



**Discharge of Condition 17
Drainage Verification Report
Planning Approval DOV/23/00714**

for

Proposed Residential Development
Former Railway Bell PH
120 London Road, River
Kent, CT16 3AD

on behalf of

Karlee Construction

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1.0 INTRODUCTION

Background

1.1 Tridax Ltd have been commissioned by Karllee Construction and requested to prepare the Verification Report for the residential development on land at former Railway Bell PH, 120 London Road, River for the discharge of condition 17 of the planning approval DOV/23/00714 to Dover District Council in order to allow occupation.

- 17 No part of the development hereby permitted shall be occupied until a Verification Report, pertaining to the surface water drainage system and prepared by a suitably competent person, has been submitted to and approved in writing by the Local Planning Authority. The Report shall demonstrate that the drainage system constructed is consistent with that which was approved. The Report shall contain information and evidence (including photographs) of details and locations of inlets, outlets and control structures; landscape plans; full as built drawings; information pertinent to the installation of those items identified on the critical drainage assets drawing; and the submission of an operation and maintenance manual for the sustainable drainage scheme as constructed.

Reason: To ensure that flood risks from development to the future users of the land and neighbouring land are minimised, together with those risks to controlled waters, property and ecological systems, and to ensure that the development as constructed is compliant with and subsequently maintained pursuant to the requirements of paragraph 167 of the National Planning Policy Framework.

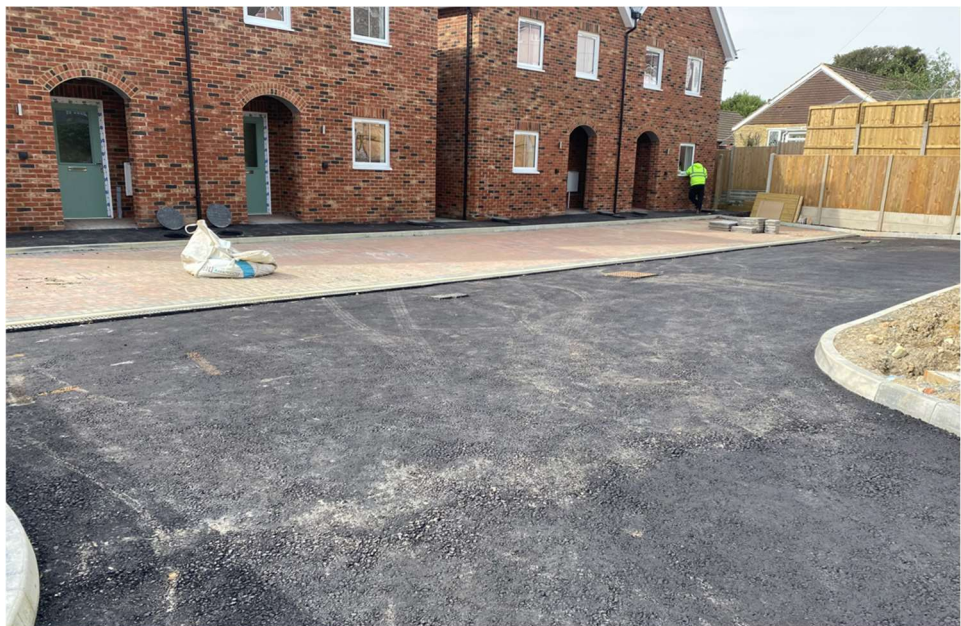
Frame 1 ~ Extract of Planning Conditions

2.0 VERIFICATION STATEMENT

- 2.1 The surface water drainage for the site is now complete and has generally been constructed in accordance with Condition 16. Included within Appendix A is a copy of the record drawings of the drainage installed.
- 2.2 The approved SUDS solution for the site was a combination of cellular soakaways and permeable paving. During the construction the Client opted to remove the permeable paving and use a conventional subbase material for use as a haul road and introduce positive drainage as shown on the record drawing. Cellular SA1 was increased to accommodate the additional area and SA6 introduced.
- 2.3 Included within Appendix B is the updated soakaway design for SA1 with the additional catchment area and the soakaway design for SA6. The soakaways are designed to cater for a 1in100 year return period with a 45% allowance for climate change. The drainage calculations provided comply with the new Kent County Council SUDS guidance.

Construction Photographs

- 2.4 Below as frame 4 are progress photographs taken during the final site inspection (note that the access road is yet to receive the dense macadam wearing course) and during construction.



Parking Court rear plots 1-4



View from site entrance



SA1 Excavation



Soakaway SA1 Installed



SA2 Excavation



Soakaway SA2 Installed



SA4 Excavation



Soakaway SA4 Installed

Frame 4 ~ Surface Water Construction Photographs

- 2.5 Tridax Ltd confirms that the surface water drainage system the site has been installed as per the details shown on the record drawings and meets with the design intent to adequately manage the surface water disposal.

3.0 OPERATION & MAINTENANCE STATEMENT

3.1 The onsite foul & surface water sewers will remain private and will be maintained by an appropriate management company set up for the development by Karllee Construction.

3.2 It is recommended that the chambers, catch pits, and the soakaway structures are inspected as part of the general planned inspection and maintenance regime for the development, but certainly at no greater intervals than once a year.

3.3 Annual Inspection to include;

- Lift all manhole covers and check general condition and ensure no floating debris within the manholes.
- Note that the chamber upstream of the soakaway SA1 and SA6 is constructed as catch pits with a 450mm sump below the outlets and should be dipped to check the level of any accumulated silt and emptied by gully sucker and disposed off-site by a licensed carrier.
- Check the overall integrity of the soakaway location looking for any ground settlement local to the tanks.
- Carry out works as identified from inspection.

3.4 Five year Inspection / Five Year Anniversary

- Carry out a rapid 'Flush' through of the system (carry out works during a dry period) of all pipe work to ensure no blockages and free flow of water to the outfall and to check the overall integrity.
- Empty the catchpit with a gully sucker and dispose off-site by a licensed carrier

3.5 Implementation Programme

The developer will be responsible for the first year's maintenance and will arrange for a joint handover inspection between the Developer and the maintenance contractor to be appointed by the Management Company with

