

Foul and Surface Water Drainage Design Summary and Calculations		
Project Name:	Fairhaven, Pagham	
Project Number:	D2404	
Client:	Randmere Limited	
Prepared by and Date:	LF	02/10/25 (Rev 2)



Site Address:	Fairhaven, Nyetimber Lane, Pagham. PO21 3JT
Local Authority:	Arun District Council
Lead Local Flood Authority:	West Sussex County Council
Site Area:	0.19Ha
Geology:	From BGS records: Clay with gravel
Green Field Runoff rate (Q _{bar}):	0.54l/s (IH124 method, Wallingford Greenfield run off rate estimation tool)
Ground Water Depth:	0.194m below ground level
Soil Infiltration rate:	3 tests undertaken by Mate Geotechnical Services, yielded test results in the region of 1x10 ⁻⁵ m/s (BRE compliant test with 3 test runs)
Nearby watercourse:	None
Nearby surface water sewer:	450mm diameter sewer in Nyetimber Lane. Approximately 1.5m deep.
Nearby Foul Water Sewer	150mm diameter sewer in Nyetimber Lane. Approximately 2.2m deep.
Surface Water	
Proposed method of surface water runoff disposal and reason:	To surface water sewer. Whilst the infiltration test results were favourable, it is not possible to use infiltration methods of drainage due to the high groundwater level (0.19m below ground level. Local and national policy requires a minimum 1m unsaturated zone between the based on any infiltration structures and the highest groundwater level. Consideration was given to raising the site, but this is limited by spatial constraints. Water butts will be provided for each property to promote reuse of rainwater. The permeable paving will be tanked to prevent groundwater ingress. There is no watercourse close to the site. The public sewer is therefore is the only viable method for disposal.
Design storms considered:	1:30, 1:100 plus CC
Climate change:	45%
Rainfall data:	FEH22. C _v = 1
Proposed Catchment Area:	1057m ² including 10% urban creep factor applied to building roofs
Proposed discharge Rate:	1.0 l/s
Flow control method	Orifice plate (risk of blockage minimal as all runoff passes through permeable paving)

Volume of Storage Provided and method:	76.24m ³ (534m ² tanked permeable paving)
Water Quality:	Pollution control has been assessed using the Simple Index Method set out in CIRIA C753 as follow: Proposed use – residential car parks and low traffic roads: TSS=0.5/ M=0.4/H=0.4 Permeable Paving - TSS=0.7/M=0.6/H=0.7. As the pollution hazard index does not exceed any pollution mitigation index for any contaminant type, for any proposed land use, the proposed SuDS methods will provide sufficient treatment
Foul Water Drainage	
Existing Infrastructure:	There is a public foul sewer in Nyetimber Road.
Proposed Method of Foul Water Drainage:	It is proposed to connect to the existing public foul water sewer using an existing connection if possible. The existing connection will need to be checked for condition and level. Should it be found to be in poor condition or at a level that cannot serve the development, a new connection will be made to the public sewer.
Documents to be read with this summary:	
	- BP Civils Drawings/Documents: 000-BPC-WD-ZZ-D-C-PL001 – Site Location Plan 000-BPC-WD-ZZ-D-C-PL002 – Topographic Survey with Contours 000-BPC-WD-ZZ-D-C-PL005 – Impermeable Areas 000-BPC-WD-ZZ-D-C-PL006 – Preliminary Levels and Drainage 000-BPC-WD-ZZ-D-C-PL007 – Preliminary Drainage Schedules - D2404/MS1.0 - Maintenance Statement - Groundwater Monitoring and Infiltration Testing – Mate Geotechnical - Wallingford Greenfield Run Off Estimation - Southern Water Public Sewer Records - Environment Agency Letter confirming Flood Zone 1 - Site3D Hydraulic Calculations
Arun District Council Critical Items Checklist	
Winter Groundwater Monitoring Data	Refer to documents prepared by Mate Geotechnical
Winter Infiltration Testing data	Refer to documents prepared by Mate Geotechnical
The hierarchy for sustainable drainage	- Rainwater reuse promoted with installation of Water butts - Complete discharge in the ground not viable due to groundwater levels - Hybrid infiltration/sewer discharge not viable due to groundwater levels - Restricted discharge to watercourse not viable as no watercourse is present. 5. Restricted discharge to a surface water sewer is proposed - Restricted discharge to a surface combined sewer is not necessary
Calculations	Site 3d calculations provided based on following:

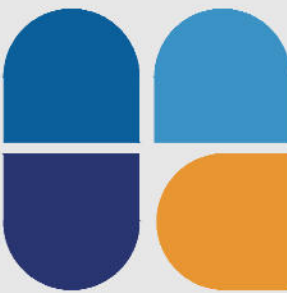
	Flow restricted to 1l/s FEH22 rainfall data 45% climate change $C_v = 1$ for Summer and Winter No additional storage allowance Half drain time not applicable (no infiltration) Infiltration rates not applicable (no infiltration) Surcharge outfall not applicable (discharge not to a watercourse)
Natural Catchment Design	Natural catchments shown on drawing PL002 No easements required No flood risk source (Zone 1) Drainage by gravity
Plans	Refer to drawings as listed above
Water quality benefits	Assessed in accordance with CIRIA C753
Biodiversity and amenity benefits	Restricted by spatial constraints/site design.
Trees and planting	Shown on drainage drawing



-SITE LOCATION PLAN KEY-
Site Boundary - 1966m² (0.2Ha)

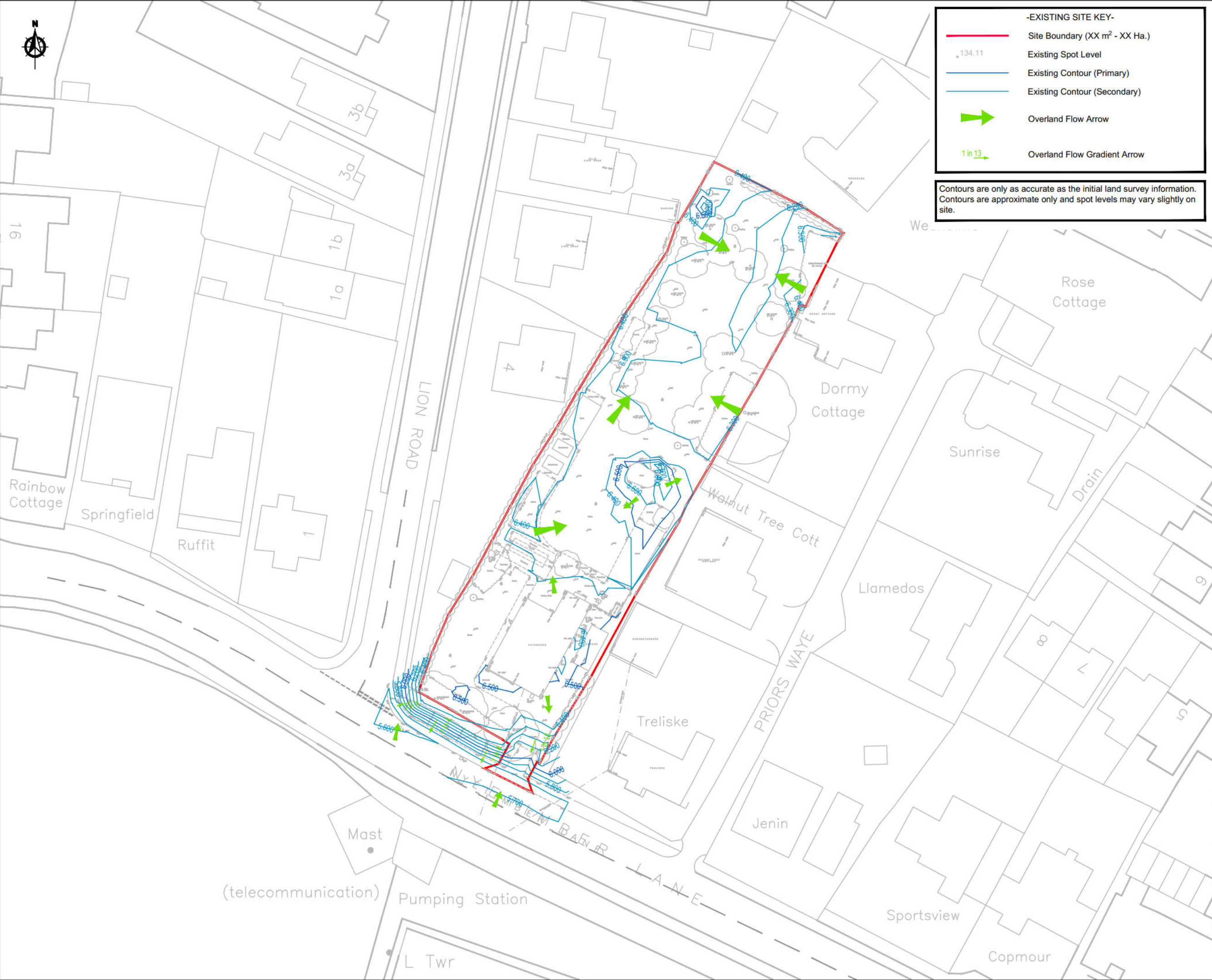
1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.
4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.
8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.

-	-	Original Issue
Rev.	Date	Amendments



BP CIVILS
Infrastructure Design and Transport Planning Consultants
2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF
Tel: 01243 210418
www.bpcivils.co.uk enquiries@bpcivils.co.uk

Drawing Status	FOR INFORMATION NOT FOR CONSTRUCTION		
Client	Randmere Limited		
Project	Fairhaven, Nyetimber Lane Bognor Regis, PO21 3JT		
Drawing Title	Site Location Plan		
Scale at A3	Date	Drawn By	Checked By
1:1000	Sept 25	JHL	LDF
Drawing Code	Drawing No.		Rev.
000-BPC-WD-ZZ-D-C	PL001		P00



-EXISTING SITE KEY-

- Site Boundary (XX m² - XX Ha.)
- Existing Spot Level
- Existing Contour (Primary)
- Existing Contour (Secondary)
- Overland Flow Arrow
- Overland Flow Gradient Arrow

Contours are only as accurate as the initial land survey information.
Contours are approximate only and spot levels may vary slightly on site.

NOTES

1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.
4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.
8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.

Rev.	Date	Amendments
-	-	Original Issue

BP CIVILS
Infrastructure Design and Transport Planning Consultants
2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF
Tel: 01243 210418
www.bpcivils.co.uk enquiries@bpcivils.co.uk

Drawing Status
**FOR INFORMATION
NOT FOR CONSTRUCTION**

Client
Randmere Limited

Project
**Fairhaven, Nyetimber Lane
Bognor Regis, PO21 3JT**

Drawing Title
**Topographic Survey
with Contours**

Scale at A3	Date	Drawn By	Checked By	Project No.
1:500	Sept 25	JHL	LDF	D2404

Drawing Code	Drawing No.	Rev.
000-BPC-WD-ZZ-D-C	PL002	P00



Manhole No.	Pipe No.	PERM	Private IMP	Private UC	Total IMP + UC
S1 (FC)	1.001	447.147	457.884	43.412	948.443
S2 (FC)	1.002	59.105	0.000	0.000	59.105
S4 (FC)	3.001	28.508	21.317	0.000	49.825
PS1	1.000	0.000	0.000	0.000	0.000
PS6	1.000	0.000	0.000	0.000	0.000
PS8	1.000	0.000	0.000	0.000	0.000
PS9	1.000	0.000	0.000	0.000	0.000
PS20	1.000	0.000	0.000	0.000	0.000
PS15	1.000	0.000	0.000	0.000	0.000
PS12	1.000	0.000	0.000	0.000	0.000
PS19	1.000	0.000	0.000	0.000	0.000
DI11	1.000	0.000	0.000	0.000	0.000
PS4	1.000	0.000	0.000	0.000	0.000
PS2	1.001	0.000	0.000	0.000	0.000
PS7	1.001	0.000	0.000	0.000	0.000
PS10	1.001	0.000	0.000	0.000	0.000
PS13	1.001	0.000	0.000	0.000	0.000
PS16	1.001	0.000	0.000	0.000	0.000
PS5	1.001	0.000	0.000	0.000	0.000
PS14	1.002	0.000	0.000	0.000	0.000
PS17	1.002	0.000	0.000	0.000	0.000
DI10	2.000	0.000	0.000	0.000	0.000
DI8	3.000	0.000	0.000	0.000	0.000
DI9	4.000	0.000	0.000	0.000	0.000
Totals:		534.760	479.202	43.412	1057.374

NOTES

1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.

2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.

3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.

4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.

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

6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.

7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.

8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.

Original Issue

Rev. Date Amendments

BP CIVILS

Infrastructure Design and Transport Planning Consultants

2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF

Tel: 01243 210418

www.bpcivils.co.uk enquiries@bpcivils.co.uk

Drawing Status

FOR INFORMATION

NOT FOR CONSTRUCTION

Client

Randmere Limited

Project

Fairhaven, Nyetimber Lane

Bognor Regis, PO21 3JT

Drawing Title

Impermeable Area Assessment

Scale at A3

Date

Sept 25

Drawn By

JHL

Checked By

LDF

Project No.

D2404

Drawing Code

000-BPC-WD-ZZ-D-C

Drawing No.

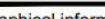
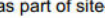
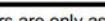
PL005

Rev.

P01

- ### -PRIVATE DRAINAGE KEY-
- | | |
|---|---|
|  | Private Surface Water Drainage |
|  | Inspection Chamber
(Max 1.2m Depth to invert) |
|  | Precast Concrete Ring Catchpit
(Over 1.5m Depth to Soffit) |
|  | Proposed Surface Water
Flow Control Manhole |
|  | SW Permeable Pavement (Tanked)
(Refer to Std Details) |
|  | Diffuser Inlet/Outlet |
|  | Linear Channel (Inc sump) |
|  | Water butt |
|  | Land Drain (Refer to Structural Design) |
|  | Private Foul Water Drainage |
|  | Inspection Chamber (Shallow)
(Max 0.6m Depth to invert,
Svp shall use main channel) |
|  | Backdrop Manhole |
|  | Inspection Chamber
(Max 1.2m Depth to invert)
Svp shall use main channel) |

-LEVELS KEY-

    	Existing Spot Level Proposed Spot Level Proposed House Door Threshold Level Proposed External House Level Proposed Plot Boundary Level
H.P. 17.570, L.P. 17.570   	Proposed Footpath Channel High/Low Point Proposed Contour (Primary) Proposed Contour (Secondary) House Stepped DPC

2C

Refer to structural drawings for further information on structural slab levels.

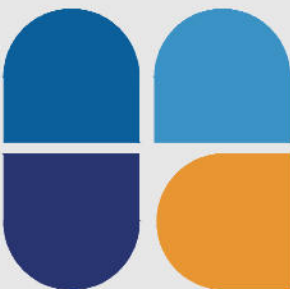
Topographical information shown is based on site survey undertaken by others as part of site-wide development.

Contours are only as accurate as the initial land survey information.
Contours are approximate only and spot levels may vary slightly on site.

Topographical survey levels are not to Ordnance Survey (OS) datum and need to be verified prior to work commencement.

THRESHOLD PLATFORM SUMMARY:

Level Threshold	
Ramped (Part M)	
Stepped Approach	

-	-	Original Issue	
Rev.	Date	Amendments	
 BP CIVILS Infrastructure Design and Transport Planning Consultants 2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF Tel: 01243 210418 www.bpcivils.co.uk enquiries@bpcivils.co.uk			
Drawing Status FOR INFORMATION NOT FOR CONSTRUCTION			
Client Randmere Limited			
Project Fairhaven, Nyetimber Lane Bognor Regis, PO21 3JT			
Drawing Title Preliminary Levels & Drainage			
Scale at A3 1:500	Date Sept 25	Drawn By JHL	Checked By LDF
Project No. D2404			
Drawing Code 000-BPC-WD-ZZ-D-C		Drawing No. PL006	Rev. P01

MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
S3		A 4.512	1350Ø	Type C	D400	5.662	4.512	1.000	489409.083	98498.448
S1 (FC)		A 5.12 B 5.17 C 5.17								
		A 4.62 B 4.62 C 4.62 D 4.67								
S2 (FC)			1350Ø	CATCHPIT with 22mm orifice plate on outlet	D400	5.709	4.620	0.939	489409.347	98501.096
S4 (FC)		A 5.225 B 5.276	1350Ø	CATCHPIT with 20mm orifice plate on outlet	D400	6.125	5.225	0.750	489407.436	98507.244
F1		A 5.493	450Ø	450 Inspection	D400	6.343	5.493	0.750	489433.024	98564.787
F2		A 5.373 B 5.373	450Ø	450 Inspection	D400	6.343	5.373	0.871	489440.236	98560.922
F3		A 4.653 B 4.653	1200Ø	Type B	D400	6.256	4.653	1.504	489412.649	98510.206
F4		A 4.417 B 4.417	1200Ø	Type B	D400	6.475	4.417	1.959	489397.193	98518.578
F5		A 4.350	EXISTING	EXISTING	EXISTING	6.46	4.350 tbc		489394.567	98513.923

MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
PS1		A 5.930	250Ø	250 Inspection	A15	6.329	5.930	0.300	489433.431	98581.060
PS2		A 5.808 B 5.808	450Ø	CATCHPIT	A15	6.385	5.808	0.477	489427.917	98570.277
PS4		A 5.90	250Ø	250 Inspection	A15	6.300	5.900	0.300	489450.627	98572.476
PS5		A 5.775 B 5.775	450Ø	CATCHPIT	A15	6.281	5.775	0.406	489444.821	98561.405
PS6		A 6.023	250Ø	250 Inspection	A15	6.423	6.023	0.300	489415.807	98552.570
PS7		A 5.941 B 5.941	450Ø	CATCHPIT	A15	6.429	5.941	0.388	489419.796	98559.785
PS8		A 6.087	250Ø	CATCHPIT	A15	6.487	6.087	0.300	489429.760	98554.240
PS9		A 6.005	250Ø	250 Inspection	A15	6.405	6.005	0.300	489423.636	98543.122
PS10		A 5.971 B 5.971	450Ø	CATCHPIT	A15	6.458	5.971	0.386	489426.621	98541.452
PS12		A 6.024	250Ø	250 Inspection	A15	6.424	6.024	0.300	489409.779	98527.832
PS13		A 5.962 B 5.962	450Ø	450 Inspection	A15	6.422	5.962	0.361	489415.925	98528.808
PS14		A 5.923 B 5.923	450Ø	CATCHPIT	A15	6.388	5.923	0.365	489419.299	98526.950
PS15		A 5.968	250Ø	250 Inspection	A15	6.368	5.968	0.300	489404.568	98518.615
PS16		A 5.923 B 5.923	450Ø	450 Inspection	A15	6.501	5.923	0.477	489406.977	98514.814
PS17		A 5.871 B 5.871	450Ø	CATCHPIT	A15	6.383	5.871	0.412	489411.500	98512.275
PS19		A 6.053	250Ø	CATCHPIT	A15	6.453	6.053	0.300	489400.862	98510.861
PS20		A 6.061	250Ø	CATCHPIT	A15	6.461	6.061	0.300	489402.956	98515.004

MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
Dif1		A 5.754	700x300	Diffuser		6.354	5.714		489427.985	98567.005
Dif2		A 5.708	700x300	Diffuser		6.308	5.714		489441.206	98559.597
Dif3		A 5.837	700x300	Diffuser		6.437	5.714		489422.781	98561.075
Dif4		A 5.836	700x300	Diffuser		6.436	5.714		489431.970	98556.466
Dif5		A 5.806	700x300	Diffuser		6.406	5.714		489421.151	98525.123
Dif6		A 5.861	700x300	Diffuser		6.461	5.665		489402.755	98511.145
Dif7		A 5.860	700x300	Diffuser		6.460	5.665		489403.940	98513.009
Dif8		A 5.577	700x300	Diffuser		6.177	5.665		489408.246	98508.409
Dif9		A 5.111	700x300	Diffuser		5.711	5.249		489407.399	98501.254
Dif10		A 5.700	700x300	Diffuser		6.300	5.714		489415.641	98511.056
Dif11		A 5.714	700x300	Diffuser		6.314	5.714		489417.209	98514.020
Dif12		A 5.759	700x300	Diffuser		6.359	5.714		489414.145	98512.956
Dif13		A 5.843	700x300	Diffuser		6.443	5.714		489427.528	98540.006

