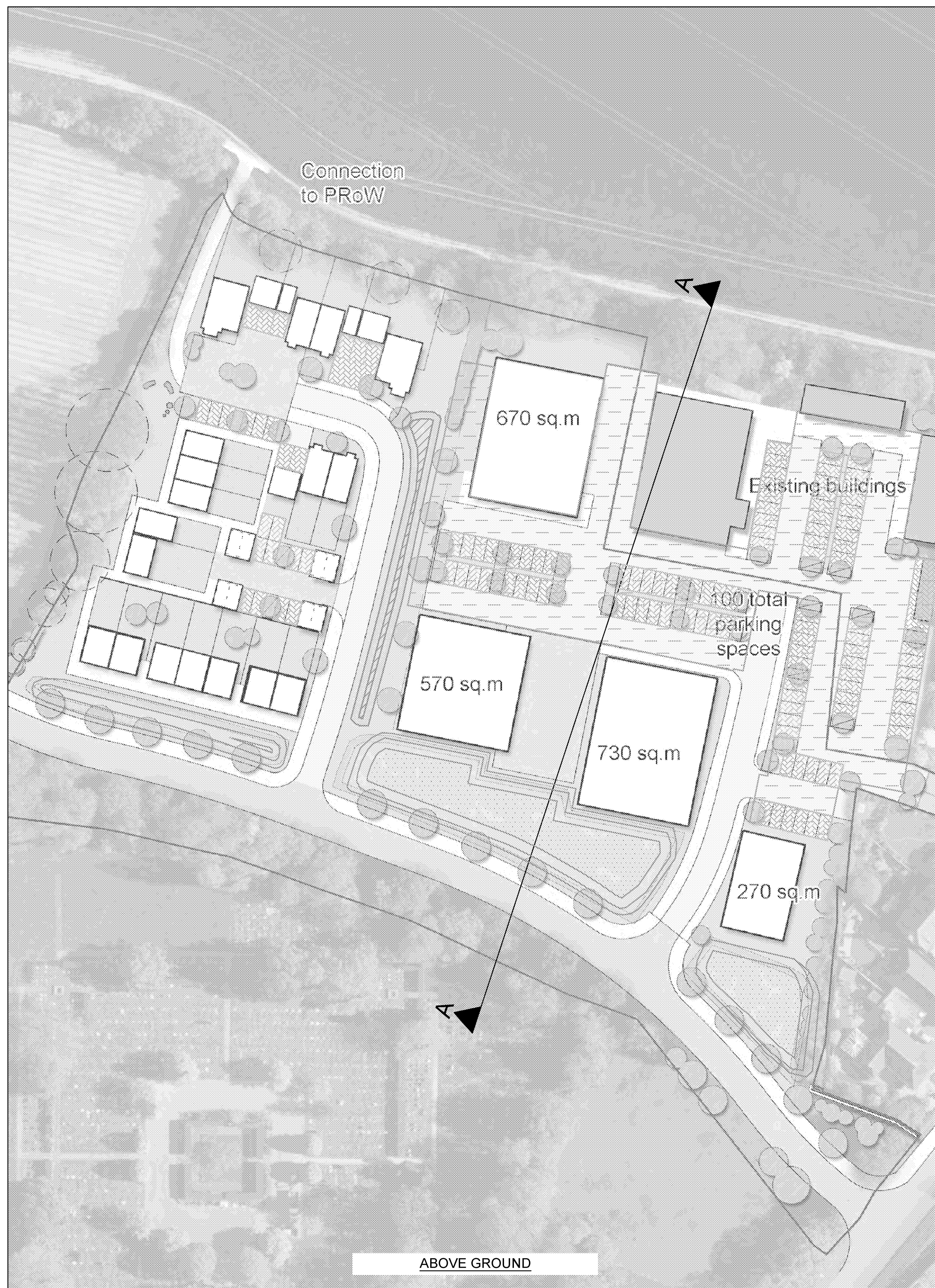


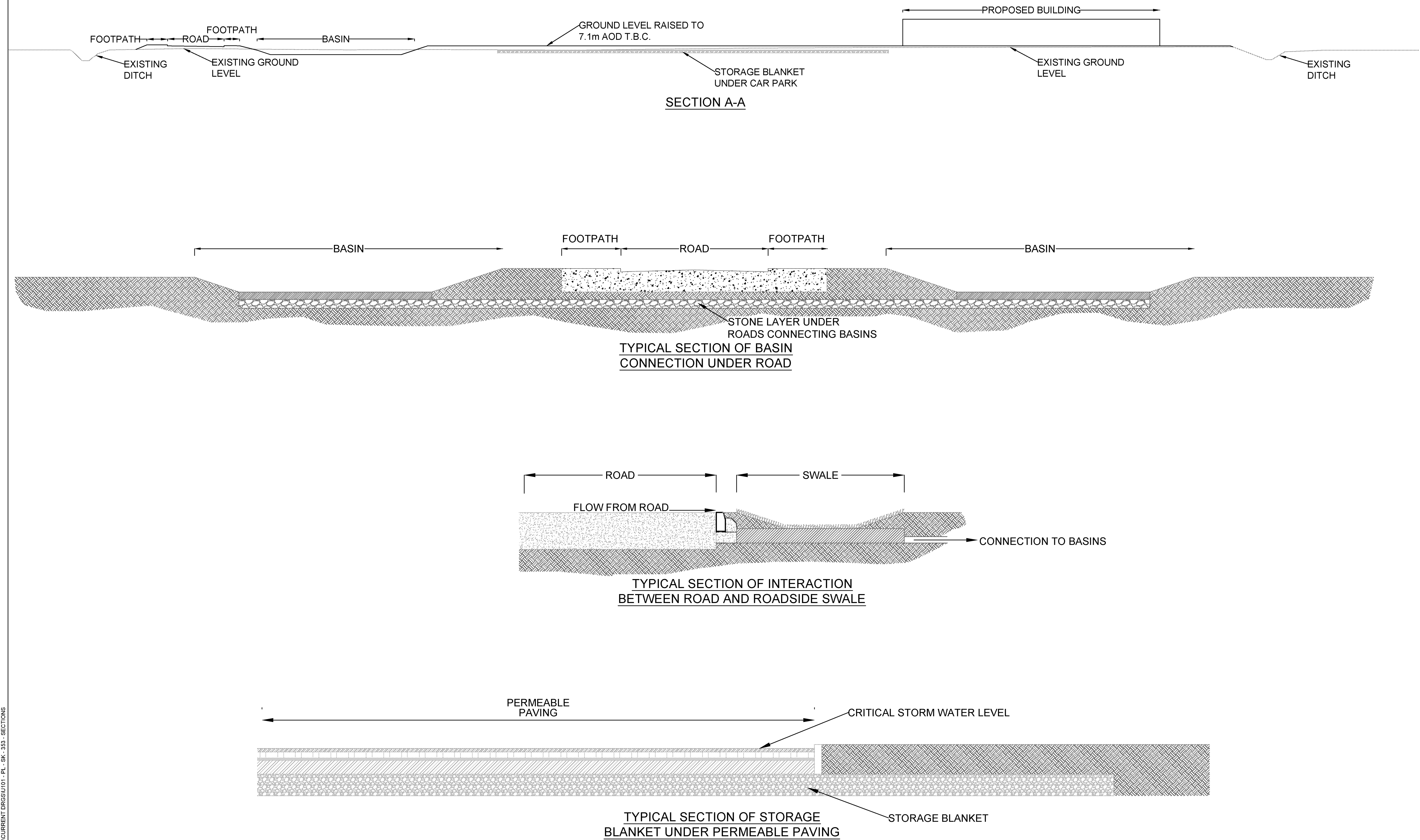


KEY

-  ATTENUATION BASIN
-  ROADSIDE SWALE
-  STORAGE BLANKET UNDER CAR PARK
-  PERMEABLE PAVING
-  AREA OF CAR PARK ATTENUATING CRITICAL STORM
-  BOX CULVERT
-  OUTFALL ROUTE
-  ORIFICE CONTROL CHAMBER

