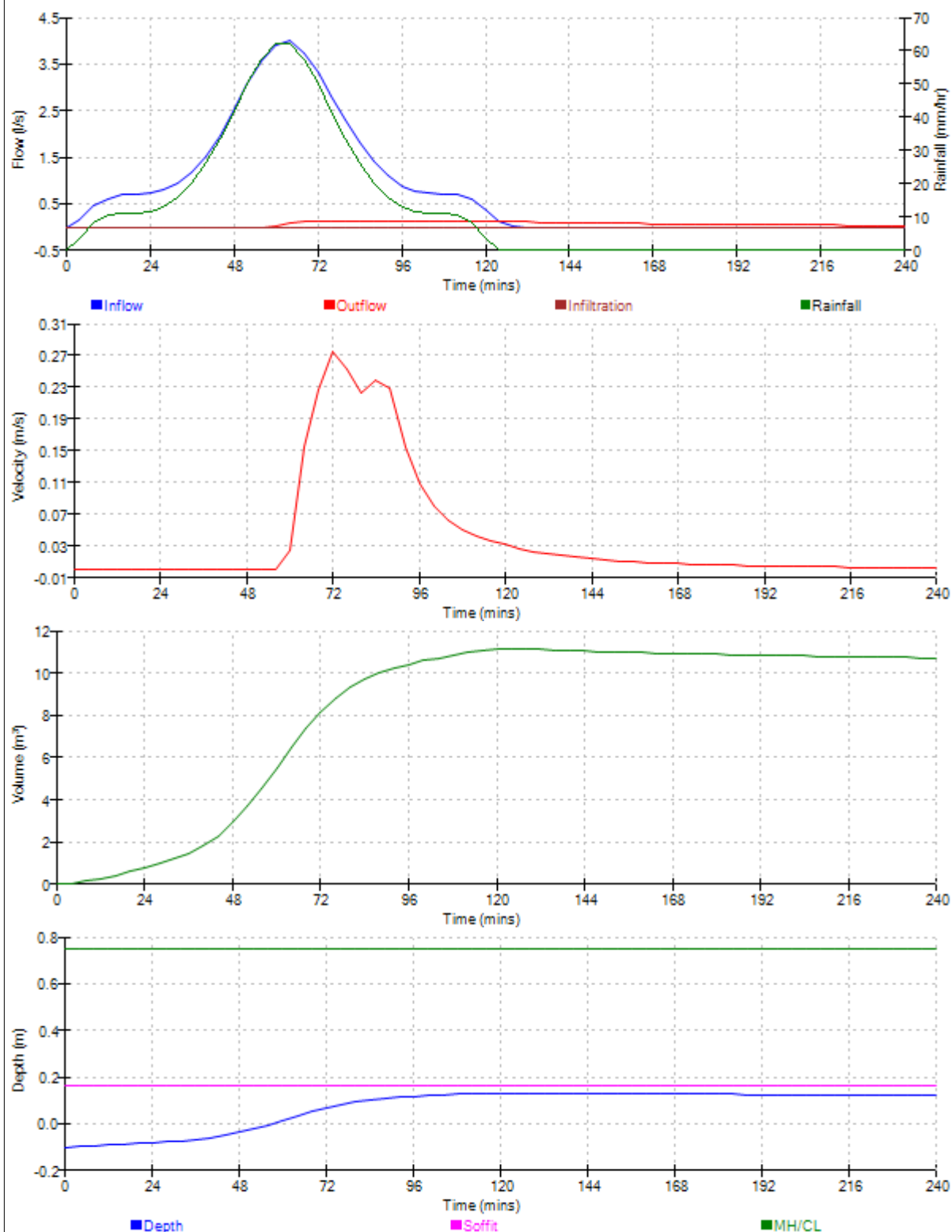
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Graphs for Pipe 2.001 US/MH S3 (Storm)
120 minute 100 year winter
Status: OK

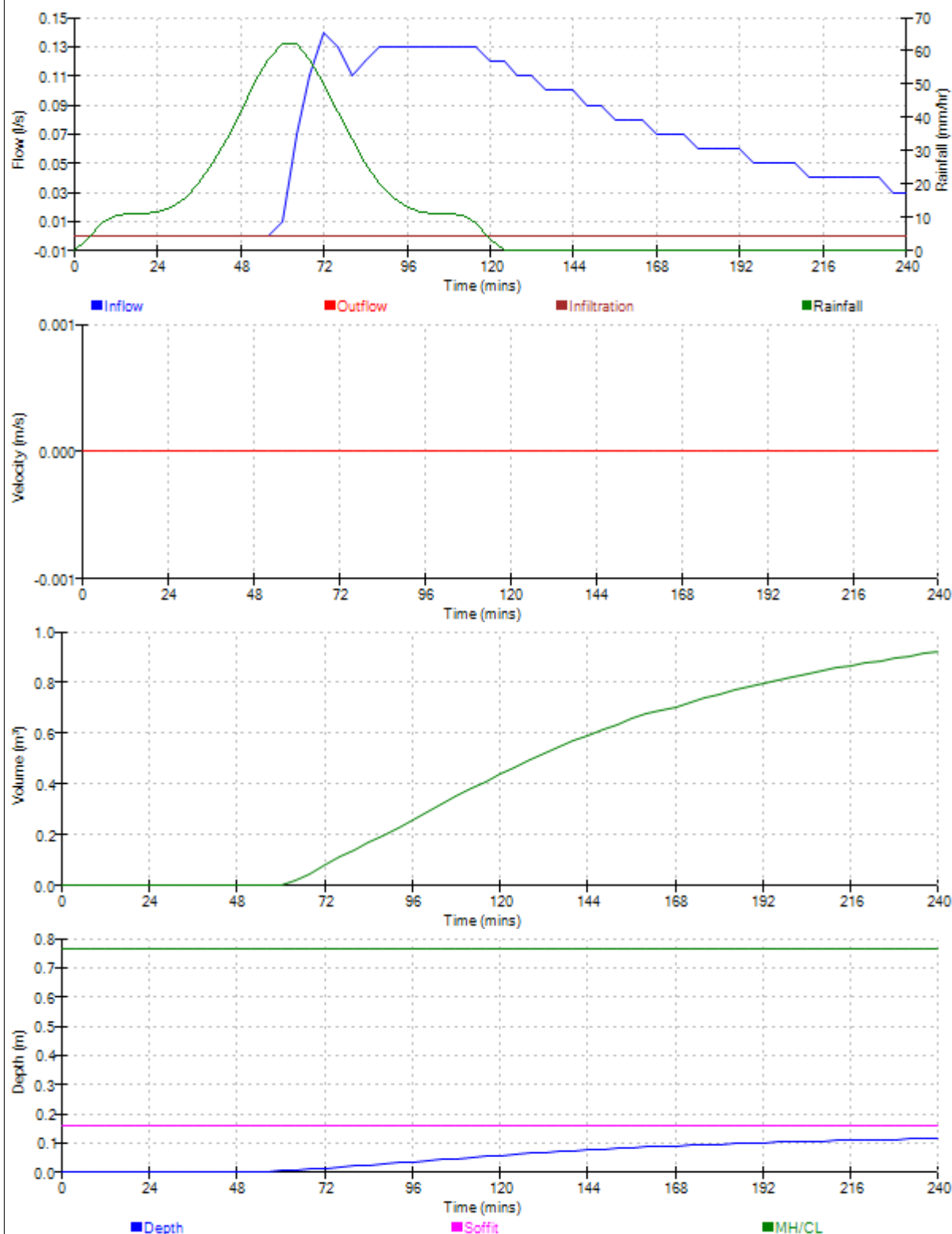


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Graphs for Pipe 1.003 US/MH S4 (Storm)
120 minute 100 year winter
Status: OK



Graphs for Pipe 1.004 US/MH Rain Garden (Storm)
120 minute 100 year winter
Status: OK



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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.400	65.000	-0.110	0.0	0.0	0.0
228	65.400	65.000	-0.110	0.0	0.0	0.0
232	65.400	65.000	-0.110	0.0	0.0	0.0
236	65.400	65.000	-0.110	0.0	0.0	0.0
240	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
4	65.002	63.853	-0.108	0.0	0.4	0.1
8	65.005	63.858	-0.105	0.0	1.0	0.2
12	65.007	63.860	-0.103	0.0	1.3	0.3
16	65.007	63.861	-0.103	0.0	1.3	0.4
20	65.007	63.861	-0.103	0.0	1.3	0.4
24	65.008	63.861	-0.102	0.0	1.3	0.4
28	65.008	63.862	-0.102	0.0	1.2	0.4
32	65.010	63.862	-0.100	0.0	1.1	0.5
36	65.012	63.864	-0.098	0.0	1.2	0.6
40	65.013	63.866	-0.097	0.0	1.3	0.8
44	65.014	63.868	-0.096	0.0	1.4	1.0
48	65.016	63.870	-0.094	0.0	1.5	1.3
52	65.018	63.873	-0.092	0.0	1.6	1.6
56	65.019	63.874	-0.091	0.0	1.6	1.8
60	65.020	63.875	-0.090	0.0	1.7	2.0
64	65.020	63.875	-0.090	0.0	1.7	2.0
68	65.019	63.874	-0.091	0.0	1.6	1.9
72	65.018	63.873	-0.092	0.0	1.6	1.6
76	65.016	63.871	-0.094	0.0	1.6	1.4
80	65.015	63.868	-0.095	0.0	1.5	1.1
84	65.013	63.866	-0.097	0.0	1.4	0.9
88	65.012	63.864	-0.098	0.0	1.2	0.7
92	65.011	63.863	-0.099	0.0	1.1	0.5
96	65.009	63.862	-0.101	0.0	1.2	0.4
100	65.008	63.861	-0.102	0.0	1.3	0.4
104	65.007	63.861	-0.103	0.0	1.3	0.4
108	65.007	63.861	-0.103	0.0	1.3	0.4
112	65.007	63.861	-0.103	0.0	1.3	0.3
116	65.006	63.859	-0.104	0.0	1.2	0.3
120	65.003	63.854	-0.107	0.0	0.6	0.1
124	65.000	63.850	-0.110	0.0	0.1	0.0
128	65.000	63.850	-0.110	0.0	0.0	0.0
132	65.000	63.850	-0.110	0.0	0.0	0.0
136	65.000	63.850	-0.110	0.0	0.0	0.0
140	65.000	63.850	-0.110	0.0	0.0	0.0
144	65.000	63.850	-0.110	0.0	0.0	0.0
148	65.000	63.850	-0.110	0.0	0.0	0.0
152	65.000	63.850	-0.110	0.0	0.0	0.0
156	65.000	63.850	-0.110	0.0	0.0	0.0
160	65.000	63.850	-0.110	0.0	0.0	0.0
164	65.000	63.850	-0.110	0.0	0.0	0.0
168	65.000	63.850	-0.110	0.0	0.0	0.0
172	65.000	63.850	-0.110	0.0	0.0	0.0
176	65.000	63.850	-0.110	0.0	0.0	0.0
180	65.000	63.850	-0.110	0.0	0.0	0.0
184	65.000	63.850	-0.110	0.0	0.0	0.0
188	65.000	63.850	-0.110	0.0	0.0	0.0
192	65.000	63.850	-0.110	0.0	0.0	0.0
196	65.000	63.850	-0.110	0.0	0.0	0.0
200	65.000	63.850	-0.110	0.0	0.0	0.0
204	65.000	63.850	-0.110	0.0	0.0	0.0
208	65.000	63.850	-0.110	0.0	0.0	0.0
212	65.000	63.850	-0.110	0.0	0.0	0.0
216	65.000	63.850	-0.110	0.0	0.0	0.0
220	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.000	63.850	-0.110	0.0	0.0	0.0
228	65.000	63.850	-0.110	0.0	0.0	0.0
232	65.000	63.850	-0.110	0.0	0.0	0.0
236	65.000	63.850	-0.110	0.0	0.0	0.0
240	65.000	63.850	-0.110	0.0	0.0	0.0

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<u>Flows and Levels for Pipe 1.002 US/MH S2 (Storm)</u> <u>120 minute 100 year winter</u> <u>Average Rainfall Intensity 25.085 mm/hr</u>						
Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
4	63.853	63.152	-0.107	0.0	0.4	0.1
8	63.858	63.156	-0.102	0.0	0.8	0.2
12	63.860	63.158	-0.100	0.0	0.8	0.3
16	63.861	63.162	-0.099	0.0	0.7	0.4
20	63.861	63.165	-0.099	0.0	0.7	0.4
24	63.861	63.169	-0.099	0.0	0.7	0.4
28	63.862	63.173	-0.098	0.0	0.8	0.4
32	63.862	63.177	-0.098	0.0	0.8	0.5
36	63.864	63.183	-0.096	0.0	0.9	0.6
40	63.866	63.190	-0.094	0.0	1.0	0.8
44	63.868	63.200	-0.092	0.0	1.0	1.0
48	63.870	63.214	-0.090	0.0	1.1	1.3
52	63.873	63.229	-0.087	0.0	1.1	1.5
56	63.874	63.246	-0.086	0.0	1.2	1.8
60	63.875	63.265	-0.085	0.0	1.2	2.0
64	63.875	63.286	-0.085	0.0	1.2	2.0
68	63.874	63.304	-0.086	0.0	1.2	1.9
72	63.873	63.320	-0.087	0.0	1.1	1.7
76	63.871	63.333	-0.089	0.0	1.1	1.4
80	63.868	63.344	-0.092	0.0	1.1	1.1
84	63.866	63.352	-0.094	0.0	1.0	0.9
88	63.864	63.358	-0.096	0.0	1.0	0.7
92	63.863	63.363	-0.097	0.0	0.9	0.5
96	63.862	63.367	-0.098	0.0	0.8	0.4
100	63.861	63.370	-0.099	0.0	0.8	0.4
104	63.861	63.373	-0.099	0.0	0.7	0.4
108	63.861	63.376	-0.099	0.0	0.7	0.4
112	63.861	63.379	-0.099	0.0	0.7	0.3
116	63.859	63.381	-0.101	0.0	0.8	0.3
120	63.854	63.382	-0.106	0.0	0.6	0.2
124	63.850	63.382	-0.110	0.0	0.2	0.0
128	63.850	63.382	-0.110	0.0	0.0	0.0
132	63.850	63.381	-0.110	0.0	0.0	0.0
136	63.850	63.380	-0.110	0.0	0.0	0.0
140	63.850	63.380	-0.110	0.0	0.0	0.0
144	63.850	63.380	-0.110	0.0	0.0	0.0
148	63.850	63.379	-0.110	0.0	0.0	0.0
152	63.850	63.379	-0.110	0.0	0.0	0.0
156	63.850	63.378	-0.110	0.0	0.0	0.0
160	63.850	63.378	-0.110	0.0	0.0	0.0
164	63.850	63.378	-0.110	0.0	0.0	0.0
168	63.850	63.377	-0.110	0.0	0.0	0.0
172	63.850	63.377	-0.110	0.0	0.0	0.0
176	63.850	63.377	-0.110	0.0	0.0	0.0
180	63.850	63.376	-0.110	0.0	0.0	0.0
184	63.850	63.376	-0.110	0.0	0.0	0.0
188	63.850	63.376	-0.110	0.0	0.0	0.0
192	63.850	63.375	-0.110	0.0	0.0	0.0
196	63.850	63.375	-0.110	0.0	0.0	0.0
200	63.850	63.375	-0.110	0.0	0.0	0.0
204	63.850	63.375	-0.110	0.0	0.0	0.0
208	63.850	63.374	-0.110	0.0	0.0	0.0
212	63.850	63.374	-0.110	0.0	0.0	0.0
216	63.850	63.374	-0.110	0.0	0.0	0.0
220	63.850	63.374	-0.110	0.0	0.0	0.0
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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.850	63.374	-0.110	0.0	0.0	0.0
228	63.850	63.373	-0.110	0.0	0.0	0.0
232	63.850	63.373	-0.110	0.0	0.0	0.0
236	63.850	63.373	-0.110	0.0	0.0	0.0
240	63.850	63.373	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	65.400	63.500	-0.110	0.0	0.0	0.0
228	65.400	63.500	-0.110	0.0	0.0	0.0
232	65.400	63.500	-0.110	0.0	0.0	0.0
236	65.400	63.500	-0.110	0.0	0.0	0.0
240	65.400	63.500	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
4	63.503	63.152	-0.107	0.0	0.4	0.1
8	63.509	63.156	-0.101	0.0	0.7	0.2
12	63.511	63.158	-0.099	0.0	0.7	0.3
16	63.511	63.162	-0.099	0.0	0.7	0.4
20	63.511	63.165	-0.099	0.0	0.7	0.4
24	63.512	63.169	-0.098	0.0	0.7	0.4
28	63.512	63.173	-0.098	0.0	0.7	0.4
32	63.513	63.177	-0.097	0.0	0.8	0.5
36	63.514	63.183	-0.096	0.0	0.9	0.6
40	63.517	63.190	-0.093	0.0	0.9	0.8
44	63.519	63.200	-0.091	0.0	1.0	1.0
48	63.522	63.214	-0.088	0.0	1.0	1.3
52	63.524	63.229	-0.086	0.0	1.1	1.6
56	63.525	63.246	-0.085	0.0	1.1	1.8
60	63.526	63.265	-0.084	0.0	1.1	2.0
64	63.526	63.286	-0.084	0.0	1.1	2.0
68	63.525	63.304	-0.085	0.0	1.1	1.9
72	63.524	63.320	-0.086	0.0	1.1	1.6
76	63.522	63.333	-0.088	0.0	1.0	1.4
80	63.520	63.344	-0.090	0.0	1.0	1.1
84	63.517	63.352	-0.093	0.0	0.9	0.9
88	63.515	63.358	-0.095	0.0	0.9	0.7
92	63.513	63.363	-0.097	0.0	0.8	0.5
96	63.512	63.367	-0.098	0.0	0.7	0.4
100	63.512	63.370	-0.098	0.0	0.7	0.4
104	63.511	63.373	-0.099	0.0	0.7	0.4
108	63.511	63.376	-0.099	0.0	0.7	0.4
112	63.511	63.379	-0.099	0.0	0.7	0.3
116	63.510	63.381	-0.100	0.0	0.7	0.3
120	63.504	63.382	-0.106	0.0	0.6	0.1
124	63.500	63.382	-0.110	0.0	0.1	0.0
128	63.500	63.382	-0.110	0.0	0.0	0.0
132	63.500	63.381	-0.110	0.0	0.0	0.0
136	63.500	63.380	-0.110	0.0	0.0	0.0
140	63.500	63.380	-0.110	0.0	0.0	0.0
144	63.500	63.380	-0.110	0.0	0.0	0.0
148	63.500	63.379	-0.110	0.0	0.0	0.0
152	63.500	63.379	-0.110	0.0	0.0	0.0
156	63.500	63.378	-0.110	0.0	0.0	0.0
160	63.500	63.378	-0.110	0.0	0.0	0.0
164	63.500	63.378	-0.110	0.0	0.0	0.0
168	63.500	63.377	-0.110	0.0	0.0	0.0
172	63.500	63.377	-0.110	0.0	0.0	0.0
176	63.500	63.377	-0.110	0.0	0.0	0.0
180	63.500	63.376	-0.110	0.0	0.0	0.0
184	63.500	63.376	-0.110	0.0	0.0	0.0
188	63.500	63.376	-0.110	0.0	0.0	0.0
192	63.500	63.375	-0.110	0.0	0.0	0.0
196	63.500	63.375	-0.110	0.0	0.0	0.0
200	63.500	63.375	-0.110	0.0	0.0	0.0
204	63.500	63.375	-0.110	0.0	0.0	0.0
208	63.500	63.374	-0.110	0.0	0.0	0.0
212	63.500	63.374	-0.110	0.0	0.0	0.0
216	63.500	63.374	-0.110	0.0	0.0	0.0
220	63.500	63.374	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.500	63.374	-0.110	0.0	0.0	0.0
228	63.500	63.373	-0.110	0.0	0.0	0.0
232	63.500	63.373	-0.110	0.0	0.0	0.0
236	63.500	63.373	-0.110	0.0	0.0	0.0
240	63.500	63.373	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.374	63.345	-0.036	0.0	0.0	0.0
228	63.373	63.346	-0.037	0.0	0.0	0.0
232	63.373	63.347	-0.037	0.0	0.0	0.0
236	63.373	63.348	-0.037	0.0	0.0	0.0
240	63.373	63.349	-0.037	0.0	0.0	0.0

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Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
120 minute 100 year winter
Average Rainfall Intensity 25.085 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
224	63.345	63.239	-0.048	0.0	0.0	0.0
228	63.346	63.239	-0.047	0.0	0.0	0.0
232	63.347	63.239	-0.046	0.0	0.0	0.0
236	63.348	63.239	-0.045	0.0	0.0	0.0
240	63.349	63.239	-0.044	0.0	0.0	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole	450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole	600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole	450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole	600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole	600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
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1.004	Dummy	64.000	63.223	63.230	450	450
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Run Time (mins)	720
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	6

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Storm Duration (mins)	360
Ratio R	0.343		

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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4. DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden. DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 360 minute 100 year Winter (Storm)

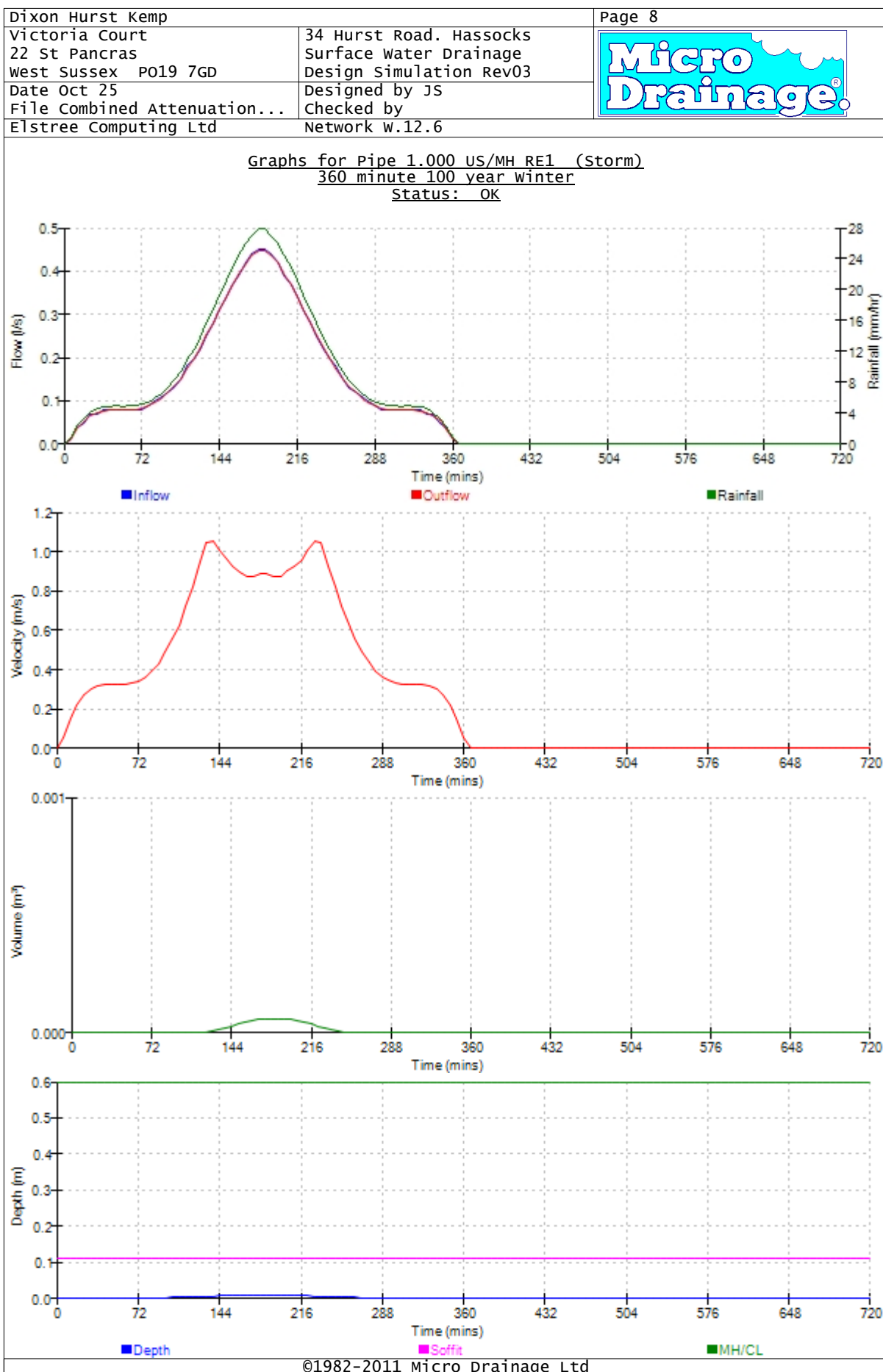
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

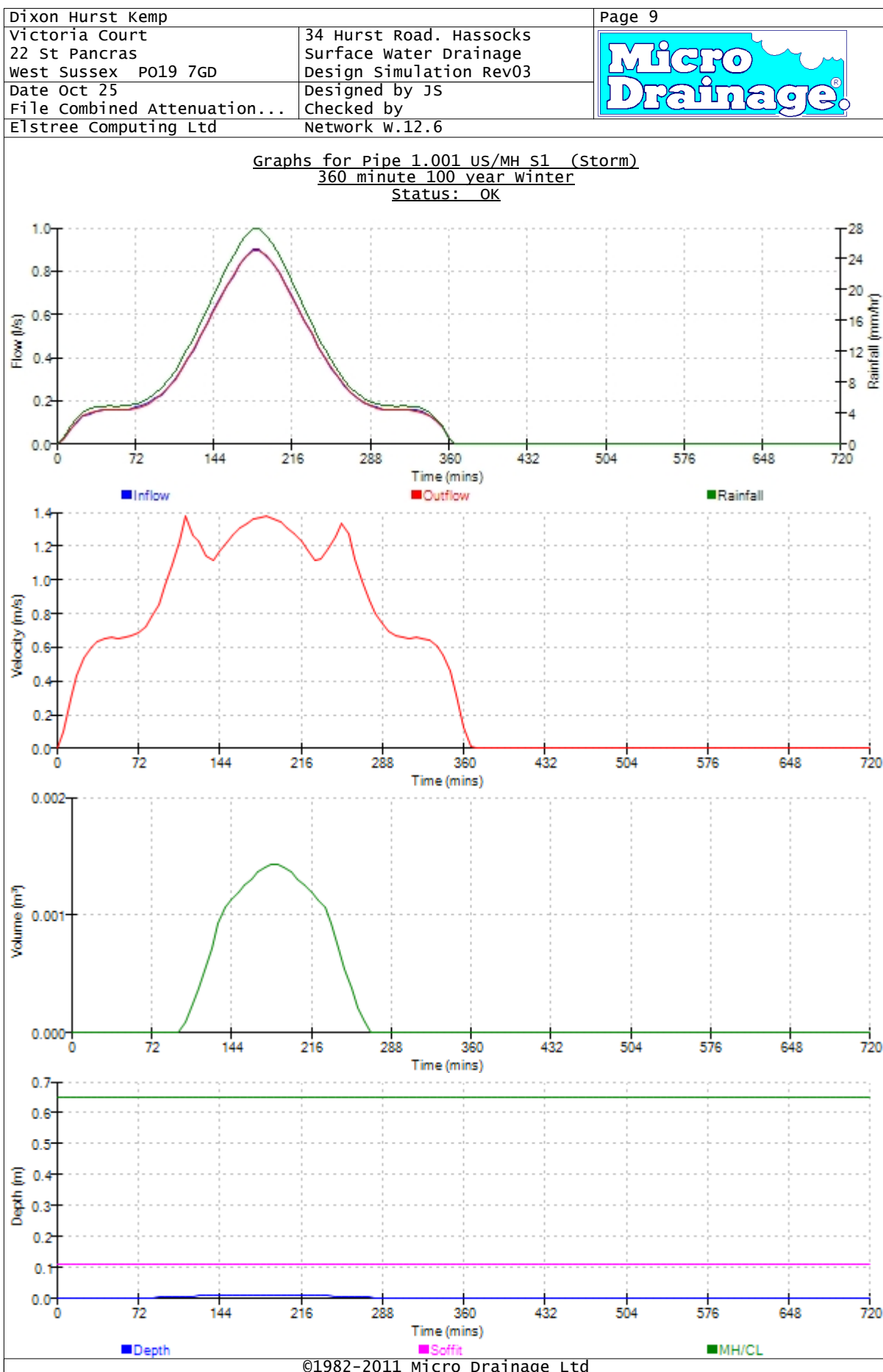
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.411	-0.099	0.000	0.02	0.0	0.4	OK
1.001	S1	65.013	-0.097	0.000	0.04	0.0	0.9	OK
1.002	S2	63.866	-0.094	0.000	0.05	0.0	0.9	OK
2.000	RE2	65.410	-0.100	0.000	0.02	0.0	0.4	OK
2.001	S3	63.517	-0.093	0.000	0.06	0.0	0.9	OK
1.003	S4	63.446	0.036	0.000	0.01	0.0	0.1	SURCHARGED
1.004	Rain Garden	63.418	0.025	0.000	0.00	0.0	0.0	SURCHARGED

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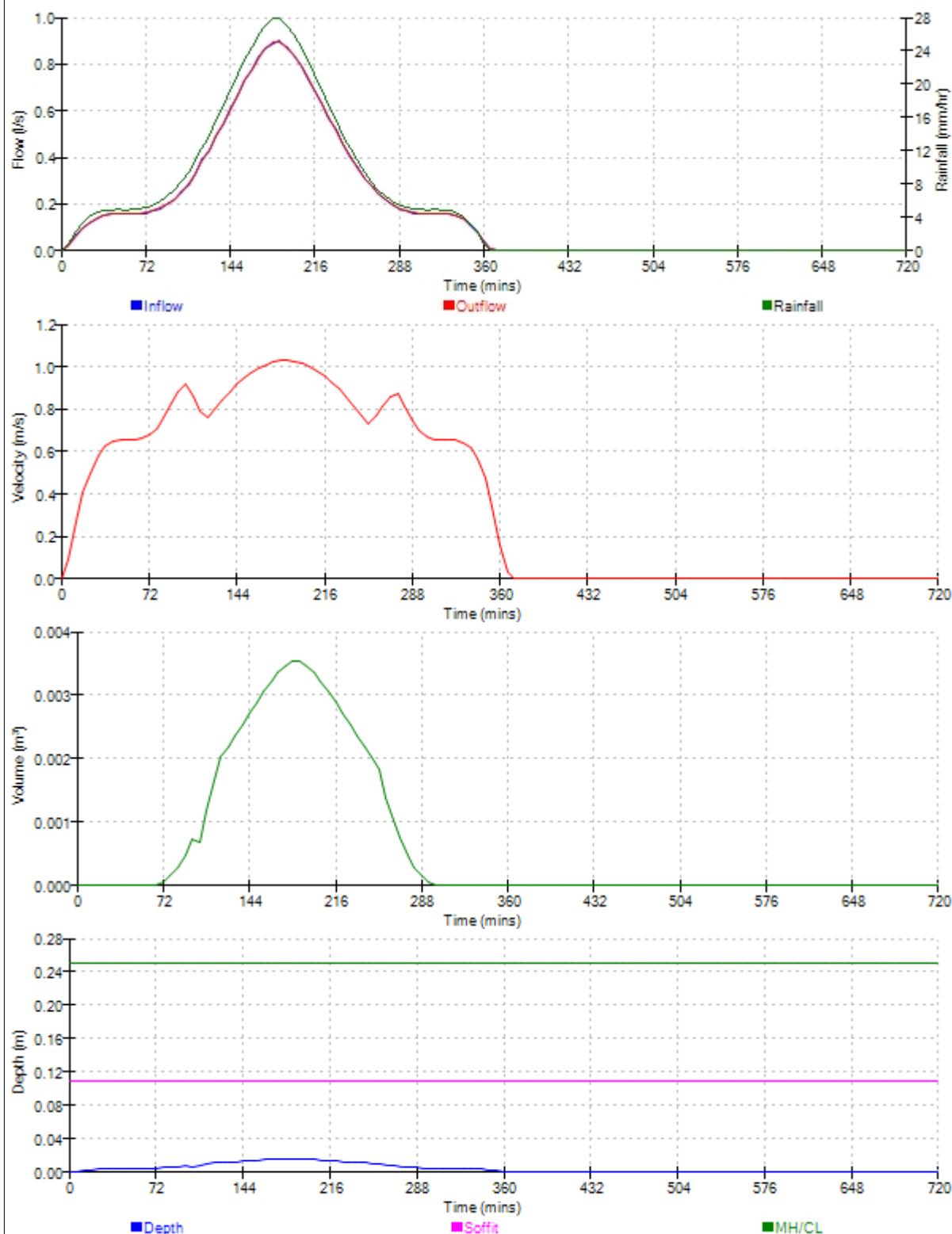
Rainfall Hyetograph for 360 minute 100 year Winter (Storm)

