Flood map for planning

Your reference	Location (easting/northing)	Created
<Unspecified>	**297291/510841**	**24 Nov 2023 9:40**

Your selected location is in flood zone 1, an area with a low probability of flooding.

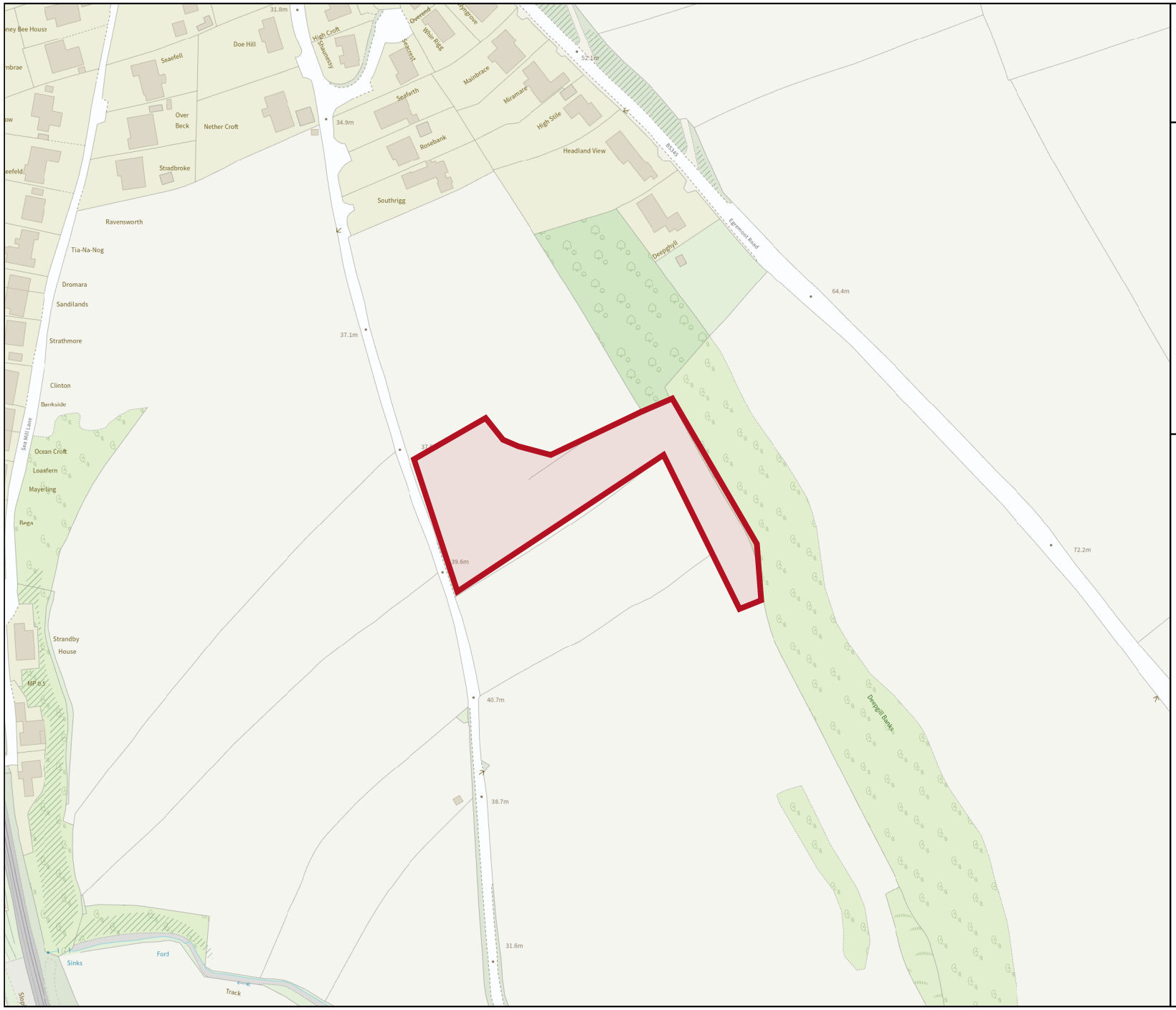
You will need to do a flood risk assessment if your site is **any of the following:**

- bigger that 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
297291/510841

Scale
1:2500

Created
24 Nov 2023 9:40

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

APPENDIX B – INFILTRATION TESTING RESULTS

All trial holes on site were 1000mm x 300mm x 1000mm.

