Appendix D DCWW Sewer Plan & Correspondence

Dŵr Cymru
Welsh Water

Pembroke Dock SA72 4RA

N
W E
S

LEGEND(Representative of most common features)

Waste network:

- Foul chamber
- Surface water chamber
- Combined chamber
- Combined sewer overflow
- Special purpose chamber
- Treatment works
- Pumping station
- Outfall
- Lamphole
- Storm Overflow
- Rising main
- Gravity sewer
- Private sewer
- Private sewer subject to Sect. 104 adoption agreement (S 104)
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

NB: Sewer symbol colour indicates the type.

RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former 524 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases, pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Map Ref:	198208,203370
Map scale:	1:1500
Printed by:	Vefa Fox
Printed on:	19 Jun 2025

Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

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Caerdydd
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Ffôn: +44 (0)800 917 2652
Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

Mr Louis Hunt
Waterco
Lôn Parcwr
Ruthin
Denbighshire
LL15 1NJ

Date: 07/07/2025
Our Ref: PPA0009500

Dear Mr Hunt

Grid Ref: 198092 203284
Site Address: Pembroke Dock, Pembrokeshire SA72 4RA
Development: Proposed commercial store (Lidl)

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

Firstly, we note that the proposal relates to a Proposed commercial store (Lidl) and acknowledge the site comprises of a potential windfall development with no allocated status in the Local Development Plan (LDP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage system, we offer the following comments as part of our appraisal of this development.

Public Sewerage Network

The proposed development site is located in the immediate vicinity of a combined sewerage system, which drains to Pembroke Dock Wastewater Treatment Works (WwTW).

You are advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

Surface Water Drainage

As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy preferring infiltration (PL2) and, where infiltration is not possible, disposal to a surface water body (PL3), in liaison with the Lead Local Flood Authority and/or Natural Resources Wales, or surface water sewer or highway drain (PL4) in liaison with the riparian owner and/or Local Highways Authority.

Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note and our Developer Services website at https://developers.dwrcymru.com/en/help-advice/regulation-to-be-aware-of/sustainable-drainage-systems.

In the absence of an accompanying surface water drainage strategy, it is recommended that the developer engage in consultation with Pembrokeshire County Council as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please be advised that under no circumstances would we allow surface water runoff or highway run-off from the proposed development to communicate directly or indirectly with the public combined sewerage system. In addition, please note, no amount of land drainage run-off is permitted to discharge directly or indirectly into the public sewerage system.

Furthermore, Planning Policy Wales (PPW) acknowledges that discharge of surface water to foul sewers is prohibited and highlights that any additional surface water from new developments should not be discharged to combined systems because of the risk of pollution when combined systems overflow (Para 6.6.3). Moreover, PPW recognises the challenges faced from rainfall intensity causing surface water flooding and diffuse pollution (Para 6.6.14) along with the importance of well-maintained sewerage networks (Para 6.6.15), particularly as a result of run-off from built surfaces and the sewage discharges from overloaded sewers (Para 6.6.16).

Foul Water Drainage – Sewerage Network

We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public combined sewerage system. We advise that the flows can be connected to the 150mm combined sewer at manhole SM98031301.

You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

Sewerage Treatment

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.

Water Supply

We anticipate this development will require the installation of a new single water connection to serve the new premise. The provisions of Section 45 of the Water industry Act 1991 apply. We therefore rely on the Local Planning Authority to control the delivery of any required reinforcement or offsite works by way of planning condition at planning application stage. Capacity is currently available in the water supply system to accommodate the development

We reserve the right however to reassess our position at planning application stage to ensure there is sufficient capacity available to serve the development without causing detriment to existing customers' supply as demands upon our water systems change continually.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at **developer.services@dwrcymru.com**

Please quote our reference number in all communications and correspondence.

Yours faithfully,

Matthew Lord
Planning Liaison Manager
Developer Services

***Please Note** that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.*

Appendix E Proposed Development Plans

DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

DESIGN SUBJECT TO FURTHER SURVEYS AND CONSULTANT INFORMATION

TOTAL SITE AREA = 23286 SQM / 5.754 ACRES

LIDL SITE AREA = 11184 SQM / 2.76 ACRES

DEMISE LAND SITE AREA = 12102 SQM / 2.99 ACRES

10.5m WIDE SITE ACCESS AMENDED TO ACCOMODATE HGV'S

PROPOSED ACCESS FOR FUTURE DEVELOPMENT

LONDON ROAD

ISAAC WAY

CADWCH YN CLIR KEEP CLEAR

HIGH PRESSURE MAIN

El Sub Sta

SALES AREA 1347 m²

127 CAR PARKING SPACES
INCLUDING 6 ACCESSIBLE, 9P&C AND 2EVC

SCHEDULE OF AREAS (TYPE 1300)	
SALES =	1334 m²
WAREHOUSE=	410 m²*
ANCILLARY=	218 m²*
GIA =	1962 m²

*(AS PER LIDL'S LATEST SPECIFICATION DRAWING DATED FEB 2024)

KEY

HIGH PRESSURE GAS MAIN

SCALE BAR 1:500

Rev.	Date	Description	Drawn
B	16/06/2025	Updated to Latest Lidl Specification BBS 2025 T13	BMS
A	29/04/2025	updated EVC feeder unit, ramp/stairs added	DK

htcarchitects
York Place Studio
8 Britannia Street
Leeds
LS1 2DZ
T:(0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client: Lidl GB Ltd.

project: Pembroke Dock

drawing title: Proposed Setting Out Plan

date: April 2025
status: Planning
scale: 1:500 @ ISO A3
drawn: KA checked: BM
job no.: 3305 dwg no.: P403 rev.: B

DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

DESIGN SUBJECT TO FURTHER SURVEYS AND CONSULTANT INFORMATION

HIGH PRESSURE MAIN

CADWCH YN GLIR KEEP CLEAR

LONDON ROAD

ISAAC WAY

El Sub Sta

5400

22700

SALES AREA
1347 m²

SURFACE KEY

- 200mm x 100mm BLOCK PAVING TO PEDESTRIAN ROUTES AND STORE ENTRANCE. PAVING TO BE LAID IN A STRETCHER BOND PATTERN COLOUR: DARK GREY/ ANTHRACITE
- CONCRETE DELIVERY YARD AND PLANT ROOM
- FOOTWAY SMA TO PEDESTRIAN ROUTES.
- 2 BITUMINOUS LAYER TO CAR AND LIGHT VEHICLE CAR PARK LOCATIONS.
- 3 BITUMINOUS LAYER TO ACCESS ROAD AND HGV LOCATIONS
- REFER TO LANDSCAPING ARCHITECTS DRAWINGS AND DETAILS FOR ALL SOFT LANDSCAPING SPECIFICATIONS AND FINISHES
- YELLOW / WHITE & GREEN AS INDICATED THERMOPLASTIC LINING TO DENOTE ALL CAR PARKING SPACES

0 10 20 30 40 50 m
SCALE BAR 1:500

Rev.	Date	Description	Drawn
A	16/06/2025	Updated to Latest Lidl Specification BBS 2025 T13	BMS

htcarchitects
York Place Studio
8 Britannia Street
Leeds
LS1 2DZ
T:(0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client: Lidl GB Ltd.

project: Pembroke Dock

drawing title: Proposed Surface Treatment Plan

date	April 2025
status	Planning
scale	1:500 @ ISO A3
drawn	DK checked BM
job no.	3305 dwg no. P404 rev. A

DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

DESIGN SUBJECT TO FURTHER SURVEYS AND CONSULTANT INFORMATION

CADWCH YN GLIR KEEP CLEAR

LONDON ROAD

ISAAC WAY

El Sub Sta

SALES AREA 1347 m²

FFL - 16.42

KEYS

1. PROPOSED LANDSCAPE CUTTING, WITH GRADIENT GOING FROM EXISTING CAR PARKING SPACES TO LIDL BACK FOOTPATH
2. FUTHER CONSIDERATION TO BE CONSIDERED AS EXISTING EMBANKMENT DOES NOT HAVE ANY RETAINING FEATURES

KEY	
110.2m	EXISTING LEVEL
110.2m	PROPOSED LEVEL
0 1:0.0 0	HARD LANDSCAPING GRADE
0 1:0.0 0	SOFT LANDSCAPING GRADE
	FINISHED FLOOR LEVEL
0 1:0.0 0	ESTIMATED GRADE
110.2m	ESTIMATED LEVEL

