

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.

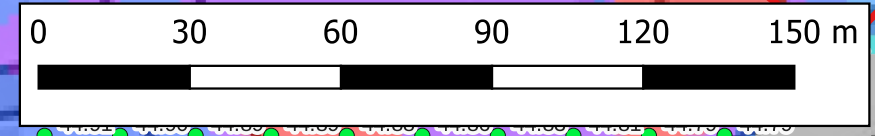
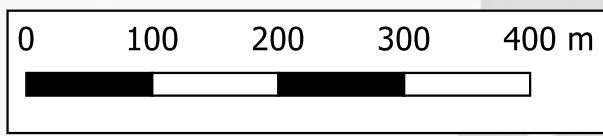
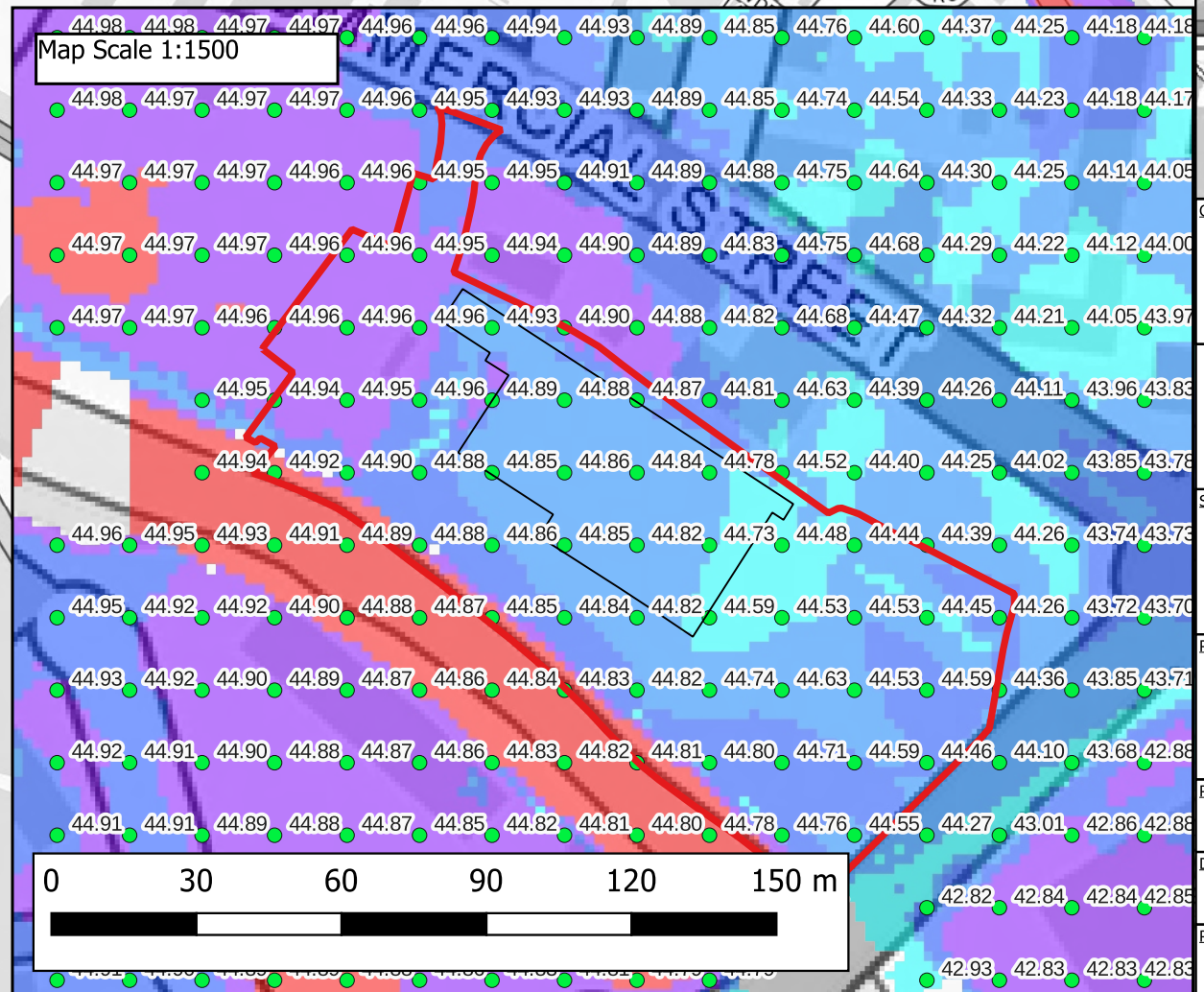
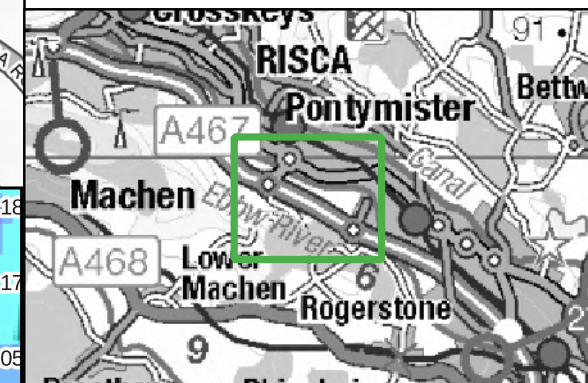
LEGEND

