Drainage Maintenance Manual

The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA
[redacted]

Project	**The Laurels, Dappers Lane, Angmering**
Project Number	**23260**
By	Martin Kempshall CEng MICE
Date	24 June 2020

1 Schedule of Maintenance

1.1 Upon completion of the development the management of the shared drainage facilities will be passed on to a Management Company who will be appointed by the developer on behalf of the new residents.

1.2 The regular and corrective maintenance of all shared elements of the drainage system beneath the road, including the lined voided subbase will be managed by the Management Company on behalf of the residents.

1.3 Regular maintenance of all private drainage, channels, gutters, rainwater pipes, driveways and connections will be the responsibility of the individual homeowner and should be undertaken every 3 months.

1.4 Driveways and connections will be the responsibility of the individual homeowner and should be undertaken every two years. Driveways which form part of the wider infiltration system include a legal covenant to ensure these remain part of the wider drainage system in perpetuity.

1.5 With adequate maintenance the working design life of permeable paving system is approximately 25 years. The extent of the permeable paving is shown on Construction Drawing 201 a copy of which is attached as part of this Drainage Maintenance Manual.

1.6 At a minimum interval of 25 years the permeable paving blocks shall be lifted and inspection undertaken as follows:

- 3-6mm gravel bedding to be removed and the voided subbase stone inspected.
- The subbase shall be replaced as required where blocked or blinded.
- The permeable geotextile shall be inspected using a series of hand dug trial holes to assess its general condition, where damaged it should be replaced or repaired.
- Upon completion of the inspection the voided stone subbase shall be replaced to the original specification and level.
- The 3-6mm bedding shall be replaced with the permeable blocks reinstated after cleaning or where required replaced with new.

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QMS ISO 9001 : 2008 REGISTERED
Cert No. 14127180

- Following block reinstatement 3-6mm grit shall be swept into the joints between the permeable blocks.

1.7 Provisions will be made to replace any infrastructure that has reached the end of its serviceable design life and will be replaced on a like for like basis as far as reasonably practicable.

1.8 The culvert adjacent to the site is under Riparian Ownership Responsibility and will be maintained in accordance with the Land Drainage Act 1991 as amended by the Flood and Water Management Act 2010. A condition survey will be completed on the section of the culvert at 5-year intervals.

1.9 Drawing 102 shows the drainage ownership responsibilities.

Maintenance Schedule	**Required Action**	**Frequency**
Regular Maintenance	Remove sediment and debris from silt trap chambers, channel drains and inlet chambers	Monthly or as required
	Litter and debris removal – catch pits	Monthly or as required
	Surface and foul water pipework – jetting / rodding	Every 2 years or as required
	Visual inspection of permeable paving for defects and settlement	Annually, or after leaf fall
	Sweeping / brushing / Vacuuming of permeable paving	Annually, or after leaf fall
	CCTV Inspection of Culvert.	Every 5 years
Corrective Maintenance	Repairs to access chambers / manhole covers	As required
	Replace any broken permeable blocks / surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipe and gullies for blockages, standing water and clear	As required
	Repairs to culvert at western site boundary in accordance with Land Drainage Act.	As required
	Full inspection and service of Permeable Paving System	Minimum of every 25 years

Table 1: Schedule of Regular and Corrective Maintenance

2 Financing

2.1 The regular maintenance of all private drainage, channels, gutters, rainwater pipes, driveways and connections will be the responsibility of the individual homeowner.

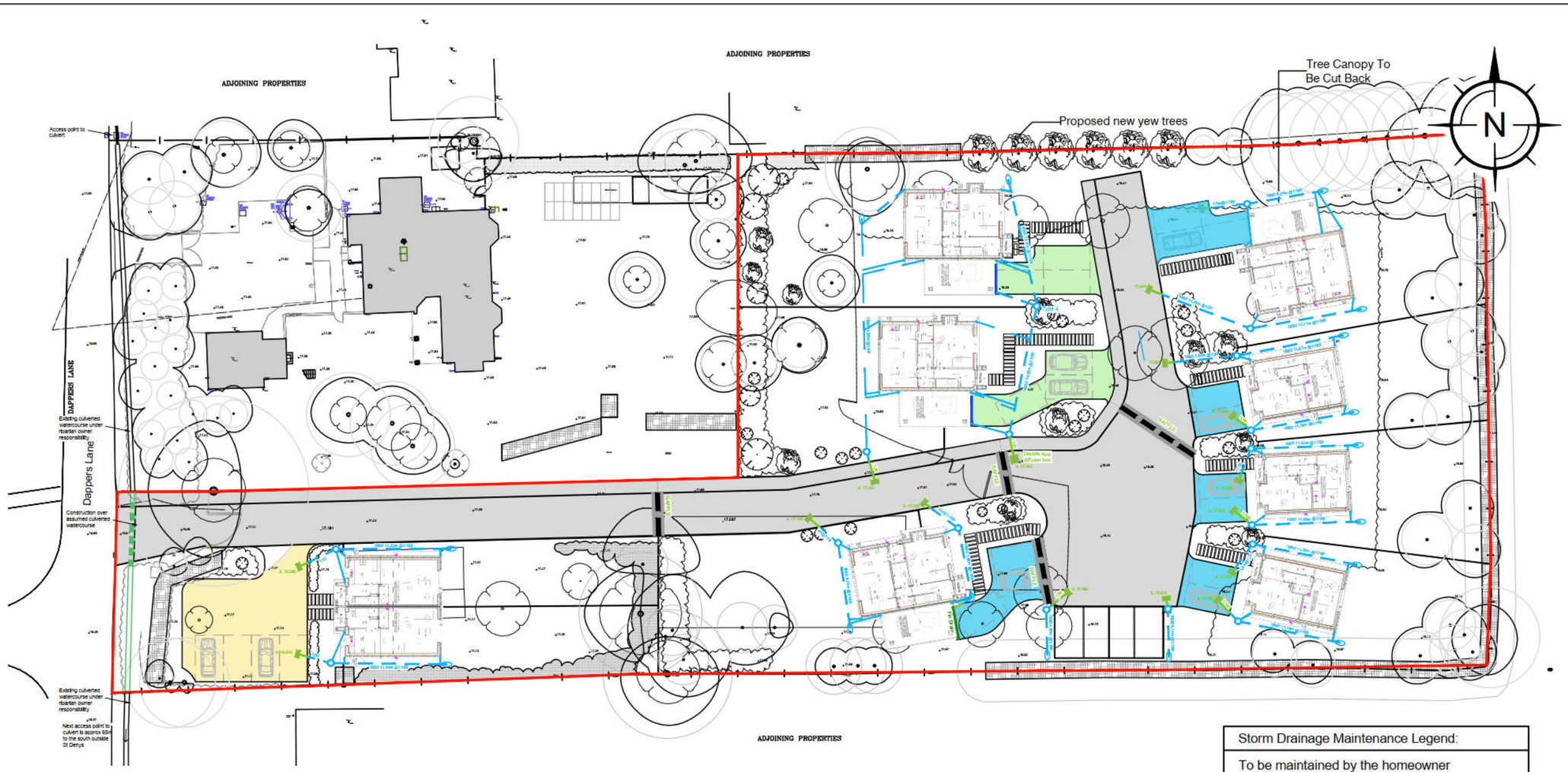
2.2 The regular and corrective maintenance of all shared elements of the drainage system will be managed and funded through the Management Company on behalf of the residents.

