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Reg. No. 7180851 Vat No. 989 4278 44

Ref. FD/629/L002

FAO. Jon Furneaux
Land Director
Palatine Homes

Date: 20th February 2025

Dear Jon,

Re: Land at Johnson Drive, Finchampstead, RG40 3NW – Planning application 223592

This letter aims to provide the necessary information to support the discharge of drainage condition 13 of the above referenced planning application (5-unit scheme). In compiling this letter and preparing the supporting documents, we have also considered the comments made by the LLFA via email.

The proposed drainage solution for the site is shown in appendix A. The drainage details are shown in appendix B.

The drainage calculations, attached in appendix C, have been produced considering the following:

- FEH rainfall data series.
- A coefficient of runoff of 0.90 for the summer and 0.95 for the winter.
- Runoff from the areas detailed in table 1.
- 10% urban creep factor applied to all private impermeable areas (ie areas within the plot curtilage).

Breakdown of impermeable areas (post-development)	
Roof	1416 m ²
Access Road	991 m ²
Private Driveways	527 m ²

Table 1

The calculations demonstrate that the proposed discharge rates into the ditch will be lower than the greenfield rates, as detailed in table 2 below. Therefore, the proposed drainage solution for the development will not cause an increase of the risk of flooding off-site.

	Greenfield rates (l/s)	Proposed rates (l/s)	% Reduction
1 year	5	4.2	16 %
30 year	13.3	13.1	1.5 %
100 year + 40% cc	18.7 (0% cc)	18.4	1.6 %

Table 2

Yours sincerely,

Felice Dileo

Civil Engineer

On behalf of BEAL Consulting Engineers Ltd

Directors:

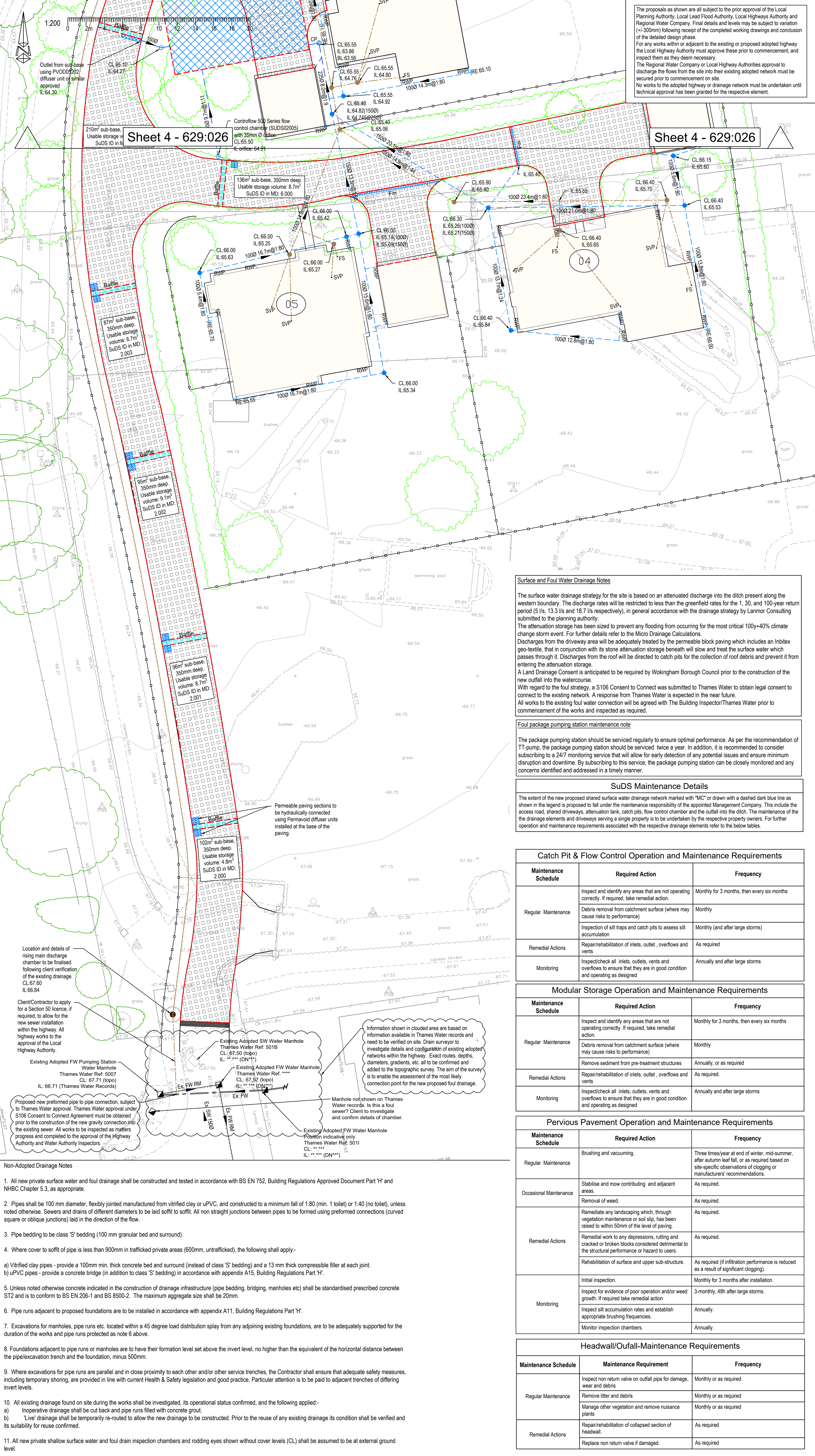
N.D.P. Blowfield M.Eng, C.Eng, MICE; S. H. Hastie B.Eng (Hons), C.Eng, MICE MCIHT,
A. v.d.Merwe B.Eng (Hons)(Civ), C.Eng, MICE, Pr Eng, MAPM, PM.PMSA; J. van Wyk N.Dip HRM, M.PMSA

Appendix A

Drainage Layout

Directors:

N.D.P. Blowfield M.Eng, C.Eng, MICE; S. H. Hastie B.Eng (Hons), C.Eng, MICE MCIHT,
A. v.d.Merwe B.Eng (Hons)(Civ), C.Eng, MICE, Pr Eng, MAPM, PM.PMSA; J. van Wyk N.Dip HRM, M.PMSA



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NOTES:

- Do not scale from this drawing. This drawing shall be read in conjunction with all other relevant Architect's and Engineer's drawings.
- Any discrepancies, ambiguities, or anomalies in the information provided on this or any of the engineering drawings package must be reported prior to work proceeding.
- All accommodation work deemed necessary to facilitate a satisfactory link between the new works and the existing to be undertaken by the developer.
- It is the contractor's responsibility to locate all existing services and verify their level & location prior to commencing any works. Should they be affected by the works then the respective statutory undertaker should be contacted and any special protection requirements agreed.
- All highway works shall be undertaken in accordance with the Local Highway Authorities Design Guide and Specification and strictly in accordance with the 'Specification for Highway Works'. All drainage works shall be undertaken in accordance with the 'Design & Construction Guidance', and any other Regional Water company requirements. All works to be supervised/inspected as required by the relevant Inspector.
- All works must comply with current Health and Safety guidance & standards. All temporary signing to comply with Traffic Signs Manual - Chapter 8.
- All products are to be installed and maintained strictly in accordance with manufacturer's recommendations & guidelines.