NOTES

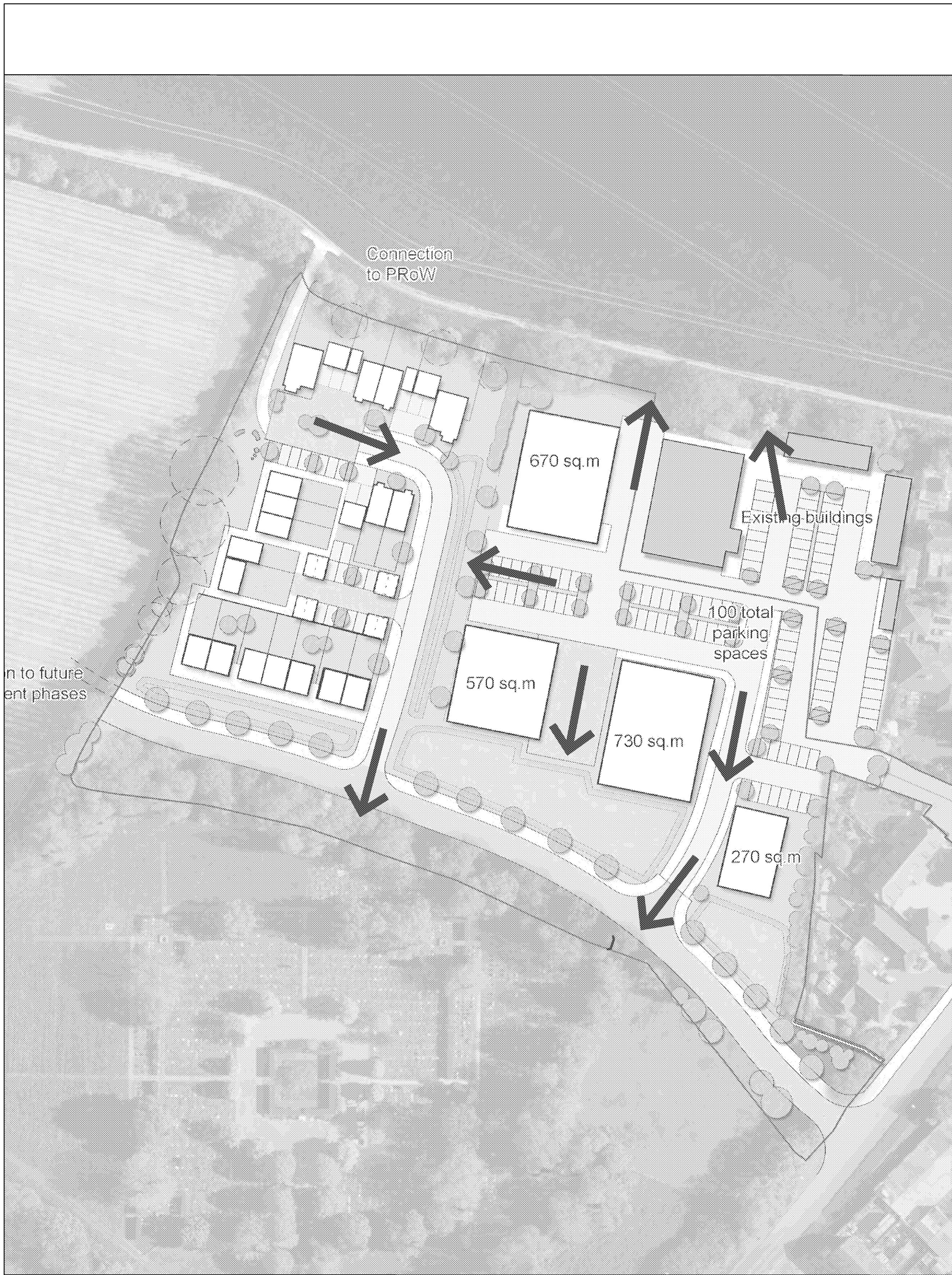
[illegible]



KEY

NOTES

REV	DESCRIPTION	DE	DR	CH	DATE
DESIGNED BY	DRAWN BY	CHECKED BY			
-	DP	-			
SCALE @ A1 SIZE		DATE			
D.N.S.		22/07/2020			
PROJECT TITLE					
CHALCROFT NURSERY, WEST BERTSED					
DRAWING TITLE					
SECTIONS					
CLIENT					
LANDFORM BERTSED LIMITED					
CANNON CONSULTING ENGINEERS Highways, Transport & Infrastructure Planning Peck House, 20 Eastcheap London, EC3M 1EB Tel: 020 7717 5870 info@cannonce.co.uk Cambridge House, Lionwades Business Park, Kirtford, Northampton, CB8 7PH Tel: 01538 555167 www.cannonce.co.uk					
DRAWING NUMBER					REV.
U101 - PL - SK - 353					-



KEY

- IMPERMEABLE AREA OF DEVELOPMENT TO BASINS
- IMPERMEABLE AREA OF DEVELOPMENT TO STORAGE BLANKET UNDER CAR PARK
- OVERLAND EXCEEDANCE ROUTE

NOTES

-	-		-		-
REV	DESCRIPTION	DE	DR	CH	DATE
DESIGNED BY	DRAWN BY	CHECKED BY			
-	DP	-			
SCALE @ A1 SIZE		DATE			
D.N.S.		21/05/2020			
PROJECT TITLE					

CHALCROFT NURSERY,
WEST BERSTED

DRAWING TITLE
SURFACE WATER CATCHMENT PLAN
AND OVERLAND EXCEEDANCE ROUTES

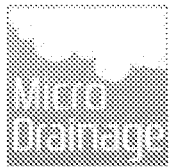
CLIENT
LANDFORM BERSTED LIMITED

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DRAWING NUMBER	REV.
U101 - PL - SK - 352	-

Cannon Consulting		Page 1
Cambridge House Lanwades Business Park Kentford		
Date 24/12/2019 11:32 File	Designed by JOH Checked by	
Micro Drainage Source Control 2018.1		