2.3 In the event that the estate's Management Company becomes unable to discharge its duties within 2 years of first appointment the developer will endeavour to appoint an alternative on behalf of the residents.

3 Maintenance Summary

Inspection / Action Required	Gullies, Channels and Gutters	Silt Traps, Channel Drainage and Inlet Chambers	Catchpit	Permeable Paving / Surfaces	Surface Water Pipework	Culvert
Monthly		✓	✓			
3 Months	✓		✓	✓		
1 Year				✓		
After leaf fall in Autumn	✓		✓	✓		
2 Years					✓	
5 Years						✓
25 Years				✓		

Table 2: Drainage System Maintenance Summary



Storm Drainage Maintenance Legend:

To be maintained by the homeowner

- Type 4 — Private Type 4 Storm Water Inspection Chamber
- Private Storm Water Catchpit
- RE — Private Storm Water Rodding Eye
- Fin Drain — Fin Drain to Subbase
- Permeable Drives under private ownership. Subject to legal covenant
- Impermeable Drives under private ownership

To be maintained by Management Company

- Property boundary — Distribution Tanks to Subbase
- BAFFLE — Baffle to subbase
- Permeable Drive under management company ownership
- Other hard paved areas including no-dig area at site boundary
- Culverted watercouse within the red line boundary

GENERAL NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.

2. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.

3. The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.

4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.

REV	DATE	INIT	DESCRIPTION	CHK
C	01.06.2020	MJP	Invert levels to diffuser tanks	MK
B	22.05.2020	MJP	Drainage Layout updated	MK
A	26.03.2020	MJP	Diffuser tanks to subbase	MK

Issue Status: FOR PLANNING

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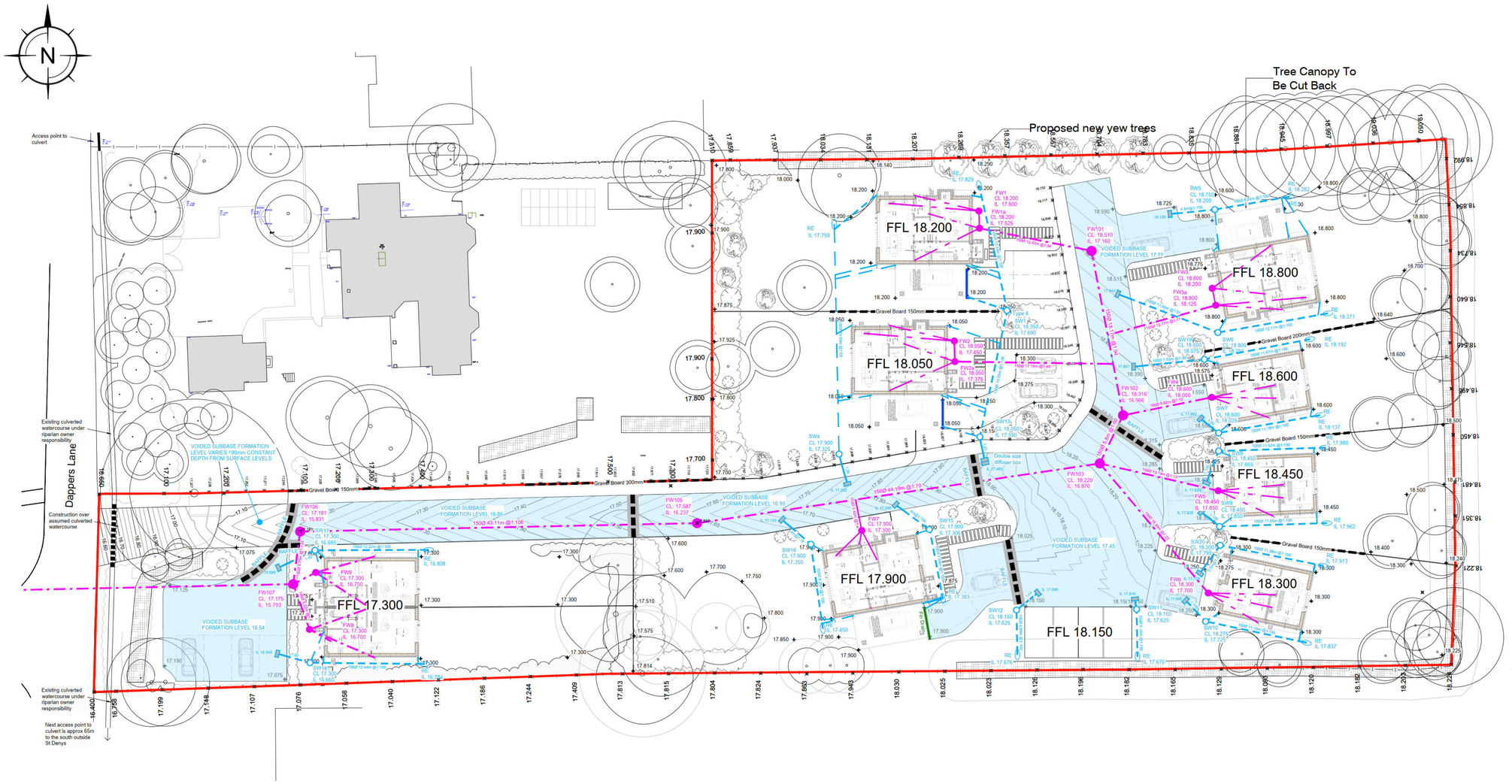
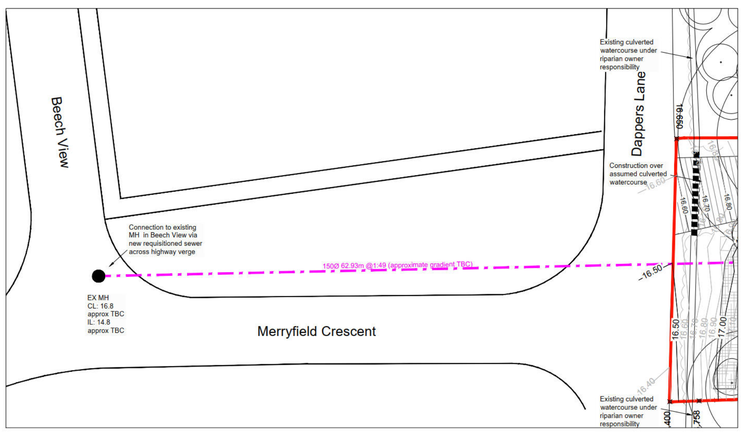
CLIENT: Oceanview Developments

PROJECT: The Laurels
Dappers Lane
Angmering

TITLE: Proposed Ownership Plan

DRAWN: M Pacifico	DATE: Oct 2019	PROJECT NO.: 23260	
ENGINEER: M Kempshall	CHECKED: SRM	DRG. No.: 102	REV: C
SCALE: 1:500 @ A3			