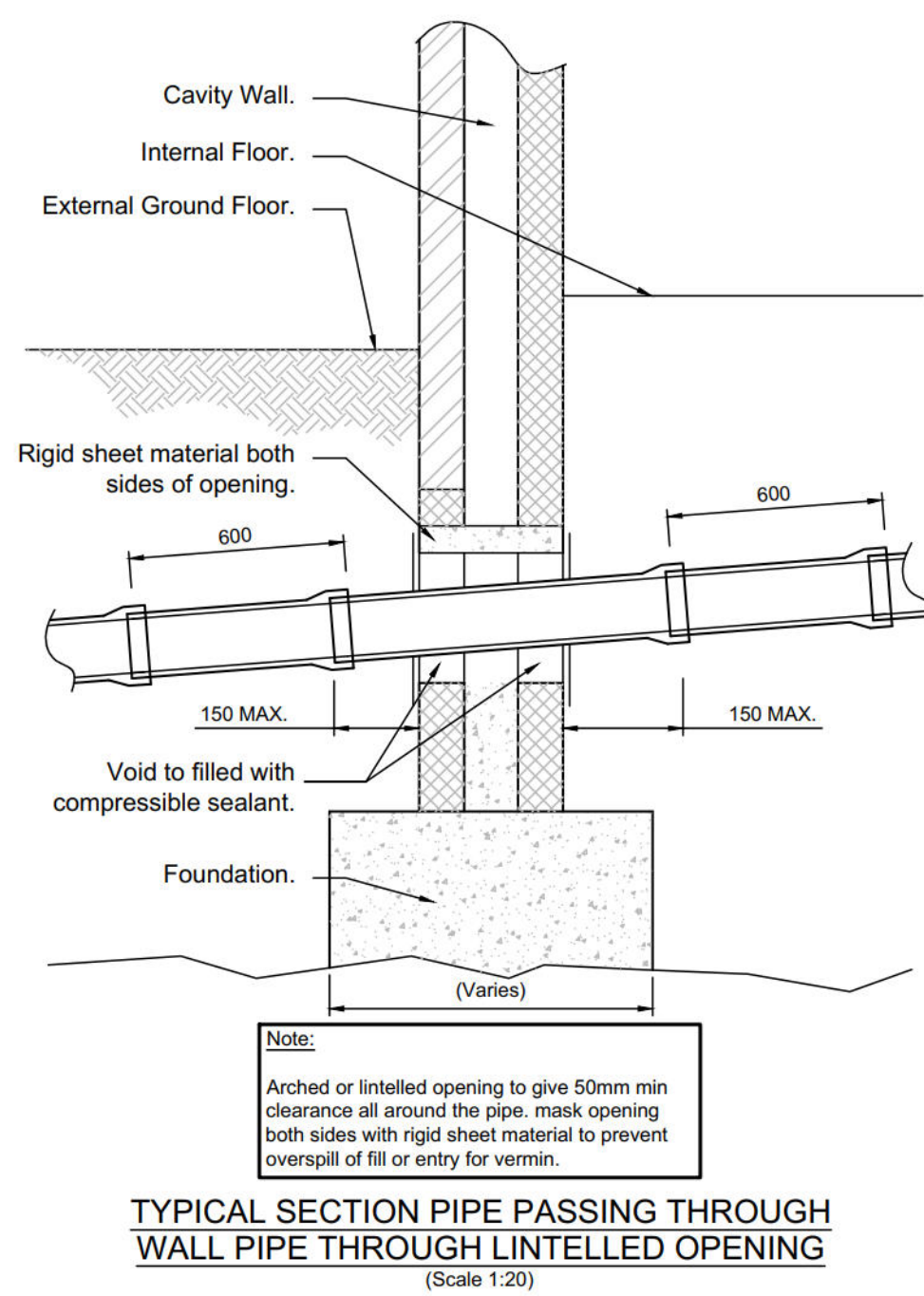
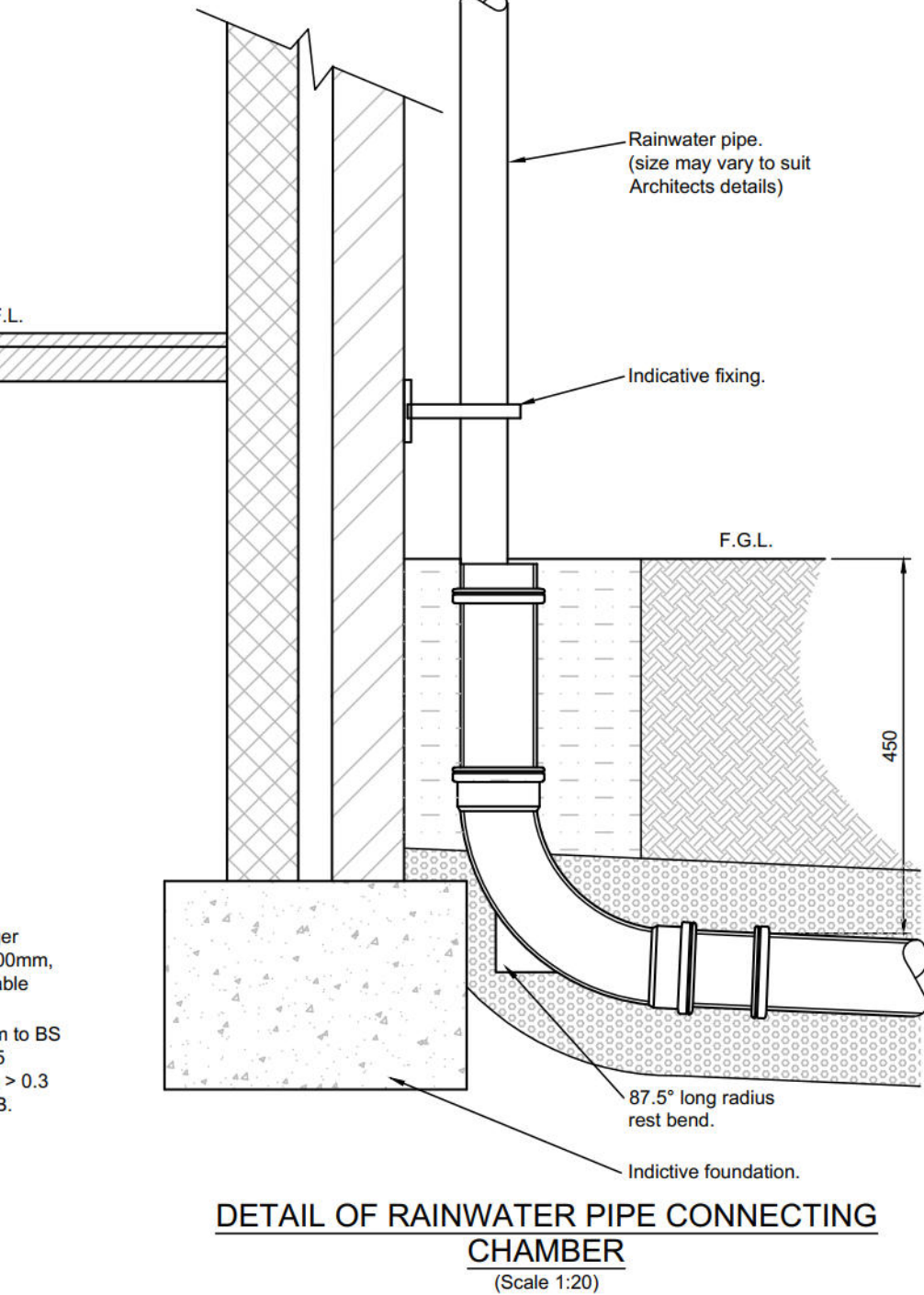
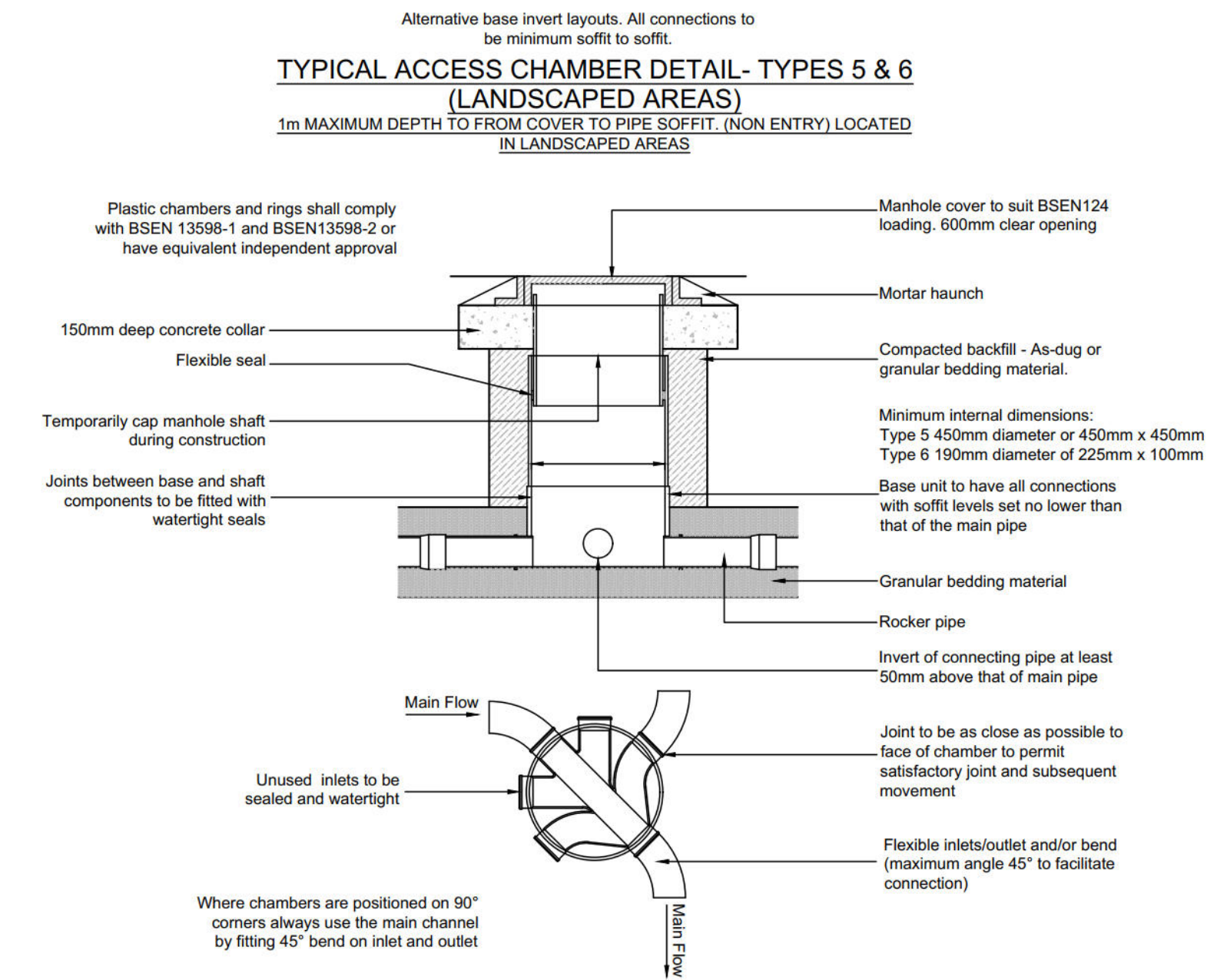
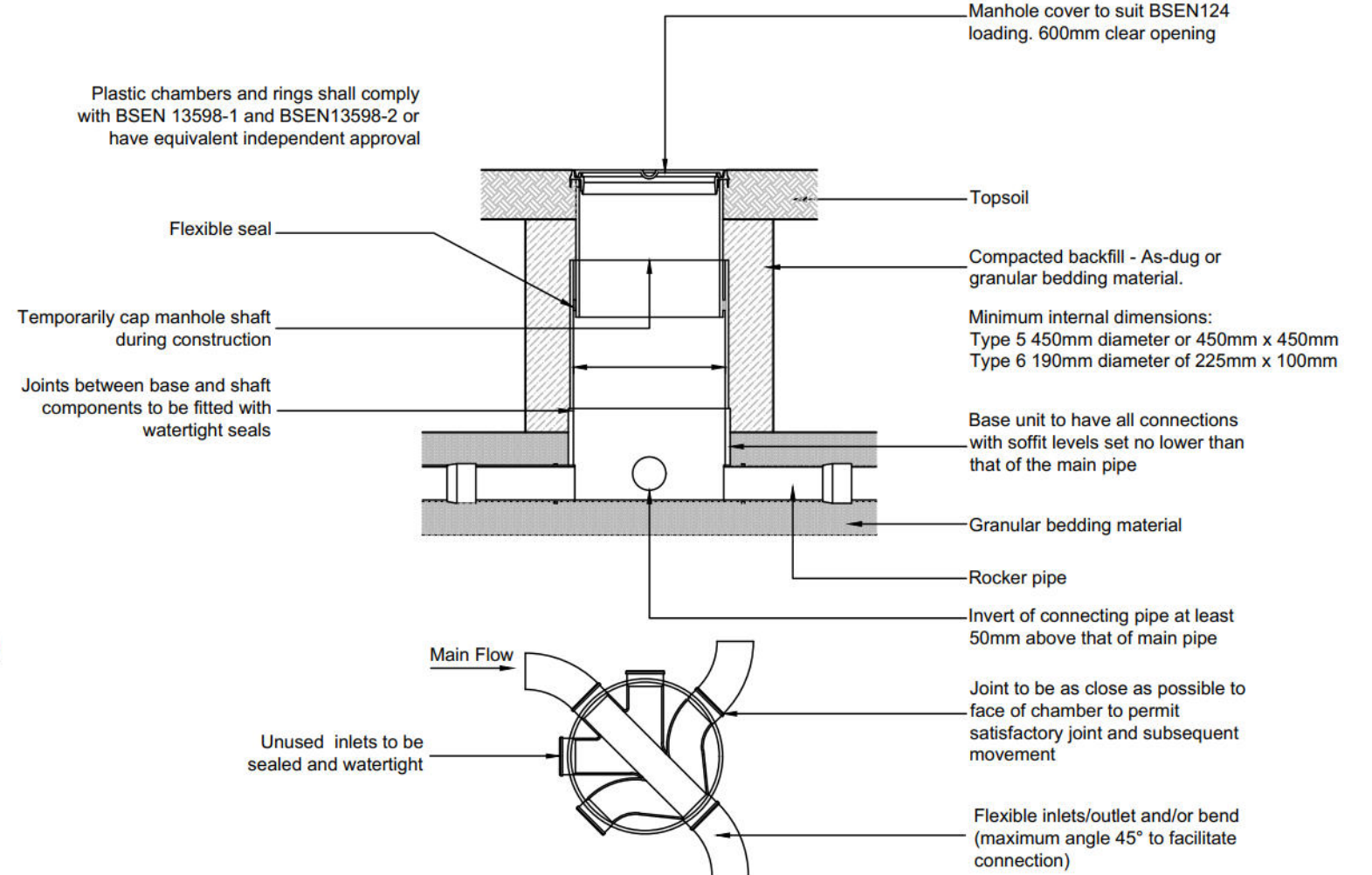
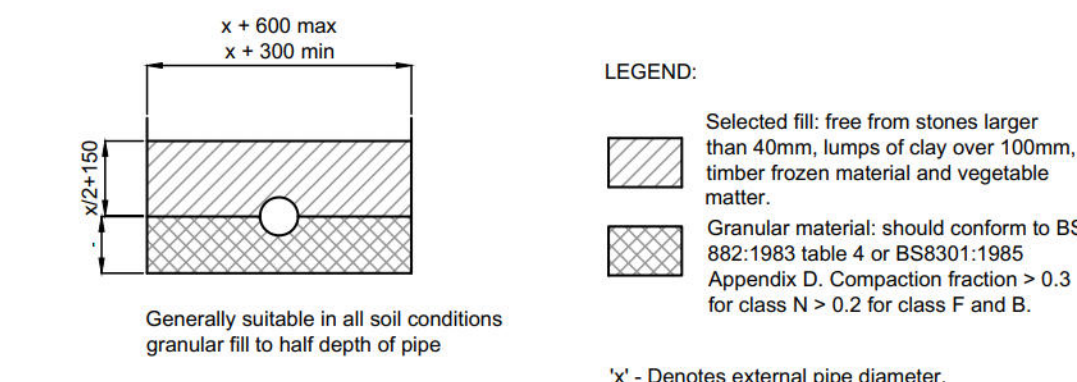
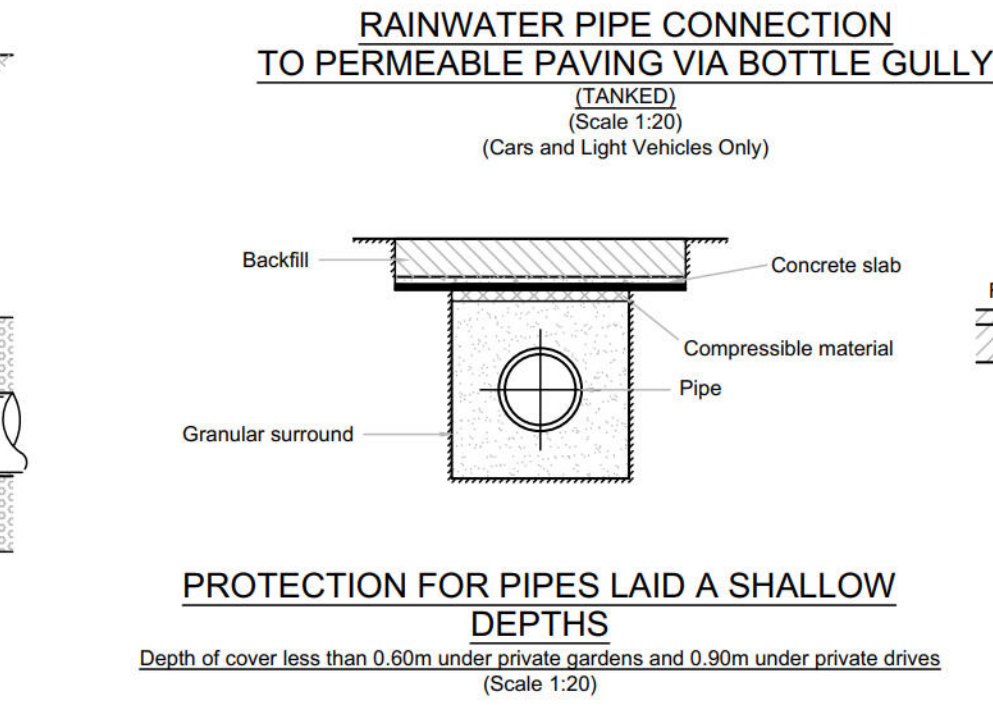
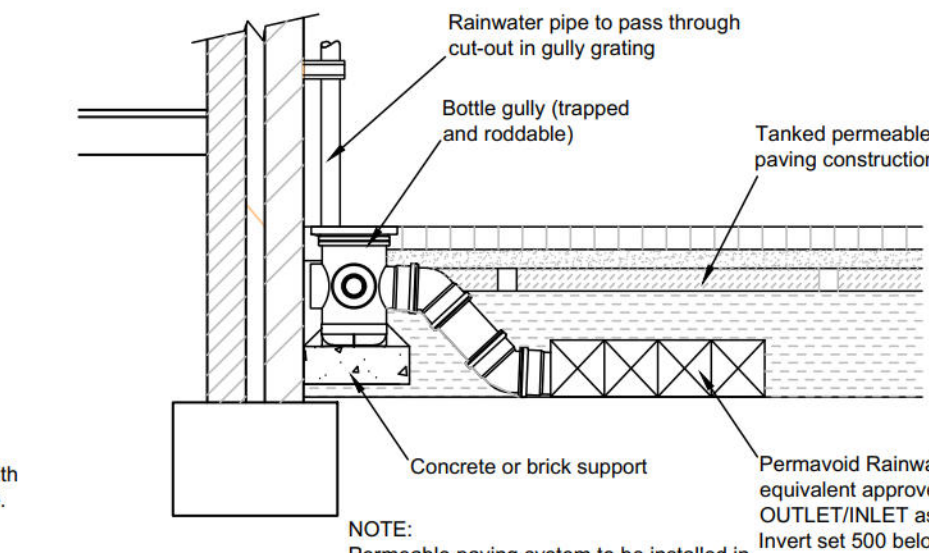
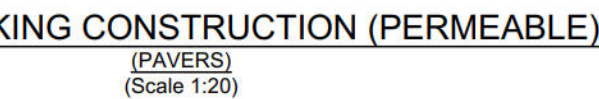
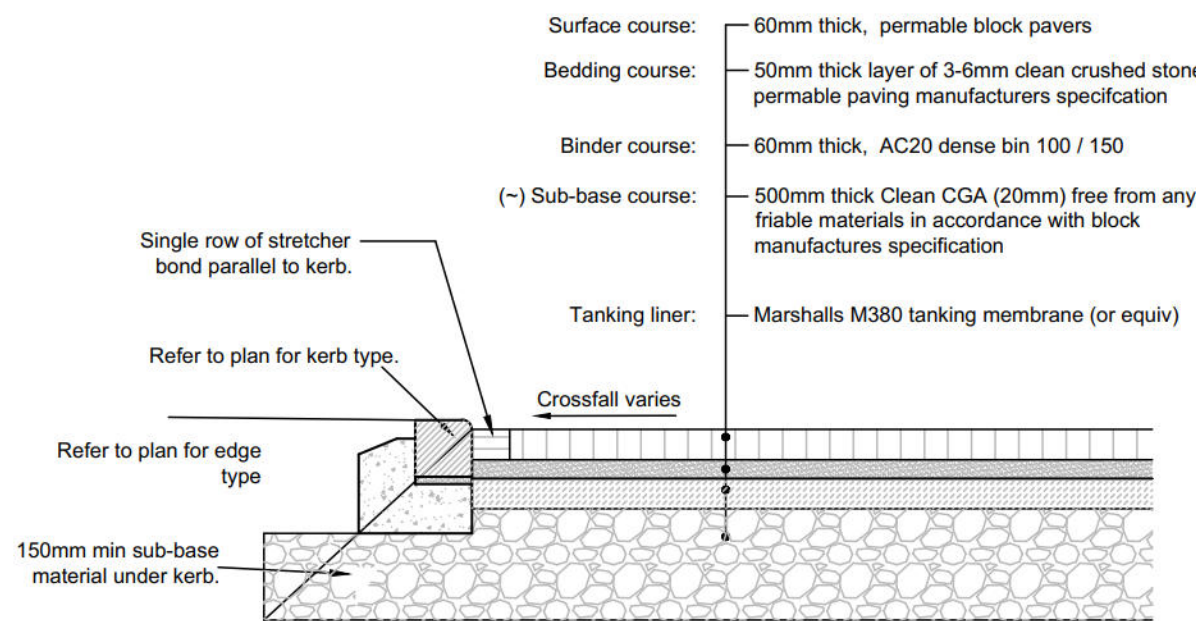
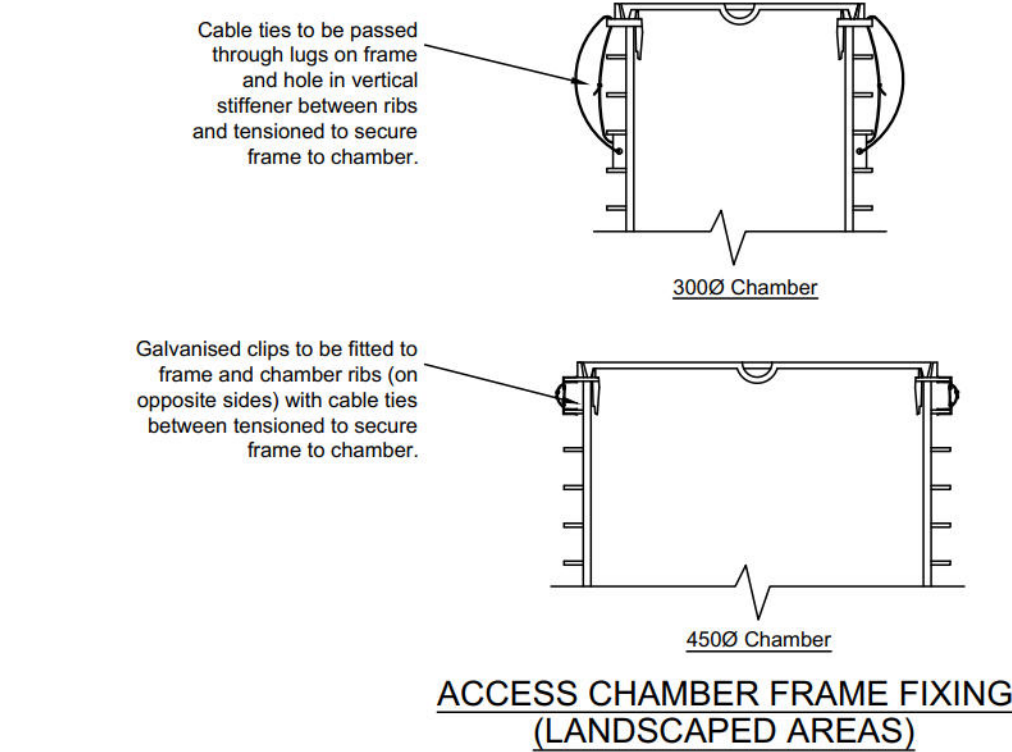
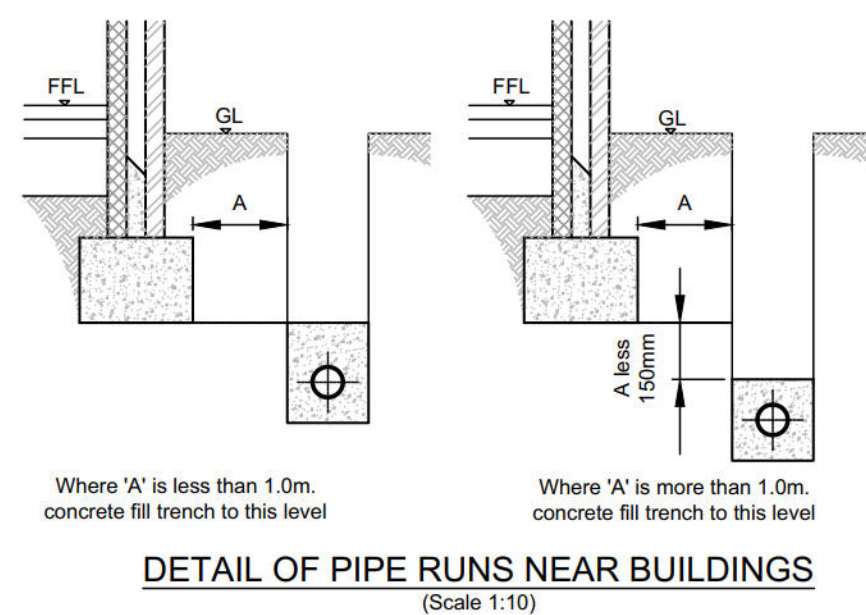
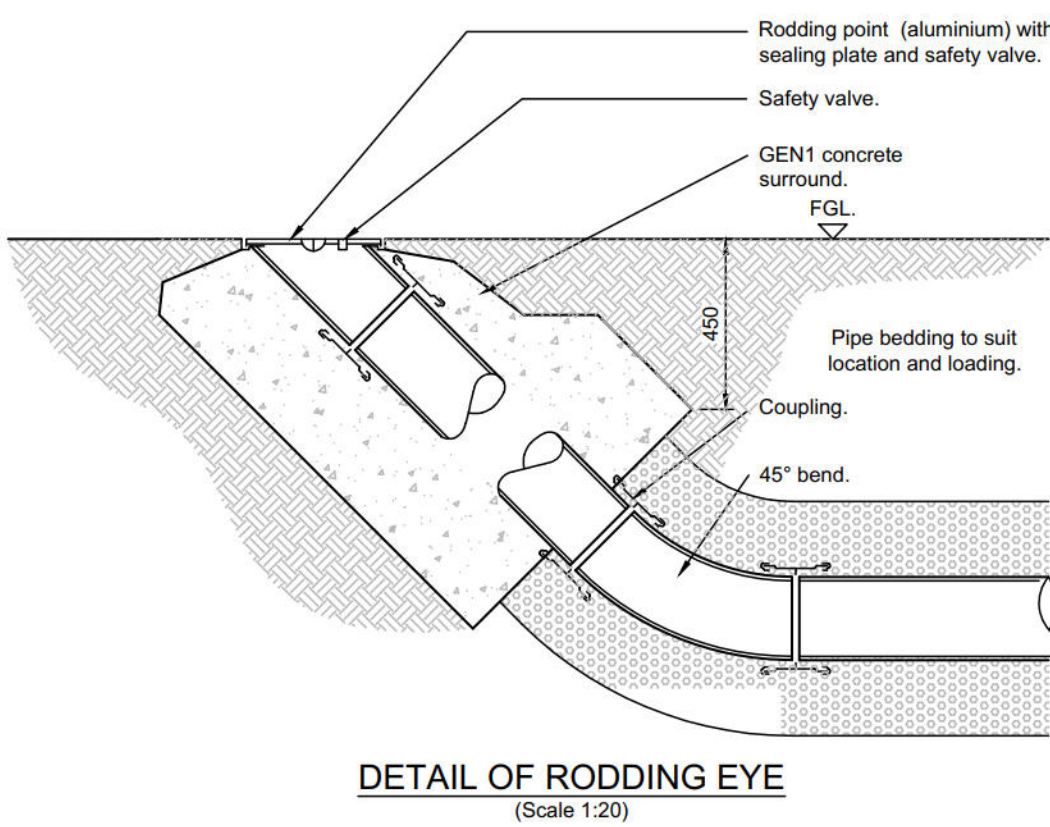
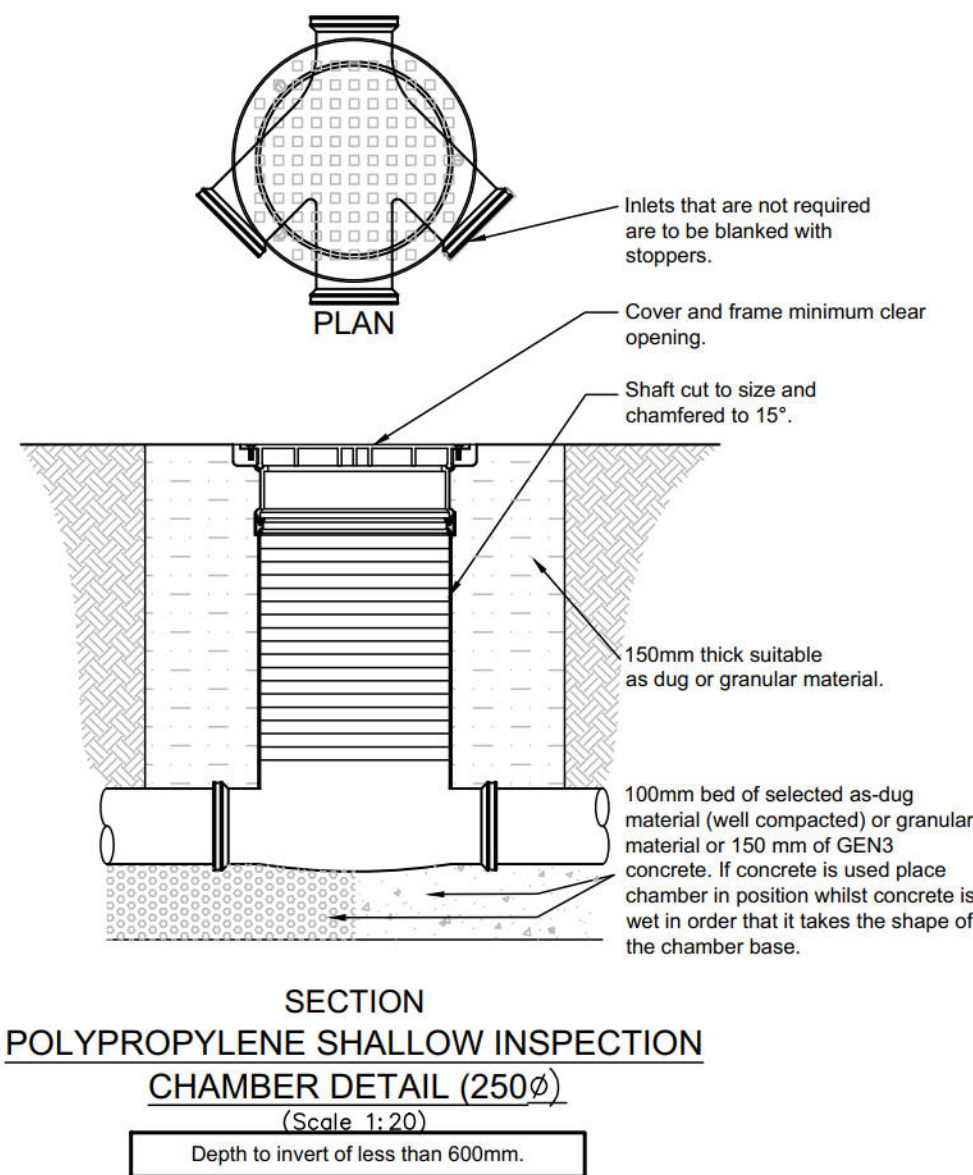
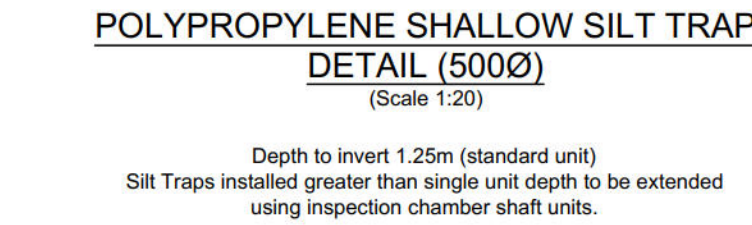
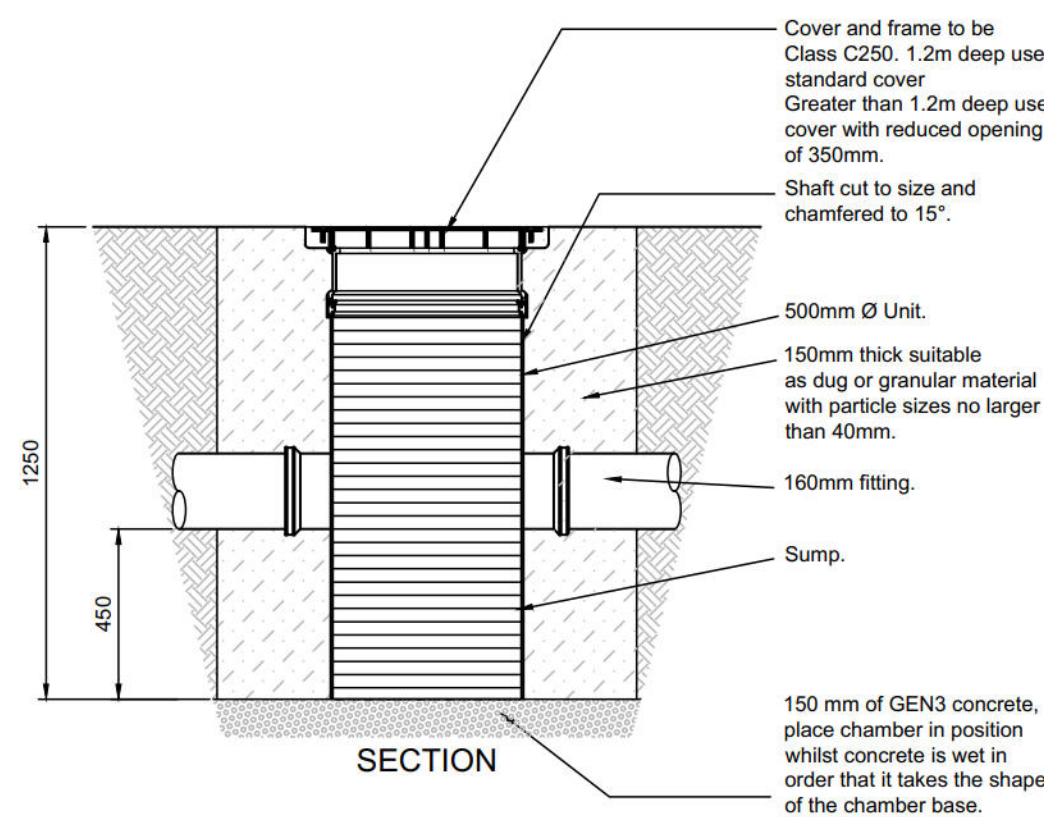
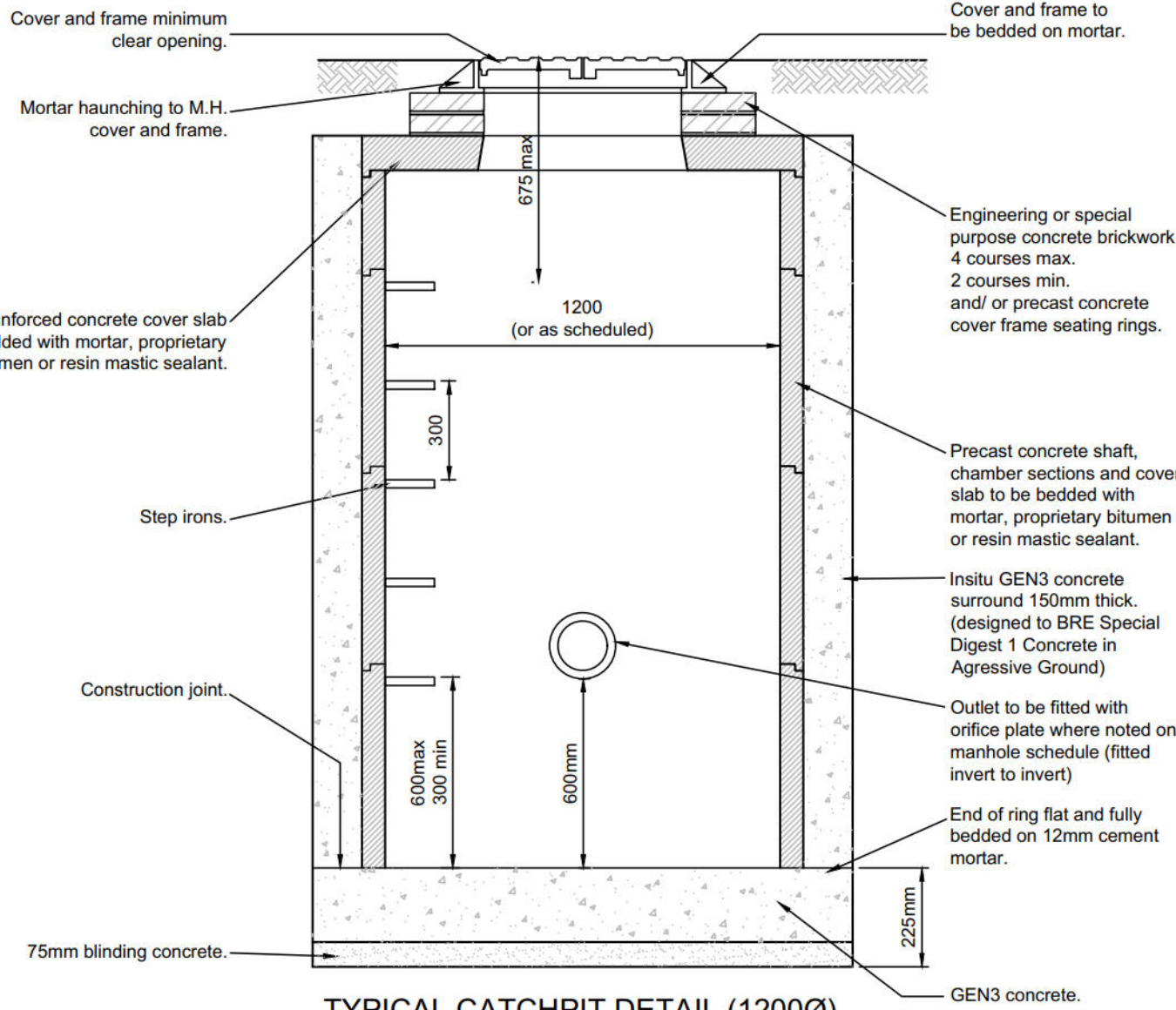
- A3
1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
 2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
 3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.
 4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
 5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
 6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
 7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.
 8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.