SCALE BAR 1:500
0 10 20 30 40 50 m

Rev.	Date	Description	Drawn
A	16/06/2025	Updated to Latest Lidl Specification BBS 2025 T13	BMS

htcarchitects
York Place Studio
8 Britannia Street
Leeds
LS1 2DZ
T:(0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client: Lidl GB Ltd.

project: Pembroke Dock

drawing title: Proposed Levels Strategy

date: April 2025
status: Planning
scale: 1:500 @ ISO A3
drawn: DK checked: BM
job no. 3305 dwg no. P405 rev. A

Appendix F NRW Flood Maps

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Flood Zone 3 displays the extent of flooding from rivers with a 1% AEP or greater of flooding in a given year including and allowance for climate change and the sea with a 0.5% AEP or greater of flooding in a given year including and allowance for climate change
3) Flood Zone 2 displays the extent of flooding from rivers with a less than 1% AEP but greater than or equal to 0.1% AEP of flooding in a given year including and allowance for climate change and the sea with a less than 0.5% AEP but greater than or equal to 0.1% AEP of flooding in a given year including and allowance for climate change

LEGEND

- Site Boundary

Flood Map for Planning

- Flood Zone 1
- Flood Zone 2
- Flood Zone 3

CLIENT:
Lidl Great Britain Limited

waterco
www.waterco.co.uk

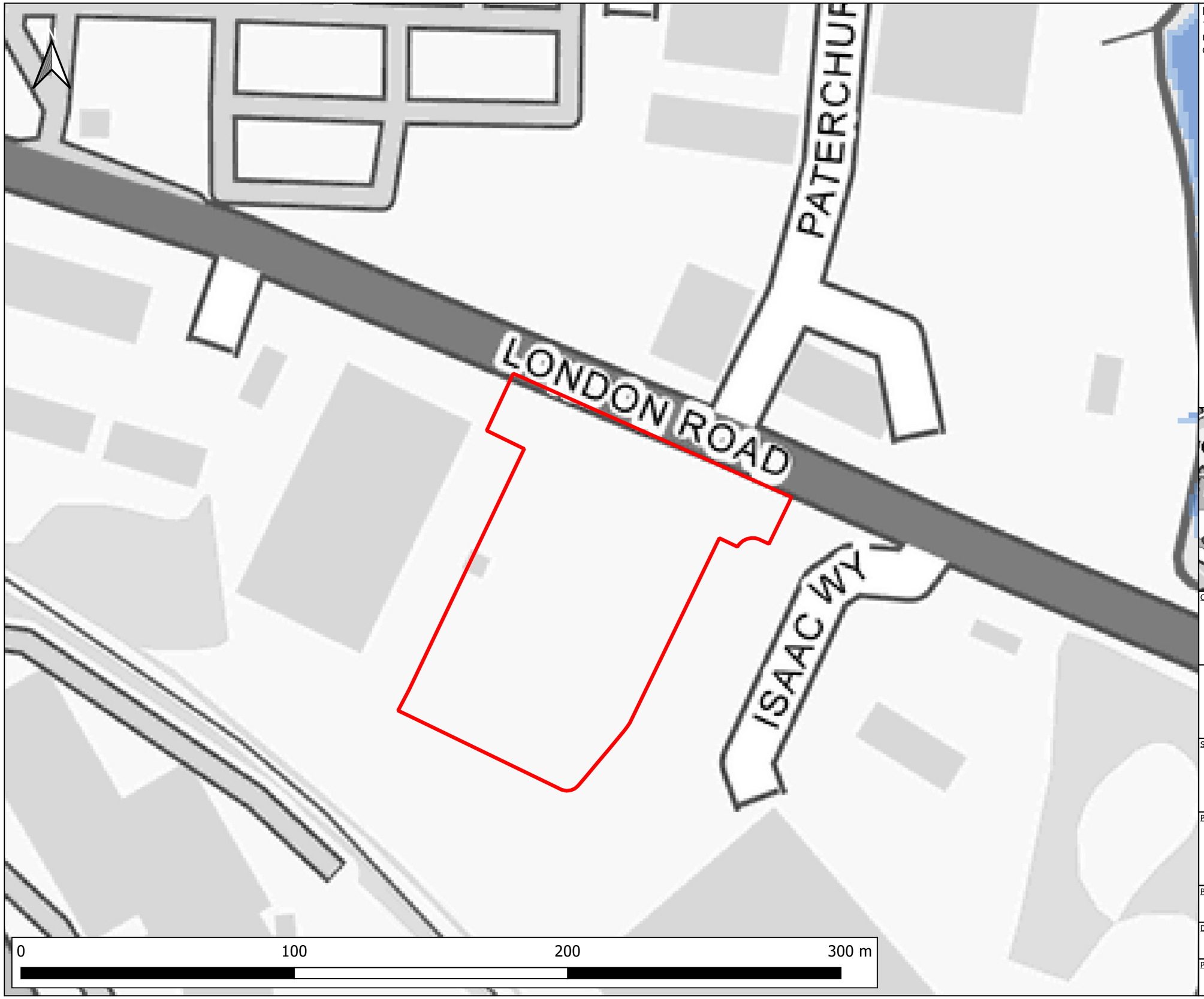
SCHEME:
Lidl Store off London Road, Pembroke Dock

PLOT TITLE:
NRW Flood Map for Planning (Rivers and Sea)
Data published November 2024

PLOT STATUS:	DATE:
FINAL	05-06-2025

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:1340

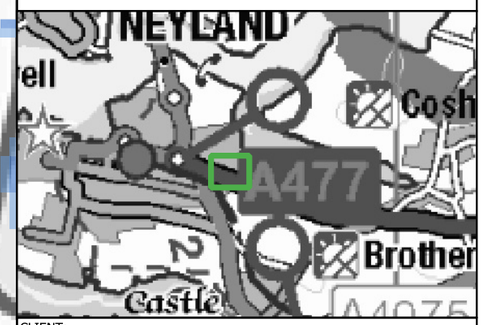
PLOT NAME:	REVISION:
16717_NRW_FMfP	-



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

LEGEND

- Site Boundary
- Flood Zones - Rivers
  - Flood Zone 1
  - Flood Zone 2
  - Flood Zone 3



CLIENT:
Lidl Great Britain Limited

www.waterco.co.uk

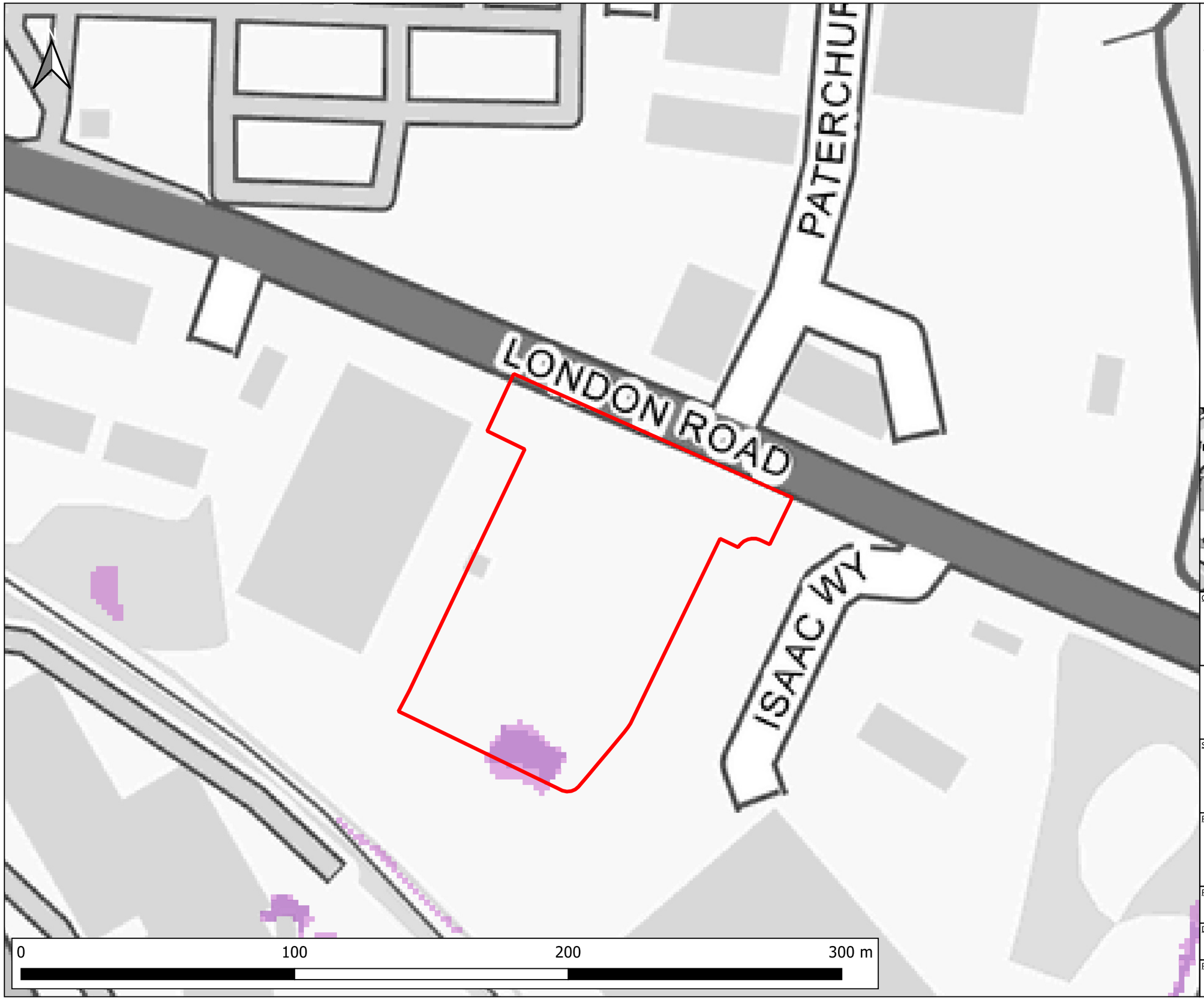
SCHEME:
Lidl Store off London Road, Pembroke Dock