- Site Boundary
- Proposed Store

Maximum Flood Depth

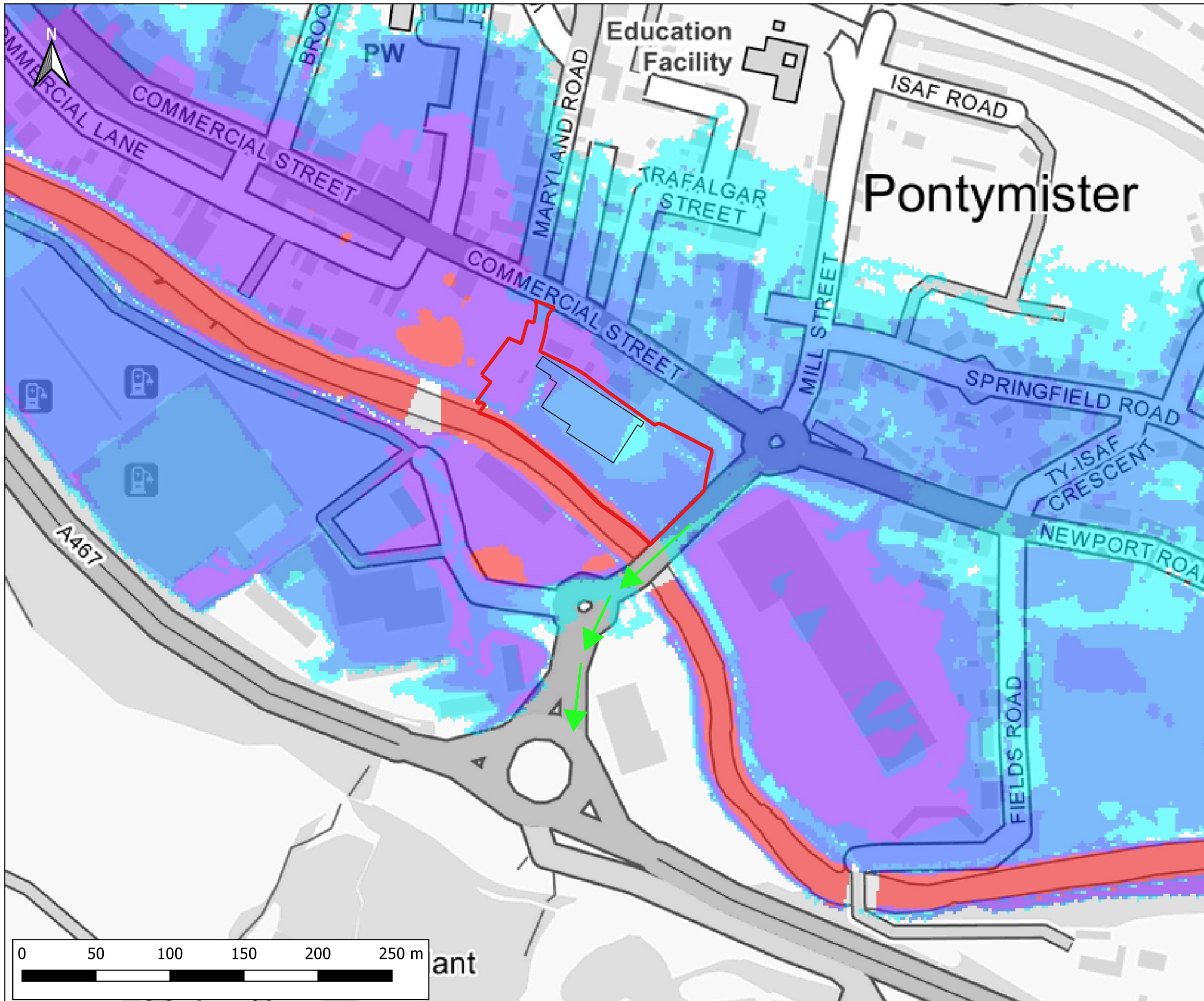
- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

- Maximum Water Level (m AOD)



CLIENT:			
Lidl Great Britain Limited			
 www.waterco.co.uk			
SCHEME:			
Land at Pontymister, Risca			
PLOT TITLE:			
Maximum Water Level 0.1% AEP Fluvial Event Proposed Development Scenario (DEV) Defended Scenario B4591 Bridge Blockage (25%)			
PLOT STATUS:			DATE:
FINAL			27-11-2024
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
JP	AW	MW	1:6000
PLOT NAME:			REVISION:
15679_EBBW_Q1000_DEF_DEV_BLI-25_027_h_Max			-

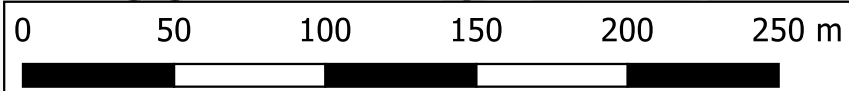
Appendix H Flood Evacuation Route Plan




Notes:
 1) All dimensions in millimetres and all levels in metres above ordnance datum unless shown otherwise.