-	-	Original Issue
Rev.	Date	Amendments



BP CIVILS
Infrastructure Design and Transport Planning Consultants
2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF
Tel: 01243 210418
www.bpcivils.co.uk enquiries@bpcivils.co.uk

Drawing Status	FOR INFORMATION NOT FOR CONSTRUCTION			
Client	Randmere Limited			
Project	Fairhaven, Nyetimber Lane Bognor Regis, PO21 3JT			
Drawing Title	Preliminary Drainage Schedules			
Scale at A3	Date	Drawn By	Checked By	Project No.
1:	Sept 25	JHL	LDF	D2404
Drawing Code	000-BPC-WD-ZZ-D-C		Drawing No.	Rev.
		PL007	P00	



DRAINAGE NOTES:

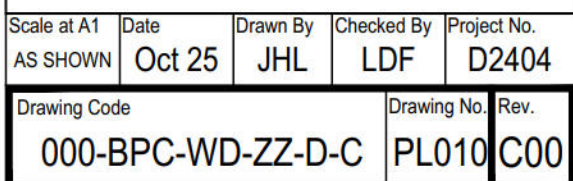
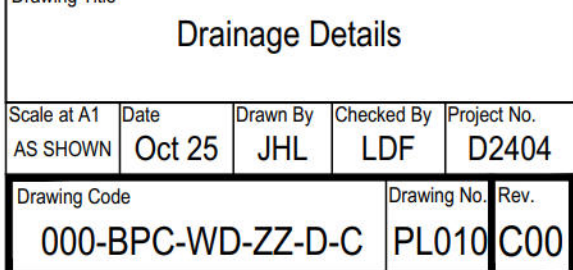
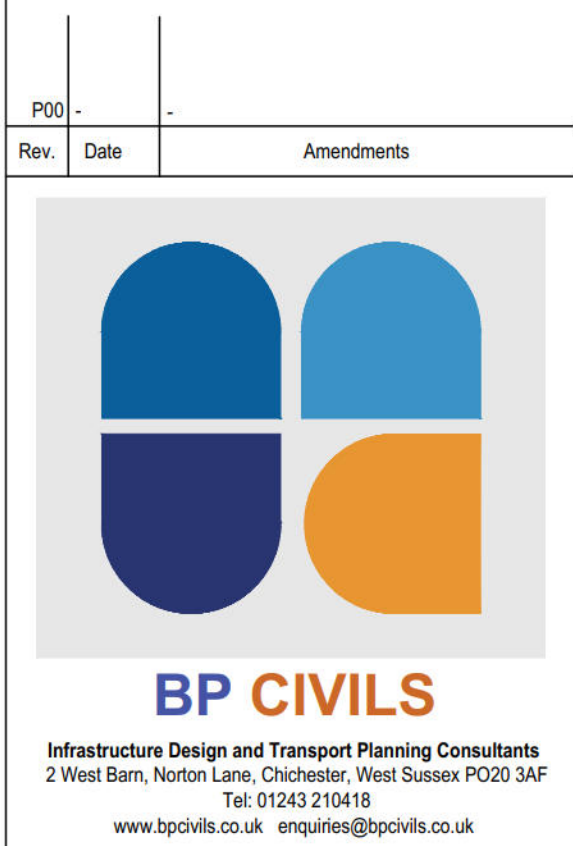
- All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK, BS8301 & BSEN 752-1).
- For location and setting out of building drainage points refer to architects drawings.
- All pipe runs near buildings to comply with the Building Regulations 2002 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class gen3 concrete up to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class gen3 concrete to a level below the lowest level for the foundation equal to the distance from the foundation less 150mm. In both cases the pipe shall be bedded and surrounded in 150mm thick class GEN3 concrete.
- Where pipes, external to the structures, have a depth to soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
- Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
- In any circumstances where pipes are bedded and surrounded in concrete flexible joints should be provided, compressible boards (fibreglass or polystyrene) shall be provided at a maximum of 8m centres (conforming with pipe joints), the boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section, a board thickness of 18mm for pipes up to 450mm nominal diameter and 38mm for pipes over 450mm nominal diameter.
- All private building drainage shall be constructed in strict accordance with BS EN 752-1. Foul drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of $1:10 = 1 \text{ in } 40$ $1:10 = 1 \text{ in } 80$ for foul drains and 1 in 80 for surface water drains.
- All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n or b) unless otherwise specified.
- All pipes, bends and junction for private building drainage shall be UPVC conforming to BS4560, BSEN13598 and BSEN401 as appropriate and shall be laid in accordance with the manufacturer's specification.
- All pipes, bends and junction materials for adoptable drainage shall be vitrified clay, extra strength or super strength to BSEN295, with flexible joints and kitemark certified.
- All back inlet gullies to be roddable or connected to inspection chambers.
- All gully connections other than at manholes to be 'y' junctions.
- All road gully connections to be 150mm diameter.
- All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m except at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
- No low point shall be without a method of drainage.
- All connections to be soffit to soffit unless otherwise noted.
- All concrete and concrete products to be in accordance with BRE 363 for sulphates.
- The locations of all building drainage points shall be cross referenced against the architects drawings during setting out.
- Before connections are made to existing public sewers an application under 106 must be made to relevant sewerage undertaker.
- The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
- Existing drains - any existing drains to be abandoned to be decommissioned in view of building regulations by either building out, infilled or sealed.
- Should ground water be encountered on site during construction BPC shall be informed to determine if additional measures are required with regard to floatation.
- The drainage drainage system shall be fully cleaned on completion of the project using methods that ensure pollution off site does not occur.
- Any existing land drains severed during construction shall be reinstated.

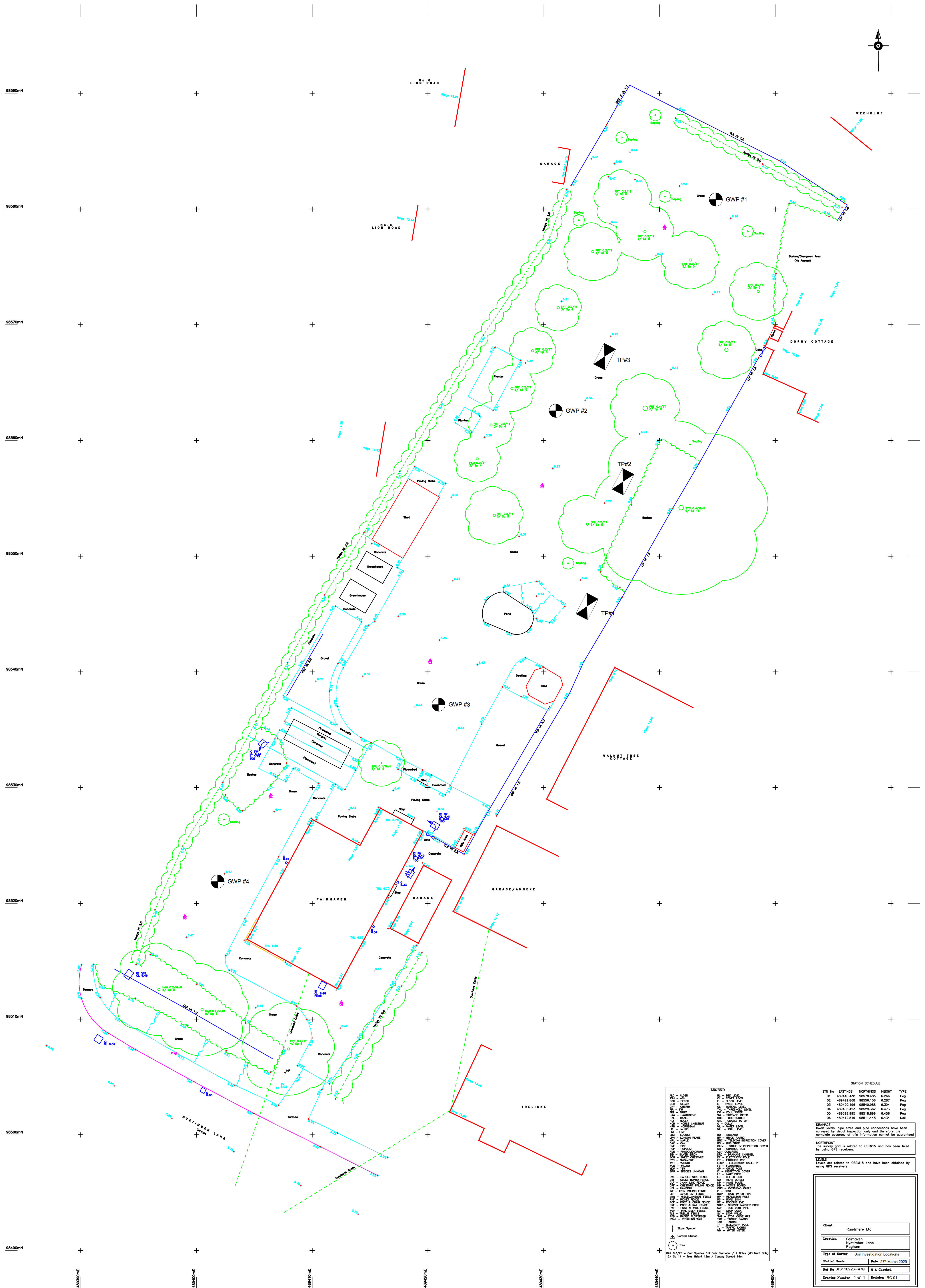
NOTES

- This drawing is to be read in conjunction with all other Bright Plan Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
- Bright Plan Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
- Do not scale, work to figured dimensions only. All dimensions are in millimetres unless noted otherwise and all levels are in metres from the topographic survey datum.
- Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
- All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
- The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. Bright Plan Civils logos and company information must be removed from copies if information is re-used.
- The main contractor is responsible for the design of all temporary works, and is also responsible for the safe maintenance and stability of existing buildings at all times.
- The groundworks contractor is responsible for dealing with all occurrences of ground water during the construction period.
- The contractor must comply with all current legislation relating to health & safety.
- All products specified shall be installed in strict accordance with the manufacturers recommendations and instructions. If there are discrepancies between that information and the details on any Bright Plan Civils drawings, the manufacturers instructions must be used.
- All earthworks shall be in accordance with Specification for Highway Works with 6F1 or 6F2 material used to increase levels where required.

RESIDUAL HAZARDS

- In addition to the hazards/risks normally associated with the type of work detailed on this drawing, note the following:
- Buried services. Contractor to refer to record drawings and use CAT to locate existing services and undertake necessary precautions and investigation prior to excavating.
 - Working in live traffic. Contractor to ensure traffic management is designed, erected and maintained to protect the workforce and the public. Contractor to undertake necessary precautions and ensure suitable traffic management is in place prior to commencement.
 - Working in live sewers. Contractor to ensure operatives are familiar and competent with the dangers of working in live sewers.
 - Excavations close to existing structures. Contractor to prepare method statement to ensure stability of existing structure.
- It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved risk assessment and method statement

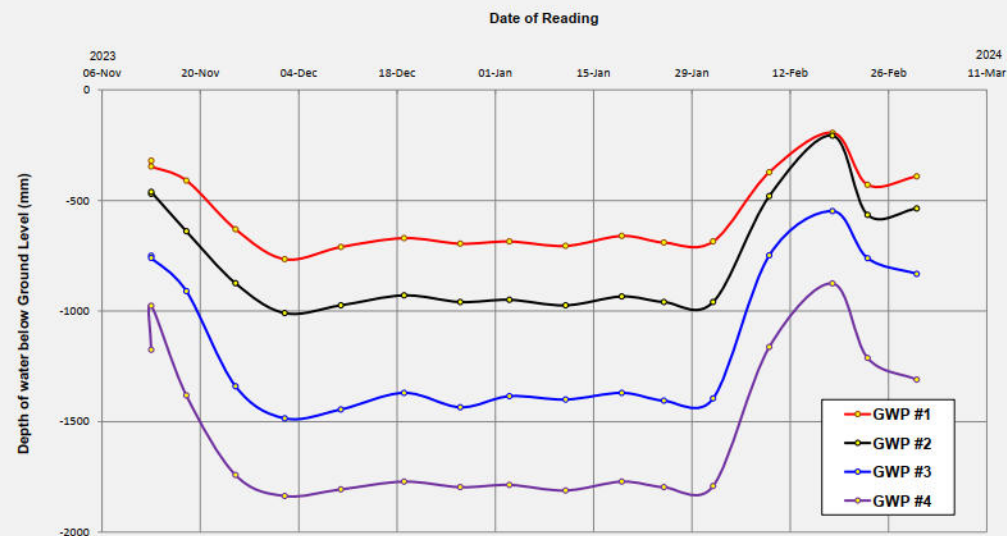




Groundwater Monitoring at 'Fairhaven' Nyetimber Lane, Bognor Regis

END
of
MONITORING
CYCLE

Water Depth on Pipe Installation	Reading on Leaving the Site
1.0	1.0
1.5	1.5
2.0	2.0
2.5	2.5
3.0	3.0
3.5	3.5
4.0	4.0
4.5	4.5
5.0	5.0
5.5	5.5
6.0	6.0
6.5	6.5
7.0	7.0
7.5	7.5
8.0	8.0
8.5	8.5
9.0	9.0
9.5	9.5
10.0	10.0



Groundwater Monitoring -- in Groundwater Points GWP#1, GWP#2, GWP#3 & GWP#4

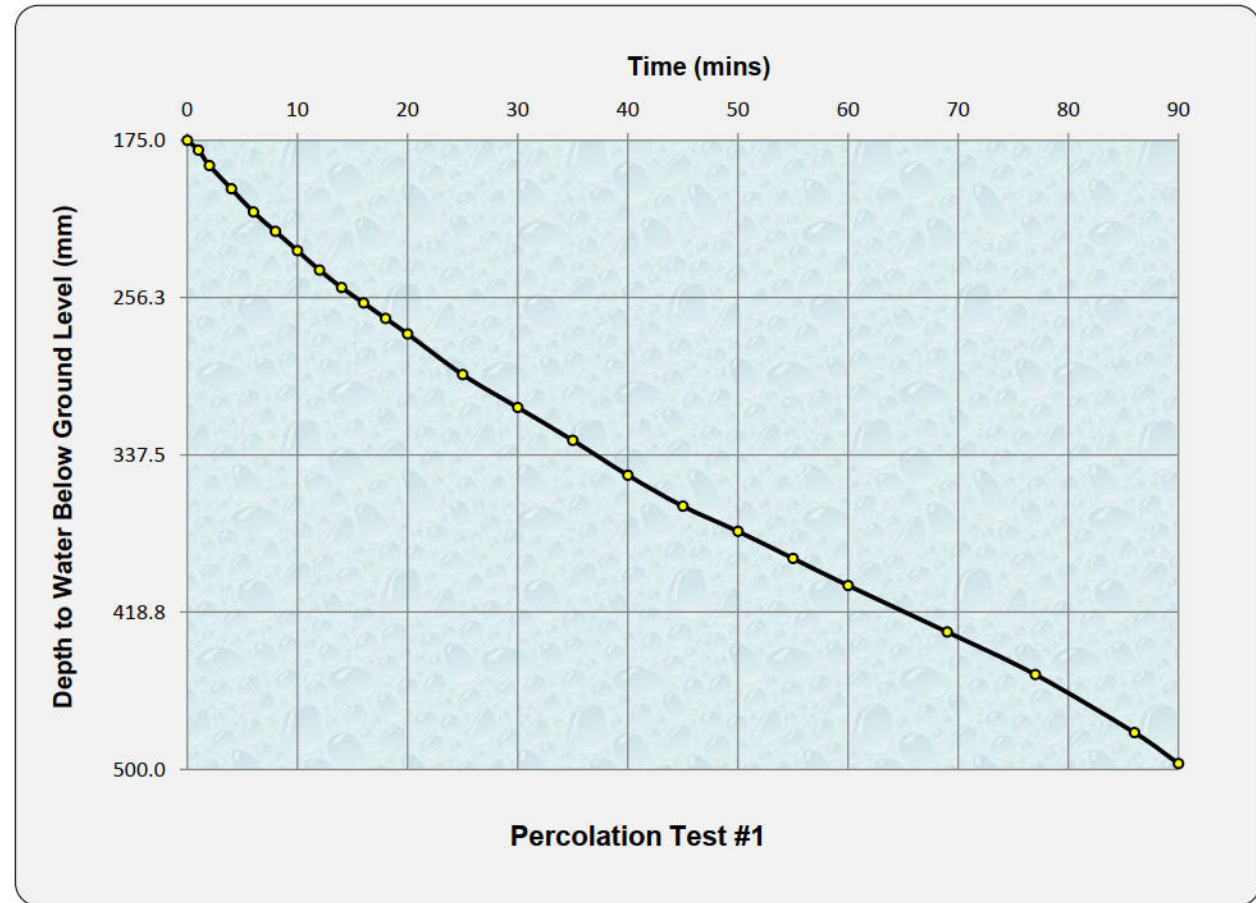
	Time (mins)	Depth to Water Surface
09:26:00	0	175
	1	180
	2	188
	4	200
	6	212
	8	222
	10	232
	12	242
	14	251
	16	259
09:46:00	18	267
	20	275
	25	296
	30	313
	35	330
	40	348
	45	364
	50	377
	55	391
	60	405
10:26:00	69	429
	77	451
	86	481
10:56:00	90	497

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#1 (south)

Percolation Test Number 1

1020mm Length x 370mm Width x 500mm Depth



Soil infiltration rate:

$$f = \frac{0.059}{0.801 \times 49.9 \times 60} = 2.458\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

2.458E-05 metres/second

11:53:00

Time (mins)	Depth to Water Surface
0	173
2	178
4	181
6	187
8	190
10	194
15	208
20	218
25	229
30	239
35	250
40	259
45	269
50	278
55	287
60	299
65	304
70	313
75	323
80	332
85	341
90	350
100	366
110	382
120	398
130	413
140	427
150	441
160	454
170	474
180	490