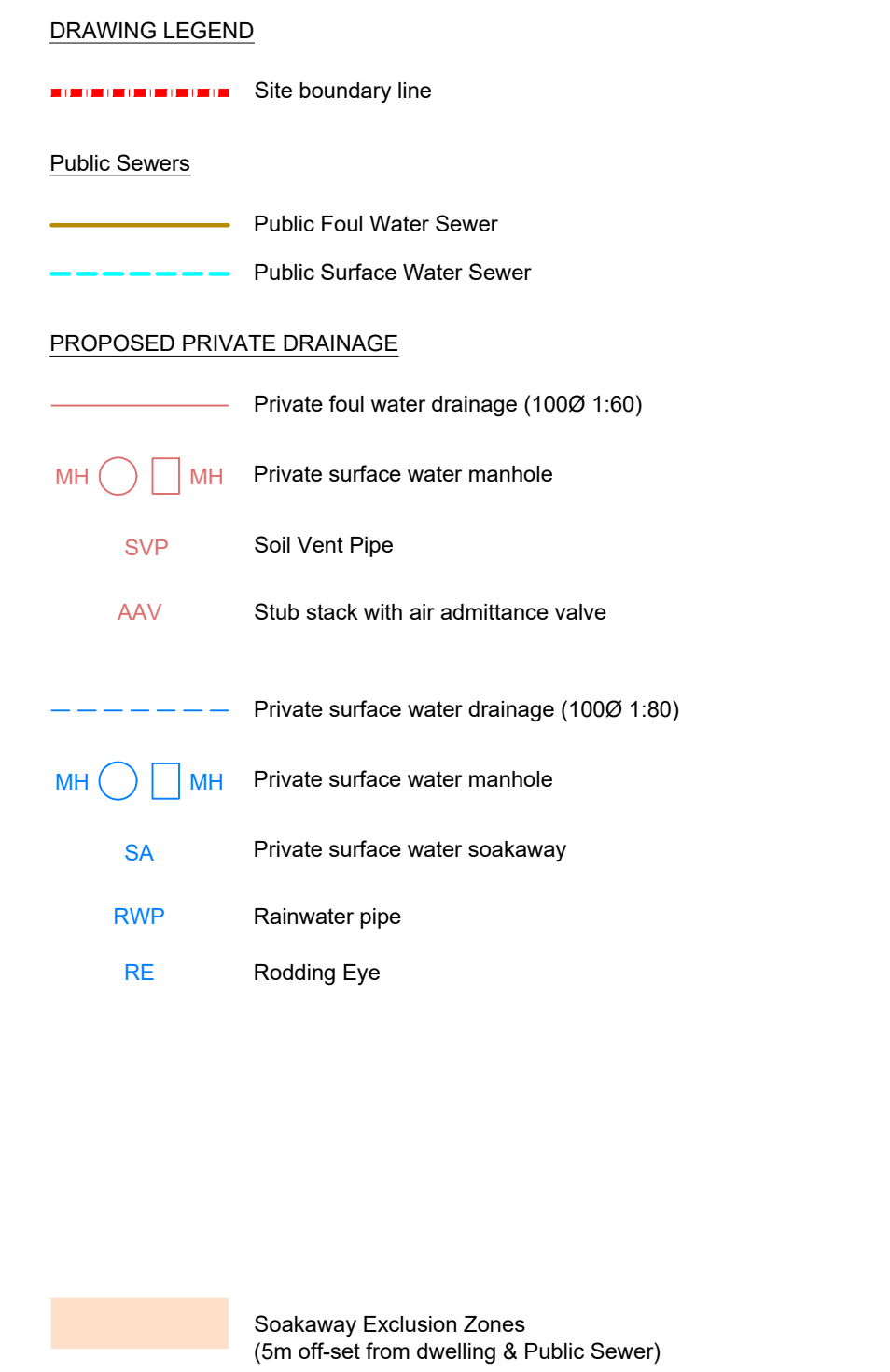
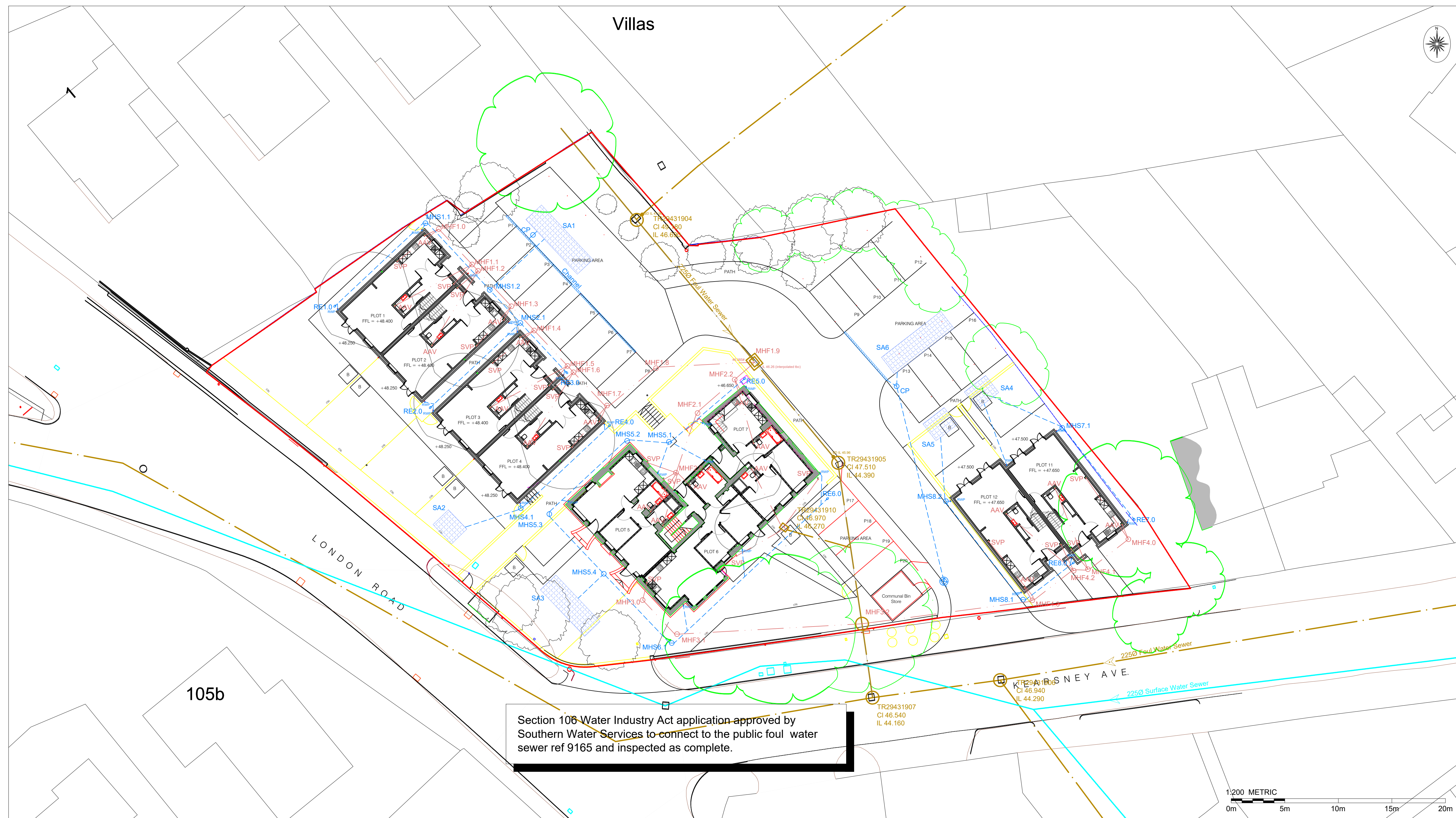
a copy of this report provided in order for Maintenance Contractor to become familiar with and understand the requirements.

