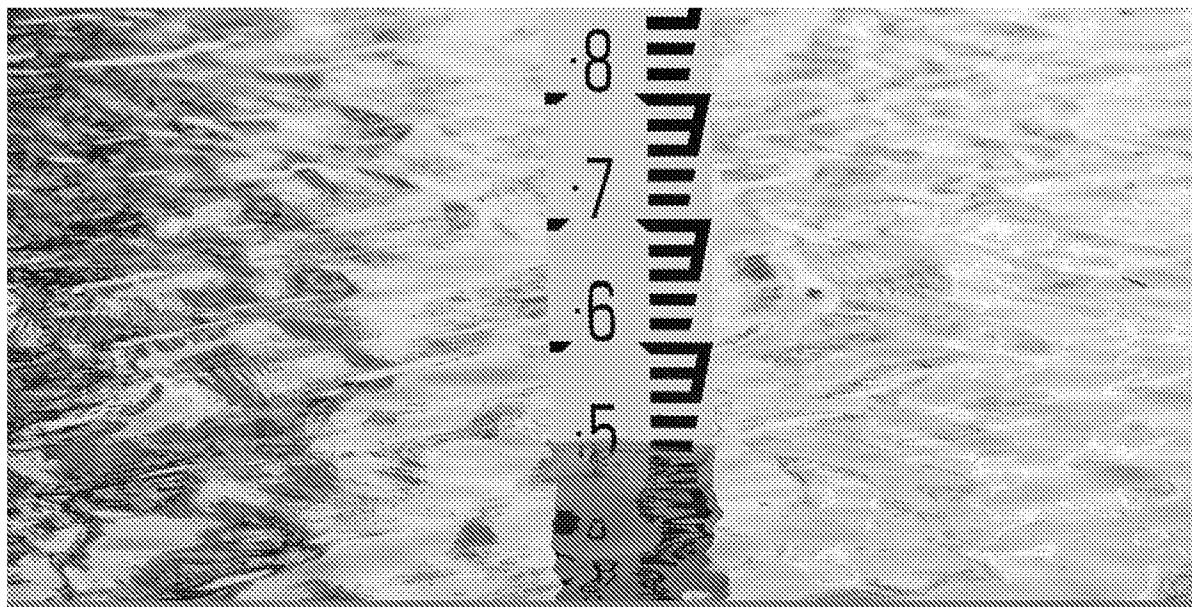




Foul & SuDS Maintenance Plan

Land off North End Road, Yapton, West Sussex BN18 0DT

Client

Redrow Homes Ltd
Unit 1, Faraday Office Park
Basingstoke
Hampshire
RG24 8QQ
11228
Date: January 2022

Consulting Engineers

GTA Civils & Transport Limited
Gloucester House
66a Church Walk
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West Sussex
RH15 9AS

Index

1	INTRODUCTION	3
2	OWNERSHIP & MAINTENANCE RESPONSIBILITIES	5
3	HEALTH AND SAFETY	8
4	MAINTENANCE OF PIPE SYSTEMS & MANHOLES & INSPECTION CHAMBERS	9
5	MAINTENANCE OF PERMEABLE PAVING	10
6	MAINTENANCE OF TRENCH SOAKAWAYS/INFILTRATION BLANKETS	13
7	FOUL DRAINAGE	14
8	CONTAMINATION, OIL SPILLAGES OR DILUTION OF SPILLAGE	15
9	GLOSSARY	16

Schedule of Appendices

- A Surface Water Catchment & Drainage Implementation Plan
- B Drainage layouts, details and maintenance responsibilities

Issue	Issue date	Compiled	Checked
First issue	7 th January 2022	MR	SL

1 INTRODUCTION

- 1.1 This document outlines the proposed management and maintenance regimes of the drainage systems at the proposed residential development site at North End Road in Yapton. It also aims to support the discharge of Condition 12 which is set out below:

Condition 12

"No development shall take place until details of the implementation, maintenance and management of a sustainable drainage scheme have been submitted to and approved in writing by the LPA. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. Those details shall include:

- i) A timetable for the scheme's implementation; and*
 - ii) A management and maintenance plan for the lifetime of the development which shall include the arrangements for the adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.*
- 1.2 The drainage features on site comprise of piped surface water systems from the house roof areas discharging mainly to areas of permeable paving in driveways or the main roads. 4 no. plots discharge some of the roof area into trench soakaways in the rear gardens. The main road is divided into sections separated by concrete baffles to enable each area of voided stone volume to be fully utilised.
- 1.3 The surface water systems and SuDS features on site are to remain private and will be maintained by a private management company with charges levied to residents.
- 1.4 All drainage features have an estimated design life of typically 50 years; subject to installation as per manufacturer guidance by a competent contractor, and regular maintenance as per manufactures recommendations, for the lifetime of the development
- 1.5 This report sets out the management and maintenance of the site's drainage system throughout its lifetime. All drainage features will be maintained by a private management agreement which will incorporate the recommendations in this document. In all cases, reference should be made to the manufacturer's inspection and maintenance recommendations.

1.6 The following text has been divided into sections which correspond to each relevant drainage type detailing:

- Description of feature
- Maintenance activities and frequency
- Inspection and frequency

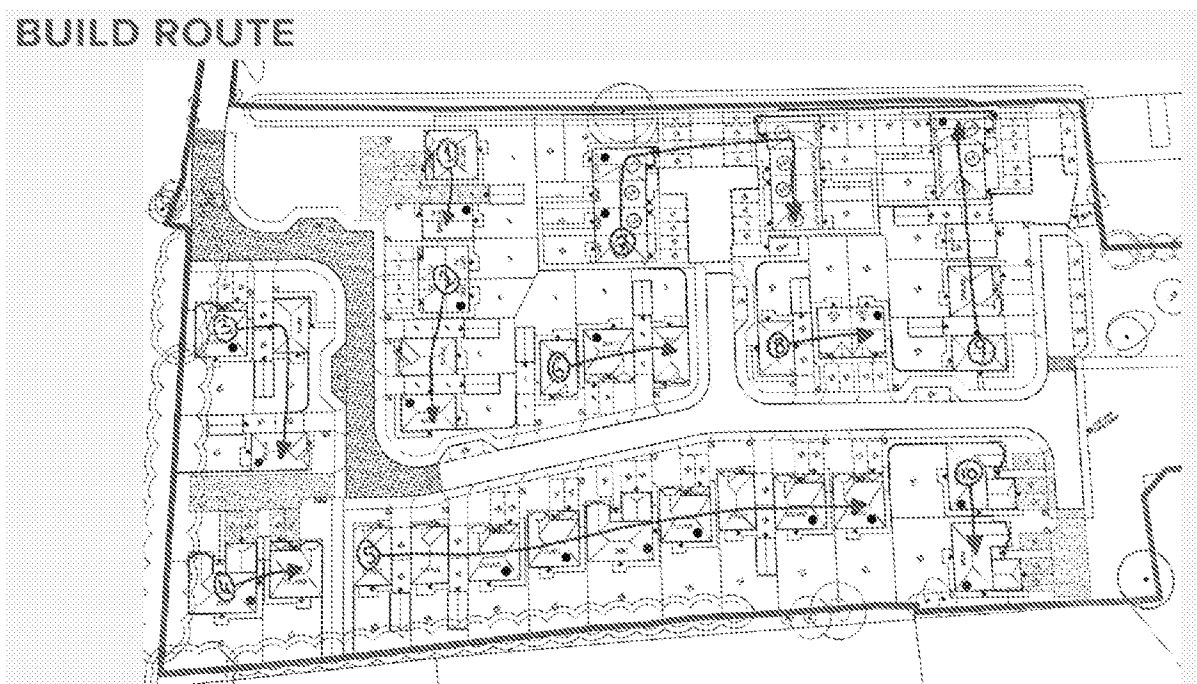
1.7 The implementation plan for the sites proposed drainage features has been set out in the table below. Catchments associated with these features are also shown on GTA drawing 11228/1101 in Appendix A.

1.8 Table 1.1: Drainage Feature Implementation Schedule

Drainage Feature	Area/Plots
Trench Soakaway 1	32 and 33
Trench Soakaway 2	7 and 8
Infiltration Zone 1- Road	Main Road – also draining plots part plot 6,7&8. Whole of plots 34-39,9,20,21,22&23
Infiltration Zone 2- Parking	Plots 10-14 & plots 15-19
Infiltration Zone 4- Parking	Plots 25-29
Infiltration Zone 5- Parking	Plot 24
Infiltration Zone 6 - Parking	Plots 40, 41, 42 & 43
Infiltration Zone 7 - Road	Part Plot 5&6
Infiltration Zone 8 - Parking	Plots 30&31
Infiltration Zone 9 - Road	Plots 3,4,44, 45 & garage plot 5
Infiltration Zone 10 - Parking	Plots 1&2
Infiltration Zone 11 - Road	Road only
Infiltration Zone 12 - Road	Road only
Infiltration Zone 13 - Road	Road only

1.9 The implementation plan for the sites proposed drainage features has been set out in the table below. Catchments associated with these features are also shown on GTA drawing 11228/1101 in Appendix A.

1.10 Regarding item i) of condition 12, the layout on the image on the next page shows how the development will be built out in stages.



- 1.11 The main road and parking areas will be constructed first along with the associated distribution tanks in the road stone sub-base. Each plot will therefore be able to drain into the road and it's associated drainage will therefore be operational immediately to full working capacity.

2 OWNERSHIP & MAINTENANCE RESPONSIBILITIES

- 2.1 Responsibility for the maintenance of the drainage system will be apportioned as follows.
- 2.2 The long term management and maintenance of the foul sewer as shown on drawing 11228/1141 will be secured in perpetuity for adoption by the water authority. The rest of the foul network will be maintained by the management company or private householders if within the conveyed property boundaries.
- 2.3 A management company, will be set up to maintain all of the private elements of foul and surface water drainage as shown on drawing 11228/1610.
- 2.4 There are elements of the drainage system such as shared foul drainage routes as shown on drawing 11228/1610 and areas of permeable paving in the shared car parks which may involve the management company encroaching into privately conveyed areas of the site. It will be made clear in the deeds to each property that the management company should be granted access to the drainage system if the system requiring maintenance falls within a demise.
- 2.5 Once the residential management company has been set up, the initial directors of that company will be the

appointed directors of Redrow. Once the development has been completed and all land transfers have taken place via land registry (done by Redrow legal team), Redrow will instruct HML Group (the appointed management company) to set up a meeting with residents to encourage them to put themselves forward as resident directors and once appointed HML will then resign Redrow directors which the residents will then take control going forward for the lifetime of the development.

- 2.6 With regards to major cost items, the maintenance budget presented at the initial stage is an estimated one in the initial period. This is an estimate which has been prepared based on the initial information provided and it is important to understand the inherent uncertainties associated in producing amenity charge for a newly managed development. Pricing the cost of services from plans is inherently difficult and relies on making a number of assumptions and relying on internal comparable costs and these might not be borne out in reality. Service charge cost can, therefore especially in the early stages go up or down from that stated in the initial cost estimate and the liability for the payment of any increase rest with owners under their TP1/lease. However, from the estimate budget all cost to run the development will be covered by the residents via their service charges.
- 2.7 All of the site surface water drainage will remain private. The drainage features to be cared for by the Estate Management Company include:
- Porous paving
 - Infiltration blankets
 - the associated manholes and piped systems.
 - Private foul pumping station
- 2.8 The following sections set out schedules detailing the maintenance requirements for each of the main drainage items used within the scheme. The Estate Management Company will undertake the inspections and maintenance activities in accordance with these schedules.
- 2.9 Additional reference should be made to currently established best practice and guidance documents such as The SuDS Manual (CIRIA C753, 2015) and other resources available at the susdrain website (www.susdrain.org).
- 2.10 This SuDS Management and Maintenance Plan (SMMP) should be considered a live document. The frequency of maintenance intervals may need to be increased or decreased based on the observed performance of the drainage systems over time. Changes should be agreed with the drainage authority and recorded and dated in the SMMP.

- 2.11 Appendix B contains the detailed drainage design drawing no.s 11228/1601 and 1602, along with drawing no. 11228/1141 which shows the proposed adoptable foul sewer and drg 11228/1610 showing the maintenance responsibilities for each section of drainage. Appendix B also contains the detailed drainage construction details in case any element of the drainage system needs replacing.
- 2.12 Important safety information is set out in the next section.

3 HEALTH AND SAFETY

- 3.1 All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:
- The Health and Safety at Work etc Act 1974
 - The Management of Health and Safety at Work Regulations 1999
 - The Workplace (Health, Safety and Welfare) Regulations 1992
- 3.2 The Estate Management Company is responsible for suitable risk assessment and management to ensure safe working conditions and practices. Measures to protect potential visitors also need to be considered.
- 3.3 Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.
- 3.4 Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and policies implemented based on risk assessment.
- 3.5 Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.
- 3.6 Entry of pipes, chambers, tanks and culverts should be avoided wherever possible. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.
- 3.7 For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

4 MAINTENANCE OF PIPE SYSTEMS & MANHOLES & INSPECTION CHAMBERS

- 4.1 Surface water falling on impermeable surfaces, such as roof and footways areas, drain at surface level and convey the water below ground to the drainage network. Manholes or inspection chambers are also provided on the drainage system at regular intervals, changes in sewer direction, gradient or pipe diameter. This type of drainage system can be accessed from the manholes/inspection chambers for routine inspection and maintenance.
- 4.2 Catchpits are provided upstream of the infiltration soakaways or permeable paving in order to trap silt/sediment before the surface water discharges into soakaways or permeable paving, thus prolonging the life of the structure. These can be accessed and maintained in a similar way to inspection chambers.
- 4.3 Pipe runs, manholes, inspection chambers, sumps/slit traps are to be maintained by a private management company in accordance with the following recommendations.

Table 4.1: Pipe Systems and Manholes / Inspection Chambers Maintenance Activities & Frequency

Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance		Gullies, manholes, inspection chambers, catchpits	Monthly (for the first three months) then annually.
	Remove debris from gratings, sumps & catchpits		Annually.
Infrequent Maintenance	Clear blockages/jetting	Piped system.	As required.

- 4.4 The above maintenance and inspection regime is recommended; however, reference should be made to the appropriate manufacturers guidance and recommendations and the more frequent maintenance and inspection regime implemented.

5 MAINTENANCE OF PERMEABLE PAVING



- 5.1 Permeable Block Paving allows water to pass through the gaps between the blocks into underlying sand and gravel layers allowing for the attenuation, conveyance and where possible infiltration, of surface water runoff.
- 5.2 Permeable paving will cleanse surface water run-off. The initial cleansing occurs within the sand bedding layer where hydrocarbons are collected. The layer of geotextile below the sand acts as a secondary filter before infiltration through to the sub-base further filters the discharge before infiltrating into the soil strata below.
- 5.3 Cellular diffuser units are used within areas of permeable paving to filter and disperse flows or to mitigate any 'wash-out' of the granular material for outflows.