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.299
Area (ha)	1.000	Urban	0.000
SAAR (mm)	716	Region Number	Region 7

Results 1/s

QBAR Rural	1.9
QBAR Urban	1.9
Q100 years	5.9
Q1 year	1.6
Q30 years	4.2
Q100 years	5.9

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Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
BASIN 1	0.050	5.00	6.700	1200	0.500
BASIN 2	0.400	5.00	6.700	1200	0.700
BASIN 3	0.150	5.00	6.700	1200	0.700
OUTFALL			6.700	1200	0.700

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	BASIN 1	BASIN 2	5.000	0.600	6.200	6.000	0.200	25.0	100	5.05	50.0
1.001	BASIN 2	BASIN 3	5.000	0.600	6.000	6.000	0.000	0.0	150	5.14	50.0
1.002	BASIN 3	OUTFALL	5.000	0.600	6.000	6.000	0.000	0.0	150	5.22	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.550	12.2	8.6	0.400	0.600	0.050	0.0	62	1.679
1.001	1.000	17.7	77.2	0.550	0.550	0.450	0.0	0	∞
1.002	1.000	17.7	103.0	0.550	0.550	0.600	0.0	0	∞

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.000	25.0	100	CIRCULAR	6.700	6.200	0.400	6.700	6.000	0.600
1.001	5.000	0.0	150	CIRCULAR	6.700	6.000	0.550	6.700	6.000	0.550
1.002	5.000	0.0	150	CIRCULAR	6.700	6.000	0.550	6.700	6.000	0.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	BASIN 1	1200	Manhole	Adoptable	BASIN 2	1200	Manhole	Adoptable
1.001	BASIN 2	1200	Manhole	Adoptable	BASIN 3	1200	Manhole	Adoptable
1.002	BASIN 3	1200	Manhole	Adoptable	OUTFALL	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
BASIN 1	6.700	0.500	1200				
					0	1.000	6.200
BASIN 2	6.700	0.700	1200		1	1.000	6.000
					0	1.001	6.000
BASIN 3	6.700	0.700	1200		1	1.001	6.000
					0	1.002	6.000
OUTFALL	6.700	0.700	1200		1	1.002	6.000

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	5	0

Node OUTFALL Online Orifice Control

Flap Valve	x	Design Depth (m)	0.700	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	6.000	Diameter (m)	0.024		

Node BASIN 1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	4.0	0.0	0.250	47.0	0.0	0.500	125.0	0.0

Node BASIN 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	564.0	0.0	0.350	724.0	0.0	0.700	890.0	0.0

Node BASIN 3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	232.0	0.0	0.350	305.0	0.0	0.700	386.0	0.0

Results for 100 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 99.99%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	BASIN 1	7560	6.682	0.482	0.6	27.2452	0.0000	FLOOD RISK
10080 minute summer	BASIN 2	7560	6.682	0.682	5.1	500.9352	0.0000	FLOOD RISK
10080 minute summer	BASIN 3	7560	6.682	0.682	2.6	211.8006	0.0000	FLOOD RISK
10080 minute summer	OUTFALL	7560	6.682	0.682	1.0	0.7710	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
10080 minute summer	BASIN 1	1.000	BASIN 2	0.4	0.498	0.029	0.0391	
10080 minute summer	BASIN 2	1.001	BASIN 3	0.9	0.056	0.048	0.0880	
10080 minute summer	BASIN 3	1.002	OUTFALL	1.0	0.071	0.056	0.0880	
10080 minute summer	OUTFALL	Orifice		1.0				413.5

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
BLANKET	0.860	5.00	7.100	1200	0.900

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	5	0

Node BLANKET Online Orifice Control

Flap Valve	x	Design Depth (m)	0.900	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.4		
Invert Level (m)	6.200	Diameter (m)	0.026		

Node BLANKET Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	4650.0	0.0	0.500	4650.0	0.0	0.501	0.0	0.0

Node BLANKET Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	4750.0	0.0	0.100	4750.0	0.0

Results for 100 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 97.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
10080 minute summer	BLANKET	7680	7.080	0.880	10.2	1099.9070	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
10080 minute summer	BLANKET	Orifice	1.3	532.3

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.950	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
CRATES	0.012	5.00	7.100	1200	1.110

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.950	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.950	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	5	0

Node CRATES Online Orifice Control

Flap Valve	x	Design Depth (m)	0.400	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	5.990	Diameter (m)	0.027		

Node CRATES Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.990
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	76

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	25.0	0.0	0.400	25.0	0.0	0.401	0.0	0.0

Results for 100 year +40% CC +5% A Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
180 minute summer	CRATES	128	6.262	0.272	3.7	6.8179	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m ³)
180 minute summer	CRATES	Orifice	0.8	10.7