

Discharge of Condition 3 (Details of Foul & Surface Water Drainage) Planning Approval F/TH/21/1948

for

Proposed Residential Development on land at 4 The Grove Westgate On Sea Kent, CT8 8AS

on behalf of

Mr & Mrs Clarke

Document Control Sheet

Project Title	Proposed Residential Development
	4 The Grove, Westgate On Sea
Document Title	Detailed Foul & Surface Water Drainage Design
Job No.	T-2023-030
Revision	1.0
Status	Final

Issue	Status	Author	Date	Check	Date	Authorised	Date
1.0	Final	P. Lavender	12.10.23	S. Carr	12.10.23	P. Lavender	12.10.23

Distribution List

Version	Issued to	Purpose	Date
1.0	Client / Architect (via email)	Planning	12/10/2023



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1.0 STATUS

- 1.1 This Report is prepared for the sole use of Mr & Mrs Clarke and their agents in connection with the current planning application. No responsibility can be assumed for the Report if used by others.
- 1.2 For the purposes of the Contracts (Rights of Third Parties) Act 1999, nothing in this Report shall confer on any third party any right to enforce or benefit from any terms of this Report

2.0 INTRODUCTION

Background

- 2.1 Tridax Ltd have been commissioned by Mr & Mrs Clarke and requested to prepare the detailed foul & surface water drainage design for the proposed Residential Development on land at 4 The Grove, Westgate On Sea, Kent, CT8 8AS for the discharge of condition 3 of the planning approval F/TH/21/1948 to Thanet District Council.
 - 3 No development shall take place until details of the means of foul and surface water disposal, including details of the implementation, management and maintenance of any proposed Sustainable urban Drainage Systems, have been submitted to and agreed in writing by the Local Planning Authority. The development shall be carried out in accordance with such details as are agreed and thereafter maintained.

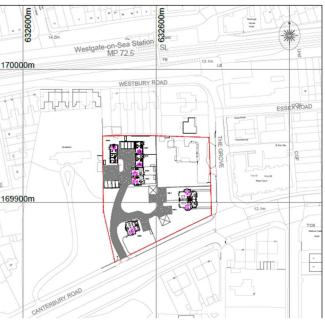
GROUND:

To protect the district's groundwater, and to ensure the development is served by satisfactory arrangements for the disposal of surface water ,in accordance with Policies SE04 and CC02 of the Thanet Local Plan and advice contained within the National Planning Policy Framework.

Frame 1 ~ Extract of Planning Conditions

Site Location

2.2 The proposed development is accessed from Canterbury Road as shown on drawing T-2023-030-01 enclosed within appendix A and the extract as Frame 2 below. The total site area (Red Line) is approximately 6,190m² (0.62ha) and is centred at Ordnance Survey reference (632559mE, 169949mN).





3.0 FOUL WATER DRAINAGE

Existing Discharge

3.1 There is no existing foul water drainage on the site with the land currently forming the garden to 4 The Grove.

Proposed Discharge

- 3.2 The intention is to connect the foul water discharge from the development to the public foul water sewer within Canterbury Road via a new manhole
- 3.3 Detailed foul water drainage design drawings are included within Appendix A along with supporting MicroDrainage design calculations included within Appendix B.

Consents

3.4 A Section 104 Water Industry Act application will need to be made to and approved by Southern Water Services prior to new connection.

4.0 SURFACE WATER DRAINAGE

Proposed Discharge

4.1 The intention is for the surface water to be disposed via on site filtration using a combination of cellular soakaways and permeable paving. To inform the detailed design the Client excavated a trial pit in the centre of the site as shown in the photographs as frame3 below. A copy of the BRE365 soakage results are included within Appendix B that provided a minimum filtration rate of 2.18 x 10⁻⁵ m/s (0.0786m/hr).



Frame 3 – Soakage Test Photographs

- 4.2 MicroDrainage Detailed Design calculations are enclosed within Appendix B to demonstrate that the proposed soakaways would be adequate to cater for a 1in100 year return period with a 40% allowance for climate change. The drainage calculations provided comply with the Kent County Council SUDS guidance;
 - FSR manually increased to 26.25mm
 - Design to accommodate 40% Climate Change
 - Half-drain times for 30year return < 24 hours
- 4.3 Note that there is no flood exceedance from the 40% sensitivity test with all flows contained with each structure.

- 4.4 The access road has a incline of a 1:28 gradient and concrete stanks are utilised within the sub base to prevent migration of surface water to allow a uniform filtration and utilise the minimum 140mm of storage required for storage within the 'no fines' sub base.
- 4.5 Detailed surface water disposal design drawings are included within Appendix A.

Consents

- 4.6 No formal consents are required for the SUDS features included for the surface water disposal strategy apart from the discharge of the precommencement planning condition requiring approval of the detailed design.
- 4.7 The responsibility of the management and maintenance will remain with the property owners to meet the requirements of the Flood and Water Management Act.

5.0 OPERATION & MAINTENANCE STATEMENT

- 5.1 We recommend that an annual maintenance contract is entered for the desludging of the primary settlement tank.
- 5.2 The surface water system as indicated on the design drawings is a private Sustainable Urban Drainage System (SUDS) and the owner of the property will be responsible for the inspection and maintenance for this system.
- 5.3 It is recommended that the chambers and the soakaway 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.
- 5.4 Annual Inspection to include;
 - Lift all manhole covers and check general condition an ensure no floating debris within the manholes.
 - Check the overall integrity of the soakaway location looking for any ground settlement local to the tanks.
 - Carry out works as identified from inspection.
- 5.5 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. Flushing of attenuation tank can be carried through the vent pipe.
 - Empty all catchpits with a gully sucker and dispose off-site by a licensed carrier

5.6 Permeable Paving Drive & Paths Maintenance Statement

The System relies upon the permeability of the finished surface to allow for surface water to percolate through the open joints of the blocks / open graded asphalt and through the 'no-fines' bedding layer. The open graded sub-base also allows for the storage of extreme storm events that has been designed to cater for a 1in100 year return period with a 40% allowance for climate change.

The most common form of failure of permeable paving systems is the 'clogging' of the joints and accumulation of silt within the sub-grade. A regular planned inspection and maintenance regime is essential to ensure the effectiveness of the system.

It is recommended that a regular visual inspection of the paving is carried out, but certainly at no greater intervals than once a year. Observe the performance of the paving during heavy periods of rain to ensure no ponding or standing water.

Annual Inspection to include:

- Vacuum sweep or pressure-wash the surface of the paving to remove debris from the open-joints and remove any weed growth.
- Apply a suitable weed-killer if required.

25-30 Year Anniversary:

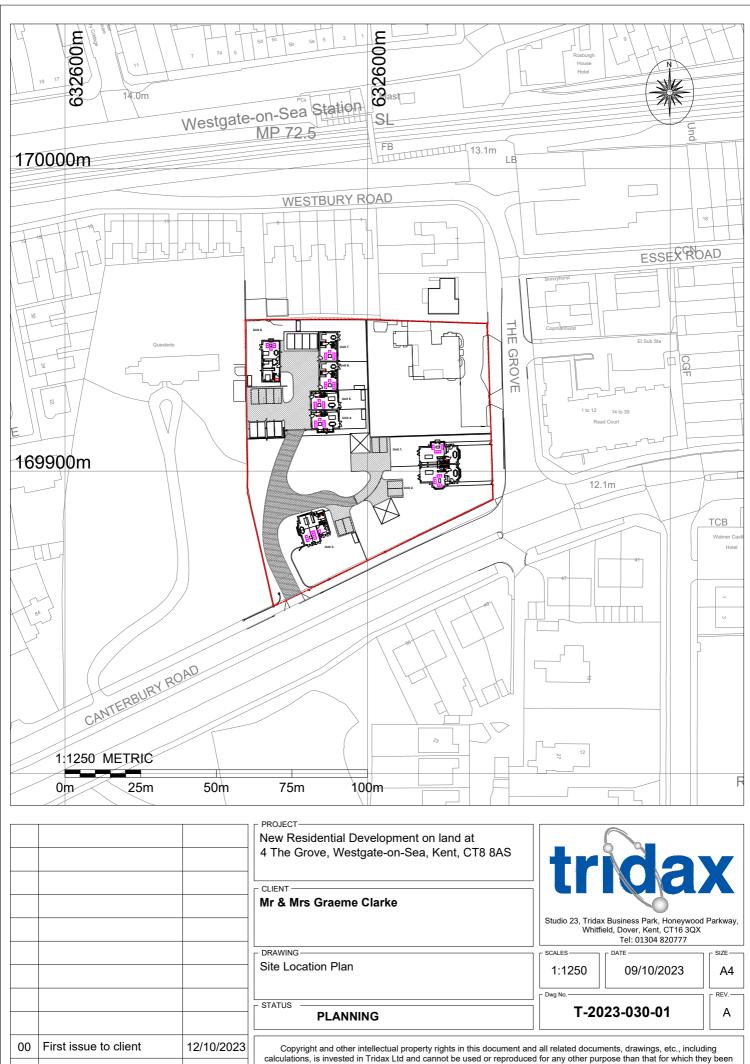
Lift and set-a-side the block paving and replace the subbase as per the construction detail shown on the drawing.