PLOT TITLE:
NRW Flood Risk from Rivers
Data published November 2024

PLOT STATUS:	DATE:
FINAL	05-06-2025

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:1340

PLOT NAME:	REVISION:
16717_NRW_Flood_Risk_from_Rivers	-



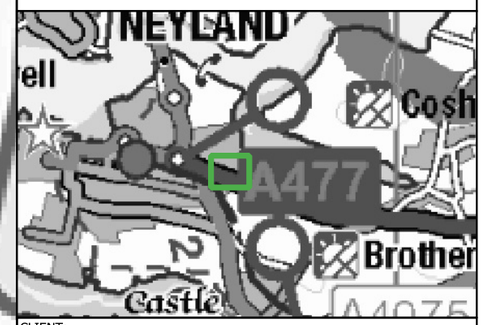
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.

LEGEND

- Site Boundary

Flood Zones - Surface Water & Small Watercourses

- Flood Zone 1
- Flood Zone 2
- Flood Zone 3



CLIENT:
Lidl Great Britain Limited

www.waterco.co.uk

SCHEME:
Lidl Store off London Road, Pembroke Dock

PLOT TITLE:
NRW Flood Zones - Surface Water & Small Watercourses
Data published November 2024

PLOT STATUS:	DATE:
FINAL	05-06-2025

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:1340

PLOT NAME:	REVISION:
16717_NRW_Flood_Risk_from_Surface_Water	-

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

LEGEND

- Site Boundary
- Flood Zones - Sea
  - Flood Zone 1
  - Flood Zone 2
  - Flood Zone 3

CLIENT:
Lidl Great Britain Limited

waterco
www.waterco.co.uk

SCHEME:
Lidl Store off London Road, Pembroke Dock

PLOT TITLE:
NRW Flood Risk from the Sea
Data published November 2024

PLOT STATUS:	DATE:
FINAL	05-06-2025

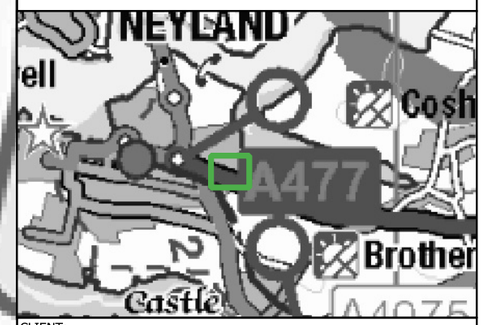
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:1340

PLOT NAME:	REVISION:
16717_NRW_Flood_Risk_from_the_Sea	-

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

LEGEND

- Site Boundary
- NRW Recorded Flood Extents



CLIENT:
Lidl Great Britain Limited

www.waterco.co.uk

SCHEME:
Lidl Store off London Road, Pembroke Dock

PLOT TITLE:
NRW Recorded Flood Extents
Data published November 2024

PLOT STATUS:	DATE:
FINAL	05-06-2025

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:1340

PLOT NAME:	REVISION:
16717_Recorded_Flood_Extents	-

Appendix G MicroDrainage Outputs

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

Half Drain Time : 243 minutes.

	Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15	min Summer	15.385	0.385	0.1	1.5	O K
30	min Summer	15.528	0.528	0.1	2.1	O K
60	min Summer	15.745	0.745	0.1	2.6	Flood Risk
120	min Summer	15.837	0.837	0.1	2.8	Flood Risk
180	min Summer	15.862	0.862	0.1	2.9	Flood Risk
240	min Summer	15.863	0.863	0.1	2.9	Flood Risk
360	min Summer	15.849	0.849	0.1	2.9	Flood Risk
480	min Summer	15.824	0.824	0.1	2.8	Flood Risk
600	min Summer	15.793	0.793	0.1	2.7	Flood Risk
720	min Summer	15.760	0.760	0.1	2.6	Flood Risk
960	min Summer	15.694	0.694	0.1	2.5	O K
1440	min Summer	15.567	0.567	0.1	2.2	O K
2160	min Summer	15.444	0.444	0.1	1.8	O K
2880	min Summer	15.367	0.367	0.1	1.5	O K
4320	min Summer	15.252	0.252	0.1	1.0	O K
5760	min Summer	15.174	0.174	0.1	0.7	O K
7200	min Summer	15.123	0.123	0.1	0.5	O K
8640	min Summer	15.089	0.089	0.1	0.4	O K

	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15	min Summer	127.488	0.0	16
30	min Summer	87.999	0.0	31
60	min Summer	58.279	0.0	62
120	min Summer	34.530	0.0	120
180	min Summer	25.484	0.0	180
240	min Summer	20.563	0.0	210
360	min Summer	15.209	0.0	274
480	min Summer	12.268	0.0	338
600	min Summer	10.379	0.0	408
720	min Summer	9.050	0.0	476
960	min Summer	7.285	0.0	614
1440	min Summer	5.358	0.0	878
2160	min Summer	3.936	0.0	1256
2880	min Summer	3.169	0.0	1644
4320	min Summer	2.345	0.0	2376
5760	min Summer	1.913	0.0	3112
7200	min Summer	1.654	0.0	3816
8640	min Summer	1.481	0.0	4496

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Summer	15.067	0.067	0.1	0.3	O K
15 min Winter	15.385	0.385	0.1	1.5	O K
30 min Winter	15.529	0.529	0.1	2.1	O K
60 min Winter	15.748	0.748	0.1	2.6	Flood Risk
120 min Winter	15.843	0.843	0.1	2.9	Flood Risk
180 min Winter	15.871	0.871	0.1	2.9	Flood Risk
240 min Winter	15.872	0.872	0.1	2.9	Flood Risk
360 min Winter	15.846	0.846	0.1	2.9	Flood Risk
480 min Winter	15.809	0.809	0.1	2.8	Flood Risk
600 min Winter	15.763	0.763	0.1	2.7	Flood Risk
720 min Winter	15.714	0.714	0.1	2.5	Flood Risk
960 min Winter	15.615	0.615	0.1	2.3	O K
1440 min Winter	15.463	0.463	0.1	1.8	O K
2160 min Winter	15.337	0.337	0.1	1.3	O K
2880 min Winter	15.241	0.241	0.1	1.0	O K
4320 min Winter	15.110	0.110	0.1	0.4	O K
5760 min Winter	15.050	0.050	0.1	0.2	O K
7200 min Winter	15.043	0.043	0.1	0.2	O K
8640 min Winter	15.039	0.039	0.1	0.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
10080 min Summer	1.360	0.0	5152
15 min Winter	127.488	0.0	16
30 min Winter	87.999	0.0	30
60 min Winter	58.279	0.0	60
120 min Winter	34.530	0.0	118
180 min Winter	25.484	0.0	174
240 min Winter	20.563	0.0	226
360 min Winter	15.209	0.0	282
480 min Winter	12.268	0.0	360
600 min Winter	10.379	0.0	434
720 min Winter	9.050	0.0	510
960 min Winter	7.285	0.0	654
1440 min Winter	5.358	0.0	924
2160 min Winter	3.936	0.0	1320
2880 min Winter	3.169	0.0	1700
4320 min Winter	2.345	0.0	2416
5760 min Winter	1.913	0.0	2936
7200 min Winter	1.654	0.0	3632
8640 min Winter	1.481	0.0	4400