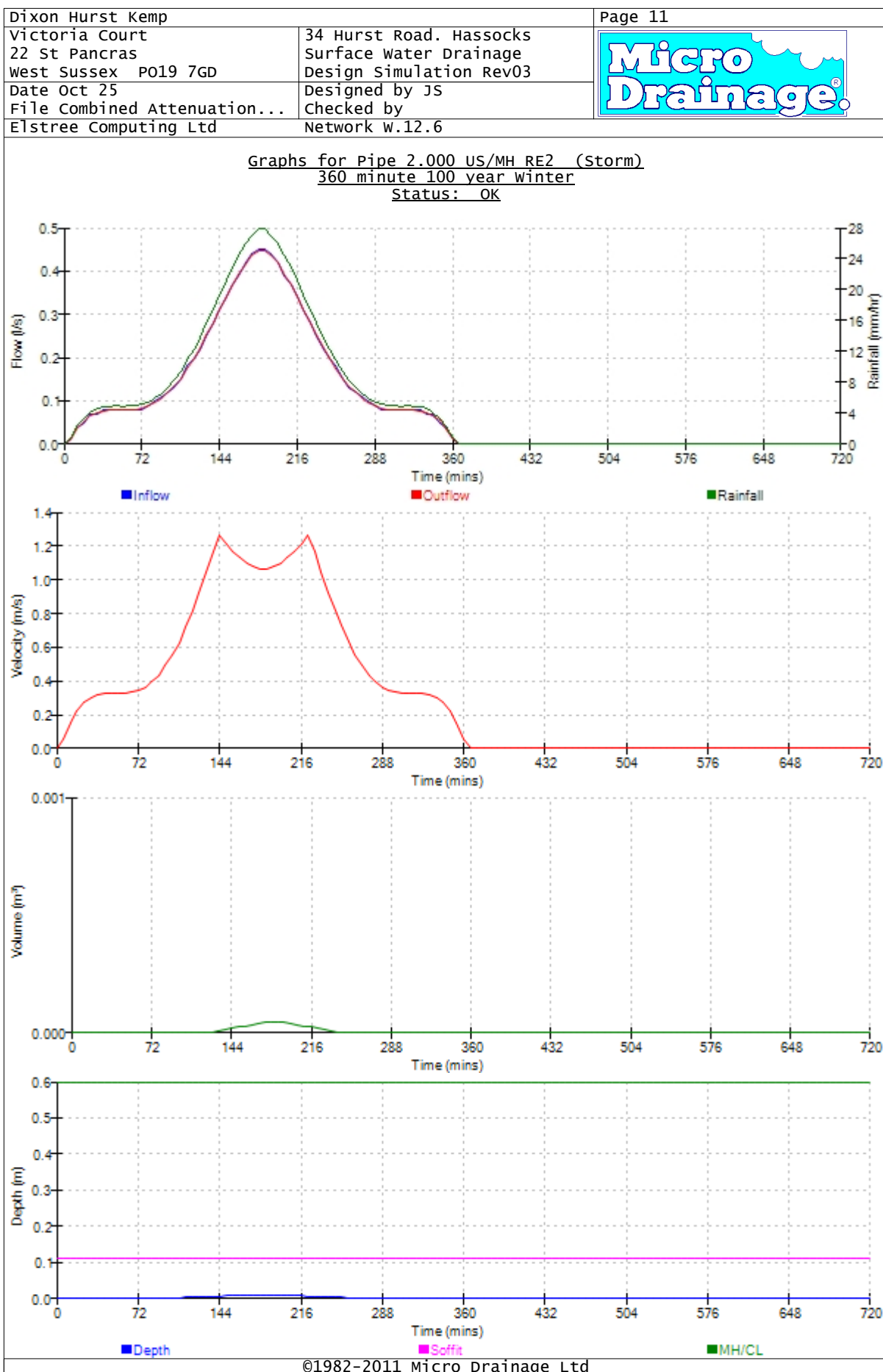
Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
6	0.786	78	5.492	150	21.205	222	19.245	294	5.166
12	2.261	84	5.936	156	22.874	228	17.487	300	5.005
18	3.343	90	6.525	162	24.430	234	15.755	306	4.930
24	4.143	96	7.391	168	25.958	240	13.886	312	4.919
30	4.568	102	8.344	174	27.042	246	12.332	318	4.930
36	4.809	108	9.453	180	27.824	252	10.894	324	4.916
42	4.916	114	10.894	186	27.824	258	9.453	330	4.809
48	4.929	120	12.332	192	27.042	264	8.344	336	4.568
54	4.919	126	13.886	198	25.958	270	7.391	342	4.143
60	4.930	132	15.755	204	24.430	276	6.525	348	3.344
66	5.005	138	17.487	210	22.874	282	5.936	354	2.261
72	5.166	144	19.245	216	21.205	288	5.492	360	0.786



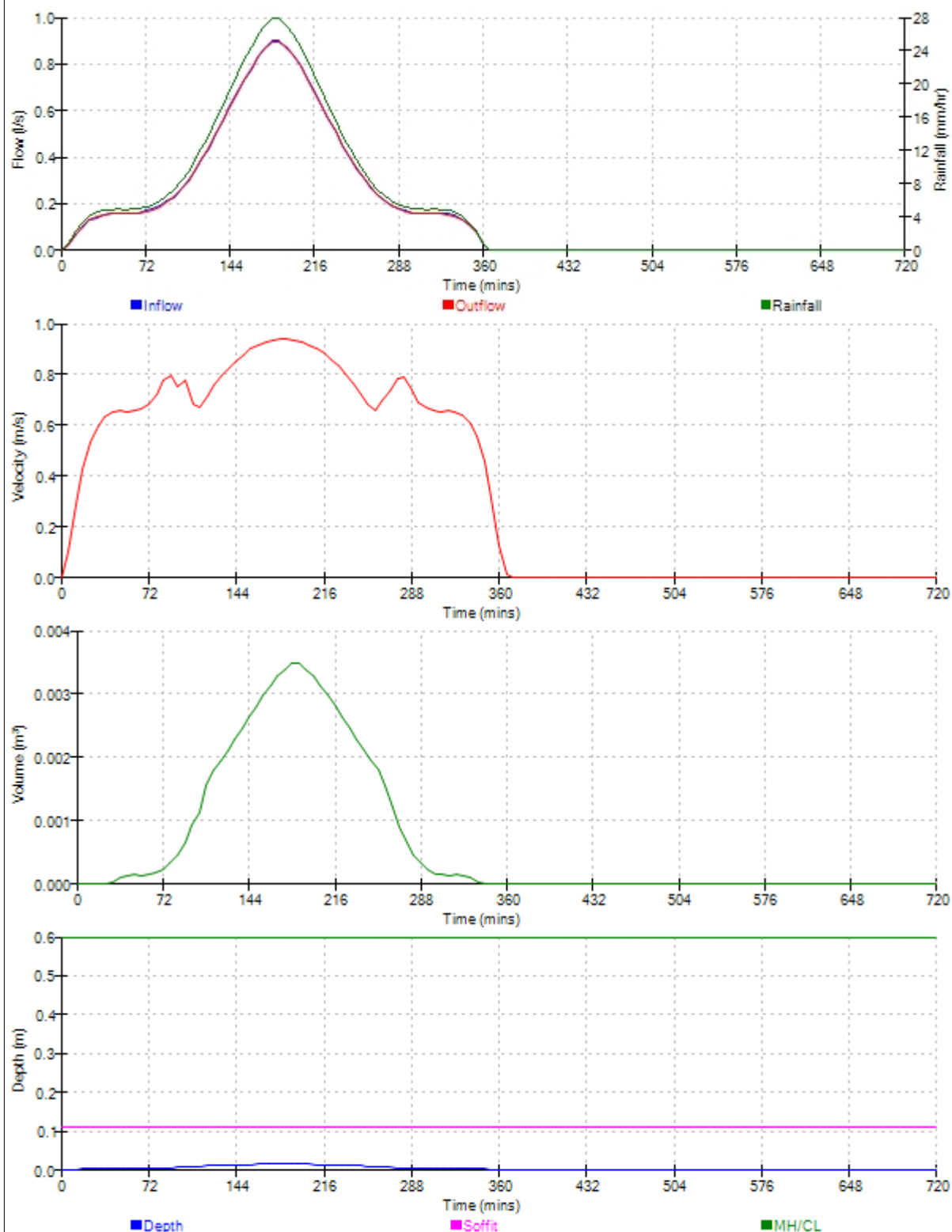


Graphs for Pipe 1.002 US/MH S2 (Storm)
360 minute 100 year winter
Status: OK

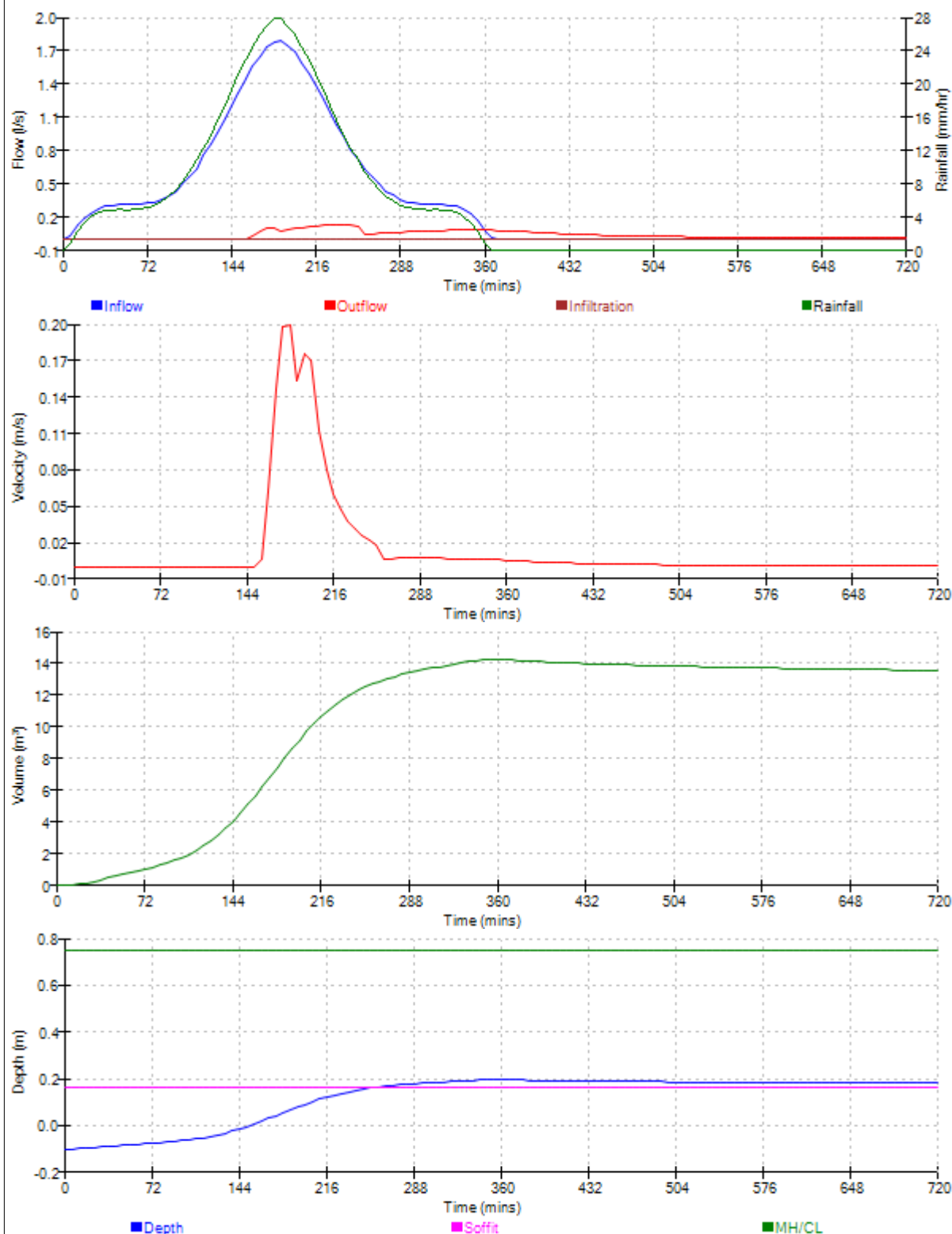


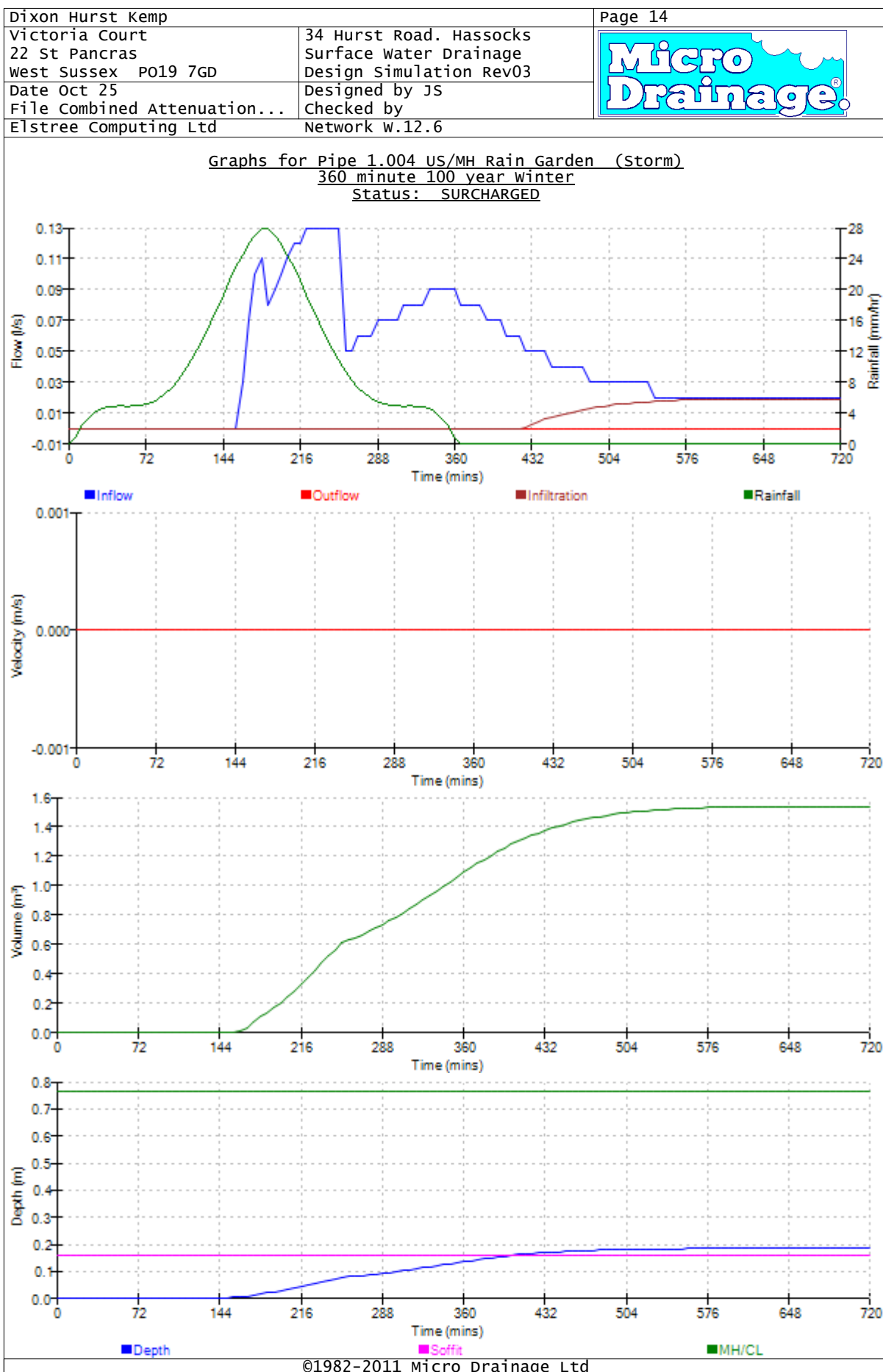


Graphs for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year winter
Status: OK



Graphs for Pipe 1.003 US/MH S4 (Storm)
360 minute 100 year winter
Status: SURCHARGED





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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
666	65.400	65.000	-0.110	0.0	0.0	0.0
672	65.400	65.000	-0.110	0.0	0.0	0.0
678	65.400	65.000	-0.110	0.0	0.0	0.0
684	65.400	65.000	-0.110	0.0	0.0	0.0
690	65.400	65.000	-0.110	0.0	0.0	0.0
696	65.400	65.000	-0.110	0.0	0.0	0.0
702	65.400	65.000	-0.110	0.0	0.0	0.0
708	65.400	65.000	-0.110	0.0	0.0	0.0
714	65.400	65.000	-0.110	0.0	0.0	0.0
720	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	65.003	63.855	-0.107	0.0	0.6	0.1
342	65.003	63.854	-0.107	0.0	0.6	0.1
348	65.002	63.853	-0.108	0.0	0.5	0.1
354	65.001	63.852	-0.109	0.0	0.3	0.1
360	65.001	63.851	-0.109	0.0	0.1	0.0
366	65.000	63.850	-0.110	0.0	0.0	0.0
372	65.000	63.850	-0.110	0.0	0.0	0.0
378	65.000	63.850	-0.110	0.0	0.0	0.0
384	65.000	63.850	-0.110	0.0	0.0	0.0
390	65.000	63.850	-0.110	0.0	0.0	0.0
396	65.000	63.850	-0.110	0.0	0.0	0.0
402	65.000	63.850	-0.110	0.0	0.0	0.0
408	65.000	63.850	-0.110	0.0	0.0	0.0
414	65.000	63.850	-0.110	0.0	0.0	0.0
420	65.000	63.850	-0.110	0.0	0.0	0.0
426	65.000	63.850	-0.110	0.0	0.0	0.0
432	65.000	63.850	-0.110	0.0	0.0	0.0
438	65.000	63.850	-0.110	0.0	0.0	0.0
444	65.000	63.850	-0.110	0.0	0.0	0.0
450	65.000	63.850	-0.110	0.0	0.0	0.0
456	65.000	63.850	-0.110	0.0	0.0	0.0
462	65.000	63.850	-0.110	0.0	0.0	0.0
468	65.000	63.850	-0.110	0.0	0.0	0.0
474	65.000	63.850	-0.110	0.0	0.0	0.0
480	65.000	63.850	-0.110	0.0	0.0	0.0
486	65.000	63.850	-0.110	0.0	0.0	0.0
492	65.000	63.850	-0.110	0.0	0.0	0.0
498	65.000	63.850	-0.110	0.0	0.0	0.0
504	65.000	63.850	-0.110	0.0	0.0	0.0
510	65.000	63.850	-0.110	0.0	0.0	0.0
516	65.000	63.850	-0.110	0.0	0.0	0.0
522	65.000	63.850	-0.110	0.0	0.0	0.0
528	65.000	63.850	-0.110	0.0	0.0	0.0
534	65.000	63.850	-0.110	0.0	0.0	0.0
540	65.000	63.850	-0.110	0.0	0.0	0.0
546	65.000	63.850	-0.110	0.0	0.0	0.0
552	65.000	63.850	-0.110	0.0	0.0	0.0
558	65.000	63.850	-0.110	0.0	0.0	0.0
564	65.000	63.850	-0.110	0.0	0.0	0.0
570	65.000	63.850	-0.110	0.0	0.0	0.0
576	65.000	63.850	-0.110	0.0	0.0	0.0
582	65.000	63.850	-0.110	0.0	0.0	0.0
588	65.000	63.850	-0.110	0.0	0.0	0.0
594	65.000	63.850	-0.110	0.0	0.0	0.0
600	65.000	63.850	-0.110	0.0	0.0	0.0
606	65.000	63.850	-0.110	0.0	0.0	0.0
612	65.000	63.850	-0.110	0.0	0.0	0.0
618	65.000	63.850	-0.110	0.0	0.0	0.0
624	65.000	63.850	-0.110	0.0	0.0	0.0
630	65.000	63.850	-0.110	0.0	0.0	0.0
636	65.000	63.850	-0.110	0.0	0.0	0.0
642	65.000	63.850	-0.110	0.0	0.0	0.0
648	65.000	63.850	-0.110	0.0	0.0	0.0
654	65.000	63.850	-0.110	0.0	0.0	0.0
660	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	65.000	63.850	-0.110	0.0	0.0	0.0
672	65.000	63.850	-0.110	0.0	0.0	0.0
678	65.000	63.850	-0.110	0.0	0.0	0.0
684	65.000	63.850	-0.110	0.0	0.0	0.0
690	65.000	63.850	-0.110	0.0	0.0	0.0
696	65.000	63.850	-0.110	0.0	0.0	0.0
702	65.000	63.850	-0.110	0.0	0.0	0.0
708	65.000	63.850	-0.110	0.0	0.0	0.0
714	65.000	63.850	-0.110	0.0	0.0	0.0
720	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.850	63.432	-0.110	0.0	0.0	0.0
672	63.850	63.432	-0.110	0.0	0.0	0.0
678	63.850	63.432	-0.110	0.0	0.0	0.0
684	63.850	63.432	-0.110	0.0	0.0	0.0
690	63.850	63.432	-0.110	0.0	0.0	0.0
696	63.850	63.432	-0.110	0.0	0.0	0.0
702	63.850	63.431	-0.110	0.0	0.0	0.0
708	63.850	63.431	-0.110	0.0	0.0	0.0
714	63.850	63.431	-0.110	0.0	0.0	0.0
720	63.850	63.431	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	65.400	63.500	-0.110	0.0	0.0	0.0
672	65.400	63.500	-0.110	0.0	0.0	0.0
678	65.400	63.500	-0.110	0.0	0.0	0.0
684	65.400	63.500	-0.110	0.0	0.0	0.0
690	65.400	63.500	-0.110	0.0	0.0	0.0
696	65.400	63.500	-0.110	0.0	0.0	0.0
702	65.400	63.500	-0.110	0.0	0.0	0.0
708	65.400	63.500	-0.110	0.0	0.0	0.0
714	65.400	63.500	-0.110	0.0	0.0	0.0
720	65.400	63.500	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
6	63.501	63.151	-0.109	0.0	0.1	0.0
12	63.503	63.153	-0.107	0.0	0.3	0.1
18	63.504	63.155	-0.106	0.0	0.4	0.1
24	63.505	63.156	-0.105	0.0	0.5	0.1
30	63.505	63.158	-0.105	0.0	0.6	0.1
36	63.505	63.161	-0.105	0.0	0.6	0.2
42	63.505	63.163	-0.105	0.0	0.7	0.2
48	63.505	63.165	-0.105	0.0	0.7	0.2
54	63.505	63.168	-0.105	0.0	0.7	0.2
60	63.505	63.170	-0.105	0.0	0.7	0.2
66	63.506	63.172	-0.104	0.0	0.7	0.2
72	63.506	63.175	-0.104	0.0	0.7	0.2
78	63.506	63.177	-0.104	0.0	0.7	0.2
84	63.507	63.180	-0.103	0.0	0.8	0.2
90	63.507	63.183	-0.103	0.0	0.8	0.2
96	63.508	63.186	-0.102	0.0	0.7	0.2
102	63.509	63.189	-0.101	0.0	0.8	0.3
108	63.510	63.193	-0.100	0.0	0.7	0.3
114	63.511	63.198	-0.099	0.0	0.7	0.3
120	63.512	63.205	-0.098	0.0	0.7	0.4
126	63.512	63.212	-0.098	0.0	0.8	0.4
132	63.513	63.219	-0.097	0.0	0.8	0.5
138	63.514	63.227	-0.096	0.0	0.8	0.6
144	63.514	63.236	-0.096	0.0	0.9	0.6
150	63.515	63.245	-0.095	0.0	0.9	0.7
156	63.516	63.258	-0.094	0.0	0.9	0.7
162	63.516	63.269	-0.094	0.0	0.9	0.8
168	63.517	63.280	-0.093	0.0	0.9	0.8
174	63.517	63.293	-0.093	0.0	0.9	0.9
180	63.517	63.305	-0.093	0.0	0.9	0.9
186	63.517	63.318	-0.093	0.0	0.9	0.9
192	63.517	63.330	-0.093	0.0	0.9	0.9
198	63.517	63.342	-0.093	0.0	0.9	0.8
204	63.516	63.353	-0.094	0.0	0.9	0.8
210	63.516	63.363	-0.094	0.0	0.9	0.7
216	63.515	63.372	-0.095	0.0	0.9	0.7
222	63.514	63.381	-0.096	0.0	0.9	0.6
228	63.514	63.388	-0.096	0.0	0.8	0.6
234	63.513	63.395	-0.097	0.0	0.8	0.5
240	63.512	63.401	-0.098	0.0	0.8	0.5
246	63.512	63.406	-0.098	0.0	0.7	0.4
252	63.511	63.410	-0.099	0.0	0.7	0.4
258	63.510	63.414	-0.100	0.0	0.7	0.3
264	63.509	63.418	-0.101	0.0	0.7	0.3
270	63.508	63.421	-0.102	0.0	0.7	0.2
276	63.507	63.424	-0.103	0.0	0.8	0.2
282	63.507	63.426	-0.103	0.0	0.8	0.2
288	63.506	63.428	-0.104	0.0	0.7	0.2
294	63.506	63.430	-0.104	0.0	0.7	0.2
300	63.506	63.432	-0.104	0.0	0.7	0.2
306	63.505	63.434	-0.105	0.0	0.7	0.2
312	63.505	63.436	-0.105	0.0	0.7	0.2
318	63.505	63.438	-0.105	0.0	0.7	0.2
324	63.505	63.439	-0.105	0.0	0.7	0.2
330	63.505	63.441	-0.105	0.0	0.6	0.2

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	63.505	63.443	-0.105	0.0	0.6	0.1
342	63.505	63.444	-0.105	0.0	0.6	0.1
348	63.504	63.445	-0.106	0.0	0.5	0.1
354	63.503	63.446	-0.107	0.0	0.3	0.1
360	63.501	63.446	-0.109	0.0	0.1	0.0
366	63.500	63.445	-0.110	0.0	0.0	0.0
372	63.500	63.445	-0.110	0.0	0.0	0.0
378	63.500	63.444	-0.110	0.0	0.0	0.0
384	63.500	63.444	-0.110	0.0	0.0	0.0
390	63.500	63.443	-0.110	0.0	0.0	0.0
396	63.500	63.443	-0.110	0.0	0.0	0.0
402	63.500	63.442	-0.110	0.0	0.0	0.0
408	63.500	63.442	-0.110	0.0	0.0	0.0
414	63.500	63.441	-0.110	0.0	0.0	0.0
420	63.500	63.441	-0.110	0.0	0.0	0.0
426	63.500	63.440	-0.110	0.0	0.0	0.0
432	63.500	63.440	-0.110	0.0	0.0	0.0
438	63.500	63.440	-0.110	0.0	0.0	0.0
444	63.500	63.439	-0.110	0.0	0.0	0.0
450	63.500	63.439	-0.110	0.0	0.0	0.0
456	63.500	63.439	-0.110	0.0	0.0	0.0
462	63.500	63.439	-0.110	0.0	0.0	0.0
468	63.500	63.438	-0.110	0.0	0.0	0.0
474	63.500	63.438	-0.110	0.0	0.0	0.0
480	63.500	63.438	-0.110	0.0	0.0	0.0
486	63.500	63.437	-0.110	0.0	0.0	0.0
492	63.500	63.437	-0.110	0.0	0.0	0.0
498	63.500	63.437	-0.110	0.0	0.0	0.0
504	63.500	63.437	-0.110	0.0	0.0	0.0
510	63.500	63.437	-0.110	0.0	0.0	0.0
516	63.500	63.436	-0.110	0.0	0.0	0.0
522	63.500	63.436	-0.110	0.0	0.0	0.0
528	63.500	63.436	-0.110	0.0	0.0	0.0
534	63.500	63.436	-0.110	0.0	0.0	0.0
540	63.500	63.436	-0.110	0.0	0.0	0.0
546	63.500	63.435	-0.110	0.0	0.0	0.0
552	63.500	63.435	-0.110	0.0	0.0	0.0
558	63.500	63.435	-0.110	0.0	0.0	0.0
564	63.500	63.435	-0.110	0.0	0.0	0.0
570	63.500	63.435	-0.110	0.0	0.0	0.0
576	63.500	63.435	-0.110	0.0	0.0	0.0
582	63.500	63.434	-0.110	0.0	0.0	0.0
588	63.500	63.434	-0.110	0.0	0.0	0.0
594	63.500	63.434	-0.110	0.0	0.0	0.0
600	63.500	63.434	-0.110	0.0	0.0	0.0
606	63.500	63.434	-0.110	0.0	0.0	0.0
612	63.500	63.434	-0.110	0.0	0.0	0.0
618	63.500	63.433	-0.110	0.0	0.0	0.0
624	63.500	63.433	-0.110	0.0	0.0	0.0
630	63.500	63.433	-0.110	0.0	0.0	0.0
636	63.500	63.433	-0.110	0.0	0.0	0.0
642	63.500	63.433	-0.110	0.0	0.0	0.0
648	63.500	63.433	-0.110	0.0	0.0	0.0
654	63.500	63.433	-0.110	0.0	0.0	0.0
660	63.500	63.432	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.500	63.432	-0.110	0.0	0.0	0.0
672	63.500	63.432	-0.110	0.0	0.0	0.0
678	63.500	63.432	-0.110	0.0	0.0	0.0
684	63.500	63.432	-0.110	0.0	0.0	0.0
690	63.500	63.432	-0.110	0.0	0.0	0.0
696	63.500	63.432	-0.110	0.0	0.0	0.0
702	63.500	63.431	-0.110	0.0	0.0	0.0
708	63.500	63.431	-0.110	0.0	0.0	0.0
714	63.500	63.431	-0.110	0.0	0.0	0.0
720	63.500	63.431	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
6	63.151	63.233	-0.259	0.0	0.0	0.0
12	63.153	63.233	-0.257	0.0	0.0	0.0
18	63.155	63.233	-0.255	0.0	0.0	0.0
24	63.156	63.233	-0.254	0.0	0.0	0.0
30	63.158	63.233	-0.252	0.0	0.0	0.0
36	63.161	63.233	-0.249	0.0	0.0	0.0
42	63.163	63.233	-0.247	0.0	0.0	0.0
48	63.165	63.233	-0.245	0.0	0.0	0.0
54	63.168	63.233	-0.242	0.0	0.0	0.0
60	63.170	63.233	-0.240	0.0	0.0	0.0
66	63.172	63.233	-0.238	0.0	0.0	0.0
72	63.175	63.233	-0.235	0.0	0.0	0.0
78	63.177	63.233	-0.233	0.0	0.0	0.0
84	63.180	63.233	-0.230	0.0	0.0	0.0
90	63.183	63.233	-0.227	0.0	0.0	0.0
96	63.186	63.233	-0.224	0.0	0.0	0.0
102	63.189	63.233	-0.221	0.0	0.0	0.0
108	63.193	63.233	-0.217	0.0	0.0	0.0
114	63.198	63.233	-0.212	0.0	0.0	0.0
120	63.205	63.233	-0.205	0.0	0.0	0.0
126	63.212	63.233	-0.198	0.0	0.0	0.0
132	63.219	63.233	-0.191	0.0	0.0	0.0
138	63.227	63.233	-0.183	0.0	0.0	0.0
144	63.236	63.233	-0.174	0.0	0.0	0.0
150	63.245	63.233	-0.165	0.0	0.0	0.0
156	63.258	63.238	-0.152	0.0	0.0	0.0
162	63.269	63.239	-0.141	0.0	0.1	0.0
168	63.280	63.242	-0.130	0.0	0.1	0.1
174	63.293	63.247	-0.117	0.0	0.2	0.1
180	63.305	63.251	-0.105	0.0	0.2	0.1
186	63.318	63.255	-0.092	0.0	0.2	0.1
192	63.330	63.258	-0.080	0.0	0.2	0.1
198	63.342	63.263	-0.068	0.0	0.2	0.1
204	63.353	63.268	-0.057	0.0	0.1	0.1
210	63.363	63.273	-0.047	0.0	0.1	0.1
216	63.372	63.278	-0.038	0.0	0.1	0.1
222	63.381	63.284	-0.029	0.0	0.0	0.1
228	63.388	63.289	-0.022	0.0	0.0	0.1
234	63.395	63.295	-0.015	0.0	0.0	0.1
240	63.401	63.301	-0.009	0.0	0.0	0.1
246	63.406	63.307	-0.004	0.0	0.0	0.1
252	63.410	63.312	0.000	0.0	0.0	0.1
258	63.414	63.315	0.004	0.0	0.0	0.0
264	63.418	63.316	0.008	0.0	0.0	0.1
270	63.421	63.319	0.011	0.0	0.0	0.1
276	63.424	63.321	0.014	0.0	0.0	0.1
282	63.426	63.324	0.016	0.0	0.0	0.1
288	63.428	63.327	0.018	0.0	0.0	0.1
294	63.430	63.330	0.020	0.0	0.0	0.1
300	63.432	63.333	0.022	0.0	0.0	0.1
306	63.434	63.337	0.024	0.0	0.0	0.1
312	63.436	63.340	0.026	0.0	0.0	0.1
318	63.438	63.343	0.028	0.0	0.0	0.1
324	63.439	63.347	0.029	0.0	0.0	0.1
330	63.441	63.351	0.031	0.0	0.0	0.1