Drainage Legend:

- Voided subbase for storm water storage and attenuation
- Type 4 — Private Type 4 Storm Water Inspection Chamber
- Private Storm Water Catchpit
- RE — Private Storm Water Rodding Eye
- Property boundary — Distribution Tanks to Subbase
- Fin Drain — Fin Drain to Subbase
- BAFFLE — Baffle to subbase
- Private Foul Water Sewer Type 2 Manhole
- Private Foul Water Sewer Type 4 Inspection Chamber

FOUL WATER MANHOLE SCHEDULE

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT	DIAMETER / SIZE	COVER TYPE	MANHOLE TYPE
FW101	18.510	17.160	1.350	1200mmØ	D400	Type 2
FW102	18.316	16.960	1.356	1200mmØ	D400	Type 2
FW103	18.200	16.870	1.330	1200mmØ	D400	Type 2
FW104	Not Used					
FW105	17.587	16.237	1.350	1200mmØ	D400	Type 2
FW106	17.181	15.831	1.350	1200mmØ	D400	Type 2
FW107	17.175	15.793	1.382	1200mmØ	D400	Type 2
FW1	18.200	17.600	0.600	450mmØ	A15	Type 4
FW1a	18.200	17.525	0.675	450mmØ	A15	Type 4
FW2	18.050	17.450	0.600	450mmØ	A15	Type 4
FW2a	18.050	17.375	0.675	450mmØ	A15	Type 4
FW3	18.800	18.200	0.600	450mmØ	A15	Type 4
FW3a	18.800	18.125	0.675	450mmØ	A15	Type 4
FW4	18.600	18.000	0.600	450mmØ	A15	Type 4
FW5	18.450	17.850	0.600	450mmØ	A15	Type 4
FW6	18.300	17.700	0.600	450mmØ	A15	Type 4
FW7	17.900	17.300	0.600	450mmØ	A15	Type 4
FW8	17.300	16.700	0.600	450mmØ	A15	Type 4
FW9	17.300	16.700	0.600	450mmØ	A15	Type 4

STORM WATER MANHOLE SCHEDULE

MANHOLE REFERENCE	COVER LEVEL	INVERT LEVEL	DEPTH TO INVERT	DIAMETER / SIZE	COVER TYPE	MANHOLE TYPE
SW1	18.350	17.690	0.660	450mmØ	A15	Type 4
SW2	Not Used					
SW3	Not Used					
SW4	17.900	17.325	0.575	450mmØ	A15	Catchpit
SW5	18.750	18.200	0.550	450mmØ	A15	Catchpit
SW6	18.800	18.250	0.550	450mmØ	A15	Catchpit
SW7	18.600	18.025	0.575	450mmØ	A15	Catchpit
SW8	18.450	17.865	0.585	450mmØ	A15	Catchpit
SW9	18.450	17.850	0.600	450mmØ	A15	Catchpit
SW10	18.275	17.725	0.550	450mmØ	A15	Catchpit
SW11	18.150	17.625	0.525	450mmØ	A15	Catchpit
SW12	18.150	17.625	0.525	450mmØ	A15	Catchpit
SW13	18.050	17.550	0.500	450mmØ	A15	Catchpit
SW14	Not Used					
SW15	17.900	17.306	0.594	450mmØ	A15	Catchpit
SW16	17.900	17.350	0.550	450mmØ	A15	Catchpit
SW17	17.300	16.685	0.615	450mmØ	A15	Catchpit
SW18	17.300	16.660	0.640	450mmØ	A15	Catchpit
SW19	18.600	18.075	0.525	450mmØ	A15	Catchpit
SW20	18.300	17.900	0.400	450mmØ	A15	Catchpit

-2.5m 0 2.5m 5.0m 7.5m 10m

Scale 1:250

NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.

2. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.

3. The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.

4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.

5. All pipes, bends and junctions shall be vitrified clay to BS EN 295-1, with flexible joints and kitemark certified. Alternatively all pipes and fittings can be UPVC conforming to BS EN 1401-1 and shall be laid in accordance with the manufacturers specification. If UPVC pipes are to be used then the manufacturer shall be approved by the Engineer prior to construction.

6. All Adoptable sewers shall be in strict accordance with the current edition of Sewers For Adoption. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.

7. All private building drainage shall be constructed in strict accordance with BS EN 752:1996. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.

8. Where the service trench is near to the foundation of any building, refer to the guidance in Approved Document H, Building Regulations Part H1.

9. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.

10. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.

11. All svps shall have rodding access plates fitted at their bases (ground floor level).

12. Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.

REV	DATE	INT	DESCRIPTION	CHK
B	24.06.2020	PJR	Baffles added close to site entrance. Voided subbase formation levels added.	MK
A	01.06.2020	MJP	Invert levels and gradients to diffuser tanks	MK

Issue Status: FOR CONSTRUCTION

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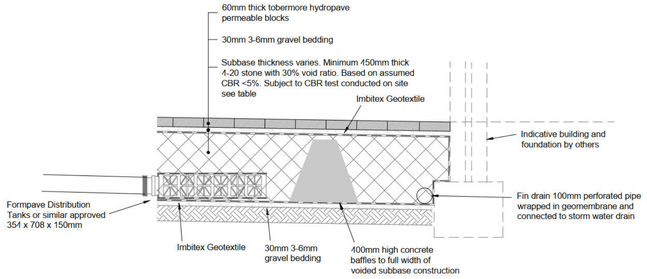
CLIENT: Oceanview Developments Ltd

PROJECT: The Laurals
Dappers Lane
Angmering

TITLE: Proposed Drainage Layout and Levels Plan

DRAWN	DATE	PROJECT NO.
M Pacifico	May 2020	23260
ENGINEER	CHECKED	DRG No. / REV.
M Kemshall		201 B

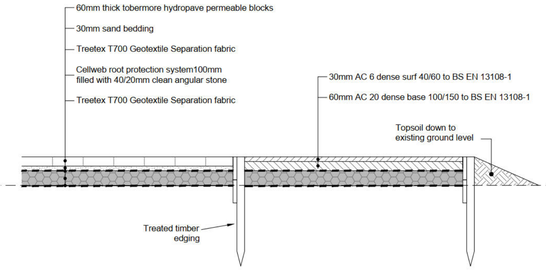
SCALE: 1:250 @ A1, 1:500 @ A3



BLOCK CARRIAGEWAY AND DRIVES VOIDED SUBBASE INFILTRATION SYSTEM

(Scale 1:20)

CBR of sub grade %	<=2	<=5	<=15	<=30	>30
Subbase thickness mm	550	350	235	235	235



PV3 - NO DIG CONSTRUCTION

(Scale 1:20)

FIGURE B.12
TYPICAL MANHOLE DETAIL - TYPE 2
Maximum depth from cover level to soffit of pipe 3.0 m