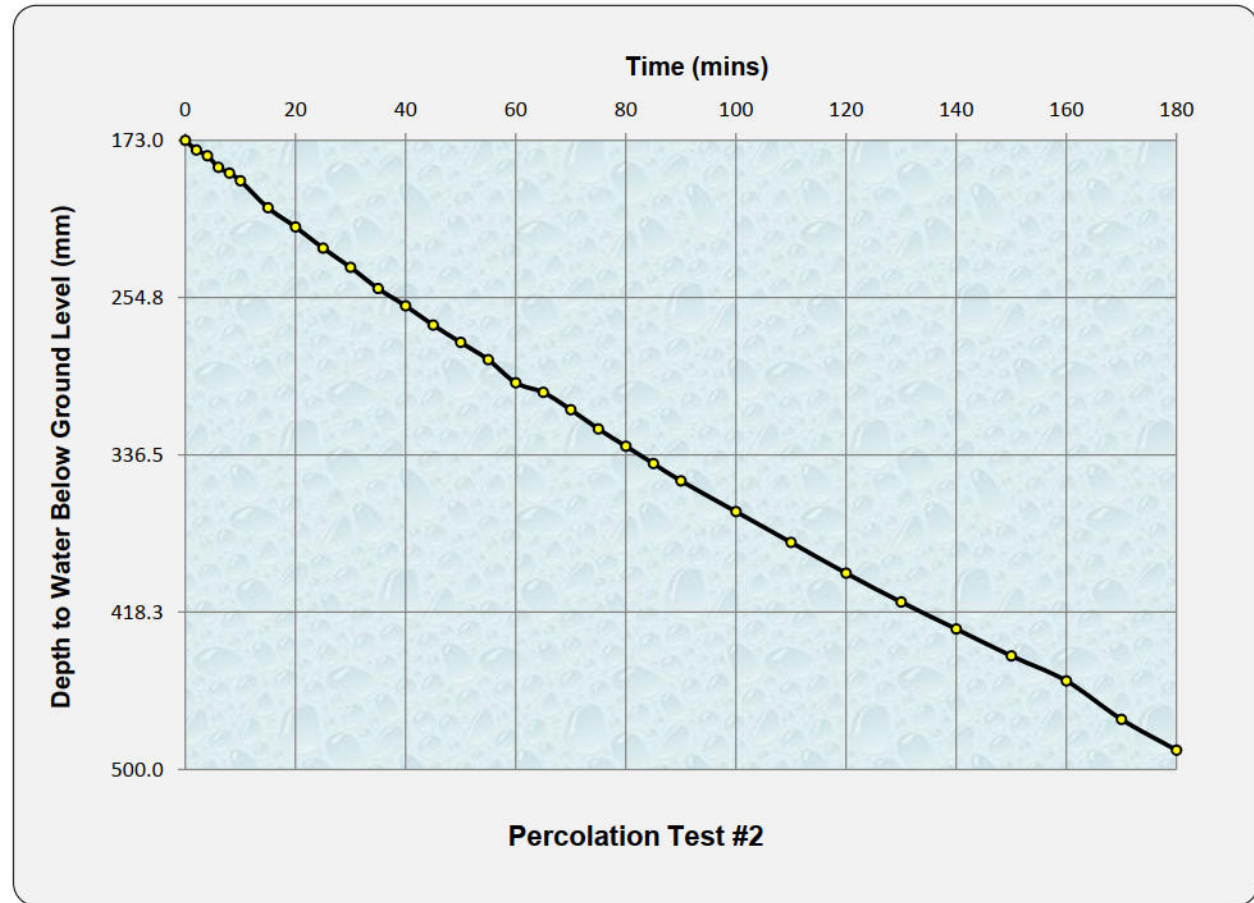
14:53:00

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#1 (south)

Percolation Test Number 2

1020mm Length x 370mm Width x 500mm Depth



Soil infiltration rate:

$$f = \frac{0.059}{0.804 \times 96.1 \times 60} = 1.279\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

1.279E-05 metres/second

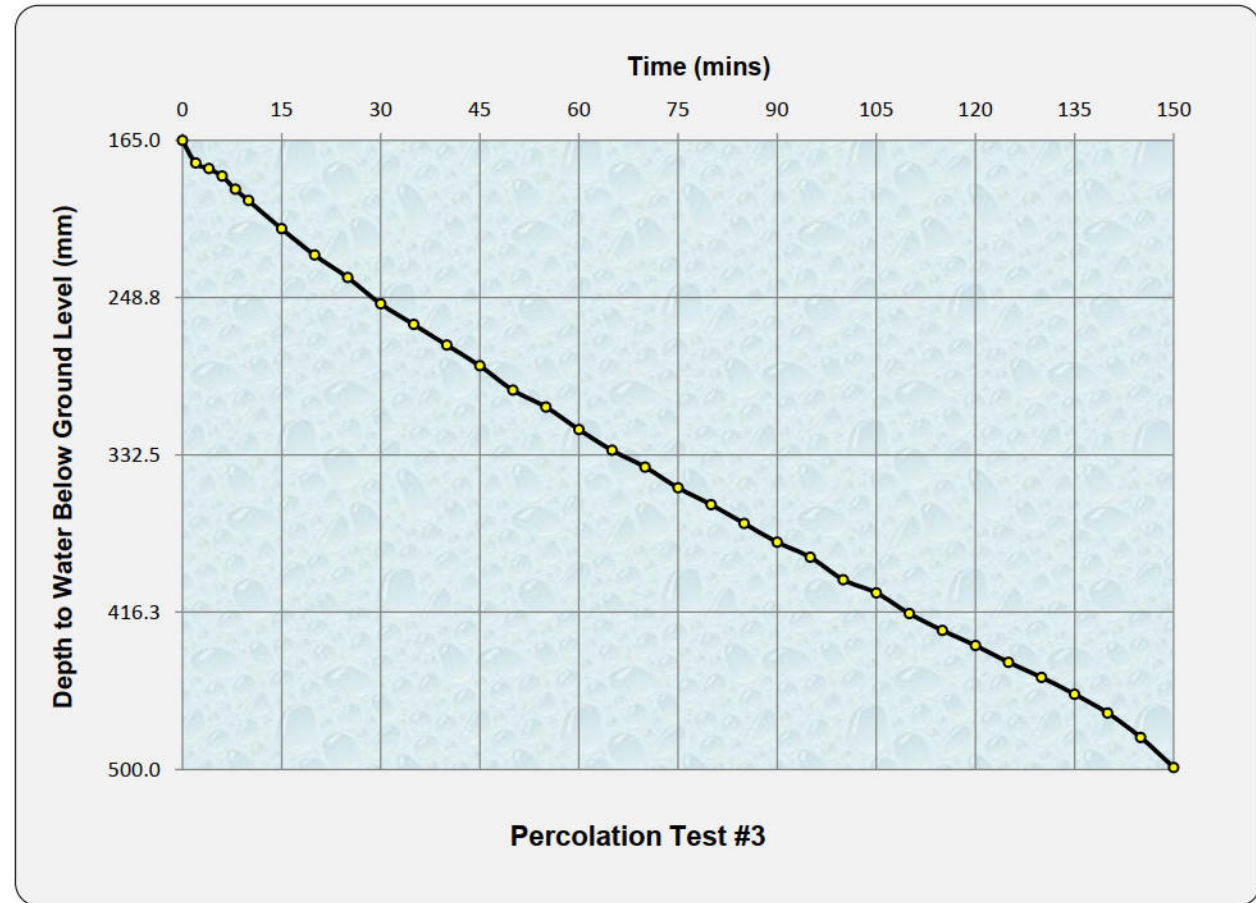
	Time (mins)	Depth to Water Surface
09:41:00	0	165
	2	177
	4	180
	6	184
	8	191
	10	197
	15	212
	20	226
	25	238
	30	252
10:41:00	35	263
	40	274
	45	285
	50	298
	55	307
	60	319
	65	330
	70	339
	75	350
	80	359
11:41:00	85	369
	90	379
	95	387
	100	399
	105	406
	110	417
	115	426
	120	434
	125	443
	130	451
12:11:00	135	460
	140	470
	145	483
	150	499

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#1 (south)

Percolation Test Number 3

1020mm Length x 370mm Width x 500mm Depth



Soil infiltration rate:

$$f = \frac{0.061}{0.815 \times 80.8 \times 60} = 1.537\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

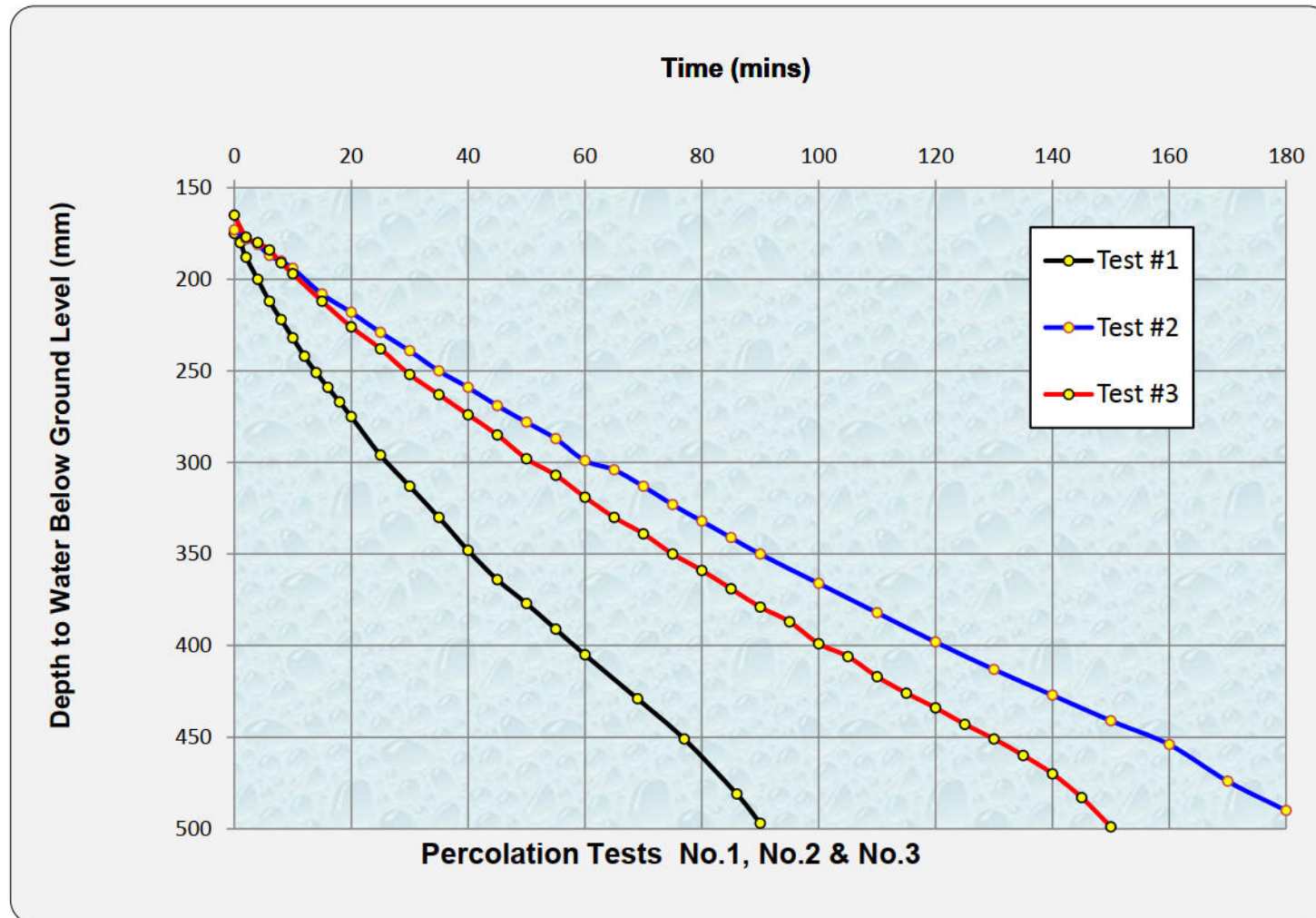
1.537E-05 metres/second

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#1 (south)

Percolation Testing Numbers #1, #2 and #3

1020mm Length x 370mm Width x 500mm Depth



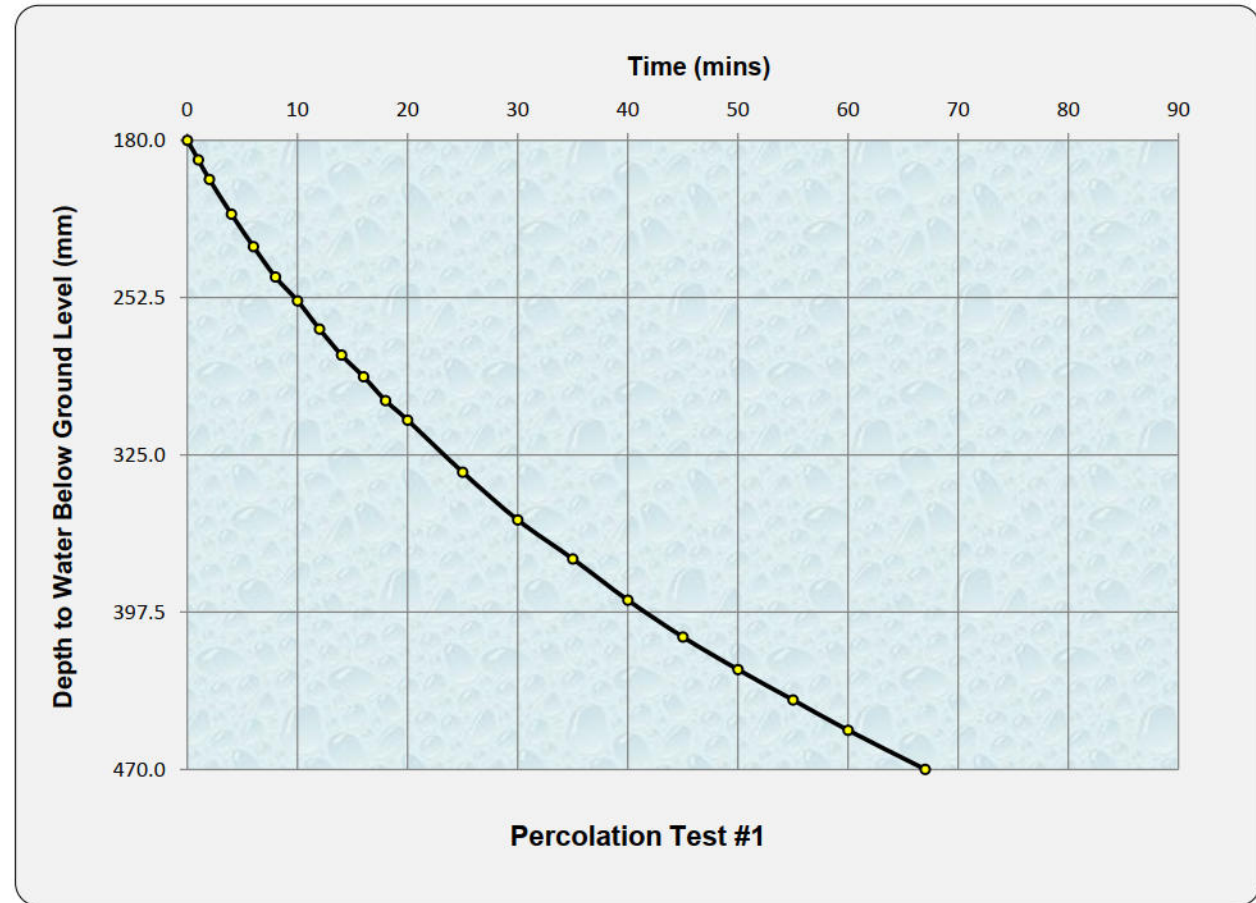
	Time (mins)	Depth to Water Surface
09:54:00	0	180
	1	189
	2	198
	4	214
	6	229
	8	243
	10	254
	12	267
	14	279
	16	289
	18	300
	20	309
	25	333
	30	355
	35	373
11:01:00	40	392
	45	409
	50	424
	55	438
	60	452
	67	470

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#2 (centre)

Percolation Test Number 1

1010mm Length x 380mm Width x 470mm Depth



Soil infiltration rate:

$$f = \frac{0.050}{0.713 \times 31.9 \times 60} = 3.634\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

3.634E-05 metres/second

12:05:00

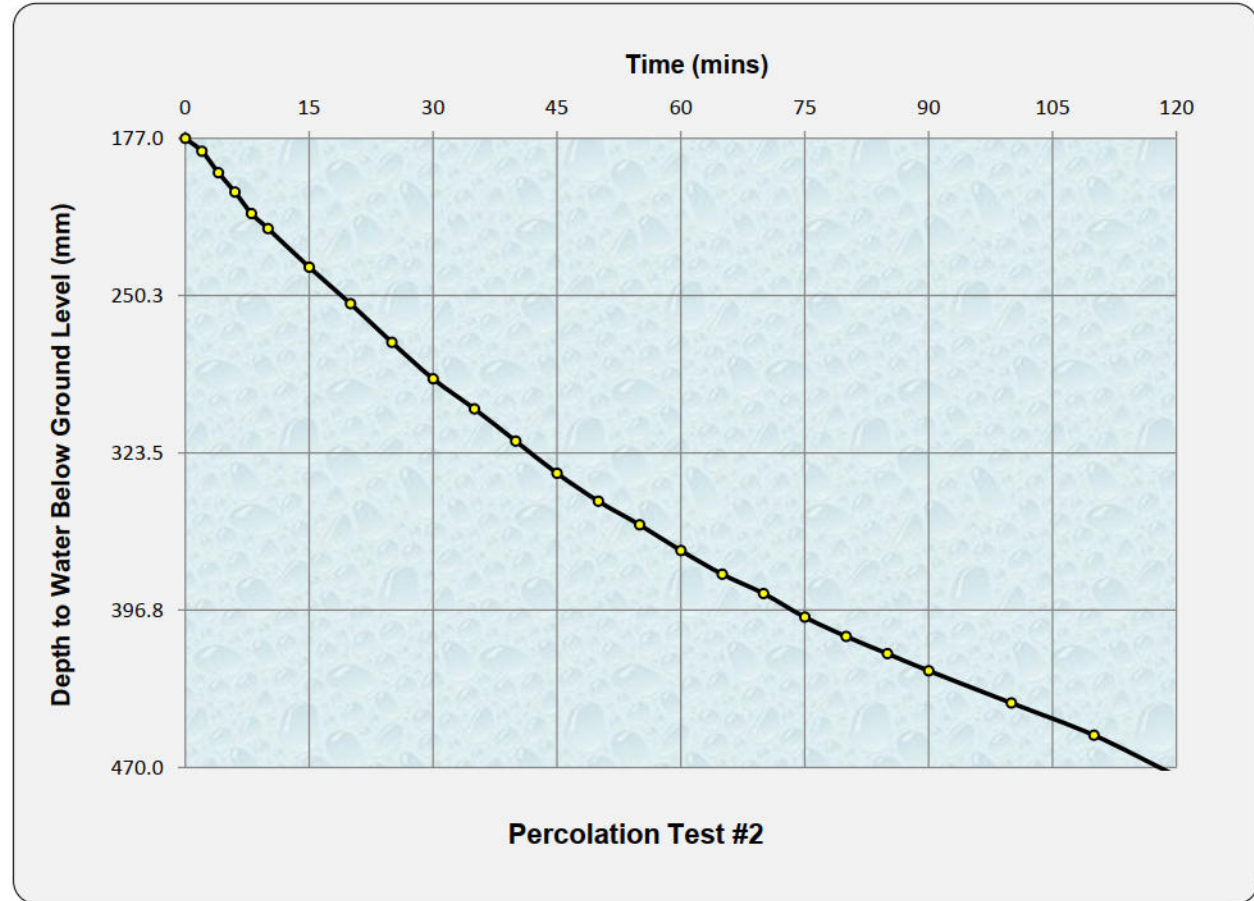
Time (mins)	Depth to Water Surface
0	177
2	183
4	193
6	202
8	212
10	219
15	237
20	254
25	272
30	289
35	303
40	318
45	333
50	346
55	357
60	369
65	380
70	389
75	400
80	409
85	417
90	425
100	440
110	455
120	474

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#2 (centre)

Percolation Test Number 2

1010mm Length x 380mm Width x 470mm Depth



Soil infiltration rate:

$$f = \frac{0.050}{0.717 \times 54.6 \times 60} = 2.132\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

2.132E-05 metres/second

10:42:00

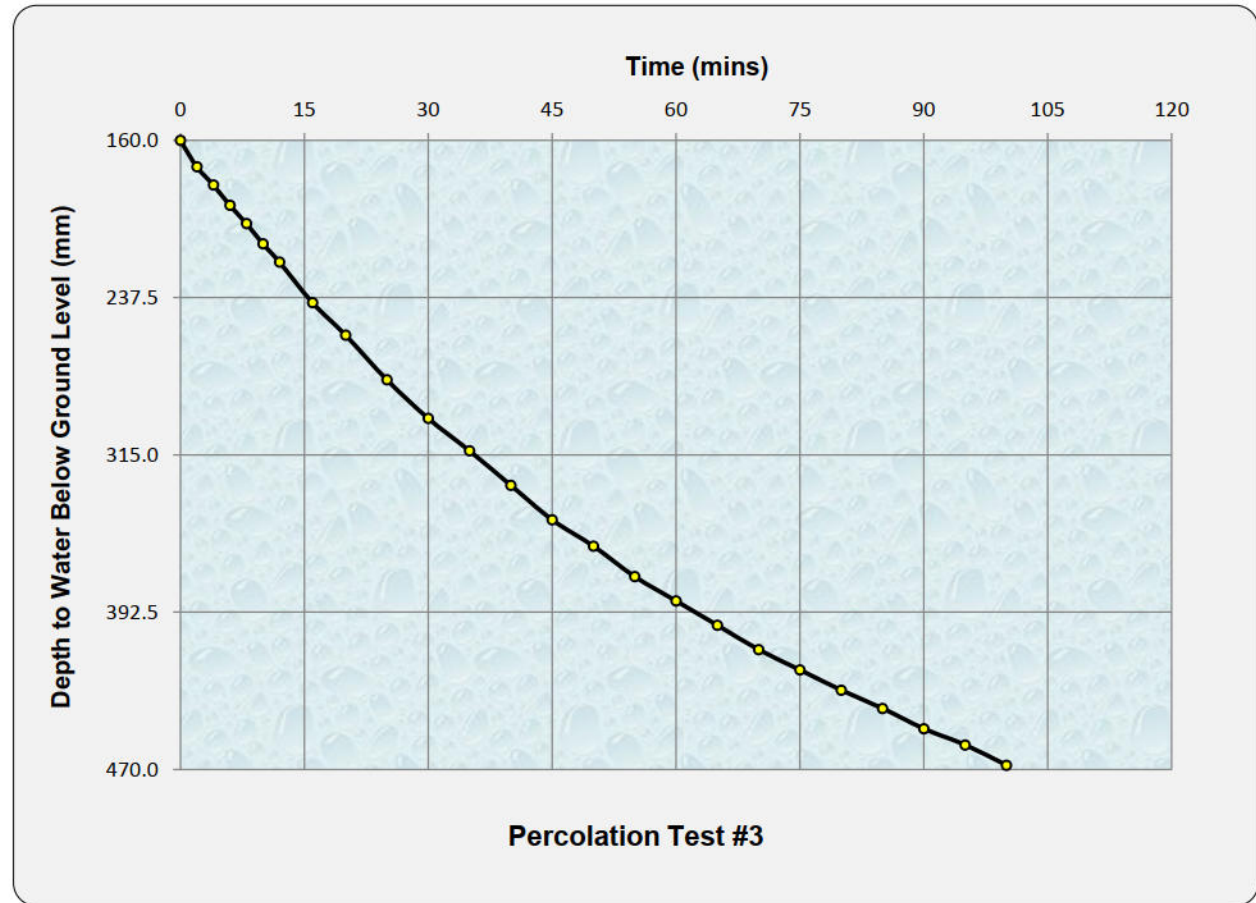
Time (mins)	Depth to Water Surface
0	160
2	173
4	182
6	192
8	201
10	211
12	220
16	240
20	256
25	278
30	297
35	313
40	330
45	347
50	360
55	375
60	387
65	399
70	411
75	421
80	431
85	440
90	450
95	458
100	468

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#2 (centre)

Percolation Test Number 3

1010mm Length x 380mm Width x 470mm Depth



Soil infiltration rate:

$$f = \frac{0.053}{0.739 \times 46.8 \times 60} = 2.556\text{E-}05 \text{ m/s}$$

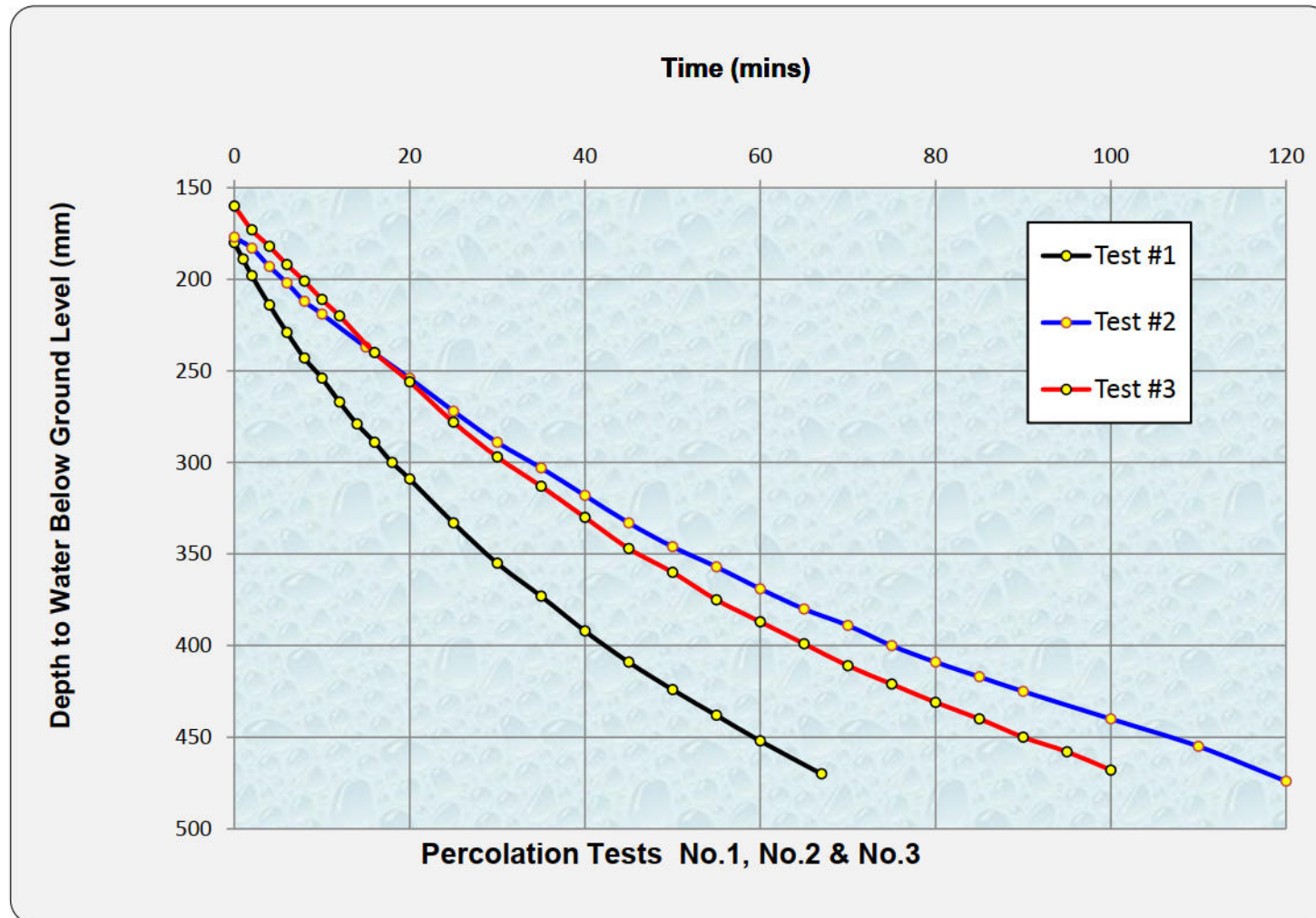
SOIL INFILTRATION RATE IS
2.556E-05 metres/second