3.6 Maintenance Records:

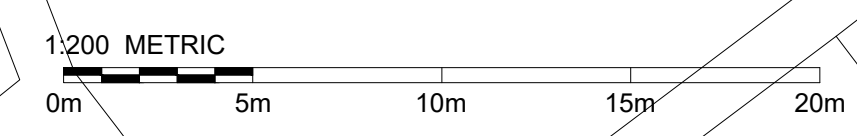
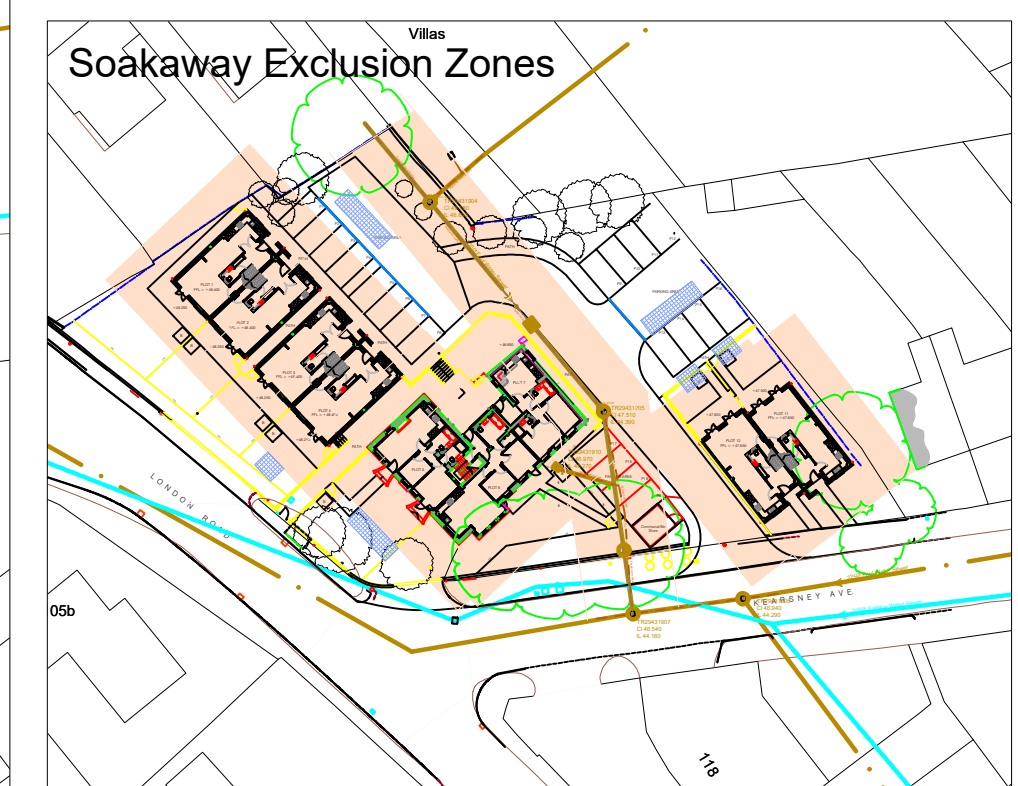
Record the date of each inspection along with a brief description of any works carried out.

APPENDIX A

Tridax Drawings
T-2022-152-02-revD – Drainage Plan & Schedules
T-2022-152-03-revB – Drainage Construction Details



Section 106 Water Industry Act application approved by Southern Water Services to connect to the public foul water sewer ref 9165 and inspected as complete.



FOUL WATER MANHOLE SCHEDULE							
Manhole Ref.	Cover Level (m)	Invert Level (m)	Backdrop Invert Lvl (m)	Manhole Depth (m)	Manhole Type	Manhole Ø (mm)	Cover/Frame Grade
MHF1.0	47.850	47.150	-	0.700	PPIC	450	B125
MHF1.1	47.850	47.085	-	0.775	PPIC	450	B125
MHF1.2	47.850	47.060	-	0.790	PPIC	450	B125
MHF1.3	47.850	46.985	-	0.865	PPIC	450	B125
MHF1.4	47.850	46.930	-	0.920	PPIC	450	B125
MHF1.5	47.850	46.855	-	0.995	PPIC	450	B125
MHF1.6	47.850	46.840	-	1.010	PPIC	450	B125
MHF1.7	47.850	46.770	-	1.080	PPIC	450	B125
MHF1.8	47.850	46.680	-	1.170	PPIC	450	B125
MHF1.9	47.550	46.260	-	1.290	Type D	600x750	D400
MHF2.0	46.840	46.475	-	0.365	PPIC	450	B125
MHF2.1	46.980	46.375	-	0.605	PPIC	450	B125
MHF2.2	47.675	46.300	-	1.375	PPIC	450	B125
MHF3.0	46.440	45.840	-	0.600	PPIC	450	B125
MHF3.1	46.770	45.765	-	1.005	PPIC	450	B125
MHF3.2	46.600	44.230	-	2.370	Type B	1200	D400
MHF4.0	47.500	46.800	-	0.700	PPIC	450	B125
MHF4.1	47.500	46.725	-	0.775	PPIC	450	B125
MHF4.0	47.500	46.705	-	0.795	PPIC	450	B125
MHF4.0	47.500	46.635	-	0.865	PPIC	450	B125

SURFACE WATER MANHOLE SCHEDULE							
Manhole Ref.	Cover Level (m)	Invert Level (m)	Backdrop Invert Lvl (m)	Manhole Depth (m)	Manhole Type	Manhole Ø (mm)	Cover/Frame Grade
RE1.0	47.850	47.400	-	0.450	Rodding Eye	100	A15
MHS1.1	47.850	47.260	-	0.590	Catchpit	450	A15
MHS1.2	47.850	47.100	-	0.750	Catchpit	450	A15
RE2.0	47.850	47.400	-	0.450	Rodding Eye	100	A15
MHS2.1	47.850	47.260	-	0.590	Catchpit	450	A15
RE3.0	47.850	47.400	-	0.450	Rodding Eye	100	A15
RE4.0	47.850	47.400	-	0.450	Rodding Eye	100	A15
MHS4.1	47.850	47.260	-	0.590	Catchpit	450	A15
RE5.0	47.675	47.225	-	0.450	Rodding Eye	100	A15
MHS5.1	46.840	46.390	-	0.450	Catchpit	450	A15
MHS5.2	46.770	46.300	-	0.470	Catchpit	450	A15
MHS5.3	46.480	46.030	-	0.450	Catchpit	450	A15
MHS5.4	46.490	45.935	-	0.555	Catchpit	450	A15
RE6.0	47.000	46.550	-	0.450	Rodding Eye	100	A15
MHS6.1	46.770	46.300	-	0.470	Catchpit	450	A15
RE7.0	47.500	47.050	-	0.450	Rodding Eye	100	A15
MHS7.1	47.500	46.920	-	0.580	Catchpit	450	A15
RE8.0	47.500	47.050	-	0.450	Rodding Eye	100	A15
MHS8.1	47.500	46.975	-	0.525	Catchpit	450	A15
MHS8.2	47.500	46.835	-	0.665	Catchpit	450	A15