TP01 Percolation Test Results

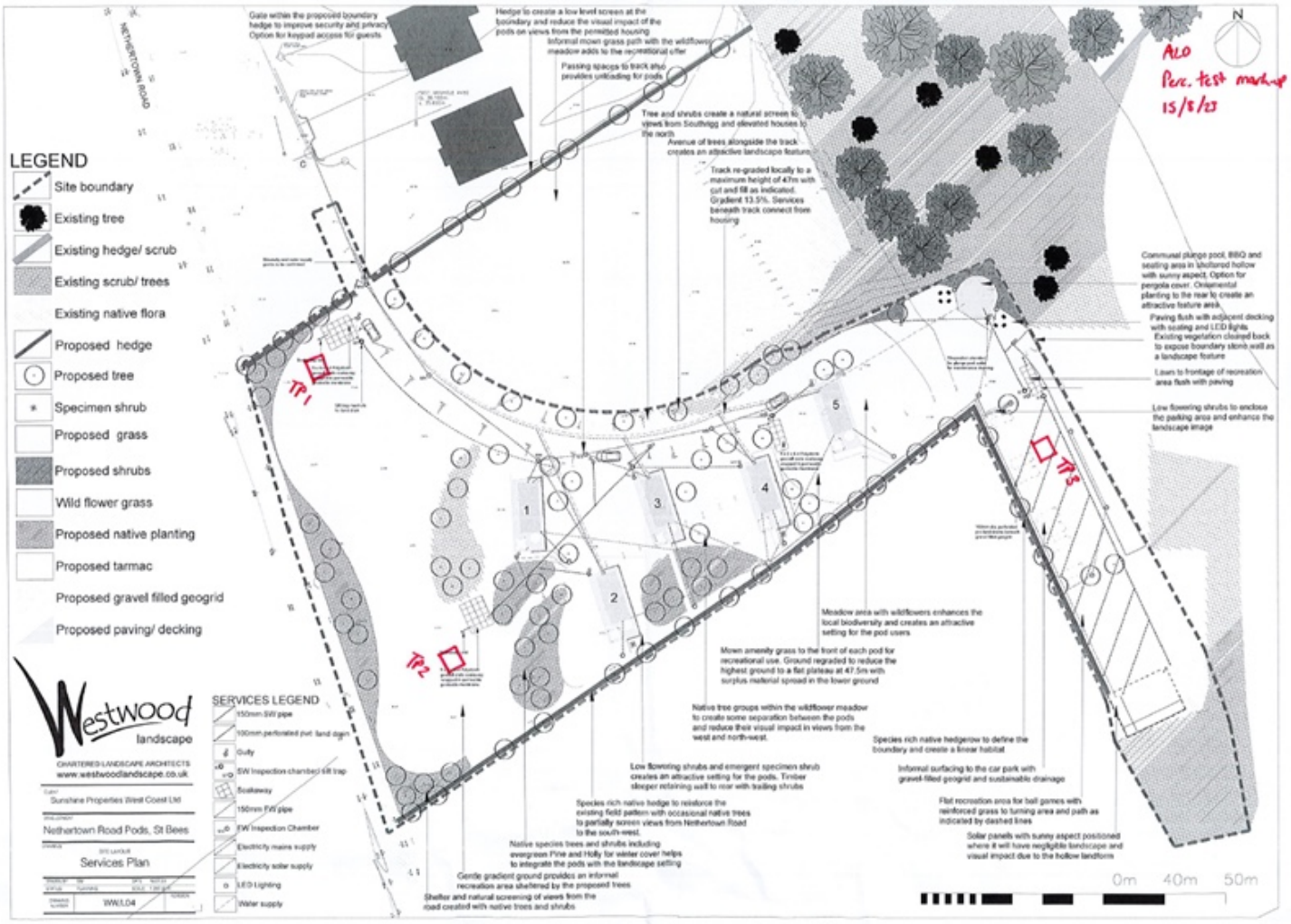
Test Number	Date of Test	Time @ 750mm deep	Time @ 250mm deep	Time (mins) from 750mm to 250mm
1	06/11/2023	09:58	16:32	394
2	07/11/2023	10:52	17:15	368
3	08/11/2023	10:45	17:30	375
			Average	379

