BENJAMIN ALLEN CONSTRUCTION LIMITED



TOWNHOUSE FARM, CHURCH LANE, ARDINGLY
WEST SUSSEX, RH17 6UR

Drainage Strategy & Design

July 2024
(Revised November 2025)

eas ltd
Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	**Data**
Report Reference	723/BAC/TownhouseFm/DA
Date	July 2024
Client	Benjamin Alan Construction Ltd
Report type	Drainage Strategy & Design
Purpose	Planning Condition
Revisions	August 2024 October 2024 November 2024 November 2025
Prepared by	Eur Ing Malcolm McKemey BSc (Hons), CEng, CEnv, MICE, MCIWEM, MIEnvSc [redacted] Signed
Approved by	Xanthe Lyford BSc (Hons) [redacted] Signed

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1. EXISTING SITE & PROPOSED DEVELOPMENT

1.1 The site comprises part of a farmyard attached to Townhouse Farm at the southern end of Church Lane in Ardingly, West Sussex. The site area is approximately 0.28 ha. The Ordnance Survey (OS) map reference for the site is TQ 3376 2934. The site elevation is approximately +104 m OD. See Appendix A, Figure 1: Site Location Plan and Figure 2: Existing Site Layout.

1.2 According to the British Geological Survey, the site lies on Lower Grinstead Clay, apart from the northeast corner, which lies on Cuckfield Stone (sandstone). The Cuckfield Stone is classified as a Secondary A aquifer and the Lower Grinstead Clay is classified as Unproductive Strata. The site does not lie within a groundwater source protection zone.

1.3 The geology has been confirmed in a site investigation carried out by AGB Environmental at the site in 2022.

1.4 The site has been largely cleared of buildings and hardstanding. The site falls gently from north to south and there is a large excavation on the west side, reputed to be a former gravel pit.

1.5 There is a ditch along the southern edge of the site, a spring fed watercourse 200 m to the east and another watercourse 200 m to the north. All these watercourses drain to the Ardingly Reservoir 400 m to the southwest.

2. FLOOD RISK ASSESSMENT

2.1 According to the EA online Flood Map for Planning, the site lies within Flood Zone 1 (low risk of flooding from fluvial source), at very low risk of surface water flooding and groundwater flooding or reservoir flooding are deemed unlikely.

2.2 As the site is less than 1 ha in area and lies within Flood Zone 1, there is no requirement for a flood risk assessment under the National Planning Policy Framework (NPPF) and associated guidance documents.

2.3 In this case, it is required by current standards that surface water discharge from the site should not exceed the greenfield flow. See Table 2.1 below:

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TABLE 2.1
GREENFIELD RUNOFF RATES
From the UK Sustainable Drainage (UKSUDS)
Greenfield Runoff Estimation Tool.

Return period	Flow rates (l/s)
Qbar	1.69
1 in 1 year	1.44
1 in 10 year	3.90
1 in 30 year	5.40
1 in 100 year	6.31

2.4 The maximum flow permitted to leave the site should not exceed the 1 in 1 year return period flow (1.44 l/s). The foul sewage should also be allowed for in the permitted discharge flow rate. The peak foul sewage design flow has been calculated for the proposed site as 0.093 l/s. This gives the maximum flow permitted to leave the site as 1.347 l/s.

3. EXISTING DRAINAGE

3.1 The site was visited on 18 July 2024 in order to examine the existing drainage. See Appendix B: Site Photographs.

3.2 Formal surface water drainage as existing comprises down pipes from the remaining agricultural building immediately to the north of the site discharging roof water to the ground. The remaining site has been cleared and no formal surface water drainage remains on site. Apparent surface water runoff flow paths are shown in Figure 2.

3.3 It should be noted that the proposed redevelopment of the site will result in a reduction in impermeable area compared with the former agricultural buildings and concrete paved areas on the site.

3.4 Whilst the site presently has no foul drainage, there are two sewage treatment plants on the southern edge of the site belonging to adjacent properties. These plants discharge treated effluent into the ditch on the southern boundary of the site.

4. PROPOSED DRAINAGE

4.1 The preferred sustainable (SuDS) option in the SuDS hierarchy is infiltration drainage. However, this requires suitably permeable substrate. The underlying Lower Grinstead Clay probably has minimal permeability and the Cuckfield Stone in the northeast corner (identified as gravel) overlies the Lower Grinstead Clay and is too shallow for a soakaway. The presence of a pond to the east of the site tends to confirm the low permeability of the underlying clay.

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4.2 Percolation testing was carried out on 30 August 2024 at the most practicable locations for soakaways (see Figure 2). The test pits revealed topsoil mixed with stone and brick gravel over stiff, slightly silty, clay. The test pit logs are given in Appendix F. The best infiltration rate achieved was 1.1 x 10-6 m/s. This is too low for a practicable soakaway.

4.3 The alternative to drainage to soakaway is attenuation storage with controlled outflow limited to a maximum of greenfield flow. The controlled flow has to be discharged to a watercourse or a surface water/combined sewer.

4.4 It is required that the attenuation storage should cater for flows up to the 1 in 100 year return period event, plus a 45% allowance for climate change.

4.5 Attenuation storage may be provided in the form of ponds, swales, a detention basin or underground (typically a geocellular/modular system wrapped in an impermeable geomembrane). Open storage is preferred as it is easier to observe the condition of and maintain. However, in this case, the underground Geocellular storage option is preferred.

4.6 The attenuation volume has been calculated at 14 m^3. This can be provided by a 5 m x 4 m x 0.8 m deep geocellular structure with an outlet chamber discharging to the ditch through a 35 mm diameter orifice plate. A 35 mm diameter orifice will be at high risk of blockage and a vortex valve should be used instead.

4.7 Where drainage to the ditch is required, it will be necessary to obtain an ordinary watercourse land discharge consent from MDSC.

4.8 Other Sustainable Urban Drainage System (SUDS) Options

4.8.1 Additional SUDS options could include the use of permeable paving in the driveway and any patio areas. Permeable paving will permit surface water to infiltrate into the underlying soil, delay discharge and reduce peak flows following a rainfall event. Permeable paving should be underlain by a shallow drainage blanket connected to the surface water drainage system. Rainwater harvesting could also be practiced. Rainwater could be harvested for garden irrigation, collected in water butts connected to roof downpipes.

4.8.2 It may be possible to incorporate a green roof into the proposed design. Green roofs reduce the volume and rate of runoff and can be low maintenance, generally requiring bi-annual maintenance visits.

4.9 Extreme event

4.9.1 If an extreme storm event overwhelmed the surface water drainage system at the site and/or if the drainage system were to fail, ground levels would indicate that surface water would discharge south into the drainage ditch lying along the southern site boundary, and also into the old quarry/gravel pit on the western site boundary, as per the present situation. Both these features drain south towards the Ardingly Reservoir.

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4.9 Drainage Design

4.9.1 The results of the drainage design from the MasterDrain SW analysis given in Appendix D and illustrated in Figure 3 are summarised in Table 4.1 below:

TABLE 4.1

SURFACE WATER CHAMBERS

Chamber No.	Chamber dia (mm)/type	Area drained (m2)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
SW1	450	60	104.00	103.50	-	100
SW2	450	45	103.45	102.95	100	100
SW3	600	25	103.00	102.50	100	150
SW4	600	35	103.15	102.36	100	150
SW5	600	20	103.10	102.28	150	150
SW6	600	20	103.10	102.20	150	150
SW7	450	32	103.10	102.60	-	100
SW8	450	32	103.10	102.49	100	100
SW9	900	-	103.00	102.15	100/150	150
SW10	600	-	102.40	101.80	150	150
Atten	5x5x0.8	-	102.30	101.00	150	100
Flow control	900	-	102.20	100.90	100	Vortex valve

All falls are approximately 1% or steeper where dictated by ground levels at the chamber locations.

5 FOUL SEWERAGE

5.1 There is no existing foul sewerage at the site. No public foul sewers are located in Church Lane or otherwise in the vicinity of the site. Foul sewerage for the proposed development should comprise a package sewage treatment plant producing treated effluent suitable for disposal to a watercourse (Kingspan Biodisc or similar). The sewage treatment plant is to be located close to the drainage ditch at the southern edge of the site with the outlet downstream of the surface water outlet from the attenuation storage.

5.2 The proposed sewage treatment system should require no permit from the Environment Agency (EA), provided that it adheres to the EA's General Binding Rules for a discharge to a watercourse. The General Binding Rules relevant to this type of site and discharge to a watercourse are provided in Appendix E.

5.3 The proposed development will comprise one dwelling and a separate “work from home” office building. The sewage flow is calculated by the MasterDrain (foul) model based on “drainage units”; the number of facilities (basins, baths, showers, WCs, washing machines, dishwashers, etc.). Otherwise, overall flow data is available from British Water Code of Practice: *Flows and Loads* and the WRc publication "Sewers for Adoption".

5.4 The results of the sewerage design from the MasterDrain Foul analysis given in Appendix D and illustrated in Figure 3 are summarised in Table 5.1 below:

TABLE 5.1
FOUL SEWERAGE CHAMBERS

Chamber No.	Chamber dia (mm)/type	Drainage Units (DUs)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
F1	450	11.4	104.00	103.50	100	100
F2	450	4	104.00	103.41	100	100
F3	450	4	104.00	103.32	100	100
F4	450	4	103.10	102.60	100	100
STW	1800	-	102.20	101.30	100	Outfall

All falls are approximately 1% or steeper where dictated by ground levels at the chamber locations.

6 CONCLUSIONS

6.1 Planning permission has been sought for the demolition of agricultural buildings and removal of hardstanding in a plot formerly part of Townhouse Farm in Ardingly, West Sussex. The site is to be redeveloped for a residence, with home office, other outbuildings and gardens. A drainage strategy is required for the disposal of surface water and foul sewage.

6.2 The site lies within Flood Zone 1 and is generally at low risk of flooding from all sources.

6.3 There is presently no formal surface water drainage remaining on site. The site has a slight fall from North to South and surface water runs off into the ditch at the southern boundary of the site or flows to the west into an old (gravel pit?) excavation.

6.4 The requirement for sustainable drainage (SuDS) is that surface water flows leaving the site should not exceed the “greenfield” flow. The preferred option in the SuDS hierarchy is infiltration, where no flow leaves the site. The underlying soil is clay of low permeability and percolation testing confirmed that infiltration drainage (drainage to soakaway) will not be practicable at this site. The alternative to drainage to soakaway is attenuation storage with outflow limited to greenfield flow.

6.5 The total storage volume required to retain the 1 in 100 year plus 45% climate change allowance flood event on site has been calculated as 14 m3, Outflow will be limited to a maximum of 1.347 l/s using a vortex valve.

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6.6 It should be noted that the proposed development will not result in an increase in the impermeable area of the site compared to its prior use.

6.7 Additional SuDS options would be permeable paving in any driveway or patio areas, a rain garden, water butts on downpipes to collect rainwater for garden irrigation and possibly a green roof.

6.8 The proposed development will require foul sewerage. The normal requirement is the foul sewage should be discharged to the public foul (or combined) sewer, where there is one within practicable reach.

6.9 In this case there are no public sewers within practicable reach and the proposed development will require a package sewage treatment plant with a discharge of treated effluent into the dich on the southern site boundary.

6.10 No permit should be required from the EA and the installation should comply with the General Binding Rules.

6.11 The drainage system will require maintenance, particularly the flow control device and the sewage treatment plant. The vortex valve or orifice will require regular checking to ensure that it has not become obstructed and is working correctly. All chambers will require checking and de-silting occasionally. This should be carried out at least annually in late winter after most leaf fall has occurred. The sewage treatment plant should be maintained by a specialist on a schedule recommended by the manufacturer.

7 RECOMMENDATIONS

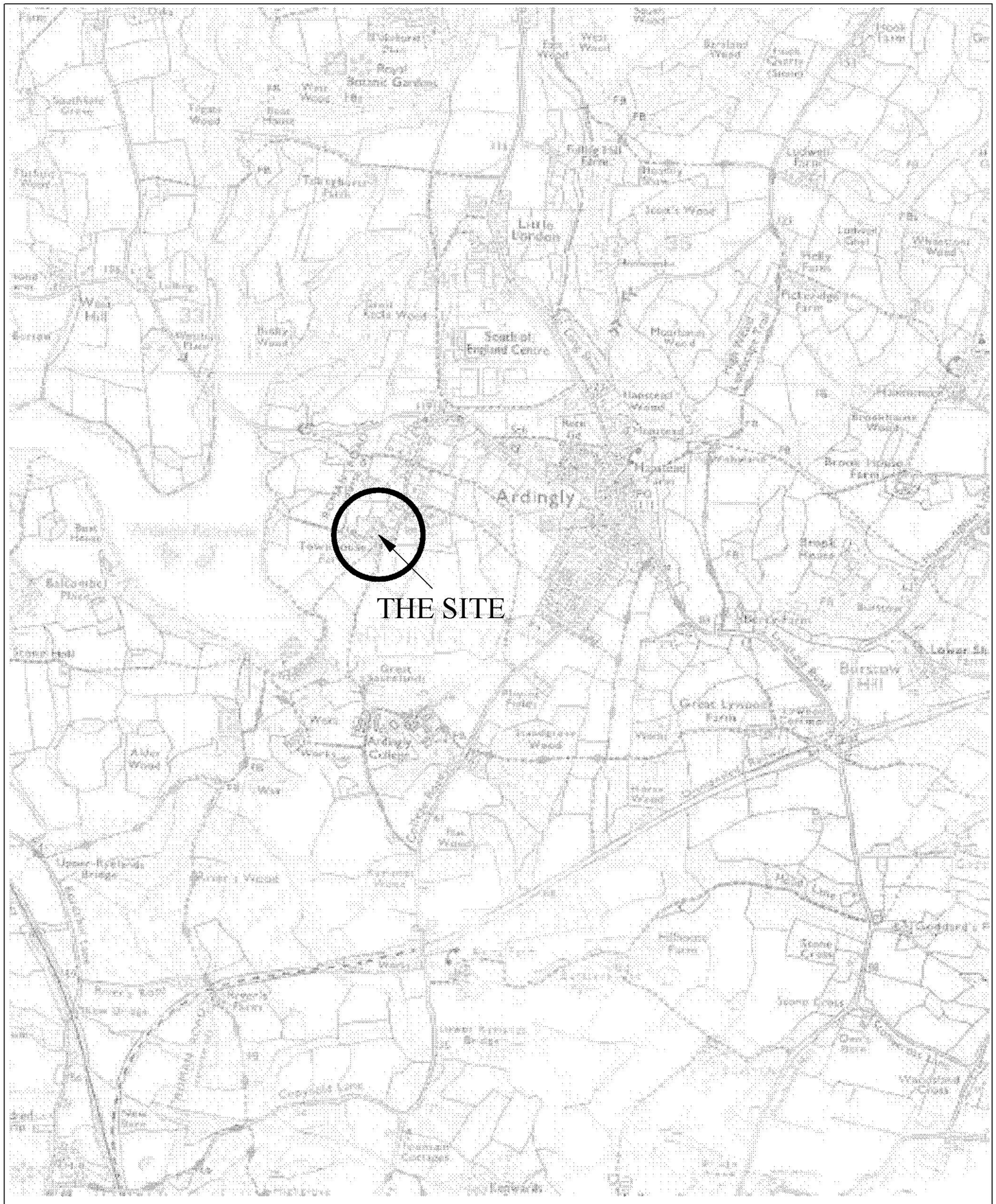
7.1 It is recommended that the ditch on the southern boundary of the site should be cleared and the location of the existing two sewage treatment plant outfalls should be identified. The surface water outfall should be located upstream of the existing outfalls and the sewage effluent outfall from the site should be located downstream of the existing outfalls.

7.2 It is recommended that the sewerage for the adjacent properties that cross the site should be surveyed, identified and marked out to protect them from damage during the proposed redevelopment.