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Elstree Computing Ltd		Network W.12.6				
<u>Flows and Levels for Pipe 1.003 US/MH S4 (Storm)</u> <u>360 minute 100 year winter</u> <u>Average Rainfall Intensity 11.062 mm/hr</u>						
Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	63.443	63.354	0.033	0.0	0.0	0.1
342	63.444	63.358	0.034	0.0	0.0	0.1
348	63.445	63.362	0.035	0.0	0.0	0.1
354	63.446	63.366	0.036	0.0	0.0	0.1
360	63.446	63.370	0.036	0.0	0.0	0.1
366	63.445	63.374	0.035	0.0	0.0	0.1
372	63.445	63.377	0.035	0.0	0.0	0.1
378	63.444	63.381	0.034	0.0	0.0	0.1
384	63.444	63.384	0.034	0.0	0.0	0.1
390	63.443	63.387	0.033	0.0	0.0	0.1
396	63.443	63.390	0.033	0.0	0.0	0.1
402	63.442	63.393	0.032	0.0	0.0	0.1
408	63.442	63.396	0.032	0.0	0.0	0.1
414	63.441	63.398	0.031	0.0	0.0	0.1
420	63.441	63.401	0.031	0.0	0.0	0.1
426	63.440	63.402	0.030	0.0	0.0	0.1
432	63.440	63.403	0.030	0.0	0.0	0.0
438	63.440	63.405	0.030	0.0	0.0	0.0
444	63.439	63.406	0.029	0.0	0.0	0.0
450	63.439	63.407	0.029	0.0	0.0	0.0
456	63.439	63.409	0.029	0.0	0.0	0.0
462	63.439	63.410	0.029	0.0	0.0	0.0
468	63.438	63.411	0.028	0.0	0.0	0.0
474	63.438	63.411	0.028	0.0	0.0	0.0
480	63.438	63.412	0.028	0.0	0.0	0.0
486	63.437	63.413	0.027	0.0	0.0	0.0
492	63.437	63.413	0.027	0.0	0.0	0.0
498	63.437	63.414	0.027	0.0	0.0	0.0
504	63.437	63.415	0.027	0.0	0.0	0.0
510	63.437	63.415	0.027	0.0	0.0	0.0
516	63.436	63.415	0.026	0.0	0.0	0.0
522	63.436	63.416	0.026	0.0	0.0	0.0
528	63.436	63.416	0.026	0.0	0.0	0.0
534	63.436	63.416	0.026	0.0	0.0	0.0
540	63.436	63.417	0.026	0.0	0.0	0.0
546	63.435	63.417	0.025	0.0	0.0	0.0
552	63.435	63.417	0.025	0.0	0.0	0.0
558	63.435	63.417	0.025	0.0	0.0	0.0
564	63.435	63.418	0.025	0.0	0.0	0.0
570	63.435	63.418	0.025	0.0	0.0	0.0
576	63.435	63.418	0.025	0.0	0.0	0.0
582	63.434	63.418	0.024	0.0	0.0	0.0
588	63.434	63.418	0.024	0.0	0.0	0.0
594	63.434	63.418	0.024	0.0	0.0	0.0
600	63.434	63.418	0.024	0.0	0.0	0.0
606	63.434	63.418	0.024	0.0	0.0	0.0
612	63.434	63.418	0.024	0.0	0.0	0.0
618	63.433	63.418	0.023	0.0	0.0	0.0
624	63.433	63.418	0.023	0.0	0.0	0.0
630	63.433	63.418	0.023	0.0	0.0	0.0
636	63.433	63.418	0.023	0.0	0.0	0.0
642	63.433	63.418	0.023	0.0	0.0	0.0
648	63.433	63.418	0.023	0.0	0.0	0.0
654	63.433	63.418	0.023	0.0	0.0	0.0
660	63.432	63.418	0.022	0.0	0.0	0.0
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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.432	63.418	0.022	0.0	0.0	0.0
672	63.432	63.418	0.022	0.0	0.0	0.0
678	63.432	63.418	0.022	0.0	0.0	0.0
684	63.432	63.418	0.022	0.0	0.0	0.0
690	63.432	63.418	0.022	0.0	0.0	0.0
696	63.432	63.418	0.022	0.0	0.0	0.0
702	63.431	63.418	0.021	0.0	0.0	0.0
708	63.431	63.418	0.021	0.0	0.0	0.0
714	63.431	63.418	0.021	0.0	0.0	0.0
720	63.431	63.418	0.021	0.0	0.0	0.0

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Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
360 minute 100 year winter
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.418	63.239	0.025	0.0	0.0	0.0
672	63.418	63.239	0.025	0.0	0.0	0.0
678	63.418	63.239	0.025	0.0	0.0	0.0
684	63.418	63.239	0.025	0.0	0.0	0.0
690	63.418	63.239	0.025	0.0	0.0	0.0
696	63.418	63.239	0.025	0.0	0.0	0.0
702	63.418	63.239	0.025	0.0	0.0	0.0
708	63.418	63.239	0.025	0.0	0.0	0.0
714	63.418	63.239	0.025	0.0	0.0	0.0
720	63.418	63.239	0.025	0.0	0.0	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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PIPELINE SCHEDULES for Storm								
Upstream Manhole								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole	450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole	600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
Downstream Manhole								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole	450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole	600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole	600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450
Free Flowing Outfall Details for Storm								
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)		
1.004	Dummy	64.000	63.223	63.230	450	450		
Simulation Criteria for Storm								
Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000					
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000					
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000					
Hot Start Level (mm)	0	Run Time (mins)	720					
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	6					
Number of Input Hydrographs	0	Number of Storage Structures	2					
Number of Online Controls	2	Number of Time/Area Diagrams	0					
Number of Offline Controls	0							
Synthetic Rainfall Details								
Rainfall Model	FSR	Profile Type	Summer					
Return Period (years)	100	Cv (Summer)	1.000					
Region	England and Wales	Cv (Winter)	1.000					
M5-60 (mm)	20.000	Storm Duration (mins)	360					
Ratio R	0.343							
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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4. DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden. DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 360 minute 100 year Summer (Storm)

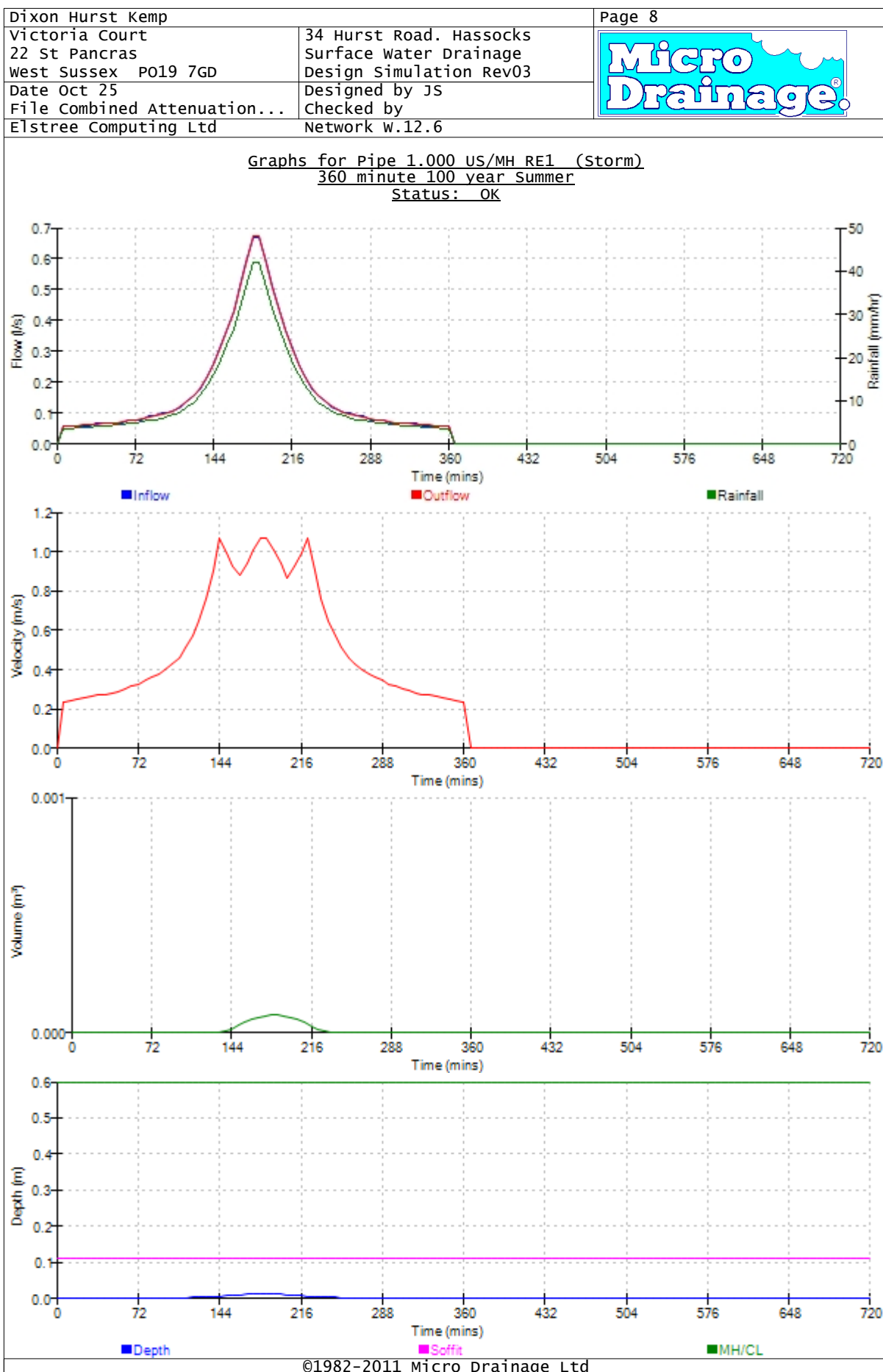
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

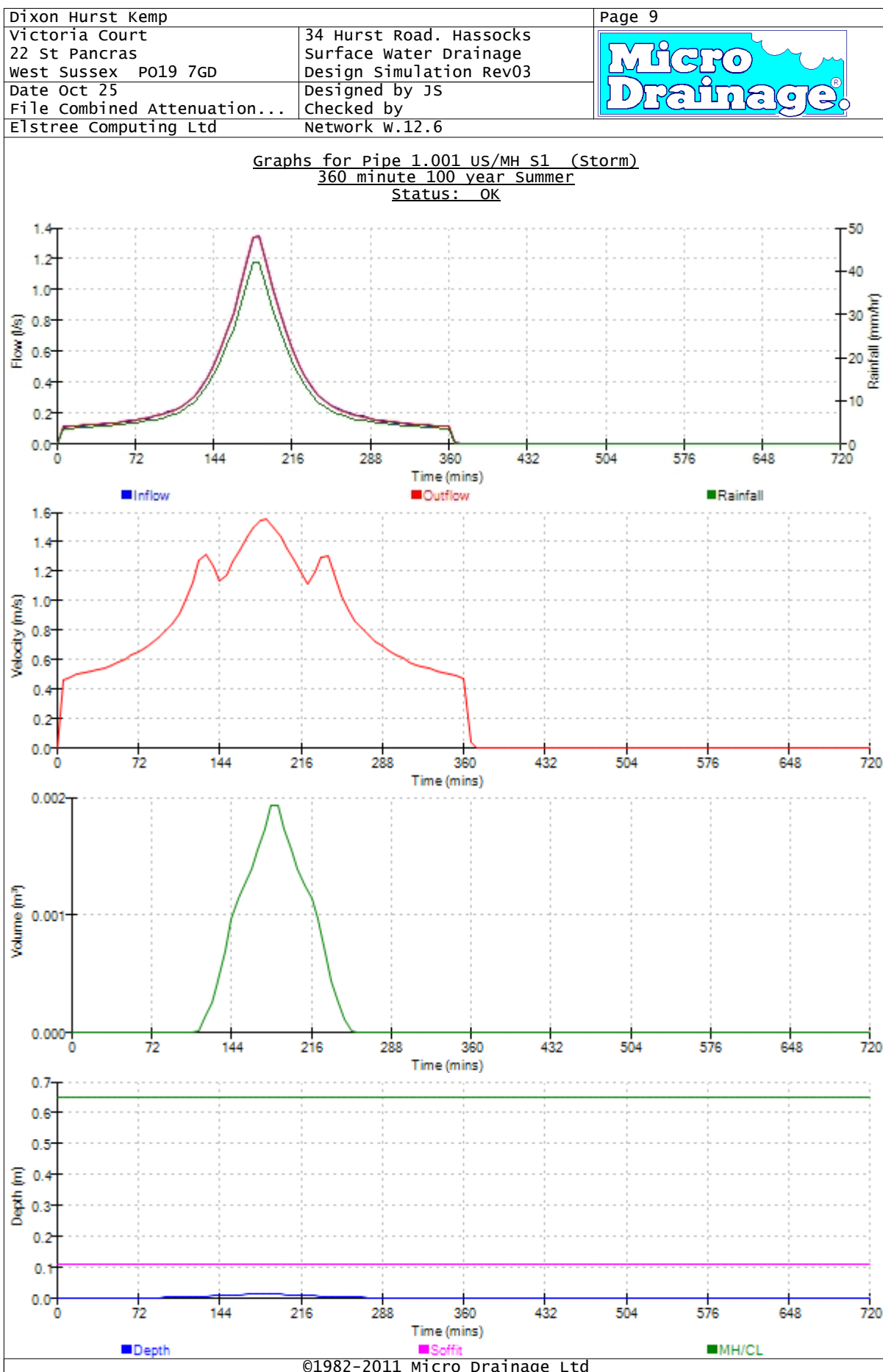
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.413	-0.097	0.000	0.03	0.0	0.7	OK
1.001	S1	65.016	-0.094	0.000	0.05	0.0	1.3	OK
1.002	S2	63.871	-0.089	0.000	0.08	0.0	1.3	OK
2.000	RE2	65.412	-0.098	0.000	0.03	0.0	0.7	OK
2.001	S3	63.522	-0.088	0.000	0.09	0.0	1.3	OK
1.003	S4	63.446	0.036	0.000	0.01	0.0	0.1	SURCHARGED
1.004	Rain Garden	63.418	0.025	0.000	0.00	0.0	0.0	SURCHARGED

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Elstree Computing Ltd	Network W.12.6	

Rainfall Hyetograph for 360 minute 100 year Summer (Storm)

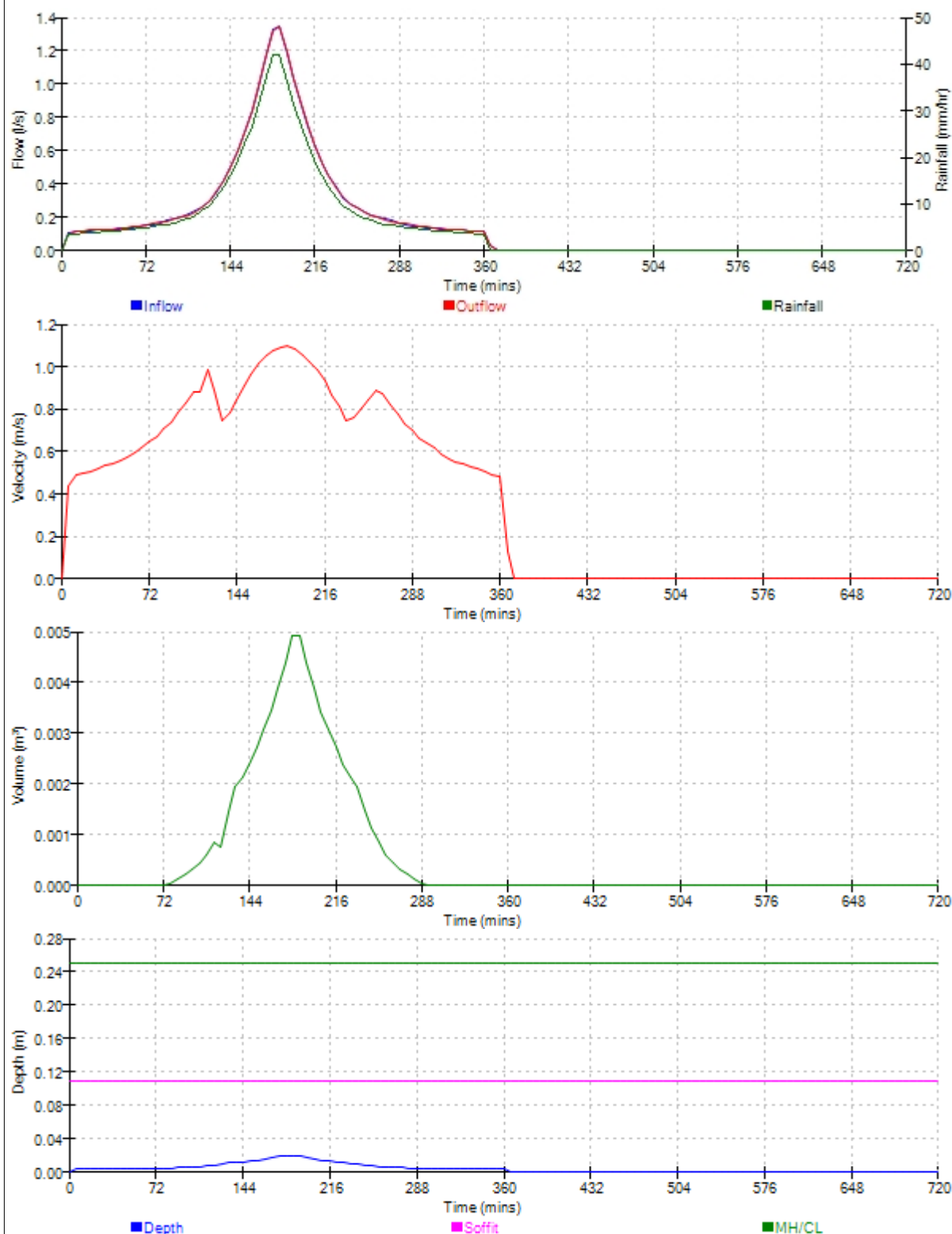
Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
6	3.584	78	5.177	150	19.601	222	16.106	294	4.934
12	3.673	84	5.442	156	23.008	228	13.606	300	4.757
18	3.761	90	5.708	162	26.681	234	11.438	306	4.580
24	3.872	96	6.062	168	31.460	240	9.756	312	4.381
30	3.960	102	6.438	174	36.327	246	8.628	318	4.226
36	4.049	108	6.947	180	41.858	252	7.699	324	4.137
42	4.137	114	7.699	186	41.858	258	6.947	330	4.049
48	4.226	120	8.628	192	36.327	264	6.438	336	3.960
54	4.380	126	9.756	198	31.460	270	6.062	342	3.872
60	4.580	132	11.438	204	26.681	276	5.708	348	3.761
66	4.757	138	13.606	210	23.008	282	5.442	354	3.673
72	4.934	144	16.106	216	19.601	288	5.177	360	3.584

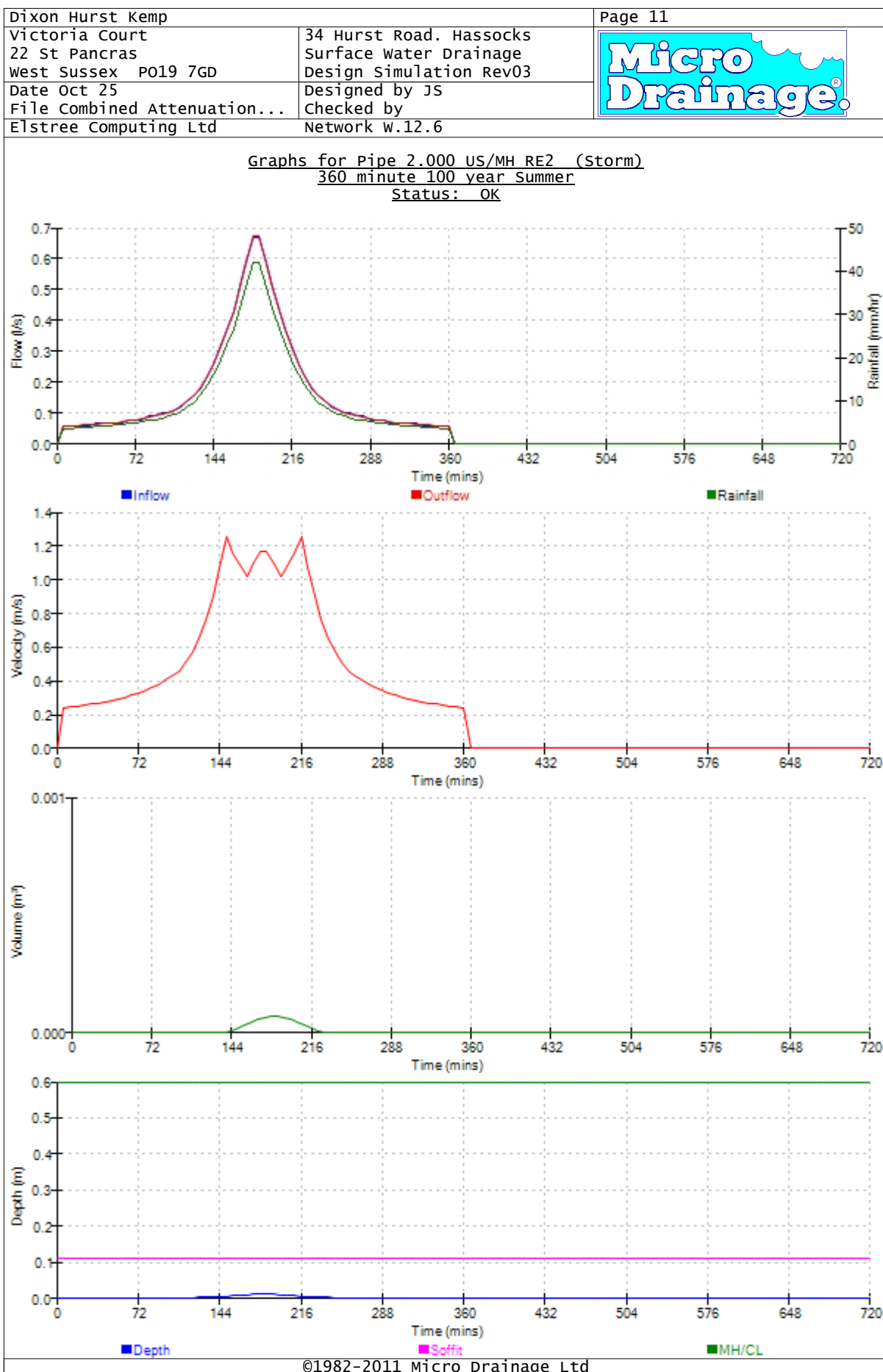


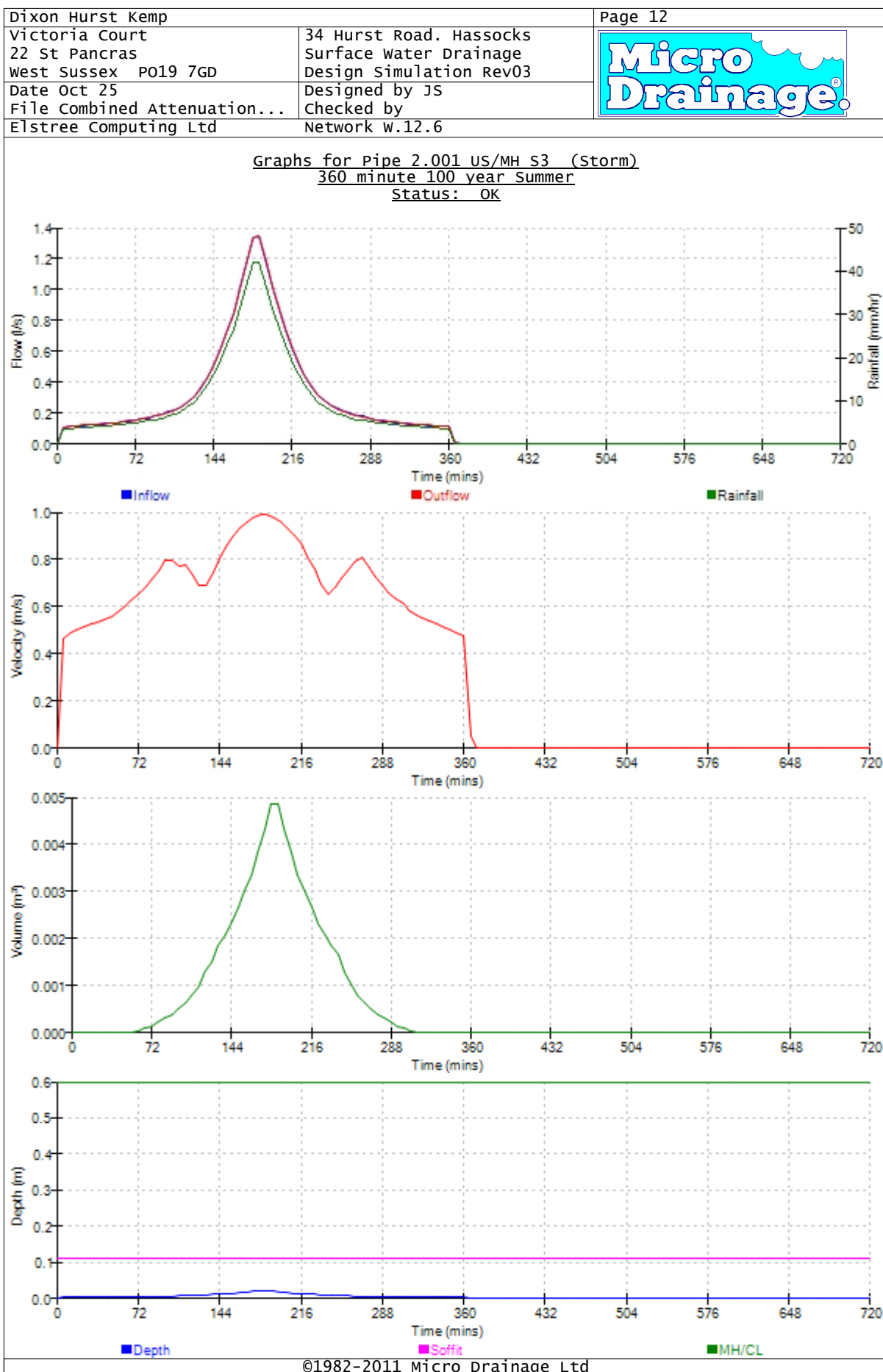


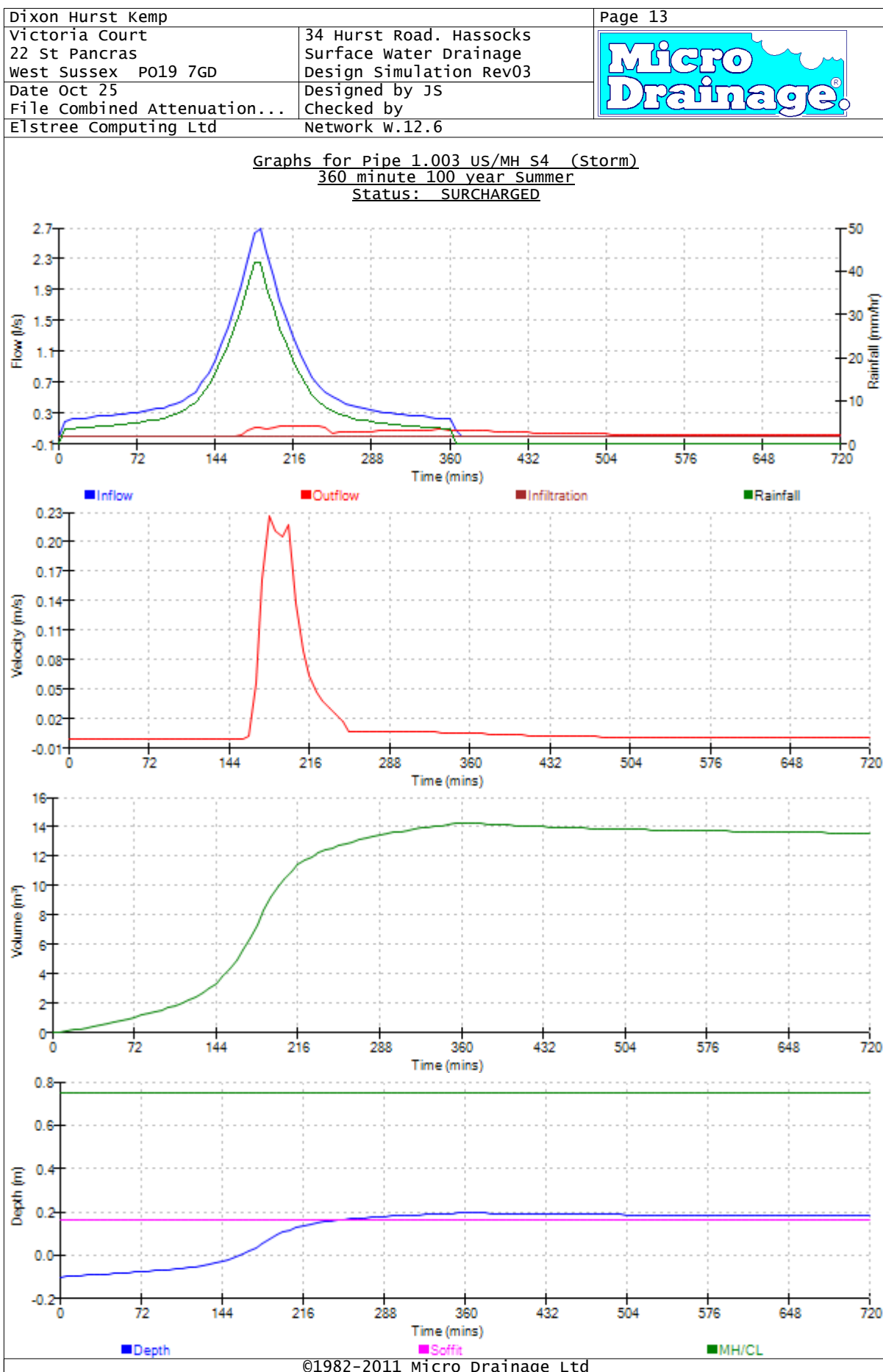
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	Surface Water Drainage Design Simulation Rev03	
Date Oct 25	Designed by JS	
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Graphs for Pipe 1.002 US/MH S2 (Storm)
360 minute 100 year Summer
Status: OK