TP02 Percolation Test Results

Test Number	Date of Test	Time @ 750mm deep	Time @ 250mm deep	Time (mins) from 750mm to 250mm
1	06/11/2023	10:49	11:54	65
2	07/11/2023	08:20	09:35	75
3	08/11/2023	08:15	09:25	70
			Average	70

TP03 Percolation Test Results

Test Number	Date of Test	Time @ 750mm deep	Time @ 250mm deep	Time (mins) from 750mm to 250mm
1	06/11/2023	12:30	15:00	150
2	07/11/2023	11:05	13:45	160
3	08/11/2023	12.10	14:56	166
			Average	158.67


LEGEND
Site boundary
Existing tree
Existing hedge/ scrub
Existing scrub/ trees
Existing native flora
Proposed hedge
Proposed tree
Specimen shrub
Proposed grass
Proposed shrubs
Wild flower grass
Proposed native planting
Proposed tarmac
Proposed gravel filled geogrid
Proposed paving/ decking
NETHERTOWN ROAD
Gate within the proposed boundary hedge to improve security and privacy. Option for keypad access for guests
Hedge to create a low level screen at the boundary and reduce the visual impact of the pods on views from the permitted housing
Informal mown grass path with the wildflower meadow adds to the recreational offer
Passing spaces to track also provides unloading for pods
Tree and shrubs create a natural screen to views from Southrigg and elevated houses to the north
Avenue of trees alongside the track creates an attractive landscape feature
Track re-graded locally to a maximum height of 47m with cut and fill as indicated. Gradient 13.5%. Services beneath track connect from housing
TP1
TP2
TP3
Communal plunge pool, BBQ and seating area in sheltered hollow with sunny aspect. Option for pergola cover. Ornamental planting to the rear to create an attractive feature area
Paving flush with adjacent decking with seating and LED lights
Existing vegetation cleared back to expose boundary storm wall as a landscape feature
Lawn to frontage of recreation area flush with paving
Low flowering shrubs to enclose the parking area and enhance the landscape image
Meadow area with wildflowers enhances the local biodiversity and creates an attractive setting for the pod users
Mown amenity grass to the front of each pod for recreational use. Ground regraded to reduce the highest ground to a flat plateau at 47.5m with surplus material spread in the lower ground
Native tree groups within the wildflower meadow to create some separation between the pods and reduce their visual impact in views from the west and north-west.
Species rich native hedgerow to define the boundary and create a linear habitat
Low flowering shrubs and emergent specimen shrub creates an attractive setting for the pods. Timber sleeper retaining wall to rear with trailing shrubs
Informal surfacing to the car park with gravel-filled geogrid and sustainable drainage
Species rich native hedge to reinforce the existing field pattern with occasional native trees to partially screen views from Nethertown Road to the south-west.
Flat recreation area for ball games with reinforced grass to turning area and path as indicated by dashed lines
Native species trees and shrubs including evergreen Pine and Holly for winter cover helps to integrate the pods with the landscape setting
Solar panels with sunny aspect positioned where it will have negligible landscape and visual impact due to the hollow landform
Gentle gradient ground provides an informal recreation area sheltered by the proposed trees
Shelter and natural screening of views from the road created with native trees and shrubs
1
2
3
4
5
N
ALO
Perc. test markup
15/8/23
0m
40m
50m
Westwood landscape
CHARTERED LANDSCAPE ARCHITECTS
www.westwoodlandscape.co.uk
Sunshine Properties West Coast Ltd
Nethertown Road Pods, St Bees
Services Plan
WWL04
SERVICES LEGEND
150mm SW pipe
100mm perforated pvc land drain
Gully
SW Inspection chamber/ silt trap
Soakaway
150mm FW pipe
FW Inspection Chamber
Electricity mains supply
Electricity solar supply
LED Lighting
Water supply