LEGEND

- ▭ Site Boundary
- Proposed Store
- ▶ Evacuation Route
- Maximum Flood Depth
- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:			
Lidl Great Britain Limited			
 www.waterco.co.uk			
SCHEME:			
Land at Pontymister, Risca			
PLOT TITLE:			
Flood Evacuation Route Plan 1% AEP Plus 70% Climate Change Fluvial Event Proposed Development Scenario (DEV) Defended Scenario B4591 Bridge Blockage (25%)			
PLOT STATUS:			DATE:
FINAL			28-11-2024
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
JP	AW	MW	1:2500
PLOT NAME:			REVISION:
15679_Flood_Evacuation_Plan			-

Appendix I ICP SuDS Greenfield Runoff Rates

Waterco Ltd		Page 1
Eden Court	15679	
Lon Parcwr Business Park Denbighshire LL15 1NJ	Pontymister, Risca Greenfield Runoff Rate	
Date 22/11/2024	Designed by JP	
File	Checked by AW	
XP Solutions	Source Control 2020.1.3	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.400
Area (ha)	1.071	Urban	0.000
SAAR (mm)	1242	Region Number	Region 9


Results 1/s

QBAR Rural	7.1
QBAR Urban	7.1

Q1 year 6.3

Q1 year	6.3
Q30 years	12.6
Q100 years	15.5


Appendix J MicroDrainage Storage Estimate

Waterco Ltd		Page 1
Eden Court	15679	
Lon Parcwr Business Park Denbighshire LL15 1NJ	Pontymister, Risca Q100 + 40% CC	
Date 22/11/2024	Designed by JP	
File Q100 + 40CC.SRCX	Checked by AW	
XP Solutions	Source Control 2020.1.3	

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.431	0.231	6.3	230.8	O K
30 min Summer	9.521	0.321	6.3	321.3	O K
60 min Summer	9.627	0.427	6.3	426.6	O K
120 min Summer	9.717	0.517	6.3	517.0	Flood Risk
180 min Summer	9.779	0.579	6.3	578.6	Flood Risk
240 min Summer	9.823	0.623	6.3	623.1	Flood Risk
360 min Summer	9.881	0.681	6.3	680.9	Flood Risk
480 min Summer	9.914	0.714	6.3	714.5	Flood Risk
600 min Summer	9.934	0.734	6.3	733.8	Flood Risk
720 min Summer	9.944	0.744	6.3	744.0	Flood Risk
960 min Summer	9.947	0.747	6.3	747.3	Flood Risk
1440 min Summer	9.938	0.738	6.3	737.6	Flood Risk
2160 min Summer	9.912	0.712	6.3	711.7	Flood Risk
2880 min Summer	9.886	0.686	6.3	686.3	Flood Risk
4320 min Summer	9.846	0.646	6.3	646.3	Flood Risk
5760 min Summer	9.815	0.615	6.3	615.0	Flood Risk
7200 min Summer	9.793	0.593	6.3	592.9	Flood Risk
8640 min Summer	9.776	0.576	6.3	575.9	Flood Risk
10080 min Summer	9.763	0.563	6.3	563.0	Flood Risk


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	120.325	0.0	217.1	16
30 min Summer	84.354	0.0	305.6	31
60 min Summer	56.724	0.0	433.9	62
120 min Summer	35.151	0.0	537.3	122
180 min Summer	26.716	0.0	611.5	182
240 min Summer	21.987	0.0	669.6	242
360 min Summer	16.628	0.0	756.1	360
480 min Summer	13.571	0.0	818.1	480
600 min Summer	11.557	0.0	864.7	600
720 min Summer	10.117	0.0	899.8	720
960 min Summer	8.167	0.0	939.3	912
1440 min Summer	6.010	0.0	914.9	1140
2160 min Summer	4.413	0.0	1230.4	1536
2880 min Summer	3.563	0.0	1321.6	1960
4320 min Summer	2.683	0.0	1477.3	2808
5760 min Summer	2.228	0.0	1665.8	3632
7200 min Summer	1.957	0.0	1828.7	4464
8640 min Summer	1.776	0.0	1989.8	5280
10080 min Summer	1.649	0.0	2149.3	6144

Waterco Ltd		Page 2
Eden Court	15679	
Lon Parcwr Business Park Denbighshire LL15 1NJ	Pontymister, Risca Q100 + 40% CC	
Date 22/11/2024	Designed by JP	
File Q100 + 40CC.SRCX	Checked by AW	
XP Solutions	Source Control 2020.1.3	

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m ³)	Status
15 min Winter	9.431	0.231	6.3	230.8	O K
30 min Winter	9.521	0.321	6.3	321.1	O K
60 min Winter	9.626	0.426	6.3	426.2	O K
120 min Winter	9.717	0.517	6.3	516.7	Flood Risk
180 min Winter	9.778	0.578	6.3	578.2	Flood Risk
240 min Winter	9.823	0.623	6.3	622.8	Flood Risk
360 min Winter	9.881	0.681	6.3	681.1	Flood Risk
480 min Winter	9.915	0.715	6.3	715.4	Flood Risk
600 min Winter	9.936	0.736	6.3	735.7	Flood Risk
720 min Winter	9.947	0.747	6.3	747.1	Flood Risk
960 min Winter	9.953	0.753	6.3	752.5	Flood Risk
1440 min Winter	9.934	0.734	6.3	734.3	Flood Risk
2160 min Winter	9.898	0.698	6.3	697.9	Flood Risk
2880 min Winter	9.857	0.657	6.3	656.9	Flood Risk
4320 min Winter	9.781	0.581	6.3	580.8	Flood Risk
5760 min Winter	9.700	0.500	6.3	499.7	O K
7200 min Winter	9.636	0.436	6.3	436.2	O K
8640 min Winter	9.586	0.386	6.3	385.9	O K
10080 min Winter	9.545	0.345	6.3	345.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Winter	120.325	0.0	217.1	16
30 min Winter	84.354	0.0	305.6	31
60 min Winter	56.724	0.0	433.9	62
120 min Winter	35.151	0.0	537.3	120
180 min Winter	26.716	0.0	611.5	178
240 min Winter	21.987	0.0	669.7	238
360 min Winter	16.628	0.0	756.2	354
480 min Winter	13.571	0.0	818.3	470
600 min Winter	11.557	0.0	865.0	582
720 min Winter	10.117	0.0	900.2	694
960 min Winter	8.167	0.0	940.3	912
1440 min Winter	6.010	0.0	918.6	1168
2160 min Winter	4.413	0.0	1230.5	1624
2880 min Winter	3.563	0.0	1321.9	2100
4320 min Winter	2.683	0.0	1480.7	3024
5760 min Winter	2.228	0.0	1665.8	3856
7200 min Winter	1.957	0.0	1828.9	4616
8640 min Winter	1.776	0.0	1990.2	5368
10080 min Winter	1.649	0.0	2150.3	6152