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#2 (centre)

Percolation Testing Numbers #1, #2 and #3

1010mm Length x 380mm Width x 470mm Depth



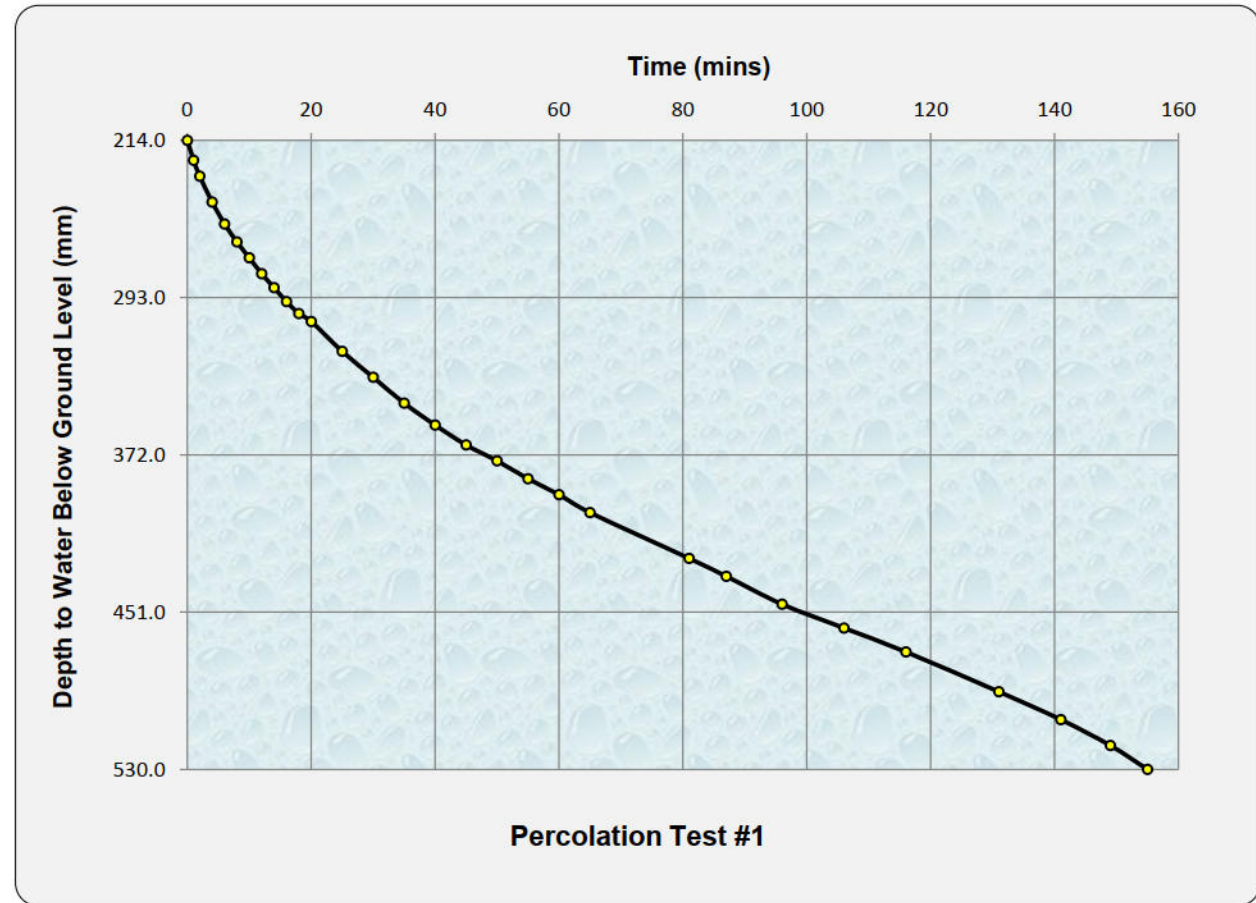
	Time (mins)	Depth to Water Surface
10:45:00	0	214
	1	224
	2	232
	4	245
	6	256
	8	265
	10	273
	12	281
	14	288
	16	295
	18	301
	20	305
	25	320
	30	333
	35	346
	40	357
	45	367
	50	375
	55	384
11:45:00	60	392
	65	401
	81	424
	87	433
	96	447
	106	459
	116	471
	131	491
	141	505
	149	518
	155	530

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#3 (north)

Percolation Test Number 1

1020mm Length x 390mm Width x 530mm Depth



Soil infiltration rate:

$$f = \frac{0.060}{0.815 \times 83.9 \times 60} = 1.472\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

1.472E-05 metres/second

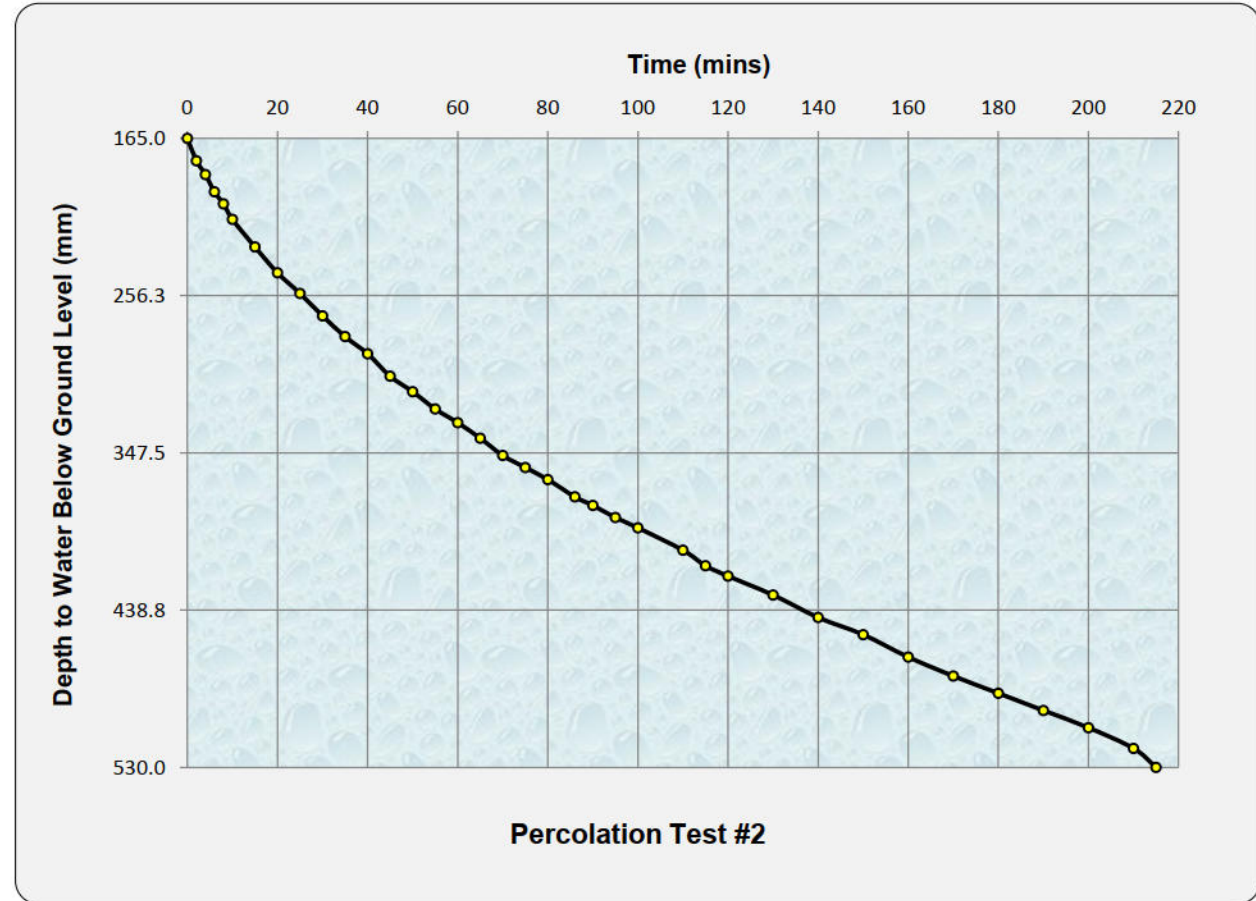
	Time (mins)	Depth to Water Surface
09:18:00	0	165
	2	178
	4	186
	6	196
	8	203
	10	212
	15	228
	20	243
	25	255
	30	268
10:18:00	35	280
	40	290
	45	303
	50	312
	55	322
	60	330
	65	339
	70	349
	75	356
	80	363
11:18:00	86	373
	90	378
	95	385
	100	391
	110	404
	115	413
	120	419
	130	430
	140	443
	150	453
12:18:00	160	466
	170	477
	180	487
	190	497
	200	507
	210	519
	215	530

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#3 (north)

Percolation Test Number 2

1020mm Length x 390mm Width x 530mm Depth



Soil infiltration rate:

$$f = \frac{0.070}{0.882 \times 111.3 \times 60} = 1.184\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

1.184E-05 metres/second

10:06:00

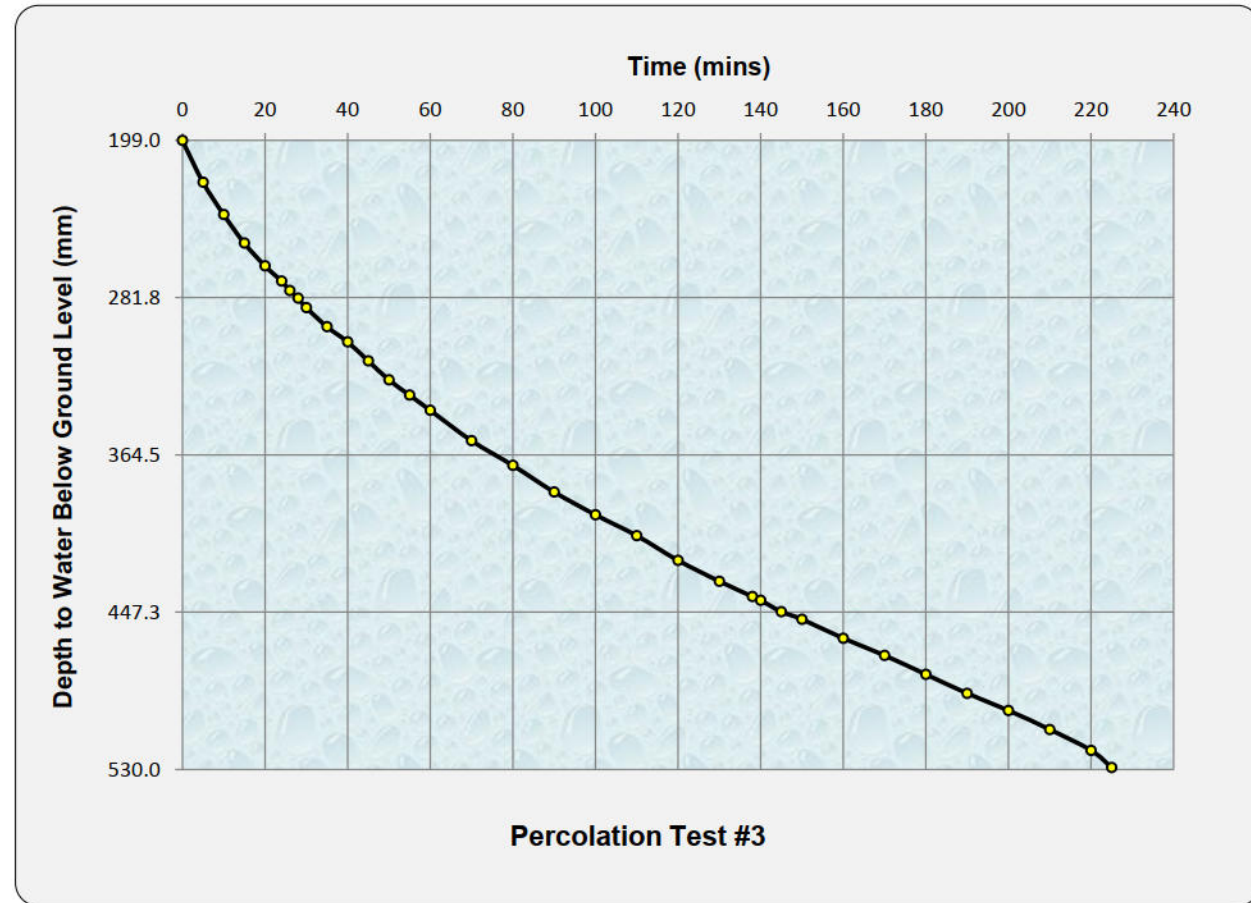
Time (mins)	Depth to Water Surface
0	199
5	221
10	238
15	253
20	265
24	273
26	278
28	282
30	287
35	297
40	305
45	315
50	325
55	333
60	341
70	357
80	370
90	384
100	396
110	407
120	420
130	431
138	439
140	441
145	447
150	451
160	461
170	470
180	480
190	490
200	499
210	509
220	520
225	529

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#3 (north)

Percolation Test Number 3

1020mm Length x 390mm Width x 530mm Depth



Soil infiltration rate:

$$f = \frac{0.063}{0.836 \times 117.4 \times 60} = 1.074\text{E-}05 \text{ m/s}$$

SOIL INFILTRATION RATE IS

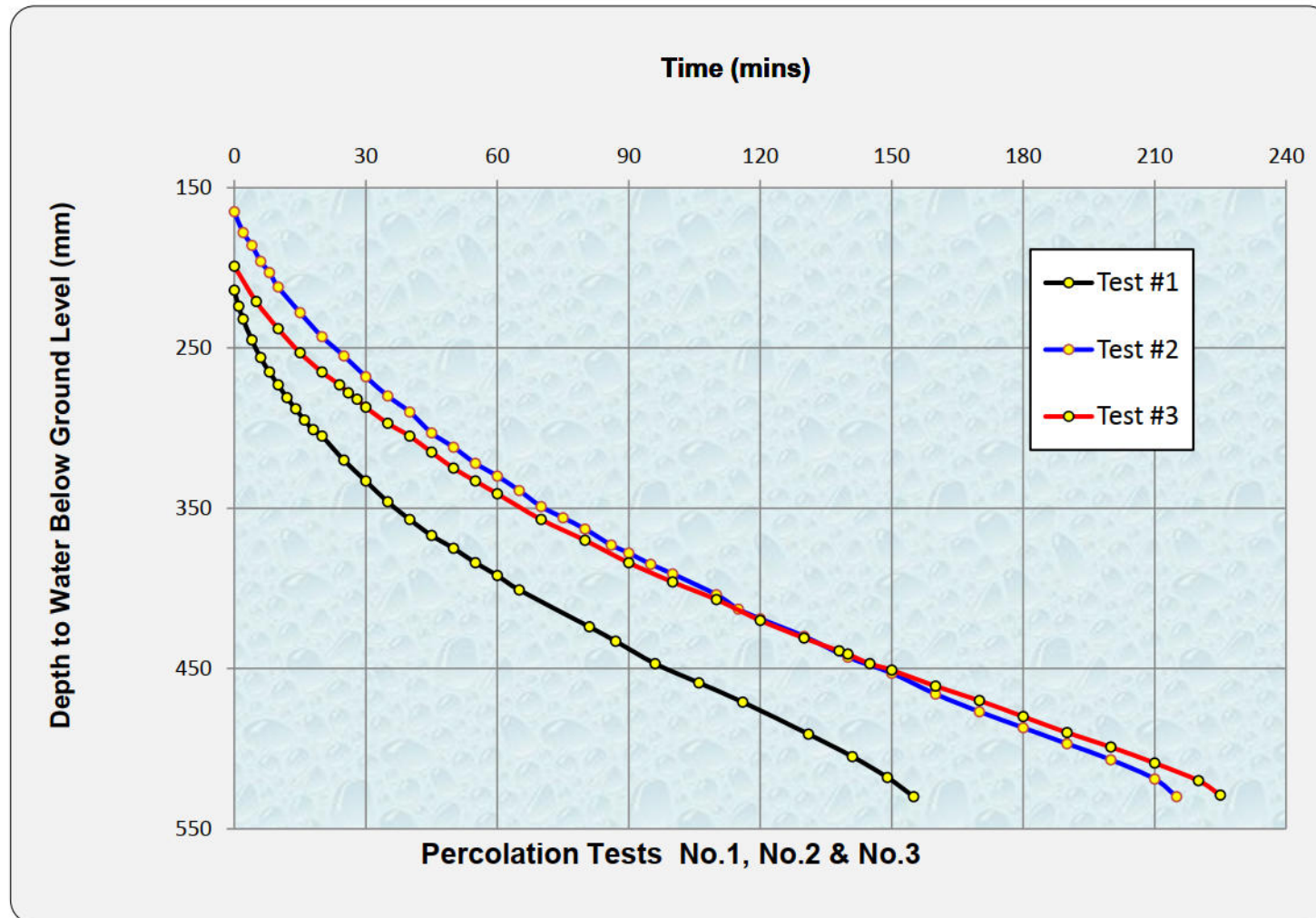
1.074E-05 metres/second

"Fairhaven" Nyetimber Lane, Aldwick, Bognor Regis

Percolation Trial Pit TP#3 (north)

Percolation Testing Numbers #1, #2 and #3

1020mm Length x 390mm Width x 530mm Depth



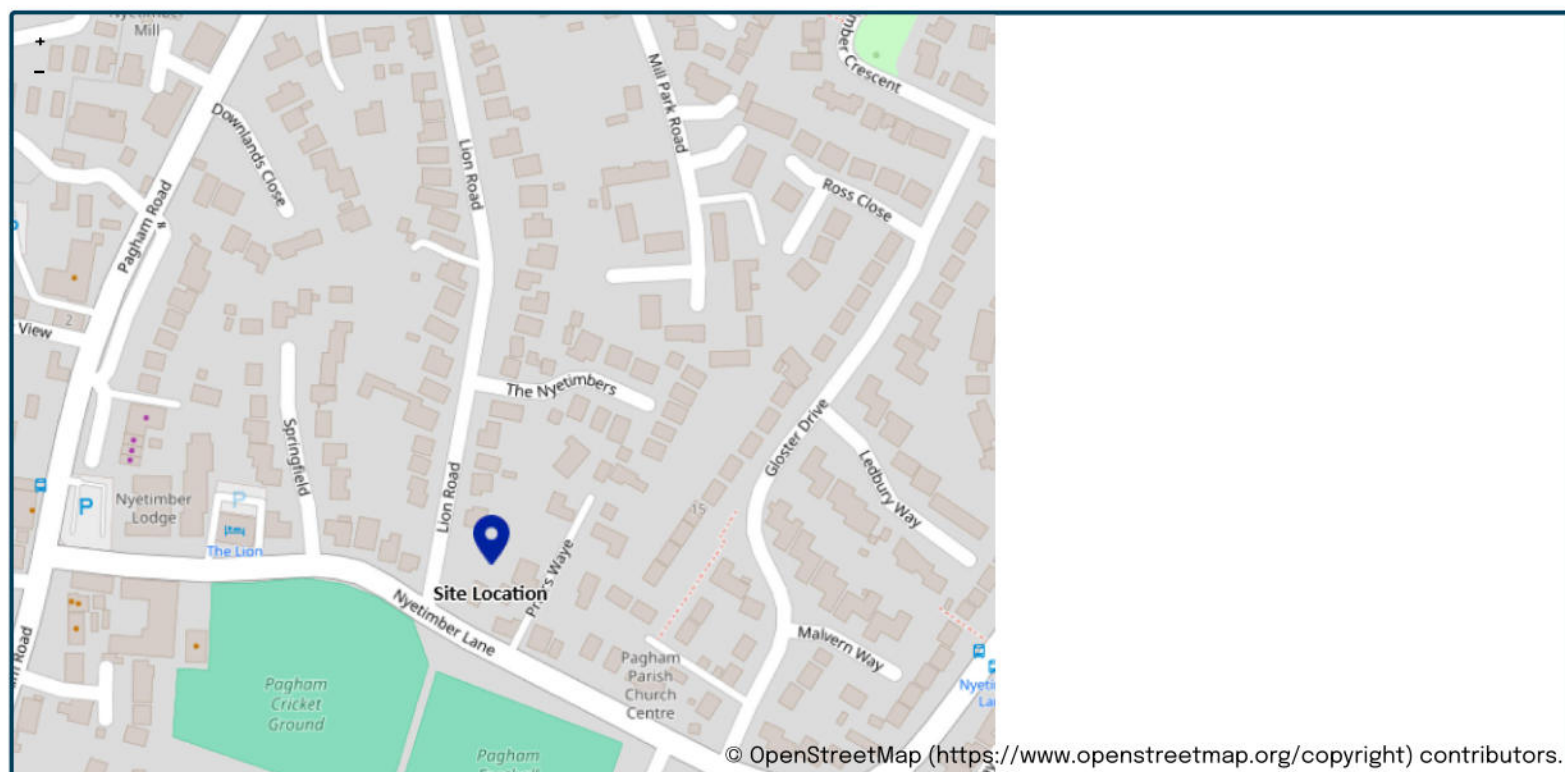
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	02/10/2025
Calculated by	LF
Reference	D2404
Model version	2.1.2

Location

Site name	Fairhaven, Pagham
Site location	Pagham, West Sussex



Site easting (British National Grid)	489420
Site northing (British National Grid)	98522

Site details

Total site area (ha)	0.19	ha
----------------------	-----------------------------------	----

Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	694 mm	☒	694
How should SPR be derived?	WRAP soil type		
WRAP soil type	3	☒	3
SPR	0.37		
QBar (IH124) (l/s)	0.54 l/s		

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	7	☒	7
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124	
Flow rate 1 year (l/s)	0.5	l/s
Flow rate 2 year (l/s)	0.5	l/s
Flow rate 10 years (l/s)	0.9	l/s
Flow rate 30 years (l/s)	1.2	l/s
Flow rate 100 years (l/s)	1.7	l/s
Flow rate 200 years (l/s)	2.0	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Our reference: **EIR2025/27211**

Date: **22/09/2025**

Dear Mark,

Thank you for your request of 02 September 2025 to use Environment Agency Product 4 data for the site centred at **489424,98535 (shown as easting and northing coordinates)**.

Response to your request

The Environment Agency's records indicate that the above site is located in Flood Zone 1 (land assessed as having less than 0.1% (1 in 1,000) chance of flooding in any given year from **rivers or the sea**). Therefore, the likelihood of flooding from rivers and sea in this area is estimated as 'very low'.

Proximity to Flood Zones 2 or 3

The above site is approximately 475 metres away from Flood Zone 2/3. We are therefore unable to provide data from our detailed fluvial or tidal models which is relevant to your site.

More information on Flood Zones can be found on the GOV.UK website:

<http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/flood-zone-and-flood-risk-tables/table-1-flood-zones/>

Surface water flooding

Our mapping indicates that there are areas within this site that are at **High Risk** of surface water flooding.

For information on flooding from all other sources, such as surface water, please contact the Lead Local Flood Authority, which in this case is **West Sussex County Council**. A link to their information available online is shown below:

<https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/dealing-with-flooding/flood-risk-management/local-flood-risk-management-strategy/>

Please note that the above is a link to an external website which the Environment Agency does not control or maintain. Therefore, the link may not be the most up-to-date at the date of this letter. If the link does not work, and you are unable to find the information about surface water flooding on the relevant website, please contact the authority named above directly.

Where you can find further information

- Detailed long-term flood information and maps can be found on the GOV.UK website:
<https://flood-warning-information.service.gov.uk/long-term-flood-risk/>
- Flood maps for planning can be found on the GOV.UK website:
<https://flood-map-for-planning.service.gov.uk/>
- Please be aware that in February 2016 the Environment Agency updated its guidance on climate change allowances. The standard allowance of adding 20% to peak flows – as per previous guidance in the National Planning Policy Framework, may not be applicable for the purposes of informing development proposals. It is possible that our current modelling has under estimated flood risk when taking climate change into consideration. This does not however have an effect on Flood Zones 2 or 3. For further information please visit:
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>
- Further details about the Environment Agency information supplied can be found on the GOV.UK website:
<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>
- If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency information for Flood Risk Assessments:
<https://www.gov.uk/planning-applications-assessing-flood-risk>
<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

If you have any queries or would like to discuss the content of this letter further please call us on 03708 506 506, or reply to the email sent to you with this letter attached.

Please get in touch if you have any further queries or contact us within two (2) months if you would like us to review the information we have sent.