United Utilities

Water for the North West

SEWER RECORDS

Address or Site Reference

SOUTHRIGG NETHERTOWN ROAD,
ST. BEES,
CA27 0AY

Scale: 1:1250
Date: 17/08/2021

Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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)	100	PIMP (%)	100
M5-60 (mm)	16.300	Add Flow / Climate Change (%)	0
Ratio R	0.277	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	5.000#	0.013	384.6	0.017	5.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	5.000#	0.013	384.6	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	

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	5.22	47.700	0.017	0.0	0.0	0.0	0.39	3.0	2.3
1.001	50.00	5.43	47.687	0.017	0.0	0.0	0.0	0.39	3.0	2.3

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	16.300	Storm Duration (mins)	30
Ratio R	0.277		

ACO. creating

the future of drainage

ACO V-Septor – Hydrodynamic Separator

The ACO V-Septor is an advanced hydrodynamic separator that removes sediment bound contaminants. Its design enables removal of pollutants by means of settlement and the capture of floatables.

The ACO V-Septor is available in a range of sizes to accommodate small to large sites and can be custom made for demanding installations.

The ACO V-Septor retains solid pollution and oil. It also forms part of the SuDS management train as it removes over 50% of fine Total Suspended Solids as well as sediment bound metals and hydrocarbons.

Benefits

- Removes solid pollution – from plastic rubbish to fine silt
- Forms part of the SuDS management train
- Delivered fitted in a HDPE chamber with lifting eyes, and straps supplied for ease of installation
- Easily accessible for maintenance

ACO V-Septor

Hydrocarbons	Total suspended solids	Metals
0.5	0.5	0.4

Liquid hydrocarbons	Sediment bound hydrocarbons
0.8	0.5

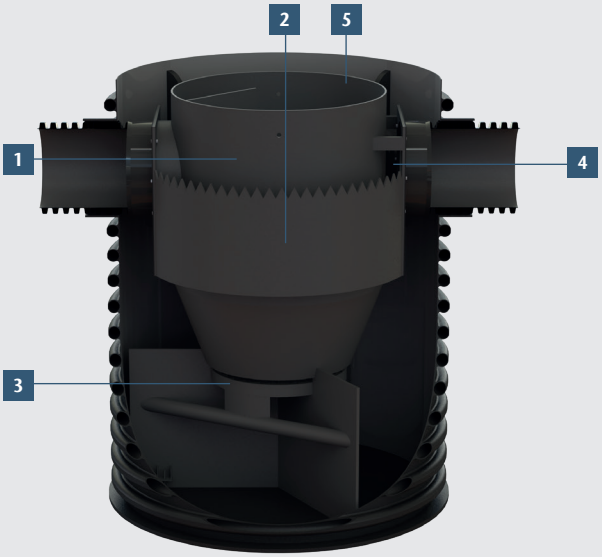
Details available on request

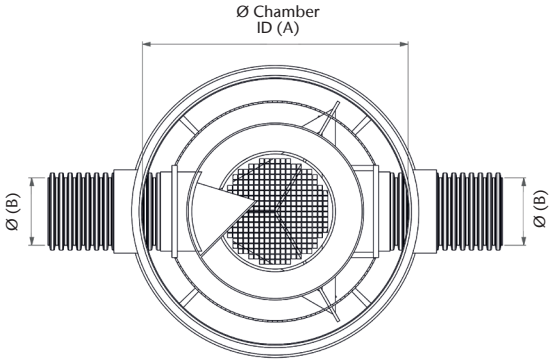
V-Septor 750 | V-Septor 1000 | V-Septor 1200 | V-Septor 1500 | V-Septor 2000 | V-Septor 2500