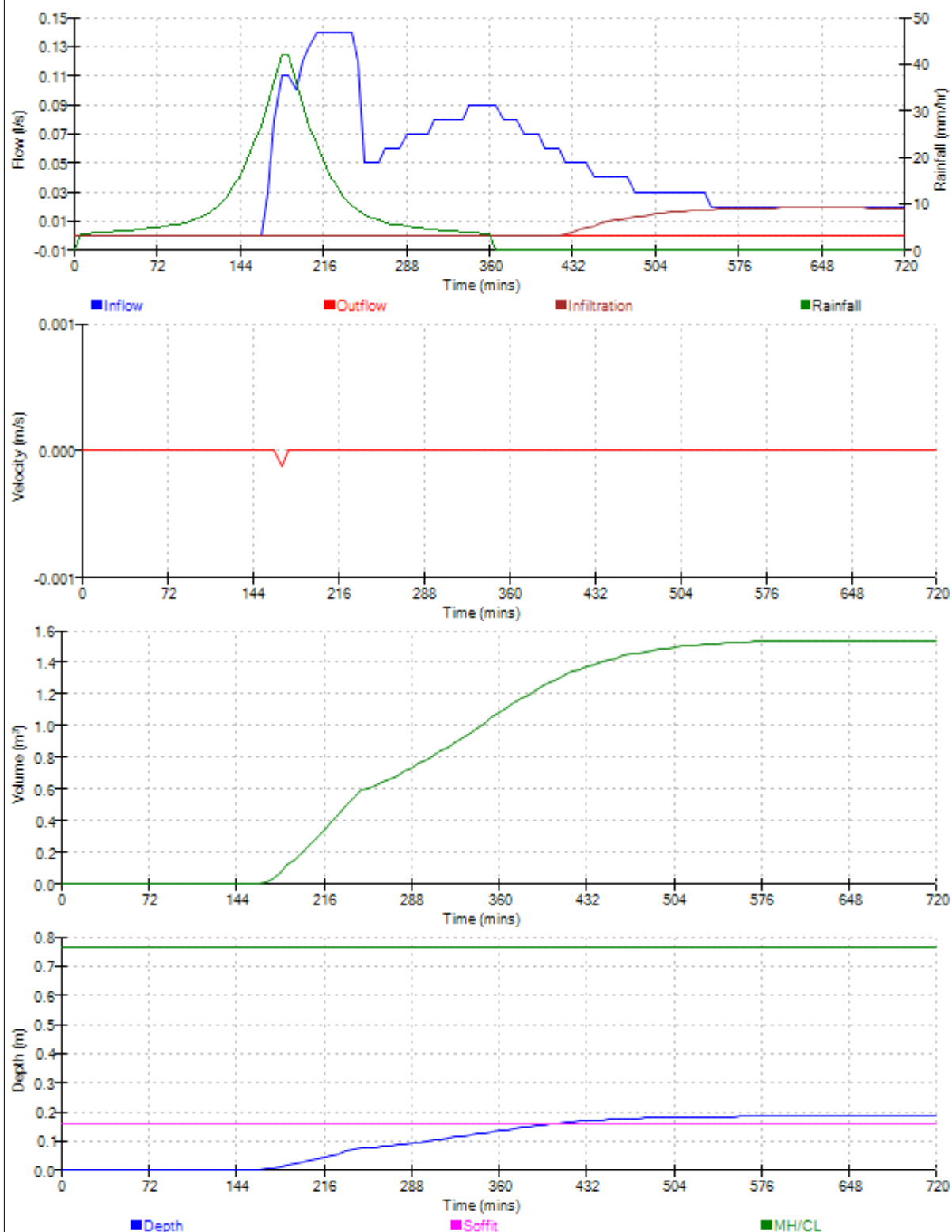






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Graphs for Pipe 1.004 US/MH Rain Garden (Storm)
360 minute 100 year Summer
Status: SURCHARGED



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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	65.400	65.000	-0.110	0.0	0.0	0.0
672	65.400	65.000	-0.110	0.0	0.0	0.0
678	65.400	65.000	-0.110	0.0	0.0	0.0
684	65.400	65.000	-0.110	0.0	0.0	0.0
690	65.400	65.000	-0.110	0.0	0.0	0.0
696	65.400	65.000	-0.110	0.0	0.0	0.0
702	65.400	65.000	-0.110	0.0	0.0	0.0
708	65.400	65.000	-0.110	0.0	0.0	0.0
714	65.400	65.000	-0.110	0.0	0.0	0.0
720	65.400	65.000	-0.110	0.0	0.0	0.0

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Elstree Computing Ltd		Network W.12.6				
<u>Flows and Levels for Pipe 1.001 US/MH S1 (Storm)</u> <u>360 minute 100 year Summer</u> <u>Average Rainfall Intensity 11.062 mm/hr</u>						
Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
6	65.002	63.854	-0.108	0.0	0.5	0.1
12	65.002	63.854	-0.108	0.0	0.5	0.1
18	65.002	63.854	-0.108	0.0	0.5	0.1
24	65.003	63.854	-0.107	0.0	0.5	0.1
30	65.003	63.854	-0.107	0.0	0.5	0.1
36	65.003	63.854	-0.107	0.0	0.5	0.1
42	65.003	63.854	-0.107	0.0	0.5	0.1
48	65.003	63.854	-0.107	0.0	0.6	0.1
54	65.003	63.854	-0.107	0.0	0.6	0.1
60	65.003	63.855	-0.107	0.0	0.6	0.1
66	65.003	63.855	-0.107	0.0	0.6	0.2
72	65.003	63.855	-0.107	0.0	0.7	0.2
78	65.003	63.855	-0.107	0.0	0.7	0.2
84	65.004	63.855	-0.106	0.0	0.7	0.2
90	65.004	63.856	-0.106	0.0	0.8	0.2
96	65.004	63.856	-0.106	0.0	0.8	0.2
102	65.004	63.856	-0.106	0.0	0.8	0.2
108	65.005	63.857	-0.105	0.0	0.9	0.2
114	65.005	63.858	-0.105	0.0	1.0	0.2
120	65.006	63.857	-0.104	0.0	1.1	0.3
126	65.006	63.860	-0.104	0.0	1.3	0.3
132	65.008	63.861	-0.102	0.0	1.3	0.4
138	65.009	63.862	-0.101	0.0	1.2	0.4
144	65.011	63.863	-0.099	0.0	1.1	0.5
150	65.012	63.864	-0.098	0.0	1.2	0.6
156	65.012	63.865	-0.098	0.0	1.3	0.7
162	65.013	63.866	-0.097	0.0	1.3	0.9
168	65.014	63.867	-0.096	0.0	1.4	1.0
174	65.015	63.869	-0.095	0.0	1.5	1.2
180	65.016	63.871	-0.094	0.0	1.5	1.3
186	65.016	63.871	-0.094	0.0	1.6	1.3
192	65.015	63.869	-0.095	0.0	1.5	1.2
198	65.014	63.867	-0.096	0.0	1.4	1.0
204	65.013	63.866	-0.097	0.0	1.4	0.9
210	65.012	63.865	-0.098	0.0	1.3	0.7
216	65.012	63.864	-0.098	0.0	1.2	0.6
222	65.011	63.863	-0.099	0.0	1.1	0.5
228	65.009	63.862	-0.101	0.0	1.2	0.4
234	65.008	63.861	-0.102	0.0	1.3	0.4
240	65.006	63.860	-0.104	0.0	1.3	0.3
246	65.006	63.859	-0.104	0.0	1.2	0.3
252	65.005	63.858	-0.105	0.0	1.0	0.3
258	65.005	63.857	-0.105	0.0	0.9	0.2
264	65.004	63.856	-0.106	0.0	0.9	0.2
270	65.004	63.856	-0.106	0.0	0.8	0.2
276	65.004	63.856	-0.106	0.0	0.8	0.2
282	65.004	63.855	-0.106	0.0	0.7	0.2
288	65.003	63.855	-0.107	0.0	0.7	0.2
294	65.003	63.855	-0.107	0.0	0.7	0.2
300	65.003	63.855	-0.107	0.0	0.6	0.2
306	65.003	63.855	-0.107	0.0	0.6	0.1
312	65.003	63.854	-0.107	0.0	0.6	0.1
318	65.003	63.854	-0.107	0.0	0.6	0.1
324	65.003	63.854	-0.107	0.0	0.6	0.1
330	65.003	63.854	-0.107	0.0	0.5	0.1
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Victoria Court 22 St Pancras West Sussex PO19 7GD	34 Hurst Road. Hassocks Surface Water Drainage Design Simulation Rev03	
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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
336	65.003	63.854	-0.107	0.0	0.5	0.1
342	65.003	63.854	-0.107	0.0	0.5	0.1
348	65.002	63.854	-0.108	0.0	0.5	0.1
354	65.002	63.854	-0.108	0.0	0.5	0.1
360	65.002	63.854	-0.108	0.0	0.5	0.1
366	65.000	63.850	-0.110	0.0	0.0	0.0
372	65.000	63.850	-0.110	0.0	0.0	0.0
378	65.000	63.850	-0.110	0.0	0.0	0.0
384	65.000	63.850	-0.110	0.0	0.0	0.0
390	65.000	63.850	-0.110	0.0	0.0	0.0
396	65.000	63.850	-0.110	0.0	0.0	0.0
402	65.000	63.850	-0.110	0.0	0.0	0.0
408	65.000	63.850	-0.110	0.0	0.0	0.0
414	65.000	63.850	-0.110	0.0	0.0	0.0
420	65.000	63.850	-0.110	0.0	0.0	0.0
426	65.000	63.850	-0.110	0.0	0.0	0.0
432	65.000	63.850	-0.110	0.0	0.0	0.0
438	65.000	63.850	-0.110	0.0	0.0	0.0
444	65.000	63.850	-0.110	0.0	0.0	0.0
450	65.000	63.850	-0.110	0.0	0.0	0.0
456	65.000	63.850	-0.110	0.0	0.0	0.0
462	65.000	63.850	-0.110	0.0	0.0	0.0
468	65.000	63.850	-0.110	0.0	0.0	0.0
474	65.000	63.850	-0.110	0.0	0.0	0.0
480	65.000	63.850	-0.110	0.0	0.0	0.0
486	65.000	63.850	-0.110	0.0	0.0	0.0
492	65.000	63.850	-0.110	0.0	0.0	0.0
498	65.000	63.850	-0.110	0.0	0.0	0.0
504	65.000	63.850	-0.110	0.0	0.0	0.0
510	65.000	63.850	-0.110	0.0	0.0	0.0
516	65.000	63.850	-0.110	0.0	0.0	0.0
522	65.000	63.850	-0.110	0.0	0.0	0.0
528	65.000	63.850	-0.110	0.0	0.0	0.0
534	65.000	63.850	-0.110	0.0	0.0	0.0
540	65.000	63.850	-0.110	0.0	0.0	0.0
546	65.000	63.850	-0.110	0.0	0.0	0.0
552	65.000	63.850	-0.110	0.0	0.0	0.0
558	65.000	63.850	-0.110	0.0	0.0	0.0
564	65.000	63.850	-0.110	0.0	0.0	0.0
570	65.000	63.850	-0.110	0.0	0.0	0.0
576	65.000	63.850	-0.110	0.0	0.0	0.0
582	65.000	63.850	-0.110	0.0	0.0	0.0
588	65.000	63.850	-0.110	0.0	0.0	0.0
594	65.000	63.850	-0.110	0.0	0.0	0.0
600	65.000	63.850	-0.110	0.0	0.0	0.0
606	65.000	63.850	-0.110	0.0	0.0	0.0
612	65.000	63.850	-0.110	0.0	0.0	0.0
618	65.000	63.850	-0.110	0.0	0.0	0.0
624	65.000	63.850	-0.110	0.0	0.0	0.0
630	65.000	63.850	-0.110	0.0	0.0	0.0
636	65.000	63.850	-0.110	0.0	0.0	0.0
642	65.000	63.850	-0.110	0.0	0.0	0.0
648	65.000	63.850	-0.110	0.0	0.0	0.0
654	65.000	63.850	-0.110	0.0	0.0	0.0
660	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	65.000	63.850	-0.110	0.0	0.0	0.0
672	65.000	63.850	-0.110	0.0	0.0	0.0
678	65.000	63.850	-0.110	0.0	0.0	0.0
684	65.000	63.850	-0.110	0.0	0.0	0.0
690	65.000	63.850	-0.110	0.0	0.0	0.0
696	65.000	63.850	-0.110	0.0	0.0	0.0
702	65.000	63.850	-0.110	0.0	0.0	0.0
708	65.000	63.850	-0.110	0.0	0.0	0.0
714	65.000	63.850	-0.110	0.0	0.0	0.0
720	65.000	63.850	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
336	63.854	63.441	-0.106	0.0	0.5	0.1
342	63.854	63.442	-0.106	0.0	0.5	0.1
348	63.854	63.443	-0.106	0.0	0.5	0.1
354	63.854	63.444	-0.106	0.0	0.5	0.1
360	63.854	63.445	-0.106	0.0	0.5	0.1
366	63.850	63.446	-0.110	0.0	0.1	0.0
372	63.850	63.445	-0.110	0.0	0.0	0.0
378	63.850	63.444	-0.110	0.0	0.0	0.0
384	63.850	63.444	-0.110	0.0	0.0	0.0
390	63.850	63.443	-0.110	0.0	0.0	0.0
396	63.850	63.443	-0.110	0.0	0.0	0.0
402	63.850	63.442	-0.110	0.0	0.0	0.0
408	63.850	63.442	-0.110	0.0	0.0	0.0
414	63.850	63.441	-0.110	0.0	0.0	0.0
420	63.850	63.441	-0.110	0.0	0.0	0.0
426	63.850	63.441	-0.110	0.0	0.0	0.0
432	63.850	63.440	-0.110	0.0	0.0	0.0
438	63.850	63.440	-0.110	0.0	0.0	0.0
444	63.850	63.440	-0.110	0.0	0.0	0.0
450	63.850	63.439	-0.110	0.0	0.0	0.0
456	63.850	63.439	-0.110	0.0	0.0	0.0
462	63.850	63.439	-0.110	0.0	0.0	0.0
468	63.850	63.438	-0.110	0.0	0.0	0.0
474	63.850	63.438	-0.110	0.0	0.0	0.0
480	63.850	63.438	-0.110	0.0	0.0	0.0
486	63.850	63.438	-0.110	0.0	0.0	0.0
492	63.850	63.437	-0.110	0.0	0.0	0.0
498	63.850	63.437	-0.110	0.0	0.0	0.0
504	63.850	63.437	-0.110	0.0	0.0	0.0
510	63.850	63.437	-0.110	0.0	0.0	0.0
516	63.850	63.436	-0.110	0.0	0.0	0.0
522	63.850	63.436	-0.110	0.0	0.0	0.0
528	63.850	63.436	-0.110	0.0	0.0	0.0
534	63.850	63.436	-0.110	0.0	0.0	0.0
540	63.850	63.436	-0.110	0.0	0.0	0.0
546	63.850	63.436	-0.110	0.0	0.0	0.0
552	63.850	63.435	-0.110	0.0	0.0	0.0
558	63.850	63.435	-0.110	0.0	0.0	0.0
564	63.850	63.435	-0.110	0.0	0.0	0.0
570	63.850	63.435	-0.110	0.0	0.0	0.0
576	63.850	63.435	-0.110	0.0	0.0	0.0
582	63.850	63.434	-0.110	0.0	0.0	0.0
588	63.850	63.434	-0.110	0.0	0.0	0.0
594	63.850	63.434	-0.110	0.0	0.0	0.0
600	63.850	63.434	-0.110	0.0	0.0	0.0
606	63.850	63.434	-0.110	0.0	0.0	0.0
612	63.850	63.434	-0.110	0.0	0.0	0.0
618	63.850	63.434	-0.110	0.0	0.0	0.0
624	63.850	63.433	-0.110	0.0	0.0	0.0
630	63.850	63.433	-0.110	0.0	0.0	0.0
636	63.850	63.433	-0.110	0.0	0.0	0.0
642	63.850	63.433	-0.110	0.0	0.0	0.0
648	63.850	63.433	-0.110	0.0	0.0	0.0
654	63.850	63.433	-0.110	0.0	0.0	0.0
660	63.850	63.433	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.850	63.432	-0.110	0.0	0.0	0.0
672	63.850	63.432	-0.110	0.0	0.0	0.0
678	63.850	63.432	-0.110	0.0	0.0	0.0
684	63.850	63.432	-0.110	0.0	0.0	0.0
690	63.850	63.432	-0.110	0.0	0.0	0.0
696	63.850	63.432	-0.110	0.0	0.0	0.0
702	63.850	63.432	-0.110	0.0	0.0	0.0
708	63.850	63.431	-0.110	0.0	0.0	0.0
714	63.850	63.431	-0.110	0.0	0.0	0.0
720	63.850	63.431	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
6	65.401	63.504	-0.109	0.0	0.2	0.1
12	65.401	63.504	-0.109	0.0	0.2	0.1
18	65.401	63.504	-0.109	0.0	0.3	0.1
24	65.401	63.504	-0.109	0.0	0.3	0.1
30	65.401	63.504	-0.109	0.0	0.3	0.1
36	65.401	63.504	-0.109	0.0	0.3	0.1
42	65.401	63.505	-0.109	0.0	0.3	0.1
48	65.401	63.505	-0.109	0.0	0.3	0.1
54	65.402	63.505	-0.108	0.0	0.3	0.1
60	65.402	63.505	-0.108	0.0	0.3	0.1
66	65.402	63.505	-0.108	0.0	0.3	0.1
72	65.402	63.505	-0.108	0.0	0.3	0.1
78	65.402	63.506	-0.108	0.0	0.3	0.1
84	65.402	63.506	-0.108	0.0	0.4	0.1
90	65.402	63.506	-0.108	0.0	0.4	0.1
96	65.402	63.507	-0.108	0.0	0.4	0.1
102	65.402	63.507	-0.108	0.0	0.4	0.1
108	65.402	63.508	-0.108	0.0	0.5	0.1
114	65.403	63.508	-0.107	0.0	0.5	0.1
120	65.403	63.510	-0.107	0.0	0.6	0.1
126	65.403	63.510	-0.107	0.0	0.6	0.2
132	65.404	63.512	-0.106	0.0	0.8	0.2
138	65.405	63.512	-0.105	0.0	0.9	0.2
144	65.406	63.513	-0.104	0.0	1.1	0.3
150	65.407	63.514	-0.103	0.0	1.3	0.3
156	65.408	63.516	-0.102	0.0	1.2	0.4
162	65.409	63.517	-0.101	0.0	1.1	0.4
168	65.411	63.519	-0.099	0.0	1.0	0.5
174	65.412	63.520	-0.098	0.0	1.1	0.6
180	65.412	63.522	-0.098	0.0	1.2	0.7
186	65.412	63.522	-0.098	0.0	1.2	0.7
192	65.412	63.520	-0.098	0.0	1.1	0.6
198	65.411	63.519	-0.099	0.0	1.0	0.5
204	65.409	63.517	-0.101	0.0	1.1	0.4
210	65.408	63.516	-0.102	0.0	1.2	0.4
216	65.407	63.514	-0.103	0.0	1.3	0.3
222	65.406	63.513	-0.104	0.0	1.1	0.3
228	65.405	63.512	-0.105	0.0	0.9	0.2
234	65.404	63.512	-0.106	0.0	0.8	0.2
240	65.403	63.511	-0.107	0.0	0.7	0.2
246	65.403	63.510	-0.107	0.0	0.6	0.1
252	65.403	63.509	-0.107	0.0	0.5	0.1
258	65.402	63.508	-0.108	0.0	0.5	0.1
264	65.402	63.507	-0.108	0.0	0.4	0.1
270	65.402	63.507	-0.108	0.0	0.4	0.1
276	65.402	63.506	-0.108	0.0	0.4	0.1
282	65.402	63.506	-0.108	0.0	0.4	0.1
288	65.402	63.506	-0.108	0.0	0.3	0.1
294	65.402	63.505	-0.108	0.0	0.3	0.1
300	65.402	63.505	-0.108	0.0	0.3	0.1
306	65.402	63.505	-0.108	0.0	0.3	0.1
312	65.402	63.505	-0.108	0.0	0.3	0.1
318	65.401	63.505	-0.109	0.0	0.3	0.1
324	65.401	63.505	-0.109	0.0	0.3	0.1
330	65.401	63.504	-0.109	0.0	0.3	0.1

Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	65.401	63.504	-0.109	0.0	0.3	0.1
342	65.401	63.504	-0.109	0.0	0.3	0.1
348	65.401	63.504	-0.109	0.0	0.3	0.1
354	65.401	63.504	-0.109	0.0	0.2	0.1
360	65.401	63.504	-0.109	0.0	0.2	0.1
366	65.400	63.500	-0.110	0.0	0.0	0.0
372	65.400	63.500	-0.110	0.0	0.0	0.0
378	65.400	63.500	-0.110	0.0	0.0	0.0
384	65.400	63.500	-0.110	0.0	0.0	0.0
390	65.400	63.500	-0.110	0.0	0.0	0.0
396	65.400	63.500	-0.110	0.0	0.0	0.0
402	65.400	63.500	-0.110	0.0	0.0	0.0
408	65.400	63.500	-0.110	0.0	0.0	0.0
414	65.400	63.500	-0.110	0.0	0.0	0.0
420	65.400	63.500	-0.110	0.0	0.0	0.0
426	65.400	63.500	-0.110	0.0	0.0	0.0
432	65.400	63.500	-0.110	0.0	0.0	0.0
438	65.400	63.500	-0.110	0.0	0.0	0.0
444	65.400	63.500	-0.110	0.0	0.0	0.0
450	65.400	63.500	-0.110	0.0	0.0	0.0
456	65.400	63.500	-0.110	0.0	0.0	0.0
462	65.400	63.500	-0.110	0.0	0.0	0.0
468	65.400	63.500	-0.110	0.0	0.0	0.0
474	65.400	63.500	-0.110	0.0	0.0	0.0
480	65.400	63.500	-0.110	0.0	0.0	0.0
486	65.400	63.500	-0.110	0.0	0.0	0.0
492	65.400	63.500	-0.110	0.0	0.0	0.0
498	65.400	63.500	-0.110	0.0	0.0	0.0
504	65.400	63.500	-0.110	0.0	0.0	0.0
510	65.400	63.500	-0.110	0.0	0.0	0.0
516	65.400	63.500	-0.110	0.0	0.0	0.0
522	65.400	63.500	-0.110	0.0	0.0	0.0
528	65.400	63.500	-0.110	0.0	0.0	0.0
534	65.400	63.500	-0.110	0.0	0.0	0.0
540	65.400	63.500	-0.110	0.0	0.0	0.0
546	65.400	63.500	-0.110	0.0	0.0	0.0
552	65.400	63.500	-0.110	0.0	0.0	0.0
558	65.400	63.500	-0.110	0.0	0.0	0.0
564	65.400	63.500	-0.110	0.0	0.0	0.0
570	65.400	63.500	-0.110	0.0	0.0	0.0
576	65.400	63.500	-0.110	0.0	0.0	0.0
582	65.400	63.500	-0.110	0.0	0.0	0.0
588	65.400	63.500	-0.110	0.0	0.0	0.0
594	65.400	63.500	-0.110	0.0	0.0	0.0
600	65.400	63.500	-0.110	0.0	0.0	0.0
606	65.400	63.500	-0.110	0.0	0.0	0.0
612	65.400	63.500	-0.110	0.0	0.0	0.0
618	65.400	63.500	-0.110	0.0	0.0	0.0
624	65.400	63.500	-0.110	0.0	0.0	0.0
630	65.400	63.500	-0.110	0.0	0.0	0.0
636	65.400	63.500	-0.110	0.0	0.0	0.0
642	65.400	63.500	-0.110	0.0	0.0	0.0
648	65.400	63.500	-0.110	0.0	0.0	0.0
654	65.400	63.500	-0.110	0.0	0.0	0.0
660	65.400	63.500	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	65.400	63.500	-0.110	0.0	0.0	0.0
672	65.400	63.500	-0.110	0.0	0.0	0.0
678	65.400	63.500	-0.110	0.0	0.0	0.0
684	65.400	63.500	-0.110	0.0	0.0	0.0
690	65.400	63.500	-0.110	0.0	0.0	0.0
696	65.400	63.500	-0.110	0.0	0.0	0.0
702	65.400	63.500	-0.110	0.0	0.0	0.0
708	65.400	63.500	-0.110	0.0	0.0	0.0
714	65.400	63.500	-0.110	0.0	0.0	0.0
720	65.400	63.500	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
6	63.504	63.153	-0.106	0.0	0.5	0.1
12	63.504	63.156	-0.106	0.0	0.5	0.1
18	63.504	63.157	-0.106	0.0	0.5	0.1
24	63.504	63.159	-0.106	0.0	0.5	0.1
30	63.504	63.160	-0.106	0.0	0.5	0.1
36	63.504	63.162	-0.106	0.0	0.5	0.1
42	63.505	63.164	-0.105	0.0	0.5	0.1
48	63.505	63.166	-0.105	0.0	0.6	0.1
54	63.505	63.168	-0.105	0.0	0.6	0.1
60	63.505	63.170	-0.105	0.0	0.6	0.1
66	63.505	63.173	-0.105	0.0	0.6	0.2
72	63.505	63.175	-0.105	0.0	0.7	0.2
78	63.506	63.177	-0.104	0.0	0.7	0.2
84	63.506	63.180	-0.104	0.0	0.7	0.2
90	63.506	63.182	-0.104	0.0	0.8	0.2
96	63.507	63.185	-0.103	0.0	0.8	0.2
102	63.507	63.188	-0.103	0.0	0.8	0.2
108	63.508	63.191	-0.102	0.0	0.8	0.2
114	63.508	63.194	-0.102	0.0	0.8	0.2
120	63.510	63.198	-0.100	0.0	0.7	0.3
126	63.510	63.202	-0.100	0.0	0.7	0.3
132	63.512	63.209	-0.098	0.0	0.7	0.4
138	63.512	63.215	-0.098	0.0	0.7	0.4
144	63.513	63.222	-0.097	0.0	0.8	0.5
150	63.514	63.231	-0.096	0.0	0.9	0.6
156	63.516	63.241	-0.094	0.0	0.9	0.7
162	63.517	63.255	-0.093	0.0	0.9	0.9
168	63.519	63.269	-0.091	0.0	1.0	1.0
174	63.520	63.286	-0.090	0.0	1.0	1.2
180	63.522	63.304	-0.088	0.0	1.0	1.3
186	63.522	63.325	-0.088	0.0	1.0	1.3
192	63.520	63.342	-0.090	0.0	1.0	1.2
198	63.519	63.356	-0.091	0.0	1.0	1.0
204	63.517	63.368	-0.093	0.0	0.9	0.9
210	63.516	63.378	-0.094	0.0	0.9	0.7
216	63.514	63.387	-0.096	0.0	0.9	0.6
222	63.513	63.394	-0.097	0.0	0.8	0.5
228	63.512	63.399	-0.098	0.0	0.8	0.4
234	63.512	63.404	-0.098	0.0	0.7	0.4
240	63.511	63.407	-0.099	0.0	0.7	0.3
246	63.510	63.411	-0.100	0.0	0.7	0.3
252	63.509	63.414	-0.101	0.0	0.7	0.3
258	63.508	63.417	-0.102	0.0	0.8	0.2
264	63.507	63.419	-0.103	0.0	0.8	0.2
270	63.507	63.422	-0.103	0.0	0.8	0.2
276	63.506	63.424	-0.104	0.0	0.8	0.2
282	63.506	63.427	-0.104	0.0	0.7	0.2
288	63.506	63.429	-0.104	0.0	0.7	0.2
294	63.505	63.430	-0.105	0.0	0.7	0.2
300	63.505	63.432	-0.105	0.0	0.6	0.2
306	63.505	63.434	-0.105	0.0	0.6	0.1
312	63.505	63.435	-0.105	0.0	0.6	0.1
318	63.505	63.437	-0.105	0.0	0.6	0.1
324	63.505	63.438	-0.105	0.0	0.6	0.1
330	63.504	63.440	-0.106	0.0	0.5	0.1