For information on what you can expect from us and our full service commitment to you, please click on this link:

<https://www.gov.uk/government/publications/environment-agency-customer-service-commitment--2/environment-agency-customer-service-commitment>

Yours sincerely,

Amy O'Donnell

Partnership and Strategic Overview West Sussex, Solent and South Downs
Environment Agency | Teville Gate House, Teville Road, Worthing, West Sussex, BN11 1UR

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Diameter (m)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
Dif11	0.000	0.180	Type E	6.314	5.714	0.500	489417.209	98514.020
Dif10	0.000	0.180	Type E	6.300	5.700	0.500	489415.641	98511.056
S1 (FC)	0.091	1.350	Type C	6.324	5.120	1.054	489415.713	98512.746
Dif8	0.000	0.180	Type E	6.177	5.577	0.500	489408.246	98508.409
S4 (FC)	0.005	1.350	Type C	6.125	5.225	0.750	489407.436	98507.244
Dif9	0.000	0.180	Type E	5.711	5.111	0.500	489407.399	98501.254
S2 (FC)	0.006	1.350	Type C	5.709	4.620	0.939	489409.347	98501.096
S3	0.000	1.350	Type C	5.662	4.512	1.000	489409.083	98498.448

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (m)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	Dif11	5.714	S1 (FC)	5.170	Circ	0.1mØ	1.965	3.6	0.600	0.500	1.054
2.000	Dif10	5.700	S1 (FC)	5.170	Circ	0.1mØ	1.692	3.2	0.600	0.500	1.054
1.001	S1 (FC)	5.120	S2 (FC)	4.620	Circ	0.15mØ	13.276	26.6	0.600	1.054	0.939
3.000	Dif8	5.577	S4 (FC)	5.276	Circ	0.1mØ	1.419	4.7	0.600	0.500	0.750
3.001	S4 (FC)	5.225	S2 (FC)	4.620	Circ	0.15mØ	6.438	10.6	0.600	0.750	0.939
4.000	Dif9	5.111	S2 (FC)	4.670	Circ	0.1mØ	1.955	4.4	0.600	0.500	0.939
1.002	S2 (FC)	4.620	S3	4.512	Circ	0.15mØ	2.661	24.7	0.600	0.939	1.000

Permeable Paving Schedule

Permeable Paving	Assigned Manhole	Effective Storage Volume (m3)	CL (m)	IL (m)	Storage Infil Rate (m/hr)	Safety Factor	Easting (m)	Northing (m)
Permeable Paving1	S1 (FC)	67.072	6.324	5.714	0.00000000	2.00	489435.940	98557.830
Permeable Paving2	S4 (FC)	2.993	6.125	5.665	0.00000000	2.00	489407.291	98510.063
Permeable Paving3	S2 (FC)	6.206	5.709	5.249	0.00000000	2.00	489409.378	98504.177

Outfall Details

Outfall Manhole S3 : Free Discharge

Flow Control Details

Controls within Manhole S1 (FC)

Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.023	0.600

Controls within Manhole S4 (FC)

Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.020	0.600

Controls within Manhole S2 (FC)

Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.022	0.600

Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_489410_98521_v5_1_0.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (100, +0%), (100, +45%)

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
2Yr 15Min Winter	32.688	0.00	1.88	30Yr 720Min Winter	4.883	0.00	0.00
2Yr 15Min Summer	32.688	0.00	1.97	30Yr 960Min Summer	3.835	0.00	0.00
2Yr 30Min Winter	21.095	0.00	2.99	30Yr 960Min Winter	3.835	0.00	0.00
2Yr 30Min Summer	21.095	0.00	2.98	30Yr 1440Min Summer	2.745	0.00	0.00
2Yr 60Min Summer	13.227	0.00	3.07	30Yr 1440Min Winter	2.745	0.00	0.00
2Yr 60Min Winter	13.227	0.00	3.08	30Yr 2160Min Summer	1.984	0.00	0.00
2Yr 120Min Winter	8.998	0.00	2.50	30Yr 2160Min Winter	1.984	0.00	0.00
2Yr 120Min Summer	8.998	0.00	2.50	30Yr 2880Min Summer	1.584	0.00	0.00
2Yr 180Min Winter	7.067	0.00	1.97	30Yr 2880Min Winter	1.584	0.00	0.00
2Yr 180Min Summer	7.067	0.00	1.98	30Yr 4320Min Summer	1.173	0.00	0.00
2Yr 240Min Summer	5.768	0.00	1.04	30Yr 4320Min Winter	1.173	0.00	0.00
2Yr 240Min Winter	5.768	0.00	0.92	30Yr 5760Min Summer	0.963	0.00	0.00
2Yr 360Min Summer	4.316	0.00	0.00	30Yr 5760Min Winter	0.963	0.00	0.00
2Yr 360Min Winter	4.316	0.00	0.00	30Yr 7200Min Summer	0.833	0.00	0.00
2Yr 480Min Winter	3.496	0.00	0.00	30Yr 7200Min Winter	0.833	0.00	0.00
2Yr 480Min Summer	3.496	0.00	0.00	30Yr 8640Min Summer	0.746	0.00	0.00
2Yr 600Min Summer	2.947	0.00	0.00	30Yr 8640Min Winter	0.746	0.00	0.00
2Yr 600Min Winter	2.947	0.00	0.00	30Yr 10080Min Summer	0.683	0.00	0.00
2Yr 720Min Summer	2.554	0.00	0.00	30Yr 10080Min Winter	0.683	0.00	0.00
2Yr 720Min Winter	2.554	0.00	0.00	100Yr 15Min Summer	100.824	0.00	2.28
2Yr 960Min Summer	2.042	0.00	0.00	100Yr 15Min Winter	100.824	0.00	2.30
2Yr 960Min Winter	2.042	0.00	0.00	100Yr 30Min Summer	66.914	0.00	2.00
2Yr 1440Min Summer	1.491	0.00	0.00	100Yr 30Min Winter	66.914	0.00	2.00
2Yr 1440Min Winter	1.491	0.00	0.00	100Yr 60Min Summer	42.546	0.00	1.80
2Yr 2160Min Summer	1.098	0.00	0.00	100Yr 60Min Winter	42.546	0.00	1.81
2Yr 2160Min Winter	1.098	0.00	0.00	100Yr 120Min Summer	25.127	0.00	1.61
2Yr 2880Min Summer	0.893	0.00	0.00	100Yr 120Min Winter	25.127	0.00	1.61
2Yr 2880Min Winter	0.893	0.00	0.00	100Yr 180Min Summer	18.335	0.00	1.47
2Yr 4320Min Summer	0.684	0.00	0.00	100Yr 180Min Winter	18.335	0.00	1.47
2Yr 4320Min Winter	0.684	0.00	0.00	100Yr 240Min Summer	14.752	0.00	1.35
2Yr 5760Min Summer	0.577	0.00	0.00	100Yr 240Min Winter	14.752	0.00	1.35
2Yr 5760Min Winter	0.577	0.00	0.00	100Yr 360Min Summer	10.728	0.00	1.14
2Yr 7200Min Summer	0.512	0.00	0.00	100Yr 360Min Winter	10.728	0.00	1.15
2Yr 7200Min Winter	0.512	0.00	0.00	100Yr 480Min Summer	8.515	0.00	0.96
2Yr 8640Min Summer	0.467	0.00	0.00	100Yr 480Min Winter	8.515	0.00	0.96
2Yr 8640Min Winter	0.467	0.00	0.00	100Yr 600Min Summer	7.102	0.00	0.79
2Yr 10080Min Summer	0.435	0.00	0.00	100Yr 600Min Winter	7.102	0.00	0.80
2Yr 10080Min Winter	0.435	0.00	0.00	100Yr 720Min Summer	6.106	0.00	0.60
10Yr 15Min Winter	62.158	0.00	2.87	100Yr 720Min Winter	6.106	0.00	0.60
10Yr 15Min Summer	62.158	0.00	2.86	100Yr 960Min Summer	4.788	0.00	0.00
10Yr 30Min Summer	40.535	0.00	2.57	100Yr 960Min Winter	4.788	0.00	0.00
10Yr 30Min Winter	40.535	0.00	2.57	100Yr 1440Min Summer	3.424	0.00	0.00
10Yr 60Min Summer	25.373	0.00	2.27	100Yr 1440Min Winter	3.424	0.00	0.00
10Yr 60Min Winter	25.373	0.00	2.27	100Yr 2160Min Summer	2.471	0.00	0.00
10Yr 120Min Winter	15.744	0.00	1.92	100Yr 2160Min Winter	2.471	0.00	0.00
10Yr 120Min Summer	15.744	0.00	1.92	100Yr 2880Min Summer	1.963	0.00	0.00
10Yr 180Min Summer	11.778	0.00	1.70	100Yr 2880Min Winter	1.963	0.00	0.00
10Yr 180Min Winter	11.778	0.00	1.70	100Yr 4320Min Summer	1.438	0.00	0.00
10Yr 240Min Summer	9.484	0.00	1.53	100Yr 4320Min Winter	1.438	0.00	0.00
10Yr 240Min Winter	9.484	0.00	1.53	100Yr 5760Min Summer	1.167	0.00	0.00
10Yr 360Min Summer	6.918	0.00	1.23	100Yr 5760Min Winter	1.167	0.00	0.00
10Yr 360Min Winter	6.918	0.00	1.22	100Yr 7200Min Summer	1.001	0.00	0.00
10Yr 480Min Summer	5.504	0.00	0.42	100Yr 7200Min Winter	1.001	0.00	0.00
10Yr 480Min Winter	5.504	0.00	0.33	100Yr 8640Min Summer	0.888	0.00	0.00
10Yr 600Min Summer	4.592	0.00	0.00	100Yr 8640Min Winter	0.888	0.00	0.00

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
10Yr 600Min Winter	4.592	0.00	0.00	100Yr 10080Min Summer	0.806	0.00	0.00
10Yr 720Min Summer	3.951	0.00	0.00	100Yr 10080Min Winter	0.806	0.00	0.00
10Yr 720Min Winter	3.951	0.00	0.00	100Yr+45% 15Min Summer	146.194	0.00	1.92
10Yr 960Min Summer	3.116	0.00	0.00	100Yr+45% 15Min Winter	146.194	0.00	1.93
10Yr 960Min Winter	3.116	0.00	0.00	100Yr+45% 30Min Summer	97.025	0.00	1.74
10Yr 1440Min Summer	2.238	0.00	0.00	100Yr+45% 30Min Winter	97.025	0.00	1.74
10Yr 1440Min Winter	2.238	0.00	0.00	100Yr+45% 60Min Summer	61.691	0.00	1.57
10Yr 2160Min Summer	1.624	0.00	0.00	100Yr+45% 60Min Winter	61.691	0.00	1.58
10Yr 2160Min Winter	1.624	0.00	0.00	100Yr+45% 120Min Summer	36.434	0.00	1.42
10Yr 2880Min Summer	1.304	0.00	0.00	100Yr+45% 120Min Winter	36.434	0.00	1.42
10Yr 2880Min Winter	1.304	0.00	0.00	100Yr+45% 180Min Summer	26.586	0.00	1.31
10Yr 4320Min Summer	0.975	0.00	0.00	100Yr+45% 180Min Winter	26.586	0.00	1.31
10Yr 4320Min Winter	0.975	0.00	0.00	100Yr+45% 240Min Summer	21.391	0.00	1.22
10Yr 5760Min Summer	0.807	0.00	0.00	100Yr+45% 240Min Winter	21.391	0.00	1.22
10Yr 5760Min Winter	0.807	0.00	0.00	100Yr+45% 360Min Summer	15.555	0.00	1.07
10Yr 7200Min Summer	0.705	0.00	0.00	100Yr+45% 360Min Winter	15.555	0.00	1.07
10Yr 7200Min Winter	0.705	0.00	0.00	100Yr+45% 480Min Summer	12.347	0.00	0.94
10Yr 8640Min Summer	0.636	0.00	0.00	100Yr+45% 480Min Winter	12.347	0.00	0.94
10Yr 8640Min Winter	0.636	0.00	0.00	100Yr+45% 600Min Summer	10.297	0.00	0.83
10Yr 10080Min Summer	0.587	0.00	0.00	100Yr+45% 600Min Winter	10.297	0.00	0.83
10Yr 10080Min Winter	0.587	0.00	0.00	100Yr+45% 720Min Summer	8.853	0.00	0.72
30Yr 15Min Summer	80.490	0.00	2.56	100Yr+45% 720Min Winter	8.853	0.00	0.72
30Yr 15Min Winter	80.490	0.00	2.59	100Yr+45% 960Min Summer	6.943	0.00	0.52
30Yr 30Min Summer	52.998	0.00	2.24	100Yr+45% 960Min Winter	6.943	0.00	0.52
30Yr 30Min Winter	52.998	0.00	2.24	100Yr+45% 1440Min Summer	4.965	0.00	0.00
30Yr 60Min Summer	33.352	0.00	1.99	100Yr+45% 1440Min Winter	4.965	0.00	0.00
30Yr 60Min Winter	33.352	0.00	1.99	100Yr+45% 2160Min Summer	3.583	0.00	0.00
30Yr 120Min Summer	20.086	0.00	1.74	100Yr+45% 2160Min Winter	3.583	0.00	0.00
30Yr 120Min Winter	20.086	0.00	1.74	100Yr+45% 2880Min Summer	2.846	0.00	0.00
30Yr 180Min Summer	14.786	0.00	1.57	100Yr+45% 2880Min Winter	2.846	0.00	0.00
30Yr 180Min Winter	14.786	0.00	1.57	100Yr+45% 4320Min Summer	2.085	0.00	0.00
30Yr 240Min Summer	11.856	0.00	1.43	100Yr+45% 4320Min Winter	2.085	0.00	0.00
30Yr 240Min Winter	11.856	0.00	1.43	100Yr+45% 5760Min Summer	1.693	0.00	0.00
30Yr 360Min Summer	8.618	0.00	1.18	100Yr+45% 5760Min Winter	1.693	0.00	0.00
30Yr 360Min Winter	8.618	0.00	1.18	100Yr+45% 7200Min Summer	1.451	0.00	0.00
30Yr 480Min Summer	6.838	0.00	0.96	100Yr+45% 7200Min Winter	1.451	0.00	0.00
30Yr 480Min Winter	6.838	0.00	0.96	100Yr+45% 8640Min Summer	1.287	0.00	0.00
30Yr 600Min Summer	5.690	0.00	0.50	100Yr+45% 8640Min Winter	1.287	0.00	0.00
30Yr 600Min Winter	5.690	0.00	0.45	100Yr+45% 10080Min Winter	1.169	0.00	0.00
30Yr 720Min Summer	4.883	0.00	0.00	100Yr+45% 10080Min Summer	1.169	0.00	0.00

Simulation Results

Return Period Yrs: 2.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Dif11	360 min Summer	249	5.802	0.088	0.000		OK
Dif10	360 min Summer	249	5.802	0.102	0.000		Surcharged
S1 (FC)	360 min Summer	249	5.802	0.682	0.802		Surcharged
Dif8	-	0	5.577	0.000	0.000		OK
S4 (FC)	120 min Summer	76	5.342	0.116	0.270		OK
Dif9	600 min Winter	478	5.292	0.180	0.000		Surcharged
S2 (FC)	600 min Winter	484	5.292	0.672	0.831		Surcharged
S3	600 min Winter	486	4.528	0.015	0.818		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	360 min Summer	504	Dif11	S1 (FC)	0.094	0.006	0.024	0.001	OK
2.000	480 min Summer	595	Dif10	S1 (FC)	0.100	0.014	0.059	0.002	Surcharged
1.001	180 min Summer	200	S1 (FC)	S2 (FC)	0.150	0.388	0.891	0.026	Surcharged
3.000	120 min Summer	76	Dif8	S4 (FC)	0.033	0.000	0.000	0.000	OK
3.001	600 min Winter	486	S4 (FC)	S2 (FC)	0.108	0.037	0.101	0.002	OK
4.000	720 min Winter	803	Dif9	S2 (FC)	0.100	0.041	0.177	0.006	Surcharged
1.002	600 min Winter	486	S2 (FC)	S3	0.016	0.842	0.818	0.023	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	360 min Summer	249	5.803	0.089	0.796		OK
Permeable Paving2	30 min Summer	23	5.687	0.021	0.561		OK
Permeable Paving3	600 min Winter	482	5.292	0.043	0.030		OK

Return Period Yrs: 10.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Dif11	240 min Winter	224	5.885	0.171	0.000		Surcharged
Dif10	240 min Winter	222	5.885	0.185	0.011		Surcharged
S1 (FC)	240 min Winter	222	5.884	0.764	0.829		Surcharged
Dif8	-	0	5.577	0.000	0.000		OK
S4 (FC)	60 min Summer	48	5.518	0.292	0.431		Surcharged
Dif9	480 min Winter	433	5.353	0.242	0.000		Surcharged
S2 (FC)	480 min Winter	439	5.353	0.733	0.893		Surcharged
S3	480 min Winter	436	4.528	0.016	0.856		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	720 min Summer	1003	Dif11	S1 (FC)	0.100	0.045	0.189	0.006	Surcharged
2.000	600 min Summer	933	Dif10	S1 (FC)	0.100	0.032	0.159	0.005	Surcharged
1.001	60 min Winter	62	S1 (FC)	S2 (FC)	0.150	0.532	0.919	0.027	Surcharged
3.000	15 min Winter	18	Dif8	S4 (FC)	0.050	0.000	0.000	0.000	OK
3.001	480 min Winter	435	S4 (FC)	S2 (FC)	0.139	0.044	0.157	0.003	OK
4.000	480 min Winter	946	Dif9	S2 (FC)	0.100	0.047	0.203	0.007	Surcharged
1.002	480 min Winter	436	S2 (FC)	S3	0.016	0.852	0.856	0.024	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	240 min Winter	221	5.886	0.172	0.830		OK
Permeable Paving2	30 min Summer	23	5.699	0.033	0.925		OK
Permeable Paving3	480 min Winter	436	5.353	0.104	0.031		OK

Return Period Yrs: 30.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Dif11	240 min Winter	232	5.942	0.228	0.000		Surcharged
Dif10	240 min Winter	232	5.942	0.243	0.000		Surcharged
S1 (FC)	240 min Winter	232	5.942	0.822	0.827		Surcharged
Dif8	60 min Summer	50	5.622	0.045	0.000		OK
S4 (FC)	60 min Summer	50	5.622	0.396	0.492		Surcharged
Dif9	480 min Winter	440	5.396	0.284	0.009		Surcharged
S2 (FC)	480 min Winter	443	5.396	0.776	0.888		Surcharged
S3	480 min Winter	442	4.529	0.016	0.881		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	960 min Winter	1304	Dif11	S1 (FC)	0.100	0.041	0.171	0.005	Surcharged
2.000	720 min Summer	1186	Dif10	S1 (FC)	0.100	0.034	0.169	0.005	Surcharged
1.001	60 min Summer	51	S1 (FC)	S2 (FC)	0.150	0.528	0.952	0.027	Surcharged
3.000	60 min Summer	60	Dif8	S4 (FC)	0.072	0.036	0.154	0.005	OK
3.001	240 min Winter	210	S4 (FC)	S2 (FC)	0.150	0.086	0.313	0.006	Surcharged
4.000	1440 min Summer	1663	Dif9	S2 (FC)	0.100	0.050	0.214	0.007	Surcharged
1.002	480 min Winter	442	S2 (FC)	S3	0.016	0.859	0.881	0.025	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	240 min Winter	232	5.944	0.230	0.789		OK
Permeable Paving2	30 min Summer	22	5.707	0.041	1.312		OK
Permeable Paving3	480 min Winter	443	5.396	0.147	0.037		OK

Return Period Yrs: 100.0

Climate Change %: 0

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Dif11	360 min Winter	342	6.018	0.304	0.000		Flood Risk
Dif10	360 min Winter	342	6.018	0.318	0.000		Flood Risk
S1 (FC)	360 min Winter	342	6.018	0.898	0.834		Surcharged
Dif8	60 min Summer	50	5.698	0.121	0.000		Surcharged
S4 (FC)	60 min Summer	50	5.698	0.472	0.516		Surcharged
Dif9	480 min Winter	453	5.451	0.340	0.000		Flood Risk
S2 (FC)	480 min Winter	451	5.451	0.831	0.893		Flood Risk
S3	480 min Winter	450	4.529	0.016	0.912		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	720 min Winter	1424	Dif11	S1 (FC)	0.100	0.047	0.200	0.006	Surcharged
2.000	960 min Winter	1551	Dif10	S1 (FC)	0.100	0.031	0.155	0.005	Surcharged
1.001	120 min Summer	70	S1 (FC)	S2 (FC)	0.150	0.469	1.100	0.032	Surcharged
3.000	60 min Winter	75	Dif8	S4 (FC)	0.100	0.060	0.262	0.009	Surcharged
3.001	120 min Winter	110	S4 (FC)	S2 (FC)	0.150	0.154	0.436	0.008	Surcharged
4.000	60 min Summer	46	Dif9	S2 (FC)	0.100	0.061	0.481	0.017	Surcharged
1.002	480 min Winter	450	S2 (FC)	S3	0.016	0.867	0.912	0.025	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	360 min Winter	342	6.020	0.305	0.831		OK
Permeable Paving2	30 min Summer	22	5.716	0.050	1.731		OK
Permeable Paving3	480 min Winter	452	5.451	0.202	0.044		OK

Return Period Yrs: 100.0

Climate Change %: 45

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Dif11	480 min Winter	461	6.199	0.485	0.028		Flood Risk
Dif10	480 min Winter	462	6.199	0.499	0.000		Flood Risk
S1 (FC)	480 min Winter	462	6.199	1.079	0.880		Flood Risk
Dif8	60 min Summer	54	5.764	0.187	0.002		Surcharged
S4 (FC)	60 min Summer	54	5.764	0.539	0.535		Surcharged
Dif9	480 min Winter	457	5.580	0.469	0.024		Flood Risk
S2 (FC)	480 min Winter	459	5.580	0.960	0.983		Flood Risk
S3	480 min Winter	459	4.529	0.017	0.981		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	2160 min Summer	2776	Dif11	S1 (FC)	0.100	0.042	0.178	0.006	Surcharged
2.000	2160 min Winter	2754	Dif10	S1 (FC)	0.100	0.035	0.172	0.005	Surcharged
1.001	60 min Winter	40	S1 (FC)	S2 (FC)	0.150	0.535	1.187	0.034	Surcharged
3.000	15 min Winter	47	Dif8	S4 (FC)	0.100	0.076	0.328	0.012	Surcharged
3.001	30 min Winter	82	S4 (FC)	S2 (FC)	0.150	0.167	0.696	0.013	Surcharged
4.000	15 min Winter	29	Dif9	S2 (FC)	0.100	0.020	0.158	0.005	Surcharged
1.002	480 min Winter	459	S2 (FC)	S3	0.017	0.887	0.981	0.027	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
Permeable Paving1	480 min Winter	461	6.200	0.486	0.854		OK
Permeable Paving2	60 min Summer	54	5.764	0.099	0.549		OK
Permeable Paving3	480 min Winter	459	5.580	0.331	0.059		OK



FAIRHAVEN, PAGHAM

RESIDENTIAL DEVELOPMENT

Drainage Maintenance Statement

Prepared on Behalf of

Randmere Ltd

D2404/MS1.1

October 2025

DOCUMENT CONTROL

Project: Fairhaven, Pagham
Residential Development

Document: Drainage Maintenance

Client: Randmere Ltd

Reference: D2404/MS1.1

Document Checking:

Author:	MJA	_____	Date:	01/10/2024	_____
Checked by:	LDF	_____	Date:	01/10/2024	_____
Approved by:	LDF	_____	Date:	01/10/2024	_____

Status:

Issue	Date	Status	Issued By
1.0	03/10/2025	Initial Issue	LDF
1.1	22/10/2025	Final Issue	LDF

CONTENTS

1	Introduction	5
1.1	Background	5
2	Proposed Drainage Strategy	6
2.1	Surface Water	6
2.2	Foul Water Drainage	6
3	Management and Maintenance	7
3.1	Responsibility for Maintenance	7
3.2	General Maintenance	7
3.3	Flow Control Chambers/Devices.....	8
3.4	Permeable Paving	8
3.5	Remedial/Repair Actions.....	9
3.6	Accidental Spillages.....	9
3.7	Construction Phasing	9
3.8	Future Alterations to the Development	9

DRAWINGS

000-BPC-WD-ZZ-D-C-PL006

000-BPC-WD-ZZ-D-C-PL007

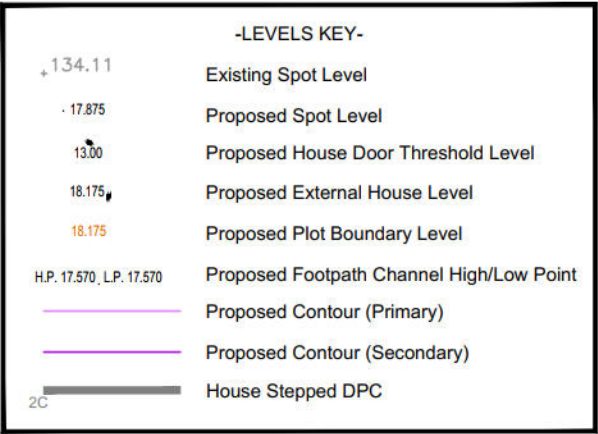
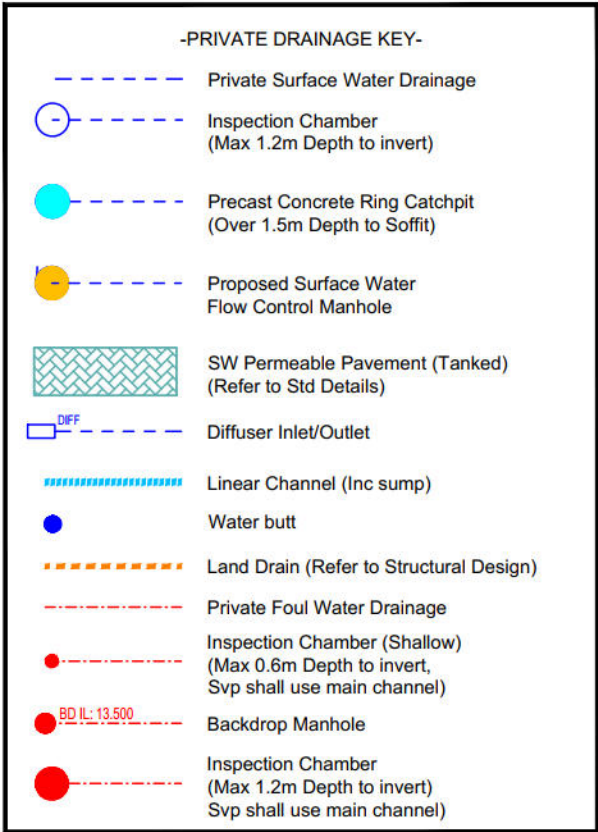
000-BPC-WD-ZZ-D-C-PL010

Preliminary Levels and Drainage Layout

Preliminary Drainage Schedules

Drainage Details

1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
3. Do not scale, work to figured dimensions only. All dimensions are in millimetres unless noted otherwise and all levels are in metres from the topographic survey datum.
4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.
8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.



Refer to structural drawings for further information on structural slab levels.

Topographical information shown is based on site survey undertaken by others as part of site-wide development.

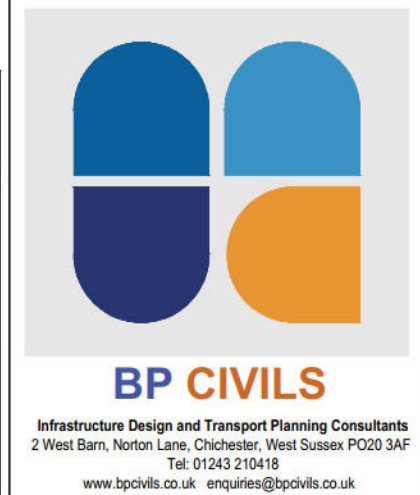
Contours are only as accurate as the initial land survey information.
Contours are approximate only and spot levels may vary slightly on site.

Topographical survey levels are not to Ordnance Survey (OS) datum and need to be verified prior to work commencement.