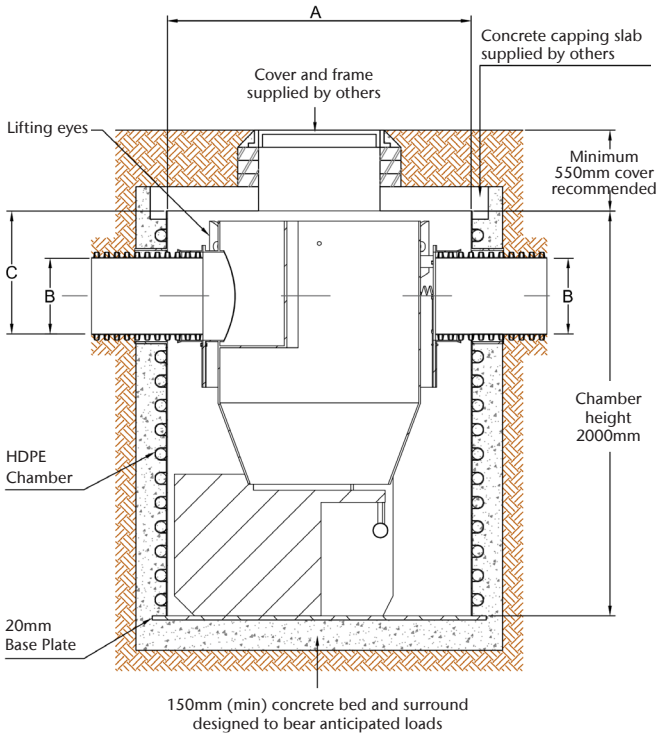
Product name	Product code	Chamber diameter (A)	Pipe connections (B)	Top to invert (C)	Sediment storage capacity	Oil / debris storage capacity	Typical treatment flow rate (fine)	Typical treatment flow rate (coarse)	Typical non remobilisation flow rate (coarse)
		mm	mm	mm	m^3	l	l/s	l/s	l/s
ACO V-Septor - Hydrodynamic Separator Range									
V-Septor 750	40995	750	150	375	0.4	49	11	14	37
V-Septor 1000	41000	1050	225	483	0.6	335	20	25	67
V-Septor 1200	41003	1200	300	550	0.86	397	29	37	98
V-Septor 1500	41005	1500	375	608	1.2	785	45	57	151
V-Septor 2000	41009	2100	500	700	2.2	1130	80	102	269
V-Septor 2500	41013	2400	600	850	3.5	2010	125	159	421

How it works

1. The deflection plate directs the incoming stormwater to create a vertical vortex.
2. Suspended solids settle down in the sludge chamber. Light liquids and debris are captured at the surface.
3. Radial flow baffles create isolated zones to retain sediments in the sludge chamber and prevent remobilisation of sediments during peak flow events.
4. Cleaned water flows up the outer chamber and over the balancing weir and then passes through the outlet to discharge to the water environment.
5. Captured solids and debris can easily be removed by suction hose during maintenance.







ACO Water Management Contacts:
Sales: uk-swc@aco.co.uk
Technical: technical@aco.co.uk
Tel: 01462 816666
www.aco.co.uk

ACO. creating the future of drainage

Online Controls for Storm

Pump Manhole: 2, DS/PN: 1.001, Volume (m³): 0.5

Invert Level (m) 47.687

Storage Structures for Storm

Cellular Storage Manhole: 2, DS/PN: 1.001

Invert Level (m) 47.087 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.01979 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.01979

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	20.0	0.0	0.801	0.0	0.0
0.800	20.0	0.0			

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	30/15 Summer				47.752
1.001	2	360 Winter	1	+0%					47.242

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.048	0.000	0.52			1.7	OK	
1.001	2	-0.545	0.000	0.00			0.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	30	+50%	30/15 Summer				47.854
1.001	2	360 Winter	30	+50%					47.600