Surface Water Drainage Legend

- New surface water sewer proposed to fall under the maintenance responsibility of the Management Company (MC)
- Denotes drainage element that fall under the maintenance responsibility of the appointed Management Company
- New surface water drainage (min gradient@1:80) to fall under the management responsibility of the property owner
- New shallow surface water inspection chamber (typ. 450mm dia.) up to 1.2m deep
- New deep surface water inspection chamber (typ. 450mm dia.) up to 3m deep with access opening restricted to 350mm diameter
- New surface water catchpit chamber (typ. 600mm dia. for pipe greater than 1500 and 450mm dia. for pipe up to 1500) up to 3m deep. Restrict access opening to 350mm Ø for depth greater than 1.2m (cover level to base of chamber).
- New surface water rodding eye
- New rain water down pipe with rodding access point
- Slot drain, Aco Hexdrain brickslot drainage system.
- Aco Channel, Aco HexDrain Garage System.
- Formpave SC Findrain or similar approved laid at the base of the permeable paving sub-base to collect/transport surface water to outlet.
- 450mm concrete baffle, see details.
- Extent of permeable paving with sub-base attenuation under, min. 350mm thick of sub-base type 4/20 (min 30% voids), sub-base formation level to fall towards outlet. Full impermeable tanking to sub-base to be provided.
- New SEL Permavoid diffuser unit PVOD05101 (or similar approved) pre-wrapped in 2mm mesh with 110mm Ø socket used as outlet of permeable paving sub-base. Dimensions: 710 x 710 x 150mm
- Aquecell Core-R/Plus-R storm water storage units (each 1.0x0.5x0.4), or similar approved, installed in accordance with manufacturer's instructions (see also construction details). To be fully encapsulated with impermeable membrane to maintain storage. Vent pipe to be provided and brought up close to ground level (see details).
- Root protection areas.
- Potential surface water flood exceedance route. For storm events in excess of design storm event (1:100y + 40% c/c).
- Proposed landscaping.

Foul Water Drainage Legend

- New foul drain/sewer (see 'Non Adopted Drainage Notes' for requirements)
- New shallow foul water inspection chamber (typ. 450mm dia.) up to 1.2m deep
- New deep foul water inspection chamber (typ. 450mm dia.) up to 3m deep with access opening restricted to 350mm diameter
- New soil and vent pipe
- New floor socket
- New trapped bottle gully

Existing Drainage Legend

- Existing adopted foul water manhole
- Existing adopted foul water sewer
- Existing adopted rising main foul water sewer
- Existing adopted surface water manhole
- Existing adopted surface water sewer

Note

The proposals as shown are all subject to the prior approval of the Local Planning Authority, Local Highway Authority and Local Water Authority. No works to the adopted highway or drainage network must be undertaken until technical approval has been granted for the respective element.

APPLICATION NOTES

The Client intention is for the proposed new drainage to remain private. Therefore a S104 application is not required.

S104 Application - Not required.

S106 Application - Submitted. Waiting for Thames Water capacity assessment and confirmation of point of connection.

Land Drainage Consent - Waiting for client instruction.

PRELIMINARY

Rev: Date: Description:

Client:

Project:

Johnson Drive, Finchampstead

Drawing Title:

Drainage Layout (Sheet 2 of 2)

Designed: FD Drawn: SRC Checked: ---

Scale: 1:200 @ A1 Date: Oct 2024 Approved: ---

Drawing Number: 629:027 Revision: -

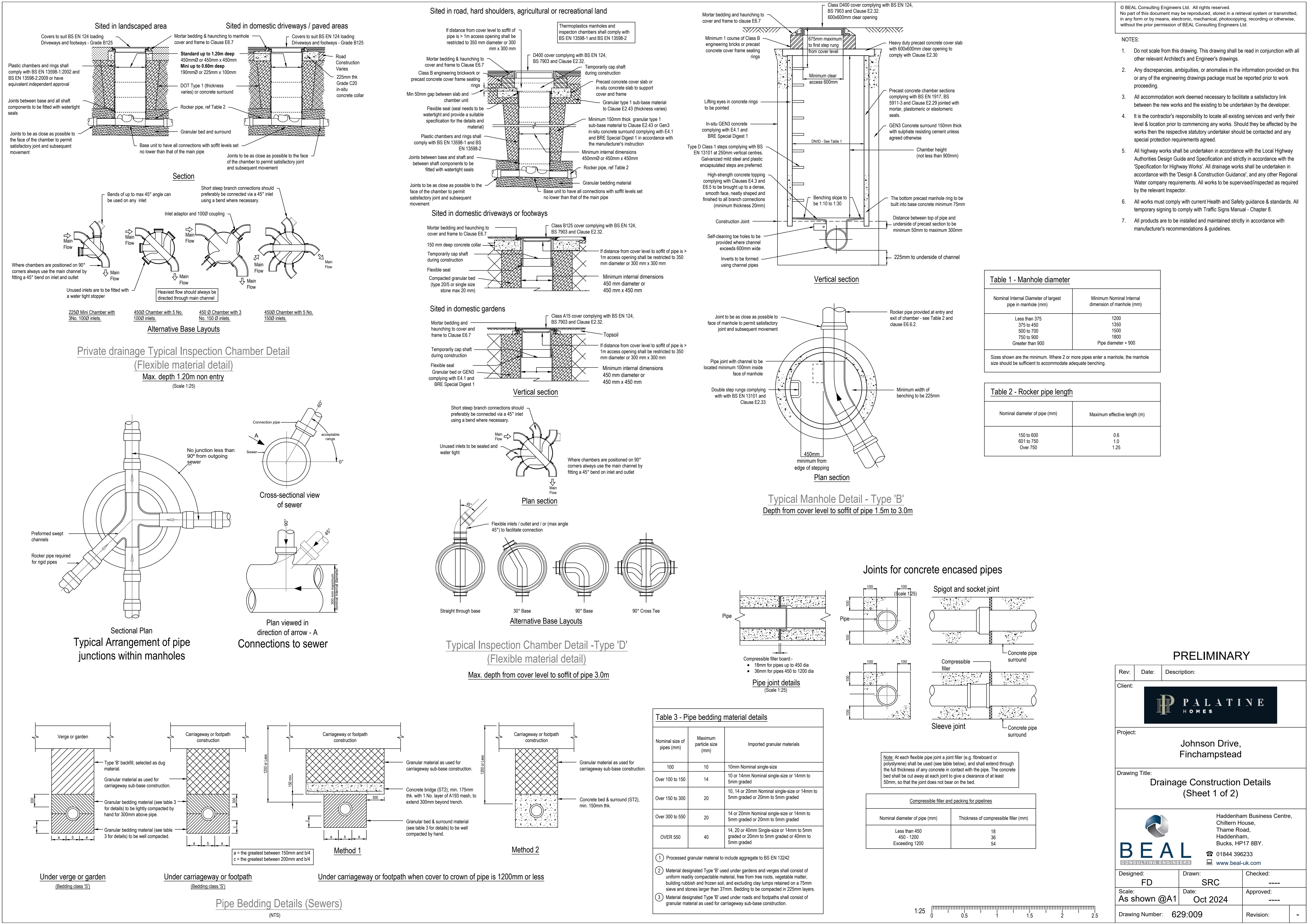
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Appendix B

Drainage Details

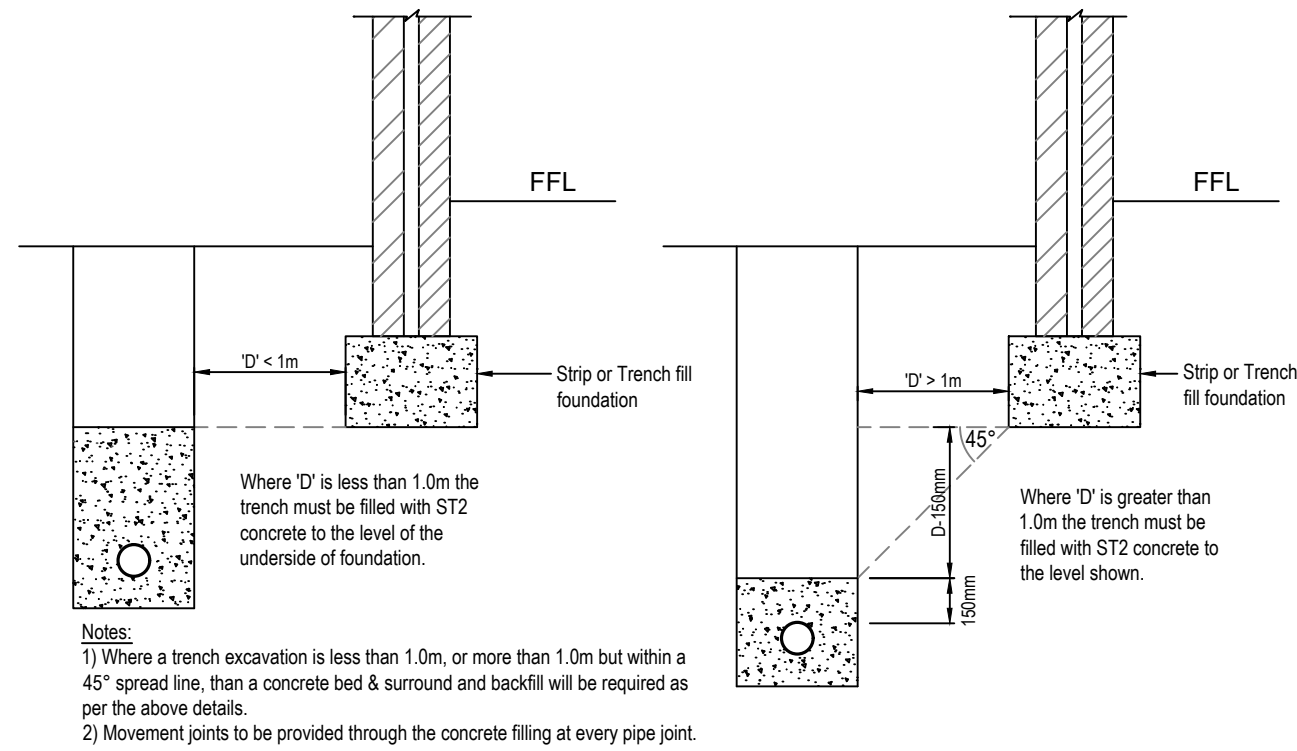
Directors:

N.D.P. Blowfield M.Eng, C.Eng, MICE; S. H. Hastie B.Eng (Hons), C.Eng, MICE MCIHT,
A. v.d.Merwe B.Eng (Hons)(Civ), C.Eng, MICE, Pr Eng, MAPM, PM.PMSA; J. van Wyk N.Dip HRM, M.PMSA

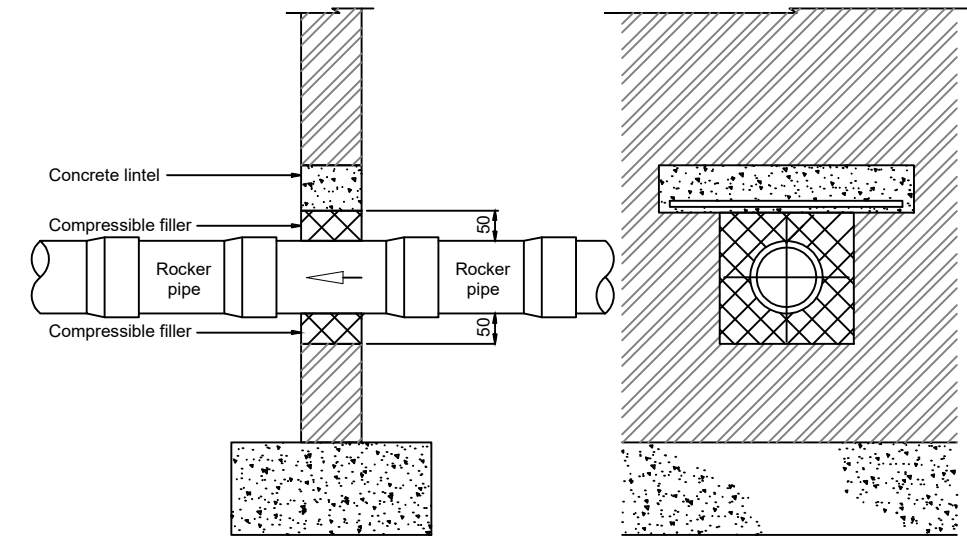


NOTES:

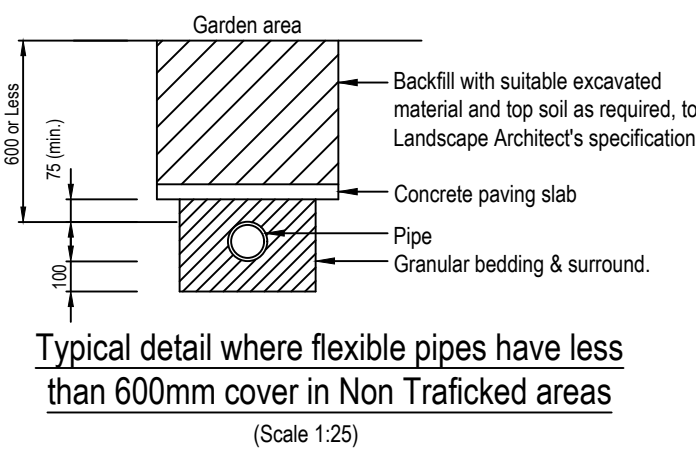
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7. All products are to be installed and maintained strictly in accordance with manufacturer's recommendations & guidelines.



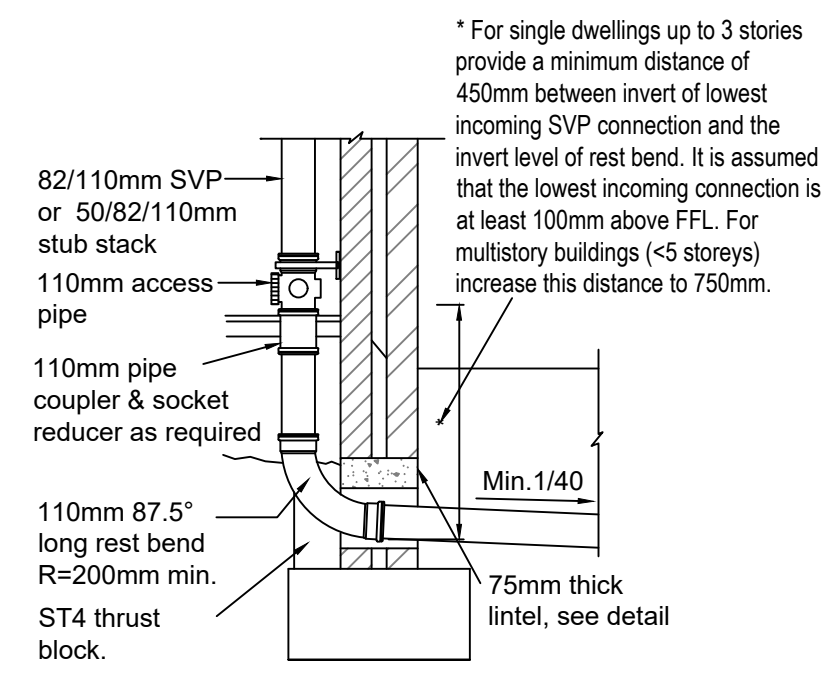
Trenches adjacent to or below foundations



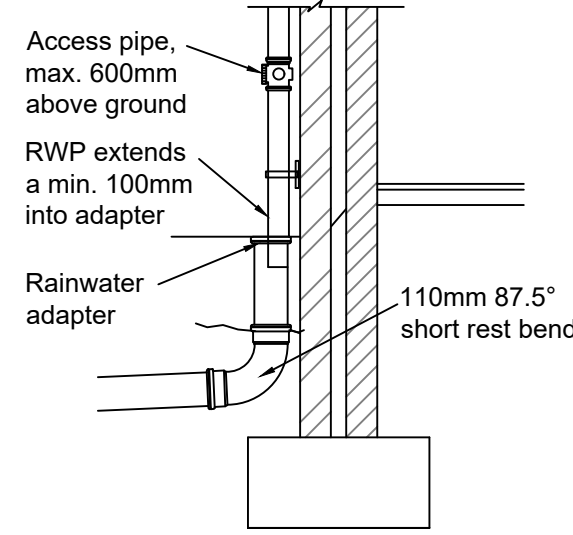
Protection of pipes penetrating single leaf boundary walls



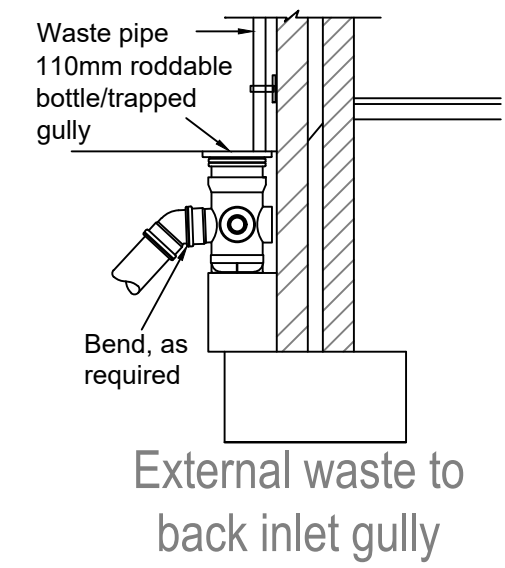
Typical detail where flexible pipes have less than 600mm cover in Non Trafficked areas (Scale 1:25)