☆ ☆ ☆ ☆ ☆ ☆ ☆

APPENDIX A: FIGURES

Figure 1: Site Location Plan
Figure 2: Pre-redevelopment Site Layout
Figure 3: Proposed Redevelopment & Drainage Layout
Figure 4: Proposed Outfall Detail



Reproduced from the Ordnance Survey 1:25000 scale map with permission. Licence No. 100005508

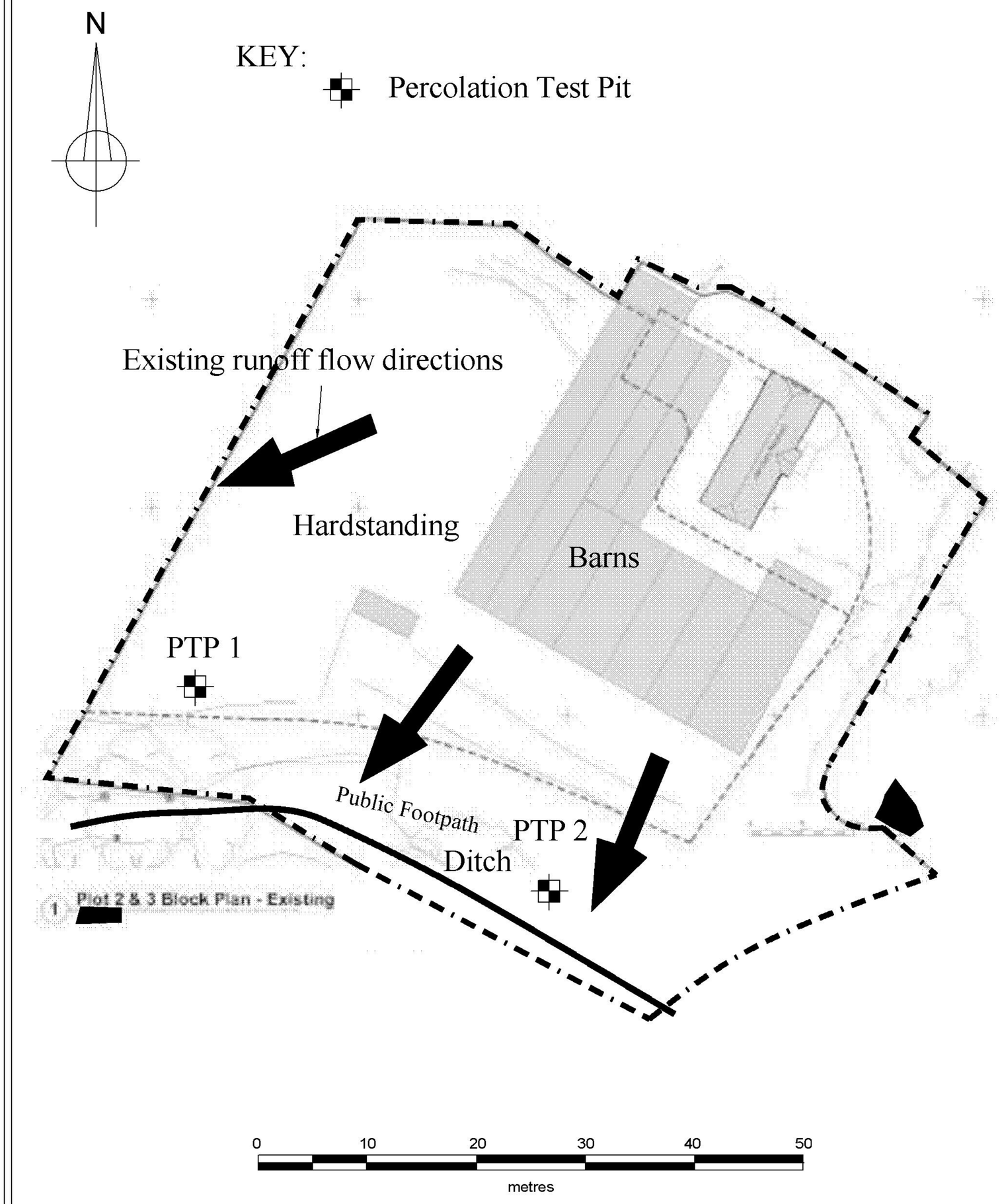
Scale as shown

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TOWNHOUSE FARM, CHURCH LANE, ARDINGLY

Figure 1: Site Location

July 2024



Scale as shown

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TOWNHOUSE FARM, CHURCH LANE, ARDINGLY

Figure 2: Site Layout prior to Redevelopment

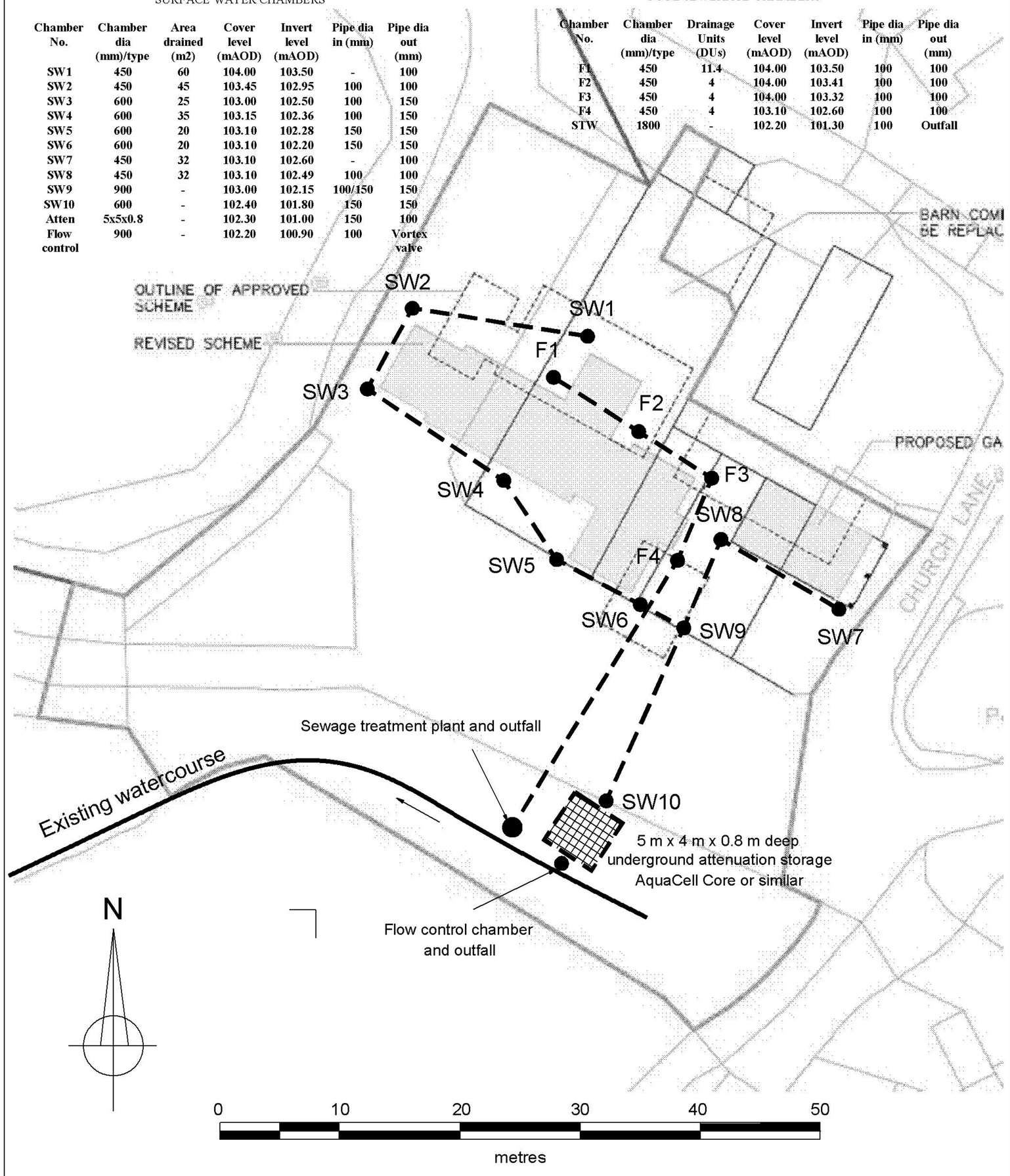
August 2024

SURFACE WATER CHAMBERS

Chamber No.	Chamber dia (mm)/type	Area drained (m2)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
SW1	450	60	104.00	103.50	-	100
SW2	450	45	103.45	102.95	100	100
SW3	600	25	103.00	102.50	100	150
SW4	600	35	103.15	102.36	100	150
SW5	600	20	103.10	102.28	150	150
SW6	600	20	103.10	102.20	150	150
SW7	450	32	103.10	102.60	-	100
SW8	450	32	103.10	102.49	100	100
SW9	900	-	103.00	102.15	100/150	150
SW10	600	-	102.40	101.80	150	150
Atten	5x5x0.8	-	102.30	101.00	150	100
Flow control	900	-	102.20	100.90	100	Vortex valve

FOUL SEWERAGE CHAMBERS

Chamber No.	Chamber dia (mm)/type	Drainage Units (DUs)	Cover level (mAOD)	Invert level (mAOD)	Pipe dia in (mm)	Pipe dia out (mm)
F1	450	11.4	104.00	103.50	100	100
F2	450	4	104.00	103.41	100	100
F3	450	4	104.00	103.32	100	100
F4	450	4	103.10	102.60	100	100
STW	1800	-	102.20	101.30	100	Outfall



Scale as shown

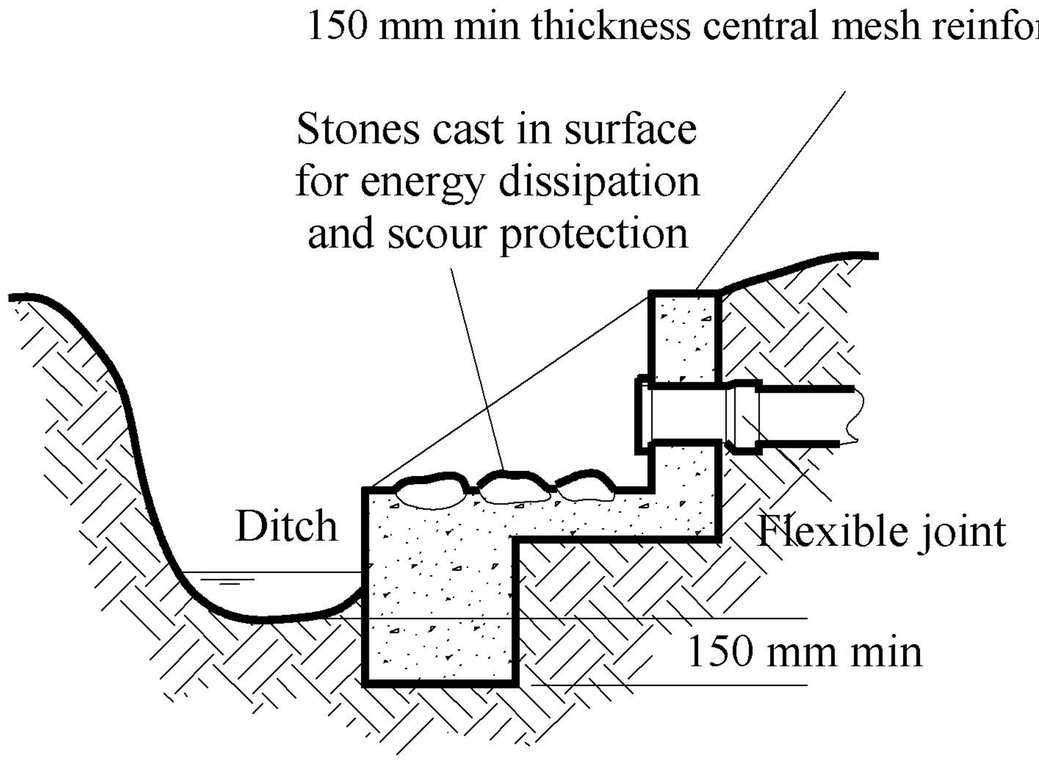
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TOWNHOUSE FARM, CHURCH LANE, ARDINGLY

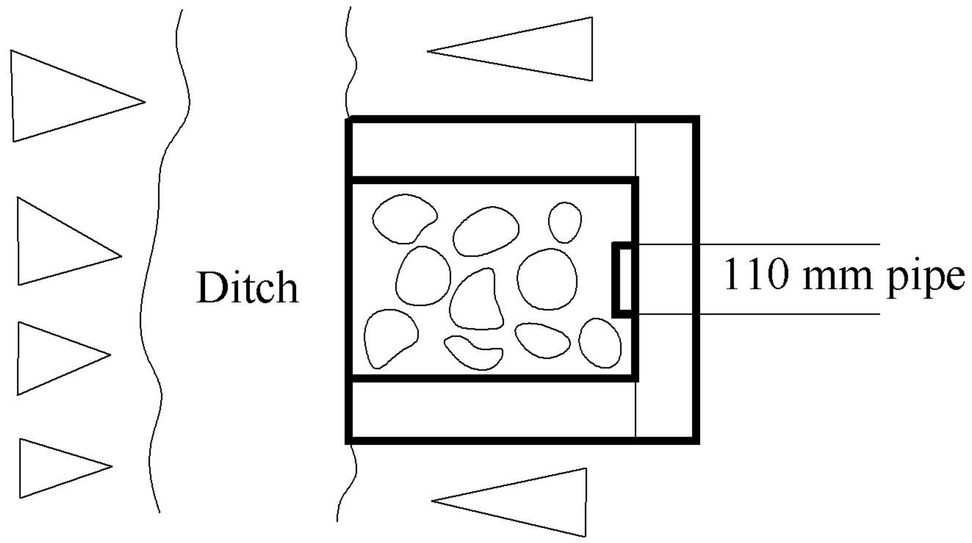
Figure 3: Proposed Redevelopment and Drainage Strategy

November 2025

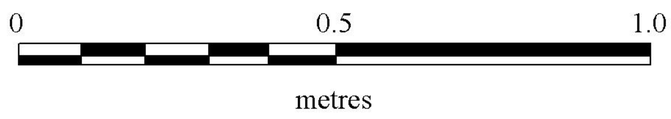
OUTFALL DETAIL FOR BOTH SURFACE WATER AND SEWAGE EFFLUENT



SECTION



PLAN



Scale as shown

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Figure 4: Proposed Outfall Details

September 2024

APPENDIX B

Site Photographs

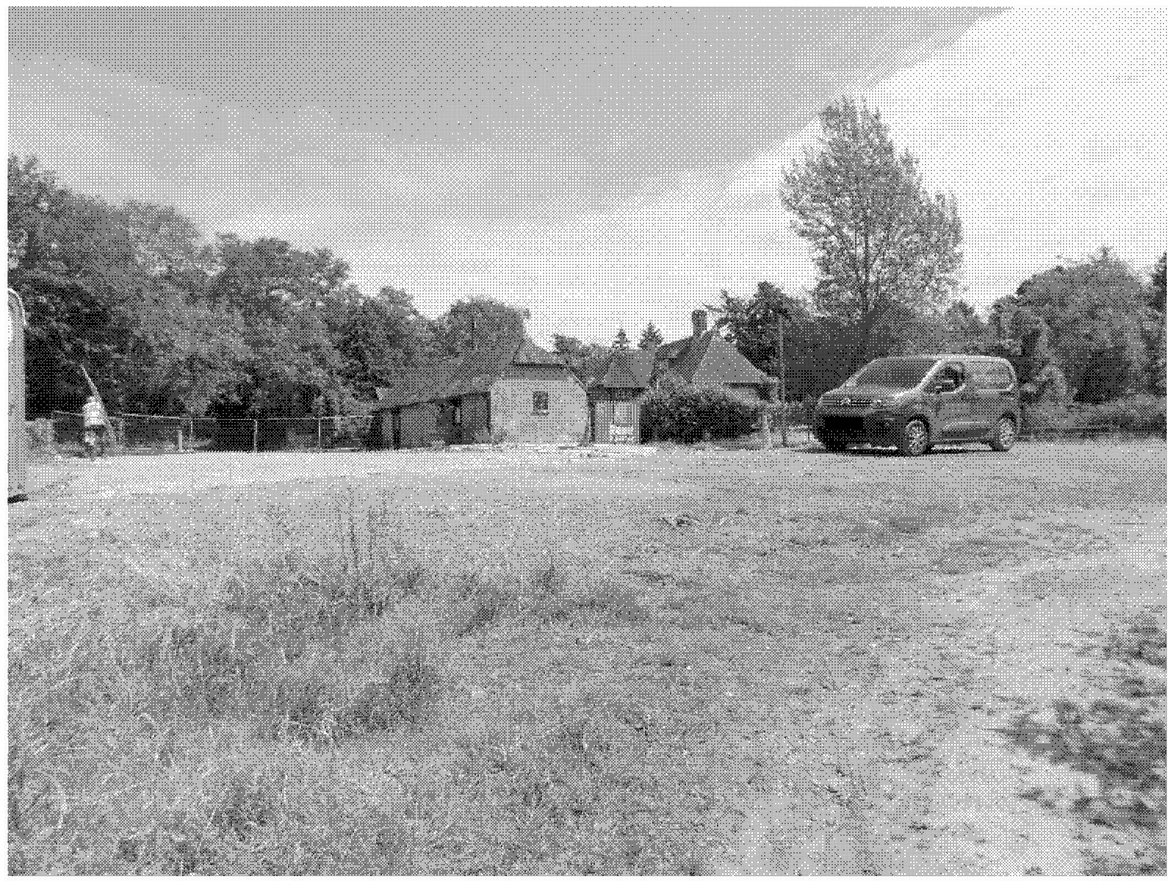


Photo 1: The site viewed from the southern edge after site clearance.



Photo 2: Drainage ditch on the southern edge of the site.



Photo 3: Old excavation (gravel pit?) beyond western edge of the site.



Photo 4: Ardingly Reservoir from the south of the site.



Photo 5: Percolation Test Pit PTP 1.



Photo 6: Percolation Test Pit PTP 2.