Waterco Ltd		Page 3
Eden Court	15679	
Lon Parcwr Business Park	Pontymister, Risca	
Denbighshire LL15 1NJ	Q100 + 40% CC	
Date 22/11/2024	Designed by JP	
File Q100 + 40CC.SRCX	Checked by AW	
XP Solutions	Source Control 2020.1.3	


Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 324415 189868 ST 24415 89868
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.779

Time (mins)		Area
From:	To:	(ha)
0	1	0.779

Waterco Ltd		Page 4
Eden Court	15679	
Lon Parcwr Business Park	Pontymister, Risca	
Denbighshire LL15 1NJ	Q100 + 40% CC	
Date 22/11/2024	Designed by JP	
File Q100 + 40CC.SRCX	Checked by AW	
XP Solutions	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1000.0	0.800	1000.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0121-6300-0800-6300
Design Head (m)	0.800
Design Flow (l/s)	6.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	121
Invert Level (m)	9.195
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	6.3
Flush-Flo™	0.245	6.3
Kick-Flo®	0.547	5.3
Mean Flow over Head Range	-	5.4

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.3	1.600	8.7	5.000	15.0
0.200	6.3	1.800	9.2	5.500	15.7
0.300	6.3	2.000	9.7	6.000	16.3
0.400	6.1	2.200	10.1	6.500	17.0
0.500	5.7	2.400	10.6	7.000	17.6
0.600	5.5	2.600	11.0	7.500	18.2
0.800	6.3	3.000	11.7	8.000	18.7
1.000	7.0	3.500	12.6	8.500	19.3
1.200	7.6	4.000	13.5	9.000	19.8
1.400	8.2	4.500	14.2	9.500	20.4

Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

15679
Pontymister, Risca
Q100 + 40% CC

Date 22/11/2024
File Q100 + 40CC.SRCX

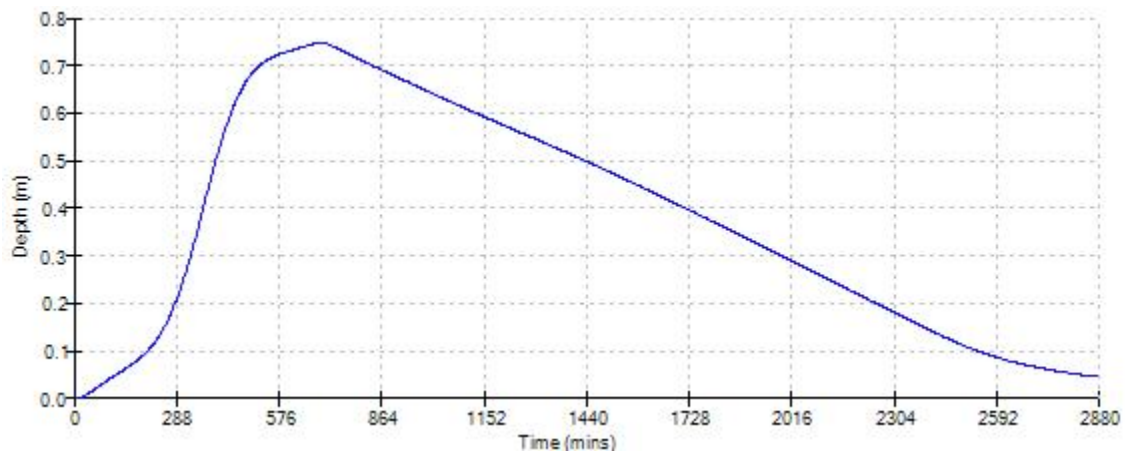
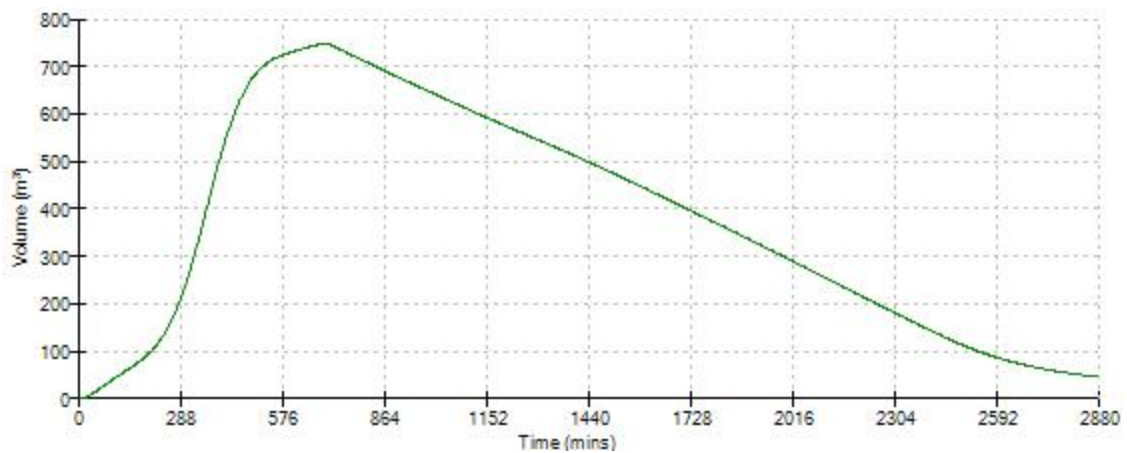
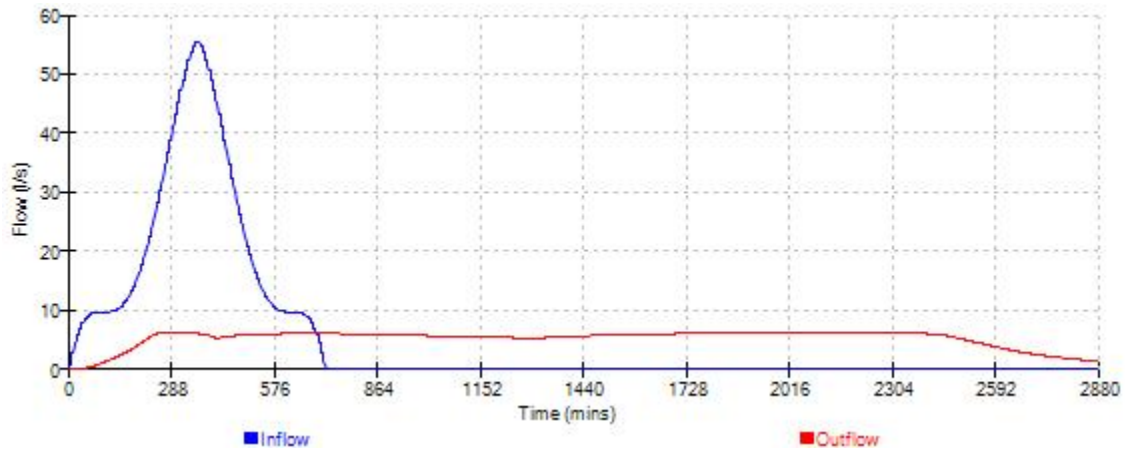
Designed by JP
Checked by AW