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.054	0.000	1.87			6.2	FLOOD RISK	
1.001	2	-0.187	0.000	0.00			0.0	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+50%	30/15 Summer				47.896
1.001	2	360 Winter	100	+50%					47.746

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.096	0.000	2.38			7.9	FLOOD RISK	
1.001	2	-0.041	0.000	0.00			0.0	OK	

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)	100	PIMP (%)	100
M5-60 (mm)	16.300	Add Flow / Climate Change (%)	0
Ratio R	0.277	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	16.300	Storm Duration (mins)	30
Ratio R	0.277		

Online Controls for Storm

Pump Manhole: 2, DS/PN: 1.001, Volume (m³): 0.9

Invert Level (m) 39.269

Storage Structures for Storm

Cellular Storage Manhole: 2, DS/PN: 1.001

Invert Level (m) 38.400 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.10711 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.10711

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	60.0	0.0	0.801	0.0	0.0
0.800	60.0	0.0			

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	1	+0%	30/15 Summer				39.373
1.001	2	360 Winter	1	+0%					38.589

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.059	0.000	0.67			6.1	OK	
1.001	2	-0.830	0.000	0.00			0.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	30	+50%	30/15 Summer				39.541
1.001	2	360 Winter	30	+50%					39.026

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.109	0.000	2.44			22.1	SURCHARGED	
1.001	2	-0.393	0.000	0.00			0.0	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+50%	30/15 Summer				39.620
1.001	2	360 Winter	100	+50%					39.414

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.188	0.000	3.12			28.2	SURCHARGED	
1.001	2	-0.005	0.000	0.00			0.0	OK	

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)	100	PIMP (%)	100
M5-60 (mm)	16.300	Add Flow / Climate Change (%)	0
Ratio R	0.277	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	5.000#	0.013	384.6	0.044	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	5.000#	0.013	384.6	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

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	5.16	47.700	0.044	0.0	0.0	0.0	0.51	9.0	6.0
1.001	50.00	5.33	47.687	0.044	0.0	0.0	0.0	0.51	9.0	6.0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	16.300	Storm Duration (mins)	30
Ratio R	0.277		

Online Controls for Storm

Pump Manhole: 2, DS/PN: 1.001, Volume (m³): 0.5

Invert Level (m) 47.687

Storage Structures for Storm

Cellular Storage Manhole: 2, DS/PN: 1.001

Invert Level (m) 47.700 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.04726 Porosity 0.40
Infiltration Coefficient Side (m/hr) 0.04726

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	240.0	0.0	0.401	0.0	0.0
0.400	240.0	0.0			

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	360 Winter	1	+0%	30/15 Summer				47.780
1.001	2	360 Winter	1	+0%	30/60 Winter				47.780

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	-0.070	0.000	0.10			0.9	OK	
1.001	2	-0.057	0.000	0.00			0.0	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	360 Winter	30	+50%	30/15 Summer				47.964
1.001	2	360 Winter	30	+50%	30/60 Winter				47.964

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.114	0.000	0.33			3.0	FLOOD RISK	
1.001	2	0.127	0.000	0.00			0.0	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.274
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	16.800	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 50, 50

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	360 Winter	100	+50%	30/15 Summer				48.042
1.001	2	360 Winter	100	+50%	30/60 Winter				48.042

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.192	0.000	0.43			3.9	FLOOD RISK	
1.001	2	0.205	0.000	0.00			0.0	FLOOD RISK	

KEY:

AREA 1

AREA 2

AREA 3

REV	DATE	AUTHOR	NOTES
DRAWING STATUS			PLANNING

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CLIENT
MR G MORGAN

TITLE
CAMPING PODS, NETHERTOWN ROAD, ST BEES
CATCHMENT AREA

DRAWN PA | DATE NOV 22 | SCALE 1:200 @A1

DRAWING NO. 23-C-17369-001 | -

STILLING CHAMBER
ø600
CL 37.388m
IL 36.350m

FOUL WATER PUMPED TO PRIVATE STILLING CHAMBER WITHIN PREVIOUS DEVELOPMENT. FOUL IS GRAVITY FED FROM THIS POINT TO EXISTING ADOPTED NETWORK

