



**Discharge of Condition 6
(Details of Foul & Surface Water Drainage)
Planning Consent CA/17/01420**

for

Proposed Residential Development
Land at Havelock Street
Canterbury
Kent, CT1 1NY

on behalf of

Abbott Construction

CONTENTS

1.0	Introduction.....	3
	Background.....	3
2.0	Foul Water Drainage.....	3
	Proposed Discharge.....	3
	Consents.....	3
3.0	Surface Water Drainage.....	4
	Existing Discharge.....	4
	Proposed Discharge.....	4
	Consents.....	4
4.0	Maintenance Statement	5
Appendix A	Tridax Drawings	
	C-2017-192-01-rev00 – Site Location	
	C-2017-192-02-rev03 – Drainage Plan	
	C-2017-192-03-rev02 – Drainage Schedules	
	C-2017-192-04-rev01 – Drainage Details Sheet 1	
	C-2017-192-05-rev01 – Drainage Details Sheet 2	
Appendix B	Correspondence	
	Southern Water Services S106 Approval	
Appendix C	Surface Water Design Calculations	
	Proposed Surface Water Network Simulation Results	
	40% Climate Change Sensitivity Test	

1.0 INTRODUCTION

Background

- 1.1 Tridax Ltd have been commissioned by Abbott Construction and requested to prepare details for the foul and surface water drainage required for the discharge of conditions 6 of the planning approval CA/17/01420 to Canterbury City Council.

2.0 FOUL WATER DRAINAGE

Existing Discharge

- 2.1 The existing site is a 'Brownfield' development and included within the Drainage Impact Assessment prepared to support the application an existing peak discharge to the foul water sewer of 20.7litres/second was established.

Proposed Discharge

- 2.2 The Drainage Impact Assessment calculated the proposed peak foul water discharge from the residential development calculated in accordance with BS EN 752: Part 4 as 5.5litres/second.
- 2.3 Considering that there is a decrease in the discharge rate to the public foul water sewer, no sewer capacity check is required.

Consents

- 2.4 A new connection to the public foul water sewer via an existing manhole on site is required and a Section 106 Water Industry Act application has been made to Southern Water Services. A copy of the approval is included within Appendix B.

3.0 SURFACE WATER DRAINAGE

Existing Discharge

3.1 The existing site is a 'Brownfield' development and included within the Drainage Impact Assessment prepared to support the application an existing peak discharge to the surface water sewer of 5.0litres/second was established.

Proposed Discharge

3.2 The proposed surface water management plan for the discharge of the surface water generated by the development is via an attenuated discharge to the public surface water sewer. The flows will be controlled to a flow rate of 5.0l/s. Considering that there is no increase in the discharge rate to the public surface water sewer, no sewer capacity check is required.

3.3 Included within Appendix C are the MicroDrainage Windes simulation results to demonstrate that the proposed surface water drainage design as shown on C-2017-192-02 is adequate to cater for a 1in100year return period.

3.4 The drainage calculations provided comply with the new Kent County Council SUDS guidance;

- FSR increased to 26.25mm
- Design to accommodate 20% Climate Change
- System sensitivity tested for 40% Climate Change

Consents

3.5 A new manhole connection to the public surface water sewer in Havelock Street is required and a Section 106 Water Industry Act application has been made to Southern Water Services. A copy of the approval is included within Appendix B.

4.0 OPERATION & MAINTENANCE STATEMENT

- 5.1 The surface water system as indicated on drawing C-2017-192-02 is a private Sustainable Urban Drainage System (SUDS) and the owners of the properties (Management Company) will be responsible for the inspection and maintenance for this system.
- 5.2 It is recommended that the chambers, catch pits, and the attenuation structure 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.
- 5.3 Annual Inspection to include;
- Lift manhole covers to the catch pits and check general condition
 - Note that the chambers are constructed as catch-pits and from the construction detail it can be seen that there is a 600mm sump for silt collection below the standing water that will need to be dipped and empty as required. by licensed carrier
 - Review quantities of silt removed and consider whether inspections should be increased or possibly reduced to every two years.
 - Check that the orifice plate flow control device (MHS1.8) is free of obstruction and the sump is clear.
 - Carry out works as identified from inspection.
- 5.4 Five year Inspection / Five Year Anniversary
- Rod and flush all pipe work to ensure no blockages and free flow of water to the catch pits and to check overall integrity and remove any silt.
 - Remove the orifice plate and carry out a rapid 'Flush' through of the system (works during a dry period), note that attenuation structure has access chambers to enable rapid flush.

APPENDIX A

Tridax Drawings

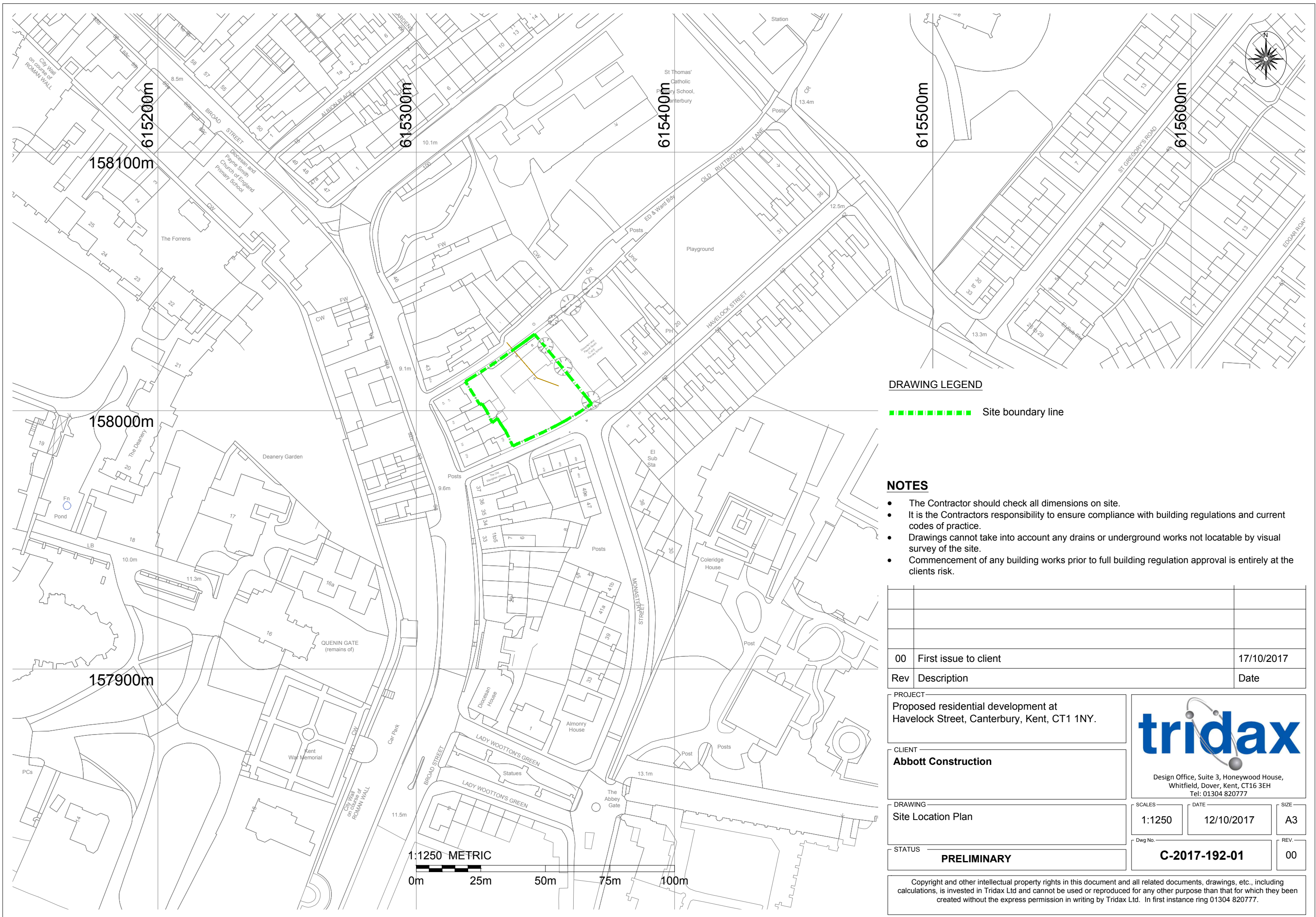
C-2017-192-01-rev00 – Site Location

C-2017-192-02-rev03 – Drainage Plan

C-2017-192-03-rev02 – Drainage Schedules

C-2017-192-04-rev01 – Drainage Details Sheet 1

C-2017-192-05-rev01 – Drainage Details Sheet 2



DRAWING LEGEND

■ Site boundary line

NOTES

- The Contractor should check all dimensions on site.
- It is the Contractors responsibility to ensure compliance with building regulations and current codes of practice.
- Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
- Commencement of any building works prior to full building regulation approval is entirely at the clients risk.

Rev	Description	Date
00	First issue to client	17/10/2017

PROJECT
Proposed residential development at Havelock Street, Canterbury, Kent, CT1 1NY.

CLIENT
Abbott Construction

DRAWING
Site Location Plan

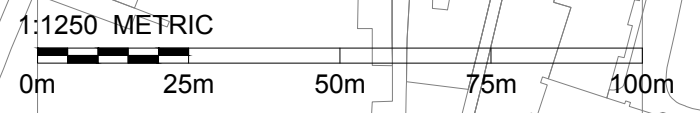
STATUS
PRELIMINARY

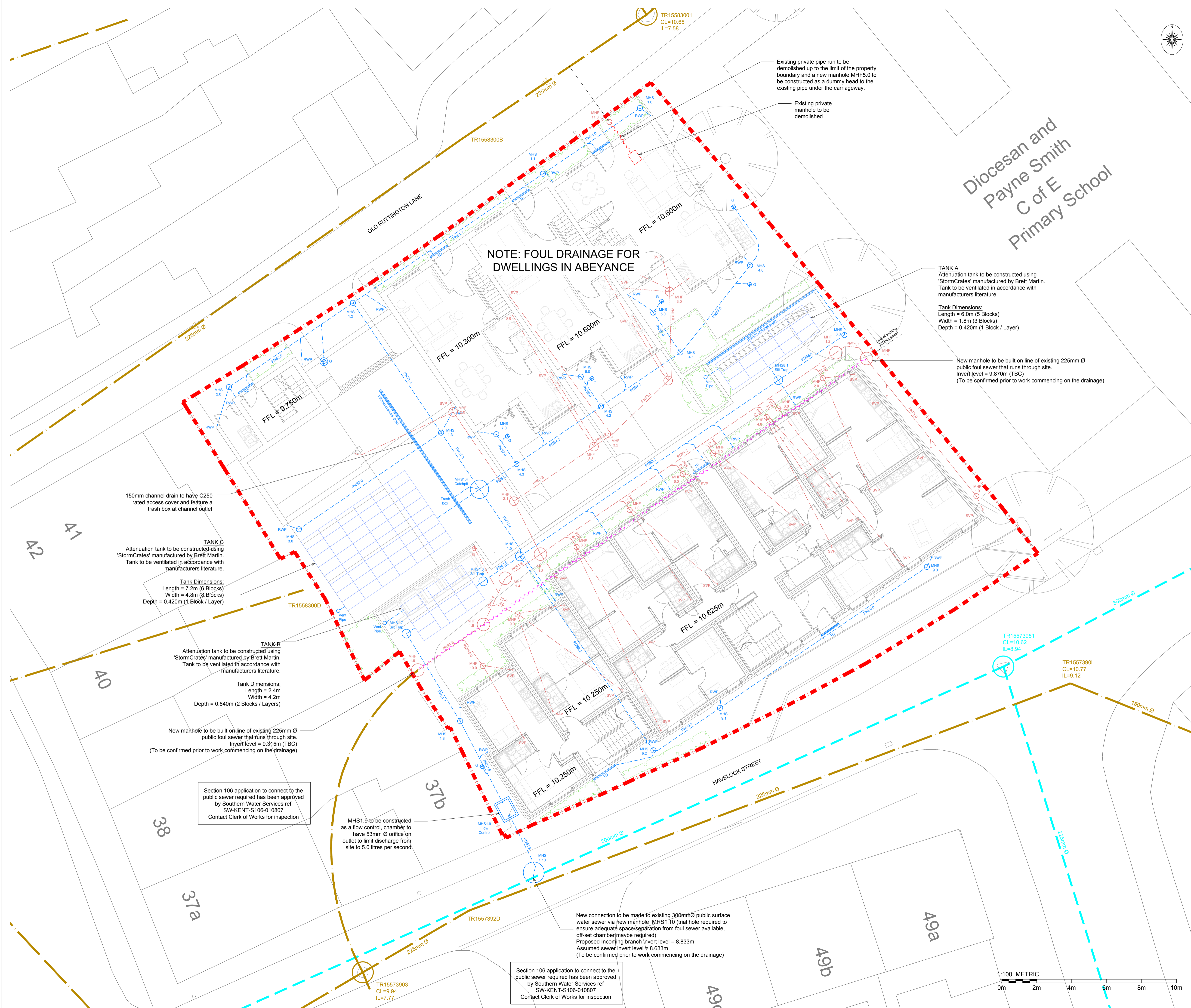


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SCALES 1:1250	DATE 12/10/2017	SIZE A3
Dwg No. C-2017-192-01	REV. 00	

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NOTE: FOUL DRAINAGE FOR DWELLINGS IN ABEYANCE

Existing private pipe run to be demolished up to the limit of the property boundary and a new manhole MHS 5.0 to be constructed as a dummy head to the existing pipe under the carriageway.

Existing private manhole to be demolished

TANK A
Attenuation tank to be constructed using 'StormCrates' manufactured by Brett Martin. Tank to be ventilated in accordance with manufacturers literature.

Tank Dimensions:
Length = 6.0m (5 Blocks)
Width = 1.8m (3 Blocks)
Depth = 0.420m (1 Block / Layer)

New manhole to be built on line of existing 225mm Ø public foul sewer that runs through site. Invert level = 9.870m (TBC). (To be confirmed prior to work commencing on the drainage)

150mm channel drain to have C250 rated access cover and feature a trash box at channel outlet

TANK C
Attenuation tank to be constructed using 'StormCrates' manufactured by Brett Martin. Tank to be ventilated in accordance with manufacturers literature.