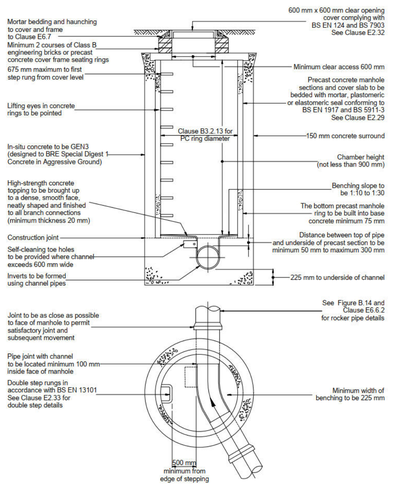


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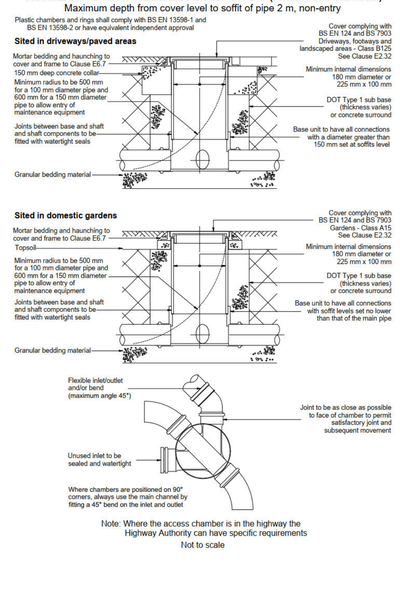
FIGURE B.21
TYPICAL INSPECTION CHAMBER DETAIL - TYPE 4 (Flexible material detail)
Maximum depth from cover level to soffit of pipe 2 m, non-entry



Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

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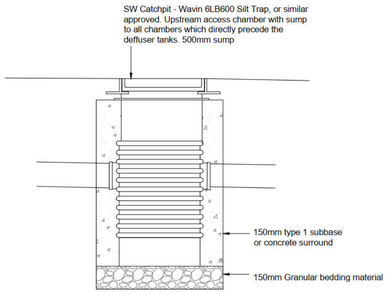
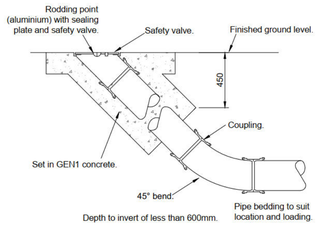


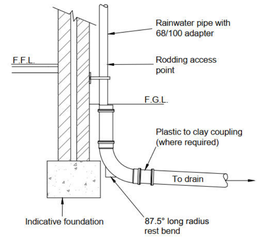
CATCHPIT CHAMBER

(Scale 1:20)



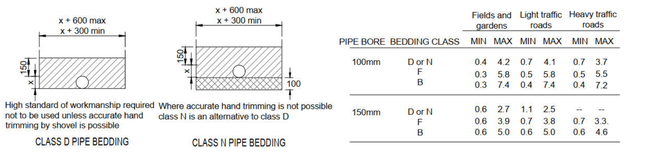
DETAIL OF RODDING EYE

(Scale 1:25)



TYPICAL RAINWATER PIPE DETAIL

(Scale 1:25)



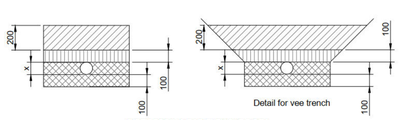
PIPE BORE	BEDDING CLASS	Fields and gardens MIN	Fields and gardens MAX	Light traffic roads MIN	Light traffic roads MAX	Heavy traffic roads MIN	Heavy traffic roads MAX
100mm	D or N	0.4	4.2	0.7	4.1	0.7	3.7
	F	0.3	5.8	0.5	5.8	0.5	5.5
	B	0.3	7.4	0.4	7.4	0.4	7.2
150mm	D or N	0.6	2.7	1.1	2.5	--	--
	F	0.6	3.9	0.7	3.8	0.7	3.3
	B	0.6	5.0	0.6	5.0	0.6	4.6
225mm	D or N	--	--	--	--	--	--
	F	0.6	2.5	1.2	2.1	--	--
	B	0.6	3.3	0.8	3.2	0.9	2.4

PIPE BEDDING FOR RIGID APPLIES (NON ADOPTIVE DRAINS)

LEGEND:

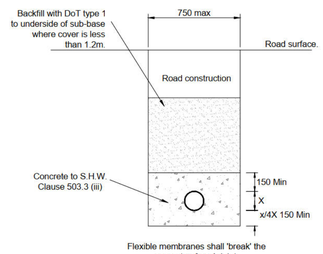
- Selected fill: free from stones larger than 40mm, lumps of clay over 100mm, timber frozen material and vegetable matter
- Granular material: should conform to BS 882:1983 table 4 or BS8301:1985 Appendix D. Compaction fraction > 0.3 for class N > 0.2 for class F and B.
- Selected fill or granular fill free from stones larger than 40mm

'x' - Denotes external pipe diameter.

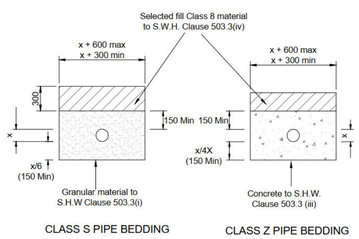


PIPE BEDDING DETAILS (NON ADOPTABLE DRAINS)

(Not To Scale)

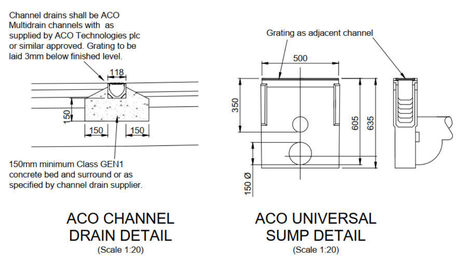


PIPE BEDDING FOR ADOPTABLE DRAINS UNDER HIGHWAY CONSTRUCTION



PIPE BEDDING DETAILS (ADOPTABLE DRAINS)

(Not To Scale)



ACO CHANNEL DRAIN DETAIL

(Scale 1:20)

ACO UNIVERSAL SUMP DETAIL

(Scale 1:20)

GENERAL NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-Contractors work must be checked and agreed between the sub-Contractor or supplier and the general Contractor.

2. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and specification.

3. The main Contractor is responsible for ensuring the stability of the structure whilst the works are in progress.

4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority. No liability is accepted by the Consultant and the main Contractor is responsible for obtaining and checking all information and taking due care and attention whilst undertaking the works.

DRAINAGE NOTES:

1. All adoptable pipes, bends and junctions shall be vitrified clay to BS EN 295-1, with flexible joints and kitemark certified.

2. All Adoptable sewers shall be in strict accordance with the 7th edition of Sewers For Adoption. Unless otherwise stated adoptable sewers shall be 150mm diameter and shall be laid in a class S bedding. Where the depth to soffit is less than 1.2m under a public highway or 0.9m elsewhere the pipe shall be laid with a class Z bedding.

3. All private building drainage shall be constructed in strict accordance with BS EN 752:2008. Unless otherwise specified building drainage shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 40 for foul drains and 1 in 80 for surface water drains. All building drains shall be laid in class B bedding unless otherwise specified.

4. Where a pipe is within 1m of a foundation the trench shall be filled with class GEN 3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class GEN 3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN 3 concrete.

5. Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN 3 concrete encasement (150mm thick). In all other cases the pipes shall be bedded and surrounded with 100mm thick granular material.