XP Solutions

Source Control 2020.1.3

Event: 720 min Winter



Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

15679
Pontymister, Risca
Q100 + 40% CC

Date 22/11/2024
File Q100 + 40CC.SRCX

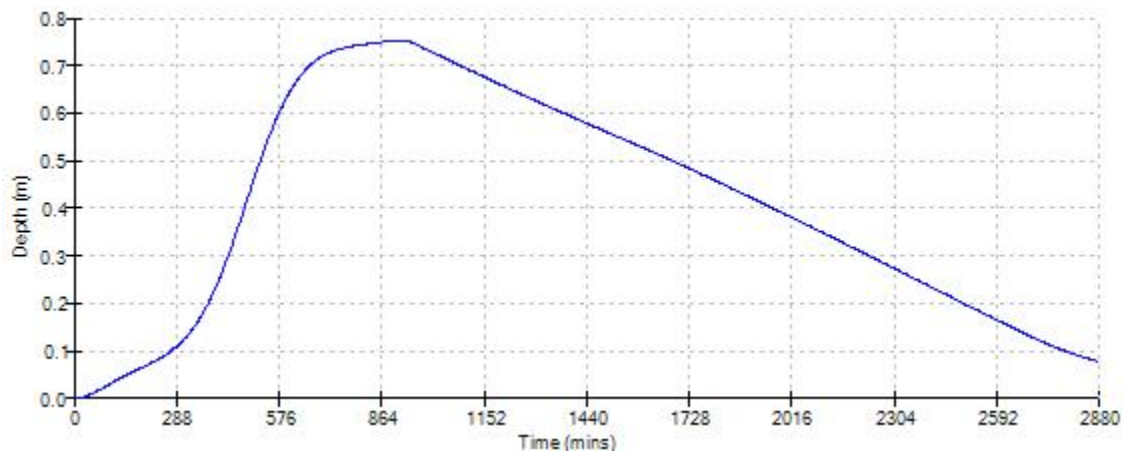
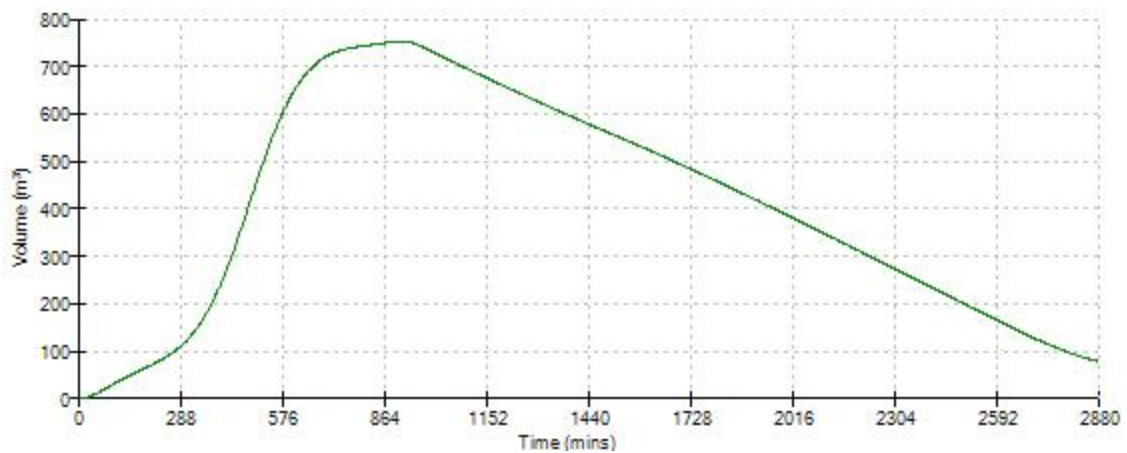
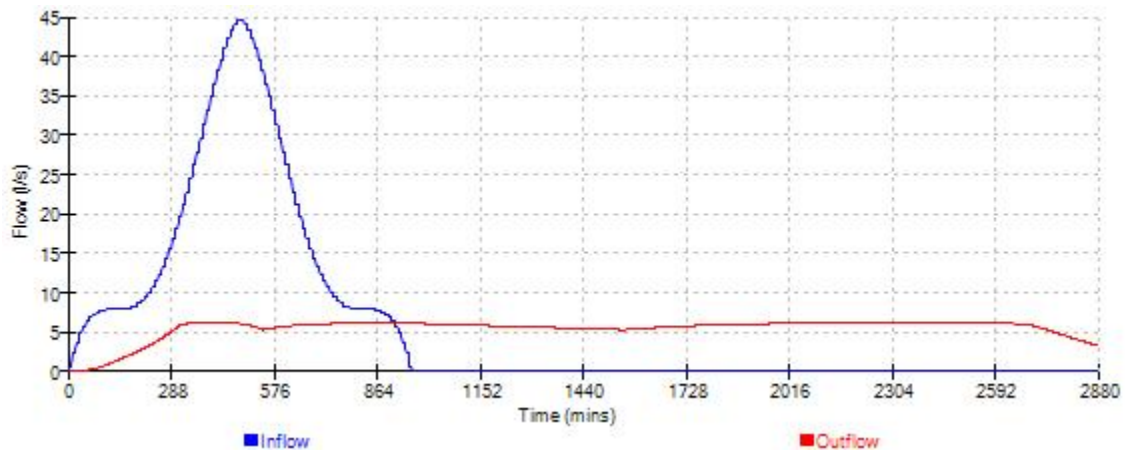
Designed by JP
Checked by AW



