

Technical Note 40: Response to LLFA comments to Application DISC/26/0085



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Site: Hilland Road, Billingshurst, West Sussex
Prepared by: Alex Maginnis
Approved by: Alal Uddin
Date: 8 June 2026

1.0 Introduction

1.1 This Technical Note has been prepared by Motion on behalf of Dunmoore Group Ltd in response to comments issued by the Lead Local Flood Authority (LLFA) dated 20th April 2026, regarding the discharge of Condition 5 (surface water drainage) for Horsham District Council application number DISC/26/0085 at Hilland Road, Billingshurst, West Sussex (RH14 9HN).

1.2 The aim of this report is to discharge the requirement of Planning Condition 5 in providing LLFA with the additional information requested, which is set out below;

(1) We require further information regarding the discharge point, connectivity and capacity of the receiving system. A CCTV survey from the proposed point of connection to the point of discharge to open watercourse is required. This is to ensure that the receiving system has capacity for the Phase 3 works, as well as the already constructed development.

(2) We require a drawing with the connectivity and capacity of the surface water network from proposed outfall to open watercourse.

(3) Calculations for surcharged outfall.

(4) Construction drawings of surface water drainage network, sustainable drainage components and flow controls (including cross sections)

(5) Construction method statement – while we note the comment in para 1.6, this is not adequate information for a discharge of condition application.

(6) Maintenance easements must be clearly shown on drawings.

(7) It is unclear whether winter groundwater levels have been considered in the design of the basins.

2.0 Response to LLFA Comments

2.1 Condition 5 (1)

This was provided to the LLFA during the pre-app however, as requested the CCTV Survey dated 07/05/2021 carried out by Anglo Development Survey Ltd is included in **Appendix A**.

2.2 Condition 5 (2)

Similarly, this information was also provided to the LLFA during the pre-application stage; however, the relevant drawings are included in **Appendix B**.

2.3 Condition 5 (3)

Model updated to include calculations for surcharged outfall. A copy of the results can be found in **Appendix C**.

2.4 Condition 5 (4)

Construction Details are included in **Appendix D**.

2.5 Condition 5 (5)

The attenuation tanks and basins will be installed early within the programme to provide adequate attenuation volume onsite during the works. This will allow the peak surface water flow rates from the construction site to be limited to greenfield rates, which mitigates the offsite flood risk without increasing the onsite flood risk. These storage devices are to be inspected regularly throughout the construction period to ensure there isn't significant siltation and are to be cleansed where required. They are to be fully flushed of silt at the end of the construction phase and CCTV surveyed to verify they function to their full design capacity. Care is to be taken during the removal and disposal of any silt to make sure it is not remobilised into the environment. The areas of permeable paving are to be constructed towards the end of the construction period, so its porosity and structural integrity is maintained.

A concrete wash-out point is to be set up onsite in order to prevent alkaline waters from being discharged from site. To prevent mud being carried offsite through the trade park, wheel washing facilities are to be present onsite. This will either be in the form of a dry wheel wash or a jet washing facility depending on what the site conditions dictate. Drainage of water from wheel washing facilities is to be achieved by utilising regularly maintained membrane lined filter drains or similar to capture silt prior to the water leaving site.

Any fuels and chemicals onsite are to be stored in locked bunded containers. Drip trays will be utilised when refilling plant onsite, with spill kits present during refuelling. Regular toolbox talks are to be held on spill kit usage and refuelling procedures.

2.6 Condition 5 (6)

Drawing updated to show 3m easement within the SuDS features for maintenance. Updated drawing is provided in **Appendix E**. N.B All below-ground drainage network and SuDS features are to be managed by Billingshurst Management Company.

2.7 Condition 5 (7)

Winter groundwater levels have been considered within the design of the basins. The geology of the site is comprised of a mix of Weald Clay Formation Mudstone and Weald Clay Formation Sandstone. The mudstone is generally impermeable and an unproductive stratum. The areas of sandstone existing to the south of the site, and Basin 1 is located within the area. The sides of the basin have been bunded in order to raise the base of the basin up, so that the base is approximately 600mm below existing ground level, with the basins themselves formed with a min. 300mm of cohesive impermeable material. The site in general is at a negligible risk of groundwater flooding, being in an area of steep topography with largely unproductive strata below.

3.0 Conclusion

- 3.1 Motion has reviewed and addressed the comments dated 20th April 2026 raised by the LLFA and provided the additional information required to satisfy their requirements. As such, the discharge of Condition 5 should no longer be impeded.

Appendix A

Anglo Development Ltd CCTV Survey

Project-information / Inspection: 1

Project name :
Marbank Diversion C506

Project Number :

Contact :

Date :
07/05/2021

Client: **Marbank Construction Ltd**
 Contact Name: **Florin Iacoban**
 Department:
 Road: **Wintersells Road**
 Town: **West Byfleet**
 County: **Surrey**
 Telephone:
 Fax:
 Mobile:
 E-mail:

Site: **C506**
 Contact Name: **Diversion Survey**
 Department:
 Road: **Stane Street**
 Town: **Billinghurst**
 County:
 Telephone:
 Fax:
 Mobile:
 E-mail:

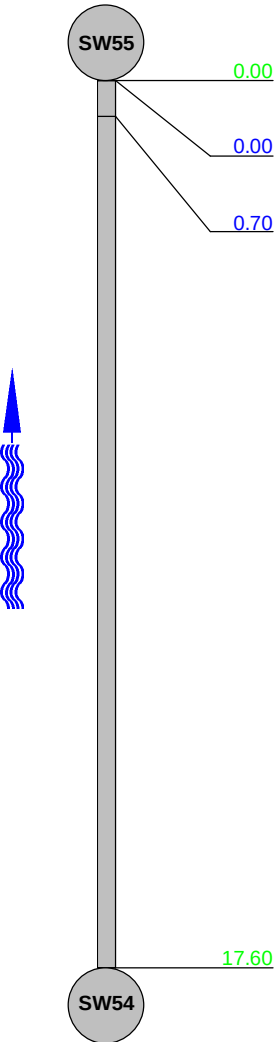
Contractor **Anglo Development Surveys Ltd**
 Contact Name:
 Department:
 Road: **Bradfield Road**
 Town: **Wix**
 County: **Essex**
 Telephone: **01255 870483**
 Fax:
 Mobile: **07747 620800**
 E-mail: **anglosurveys@btinternet.com**

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 1	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW55 (U/S) SW54	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW54 SW55 SW55
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 17.60 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :

1:150	Position	Code	Observation	Grade
		MH	Start node type, manhole, reference number : SW55	(Constr) 0
		LU	Line deviates up	(Serv) 0
		WL	Water level, 5% of the vertical dimension	(Serv) 0
		MHF	Finish node type, manhole reference number: SW54	(Constr) 0