Maintenance Records:

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

APPENDIX A

Tridax Drawings T-2023-030-01 RevA Site Location Plan T-2023-030-02 RevA Drainage Plan T-2023-030-03 RevA Drainage Details



Rev Description Date created without the express permission in writing by Tridax Ltd. In first instance ring 01304 820777.

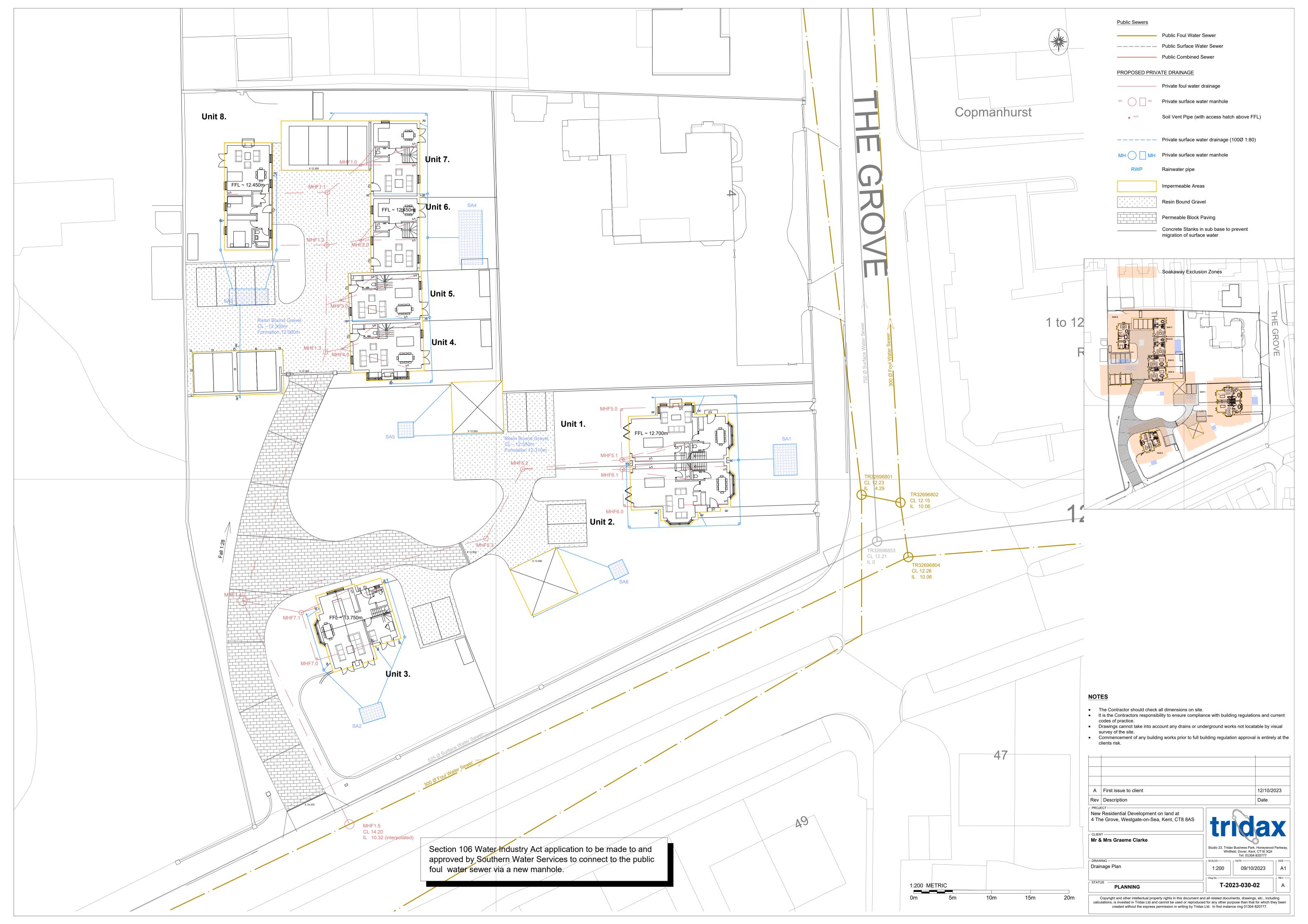


Figure B9 Typical manhole detail - Type B

scale 1:25 • Maximum depth from cover level to soffit of pipe1.5m to 3.0m

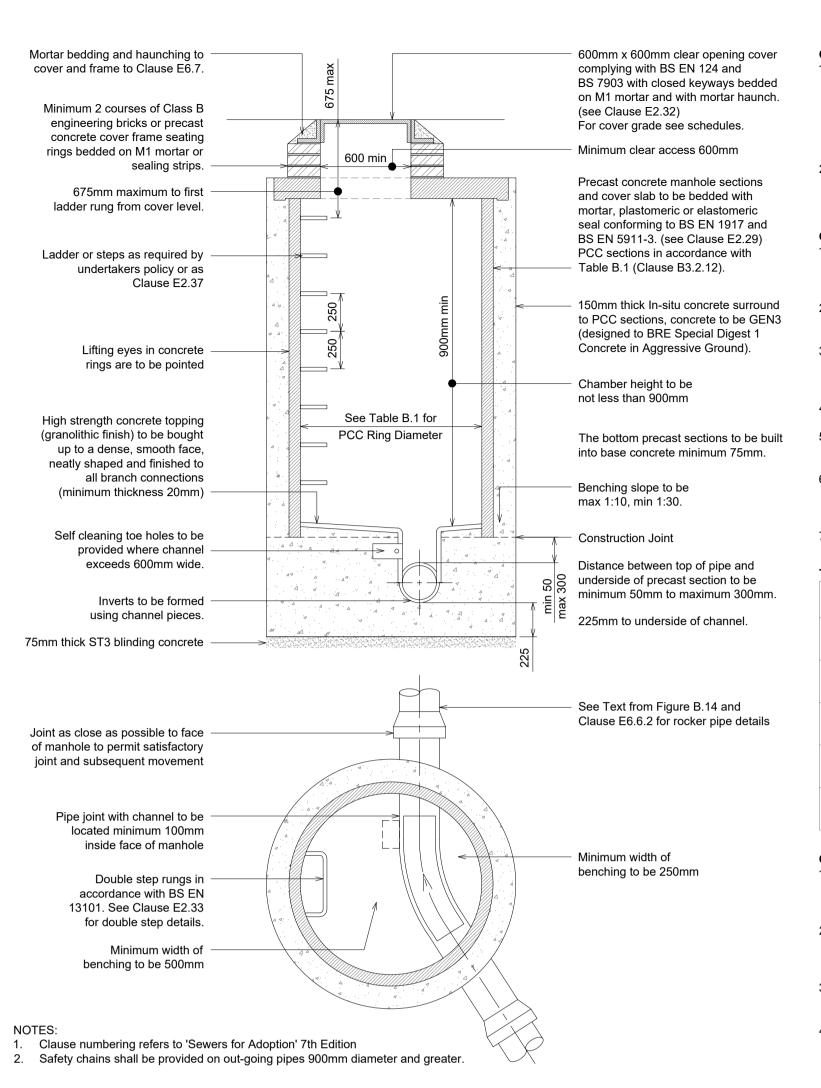


Table B.1 - Clause B3.2.12 - Manhole Diameters Nominal internal diameter of Minimum nominal internal

largest pipe in manhole (mm)	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 1. 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.

2. The recommended length of the next pipe (rocker pipe) away from the structure shall be as shown in Table E.12.

Clause E6.7 - Setting Manhole Covers and Frames

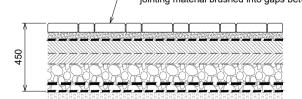
- 1. Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions. The frame shall be seated on at least two courses of Class B engineering bricks, on precast masonry units or on precast concrete cover frame seating 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.
- 2. 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 1. Stub pipes into structures shall be of rigid material.
- 2. 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.

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

Permeable Paved Access Road

80mm thick permeable paving blocks, max 6mm jointing material brushed into gaps between blocks.



Permeable Paved Highway Construction Specification

- 80mm Concrete Blocks specifically designed for permeable usage. Blocks to have max 6mm aggregate jointing material brushed into gaps between blocks.
- (architect to confirm block type and colour). 50mm Laying course comprising clean graded aggregate with particles within the range 3mm to 6mm.
- 70mm AC14 Open Graded Asphalt Surface Course to BS EN 13108-1 and Clause 916 of the Specification for Highway Works. 70mm AC32 Open Graded Base Course to BS EN 13108-1 Part 1 and Clause 906 of the Specification for Highway Works.
- Minimum 180mm thick permeable sub-base material comprising clean graded aggregate with particles within the range 5mm to 20mm.
- Tri-axle Geogrid 50mm from formation, such as TX160 by Tensar, or similar. • Lower geotextile membrane such as Terram 1000 or similar approved product.

450mm total formation depth.

scale 1:20

Clause E2.29 - Precast Concrete Manholes 1. Precast concrete manhole units shall comply with the relevant provisions of BS EN

- 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.
- comply with BS EN 1917 and BS 5911-3.