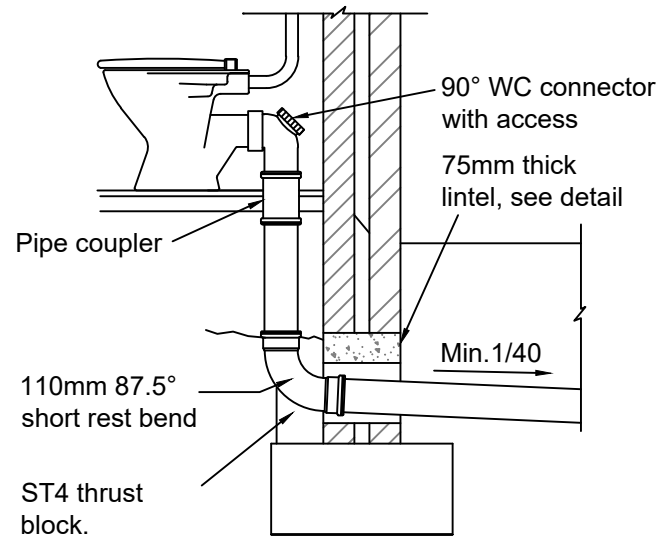
Soil & vent pipe connection and stub stack connection



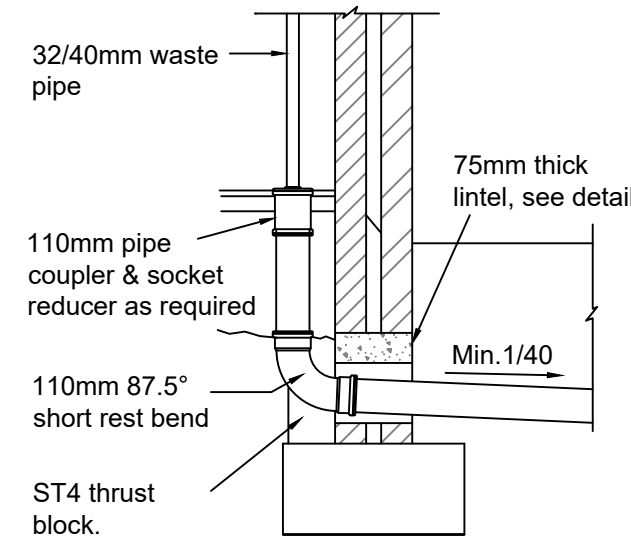
External RWP connection



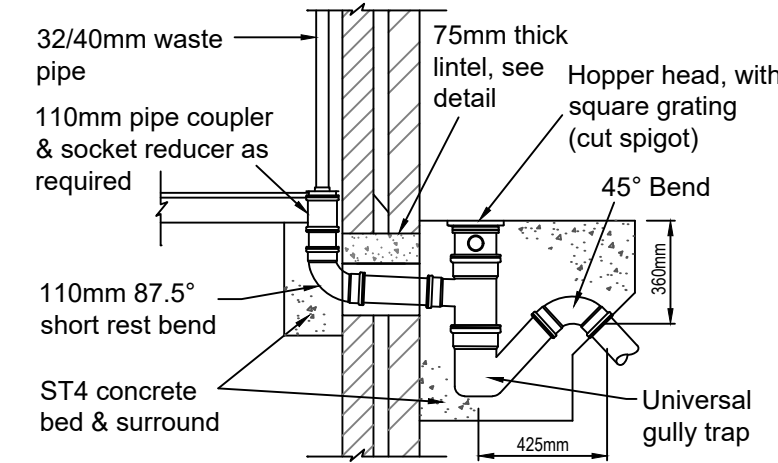
External waste to back inlet gully



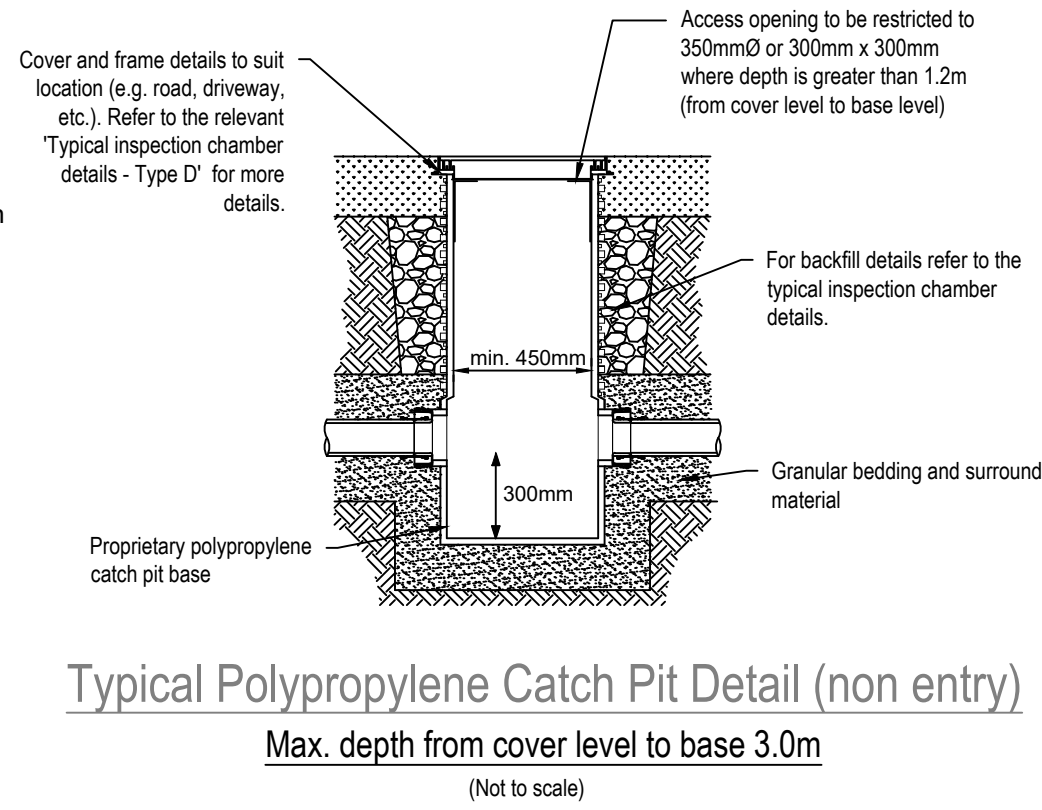
WC connection direct to drain



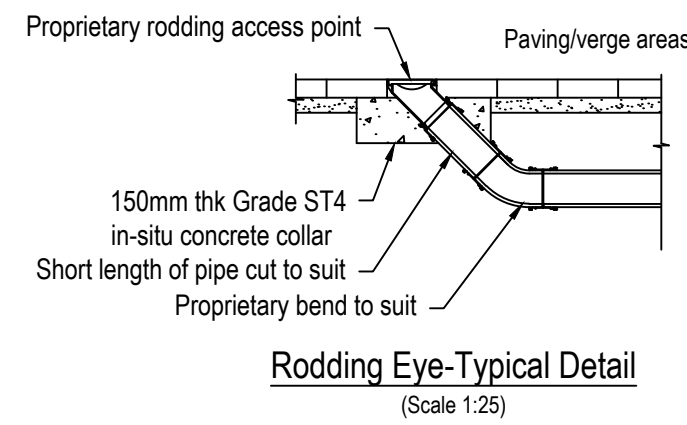
Internal waste pipe connection



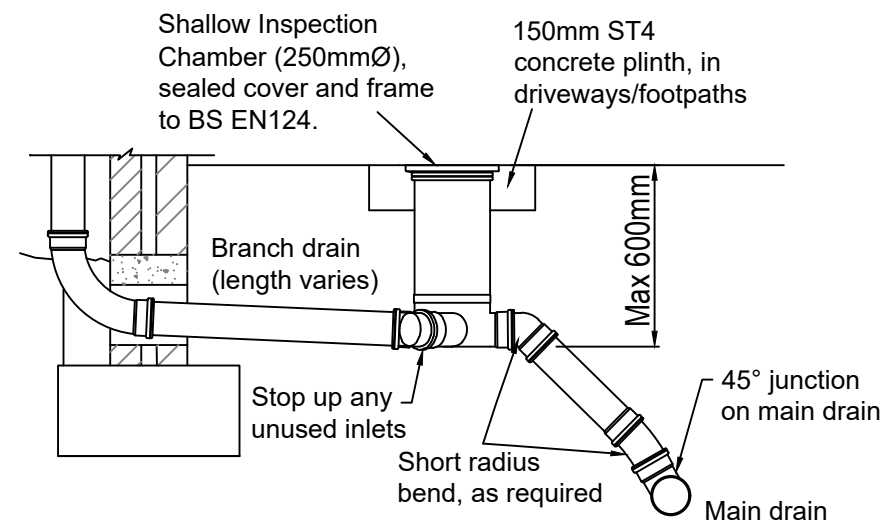
Back Inlet Gully (Universal Type)