XP Solutions

Source Control 2020.1.3

Event: 960 min Winter



Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

15679
Pontymister, Risca
Q100 + 40% CC



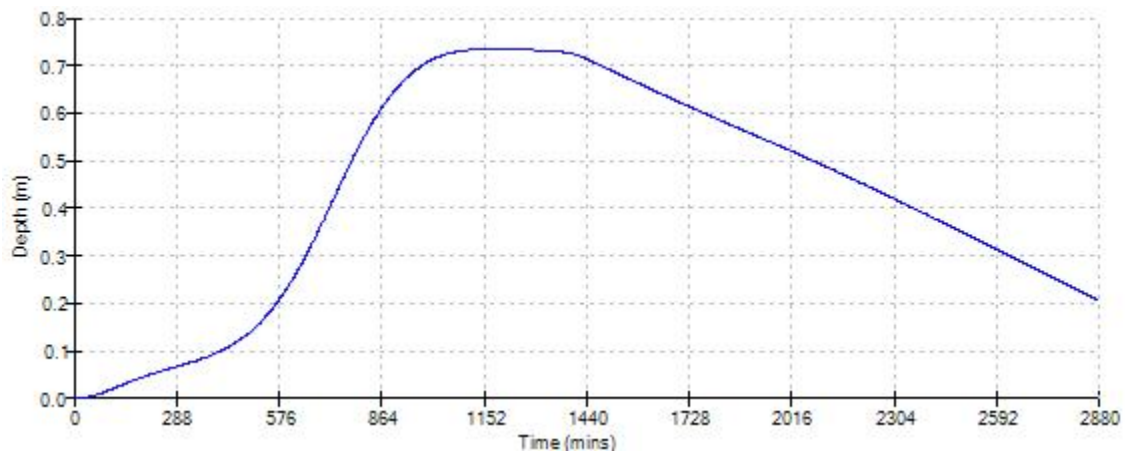
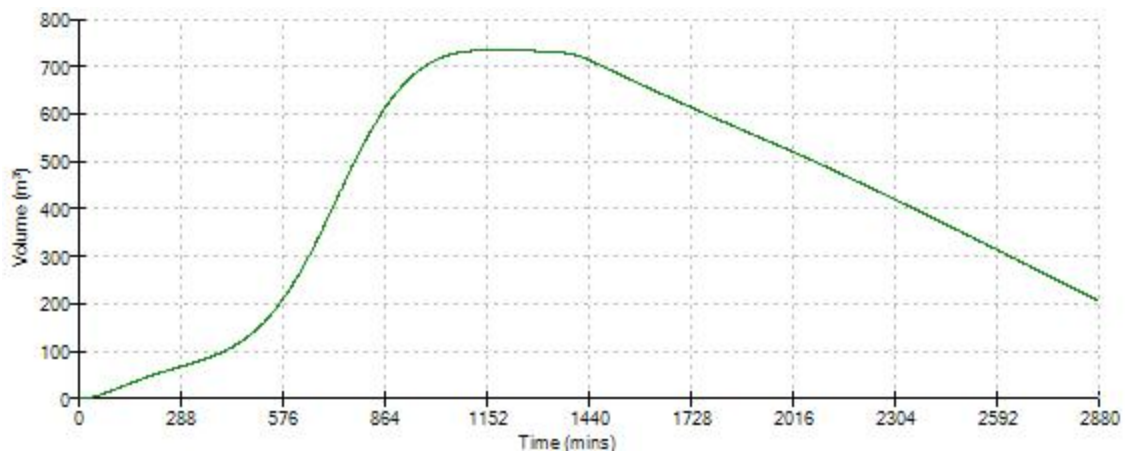
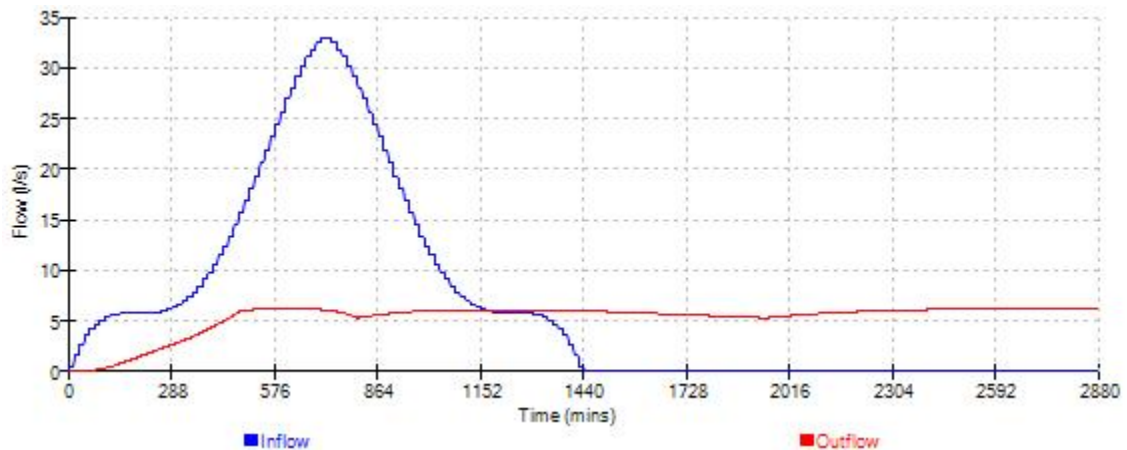
Date 22/11/2024
File Q100 + 40CC.SRCX