Clause E2.32 - Manhole Covers and Frames

- 1. 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.
- 3. 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
- 4. 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.
- 6. 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.
- 7. 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 Fra 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

- 1. 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.
- 2. 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.
- 3. Stainless steel ladders for vertical fixing shall be fabricated from Grade X5CrNiMo 17-12-2 steel conforming to BS EN 10088-3.
- 4. 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

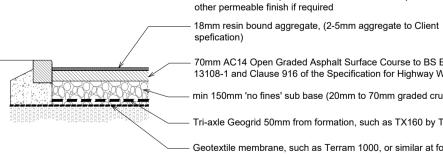
- 1. Manhole covers and frames shall comply with the relevant provisions of BS EN 124. BS 7903 and Highways Agency Guidance Document HA 104/09. They shall be of a non rocking design which does not rely on the use of cushion inserts.
- 2. Manhole covers on foul-only sewers shall be of low leakage types in order to prevent excessive surface water ingress.
- 3. 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
- 4. Minimum frame depths for NRSWA road categories I to IV shall be as table E.6.
- 5. Class B125 covers shall be used in footways, pedestrian areas and comparable locations.
- 6. 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.
- 7. All Manholes shall be the non ventilating type and shall have closed keyways.

Clause E2.33 - Manhole Steps

scale 1:20

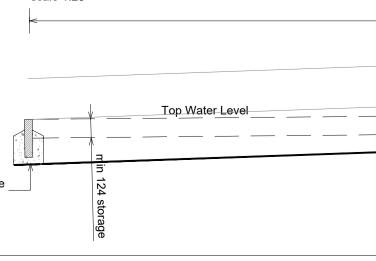
- 1. Steps for manholes and other chambers shall be Type D Class 1, complying with the requirements of BS EN 13101.
- 2. Galvanized mild steel and plastic encapsulated steps are preferred.

Permeable Resin Bound Gravel Parking Court



240mm Total Formation Depth

Permeable Sub Base Stank Detail scale 1:25



prevent migration of attenuated storm water within the sub-base (every 7.0m for 1:28 gradient road or as

250mm x 50mm PCC Edging stank to

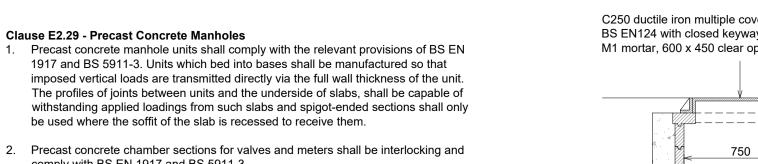
marked on the plan/section)





Inlet Level

(see schedule)





Note. Permeable Asphalt shown but this can be replaced with any

70mm AC14 Open Graded Asphalt Surface Course to BS EN 13108-1 and Clause 916 of the Specification for Highway Works

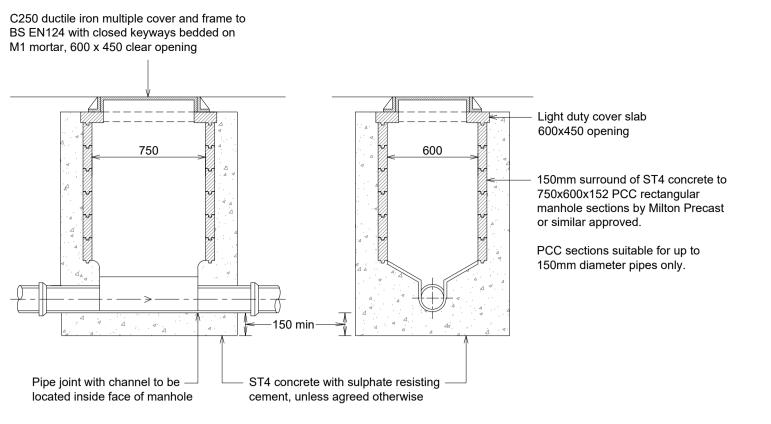
min 150mm 'no fines' sub base (20mm to 70mm graded crushed concrete).

Tri-axle Geogrid 50mm from formation, such as TX160 by Tensar, or similar.

Geotextile membrane, such as Terram 1000, or similar at formation

Access Road 1:28 Gradient

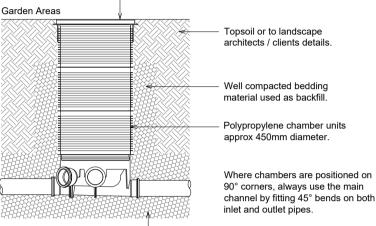
7.0m Spacing (see plan)



Polypropylene Inspection Chamber (PPIC) Use on private drainage works only scale 1:20

Proprietary access cover & frame, for cover grade see schedule.

Well compacted granular



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

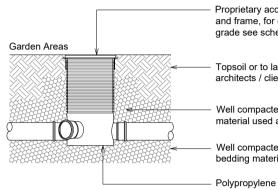
Unused inlets are to be sealed and made watertight.

Backfill to be well compacted around shaft of chamber

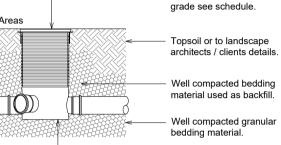
No incoming branch is to be less than 90° from the outgoing direction of flow, all pipes entering the bottom of the manhole are to have level soffits.

Manhole Ref.	Cover Level (m)	Invert Level (m)	Backdrop Invert LvI (m)	Manhole Depth (m)	Manhole Type	Manhole Ø (mm)	Cover/Frame Grade
MHF1.0	12.300	11.700	-	0.600	SIC	300	B125
MHF1.1	12.300	11.629	-	0.671	PPIC	450	B125
MHF1.2	12.300	11.542	-	0.758	PPIC	450	B125
MHF1.3	12.300	11.364	-	0.936	PPIC	450	B125
MHF1.4	13.550	10.929	-	2.621	Type 2	1200	D400
MHF1.5	14.200	10.320	Lateral 10.520	3.680	Type 2	1200	D400
MHF2.0	12.300	11.700	-	0.600	SIC	300	B125
MHF3.0	12.300	11.700	-	0.600	SIC	300	B125
MHF4.0	12.300	11.700	-	0.600	SIC	300	B125
MHF5.0	12.550	11.950	-	0.600	SIC	300	B125
MHF5.1	12.550	11.869	-	0.681	PPIC	450	B125
MHF5.2	12.550	11.704	-	0.846	PPIC	450	B125
MHF5.3	12.550	11.575	-	0.975	PPIC	450	B125
MHF6.0	12.550	11.950	-	0.600	SIC	300	B125
MHF6.1	12.550	11.892	-	0.658	PPIC	450	B125
MHF7.0	13.600	13.000	-	0.600	SIC	300	B125
MHF7.1	13.600	12.921	-	0.679	PPIC	450	B125

Shallow Inspection Chamber (SIC) Use on private drainage works only scale 1:20



Proprietary access cover and frame. for cover



Polypropylene chamber units

300mm.

AquaCell units.

Pipe Ref.	Pipe Length (m)	Pipe Ø (mm)	Pipe Material	Gradient (1 in ?)	Bedding	Remarks
PNF1.0	5.50	100	UPVC	77.5	Class S	-
PNF1.1	6.75	100	UPVC	77.6	Class S	-
PNF1.2	13.80	100	UPVC	77.5	Class S	-
PNF1.3	33.75	100	UPVC	77.6	Class S	-
PNF1.4	31.90	100	VC	78.0	Class S	-
PNF2.0	4.40	100	UPVC	27.8	Class S	-
PNF3.0	2.00	100	UPVC	6.0	Class S	-
PNF4.0	2.00	100	UPVC	6.0	Class S	-
PNF5.0	6.3	100	UPVC	77.8	Class S	-
PNF5.1	12.80	100	UPVC	77.6	Class S	-
PNF5.2	10.00	100	UPVC	77.5	Class S	-
PNF5.3	12.30	100	UPVC	50.0	Class S	-
PNF6.0	4.50	100	UPVC	77.6	Class S	-
PNF6.1	12.80	100	UPVC	68.1	Class S	-
PNF7.0	6.15	100	UPVC	778	Class S	-
PNF7.1	7.70	100	UPVC	3.9	Class S	-

SURFACE WATER SOAKAWAY SCHEDULE - CELLULAR BLOCKS

Soakaway Ref.	Cover / Ground Level (m)	Base Level(s) (m)	Depth (m)	Remarks (Based on
SA1	12.550	10.550	2.000 (0.800 of cover)	4m x 4.0m (4No x 8No
SA2	13.750	11.750	2.000 (0.800 of cover)	2m x 3.0m (2No x 6No
SA3	12.300	10.300	2.000 (0.800 of cover)	2m x 5.0m (2No x 10N
SA4	12.300	10.300	2.000 (0.800 of cover)	3m x 7.0m (3No x 14N
SA5	12.300	10.300	2.000 (0.800 of cover)	2m x 2.0m (2No x 4No
SA6	12.550	10.550	2.000 (0.800 of cover)	2m x 2.0m (2No x 4No

Well compacted bedding material used as backfill. Well compacted granular

approx 300mm diameter.

bedding material.