THRESHOLD PLATFORM SUMMARY:

Level Threshold	L
Ramped (Part M)	S
Stepped Approach	R

-	-	Original Issue
Rev.	Date	Amendments



Drawing Status
FOR INFORMATION
NOT FOR CONSTRUCTION

Client	Randmere Limited
--------	------------------

Project	Fairhaven, Nyetimber Lane Bognor Regis, PO21 3JT
---------	---

Drawing Title
Preliminary Levels & Drainage

Scale at A3 1:500	Date Sept 25	Drawn By JHL	Checked By LDF	Project No. D2404
Drawing Code 000-BPC-WD-ZZ-D-C			Drawing No. PL006	Rev. P01

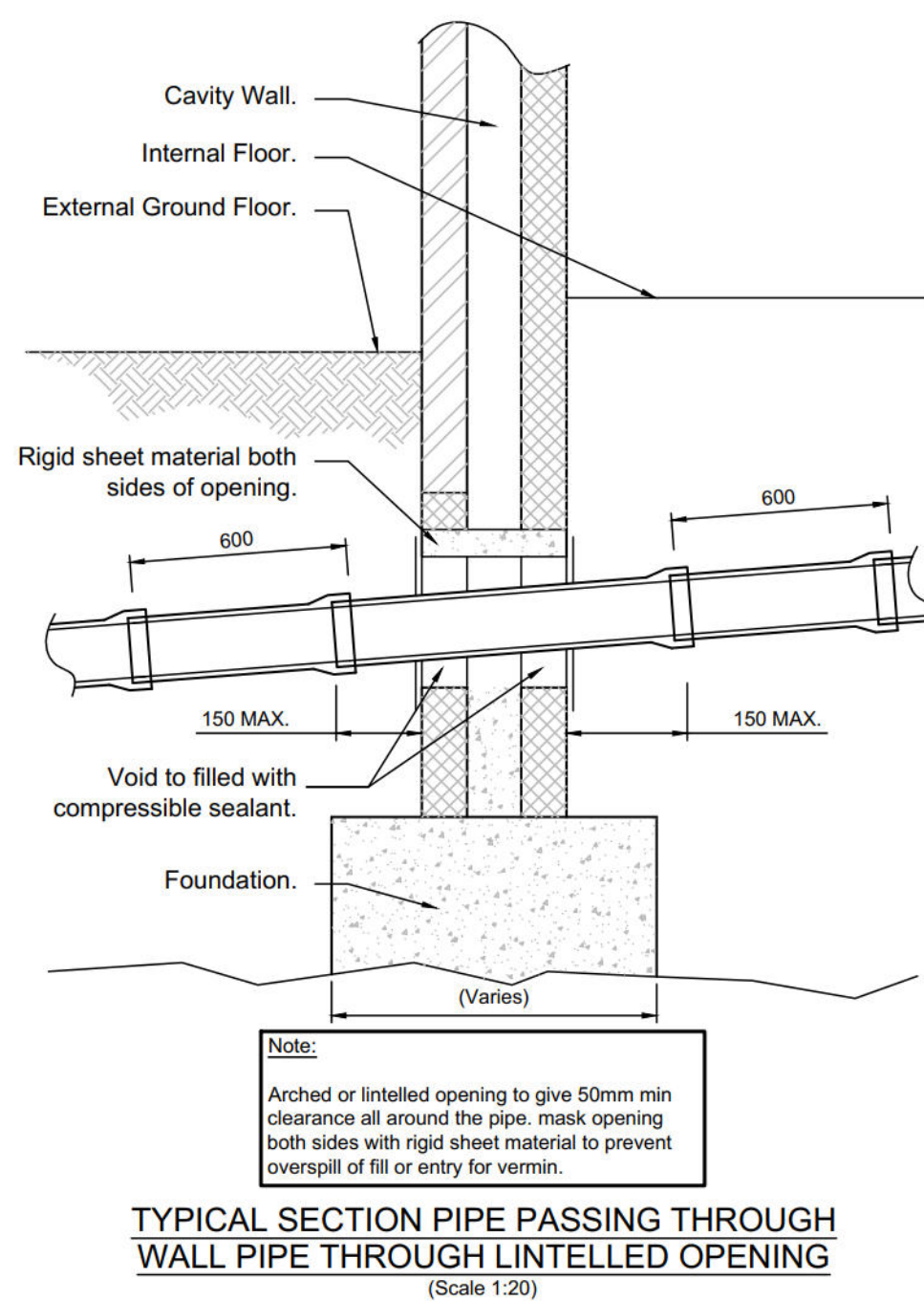
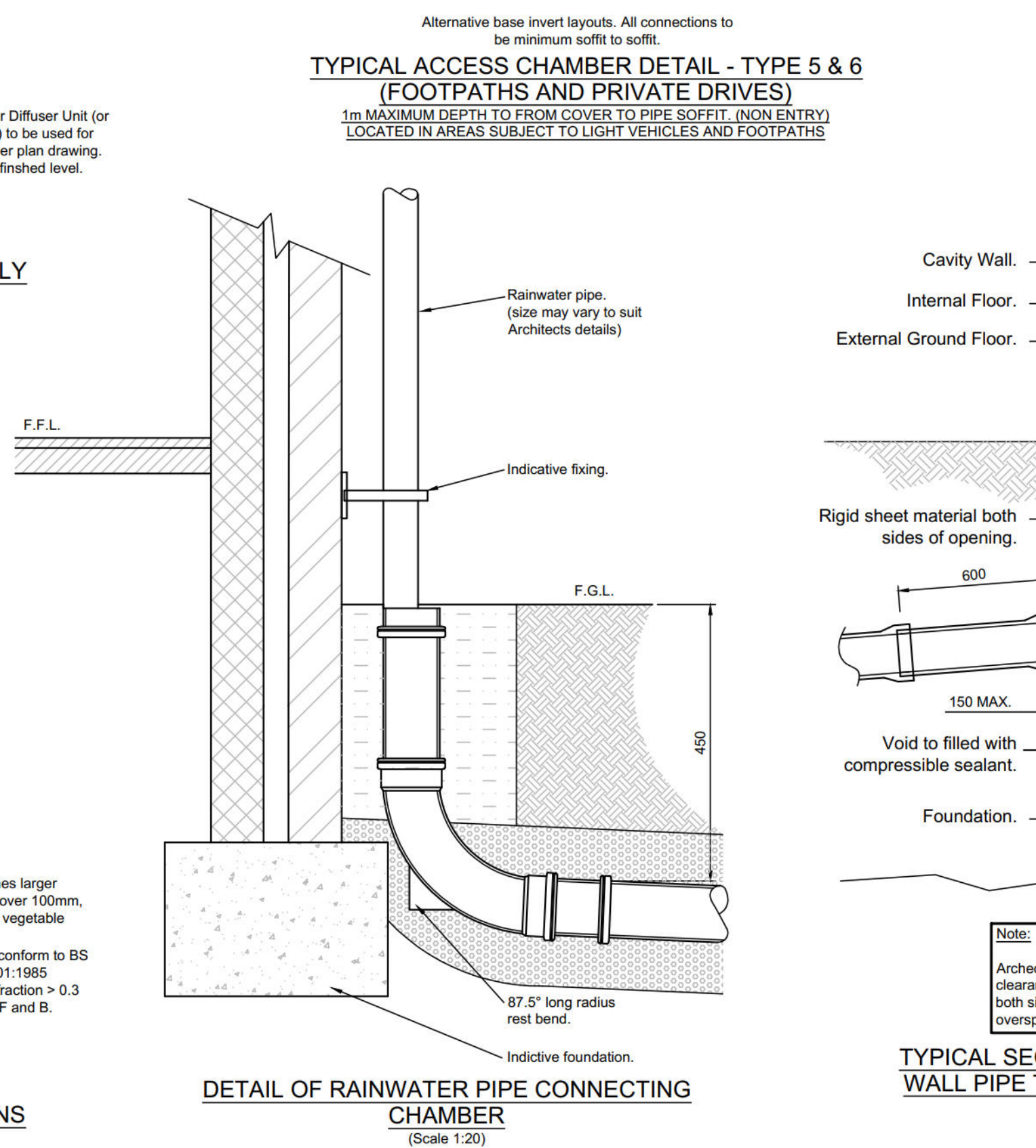
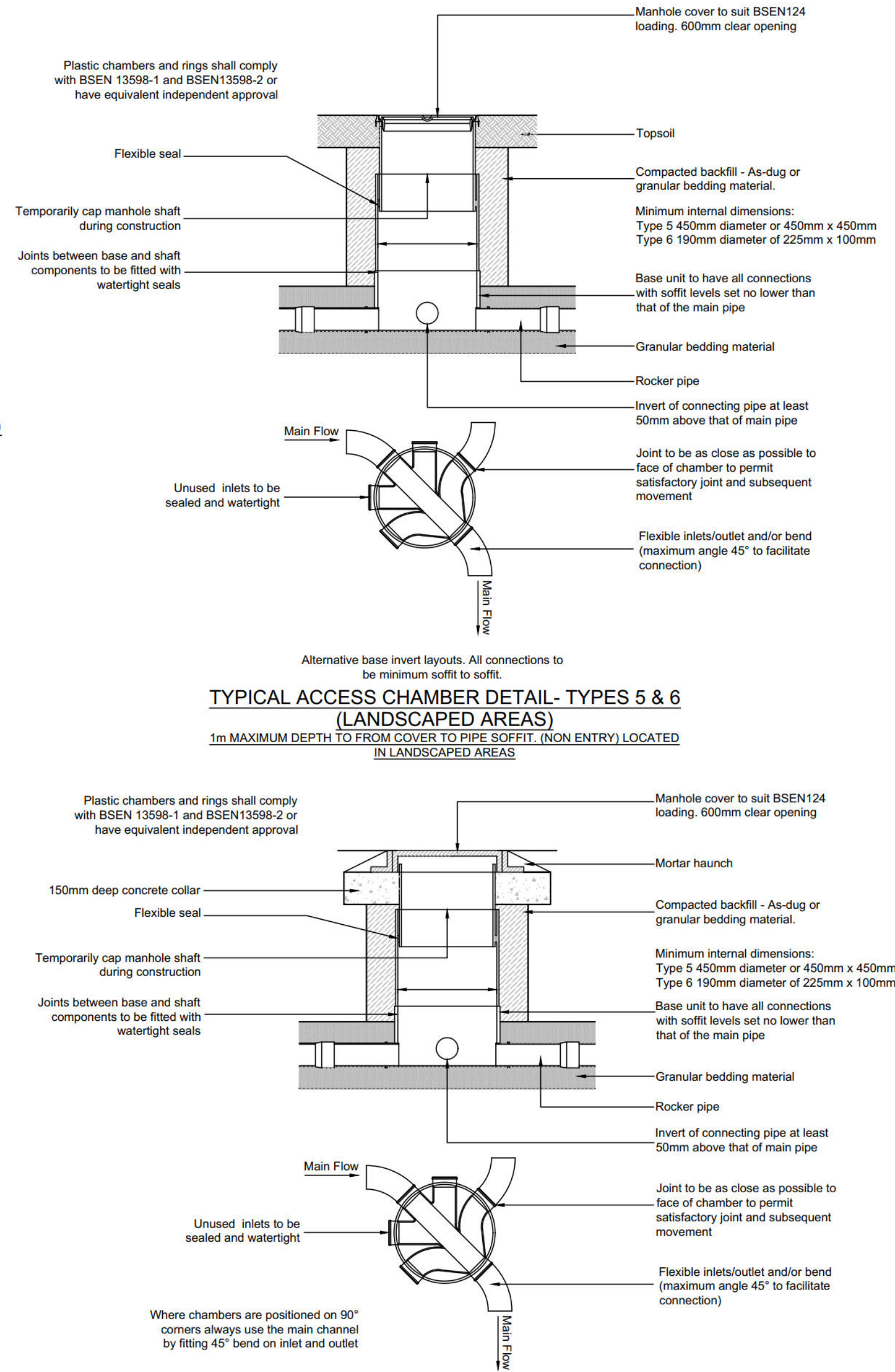
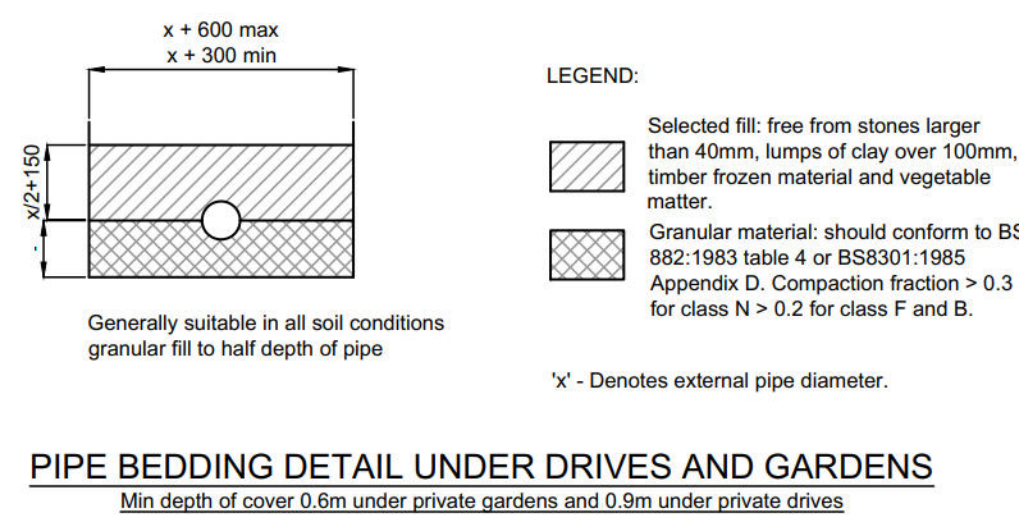
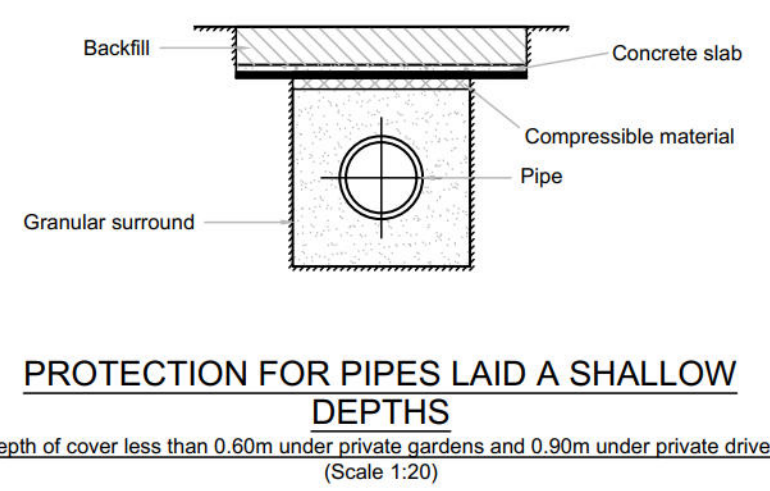
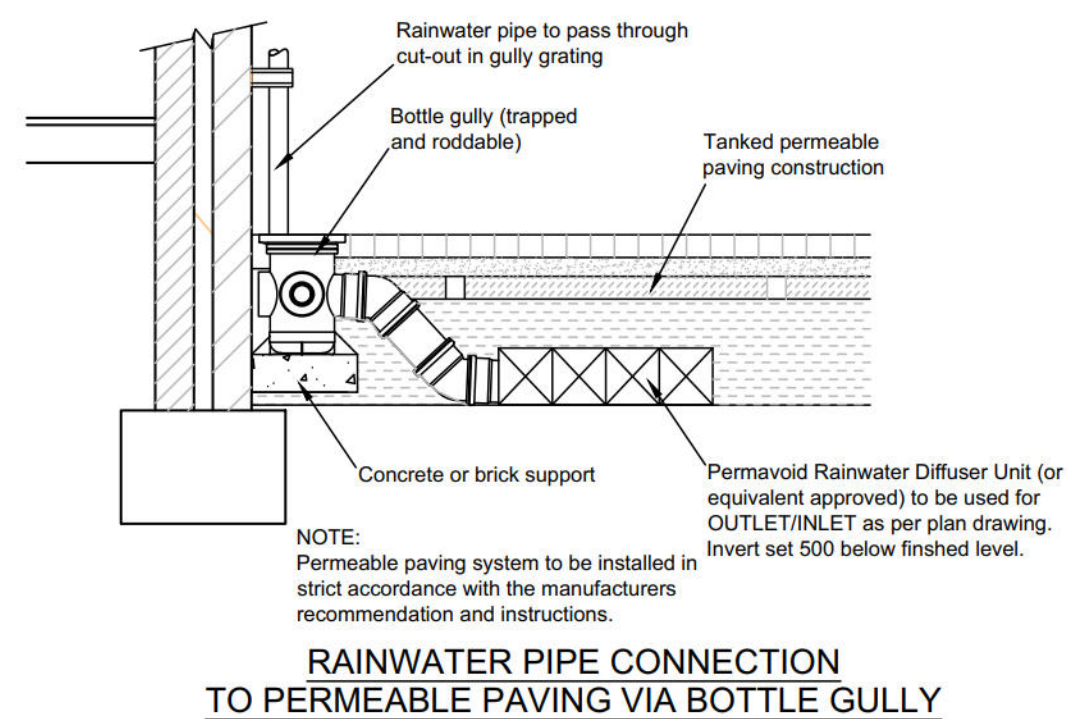
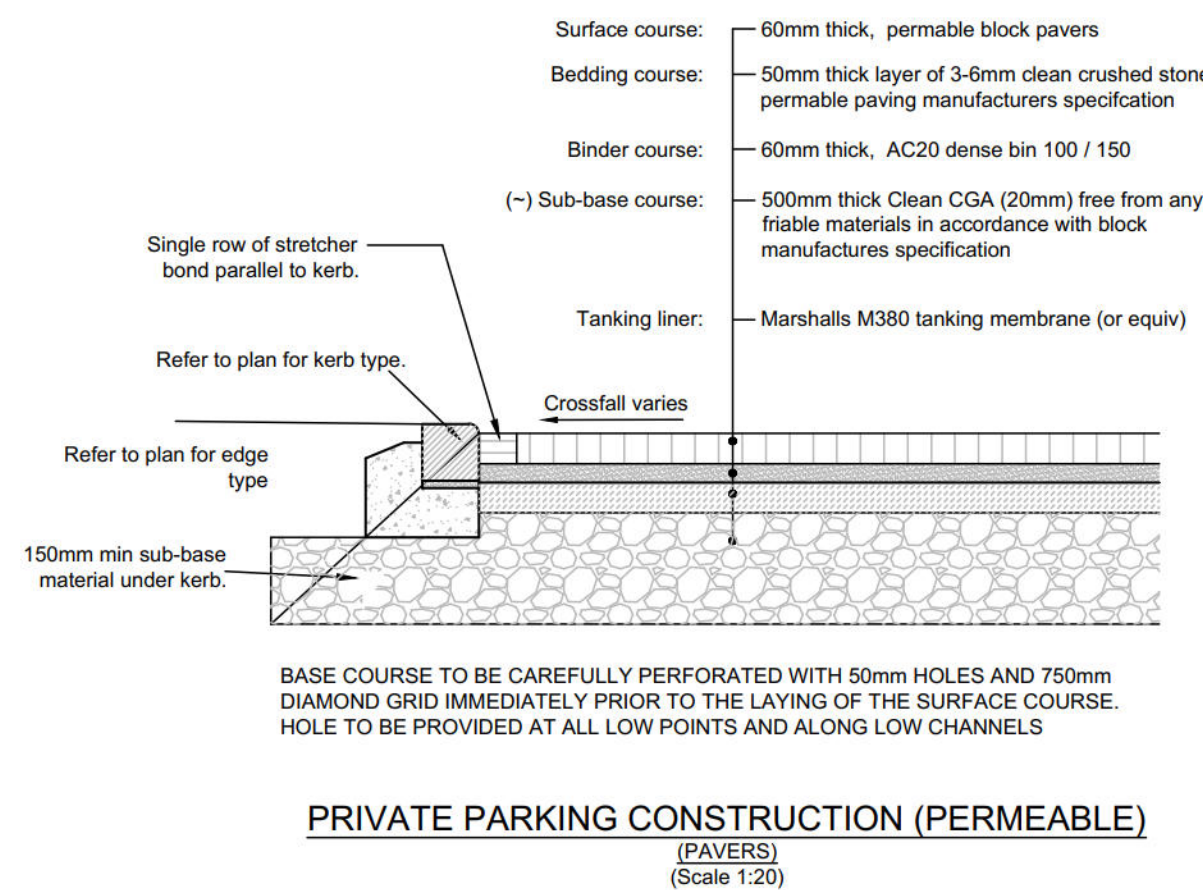
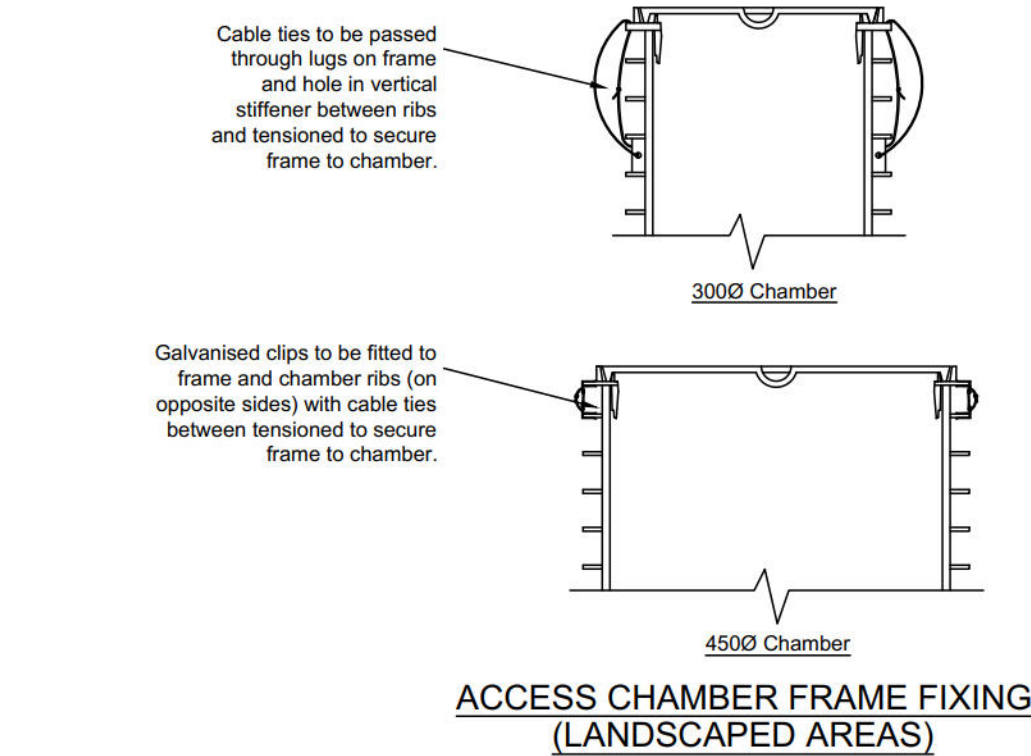
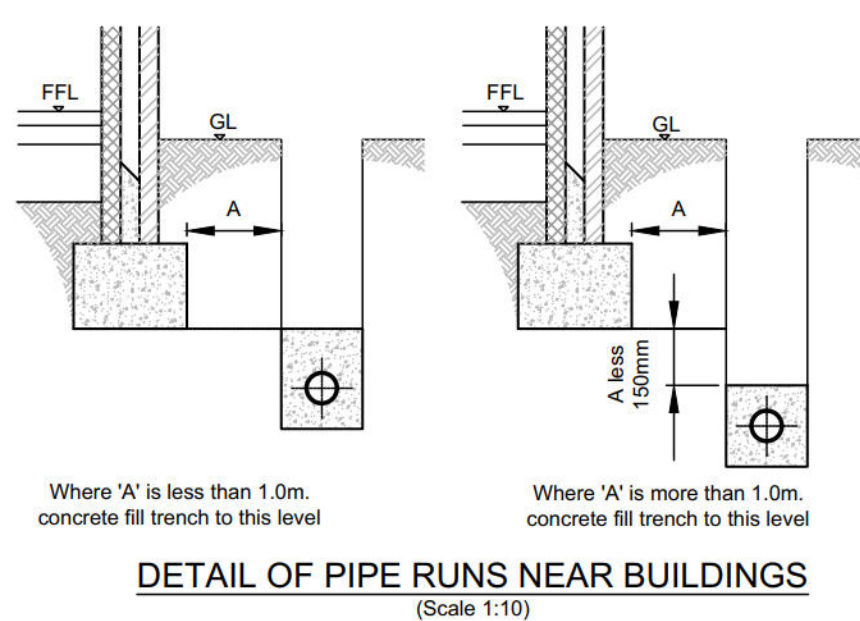
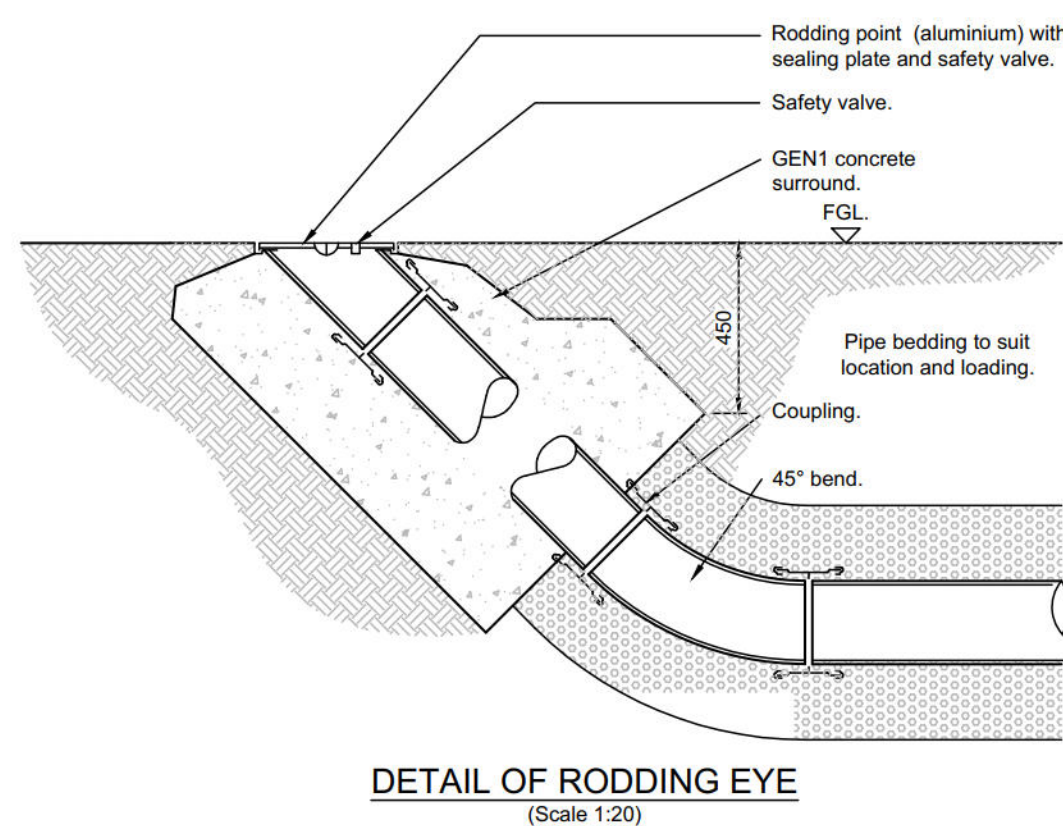
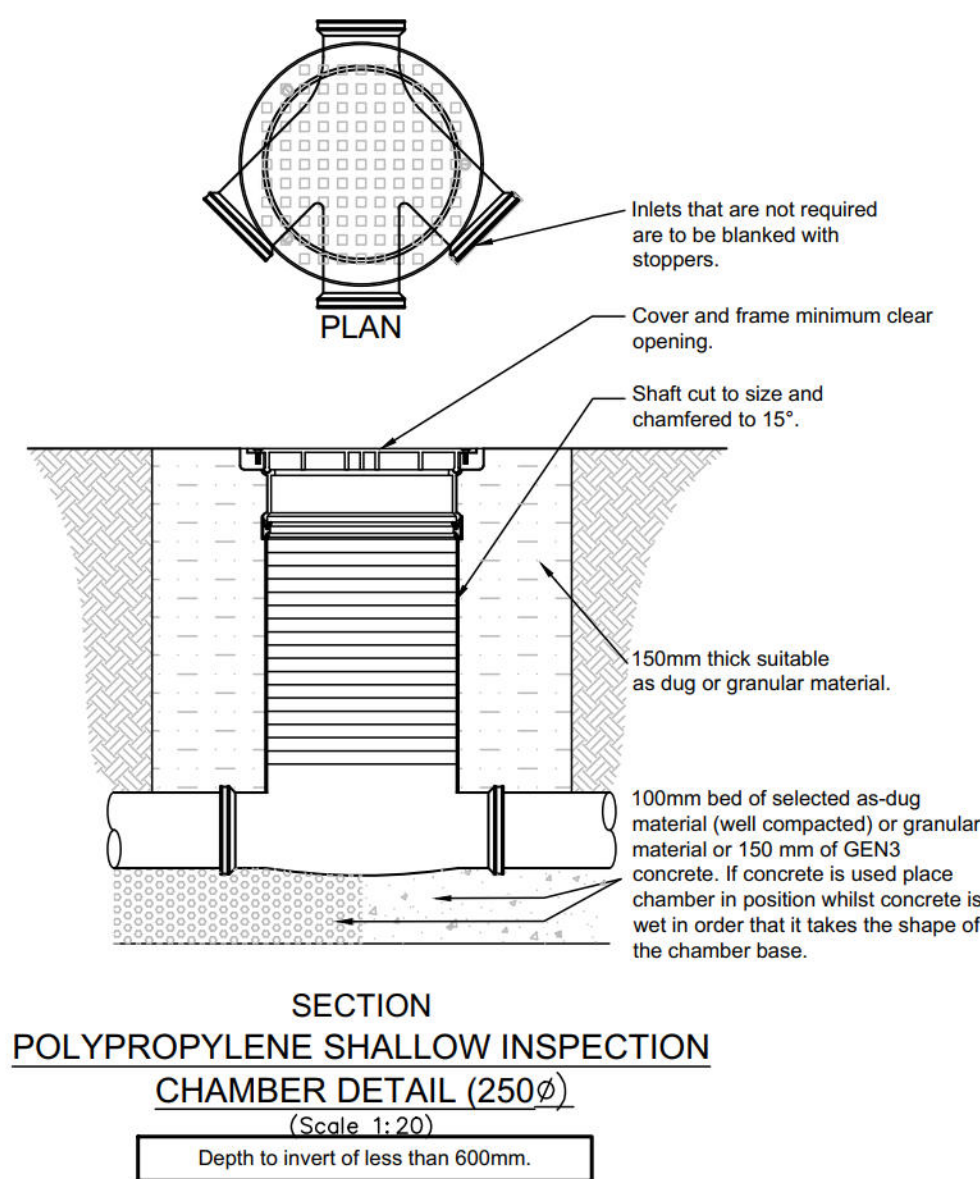
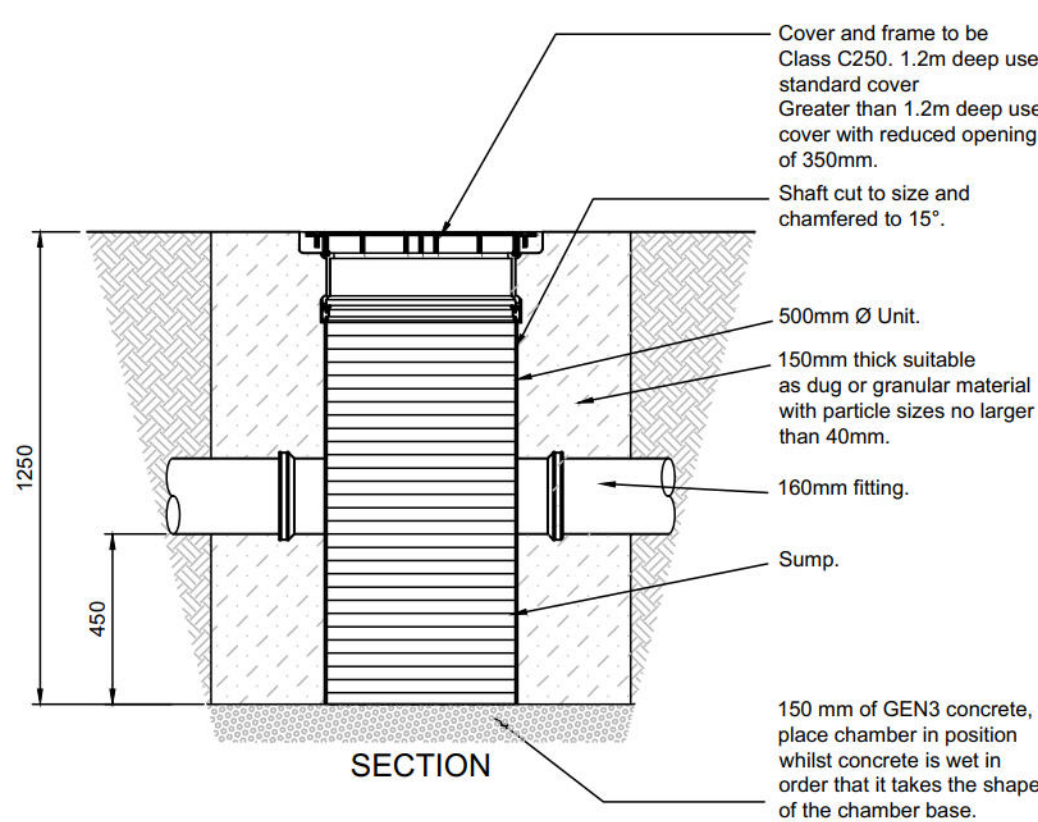
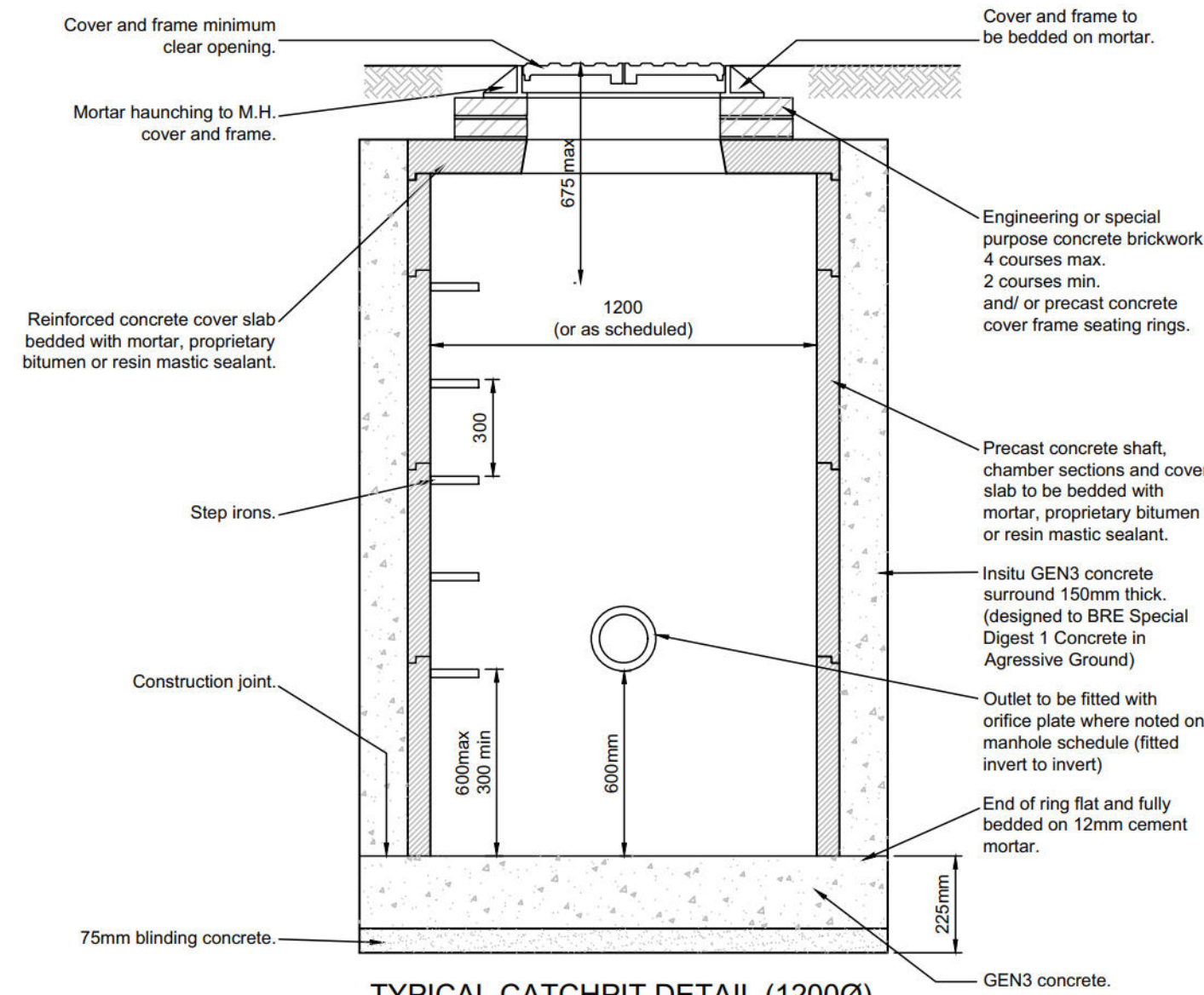
MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
S3		A 4.512	1350Ø	Type C	D400	5.662	4.512	1.000	489409.083	98498.448
S1 (FC)		A 5.12								
		B 5.17								
		C 5.17								
S2 (FC)		A 4.62	1350Ø	CATCHPIT with 23mm orifice plate on outlet	D400	5.709	4.620	0.939	489409.347	98501.096
S4 (FC)		B 4.62								
		C 4.62								
		D 4.67								
F1		A 5.225	1350Ø	CATCHPIT with 20mm orifice plate on outlet	D400	6.125	5.225	0.750	489407.436	98507.244
		B 5.276								
F2		A 5.493	450Ø	450 Inspection	D400	6.343	5.493	0.750	489433.024	98564.787
F3		A 5.373	450Ø	450 Inspection	D400	6.343	5.373	0.871	489440.236	98560.922
		B 5.373								
F4		A 4.653	1200Ø	Type B	D400	6.256	4.653	1.504	489412.649	98510.206
		B 4.653								
F5		A 4.417	1200Ø	Type B	D400	6.475	4.417	1.959	489397.193	98518.578
		B 4.417								
F5		A 4.350	EXISTING	EXISTING	EXISTING	6.46	4.350 tbc		489394.567	98513.923

MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
PS1		A 5.930	250Ø	250 Inspection	A15	6.329	5.930	0.300	489433.431	98581.060
PS2		A 5.808								
		B 5.808								
PS4		A 5.90	250Ø	250 Inspection	A15	6.300	5.900	0.300	489450.627	98572.476
PS5		A 5.775								
		B 5.775								
PS6		A 6.023	250Ø	250 Inspection	A15	6.423	6.023	0.300	489415.807	98552.570
PS7		A 5.941								
		B 5.941								
PS8		A 6.087	250Ø	CATCHPIT	A15	6.487	6.087	0.300	489429.760	98554.240
PS9		A 6.005								
PS10		A 5.971	450Ø	CATCHPIT	A15	6.458	5.971	0.386	489426.621	98541.452
PS12		B 5.971								
PS13		A 6.024	250Ø	250 Inspection	A15	6.424	6.024	0.300	489409.779	98527.832
PS14		A 5.962								
		B 5.962								
PS15		A 5.923	450Ø	450 Inspection	A15	6.501	5.923	0.477	489406.977	98514.814
PS17		B 5.923								
PS19		A 5.871	250Ø	CATCHPIT	A15	6.383	5.871	0.412	489411.500	98512.275
PS20		B 5.871								
PS20		A 6.053	250Ø	CATCHPIT	A15	6.453	6.053	0.300	489400.862	98510.861
PS20		A 6.061								

MH No.	DIAGRAM	CONDUIT INVERTS (m)	MANHOLE DIMENSION (mm)	MANHOLE TYPE	COVER TYPE	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH TO SOFFIT (m)	EASTING (m)	NORTHING (m)
Dif1		A 5.754	700x300	Diffuser		6.354	5.714		489427.985	98567.005
Dif2		A 5.708								
Dif3		A 5.837								
Dif4		A 5.836	700x300	Diffuser		6.437	5.714		489422.781	98561.075
Dif5		A 5.806								
Dif6		A 5.861								
Dif7		A 5.860	700x300	Diffuser		6.460	5.665		489403.940	98513.009
Dif8		A 5.577								
Dif9		A 5.111								
Dif10		A 5.700	700x300	Diffuser		6.406	5.714		489421.151	98525.123
Dif11		A 5.714								
Dif12		A 5.759								
Dif13		A 5.843	700x300	Diffuser		6.461	5.665		489402.755	98511.145
Dif13										

- A3
1. This drawing is to be read in conjunction with all other BP Civils drawings, and with all relevant Architect's and Engineer's drawings and specification. Any discrepancies found are to be reported immediately to the Engineer.
 2. BP Civils accepts no responsibility for inaccuracies in data provided by third parties such as topographic surveys or Ordnance Survey mapping.
 3. Do not scale, work to figured dimensions only. All dimensions are in millimeters unless noted otherwise and all levels are in metres from the topographic survey datum.
 4. Any information given regarding existing underground services is given in good faith after consultation with the relevant authority, however accuracy is not certain. The main contractor is responsible for checking all information on site prior to work commencing and taking due care whilst undertaking the works.
 5. All dimensions to be checked on site. All details and dimensions relating to sub-contractors work must be checked and agreed between the sub-contractor or supplier and the general contractor.
 6. The electronic information from this drawing can not be guaranteed as dimensionally drawn exact. Figured dimensions must be used for setting out and detailing. BP Civils logos and company information must be removed from copies if information is re-used.
 7. Where used, this map is based on or reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of His Majesty's Stationary Office (c) Crown Copyright. Licence number: 100022432. BP Civils accept no liability for any inaccuracies with the data.
 8. The client shall ensure all licences, consents and approvals required to implement the works are in place prior to commencing construction.

-	-	Original Issue
Rev.	Date	Amendments
 BP CIVILS Infrastructure Design and Transport Planning Consultants 2 West Barn, Norton Lane, Chichester, West Sussex PO20 3AF Tel: 01243 210418 www.bpcivils.co.uk enquiries@bpcivils.co.uk		
Drawing Status FOR INFORMATION NOT FOR CONSTRUCTION		
Client Randmere Limited		
Project Fairhaven, Nyetimber Lane Bognor Regis, PO21 3JT		
Drawing Title Preliminary Drainage Schedules		
Scale at A3 1:	Date Sept 25	Drawn By JHL
	Checked By LDF	Project No. D2404
Drawing Code 000-BPC-WD-ZZ-D-C		Drawing No. Rev. PL007 P00



- #### DRAINAGE NOTES:
1. All drainage works to be constructed in strict accordance with specification of the Local Authority, Building Regulations, Design and Construction Guidance (published by Water UK), BS5301 & BS EN 752:1.
 2. For location and setting out of building drainage points refer to architects drawings.
 3. All pipe runs near underbuilds to comply with the Building Regulations 2002 part H1. Where a pipe is within 1m of a foundation the trench shall be filled with class 3 concrete to the lowest level to the lowest level of the foundation. Where the trench is further than 1m from the foundation, the trench shall be filled with class 3/4 concrete to a level below the lowest level for the foundation equal to the distance from the foundation level. At both cases the concrete the pipe shall be bedded and surmounted in 150mm thick class GEN3 concrete.
 4. Where pipes, external to the structures, have a depth of soffit from ground level of less than 450mm they shall have a class GEN3 concrete encasement (150mm thick).
 5. Where a pipe, under a carriageway, has a depth of cover of less than 1.2m the pipe shall be laid in a concrete bed and surround.
 6. In any circumstances where pipes are bedded and surmounted in concrete flexible joints should be provided, compressible boards (fibreglass or polyurethane) shall be provided at a maximum of 5m centres (conform with pipe joints). The boards shall be pre-cut to pipe diameter and to a height and width equal to the concrete cross section, a board thickness of 18mm for pipes up to 450mm nominal diameter and 30mm for pipes over 450mm nominal diameter.
 7. All private building drainage shall be constructed in strict accordance with BS EN 752:1. Four drainage beneath the floor slab shall be laid, shall be laid no flatter than 1:40. Unless otherwise specified below ground building drainage external to the building shall be 100mm diameter and shall be laid at a minimum gradient of 1 in 100. Drains shall be 110mm for drains and 110 for surface water drains.
 8. All building drains shall be laid in conjunction with 'non adoptive bedding details' (class d, n, b) unless otherwise specified.
 9. All pipes, bends and junction for private building drainage shall be UPVC conforming to BS45660, BS EN13598 and BS EN14071 as appropriate and shall be laid in accordance with the manufacturer's specification.
 10. All pipes, bends and junction materials for adoptive drainage shall be verified dry, extra strength or super strength to BS28295, with flexible joints and kilnmark certified.
 11. All back inlet connections to be roddable or connected to inspection chambers.
 12. All back gutters other than at manholes to be 'Y' junctions.
 13. All road gully connections to be 150mm diameter.
 14. All stub stacks to be fitted with air admittance valves where branch drain exceeds 12m exceed at the head of the run. Soil vent pipes located at the head of a run to terminate to fresh air.
 15. No low point shall be without a method of drainage.
 16. All connections to be soffit to soffit unless otherwise noted.
 17. All concrete and concrete products to be in accordance with BRE 337 for sulphates.
 18. The locations of all building drainage points shall be cross referenced against the architects drawings during setting out.
 19. Before connections be made to existing public sewers an application under 108 must be made to relevant sewerage undertaker.
 20. The precise depth and location and size of existing pipes, watercourses or manholes where connections or diversion are proposed must be confirmed and reported to the engineer before works commence on site.
 21. Existing drains - any existing drains to be abandoned to be decommissioned in writing by drainage regulations by either building out, infilled or sealed.
 22. Should ground water be encountered on site during construction BCP shall be informed to determine if additional measures are required with regard to flotation.
 23. The drainage drainage system shall be fully commissioned on completion of the project using methods that ensure pollution off site does not occur.
 24. Any existing land drains severed during construction shall be reinstated.

[illegible]

1 INTRODUCTION

1.1 Background

- 1.1.1 BP Civils (BPC) is instructed by Randmere to prepare a drainage maintenance strategy for a residential development in relation to the Land at Fairhaven in Pagham, West Sussex.
- 1.1.2 This drainage strategy has been prepared to support an application for a residential development at the above location.
- 1.1.3 The purpose of this document is to set out the basis of the development's drainage maintenance requirements as well ensuring that those who will be responsible for maintenance tasks and activities have a detailed programme for both inspection and maintenance. This is to ensure that the surface water and foul water drainage networks can operate effectively, and as designed. This document will assist in ensuring that the surface water drainage network is continually maintained for the lifetime of the development to help prevent an increased risk of flooding both on and off-site in accordance with the National Planning Policy Framework (NPPF).
- 1.1.4 The tasks detailed herewith are specific to the components applicable to the development and represent the minimum maintenance and inspection requirements. Additional tasks or varied maintenance frequencies may be deemed appropriate. The specific maintenance needs of the drainage infrastructure implemented on site should be monitored and maintenance schedules adjusted as necessary.
- 1.1.5 Those responsible for maintenance should adhere to current Health and Safety Legislation enforced at the time of the work(s) being undertaken.
- 1.1.6 This report has been prepared for the benefit of Randmere.

2 PROPOSED DRAINAGE STRATEGY

2.1 Surface Water

- 2.1.1 A detailed drainage design for surface water run off was prepared by BP Civils for the development.
- 2.1.2 The below ground surface water drainage system at the site comprises a traditional piped system with permeable paving. This is shown on drawings **000-BPC-WD-ZZ-D-C-PL006**.
- 2.1.3 A traditional drainage system serves the of the site which will collect run-off and convey it to the sub base of the permeable paving. The permeable paving sub base will provide temporary surface water storage with the outflow restricted by a number of orifice plates fitted in catchpits, before being discharged to a public surface water sewer.

2.2 Foul Water Drainage

- 2.2.1 A detailed drainage design was prepared by BP Civils for the development.
- 2.2.2 This is shown on drawing **000-BPC-WD-ZZ-D-C-PL006**. This shows that the proposed foul sewer network discharges to an existing public sewer located in Nyetimber Lane.

3 MANAGEMENT AND MAINTENANCE

3.1 Responsibility for Maintenance

- 3.1.1 The proposed surface water drainage system will not be offered for adoption therefore the responsibility for the ongoing maintenance of drainage network will fall to the end user(s).
- 3.1.2 Infrastructure which is 'shared' (i.e. serving more than a single plot and/or falling outside of any individual plot's curtilage) will be the responsibility of the Management Company.

3.2 General Maintenance

- 3.2.1 Maintenance plays an important part in the long-term performance of a surface water drainage system and will be required to ensure that it remains fully operational.
- 3.2.2 The drainage system has been designed to minimise maintenance requirements; however, a number of key tasks will need to be undertaken so that the system remains effective. These operations are summarised in the table below, along with the required frequency of works. The frequencies given below are minimums and in order to establish an effective regime, the level of siltation in each of the components should be monitored in the early stages to inform the long term strategy.

Drainage System feature	Proposed maintenance / remedial works	Required frequency of works
Catch pits, gully sumps and drains, flap valves	Inspection and additional cleansing as required.	Every 6 months
	Desilting	Year 1, Year 3, then every 5 years
Pipework	Jetting to clear blockages	As required

3.2.3 The responsibility of any drainage infrastructure supporting a single dwelling/plot will be the sole responsibility of the owner/occupier of the associated dwelling.

3.2.4 Additional maintenance activities beyond this will be the responsibility of the management company, to be appointed by the developer upon completion of the development. It is understood funding and maintenance will be provided by the **a suitable appointed Management Company** who are the housing association developing the site.

3.3 Flow Control Chambers/Devices

3.3.1 The flow control device is a simple orifice. The potential for blockage is minimise due to all run off passing through the permeable paving sub base, which acts as a filter.

3.3.2 The flow control chamber will require the following maintenance:

- The sump within the flow control chamber should be monitored for build-up of silts and should be emptied as a minimum on the same regime as specified for catchpits previously within this document.
- The drain down door located on the centre of the unit will require inspection, greasing and opening annually, to ensure it is operating as intended.

3.4 Permeable Paving

3.4.1 The areas of permeable paving are designed to allow surface water run-off to percolate through the joints in the block paving and into the sub-base below. This sub-base provides a volume of storage. The permeable paving will be tanked.

3.4.2 Diffuser units are used to discharge surface water run-off from roof areas into the sub-base, as well as forming links between areas of permeable paving. These diffuser units are small heavy-duty cellular units which allow more efficient discharge of surface water into the sub-base base of the permeable paved areas.

3.4.3 The manufacturer of the permeable paving system is Marshalls and they provide maintenance advice to keep the permeable surface in good condition. Their recommendations require limited maintenance "every 12 months or so". Their document is included in this document.

3.4.4 In order to provide an enhanced level of maintenance, the areas of permeable paving will require the following:

- Periodic surface sweeping to reduce silt and debris accumulation. The permeable surfaces should be swept at least every 8 to 12 weeks with additional sweeps in the autumn to clear fallen leaves
- Removal / management of weed growth, as required. Typically, once or twice a year for regularly used areas

- Periodic silt removal from permeable surfaces as described by the manufacturer. If any areas are showing signs of ponding, they shall be dealt with by raking out the joints and redressing. The entire surface shall be monitored and when there are signs of excessive siltation resulting in poor drainage over the whole area, the blocks shall be taken up and the bedding layer shall be replaced. Redressing of joints on the block paving as required.
- Performance of permeable paving areas shall be reviewed 3 months after installation and within 48 hours of a significant storm event.

3.5 Remedial/Repair Actions

- 3.5.1 Significant storm events may cause considerable damage to SuDS and their associated components. As such, it may be necessary to inspect and carry out essential recovery works to return the feature to full working order.
- 3.5.2 Resetting of uneven blocks by lifting block area, removing bedding material and relaying to match original design are all actions which may need to be undertaken.

3.6 Accidental Spillages

- 3.6.1 It is not envisaged that any materials are to be stored onsite once the development has been completed, which could cause major spills and potential pollution issues within the drainage system. If this situation alters in the future consultation with a specialist will be required in order to confirm if any upgrades to the existing system are necessary.
- 3.6.2 Minor spillages of fuels and oils from motor vehicles will be dealt with by the permeable paving and deep trapped gullies, by biodegrading / collecting the hydrocarbons respectively.

3.7 Construction Phasing

- 3.7.1 It is recommended that the construction of the attenuation basin, the flow control and outfall connection are completed prior to the commencement of construction of the buildings and hardstanding areas. This will ensure that flows are controlled and treated during construction. The proposed drainage systems will need a complete maintenance check upon completion of the development and any required remedial tasks undertaken.
- 3.7.2 By constructing these drainage components first, runoff from the construction site and the hardstanding areas will travel overland into the storage. This will ensure that run-off from the site receives the level of treatment required by the SuDS manual.

3.8 Future Alterations to the Development

- 3.8.1 Any future alterations to the permeable paving should be confirmed by a specialist. Where possible any future services are to avoid being located through areas of permeable paving. If new services are required to run through areas of permeable paving, services should be installed below the permeable paving level with the permeable system reinstalled above.