SURFACE WATER SOAKAWAY SCHEDULE - CELLULAR BLOCKS				
Soakaway Ref.	Cover / Ground Level (m)	Base Level(s) (m)	Depth (m)	Remarks (Based on Wavin Aquacell Units 500x1000x400)
SA1	47.850	45.050	2.800	2m x 7.0m x 2.0m deep (2No x 14No x 5No = 140Blocks Total)
SA2	47.780	46.480	1.300	2m x 2.5m x 0.8m deep (2No x 5No x 2No = 20Blocks Total)
SA3	46.170	44.470	1.700	2m x 6.0m x 1.2m deep (2No x 12No x 3No = 72Blocks Total)
SA4	47.500	46.200	1.300	2m x 2.5m x 0.8m deep (2No x 5No x 2No = 20Blocks Total)
SA5	47.500	46.200	1.300	2m x 2.5m x 0.8m deep (2No x 5No x 2No = 20Blocks Total)
SA6	47.550	44.350	3.200	2m x 7.0m x 2.0m deep (2No x 14No x 5No = 140Blocks Total)

D	Record Issue	26/03/2024
C	Legend corrected to read permeable asphalt for the access road	24/02/2023
B	SA1 relocated to suit construction	13/02/2023
A	First issue to client	08/02/2023
Rev	Description	Date

PROJECT		as shown		07/02/2023		A1	
Proposed Residential Development on land at former Railway Bell PH, 120 London Road, River, CT16 3AD		SCALE		DATE		REV	
CLIENT		1:200		07/02/2023		D	
Karlee Construction		as shown		07/02/2023		A1	
DRAWING		1:200		DATE		REV	
Proposed Drainage Plan & Schedules		1:200		07/02/2023		A1	
STATUS		RECORD		T-2022-152-02		D	

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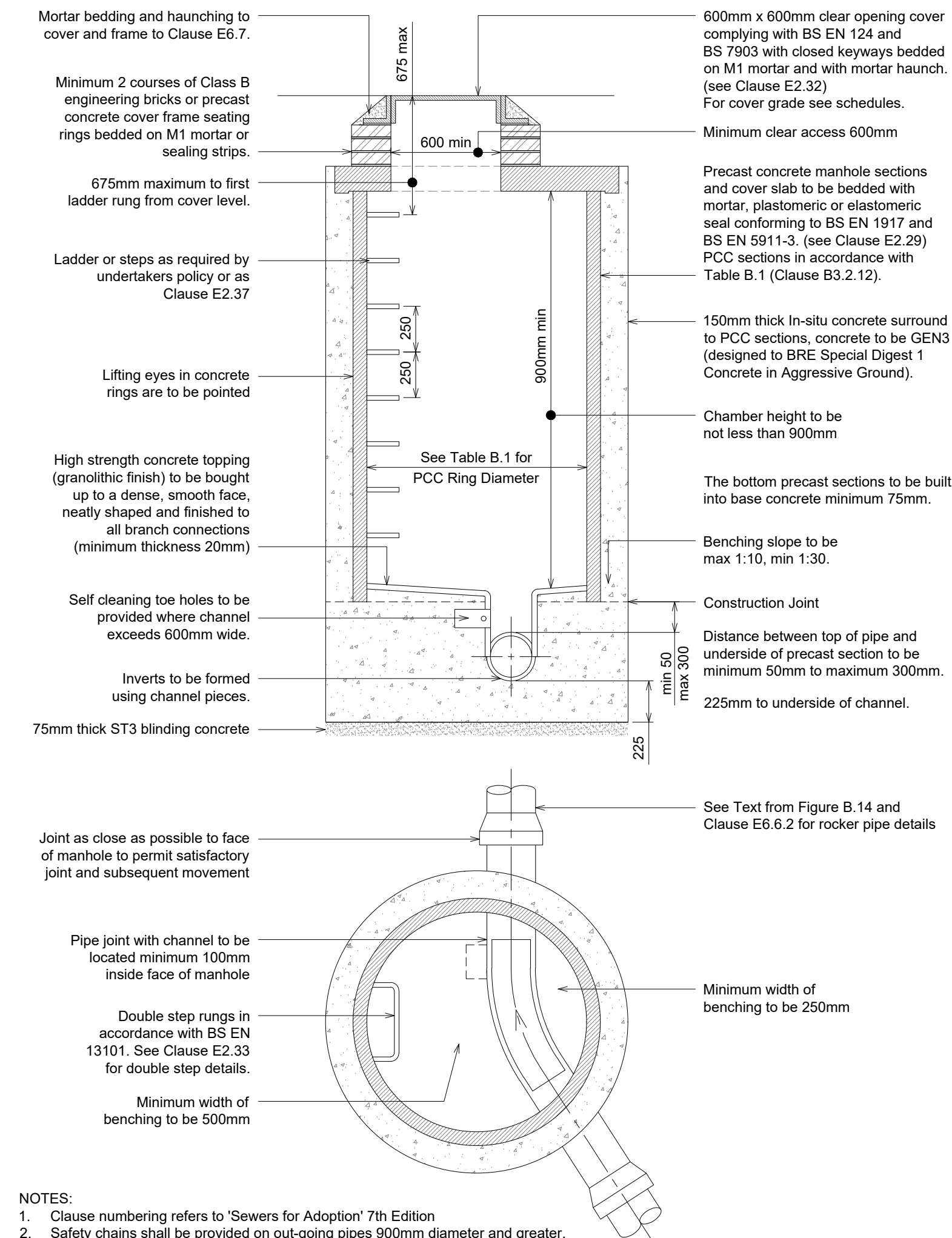


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Figure B9 Typical manhole detail - Type B

scale 1:25

- Maximum depth from cover level to soffit of pipe 1.5m to 3.0m



- NOTES:
- Clause numbering refers to 'Sewers for Adoption' 7th Edition
 - Safety chains shall be provided on out-going pipes 900mm diameter and greater.

Table B.1 - Clause B3.2.12 - Manhole Diameters

Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal dimension of manhole (mm)
Less than 375	1200
375 - 450	1350
500 - 700	1500
750 - 900	1800
Greater than 900	Pipe diameter + 900

Clause E6.6 - Pipes and Joints Adjacent to Structures

- Where rigid pipes are used, a flexible joint (rocker pipe) shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, within 150mm for pipe diameters less than 300mm. The design of the joints shall be compatible with any subsequent movement.
- The recommended length of the next pipe (rocker pipe) away from the structure shall be as shown in Table E.12.