Table 5.1: Permeable Paving Maintenance Activities & Frequency

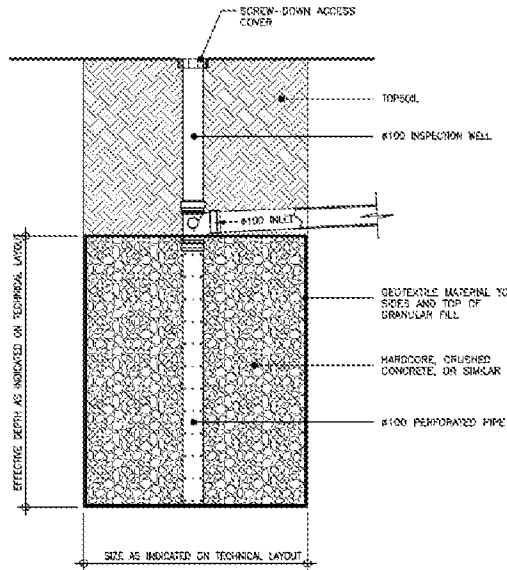
Maintenance Category	Maintenance Activity	Comments	Frequency
Routine Maintenance	Visual inspection of paving.	Ensure joints are kept fully filled.	Monthly (depending on local environment).
	Paving should be agitated (e.g. brushed, vacuumed, etc.).	To ensure no vegetation of any sort is allowed to grow and develop in the joints.	Six monthly or as required (Spring and Autumn seasons).
	Paving should be inspected after any heavy precipitations.	Ensure no displacement of any organic matter into the surface of the pavement.	As required.
Corrective Maintenance	Inspection of outfall should be undertaken.	Non-infiltration systems to have outfall checked for debris and blockages	Six monthly or as required.
	Removal of weeds.	To ensure weeds are killed effectively they should be actively growing so that the glyphosate will go down to the roots. Glyphosate based weed killers include Roundup and Tumbleweed	As required.
	Laying material may require cleaning and /or replacing.	Depending on the environment the permeable pavement has received and been exposed to.	25 to 30-year period.

Table 5.2: Permeable Paving Inspection & Frequency

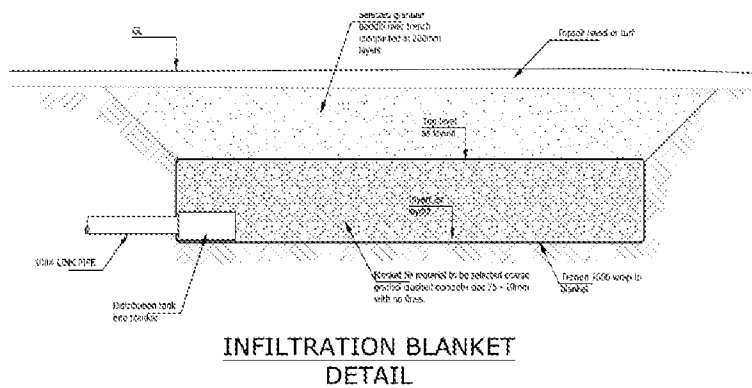
Inspection Activity	Comments	Frequency
Visual inspection of permeable surface for poor operation.	Includes visual inspection of blocks, water ponding, weeds and to make sure joints are kept full.	Monthly.
Visual inspection of outfall.	Includes visual inspection of control structures and outfall to check for damage and blockages.	Monthly.

- 5.4 It is recommended that the surfaces should be regularly inspected and cleaned accordingly. Based on the results of full-scale trials carried out by Aggregate Industries, the most effective method is to use a cleaner with suction only. Even if the surface has become completely clogged, trials have shown that this method of cleaning can rehabilitate the surface to an acceptable level.
- 5.5 The maintenance and inspection regime is recommended however reference should also be made to the appropriate manufacturers guidance and recommendations and the more frequent maintenance and inspection regime implemented.

6 MAINTENANCE OF TRENCH SOAKAWAYS/INFILTRATION BLANKETS



Detail of trench soakaway in rear gardens



**INFILTRATION BLANKET
DETAIL**

- 6.1 There are 2 trench soakaways on the site in the rear gardens of plots 7&8 and 32&33. These soakaways should not need maintenance as they are protected by upstream catchpits, but if the system upstream is not maintained then they could become clogged and may require localised excavation to remove silt. The maintenance regime for these is set out in table 3.2 on the following page.
- 6.2 There is an infiltration blanket to the east of the site which supplements the infiltration to the road zone 1 to enable this area to half drain in the required period. This blanket is linked to the road via cellular crates. This should required not maintenance as any silt would have been filtered out by the road stone in the permeable paving zone.

Table 6.1: Trench soakaway Inspection & Frequency

Inspection Activity	Comments	Frequency
Inspect for sediment and debris in pre-treatment components such as upstream catchpits and rodding access to trench soakaway	Includes visual inspection of blocks, water ponding, weeds and to make sure joints are kept full	Annually
Occasional maintenance	Remove sediment and debris from pre-treatment components.	As required based on inspections
Remedial Actions	Reconstruct soakaway/replace clean void fill if performance deteriorates or failure occurs	

7 FOUL DRAINAGE

The majority of the foul drainage on site is to be maintained by the management company or private householders. The private drainage around the plot within the householders demise is the responsibility of the householder. The private foul drainage outside of the conveyed boundaries is the responsibility of the management company. This includes a foul pumping station serving plots 1-5 and 41-45.

The foul sewers shown on GTA drawing 11228/1141 shows the section of foul sewer which is to be maintained by the adopting water authority to the east of the site.

The section below outlines the requirements of maintenance of the private foul drainage systems, including homeowners' & management companies' responsibilities.

Inspection frequency: annually.

Maintenance Requirements: Visual inspection of chambers & manholes is to be completed on a 5-yearly basis and any signs of blockage / waste build up should be jet washed or removed by a Licensed Effluent Disposal Contractor.

A CCTV Drainage Survey should be completed every 10 Years and any of blockage/waste build up should be jet washed or removed by a Licensed Effluent Disposal Contractor.

8 CONTAMINATION, OIL SPILLAGES OR DILUTION OF SPILLAGE

In the event of a spillage, it is the responsibility of the landowner to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of hydrocarbons should be using sand to soak up the leak and prevent any hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The Environment Agency Incident Hotline is **0800 80 70 60** (Freephone 24hrs).

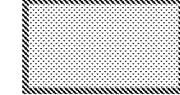
9 GLOSSARY

Attenuation	Storage of peak surface water runoff from roofs and hard paving
Baseflow	Sustained (or constant) flow required for wetlands.
Conveyance	Movement of runoff from one point to another.
Design level (or flood level)	Level of water storage within SUDS.
Forebay	Small basin designed to capture and retain sediment.
Geotextile	Synthetic permeable fabric commonly used in SUDS construction, e.g. filter trenches, helping to retain sediment.
Half Drain Time	Time taken for the attenuated volume (in SUDS) to reduce to half of the storage volume by infiltration or use of flow control.
Infiltration	Process by which water on the ground surface enters the soil.
Inspection chamber	Open chamber used to assess level of sediment in the structure and for clearing blockages/silt
Permeable Paving	Paving designed to allow infiltration of runoff between blocks; can be designed to attenuate or allow infiltration into the ground.
Run off	Surface runoff is water from rain, snow melt or other sources that flows over the land surface.
SUDS	Sustainable Urban Drainage Systems
Source Control	Control of runoff at or near its source, e.g. soakaway.
Treatment	Improving water quality by physical, chemical and/or biological means.
Treatment train	Series of SUDS component used to provide incremental water quality improvement and storage.
Void space	The storage volume between gravel particles (usually for filter/infiltration trenches).

Appendix A

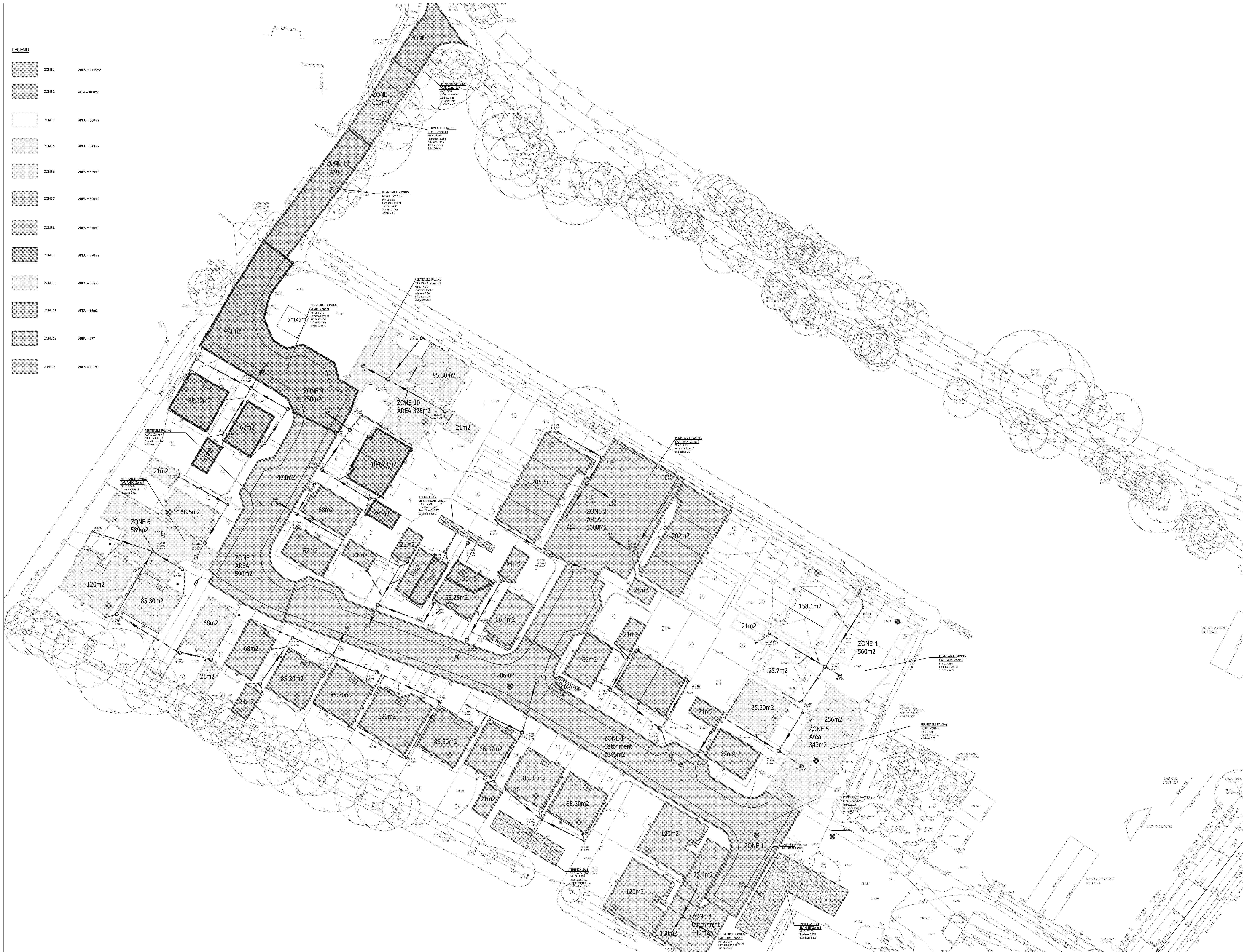
Surface Water Catchment & Drainage Implementation Plan

LEGEND

	ZONE 1	AREA = 2145m ²
	ZONE 2	AREA = 1680m ²
	ZONE 4	AREA = 560m ²
	ZONE 5	AREA = 343m ²
	ZONE 6	AREA = 589m ²
	ZONE 7	AREA = 590m ²
	ZONE 8	AREA = 440m ²
	ZONE 9	AREA = 770m ²
	ZONE 10	AREA = 325m ²
	ZONE 11	AREA = 94m ²
	ZONE 12	AREA = 177m ²
	ZONE 13	AREA = 101m ²

GENERAL NOTES:

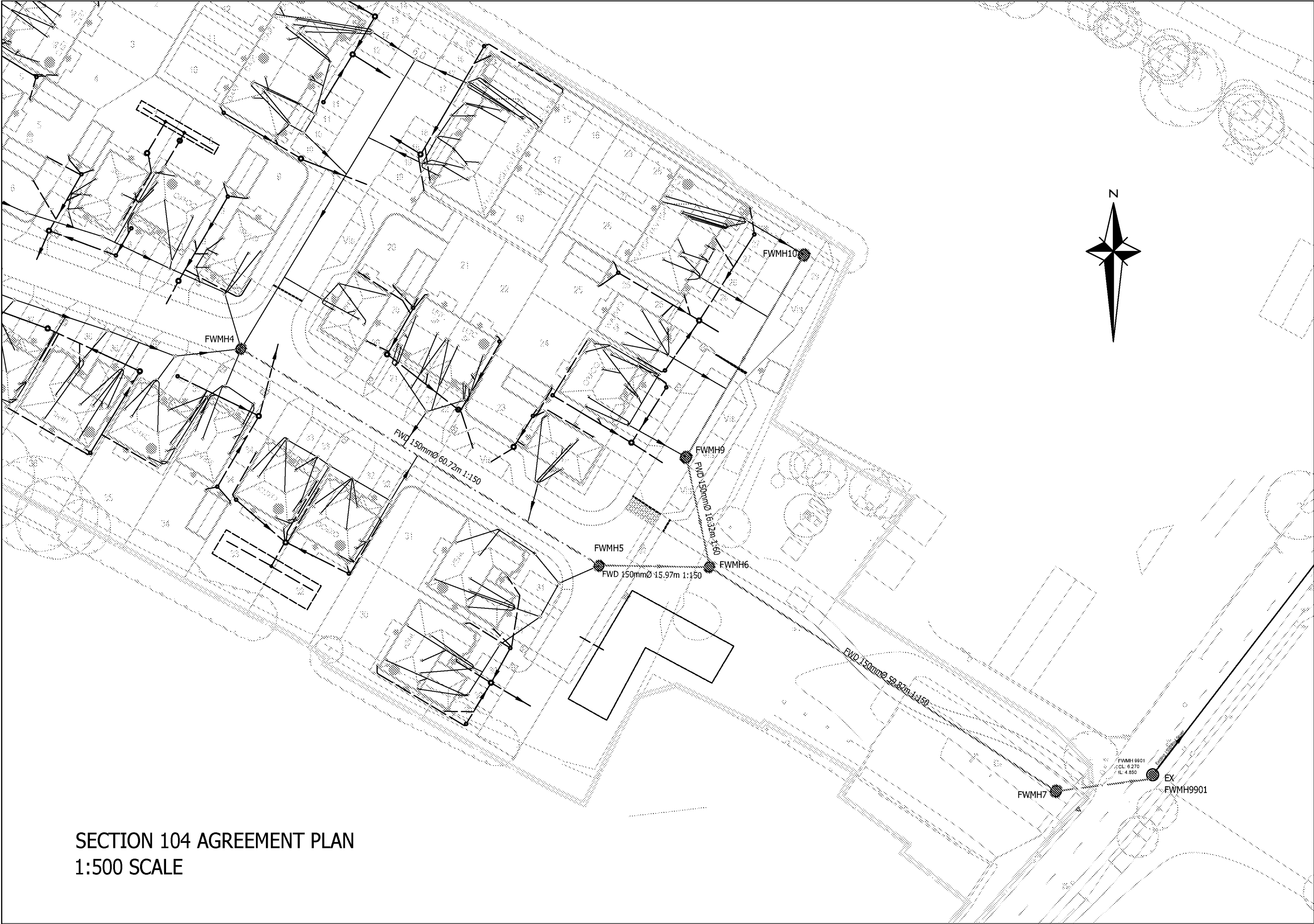
1. All dimensions to be checked on site. All details and dimensions relating to sub-contractors or suppliers work must be checked and agreed between the sub-contractor or supplier and the main contractor.
2. This drawing is to be read in conjunction with all relevant architects, services and engineers drawings and specifications.
3. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non-intrusive observations, aerial drawings or the file. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
4. Trench or filling drawings shall not be used for construction or the covering of materials.
5. Do not scale. All dimensions and levels to be site confirmed.
6. Copyright - This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.