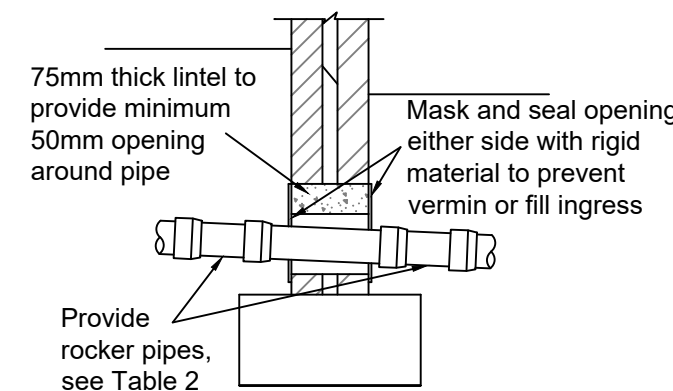
Typical Polypropylene Catch Pit Detail (non entry) Max. depth from cover level to base 3.0m (Not to scale)



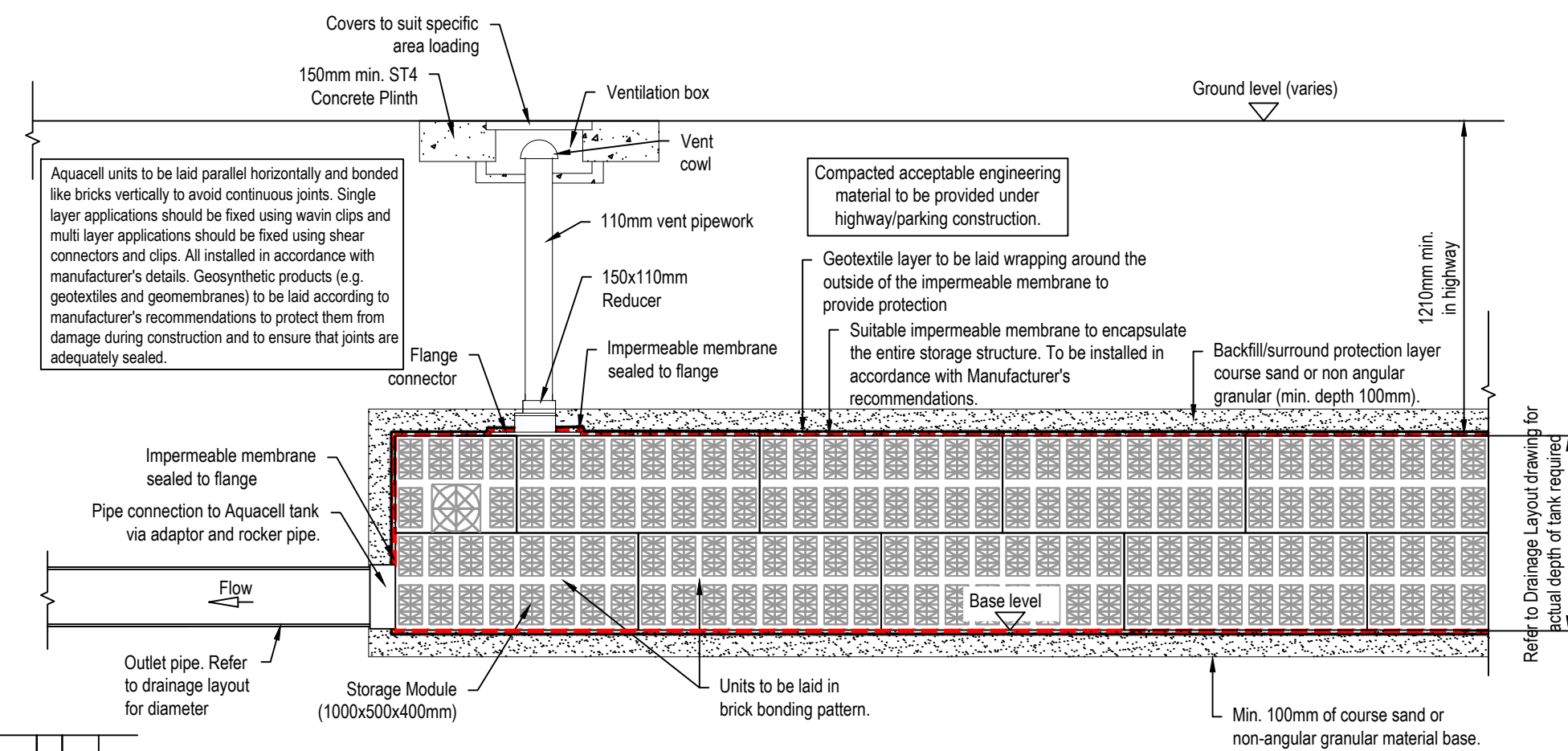
Rodding Eye-Typical Detail (Scale 1:25)



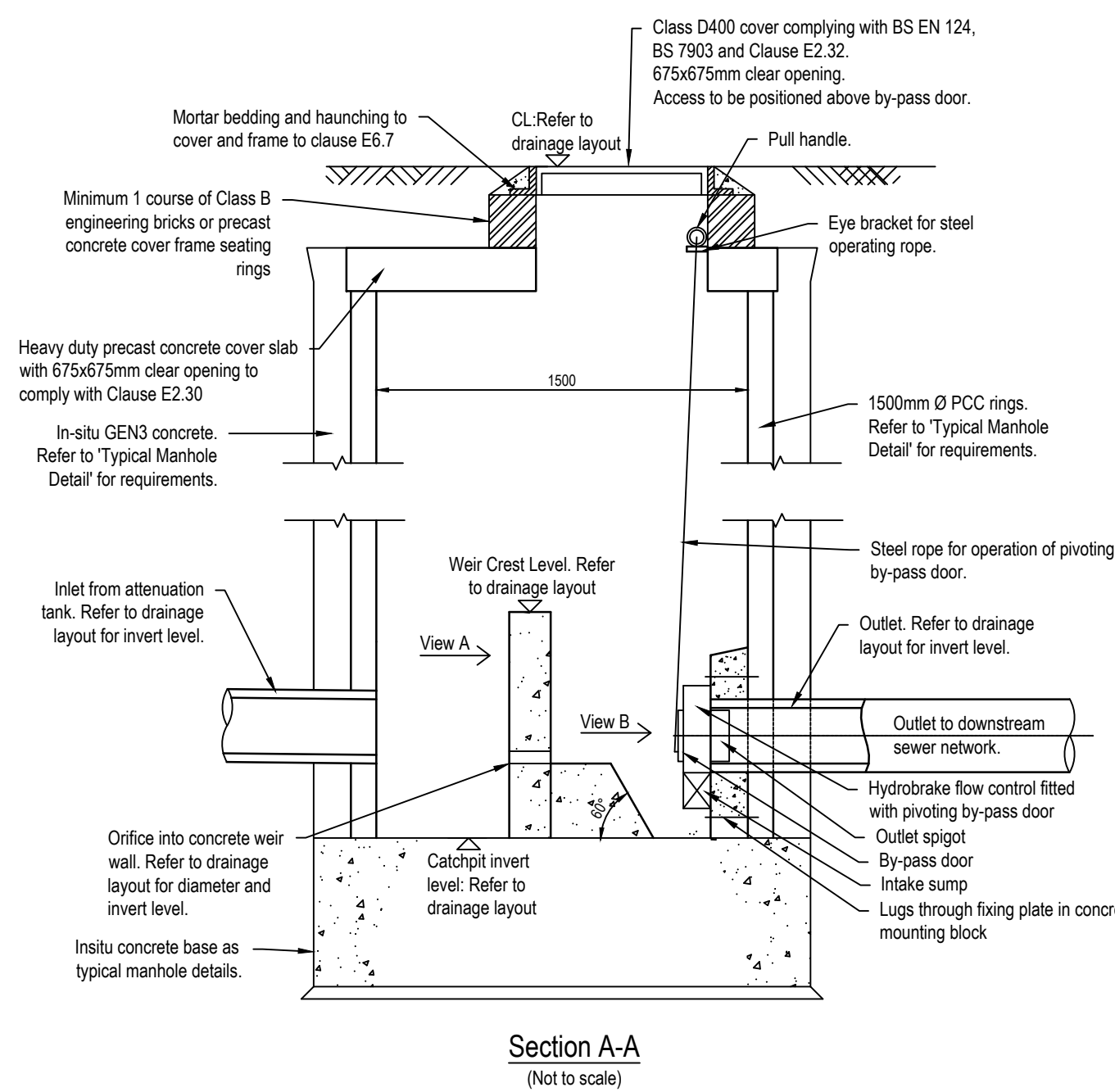
Typical section shallow inspection chamber