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Winter	15.036	0.036	0.0	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
10080 min Winter	1.360	0.0	5120

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 198131 203325 SM 98131 03325
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) 0.005

Time (mins) From:	To:	Area (ha)
0	1	0.005

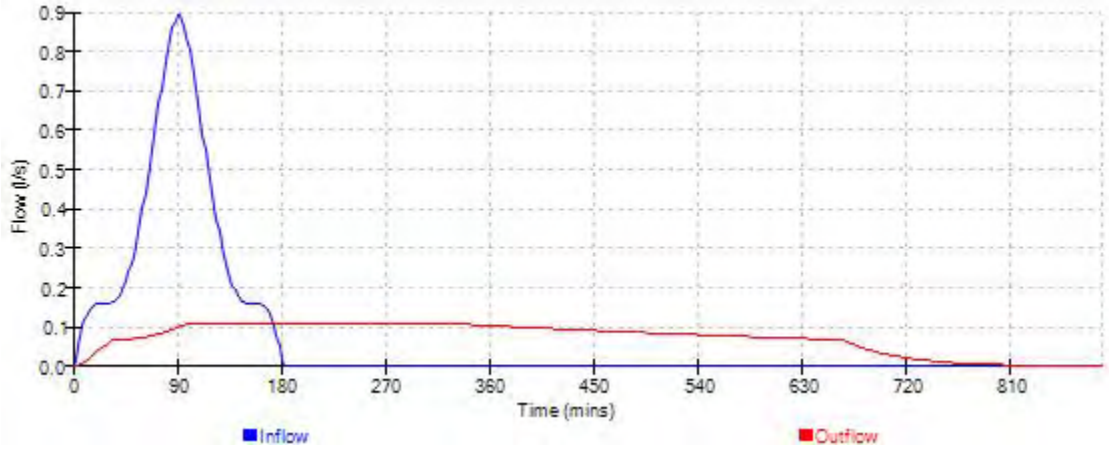
Model Details

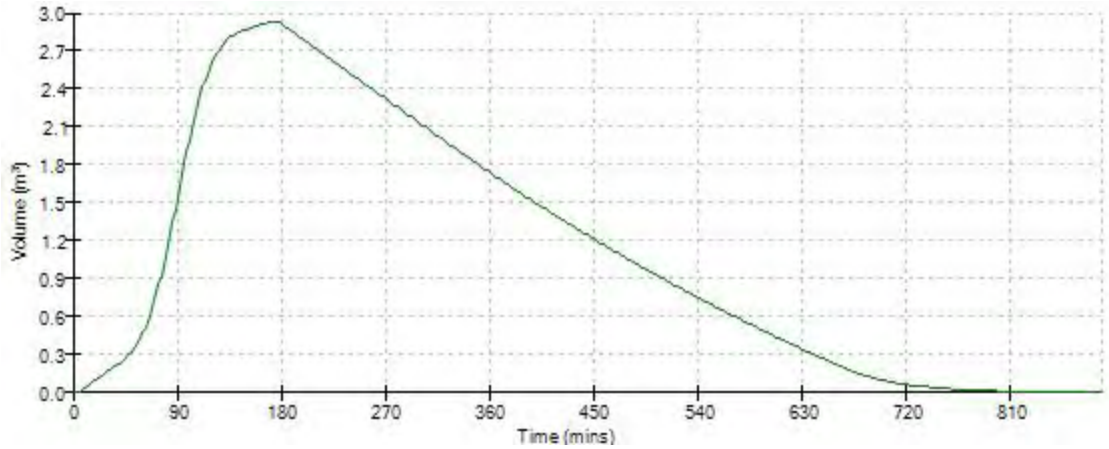
Storage is Online Cover Level (m) 16.000

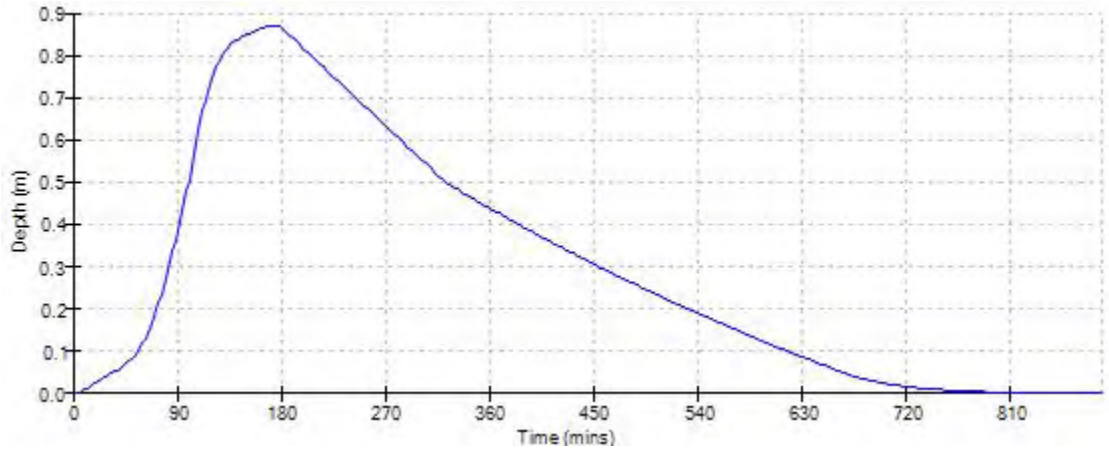
Lined Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.15500
Infiltration Coefficient Side (m/hr)	0.15500
Safety Factor	5.0
Porosity	0.30
Invert Level (m)	15.000
Ring Diameter (m)	1.80
Pit Multiplier	1.5
Number Required	1
Cap Volume Depth (m)	0.000
Cap Infiltration Depth (m)	0.500