6. In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided. Compressible boards (fibreboard or polystyrene) shall be provided at a maximum of 8m centres (coinciding with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section. A board thickness of 18mm for pipes up to 450mm nominal diameter and 36mm for pipes over 450mm nominal diameter.

7. All svps shall have rodding access plates fitted at their bases (ground floor level).

8. Where existing pipes are to be abandoned they shall be dug out together with any abandoned manholes.

9. Any discrepancy between the drawing and site should be reported immediately to the Engineer.

10. All manhole and chamber sizes are given as a minimum to meet the 7th edition of Sewers For Adoption

REV	DATE	INT	DESCRIPTION	CHK
B	24.06.2020	PJR	Block thickness added to details	MK
A	01.06.2020	MJP	Carriageway construction corrected	MK

Issue Status: FOR PLANNING

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CLIENT: Oceanview Developments

PROJECT: The Laurels, Dappers Lane, Angmering

TITLE: Construction Details

DRAWN	DATE	PROJECT NO.
M Pacifico	Nov 2019	23260
ENGINEER	CHECKED	DRG No. / REV
M Kempshall	SRM	501 B

SCALE: As Shown @ A1

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

Half Drain Time : 29 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	16.714	0.064	0.9	1.7	Flood Risk
30 min Summer	16.727	0.077	0.9	2.0	Flood Risk
60 min Summer	16.733	0.083	0.9	2.2	Flood Risk
120 min Summer	16.728	0.078	0.9	2.0	Flood Risk
180 min Summer	16.718	0.068	0.9	1.8	Flood Risk
240 min Summer	16.709	0.059	0.9	1.5	Flood Risk
360 min Summer	16.697	0.047	0.8	1.2	Flood Risk
480 min Summer	16.691	0.041	0.7	1.1	Flood Risk
600 min Summer	16.686	0.036	0.6	0.9	Flood Risk
720 min Summer	16.683	0.033	0.6	0.8	Flood Risk
960 min Summer	16.677	0.027	0.5	0.7	Flood Risk
1440 min Summer	16.671	0.021	0.4	0.5	Flood Risk
2160 min Summer	16.666	0.016	0.3	0.4	Flood Risk
2880 min Summer	16.663	0.013	0.2	0.3	Flood Risk
4320 min Summer	16.659	0.009	0.2	0.2	Flood Risk
5760 min Summer	16.658	0.008	0.1	0.2	Flood Risk
7200 min Summer	16.656	0.006	0.1	0.2	Flood Risk
8640 min Summer	16.656	0.006	0.1	0.1	Flood Risk
10080 min Summer	16.655	0.005	0.1	0.1	Flood Risk
15 min Winter	16.723	0.073	0.9	1.9	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	18
30 min Summer	87.133	0.0	28
60 min Summer	55.837	0.0	46
120 min Summer	34.509	0.0	78
180 min Summer	25.637	0.0	110
240 min Summer	20.604	0.0	140
360 min Summer	15.169	0.0	198
480 min Summer	12.185	0.0	260
600 min Summer	10.272	0.0	320
720 min Summer	8.930	0.0	380
960 min Summer	7.152	0.0	502
1440 min Summer	5.221	0.0	740
2160 min Summer	3.803	0.0	1104
2880 min Summer	3.033	0.0	1468
4320 min Summer	2.201	0.0	2204
5760 min Summer	1.751	0.0	2896
7200 min Summer	1.466	0.0	3560
8640 min Summer	1.270	0.0	4360
10080 min Summer	1.124	0.0	5136
15 min Winter	129.682	0.0	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	16.738	0.088	0.9	2.3	Flood Risk
60 min Winter	16.743	0.093	0.9	2.4	Flood Risk
120 min Winter	16.732	0.082	0.9	2.1	Flood Risk
180 min Winter	16.716	0.066	0.9	1.7	Flood Risk
240 min Winter	16.703	0.053	0.9	1.4	Flood Risk
360 min Winter	16.692	0.042	0.7	1.1	Flood Risk
480 min Winter	16.685	0.035	0.6	0.9	Flood Risk
600 min Winter	16.680	0.030	0.5	0.8	Flood Risk
720 min Winter	16.676	0.026	0.5	0.7	Flood Risk
960 min Winter	16.671	0.021	0.4	0.6	Flood Risk
1440 min Winter	16.666	0.016	0.3	0.4	Flood Risk
2160 min Winter	16.662	0.012	0.2	0.3	Flood Risk
2880 min Winter	16.659	0.009	0.2	0.2	Flood Risk
4320 min Winter	16.657	0.007	0.1	0.2	Flood Risk
5760 min Winter	16.656	0.006	0.1	0.1	Flood Risk
7200 min Winter	16.655	0.005	0.1	0.1	Flood Risk
8640 min Winter	16.654	0.004	0.1	0.1	Flood Risk
10080 min Winter	16.654	0.004	0.1	0.1	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	30
60 min Winter	55.837	0.0	48
120 min Winter	34.509	0.0	84
180 min Winter	25.637	0.0	116
240 min Winter	20.604	0.0	144
360 min Winter	15.169	0.0	204
480 min Winter	12.185	0.0	264
600 min Winter	10.272	0.0	326
720 min Winter	8.930	0.0	386
960 min Winter	7.152	0.0	508
1440 min Winter	5.221	0.0	750
2160 min Winter	3.803	0.0	1104
2880 min Winter	3.033	0.0	1472
4320 min Winter	2.201	0.0	2204
5760 min Winter	1.751	0.0	2904
7200 min Winter	1.466	0.0	3760
8640 min Winter	1.270	0.0	4504
10080 min Winter	1.124	0.0	5120

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.009

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.004	4	8	0.005

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Model Details

Storage is Online Cover Level (m) 16.900

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.05400	Diameter/Width (m)	9.3
Safety Factor	1.5	Length (m)	9.3
Porosity	0.30	Cap Volume Depth (m)	0.150
Invert Level (m)	16.650		

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

Half Drain Time : 52 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	16.662	0.122	1.6	5.8	O K
30 min Summer	16.693	0.153	1.6	7.3	O K
60 min Summer	16.711	0.171	1.6	8.1	O K
120 min Summer	16.711	0.171	1.6	8.1	O K
180 min Summer	16.699	0.159	1.6	7.6	O K
240 min Summer	16.685	0.145	1.6	6.9	O K
360 min Summer	16.658	0.118	1.6	5.6	O K
480 min Summer	16.635	0.095	1.6	4.5	O K
600 min Summer	16.617	0.077	1.6	3.7	O K
720 min Summer	16.603	0.063	1.6	3.0	O K
960 min Summer	16.588	0.048	1.5	2.3	O K
1440 min Summer	16.577	0.037	1.2	1.7	O K
2160 min Summer	16.568	0.028	0.9	1.3	O K
2880 min Summer	16.562	0.022	0.7	1.1	O K
4320 min Summer	16.556	0.016	0.5	0.8	O K
5760 min Summer	16.553	0.013	0.4	0.6	O K
7200 min Summer	16.551	0.011	0.4	0.5	O K
8640 min Summer	16.550	0.010	0.3	0.5	O K
10080 min Summer	16.549	0.009	0.3	0.4	O K
15 min Winter	16.679	0.139	1.6	6.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	19
30 min Summer	87.133	0.0	32
60 min Summer	55.837	0.0	52
120 min Summer	34.509	0.0	86
180 min Summer	25.637	0.0	120
240 min Summer	20.604	0.0	154
360 min Summer	15.169	0.0	218
480 min Summer	12.185	0.0	278
600 min Summer	10.272	0.0	336
720 min Summer	8.930	0.0	390
960 min Summer	7.152	0.0	502
1440 min Summer	5.221	0.0	740
2160 min Summer	3.803	0.0	1104
2880 min Summer	3.033	0.0	1468
4320 min Summer	2.201	0.0	2204
5760 min Summer	1.751	0.0	2928
7200 min Summer	1.466	0.0	3640
8640 min Summer	1.270	0.0	4352
10080 min Summer	1.124	0.0	5096
15 min Winter	129.682	0.0	20