WATER MANHOLE SCHEDULE													
ole Cover f. Level (m)		Invert Level (m)	Backdrop Invert Lvl (m)	Manhole Depth (m)	Manhole Type	Manhole Ø (mm)	Cover/Frame Grade						
1.0	12.300	11.700	-	0.600	SIC	300	B125						
1.1	12.300	11.629	-	0.671	PPIC	450	B125						
1.2	12.300	11.542	-	0.758	PPIC	450	B125						
1.3	12.300	11.364	-	0.936	PPIC	450	B125						
1.4	13.550	10.929	-	2.621	Type 2	1200	D400						
1.5	14.200	10.320	Lateral 10.520	3.680	Type 2	1200	D400						
2.0	12.300	11.700	-	0.600	SIC	300	B125						
3.0	12.300	11.700	-	0.600	SIC	300	B125						
4.0	12.300	11.700	-	0.600	SIC	300	B125						
5.0	12.550	11.950	-	0.600	SIC	300	B125						
5.1	12.550	11.869	-	0.681	PPIC	450	B125						
5.2	12.550	11.704	-	0.846	PPIC	450	B125						
5.3	12.550	11.575	-	0.975	PPIC	450	B125						
6.0	12.550	11.950	-	0.600	SIC	300	B125						

Section - Cellular Soakaway (Aquacell)

-Inlet with pipe adaptor as required						//~ [\ \ a r	Wavir and jo manuf	n Aqu vinteo factu	uace d in a irers	II blo acco guio	ocks i Irdan Jance	nsta ce w	lled ith	/ </th <th></th> <th>For depth see</th> <th></th>		For depth see	
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					X	X		X							X		40	
										<u>۸</u>								
Permeable geotextile membrane to surround Aquacell blocks Min 100mm coarse sand or non-angular gravel											ind	100						

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

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the

2. Lay 100mm bed of coarse sand or non angular granular material, level and compact.

3. Lay the geotextile membrane over the base and up the sides of the trench.

4. 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).

5. Fix the pipe adaptors to the AquaCell units as required to suit the incoming pipework.

6. 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.

7. Wrap and overlap the geotextile covering the entire AquaCell structure, minimum lap to be in the order of

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.

9. Lay 100mm of coarse sand or non angular granular material over the geotextile and compact.

10. Backfill tank with suitable clean material, free of organic matter and debris.

n Wavin Aquacell Units 500x1000x400)					
Twavin Aquacen Onits 500x 1000x400)					
n x 1.2m deep No x 3No = 96Blocks Total)					
n x 1.2m deep	А	First issue to client		12/10/	2023
No x 3No = 36Blocks Total)	Rev	Description		Date	
n x 1.2m deep No x 3No = 60Blocks Total) n x 1.2m deep No x 3No = 126Blocks Total) n x 1.2m deep No x 3No = 24Blocks Total)	4 Th	Residential Development on land at e Grove, Westgate-on-Sea, Kent, CT8 8AS T T Mrs Graeme Clarke	Studio 23, Tridax	Business Park, Honeywood Id, Dover, Kent, CT16 302 Tel: 01304 820777	od Parkway
n x 1.2m deep	Drai		SCALES	_ DATE	
lo x 3No = 24Blocks Total)	Drair	nage Details	as shown	09/10/2023	A1
				23-030-03	
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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)

created without the express permission in writing by Tridax Ltd. In first instance ring 01304 820777.

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

APPENDIX B

MicroDrainage Design Calculations

- 1. Foul Water Network Design Calculations
- 2. BRE365 Soakage Test Results
- 3. Soakaway SA1 Design
- 4. Soakaway SA2 Design
- 5. Soakaway SA3 Design
- 6. Soakaway SA4 Design
- 7. Soakaway SA5 & SA6 Design
- 8. Permeable Paving Design

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Honeywood House	The Grove, Wesgate On Sea	
Whitfield	Foul Water Network	
Kent CT16 3EH		Micro
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File T-2023-030 FW Network.MDX	Checked by	Diamage
XP Solutions	Network 2020.1.3	

FOUL SEWERAGE DESIGN

Design Criteria for Foul - Main

Pipe Sizes STANDARD Manhole Sizes STANDARD

Industrial Flow (l/s/ha)	0.00	Add Flow / Climate Change (%)	0
Industrial Peak Flow Factor	0.00	Minimum Backdrop Height (m)	0.600
Flow Per Person (l/per/day)	222.00	Maximum Backdrop Height (m)	1.500
Persons per House	3.00	Min Design Depth for Optimisation (m)	0.500
Domestic (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.75
Domestic Peak Flow Factor	6.00	Min Slope for Optimisation (1:X)	100

Designed with Level Soffits

Network Design Table for Foul - Main

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000 1.001	5.500 6.750	0.071 0.087	77.5 77.6	0.000	1 1		1.500 1.500	0 0		Pipe/Conduit Pipe/Conduit	e e
2.000	4.400	0.158	27.8	0.000	1	0.0	1.500	0	100	Pipe/Conduit	đ
1.002	13.800	0.178	77.5	0.000	0	0.0	1.500	0	100	Pipe/Conduit	¢
3.000	2.000	0.336	6.0	0.000	1	0.0	1.500	0	100	Pipe/Conduit	đ
4.000	2.000	0.336	6.0	0.000	1	0.0	1.500	0	100	Pipe/Conduit	đ
1.003	33.750	0.435	77.6	0.000	0	0.0	1.500	0	100	Pipe/Conduit	đ
5.000 5.001	6.300 12.800	0.081 0.165	77.8 77.6	0.000	1 0		1.500 1.500	0	100 100	Pipe/Conduit Pipe/Conduit	ъ С

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (1/s)	Flow (1/s)	
	11.700 11.629	0.000 0.000	0.0	1 2	0.0	7 9	0.21 0.26	0.76 0.76	5.9 5.9	0.0 0.1	
2.000	11.700	0.000	0.0	1	0.0	5	0.29	1.26	9.9	0.0	
1.002	11.542	0.000	0.0	3	0.0	11	0.30	0.76	5.9	0.1	
3.000	11.700	0.000	0.0	1	0.0	4	0.49	2.74	21.5	0.0	
4.000	11.700	0.000	0.0	1	0.0	4	0.49	2.74	21.5	0.0	
1.003	11.364	0.000	0.0	5	0.0	14	0.35	0.76	5.9	0.2	
	11.950 11.869	0.000 0.000	0.0	1 1	0.0	7 7	0.21 0.21	0.75 0.76	5.9 5.9	0.0	
			©198	2-202	0 Inno	vyze					

Tridax Ltd													Page 2
Honeywood Ho	ouse				Th	le Gro	ove,	Wesg	gate	On	Sea		
Whitfield					Fc	ul Wa	iter	Netw	ork				
Kent CT16 3	BEH												Micro
Date 11/10/2	2023	16:49			De	signe	d b	y prl	-				
File T-2023-	-030	FW Ne	twork	.MDX	Ch	ecked	l by						Drainac
XP Solutions	5				Ne	twork	202	20.1.	3				
			Netwo	rk De	sign	Tabl	e fo	r Fo	ul -	Mai	<u>.n</u>		
PN	Leng (m)	th Fall)) (m)	Slope		Houses	Bas Flow		k (mm)	HYD SECT	DIA (mm)	Section		Auto Design
								. ,		. ,			
		00 0.05			1			1.500	0		Pipe/Cor		÷
6.00	1 12.8	00 0.18	8 68.1	0.000	0		0.0	1.500	0	100	Pipe/Cor	nduit	ď
		00 0.12			0			1.500			Pipe/Cor		گ
5.00	3 32.3	00 0.64	6 50.0	0.000	0		0.0	1.500	0	100	Pipe/Cor	nduit	ď
7.00 7.00		50 0.07		0.000	1 0			1.500 1.500			Pipe/Cor Pipe/Cor		e e
											-		-
1.00	4 31.9	00 0.40	9 78.0	0.000	0		0.0	1.500	0	100	Pipe/Cor	nduit	ď
				Net	work	Resu	lts	Tabl	e				
	PN	-	Σ Area	Σ Bas		Hse Ad		-			-		
		(m)	(ha)	Flow (1	./s)	(1/s)	(mm)	(m/s) (m	/s) (l/s) (1/5	5)
	6.000	11.950	0.000		0.0	1	0.0) 7	7 0.2	1 0	.76 5.	90.	.0
	6.001	11.892	0.000		0.0	1	0.0) (5 0.2	2 0	.81 6.	30.	.0
		11.704			0.0	2	0.0		9 0.2		.76 5.		
	5.003	11.575	0.000		0.0	2	0.0	3 (3 0.3	1 0	.94 7.	40.	.1
		13.000			0.0	1 1	0.0				.75 5.		
		12.921	0.000		0.0	T	0.0) 3	o 0.5	v 3	.40 26.	, 0.	. U
	7.001	10.929			0.0	8) 17			.75 5.	90.	