Tank Dimensions:
Length = 7.2m (6 Blocks)
Width = 4.8m (8 Blocks)
Depth = 0.420m (1 Block / Layer)

TANK B
Attenuation tank to be constructed using 'StormCrates' manufactured by Brett Martin. Tank to be ventilated in accordance with manufacturers literature.

Tank Dimensions:
Length = 2.4m
Width = 4.2m
Depth = 0.840m (2 Blocks / Layers)

New manhole to be built on line of existing 225mm Ø public foul sewer that runs through site. Invert level = 9.315m (TBC). (To be confirmed prior to work commencing on the drainage)

Section 106 application to connect to the public sewer required has been approved by Southern Water Services ref SW-KENT-S106-010807. Contact Clerk of Works for inspection

MHS 1.9 to be constructed as a flow control chamber to have 53mm Ø orifice on outlet to limit discharge from site to 5.0 litres per second

New connection to be made to existing 300mm Ø public surface water sewer via new manhole MHS 1.10 (trial hole required to ensure adequate space/separation from foul sewer available, off-set chamber may be required). Proposed incoming branch invert level = 8.833m. Assumed sewer invert level = 8.633m. (To be confirmed prior to work commencing on the drainage)

Section 106 application to connect to the public sewer required has been approved by Southern Water Services ref SW-KENT-S106-010807. Contact Clerk of Works for inspection

- DRAWING LEGEND**
- Site boundary line
 - EXISTING PUBLIC SEWERS**
 - Public foul water sewer
 - Public foul water manhole
 - Public surface water sewer
 - Public surface water manhole
 - Public sewer to be abandoned / grubbed out
 - EXISTING PRIVATE DRAINAGE**
 - Private foul water drain
 - Private drain to be abandoned / grubbed out
 - PROPOSED PRIVATE DRAINAGE**
 - Private foul water drainage
 - Private foul water manhole
 - Soil vent pipe
 - Stub stack
 - Air admittance valve
 - Foul water gully
 - Private surface water drainage
 - Private surface water manhole
 - Rainwater pipe
 - Threshold drain (details by others)
 - Surface water gully

- DRAINAGE NOTES:**
- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
 - All materials, workmanship and construction to be in accordance with the requirements of 'Sewers for Adoption - 7th Edition' and published addendum and corrigendum.
 - Channel drains shown are only to collect surface water run-off from hard paved areas and door thresholds and are not intended to collect groundwater or run-off from gardens and landscaped areas.
 - All abandoned pipework to be completely removed or grout filled unless stated otherwise.

- NOTES**
- The Contractor should check all dimensions on site.
 - It is the Contractors responsibility to ensure compliance with building regulations and current codes of practice.
 - Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
 - Commencement of any building works prior to full building regulation approval is entirely at the clients risk.

03	Southern Water S106 approval added	01/02/2018
02	Surface Water connection changed to manhole as SWS comments	14/11/2017
01	Updated following site visit and diversion of existing private sewer	07/11/2017
00	First issue to client	17/10/2017
Rev	Description	Date

PROJECT: Proposed residential development at Havelock Street, Canterbury, Kent, CT1 1NY.

CLIENT: Abbott Construction

DRAWING: Proposed Drainage Plan

STATUS: APPROVAL

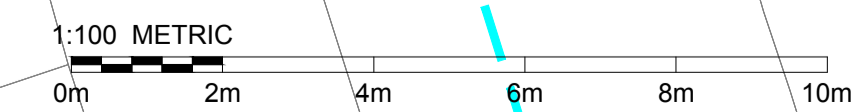
SCALE: 1:100

DATE: 12/10/2017

SHEET: A1

PROJECT NO: C-2017-192-02

REV: 03



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FOUL WATER MANHOLE SCHEDULE							
Manhole Ref.	Cover Level (m)	Invert Level (m)	Backdrop Invert Lvl (m)	Manhole Depth (m)	Manhole Type	Manhole Cover/Frame Grade	Remarks
02	MHF1.0	10.600	10.040	0.560	Type 4	B125	-
02	MHF1.1	10.600	9.870	0.730	Wavin 600	B125	-
02	MHF1.2	10.600	9.832	0.768	Wavin 600	B125	-
02	MHF1.3	10.250	9.484	0.766	Wavin 600	B125	-
02	MHF1.4	10.225	9.442	0.783	Wavin 600	B125	-
02	MHF1.5	10.225	9.392	0.833	Wavin 600	B125	-
02	MHF1.6	10.250	9.315	0.935	Wavin 600	B125	-
02	MHF2.0	10.600	9.881	0.719	Type 4	B125	-
02	MHF3.0	10.600	9.829	0.771	Type 4	B125	-
02	MHF4.0	10.600	9.815	0.785	Type 4	B125	-
02	MHF5.0	10.600	9.751	0.849	Type 4	B125	-
02	MHF6.0	10.600	9.715	0.885	Type 4	B125	-
02	MHF7.0	10.460	9.653	0.807	Type 4	B125	-
02	MHF8.0	10.320	9.591	0.729	Type 4	B125	-
02	MHF9.0	10.250	9.501	0.749	Type 4	B125	-
02	MHF10.0	10.250	9.460	0.790	Type 4	B125	-
02	MHF11.0	10.650	TBC	TBC	Type 4	B125	To cap off existing run

FOUL WATER PIPE SCHEDULE						
Pipe Ref.	Pipe Length (m)	Pipe Ø (mm)	Pipe Material	Gradient (1 in 7)	Bedding	Remarks
02	PNF1.0	10.06	100	UPVC	60	Class S -
02	PNF1.1	2.20	225	VC	58.8	Class S -
02	PNF1.2	20.45	225	VC	58.8	Class S -
02	PNF1.3	2.44	225	VC	58.8	Class S -
02	PNF1.4	2.92	225	VC	58.8	Class S -
02	PNF1.5	4.57	225	VC	58.8	Class S -
02	PNF2.0	0.85	100	UPVC	60	Class S -
02	PNF3.0	0.85	100	UPVC	60	Class S -
02	PNF4.0	0.88	100	UPVC	60	Class S -
02	PNF5.0	0.95	100	UPVC	60	Class S -
02	PNF6.0	0.93	100	UPVC	60	Class S -
02	PNF7.0	0.88	100	UPVC	60	Class S -
02	PNF8.0	0.92	100	UPVC	60	Class S -
02	PNF9.0	1.59	100	UPVC	60	Class S -
02	PNF10.0	1.98	100	UPVC	60	Class S -

SURFACE WATER MANHOLE SCHEDULE							
Manhole Ref.	Cover Level (m)	Invert Level (m)	Backdrop Invert Lvl (m)	Manhole Depth (m)	Manhole Type	Manhole Cover/Frame Grade	Remarks
02	MHS1.0	10.600	10.000	0.600	Type 4	A15	-
02	MHS1.1	10.600	9.966	0.634	Type 4	A15	-
02	MHS1.2	10.200	9.107	1.093	Type 4	C250	-
02	MHS1.3	9.960	9.090	0.870	Type 4	C250	-
02	MHS1.4	9.960	8.970	1.000	Type 2	C250	Outlet LL to Tank B = 9.070
02	MHS1.5	10.250	8.987	1.253	Type 3	B125	450mm deep sump
02	MHS1.6	10.250	8.984	1.266	Type 3	B125	450mm deep sump
02	MHS1.7	10.250	8.957	1.293	Type 3	B125	450mm deep sump
02	MHS1.8	10.240	8.927	1.313	Type 4	B125	-
02	MHS1.9	10.250	8.900	1.350	PCC RECT	B125	Flow control chamber with 530mm Ø orifice on outlet. 450mm deep sump
02	MHS1.10	10.100	8.638	1.462	Type 2	D400	NOTE: Invert TBC prior to work commencing on the surface water drainage.

02	MHS2.0	9.750	9.200	0.550	Type 4	B125	-
02	MHS3.0	10.070	9.470	0.600	Type 4	B125	-
02	MHS4.0	10.425	9.577	0.848	Type 4	A15	-
02	MHS4.1	10.450	9.417	1.033	Type 4	A15	-
02	MHS4.2	10.375	9.280	1.095	Type 4	A15	-
02	MHS4.3	10.150	9.134	1.016	Type 4	A15	-
02	MHS5.0	10.425	9.825	0.600	Type 4	A15	-
02	MHS6.0	10.425	9.825	0.600	Type 4	A15	-
02	MHS7.0	10.125	9.575	0.550	Type 4	A15	-
02	MHS8.0	10.625	9.372	1.253	Type 4	B125	-
02	MHS8.1	10.625	9.295	1.330	Type 3	B125	-
02	MHS9.0	10.625	10.025	0.600	Type 4	B125	-
02	MHS9.1	10.350	9.667	0.683	Type 4	B125	-
02	MHS9.2	10.250	9.182	1.068	Type 4	B125	-

SURFACE WATER PIPE SCHEDULE						
Pipe Ref.	Pipe Length (m)	Pipe Ø (mm)	Pipe Material	Gradient (1 in 7)	Bedding	Remarks
02	PNS1.0	6.70	100	UPVC	200	Class S -
02	PNS1.1	13.13	100	UPVC	16.2	Class S -
02	PNS1.2	8.97	150	UPVC	528	Class Z
02	PNS1.3	3.91	150	UPVC	200	Class Z
02	PNS1.4	4.57	150	UPVC	200	Class Z
02	PNS1.5	2.53	150	UPVC	200	Class S -
02	PNS1.6A	0.51	150	UPVC	200	Class S
02	PNS1.6B	0.60	150	UPVC	200	Class S
02	PNS1.7	5.32	150	UPVC	200	Class S -
02	PNS1.8	4.02	100	UPVC	60	Class S -
02	PNS2.0	8.57	100	UPVC	200	Class S & Z
02	PNS3.0	9.83	100	UPVC	29.8	Class Z
02	PNS4.0	6.38	100	UPVC	40	Class S -
02	PNS4.1	5.48	100	UPVC	40	Class S -
02	PNS4.2	5.85	100	UPVC	40	Class S -
02	PNS4.3	2.56	100	UPVC	40	Class Z
02	PNS5.0	2.75	100	UPVC	7.7	Class S -
02	PNS6.0	2.06	100	UPVC	4.2	Class S -
02	PNS7.0	2.06	100	UPVC	6	Class S -
02	PNS8.0	4.57	150	UPVC	60	Class S -
02	PNS8.1	17.89	150	UPVC	60	Class S -
02	PNS9.0	14.31	100	UPVC	40	Class S -
02	PNS9.1	4.56	100	UPVC	8.8	Class S -
02	PNS9.2	13.46	100	UPVC	100	Class S -

SURFACE WATER ATTENUATION TANK SCHEDULE					
Tank Ref.	Cover/ Ground Level (m)	Inlet Level(s) (m)	Inlet Depth(s) (m)	Remarks	
02	Tank A	10.580 at lowest point	9.305	1.255	Tank constructed using StormCaters' manufactured by Brent Mann (Individual block dimensions: L=1.2m x W=0.6m x D=0.42m) Tank Structure Dimensions Length = 6.0m (5 Blocks) Width = 1.8m (3 Blocks) Depth = 0.42m (1 Layer of Blocks)
02	Tank B	10.250	IN=8.981 OUT=8.980	IN=1.269 OUT=1.290	Tank constructed using StormCaters' manufactured by Brent Mann (Individual block dimensions: L=1.2m x W=0.6m x D=0.42m) Tank Structure Dimensions Length = 4.2m (2 Blocks) Width = 1.8m (3 Blocks) Depth = 0.84m (2 Layers of Blocks)
02	Tank C	9.950 at lowest point	9.085	0.865	Tank constructed using StormCaters' manufactured by Brent Mann (Individual block dimensions: L=1.2m x W=0.6m x D=0.42m) Tank Structure Dimensions Length = 7.2m (6 Blocks) Width = 4.8m (8 Blocks) Depth = 0.42m (1 Layer of Blocks)


Rev	Description	Date
02	Schedules revised as shown	12/01/2018
01	Foul Water Schedules revised to updated scheme	07/11/2017
00	First issue to client	17/10/2017

CLIENT
 Proposed residential development at
 Havenock Street, Canterbury, Kent, CT1 1NY.