P2	Revisions revised	16.12.21	AE	MR
P1	INITIAL ISSUE	12.11.21	AE	MR
Rev	Amendments	Date	Des	CHK
Status	PRELIMINARY			
Client	 REDROW			
Architect				
Project	LAND OFF NORTH END ROAD YAPTON			
Title	CATCHMENT AND IMPLEMENTATION PLAN			
Date	NOVEMBER 2021	Scale	As A0	1:250
Clients Ref		Project Ref.	11228	
 Civils & Transport Gloster House 65a Church Walk, Burgess Hill West Sussex, BN15 5AS Tel:01444 871444 Web: www.gta.co.uk				
Drawing Number	11228/1101			Rev: P2

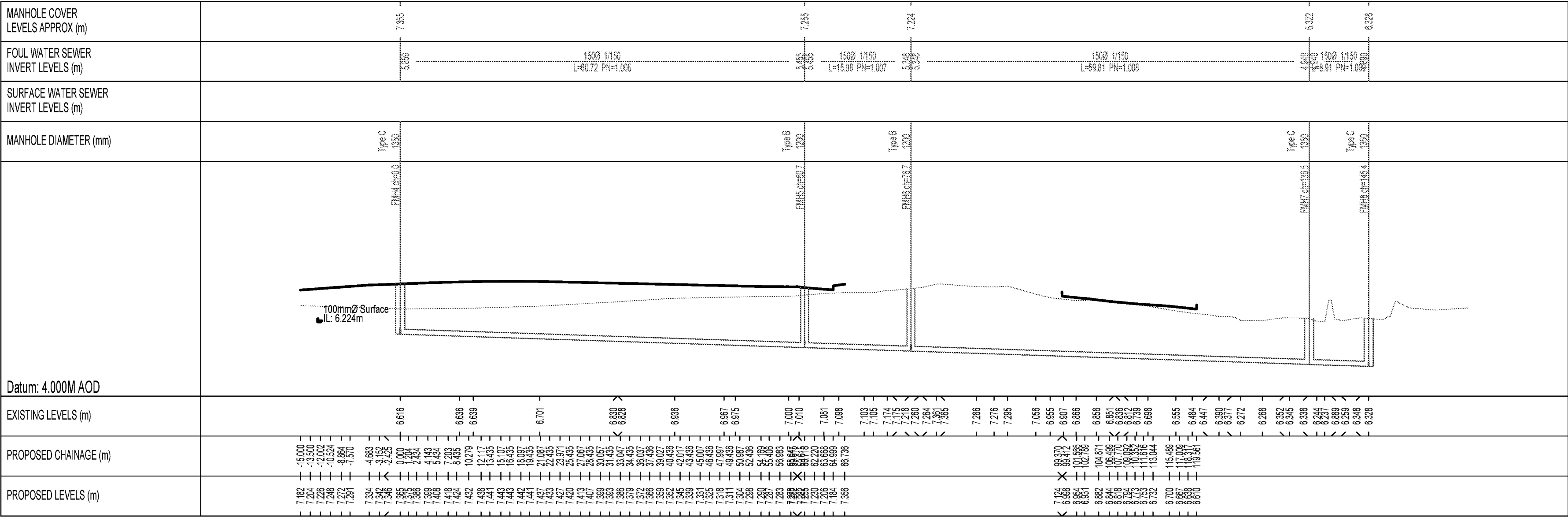
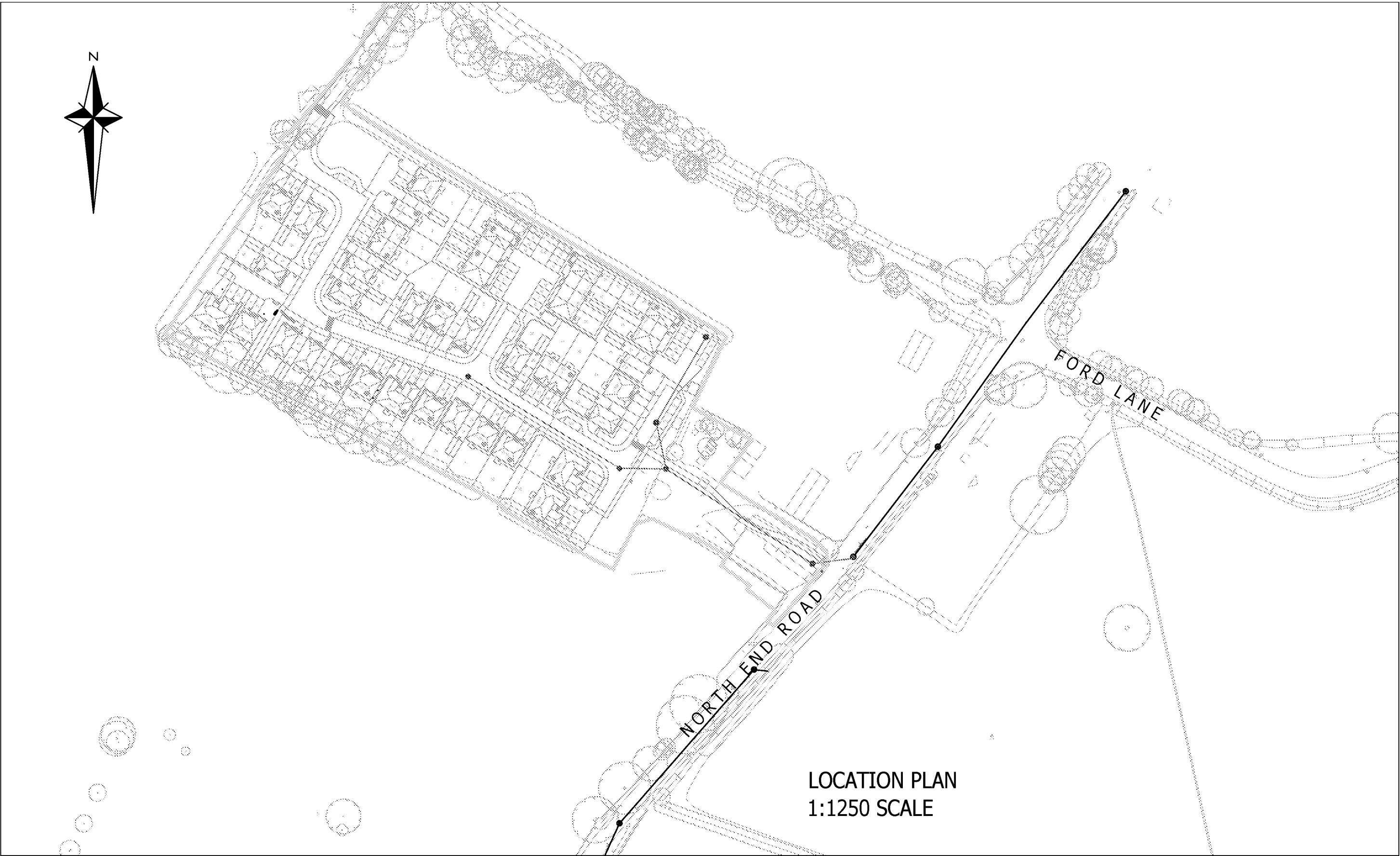
Appendix B

Drainage layouts, details and maintenance responsibilities



MANHOLE SCHEDULE						
MH No.	MANHOLE DIAMETER (mm)	MANHOLE TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	
FWMH4	1350	Type C	7.385	5.859	1.355	497822.371
FWMH5	1200	Type B	7.255	5.455	1.650	497874.343
FWMH6	1200	Type B	7.224	5.348	1.728	497890.317
FWMH7	1350	Type C	6.322	4.948	1.223	497940.542
FWMH9	1350	Type C	7.253	5.670	1.443	497888.919
FWMH10	1350	Type C	7.561	6.20	1.211	497904.001
						103983.347
						103951.954
						103951.687
						103919.205
						103967.654
						103966.978

MANHOLE COVERS TO BE 675mm x 675mm clear opening for Type B manholes, and 1220x650mm clear opening for Type C manholes. All covers to be D400 grade in accordance with Design Codes for adoption specification



IMPORTANT NOTE:

ALL WORKS TO ADOPTABLE SECTION 104 SURFACE WATER AND FOUL WATER SEWERS WILL BE AT RISK UNTIL SECTION 104 TECHNICAL APPROVAL

REFER TO DRAWING 11228/1501 FOR DRAINAGE DETAILS RELATIVE TO ALL ADOPTABLE DRAINAGE

ALL DRAINAGE PIPEWORK MATERIAL UP TO 300mm TO BE VITRIFIED CLAY, HIGH STRENGTH. ABOVE 300mm TO BE HIGH STRENGTH CONCRETE

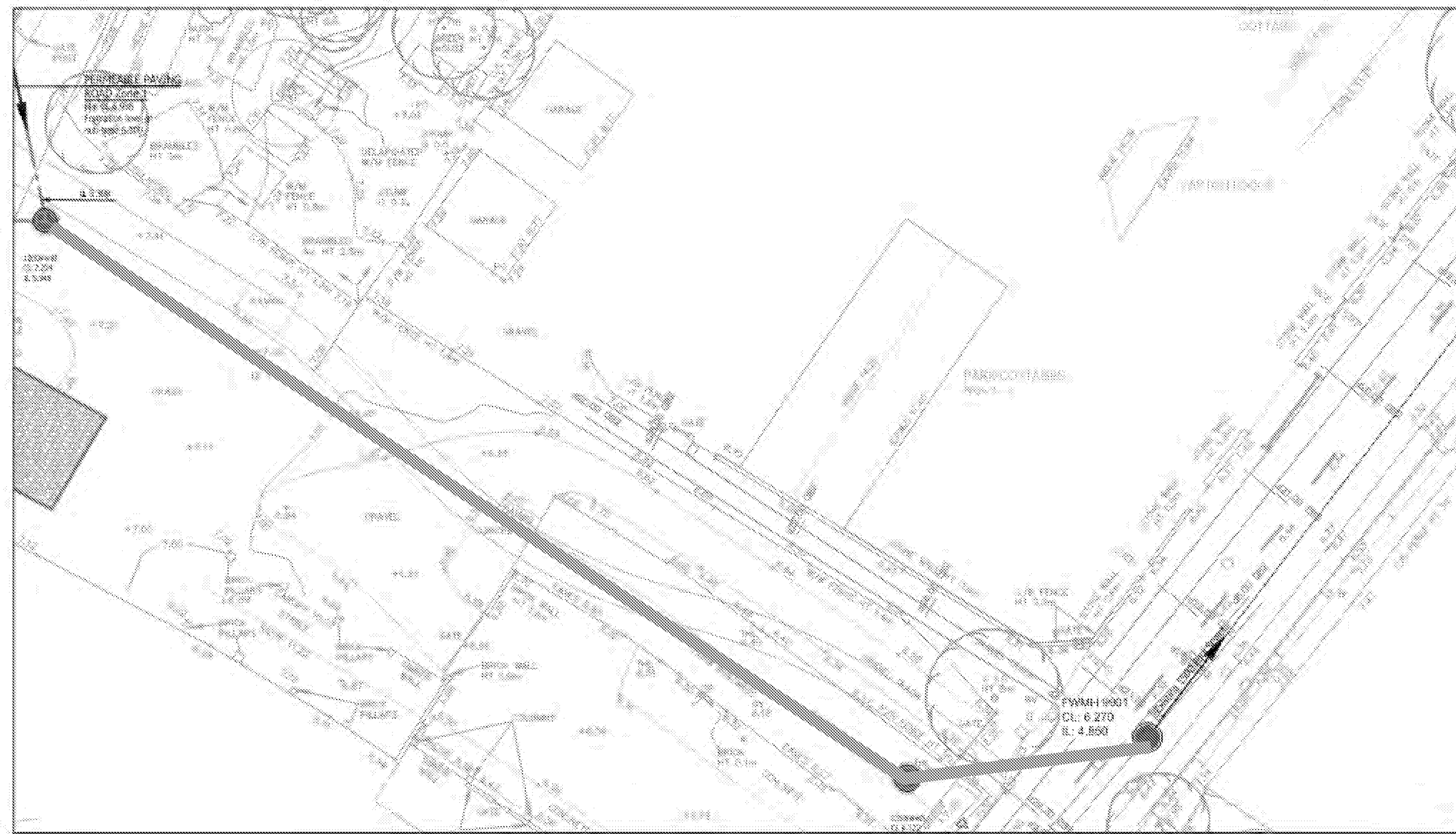
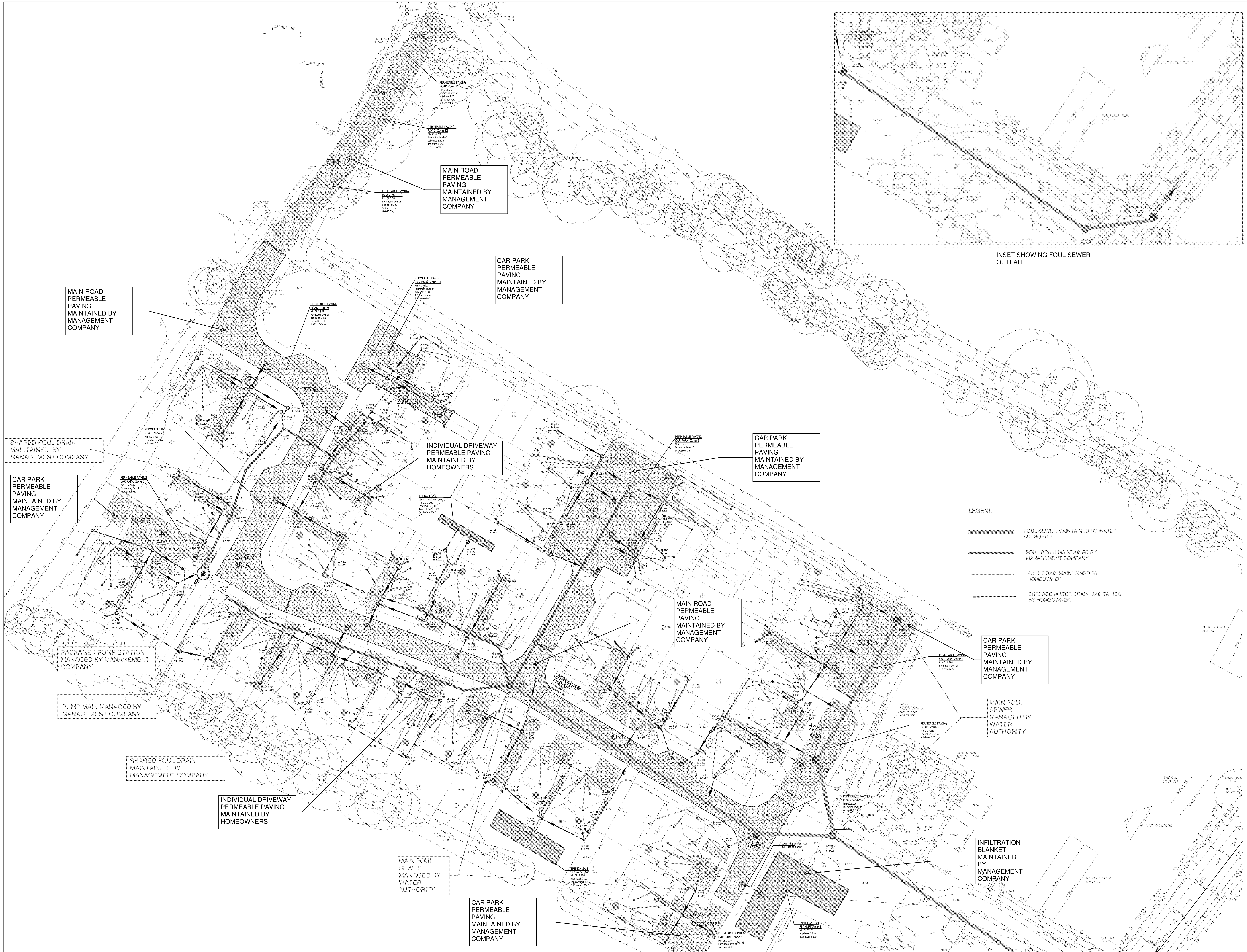
ALL WORK TO BE AS SSG DESIGN 7 CONSTRUCTION SECTION ANY SOUTHERN WATER AMENDMENTS TO THIS