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	16.716	0.176	1.6	8.4	O K
60 min Winter	16.737	0.197	1.6	9.4	O K
120 min Winter	16.733	0.193	1.6	9.2	O K
180 min Winter	16.714	0.174	1.6	8.3	O K
240 min Winter	16.692	0.152	1.6	7.2	O K
360 min Winter	16.650	0.110	1.6	5.2	O K
480 min Winter	16.617	0.077	1.6	3.6	O K
600 min Winter	16.594	0.054	1.6	2.6	O K
720 min Winter	16.586	0.046	1.5	2.2	O K
960 min Winter	16.578	0.038	1.2	1.8	O K
1440 min Winter	16.568	0.028	0.9	1.3	O K
2160 min Winter	16.560	0.020	0.6	1.0	O K
2880 min Winter	16.556	0.016	0.5	0.8	O K
4320 min Winter	16.552	0.012	0.4	0.6	O K
5760 min Winter	16.550	0.010	0.3	0.5	O K
7200 min Winter	16.548	0.008	0.3	0.4	O K
8640 min Winter	16.547	0.007	0.2	0.3	O K
10080 min Winter	16.546	0.006	0.2	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	32
60 min Winter	55.837	0.0	58
120 min Winter	34.509	0.0	92
180 min Winter	25.637	0.0	130
240 min Winter	20.604	0.0	166
360 min Winter	15.169	0.0	230
480 min Winter	12.185	0.0	288
600 min Winter	10.272	0.0	334
720 min Winter	8.930	0.0	384
960 min Winter	7.152	0.0	502
1440 min Winter	5.221	0.0	748
2160 min Winter	3.803	0.0	1108
2880 min Winter	3.033	0.0	1472
4320 min Winter	2.201	0.0	2208
5760 min Winter	1.751	0.0	2976
7200 min Winter	1.466	0.0	3656
8640 min Winter	1.270	0.0	4384
10080 min Winter	1.124	0.0	5136

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.029

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.014	4	8	0.015

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Model Details

Storage is Online Cover Level (m) 17.150

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.05400	Diameter/Width (m)	12.6
Safety Factor	1.5	Length (m)	12.6
Porosity	0.30	Cap Volume Depth (m)	0.200
Invert Level (m)	16.540		

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

Half Drain Time : 32 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	16.934	0.084	1.7	4.4	Flood Risk
30 min Summer	16.953	0.103	1.7	5.4	Flood Risk
60 min Summer	16.963	0.113	1.7	5.9	Flood Risk
120 min Summer	16.959	0.109	1.7	5.7	Flood Risk
180 min Summer	16.948	0.098	1.7	5.1	Flood Risk
240 min Summer	16.936	0.086	1.7	4.5	Flood Risk
360 min Summer	16.916	0.066	1.7	3.4	Flood Risk
480 min Summer	16.903	0.053	1.7	2.7	Flood Risk
600 min Summer	16.896	0.046	1.6	2.4	Flood Risk
720 min Summer	16.891	0.041	1.4	2.2	Flood Risk
960 min Summer	16.885	0.035	1.2	1.8	Flood Risk
1440 min Summer	16.876	0.026	0.9	1.4	Flood Risk
2160 min Summer	16.870	0.020	0.7	1.0	Flood Risk
2880 min Summer	16.866	0.016	0.6	0.8	Flood Risk
4320 min Summer	16.862	0.012	0.4	0.6	Flood Risk
5760 min Summer	16.860	0.010	0.3	0.5	Flood Risk
7200 min Summer	16.858	0.008	0.3	0.4	Flood Risk
8640 min Summer	16.857	0.007	0.3	0.4	Flood Risk
10080 min Summer	16.856	0.006	0.2	0.3	Flood Risk
15 min Winter	16.945	0.095	1.7	5.0	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	18
30 min Summer	87.133	0.0	30
60 min Summer	55.837	0.0	48
120 min Summer	34.509	0.0	82
180 min Summer	25.637	0.0	114
240 min Summer	20.604	0.0	146
360 min Summer	15.169	0.0	206
480 min Summer	12.185	0.0	262
600 min Summer	10.272	0.0	320
720 min Summer	8.930	0.0	380
960 min Summer	7.152	0.0	500
1440 min Summer	5.221	0.0	740
2160 min Summer	3.803	0.0	1104
2880 min Summer	3.033	0.0	1468
4320 min Summer	2.201	0.0	2204
5760 min Summer	1.751	0.0	2928
7200 min Summer	1.466	0.0	3640
8640 min Summer	1.270	0.0	4392
10080 min Summer	1.124	0.0	5136
15 min Winter	129.682	0.0	19

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	16.969	0.119	1.7	6.2	Flood Risk
60 min Winter	16.978	0.128	1.7	6.7	Flood Risk
120 min Winter	16.969	0.119	1.7	6.2	Flood Risk
180 min Winter	16.950	0.100	1.7	5.2	Flood Risk
240 min Winter	16.931	0.081	1.7	4.2	Flood Risk
360 min Winter	16.904	0.054	1.7	2.8	Flood Risk
480 min Winter	16.894	0.044	1.5	2.3	Flood Risk
600 min Winter	16.888	0.038	1.3	2.0	Flood Risk
720 min Winter	16.883	0.033	1.2	1.7	Flood Risk
960 min Winter	16.877	0.027	0.9	1.4	Flood Risk
1440 min Winter	16.870	0.020	0.7	1.0	Flood Risk
2160 min Winter	16.865	0.015	0.5	0.8	Flood Risk
2880 min Winter	16.862	0.012	0.4	0.6	Flood Risk
4320 min Winter	16.859	0.009	0.3	0.4	Flood Risk
5760 min Winter	16.857	0.007	0.2	0.4	Flood Risk
7200 min Winter	16.856	0.006	0.2	0.3	Flood Risk
8640 min Winter	16.855	0.005	0.2	0.3	Flood Risk
10080 min Winter	16.855	0.005	0.2	0.2	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	31
60 min Winter	55.837	0.0	50
120 min Winter	34.509	0.0	88
180 min Winter	25.637	0.0	122
240 min Winter	20.604	0.0	154
360 min Winter	15.169	0.0	208
480 min Winter	12.185	0.0	264
600 min Winter	10.272	0.0	326
720 min Winter	8.930	0.0	386
960 min Winter	7.152	0.0	502
1440 min Winter	5.221	0.0	744
2160 min Winter	3.803	0.0	1104
2880 min Winter	3.033	0.0	1472
4320 min Winter	2.201	0.0	2164
5760 min Winter	1.751	0.0	2944
7200 min Winter	1.466	0.0	3672
8640 min Winter	1.270	0.0	4280
10080 min Winter	1.124	0.0	5248