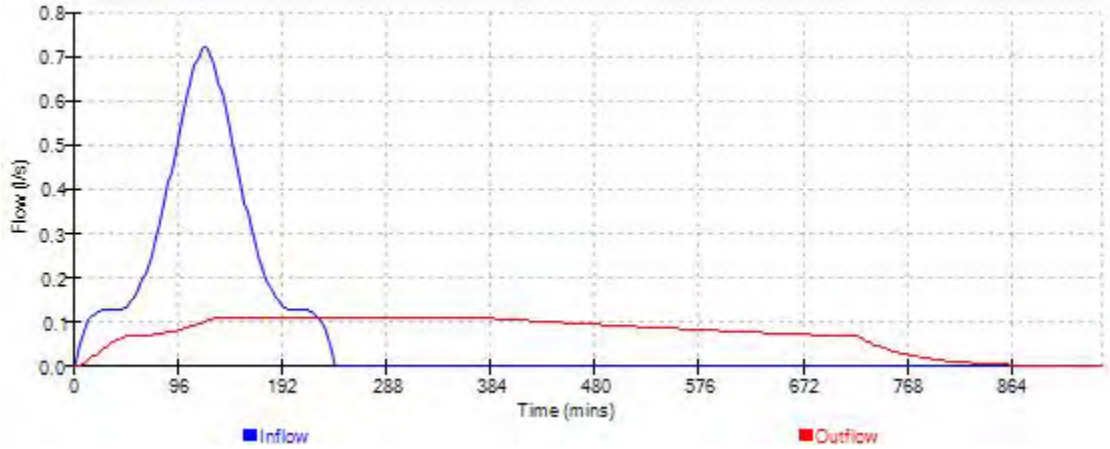
Event: 180 min Winter

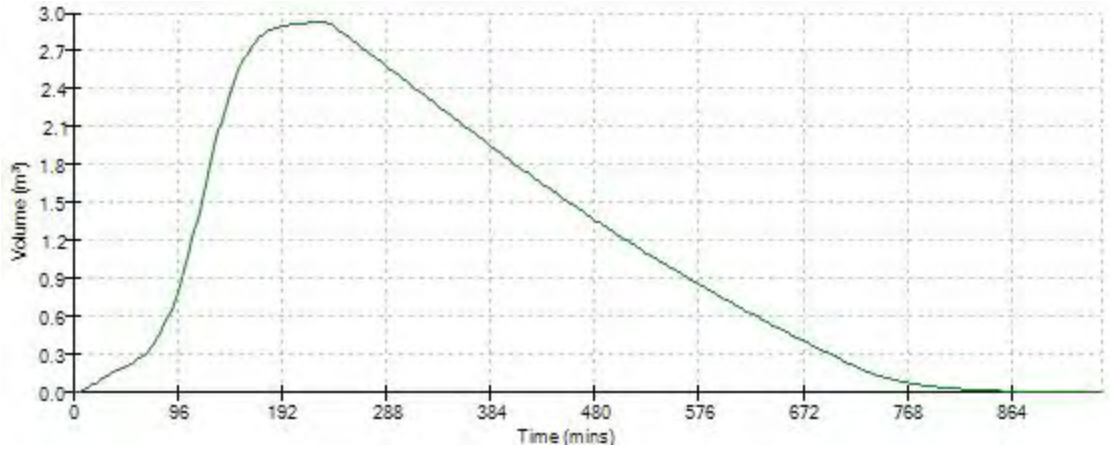


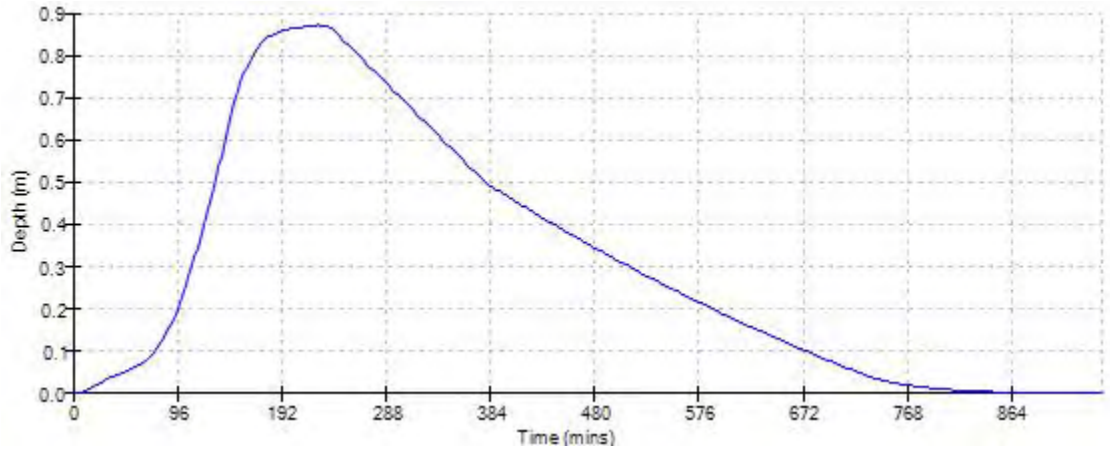




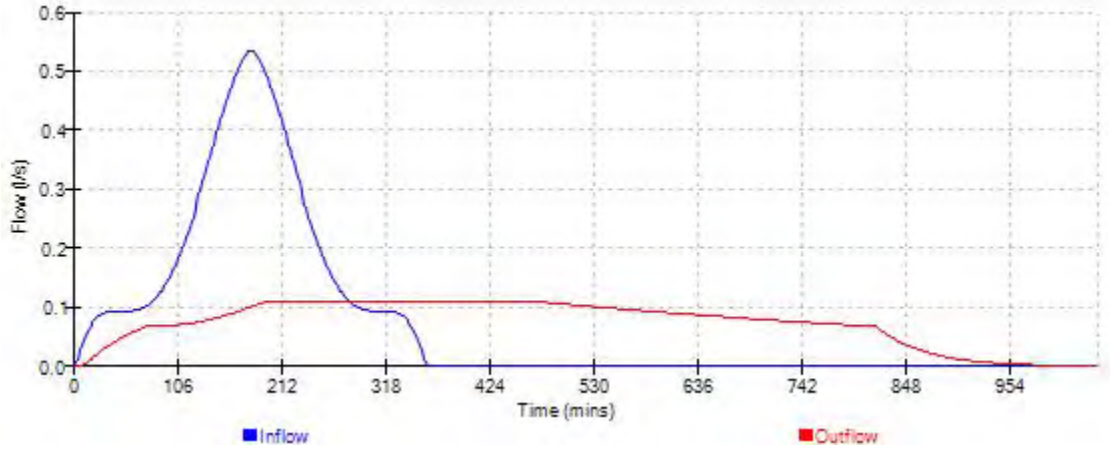
Event: 240 min Winter

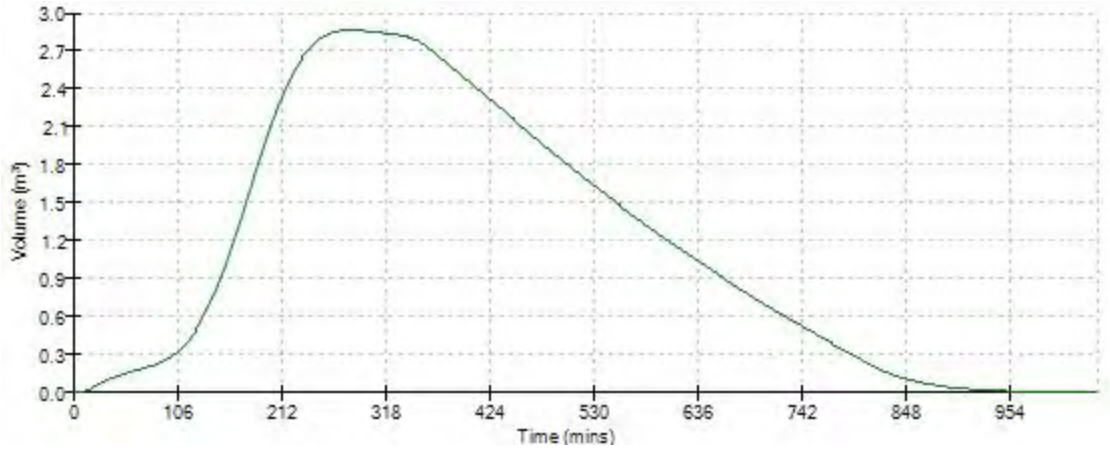


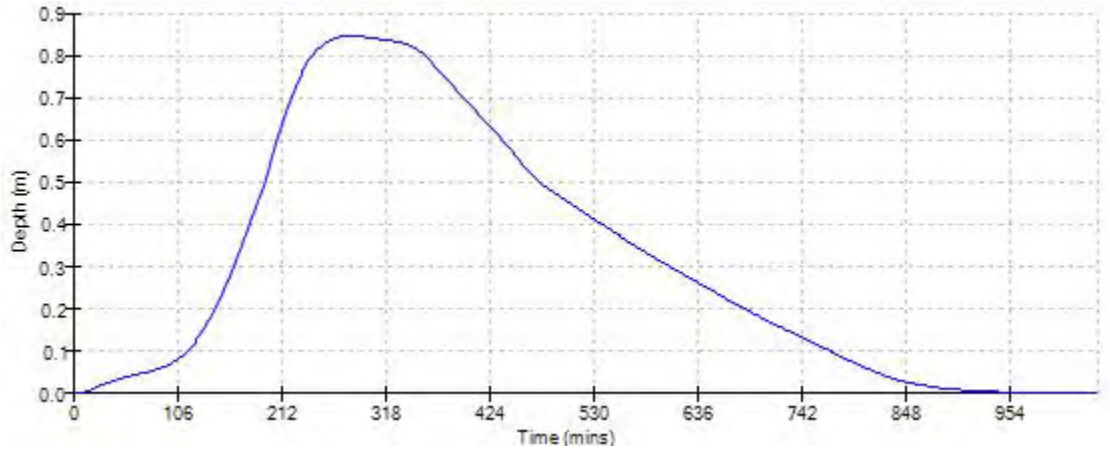




Event: 360 min Winter







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

Half Drain Time : 107 minutes.

	Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15	min Summer	15.814	0.214	25.9	190.0	Flood Risk
30	min Summer	15.888	0.288	25.9	257.0	Flood Risk
60	min Summer	15.957	0.357	25.9	319.2	Flood Risk
120	min Summer	15.963	0.363	25.9	324.2	Flood Risk
180	min Summer	15.956	0.356	25.9	317.9	Flood Risk
240	min Summer	15.946	0.346	25.9	309.3	Flood Risk
360	min Summer	15.923	0.323	25.9	288.3	Flood Risk
480	min Summer	15.898	0.298	25.9	265.6	Flood Risk
600	min Summer	15.872	0.272	25.9	242.8	Flood Risk
720	min Summer	15.848	0.248	25.9	220.4	Flood Risk
960	min Summer	15.801	0.201	25.9	178.6	Flood Risk
1440	min Summer	15.726	0.126	25.9	111.1	Flood Risk
2160	min Summer	15.662	0.062	25.9	53.4	O K
2880	min Summer	15.645	0.045	23.4	38.3	O K
4320	min Summer	15.634	0.034	17.7	27.9	O K
5760	min Summer	15.628	0.028	14.4	22.5	O K
7200	min Summer	15.624	0.024	12.6	19.0	O K
8640	min Summer	15.622	0.022	11.3	16.7	O K

	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15	min Summer	127.488	0.0	17
30	min Summer	87.999	0.0	32
60	min Summer	58.279	0.0	60
120	min Summer	34.530	0.0	106
180	min Summer	25.484	0.0	138
240	min Summer	20.563	0.0	170
360	min Summer	15.209	0.0	238
480	min Summer	12.268	0.0	306
600	min Summer	10.379	0.0	374
720	min Summer	9.050	0.0	440
960	min Summer	7.285	0.0	566
1440	min Summer	5.358	0.0	806
2160	min Summer	3.936	0.0	1128
2880	min Summer	3.169	0.0	1468
4320	min Summer	2.345	0.0	2200
5760	min Summer	1.913	0.0	2936
7200	min Summer	1.654	0.0	3624
8640	min Summer	1.481	0.0	4320

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Summer	15.620	0.020	10.2	15.1	O K
15 min Winter	15.814	0.214	25.9	189.8	Flood Risk
30 min Winter	15.888	0.288	25.9	257.3	Flood Risk
60 min Winter	15.958	0.358	25.9	320.4	Flood Risk
120 min Winter	15.964	0.364	25.9	325.3	Flood Risk
180 min Winter	15.952	0.352	25.9	314.7	Flood Risk
240 min Winter	15.937	0.337	25.9	301.3	Flood Risk
360 min Winter	15.900	0.300	25.9	267.9	Flood Risk
480 min Winter	15.860	0.260	25.9	231.8	Flood Risk
600 min Winter	15.821	0.221	25.9	196.6	Flood Risk
720 min Winter	15.784	0.184	25.9	163.4	Flood Risk
960 min Winter	15.721	0.121	25.9	106.0	Flood Risk
1440 min Winter	15.650	0.050	25.7	42.1	O K
2160 min Winter	15.637	0.037	19.0	30.5	O K
2880 min Winter	15.630	0.030	15.4	24.0	O K
4320 min Winter	15.622	0.022	11.5	17.1	O K
5760 min Winter	15.618	0.018	9.4	13.5	O K
7200 min Winter	15.616	0.016	8.2	11.3	O K
8640 min Winter	15.614	0.014	7.4	9.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
10080 min Summer	1.360	0.0	5136
15 min Winter	127.488	0.0	17
30 min Winter	87.999	0.0	31
60 min Winter	58.279	0.0	60
120 min Winter	34.530	0.0	114
180 min Winter	25.484	0.0	142
240 min Winter	20.563	0.0	180
360 min Winter	15.209	0.0	256
480 min Winter	12.268	0.0	328
600 min Winter	10.379	0.0	396
720 min Winter	9.050	0.0	460
960 min Winter	7.285	0.0	578
1440 min Winter	5.358	0.0	748
2160 min Winter	3.936	0.0	1104
2880 min Winter	3.169	0.0	1468
4320 min Winter	2.345	0.0	2188
5760 min Winter	1.913	0.0	2920
7200 min Winter	1.654	0.0	3704
8640 min Winter	1.481	0.0	4400

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
10080 min Winter	15.613	0.013	6.6	8.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
10080 min Winter	1.360	0.0	5064

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 198131 203325 SM 98131 03325
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) 0.699

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	1	0.233	1	2	0.233	2	3	0.233

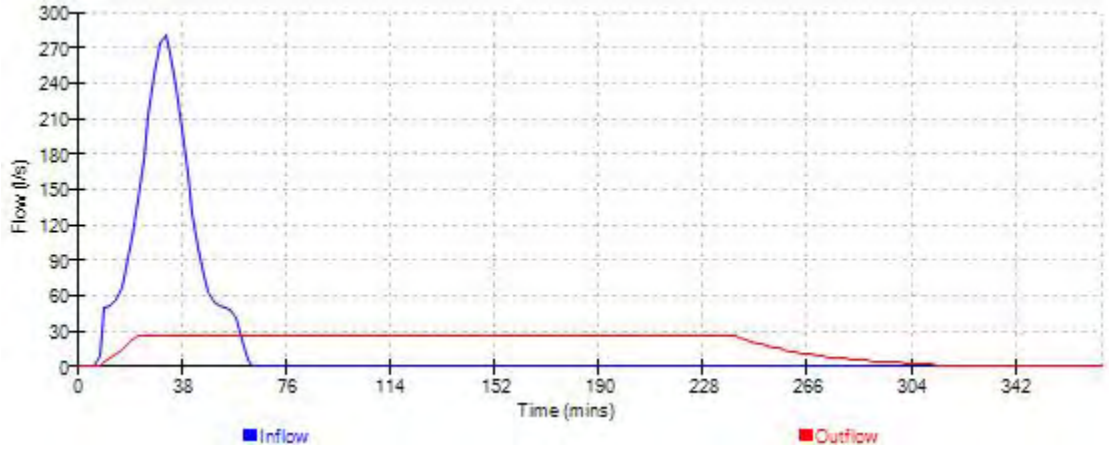
Model Details

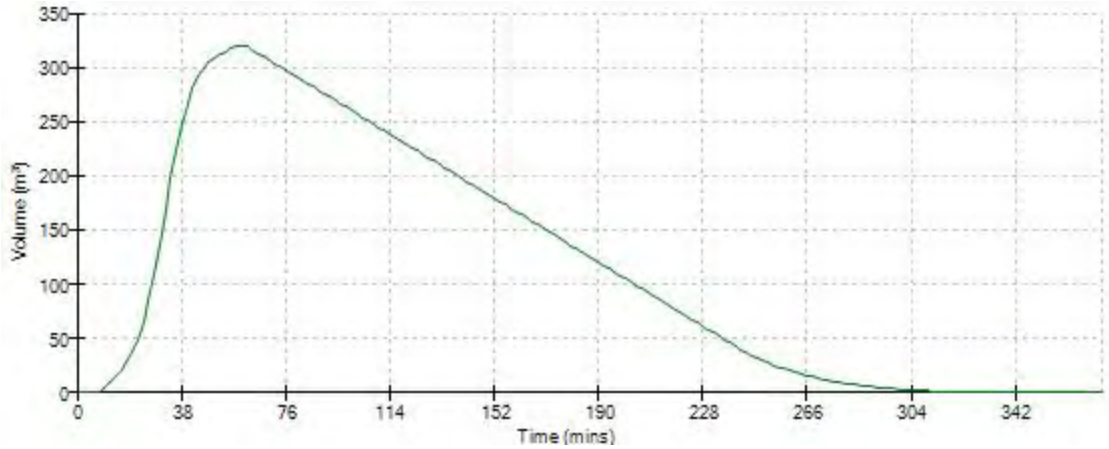
Storage is Online Cover Level (m) 16.000

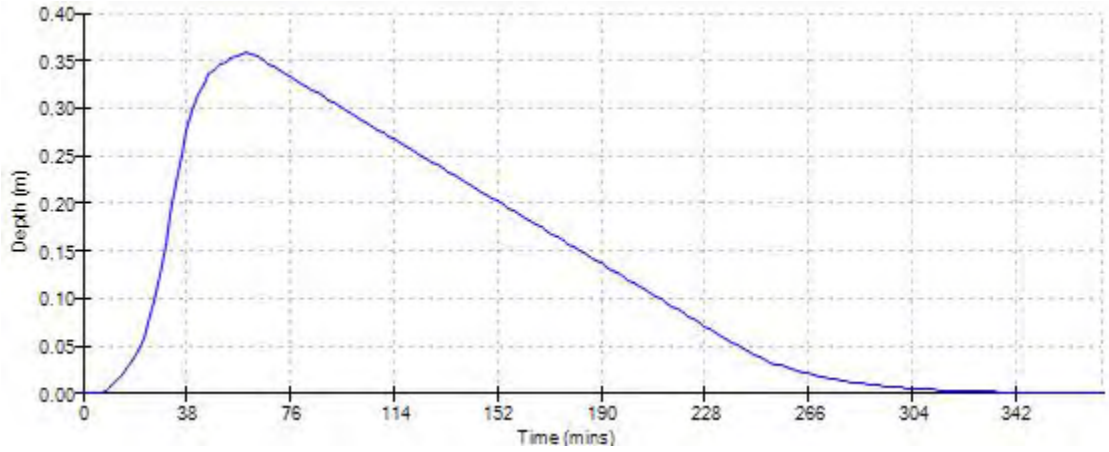
Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.15500
Membrane Percolation (mm/hr)	1000
Max Percolation (l/s)	834.7
Safety Factor	5.0
Porosity	0.30
Invert Level (m)	15.600
Width (m)	50.0
Length (m)	60.1
Slope (1:X)	10000.0
Depression Storage (mm)	5
Evaporation (mm/day)	3
Membrane Depth (m)	0