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

Section number :
1

PLR Suffix :
X



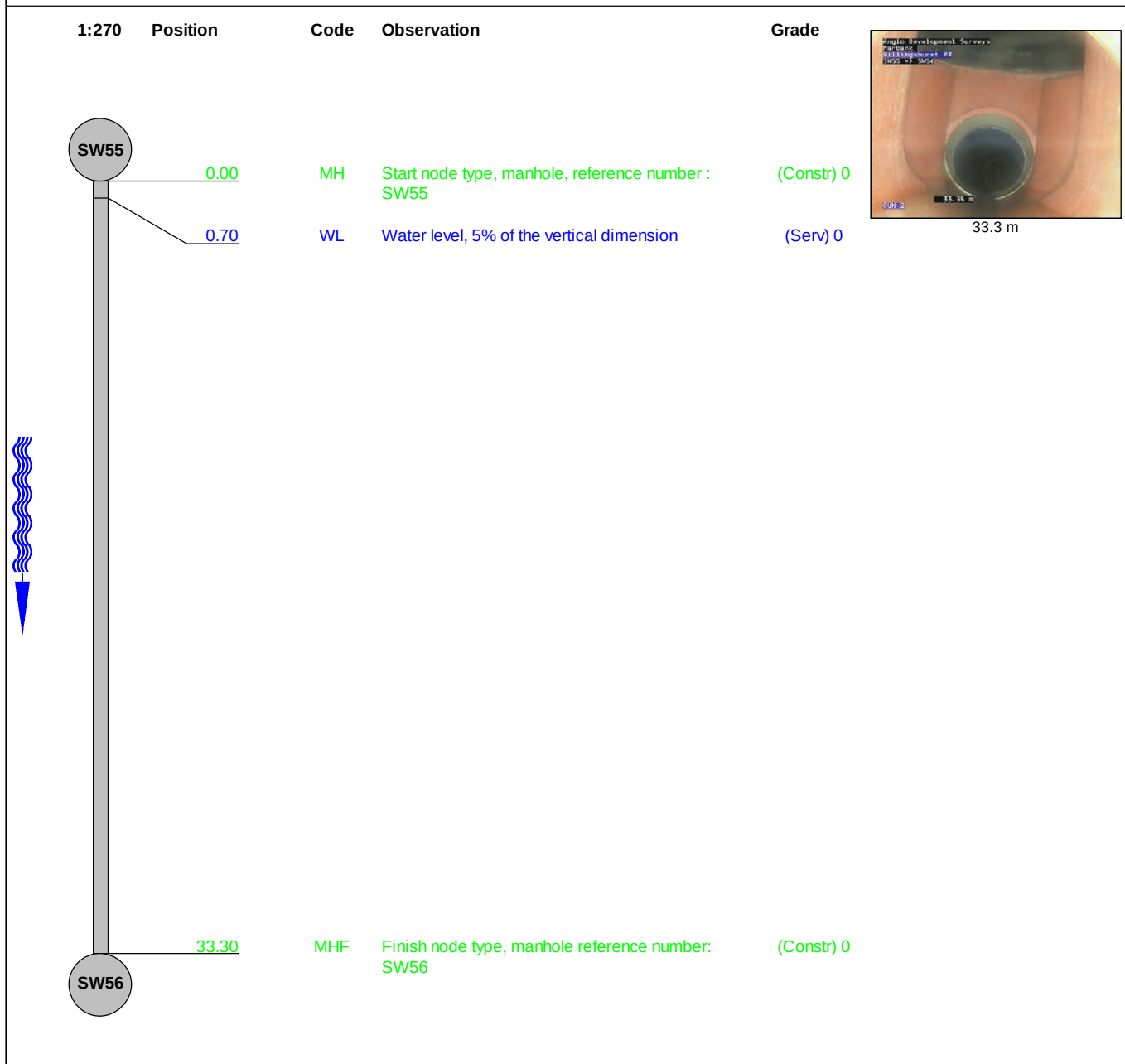
Photo: 1_1_5_A.JPG
17.6m, Finish node type, manhole reference number: SW54

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 2	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW55 (D/S) SW56	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW55 SW56 SW56
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 33.30 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :



Structural Defects

Constructional Features

Service Defects

Miscellaneous Features

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billingshurst

Road :
Stane Street

Date :
07/05/2021

Section number :
2

PLR Suffix :
X



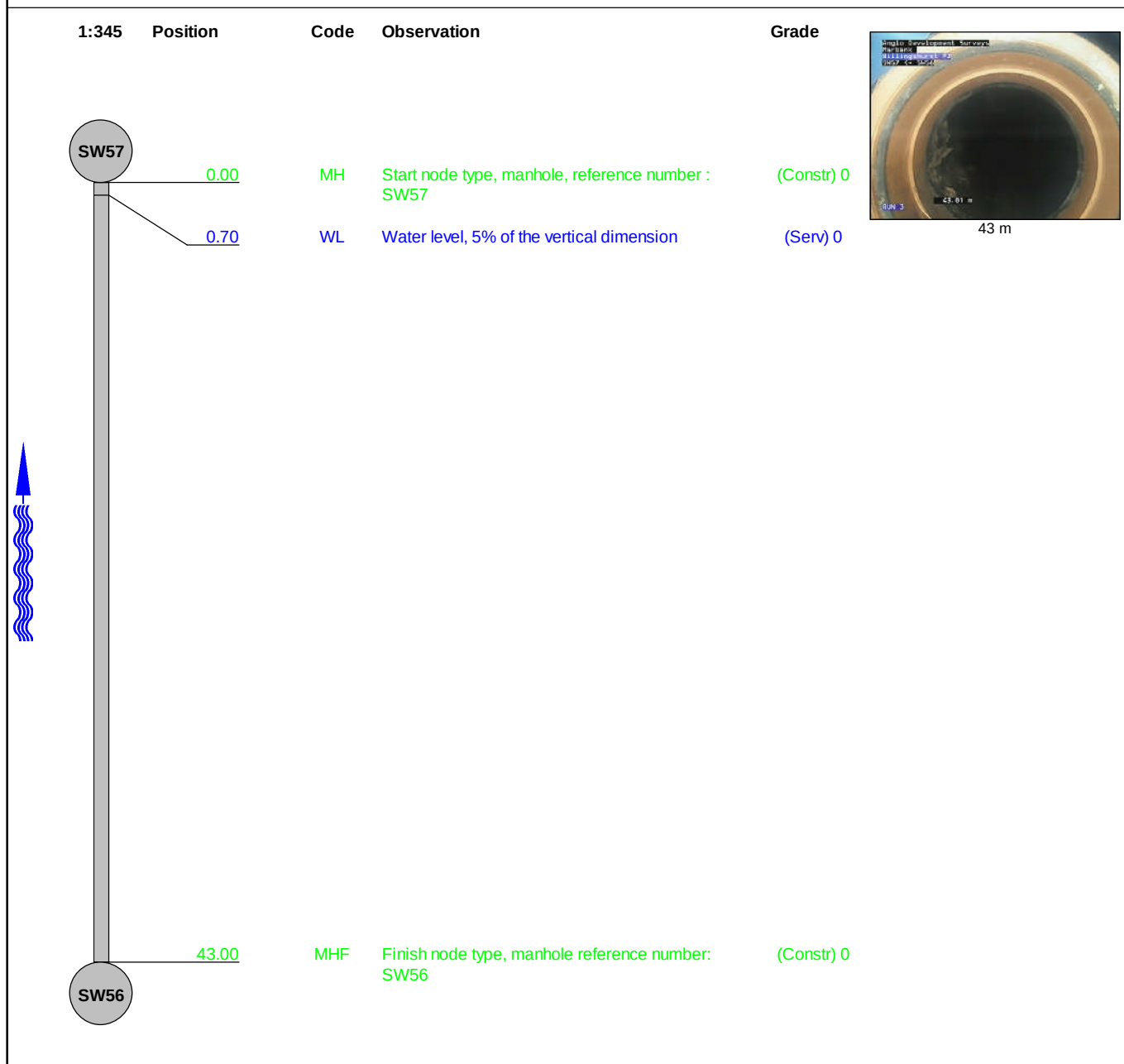
Photo: 3_3_8_A.JPG
33.3m, Finish node type, manhole reference number: SW56

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 3	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW57 (U/S) SW56	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW56 SW57
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 43.00 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

Section number :
3

PLR Suffix :
X



Photo: 4_4_11_A.JPG

43m, Finish node type, manhole reference number: SW56

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 4	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW57 (D/S) SW58	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW57 SW58
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 7.70 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

Section number :
4

PLR Suffix :
X



Photo: 5_5_15_A.JPG
7.7m, Finish node type, manhole reference number: SW58

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 5	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW59 (U/S) SW58	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW58 SW59 SW59
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 42.00 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :

1:345 Position Code Observation

Grade



SW59

0.00

MH

Start node type, manhole, reference number :
SW59

(Constr) 0

0.70

WL

Water level, 5% of the vertical dimension

(Serv) 0

42 m

42.00

MHF

Finish node type, manhole reference number:
SW58

(Constr) 0

SW58

Structural Defects

Constructional Features

Service Defects

Miscellaneous Features

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

Section number :
5

PLR Suffix :
X



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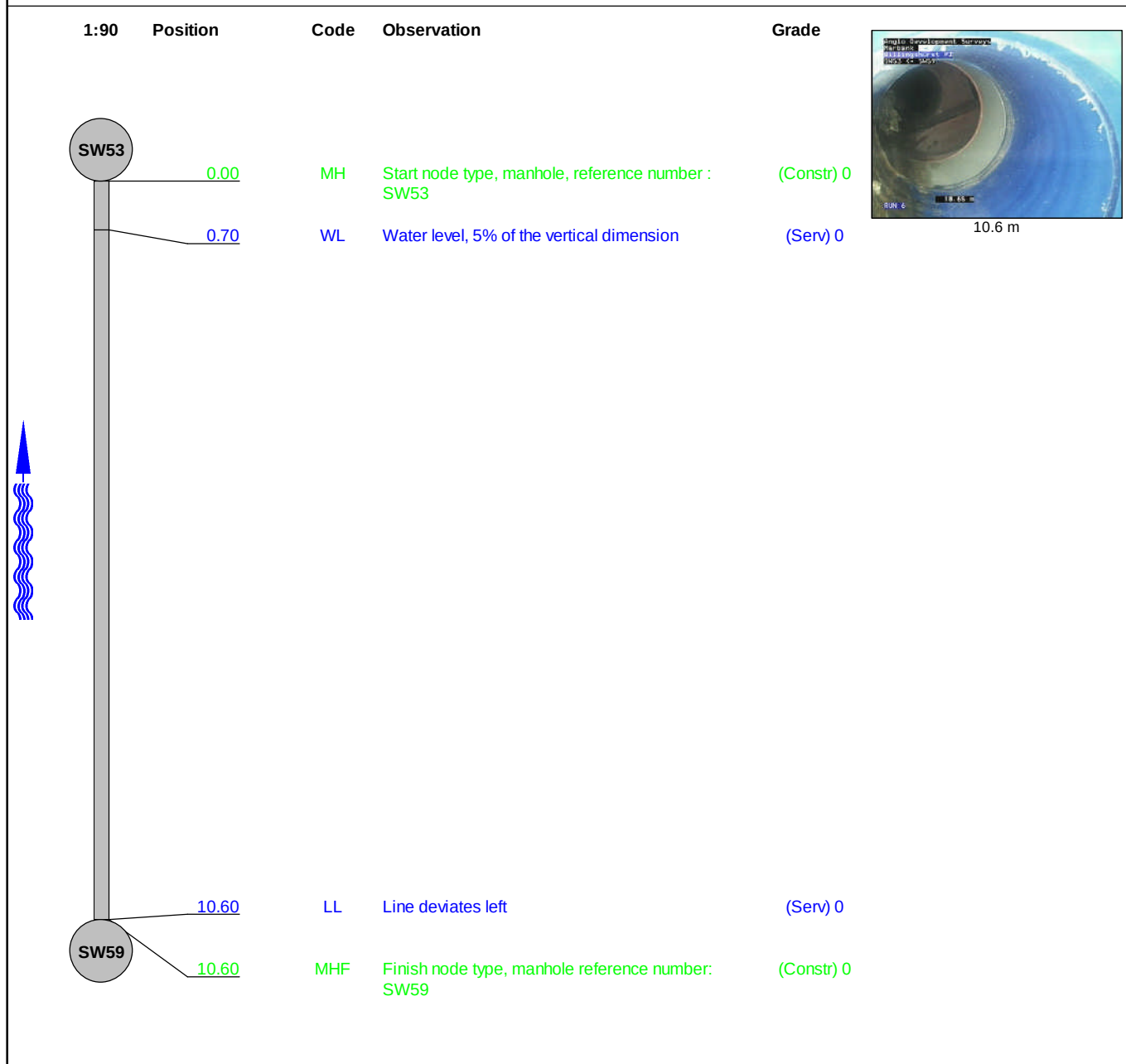
42m, Finish node type, manhole reference number: SW58

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 6	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW53 (U/S) SW59	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW59 SW53
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 10.60 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 225 mm Polyvinyl chloride	

Comment :



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

Section number :
6

PLR Suffix :
X



Photo: 7_7_22_A.JPG
10.6m, Finish node type, manhole reference number: SW59

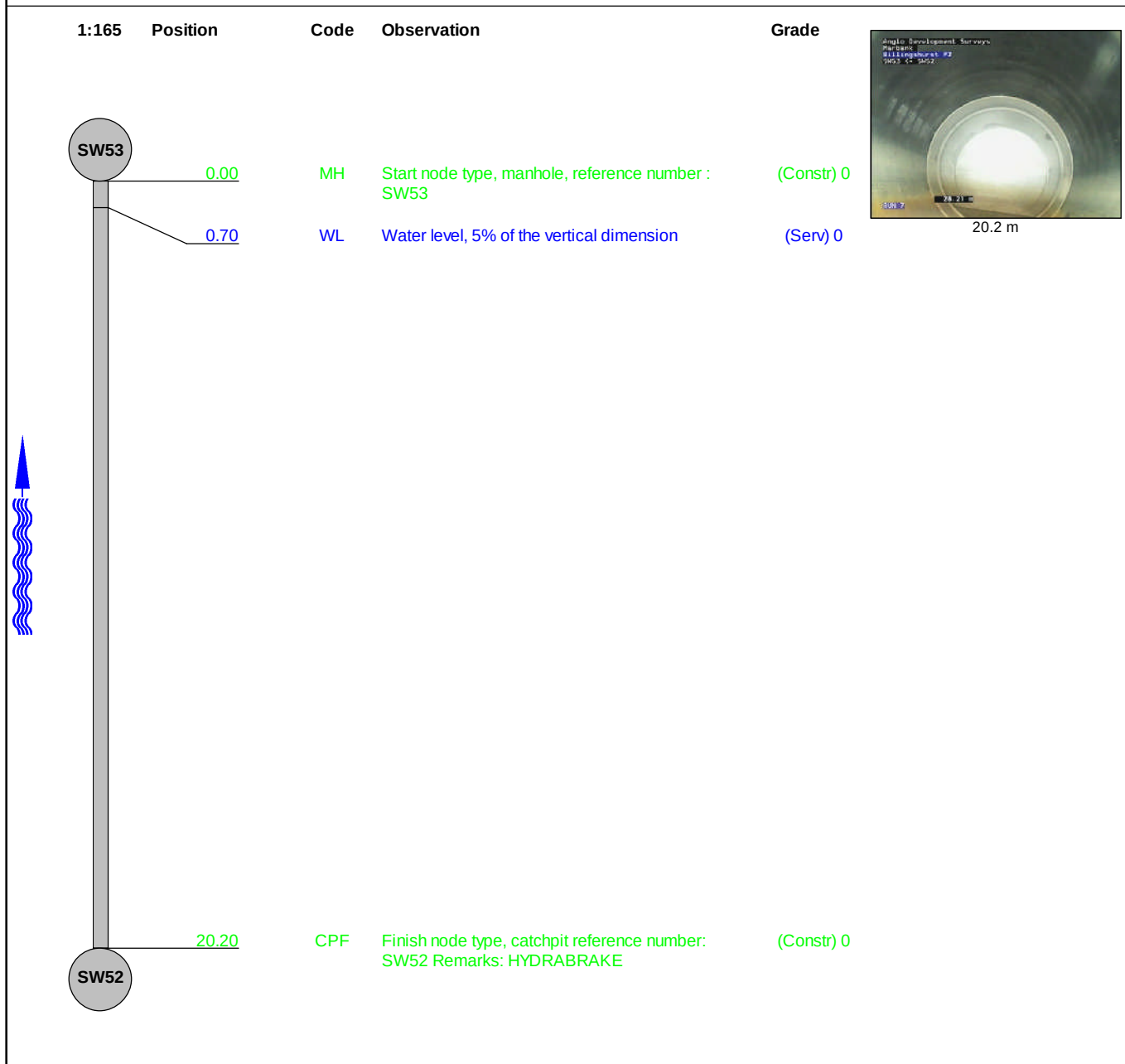
Inspection report / Inspection: 1

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Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW53 (U/S) SW52	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW52 SW53 SW53
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Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 20.20 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 300 mm Polyvinyl chloride
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Comment :