Tridax Ltd		Page 3
Honeywood House	The Grove, Wesgate On Sea	
Whitfield	Foul Water Network	
Kent CT16 3EH		Micro
Date 11/10/2023 16:49	Designed by prl	Drainage
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XP Solutions	Network 2020.1.3	

MH Name	MH CL (m)	MH Depth (m)	Coni	MH nection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrog (mm)
MHF1.0	12.300	0.600	Open	Manhole	300	1.000	11.700	100				
MHF1.1	12.300	0.671	0pen	Manhole	600	1.001	11.629	100	1.000	11.629	100	
MHF2.0	12.300	0.600	Open	Manhole	300	2.000	11.700	100				
MHF2.0	12.300	0.758	Open	Manhole	600	1.002	11.542	100	1.001	11.542	100	
									2.000	11.542	100	
MHF3.0	12.300	0.600	Open	Manhole	300	3.000	11.700	100				
MHF4.0	12.300	0.600	Open	Manhole	300	4.000	11.700	100				
MHF1.3	12.300	0.936	Open	Manhole	600	1.003	11.364	100	1.002	11.364	100	
									3.000	11.364	100	
									4.000	11.364	100	
MHF5.0	12.550	0.600	Open	Manhole	300	5.000	11.950	100				
MHF5.1	12.550	0.681	Open	Manhole	600	5.001	11.869	100	5.000	11.869	100	
MHF6.0	12.550	0.600	Open	Manhole	300	6.000	11.950	100				
MHF6.1	12.550	0.658	Open	Manhole	600	6.001	11.892	100	6.000	11.892	100	
MHF5.2	12.550	0.846	Open	Manhole	600	5.002	11.704	100	5.001	11.704	100	
									6.001	11.704	100	
MHF5.3	12.550	0.975	Open	Manhole	600	5.003	11.575	100	5.002	11.575	100	
MHF7.0	13.600	0.600	Open	Manhole	300	7.000	13.000	100				
MHF7.1	13.600	0.679	Open	Manhole	600	7.001	12.921	100	7.000	12.921	100	
MHF1.4	13.550	2.621	Open	Manhole	1200	1.004	10.929	100	1.003	10.929	100	
									5.003	10.929	100	
									7.001	10.929	100	
	14.200	3.680	Open	Manhole	1200		OUTFALL		1.004	10.520	100	

Manhole Schedules for Foul - Main

No coordinates have been specified, layout information cannot be produced.

Tridax Ltd		Page 4
Honeywood House	The Grove, Wesgate On Sea	
Whitfield	Foul Water Network	
Kent CT16 3EH		Mirro
Date 11/10/2023 16:49	Designed by prl	
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XP Solutions	Network 2020.1.3	

PIPELINE SCHEDULES for Foul - Main

Upstream Manhole

PN	-	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	0 0	100 100	MHF1.0 MHF1.1	12.300 12.300			Open Manhole Open Manhole		300 600
2.000	0	100	MHF2.0	12.300	11.700	0.500	Open Manhole		300
1.002	0	100	MHF2.0	12.300	11.542	0.658	Open Manhole		600
3.000	0	100	MHF3.0	12.300	11.700	0.500	Open Manhole		300
4.000	0	100	MHF4.0	12.300	11.700	0.500	Open Manhole		300
1.003	o	100	MHF1.3	12.300	11.364	0.836	Open Manhole		600
5.000 5.001	0	100 100	MHF5.0 MHF5.1	12.550 12.550	<mark>11.950</mark> 11.869		Open Manhole Open Manhole		300 600
6.000 6.001	0	100 100	MHF6.0 MHF6.1	12.550 12.550	<mark>11.950</mark> 11.892		Open Manhole Open Manhole		300 600
5.002 5.003	0	100 100	MHF5.2 MHF5.3	12.550 12.550	11.704 11.575		Open Manhole Open Manhole		600 600
7.000	0	100	MHF7.0	13.600	13.000	0.500	Open Manhole		300

Downstream Manhole

PN	Length (m)	Slope (1:X)		C.Level (m)	I.Level (m)	-	MH Connection	MH DIAM., L*W (mm)
1.000				12.300 12.300			Open Manhole Open Manhole	
	4.400			12.300			Open Manhole	600
1.002	13.800	77.5	MHF1.3	12.300	11.364	0.836	Open Manhole	600
3.000	2.000	6.0	MHF1.3	12.300	11.364	0.836	Open Manhole	600
4.000	2.000	6.0	MHF1.3	12.300	11.364	0.836	Open Manhole	600
1.003	33.750	77.6	MHF1.4	13.550	10.929	2.521	Open Manhole	1200
5.000	6.300	77.8	MHF5.1	12.550	11.869	0.581	Open Manhole	600
5.001	12.800	77.6	MHF5.2	12.550	11.704	0.746	Open Manhole	600
6.000	4.500	77.6	MHF6.1	12.550	11.892	0.558	Open Manhole	600
6.001	12.800	68.1	MHF5.2	12.550	11.704	0.746	Open Manhole	600
5.002	10.000	77.5	MHF5.3	12.550	11.575	0.875	Open Manhole	600
5.003	32.300	50.0	MHF1.4	13.550	10.929		Open Manhole	
7.000	6.150	77.8	MHF7.1	13.600	12.921	0.579	Open Manhole	600
				01982-2	2020 T	nnovvz	<u></u>	
			C	91302-2	LUZU II	movyz	e	

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Honeywood House	The Grove, Wesgate On Sea	
Whitfield	Foul Water Network	
Kent CT16 3EH		Micro
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File T-2023-030 FW Network.MDX	Checked by	Diamage
XP Solutions	Network 2020.1.3	1

PIPELINE SCHEDULES for Foul - Main

Upstream Manhole

PN	Hyd Sect		MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
7.001	0	100	MHF7.1	13.600	12.921	0.579	Open Manhole		600
1.004	0	100	MHF1.4	13.550	10.929	2.521	Open Manhole	1	200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)		D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
7.001	7.700	3.9	MHF1.4	13.550	10.929	2.521	Open Manhole	1200
1.004	31.900	78.0		14.200	10.520	3.580	Open Manhole	1200

Free Flowing Outfall Details for Foul - Main

Outfall Pipe Number	Outfall Name	C. Level (m)		Min I. Level (m)	'	
1.004		14.200	10.520	10.520	1200	0



Tridax Ltd Suite 2, The Powder House Menzies Road White Cliffs Business Park Whitfield, Dover, Kent CT16 2HQ Tel : 01304 820777

Job No. **T-2023-030**

Job The Grove, Westgate-on-Sea

Client Rebekah & Graeme Clarke

01 Rev:

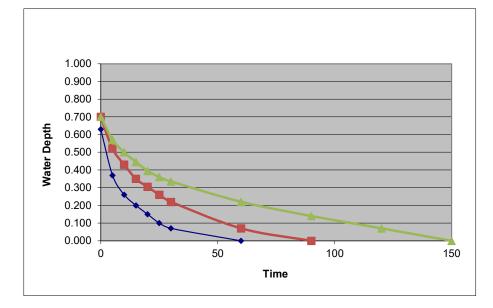
Sheet

Soakage Test ~ TP1

1.0 Calculation of Soil Infiltration Rate

Design to BRE 365: Sept 2003

Test	1	т	rial Pit Length	x Width	x Depth		f =	VP	75-25	
Time	Dip		1.0	0 0.45	5 1.00				t _{p75-25}	
0	0.370	0.630								
5	0.630	0.370								
10	0.740	0.260				therefore	lowest f=	2.18	E-05	m/s
15	0.800	0.200								
20	0.850	0.150					=	0.0	078	m/hr
25	0.900	0.100								
30	0.930	0.070								
60	1.000	0.000				;	Test 1	Test 2	Test 3	
Test	2					V _{p100} (Start test)=	Test 1 0.284	0.315		
Time	Dip					V_{p100} (End test)=	0.204	0.000		
0	0.300	0.700				Total Volume=	0.000			
5	0.480	0.520				V _{p75} =	0.204	0.236		
10	0.400	0.430				V _{p25} =	0.213			
15	0.650	0.350				• p25	0.071	0.010	0.001	
20	0.695	0.305				a _p 100(Start Test) =	2.277	2.480	2.480	m ²
25	0.740	0.260				a _p 0(End Test) =	0.450	0.450		
30	0.780	0.220				p-()				
60	0.930	0.070				t _n 75 =	3	4	9	min
90	1.000	0.000				t _p 25 =	19	39	76	min
_										
Test						V _{P75-25} =	0.142	0.158		
Time	Dip					a _{p50} =	1.364			
0	0.300	0.700				t _{p75-25} =	16	35	67	min
5	0.430	0.570								
10	0.500	0.500				therfore f=	1.08E-04 ¦	5.12E-05	2.18E-05	m/s
15	0.555	0.445								
20	0.605	0.395								
25	0.640	0.360								
30	0.665	0.335								
60	0.780	0.220								
90	0.860	0.140								
120	0.930	0.070								
150	1.000	0.000								