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.500	63.432	-0.110	0.0	0.0	0.0
672	63.500	63.432	-0.110	0.0	0.0	0.0
678	63.500	63.432	-0.110	0.0	0.0	0.0
684	63.500	63.432	-0.110	0.0	0.0	0.0
690	63.500	63.432	-0.110	0.0	0.0	0.0
696	63.500	63.432	-0.110	0.0	0.0	0.0
702	63.500	63.432	-0.110	0.0	0.0	0.0
708	63.500	63.431	-0.110	0.0	0.0	0.0
714	63.500	63.431	-0.110	0.0	0.0	0.0
720	63.500	63.431	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	63.441	63.354	0.031	0.0	0.0	0.1
342	63.442	63.358	0.032	0.0	0.0	0.1
348	63.443	63.361	0.033	0.0	0.0	0.1
354	63.444	63.365	0.034	0.0	0.0	0.1
360	63.445	63.369	0.035	0.0	0.0	0.1
366	63.446	63.373	0.036	0.0	0.0	0.1
372	63.445	63.376	0.035	0.0	0.0	0.1
378	63.444	63.380	0.034	0.0	0.0	0.1
384	63.444	63.383	0.034	0.0	0.0	0.1
390	63.443	63.386	0.033	0.0	0.0	0.1
396	63.443	63.389	0.033	0.0	0.0	0.1
402	63.442	63.392	0.032	0.0	0.0	0.1
408	63.442	63.395	0.032	0.0	0.0	0.1
414	63.441	63.398	0.031	0.0	0.0	0.1
420	63.441	63.400	0.031	0.0	0.0	0.1
426	63.441	63.401	0.031	0.0	0.0	0.1
432	63.440	63.403	0.030	0.0	0.0	0.1
438	63.440	63.405	0.030	0.0	0.0	0.0
444	63.440	63.406	0.030	0.0	0.0	0.0
450	63.439	63.407	0.029	0.0	0.0	0.0
456	63.439	63.408	0.029	0.0	0.0	0.0
462	63.439	63.409	0.029	0.0	0.0	0.0
468	63.438	63.410	0.028	0.0	0.0	0.0
474	63.438	63.411	0.028	0.0	0.0	0.0
480	63.438	63.412	0.028	0.0	0.0	0.0
486	63.438	63.413	0.028	0.0	0.0	0.0
492	63.437	63.413	0.027	0.0	0.0	0.0
498	63.437	63.414	0.027	0.0	0.0	0.0
504	63.437	63.414	0.027	0.0	0.0	0.0
510	63.437	63.415	0.027	0.0	0.0	0.0
516	63.436	63.415	0.026	0.0	0.0	0.0
522	63.436	63.416	0.026	0.0	0.0	0.0
528	63.436	63.416	0.026	0.0	0.0	0.0
534	63.436	63.416	0.026	0.0	0.0	0.0
540	63.436	63.417	0.026	0.0	0.0	0.0
546	63.436	63.417	0.026	0.0	0.0	0.0
552	63.435	63.417	0.025	0.0	0.0	0.0
558	63.435	63.417	0.025	0.0	0.0	0.0
564	63.435	63.418	0.025	0.0	0.0	0.0
570	63.435	63.418	0.025	0.0	0.0	0.0
576	63.435	63.418	0.025	0.0	0.0	0.0
582	63.434	63.418	0.024	0.0	0.0	0.0
588	63.434	63.418	0.024	0.0	0.0	0.0
594	63.434	63.418	0.024	0.0	0.0	0.0
600	63.434	63.418	0.024	0.0	0.0	0.0
606	63.434	63.418	0.024	0.0	0.0	0.0
612	63.434	63.418	0.024	0.0	0.0	0.0
618	63.434	63.418	0.024	0.0	0.0	0.0
624	63.433	63.418	0.023	0.0	0.0	0.0
630	63.433	63.418	0.023	0.0	0.0	0.0
636	63.433	63.418	0.023	0.0	0.0	0.0
642	63.433	63.418	0.023	0.0	0.0	0.0
648	63.433	63.418	0.023	0.0	0.0	0.0
654	63.433	63.418	0.023	0.0	0.0	0.0
660	63.433	63.418	0.023	0.0	0.0	0.0

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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
666	63.432	63.418	0.022	0.0	0.0	0.0
672	63.432	63.418	0.022	0.0	0.0	0.0
678	63.432	63.418	0.022	0.0	0.0	0.0
684	63.432	63.418	0.022	0.0	0.0	0.0
690	63.432	63.418	0.022	0.0	0.0	0.0
696	63.432	63.418	0.022	0.0	0.0	0.0
702	63.432	63.418	0.022	0.0	0.0	0.0
708	63.431	63.418	0.021	0.0	0.0	0.0
714	63.431	63.418	0.021	0.0	0.0	0.0
720	63.431	63.418	0.021	0.0	0.0	0.0

Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (1/s)	Velocity (m/s)	Pipe Flow (1/s)
6	63.233	63.239	-0.160	0.0	0.0	0.0
12	63.233	63.239	-0.160	0.0	0.0	0.0
18	63.233	63.239	-0.160	0.0	0.0	0.0
24	63.233	63.239	-0.160	0.0	0.0	0.0
30	63.233	63.239	-0.160	0.0	0.0	0.0
36	63.233	63.239	-0.160	0.0	0.0	0.0
42	63.233	63.239	-0.160	0.0	0.0	0.0
48	63.233	63.239	-0.160	0.0	0.0	0.0
54	63.233	63.239	-0.160	0.0	0.0	0.0
60	63.233	63.239	-0.160	0.0	0.0	0.0
66	63.233	63.239	-0.160	0.0	0.0	0.0
72	63.233	63.239	-0.160	0.0	0.0	0.0
78	63.233	63.239	-0.160	0.0	0.0	0.0
84	63.233	63.239	-0.160	0.0	0.0	0.0
90	63.233	63.239	-0.160	0.0	0.0	0.0
96	63.233	63.239	-0.160	0.0	0.0	0.0
102	63.233	63.239	-0.160	0.0	0.0	0.0
108	63.233	63.239	-0.160	0.0	0.0	0.0
114	63.233	63.239	-0.160	0.0	0.0	0.0
120	63.233	63.239	-0.160	0.0	0.0	0.0
126	63.233	63.239	-0.160	0.0	0.0	0.0
132	63.233	63.239	-0.160	0.0	0.0	0.0
138	63.233	63.239	-0.160	0.0	0.0	0.0
144	63.233	63.239	-0.160	0.0	0.0	0.0
150	63.233	63.239	-0.160	0.0	0.0	0.0
156	63.233	63.239	-0.160	0.0	0.0	0.0
162	63.235	63.239	-0.158	0.0	0.0	0.0
168	63.239	63.239	-0.154	0.0	0.0	0.0
174	63.242	63.239	-0.151	0.0	0.0	0.0
180	63.247	63.239	-0.146	0.0	0.0	0.0
186	63.253	63.239	-0.140	0.0	0.0	0.0
192	63.257	63.239	-0.136	0.0	0.0	0.0
198	63.262	63.239	-0.131	0.0	0.0	0.0
204	63.268	63.239	-0.125	0.0	0.0	0.0
210	63.274	63.239	-0.119	0.0	0.0	0.0
216	63.280	63.239	-0.113	0.0	0.0	0.0
222	63.286	63.239	-0.107	0.0	0.0	0.0
228	63.292	63.239	-0.101	0.0	0.0	0.0
234	63.298	63.239	-0.095	0.0	0.0	0.0
240	63.304	63.239	-0.089	0.0	0.0	0.0
246	63.310	63.239	-0.083	0.0	0.0	0.0
252	63.311	63.239	-0.082	0.0	0.0	0.0
258	63.314	63.239	-0.079	0.0	0.0	0.0
264	63.316	63.239	-0.077	0.0	0.0	0.0
270	63.318	63.239	-0.075	0.0	0.0	0.0
276	63.321	63.239	-0.072	0.0	0.0	0.0
282	63.324	63.239	-0.069	0.0	0.0	0.0
288	63.327	63.239	-0.066	0.0	0.0	0.0
294	63.330	63.239	-0.063	0.0	0.0	0.0
300	63.333	63.239	-0.060	0.0	0.0	0.0
306	63.336	63.239	-0.057	0.0	0.0	0.0
312	63.340	63.239	-0.053	0.0	0.0	0.0
318	63.343	63.239	-0.050	0.0	0.0	0.0
324	63.347	63.239	-0.046	0.0	0.0	0.0
330	63.350	63.239	-0.043	0.0	0.0	0.0

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Date Oct 25 File Combined Attenuation...		Designed by JS Checked by				
Elstree Computing Ltd		Network W.12.6				
Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm) 360 minute 100 year Summer Average Rainfall Intensity 11.062 mm/hr						
Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
336	63.354	63.239	-0.039	0.0	0.0	0.0
342	63.358	63.239	-0.035	0.0	0.0	0.0
348	63.361	63.239	-0.032	0.0	0.0	0.0
354	63.365	63.239	-0.028	0.0	0.0	0.0
360	63.369	63.239	-0.024	0.0	0.0	0.0
366	63.373	63.239	-0.020	0.0	0.0	0.0
372	63.376	63.239	-0.017	0.0	0.0	0.0
378	63.380	63.239	-0.013	0.0	0.0	0.0
384	63.383	63.239	-0.010	0.0	0.0	0.0
390	63.386	63.239	-0.007	0.0	0.0	0.0
396	63.389	63.239	-0.004	0.0	0.0	0.0
402	63.392	63.239	-0.001	0.0	0.0	0.0
408	63.395	63.239	0.002	0.0	0.0	0.0
414	63.398	63.239	0.005	0.0	0.0	0.0
420	63.400	63.239	0.007	0.0	0.0	0.0
426	63.401	63.239	0.008	0.0	0.0	0.0
432	63.403	63.239	0.010	0.0	0.0	0.0
438	63.405	63.239	0.012	0.0	0.0	0.0
444	63.406	63.239	0.013	0.0	0.0	0.0
450	63.407	63.239	0.014	0.0	0.0	0.0
456	63.408	63.239	0.015	0.0	0.0	0.0
462	63.409	63.239	0.016	0.0	0.0	0.0
468	63.410	63.239	0.017	0.0	0.0	0.0
474	63.411	63.239	0.018	0.0	0.0	0.0
480	63.412	63.239	0.019	0.0	0.0	0.0
486	63.413	63.239	0.020	0.0	0.0	0.0
492	63.413	63.239	0.020	0.0	0.0	0.0
498	63.414	63.239	0.021	0.0	0.0	0.0
504	63.414	63.239	0.021	0.0	0.0	0.0
510	63.415	63.239	0.022	0.0	0.0	0.0
516	63.415	63.239	0.022	0.0	0.0	0.0
522	63.416	63.239	0.023	0.0	0.0	0.0
528	63.416	63.239	0.023	0.0	0.0	0.0
534	63.416	63.239	0.023	0.0	0.0	0.0
540	63.417	63.239	0.024	0.0	0.0	0.0
546	63.417	63.239	0.024	0.0	0.0	0.0
552	63.417	63.239	0.024	0.0	0.0	0.0
558	63.417	63.239	0.024	0.0	0.0	0.0
564	63.418	63.239	0.025	0.0	0.0	0.0
570	63.418	63.239	0.025	0.0	0.0	0.0
576	63.418	63.239	0.025	0.0	0.0	0.0
582	63.418	63.239	0.025	0.0	0.0	0.0
588	63.418	63.239	0.025	0.0	0.0	0.0
594	63.418	63.239	0.025	0.0	0.0	0.0
600	63.418	63.239	0.025	0.0	0.0	0.0
606	63.418	63.239	0.025	0.0	0.0	0.0
612	63.418	63.239	0.025	0.0	0.0	0.0
618	63.418	63.239	0.025	0.0	0.0	0.0
624	63.418	63.239	0.025	0.0	0.0	0.0
630	63.418	63.239	0.025	0.0	0.0	0.0
636	63.418	63.239	0.025	0.0	0.0	0.0
642	63.418	63.239	0.025	0.0	0.0	0.0
648	63.418	63.239	0.025	0.0	0.0	0.0
654	63.418	63.239	0.025	0.0	0.0	0.0
660	63.418	63.239	0.025	0.0	0.0	0.0
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Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
360 minute 100 year Summer
Average Rainfall Intensity 11.062 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
666	63.418	63.239	0.025	0.0	0.0	0.0
672	63.418	63.239	0.025	0.0	0.0	0.0
678	63.418	63.239	0.025	0.0	0.0	0.0
684	63.418	63.239	0.025	0.0	0.0	0.0
690	63.418	63.239	0.025	0.0	0.0	0.0
696	63.418	63.239	0.025	0.0	0.0	0.0
702	63.418	63.239	0.025	0.0	0.0	0.0
708	63.418	63.239	0.025	0.0	0.0	0.0
714	63.418	63.239	0.025	0.0	0.0	0.0
720	63.418	63.239	0.025	0.0	0.0	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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PIPELINE SCHEDULES for Storm								
Upstream Manhole								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole	450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole	600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
Downstream Manhole								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole	450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole	600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole	600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450
Free Flowing Outfall Details for Storm								
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)		
1.004	Dummy	64.000	63.223	63.230	450	450		
Simulation Criteria for Storm								
Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000					
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000					
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000					
Hot Start Level (mm)	0	Run Time (mins)	960					
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	8					
Number of Input Hydrographs	0	Number of Storage Structures	2					
Number of Online Controls	2	Number of Time/Area Diagrams	0					
Number of Offline Controls	0							
Synthetic Rainfall Details								
Rainfall Model	FSR	Profile Type	Winter					
Return Period (years)	100	Cv (Summer)	1.000					
Region	England and Wales	Cv (Winter)	1.000					
M5-60 (mm)	20.000	Storm Duration (mins)	480					
Ratio R	0.343							
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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4, DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 480 minute 100 year Winter (Storm)

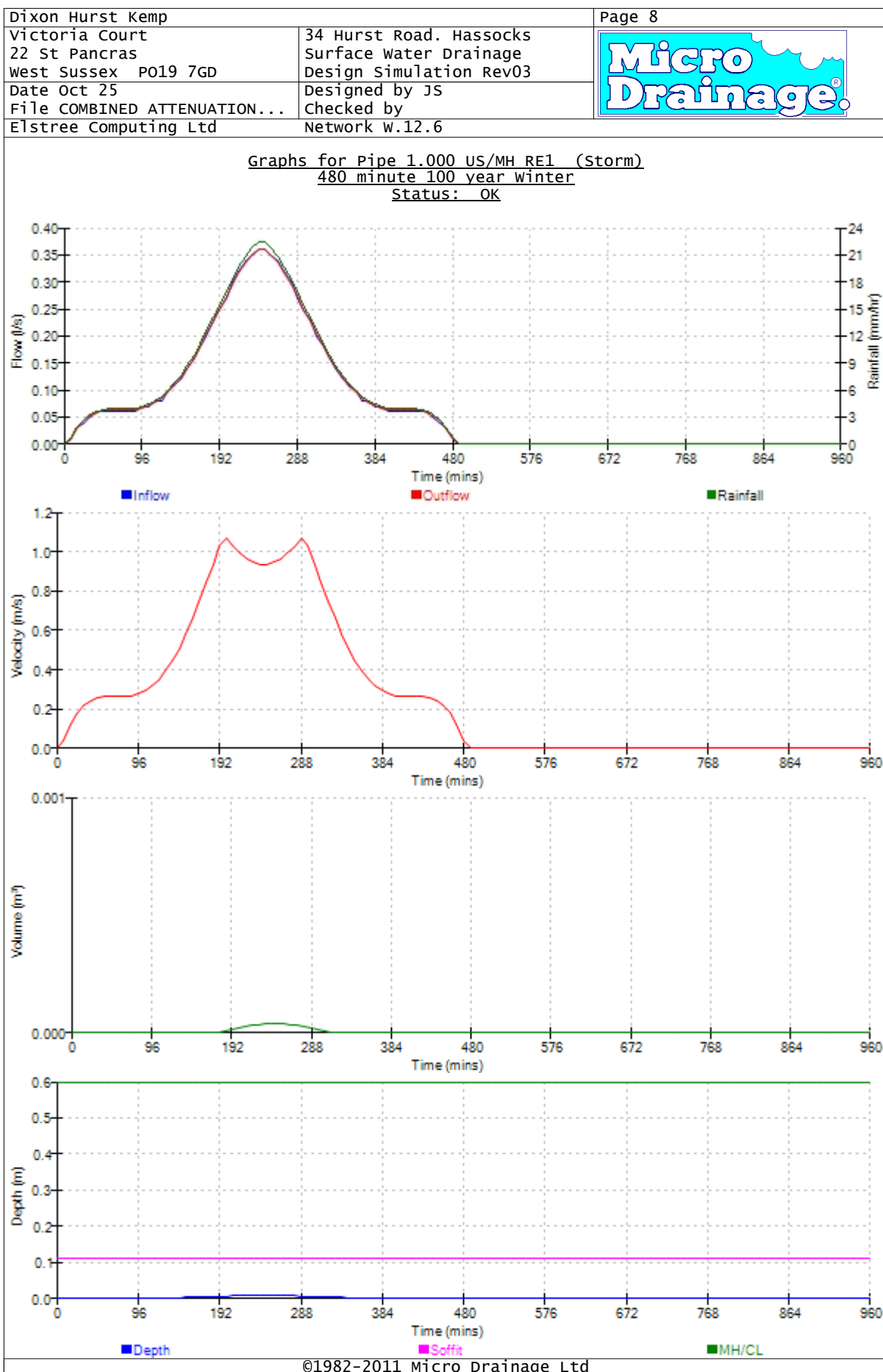
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

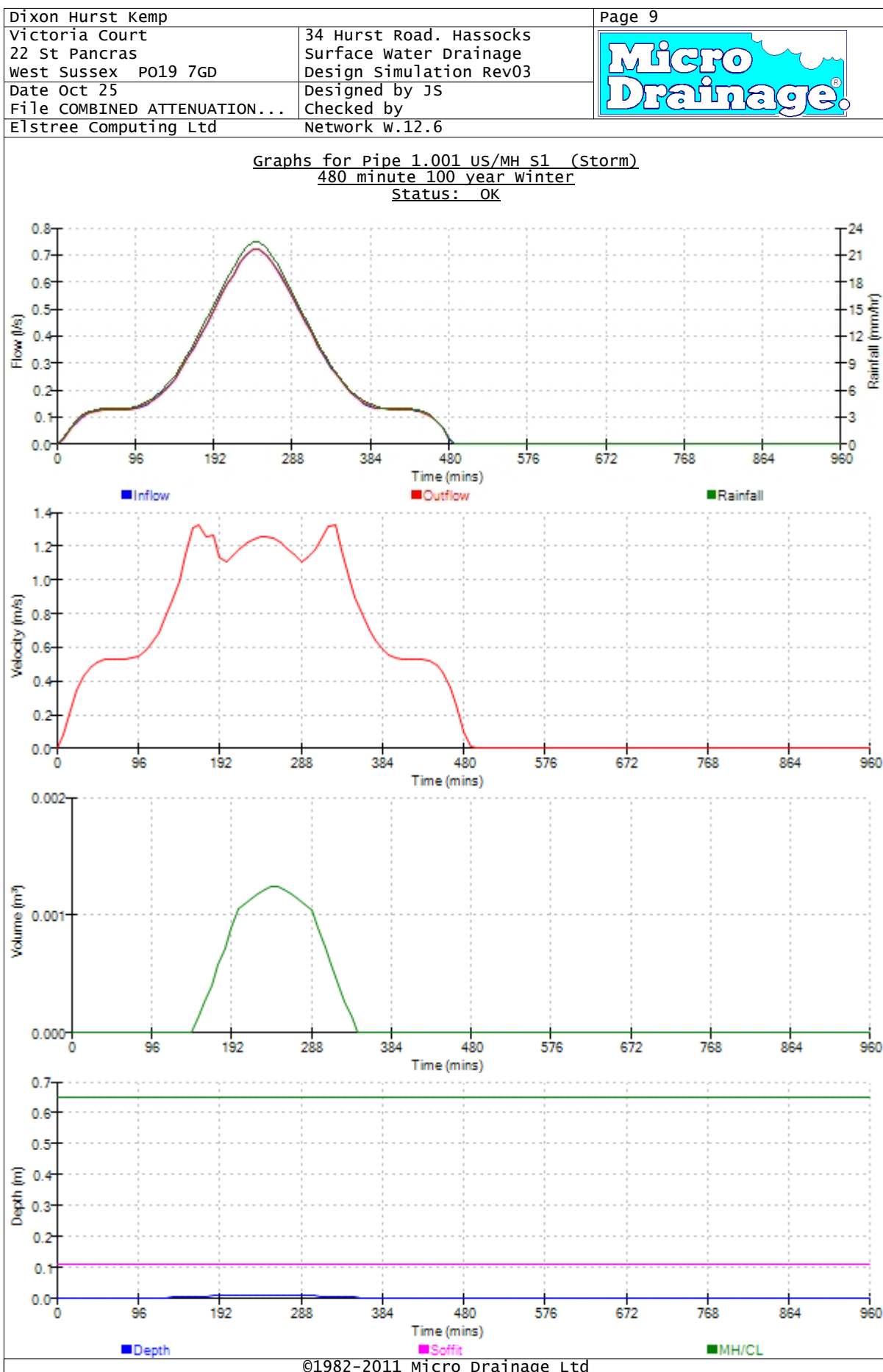
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.409	-0.101	0.000	0.02	0.0	0.4	OK
1.001	S1	65.012	-0.098	0.000	0.03	0.0	0.7	OK
1.002	S2	63.865	-0.095	0.000	0.04	0.0	0.7	OK
2.000	RE2	65.408	-0.102	0.000	0.02	0.0	0.4	OK
2.001	S3	63.515	-0.095	0.000	0.05	0.0	0.7	OK
1.003	S4	63.461	0.051	0.000	0.01	0.0	0.1	SURCHARGED
1.004	Rain Garden	63.429	0.036	0.000	0.00	0.0	0.0	SURCHARGED

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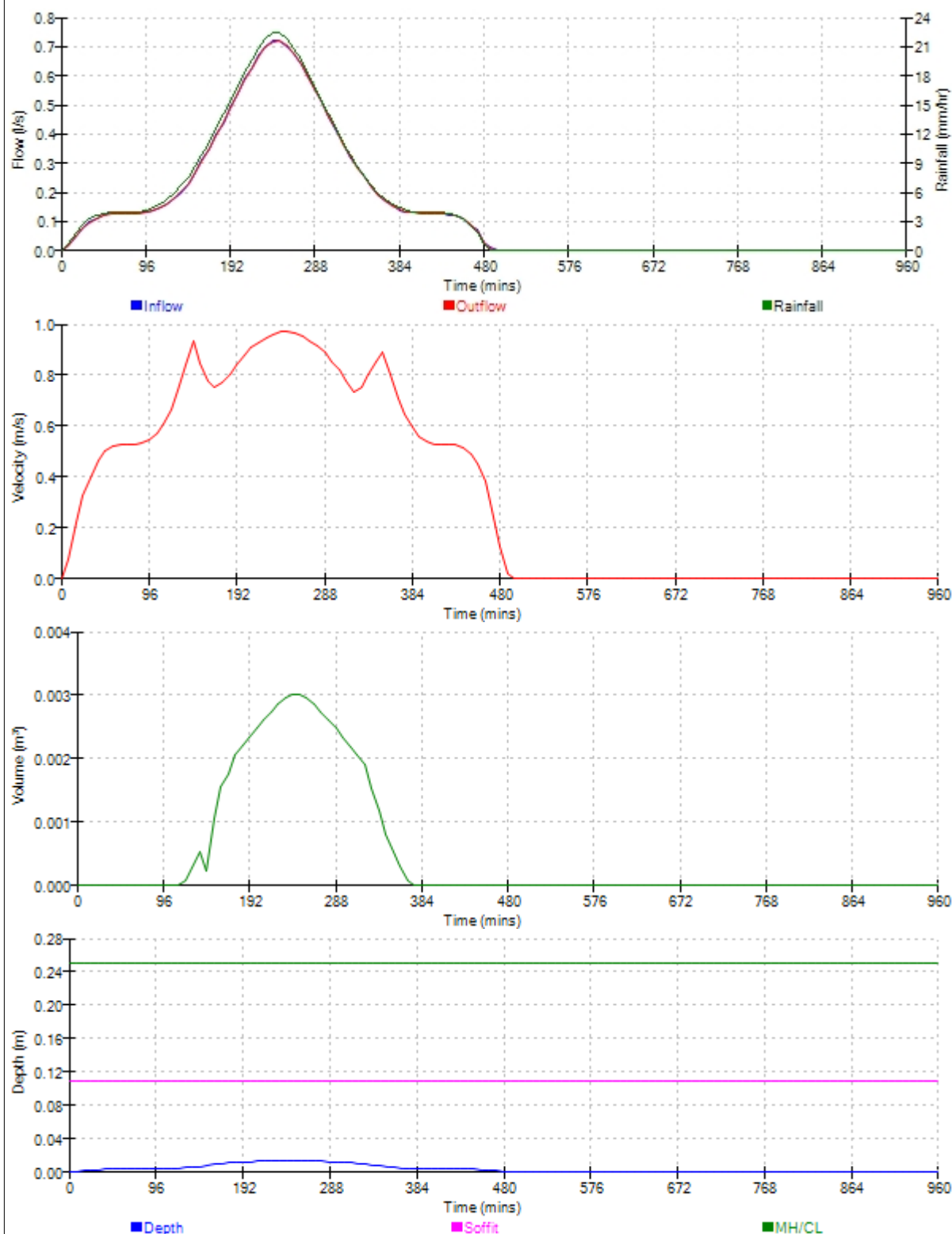
Rainfall Hyetograph for 480 minute 100 year Winter (Storm)

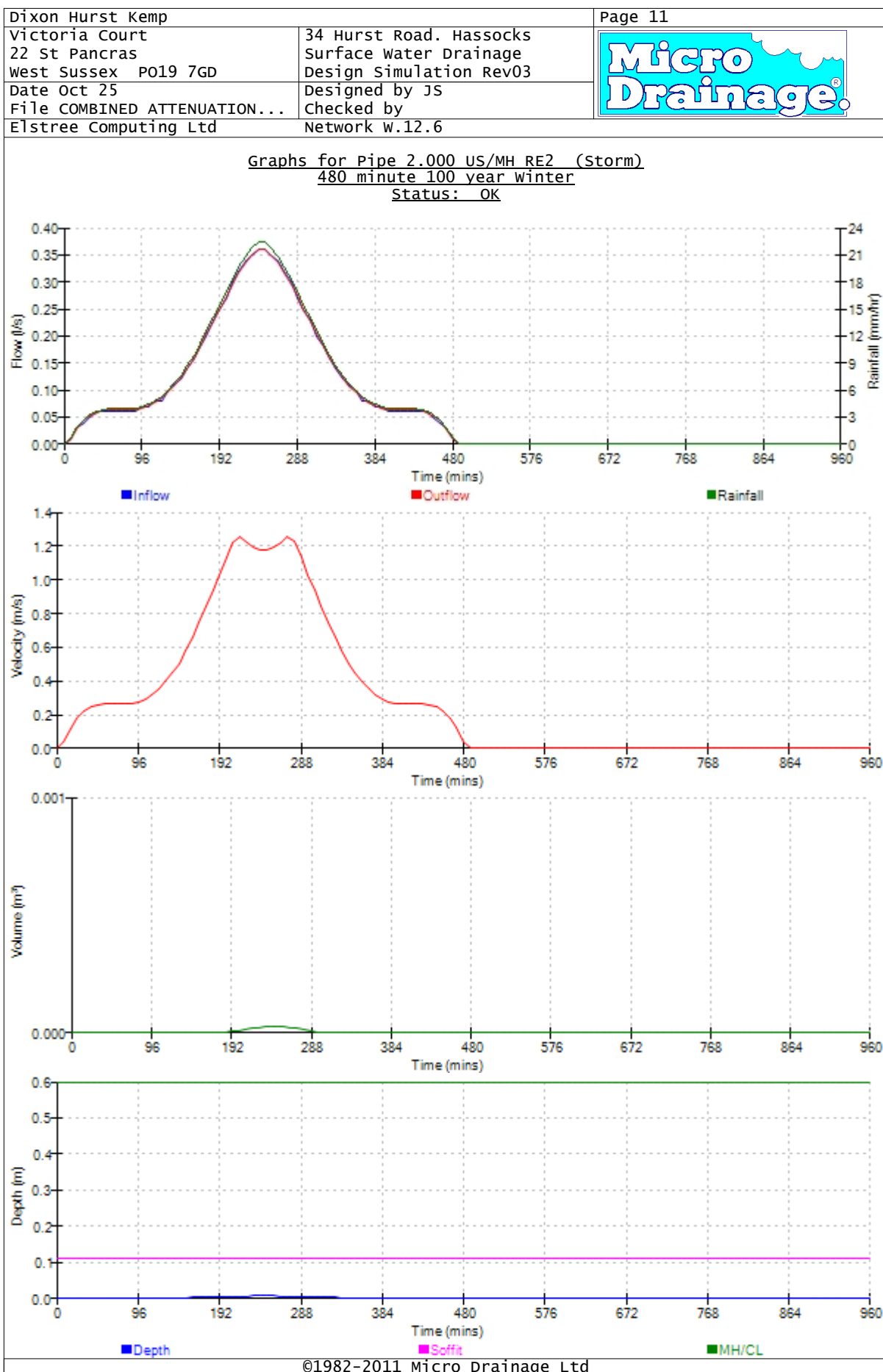
Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
8	0.632	104	4.417	200	17.051	296	15.475	392	4.154
16	1.818	112	4.773	208	18.394	304	14.062	400	4.025
24	2.689	120	5.247	216	19.645	312	12.669	408	3.965
32	3.332	128	5.943	224	20.874	320	11.166	416	3.956
40	3.673	136	6.709	232	21.745	328	9.917	424	3.964
48	3.867	144	7.601	240	22.373	336	8.760	432	3.953
56	3.953	152	8.760	248	22.373	344	7.601	440	3.867
64	3.964	160	9.917	256	21.745	352	6.709	448	3.673
72	3.956	168	11.166	264	20.874	360	5.943	456	3.332
80	3.965	176	12.669	272	19.645	368	5.247	464	2.689
88	4.025	184	14.062	280	18.394	376	4.773	472	1.818
96	4.154	192	15.475	288	17.051	384	4.417	480	0.632