APPENDIX C

UK Sustainable Drainage (UKSUDS) Calculations (Greenfield Runoff Rate)

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Malcolm McKemey
Site name:	Townhouse Farm
Site location:	Ardingly

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.04795° N
Longitude:	0.09295° W
Reference:	2668431726
Date:	Jul 19 2024 13:42

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.28

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	849	849
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	1.69	1.69
1 in 1 year (l/s):	1.44	1.44
1 in 30 years (l/s):	3.9	3.9
1 in 100 year (l/s):	5.4	5.4
1 in 200 years (l/s):	6.34	6.34

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

APPENDIX D

Output from the MasterDrain network model

MasterDrain SW

Environmental Assessment Services Ltd http://www.easltd.co.uk	London Rd, Hickstead Haywards Heath, West Sussex, RH17 5LZ Tel: 01444 882552 email: info@easltd.co.uk	Job No. 723		
		Sheet no. 1		
		Date 20/11/25		
Project: Townhouse Farm foul sewerage (revised)		By MDM	Checked	Reviewed
Title: Hydrograph storage analysis (Winter profile) for Ardingly				

Data:-

Location = Ardingly
M5-60 (mm) = 19.8
Soil index = 0.45
Return period = 100
UCWI = 0.0

Grid reference = TQ3429
r = 0.33
SAAR (mm/yr) = 845
WRAP = 4
Climate change = +45%

Clayey, or loamy over clayey soils with an impermeable layer at shallow depth.

Percentage runoff = 95.0% (manual setting)

Imperv. area = 269 m²
Total area = 269 m²
Total runoff = 18.5 m³

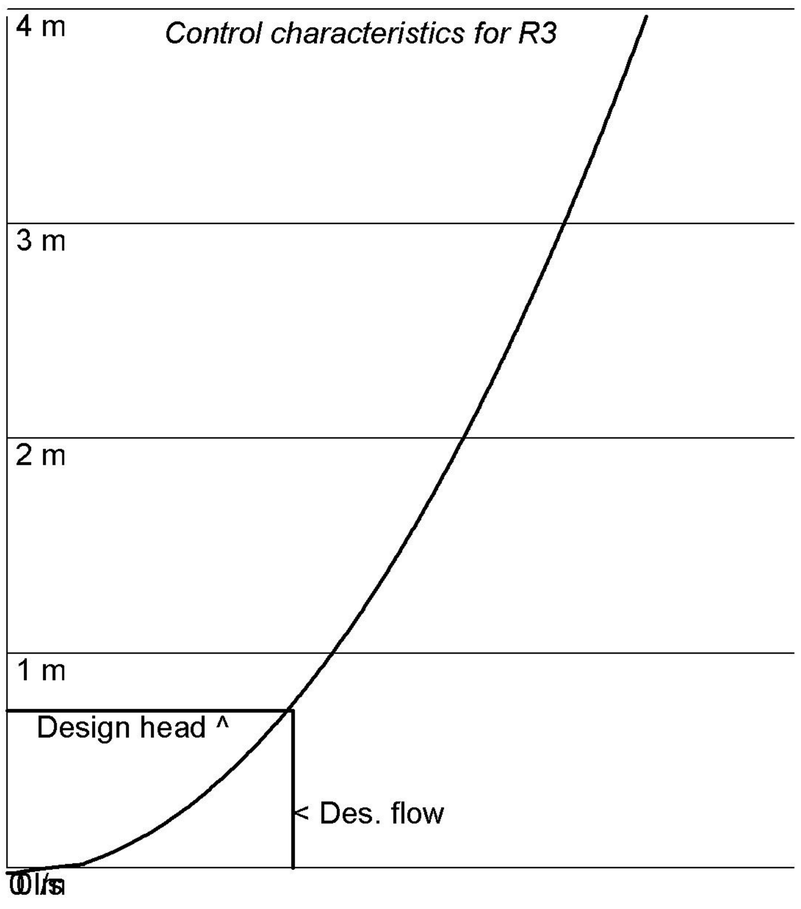
Pervious area = 0 m²
Equiv area = 256 m² (Tot. area x % runoff).
Discharge rate = 1.347 l/s

Design Head = 0.8m
Control device = R3
Max. calc. depth = 0.78 m
Mean discharge = 0.87 l/s

Peak flow = 1.33 l/s
Orifice diam = 34.3 mm
Available depth = 0.0 m³

Available system storage = 0.00 m³ under a system plane at the design head level.
Offline storage = 0.0 m³
Total storage = 14.0 m³

Peak input flow =6.43 l/s

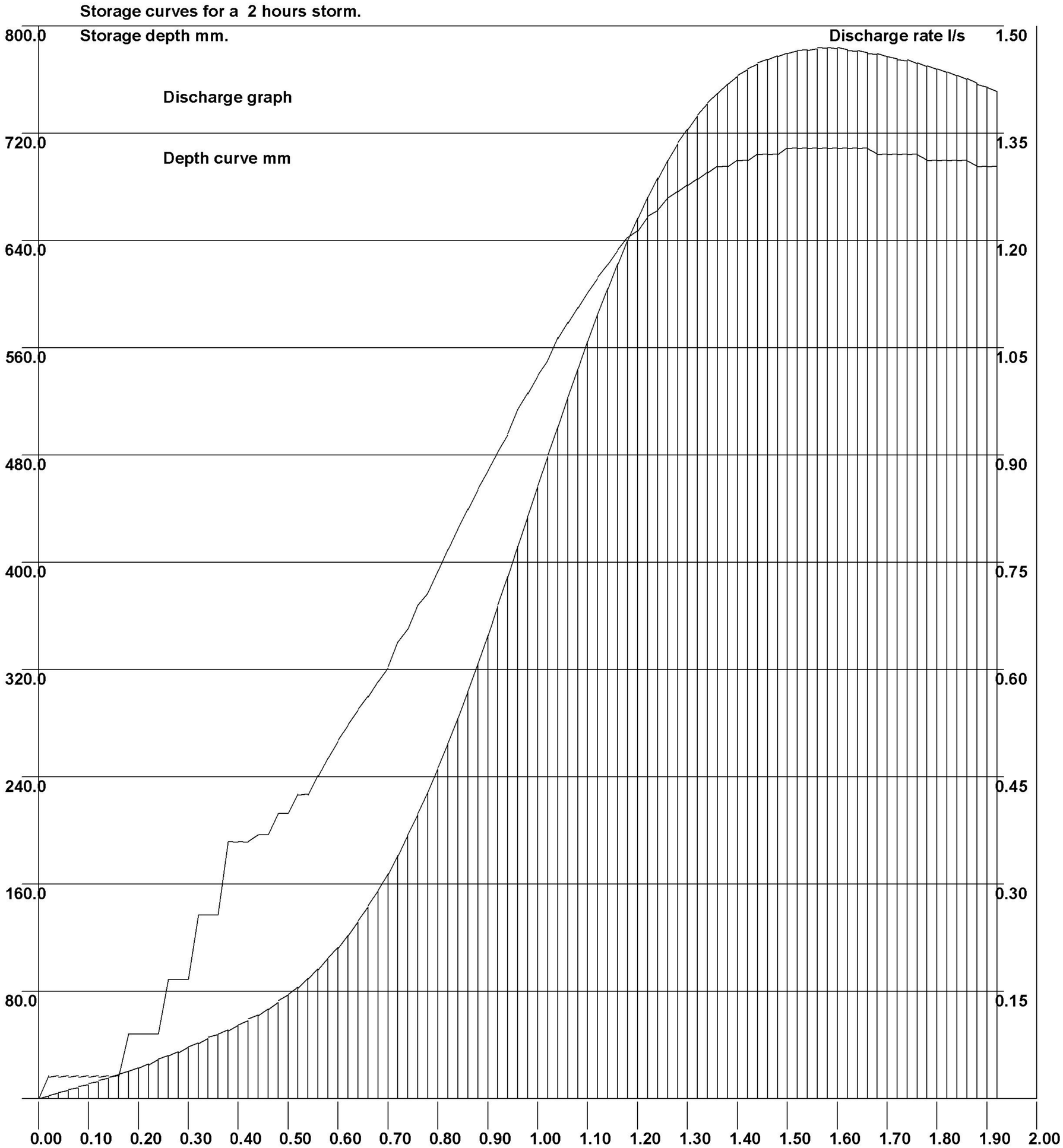


Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
0.01	0.03	2.01	2.14
0.05	0.36	2.05	2.16
0.10	0.48	2.10	2.18
0.15	0.58	2.15	2.21
0.20	0.67	2.20	2.23
0.25	0.75	2.25	2.26
0.30	0.82	2.30	2.28
0.35	0.89	2.35	2.31
0.40	0.95	2.40	2.33
0.45	1.01	2.45	2.36
0.50	1.06	2.50	2.38
0.55	1.12	2.55	2.40
0.60	1.17	2.60	2.43
0.65	1.21	2.65	2.45
0.70	1.26	2.70	2.47
0.75	1.30	2.75	2.50
0.80	1.35	2.80	2.52
0.85	1.39	2.85	2.54
0.90	1.43	2.90	2.56
0.95	1.47	2.95	2.59
1.00	1.51	3.00	2.61
1.05	1.54	3.05	2.63
1.10	1.58	3.10	2.65
1.15	1.61	3.15	2.67
1.20	1.65	3.20	2.69
1.25	1.68	3.25	2.71
1.30	1.72	3.30	2.74
1.35	1.75	3.35	2.76
1.40	1.78	3.40	2.78
1.45	1.81	3.45	2.80
1.50	1.84	3.50	2.82
1.55	1.87	3.55	2.84
1.60	1.90	3.60	2.86
1.65	1.93	3.65	2.88
1.70	1.96	3.70	2.90
1.75	1.99	3.75	2.92
1.80	2.02	3.80	2.94
1.85	2.05	3.85	2.95
1.90	2.08	3.90	2.97
1.95	2.10	3.95	2.99
2.00	2.13	4.00	3.01

Calculation data provided by Crown Water Ltd, SL5 7NT

MasterDrain SW

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		Sheet no. 2		
		Date 20/11/25		
Project: Townhouse Farm foul sewerage (revised)		By MDM	Checked	Reviewed
Title: Hydrograph storage analysis (Winter profile) for Ardingly				



MasterDrain SW

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Job No. 723			
Sheet no. 3			
Date 20/11/25			
Project Townhouse Farm foul sewerage (revised)	By MDM	Checked	Reviewed
Title Hydrograph storage analysis (Winter profile) for Ardingly			

Incremental rainfall figures.

Storm Mins	Storage Depth mm	Control Flow l/s	Storm Mins	Storage Depth mm	Control Flow l/s
1.2	2.1	0.03	61.2	478.9	1.03
2.4	4.1	0.03	62.4	501.1	1.06
3.6	6.2	0.03	63.6	523.0	1.09
4.8	8.3	0.03	64.8	544.3	1.11
6.0	10.5	0.03	66.0	565.1	1.13
7.2	12.8	0.03	67.2	585.1	1.15
8.4	15.2	0.03	68.4	604.3	1.17
9.6	17.8	0.03	69.6	622.7	1.19
10.8	20.5	0.09	70.8	640.3	1.20
12.0	23.2	0.09	72.0	656.9	1.21
13.2	26.2	0.09	73.2	672.5	1.23
14.4	29.2	0.09	74.4	686.8	1.24
15.6	32.3	0.17	75.6	700.0	1.26
16.8	35.2	0.17	76.8	712.2	1.27
18.0	38.3	0.17	78.0	723.3	1.28
19.2	41.7	0.26	79.2	733.2	1.29
20.4	44.7	0.26	80.4	742.2	1.30
21.6	47.9	0.26	81.6	750.1	1.30
22.8	51.3	0.36	82.8	756.8	1.30
24.0	54.6	0.36	84.0	762.5	1.31
25.2	58.3	0.36	85.2	767.5	1.31
26.4	62.5	0.37	86.4	771.7	1.32
27.6	67.0	0.37	87.6	775.2	1.32
28.8	72.0	0.40	88.8	777.9	1.32
30.0	77.4	0.40	90.0	780.0	1.33
31.2	83.3	0.43	91.2	781.5	1.33
32.4	89.7	0.43	92.4	782.6	1.33
33.6	96.8	0.45	93.6	783.2	1.33
34.8	104.6	0.48	94.8	783.3	1.33
36.0	113.0	0.50	96.0	783.0	1.33
37.2	122.1	0.52	97.2	782.3	1.33
38.4	132.0	0.54	98.4	781.3	1.33
39.6	143.0	0.56	99.6	780.1	1.33
40.8	155.0	0.58	100.8	778.7	1.32
42.0	167.7	0.60	102.0	777.3	1.32
43.2	181.5	0.64	103.2	775.7	1.32
44.4	196.3	0.66	104.4	773.9	1.32
45.6	211.9	0.69	105.6	771.9	1.32
46.8	228.4	0.71	106.8	769.9	1.31
48.0	246.1	0.74	108.0	767.7	1.31
49.2	264.6	0.77	109.2	765.4	1.31
50.4	283.9	0.80	110.4	762.9	1.31
51.6	303.8	0.82	111.6	760.2	1.31
52.8	324.4	0.85	112.8	757.4	1.30
54.0	345.6	0.88	114.0	754.4	1.30
55.2	367.3	0.90	115.2	751.4	1.30
56.4	389.4	0.93	116.4	748.3	1.30
57.6	411.8	0.96	117.6	745.1	1.30
58.8	434.2	0.99	118.8	741.9	1.30
60.0	456.6	1.01	120.0	738.7	1.29

Using the Get Max button causes the program to step through a series of storm durations until a maximum volume is obtained.
Each duration is sampled 600 times and the results recorded. The storm durations (hrs) are:-

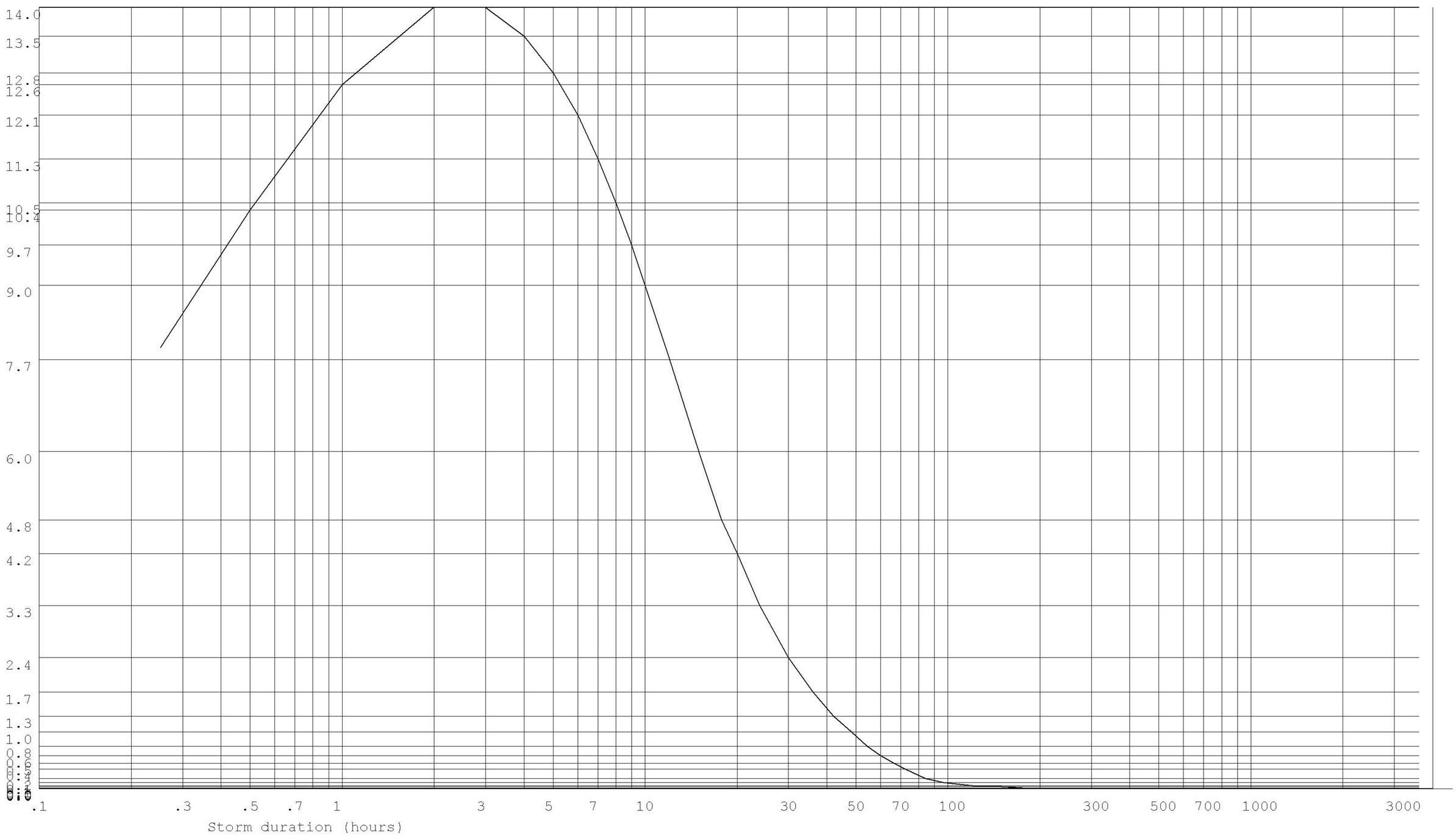
0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84, 96, 120, 150, 175, 200, 250, 300, 375, 500, 750, 1000, 1250, 1500, 1570, 2000, 2500, 3000, 3500, 4000

It should be noted that the six hour storm frequently requested rarely demonstrates the worst case for storage.