Designed by JP
Checked by AW

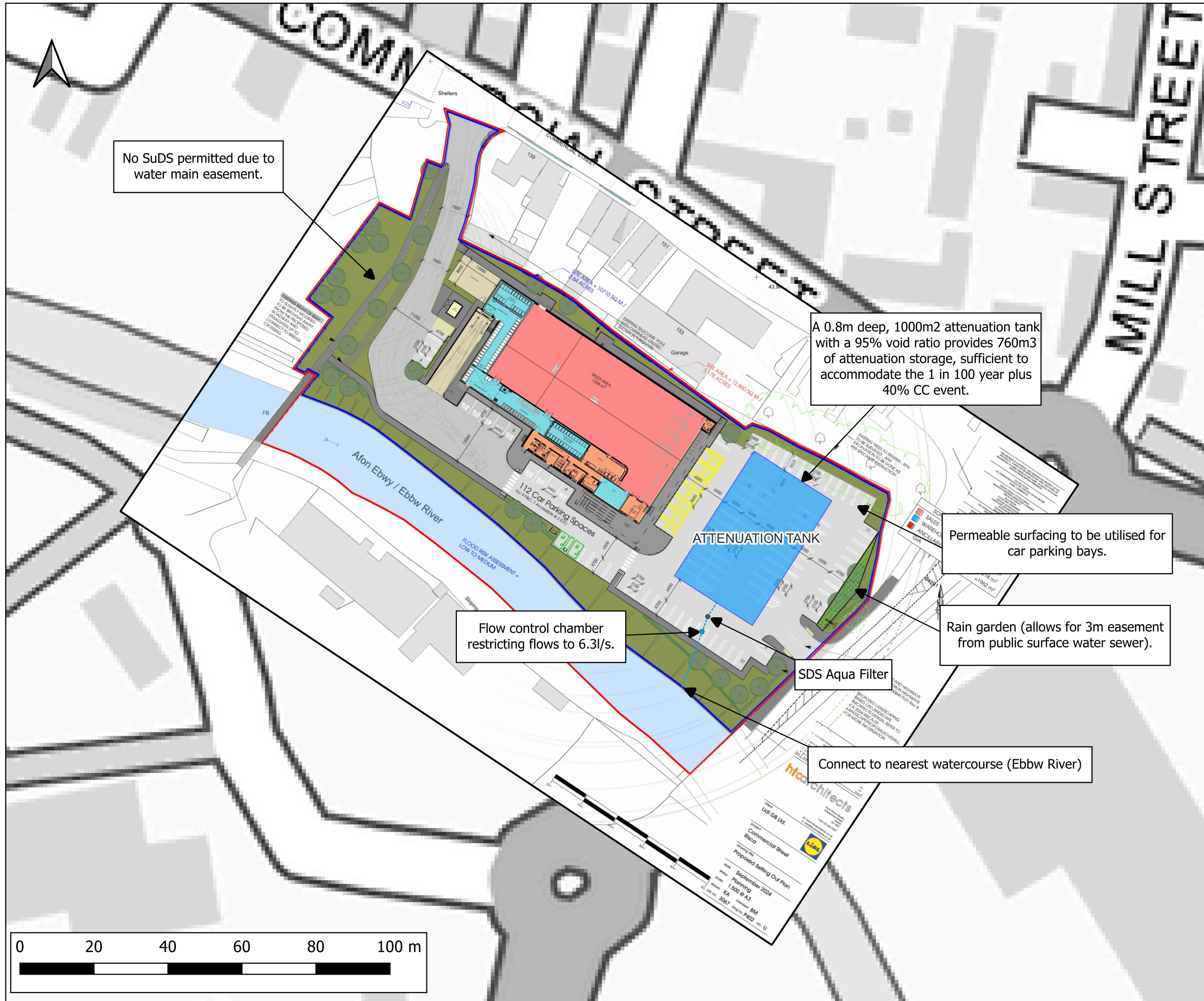
XP Solutions

Source Control 2020.1.3

Event: 1440 min Winter



Appendix K Concept Drainage Sketch



Notes:
 1) This sketch has not been subject to formal checks or approvals. Its validity and use must therefore be limited to discussion and information purposes only.
 2) Unless otherwise noted the risks associated with this proposal are not considered to be extra ordinary and within the remit of an experienced and competent contractor.
 3) All dimensions in millimetres and all levels in metres above ordnance datum unless shown otherwise.
 4) This drawing is an ammendment of '3067 P402U Proposed Setting Out Plan' by 'HTC Architects'. This drawing provides a concept only and is not intended for detailed design.

LEGEND

- Proposed surface water drain
- Proposed flow control chamber
- Proposed SDS Aqua Filter
- Proposed attenuation tank
- Proposed rain garden

CLIENT:			
Lidl Great Britain Limited			
 www.waterco.co.uk			
SCHEME:			
Land at Pontymister, Risca			
PLOT TITLE:			
Concept Drainage Sketch			
PLOT STATUS:		DATE:	
SKETCH		29-11-2024	
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
JP	AW	MW	1:1000
PLOT NAME:			REVISION:
15679_Concept_Drainage_Sketch			-

Appendix L SuDS Maintenance Schedules

Operation and Maintenance Requirements for Bioretention Systems

Maintenance Schedule	Required Action	Typical Frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate to determine if maintenance is necessary)	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

Ref. Table 18.3, CIRIA C753 'The SuDS Manual'

The maintenance requirements detailed above are to be undertaken by the site owner.

Name :

Position :

Date :

Signed on behalf of the site owner :

Operation and Maintenance Requirements for Permeable Paving

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer’s recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and move contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level or the paving	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Inspect for evidence of poor operation and / or weed growth – if required, take remedial action	Three-monthly, 48hr after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Ref. Table 20.15, CIRIA C753 ‘The SuDS Manual’

The maintenance requirements detailed above are to be undertaken by the site owner.

Name : _____

Position : _____

Date : _____

Signed on behalf of the site owner : _____

Operation and Maintenance Requirements for Attenuation Storage Tanks

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Ref. Table 21.3, CIRIA C753 'The SuDS Manual'

The maintenance requirements detailed above are to be undertaken by the site owner.

Name :

Position :

Date :

Signed on behalf of the site owner :

Appendix M cDRA

Project: Land at Pontymister, Risca
 Client: Lidl Great Britain Ltd