Structural Defects

Service Defects

Constructional Features

Miscellaneous Features

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billingshurst

Road :
Stane Street

Date :
07/05/2021

Section number :
7

PLR Suffix :
X



Photo: 8_8_25_A.JPG
20.2m, Finish node type, catchpit reference number: SW52

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 8	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW53 (D/S) OUTFALL	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW53 OUTFALL
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 17.70 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 300 mm Concrete	

Comment :



Structural Defects

Constructional Features

Service Defects

Miscellaneous Features

STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billingshurst

Road :
Stane Street

Date :
07/05/2021

Section number :
8

PLR Suffix :
X



Photo: 9_9_28_A.JPG

17.7m, Finish node type, outfall reference number: OUTFALL

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 9	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW51 (D/S) SW52	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	SW51 SW52
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 35.70 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 300 mm Polyvinyl chloride	

Comment :



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
STR no def	STR peak	STR mean	STR total	STR grade	SER no def	SER peak	SER mean	SER total	SER grade
0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billingshurst

Road :
Stane Street

Date :
07/05/2021

Section number :
9

PLR Suffix :
X



Photo: 10_10_31_A.JPG

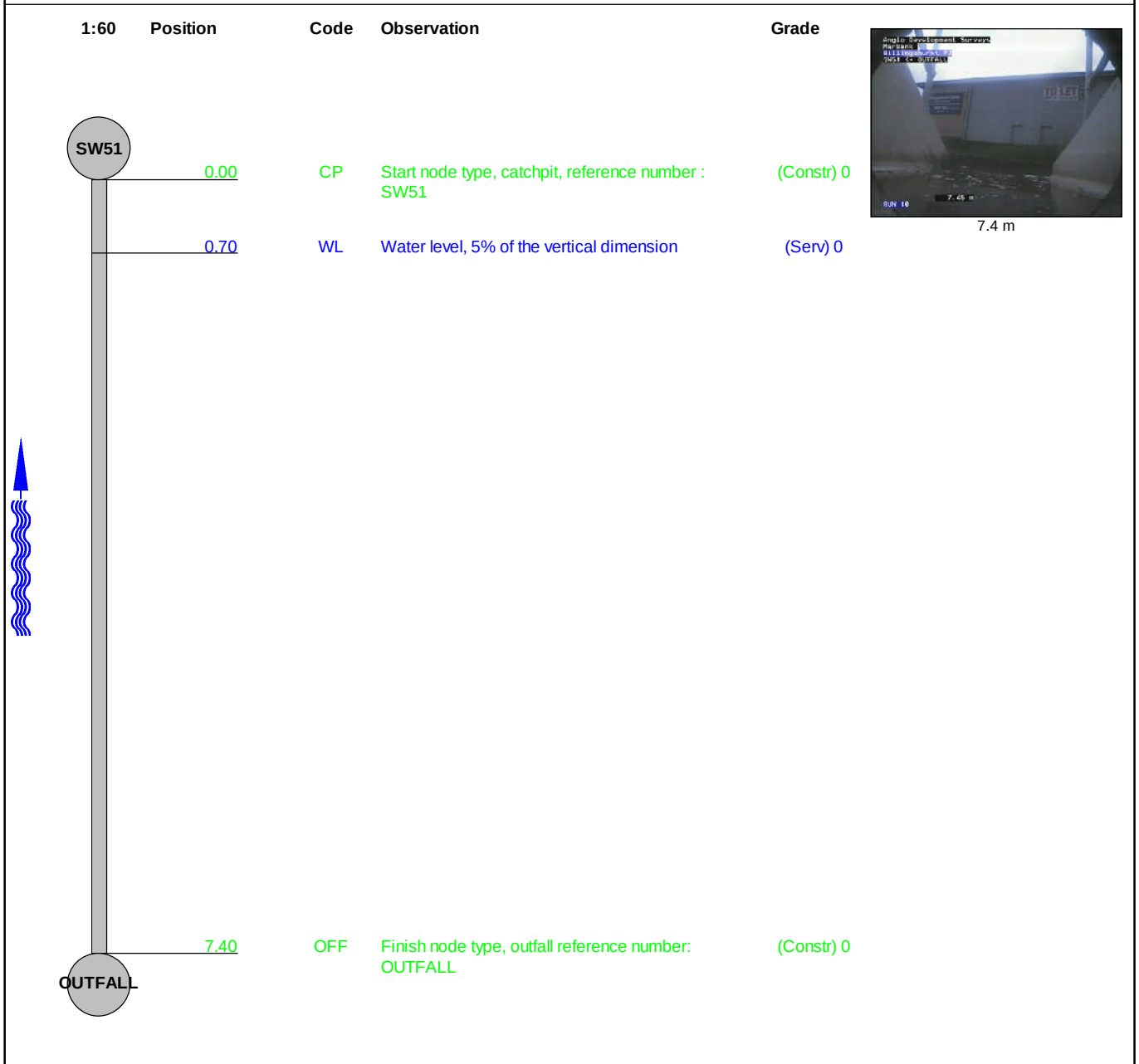
35.7m, Finish node type, catchpit reference number: SW52

Inspection report / Inspection: 1

Date : 07/05/2021	Job number :	Weather : no rain or snow	Operator : Dan	Section number : 10	PLR SUFFIX: X
Weather no rain or snow	Vehicle : Transit	Camera : camera 1	Preset :	Cleaned : no	Operator : Dan

Place : Road : Location Inspection	Billinghurst Stane Street Property with buildings SW51 (U/S) OUTFALL	Location details: Catchment: Tape number : Pipe Length	U/S MH : U/S Depth : D/S MH : D/S Depth :	OUTFALL SW51
Use: Year laid : Purpose : Total length :	Surface water 2020 Post completion inspection of new sewers 7.40 m	Pipe shape : Pipe size : Pipe material : Lining :	Circular 300 mm Polyvinyl chloride	

Comment :



Structural Defects					Constructional Features				
Service Defects					Miscellaneous Features				
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0	0	0	0	1	0	0	0	0	1

Place :