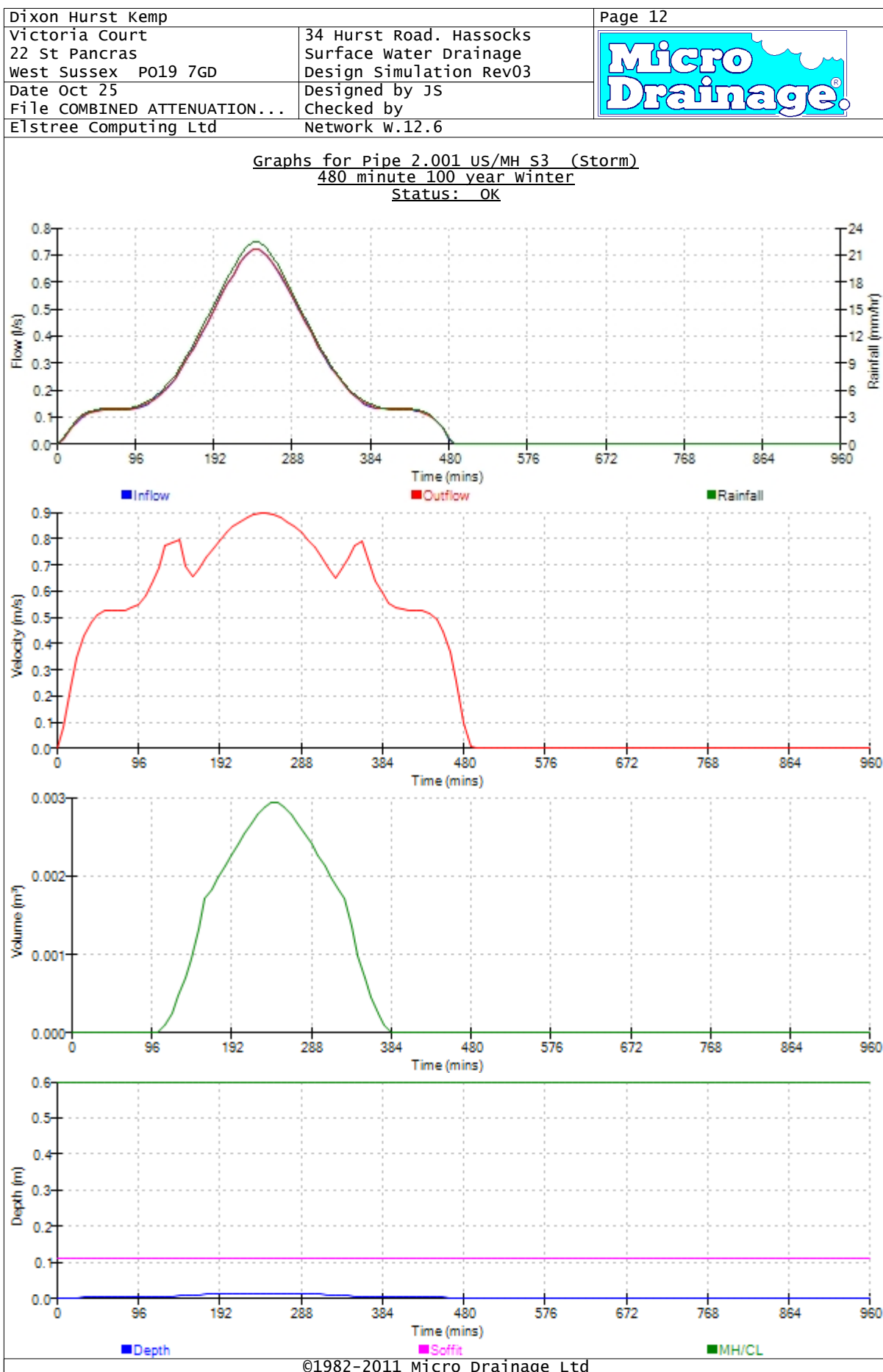




Graphs for Pipe 1.002 US/MH S2 (Storm)
480 minute 100 year winter
Status: OK

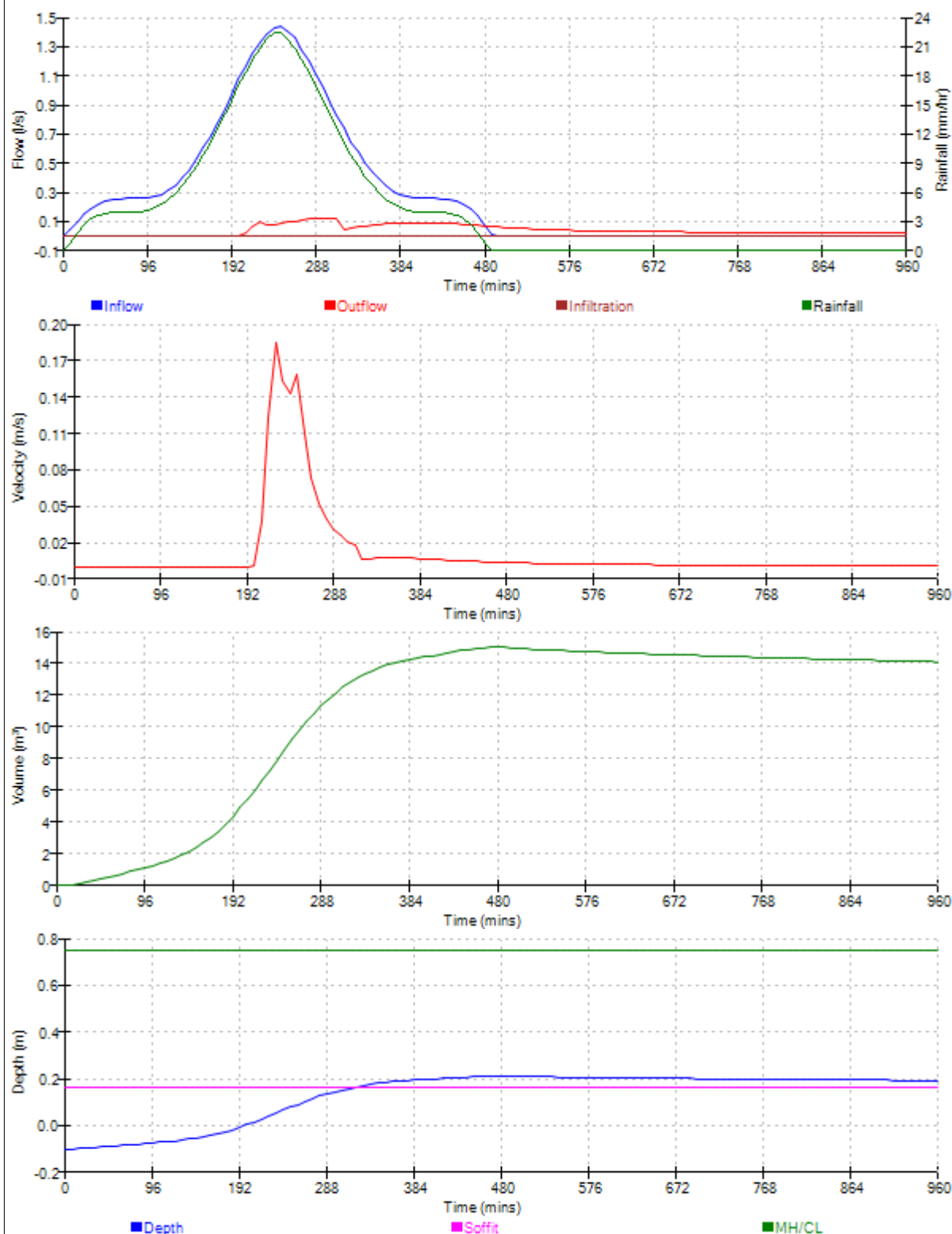


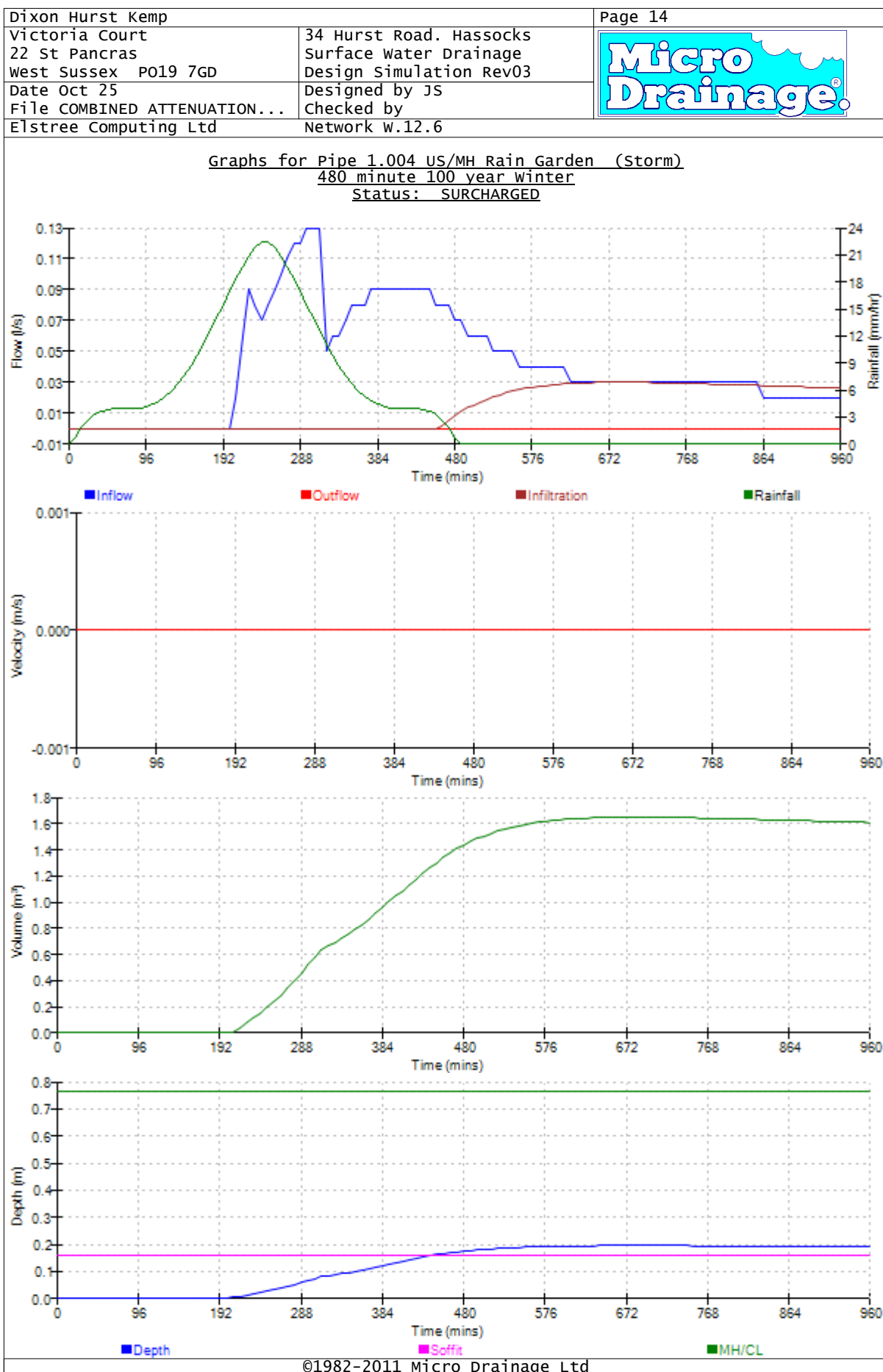




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Graphs for Pipe 1.003 US/MH S4 (Storm)
480 minute 100 year winter
Status: SURCHARGED





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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.400	65.000	-0.110	0.0	0.0	0.0
896	65.400	65.000	-0.110	0.0	0.0	0.0
904	65.400	65.000	-0.110	0.0	0.0	0.0
912	65.400	65.000	-0.110	0.0	0.0	0.0
920	65.400	65.000	-0.110	0.0	0.0	0.0
928	65.400	65.000	-0.110	0.0	0.0	0.0
936	65.400	65.000	-0.110	0.0	0.0	0.0
944	65.400	65.000	-0.110	0.0	0.0	0.0
952	65.400	65.000	-0.110	0.0	0.0	0.0
960	65.400	65.000	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
8	65.000	63.851	-0.110	0.0	0.1	0.0
16	65.001	63.852	-0.109	0.0	0.2	0.1
24	65.002	63.853	-0.108	0.0	0.3	0.1
32	65.002	63.853	-0.108	0.0	0.4	0.1
40	65.002	63.854	-0.108	0.0	0.5	0.1
48	65.003	63.854	-0.107	0.0	0.5	0.1
56	65.003	63.854	-0.107	0.0	0.5	0.1
64	65.003	63.854	-0.107	0.0	0.5	0.1
72	65.003	63.854	-0.107	0.0	0.5	0.1
80	65.003	63.854	-0.107	0.0	0.5	0.1
88	65.003	63.854	-0.107	0.0	0.5	0.1
96	65.003	63.854	-0.107	0.0	0.6	0.1
104	65.003	63.854	-0.107	0.0	0.6	0.1
112	65.003	63.855	-0.107	0.0	0.6	0.2
120	65.003	63.855	-0.107	0.0	0.7	0.2
128	65.004	63.856	-0.106	0.0	0.8	0.2
136	65.004	63.857	-0.106	0.0	0.9	0.2
144	65.005	63.856	-0.105	0.0	1.0	0.2
152	65.006	63.858	-0.104	0.0	1.2	0.3
160	65.007	63.860	-0.103	0.0	1.3	0.3
168	65.007	63.861	-0.103	0.0	1.3	0.4
176	65.008	63.861	-0.102	0.0	1.3	0.4
184	65.009	63.862	-0.101	0.0	1.3	0.4
192	65.010	63.862	-0.100	0.0	1.1	0.5
200	65.011	63.863	-0.099	0.0	1.1	0.5
208	65.011	63.863	-0.099	0.0	1.1	0.6
216	65.012	63.864	-0.098	0.0	1.2	0.6
224	65.012	63.864	-0.098	0.0	1.2	0.7
232	65.012	63.864	-0.098	0.0	1.2	0.7
240	65.012	63.865	-0.098	0.0	1.3	0.7
248	65.012	63.865	-0.098	0.0	1.3	0.7
256	65.012	63.864	-0.098	0.0	1.2	0.7
264	65.012	63.864	-0.098	0.0	1.2	0.7
272	65.012	63.864	-0.098	0.0	1.2	0.6
280	65.011	63.863	-0.099	0.0	1.1	0.6
288	65.011	63.863	-0.099	0.0	1.1	0.6
296	65.010	63.862	-0.100	0.0	1.1	0.5
304	65.009	63.862	-0.101	0.0	1.2	0.5
312	65.008	63.861	-0.102	0.0	1.2	0.4
320	65.007	63.861	-0.103	0.0	1.3	0.4
328	65.007	63.860	-0.103	0.0	1.3	0.3
336	65.006	63.859	-0.104	0.0	1.2	0.3
344	65.005	63.858	-0.105	0.0	1.0	0.2
352	65.004	63.857	-0.106	0.0	0.9	0.2
360	65.004	63.856	-0.106	0.0	0.8	0.2
368	65.003	63.855	-0.107	0.0	0.7	0.2
376	65.003	63.855	-0.107	0.0	0.6	0.2
384	65.003	63.854	-0.107	0.0	0.6	0.1
392	65.003	63.854	-0.107	0.0	0.6	0.1
400	65.003	63.854	-0.107	0.0	0.5	0.1
408	65.003	63.854	-0.107	0.0	0.5	0.1
416	65.003	63.854	-0.107	0.0	0.5	0.1
424	65.003	63.854	-0.107	0.0	0.5	0.1
432	65.003	63.854	-0.107	0.0	0.5	0.1
440	65.003	63.854	-0.107	0.0	0.5	0.1

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.000	63.850	-0.110	0.0	0.0	0.0
896	65.000	63.850	-0.110	0.0	0.0	0.0
904	65.000	63.850	-0.110	0.0	0.0	0.0
912	65.000	63.850	-0.110	0.0	0.0	0.0
920	65.000	63.850	-0.110	0.0	0.0	0.0
928	65.000	63.850	-0.110	0.0	0.0	0.0
936	65.000	63.850	-0.110	0.0	0.0	0.0
944	65.000	63.850	-0.110	0.0	0.0	0.0
952	65.000	63.850	-0.110	0.0	0.0	0.0
960	65.000	63.850	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
448	63.854	63.458	-0.106	0.0	0.5	0.1
456	63.853	63.460	-0.107	0.0	0.5	0.1
464	63.853	63.461	-0.107	0.0	0.4	0.1
472	63.852	63.461	-0.108	0.0	0.3	0.1
480	63.851	63.461	-0.109	0.0	0.1	0.0
488	63.850	63.461	-0.110	0.0	0.0	0.0
496	63.850	63.460	-0.110	0.0	0.0	0.0
504	63.850	63.460	-0.110	0.0	0.0	0.0
512	63.850	63.459	-0.110	0.0	0.0	0.0
520	63.850	63.459	-0.110	0.0	0.0	0.0
528	63.850	63.458	-0.110	0.0	0.0	0.0
536	63.850	63.458	-0.110	0.0	0.0	0.0
544	63.850	63.457	-0.110	0.0	0.0	0.0
552	63.850	63.457	-0.110	0.0	0.0	0.0
560	63.850	63.456	-0.110	0.0	0.0	0.0
568	63.850	63.456	-0.110	0.0	0.0	0.0
576	63.850	63.456	-0.110	0.0	0.0	0.0
584	63.850	63.455	-0.110	0.0	0.0	0.0
592	63.850	63.455	-0.110	0.0	0.0	0.0
600	63.850	63.454	-0.110	0.0	0.0	0.0
608	63.850	63.454	-0.110	0.0	0.0	0.0
616	63.850	63.454	-0.110	0.0	0.0	0.0
624	63.850	63.453	-0.110	0.0	0.0	0.0
632	63.850	63.453	-0.110	0.0	0.0	0.0
640	63.850	63.453	-0.110	0.0	0.0	0.0
648	63.850	63.452	-0.110	0.0	0.0	0.0
656	63.850	63.452	-0.110	0.0	0.0	0.0
664	63.850	63.452	-0.110	0.0	0.0	0.0
672	63.850	63.451	-0.110	0.0	0.0	0.0
680	63.850	63.451	-0.110	0.0	0.0	0.0
688	63.850	63.451	-0.110	0.0	0.0	0.0
696	63.850	63.451	-0.110	0.0	0.0	0.0
704	63.850	63.450	-0.110	0.0	0.0	0.0
712	63.850	63.450	-0.110	0.0	0.0	0.0
720	63.850	63.450	-0.110	0.0	0.0	0.0
728	63.850	63.449	-0.110	0.0	0.0	0.0
736	63.850	63.449	-0.110	0.0	0.0	0.0
744	63.850	63.449	-0.110	0.0	0.0	0.0
752	63.850	63.449	-0.110	0.0	0.0	0.0
760	63.850	63.448	-0.110	0.0	0.0	0.0
768	63.850	63.448	-0.110	0.0	0.0	0.0
776	63.850	63.448	-0.110	0.0	0.0	0.0
784	63.850	63.448	-0.110	0.0	0.0	0.0
792	63.850	63.447	-0.110	0.0	0.0	0.0
800	63.850	63.447	-0.110	0.0	0.0	0.0
808	63.850	63.447	-0.110	0.0	0.0	0.0
816	63.850	63.447	-0.110	0.0	0.0	0.0
824	63.850	63.446	-0.110	0.0	0.0	0.0
832	63.850	63.446	-0.110	0.0	0.0	0.0
840	63.850	63.446	-0.110	0.0	0.0	0.0
848	63.850	63.446	-0.110	0.0	0.0	0.0
856	63.850	63.445	-0.110	0.0	0.0	0.0
864	63.850	63.445	-0.110	0.0	0.0	0.0
872	63.850	63.445	-0.110	0.0	0.0	0.0
880	63.850	63.445	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
888	63.850	63.444	-0.110	0.0	0.0	0.0
896	63.850	63.444	-0.110	0.0	0.0	0.0
904	63.850	63.444	-0.110	0.0	0.0	0.0
912	63.850	63.444	-0.110	0.0	0.0	0.0
920	63.850	63.443	-0.110	0.0	0.0	0.0
928	63.850	63.443	-0.110	0.0	0.0	0.0
936	63.850	63.443	-0.110	0.0	0.0	0.0
944	63.850	63.443	-0.110	0.0	0.0	0.0
952	63.850	63.442	-0.110	0.0	0.0	0.0
960	63.850	63.442	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.400	63.500	-0.110	0.0	0.0	0.0
896	65.400	63.500	-0.110	0.0	0.0	0.0
904	65.400	63.500	-0.110	0.0	0.0	0.0
912	65.400	63.500	-0.110	0.0	0.0	0.0
920	65.400	63.500	-0.110	0.0	0.0	0.0
928	65.400	63.500	-0.110	0.0	0.0	0.0
936	65.400	63.500	-0.110	0.0	0.0	0.0
944	65.400	63.500	-0.110	0.0	0.0	0.0
952	65.400	63.500	-0.110	0.0	0.0	0.0
960	65.400	63.500	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
8	63.501	63.151	-0.109	0.0	0.1	0.0
16	63.502	63.153	-0.108	0.0	0.2	0.1
24	63.503	63.155	-0.107	0.0	0.3	0.1
32	63.504	63.157	-0.106	0.0	0.4	0.1
40	63.504	63.159	-0.106	0.0	0.5	0.1
48	63.504	63.161	-0.106	0.0	0.5	0.1
56	63.504	63.164	-0.106	0.0	0.5	0.1
64	63.504	63.166	-0.106	0.0	0.5	0.1
72	63.504	63.169	-0.106	0.0	0.5	0.1
80	63.504	63.171	-0.106	0.0	0.5	0.1
88	63.504	63.174	-0.106	0.0	0.5	0.1
96	63.505	63.176	-0.105	0.0	0.5	0.1
104	63.505	63.179	-0.105	0.0	0.6	0.1
112	63.505	63.182	-0.105	0.0	0.6	0.2
120	63.506	63.185	-0.104	0.0	0.7	0.2
128	63.507	63.188	-0.103	0.0	0.8	0.2
136	63.507	63.192	-0.103	0.0	0.8	0.2
144	63.508	63.196	-0.102	0.0	0.8	0.2
152	63.510	63.203	-0.100	0.0	0.7	0.3
160	63.511	63.209	-0.099	0.0	0.7	0.3
168	63.511	63.216	-0.099	0.0	0.7	0.4
176	63.512	63.224	-0.098	0.0	0.7	0.4
184	63.512	63.232	-0.098	0.0	0.8	0.4
192	63.513	63.242	-0.097	0.0	0.8	0.5
200	63.513	63.254	-0.097	0.0	0.8	0.5
208	63.514	63.265	-0.096	0.0	0.8	0.6
216	63.514	63.277	-0.096	0.0	0.9	0.6
224	63.515	63.289	-0.095	0.0	0.9	0.7
232	63.515	63.302	-0.095	0.0	0.9	0.7
240	63.515	63.315	-0.095	0.0	0.9	0.7
248	63.515	63.329	-0.095	0.0	0.9	0.7
256	63.515	63.342	-0.095	0.0	0.9	0.7
264	63.515	63.354	-0.095	0.0	0.9	0.7
272	63.514	63.366	-0.096	0.0	0.9	0.6
280	63.514	63.376	-0.096	0.0	0.8	0.6
288	63.513	63.386	-0.097	0.0	0.8	0.6
296	63.513	63.395	-0.097	0.0	0.8	0.5
304	63.512	63.403	-0.098	0.0	0.8	0.5
312	63.512	63.410	-0.098	0.0	0.7	0.4
320	63.511	63.417	-0.099	0.0	0.7	0.4
328	63.511	63.422	-0.099	0.0	0.7	0.3
336	63.510	63.428	-0.100	0.0	0.7	0.3
344	63.508	63.432	-0.102	0.0	0.7	0.2
352	63.507	63.435	-0.103	0.0	0.8	0.2
360	63.507	63.439	-0.103	0.0	0.8	0.2
368	63.506	63.441	-0.104	0.0	0.7	0.2
376	63.505	63.443	-0.105	0.0	0.6	0.2
384	63.505	63.445	-0.105	0.0	0.6	0.1
392	63.505	63.447	-0.105	0.0	0.6	0.1
400	63.504	63.449	-0.106	0.0	0.5	0.1
408	63.504	63.450	-0.106	0.0	0.5	0.1
416	63.504	63.452	-0.106	0.0	0.5	0.1
424	63.504	63.454	-0.106	0.0	0.5	0.1
432	63.504	63.455	-0.106	0.0	0.5	0.1
440	63.504	63.457	-0.106	0.0	0.5	0.1

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	63.500	63.444	-0.110	0.0	0.0	0.0
896	63.500	63.444	-0.110	0.0	0.0	0.0
904	63.500	63.444	-0.110	0.0	0.0	0.0
912	63.500	63.444	-0.110	0.0	0.0	0.0
920	63.500	63.443	-0.110	0.0	0.0	0.0
928	63.500	63.443	-0.110	0.0	0.0	0.0
936	63.500	63.443	-0.110	0.0	0.0	0.0
944	63.500	63.443	-0.110	0.0	0.0	0.0
952	63.500	63.442	-0.110	0.0	0.0	0.0
960	63.500	63.442	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
448	63.458	63.396	0.048	0.0	0.0	0.1
456	63.460	63.400	0.050	0.0	0.0	0.1
464	63.461	63.403	0.051	0.0	0.0	0.1
472	63.461	63.406	0.051	0.0	0.0	0.1
480	63.461	63.409	0.051	0.0	0.0	0.1
488	63.461	63.412	0.051	0.0	0.0	0.1
496	63.460	63.414	0.050	0.0	0.0	0.1
504	63.460	63.415	0.050	0.0	0.0	0.1
512	63.459	63.417	0.049	0.0	0.0	0.1
520	63.459	63.419	0.049	0.0	0.0	0.1
528	63.458	63.420	0.048	0.0	0.0	0.1
536	63.458	63.422	0.048	0.0	0.0	0.0
544	63.457	63.423	0.047	0.0	0.0	0.0
552	63.457	63.424	0.047	0.0	0.0	0.0
560	63.456	63.424	0.046	0.0	0.0	0.0
568	63.456	63.425	0.046	0.0	0.0	0.0
576	63.456	63.426	0.046	0.0	0.0	0.0
584	63.455	63.426	0.045	0.0	0.0	0.0
592	63.455	63.427	0.045	0.0	0.0	0.0
600	63.454	63.427	0.044	0.0	0.0	0.0
608	63.454	63.428	0.044	0.0	0.0	0.0
616	63.454	63.428	0.044	0.0	0.0	0.0
624	63.453	63.428	0.043	0.0	0.0	0.0
632	63.453	63.428	0.043	0.0	0.0	0.0
640	63.453	63.428	0.043	0.0	0.0	0.0
648	63.452	63.428	0.042	0.0	0.0	0.0
656	63.452	63.429	0.042	0.0	0.0	0.0
664	63.452	63.429	0.042	0.0	0.0	0.0
672	63.451	63.429	0.041	0.0	0.0	0.0
680	63.451	63.429	0.041	0.0	0.0	0.0
688	63.451	63.429	0.041	0.0	0.0	0.0
696	63.451	63.429	0.041	0.0	0.0	0.0
704	63.450	63.429	0.040	0.0	0.0	0.0
712	63.450	63.429	0.040	0.0	0.0	0.0
720	63.450	63.429	0.040	0.0	0.0	0.0
728	63.449	63.428	0.039	0.0	0.0	0.0
736	63.449	63.428	0.039	0.0	0.0	0.0
744	63.449	63.428	0.039	0.0	0.0	0.0
752	63.449	63.428	0.039	0.0	0.0	0.0
760	63.448	63.428	0.038	0.0	0.0	0.0
768	63.448	63.428	0.038	0.0	0.0	0.0
776	63.448	63.428	0.038	0.0	0.0	0.0
784	63.448	63.428	0.038	0.0	0.0	0.0
792	63.447	63.428	0.037	0.0	0.0	0.0
800	63.447	63.428	0.037	0.0	0.0	0.0
808	63.447	63.427	0.037	0.0	0.0	0.0
816	63.447	63.427	0.037	0.0	0.0	0.0
824	63.446	63.427	0.036	0.0	0.0	0.0
832	63.446	63.427	0.036	0.0	0.0	0.0
840	63.446	63.427	0.036	0.0	0.0	0.0
848	63.446	63.427	0.036	0.0	0.0	0.0
856	63.445	63.427	0.035	0.0	0.0	0.0
864	63.445	63.427	0.035	0.0	0.0	0.0
872	63.445	63.426	0.035	0.0	0.0	0.0
880	63.445	63.426	0.035	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
888	63.444	63.426	0.034	0.0	0.0	0.0
896	63.444	63.426	0.034	0.0	0.0	0.0
904	63.444	63.426	0.034	0.0	0.0	0.0
912	63.444	63.426	0.034	0.0	0.0	0.0
920	63.443	63.426	0.033	0.0	0.0	0.0
928	63.443	63.425	0.033	0.0	0.0	0.0
936	63.443	63.425	0.033	0.0	0.0	0.0
944	63.443	63.425	0.033	0.0	0.0	0.0
952	63.442	63.425	0.032	0.0	0.0	0.0
960	63.442	63.425	0.032	0.0	0.0	0.0

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Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
480 minute 100 year winter
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	63.426	63.239	0.033	0.0	0.0	0.0
896	63.426	63.239	0.033	0.0	0.0	0.0
904	63.426	63.239	0.033	0.0	0.0	0.0
912	63.426	63.239	0.033	0.0	0.0	0.0
920	63.426	63.239	0.033	0.0	0.0	0.0
928	63.425	63.239	0.032	0.0	0.0	0.0
936	63.425	63.239	0.032	0.0	0.0	0.0
944	63.425	63.239	0.032	0.0	0.0	0.0
952	63.425	63.239	0.032	0.0	0.0	0.0
960	63.425	63.239	0.032	0.0	0.0	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2
M5-60 (mm)	20.000
Ratio R	0.343
Maximum Rainfall (mm/hr)	50
Foul Sewage (l/s/ha)	0.00
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	0.200
Min Design Depth for Optimisation (m)	0.200
Min Vel for Auto Design only (m/s)	0.76
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.484

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	3.600	0.360	10.0	0.004	5.00	0.0	0.600	o	110
1.001	9.200	1.150	8.0	0.004	0.00	0.0	0.600	o	110
1.002	11.200	0.600	18.7	0.000	0.00	0.0	0.600	o	110
2.000	16.200	1.620	10.0	0.004	5.00	0.0	0.600	o	110
2.001	5.000	0.250	20.0	0.004	0.00	0.0	0.600	o	110
1.003	1.700	0.017	100.0	0.000	0.00	0.0	0.600	o	160
1.004	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	160

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.02	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
1.001	50.00	5.08	65.000	0.008	0.0	0.0	0.0	2.93	27.8	1.4
1.002	50.00	5.17	63.850	0.008	0.0	0.0	0.0	1.91	18.2	1.4
2.000	50.00	5.10	65.400	0.004	0.0	0.0	0.0	2.62	24.9	0.7
2.001	50.00	5.15	63.500	0.008	0.0	0.0	0.0	1.85	17.6	1.4
1.003	50.00	5.20	63.250	0.016	0.0	0.0	0.0	1.05	21.1	2.9
1.004	50.00	5.22	63.233	0.016	0.0	0.0	0.0	1.05	21.1	2.9

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110			
S1	65.650	0.650	Open Manhole	450	1.001	65.000	110	1.000	65.040	110
S2	64.100	0.250	Open Manhole	600	1.002	63.850	110	1.001	63.850	110
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110			
S3	64.100	0.600	Open Manhole	600	2.001	63.500	110	2.000	63.780	110
S4	64.000	0.750	Open Manhole	14000 x 2000	1.003	63.250	160	1.002	63.250	110
								2.001	63.250	110
Rain Garden	64.000	0.767	Open Manhole	7500 x 1100	1.004	63.233	160	1.003	63.233	160
Dummy	64.000	0.777	Open Manhole	450 x 450		OUTFALL		1.004	63.223	160

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<u>PIPELINE SCHEDULES for Storm</u>								
<u>Upstream Manhole</u>								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	65.650	65.000	0.540	Open Manhole	450
1.002	o	110	S2	64.100	63.850	0.140	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S3	64.100	63.500	0.490	Open Manhole	600
1.003	o	160	S4	64.000	63.250	0.590	Open Manhole	14000 x 2000
1.004	o	160	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
<u>Downstream Manhole</u>								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	3.600	10.0	S1	65.650	65.040	0.500	Open Manhole	450
1.001	9.200	8.0	S2	64.100	63.850	0.140	Open Manhole	600
1.002	11.200	18.7	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
2.000	16.200	10.0	S3	64.100	63.780	0.210	Open Manhole	600
2.001	5.000	20.0	S4	64.000	63.250	0.640	Open Manhole	14000 x 2000
1.003	1.700	100.0	Rain Garden	64.000	63.233	0.607	Open Manhole	7500 x 1100
1.004	1.000	100.0	Dummy	64.000	63.223	0.617	Open Manhole	450 x 450
<u>Free Flowing Outfall Details for Storm</u>								
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)		
1.004	Dummy	64.000	63.223	63.230	450	450		
<u>Simulation Criteria for Storm</u>								
Volumetric Runoff Coeff		1.000	Foul Sewage per hectare (l/s)		0.000			
Areal Reduction Factor		1.000	Additional Flow - % of Total Flow		45.000			
Hot Start (mins)		0	MADD Factor * 10m³/ha Storage		2.000			
Hot Start Level (mm)		0	Run Time (mins)		960			
Manhole Headloss Coeff (Global)		0.500	Output Interval (mins)		8			
Number of Input Hydrographs		0	Number of Storage Structures		2			
Number of Online Controls		2	Number of Time/Area Diagrams		0			
Number of Offline Controls		0						
<u>Synthetic Rainfall Details</u>								
Rainfall Model		FSR	Profile Type		Summer			
Return Period (years)		100	Cv (Summer)		1.000			
Region		England and Wales	Cv (Winter)		1.000			
M5-60 (mm)		20.000	Storm Duration (mins)		480			
Ratio R		0.343						
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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 21.0