FOR MANHOLE SCHEDULE, REFER TO DRAWING 2734-21-06-504

GENERAL NOTES

- The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
- Tender or billing drawings shall not be used for construction or the ordering of materials.
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P1	INITIAL ISSUE	17.12.21	AE	MR
Rev	Amendments	Date	On	Chk
Status	PRELIMINARY			
Client	REDROW			
Architect				
Project	LAND OFF NORTH END ROAD YAPTON			
Title	SECTION 104 AGREEMENT PLAN			
Date	SEPTEMBER 2021	Scale @ A1	NTS	
Clients Ref.		Project Ref.	11228	
 Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS Tel: 01444 871444 Web: www.gtacivils.co.uk				
Drawing Number	11228/1141			Rev. P1



- GENERAL NOTES:**
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 2. This drawing is to be read in conjunction with all relevant architects, services and engineers drawings and specifications.
 3. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non-intrusive observations, aerial drawings or the file. The contractor shall carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to the client prior to works commencing.
 4. Trench or filling drawings shall not be used for construction or the covering of materials.
 5. Do not scale. All dimensions and levels to be site confirmed.
 6. Copyright - This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

- LEGEND**
- FOUL SEWER MAINTAINED BY WATER AUTHORITY
 - FOUL DRAIN MAINTAINED BY MANAGEMENT COMPANY
 - FOUL DRAIN MAINTAINED BY HOMEOWNER
 - SURFACE WATER DRAIN MAINTAINED BY HOMEOWNER

PI	INITIAL ISSUE	07.01.22	HR	MR
Rev	Amendments	Date	Des	CHK
Status		PRELIMINARY		
Client	 REDROW			
Architect				
Project	LAND OFF NORTH END ROAD YAPTON			
Title	DRAINAGE MAINTENANCE RESPONSIBILITIES PLAN			
Date	JANUARY 2022	Scale	R/A0	1:250
Client's Ref.		Project Ref.	11228	
 Gloster House, 65a Church Walk, Burgess Hill, West Sussex, BN15 5AS Tel: 01444 871444 Web: www.gtacivils.co.uk				
Drawing Number	11228/1610			Rev: P1



GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non-intrusive observations, record drawings or the like. The contractor shall satisfy carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
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KEY

- Existing surface water drain
- Existing foul water drain
- Private surface water drain
- Private foul drain
- Adoptable foul sewer
- Adoptable surface water sewer
- Foul Plastic Inspection Chamber - D202.6
- Surface Water Plastic Inspection Chamber - D202.6
- 300mm diameter Surface Water Access Chamber - D202.18
- 300mm diameter Foul Water Access Chamber - D202.35
- Private Foul Manhole
- Private Surface Water Manhole
- Adoptable Foul Water Sewer Manhole
- Adoptable Highway Manhole
- Foul drain point D207.0
- SW Drain point for RWP D203.5
- Drainage channel
- 300mm wide x 450mm deep gravel filled french drain
- Grille in Permeable Paving
- Area of voided stone under permeable paving - refer to additional notes layout for details
- Distribution tank (inlet) from roof drainage in permeable paving sub-base. See detail on drg 2752
- Distribution tank (outlet) in permeable paving sub-base. See detail on drg 2752
- Proposed external levels

DESIGN NOTES

1. PERMEABLE PAVING DESIGN BASED ON AVERAGE INFILTRATION RATE OF 0.958 X 10-6 M/S FROM EASTWOOD & PARTNERS TEST RESULTS FOR SHALLOW TEST PITS SA1-5 DATED JANUARY 2020, EXCEPT ZONE 6 BASED ON ACTUAL NEARBY RESULT SA103 AT 6.7X10-6M/S
2. CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
3. EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.
4. SECTION 106 APPROVAL TO BE GAINED FROM SOUTHERN WATER FOR CONNECTION TO FOUL SEWER

SPECIFICATION NOTES

All drainage that be constructed and commissioned in accordance with BS EN 256 & BS EN 752, Building Regulations Doc. H and any particular requirements of the Building Control Officer.

Drainage pipelines shall be in PVC-u below ground as Manley or similar approved, or verified clay.

All sewer pipework to be VC only.

This drawing shall be read in conjunction with all other relevant drainage drawings, architectural drawings and structural drawings.

For manhole details, gully details, bedding etc, refer to gta detail sheets.

All foul water drain runs shall have a fall of 1:40 or steeper, unless noted otherwise.

All cement used for concrete drainage installations shall be sulphate resistant to class 3 or BS EN 12620, 30.5 (Grade 37.5).

The use of short radius or 90° bends for changes in direction is not permitted, only long or medium radius 45° bends shall be used. All junctions shall be 45°.

All drains shall have granular bed and surround as class 'S' bedding, unless noted otherwise.

All drainage works shall commence from the downstream end first unless agreed otherwise. Detail level to be checked by contractor prior to any works commencing and any discrepancy identified to engineer prior to laying and drainage.

ABBREVIATIONS

DETAIL NUMBER - SEE DRAINAGE DETAIL SHEET	
D207.0	FOUL DRAIN
SWD	SURFACE WATER DRAIN
PWD	ADAPTABLE FOUL WATER SEWER
SWS	ADAPTABLE SURFACE WATER SEWER
HM	MANHOLE
IC	INJECTION CHAMBER
SA	450mm DIA. FOUL INSPECTION CHAMBER - D202.6
SIC	450mm DIA. SURFACE WATER INSPECTION CHAMBER - D202.6
FAC	300mm DIA. FOUL ACCESS CHAMBER - D202.18
SWC	300mm DIA. SURFACE WATER ACCESS CHAMBER - D202.18
CT	CUT TROUGH
VC	VITRIFIED CLAY
CWC	CONCRETE
PVC-U	POLY(VINYL CHLORIDE) - UNPLASTICISED
G	SMALL GULLY - D202.0
YG	YARD GULLY - D202.2
RG	ROAD GULLY - D202.1
CPG	CAR PARK GULLY - D202.2
BCP	BELOW GROUND CHAIN POINT
SP	SOIL VENT PIPE DROP
STP	STUB STACK OR DIRECT DRAIN CONNECTION
EP	EXTERNAL RECORDING POINT - D212.1
DT	SURFACE WATER DISTRIBUTION TANK
FFL	FINISHED FLOOR LEVEL
SL	STRUCTURAL SLAB LEVEL
GL	GROUND LEVEL
CL	COVER LEVEL
IPWL	INVERT LEVEL
SL	SLAB LEVEL
BL	BASE LEVEL
HL	HIGH LEVEL
BD	BLOCK/DOOR
CR	CONCRETE BED & SURROUND
CLASS 5	GRANULAR BED & SURROUND
CLASS 8	GRANULAR BED

P3	Permeable paving references amended	16.12.21	MR	MR
P2	Update to STA Title Block Sewer size amended	15.12.21	GS	MR
P1	INITIAL ISSUE	29.01.21	AE	MR
Rev	Amendments	Date	Draw	GFA
Status	PRELIMINARY			
Client	 REDROW			
Architect	RHP			
Project	LAND OFF NORTH END ROAD YAPTON			
Title	SITE DRAINAGE LAYOUT SHEET 1 OF 2			
Date	SEPTEMBER 2021	Scale @ A0	1:200	
Client Ref:	Project Ref:		11228	
 Glochester House, 50a Church Walk, Burgess Hill, West Sussex, BN15 5AG Tel 01444 871444 Web: www.gtacivils.co.uk				
Drawing Number	11228/1601			Rev: P3

GENERAL NOTES:

1. All dimensions to be checked on site. All details and dimensions relating to sub-contractors or suppliers work must be checked and agreed between the sub-contractor or supplier and the main contractor.
2. This drawing is to be read in conjunction with all relevant architects, services and engineers drawings and specifications.
3. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gsp prior to works commencing.
4. Tender or billing drawings shall not be used for construction or the ordering of materials.
5. Do not scale. All dimensions and levels to be site confirmed.
6. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.

SPECIFICATION NOTES

All drainage shall be constructed and commissioned in accordance with BS EN 295 & BS EN752, Building Regulations Doc. H and any particular requirements of the Building Control Officer.

Drainage pipelines shall be in PVC-u below ground as Marley or similar approved, or vitrified clay.

All sewer pipelines to be VC only.

This drawing shall be read in conjunction with all other relevant drainage drawings, architectural drawings and structural drawings.

For manhole details, gully details, bedding etc, refer to gta detail sheets.

All foul water drain runs shall have a fall of 1:40 or steeper, unless noted otherwise.

All cement used for concrete drainage installations shall be sulphate resistant to class 3 of BRE Digest 363. (Grade ST5)

The use of short radius or 90° bends for changes in direction is not permitted, only long or medium radius 45° bends shall be used. All junctions shall be 45°.

All drains shall have granular bed and surround as class 'S' bedding, unless noted otherwise.

All drainage works shall commence from the downstream end first unless agreed otherwise. Outfall level to be checked by contractor prior to any works commencing and any discrepancy identified to engineer prior to laying and drainage.