Table E.12 Rocker Pipes

Nominal Diameter (mm)	Effective length of Rocker Pipe (mm)
150 to 600	600
600 to 750	1000
Over 750	1250

Clause E6.7 - Setting Manhole Covers and Frames

- Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions. The frame shall be seated on at least two courses of Class B engineering bricks, on precast masonry units or on precast concrete cover frame sealing rings to regulate the distance between the top of the cover and the top rung of the ladder (to be no greater than 675mm). A mortar filler shall be provided where the corners to an opening in a slab are chamfered and the brickwork is not flush with the edges of the opening.
- Frames for manhole covers shall be bedded in a polyester resin based mortar in all situations where covers are sited in NRSWA Road Categories I, II or III (i.e. all except residential cul-de-sacs).

Text taken from Figure B.14

- Stub pipes into structures shall be of rigid material.
- No incoming branch is to be less than 90° from the outgoing direction of flow, all pipes entering the bottom of the manhole are to have level soffits.

Clause E2.29 - Precast Concrete Manholes

- Precast concrete manhole units shall comply with the relevant provisions of BS EN 1917 and BS 5911-3. Units which bed into bases shall be manufactured so that imposed vertical loads are transmitted directly via the full wall thickness of the unit. The profiles of joints between units and the underside of slabs, shall be capable of withstanding applied loadings from such slabs and spigot-ended sections shall only be used where the soffit of the slab is recessed to receive them.
- Precast concrete chamber sections for valves and meters shall be interlocking and comply with BS EN 1917 and BS 5911-3.

Clause E2.32 - Manhole Covers and Frames

- Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highways Agency Guidance Document HA 104/09. They shall be of a non rocking design which does not rely on the use of cushion inserts.
- Manhole covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress.
- As a minimum, Class D400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders and parking areas used by all types of road vehicles.
- Minimum frame depths for NRSWA road categories I to IV shall be as table E.6.
- Class B125 covers shall be used in footways, pedestrian areas and comparable locations.
- In situations where traffic loading is anticipated to be heavier than would occur on a typical residential estate distributor road (i.e. braking or turning near a junction), higher specification E600 covers shall be used.
- All Manholes shall be the non ventilating type and shall have closed keyways.

Table E.6 Minimum Frame Depths

NRSWA Road Category	Road Description	Minimum Frame Depth (mm)
I	Trunk road and dual carriageways	150
II	All other A roads	150
III	Bus services	150
IV	All other roads except residential cul-de-sacs	150
-	Residential cul-de-sacs	100

Clause E2.37 - Ladders

- Ladders in manholes and similar structures shall comply with the requirements of BS EN 14396, with width of rung 380mm and two stringers, but shall not be made from aluminium.
- Mild steel ladders for vertical fixing shall be fabricated from steel conforming to BS EN 10025-2. After fabrication, low carbon steel ladders shall be hot dip galvanized in accordance with BS EN 1461.
- Stainless steel ladders for vertical fixing shall be fabricated from Grade X5CrNiMo 17-12-2 steel conforming to BS EN 10088-3.
- GRP ladders shall be manufactured from pultruded sections conforming to BS EN 13706-2 and BS EN 13706-3. The surface shall be smooth with fibres embedded and sealed against penetration from dirt and water. The Barcol hardness of the sections shall be at least 35 when tested in accordance with BS 2782-10.

Clause E2.32 - Manhole Covers and Frames

- Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highways Agency Guidance Document HA 104/09. They shall be of a non rocking design which does not rely on the use of cushion inserts.
- Manhole covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress.
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- In situations where traffic loading is anticipated to be heavier than would occur on a typical residential estate distributor road (i.e. braking or turning near a junction), higher specification E600 covers shall be used.
- All Manholes shall be the non ventilating type and shall have closed keyways.

Clause E2.33 - Manhole Steps

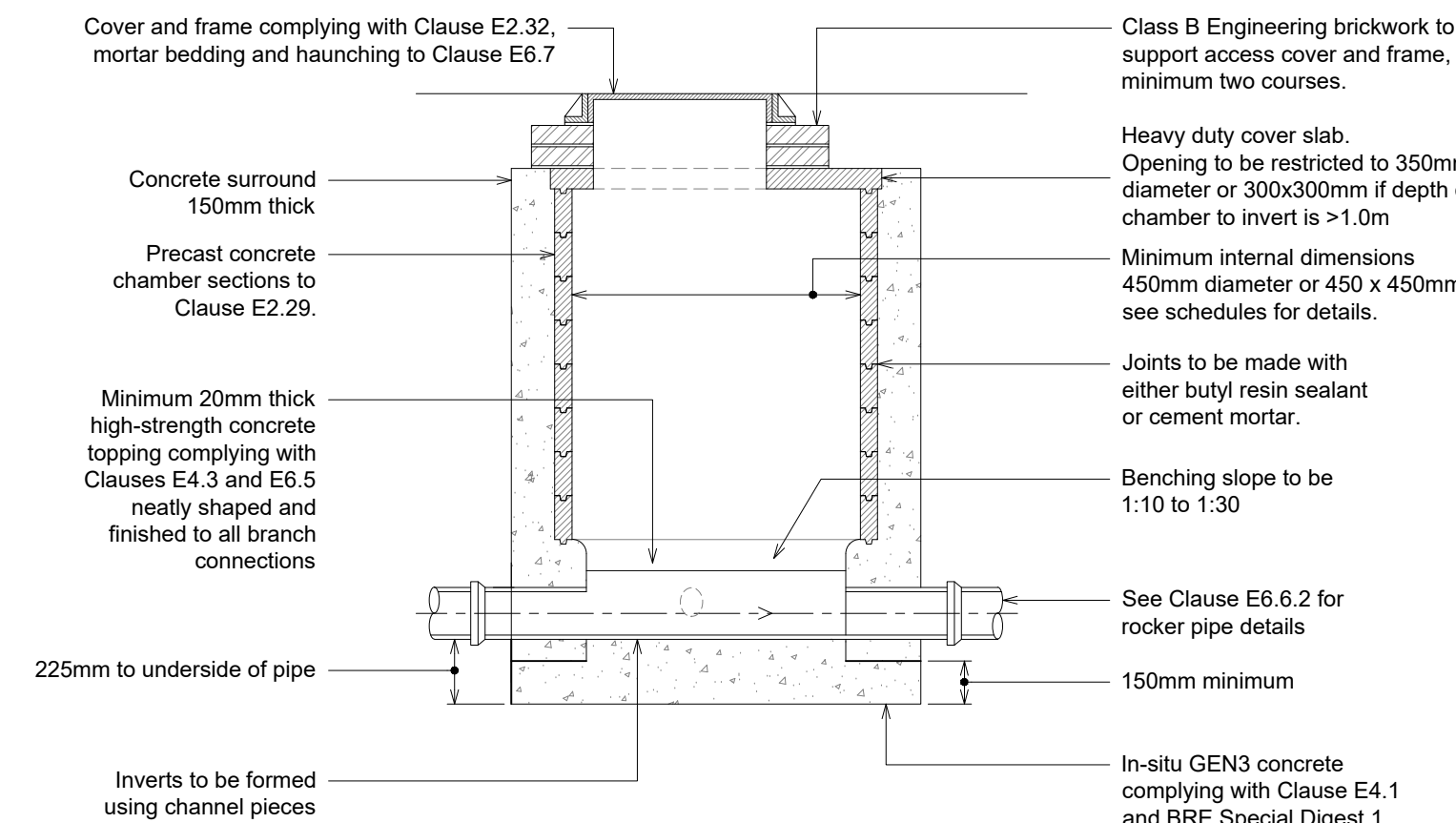
- Steps for manholes and other chambers shall be Type D Class 1, complying with the requirements of BS EN 13101.
- Galvanized mild steel and plastic encapsulated steps are preferred.