Tridax Ltd							Page 1
Honeywood House		Т	he Grov	ve, West	gate d	on Sea	
Whitfield		S	A1				
Kent CT16 3EH							Micco
Date 11/10/2023	13:46	D	esigne	d by prl			- Micro
File T-2023-030			hecked				Drainage
XP Solutions	0111.01(01)			Control 2	2020 1	3	
AP SOLUCIONS		S	ource		2020.1	L.J	
S11	mmary of Results	for	~ 100 v	aar Patu	rn Do	riod $(+108)$	
	nnnary or Nesurcs	5 101	_ 100 y	ear Netu	III IE	1100 (140%)	
	Hal	f Drai	in Time :	416 minutes			
	Storm	Max	Max	Max	Max	Status	
				nfiltration		blacab	
		(m)	(m)	(1/s)	(m³)		
	15 min Summer	11.085	5 0.535	0.2	6.1	O K	
	30 min Summer			0.2	7.8	O K	
	60 min Summer				9.3		
	120 min Summer 180 min Summer			0.3			
	240 min Summer			0.3		0 K	
	360 min Summer	11.487	0.937	0.3		0 K	
	480 min Summer			0.3		O K	
	600 min Summer 720 min Summer			0.3		ок ок	
	960 min Summer			0.3		0 K	
	1440 min Summer			0.2		0 K	
	15 min Winter	11.150	0.600	0.2	6.8	O K	
	30 min Winter			0.2		O K	
	60 min Winter 120 min Winter			0.3			
	180 min Winter			0.3		ОК	
	240 min Winter			0.3			
	360 min Winter			0.3			
	480 min Winter 600 min Winter				12.0 11.8		
	720 min Winter				11.0	ОК	
	960 min Winter			0.3		O K	
	Stor	m	Rain	Flooded Tim	me-Peak		
	Even	t	(mm/hr)	Volume ((m³)	mins)		
	15 min .	Summer	185.630	0.0	19		
			120.567	0.0	33		
	60 min . 120 min			0.0	62 122		
	120 min 180 min			0.0	122 182		
	240 min			0.0	240		
	360 min .			0.0	312		
	480 min .			0.0	374		
	600 min 720 min			0.0	436 506		
	960 min			0.0	644		
	1440 min	Summer	6.003	0.0	922		
			185.630	0.0	19		
	30 min 1 60 min 1		120.567 73.889	0.0	33 62		
	120 min			0.0	120		
	180 min	Winter	31.706	0.0	178		
	240 min 1			0.0	234		
			18.336 14.573	0.0	340 388		
	480 min 600 min			0.0	462		
	720 min			0.0	540		
	0.00	Winter	8.342	0.0	694		
	960 min 1	wincer	0.542				

Tridax Ltd							Page 2
Honeywood House		Th	ne Grove	, Westo	gate c	on Sea	
Whitfield		SA	A1				
Kent CT16 3EH							_ Micro
Date 11/10/2023 13	:46	De	esigned	by prl			
File T-2023-030 SA	1.SRCX	Ch	necked b	У			Drainage
XP Solutions		Sc	ource Co	ntrol 2	2020.1	.3	
Summa	ary of Result	s for	100 yea	ar Retu	rn Per	riod (+40%)	<u>)</u>
	Storm Event	Max Level (m)	Max Depth Inf: (m)	Max iltration (1/s)	Volume	Status	
	1440 min Winter					ОК	
	Sto	rm	Rain F	looded Tir	ne-Peak		
	Eve	nt	(mm/hr) V	'olume ((m³)	mins)		
	1440 min	Winter	6.003	0.0	994		
		1000	0000 -				
	C	1982-	-2020 In	novyze			

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA1	
Kent CT16 3EH		Micro
Date 11/10/2023 13:46	Designed by prl	Drainage
File T-2023-030 SA1.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	•

Rainfall Details

Rainfall Model	FSR	Winter Storms	
Return Period (years)	100	Cv (Summer)	
Region	England and Wales	Cv (Winter)	
M5-60 (mm)	26.250	Shortest Storm (mins)	15
Ratio R		Longest Storm (mins)	1440
Summer Storms		Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.018

Time (mins) Area From: To: (ha)

0 4 0.018

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA1	
Kent CT16 3EH		Micro
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File T-2023-030 SA1.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	•

Model Details

Storage is Online Cover Level (m) 12.550

Cellular Storage Structure

Invert Level (m) 10.550 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07800 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07800

Depth (m)	Area (m²)	Inf. Area (m²)	Depth	(m) Are	a (m²)	Inf. Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)
0.000	12.0	12.0	1.2	200	12.0		28.8	1.	201		0.0			28.8

Tridax Ltd						Page 1
Honeywood House	ſ	The Gro	ve, Westo	gate o	n Sea	
Whitfield	S	SA2				
Kent CT16 3EH						Micco
Date 11/10/2023 14:07	Г	Designe	d by prl			Micro
File T-2023-030 SA2.SRCX		Checked				Drainage
			Control 2	2020 1		
XP Solutions	2	source	Control 2	2020.1	. 3	
Cummary of Dool	lta fo	~ 100 t	Dar Datu	rn Doi	rid (+10%	۱ ۱
Summary of Resu	ILS IU	<u>r 100 y</u>	Year Ketu	III Pel	1100 (+40%	<u>)</u>
	Half Dra	in Time :	347 minutes.			
Storm	Max	Max	Max	Max	Status	
Event			Infiltration		Status	
	(m)	(m)	(l/s)	(m³)		
15 min Summ	ner 12.28	3 0.533	0.1	3.0	ОК	
30 min Summ	ner 12.43	1 0.681	0.1	3.9	ОК	
60 min Summ			0.2		ОК	
120 min Summ 180 min Summ			0.2		O K	
180 min Summ 240 min Summ			0.2		ок ок	
360 min Summ			0.2		0 K	
480 min Summ			0.2	5.0	ОК	
600 min Summ			0.2		ОК	
720 min Summ 960 min Summ			0.2	4.7 4.5	ОК	
1440 min Summ			0.1		O K	
15 min Wint			0.1		O K	
30 min Wint			0.1		O K	
60 min Wint 120 min Wint			0.2	5.2	O K	
120 min Wint 180 min Wint			0.2		ок ок	
240 min Wint			0.2		O K	
360 min Wint	er 12.77	7 1.027	0.2	5.9	O K	
480 min Wint			0.2		O K	
600 min Wint 720 min Wint			0.2		ОК	
960 min Wint			0.2		0 K	
	Storm Event	Rain		me-Peak (mins)		
-	lvene	(1111) 111)	(m ³)	,		
15 r	min Summe	r 185.630	0.0	19		
30 r	min Summe	r 120.567	0.0	33		
	min Summe			62		
	min Summe min Summe			122 180		
	min Summe			230		
	min Summe	r 18.336	0.0	286		
	min Summe			348		
	min Summe min Summe			416 486		
	min Summe			400 626		
	min Summe			896		
		r 185.630		18		
	min Winte min Winte	r 120.567 r 73.889		33 62		
	min Winte min Winte			120		
	min Winte			176		
	min Winte		0.0	230		
		r 18.336		296		
	min Winte min Winte	r 14.573 r 12.186		370 446		
0001				522		
720 m	min Winte	r 10.523	0.0			
	min Winte min Winte			674		

Tridax Ltd							Page 2
loneywood House	2	Tł	ne Grov	ve, Westo	gate d	on Sea	
Nhitfield		SF	42				
Kent CT16 3EH							— Micro
Date 11/10/2023	3 14:07	De	esigned	d by prl			Drainag
File T-2023-030	SA2.SRCX	Ch	necked	by			Diamac
KP Solutions		Sc	ource (Control 2	2020.1	L.3	
Si	ummary of Resul	lts for	100 y	ear Retu	rn Pe	riod (+40%	;)
	Storm Event	Max Level (m)	Max Depth In (m)	Max nfiltration (1/s)		Status	
	1440 min Winte					ОК	
	s	torm	Rain	Flooded Tin	ne-Peak		
	Ε	vent	(mm/hr)	Volume ((m³)	mins)		
	1440 m	in Winter	6.003	0.0	966		

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA2	
Kent CT16 3EH		Micro
Date 11/10/2023 14:07	Designed by prl	Drainage
File T-2023-030 SA2.SRCX	Checked by	Drainiage
XP Solutions	Source Control 2020.1.3	•

Rainfall Details

Rainfall Model	FSR	Winter Storms	
Return Period (years)	100	Cv (Summer)	
Region	England and Wales	Cv (Winter)	
M5-60 (mm)		Shortest Storm (mins)	15
Ratio R		Longest Storm (mins)	1440
Summer Storms		Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.009

Time (mins) Area From: To: (ha)

0 4 0.009

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA2	
Kent CT16 3EH		Micro
Date 11/10/2023 14:07	Designed by prl	Drainage
File T-2023-030 SA2.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 13.750

Cellular Storage Structure

Invert Level (m) 11.750 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07800 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07800

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m) Area	(m²)	Inf.	Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)
0.000	6.0	6.0	1.2	00	6.0			18.0	1.	201		0.0			18.0