ABBREVIATIONS

DETAIL NUMBER - SEE DRAINAGE DETAIL SHEET

D307.0 FOUL DRAIN

FD SURFACE WATER DRAIN

SWD ADOPTABLE FOUL WATER SEWER

SWS ADOPTABLE SURFACE WATER SEWER

MH MANHOLE

IC INSPECTION CHAMBER

SA SOAKAWAY

FIC 450mm DIA. FOUL INSPECTION CHAMBER - D202.6

SIC 450mm DIA. SURFACE WATER INSPECTION CHAMBER - D202.6

FAC 300mm DIA. FOUL ACCESS CHAMBER - D202.18

SAC 300mm DIA. SURFACE WATER ACCESS CHAMBER - D202.18

CI CAST IRON

VC VITRIFIED CLAY

CONC CONCRETE

PVC-U POLYVINYL CHLORIDE - UNPLASTICISED

G SMALL GULLY - D209.0

YG YARD GULLY - D209.2

RG ROAD GULLY - D208.1

CPG CAR PARK GULLY - D208.2

DP BELOW GROUND DRAIN POINT

SVP SOIL VENT PIPE DROP

SS STUB STACK OR DIRECT DRAIN CONNECTION

RP EXTERNAL RODDING POINT - D213.1

DT SURFACE WATER DISTRIBUTION TANK

FFL FINISHED FLOOR LEVEL

SSL STRUCTURAL SLAB LEVEL

GL GROUND LEVEL

CL COVER LEVEL

IL INVERT LEVEL

SL SUMP LEVEL

BL BASE LEVEL

HL HIGH LEVEL

BD BACKDROP

CBS CONCRETE BED & SURROUND

CLASS S GRANULAR BED & SURROUND

CLASS B GRANULAR BED

KEY

Existing surface water drain

Existing foul water drain

Private surface water drain

Private foul drain

Adoptable foul sewer

Adoptable surface water sewer

FIC
● Foul Plastic Inspection Chamber - D202.6

SIC
● Surface Water Plastic Inspection Chamber - D202.6

SAC
● 300mm diameter Surface Water Access Chamber - D202.18

FAC
● 300mm diameter Foul Water Access Chamber - D202.18

FWMH
● Private Foul Manhole

SWMH
● Private Surface Water Manhole

FWSMH
● Adoptable Foul water Sewer Manhole

HWMH
● Adoptable Highway Manhole

SVP
+ Foul drain point D307.0

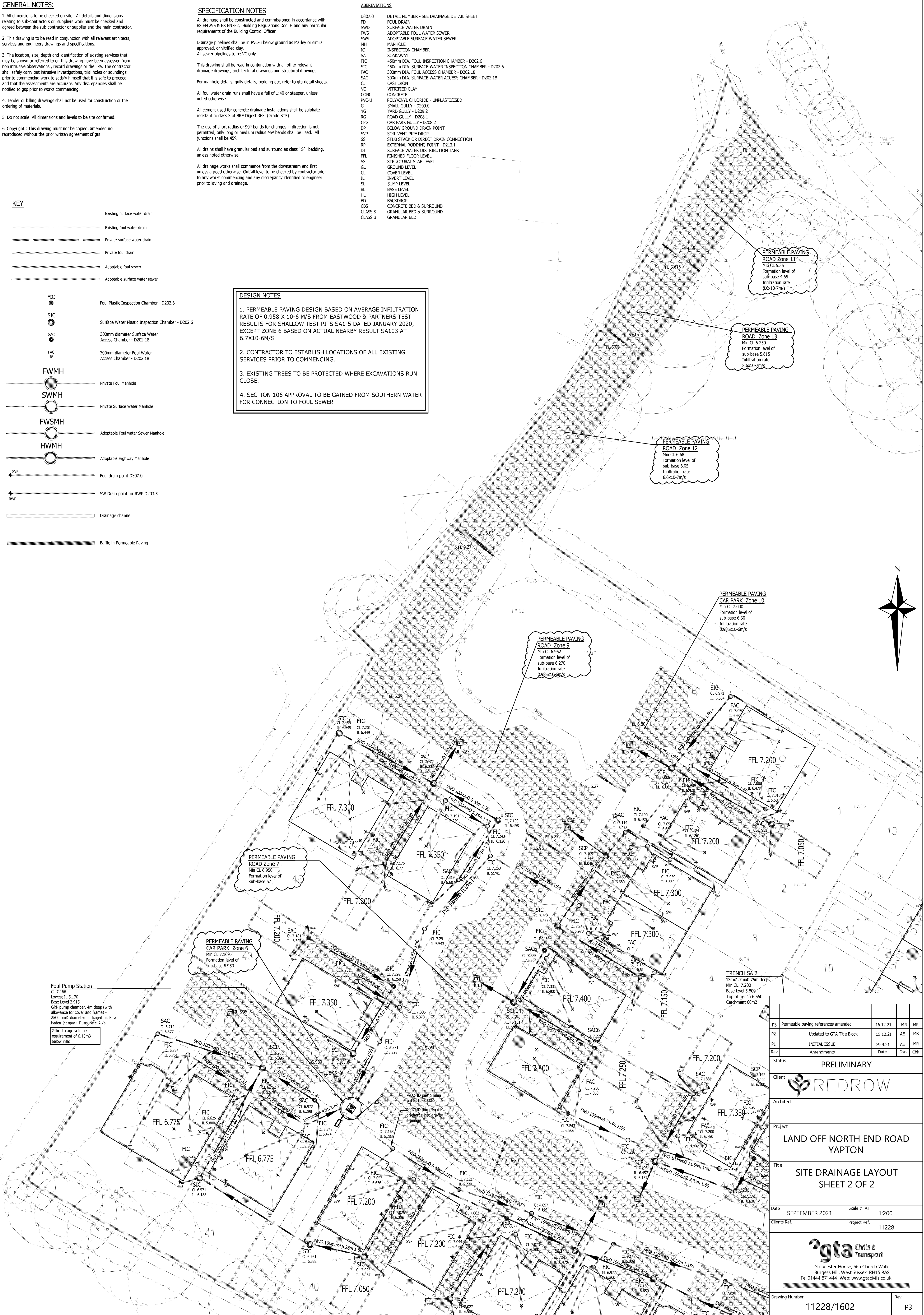
RWP
+ SW Drain point for RWP D203.5

Drainage channel

Baffle in Permeable Paving

DESIGN NOTES

1. PERMEABLE PAVING DESIGN BASED ON AVERAGE INFILTRATION RATE OF 0.958 X 10⁻⁶ M/S FROM EASTWOOD & PARTNERS TEST RESULTS FOR SHALLOW TEST PITS SA1-5 DATED JANUARY 2020, EXCEPT ZONE 6 BASED ON ACTUAL NEARBY RESULT SA103 AT 6.7X10⁻⁶M/S
2. CONTRACTOR TO ESTABLISH LOCATIONS OF ALL EXISTING SERVICES PRIOR TO COMMENCING.
3. EXISTING TREES TO BE PROTECTED WHERE EXCAVATIONS RUN CLOSE.
4. SECTION 106 APPROVAL TO BE GAINED FROM SOUTHERN WATER FOR CONNECTION TO FOUL SEWER



P3	Permeable paving references amended	16.12.21	MR	MR
P2	Updated to GTA Title Block	15.12.21	AE	MR
P1	INITIAL ISSUE	29.9.21	AE	MR
Rev	Amendments	Date	Disn	CHK
Status				
PRELIMINARY				
Client				
Architect				
Project				
LAND OFF NORTH END ROAD YAPTON				
Title				
SITE DRAINAGE LAYOUT SHEET 2 OF 2				
Date	SEPTEMBER 2021	Scale	At 1:200	
Clients Ref.		Project Ref.	11228	
gta Civils & Transport				
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Drawing Number				Rev.
11228/1602				P3

FIGURE B.9
TYPICAL MANHOLE DETAIL - TYPE B
Depth from cover level to soffit of pipe 1.5m to 3.0 m

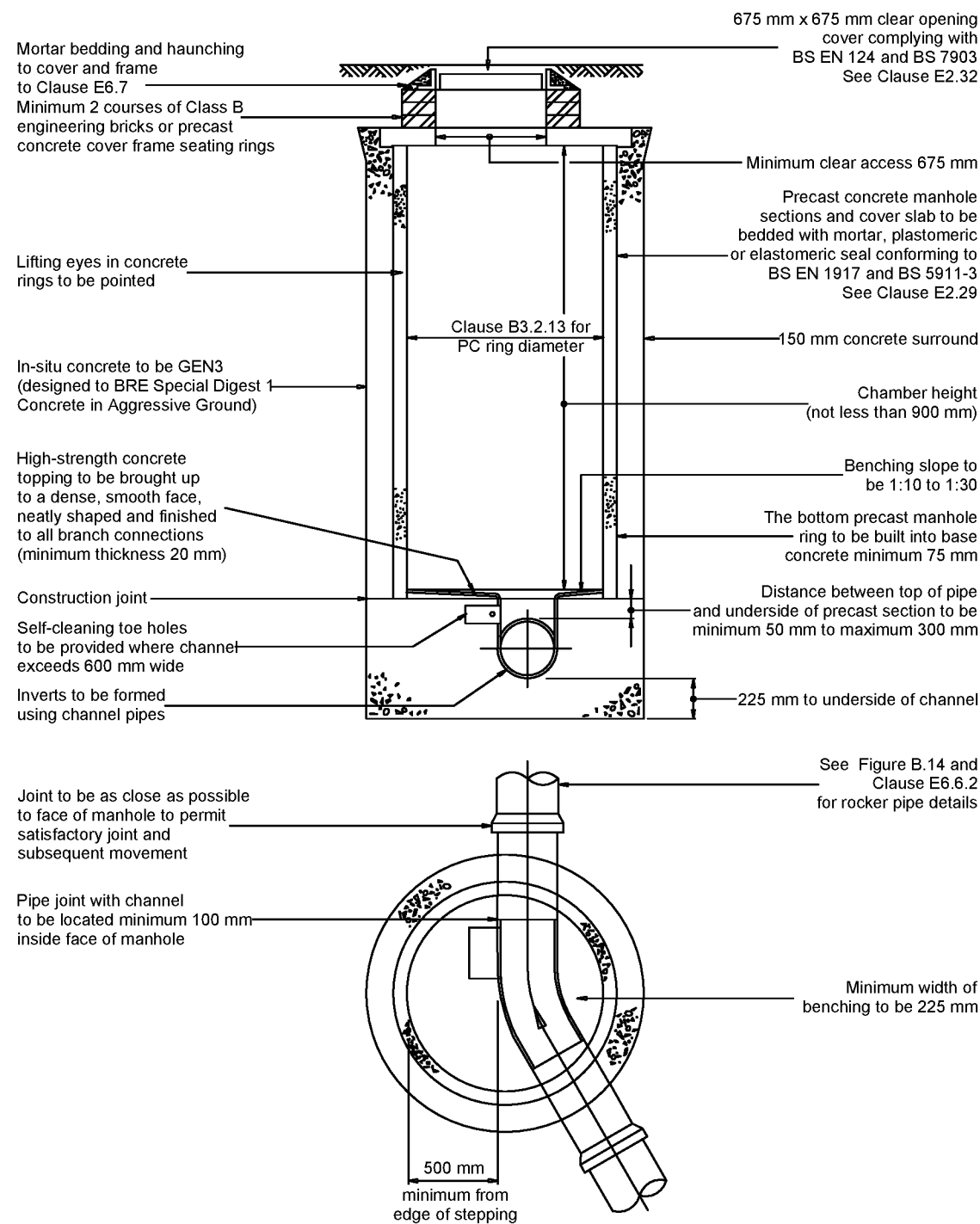


FIG B10 TO SSG APPENDIX C
MANHOLE TYPE B
DEPTH FROM COVER LEVEL
TO SOFFIT 1.5M TO 3M
(NTS)

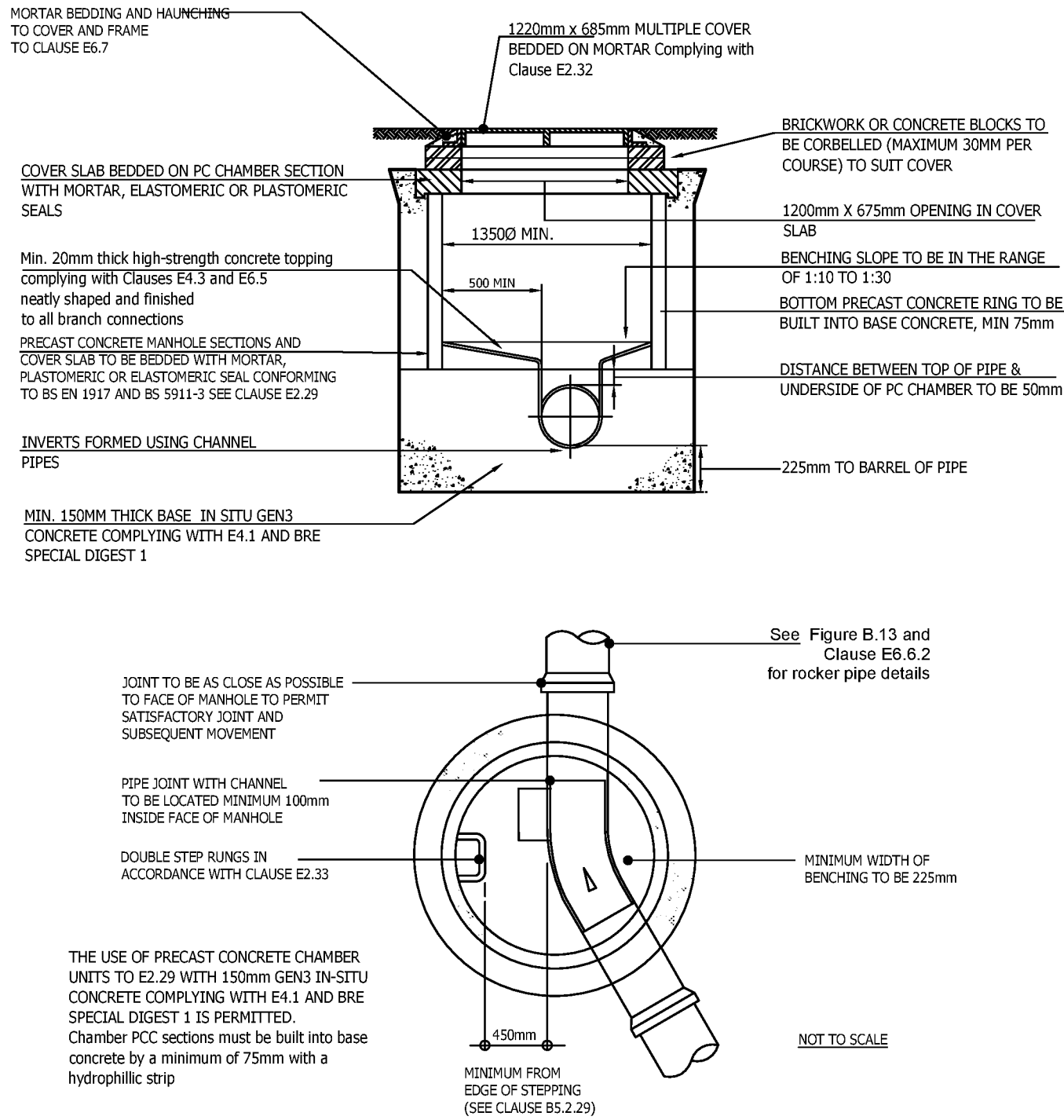
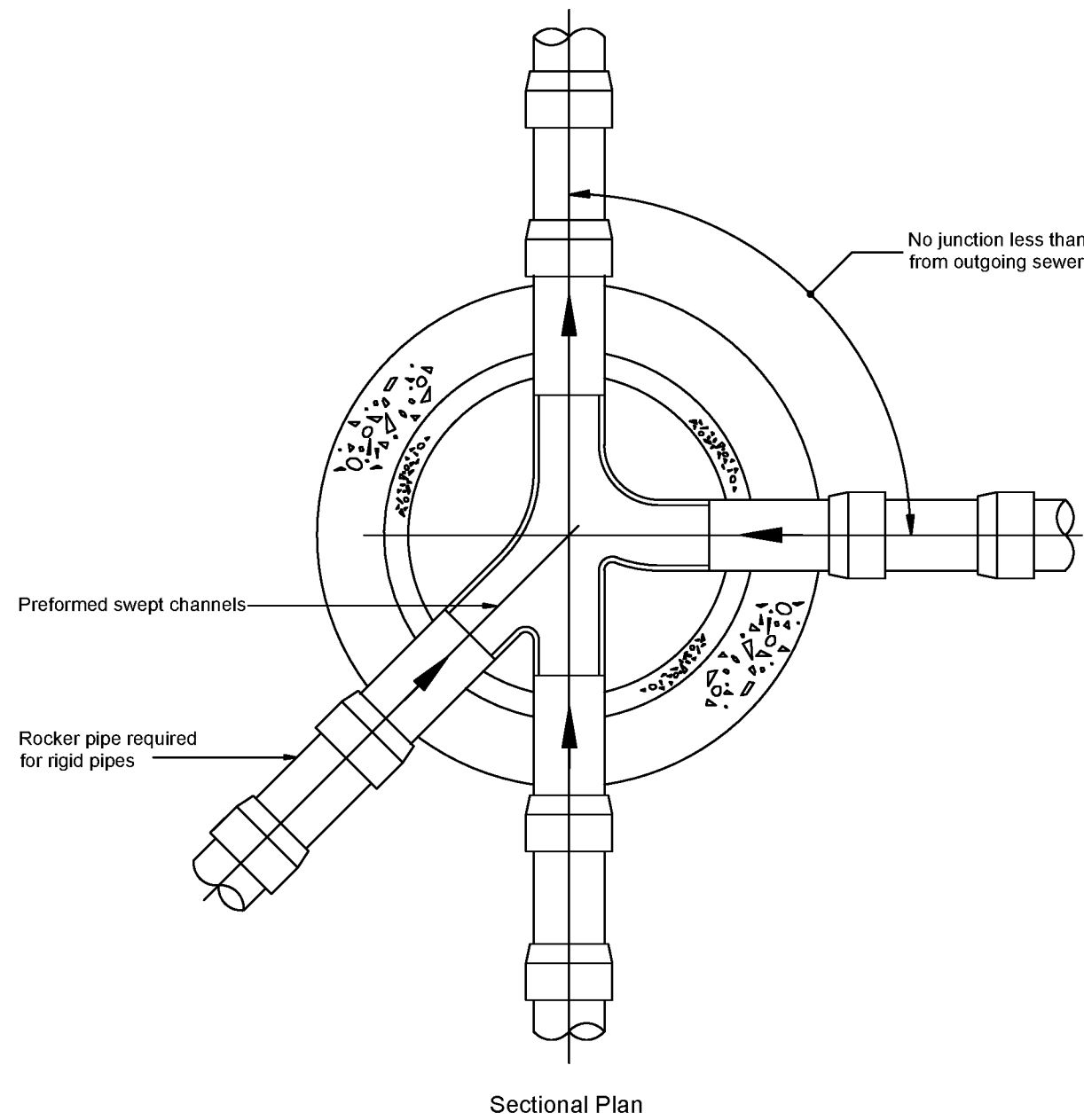


FIG B10 TO SSG APPENDIX C
MANHOLE TYPE C
DEPTH FROM COVER LEVEL
TO SOFFIT LESS THAN 1.5M
(NTS)



Nominal diameter (mm)	Maximum effective length (m)
150 - 600	0.6
601 - 750	1.00
over 750	1.25

All pipes entering the bottom of the manhole to have soffits level.