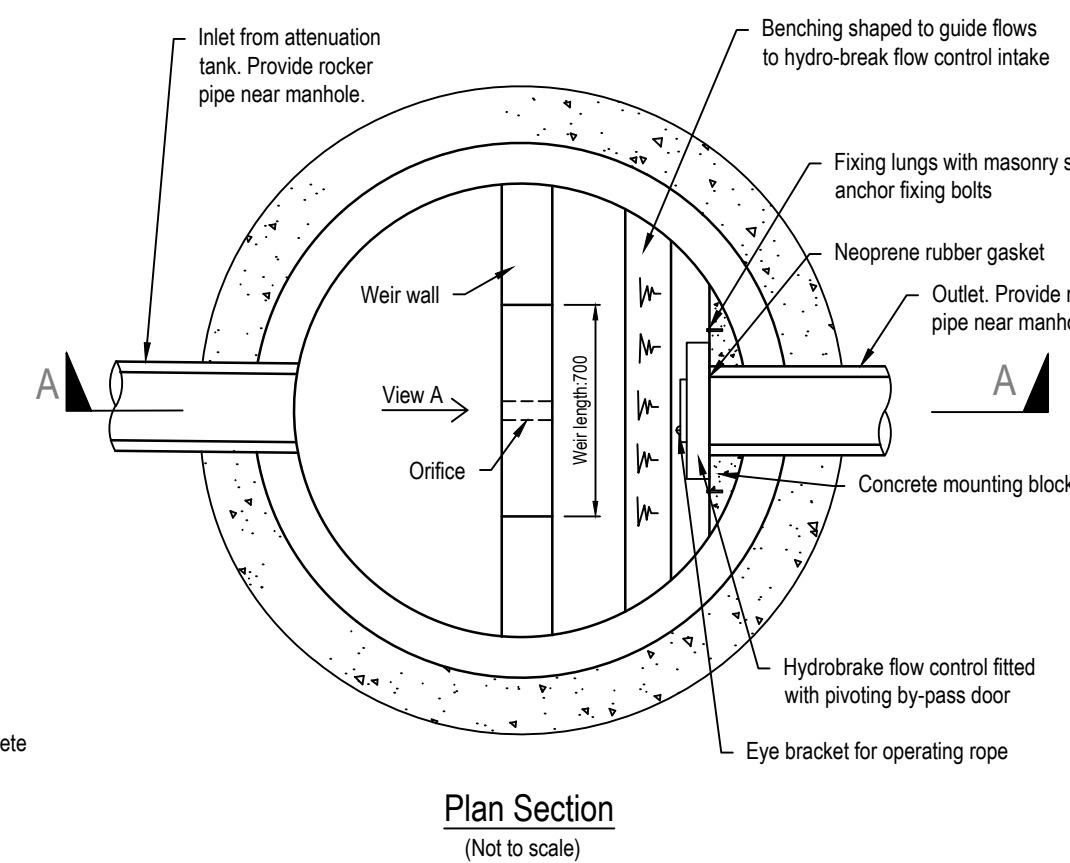
Pipes through walls (lintelled opening)



Tank 1- Aquacell Core-R Storage Tank Detail For size and location of tank refer to drainage layout drawing (Not to scale)

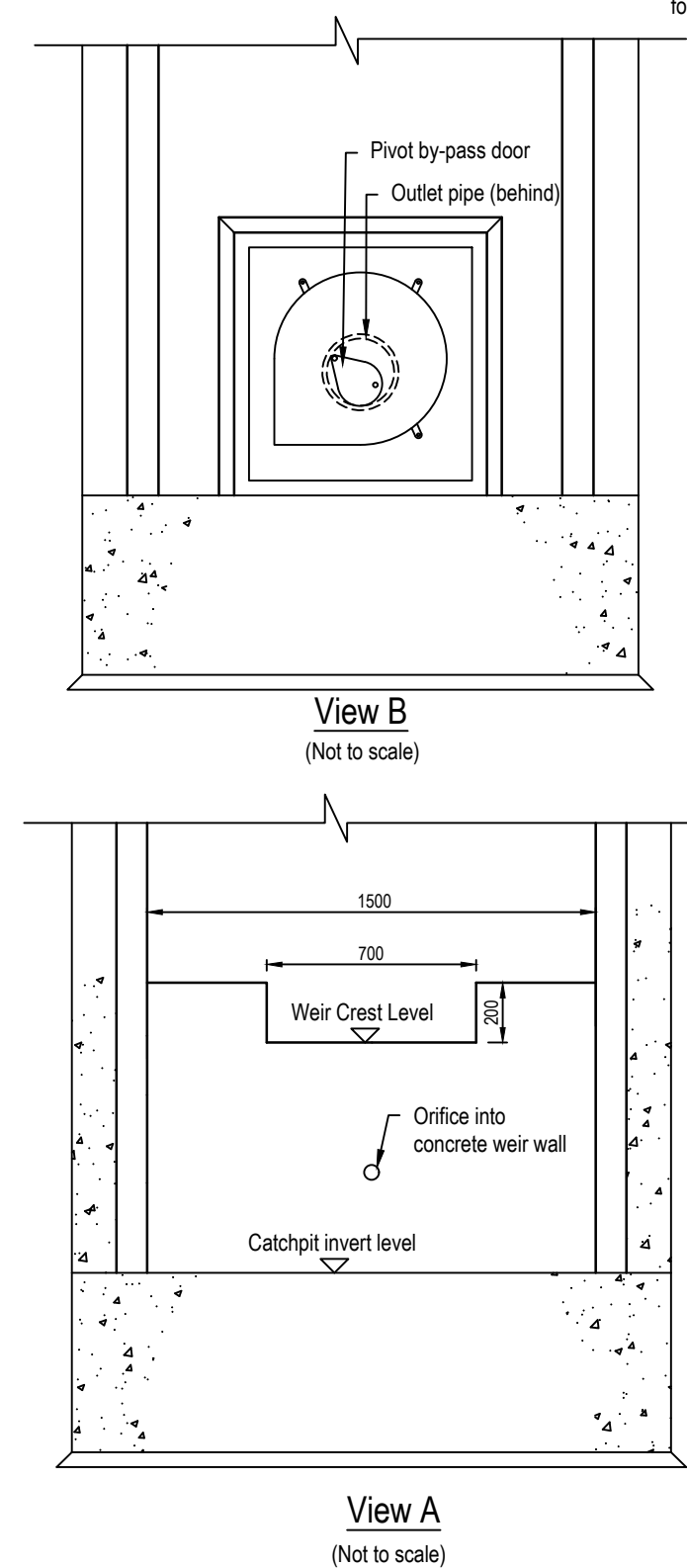


Section A-A (Not to scale)