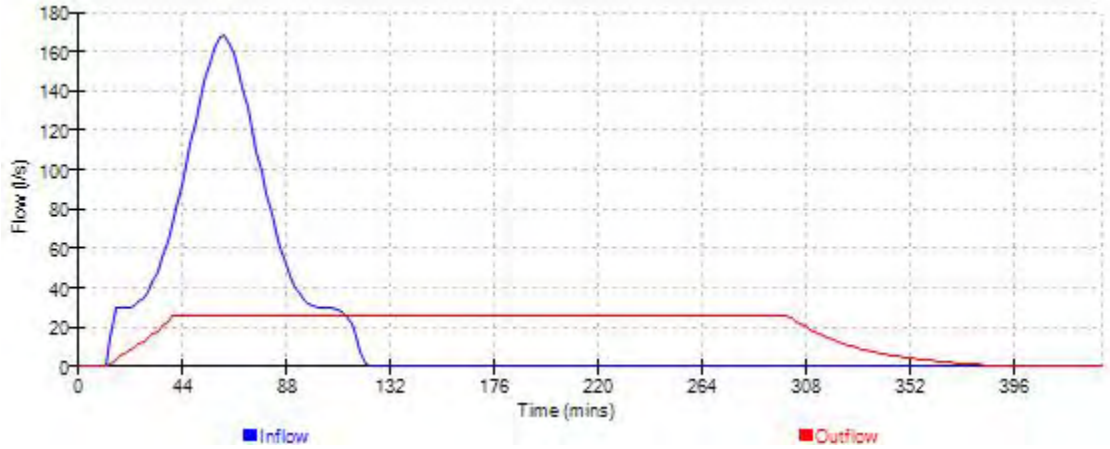
Event: 60 min Winter

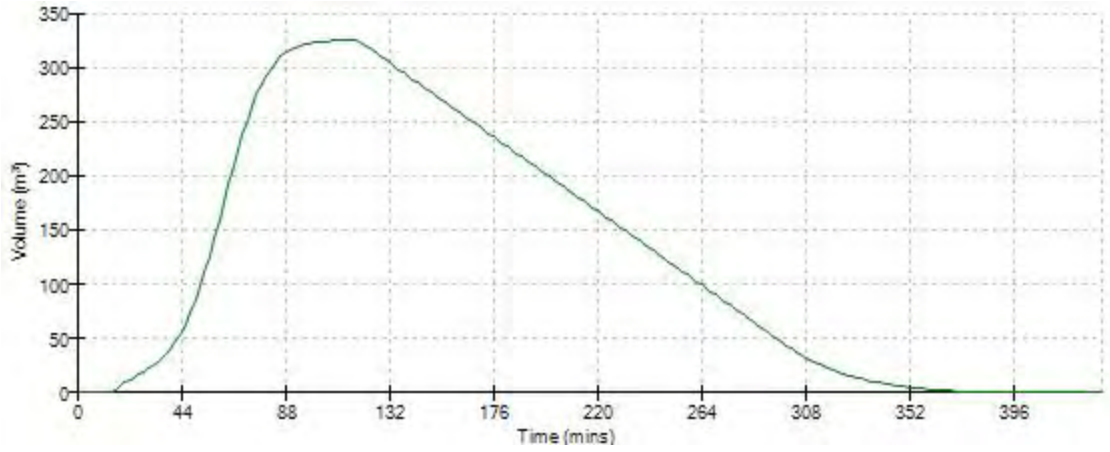


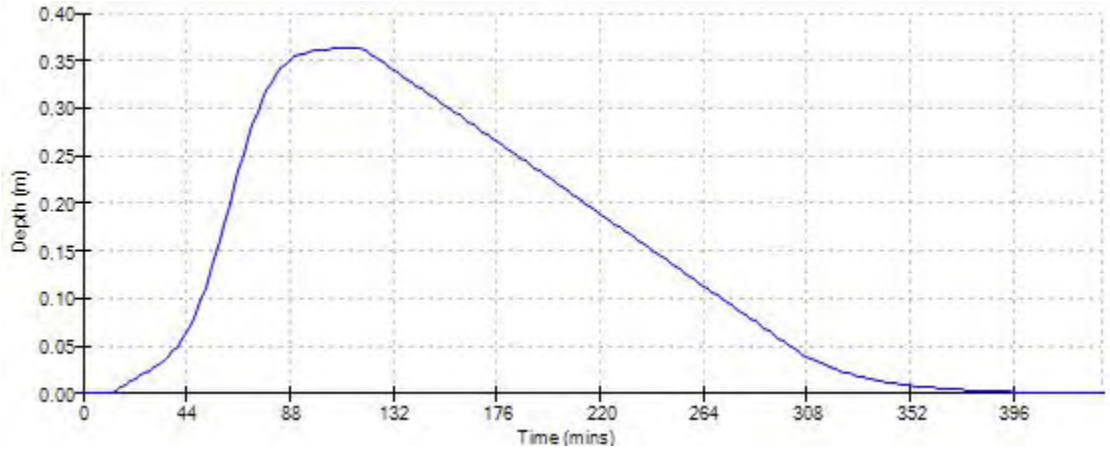




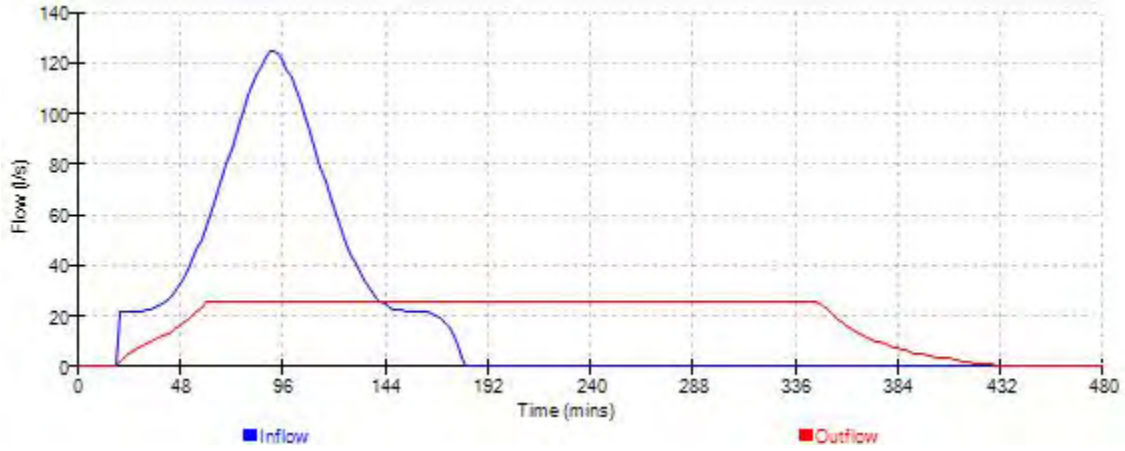
Event: 120 min Winter

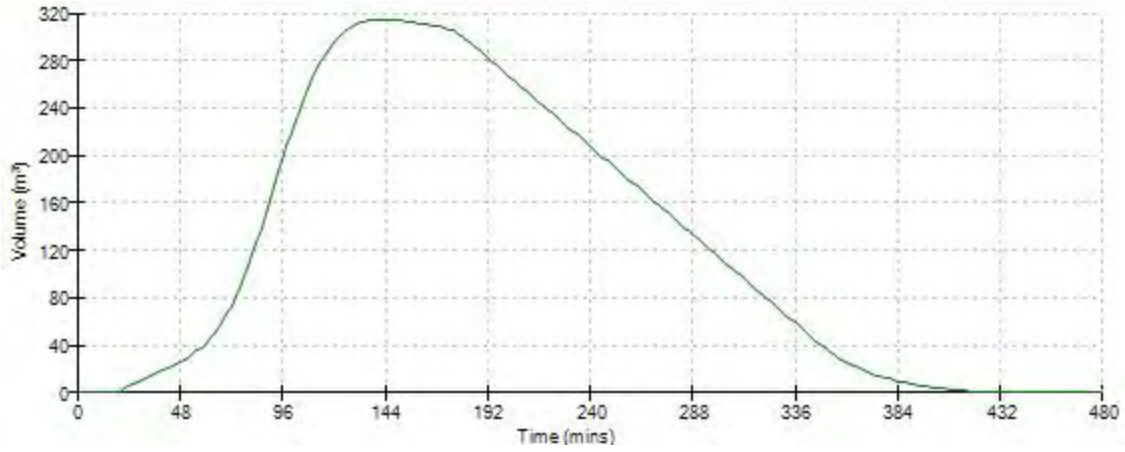


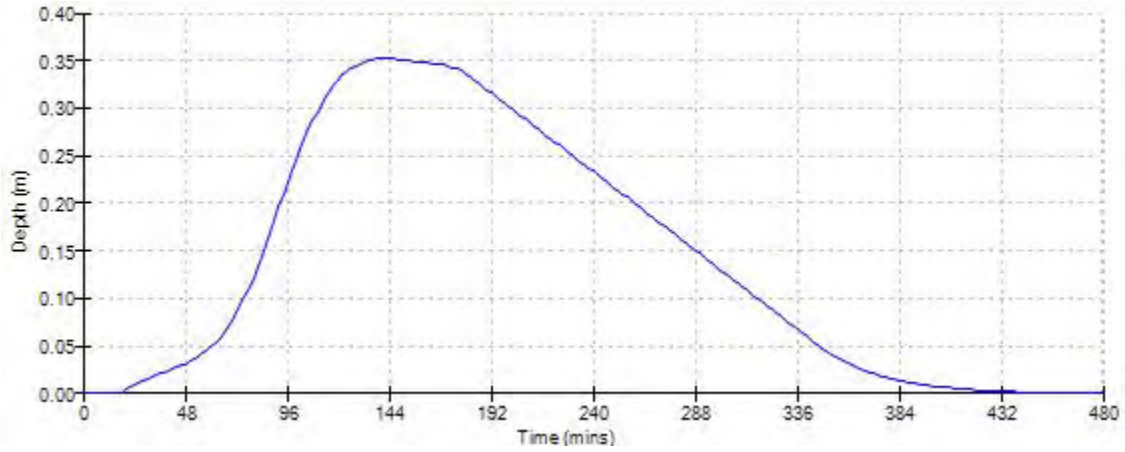




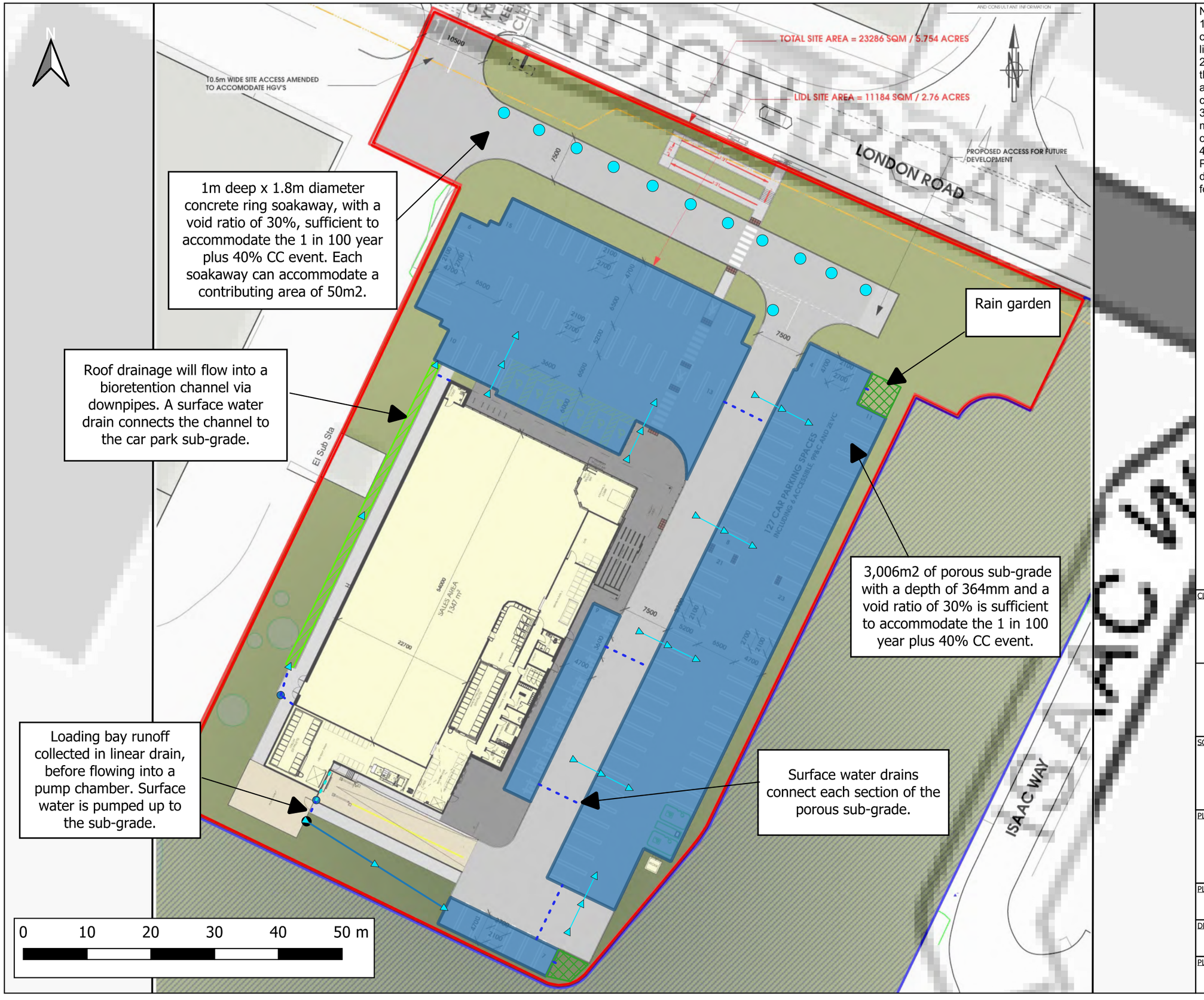
Event: 180 min Winter







Appendix H 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 amendment of the '3305 P403B Proposed Setting Out Plan' by 'HTC Architects'. This drawing provides a concept only and is not intended for detailed design.

LEGEND

- Permeable Car Park Surface with 364mm Sub-Grade
- Bioretention Channel
- Rain Gardens
- Surface Water Inspection Chamber
- Proposed Concrete Ring Soakaway
- Pumping Chamber
- Proposed Surface Water Drain
- Proposed Surface Water Rising Main
- Flow Direction

CLIENT: Lidl Great Britain Limited

waterco
www.waterco.co.uk

SCHEME: Lidl Store off London Road, Pembroke Dock

PLOT TITLE: Concept Drainage Sketch

PLOT STATUS:	DATE:
SKETCH	02-07-2025

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
LH	AW	NJ	1:580

PLOT NAME:	REVISION:
16717_Concept_Drainage_Sketch	-

Appendix I 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 glyphospate 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 Soakaways

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor inspection tube or chamber and inside of concrete manhole rings.	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs.	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