PROJECT
 About Construction

DATE 13/10/2017
TIME 13:10:2017
AS NOTED A1
APPROVAL C-2017-192-03
DATE 02

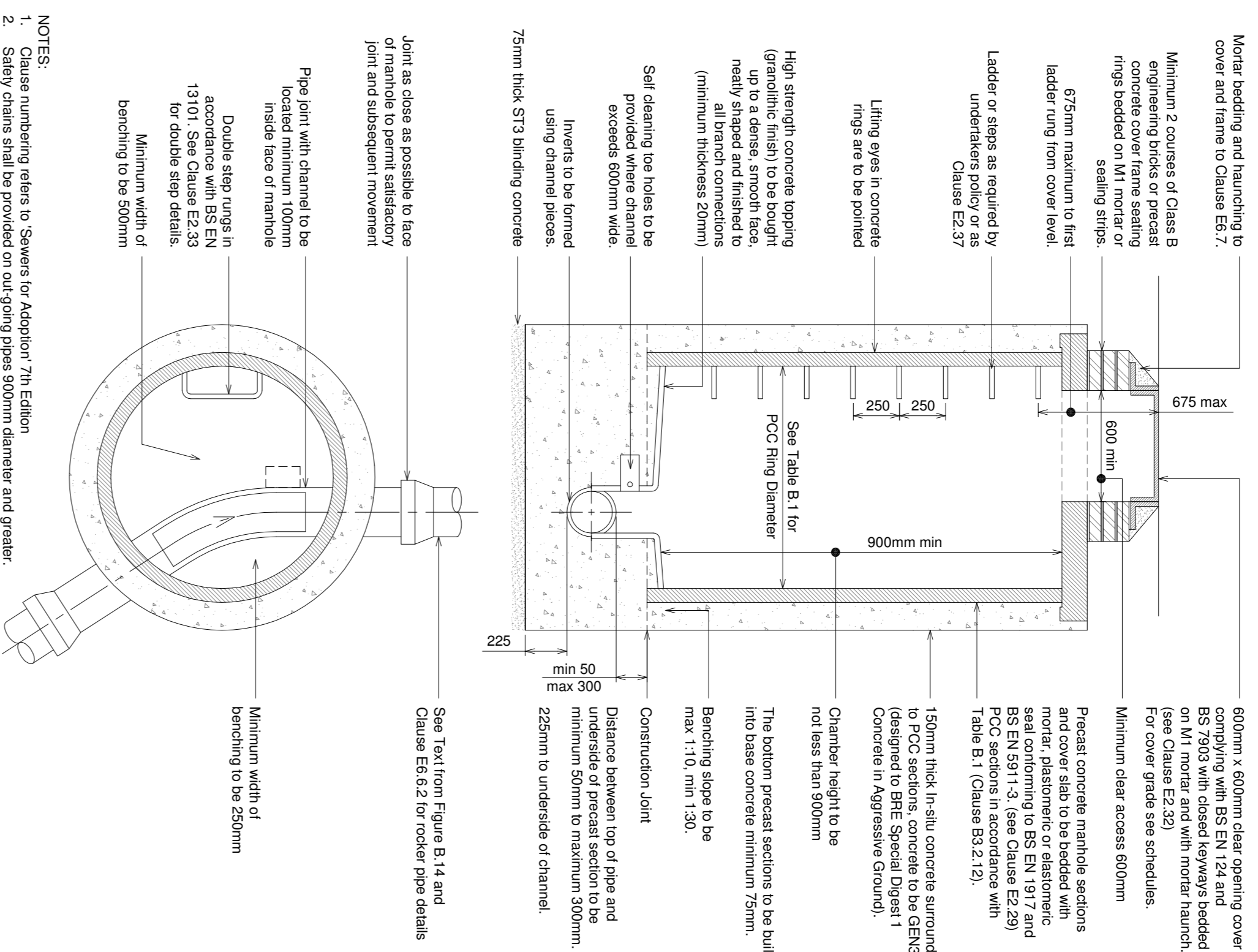
- NOTES**
- The Contractor should check all dimensions on site.
 - It is the responsibility of the Contractor to ensure compliance with building regulations and current codes of practice.
 - Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
 - Commencement of any building works prior to full building regulation approval is entirely at the client's risk.
- DRAINAGE NOTES:**
- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
 - All materials, workmanship and construction to be in accordance with the requirements of Schedules for Adoption - 7th Edition and published addendum and corrigendum.
 - Drains and sewers shall be constructed in accordance with the requirements of the British Standard BS 5955 and shall be installed to collect groundwater or runoff from gardens and landscaped areas.
 - All abandoned pipework to be completely removed or ground filled unless stated otherwise.


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Typical Type 2 Chamber Detail

Scale 1:25
 • Maximum depth from cover level to soffit of pipes 30m



NOTE:
 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.

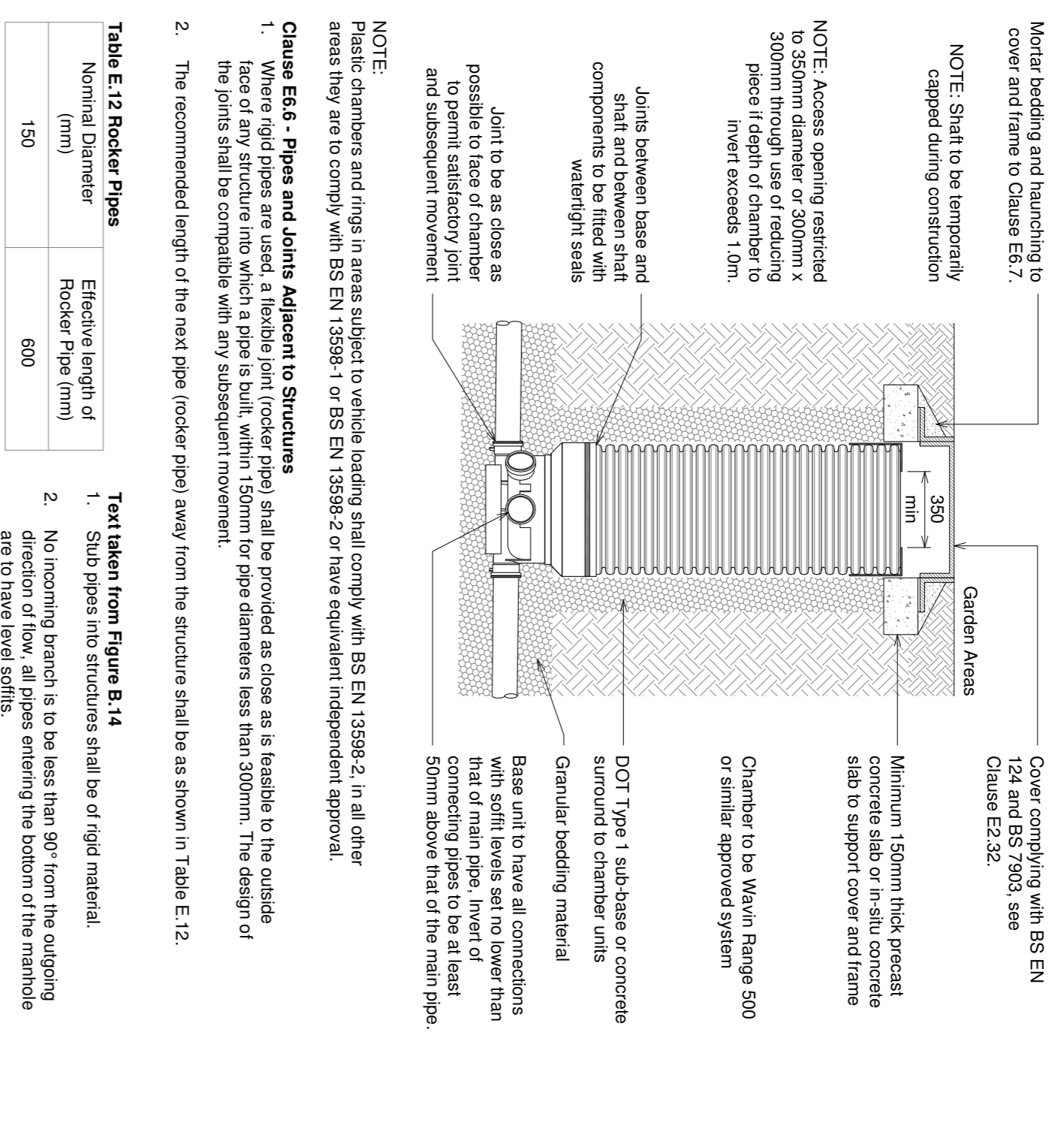
Nominal internal diameter of largest pipe in manhole (mm)	Minimum nominal internal diameter of manhole (mm)
Less than 375	1200
375 - 450	1350
500 - 700	1500
750 - 900	1800
Greater than 900	Pipe diameter + 900

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.

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

Typical Type 3 Chamber Detail (Non-Entry)

Scale 1:25
 • Maximum depth of cover level to soffit of pipe 3m
 • For individual access cover grades see schedules.



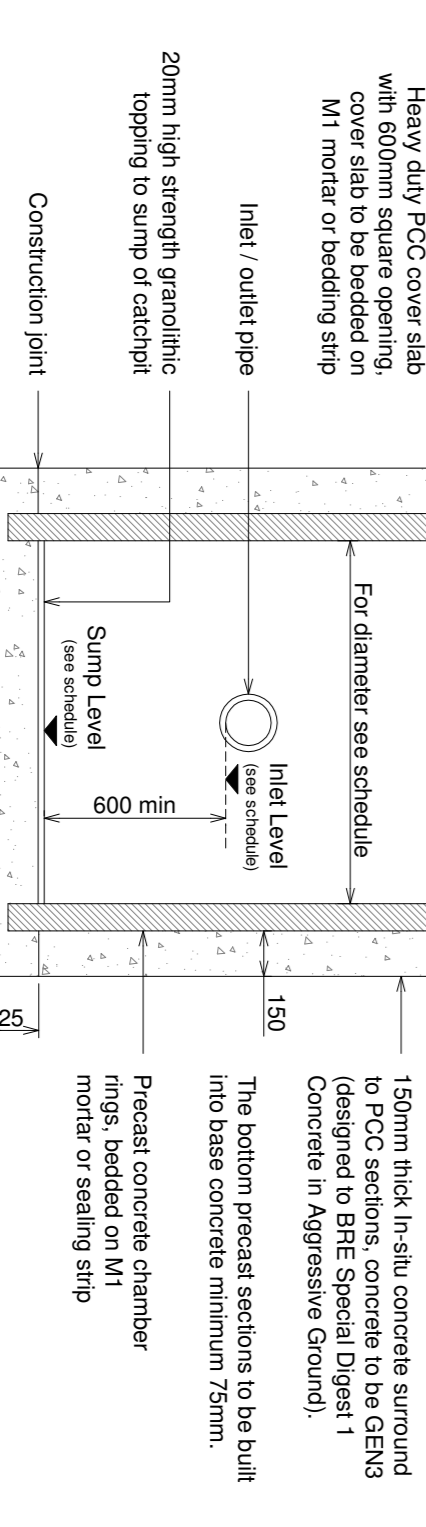
NOTE:
 1. Access opening restricted to 350mm diameter or 300mm x 300mm through use of reducing precast concrete sections. Inlet recesses 150mm.
 2. Manhole covers on four only sewers shall be of low leakage types in order to prevent excessive surface water ingress.

Clause E2.29 - Precast Concrete Manholes
 1. Precast concrete manhole units shall comply with the relevant provisions of BS EN 1917 and BS 5911-3. Units which had no bases shall be manufactured so that imposed vertical loads are transmitted directly via the full thickness of the unit. The profiles of joints between units and the underside of slabs shall be capable of withstanding splashing from road salts and spray-eroded sections shall only be used where the soffit of the slab is recessed to receive them.
 2. Precast concrete chamber sections for valves and meters shall be interlocking and comply with BS EN 1917 and BS 5911-3.

NPSWA 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 E2.32 - 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-slipping design which does not rely on the use of cushion inserts.
 2. Manhole covers on four-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 NPSWA 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 E800 covers shall be used.
 7. All Manholes shall be the non-ventilating type and shall have closed keyways.

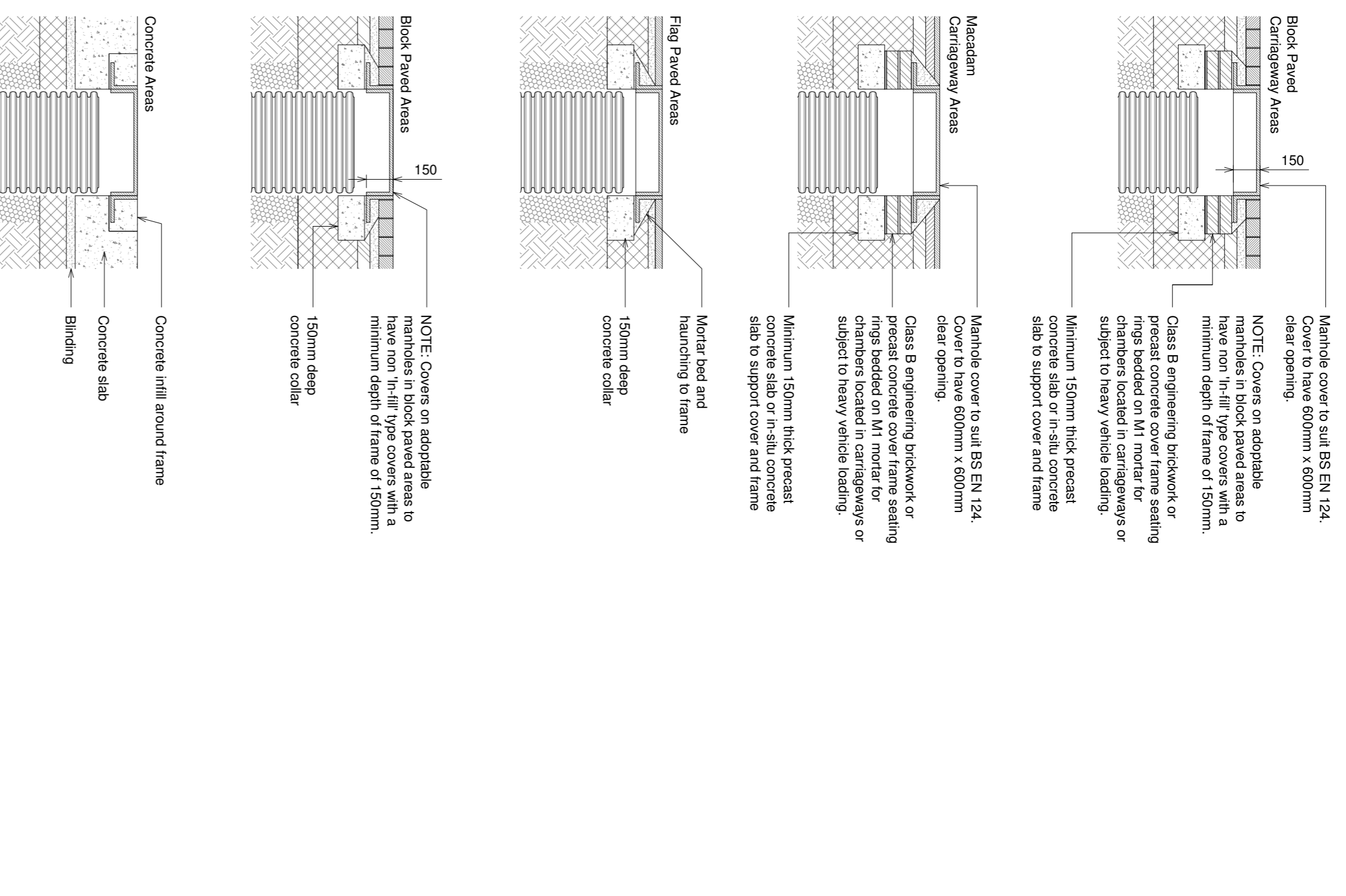
Clause E2.33 - Manhole Slope
 1. Steps for manholes and other chambers shall be Type D Class 1, complying with the requirements of BS EN 13101.
 2. Galvanized mild steel and plastic encapsulated steps are preferred.