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: Rain Garden, DS/PN: 1.004, Volume (m³): 6.1

Invert Level (m) 63.233

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	0.0000	0.400	0.0000

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Storage Structures for Storm

Cellular Storage Manhole: S4, DS/PN: 1.003

Invert Level (m) 63.150
Infiltration Coefficient Base (m/hr) 0.00000
Infiltration Coefficient Side (m/hr) 0.00000
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	21.8	21.8	0.500	0.0	34.6
0.400	21.8	34.6			

Infiltration Blanket Manhole: Rain Garden, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461
Safety Factor 2.0
Porosity 0.30
Invert Level (m) 63.400
Diameter/Width (m) 1.1
Length (m) 7.7
Cap Volume Depth (m) 0.000

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
1.002	S2	0.500
2.000	RE2	0.500
2.001	S3	0.500
1.003	S4	0.500
1.004	Rain Garden	0.500

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Summary of Results for 480 minute 100 year Summer (Storm)

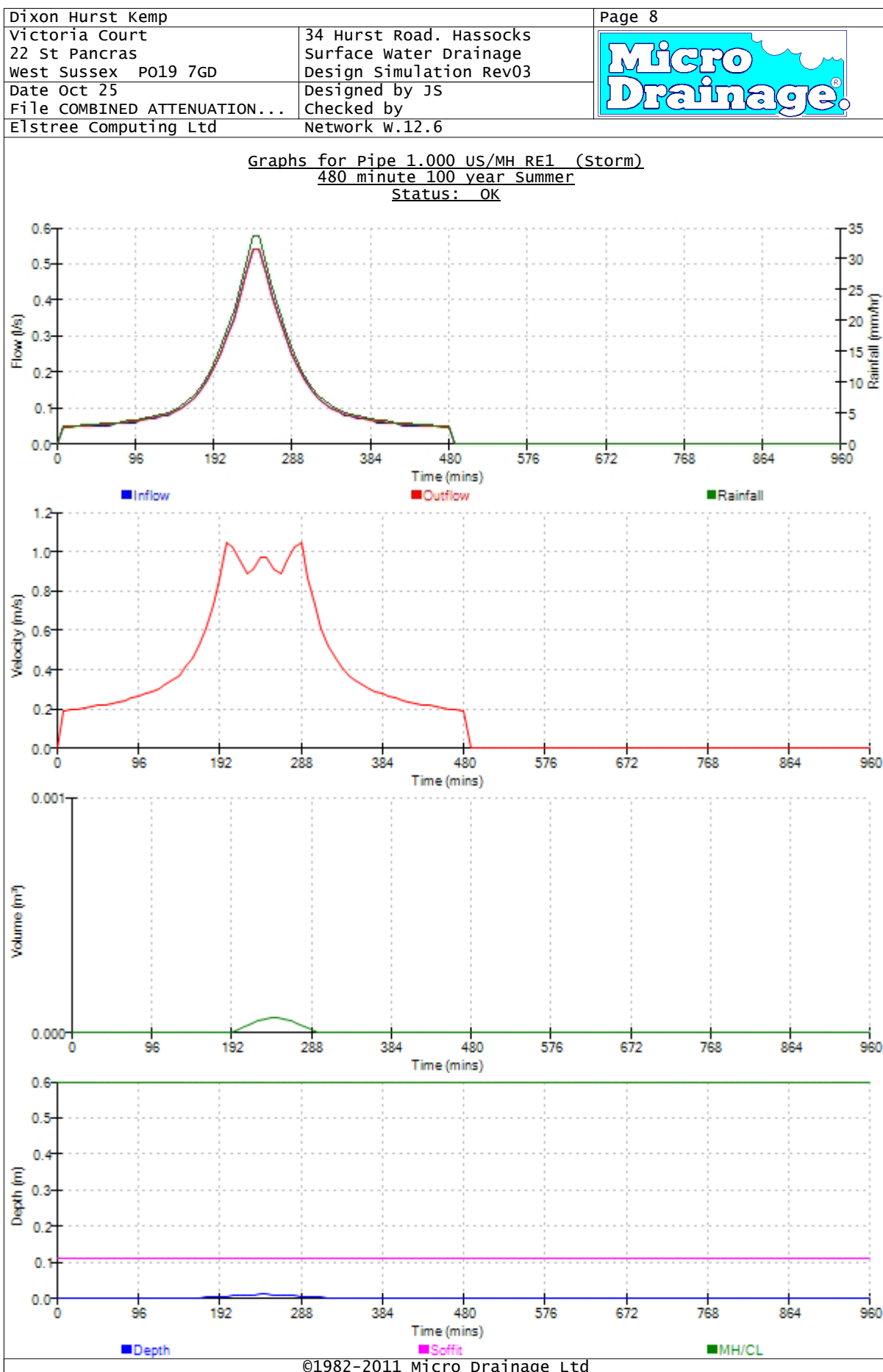
Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

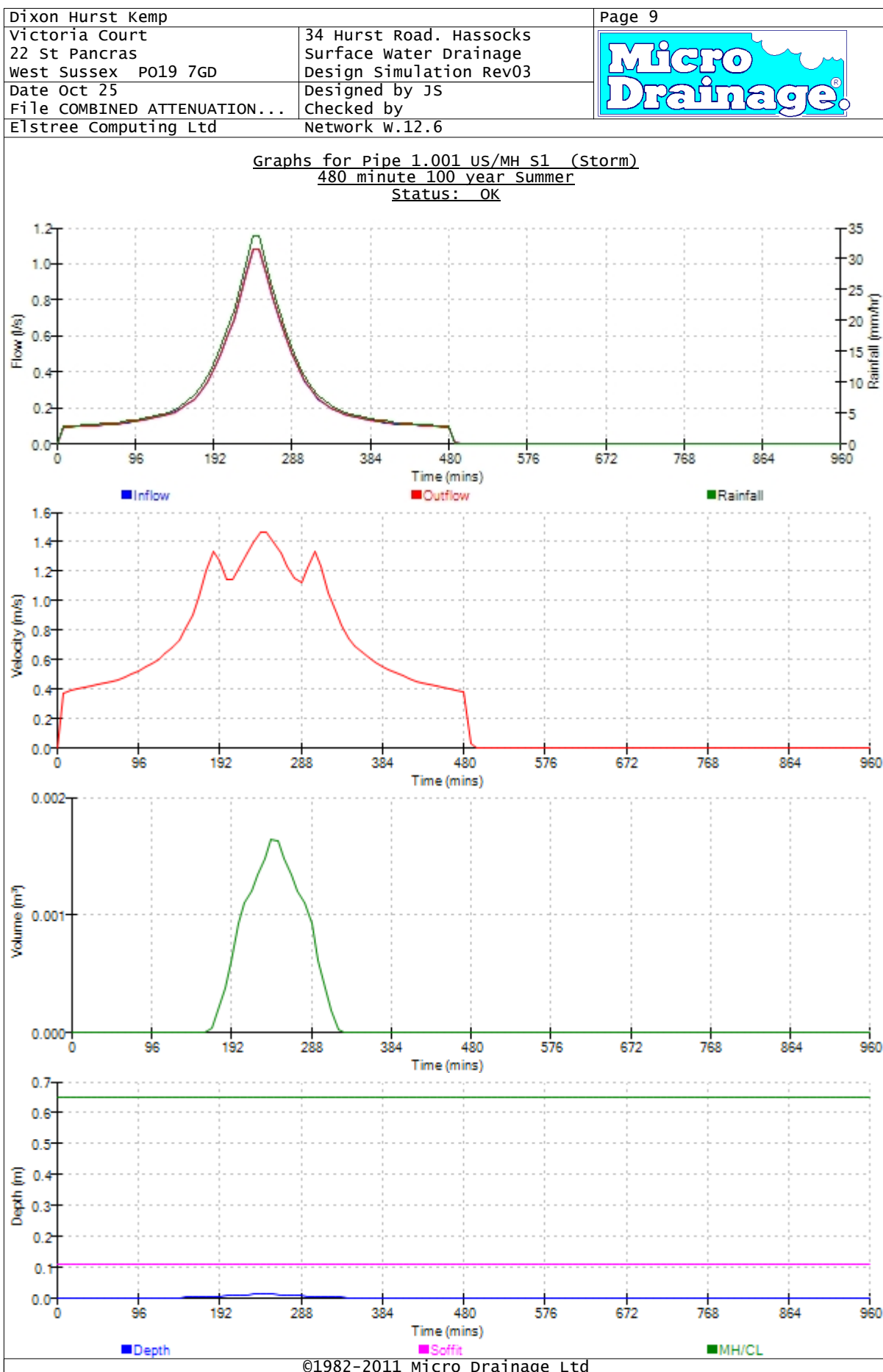
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.412	-0.098	0.000	0.03	0.0	0.5	OK
1.001	S1	65.014	-0.096	0.000	0.04	0.0	1.1	OK
1.002	S2	63.868	-0.092	0.000	0.06	0.0	1.1	OK
2.000	RE2	65.411	-0.099	0.000	0.02	0.0	0.5	OK
2.001	S3	63.519	-0.091	0.000	0.07	0.0	1.1	OK
1.003	S4	63.461	0.051	0.000	0.01	0.0	0.1	SURCHARGED
1.004	Rain Garden	63.429	0.036	0.000	0.00	0.0	0.0	SURCHARGED

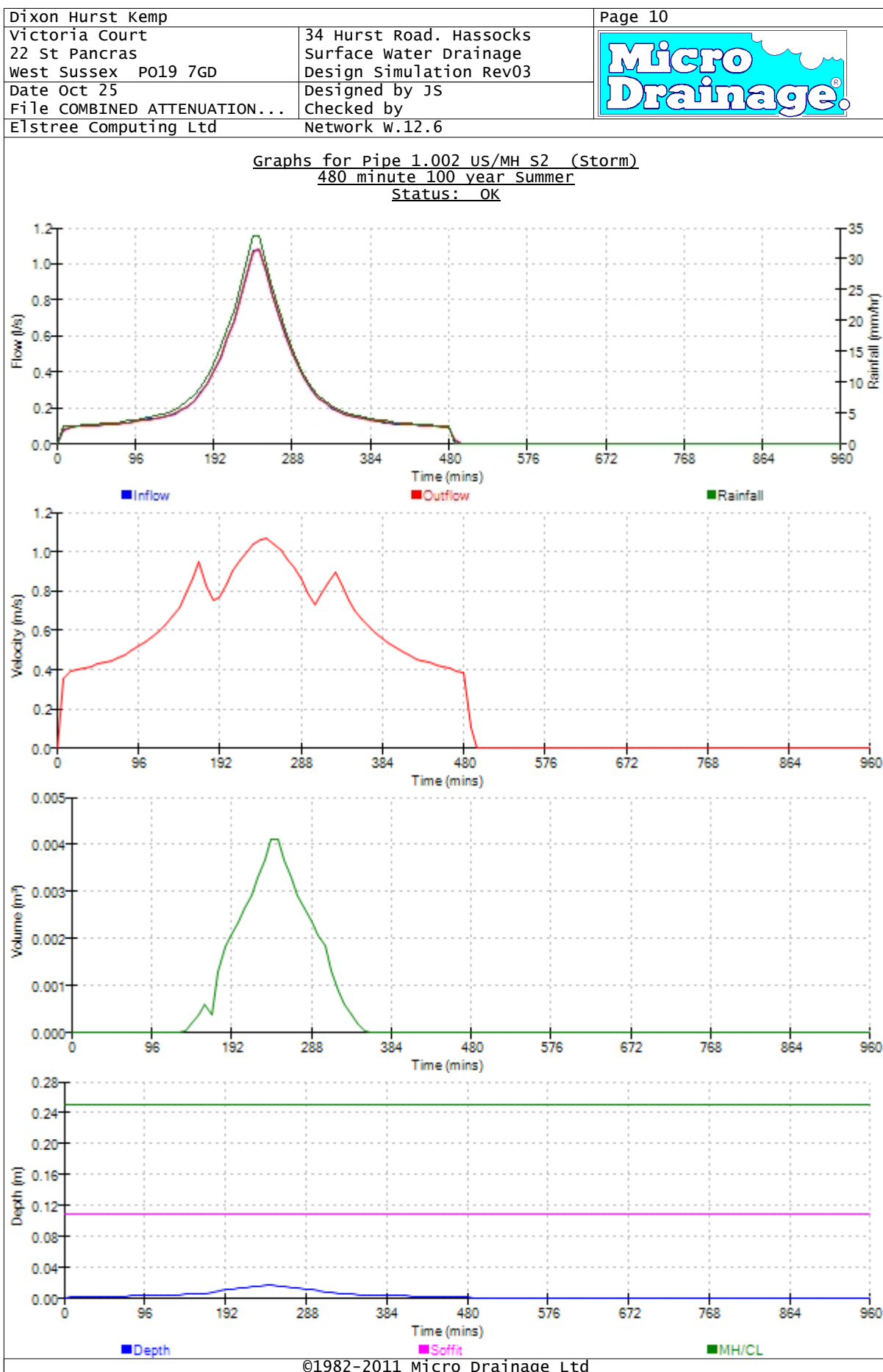
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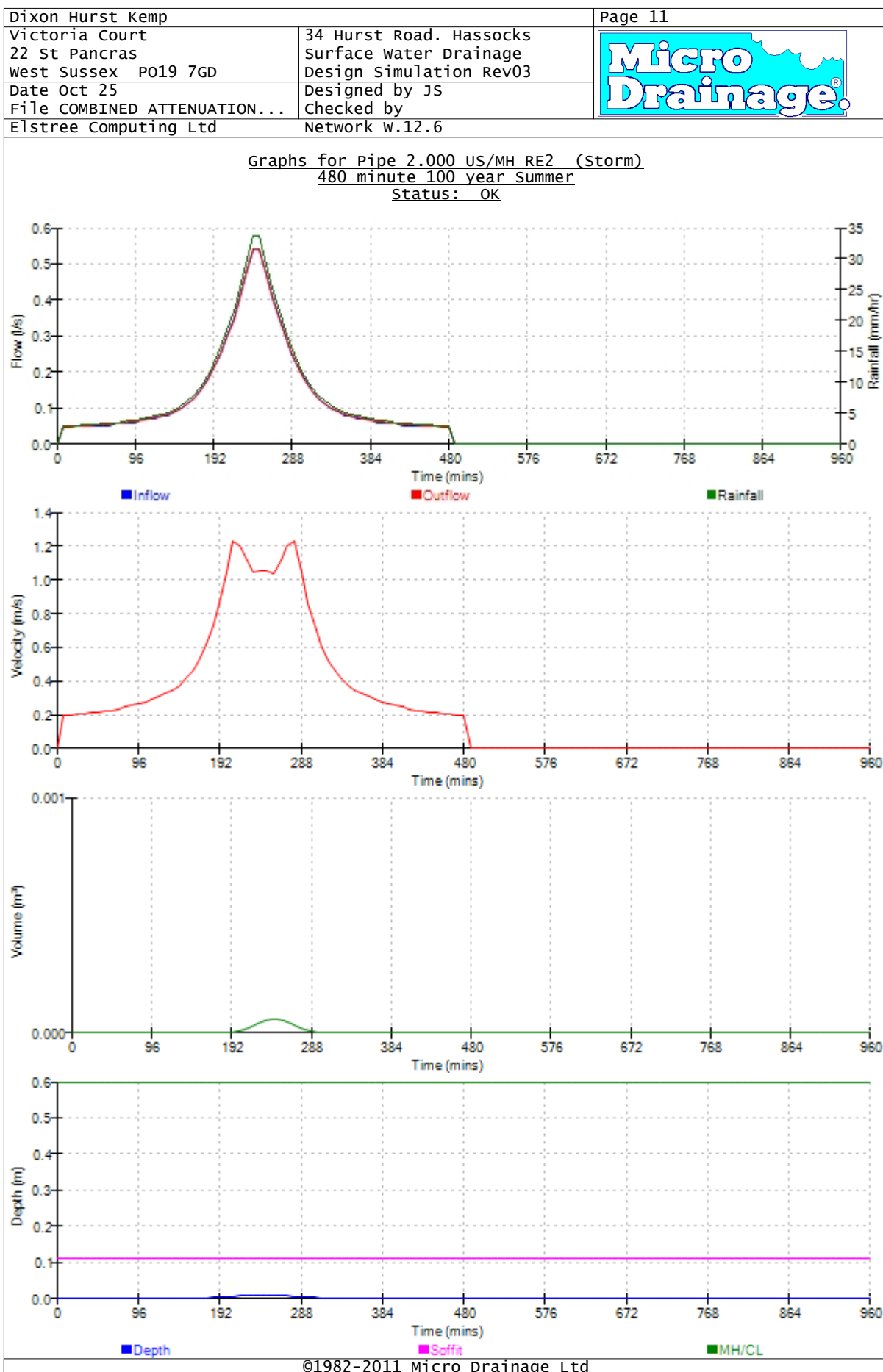
Rainfall Hyetograph for 480 minute 100 year Summer (Storm)

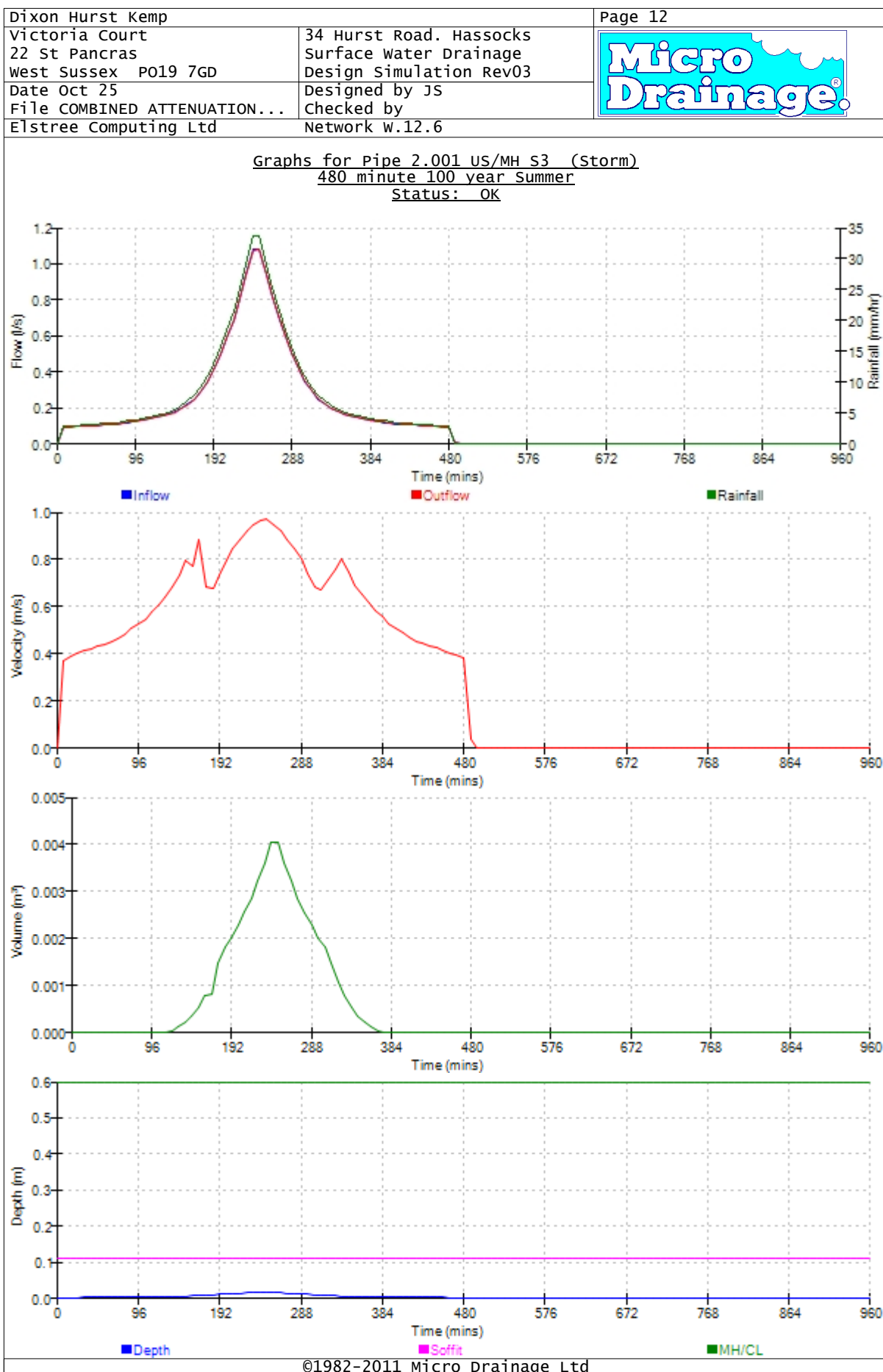
Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
8	2.882	104	4.163	200	15.762	296	12.951	392	3.967
16	2.953	112	4.376	208	18.501	304	10.941	400	3.825
24	3.024	120	4.590	216	21.455	312	9.197	408	3.683
32	3.113	128	4.874	224	25.297	320	7.845	416	3.522
40	3.184	136	5.177	232	29.211	328	6.938	424	3.398
48	3.256	144	5.586	240	33.658	336	6.191	432	3.327
56	3.327	152	6.191	248	33.658	344	5.586	440	3.256
64	3.398	160	6.938	256	29.211	352	5.177	448	3.184
72	3.522	168	7.845	264	25.297	360	4.874	456	3.113
80	3.683	176	9.197	272	21.455	368	4.590	464	3.024
88	3.825	184	10.941	280	18.501	376	4.376	472	2.953
96	3.967	192	12.951	288	15.762	384	4.163	480	2.882



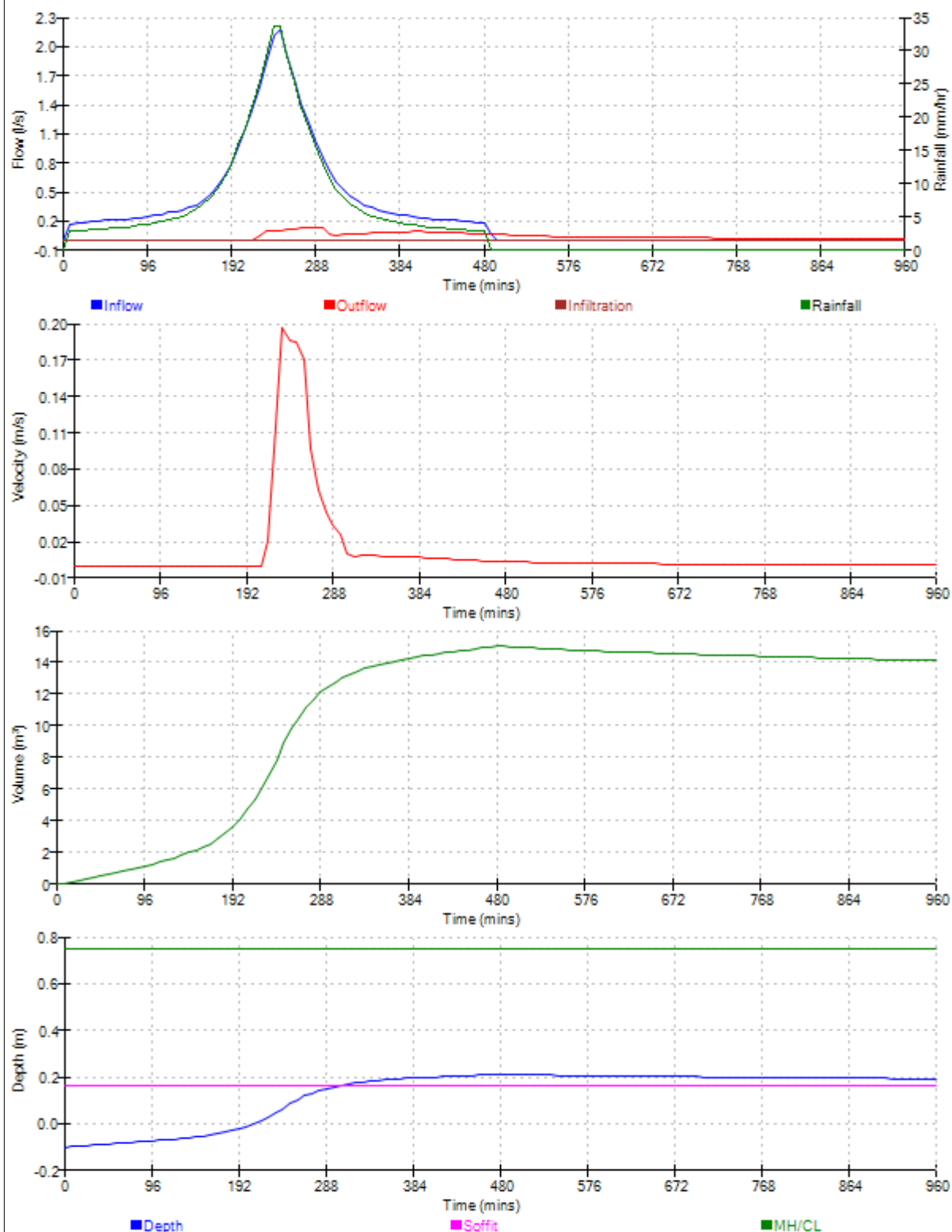


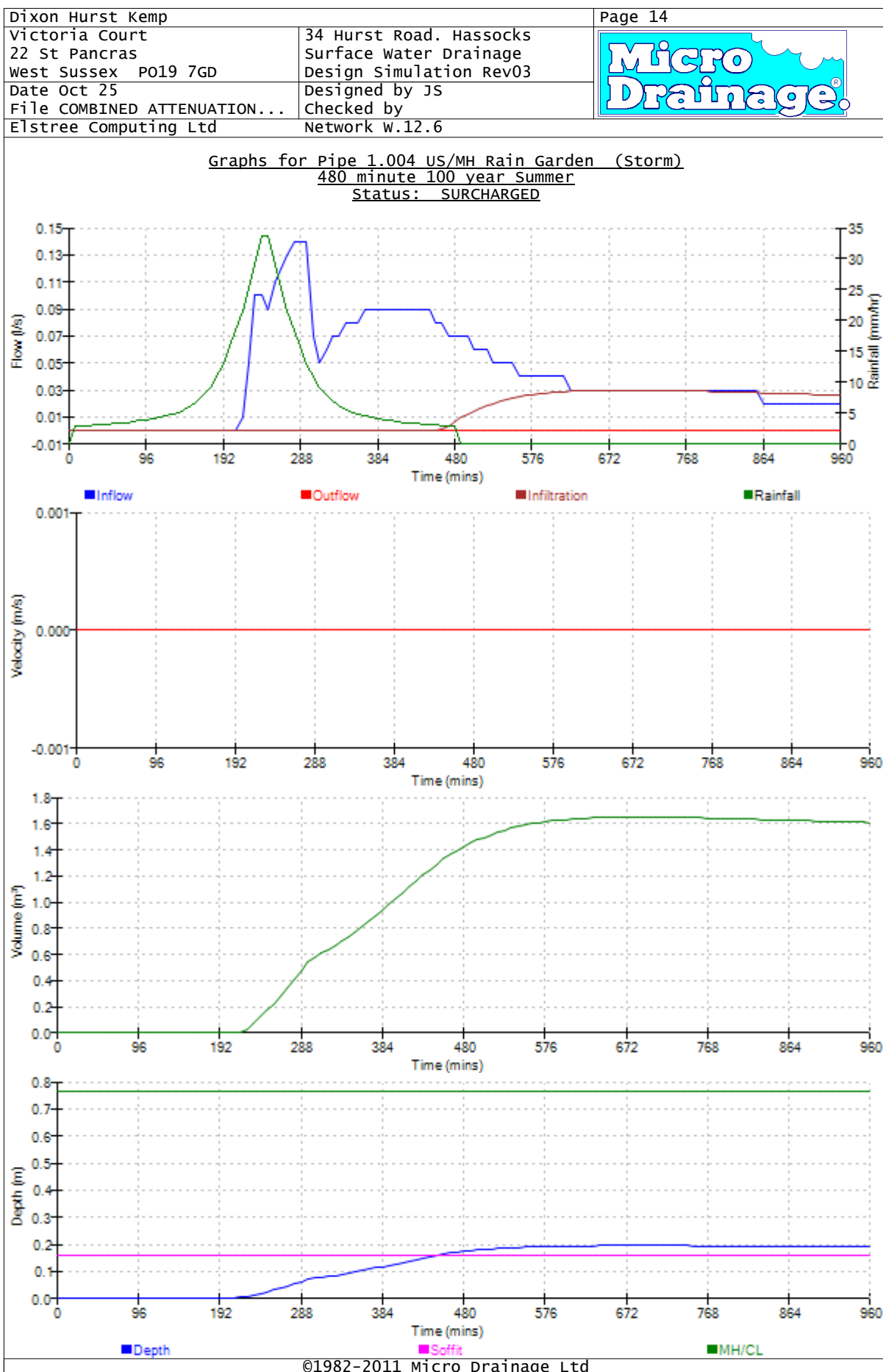






Graphs for Pipe 1.003 US/MH S4 (Storm)
480 minute 100 year Summer
Status: SURCHARGED





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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.400	65.000	-0.110	0.0	0.0	0.0
896	65.400	65.000	-0.110	0.0	0.0	0.0
904	65.400	65.000	-0.110	0.0	0.0	0.0
912	65.400	65.000	-0.110	0.0	0.0	0.0
920	65.400	65.000	-0.110	0.0	0.0	0.0
928	65.400	65.000	-0.110	0.0	0.0	0.0
936	65.400	65.000	-0.110	0.0	0.0	0.0
944	65.400	65.000	-0.110	0.0	0.0	0.0
952	65.400	65.000	-0.110	0.0	0.0	0.0
960	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.000	63.850	-0.110	0.0	0.0	0.0
896	65.000	63.850	-0.110	0.0	0.0	0.0
904	65.000	63.850	-0.110	0.0	0.0	0.0
912	65.000	63.850	-0.110	0.0	0.0	0.0
920	65.000	63.850	-0.110	0.0	0.0	0.0
928	65.000	63.850	-0.110	0.0	0.0	0.0
936	65.000	63.850	-0.110	0.0	0.0	0.0
944	65.000	63.850	-0.110	0.0	0.0	0.0
952	65.000	63.850	-0.110	0.0	0.0	0.0
960	65.000	63.850	-0.110	0.0	0.0	0.0

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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 1.002 US/MH S2 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
888	63.850	63.444	-0.110	0.0	0.0	0.0
896	63.850	63.444	-0.110	0.0	0.0	0.0
904	63.850	63.444	-0.110	0.0	0.0	0.0
912	63.850	63.444	-0.110	0.0	0.0	0.0
920	63.850	63.444	-0.110	0.0	0.0	0.0
928	63.850	63.443	-0.110	0.0	0.0	0.0
936	63.850	63.443	-0.110	0.0	0.0	0.0
944	63.850	63.443	-0.110	0.0	0.0	0.0
952	63.850	63.443	-0.110	0.0	0.0	0.0
960	63.850	63.442	-0.110	0.0	0.0	0.0