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Title: Hydrograph storage analysis (Winter profile) for Ardingly				

MasterDrain SW

Sequential storage volume at specific storm durations.



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Project **Townhouse Farm (revised)**

Title **Manhole printout for TOWNHOUSE FARM 3.SW**

Manhole ref.	X ref	Y ref	Form	Cham diam. or length	Rect. width	Chamb. height	Shaft height	MH Volume	Exit Diam	Exit Crown	Exit Invert
SW1	22.49	47.82	circ	450	N/A	0.50		0.08	100	103.625	103.500
SW2	8.01	50.14	circ	450	N/A	0.50		0.08	100	103.075	102.950
SW3	4.26	48.55	circ	600	N/A	0.50		0.14	150	102.675	102.500
SW4	15.64	35.92	circ	600	N/A	0.79		0.22	150	102.535	102.360
SW5	20.16	29.2	circ	600	N/A	0.82		0.23	150	102.455	102.280
SW6	27.01	25.45	circ	600	N/A	0.90		0.25	150	102.375	102.200
SW7	43.56	25.06	circ	450	N/A	0.50		0.08	100	102.725	102.600
SW8	33.74	30.75	circ	450	N/A	0.61		0.10	100	102.615	102.490
SW9	30.76	23.51	circ	900	N/A	0.85		0.54	150	102.325	102.150
SW10	24.3	8.94	circ	600	N/A	0.60		0.17	150	101.975	101.800
Atten	22.32	6.87	circ	5000	N/A	1.30		25.53	150	101.175	101.000

All manholes to be as per 'Sewers for Adoption'

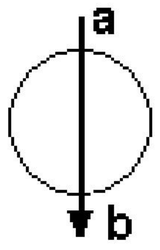
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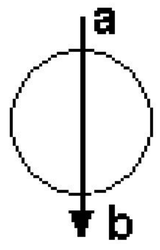
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Project **Townhouse Farm (revised)**

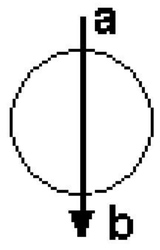
Title **Manhole printout for TOWNHOUSE FARM 3.SW**



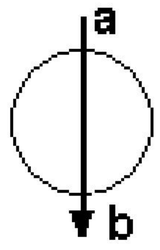
MH = SW1
a=head
b = 100



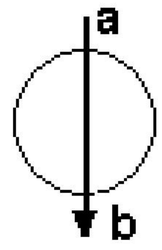
MH = SW2
a= 100
b = 100



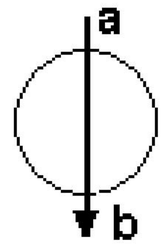
MH = SW3
a= 100
b = 150



MH = SW4
a= 150
b = 150

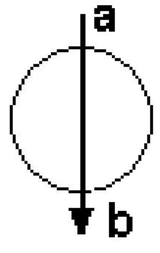


MH = SW5
a= 150
b = 150

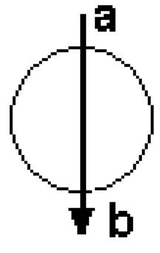


MH = SW6
a= 150
b = 150

M
a
b



MH = SW9
a= 150
b = 150
c = 100
d = 150



MH = SW10
a= 150
b = 150

MH = Atten
a= 150
b = 150

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Project **Townhouse Farm (revised)**

Title **Manhole printout for TOWNHOUSE FARM 3.SW**

These explanatory notes should be read in conjunction with the Manhol

1) Manhole ref - the reference for the manhole in question
2) Form - either circular or rectangular
3) Chamber diam or length - diameter of chamber if circular, or leng
4) Rectangular width - if form is rectangular, this gives the width
5) Chamber height - height of chamber from invert
6) Shaft height - height of access shaft if applicable, from top of
7) Manhole volume - cubic capacity of manhole chamber
8) Exit diameter - diameter of pipe leaving this manhole
9) Exit crown - crown level of pipe leaving this manhole
10) Exit invert - invert level of pipe leaving this manhole
11) Chamb const - manhole construction :-
    - N/A - not specified
    - Conc - concrete rings
    - Poly - polypropylene rings surrounded by selected fill
    - Poly/conc - polypropylene rings surrounded by concrete
    - Brick - brick built with waterproof render
    - In situ - concrete cast in situ
12) Slab level - surface level of base slab (if no sump, this is plac
    allow levels manipulation).
13) Manhole diameters of 9999 have exceeded the sizes available in Sf
14) Manhole diameters may have to be modified due to the number of br

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MasterDrain SW

Project: **Townhouse Farm (revised)**

Title: **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**

Surcharged outlet (0.500)
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 15 mins
No offline storage

Mean rain intens. 180.00 mm/hr
Storm profile = Summer
Using FSR data

Entry No.		SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE fract.	SURCHARGE Depth
1	I	1.01	SW1	11.7	4.9	100	450	103.50	103.54	104.00	0.42	0.0
2	I	1.02	SW2	20.3	8.6	100	450	102.95	102.99	103.45	0.42	0.0
3	I	1.03	SW3	16.1	10.6	150	600	102.50	102.59	103.00	0.66	0.0
4	I	1.04	SW4	17.6	13.5	150	600	102.36	102.47	103.15	0.76	0.1
5	I	1.05	SW5	17.9	15.1	150	600	102.28	102.40	103.10	0.84	0.1
6	I	1.06	SW6	19.4	16.7	150	600	102.20	102.32	103.10	0.86	0.1
7	B	2.01	SW7	5.9	2.6	100	450	102.60	102.65	103.10	0.44	0.0
8	B	2.02	SW8	12.7	5.2	100	450	102.49	102.53	103.10	0.41	0.0
9	I	1.07	SW9	26.3	21.9	150	900	102.15	102.27	103.00	0.84	0.1
10	I	1.08	SW10	89.7	21.9	150	600	101.80	101.84	102.40	0.24	0.0
11	I	1.09	Atten	30.1	21.9	150	5000	101.00	101.60	102.30	0.73	0.6

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MasterDrain SW

Project **Townhouse Farm (revised)**

Title **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**

Notes

Printout headings

1) Entry no - position in file
2) Section no - pipe identifier
3) Manhol
4) Pipe cap - full bore capacity of that pipe
5) Rate of flow - calculated flow rate (l/s) ‡ = flow restrictor.
6) Pipe dia
7) Chamber diam - chamber diam. at base of MH, or Manhole length x width
8) Static le
9) Invert level - invert level of manhole
10) Water level - calculated peak water level.
11) Grnd l
12) Surch. fract - calc.flow/pipe capacity
13) Surch. depth - surcharge level above soffit
14) Overfl
15) Flooded vol - volume of water above cover
16) Upstrm Vol - upstream pipe vol to previous manhole(s)
17) Status
18) Status - Surcharged - outlet surcharged
19) Status - Warning - water level within 299mm of cover level
20) Status

Title box

Hydrograph data

1) Ret. period - that used to calculate profile
2) Duration - length of storm (mins)
3) Profile -

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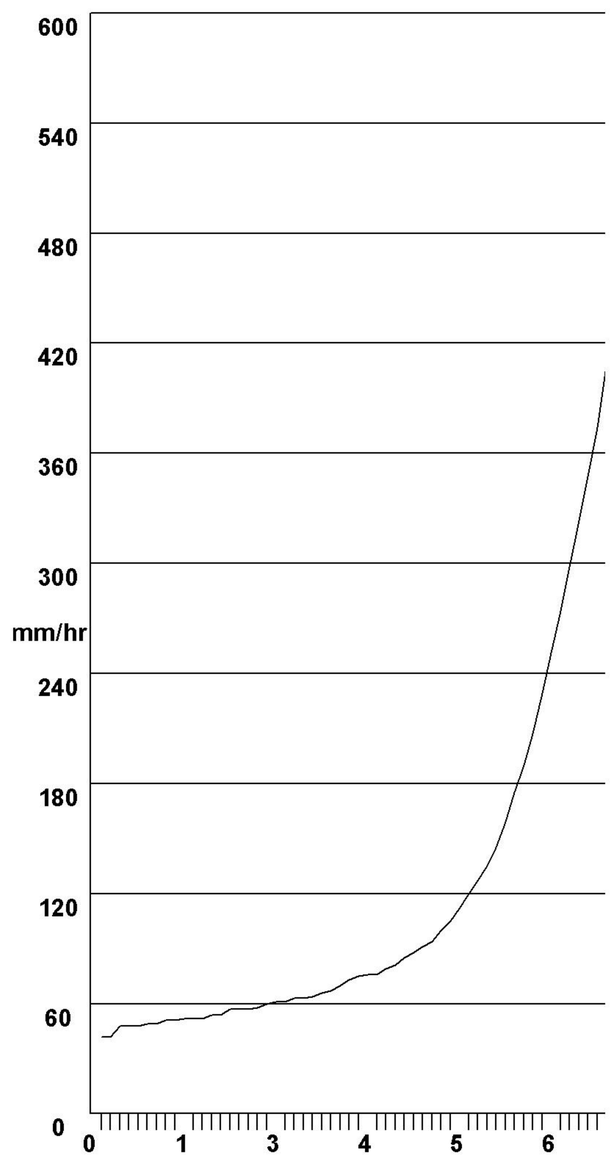
Project: **Townhouse Farm (revised)**

Title: **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:08	41.91	5:08	119.74	10:08	128.72
0:15	41.91	5:15	127.22	10:15	121.24
0:22	47.90	5:22	134.71	10:22	113.75
0:30	47.90	5:30	145.18	10:30	106.27
0:38	47.90	5:38	158.66	10:38	101.78
0:45	49.39	5:45	175.12	10:45	95.79
0:52	49.39	5:52	190.09	10:52	91.30
1:00	50.89	6:00	206.55	11:00	88.31
1:08	50.89	6:08	229.00	11:08	85.31
1:15	52.39	6:15	251.45	11:15	83.82
1:22	52.39	6:22	273.90	11:22	79.33
1:30	52.39	6:30	297.85	11:30	76.33
1:38	53.88	6:38	323.30	11:38	76.33
1:45	53.88	6:45	347.25	11:45	74.84
1:52	56.88	6:52	374.19	11:52	73.34
2:00	56.88	7:00	407.12	12:00	71.84
2:08	56.88	7:08	438.55	12:08	67.35
2:15	58.37	7:15	471.48	12:15	65.86
2:22	59.87	7:22	508.89	12:22	64.36
2:30	61.37	7:30	547.81	12:30	64.36
2:38	61.37	7:38	586.73	12:38	62.86
2:45	62.86	7:45	586.73	12:45	61.37
2:52	62.86	7:52	555.29	12:52	61.37
3:00	64.36	8:00	514.88	13:00	59.87
3:08	65.86	8:08	478.96	13:08	58.37
3:15	67.35	8:15	444.53	13:15	58.37
3:22	70.35	8:22	411.61	13:22	56.88
3:30	73.34	8:30	381.67	13:30	56.88
3:38	74.84	8:38	353.23	13:38	53.88
3:45	76.33	8:45	327.79	13:45	53.88
3:52	76.33	8:52	302.34	13:52	52.39
4:00	79.33	9:00	276.90	14:00	52.39
4:08	80.82	9:08	255.94	14:08	52.39
4:15	85.31	9:15	232.00	14:15	50.89
4:22	88.31	9:22	212.54	14:22	50.89
4:30	91.30	9:30	193.08	14:30	49.39
4:38	94.30	9:38	176.62	14:38	49.39
4:45	100.28	9:45	161.65	14:45	49.39
4:52	104.77	9:52	146.68	14:52	47.90
5:00	112.26	10:00	136.20	15:00	47.90

Hydrograph profile derived f

Return period= 100 yrs D



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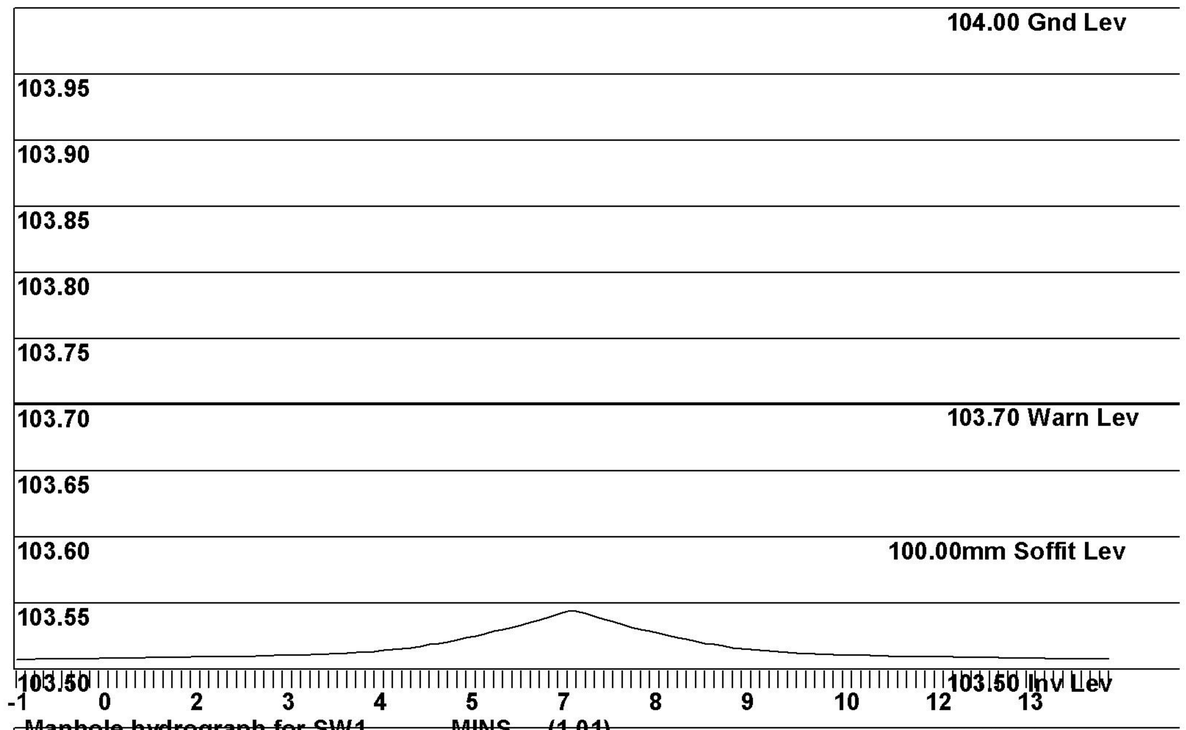
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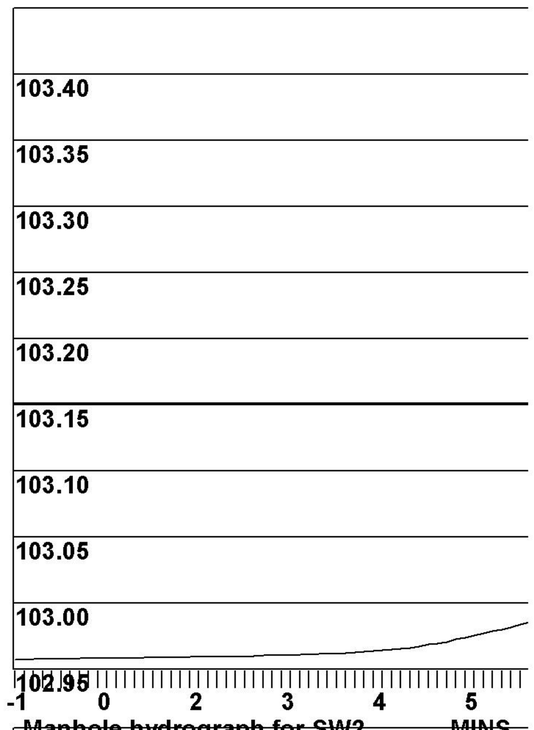
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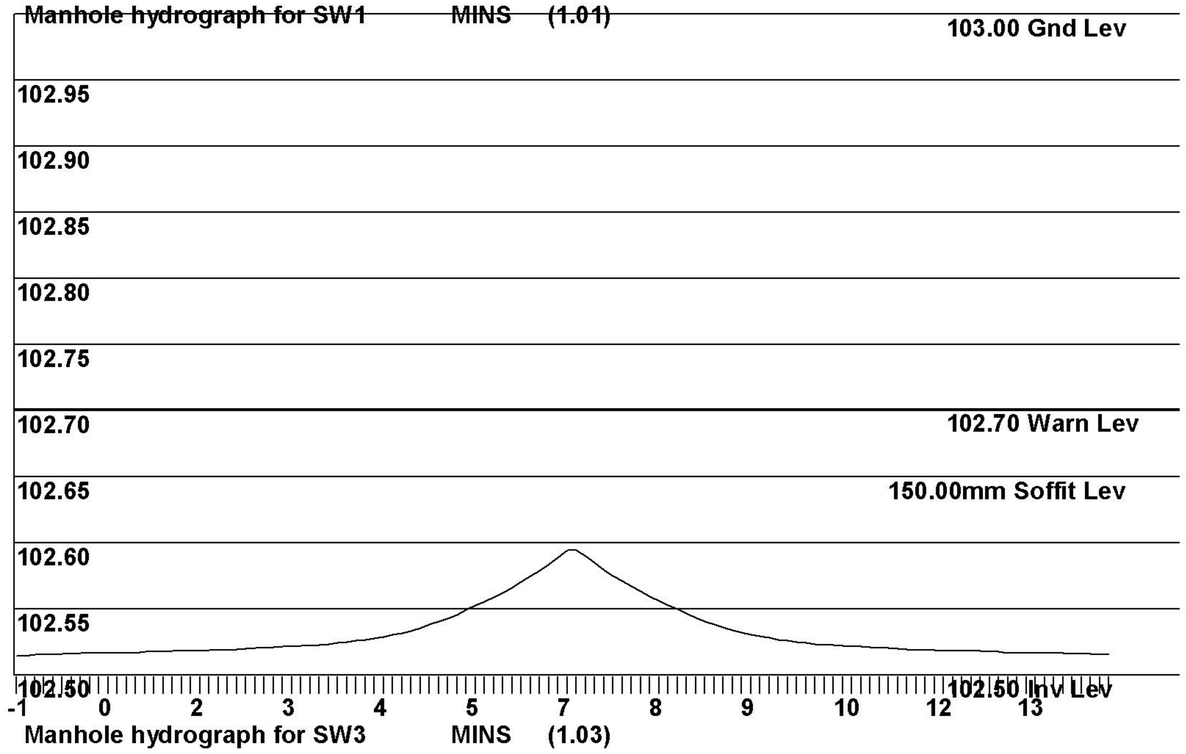
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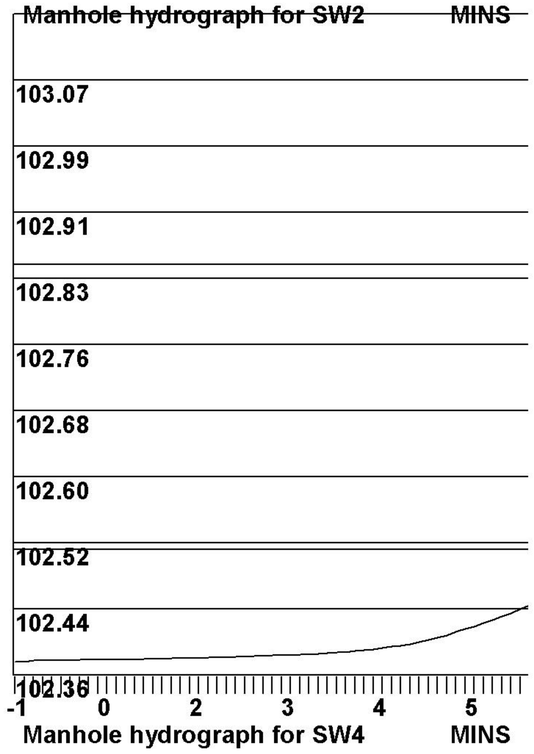
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Title: Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%