Tridax Ltd							Page 1
Honeywood House		Т	he Grov	ve, West	gate c	on Sea	
Whitfield		S	A3				
Kent CT16 3EH							Micco
Date 11/10/2023	14:45	D	esigne	d by prl			Micro
File T-2023-030			hecked				Drainage
	JAJ. JICA				2020 1	2	
XP Solutions		5	ource	Control 2	2020.1		
C 111	mmary of Docult	for	100	oor Dotu	rn Do	rid(+10%)	
<u></u>	mmary of Results	5 101	<u> 100 y</u>	ear Ketu	III Pe	1100 (+40%)	-
	Hal	f Drai	.n Time :	371 minutes			
	Storm	Max	Max	Max	Max	Status	
	Event			nfiltration		Status	
		(m)	(m)	(1/s)	(m³)		
	15 min Summer	10.834	0.534	0.2	5.1	ОК	
	30 min Summer	10.983	0.683	0.2	6.5	O K	
	60 min Summer			0.2			
	120 min Summer 180 min Summer			0.2			
	240 min Summer			0.2		0 K	
	360 min Summer			0.2			
	480 min Summer			0.2			
	600 min Summer			0.2			
	720 min Summer 960 min Summer			0.2	8.1 7.7	O K O K	
	1440 min Summer			0.2			
	15 min Winter			0.2			
	30 min Winter			0.2		O K	
	60 min Winter 120 min Winter			0.2			
	180 min Winter			0.3		O K O K	
	240 min Winter			0.3		O K	
	360 min Winter			0.3		O K	
	480 min Winter				9.8		
	600 min Winter 720 min Winter			0.3			
	960 min Winter				8.7		
	Stor Even		Rain (mm/hr)	Flooded Tin Volume ((m³)	me-Peak (mins)		
	15 min	Summer	185.630	0.0	19		
			120.567	0.0	33		
	60 min			0.0	62		
	120 min 180 min			0.0	122 180		
	180 min 240 min			0.0	180 240		
	360 min			0.0	298		
	480 min			0.0	360		
	600 min 720 min			0.0	426 494		
	720 min 960 min			0.0	494 634		
	1440 min			0.0	910		
			185.630	0.0	18		
			120.567	0.0	33		
	60 min 120 min			0.0	62 120		
	180 min			0.0	176		
	240 min	Winter	25.287	0.0	232		
			18.336	0.0	334		
	480 min 600 min		14.573 12.186	0.0	376 454		
	720 min			0.0	434 532		
	960 min	Winter	8.342	0.0	684		

Tridax Ltd								Page 2
Honeywood Hou	se		Tł	ne Gro	ve, West	gate d	on Sea	
Whitfield			SZ	43				
Kent CT16 3E	H							Micro
Date 11/10/202	23 14:45		De	esigne	d by prl			Drainac
File T-2023-0	30 SA3.SR	СХ	Cł	necked	by			טומווימע
XP Solutions			Sc	ource	Control	2020.2	1.3	ł
								_
	Summary o	f Result:	s for	100 3	year Retu	ırn Pe	riod (+4	108)
		Storm Event	Max Level (m)	Max Depth 1 (m)	Max Infiltration (1/s)		Status	
	1440	min Winter	11.093	0.793	0.2	7.5	ОК	
		Sto: Eve			Flooded Ti Volume (m³)	me-Peak (mins)		
		1440 min	Winter	6.003	0.0	980		

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA3	
Kent CT16 3EH		Micro
Date 11/10/2023 14:45	Designed by prl	Drainage
File T-2023-030 SA3.SRCX	Checked by	Drainiage
XP Solutions	Source Control 2020.1.3	•

Rainfall Details

Rainfall Model	FSR	Winter Storms	
Return Period (years)	100	Cv (Summer)	
Region	England and Wales	Cv (Winter)	
M5-60 (mm)	26.250	Shortest Storm (mins)	15
Ratio R		Longest Storm (mins)	1440
Summer Storms		Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.015

Time (mins) Area From: To: (ha)

0 4 0.015

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA3	
Kent CT16 3EH		Micro
Date 11/10/2023 14:45	Designed by prl	Drainage
File T-2023-030 SA3.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 12.300

Cellular Storage Structure

Invert Level (m) 10.300 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07800 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07800

Depth (m	Area	(m²)	Inf. Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)	Depth	(m)	Area	(m²)	Inf.	Area	(m²)
0.00)	10.0		10.0	1.	200		10.0			26.8	1.	201		0.0			26.8

Tridax Ltd							Page 1
Honeywood House		T	he Grov	ve, West	gate d	on Sea	
Whitfield		Si	A4				
Kent CT16 3EH							Micco
Date 11/10/2023	14.52		adiana	d by prl	1		_ Micro
			-		_		Drainag
File T-2023-030	SA4.SRCX		hecked				
XP Solutions		S	ource (Control	2020.3	L.3	
		~	1 0 0		_		
Su	mmary of Results	s for	: 100 y	rear Ret	urn Pe	riod (+40%)	
	Hal	f Drai	n Time :	458 minute	s.		
	Storm	Max	Max	Max	Max	Status	
	Event	(m)	(m)	nfiltration (l/s)	(m ³)		
	15	10 040	0 5 4 0	0	10.0		
	15 min Summer 30 min Summer			0.3		ОК	
	60 min Summer			0.4		0 K	
	120 min Summer			0.4		0 K	
	180 min Summer			0.4		ОК	
	240 min Summer			0.4		O K	
	360 min Summer			0.4		ОК	
	480 min Summer			0.4		O K	
	600 min Summer 720 min Summer			0.4		O K	
	720 min Summer 960 min Summer			0.4		ок ок	
	1440 min Summer			0.4		0 K	
	15 min Winter			0.4		0 K	
	30 min Winter			0.4		O K	
	60 min Winter	11.236	0.936	0.4	1 18.7	O K	
	120 min Winter			0.5		O K	
	180 min Winter			0.5		O K	
	240 min Winter			0.5		O K	
	360 min Winter 480 min Winter			0.5		O K O K	
	600 min Winter			0.5		O K	
	720 min Winter			0.5		0 K	
	960 min Winter	11.296	0.996	0.4	19.9	O K	
	Stor Even		Rain (mm/hr)	Flooded T Volume	ime-Peak (mins)		
				(m³)			
			185.630	0.0	22		
			120.567	0.0	37		
	60 min 120 min			0.0	66 124		
	120 min 180 min			0.0	124		
	240 min			0.0	242		
	360 min			0.0	336		
	480 min		14.573	0.0	392		
	600 min			0.0	454		
	720 min			0.0	520		
	960 min 1440 min			0.0	658 930		
			185.630	0.0	930 22		
			120.567	0.0	36		
	60 min			0.0	64		
	120 min			0.0	122		
	180 min			0.0	180		
	240 min			0.0	236		
	360 min			0.0	346		
	480 mlh		14.573	0.0	444 476		
	600 min	Winter	12 180				
	600 min 720 min			0.0	552		
		Winter	10.523				

Tridax Ltd								Page 2
Honeywood Hous	e		Tł	ne Gro	ve, West	gate 0	on Sea	
Vhitfield			SZ	44				
Kent CT16 3EH	I							— Micro
Date 11/10/202	3 14:53		De	esigne	d by prl			Drainad
File T-2023-03	0 SA4.SRC	CX	Cł	necked	by			
XP Solutions			Sc	ource	Control	2020.3	1.3	1
			_					
2	Summary o:	f Result	s for	100 5	year Retu	ırn Pe	riod (+4	10%)
		Storm Event	Max Level (m)	Max Depth : (m)	Max Infiltration (1/s)		Status	
	1440	min Winter	11.183	0.883	0.4	17.6	ОК	
		Sto: Eve			Flooded Ti Volume (m³)	ime-Peak (mins)		
		1440 min	Winter	6.003	0.0	1010		

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA4	
Kent CT16 3EH		Micro
Date 11/10/2023 14:53	Designed by prl	Drainage
File T-2023-030 SA4.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	

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 0.400 Longest Storm (mins) 1440	
Summer Storms Yes Climate Change % +40	

<u>Time Area Diagram</u>

Total Area (ha) 0.032

Time	(mins)	Area	Time	(mins)	Area
From:	To:	(ha)	From:	To:	(ha)
0	4	0.016	4	8	0.016

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA4	
Kent CT16 3EH		Micro
Date 11/10/2023 14:53	Designed by prl	Drainage
File T-2023-030 SA4.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	•

Model Details

Storage is Online Cover Level (m) 12.300

Cellular Storage Structure

Invert Level (m) 10.300 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07800 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07800

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	21.0	21.0	1.20	21.0	45.0	1.201	0.0	45.0