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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	65.400	63.500	-0.110	0.0	0.0	0.0
896	65.400	63.500	-0.110	0.0	0.0	0.0
904	65.400	63.500	-0.110	0.0	0.0	0.0
912	65.400	63.500	-0.110	0.0	0.0	0.0
920	65.400	63.500	-0.110	0.0	0.0	0.0
928	65.400	63.500	-0.110	0.0	0.0	0.0
936	65.400	63.500	-0.110	0.0	0.0	0.0
944	65.400	63.500	-0.110	0.0	0.0	0.0
952	65.400	63.500	-0.110	0.0	0.0	0.0
960	65.400	63.500	-0.110	0.0	0.0	0.0

Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
8	63.503	63.154	-0.107	0.0	0.4	0.1
16	63.503	63.156	-0.107	0.0	0.4	0.1
24	63.503	63.158	-0.107	0.0	0.4	0.1
32	63.503	63.159	-0.107	0.0	0.4	0.1
40	63.504	63.161	-0.106	0.0	0.4	0.1
48	63.504	63.163	-0.106	0.0	0.4	0.1
56	63.504	63.165	-0.106	0.0	0.4	0.1
64	63.504	63.167	-0.106	0.0	0.5	0.1
72	63.504	63.169	-0.106	0.0	0.5	0.1
80	63.504	63.172	-0.106	0.0	0.5	0.1
88	63.504	63.174	-0.106	0.0	0.5	0.1
96	63.504	63.176	-0.106	0.0	0.5	0.1
104	63.505	63.179	-0.105	0.0	0.5	0.1
112	63.505	63.182	-0.105	0.0	0.6	0.1
120	63.505	63.184	-0.105	0.0	0.6	0.1
128	63.505	63.187	-0.105	0.0	0.6	0.2
136	63.506	63.191	-0.104	0.0	0.7	0.2
144	63.506	63.194	-0.104	0.0	0.7	0.2
152	63.507	63.197	-0.103	0.0	0.8	0.2
160	63.508	63.201	-0.102	0.0	0.8	0.2
168	63.508	63.206	-0.102	0.0	0.9	0.2
176	63.510	63.213	-0.100	0.0	0.7	0.3
184	63.511	63.219	-0.099	0.0	0.7	0.3
192	63.512	63.227	-0.098	0.0	0.7	0.4
200	63.513	63.236	-0.097	0.0	0.8	0.5
208	63.514	63.249	-0.096	0.0	0.8	0.6
216	63.515	63.263	-0.095	0.0	0.9	0.7
224	63.516	63.278	-0.094	0.0	0.9	0.8
232	63.518	63.295	-0.092	0.0	0.9	0.9
240	63.519	63.314	-0.091	0.0	1.0	1.1
248	63.519	63.337	-0.091	0.0	1.0	1.1
256	63.518	63.354	-0.092	0.0	0.9	0.9
264	63.516	63.370	-0.094	0.0	0.9	0.8
272	63.515	63.382	-0.095	0.0	0.9	0.7
280	63.514	63.393	-0.096	0.0	0.8	0.6
288	63.513	63.402	-0.097	0.0	0.8	0.5
296	63.512	63.409	-0.098	0.0	0.7	0.4
304	63.511	63.415	-0.099	0.0	0.7	0.4
312	63.510	63.420	-0.100	0.0	0.7	0.3
320	63.509	63.425	-0.101	0.0	0.7	0.3
328	63.508	63.429	-0.102	0.0	0.8	0.2
336	63.507	63.432	-0.103	0.0	0.8	0.2
344	63.506	63.435	-0.104	0.0	0.7	0.2
352	63.506	63.437	-0.104	0.0	0.7	0.2
360	63.505	63.440	-0.105	0.0	0.7	0.2
368	63.505	63.442	-0.105	0.0	0.6	0.1
376	63.505	63.444	-0.105	0.0	0.6	0.1
384	63.505	63.446	-0.105	0.0	0.6	0.1
392	63.504	63.447	-0.106	0.0	0.5	0.1
400	63.504	63.449	-0.106	0.0	0.5	0.1
408	63.504	63.450	-0.106	0.0	0.5	0.1
416	63.504	63.452	-0.106	0.0	0.5	0.1
424	63.504	63.453	-0.106	0.0	0.5	0.1
432	63.504	63.454	-0.106	0.0	0.4	0.1
440	63.504	63.455	-0.106	0.0	0.4	0.1

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Flows and Levels for Pipe 2.001 US/MH S3 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	63.500	63.444	-0.110	0.0	0.0	0.0
896	63.500	63.444	-0.110	0.0	0.0	0.0
904	63.500	63.444	-0.110	0.0	0.0	0.0
912	63.500	63.444	-0.110	0.0	0.0	0.0
920	63.500	63.444	-0.110	0.0	0.0	0.0
928	63.500	63.443	-0.110	0.0	0.0	0.0
936	63.500	63.443	-0.110	0.0	0.0	0.0
944	63.500	63.443	-0.110	0.0	0.0	0.0
952	63.500	63.443	-0.110	0.0	0.0	0.0
960	63.500	63.442	-0.110	0.0	0.0	0.0

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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
888	63.444	63.426	0.034	0.0	0.0	0.0
896	63.444	63.426	0.034	0.0	0.0	0.0
904	63.444	63.426	0.034	0.0	0.0	0.0
912	63.444	63.426	0.034	0.0	0.0	0.0
920	63.444	63.426	0.034	0.0	0.0	0.0
928	63.443	63.426	0.033	0.0	0.0	0.0
936	63.443	63.425	0.033	0.0	0.0	0.0
944	63.443	63.425	0.033	0.0	0.0	0.0
952	63.443	63.425	0.033	0.0	0.0	0.0
960	63.442	63.425	0.032	0.0	0.0	0.0

Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
8	63.233	63.239	-0.160	0.0	0.0	0.0
16	63.233	63.239	-0.160	0.0	0.0	0.0
24	63.233	63.239	-0.160	0.0	0.0	0.0
32	63.233	63.239	-0.160	0.0	0.0	0.0
40	63.233	63.239	-0.160	0.0	0.0	0.0
48	63.233	63.239	-0.160	0.0	0.0	0.0
56	63.233	63.239	-0.160	0.0	0.0	0.0
64	63.233	63.239	-0.160	0.0	0.0	0.0
72	63.233	63.239	-0.160	0.0	0.0	0.0
80	63.233	63.239	-0.160	0.0	0.0	0.0
88	63.233	63.239	-0.160	0.0	0.0	0.0
96	63.233	63.239	-0.160	0.0	0.0	0.0
104	63.233	63.239	-0.160	0.0	0.0	0.0
112	63.234	63.239	-0.159	0.0	0.0	0.0
120	63.234	63.239	-0.159	0.0	0.0	0.0
128	63.234	63.239	-0.159	0.0	0.0	0.0
136	63.234	63.239	-0.159	0.0	0.0	0.0
144	63.234	63.239	-0.159	0.0	0.0	0.0
152	63.234	63.239	-0.159	0.0	0.0	0.0
160	63.234	63.239	-0.159	0.0	0.0	0.0
168	63.234	63.239	-0.159	0.0	0.0	0.0
176	63.234	63.239	-0.159	0.0	0.0	0.0
184	63.234	63.239	-0.159	0.0	0.0	0.0
192	63.234	63.239	-0.159	0.0	0.0	0.0
200	63.234	63.239	-0.159	0.0	0.0	0.0
208	63.234	63.239	-0.159	0.0	0.0	0.0
216	63.238	63.239	-0.155	0.0	0.0	0.0
224	63.241	63.239	-0.152	0.0	0.0	0.0
232	63.247	63.239	-0.146	0.0	0.0	0.0
240	63.253	63.239	-0.140	0.0	0.0	0.0
248	63.259	63.239	-0.134	0.0	0.0	0.0
256	63.265	63.239	-0.128	0.0	0.0	0.0
264	63.272	63.239	-0.121	0.0	0.0	0.0
272	63.280	63.239	-0.113	0.0	0.0	0.0
280	63.288	63.239	-0.105	0.0	0.0	0.0
288	63.296	63.239	-0.097	0.0	0.0	0.0
296	63.304	63.239	-0.089	0.0	0.0	0.0
304	63.308	63.239	-0.085	0.0	0.0	0.0
312	63.311	63.239	-0.082	0.0	0.0	0.0
320	63.315	63.239	-0.078	0.0	0.0	0.0
328	63.319	63.239	-0.074	0.0	0.0	0.0
336	63.323	63.239	-0.070	0.0	0.0	0.0
344	63.327	63.239	-0.066	0.0	0.0	0.0
352	63.332	63.239	-0.061	0.0	0.0	0.0
360	63.337	63.239	-0.056	0.0	0.0	0.0
368	63.341	63.239	-0.052	0.0	0.0	0.0
376	63.347	63.239	-0.046	0.0	0.0	0.0
384	63.352	63.239	-0.041	0.0	0.0	0.0
392	63.357	63.239	-0.036	0.0	0.0	0.0
400	63.363	63.239	-0.030	0.0	0.0	0.0
408	63.368	63.239	-0.025	0.0	0.0	0.0
416	63.374	63.239	-0.019	0.0	0.0	0.0
424	63.379	63.239	-0.014	0.0	0.0	0.0
432	63.384	63.239	-0.009	0.0	0.0	0.0
440	63.389	63.239	-0.004	0.0	0.0	0.0

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Victoria Court 22 St Pancras West Sussex PO19 7GD		34 Hurst Road. Hassocks Surface Water Drainage Design Simulation Rev03				
Date Oct 25 File COMBINED ATTENUATION...		Designed by JS Checked by				
Elstree Computing Ltd		Network W.12.6				
<u>Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)</u> <u>480 minute 100 year Summer</u> <u>Average Rainfall Intensity 8.895 mm/hr</u>						
Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
448	63.394	63.239	0.001	0.0	0.0	0.0
456	63.399	63.239	0.006	0.0	0.0	0.0
464	63.402	63.239	0.009	0.0	0.0	0.0
472	63.405	63.239	0.012	0.0	0.0	0.0
480	63.408	63.239	0.015	0.0	0.0	0.0
488	63.411	63.239	0.018	0.0	0.0	0.0
496	63.413	63.239	0.020	0.0	0.0	0.0
504	63.414	63.239	0.021	0.0	0.0	0.0
512	63.416	63.239	0.023	0.0	0.0	0.0
520	63.418	63.239	0.025	0.0	0.0	0.0
528	63.420	63.239	0.027	0.0	0.0	0.0
536	63.421	63.239	0.028	0.0	0.0	0.0
544	63.422	63.239	0.029	0.0	0.0	0.0
552	63.423	63.239	0.030	0.0	0.0	0.0
560	63.424	63.239	0.031	0.0	0.0	0.0
568	63.425	63.239	0.032	0.0	0.0	0.0
576	63.426	63.239	0.033	0.0	0.0	0.0
584	63.426	63.239	0.033	0.0	0.0	0.0
592	63.427	63.239	0.034	0.0	0.0	0.0
600	63.427	63.239	0.034	0.0	0.0	0.0
608	63.427	63.239	0.034	0.0	0.0	0.0
616	63.428	63.239	0.035	0.0	0.0	0.0
624	63.428	63.239	0.035	0.0	0.0	0.0
632	63.428	63.239	0.035	0.0	0.0	0.0
640	63.428	63.239	0.035	0.0	0.0	0.0
648	63.428	63.239	0.035	0.0	0.0	0.0
656	63.429	63.239	0.036	0.0	0.0	0.0
664	63.429	63.239	0.036	0.0	0.0	0.0
672	63.429	63.239	0.036	0.0	0.0	0.0
680	63.429	63.239	0.036	0.0	0.0	0.0
688	63.429	63.239	0.036	0.0	0.0	0.0
696	63.429	63.239	0.036	0.0	0.0	0.0
704	63.429	63.239	0.036	0.0	0.0	0.0
712	63.429	63.239	0.036	0.0	0.0	0.0
720	63.429	63.239	0.036	0.0	0.0	0.0
728	63.428	63.239	0.035	0.0	0.0	0.0
736	63.428	63.239	0.035	0.0	0.0	0.0
744	63.428	63.239	0.035	0.0	0.0	0.0
752	63.428	63.239	0.035	0.0	0.0	0.0
760	63.428	63.239	0.035	0.0	0.0	0.0
768	63.428	63.239	0.035	0.0	0.0	0.0
776	63.428	63.239	0.035	0.0	0.0	0.0
784	63.428	63.239	0.035	0.0	0.0	0.0
792	63.428	63.239	0.035	0.0	0.0	0.0
800	63.428	63.239	0.035	0.0	0.0	0.0
808	63.427	63.239	0.034	0.0	0.0	0.0
816	63.427	63.239	0.034	0.0	0.0	0.0
824	63.427	63.239	0.034	0.0	0.0	0.0
832	63.427	63.239	0.034	0.0	0.0	0.0
840	63.427	63.239	0.034	0.0	0.0	0.0
848	63.427	63.239	0.034	0.0	0.0	0.0
856	63.427	63.239	0.034	0.0	0.0	0.0
864	63.427	63.239	0.034	0.0	0.0	0.0
872	63.426	63.239	0.033	0.0	0.0	0.0
880	63.426	63.239	0.033	0.0	0.0	0.0
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Elstree Computing Ltd	Network W.12.6	

Flows and Levels for Pipe 1.004 US/MH Rain Garden (Storm)
480 minute 100 year Summer
Average Rainfall Intensity 8.895 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
888	63.426	63.239	0.033	0.0	0.0	0.0
896	63.426	63.239	0.033	0.0	0.0	0.0
904	63.426	63.239	0.033	0.0	0.0	0.0
912	63.426	63.239	0.033	0.0	0.0	0.0
920	63.426	63.239	0.033	0.0	0.0	0.0
928	63.426	63.239	0.033	0.0	0.0	0.0
936	63.425	63.239	0.032	0.0	0.0	0.0
944	63.425	63.239	0.032	0.0	0.0	0.0
952	63.425	63.239	0.032	0.0	0.0	0.0
960	63.425	63.239	0.032	0.0	0.0	0.0

In addition to these notes, reference shall be made to the specification of works and the relevant Architect's and Specialist's drawings and specifications. The Contractor is responsible for verifying all site dimensions before commencing work.

All dimensions are in millimetres unless noted otherwise. This drawing has been produced electronically and may have been photo reduced or enlarged when printed or copied. Dimensions on this drawing shall not be used for construction purposes unless they are specifically stated as such. Errors or omissions are to be reported to the engineer immediately. Levels are in metres unless noted otherwise to Ordnance Survey datum. The Contractor is responsible for the stability of the building whilst the works are in progress.

NOTES

- THIS DRAWING IS BASED ON DRAWING NO. B04.3.24 BY BELMONT DESIGNS ARCHITECTURE PRACTICE LIMITED.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE FOLLOWING DRAWING:
63770/11 DRAINAGE DETAILS SHEET 1 OF 2
63770/12 DRAINAGE DETAILS SHEET 2 OF 2
- CONTRACTOR IS TO TAKE NECESSARY PRECAUTIONS TO ENSURE THAT TRENCHES ARE KEPT CLEAR OF GROUND WATER DURING CONSTRUCTION.
- ALL DRAINAGE WORKS TO BE CARRIED OUT IN ACCORDANCE WITH 'SEWERS FOR ADOPTION' 7TH EDITION.
- ALL ADOPTED PIPEWORK TO BE 100Ø VITRIFIED CLAY UNLESS NOTED OTHERWISE.
- ALL PIPEWORK THROUGH WALLS TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS.
- ALL PIPEWORK UNDER ROADS WITH LESS THAN 900MM COVER TO HAVE 150MM CONCRETE SURROUND.
- MINIMUM GRADIENT TO DRAINS TO BE 1:40 FOR 110Ø OR 110Ø FW AND 1:100 FOR 110Ø SW.
- ALL ADOPTED PIPEWORK, DRAINAGE LATERALS OR PIPE CONNECTION TO THE PUBLIC SHALL BE VITRIFIED CLAY (VC) PIPE MATERIAL TO SOUTHERN WATER APPROVAL.
- POSITIONS OF MANHOLES SHOWN ON THIS DRAWING ARE INDICATIVE ONLY. ACTUAL LOCATIONS TO BE FINALIZED ON SITE.
- PROVIDE CONCRETE LINTELS OVER OPENINGS WHERE PIPES PASS THROUGH WALLS. ALLOW FOR 150MM CLEARANCE ALL ROUND PIPE.

KEY

- Soil Vent Pipe with Rodding Access
- RWP Rain Water Pipe with Rodding Access
- SS Stub Stack with Air Admission valve
- RE Rodding Eye
- CD Channel Drain
- FW -Existing Private Surface Water Sewer
- SW -Proposed Private Surface Water Sewer
- SW -Proposed Private Perforate Drain
- SW -Existing Public Surface Water Sewer
- FW -Existing Private Foul Water Sewer
- FW -Proposed Private Foul Water Sewer
- FW -Existing Public Foul Water Sewer
- FW -Existing Private Foul Water Pumping Main
- F6 Foul Manhole
- S6 Surface Water Manhole
- EX.FLIC Existing Private Foul Water Manhole
- Existing Private Foul Water Pumping Station
- SW Rain Garden

C	MENDED SW DRAINAGE LAYOUT	04/08/25JS
B	MENDED SW DRAINAGE LAYOUT	07/08/25JS
A	MENDED DRAINAGE LAYOUT	05/06/25JS
O	ORIGINAL ISSUE	30/04/25JS
REV	DESCRIPTION	DATE BY

DIXON HURST

CONSULTING CIVIL & STRUCTURAL ENGINEERS

HEDERSHAM HOUSE, 18-22 BOUNDARY ROAD, HOVE, BN1 4EF
T: (01273) 421444 F: (01273) 420008 E: hove@dih.co.uk
www.dih.co.uk

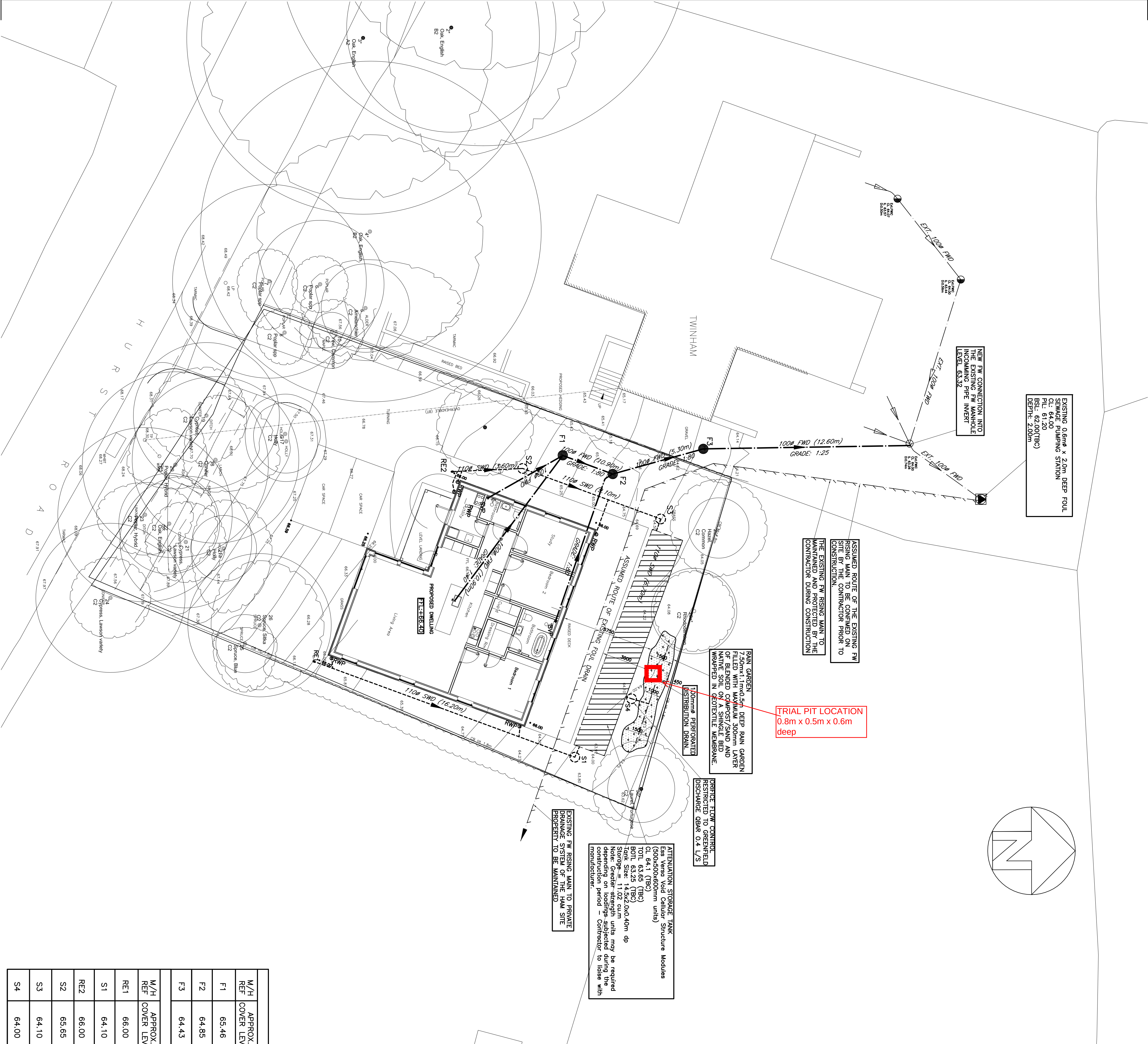
Registered in England No. 3483720 - Registered Office 4 Franchise, Totton, Brighton BN1 1AX

CONTRACT
**LAND ADJACENT TO TWINHAM
34 HURST ROAD,
HAS SOCKS, BN6 9NL**

FOUL WATER MANHOLE SCHEDULE					
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE
F1	65.46	64.86	0.60	3	B125
F2	64.85	64.20	0.65	3	B125
F3	64.43	63.83	0.60	3	B125
SURFACE WATER MANHOLE SCHEDULE					
M/H REF	APPROX. COVER LEVEL	INVERT LEVEL	DEPTH (M)	M/H TYPE	COVER TYPE
RE1	66.00	65.40	0.60	RODDING EYE	-
S1	64.10	63.50	0.60	3	B125
RE2	66.00	65.40	0.60	RODDING EYE	-
S2	65.65	65.00	0.65	3	B125
S3	64.10	63.50	0.60	3A SILT TRAP	B125
S4	64.00	63.25	0.75	3B 600Ø FLOW CONTROL MH	B125

DRAWING NO.	63770 / 10	REV	C	CHECKED
SCALE	1:125@ A1	DATE	JULY 25	DRAWN
AutoCAD Ref:	63770-10.dwg	JS		APPROVED

This drawing is produced using AutoCAD. Only written dimensions are to be respected.



DIXON HURST CONSULTING CIVIL & STRUCTURAL ENGINEERS	Project:	Twinham, 34 Hurst Road, Lindfield			By:
	Calculation:	Soakaway Design			JS
	Infiltration Rate - Test				Approved:
	Sheet Number:	1	Date:	Oct-25	JS

Infiltration Test (BRE 365)

Weather : Raining

Start Time: 8:00 am (Mon 20th)

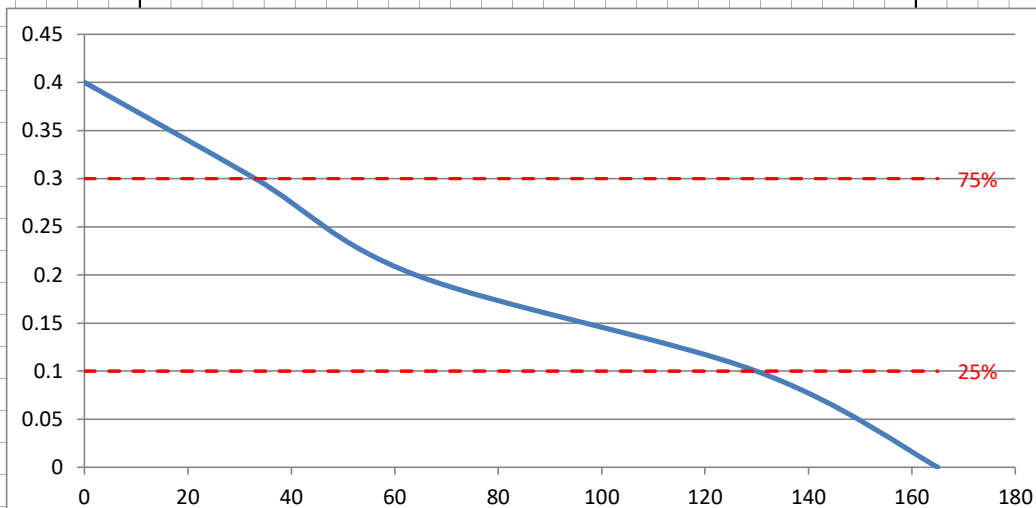
End Time :10:45 am

Trial Pit Details : 0.9 Lx 0.8W x 0.6D

Total Water Depth	0.4	m
Total Pit Length	0.9	m
Total Pit Width	0.8	m

Test Results

	Time (Mins)	Water Level (From Base)
1	0	0.40
2	33	0.30
3	64	0.20
4	130	0.10
5	165	0.00
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		





Project:	Twinham, 34 Hurst Road, Lindfield			By:
Calculation:	Soakaway Design			JS
Infiltration Rate - Test 1				Approved:
Sheet Number:	2	Date:	Oct-25	JS

Results

Time to reach 75% depth: 33.0 mins
Time to reach 25% depth: 130.0 mins

Soil Infiltration Rate: **1.7673E-05** m/s
0.063622975 m/hr

Project:	Twinham, 34 Hurst Road, Lindfield			By:
Calculation:	Soakaway Design			JS
Infiltration Rate - Test 2				Approved:
Sheet Number:	1	Date:	Oct-25	JS

Infiltration Test (BRE 365)

Weather : Raining

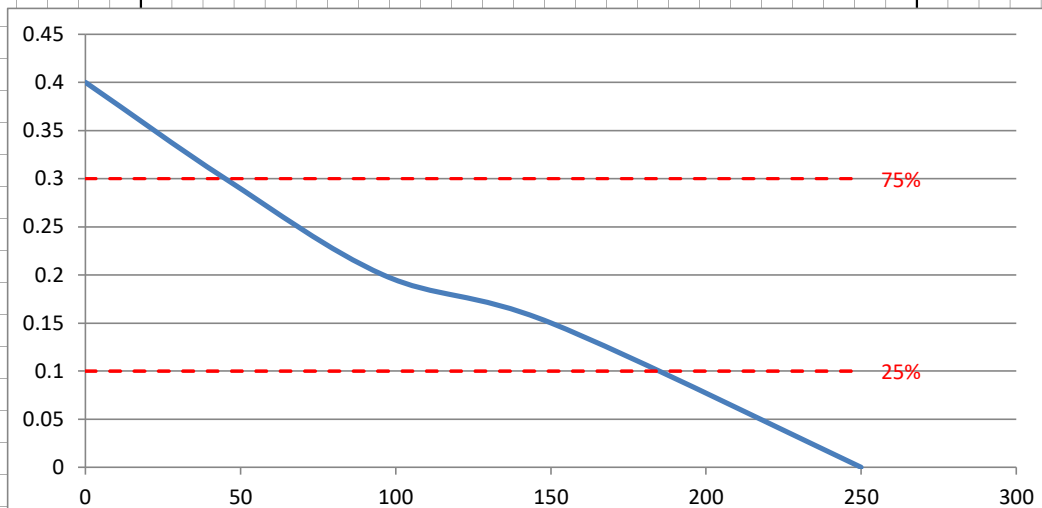
Start Time: 10:55 (Mon 20th)

End Time :15:05 am

Trial Pit Details : 0.9 Lx 0.8W x 0.6D

Total Water Depth	0.4	m
Total Pit Length	0.9	m
Total Pit Width	0.8	m

Test Results		
	Time (Mins)	Water Level (From Base)
1	0	0.40
2	45	0.30
3	96	0.20
4	150	0.15
5	250	0.00
6		
7		
8		
9		
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16		
17		
18		
19		
20		





Project:	Twinham, 34 Hurst Road, Lindfield			By:
Calculation:	Soakaway Design			JS
Infiltration Rate - Test 2				Approved:
Sheet Number:	2	Date:	Oct-25	JS

Results

Time to reach 75% depth: 45.0 mins
Time to reach 25% depth: 183.3 mins

Soil Infiltration Rate: **1.23924E-05** m/s

0.044612737 m/hr

DIXON HURST CONSULTING CIVIL & STRUCTURAL ENGINEERS	Project:	Land Next to Lansdowne Road, Worthing			By:
	Calculation:	Soakaway Design			JS
	Infiltration Rate - Test 3				Approved:
	Sheet Number:	1	Date:	Oct-25	JS

Infiltration Test (BRE 365)

Weather : Light Drizzle

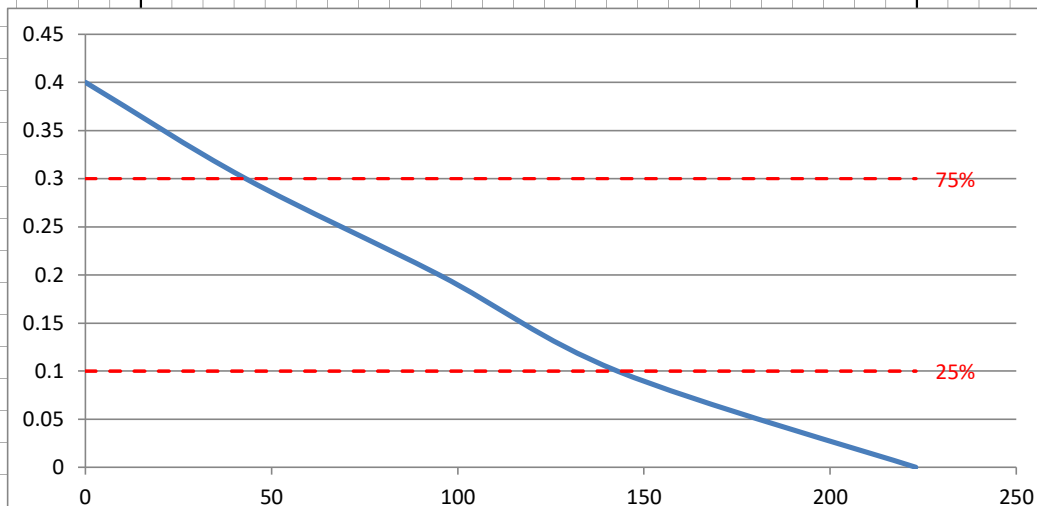
Start Time : 9:15 (Tue 21st)

End Time : 12:58 am

Trial Pit Details : 0.9 Lx 0.8W x 0.6D

Total Water Depth	0.4	m
Total Pit Length	0.9	m
Total Pit Width	0.8	m

Test Results		
	Time (Mins)	Water Level (From Base)
1	0	0.40
2	43	0.30
3	95	0.20
4	143	0.10
5	223	0.00
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		





Project:	Land Next to Lansdowne Road, Worthing		By:
Calculation:	Soakaway Design		JS
Infiltration Rate - Test 3			Approved:
Sheet Number:	2	Date:	21/10/2025 JS

Results

Time to reach 75% depth: 43.0 mins
Time to reach 25% depth: 143.0 mins

Soil Infiltration Rate: **1.71429E-05** m/s
0.061714286 m/hr



Soakaway Test Pit – Location



Soakaway Test Pit – 0.9L x 0.8W x 0.6D



Soakaway Test Pit – Start Water Level 400mm



Soakaway Test Pit – Water Level 300mm



Soakaway Test Pit – Start Water Level 200mm



Soakaway Test Pit – Start Water Level 100mm