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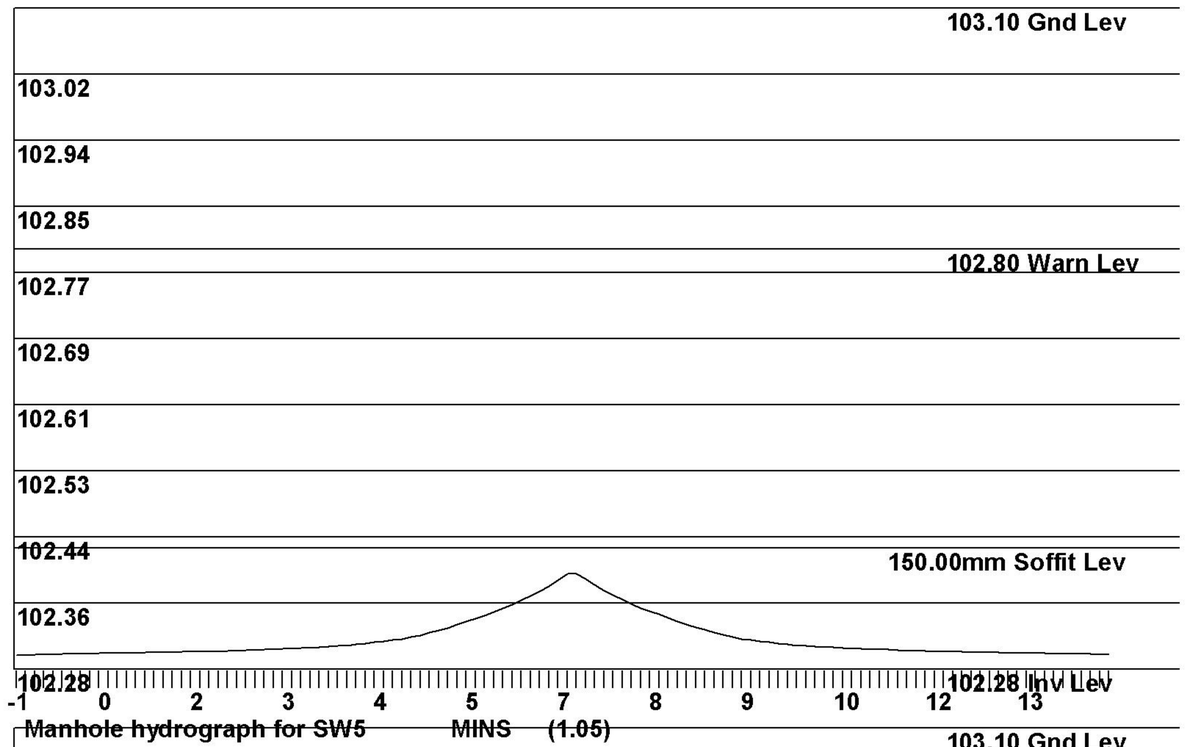
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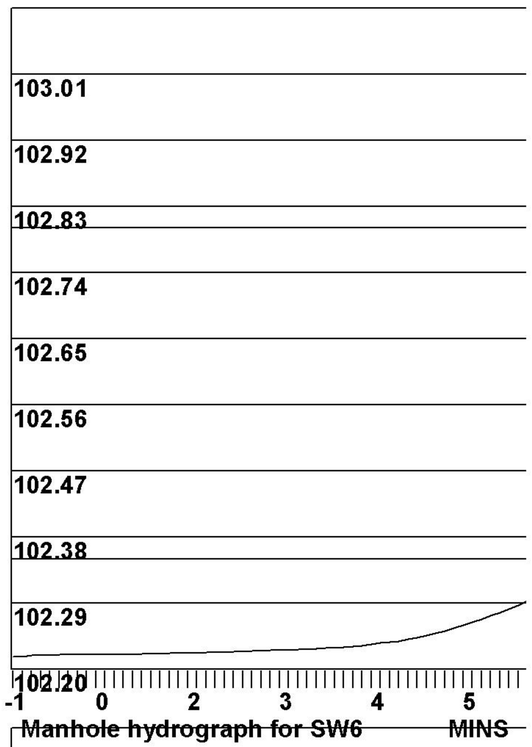
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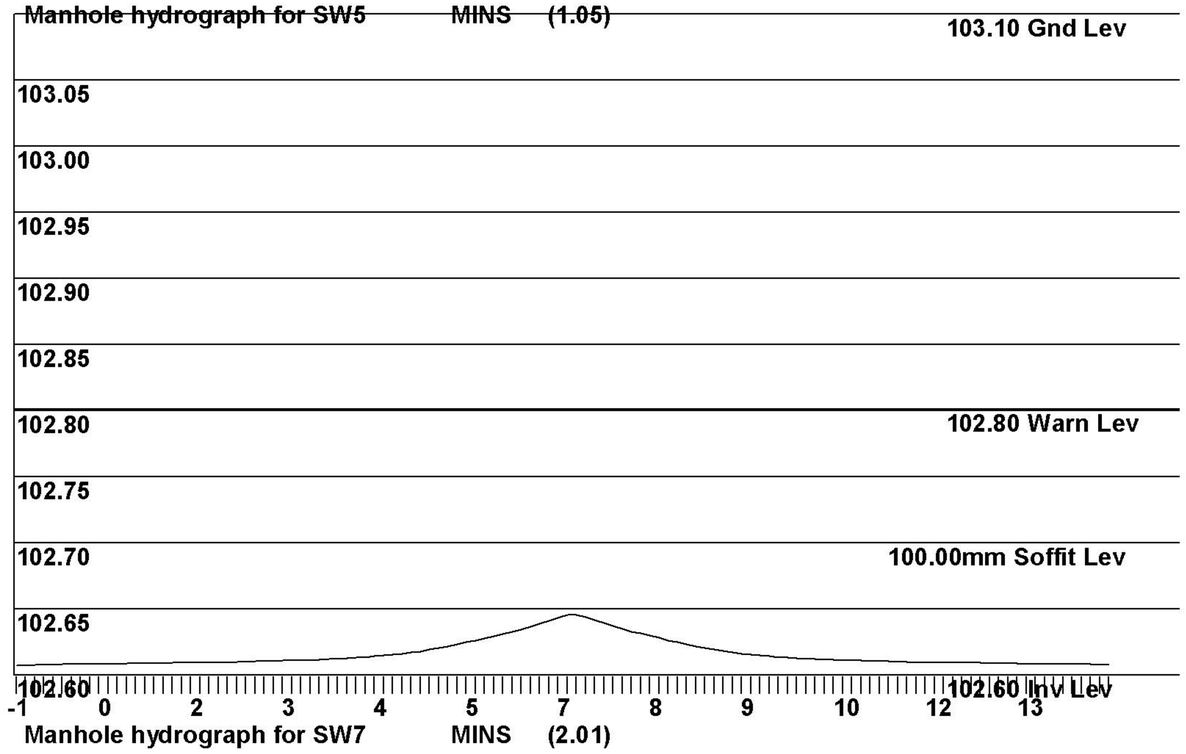
MasterDrain SW

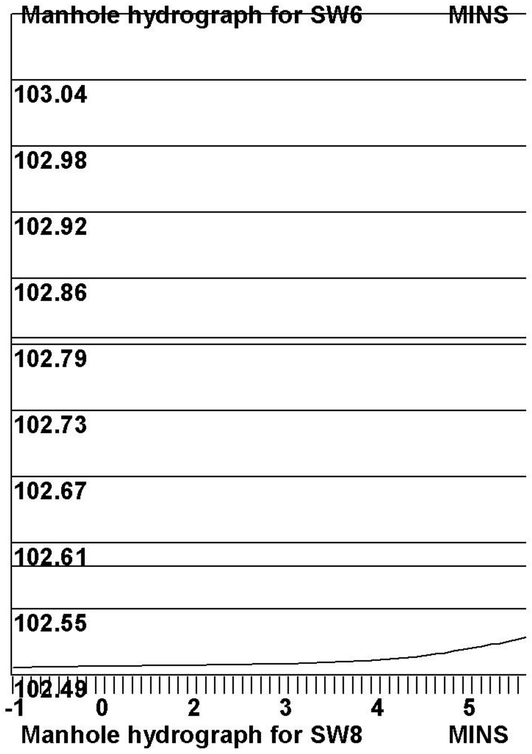
Project: Townhouse Farm (revised)

Title: Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%









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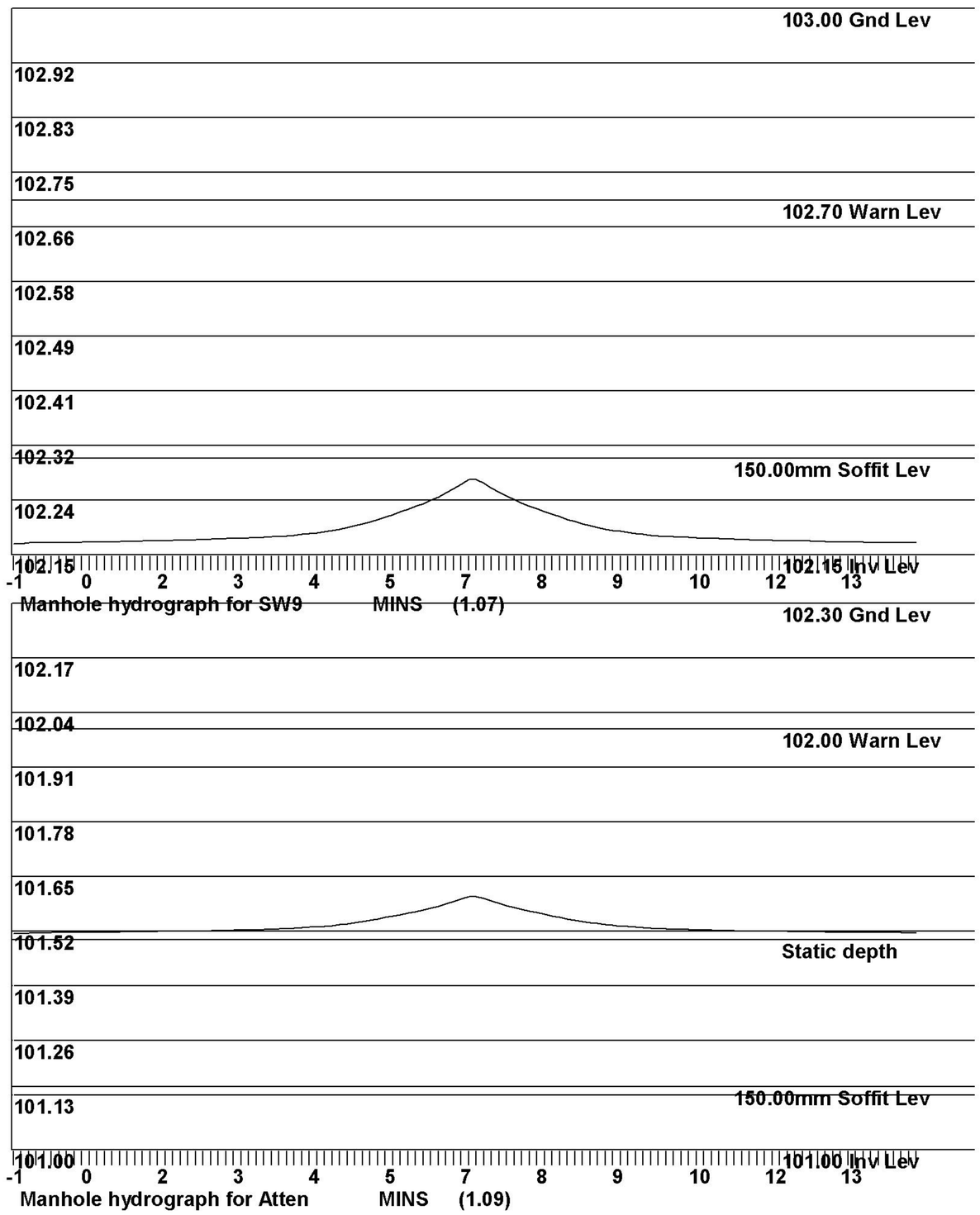
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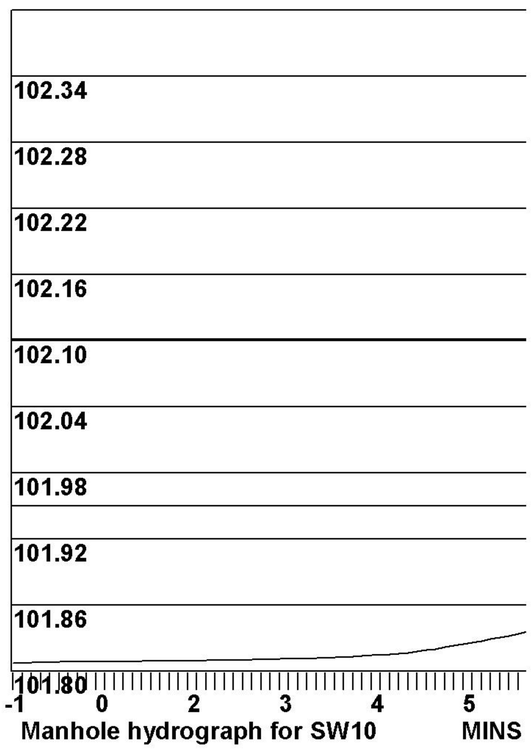
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Project: Townhouse Farm (revised)

Title: Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%





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Title **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**

Surcharged outlet (0.500)
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 60 mins
No offline storage