Figure B18 Typical Inspection Chamber Detail - Type D

scale 1:25

NOTE

Depth from cover level to soffit of pipe up to 3.0m.
Rigid material construction for use in areas subject to vehicle loading or landscaped areas.



NOTE: Invert of any connecting pipes to be at least 50mm above that of the main pipe.

Clause E6.7 - Setting Manhole Covers and Frames

- Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions. The frame shall be seated on at least two courses of Class B engineering bricks, on precast masonry units or on precast concrete cover frame sealing rings to regulate the distance between the top of the cover and the top rung of the ladder (to be no greater than 675mm). A mortar filler shall be provided where the corners to an opening in a slab are chamfered and the brickwork is not flush with the edges of the opening.
- Frames for manhole covers shall be bedded in a polyester resin based mortar in all situations where covers are sited in NRSWA Road Categories I, II or III (i.e. all except residential cul-de-sacs).

Clause E6.6 - Pipes and Joints Adjacent to Structures

- Where rigid pipes are used, a flexible joint (rocker pipe) shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, within 150mm for pipe diameters less than 300mm. The design of the joints shall be compatible with any subsequent movement.
- The recommended length of the next pipe (rocker pipe) away from the structure shall be as shown in Table E.12.

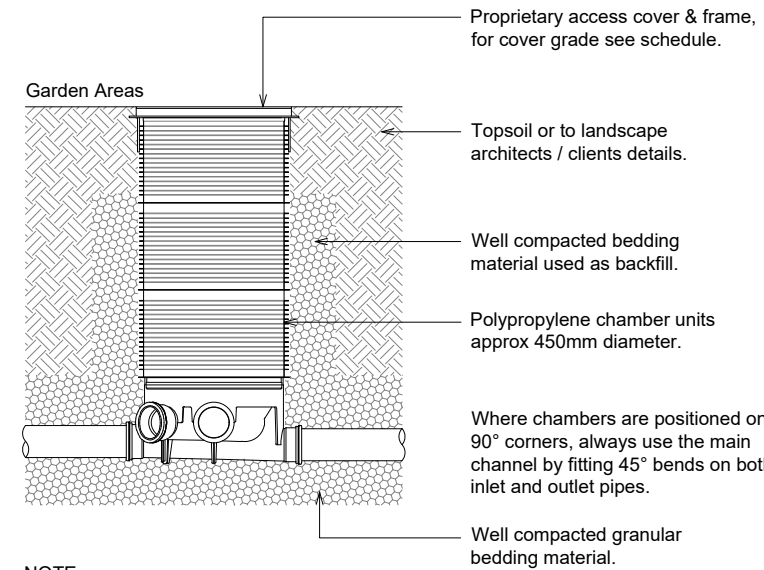
Table E.12 Rocker Pipes

Nominal Diameter (mm)	Effective length of Rocker Pipe (mm)
150 to 600	600
600 to 750	1000
Over 750	1250

Polypropylene Inspection Chamber (PPIC)

Use on private drainage works only

scale 1:20



NOTE: Maximum diameter of main channel 150/160mm
Maximum pipe diameter of inlets 100/110mm

Unused inlets are to be sealed and made watertight.

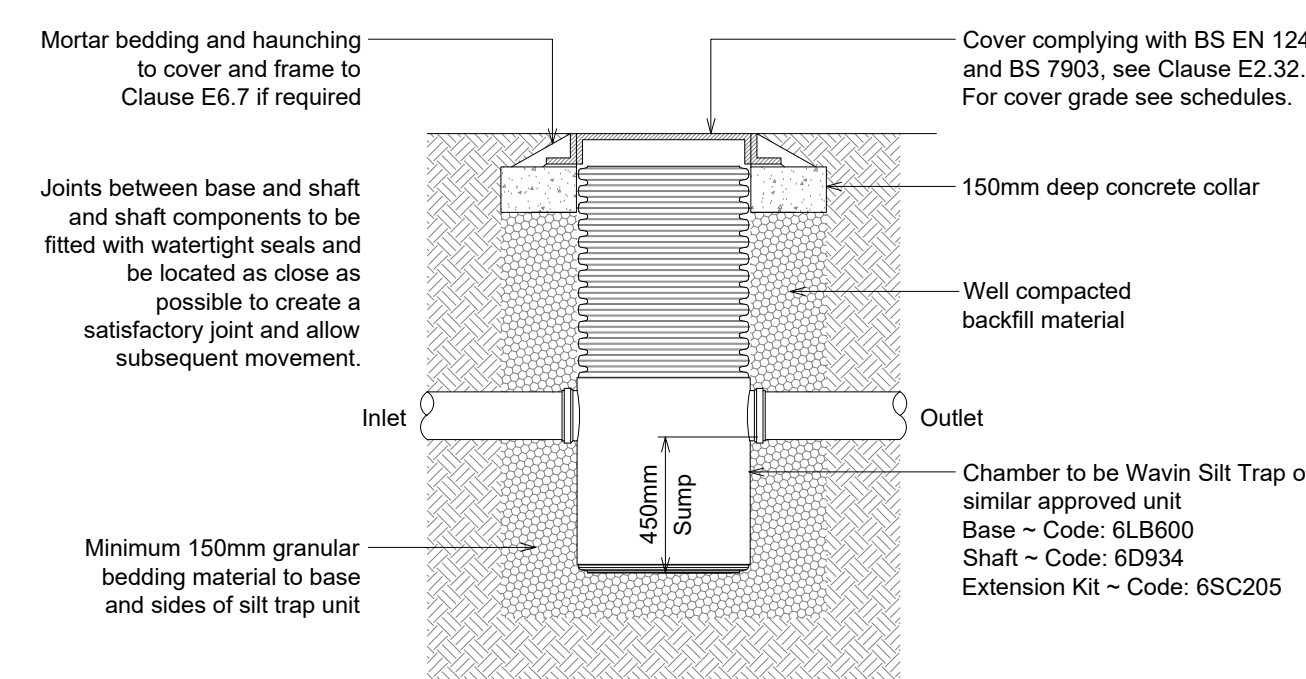
Backfill to be well compacted around shaft of chamber.