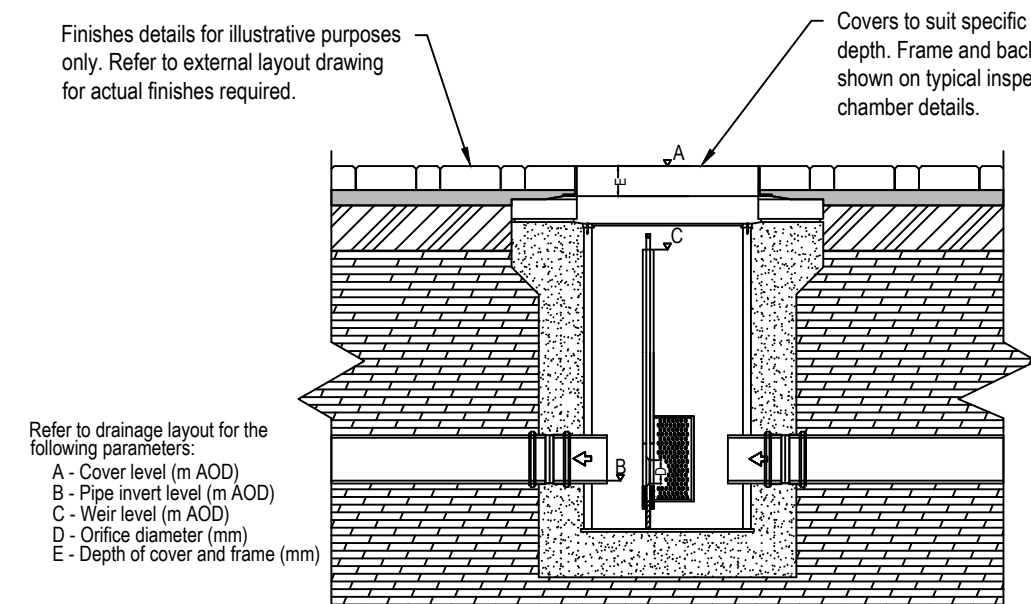


Plan Section (Not to scale)

Complex flow control chamber (Not to scale)



Flow Control Detail SUDS02005 - CONTROFLOW 500 SERIES UNIVERSAL LEVEL INVERT GENERAL APPLICATION (Not to scale)



PRELIMINARY

Rev:	Date:	Description:
Client:		
		
Project:		
Johnson Drive, Finchampstead		
Drawing Title:		
Drainage Construction Details (Sheet 2 of 2)		
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Designed:	Drawn:	Checked:
FD	SRC	----
Scale:	Date:	Approved:
As shown @A1	Oct 2024	----
Drawing Number:	629:010	Revision:
		-

Appendix C

Hydraulic Calculations

Directors:

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Chiltern House Thame Road Haddenham Bucks HP17 8BY	Project 629- Johnson drive Finchampstead	
Date 19/02/2025 17:36 File 629-JOHNSON DRIVE_FEH D...	Designed by Felice Checked by	
XP Solutions	Network 2015.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	100
Site Location GB 480850 165550	
C (1km)	-0.029
D1 (1km)	0.269
D2 (1km)	0.274
D3 (1km)	0.311
E (1km)	0.304
F (1km)	2.678
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.208	4-8	0.105

Total Area Contributing (ha) = 0.313

Total Pipe Volume (m³) = 3.154

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
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Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
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Page 2



Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	14.600	0.093	157.0	0.082	5.00	0.0	0.600	o	300	
2.000	1.000	0.010	100.0	0.010	5.00	0.0	0.600	o	100	
2.001	1.000	0.010	100.0	0.010	0.00	0.0	0.600	o	100	
2.002	1.000	0.010	100.0	0.010	0.00	0.0	0.600	o	100	
2.003	1.000	0.010	100.0	0.010	0.00	0.0	0.600	o	100	
2.004	5.900	0.350	16.9	0.023	0.00	0.0	0.600	o	150	
3.000	4.500	0.905	5.0	0.094	5.00	0.0	0.600	o	225	
4.000	1.000	0.000	0.0	0.021	5.00	0.0	0.600	o	100	
4.001	5.900	0.230	25.7	0.017	0.00	0.0	0.600	o	100	
5.000	2.500	0.880	2.8	0.022	5.00	0.0	0.600	o	150	
6.000	1.900	0.024	79.2	0.014	5.00	0.0	0.600	o	100	
6.001	9.700	0.920	10.5	0.000	0.00	0.0	0.600	o	100	
1.001	1.000	0.000	0.0	0.000	0.00	0.0	0.600	o	225	
1.002	29.600	0.197	150.0	0.000	0.00	0.0	0.600	o	225	
1.003	10.100	0.067	150.7	0.000	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.19	63.560	0.082	0.0	0.0	0.0	1.25	88.5	11.1
2.000	50.00	5.02	66.210	0.010	0.0	0.0	0.0	0.77	6.0	1.4
2.001	50.00	5.04	65.730	0.020	0.0	0.0	0.0	0.77	6.0	2.7
2.002	50.00	5.07	65.400	0.030	0.0	0.0	0.0	0.77	6.0	4.1
2.003	50.00	5.09	64.950	0.040	0.0	0.0	0.0	0.77	6.0	5.4
2.004	50.00	5.13	64.270	0.063	0.0	0.0	0.0	2.47	43.6	8.5
3.000	50.00	5.01	64.745	0.094	0.0	0.0	0.0	5.91	234.9	12.7
4.000	50.00	5.24	64.200	0.021	0.0	0.0	0.0	0.07	0.5<	2.8
4.001	50.00	5.30	64.200	0.038	0.0	0.0	0.0	1.53	12.0	5.1
5.000	50.00	5.01	64.720	0.022	0.0	0.0	0.0	6.02	106.5	3.0
6.000	50.00	5.04	64.910	0.014	0.0	0.0	0.0	0.87	6.8	1.9
6.001	50.00	5.10	64.890	0.014	0.0	0.0	0.0	2.39	18.8	1.9
1.001	50.00	5.44	63.270	0.313	0.0	0.0	0.0	0.12	4.9<	42.4
1.002	50.00	5.90	63.270	0.313	0.0	0.0	0.0	1.07	42.4<	42.4
1.003	50.00	6.06	63.070	0.313	0.0	0.0	0.0	1.06	42.2<	42.4

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Date 19/02/2025 17:36 File 629-JOHNSON DRIVE_FEH D...	Designed by Felice Checked by	
XP Solutions	Network 2015.1	

Online Controls for Storm

Orifice Manhole: 12, DS/PN: 6.001, Volume (m³): 0.8

Diameter (m) 0.035 Discharge Coefficient 0.600 Invert Level (m) 64.890

Complex Manhole: 13, DS/PN: 1.001, Volume (m³): 3.6

Orifice

Diameter (m) 0.120 Discharge Coefficient 0.600 Invert Level (m) 63.270

Weir

Discharge Coef 0.544 Width (m) 0.700 Invert Level (m) 63.720

Hydro-Brake Optimum® Manhole: 14, DS/PN: 1.002, Volume (m³): 2.3

Unit Reference	MD-SHE-0194-1850-0800-1850
Design Head (m)	0.800
Design Flow (l/s)	18.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	194
Invert Level (m)	63.270
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	18.4
Flush-Flo™	0.308	18.4
Kick-Flo®	0.601	16.1
Mean Flow over Head Range	-	15.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.7	1.200	22.3	3.000	34.7	7.000	52.3
0.200	17.8	1.400	24.1	3.500	37.4	7.500	54.0
0.300	18.4	1.600	25.6	4.000	39.8	8.000	55.8
0.400	18.2	1.800	27.1	4.500	42.2	8.500	57.2
0.500	17.6	2.000	28.5	5.000	44.4	9.000	58.8
0.600	16.1	2.200	29.9	5.500	46.5	9.500	60.5
0.800	18.4	2.400	31.1	6.000	48.5		
1.000	20.5	2.600	32.4	6.500	50.4		

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Storage Structures for Storm