Mean rain intens. 76.00 mm/hr
Storm profile = Summer
Using FSR data

Entry No.		SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE fract.	SURCHARGE Depth
1	I	1.01	SW1	11.7	2.1	100	450	103.50	103.52	104.00	0.18	0.0
2	I	1.02	SW2	20.3	3.6	100	450	102.95	102.97	103.45	0.18	0.0
3	I	1.03	SW3	16.1	4.5	150	600	102.50	102.55	103.00	0.28	0.0
4	I	1.04	SW4	17.6	5.7	150	600	102.36	102.41	103.15	0.32	0.0
5	I	1.05	SW5	17.9	6.4	150	600	102.28	102.34	103.10	0.36	0.0
6	I	1.06	SW6	19.4	7.1	150	600	102.20	102.26	103.10	0.37	0.0
7	B	2.01	SW7	5.9	1.1	100	450	102.60	102.62	103.10	0.19	0.0
8	B	2.02	SW8	12.7	2.2	100	450	102.49	102.51	103.10	0.17	0.0
9	I	1.07	SW9	26.3	9.3	150	900	102.15	102.21	103.00	0.36	0.0
10	I	1.08	SW10	89.7	9.3	150	600	101.80	101.82	102.40	0.10	0.0
11	I	1.09	Atten	30.1	9.3	150	5000	101.00	101.55	102.30	0.31	0.5

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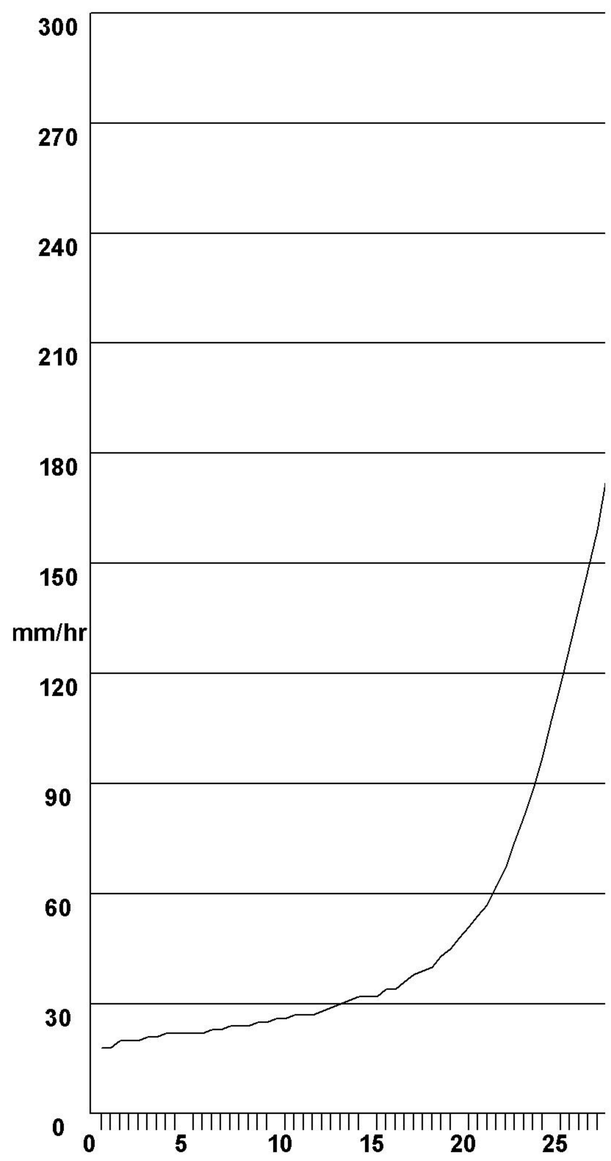
Project

Title **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:30	17.83	20:30	50.93	40:30	54.75
1:00	17.83	21:00	54.11	41:00	51.57
1:30	20.37	21:30	57.30	41:30	48.38
2:00	20.37	22:00	61.75	42:00	45.20
2:30	20.37	22:30	67.48	42:30	43.29
3:00	21.01	23:00	74.49	43:00	40.74
3:30	21.01	23:30	80.85	43:30	38.83
4:00	21.65	24:00	87.86	44:00	37.56
4:30	21.65	24:30	97.41	44:30	36.29
5:00	22.28	25:00	106.95	45:00	35.65
5:30	22.28	25:30	116.50	45:30	33.74
6:00	22.28	26:00	126.69	46:00	32.47
6:30	22.92	26:30	137.51	46:30	32.47
7:00	22.92	27:00	147.70	47:00	31.83
7:30	24.19	27:30	159.16	47:30	31.20
8:00	24.19	28:00	173.16	48:00	30.56
8:30	24.19	28:30	186.53	48:30	28.65
9:00	24.83	29:00	200.54	49:00	28.01
9:30	25.47	29:30	216.46	49:30	27.38
10:00	26.10	30:00	233.01	50:00	27.38
10:30	26.10	30:30	249.56	50:30	26.74
11:00	26.74	31:00	249.56	51:00	26.10
11:30	26.74	31:30	236.19	51:30	26.10
12:00	27.38	32:00	219.00	52:00	25.47
12:30	28.01	32:30	203.72	52:30	24.83
13:00	28.65	33:00	189.08	53:00	24.83
13:30	29.92	33:30	175.07	53:30	24.19
14:00	31.20	34:00	162.34	54:00	24.19
14:30	31.83	34:30	150.25	54:30	22.92
15:00	32.47	35:00	139.42	55:00	22.92
15:30	32.47	35:30	128.60	55:30	22.28
16:00	33.74	36:00	117.78	56:00	22.28
16:30	34.38	36:30	108.86	56:30	22.28
17:00	36.29	37:00	98.68	57:00	21.65
17:30	37.56	37:30	90.40	57:30	21.65
18:00	38.83	38:00	82.13	58:00	21.01
18:30	40.11	38:30	75.12	58:30	21.01
19:00	42.65	39:00	68.76	59:00	21.01
19:30	44.56	39:30	62.39	59:30	20.37
20:00	47.75	40:00	57.93	60:00	20.37

Hydrograph profile derived f

Return period= 100 yrs D



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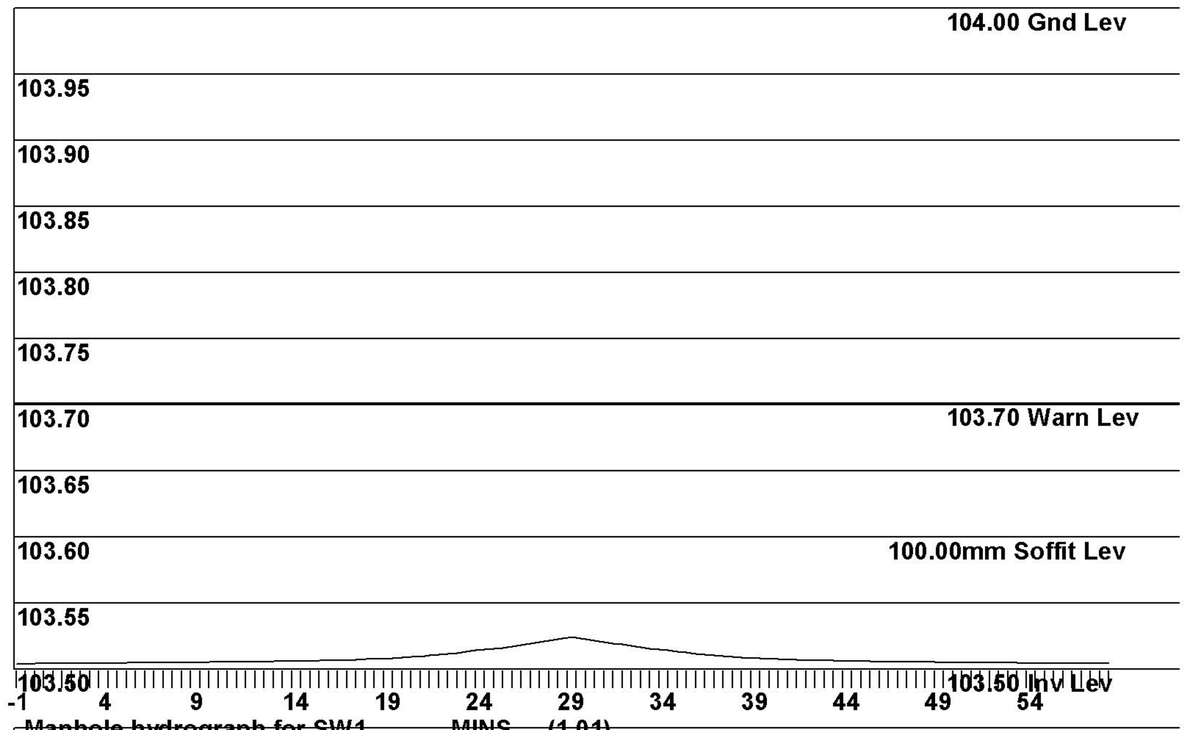
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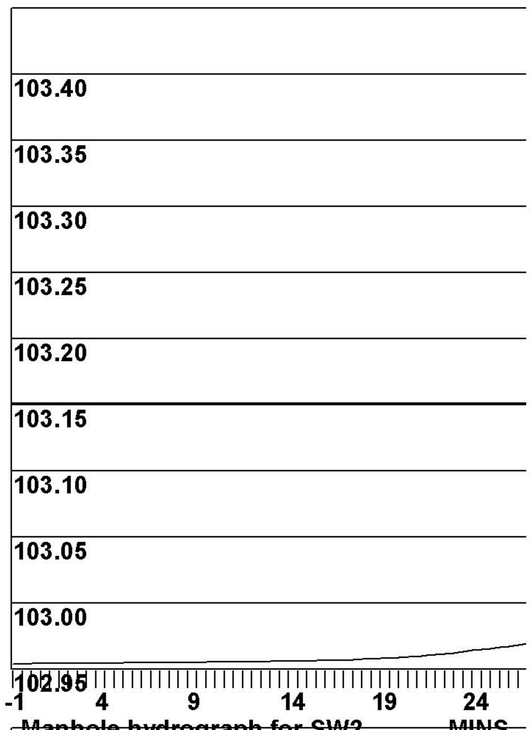
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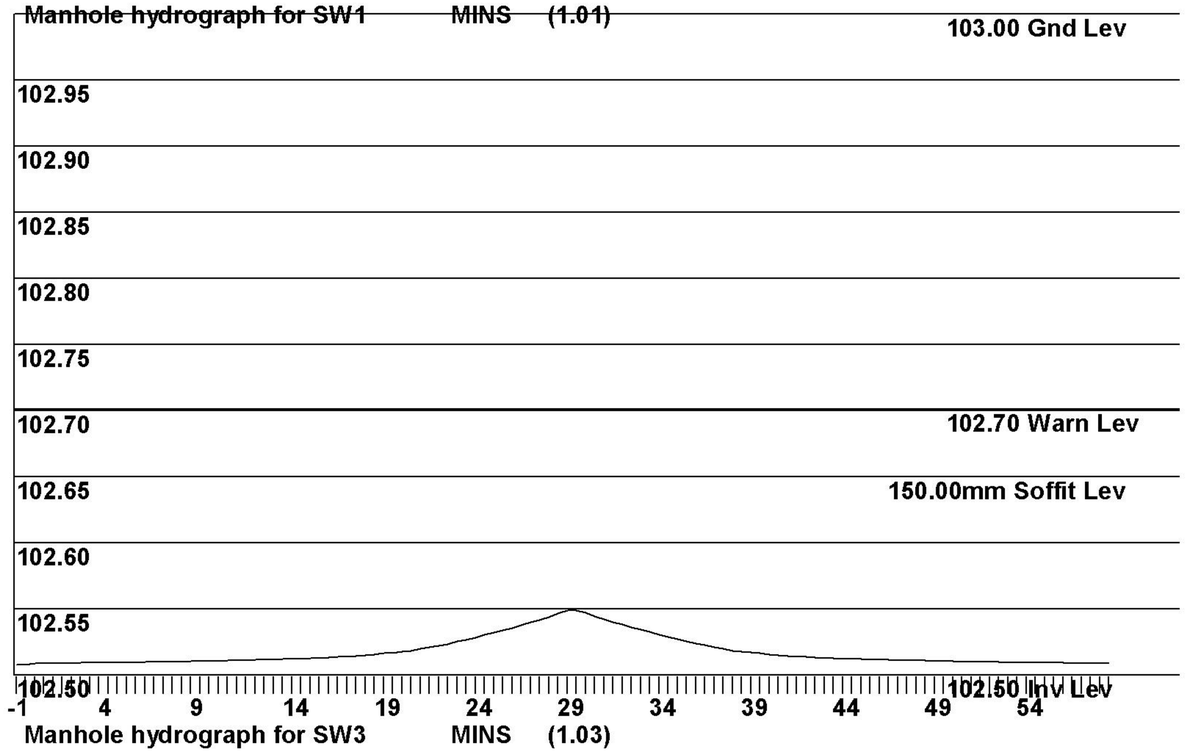
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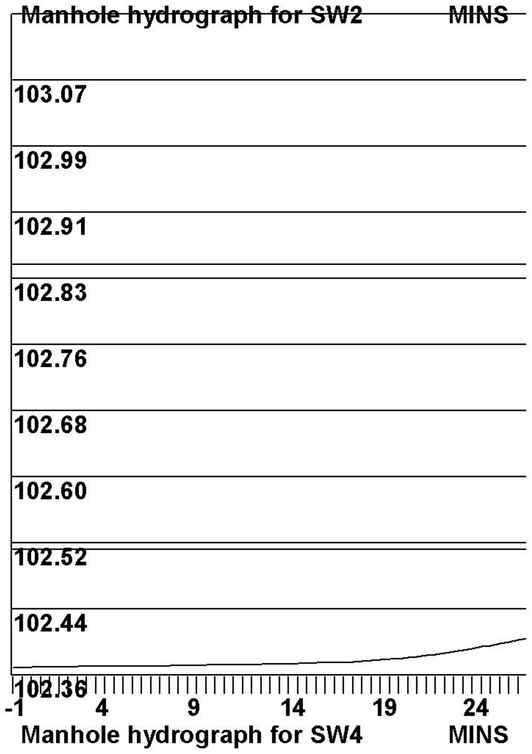
Project

Title **Surcharge calcs (Sized at 30 yrs storm) for TOWNHOUSE FARM 3.SW CCF = 45%**