FIG B13 SSG Appendix C
TYPICAL ARRANGEMENT OF PIPE JUNCTIONS WITHIN
MANHOLES (NTS)

Note: Steeper gradients are preferred to the use of backdrops.
Type of backdrop to be used to be agreed with Undertaker.

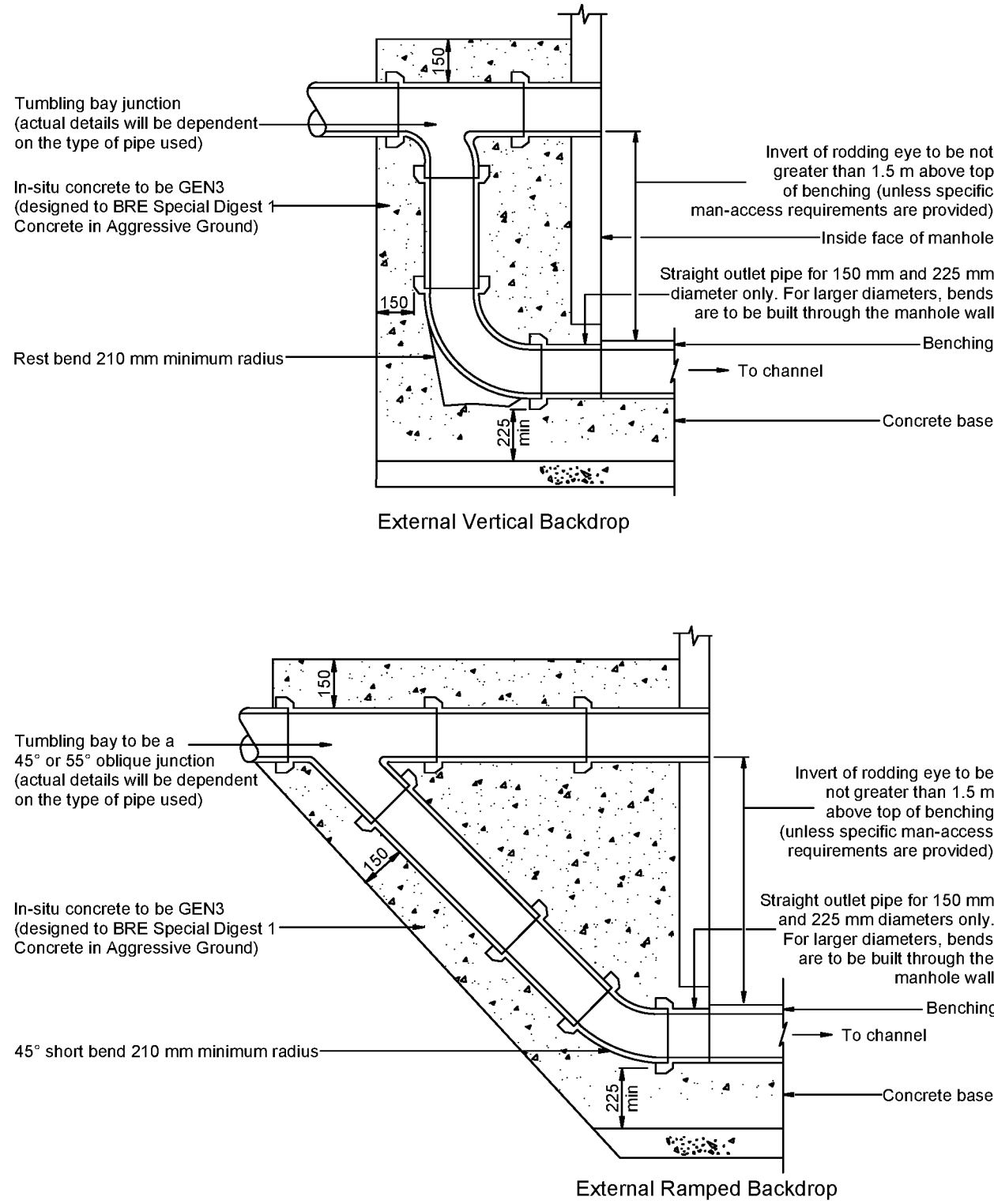
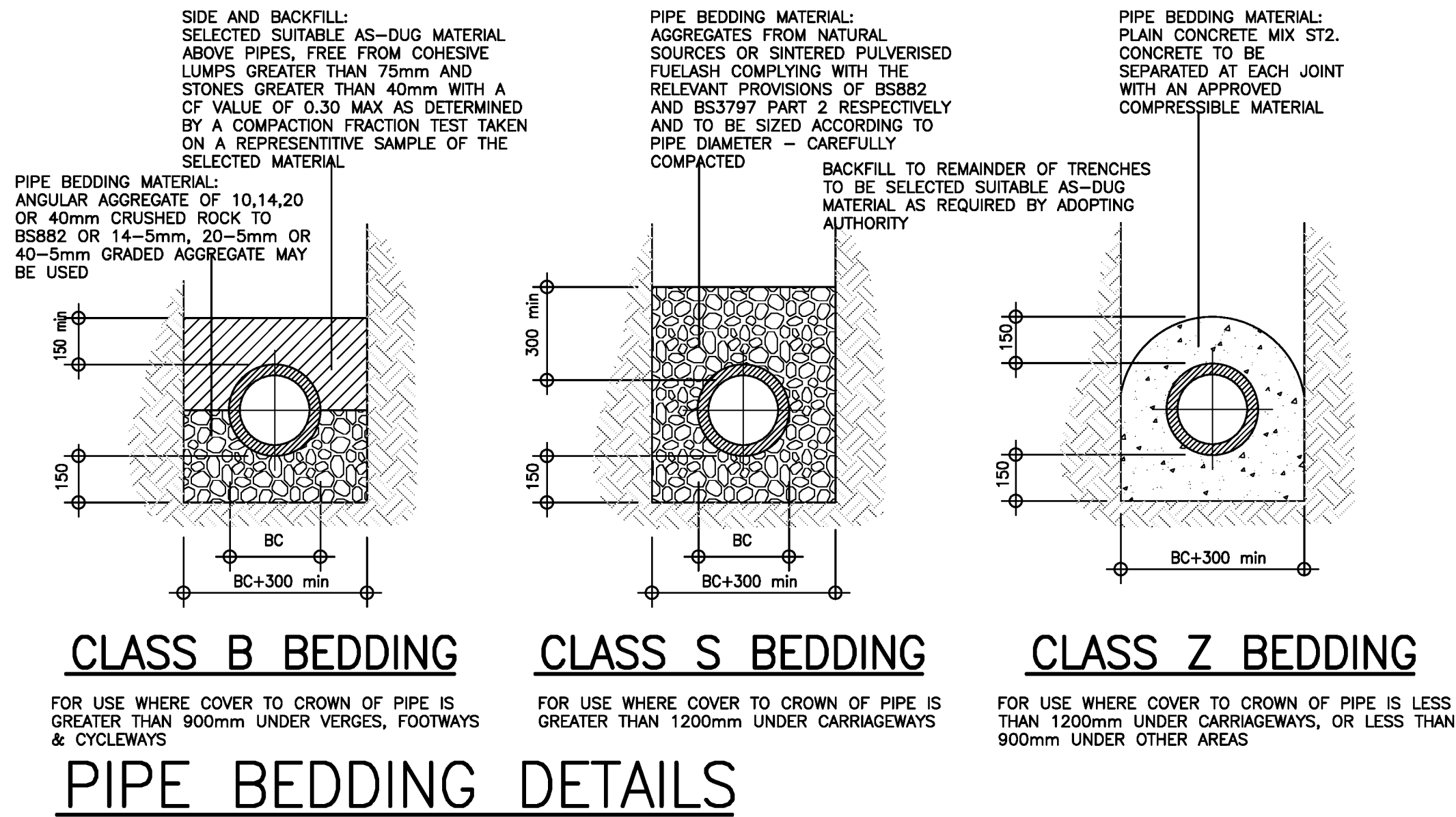


FIG B 16 SSG Appendix C
TYPICAL RAMPED BACKDROP DETAIL (NTS)

GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations , record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
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4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements
5. Copyright : This drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client proceeding prior to these approvals is considered wholly at the Clients risk. gta hold no responsibility for resulting abortive works or costs.



P3	Title Block revised	15.12.21	MR	MR
P2	Updated to GTA Title Block	15.12.21	MR	MR
P1	INITIAL ISSUE	29.09.21	MR	SL
Rev	Amendments	Date	Dn	Chk