NOTE:
 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.

Type 3 Alternate Cover Details

Scale 1:25
 All covers to comply with BS EN 124 and BS 7903, see Clause E2.32.
 All covers to have mortar bedding and haunching to cover and frame to Clause E6.7.



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-slipping design which does not rely on the use of cushion inserts.
 2. Manhole covers on four-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 NPSWA road categories I to IV shall be as table E.6.

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.
 2. Frames for manhole covers shall be bedded in a polyester resin based mortar in all situations where they are to comply with BS EN 13598-1 or BS EN 13598-2 or have equivalent independent approval.

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.

Rev	Description	Date
01	Type 2 manhole detail title changed.	12/01/2018
00	First issue to client	17/10/2017

PROJECT: Proposed residential development at Havelock Street, Canterbury, Kent, CT1 1NV

CLIENT: **tridax**
 Design Office: 100, The Old Kent Road, London, SE15 2HT
 Telephone: 020 7461 6000
 Fax: 020 7461 6001
 Email: info@tridax.co.uk

DESIGNED BY: AS/MSD
 CHECKED BY: AS/MSD
 DATE: 13/10/2017

APPROVAL: C-2017-192-04

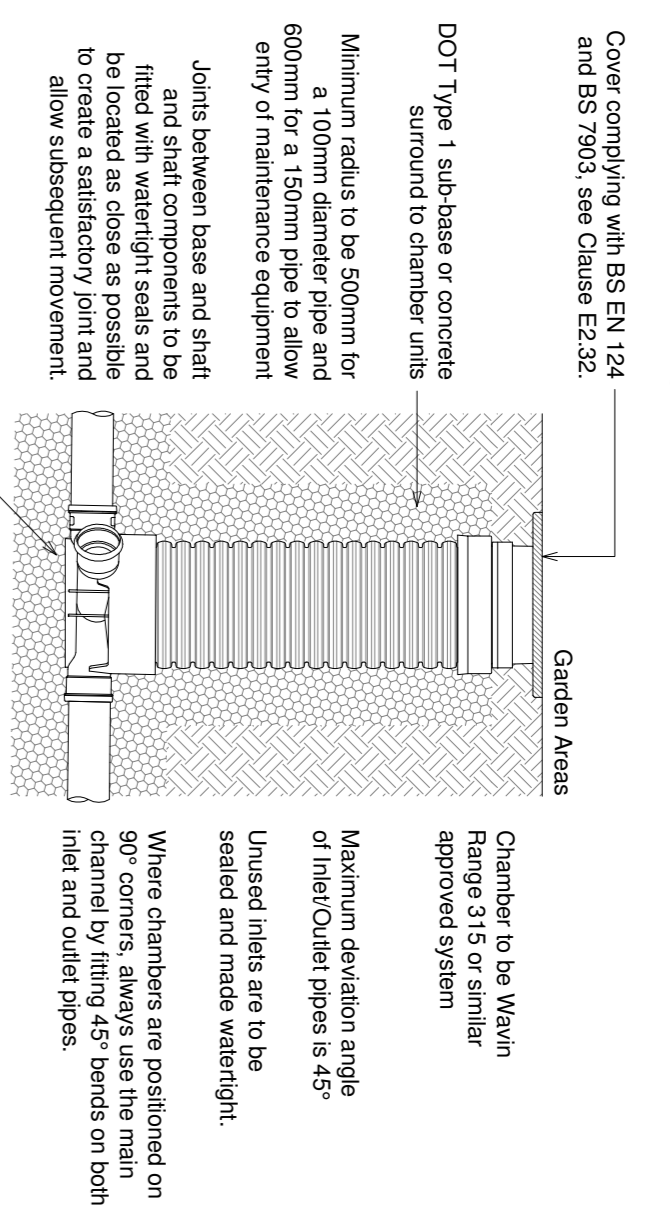
DRAINAGE NOTES:
 • The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
 • All materials, workmanship and construction to be in accordance with the requirements of 'Sewers for Adoption - 7th Edition' and published addendum and corrigendum.
 • All manholes and access covers shall be constructed in accordance with the relevant standards and design details and are not intended to collect groundwater or rainfall run off waters and landscaped areas.
 • All abandoned pipework to be completely removed or ground filled unless stated otherwise.

NOTES:
 • The Contractor should check all dimensions on site.
 • All drawings are the responsibility of the Designer to ensure compliance with building regulations and current codes of practice.
 • Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
 • Commencement of any building works prior to full building regulation approval is entirely at the client's risk.

Typical Type 4 Chamber Detail (Non-Entry)

Scale 1:20

- Max depth from cover to soffit of pipe 2.0m
- For individual access cover grades see schedules.



- NOTE:
1. Plastic chambers and rings shall comply with BS EN 13398-1 or BS EN 13398-2 or have equivalent independent approval.
 2. Backfill to be well compacted around shaft of chamber.

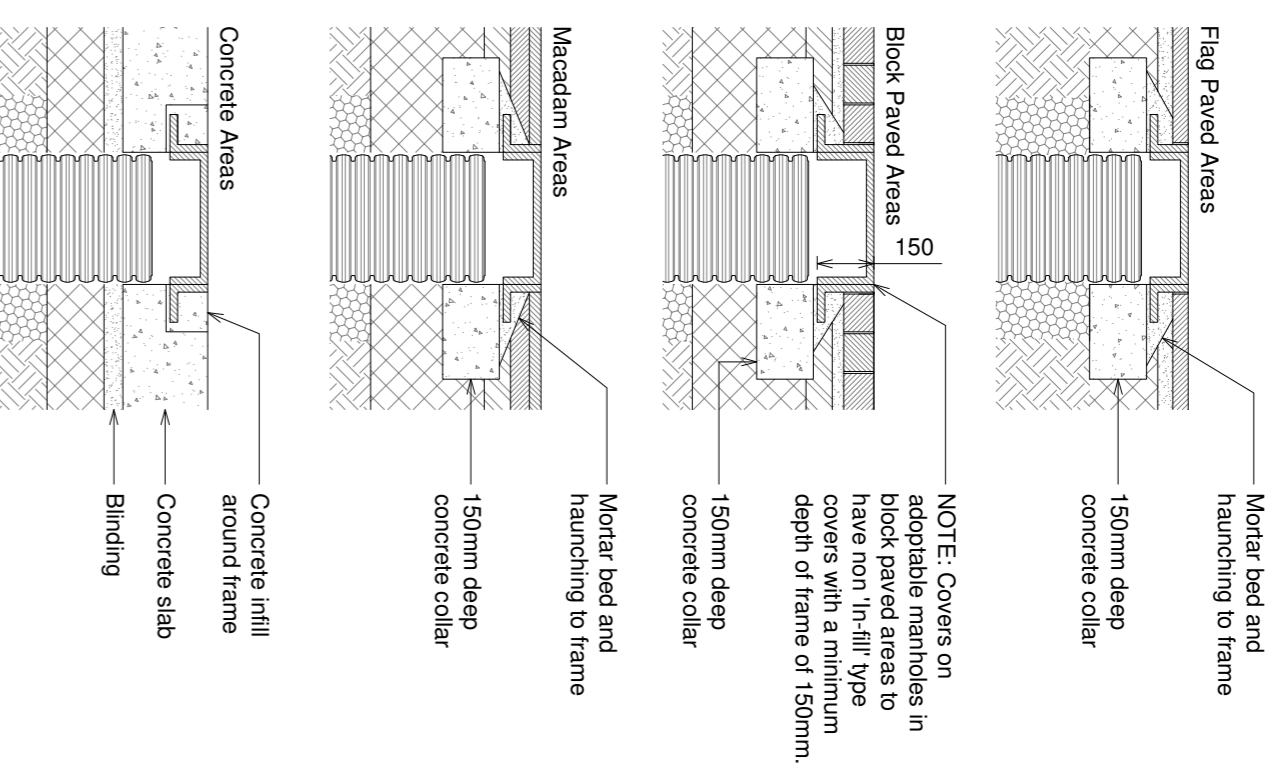
Clause: E2.32 Manhole Covers and Frames

1. Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS EN 13398-1 or BS EN 13398-2 or have equivalent independent approval. Backfill to be well compacted around shaft of chamber.
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 conjunction 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.

NRSWA road category	Description	Minimum frame depth (mm)
I	Trunk roads and dual carriageways	150
II	All other A roads	150
III	Bus services	150
IV	All other roads except residential cut-de-secs	150
-	Residential cut-de-secs	100

Clause: E6.7 Setting Manhole Covers and Frames

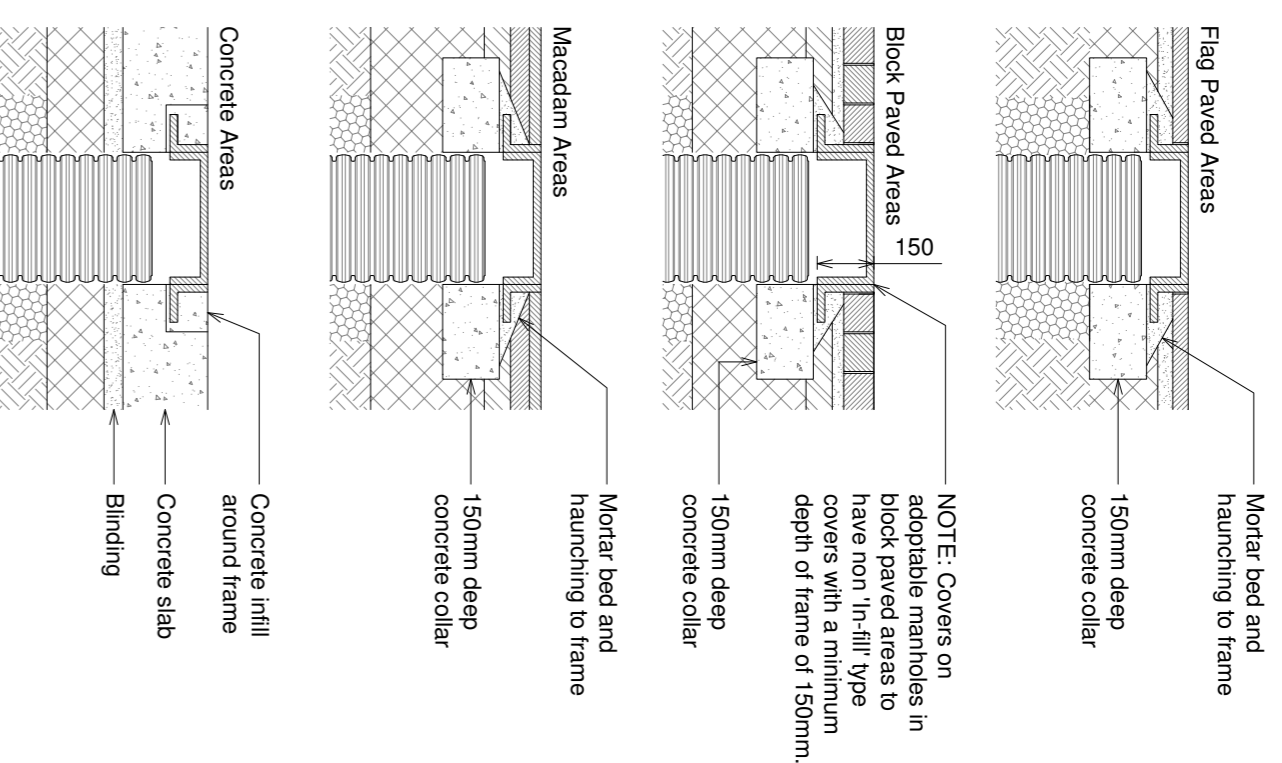
1. Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturers instructions.
2. Frames for manhole covers shall be bedded in a polyester resin bedding for all situations where covers are sited in NRSWA Road Categories I, II or III (i.e. all except residential cut-de-secs).



Type 4 - Alternate Cover Details

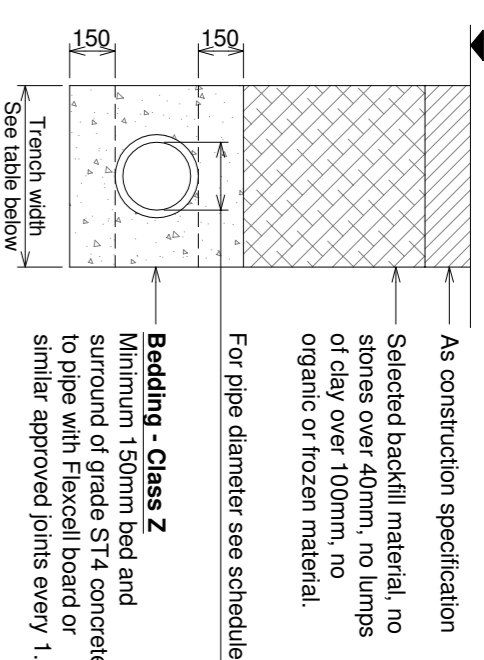
Scale 1:20

- All covers to comply with BS EN 124 and BS 7903, see Clause E2.32. All covers to have mortar bedding and haunching to cover and frame to Clause E6.7



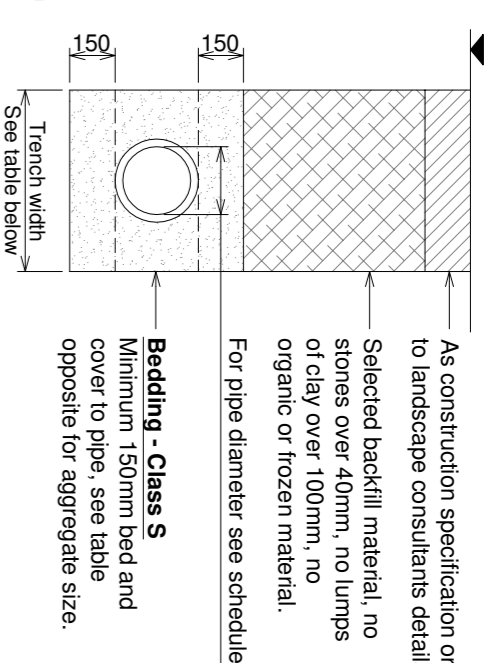
Pipe Bedding - Class Z

Areas subject to vehicle loadings. Less than 1.2m cover to pipe.