No incoming branch is to be less than 90° from the outgoing direction of flow, all pipes entering the bottom of the manhole are to have level soffits.

Typical Type 3 Silt Trap Detail

scale 1:25

- Sited in soft landscaped areas

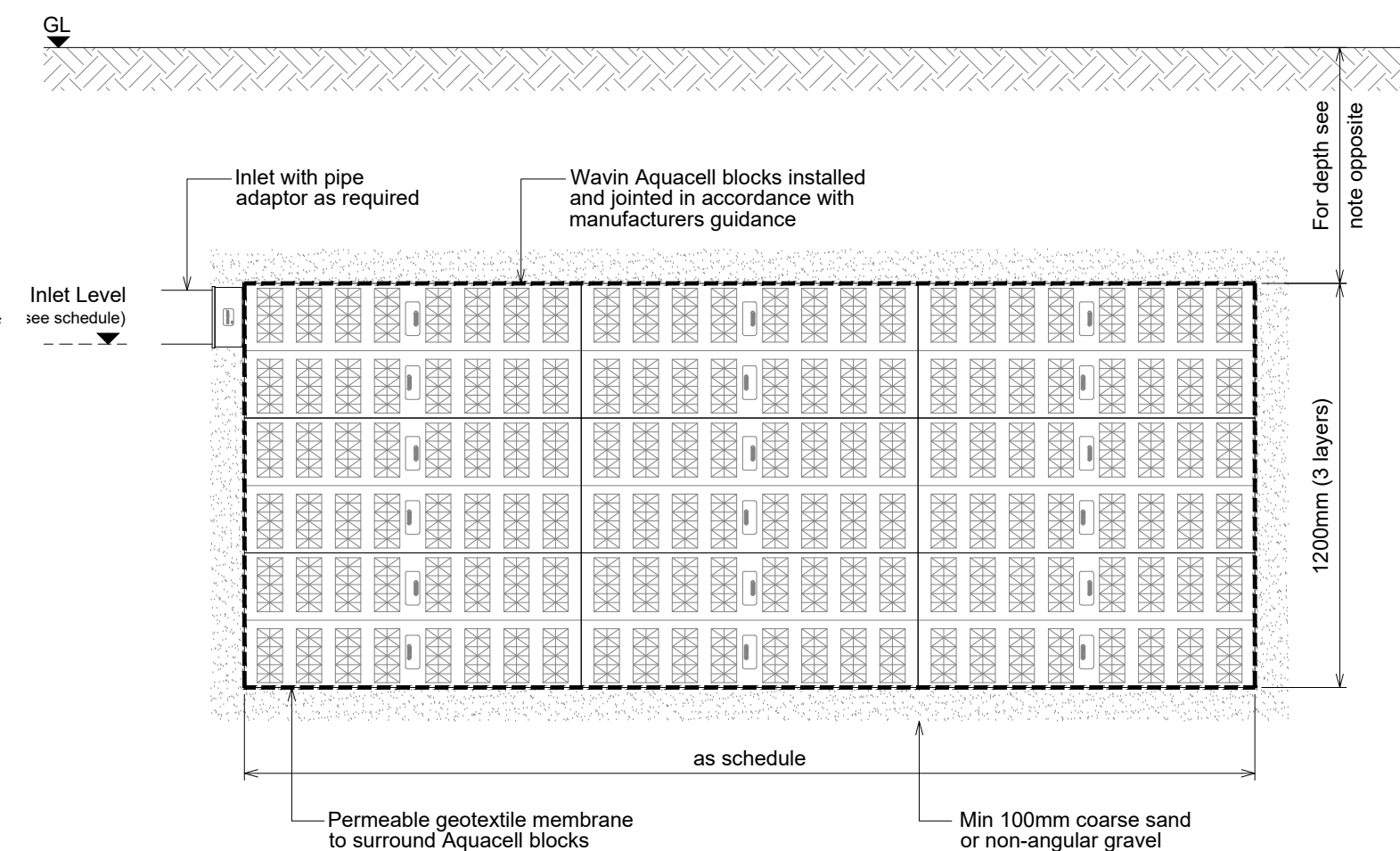


NOTES:

- Plastic chambers and rings shall comply with BS EN 13598-1 or BS EN 13598-2 or have equivalent independent approval.
- Backfill to be well compacted around shaft of chamber.

Typical Section: Cellular Soakaway (Aquacell)

scale 1:20



Aquacell Installation Notes: (Contractor to consult manufacturers literature for full details)

- Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
- Lay 100mm bed of coarse sand or non angular granular material, level and compact.
- Lay the geotextile membrane over the base and up the sides of the trench.
- Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below) For single layer applications use AquaCell Clips and for multi layers use AquaCell Clips and AquaCell Shear Connectors (vertical rods).
- Fix the pipe adaptors to the AquaCell units as required to suit the incoming pipework.
- In order to prevent silt from entering the tank, clogging the inlet pipework and reducing the storage capacity, it is recommended that a silt trap / catchpit is installed upstream of the tank inlet.
- Wrap and overlap the geotextile covering the entire AquaCell structure, minimum lap to be in the order of 300mm.
- Lay 100mm of coarse sand or non angular granular material between the trench walls and the AquaCell structure and compact being careful not to damage either the blocks or the geotextile membrane.
- Lay 100mm of coarse sand or non angular granular material over the geotextile and compact.
- Backfill tank with suitable clean material, free of organic matter and debris.

See manufacturers literature for details of block arrangement / fixing and selection.

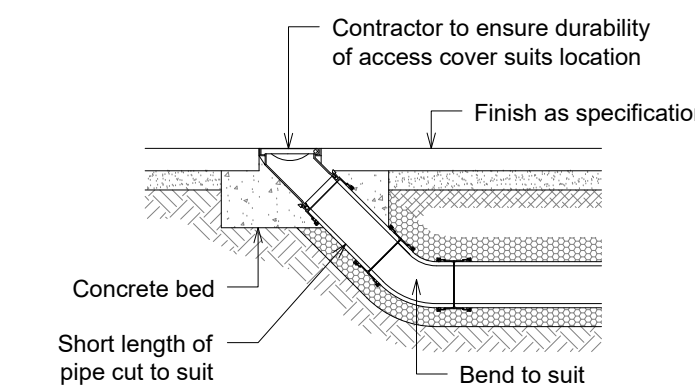
As strength varies between block models, the contractor is to consult the manufacturer to ascertain the correct block selection for each installation.