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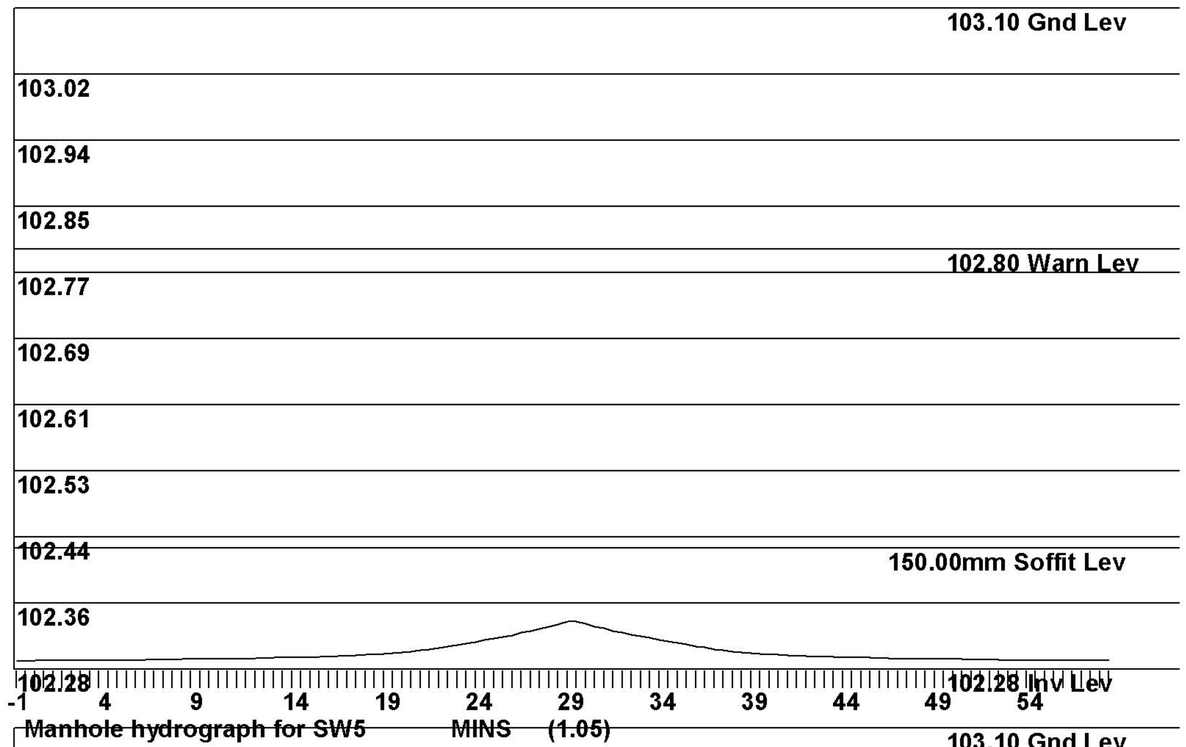
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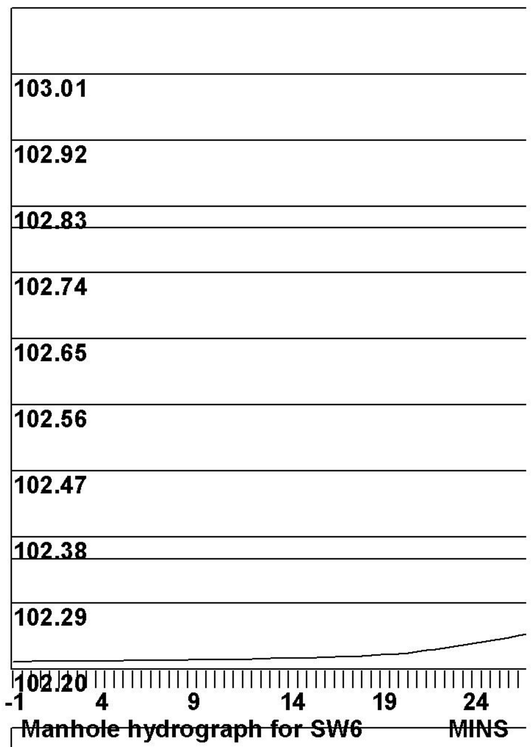
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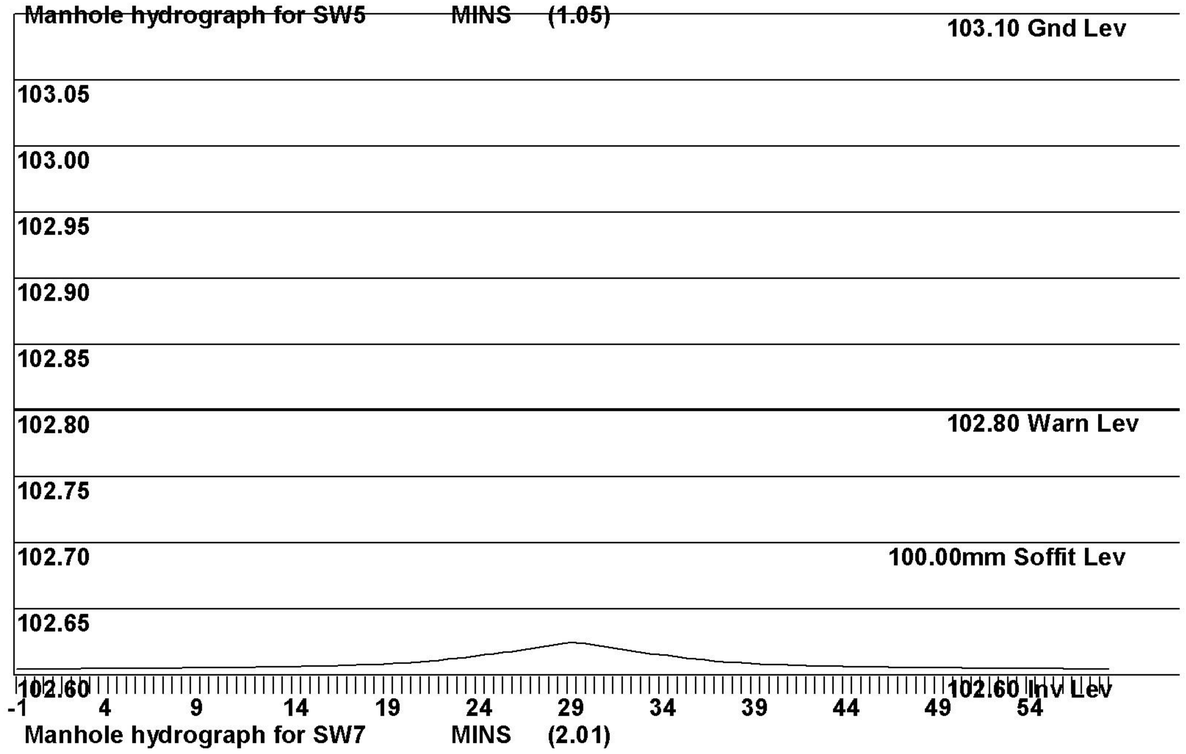
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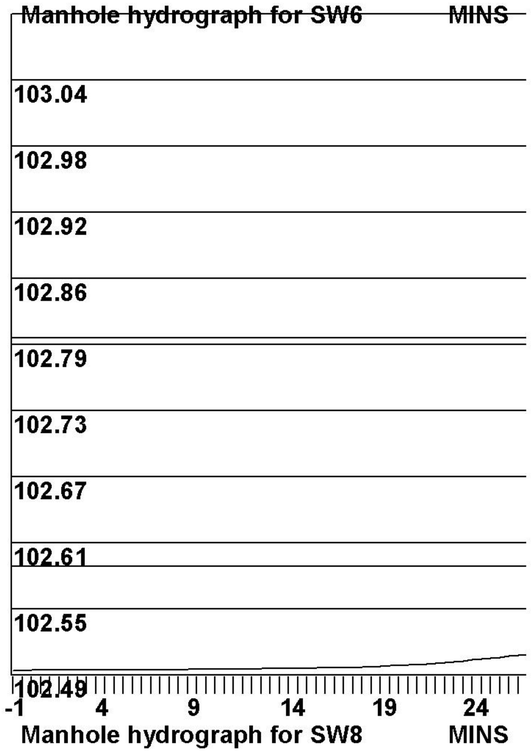
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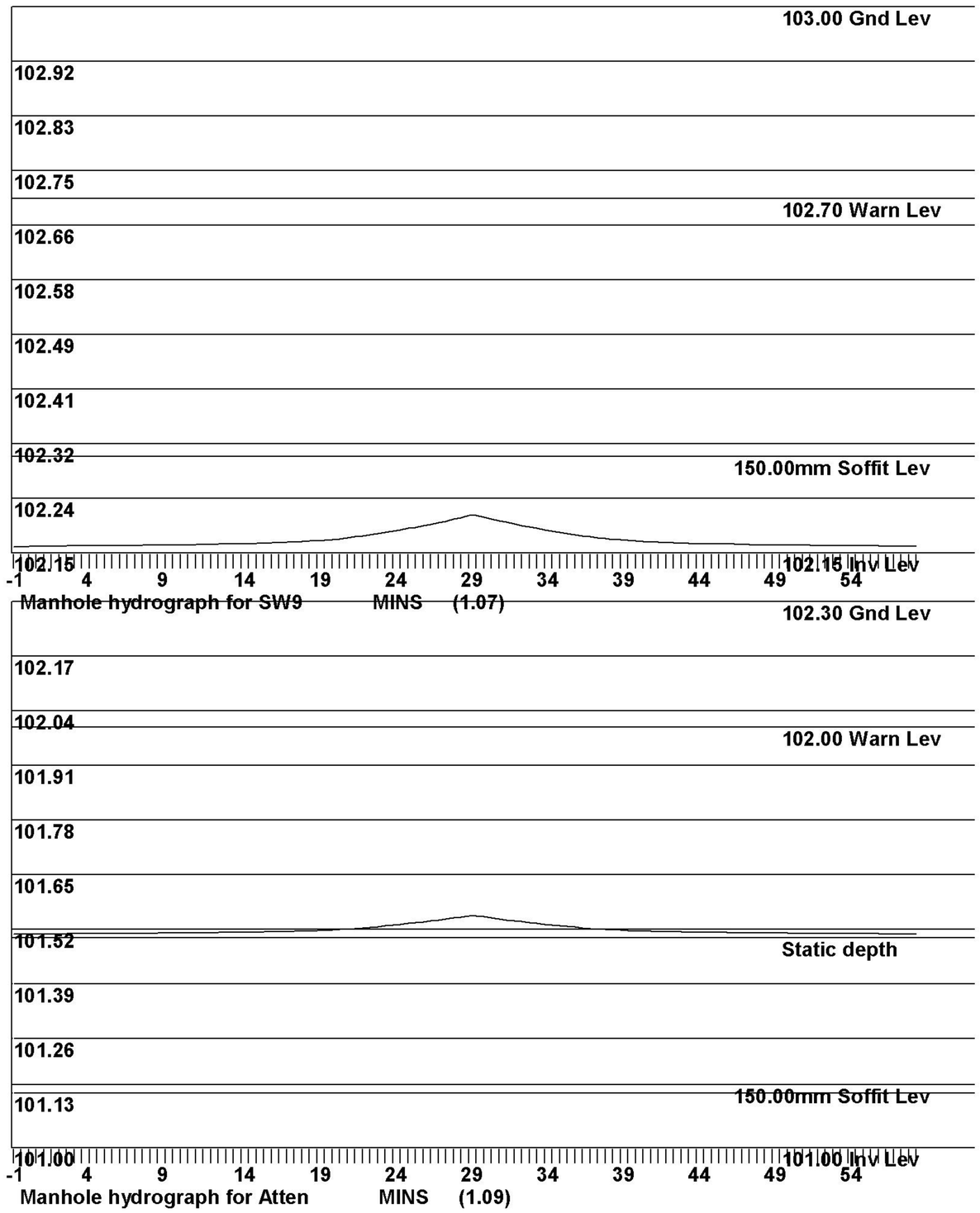
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SW

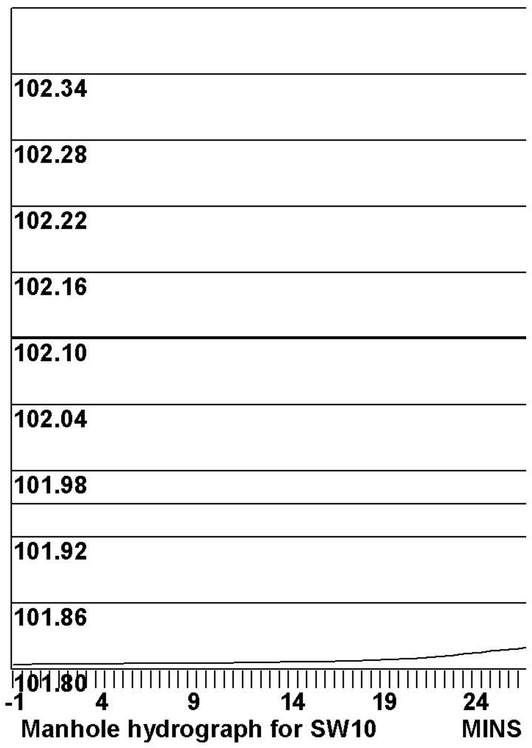
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SW

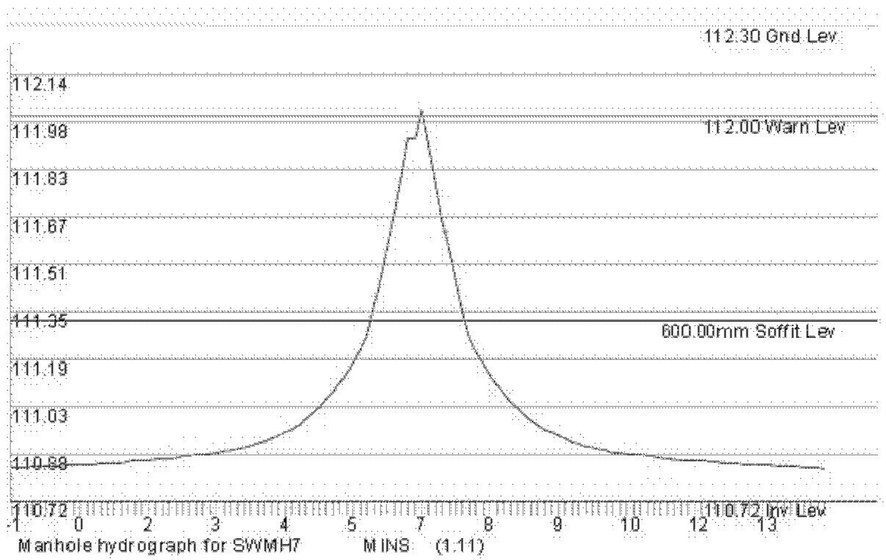
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.



1) Ground / cover level

2) Warning level - in this case, set at 300mm below cover le

3) Soffit level of outflow pipe.

4) Invert level of chamber.

Notes

a) Lower section of the graph shows the water depth filling the channel. Channel is assumed to be a full pipe dian

b) Upper section of the graph shows the water depth filling the chamber. Chamber has a greater width/diameter th proportionally less.

c) The top of the graph clips the warning level and would be marked thus on the printout.

d) In many cases the invert of the offline storage is required to enter at the channel soffit level, meaning that the p

e) The diagram above is a general one and is not part of the current calculation.

APPENDIX E

General Binding Rules

GOV.UK

Guidance

General binding rules: small sewage discharge to a surface water

How to meet the general binding rules if your septic tank or small sewage discharge treatment plant releases (discharges) waste water to a surface water.

From: **Environment Agency**
(/government/organisations/environment-agency)

Published 16 June 2015

Last updated 2 October 2023 —

Applies to England

Guidance for Northern Ireland (https://www.daera-ni.gov.uk/articles/regulating-water-discharges)

Guidance for Scotland (https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/small-sewage-discharges/)

Guidance for Wales (https://naturalresources.wales/permits-and-permissions/water-discharges-and-septic-tanks/register-your-septic-tank-or-small-sewage-treatment-plant/?lang=en)

Related content

General binding rules: small sewage discharge to the ground (/guidance/general-binding-rules-small-sewage-discharge-to-the-ground)

Sewage discharges: calculator for domestic properties

Contents

- — Overview
- — Work out which rules apply to you
- — Rules that apply to all discharges
- — Additional rules for discharges started on or after 1 January 2015
- — Additional rules for new discharges started on or after 2 October 2023
- — Get help following the rules
- — If you cannot meet all of the rules that apply to you
- — Enforcement

Overview

If you're the operator (https://www.gov.uk/permits-you-need-for-septic-tanks/you-have-a-septic-tank-or-small-sewage-treatment-plant) of a septic tank or small sewage treatment plant, you will not need a permit if you meet all of the general binding rules that apply to you.

The full set of rules is given in the publication Small sewage discharges in England: the general binding rules (https://www.gov.uk/government/publications/small-sewage-discharges-in-england-the-general-binding-rules).

This guide explains which of the general binding rules you must meet if you discharge waste water to a surface water, such as a:

- river
- stream
- estuary
- lake
- canal
- coastal water

You must also have the other permissions that you need to discharge to the environment legally,

(/government/publications/sewage-discharges-calculator-for-domestic-properties)

Discharges to surface water and groundwater: environmental permits (/guidance/discharges-to-surface-water-and-groundwater-environmental-permits)

Groundwater source protection zones (SPZs) (/guidance/groundwater-source-protection-zones-spzs)

Septic tanks and sewage treatment plants: what you need to do (/permits-you-need-for-septic-tanks)

Detailed guidance

General binding rules: small sewage discharge to the ground (/guidance/general-binding-rules-small-sewage-discharge-to-the-ground)

Discharges to surface water and groundwater: environmental permits (/guidance/discharges-to-surface-water-and-

including:

- appropriate building regulations approval (https://www.gov.uk/building-regulations-approval/when-you-need-approval)
- planning permission (https://www.gov.uk/planning-permission-england-wales), where necessary

There's separate guidance on how to meet the general binding rules if your septic tank or small sewage treatment plant discharges to the ground (https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-the-ground).

Work out which rules apply to you

The general binding rules you must meet depend on when your discharge to a surface water started.

Existing discharges that started before 1 January 2015

You're in this category if all these points apply:

- the discharge was already happening before 1 January 2015
- you have not changed the discharge from ground or a different surface water
- you have not moved the location of the discharge or, if you have, it's still within 10 metres of the previous location
- you have not changed the volume or, if you have, it's not greater than 5 cubic metres (5,000 litres) a day to surface water

If you have replaced your treatment system but all these points apply, you're still in this category.

If so, you must meet the 'rules that apply to all discharges'. (Not the additional rules.)

Existing discharges that started on or after 1 January 2015 but before 2 October 2023

You're in this category if, on or after 1 January 2015 but before 2 October 2023, you:

groundwater-environmental-permits)

- started a discharge from small sewage treatment plant
- changed your discharge from ground to surface water
- moved the location of the discharge to more than 10 metres away from the previous location
- changed the volume of the discharge to more than 5 cubic metres (5,000 litres) a day to surface water

If so, you must meet the:

- rules that apply to all discharges
- additional rules for discharges started on or after 1 January 2015

New discharges that started on or after 2 October 2023

You're in this category if, on or after the 2 October 2023, you:

- started a discharge from a small sewage treatment plant
- changed a discharge from surface water to ground
- moved the location of the discharge to more than 10 metres away from the previous location
- increased a discharge to ground to more than 5 cubic metres (5,000 litres) a day to surface water

If so, you must meet the:

- rules that apply to all discharges
- additional rules for discharges started on or after 1 January 2015
- additional rules for new discharges started on or after 2 October 2023

Rules that apply to all discharges

Rule 2: only discharge 5 cubic metres or less a day in volume

For sewage from a residential property, use the daily discharge calculator (https://www.gov.uk/government/publications/sewage-discharges-calculator-for-domestic-properties) to work out how much you discharge a day.