 Report Reference: 15679-FCA and Drainage Strategy-01

Project No: 15679

Prepared by: Jack Pugh Date: 27/11/2024
 Checked by: Aled Williams Date: 28/11/2024
 Reviewed by: Mike Wellington Date: 28/11/2024

Requirement:

The Construction (Design and Management) Regulations 2015 (CDM 2015) place an obligation on the Designer to take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under CDM. The Designer has undertaken this assessment to identify any extra-ordinary risks, or those that would not be expected on this particular project by an experienced and competent Contractor. The aim is to avoid needless paperwork and bureaucracy and ensure the assessment is project specific, relevant and proportionate to the risk.

DRA Summary

Each of the following risk areas has been considered using the question below. Is a risk present which is considered to be **extra-ordinary or unexpected** in this instance?

If **YES** - A detailed risk assessment is required at design stage

If **UNKNOWN** - Insufficient information has been provided at concept design stage and the risks are unknown. Further consideration must be given at design stage(s)

If **NO** - No further action is required.

Hazard Ref.	Risk Areas	YES, UNKNOWN or NO	Comments
1	Ground Conditions	Unknown	BGS identified superficial deposits of alluvium comprising clay, silt, sand and gravel.
2	Hazardous Environment	Unknown	To be considered at detailed design stage.
3	Existing Working Environment	Unknown	Site comprises a storage depot. Further consideration required at detailed design stage.
4	Existing Services	Yes	Existing utilities in place on site.
5	Proximity to Other Structure(s)	Yes	Commerical land use adjacent. Petrol filling station to the north
6	Near Waterbody / flood risk	Yes	Site is located within Flood Zone 3.
7	Proximity to Other Activities	Yes	Commerical land use adjacent. Petrol filling station to the north
8	Sequence of Construction	Unknown	To be considered at detailed design stage
9	Access	Unknown	Access to the site from Commercial Street
10	Interfaces	Unknown	To be considered at detailed design stage
11	Confined Space Working	Unknown	To be considered at detailed design stage
12	Maintenance Considerations	Unknown	To be considered at detailed design stage
13	Working at Height	Unknown	To be considered at detailed design stage
14	Steep Slopes	No	No steep slopes. Refer to LiDAR extract for further details
15	Demolition / Refurbishment / Repair	Unknown	Site clearance required. To be considered in detailed design
16	Welfare	Unknown	To be considered at detailed design stage
17	Occupational Health	Unknown	To be considered at detailed design stage
18	Environmental Issues	Unknown	To be considered at detailed design stage
19	Other Significant Hazards not Identified Above	Unknown	To be considered at detailed design stage
20	Residual Risk to Future Users	Unknown	To be considered at detailed design stage