NOTE: Minimum cover depths. (Guidance Only)

- Heavy vehicle loading (i.e. large vehicles)
Cover to be not less than 1200mm.
- Light vehicle loading (i.e. parked cars)
Cover to be not less than 800mm.
- Non trafficked areas:
Cover to be not less than 600mm

Rodding Point Detail

scale 1:20



Rev	Description	Date
B	Permeable Paving Details removed / Record Issue	26/03/2024
A	First issue to client	08/02/2023

PROJECT:	Proposed Residential Development on land at former Railway Bell PH, 120 London Road, River, CT16 3AD
CLIENT:	Karllee Construction
DRAWING:	Drainage Construction Details
STATUS:	RECORD

SCALE:	DATE:	SHEET:
as shown	08/02/2023	A1
STATUS:	REV:	REV:
RECORD	T-2022-152-03	B


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APPENDIX B

MicroDrainage Design Calculations

1 ~ Soakaway SA1 revA

2 ~ Soakaway SA6


Tridax Ltd		Page 1
Honeywood House Whitfield Kent CT16 3EH		
Date 26/03/2024 13:35 File T-2022-153 SA1 revA Desi...		
Railway Bell, River SA1 RevA		
Designed by prl Checked by		
XP Solutions	Source Control 2020.1.3	

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 227 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	46.099	1.049	0.8	14.0	O K
30 min Summer	46.370	1.320	0.9	17.6	O K
60 min Summer	46.579	1.529	1.0	20.3	O K
120 min Summer	46.672	1.622	1.1	21.6	O K
180 min Summer	46.667	1.617	1.1	21.5	O K
240 min Summer	46.648	1.598	1.1	21.3	O K
360 min Summer	46.594	1.544	1.0	20.5	O K
480 min Summer	46.530	1.480	1.0	19.7	O K
600 min Summer	46.464	1.414	1.0	18.8	O K
720 min Summer	46.401	1.351	1.0	18.0	O K
960 min Summer	46.290	1.240	0.9	16.5	O K
1440 min Summer	46.107	1.057	0.8	14.1	O K
15 min Winter	46.229	1.179	0.9	15.7	O K
30 min Winter	46.536	1.486	1.0	19.8	O K
60 min Winter	46.778	1.728	1.1	23.0	O K
120 min Winter	46.899	1.849	1.2	24.6	O K
180 min Winter	46.901	1.851	1.2	24.6	O K
240 min Winter	46.872	1.822	1.2	24.2	O K
360 min Winter	46.805	1.755	1.1	23.3	O K
480 min Winter	46.720	1.670	1.1	22.2	O K
600 min Winter	46.631	1.581	1.1	21.0	O K
720 min Winter	46.543	1.493	1.0	19.9	O K
960 min Winter	46.383	1.333	0.9	17.7	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	195.488	0.0	22
30 min Summer	125.896	0.0	36
60 min Summer	76.528	0.0	64
120 min Summer	44.697	0.0	122
180 min Summer	32.463	0.0	158
240 min Summer	25.816	0.0	190
360 min Summer	18.645	0.0	254
480 min Summer	14.778	0.0	324
600 min Summer	12.331	0.0	394
720 min Summer	10.631	0.0	462
960 min Summer	8.406	0.0	600
1440 min Summer	6.028	0.0	866
15 min Winter	195.488	0.0	22
30 min Winter	125.896	0.0	35
60 min Winter	76.528	0.0	64
120 min Winter	44.697	0.0	118
180 min Winter	32.463	0.0	172
240 min Winter	25.816	0.0	196
360 min Winter	18.645	0.0	272
480 min Winter	14.778	0.0	348
600 min Winter	12.331	0.0	424
720 min Winter	10.631	0.0	498
960 min Winter	8.406	0.0	640

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
1440 min Winter	46.131	1.081	0.8	14.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
1440 min Winter	6.028	0.0	916

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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)	26.250	Shortest Storm (mins)	15
Ratio R	0.420	Longest Storm (mins)	1440
Summer Storms	Yes	Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.040

Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:
0	4	0.020	
		4	8
		0.020	

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Model Details

Storage is Online Cover Level (m) 47.850

Cellular Storage Structure

Invert Level (m) 45.050 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.18000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.18000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	14.0	14.0	2.000	14.0	50.0	2.001	0.0	50.0


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Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 207 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	45.345	0.995	0.8	13.2	O K
30 min Summer	45.602	1.252	0.9	16.7	O K
60 min Summer	45.799	1.449	1.0	19.3	O K
120 min Summer	45.883	1.533	1.0	20.4	O K
180 min Summer	45.877	1.527	1.0	20.3	O K
240 min Summer	45.857	1.507	1.0	20.0	O K
360 min Summer	45.803	1.453	1.0	19.3	O K
480 min Summer	45.740	1.390	1.0	18.5	O K
600 min Summer	45.676	1.326	0.9	17.6	O K
720 min Summer	45.616	1.266	0.9	16.8	O K
960 min Summer	45.509	1.159	0.9	15.4	O K
1440 min Summer	45.334	0.984	0.8	13.1	O K
15 min Winter	45.469	1.119	0.9	14.9	O K
30 min Winter	45.760	1.410	1.0	18.8	O K
60 min Winter	45.988	1.638	1.1	21.8	O K
120 min Winter	46.100	1.750	1.1	23.3	O K
180 min Winter	46.098	1.748	1.1	23.3	O K
240 min Winter	46.070	1.720	1.1	22.9	O K
360 min Winter	46.003	1.653	1.1	22.0	O K
480 min Winter	45.919	1.569	1.1	20.9	O K
600 min Winter	45.832	1.482	1.0	19.7	O K
720 min Winter	45.746	1.396	1.0	18.6	O K
960 min Winter	45.595	1.245	0.9	16.6	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	195.488	0.0	22
30 min Summer	125.896	0.0	36
60 min Summer	76.528	0.0	64
120 min Summer	44.697	0.0	120
180 min Summer	32.463	0.0	158
240 min Summer	25.816	0.0	188
360 min Summer	18.645	0.0	254
480 min Summer	14.778	0.0	324
600 min Summer	12.331	0.0	392
720 min Summer	10.631	0.0	462
960 min Summer	8.406	0.0	598
1440 min Summer	6.028	0.0	866
15 min Winter	195.488	0.0	22
30 min Winter	125.896	0.0	35
60 min Winter	76.528	0.0	64
120 min Winter	44.697	0.0	118
180 min Winter	32.463	0.0	172
240 min Winter	25.816	0.0	194
360 min Winter	18.645	0.0	272
480 min Winter	14.778	0.0	348
600 min Winter	12.331	0.0	422
720 min Winter	10.631	0.0	496
960 min Winter	8.406	0.0	640

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m ³)	Status
1440 min Winter	45.352	1.002	0.8	13.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Time-Peak (mins)
1440 min Winter	6.028	0.0	914

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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)	26.250	Shortest Storm (mins)	15
Ratio R	0.420	Longest Storm (mins)	1440
Summer Storms	Yes	Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.038

Time (mins)	Area (ha)	Time (mins)	Area (ha)
From:	To:	From:	To:
0	4	0.019	
		4	8
		0.019	

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Model Details

Storage is Online Cover Level (m) 47.550

Cellular Storage Structure

Invert Level (m) 44.350 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.18000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.18000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	14.0	14.0	2.000	14.0	50.0	2.001	0.0	50.0