Inspection pictures / Inspection: 1

Place :
Billinghurst

Road :
Stane Street

Date :
07/05/2021

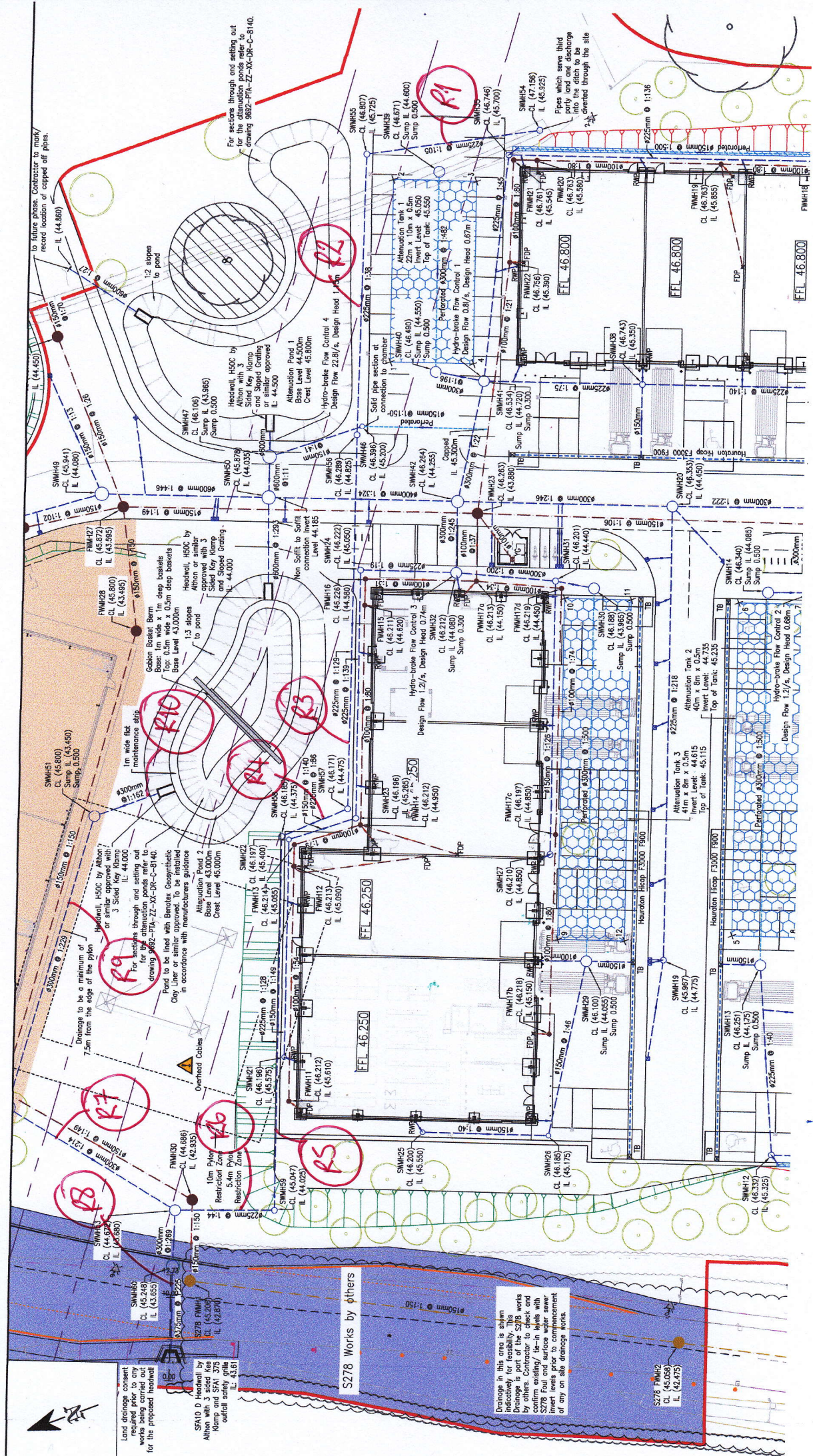
Section number :
10

PLR Suffix :
X



Photo: 11_11_34_A.JPG

7.4m, Finish node type, outfall reference number: OUTFALL



Marbank Construction

Site: **C506**

Stane Street
Billingshurst

SW Diversion

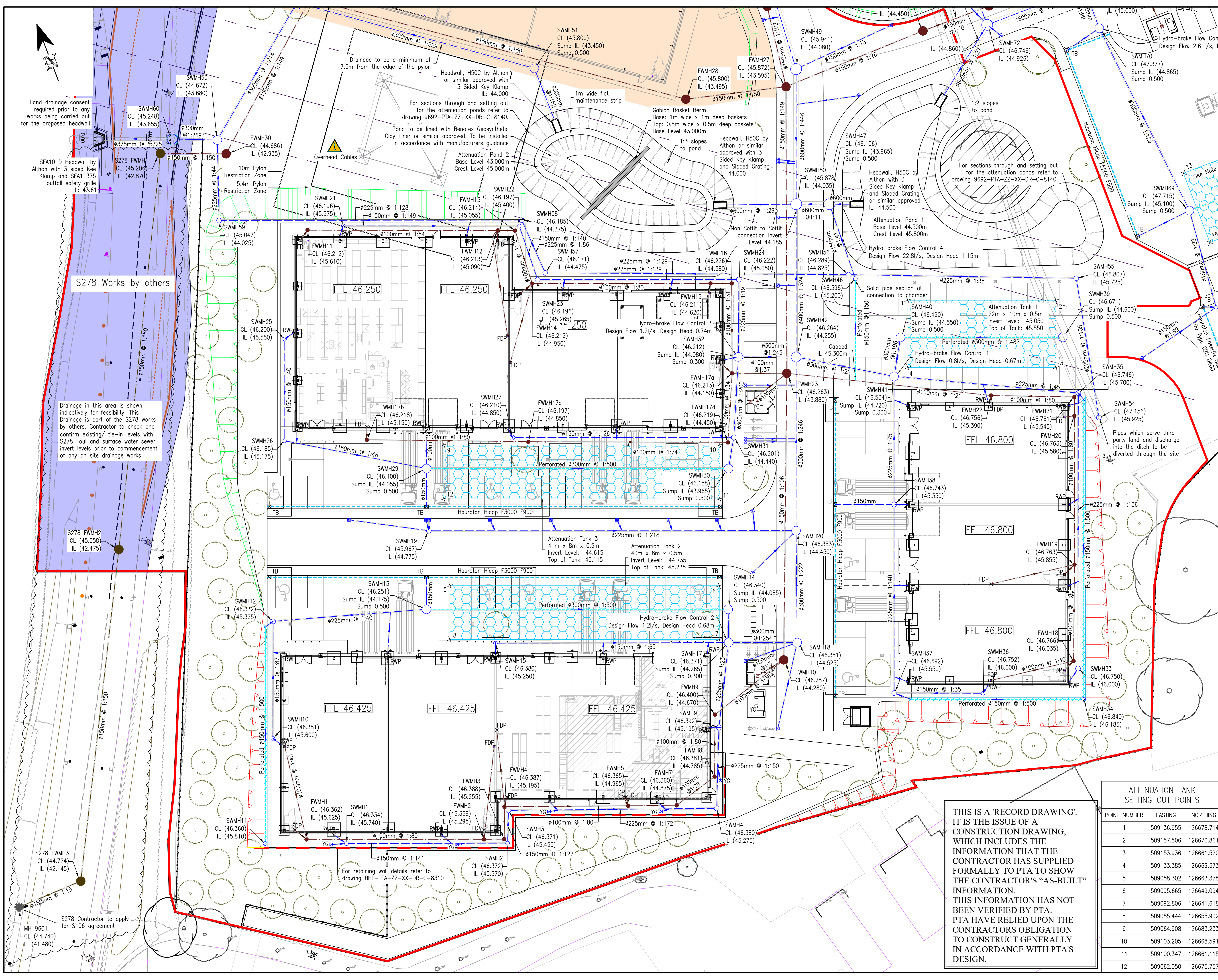
Summary

07/05/21

All surface pipe work CCTV surveyed is structurally sound and specification is adequate. No operational defects to report.

Appendix B

Connectivity and Capacity of the Surface Water Network Drawings



Notes:

- Do not scale from this drawing.
- In case of any discrepancies in drawings, details or bills, refer to engineers for clarification; unilateral decisions by the Contractor will not be accepted.
- This drawing is to be read in conjunction with all related Architects, Consultants & Sub-Contractors drawings and specifications.
- The Contractor is advised that all design drawings and information are to be read concurrently and any discrepancies or omissions reported directly to PTA's Civil Engineering Department.
- This drawing is based upon the survey by Marvin & Partners Limited reference 18/5131 dated July 2018 provided in digital format.
- All levels are relative to O.S. Datum
- All Road Gully outlets to be 150mmØ pipework
- Rainwater pipe and foul drain point locations provided by the architect in digital format in drawing ref: D-101-10-01-D
- All drainage within the carriageway of the estate roads to be to adoptable standards.
- Foul stacks to have their IL's 450mm below FFL

Key:

- Site Boundary
- Section of Phase 2 Road Brought into Phase 1 Works
- Proposed Foul Water Drainage
- Proposed Surface Water Drainage
- Drainage Channel with Trash Box
- Attenuation Tank
- French Drain with Perforated Pipe
- Rain Water Pipe & Foul Drain Pipe
- Road Gully
- Trapped SW and FW Gully
- 1:3 Battered Slope to Existing Levels
- Works for Plots 1 & 2 by Others
- S278 Works by Others
- S278 Foul Drainage by Others. Shown Indicatively for Feasibility.

FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE	CHKD
C10	Record Issue	TA	12.11.20	AH
C09	Revised to Latest Site Layout	TA	11.08.20	AH
C08	Division and Manhole Cover Levels Revised	TA	16.03.20	AH
C07	Ditch Diversion and Section of Phase 2 Road Added	TA	19.02.20	AH
C06	Drainage Adjacent to Future Units 1&2 and Units 3-5 Revised. Revised to Latest Unit 9 Stack Positions	TA	03.02.20	AH
C05	Pond 1 Reshaped, Land Re-profiled West of Unit 9 and Updated to Latest Stack Locations	TA	13.01.20	AH
C04	Revised to Latest Site Layout	TA	19.12.19	AH
C03	Revised to SDS Attenuation Tank Drawings, Tank Setting Out Points Added	TA	12.12.19	AH
C02	Revised to Latest Site Layout	TA	10.12.19	AH
C01	First Issue	TA	21.11.19	AH

PROJECT TITLE: Billingshurst

DRAWING TITLE: Proposed Drainage Layout Sheet 2 of 3

POINT NUMBER	EASTING	NORTHING
1	509136.955	126678.714
2	509157.506	126670.861
3	509153.936	126661.520
4	509133.385	126669.373
5	509058.302	126663.378
6	509095.665	126649.094
7	509092.806	126641.618
8	509055.444	126655.902
9	509064.908	126683.233
10	509103.205	126668.591
11	509100.347	126661.115
12	509062.050	126675.757

9692-PTA-ZZ-XX-DR-C-8102

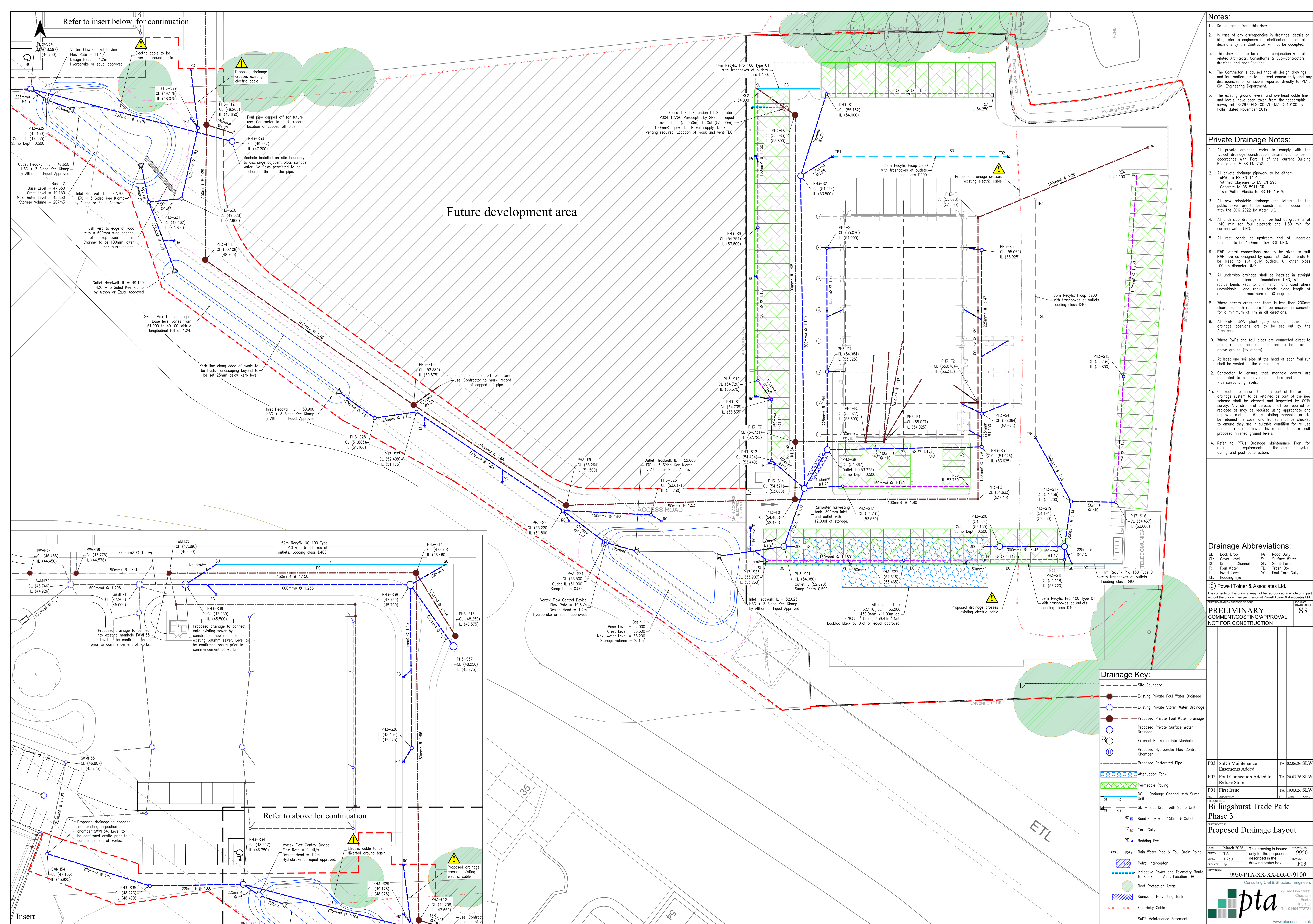
Consulting Civil & Structural Engineers

pta

29 Red Lion Street
Chesham
Bucks.
HP5 1EJ
Tel. 01494 772721

www.placonsult.co.uk

THIS IS A 'RECORD DRAWING'. IT IS THE ISSUE OF A CONSTRUCTION DRAWING, WHICH INCLUDES THE INFORMATION THAT THE CONTRACTOR HAS SUPPLIED FORMALLY TO PTA TO SHOW THE CONTRACTOR'S "AS-BUILT" INFORMATION. THIS INFORMATION HAS NOT BEEN VERIFIED BY PTA. PTA HAVE RELIED UPON THE CONTRACTORS OBLIGATION TO CONSTRUCT GENERALLY IN ACCORDANCE WITH PTA'S DESIGN.



Appendix C

Surcharged Outfall Calculations



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Adoptable Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1200

HiCap 5200 Link Type

Template	Freeform Carrier	Preferred Cover (m)	0.200
Shape	Rectangular	Follow Ground	x
Barrels	1	Velocity	Colebrook-White
Height (mm)	400	ks (mm) / n	0.600
Auto Increment (mm)	100		

Available Diameters (mm)

200

Circular Link Type

Template	Freeform Carrier	Auto Increment (mm)	75
Shape	Circular	Follow Ground	x
Barrels	1		

Available Diameters (mm)

100 | 150

1:3 Swale Link Type

Template	Freeform Carrier	Preferred Cover (m)	0.010
Shape	Trapezoidal	Steep Slope (1:X)	350
Barrels	1	Follow Ground	✓
Width (mm)	600	Velocity	Manning
Side Slope (1:X)	3.0	ks (mm) / n	0.030
Auto Increment (mm)	100		

Available Diameters (mm)