Status PRELIMINARY

Client



Architect

Project NORTH END ROAD
YAPTON

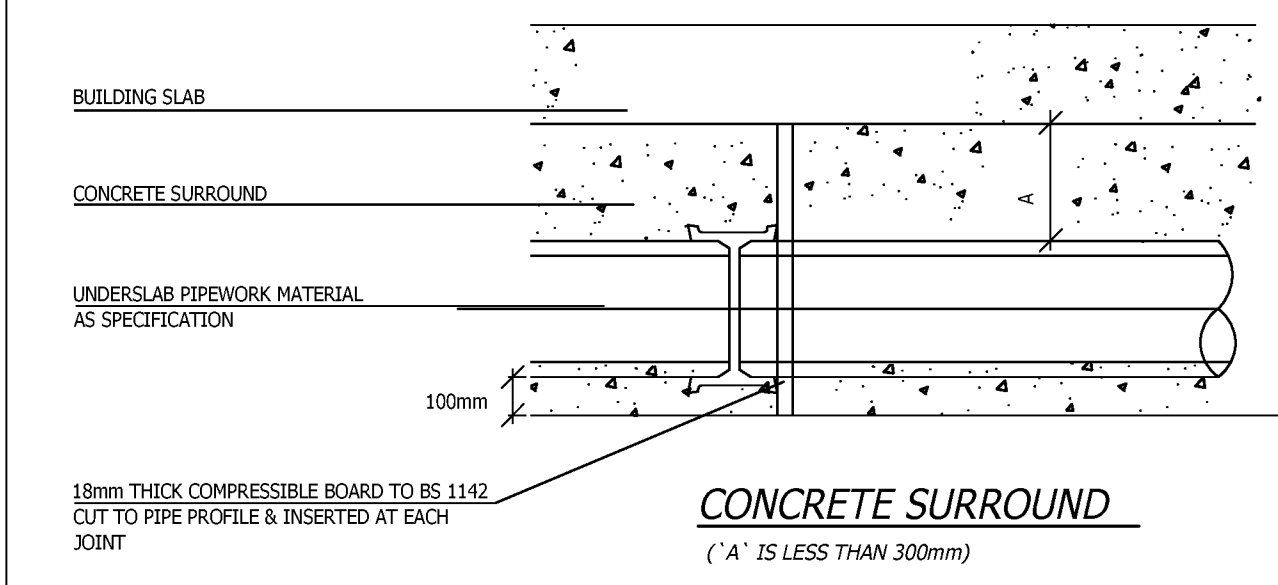
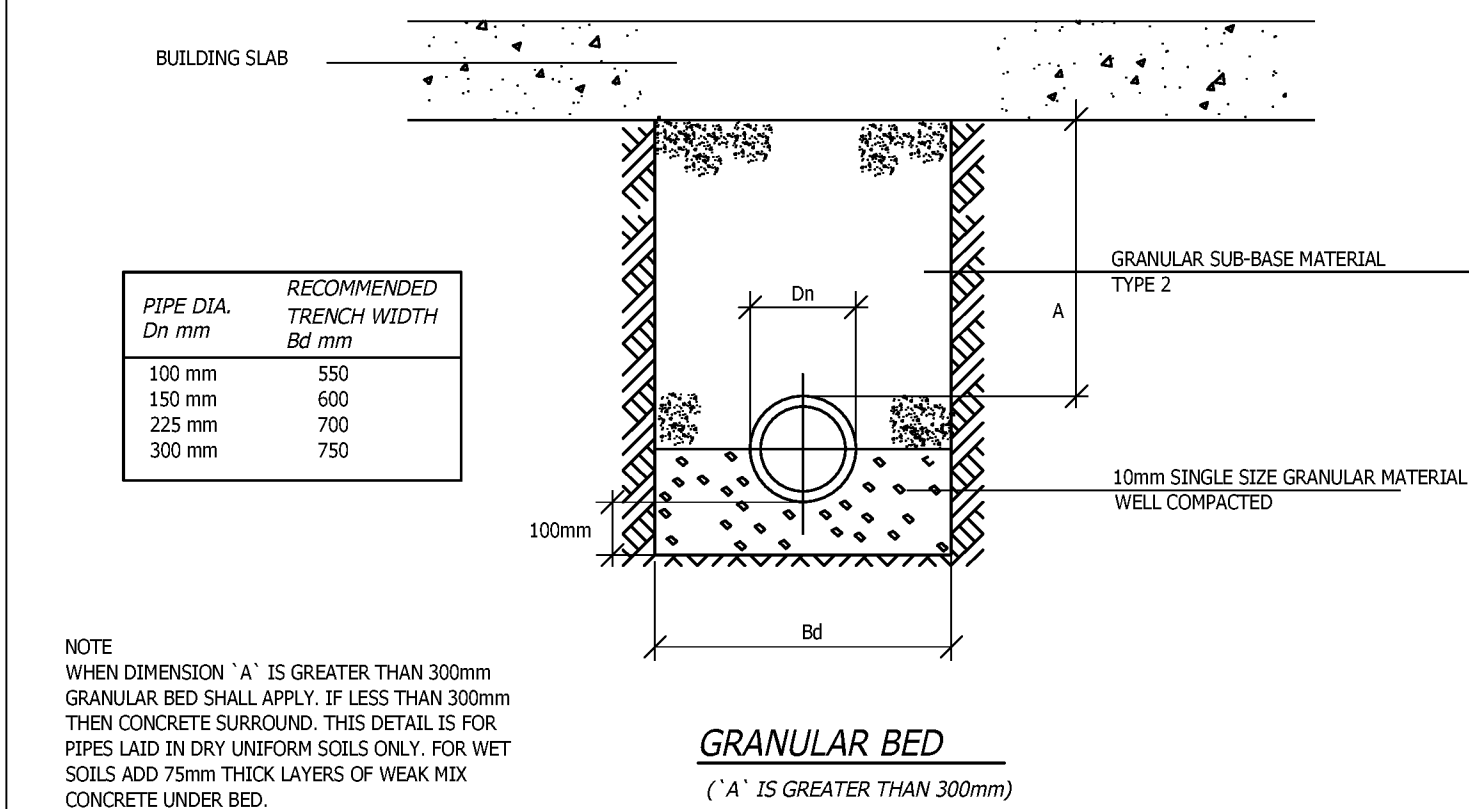
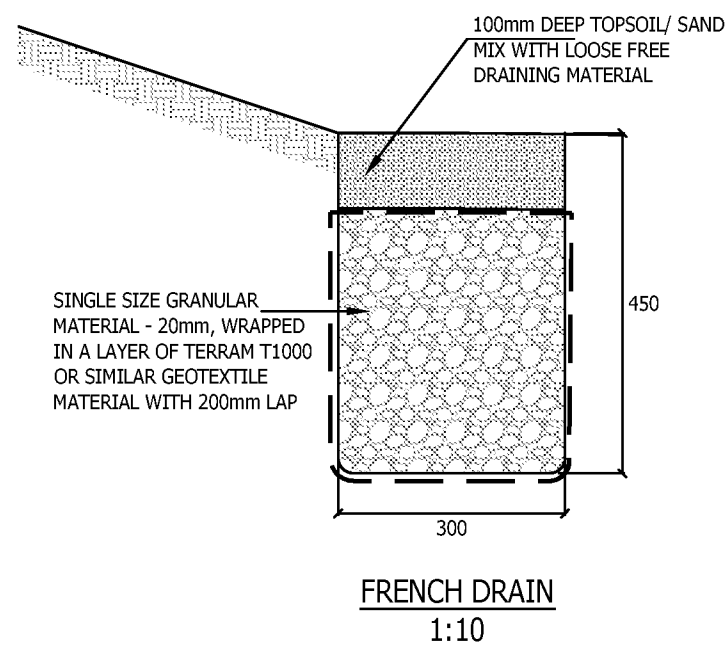
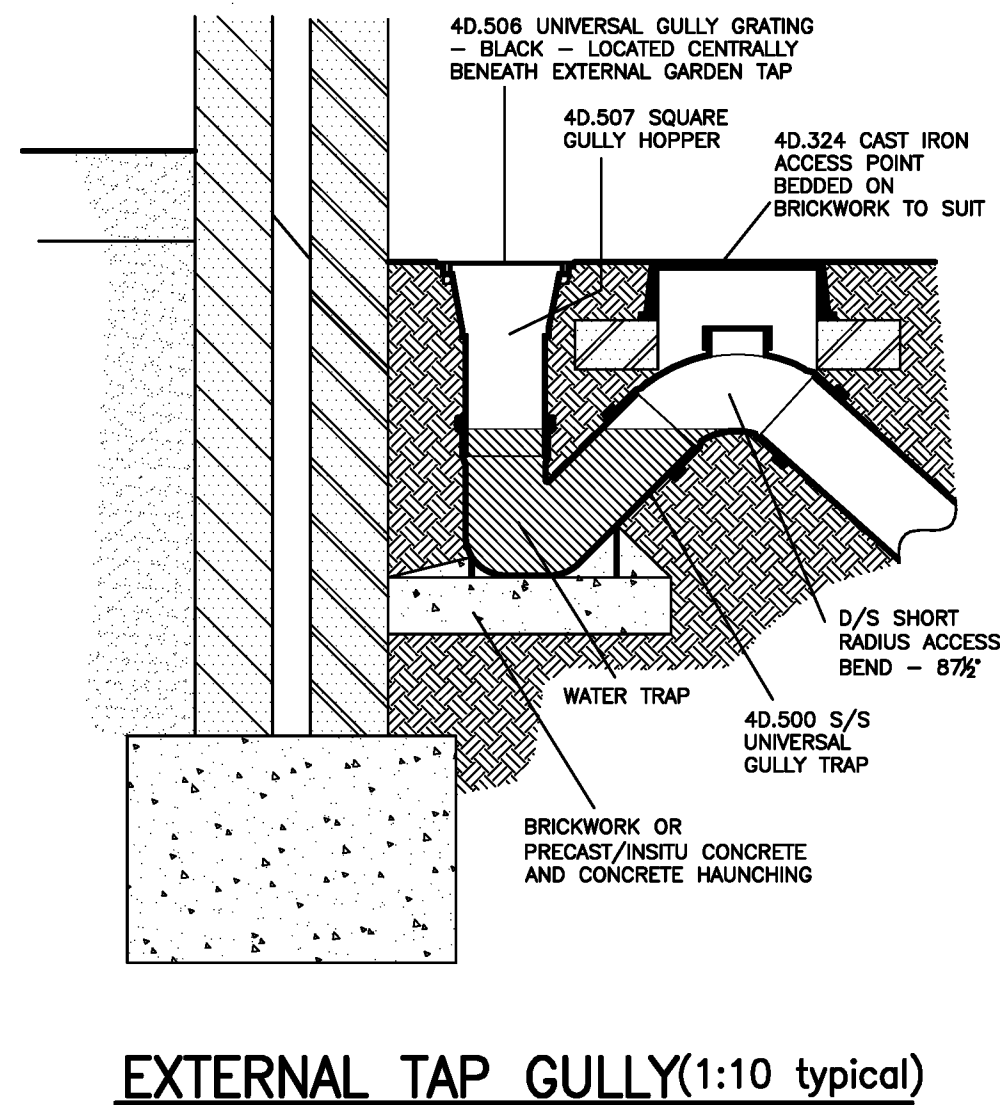
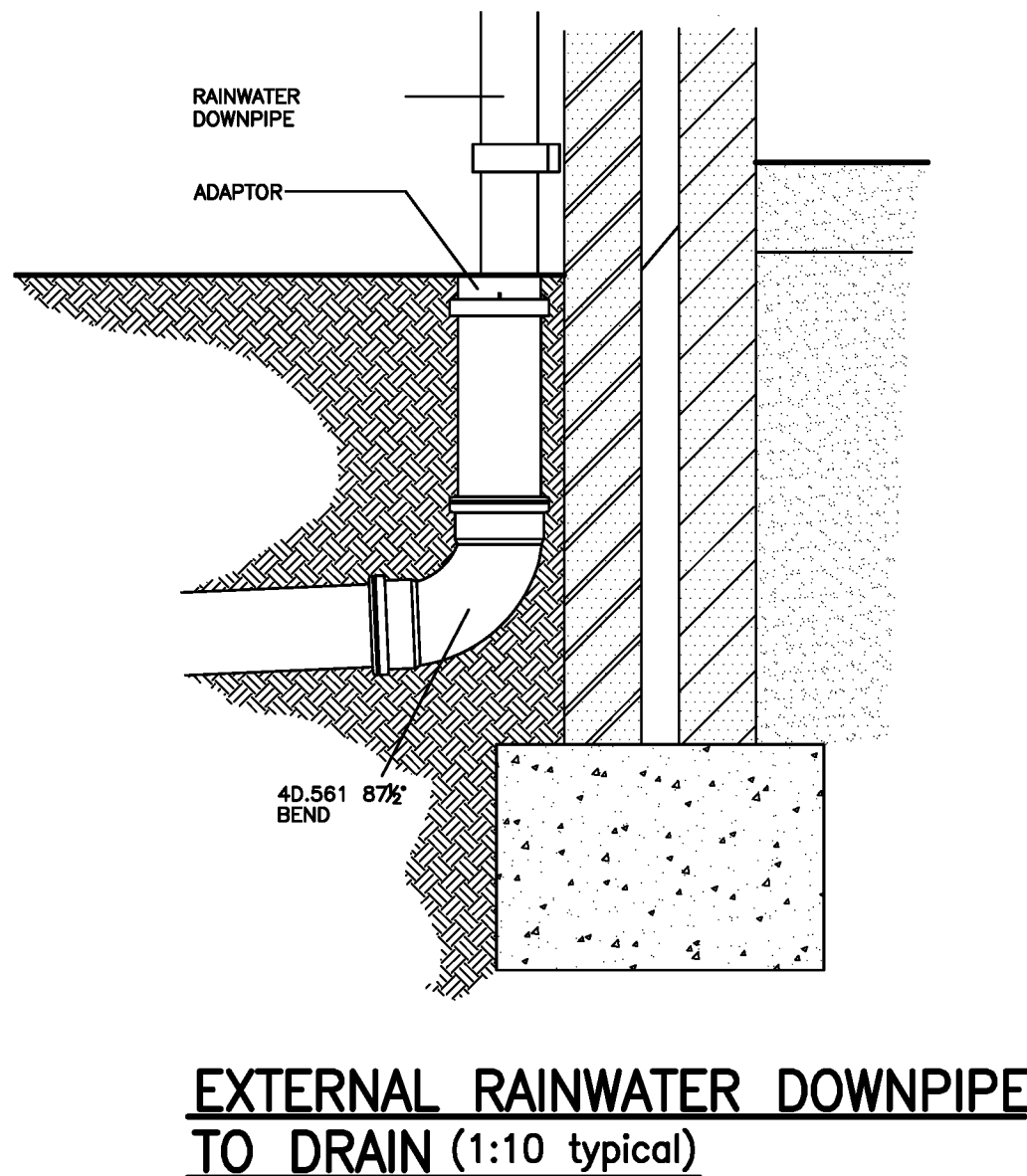
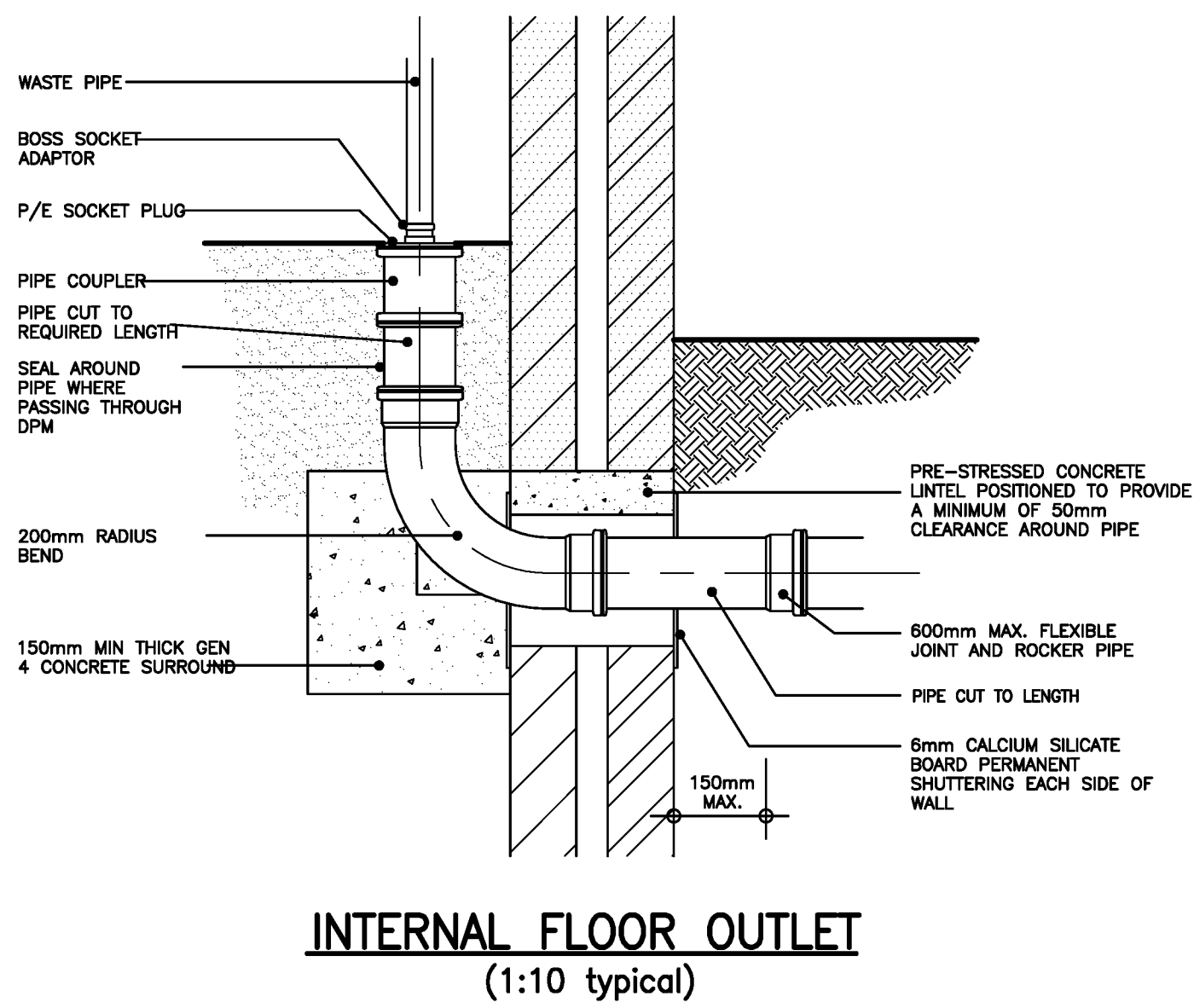
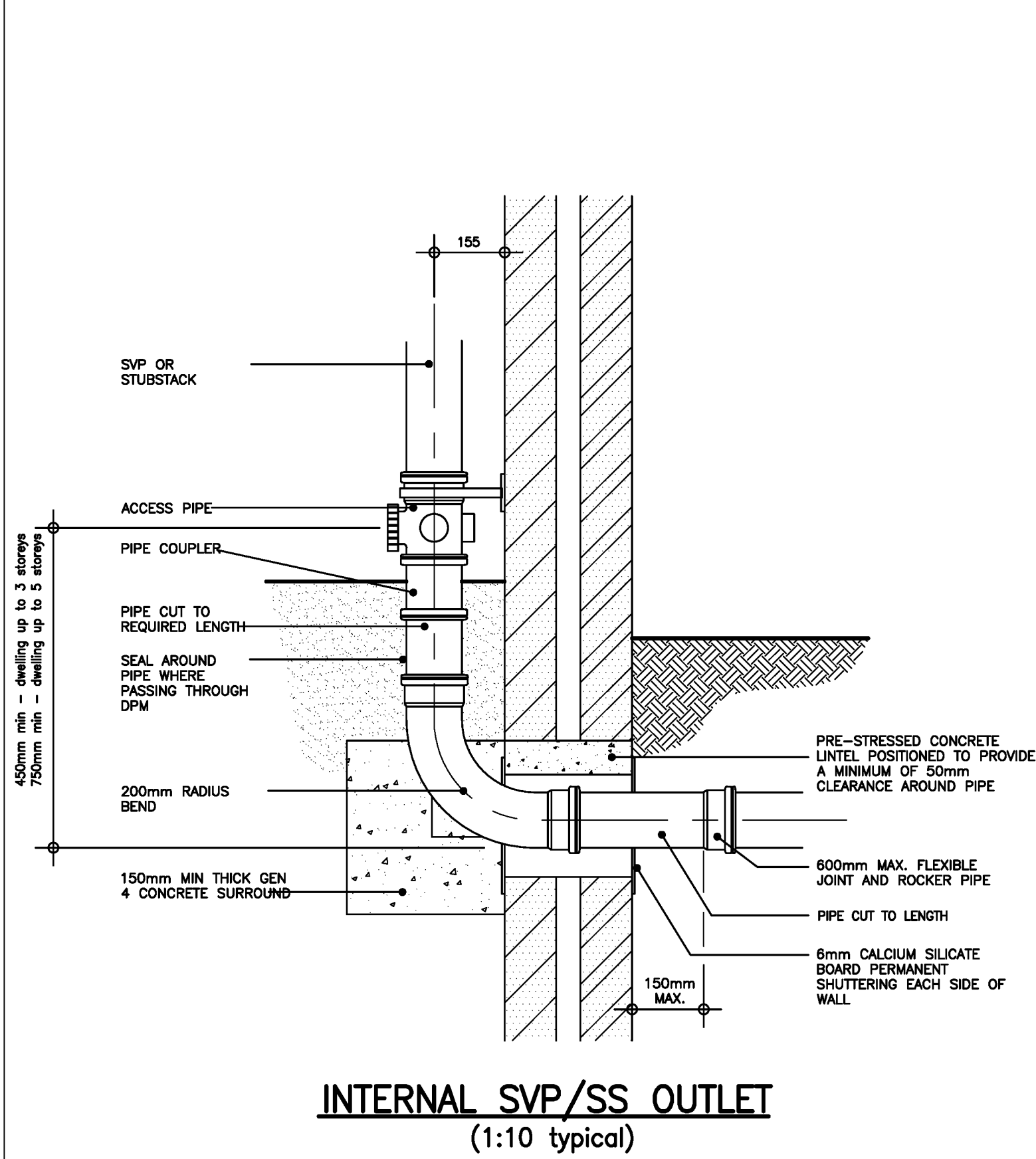
Title MAIN DRAINAGE
CONSTRUCTION DETAILS