Porous Car Park Manhole: 2, DS/PN: 2.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	23.7
Max Percolation (l/s)	31.6	Slope (1:X)	25.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	66.210	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 3, DS/PN: 2.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.5
Max Percolation (l/s)	26.0	Slope (1:X)	45.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	65.730	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 4, DS/PN: 2.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	20.2
Max Percolation (l/s)	26.9	Slope (1:X)	55.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	65.400	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 5, DS/PN: 2.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.2
Max Percolation (l/s)	25.6	Slope (1:X)	35.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.950	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 6, DS/PN: 2.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	17.7
Max Percolation (l/s)	23.6	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.270	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 8, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Max Percolation (l/s)	58.5
Membrane Percolation (mm/hr)	1000	Safety Factor	2.0

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Porous Car Park Manhole: 8, DS/PN: 4.000

Porosity	0.30	Slope (1:X)	0.0
Invert Level (m)	64.200	Depression Storage (mm)	5
Width (m)	4.3	Evaporation (mm/day)	3
Length (m)	49.0	Cap Volume Depth (m)	0.330

Porous Car Park Manhole: 11, DS/PN: 6.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1
Membrane Percolation (mm/hr)	1000	Length (m)	20.0
Max Percolation (l/s)	22.8	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	64.940	Cap Volume Depth (m)	0.350

Cellular Storage Manhole: 13, DS/PN: 1.001

Invert Level (m)	63.270	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

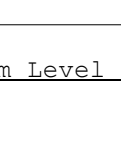
Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	229.0	229.0	0.801	0.0	229.0
0.800	229.0	229.0			

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Storage Structure Volume (m ³)	Total Volume (m ³)
1.000	1	0.000	0.000
2.000	2	4.725	4.725
2.001	3	8.617	8.617
2.002	4	9.073	9.073
2.003	5	6.615	6.615
2.004	6	8.921	8.921
3.000	7	0.000	0.000
4.000	8	20.859	20.859
4.001	9	0.000	0.000
5.000	10	0.000	0.000
6.000	11	8.610	8.610
6.001	12	0.000	0.000
1.001	13	174.113	174.113
1.002	14	0.000	0.000
1.003	15	0.000	0.000
Total		241.532	241.532

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

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	8
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.311
Site Location GB 480850 165550	E (1km)		0.304
C (1km)	-0.029	F (1km)	2.678
D1 (1km)	0.269 Cv (Summer)		0.950
D2 (1km)	0.274 Cv (Winter)		0.950

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

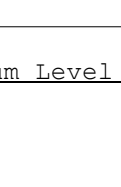
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Summer	1	+0%	100/15 Summer				63.660
2.000	2	15 Summer	1	+0%	30/15 Summer				66.255
2.001	3	30 Summer	1	+0%	30/15 Summer				65.789
2.002	4	30 Summer	1	+0%	30/15 Summer				65.472
2.003	5	30 Summer	1	+0%	30/15 Summer				65.036
2.004	6	60 Summer	1	+0%	100/15 Summer				64.310
3.000	7	15 Summer	1	+0%	100/15 Summer				64.804
4.000	8	180 Summer	1	+0%	100/15 Summer				64.226
4.001	9	15 Summer	1	+0%	30/15 Summer				64.234
5.000	10	15 Summer	1	+0%					64.749
6.000	11	60 Summer	1	+0%	30/15 Summer				64.963
6.001	12	60 Winter	1	+0%	30/15 Summer				64.962
1.001	13	360 Summer	1	+0%	30/15 Summer				63.443
1.002	14	360 Summer	1	+0%	100/15 Summer				63.346
1.003	15	360 Summer	1	+0%					63.121

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Level	
		Depth (m)	Volume (m³)				Status	Exceeded
1.000	1	-0.200	0.000	0.24		17.8	OK	
2.000	2	-0.055	0.000	0.37		1.5	OK	
2.001	3	-0.041	0.000	0.66		2.6	OK	
2.002	4	-0.028	0.000	0.85		3.4	OK	
2.003	5	-0.014	0.000	1.00		3.9	OK	
2.004	6	-0.110	0.000	0.16		5.8	OK	
3.000	7	-0.166	0.000	0.15		20.4	OK	
4.000	8	-0.074	0.000	0.16		0.6	OK	
4.001	9	-0.066	0.000	0.24		2.6	OK	
5.000	10	-0.121	0.000	0.08		4.8	OK	
6.000	11	-0.047	0.000	0.16		0.7	OK	
6.001	12	-0.028	0.000	0.03		0.6	OK	
1.001	13	-0.052	0.000	0.14		4.2	OK	
1.002	14	-0.149	0.000	0.11		4.2	OK	
1.003	15	-0.174	0.000	0.12		4.2	OK	

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

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	8
Number of Online Controls	3	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.311
Site Location GB 480850	165550	E (1km)	0.304
C (1km)	-0.029	F (1km)	2.678
D1 (1km)	0.269	Cv (Summer)	0.950
D2 (1km)	0.274	Cv (Winter)	0.950

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1 15	Summer	30	+0%	100/15	Summer			63.761
2.000	2 15	Summer	30	+0%	30/15	Summer			66.346
2.001	3 15	Summer	30	+0%	30/15	Summer			65.923
2.002	4 15	Summer	30	+0%	30/15	Summer			65.614
2.003	5 15	Summer	30	+0%	30/15	Summer			65.195
2.004	6 15	Summer	30	+0%	100/15	Summer			64.360
3.000	7 15	Summer	30	+0%	100/15	Summer			64.857
4.000	8 15	Summer	30	+0%	100/15	Summer			64.275
4.001	9 15	Summer	30	+0%	30/15	Summer			64.317
5.000	10 15	Summer	30	+0%					64.772
6.000	11 30	Winter	30	+0%	30/15	Summer			65.058
6.001	12 30	Winter	30	+0%	30/15	Summer			65.055
1.001	13 60	Winter	30	+0%	30/15	Summer			63.670
1.002	14 60	Winter	30	+0%	100/15	Summer			63.421
1.003	15 60	Winter	30	+0%					63.165

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

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	
1.000	1	-0.099	0.000	0.77		57.1	OK
2.000	2	0.036	0.000	1.57		6.2	SURCHARGED
2.001	3	0.093	0.000	2.30		9.1	SURCHARGED
2.002	4	0.114	0.000	2.54		10.0	SURCHARGED
2.003	5	0.145	0.000	2.83		11.1	SURCHARGED
2.004	6	-0.060	0.000	0.65		23.7	OK
3.000	7	-0.113	0.000	0.49		65.6	OK
4.000	8	-0.025	0.000	0.92		3.6	OK
4.001	9	0.017	0.000	1.04		11.1	SURCHARGED
5.000	10	-0.098	0.000	0.26		15.4	OK
6.000	11	0.048	0.000	0.24		1.1	SURCHARGED
6.001	12	0.065	0.000	0.06		1.0	SURCHARGED
1.001	13	0.175	0.000	0.44		13.1	SURCHARGED
1.002	14	-0.074	0.000	0.33		13.1	OK
1.003	15	-0.130	0.000	0.37		13.1	OK

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

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)					
1.000	1	0.602	0.000	0.59		43.5	FLOOD RISK	
2.000	2	0.155	0.000	2.90		11.4	FLOOD RISK	
2.001	3	0.247	0.000	3.62		14.2	FLOOD RISK	
2.002	4	0.263	0.000	3.72		14.7	FLOOD RISK	
2.003	5	0.318	0.000	4.08		16.1	FLOOD RISK	
2.004	6	0.051	0.000	0.67		24.5	SURCHARGED	
3.000	7	0.046	0.000	1.02		137.3	SURCHARGED	
4.000	8	0.114	0.000	-3.22		-12.7	SURCHARGED	
4.001	9	0.233	0.000	1.40		15.0	FLOOD RISK	
5.000	10	-0.070	0.000	0.56		32.7	OK	
6.000	11	0.215	0.000	0.38		1.6	FLOOD RISK	
6.001	12	0.232	0.000	0.08		1.4	SURCHARGED	
1.001	13	0.962	0.000	0.69		20.7	SURCHARGED	
1.002	14	0.539	0.000	0.47		18.4	SURCHARGED	
1.003	15	-0.110	0.000	0.52		18.4	OK	