FFL 36.400m

PREVIOUSLY INSTALLED 3No. ø100mm ID PUMP RISING MAIN DUCTS INSTALLED UNDER ROAD

SW01 ø450
CL 37.300m
IL 35.400m

CATCH PIT MANHOLE

ACO V SEPTOR ø750

SuDS SOAKAWAY
5x2x0.8m DEEP POLYSTORM (OR SIMILAR APPROVED) GEOCELLULAR CRATED SOAKAWAY WRAPPED IN PERMEABLE GEOTEXTILE MEMBRANE

SOAKAWAY VENT AS REQUIRED BY MANUFACTURER

FW PUMP (LOCATION & SPEC TBC). MUST INCLUDE MIN 24 HOUR EFFLUENT STORAGE.
CL 37.500m

SW02 ø450
CL 38.083m
IL 37.000m

SW03 ø450
CL 39.500m
IL 38.000m

FW04 ø600
BACKDROP MANHOLE
CL 40.110m
INCOMING IL 38.810m
OUTGOING IL 37.087m

SW04 ø450
CL 40.850m
IL 39.550m

SW05 ø450
CL 40.000m
IL 39.450m

ACO V SEPTOR ø750

SuDS SOAKAWAY
10x6x0.8m DEEP POLYSTORM (OR SIMILAR APPROVED) GEOCELLULAR CRATED SOAKAWAY WRAPPED IN PERMEABLE GEOTEXTILE MEMBRANE

SOAKAWAY VENT AS REQUIRED BY MANUFACTURER

SW06 ø600
CL 40.000m
IL 39.282m

SW07 ø450
CL 41.750m
IL 40.750m

FW01 ø600
CL 47.750m
IL 46.050m

FW02 ø600
BACKDROP MANHOLE
CL 46.700m
INCOMING IL 45.700m
OUTGOING IL 42.543m

FW03 ø600
BACKDROP MANHOLE
CL 43.500m
INCOMING IL 42.150m
OUTGOING IL 39.325m

SW08 ø600
CL 44.350m
IL 43.050m

SW09 ø450
CL 47.000m
IL 46.000m

SW10 CATCH PIT MANHOLE 450
CL 45.800m
IL 45.200m

ACO V SEPTOR ø750

SuDS GRAVEL SOAKAWAY
11x20x0.4m WRAPPED IN PERMEABLE GEOTEXTILE MEMBRANE

EXISTING UU TW MANHOLE
ø1200 DA
ø150 PIPE
CL 33.428m
MAN_RUN IL 32.207m

POINT OF EXISTING PRIVATE DRAINAGE CONNECTION TO UU ADOPTED NETWORK. APPROVED UNDER PREVIOUS PLANNING APPLICATION 4/21/2369/OR1

FOUL WATER PUMPED TO PRIVATE STILLING CHAMBER WITHIN PREVIOUS DEVELOPMENT. FOUL IS GRAVITY FED FROM THIS POINT TO EXISTING ADOPTED NETWORK

DISCHARGE POINT OF FOUL WATER SYSTEM
1:1000 @A1

REV	DATE	AUTHOR	NOTES
C	02/07/24	SM	LARGE SCALE PLAN ADDED FOR FOUL ROUTE CLARITY
B	10/05/24	PA	GRAVEL SOAKAWAY BENEATH CAR PARK AMENDMENT IN SIZE
A	10/05/24	PA	REMOVAL OF PLUNGE POOL AND REDUCED CAR PARKING

DRAWING STATUS: PLANNING

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TITLE
CAMPING PODS, NETHERTOWN ROAD, ST BEES
PROPOSED DRAINAGE DESIGN

DRAWN PA | DATE NOV 22 | SCALE 1:200 @A1

DRAWING NO. 23-C-17369-002 | C