For commercial properties (such as a hotel, restaurant or office) or holiday accommodation (such as a cottage or chalet), use British Water's Flows and Loads guidance (https://cdn.ymaws.com/www.britishwater.co.uk/resource/resmgr/publications/codes_of_practice/flows_and_loads__bw_cop_18..pdf). You will need to add all sources of flow together.

If you discharge more than 5 cubic metres (5,000 litres) a day to surface water, you must connect to the public foul sewer when it's reasonable (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#discharges-in-sewered-areas) to do so. You must apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit) if it's not.

Rule 3: only discharge domestic sewage

The sewage must be domestic in nature. For example, from a toilet, bathroom, shower or kitchen of a house, flat or business (such as a pub, hotel or office).

Find out more about what the definition of domestic sewage includes (https://www.gov.uk/government/publications/domestic-sewage-discharges-to-surface-water-and-groundwater/domestic-sewage-discharges-to-surface-water-and-groundwater).

Rule 4: do not cause pollution of surface water or groundwater

The sewage must not cause pollution – find out how to check for pollution (https://www.gov.uk/guidance/comply-with-septic-tank-and-sewage-treatment-plant-permits#check-for-pollution).

Rule 6: use the correct treatment system

You must use a small sewage treatment plant to treat the sewage if you're discharging to a watercourse such as a river or stream. A sewage treatment plant, also known as a package treatment plant, treats sewage to a higher standard than a septic tank.

If your septic tank discharges directly to a watercourse, as soon as possible you must do one of the following:

- connect to a public foul sewer
- replace your septic tank with a small sewage treatment plant
- install a drainage field (also known as an infiltration system) – a series of pipes with holes placed in trenches and arranged so that the waste water can trickle through the ground for further treatment – and check if you meet the general binding rules for discharges to ground (https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-the-ground)

You must have plans in place to do this work within a reasonable timescale, usually 12 months.

If you buy or sell a property with a septic tank that discharges directly into a watercourse

You should agree with the buyer or seller who will be responsible for replacing or upgrading the treatment system. You should agree this as a condition of sale.

New sewer: first time sewerage scheme

If more than one property needs to replace or upgrade their sewerage system, your sewerage undertaker (https://www.water.org.uk/customers/find-your-supplier) may have a legal duty to provide a sewer for you to connect to. This is known as first time sewerage (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#building-and-paying-for-a-new-sewer).

Rule 8: in tidal areas, make sure you discharge below the mean low water spring mark

If you're in an area where the water level changes according to tides, you must make sure the top end of the pipe that releases sewage is below the 'mean low water spring mark'. This is the average low water mark at the time of spring tides. Check the low water mark where you live (https://easytide.admiralty.co.uk/).

Rule 9: make sure your treatment system meets the right British Standard

Your system must meet the relevant British Standard that was in place at the time it was installed.

The current standards for new systems are:

- BS EN 12566 for small sewage treatment plants
- BS 6297:2007 for drainage fields

How to check if your treatment system met the British Standard

Your septic tank or treatment plant met the British Standard in place at the time of installation if:

- it has a CE mark (https://www.gov.uk/ce-marking)
- the manual or other documentation that came with your tank or treatment plant has a certificate of compliance with a British Standard
- it's on British Water's list of approved equipment (https://www.britishwater.co.uk/page/Accreditation-Certificationcertified-small-wastewater-treatment-systems-for-up-to-50-pt)

You can also ask the company that installed your equipment to confirm that it met the British Standard in place at the time of installation.

If your treatment system was installed before 1983 you do not need to do anything to meet the British Standard. There was no British Standard in place before then. You must still meet the other general binding rules that apply to you.

Non-British Standard systems

Retrofit systems within an existing septic tank can only be used if they were installed before 2007. If you have a system like this that was installed after that date, or you're planning on installing one of these systems, you must apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit).

You can only use a reedbed or a secondary treatment unit, installed after a septic tank, to discharge to a watercourse if it meets the relevant British Standard. Otherwise you must either:

- upgrade to a sewage treatment plant
- apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit) so the Environment Agency can assess the risk of using this sort of system in your location

Rule 10: make sure your treatment system is installed and operated correctly, and has enough capacity

Your treatment system must be large enough to handle the maximum amount of sewage it will need to treat.

If you install a new small sewage treatment plant, or installed one after 1 February 2006, you must check with the installer that it meets the sizing requirements in British Water's Flows and Loads guidance (https://cdn.ymaws.com/www.britishwater.co.uk/resource/resmgr/publications/codes_of_practice/flows_and_loads__bw_cop_18..pdf).

Your treatment system must be installed and operated in line with the manufacturer's specification. This is the instruction manual or technical set of requirements that comes with the equipment.

If the amount of sewage the system needs to treat increases

You must make sure the treatment system is still big enough. For example, this could be if you extend your property or connect another property.

You must recalculate the maximum daily volume of your discharge (https://www.gov.uk/government/publications/sewage-discharges-calculator-for-domestic-properties).

If you discharge more than 5 cubic metres (5,000 litres) a day to surface water you must connect to the public foul sewer when it's reasonable (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#discharges-in-sewered-areas) to do so. You must apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit) if it's not.

Rule 11: get your treatment system regularly maintained

You should have your treatment system regularly maintained in line with the manufacturer's instructions. If these are not available, ask your local maintenance company for advice.

You must have your treatment system repaired or replaced if it's not in good working order. For example, this could be if it has:

- leaks
- cracks in tank walls or pipes
- blocked pipes
- signs that the waste water is not draining properly, like pools of water around the drainage point
- sewage smells
- a failed motor
- a failed pump
- a failed electrical supply

Anyone who carries out maintenance on your system must be competent. Competent people include those on British Water's list of accredited service engineers (https://www.britishwater.co.uk/page/ListofAccreditedServiceTechnicians).

If you change your treatment system, check if it's now classed as a new discharge. To do this, see

the section ‘Work out which rules apply to you’.

Rule 12: get your treatment system regularly emptied

You must get the sludge that builds up in your sewage treatment plant removed (desludged) before it goes beyond the maximum capacity. You should do this at least once a year or in line with the manufacturer’s instructions.

The company you use to dispose of your waste sludge must be a registered waste carrier. You can find this out by either:

- asking the company to confirm this when you arrange to have your tank emptied
- asking the tanker driver for a copy of the company’s waste carrier’s certificate

Rule 13: if you sell your property, tell the new owner about the sewage treatment system

If you sell your property, you must tell the new operator (the owner or person responsible for the sewage treatment plant) in writing that a sewage discharge is in place.

Include:

- a description of the treatment plant and drainage system
- the location of the main parts of the treatment plant, drainage system and discharge point
- details of any changes made to the treatment plant and drainage system
- details of how the treatment plant should be maintained and the maintenance manual, if you have one
- maintenance records, if you have them

Rule 14: if you stop using your treatment system, make sure it’s decommissioned properly

You must remove anything that could cause pollution (for example, remaining sludge) when you stop using a septic tank or sewage treatment plant.

This does not apply if you only stop using the equipment temporarily. For example, if your property is empty.

You can ask a maintenance company for advice on how to decommission your septic tank or treatment plant properly.

Additional rules for discharges started on or after 1 January 2015

Rule 15: check if you can connect to a nearby public foul sewer

If you connect to a public foul sewer:

- the general binding rules will not apply to you
- you will not need a permit

To find out if there is a public sewer near your property, contact your local water company (https://www.water.org.uk/customers/find-your-supplier). You can also ask owners of neighbouring properties if their property is connected to a public sewer.

For a single domestic property

You cannot meet the general binding rules if there's a public foul sewer within 30 metres of any boundary of the premises that your system serves.

If you're building a development of more than one property

Multiply the number of houses by 30 metres.

> **Example**
> If there are 3 properties then this will give you a distance of 90 metres (3 × 30 metres).

You cannot meet the general binding rules if any boundary of the premises that your system serves is within that distance of a public foul sewer.

If some or all of your discharge is from non-domestic properties

Divide the maximum volume in cubic metres that you want to discharge from those other premises by 0.75 (1 cubic metre is 1,000 litres). Multiply the result by 30. This will give you a result in metres.

> **Example**
> A discharge of 1.2 cubic metres divided by 0.75 gives 1.6, which multiplied by 30 gives a result of 48 metres.

You cannot meet the general binding rules if any boundary of the premises that your system serves is within that distance of a public foul sewer.

If your discharge is in a sewered area

Check what you need to do if your discharge is in a sewered area (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#discharges-in-sewered-areas).

If there's no public foul sewer and a discharge can negatively affect the property or environment, check if your sewerage undertaker has a duty to to build and pay for a new sewer for you to connect to. This is known as first time sewerage (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#building-and-paying-for-a-new-sewer).

Rule 17: make sure the discharge point is not in or near protected sites

You cannot meet the general binding rules if the discharge will be in or within 500 metres of any:

- biological sites of special scientific interest (SSSI)
- special protection areas

- special areas of conservation
- Ramsar wetland sites
- designated bathing water
- protected shellfish water
- freshwater pearl mussel population

You also cannot meet the rules if the discharge will be in or within:

- 200 metres of an aquatic local nature reserve
- 50 metres of a chalk river or aquatic local wildlife site

If you have or are planning to start a discharge to surface water in or near a protected site, you must connect to the public foul sewer when it's reasonable (https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits#discharges-in-sewered-areas) to do so. You must apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit) if it's not.

How to check the locations of protected sites

You can use Magic map (https://magic.defra.gov.uk/MagicMap.aspx) to identify the locations of most of these sites.

1. Search for the discharge site location.
2. In the table of contents, open 'Designations', then 'Land-Based Designations', then 'Statutory'. Select 'Sites of Special Scientific Interest (England)', 'Special Protection Areas (England)', 'Special Areas of Conservation (England)', 'Ramsar Sites (England)' and 'Local Nature Reserves (England)'.
3. If the discharge will be to an estuary or the sea you should also open 'Marine Designations', then 'Statutory'. Select 'Special Protection Area (Marine) (GB)', 'Special Area of Conservation (Inshore) (GB)', 'Special Area of Conservation (Offshore) (GB)' and 'Bathing Waters 2016 (England)'. Also open 'Marine' in the table of contents, then 'Fisheries and Fishing Activity'. Select 'Shellfish Waters 2014 (England)'.
4. To measure the distance from the discharge site to any protected sites, select the 'Measure' tool

from the menu then use the ‘Distance’ option.

5. To find out if a site is a biological SSSI or if a local nature reserve is aquatic, select the ‘Identify’ tool from the menu, then select the protected site on the map. Open the site detail link to read the description.

Magic map does not indicate the locations of freshwater pearl mussel populations, chalk rivers or aquatic local wildlife sites.

If you do not know whether the discharge will be in or near a protected site, or if you cannot use Magic, contact the Environment Agency (https://www.gov.uk/government/publications/environmental-permit-pre-application-advice-form) to request a nature and heritage conservation screening.

Rule 19: make sure the surface water has flow

You cannot meet the general binding rules if you have a discharge to:

- a ditch or a surface water that does not contain flowing water throughout the year, unless there is a drought or an unusually long period of dry weather
- watercourses that seasonally dry up

Rule 20: Make sure any partial drainage field is close enough to the watercourse

A partial drainage field is a length of perforated pipe that is installed between the sewage treatment plant and the outfall. It’s installed instead of a solid pipe. This allows some of the waste water to soak into the ground when the ground is dry and flows in the watercourse are likely to be lower.

If you’re using a partial drainage field for a new discharge, the perforated section of the pipe must not extend more than 10 metres from the edge of the watercourse. You must only use it with a small sewage treatment plant, not a septic tank.

Rule 21: do not discharge to an enclosed lake or pond

You cannot meet the general binding rules if you have a discharge to an enclosed lake or pond. This means a lake or pond in which all of the following apply:

- it contains water throughout the year, other than in extreme weather conditions
- it does not have an outfall that connects it to a watercourse, or has an outfall that only discharges in extreme weather conditions
- it is sealed or lined to prevent water draining into the ground or soaking into the surrounding soil

You do not need a permit to discharge to an enclosed lake or pond. But you must use appropriate pollution prevention measures (https://www.gov.uk/guidance/pollution-prevention-for-businesses) to make sure your discharge does not cause pollution.

Additional rules for new discharges started on or after 2 October 2023

Rule 22: make sure your new discharge does not use the same discharge point as any other discharge if the combined volume would exceed the general binding rule limit

A new discharge must not use the same outlet as any other discharge if the combined volume is greater than 5 cubic metres (5,000 litres) a day to surface water. You must have a permit for the new discharge if the combined volume of the new and existing discharges is above this limit.

Rule 23: make sure your new discharge is not within 50 metres of any other exempt small sewage discharge

Ask your neighbours if their foul drainage solution discharges under the general binding rules. If so, ask how far their discharge is from your discharge location.

You must have a permit for the new discharge if it's within 50 metres of any other system that discharges under the general binding rules.

Get help following the rules

You should get advice from a competent service engineer if you need help understanding:

- what treatment system you have
- where your treatment system discharges
- what you must do to meet the general binding rules

British Water provides a list of accredited service engineers (https://www.britishwater.co.uk/page/ListofAccreditedServiceTechnicians). There may be other competent service engineers.

If you cannot meet all of the rules that apply to you

You must either:

- connect to a public foul sewer – contact your sewerage undertaker (https://www.water.org.uk/customers/find-your-supplier) for advice
- change your treatment system so that it can meet the general binding rules

Otherwise, you must apply for a permit (https://www.gov.uk/permits-you-need-for-septic-tanks/apply-for-a-permit).

In your permit application you must justify why it's not reasonable to connect to a public foul sewer. The Environment Agency will then assess the risk of using your system at your location.

Enforcement

If your discharge causes pollution you may be committing an offence. The Environment Agency will give you advice to help you fix the problem. If

your discharge continues to cause pollution the Environment Agency may take enforcement action (https://www.gov.uk/government/publications/environment-agency-enforcement-and-sanctions-policy) against you.

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APPENDIX F

Percolation Test Pit Logs

Environmental Assessment Services Limited

Townhouse Farm, Ardingly Percolation Test Pits	Date: 30 August 2024

Standpipe	Sampling			Strata			
	Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
							Light grey/brown topsoil with stone & brick gravel
					0.3 m		Stiff light brown & grey Clay LOWER GRINSTEAD CLAY

Remarks

No groundwater encountered

Method	Trial Pit
Dimensions Dia	0.6 x 0.3 x 0.9
Made by	MDM
Job No.	723
Borehole or Trial Pit No.	PTP 1

Environmental Assessment Services Limited

Townhouse Farm, Ardingly Percolation Test Pits	Date: 30 August 2024

Standpipe	Sampling			Strata			
	Type	Depths From	Depths To	Legend	Depth bgl	R L	Strata Description
							Light grey/brown topsoil with stone & brick gravel
					0.4 m		Stiff light brown & grey Clay LOWER GRINSTEAD CLAY

Remarks

No groundwater encountered

Method	Trial Pit
Dimensions Dia	0.6 x 0.3 x 0.9
Made by	MDM
Job No.	723
Borehole or Trial Pit No.	PTP 2

APPENDIX G:

Maintenance Management Plan

MAINTENANCE MANAGEMENT PLAN

G1 **Initial maintenance:**

G1.1 On completion of the development, all chambers, pipework and the attenuation storage outlet and flow control device for the surface water drainage should be checked and cleared/de-silted as necessary. Any remaining areas of bare ground within the surface water drainage catchment should be planted/seeded or surfaced to minimise loose soil washing into the drainage system. The foul chambers, sewage treatment plant and pipework should be checked at the same time

G1.2 After the first late winter following completion of the development (after most leaf fall has occurred), all gullies and chambers should be de-silted, and the attenuation storage flow control chamber outlet cleared of debris.

G2 **Annual maintenance:**

G2.1 Annual maintenance should generally be carried out after late winter when most leaf fall will have occurred. If siltation and debris blockage is found to be excessive, more frequent maintenance may be indicated.

G2.2 Annual maintenance will comprise:

- Checking all chamber covers and frames for damage and fit.
- Checking all gully gratings for damage and fit.
- Clear attenuation storage controlled flow outlet and check for function.
- De-silting and removing debris from all chambers and gullies/strip drains.
- Checking the surface water and sewage effluent outfalls and clearing out the ditch as necessary
- Specialist maintenance of the sewage treatment plant.

G4. **Responsibility for carrying out the Maintenance Management Plan**:

G4.1 The developer/contractor will be responsible for the initial maintenance and the annual maintenance up to the end of any maintenance or guarantee period.

G4.2 After the end of the maintenance or guarantee period, it will become the responsibility of the site owner.

G4.3 A record of all maintenance work carried out should be kept as part of the Maintenance Management Plan.

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