Tridax Ltd					Page 1
Honeywood House	The Gro	ve, Westg	gate o	n Sea	
Whitfield	SA5 & S.	A6			
Kent CT16 3EH					Micco
Date 12/10/2023 08:31	Dociano	d by prl			— Micro
					Drainage
File T-2023-030 SA5.SRCX	Checked	=			
XP Solutions	Source	Control 2	2020.1	.3	
Summary of Results :	for 100 y	year Retu	rn Per	ciod (+40%	;)
Half H	Orain Time :	281 minutes.			
Storm M	lax Max	Max	Max	Status	
	-	Infiltration			
(m) (m)	(1/s)	(m³)		
15 min Summer 10	.742 0.442	0.1	1.7	ОК	
30 min Summer 10		0.1	2.1	O K	
60 min Summer 10		0.1	2.5	O K	
120 min Summer 11 180 min Summer 11		0.1		O K	
240 min Summer 11		0.1	2.8 2.8	О К О К	
360 min Summer 11		0.1		0 K	
480 min Summer 10		0.1	2.6	0 K	
600 min Summer 10		0.1	2.5	ОК	
720 min Summer 10		0.1	2.5	O K	
960 min Summer 10		0.1	2.3	O K	
1440 min Summer 10 15 min Winter 10		0.1	2.0 1.9	O K O K	
30 min Winter 10		0.1	2.4	0 K	
60 min Winter 11		0.1	2.8	O K	
120 min Winter 11	.119 0.819	0.1	3.1	O K	
180 min Winter 11		0.1	3.2	O K	
240 min Winter 11 360 min Winter 11		0.1	3.2 3.1	OK	
480 min Winter 11		0.1		О К О К	
600 min Winter 11		0.1		0 K	
720 min Winter 11		0.1			
960 min Winter 10	.961 0.661	0.1	2.5	ОК	
Storm	Rain	Flooded Tim	ne-Peak		
Event			mins)		
		(m³)			
15 min Suu	nmer 185.630	0.0	18		
30 min Sur	nmer 120.567		33		
60 min Sur			62		
120 min Sur 180 min Sur			122		
180 min Sur 240 min Sur	nmer 31.706 nmer 25.287		180 206		
360 min Sur			268		
480 min Sur	nmer 14.573	0.0	336		
600 min Sur			404		
720 min Sur 960 min Sur			474 614		
960 min Sur 1440 min Sur			614 880		
	nter 185.630		18		
30 min Wir	nter 120.567	0.0	33		
60 min Wir			62		
120 min Wir 180 min Wir	nter 43.472 nter 31.706		118 174		
	nter 31.706 nter 25.287		226		
	nter 18.336		282		
480 min Wir	nter 14.573	0.0	360		
	nter 12.186		436		
/20 min Wir 960 min Wir	nter 10.523 nter 8.342		512 658		
500 MIII WI					
	82-2020				

Tridax Ltd								Page 2
loneywood House				ve, West	gate o	on Sea		
Vhitfield		SA	45 & SA	46				
Kent CT16 3EH								Micro
Date 12/10/2023 08:31		De	esigned	d by prl	L			Drainag
File T-2023-030 SA5.SR0	CX	Ch	necked	by				Dialital
KP Solutions		Sc	ource (Control	2020.2	1.3		
Summary o	f Results	for	100 y	ear Ret	urn Pe	riod (+	+40%)	
	Storm	Max	Max	Max	Max	Status		
	Event	Level (m)	Depth I (m)	nfiltration (l/s)	n Volume (m³)			
1440	min Winter :					ОК		
		10.000	0.000	0		0 11		
	Storr Even			Flooded T Volume (m³)	ime-Peak (mins)			
	1440 min 1	Winter	6.003	0.0	940			

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA5 & SA6	
Kent CT16 3EH		Micro
Date 12/10/2023 08:31	Designed by prl	Drainage
File T-2023-030 SA5.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	•

Rainfall Details

Rainfall Model	FSR	Winter Storms	
Return Period (years)	100	Cv (Summer)	
Region	England and Wales	Cv (Winter)	
M5-60 (mm)		Shortest Storm (mins)	15
Ratio R		Longest Storm (mins)	1440
Summer Storms		Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.005

Time (mins) Area From: To: (ha)

0 4 0.005

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	SA5 & SA6	
Kent CT16 3EH		Micro
Date 12/10/2023 08:31	Designed by prl	Drainage
File T-2023-030 SA5.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	•

Model Details

Storage is Online Cover Level (m) 12.300

Cellular Storage Structure

Invert Level (m) 10.300 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.07800 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07800

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m) Area (m²)	Inf. Area (m²) Depth (m)	Area (m²)	Inf. Area (m²)
0.000	4.0	4.0	1.20	0 4.0	13.	6 1.201	0.0	13.6

Tridax Ltd							Page 1
Honeywood House		T	he Gro	ve, Westo	gate c	on Sea	
Whitfield		Pe	ermeab	le Paving	9		
Kent CT16 3EH				-			Misso
Date 11/10/2023	16.01	D	adana	d by prl			— Micro
							Drainag
File T-2023-030	Permeable.SRCX		hecked	=			
XP Solutions		S	ource	Control 2	2020.1	.3	
S11	mmary of Results	for	100 5	vaar Patu	rn Da	rid(+108)	
<u>50</u>	nunary of Results) IUI	100 <u>y</u>	ear Netu	III IC.	LIOU (140%)	_
	Hal	lf Drai	in Time :	29 minutes.			
	Storm Event	Max	Max Depth T	Max nfiltration	Max	Status	
	Event	(m)	(m)	(1/s)	(m ³)		
	15 min Ourman	11 041	0.001	0.4	C 0	0. 17	
	15 min Summer 30 min Summer			2.4	6.0 7.0	о к о к	
	60 min Summer			2.4		O K	
	120 min Summer			2.4		0 K	
	180 min Summer			2.4		0 K	
	240 min Summer	11.921	0.071	2.4	4.7	O K	
	360 min Summer			2.4		O K	
	480 min Summer			2.1		O K	
	600 min Summer			1.8		ОК	
	720 min Summer			1.6		O K	
	960 min Summer			1.4		O K	
	1440 min Summer 15 min Winter			1.0 2.4	1.4 6.9	о к о к	
	30 min Winter			2.4		0 K	
	60 min Winter			2.4		O K	
	120 min Winter			2.4		O K	
	180 min Winter	11.932	0.082	2.4	5.4	O K	
	240 min Winter	11.914	0.064	2.4	4.2	O K	
	360 min Winter			2.1		O K	
	480 min Winter			1.8		O K	
	600 min Winter			1.5		O K	
	720 min Winter 960 min Winter			1.3 1.1		O K O K	
	Stor. Even		Rain (mm/hr)	Flooded Tin Volume ((m³)	me-Peak mins)		
	15 min			0.0	16		
			120.567	0.0	27		
	60 min 120 min			0.0	44 78		
	120 min 180 min			0.0	/8 110		
	240 min			0.0	140		
	360 min			0.0	198		
	480 min			0.0	256		
	600 min			0.0	316		
	720 min			0.0	376		
	960 min 1440 min			0.0	498 736		
			185.630	0.0	16		
			120.567	0.0	29		
		Winter	73.889	0.0	48		
	60 min 1		40 470	0.0	84		
	120 min						
	120 min 180 min	Winter	31.706	0.0	116		
	120 min 180 min 240 min	Winter Winter	31.706 25.287	0.0	146		
	120 min 180 min 240 min 360 min	Winter Winter Winter	31.706 25.287 18.336	0.0	146 200		
	120 min 180 min 240 min 360 min 480 min	Winter Winter Winter Winter	31.706 25.287 18.336 14.573	0.0 0.0 0.0	146 200 260		
	120 min 180 min 240 min 360 min 480 min 600 min	Winter Winter Winter Winter Winter	31.706 25.287 18.336 14.573 12.186	0.0 0.0 0.0 0.0	146 200 260 320		
	120 min 180 min 240 min 360 min 480 min	Winter Winter Winter Winter Winter	31.706 25.287 18.336 14.573 12.186 10.523	0.0 0.0 0.0	146 200 260		

Tridax Ltd							Page 2
Honeywood House		Tł	ne Grov	ve, West	gate d	on Sea	
Vhitfield		Pe	Permeable Paving				
Kent CT16 3EH							— Micro
Date 11/10/2023	16:21	De	esigne	d by prl			
File T-2023-030	Permeable.SRCX	Cł	necked	by			Drainag
XP Solutions				Control	2020.1	.3	
Sum	nmary of Result:	s for	100 y	ear Retu	ırn Pe	riod (+40)응)
	Storm Event	Max Level (m)	Max Depth I (m)	Max nfiltration (1/s)	Max Volume (m³)	Status	
	1440 min Winter	11.866	0.016	0.8	1.1	O K	
	Stor Ever			Flooded Ti Volume	me-Peak (mins)		
				(m³)			
	1440 min	Winter	6.003	0.0	738		
	C	1982-	-2020 -	Innovyze			

Tridax Ltd		Page 3
Honeywood House	The Grove, Westgate on Sea	
Whitfield	Permeable Paving	
Kent CT16 3EH		Mirro
Date 11/10/2023 16:21	Designed by prl	Drainage
File T-2023-030 Permeable.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	

Rainfall Details

Rainfall Model	FSR	Winter Storms	
Return Period (years)	100	Cv (Summer)	
Region	England and Wales	Cv (Winter)	
M5-60 (mm)	26.250	Shortest Storm (mins)	15
Ratio R		Longest Storm (mins)	1440
Summer Storms		Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.022

Time (mins) Area From: To: (ha)

0 4 0.022

Tridax Ltd		Page 4
Honeywood House	The Grove, Westgate on Sea	
Whitfield	Permeable Paving	
Kent CT16 3EH		Micro
Date 11/10/2023 16:21	Designed by prl	Drainage
File T-2023-030 Permeable.SRCX	Checked by	Diamage
XP Solutions	Source Control 2020.1.3	

Model Details

Storage is Online Cover Level (m) 12.300

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.07800	Width (m)	14.8	
Membrane Percolation (mm/hr)	1000	Length (m)	14.8	
Max Percolation (l/s)	60.8	Slope (1:X)	0.0	
Safety Factor	2.0	Depression Storage (mm)	1	
Porosity	0.30	Evaporation (mm/day)	0	
Invert Level (m)	11.850	Membrane Depth (m)	0	