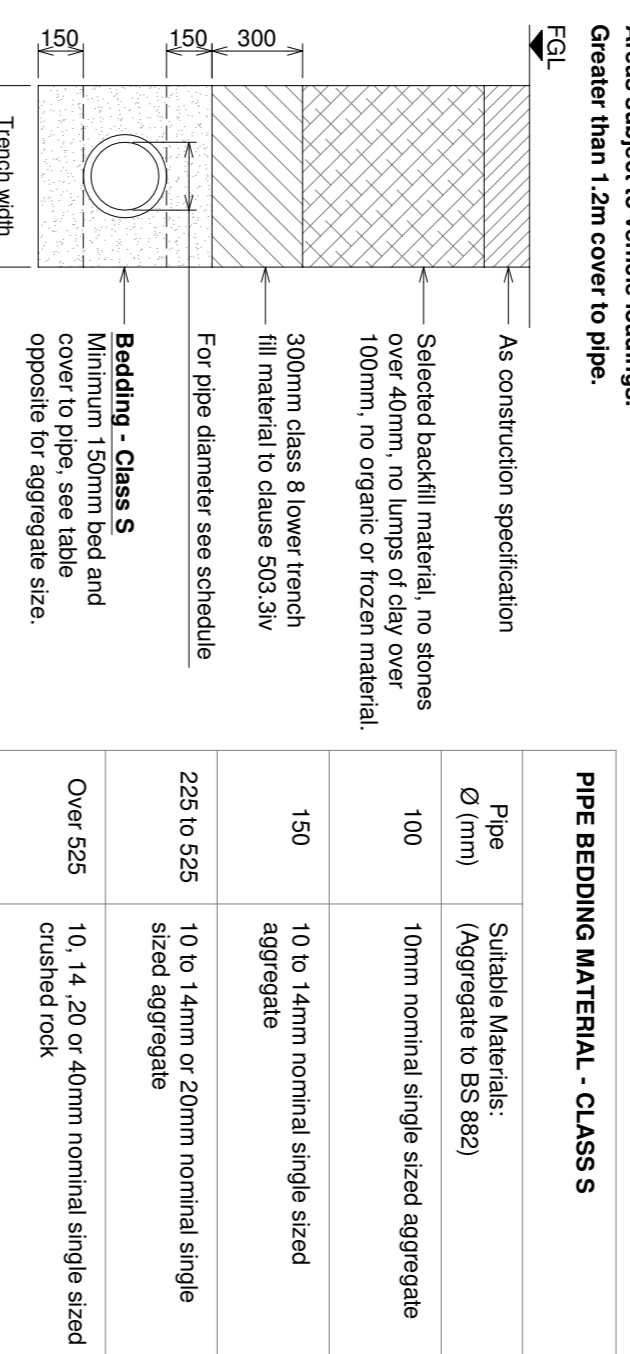
Pipe Bedding - Class S

Areas not subject to vehicle loadings. Use in private gardens, landscaped areas etc.



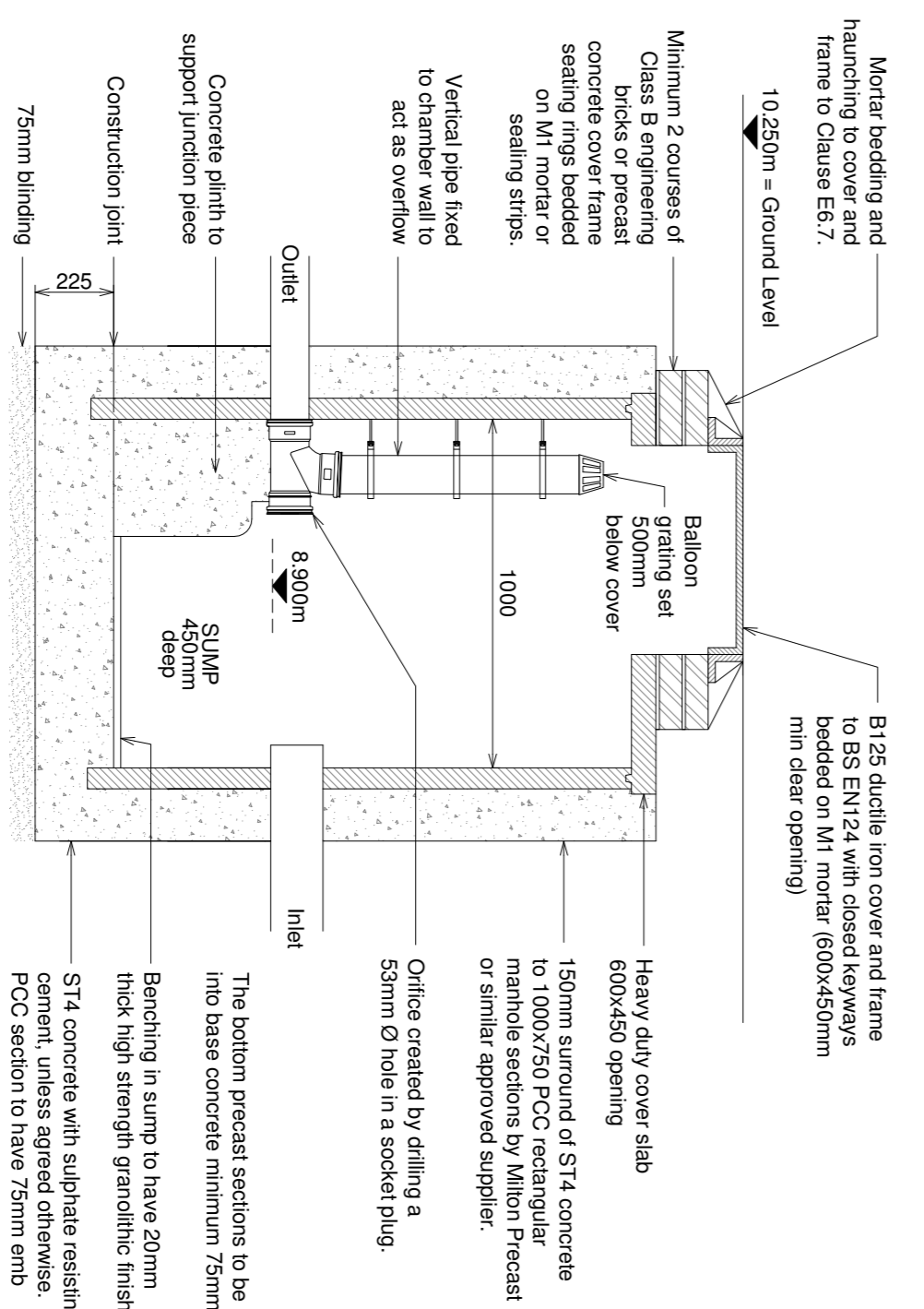
Pipe Bedding - Class S

Areas subject to vehicle loadings. Greater than 1.2m cover to pipe.



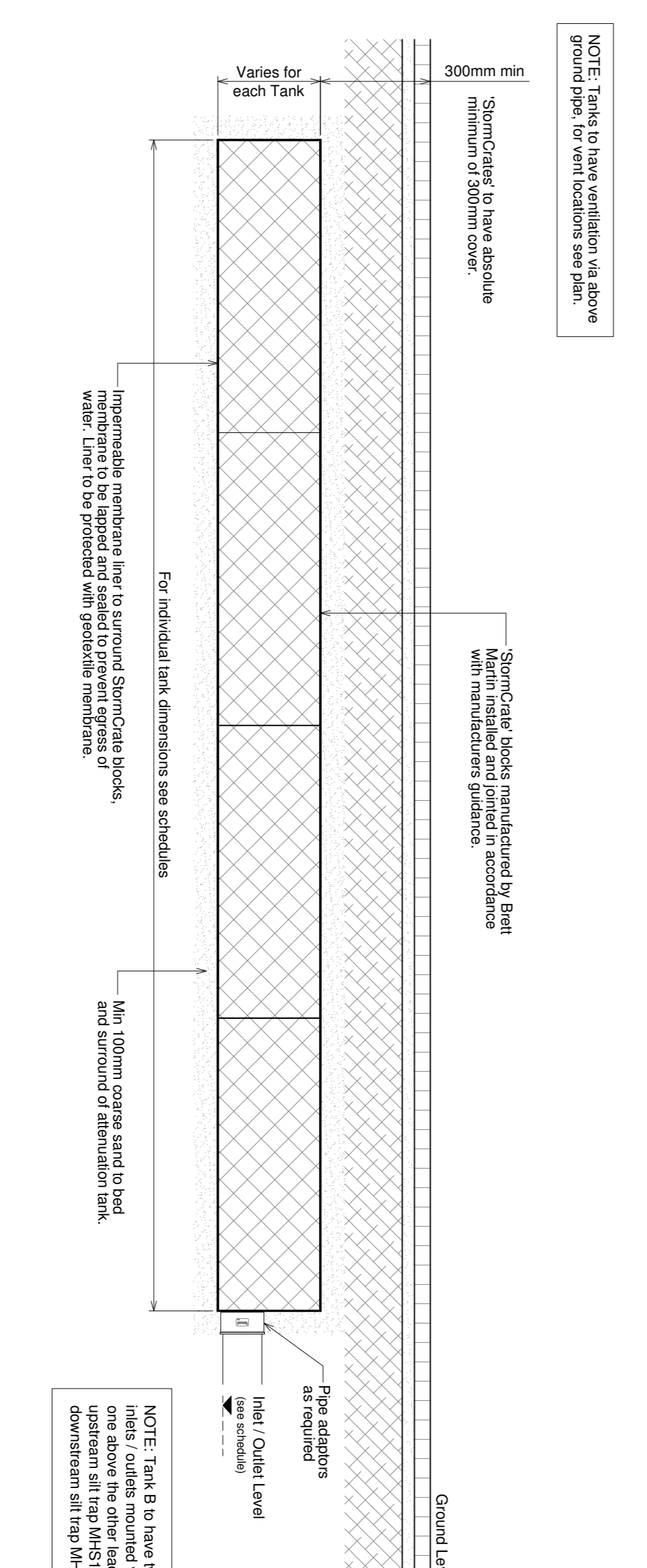
MHS1.9 Flow Control Chamber Detail

Scale 1:20



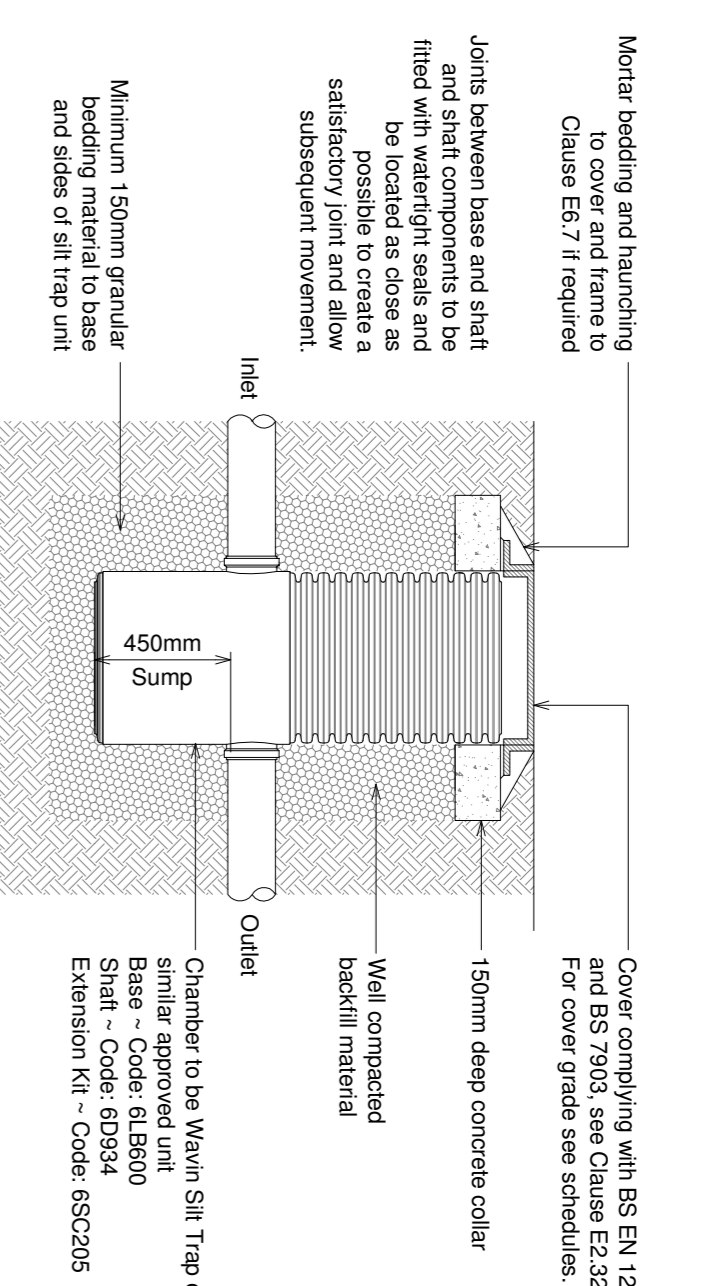
Typical Section ~ Cellular Attenuation Tanks (StormCrate)

Scale 1:20



Typical Type 3 Silt Trap Detail

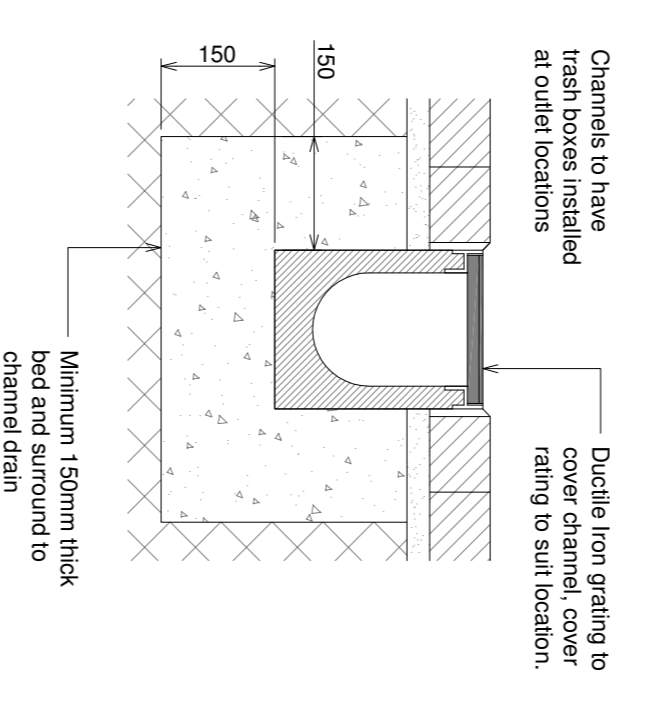
Scale 1:25



- NOTE:
1. Plastic chambers and rings shall comply with BS EN 13398-1 or BS EN 13398-2 or have equivalent independent approval.
 2. Backfill to be well compacted around shaft of chamber.