Date	NOVEMBER 2021	Scale @ A1	AS SHOWN
Clients Ref.		Project Ref.	11615

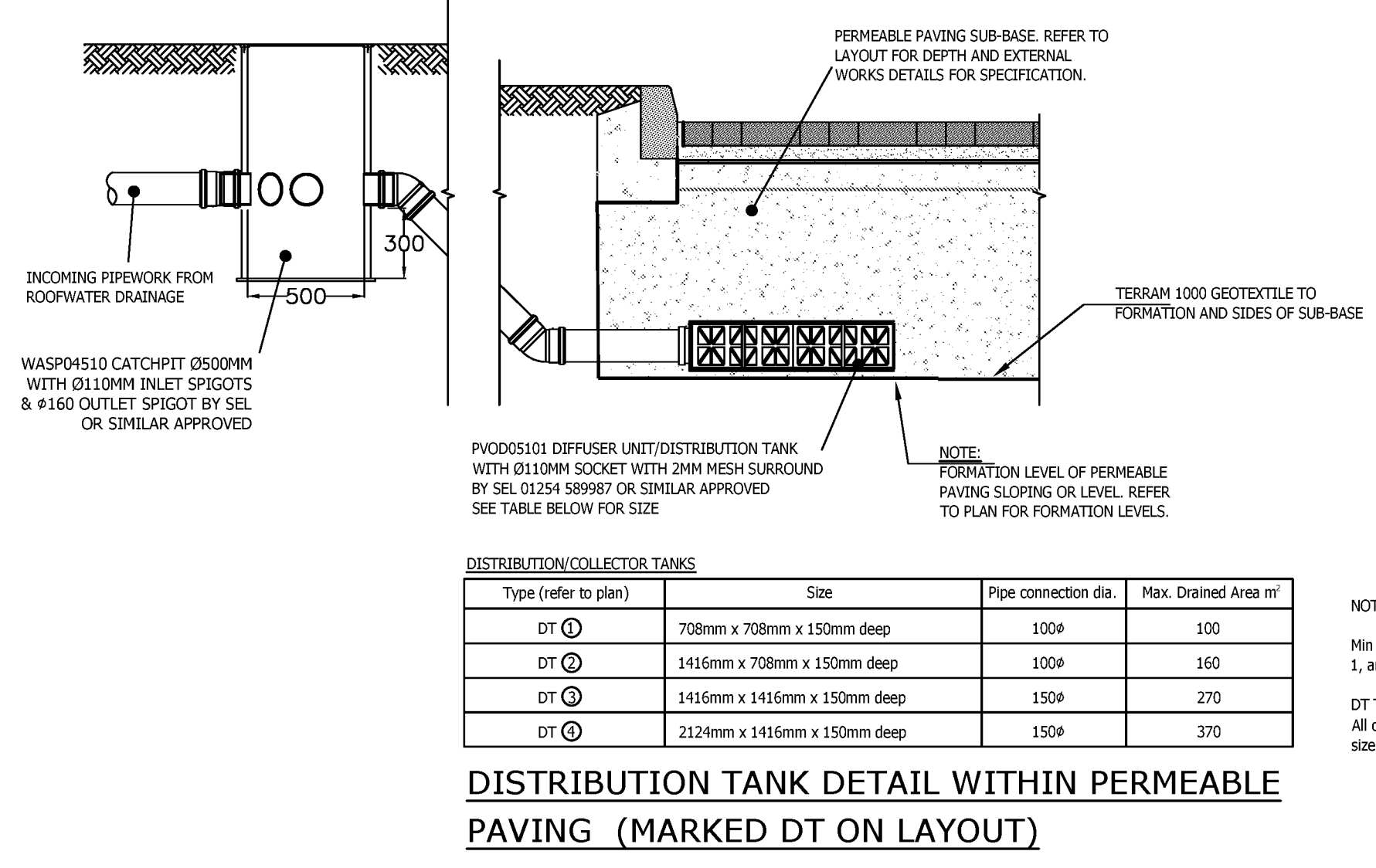


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Drawing Number	11228/1501	Rev.	P3
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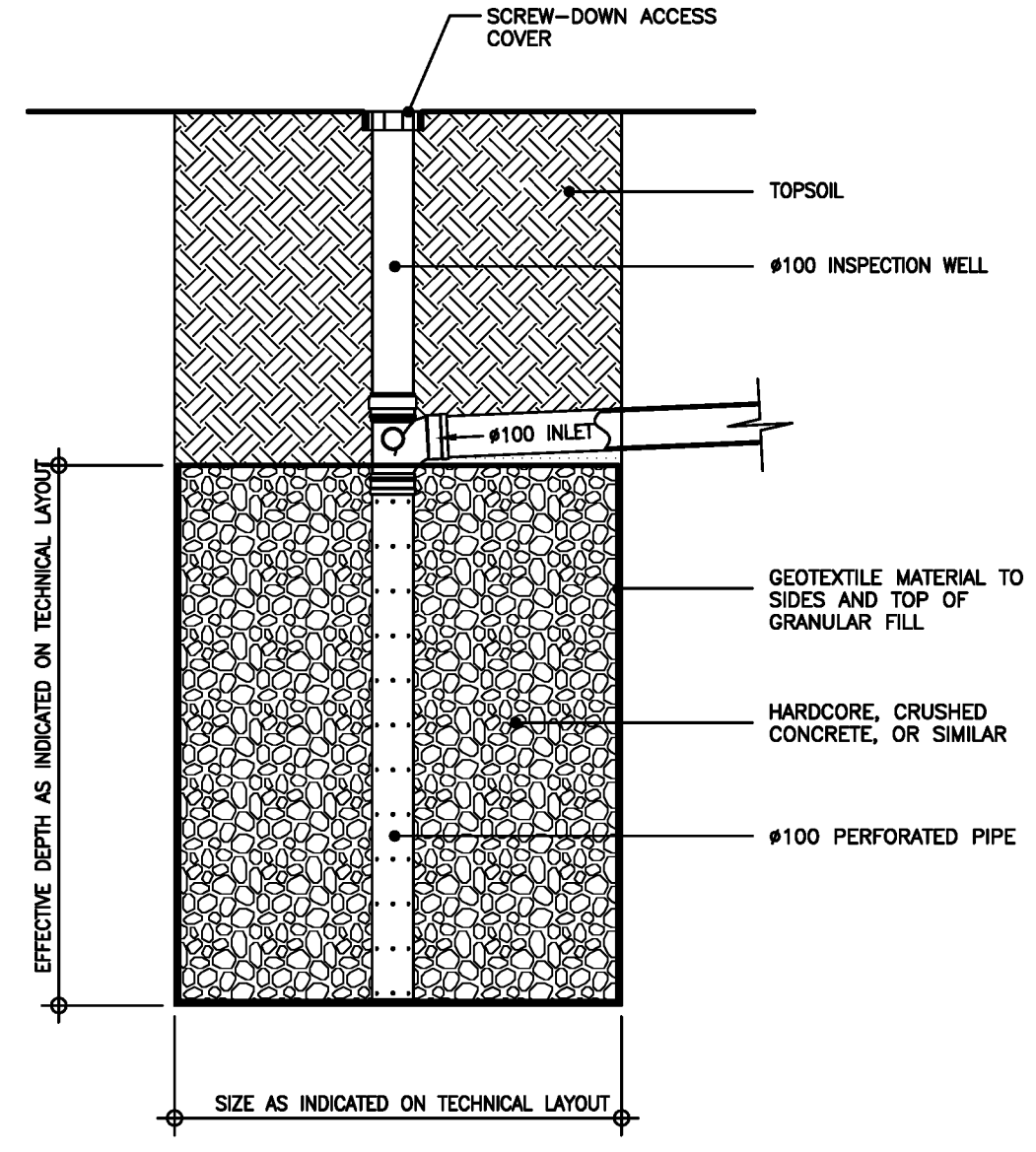
DRAIN BEDDING DETAILS - D300.0
FOR PIPE UNDERBUILDING



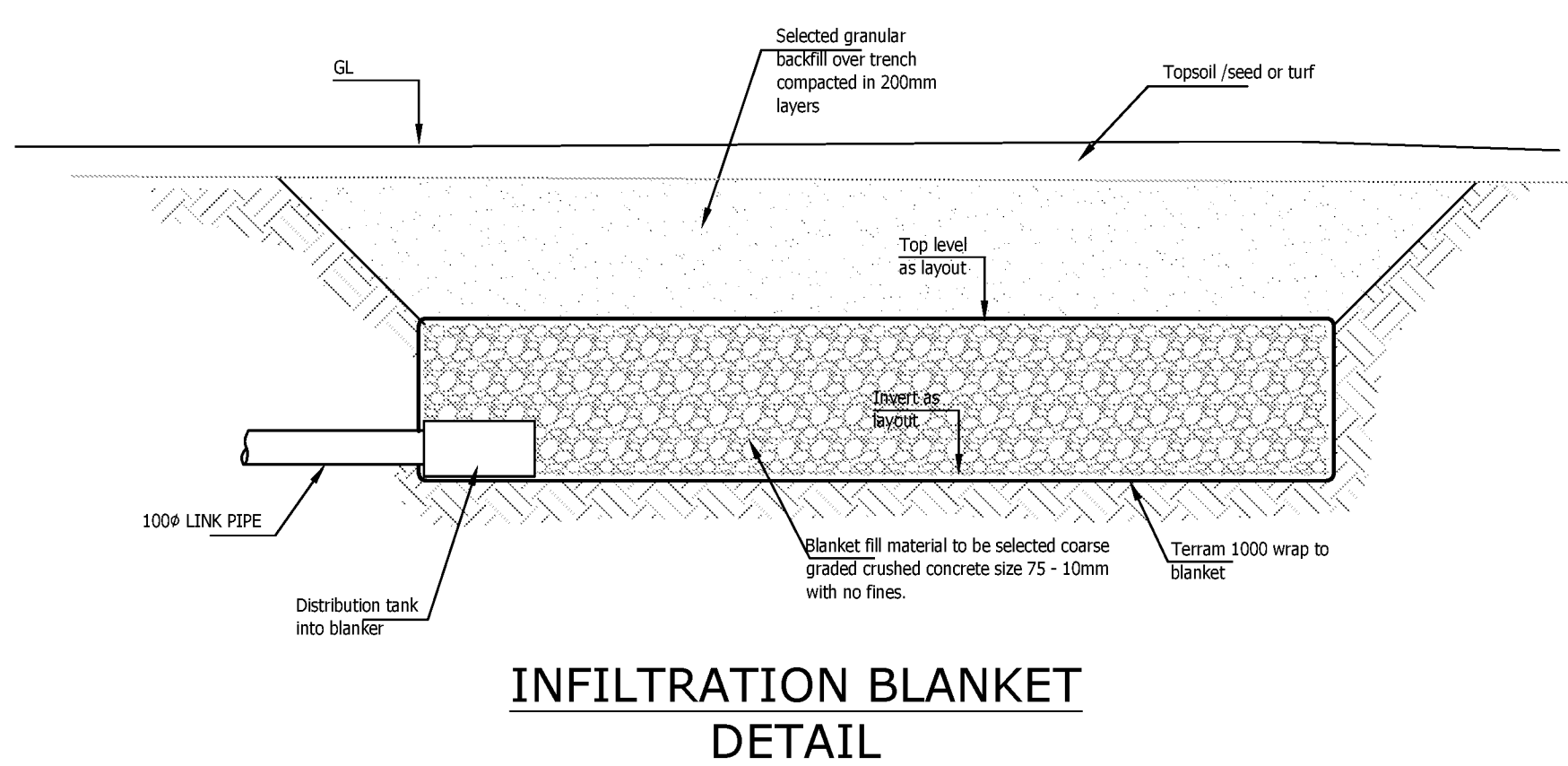
NOTES:

Min spacing on plan between DT's to be 2m for Type 1, and 4m for a Type 2.

DT Type 1 specification reference - SEL: PVOD05101. All other types are based on a multiplication of this size and need to be manufactured to order.

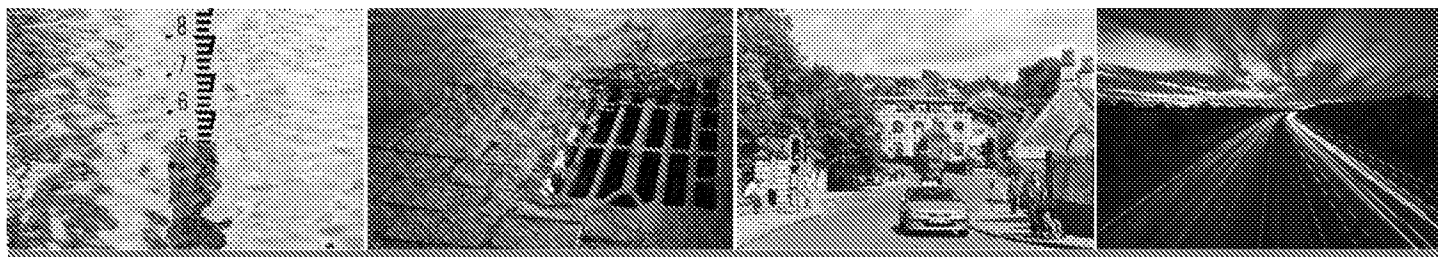


TYPE 'C' PRIVATE SOAKAWAY(1:20 typical)



- GENERAL NOTES**
1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. any discrepancies shall be notified to gta prior to works commencing.
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P2	Updated to GTA Title Block	15.12.21	MR	MR	
P1	PRELIMINARY ISSUE	06.05.21	MR	SDL	
Rev	Amendments	Date	Don	Chk	
Status					
PRELIMINARY					
Client					
 REDROW					
Architect					
Project					
LAND OFF NORTH END ROAD YAPTON					
Title					
PRIVATE DRAINAGE CONSTRUCTION DETAILS SHEET 2 OF 2					
Date		SEPTEMBER 2021		Scale @ A1	
				NTS	
Client's Ref.		Project Ref.		11228	
					
Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS Tel:01444 871444 Web: www.gtacivils.co.uk					
Drawing Number				Rev.	
11228/1702				P2	



Civil Engineering - Transport Planning - Flood Risk

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