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.023

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.011	4	8	0.012

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Model Details

Storage is Online Cover Level (m) 17.100

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.05400	Diameter/Width (m)	13.2
Safety Factor	1.5	Length (m)	13.2
Porosity	0.30	Cap Volume Depth (m)	0.150
Invert Level (m)	16.850		

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

Half Drain Time : 46 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	17.184	0.194	3.0	9.8	Flood Risk
30 min Summer	17.231	0.241	3.0	12.2	Flood Risk
60 min Summer	17.252	0.262	3.0	13.3	Flood Risk
120 min Summer	17.243	0.253	3.0	12.8	Flood Risk
180 min Summer	17.220	0.230	3.0	11.7	Flood Risk
240 min Summer	17.193	0.203	3.0	10.3	Flood Risk
360 min Summer	17.145	0.155	3.0	7.9	Flood Risk
480 min Summer	17.106	0.116	3.0	5.9	Flood Risk
600 min Summer	17.076	0.086	3.0	4.3	O K
720 min Summer	17.054	0.064	3.0	3.3	O K
960 min Summer	17.037	0.047	2.8	2.4	O K
1440 min Summer	17.025	0.035	2.1	1.8	O K
2160 min Summer	17.016	0.026	1.6	1.3	O K
2880 min Summer	17.011	0.021	1.3	1.0	O K
4320 min Summer	17.005	0.015	0.9	0.8	O K
5760 min Summer	17.002	0.012	0.7	0.6	O K
7200 min Summer	17.000	0.010	0.6	0.5	O K
8640 min Summer	16.999	0.009	0.5	0.4	O K
10080 min Summer	16.998	0.008	0.5	0.4	O K
15 min Winter	17.212	0.222	3.0	11.2	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	19
30 min Summer	87.133	0.0	31
60 min Summer	55.837	0.0	50
120 min Summer	34.509	0.0	84
180 min Summer	25.637	0.0	118
240 min Summer	20.604	0.0	152
360 min Summer	15.169	0.0	214
480 min Summer	12.185	0.0	274
600 min Summer	10.272	0.0	330
720 min Summer	8.930	0.0	384
960 min Summer	7.152	0.0	494
1440 min Summer	5.221	0.0	736
2160 min Summer	3.803	0.0	1100
2880 min Summer	3.033	0.0	1468
4320 min Summer	2.201	0.0	2176
5760 min Summer	1.751	0.0	2872
7200 min Summer	1.466	0.0	3600
8640 min Summer	1.270	0.0	4352
10080 min Summer	1.124	0.0	5008
15 min Winter	129.682	0.0	19

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	17.268	0.278	3.0	14.1	Flood Risk
60 min Winter	17.293	0.303	3.0	15.4	Flood Risk
120 min Winter	17.277	0.287	3.0	14.5	Flood Risk
180 min Winter	17.238	0.248	3.0	12.6	Flood Risk
240 min Winter	17.196	0.206	3.0	10.5	Flood Risk
360 min Winter	17.123	0.133	3.0	6.7	Flood Risk
480 min Winter	17.068	0.078	3.0	3.9	O K
600 min Winter	17.040	0.050	3.0	2.5	O K
720 min Winter	17.033	0.043	2.6	2.2	O K
960 min Winter	17.025	0.035	2.1	1.8	O K
1440 min Winter	17.016	0.026	1.6	1.3	O K
2160 min Winter	17.009	0.019	1.1	0.9	O K
2880 min Winter	17.005	0.015	0.9	0.8	O K
4320 min Winter	17.001	0.011	0.7	0.6	O K
5760 min Winter	16.999	0.009	0.5	0.4	O K
7200 min Winter	16.997	0.007	0.4	0.4	O K
8640 min Winter	16.996	0.006	0.4	0.3	O K
10080 min Winter	16.996	0.006	0.3	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	32
60 min Winter	55.837	0.0	54
120 min Winter	34.509	0.0	92
180 min Winter	25.637	0.0	128
240 min Winter	20.604	0.0	162
360 min Winter	15.169	0.0	226
480 min Winter	12.185	0.0	278
600 min Winter	10.272	0.0	316
720 min Winter	8.930	0.0	378
960 min Winter	7.152	0.0	492
1440 min Winter	5.221	0.0	736
2160 min Winter	3.803	0.0	1104
2880 min Winter	3.033	0.0	1500
4320 min Winter	2.201	0.0	2176
5760 min Winter	1.751	0.0	2912
7200 min Winter	1.466	0.0	3736
8640 min Winter	1.270	0.0	4408
10080 min Winter	1.124	0.0	5064

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.051

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.025	4	8	0.026

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Model Details

Storage is Online Cover Level (m) 17.400

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.09720	Diameter/Width (m)	13.0
Safety Factor	1.5	Length (m)	13.0
Porosity	0.30	Cap Volume Depth (m)	0.310
Invert Level (m)	16.990		

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

Half Drain Time : 31 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	17.589	0.139	6.3	15.1	O K
30 min Summer	17.621	0.171	6.3	18.5	O K
60 min Summer	17.632	0.182	6.3	19.7	O K
120 min Summer	17.620	0.170	6.3	18.4	O K
180 min Summer	17.598	0.148	6.3	16.0	O K
240 min Summer	17.575	0.125	6.3	13.5	O K
360 min Summer	17.538	0.088	6.3	9.6	O K
480 min Summer	17.513	0.063	6.3	6.9	O K
600 min Summer	17.500	0.050	6.2	5.4	O K
720 min Summer	17.494	0.044	5.5	4.8	O K
960 min Summer	17.486	0.036	4.5	3.9	O K
1440 min Summer	17.477	0.027	3.4	3.0	O K
2160 min Summer	17.470	0.020	2.5	2.2	O K
2880 min Summer	17.466	0.016	2.0	1.7	O K
4320 min Summer	17.462	0.012	1.5	1.3	O K
5760 min Summer	17.460	0.010	1.2	1.0	O K
7200 min Summer	17.458	0.008	1.0	0.9	O K
8640 min Summer	17.457	0.007	0.9	0.8	O K
10080 min Summer	17.456	0.006	0.8	0.7	O K
15 min Winter	17.610	0.160	6.3	17.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	18
30 min Summer	87.133	0.0	30
60 min Summer	55.837	0.0	46
120 min Summer	34.509	0.0	82
180 min Summer	25.637	0.0	114
240 min Summer	20.604	0.0	146
360 min Summer	15.169	0.0	206
480 min Summer	12.185	0.0	260
600 min Summer	10.272	0.0	314
720 min Summer	8.930	0.0	374
960 min Summer	7.152	0.0	494
1440 min Summer	5.221	0.0	736
2160 min Summer	3.803	0.0	1100
2880 min Summer	3.033	0.0	1444
4320 min Summer	2.201	0.0	2200
5760 min Summer	1.751	0.0	2904
7200 min Summer	1.466	0.0	3624
8640 min Summer	1.270	0.0	4392
10080 min Summer	1.124	0.0	5048
15 min Winter	129.682	0.0	19