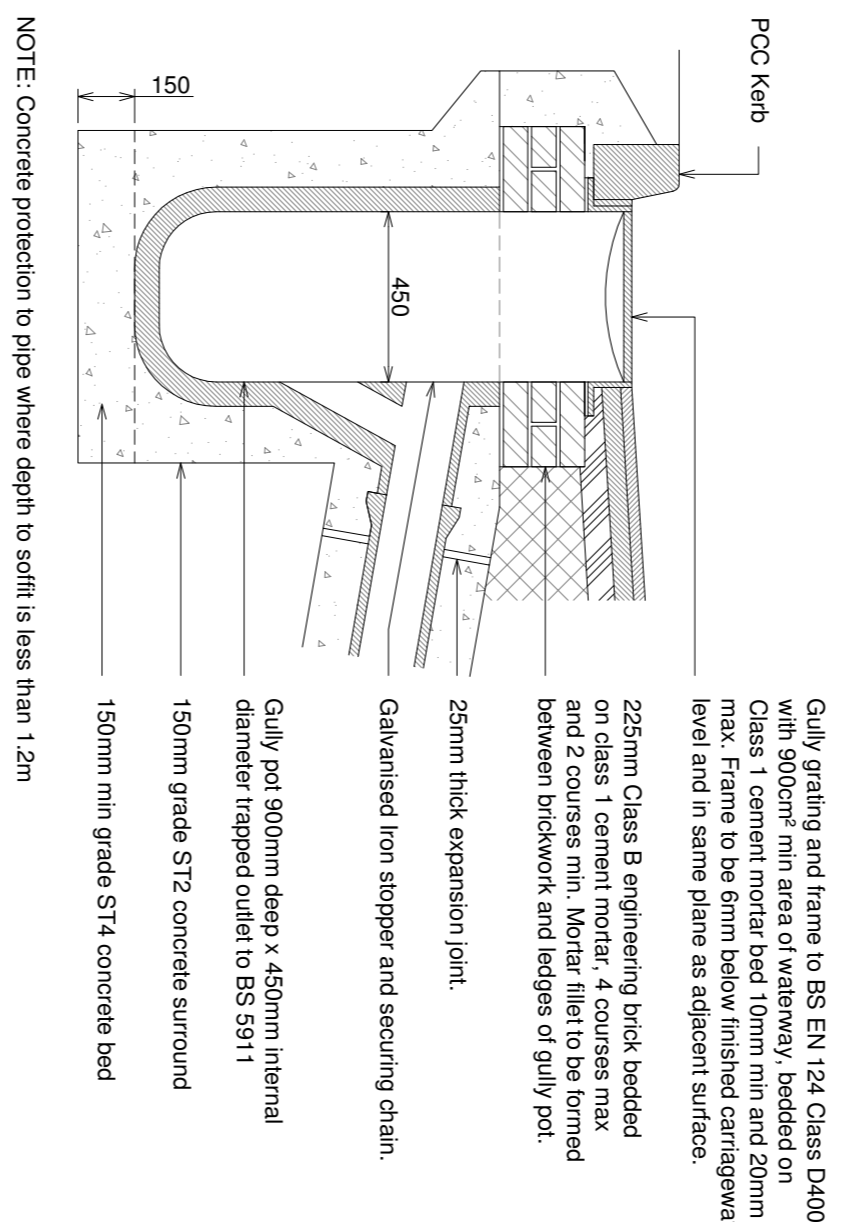
Channel Drain Detail

Scale 1:10



Typical Highway Gully Detail

Scale 1:20



NOTE: Concrete protection to pipe where depth to soffit is less than 1.2m

DRAINAGE NOTES:

- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
- All materials, workmanship and construction to be in accordance with the requirements of Sewers for Adoption - 7th Edition and published addendum and corrigendum.
- Sewers for Adoption - 7th Edition and published addendum and corrigendum.
- All manholes and covers are to be constructed of concrete or cast in situ concrete and landeigned areas.
- All abandoned pipework to be completely removed or grout filled unless stated otherwise.

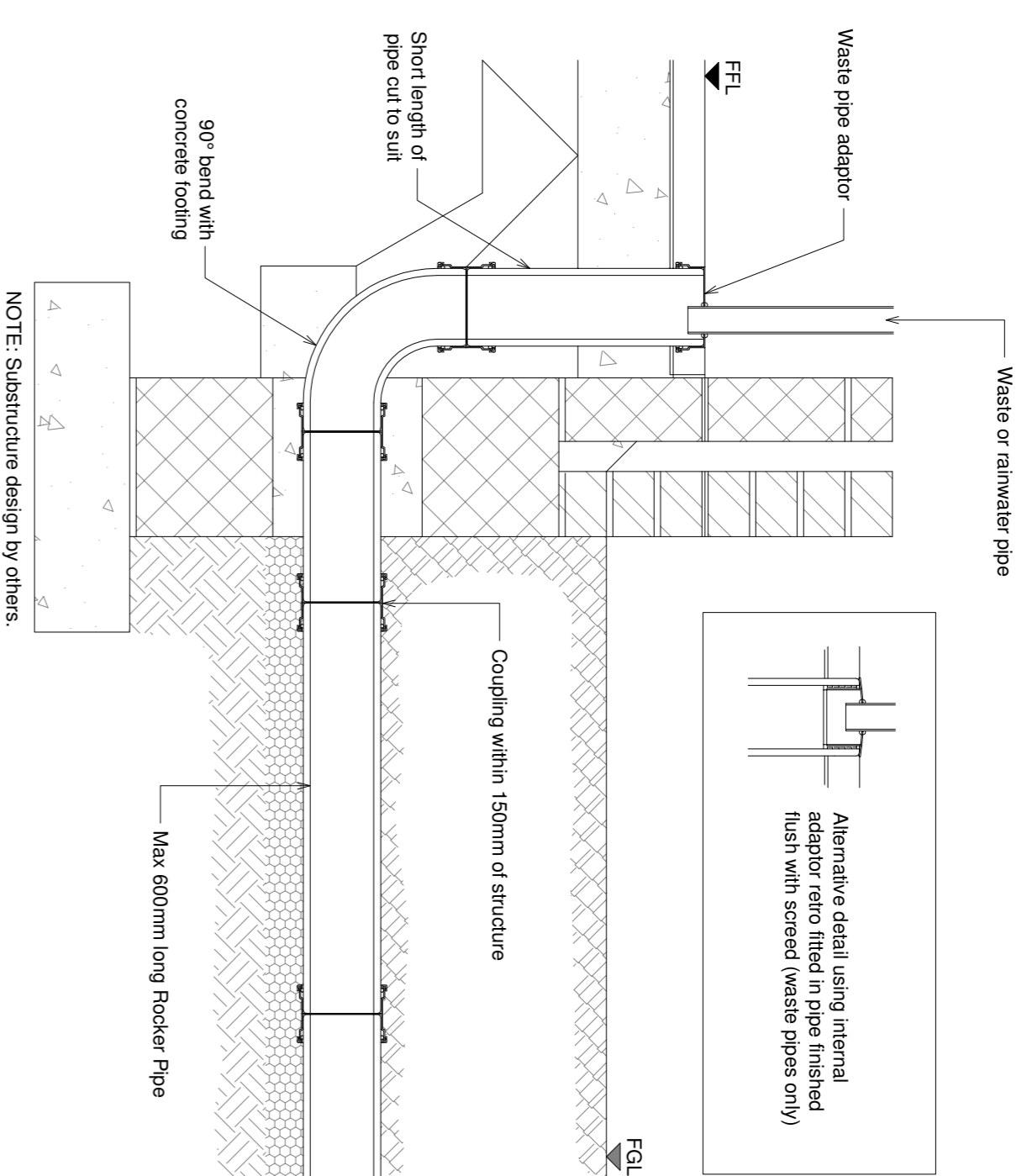
NOTES

- The Contractor should check all dimensions on site.
- Copies of tenders responsibility to ensure compliance with building regulations and current codes of practice.
- Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
- Commencement of any building works prior to full building regulation approval is entirely at the client's risk.

PROJECT	Proposed residential development at Havelock Street, Canterbury, Kent, CT1 1NY
CLIENT	Abdolt Construction
DESIGNED BY	tridax
DRAWING NO.	C-2017-192-05
DATE	17/10/2017
SCALE	As noted
APPROVAL	01

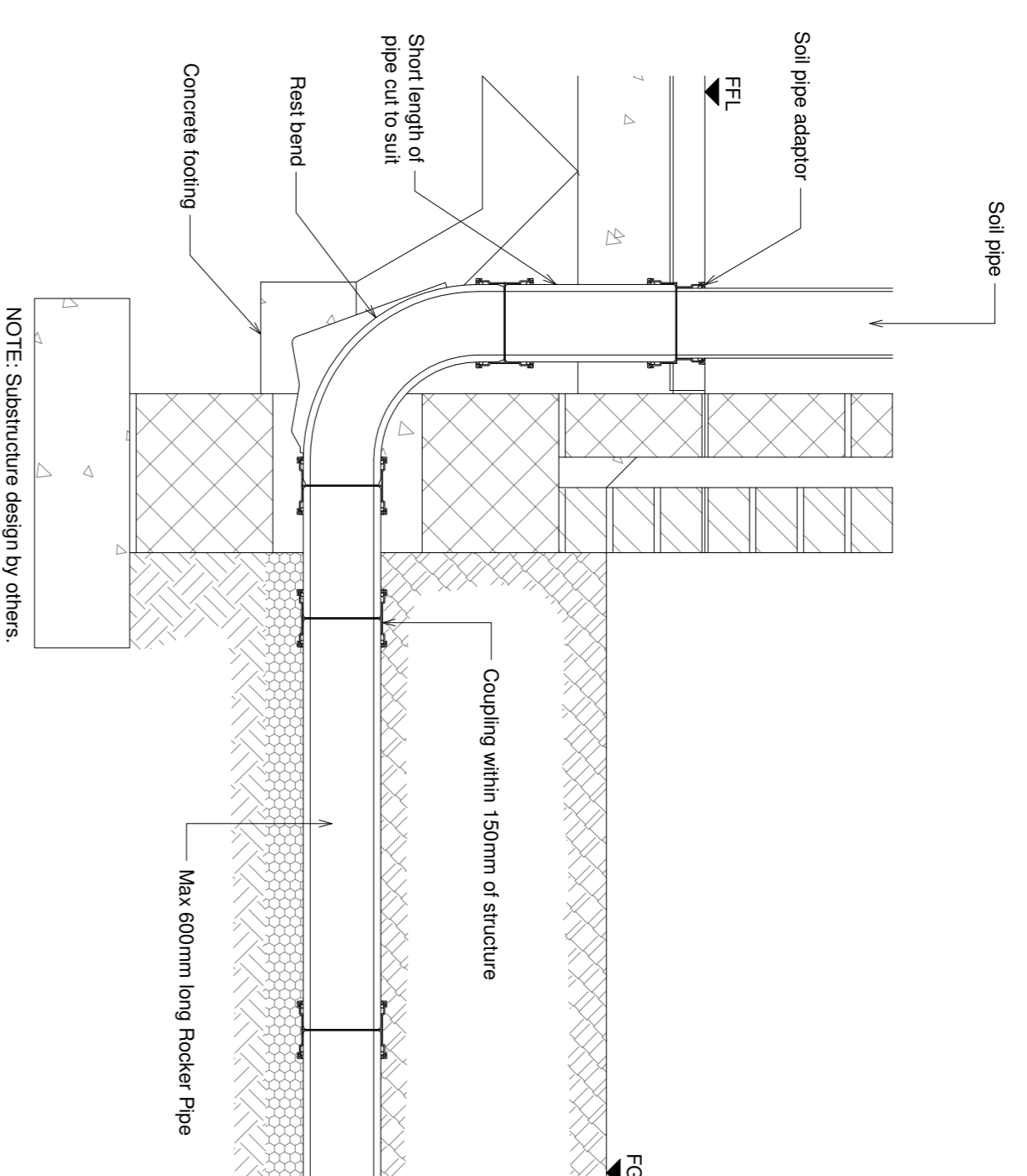
Typical Internal Waste Pipe Connection Detail