Ref. Table 13.1, 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 J Concept Designer's Risk Assessment (cDRA)

CONCEPT DESIGNER'S RISK ASSESSMENT

Project:	Proposed Lidl Store off London Road, Pembroke Dock	**Project No:**	16717
Client:	Lidl Great Britain Ltd		
Report Reference:	16717-FCA & Drainage Strategy-01-v1		

Prepared by:	Louis Hunt	**Date:**	01/07/2025
Checked by:	Aled Williams	**Date:**	01/07/2025
Reviewed by:	Nigel Jones	**Date:**	01/07/2025

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	The phase 2 site investigation report identified Made Ground and detectible concentrations of TPH and PAHs (low solubility)
2	Hazardous Environment	Unknown	To be considered at detailed design stage
3	Existing Working Environment	No	Demolished brownfield site, site comprises an electricity substation in the western extent.
4	Existing Services	Yes	Existing services in place on site - see utility survey
5	Proximity to Other Structure(s)	Yes	Commerical properties adjacent
6	Near Waterbody / flood risk	No	No watercourses within the vicinity, site is in Flood Zone 1
7	Proximity to Other Activities	Yes	Commcerial properties adjacent
8	Sequence of Construction	Unknown	To be considered at detailed design stage
9	Access	Unknown	Access to the site from the A477 to the north
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	Site is gently sloping
15	Demolition / Refurbishment / Repair	Unknown	To be considered at detailed design stage
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