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	17.647	0.197	6.3	21.3	O K
60 min Winter	17.658	0.208	6.3	22.5	O K
120 min Winter	17.635	0.185	6.3	20.1	O K
180 min Winter	17.599	0.149	6.3	16.2	O K
240 min Winter	17.564	0.114	6.3	12.4	O K
360 min Winter	17.513	0.063	6.3	6.8	O K
480 min Winter	17.496	0.046	5.7	4.9	O K
600 min Winter	17.489	0.039	4.8	4.2	O K
720 min Winter	17.484	0.034	4.3	3.7	O K
960 min Winter	17.477	0.027	3.4	3.0	O K
1440 min Winter	17.470	0.020	2.5	2.2	O K
2160 min Winter	17.465	0.015	1.8	1.6	O K
2880 min Winter	17.462	0.012	1.5	1.3	O K
4320 min Winter	17.459	0.009	1.1	0.9	O K
5760 min Winter	17.457	0.007	0.8	0.7	O K
7200 min Winter	17.456	0.006	0.7	0.6	O K
8640 min Winter	17.455	0.005	0.7	0.5	O K
10080 min Winter	17.455	0.005	0.6	0.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	31
60 min Winter	55.837	0.0	50
120 min Winter	34.509	0.0	88
180 min Winter	25.637	0.0	122
240 min Winter	20.604	0.0	154
360 min Winter	15.169	0.0	208
480 min Winter	12.185	0.0	256
600 min Winter	10.272	0.0	316
720 min Winter	8.930	0.0	376
960 min Winter	7.152	0.0	500
1440 min Winter	5.221	0.0	738
2160 min Winter	3.803	0.0	1096
2880 min Winter	3.033	0.0	1420
4320 min Winter	2.201	0.0	2220
5760 min Winter	1.751	0.0	2992
7200 min Winter	1.466	0.0	3632
8640 min Winter	1.270	0.0	4432
10080 min Winter	1.124	0.0	5032

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.082

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.041	4	8	0.041

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Model Details

Storage is Online Cover Level (m) 18.100

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.09360	Diameter/Width (m)	19.0
Safety Factor	1.5	Length (m)	19.0
Porosity	0.30	Cap Volume Depth (m)	0.220
Invert Level (m)	17.450		

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

Half Drain Time : 25 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	17.888	0.118	4.0	8.0	O K
30 min Summer	17.912	0.142	4.0	9.7	O K
60 min Summer	17.921	0.151	4.0	10.3	O K
120 min Summer	17.907	0.137	4.0	9.4	O K
180 min Summer	17.886	0.116	4.0	7.9	O K
240 min Summer	17.866	0.096	4.0	6.5	O K
360 min Summer	17.836	0.066	4.0	4.5	O K
480 min Summer	17.820	0.050	3.9	3.4	O K
600 min Summer	17.813	0.043	3.4	3.0	O K
720 min Summer	17.808	0.038	3.0	2.6	O K
960 min Summer	17.802	0.032	2.5	2.2	O K
1440 min Summer	17.794	0.024	1.9	1.6	O K
2160 min Summer	17.788	0.018	1.4	1.2	O K
2880 min Summer	17.784	0.014	1.1	1.0	O K
4320 min Summer	17.780	0.010	0.8	0.7	O K
5760 min Summer	17.778	0.008	0.7	0.6	O K
7200 min Summer	17.777	0.007	0.5	0.5	O K
8640 min Summer	17.776	0.006	0.5	0.4	O K
10080 min Summer	17.775	0.005	0.4	0.4	O K
15 min Winter	17.904	0.134	4.0	9.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	129.682	0.0	18
30 min Summer	87.133	0.0	28
60 min Summer	55.837	0.0	46
120 min Summer	34.509	0.0	80
180 min Summer	25.637	0.0	112
240 min Summer	20.604	0.0	142
360 min Summer	15.169	0.0	200
480 min Summer	12.185	0.0	254
600 min Summer	10.272	0.0	314
720 min Summer	8.930	0.0	374
960 min Summer	7.152	0.0	494
1440 min Summer	5.221	0.0	736
2160 min Summer	3.803	0.0	1100
2880 min Summer	3.033	0.0	1460
4320 min Summer	2.201	0.0	2160
5760 min Summer	1.751	0.0	2880
7200 min Summer	1.466	0.0	3672
8640 min Summer	1.270	0.0	4288
10080 min Summer	1.124	0.0	5032
15 min Winter	129.682	0.0	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	17.934	0.164	4.0	11.2	O K
60 min Winter	17.940	0.170	4.0	11.7	O K
120 min Winter	17.915	0.145	4.0	9.9	O K
180 min Winter	17.881	0.111	4.0	7.6	O K
240 min Winter	17.851	0.081	4.0	5.5	O K
360 min Winter	17.818	0.048	3.8	3.3	O K
480 min Winter	17.810	0.040	3.1	2.7	O K
600 min Winter	17.804	0.034	2.7	2.3	O K
720 min Winter	17.800	0.030	2.4	2.0	O K
960 min Winter	17.794	0.024	1.9	1.6	O K
1440 min Winter	17.788	0.018	1.4	1.2	O K
2160 min Winter	17.783	0.013	1.0	0.9	O K
2880 min Winter	17.780	0.010	0.8	0.7	O K
4320 min Winter	17.778	0.008	0.6	0.5	O K
5760 min Winter	17.776	0.006	0.5	0.4	O K
7200 min Winter	17.775	0.005	0.4	0.3	O K
8640 min Winter	17.774	0.004	0.3	0.3	O K
10080 min Winter	17.774	0.004	0.3	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	87.133	0.0	30
60 min Winter	55.837	0.0	50
120 min Winter	34.509	0.0	86
180 min Winter	25.637	0.0	118
240 min Winter	20.604	0.0	148
360 min Winter	15.169	0.0	196
480 min Winter	12.185	0.0	256
600 min Winter	10.272	0.0	316
720 min Winter	8.930	0.0	376
960 min Winter	7.152	0.0	496
1440 min Winter	5.221	0.0	736
2160 min Winter	3.803	0.0	1100
2880 min Winter	3.033	0.0	1456
4320 min Winter	2.201	0.0	2236
5760 min Winter	1.751	0.0	2848
7200 min Winter	1.466	0.0	3576
8640 min Winter	1.270	0.0	4408
10080 min Winter	1.124	0.0	5144

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Shortest Storm (mins)	15
Ratio R	0.350	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.045

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.022	4	8	0.023

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Model Details

Storage is Online Cover Level (m) 18.300

Infiltration Blanket Structure

Infiltration Coefficient Base (m/hr)	0.09360	Diameter/Width (m)	15.1
Safety Factor	1.5	Length (m)	15.1
Porosity	0.30	Cap Volume Depth (m)	0.180
Invert Level (m)	17.770		

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