Scale 1:10



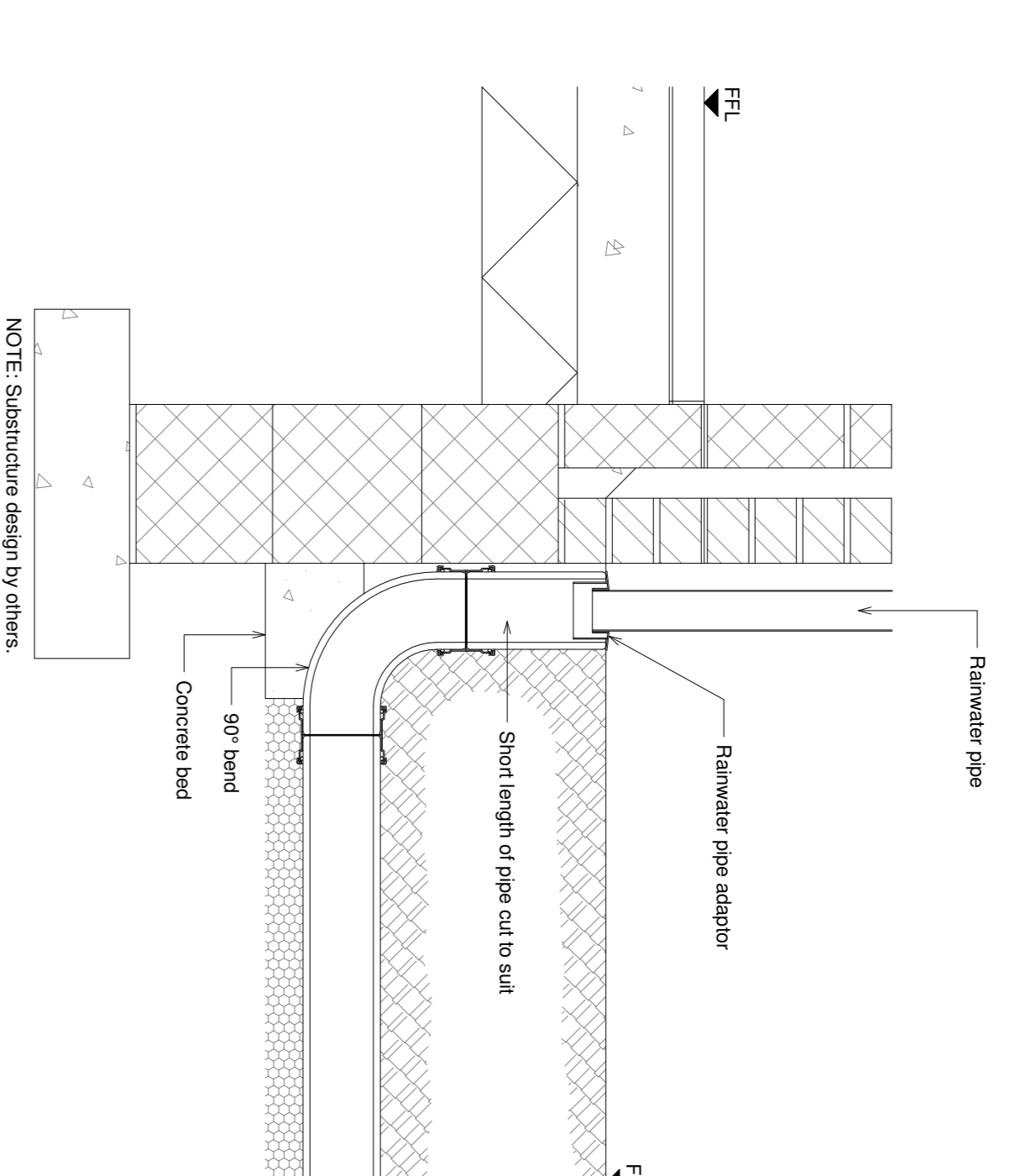
Typical Soil Vent Pipe / Stub Stack Connection Detail

Scale 1:10



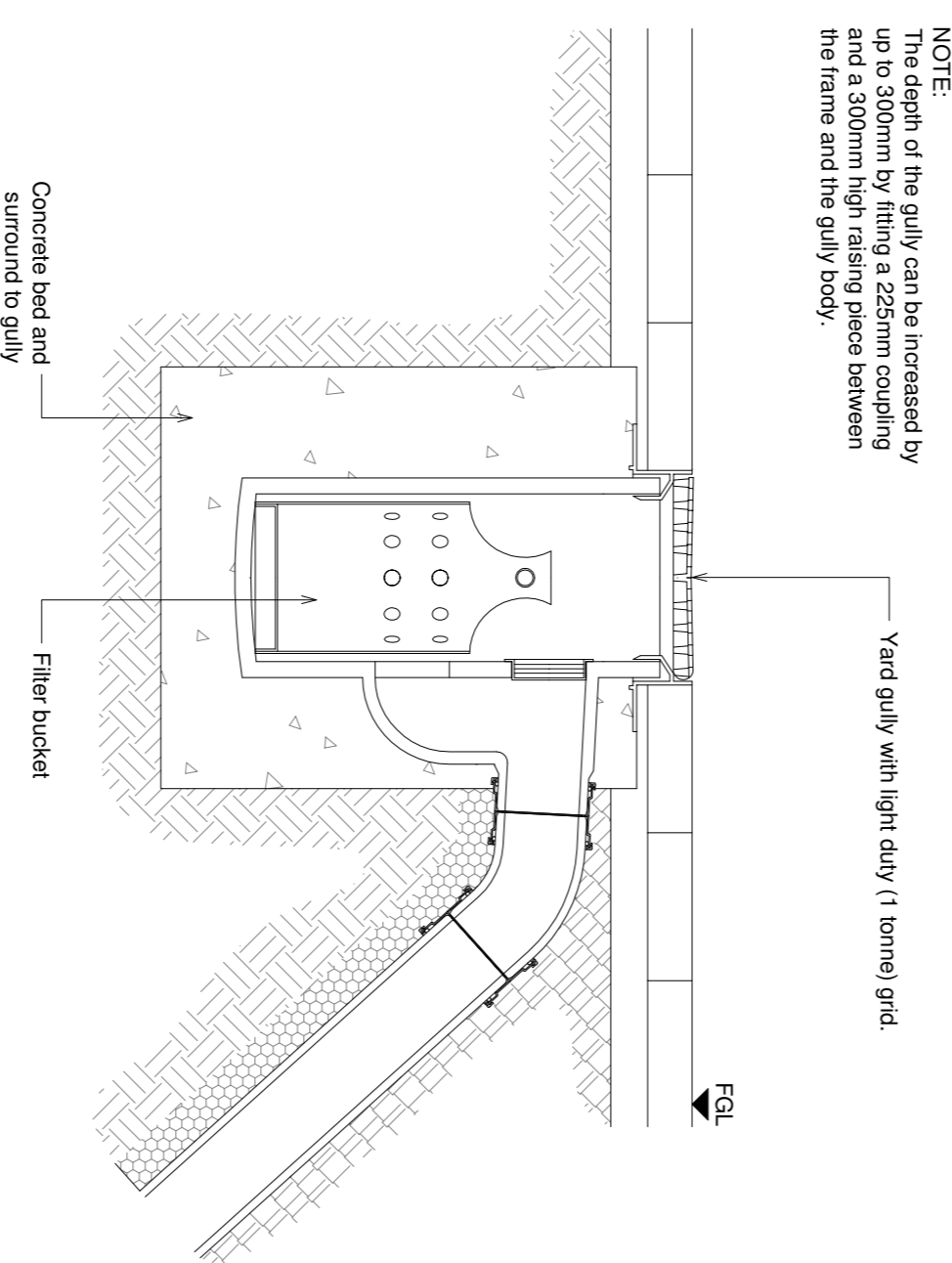
Typical External Rainwater Pipe Connection Detail

Scale 1:10



Bin Store Gully Connection Detail

Scale 1:10



- DRAINAGE NOTES:**
- The location of any existing drains and sewers are to be accurately located and reported prior to any work commencing on site.
 - All materials, workmanship and construction to be in accordance with the requirements of Sewers for Adoption - 7th Edition and published addendum and corrigendum.
 - Manholes, gullies, and other structures shall be constructed in accordance with the requirements of the relevant standards and are not intended to collect groundwater or runoff from gardens and landscaped areas.
 - All abandoned pipework to be completely removed or ground filled unless stated otherwise.
- NOTES**
- The Contractor should check all dimensions on site.
 - The Contractor shall ensure that all work is carried out in accordance with the requirements of the relevant standards and are not intended to collect groundwater or runoff from gardens and landscaped areas.
 - Drawings cannot take into account any drains or underground works not locatable by visual survey of the site.
 - Commencement of any building works prior to full building regulator approval is entirely at the client's risk.
- | Rev | Description | Date |
|-----|---|------------|
| 01 | Attenuation tank detail removed from drawing. | 12/01/2018 |
| 00 | First issue to client | **7**20** |

CLIENT		PROJECT	
About Construction		Proposed residential development at Havelock Street, Canterbury, Kent, CT1 1NY.	
DRAWING		SCALE	
Proposed Drainage Details		As Noted	
Sheet 3		13/10/2017	
STATUS		REV	
PRELIMINARY		EMC-2017-192-06	
DATE		01	

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Design Office: Suite 10, The Old Mill House, Havelock Street, Canterbury, Kent, CT1 1NY. Tel: 01304 820777

APPENDIX B

Correspondence
Southern Water Services S106 Approval



Paul Lavender
Tridax Ltd
Suite 3
Honeywood House Road
Whitfield
Dover
Kent
CT16 3EH

Developer Services
Southern Water
Sparrowgrove House
Sparrowgrove
Otterbourne
Hampshire
SO21 2SW

Tel: 0330 303 0119

Your Reference:

Our Reference:

SWS-KENT-S106-010807

Date:

29/01/2018

Application to Connect to the Public Sewerage System - Section 106 Water Industry Act 1991. Location: Land at Havelock Road, Canterbury, Kent, CT1 1NY.

Dear Mr Lavender,

Further to your recent application to connect to the public sewerage system at the above location, we are pleased to inform you that your proposal to connect to the public foul sewers via existing lateral and surface water sewers via a new manhole has been approved subject to the following provisions: -

Construction of new manhole and arrangement of pipe junctions within the manhole should be in accordance with Sewers for Adoption 7th edition and Southern Water guidance documentation.

This letter is for the purpose of approval to permit communication to be made to the public sewer, under S106 of the Water Industry Act 1991.

This approval is to the means and mode of construction.

It does not confirm that capacity is available for the proposed development in the public sewer network. Lack of such capacity may increase the risk of flooding and pollution and is a material drainage matter, for the Planning Authority to consider, by way of appropriate Planning Conditions. The availability of such capacity may be assessed through the Capacity Check process.

Any works required to provide such capacity may require the application of a S98 application and agreement.

This letter should not be considered as approval by Southern Water, to the discharge of any relevant Planning Conditions, relating to drainage.

If there is any change in the approved connection point, as above, you must provide us with your revised drawing and obtain our approval for the revision prior to the connection being made.

Please contact Sarah Simmons our Assistant Project Manager for this area on 07803 259274 giving at least 2 full working days notice, in order for a mutually convenient date and time for the inspection of the works to be arranged.

If connection is to be made through the lands of another, the works may not proceed until the landowners consent has been obtained.

In approving this application, it is assumed that you have obtained any necessary Building Regulations Approval and /or Highway Authority Road Opening Licence.

I refer you to Southern Water Health and Safety Advisory which can be viewed in the Developer and Builders section of the Southern Water website as the link below:
<https://www.southernwater.co.uk/health-safety-advisory>.

This approval is given on the basis that you will review this Advisory and take the necessary actions with regards to Health and Safety.

Yours sincerely,

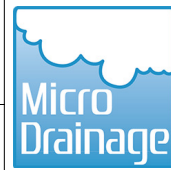


David Akehurst
Developer Services

APPENDIX C

Surface Water Design Calculations
Proposed Surface Water Network Simulation Results
40% Climate Change Sensitivity Test

Tridax Ltd		Page 1
Honeywood House Whitfield Kent CT16 3EH		Havelock Street Canterbury
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...		Designed by PRL Checked by
XP Solutions		Network 2017.1.2



Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	6.705	0.034	200.0	0.003	5.00	0.0	0.600	o	100	Pipe/Conduit
1.001	13.139	0.859	15.3	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit
2.000	8.574	0.043	199.4	0.003	5.00	0.0	0.600	o	100	Pipe/Conduit
1.002	8.974	0.045	199.4	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit
3.000	9.828	0.408	24.1	0.001	5.00	0.0	0.600	o	100	Pipe/Conduit
1.003	3.913	0.019	205.9	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit
4.000	6.381	0.032	200.0	0.005	5.00	0.0	0.600	o	100	Pipe/Conduit
5.000	2.751	0.032	86.0	0.003	5.00	0.0	0.600	o	100	Pipe/Conduit
4.001	5.488	0.068	80.6	0.002	0.00	0.0	0.600	o	100	Pipe/Conduit
6.000	2.063	0.100	20.6	0.003	5.00	0.0	0.600	o	100	Pipe/Conduit
4.002	5.850	0.225	26.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
7.000	2.062	0.325	6.3	0.003	5.00	0.0	0.600	o	100	Pipe/Conduit
4.003	2.566	0.457	5.6	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
1.004	4.472	0.022	200.0	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit
8.000	13.101	0.066	200.0	0.006	5.00	0.0	0.600	o	100	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	10.000	0.003	0.0	0.54	4.2
1.001	9.966	0.009	0.0	1.99	15.6
2.000	9.150	0.003	0.0	0.54	4.2
1.002	9.107	0.015	0.0	0.71	12.5
3.000	9.470	0.001	0.0	1.58	12.4
1.003	9.062	0.020	0.0	0.70	12.3
4.000	9.825	0.005	0.0	0.54	4.2
5.000	9.825	0.003	0.0	0.83	6.5
4.001	9.793	0.010	0.0	0.86	6.7
6.000	9.825	0.003	0.0	1.71	13.4
4.002	9.725	0.013	0.0	1.52	11.9
7.000	9.825	0.003	0.0	3.09	24.3
4.003	9.500	0.016	0.0	3.29	25.8
1.004	9.043	0.045	0.0	0.71	12.5
8.000	10.000	0.006	0.0	0.54	4.2

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Honeywood House Whitfield Kent CT16 3EH		Havelock Street Canterbury
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...		Designed by PRL Checked by
XP Solutions		Network 2017.1.2



Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
8.001	4.795	0.024	200.0	0.002	0.00	0.0	0.600	o	100	Pipe/Conduit
8.002	17.894	0.890	20.1	0.013	0.00	0.0	0.600	o	100	Pipe/Conduit
9.000	4.417	0.100	44.2	0.007	5.00	0.0	0.600	o	100	Pipe/Conduit
9.001	13.742	0.630	21.8	0.002	0.00	0.0	0.600	o	100	Pipe/Conduit
1.005	4.611	0.023	200.5	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit
1.006	6.833	0.034	201.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
1.007	6.128	0.031	197.7	0.002	0.00	0.0	0.600	o	150	Pipe/Conduit
1.008	3.772	0.099	38.1	0.006	0.00	0.0	0.600	o	100	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
8.001	9.934	0.008	0.0	0.54	4.2
8.002	9.911	0.021	0.0	1.73	13.6
9.000	9.750	0.007	0.0	1.16	9.1
9.001	9.650	0.009	0.0	1.66	13.0
1.005	9.020	0.078	0.0	0.71	12.5
1.006	8.997	0.078	0.0	0.71	12.5
1.007	8.963	0.080	0.0	0.71	12.6
1.008	8.932	0.086	0.0	1.25	9.8

Free Flowing Outfall Details for Storm


Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.008	TR15573951	10.620	8.833	8.833	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Storage Structures	3
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details


Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	26.250	Storm Duration (mins)	30
Ratio R	0.378		

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Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury	
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

Online Controls for Storm

Orifice Manhole: SW1.8, DS/PN: 1.008, Volume (m³): 0.6

Diameter (m) 0.053 Discharge Coefficient 0.600 Invert Level (m) 8.932

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Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury	
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

Storage Structures for Storm

Cellular Storage Manhole: SW1.4, DS/PN: 1.004

Invert Level (m) 9.043 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

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	36.0	0.0	0.660	36.0	0.0	0.661	0.0	0.0

Cellular Storage Manhole: SW8.2, DS/PN: 8.002


Invert Level (m) 9.911 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

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	11.0	0.0	0.420	11.0	0.0	0.421	0.0	0.0

Cellular Storage Manhole: SW1.6, DS/PN: 1.006

Invert Level (m) 8.997 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

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	10.0	0.0	0.840	10.0	0.0	0.841	0.0	0.0

Tridax Ltd		Page 5
Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury	
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 26.250 Cv (Summer) 0.750
Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH		Event	US/CL (m)	Water Flooded		Discharge Vol (m ³)	Pipe		Status
	Name				Level (m)	Volume (m ³)		Flow (l/s)		
1.000	SW1.0	30 minute	2 year Summer I+0%	10.600	10.027	0.000	0.383	0.6	OK	
1.001	SW1.1	30 minute	2 year Summer I+0%	10.600	9.989	0.000	1.149	1.7	OK	
2.000	SW2.0	60 minute	2 year Winter I+0%	9.800	9.222	0.000	0.544	0.4	OK	
1.002	SW1.2	60 minute	2 year Winter I+0%	10.200	9.222	0.000	2.713	1.8	OK	
3.000	SW3.0	30 minute	2 year Summer I+0%	10.070	9.478	0.000	0.128	0.2	OK	
1.003	SW1.3	60 minute	2 year Winter I+0%	9.960	9.220	0.000	3.612	2.2	SURCHARGED	
4.000	SW4.0	30 minute	2 year Summer I+0%	10.425	9.860	0.000	0.639	1.0	OK	
5.000	SW5.0	30 minute	2 year Summer I+0%	10.425	9.848	0.000	0.383	0.6	OK	
4.001	SW4.1	30 minute	2 year Summer I+0%	10.450	9.833	0.000	1.275	2.0	OK	
6.000	SW6.0	30 minute	2 year Summer I+0%	10.425	9.842	0.000	0.383	0.6	OK	
4.002	SW4.2	30 minute	2 year Summer I+0%	10.375	9.758	0.000	1.654	2.6	OK	
7.000	SW7.0	30 minute	2 year Summer I+0%	10.425	9.838	0.000	0.383	0.6	OK	
4.003	SW4.3	30 minute	2 year Summer I+0%	10.150	9.527	0.000	2.031	3.2	OK	
1.004	SW1.4	60 minute	2 year Winter I+0%	9.960	9.219	0.000	7.384	1.9	SURCHARGED	
8.000	SW8.0	30 minute	2 year Summer I+0%	10.600	10.038	0.000	0.768	1.2	OK	
8.001	SW8.1	30 minute	2 year Summer I+0%	10.625	9.980	0.000	1.021	1.6	OK	
8.002	SW8.2	30 minute	2 year Summer I+0%	10.625	9.947	0.000	2.685	3.7	OK	
9.000	SW9.0	30 minute	2 year Summer I+0%	10.350	9.778	0.000	0.894	1.4	OK	
9.001	SW9.1	30 minute	2 year Summer I+0%	10.250	9.675	0.000	1.147	1.8	OK	
1.005	SW1.5	60 minute	2 year Winter I+0%	10.250	9.213	0.000	13.324	3.7	SURCHARGED	
1.006	SW1.6	60 minute	2 year Winter I+0%	10.250	9.207	0.000	12.992	2.7	SURCHARGED	
1.007	SW1.7	60 minute	2 year Winter I+0%	10.240	9.245	0.000	13.297	2.7	SURCHARGED	
1.008	SW1.8	60 minute	2 year Winter I+0%	10.700	9.249	0.000	14.299	2.8	SURCHARGED	

Tridax Ltd		Page 6
Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury	
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 26.250 Cv (Summer) 0.750
Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Flooded Volume (m ³)	Discharge Vol (m ³)	Pipe Flow (l/s)	Status
1.000	SW1.0	30 minute 30 year Summer I+0%	10.600	10.037	0.000	0.729	1.2	OK
1.001	SW1.1	30 minute 30 year Summer I+0%	10.600	10.000	0.000	2.186	3.6	OK
2.000	SW2.0	60 minute 30 year Winter I+0%	9.800	9.440	0.000	0.997	0.6	SURCHARGED
1.002	SW1.2	60 minute 30 year Winter I+0%	10.200	9.439	0.000	4.966	3.1	SURCHARGED
3.000	SW3.0	30 minute 30 year Summer I+0%	10.070	9.482	0.000	0.243	0.4	OK
1.003	SW1.3	60 minute 30 year Winter I+0%	9.960	9.437	0.000	6.487	4.0	SURCHARGED
4.000	SW4.0	30 minute 30 year Summer I+0%	10.425	9.875	0.000	1.215	1.9	OK
5.000	SW5.0	30 minute 30 year Summer I+0%	10.425	9.860	0.000	0.729	1.2	OK
4.001	SW4.1	30 minute 30 year Summer I+0%	10.450	9.853	0.000	2.428	3.9	OK
6.000	SW6.0	30 minute 30 year Summer I+0%	10.425	9.849	0.000	0.729	1.2	OK
4.002	SW4.2	30 minute 30 year Summer I+0%	10.375	9.774	0.000	3.154	5.0	OK
7.000	SW7.0	30 minute 30 year Summer I+0%	10.425	9.843	0.000	0.729	1.2	OK
4.003	SW4.3	30 minute 30 year Summer I+0%	10.150	9.539	0.000	3.880	6.2	OK
1.004	SW1.4	60 minute 30 year Winter I+0%	9.960	9.435	0.000	9.508	2.7	SURCHARGED
8.000	SW8.0	30 minute 30 year Summer I+0%	10.600	10.054	0.000	1.458	2.3	OK
8.001	SW8.1	30 minute 30 year Summer I+0%	10.625	10.005	0.000	1.943	3.1	OK
8.002	SW8.2	30 minute 30 year Summer I+0%	10.625	9.968	0.000	5.104	8.0	OK
9.000	SW9.0	30 minute 30 year Summer I+0%	10.350	9.790	0.000	1.701	2.7	OK
9.001	SW9.1	30 minute 30 year Summer I+0%	10.250	9.686	0.000	2.185	3.5	OK
1.005	SW1.5	60 minute 30 year Winter I+0%	10.250	9.434	0.000	20.470	4.9	SURCHARGED
1.006	SW1.6	60 minute 30 year Winter I+0%	10.250	9.430	0.000	18.522	3.8	SURCHARGED
1.007	SW1.7	120 minute 30 year Summer I+0%	10.240	9.410	0.000	28.508	3.4	SURCHARGED
1.008	SW1.8	120 minute 30 year Summer I+0%	10.700	9.416	0.000	30.655	3.6	SURCHARGED

Tridax Ltd		Page 7
Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury	
Date 17/10/2017 09:22 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 26.250 Cv (Summer) 0.750
Region England and Wales Ratio R 0.378 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Flooded Volume (m ³)	Discharge Vol (m ³)	Pipe Flow (l/s)	Status
1.000	SW1.0	30 minute 100 year Summer	I+20% 10.600	10.049	0.000	1.151	1.8	OK
1.001	SW1.1	30 minute 100 year Summer	I+20% 10.600	10.010	0.000	3.453	5.6	OK
2.000	SW2.0	60 minute 100 year Winter	I+20% 9.800	9.759	0.000	1.494	0.9	FLOOD RISK
1.002	SW1.2	60 minute 100 year Winter	I+20% 10.200	9.758	0.000	7.677	5.0	SURCHARGED
3.000	SW3.0	60 minute 100 year Winter	I+20% 10.070	9.754	0.000	0.532	0.4	SURCHARGED
1.003	SW1.3	60 minute 100 year Winter	I+20% 9.960	9.755	0.000	9.999	6.5	SURCHARGED
4.000	SW4.0	30 minute 100 year Summer	I+20% 10.425	9.903	0.000	1.919	3.0	OK
5.000	SW5.0	30 minute 100 year Summer	I+20% 10.425	9.889	0.000	1.151	1.8	OK
4.001	SW4.1	30 minute 100 year Summer	I+20% 10.450	9.883	0.000	3.836	6.0	OK
6.000	SW6.0	30 minute 100 year Summer	I+20% 10.425	9.856	0.000	1.151	1.8	OK
4.002	SW4.2	30 minute 100 year Summer	I+20% 10.375	9.789	0.000	4.985	7.8	OK
7.000	SW7.0	30 minute 100 year Summer	I+20% 10.425	9.847	0.000	1.151	1.8	OK
4.003	SW4.3	60 minute 100 year Winter	I+20% 10.150	9.756	0.000	8.500	5.8	SURCHARGED
1.004	SW1.4	60 minute 100 year Winter	I+20% 9.960	9.753	0.000	10.286	3.7	SURCHARGED
8.000	SW8.0	30 minute 100 year Summer	I+20% 10.600	10.101	0.000	2.302	3.6	SURCHARGED
8.001	SW8.1	30 minute 100 year Summer	I+20% 10.625	10.048	0.000	3.069	4.9	SURCHARGED
8.002	SW8.2	30 minute 100 year Summer	I+20% 10.625	10.003	0.000	8.055	11.0	OK
9.000	SW9.0	30 minute 100 year Summer	I+20% 10.350	9.802	0.000	2.686	4.3	OK
9.001	SW9.1	60 minute 100 year Winter	I+20% 10.250	9.752	0.000	4.784	3.3	SURCHARGED
1.005	SW1.5	60 minute 100 year Winter	I+20% 10.250	9.750	0.000	27.511	7.0	SURCHARGED
1.006	SW1.6	60 minute 100 year Winter	I+20% 10.250	9.742	0.000	23.537	4.8	SURCHARGED
1.007	SW1.7	60 minute 100 year Winter	I+20% 10.240	9.792	0.000	24.300	4.9	SURCHARGED
1.008	SW1.8	60 minute 100 year Winter	I+20% 10.700	9.796	0.000	27.208	5.1	SURCHARGED


Tridax Ltd		Page 1
Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury (40% Test)	
Date 17/10/2017 09:47 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	2
Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0			
Number of Online Controls 1 Number of Storage Structures 3 Number of Real Time Controls 0			

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	26.250	Storm Duration (mins)	60
Ratio R	0.378		

Tridax Ltd		Page 2
Honeywood House Whitfield Kent CT16 3EH	Havelock Street Canterbury (40% Test)	
Date 17/10/2017 09:47 File EMC-2017-192 SW NETWORK...	Designed by PRL Checked by	
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Summary of Results for 60 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 100.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

PN	US/MH Name	US/CL (m)	Water Level (m)	Flooded Volume (m ³)	Discharge Vol (m ³)	Pipe Flow (l/s)	Status
1.000	SW1.0	10.600	10.038	0.000	1.768	1.2	OK
1.001	SW1.1	10.600	10.000	0.000	5.305	3.6	OK
2.000	SW2.0	9.850	9.827	0.000	1.700	1.0	FLOOD RISK
1.002	SW1.2	10.200	9.828	0.000	8.611	5.5	SURCHARGED
3.000	SW3.0	10.070	9.821	0.000	0.589	0.4	SURCHARGED
1.003	SW1.3	9.960	9.826	0.000	11.265	7.1	SURCHARGED
4.000	SW4.0	10.425	9.876	0.000	2.947	2.0	OK
5.000	SW5.0	10.425	9.860	0.000	1.768	1.2	OK
4.001	SW4.1	10.450	9.853	0.000	5.893	3.9	OK
6.000	SW6.0	10.425	9.849	0.000	1.768	1.2	OK
4.002	SW4.2	10.375	9.833	0.000	7.660	5.1	SURCHARGED
7.000	SW7.0	10.425	9.843	0.000	1.768	1.2	OK
4.003	SW4.3	10.150	9.828	0.000	9.426	6.3	SURCHARGED
1.004	SW1.4	9.960	9.824	0.000	15.751	5.0	SURCHARGED
8.000	SW8.0	10.600	10.056	0.000	3.537	2.4	OK
8.001	SW8.1	10.625	10.007	0.000	4.715	3.2	OK
8.002	SW8.2	10.625	9.969	0.000	12.376	8.3	OK
9.000	SW9.0	10.350	9.823	0.000	4.126	2.8	OK
9.001	SW9.1	10.250	9.822	0.000	5.304	3.6	SURCHARGED
1.005	SW1.5	10.250	9.820	0.000	34.896	10.1	SURCHARGED
1.006	SW1.6	10.250	9.810	0.000	31.685	6.5	SURCHARGED
1.007	SW1.7	10.240	9.920	0.000	32.629	6.6	SURCHARGED
1.008	SW1.8	10.700	9.961	0.000	35.817	7.0	SURCHARGED