300



Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
TB1		5.00	54.925	Manhole	600	509420.900	126630.322	0.625	54.300
TB2	0.139	5.00	54.925	Manhole	600	509381.335	126630.322	1.125	53.800
RE1	0.014	5.00	55.162	Manhole	150	509417.440	126644.320	0.912	54.250
PH3-S1	0.017	5.00	55.162	Manhole	450	509379.952	126644.306	1.162	54.000
PH3-S2			54.940	Manhole	1200	509373.239	126625.897	1.440	53.500
RE2	0.012	5.00	54.915	Manhole	150	509364.603	126644.320	0.915	54.000
PH3-S9	0.052	5.00	54.755	Manhole	450	509364.615	126614.362	0.955	53.800
PH3-S10	0.046	5.00	54.720	Manhole	450	509364.593	126579.930	1.150	53.570
PH3-S11			54.737	Manhole	450	509367.623	126575.593	1.202	53.535
PH3-S12	0.023	5.00	54.494	Manhole	450	509367.681	126562.064	1.054	53.440
PH3-S3	0.034	5.00	55.064	Manhole	450	509414.840	126609.242	1.139	53.925
PH3-S4	0.034	5.00	55.065	Manhole	600	509414.829	126572.529	1.390	53.675
PH3-S5			54.918	Manhole	600	509414.786	126564.990	1.293	53.625
PH3-S6	0.034	5.00	55.070	Manhole	450	509380.110	126609.689	1.070	54.000
PH3-S7	0.034	5.00	54.982	Manhole	600	509380.110	126581.914	1.357	53.625
PH3-S8			54.884	Manhole	1200	509380.130	126565.166	1.659	53.225
RE3	0.006	5.00	54.732	Manhole	150	509411.518	126556.423	0.982	53.750
PH3-S13	0.016	5.00	54.736	Manhole	450	509383.689	126556.409	1.176	53.560
PH3-S14	0.028	5.00	54.492	Manhole	1200	509374.120	126555.485	1.492	53.000
RE4	0.019	5.00	55.004	Manhole	150	509449.625	126625.818	0.904	54.100
PH3-S15	0.026	5.00	54.927	Manhole	450	509446.720	126580.836	1.127	53.800
PH3-S16	0.014	5.00	54.425	Manhole	450	509444.964	126552.639	0.825	53.600
TB3		5.00	54.730	Manhole	600	509434.900	126620.699	0.630	54.100
TB4	0.250	5.00	54.730	Manhole	600	509434.900	126567.188	1.100	53.630
PH3-S17			54.420	Manhole	600	509434.875	126552.832	1.220	53.200
SU	0.033	5.00	54.089	Junction		509434.835	126538.689	0.789	53.300
PH3-S18	0.037	5.00	54.118	Manhole	450	509433.415	126539.732	0.818	53.300
PH3-S19			54.192	Manhole	1200	509433.456	126542.699	1.292	52.900
PH3-S20			54.316	Manhole	1200	509419.842	126542.688	1.816	52.500
Tank			54.124	Junction		509372.230	126542.688	2.014	52.110
PH3-S22	0.054	5.00	54.316	Manhole	450	509397.803	126539.613	0.851	53.465
PH3-S23	0.014	5.00	53.913	Manhole	450	509366.863	126539.599	0.653	53.260
PH3-S21			54.080	Manhole	1200	509370.448	126542.684	1.990	52.090
Basin 1 Inlet			53.500	Manhole	1200	509356.351	126540.592	1.500	52.000
PH3-S25	0.020	5.00	53.616	Manhole	1200	509340.552	126549.791	1.366	52.250
Basin 1	0.043	5.00	53.500	Manhole	1200	509336.854	126541.778	1.500	52.000
PH3-S24			53.500	Manhole	1500	509330.336	126543.609	1.600	51.900
PH3-S26	0.027	5.00	53.220	Manhole	1200	509320.826	126550.746	1.420	51.800
PH3-S27	0.017	5.00	52.409	Manhole	1200	509287.968	126572.913	1.234	51.175
PH3-S28			51.862	Manhole	1200	509278.498	126571.533	0.762	51.100
Swale Inlet	0.045	5.00	51.500	Junction		509270.099	126577.608	1.300	50.200
Swale Outlet			50.000	Junction		509233.665	126604.253	0.900	49.100
PH3-S29	0.025	5.00	49.179	Manhole	1200	509238.873	126636.569	1.104	48.075
PH3-S30			49.529	Manhole	1200	509235.191	126620.789	1.629	47.900
PH3-S31	0.009	5.00	49.463	Manhole	1500	509227.840	126619.970	1.713	47.750
Basin 2 Inlet	0.011		49.150	Junction		509226.388	126626.169	1.500	47.650
Basin 2	0.033	5.00	49.150	Manhole	1200	509210.105	126641.073	1.500	47.650
PH3-S32			49.150	Manhole	1500	509204.805	126643.011	1.600	47.550
PH3-S34			48.600	Manhole	1200	509201.279	126645.422	1.850	46.750
PH3-S35			48.350	Manhole	1200	509180.373	126645.095	1.950	46.400



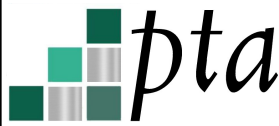
Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SWMH54			47.150	Manhole	1200	509157.247	126652.312	1.225	45.925

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	Design Flow (l/s)
1.000	TB1	TB2	39.565	0.600	54.300	54.299	0.001	39565.0	200	HiCap 5200	
1.001	TB2	PH3-S2	9.226	0.600	53.800	53.500	0.300	30.8	300	Circular	
2.000	RE1	PH3-S1	37.488	0.600	54.250	54.000	0.250	150.0	150	Circular	
2.001	PH3-S1	PH3-S2	5.577	0.600	54.000	53.650	0.350	15.9	150	Circular	
1.002	PH3-S2	PH3-S14	70.418	0.600	53.500	53.000	0.500	140.8	300	Circular	
3.000	RE2	PH3-S9	29.958	0.600	54.000	53.800	0.200	149.8	150	Circular	
3.001	PH3-S9	PH3-S10	34.432	0.600	53.800	53.570	0.230	149.7	150	Circular	
3.002	PH3-S10	PH3-S11	5.291	0.600	53.570	53.535	0.035	151.2	150	Circular	
3.003	PH3-S11	PH3-S12	13.603	0.600	53.535	53.440	0.095	143.2	150	Circular	
3.004	PH3-S12	PH3-S14	9.153	0.600	53.440	53.150	0.290	31.6	150	Circular	
5.000	PH3-S3	PH3-S4	36.713	0.600	53.925	53.675	0.250	146.9	225	Circular	
5.001	PH3-S4	PH3-S5	7.539	0.600	53.675	53.625	0.050	150.8	225	Circular	
5.002	PH3-S5	PH3-S8	34.656	0.600	53.625	53.300	0.325	106.6	225	Circular	
6.000	PH3-S6	PH3-S7	27.775	0.600	54.000	53.700	0.300	92.6	150	Circular	
6.001	PH3-S7	PH3-S8	16.748	0.600	53.625	53.300	0.325	51.5	225	Circular	
5.003	PH3-S8	PH3-S14	11.395	0.600	53.225	53.000	0.225	50.6	300	Circular	
4.000	RE3	PH3-S13	27.829	0.600	53.750	53.560	0.190	146.5	150	Circular	
4.001	PH3-S13	PH3-S14	9.614	0.600	53.560	53.000	0.560	17.2	150	Circular	
1.003	PH3-S14	PH3-S21	13.317	0.600	53.000	52.090	0.910	14.6	300	Circular	

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Pro Velocity (m/s)
1.000	TB1	TB2	0.074	5.9	0.0	0.225	0.226	0.225	0.226	0.000	0.000
1.001	TB2	PH3-S2	2.845	201.1	25.2	0.825	1.140	0.825	1.140	0.139	1.962
2.000	RE1	PH3-S1	0.818	14.5	2.6	0.762	1.012	0.762	1.012	0.014	0.621
2.001	PH3-S1	PH3-S2	2.536	44.8	5.7	1.012	1.140	1.012	1.140	0.031	1.746
1.002	PH3-S2	PH3-S14	1.323	93.5	30.8	1.140	1.192	1.140	1.474	0.171	1.189
3.000	RE2	PH3-S9	0.819	14.5	2.2	0.765	0.805	0.691	0.805	0.012	0.587
3.001	PH3-S9	PH3-S10	0.819	14.5	11.5	0.805	1.000	0.805	1.018	0.064	0.908
3.002	PH3-S10	PH3-S11	0.815	14.4	0.4	1.000	1.052	1.000	1.052	0.110	0.353
3.003	PH3-S11	PH3-S12	0.838	14.8	0.4	1.052	0.904	0.904	1.052	0.110	0.363
3.004	PH3-S12	PH3-S14	1.798	31.8	0.5	0.904	1.192	0.904	1.192	0.133	0.658
5.000	PH3-S3	PH3-S4	1.076	42.8	6.2	0.914	1.165	0.914	1.165	0.034	0.770
5.001	PH3-S4	PH3-S5	1.062	42.2	12.3	1.165	1.068	1.068	1.200	0.068	0.924
5.002	PH3-S5	PH3-S8	1.265	50.3	12.3	1.068	1.359	1.068	1.396	0.068	1.053
6.000	PH3-S6	PH3-S7	1.045	18.5	6.2	0.920	1.132	0.920	1.203	0.034	0.940
6.001	PH3-S7	PH3-S8	1.826	72.6	12.3	1.132	1.359	1.119	1.371	0.068	1.373
5.003	PH3-S8	PH3-S14	2.214	156.5	24.7	1.359	1.192	1.192	1.359	0.137	1.628
4.000	RE3	PH3-S13	0.828	14.6	1.1	0.832	1.026	0.832	1.026	0.006	0.486
4.001	PH3-S13	PH3-S14	2.443	43.2	4.0	1.026	1.342	1.026	1.342	0.022	1.533
1.003	PH3-S14	PH3-S21	4.130	291.9	88.6	1.192	1.690	1.192	1.690	0.491	3.634



Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	Design Flow (l/s)
8.000	RE4	PH3-S15	45.076	0.600	54.100	53.800	0.300	150.3	150	Circular	
8.001	PH3-S15	PH3-S16	28.252	0.600	53.800	53.600	0.200	141.3	150	Circular	
8.002	PH3-S16	PH3-S17	10.091	0.600	53.600	53.350	0.250	40.4	150	Circular	
7.000	TB3	TB4	53.000	0.600	54.100	54.099	0.001	53000.0	200	HiCap 5200	
7.001	TB4	PH3-S17	14.356	0.600	53.630	53.200	0.430	33.4	300	Circular	
7.002	PH3-S17	PH3-S19	10.232	0.600	53.200	52.900	0.300	34.1	300	Circular	
9.000	SU	PH3-S19	4.241	0.600	53.300	53.050	0.250	17.0	150	Circular	
10.000	PH3-S18	PH3-S19	2.968	0.600	53.300	53.050	0.250	11.9	150	Circular	
7.003	PH3-S19	PH3-S20	13.614	0.600	52.900	52.500	0.400	34.0	300	Circular	
7.004	PH3-S20	Tank	1.500	0.600	52.500	52.450	0.050	30.0	300	Circular	
7.006	Tank	PH3-S21	1.782	0.600	52.110	52.090	0.020	89.1	300	Circular	
11.000	PH3-S22	PH3-S23	17.940	0.600	53.465	53.260	0.205	87.5	150	Circular	
11.001	PH3-S23	PH3-S21	4.730	0.600	53.260	52.260	1.000	4.7	150	Circular	
1.004	PH3-S21	Basin 1 Inlet	14.251	0.600	52.090	52.025	0.065	219.3	300	Circular	8.0
12.000	PH3-S25	PH3-S26	19.749	0.600	52.250	51.875	0.375	52.7	150	Circular	
1.005	Basin 1	PH3-S24	6.770	0.600	52.000	51.900	0.100	67.7	225	Circular	
1.006	PH3-S24	PH3-S26	11.890	0.600	51.900	51.800	0.100	118.9	225	Circular	9.8
1.007	PH3-S26	PH3-S27	39.637	0.600	51.800	51.175	0.625	63.4	225	Circular	
1.008	PH3-S27	PH3-S28	9.570	0.600	51.175	51.100	0.075	127.6	225	Circular	
1.009	PH3-S28	Swale Inlet	10.366	0.600	51.100	50.900	0.200	51.8	225	Circular	
1.010	Swale Inlet	Swale Outlet	38.640	0.030	50.200	49.100	1.100	35.1	900	1:3 Swale	
1.011	Swale Outlet	PH3-S31	15.489	0.030	49.100	47.750	1.350	11.5	225	Circular	
13.000	PH3-S29	PH3-S30	16.203	0.600	48.075	47.900	0.175	92.6	150	Circular	

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Pro Velocity (m/s)
8.000	RE4	PH3-S15	0.817	14.4	3.5	0.754	0.977	0.736	0.977	0.019	0.673
8.001	PH3-S15	PH3-S16	0.843	14.9	8.2	0.977	0.675	0.675	1.020	0.046	0.863
8.002	PH3-S16	PH3-S17	1.588	28.1	10.8	0.675	0.920	0.675	0.920	0.060	1.489
7.000	TB3	TB4	0.063	5.1	0.0	0.230	0.231	0.230	0.231	0.000	0.000
7.001	TB4	PH3-S17	2.730	193.0	45.1	0.800	0.920	0.800	0.920	0.250	2.240
7.002	PH3-S17	PH3-S19	2.701	190.9	56.0	0.920	0.992	0.920	0.992	0.310	2.358
9.000	SU	PH3-S19	2.457	43.4	6.0	0.639	0.992	0.639	0.992	0.033	1.739
10.000	PH3-S18	PH3-S19	2.940	52.0	6.7	0.668	0.992	0.668	0.992	0.037	2.025
7.003	PH3-S19	PH3-S20	2.704	191.1	68.7	0.992	1.516	0.992	1.516	0.380	2.487
7.004	PH3-S20	Tank	2.881	203.6	68.7	1.516	1.374	1.374	1.516	0.380	2.609
7.006	Tank	PH3-S21	1.666	117.8	68.7	1.714	1.690	1.690	1.714	0.380	1.728
11.000	PH3-S22	PH3-S23	1.075	19.0	9.8	0.701	0.503	0.503	0.714	0.054	1.083
11.001	PH3-S23	PH3-S21	4.665	82.4	12.4	0.503	1.670	0.503	1.670	0.069	3.362
1.004	PH3-S21	Basin 1 Inlet	1.058	74.8	8.0	1.690	1.175	1.175	1.690	0.939	0.696
12.000	PH3-S25	PH3-S26	1.389	24.5	3.6	1.216	1.195	1.195	1.222	0.020	0.999
1.005	Basin 1	PH3-S24	1.591	63.3	7.7	1.275	1.375	1.039	1.375	0.043	1.079
1.006	PH3-S24	PH3-S26	1.198	47.6	9.8	1.375	1.195	0.981	1.381	0.043	0.947
1.007	PH3-S26	PH3-S27	1.645	65.4	16.2	1.195	1.009	1.009	1.206	0.089	1.369
1.008	PH3-S27	PH3-S28	1.156	46.0	19.2	1.009	0.537	0.537	1.009	0.106	1.106
1.009	PH3-S28	Swale Inlet	1.821	72.4	19.2	0.537	0.375	0.375	0.537	0.106	1.542
1.010	Swale Inlet	Swale Outlet	3.410	10126.4	27.3	0.400	0.000	-0.873	0.400	0.151	0.685
1.011	Swale Outlet	PH3-S31	1.445	57.4	0.5	0.675	1.488	0.675	1.488	0.151	0.454
13.000	PH3-S29	PH3-S30	1.045	18.5	4.4	0.954	1.479	0.954	1.479	0.025	0.861



Links

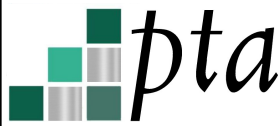
Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	Design Flow (l/s)
13.001	PH3-S30	PH3-S31	7.396	0.600	47.900	47.825	0.075	98.6	150	Circular	
1.012	PH3-S31	Basin 2 Inlet	6.367	0.030	47.750	47.700	0.050	127.3	225	Circular	
1.013	Basin 2	PH3-S32	5.642	0.600	47.650	47.550	0.100	56.4	150	Circular	
1.014	PH3-S32	PH3-S34	4.271	0.600	47.550	46.750	0.800	5.3	225	Circular	
1.015	PH3-S34	PH3-S35	20.958	0.600	46.750	46.400	0.350	59.9	225	Circular	
1.016	PH3-S35	SWMH54	24.179	0.600	46.400	45.925	0.475	50.9	225	Circular	

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Minimum Depth (m)	Maximum Depth (m)	Σ Area (ha)	Pro Velocity (m/s)
13.001	PH3-S30	PH3-S31	1.012	17.9	4.4	1.479	1.488	1.443	1.513	0.025	0.839
1.012	PH3-S31	Basin 2 Inlet	0.434	17.2	0.7	1.488	1.225	0.943	1.488	0.185	0.210
1.013	Basin 2	PH3-S32	1.342	23.7	5.9	1.350	1.450	1.120	1.450	0.033	1.113
1.014	PH3-S32	PH3-S34	5.700	226.6	5.9	1.375	1.625	1.276	1.625	0.033	2.486
1.015	PH3-S34	PH3-S35	1.693	67.3	5.9	1.625	1.725	1.625	1.725	0.033	1.044
1.016	PH3-S35	SWMH54	1.837	73.0	5.9	1.725	1.000	1.000	1.725	0.033	1.107

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	39.565	39565.0	200	HiCap 5200	54.925	54.300	0.225	54.925	54.299	0.226
1.001	9.226	30.8	300	Circular	54.925	53.800	0.825	54.940	53.500	1.140
2.000	37.488	150.0	150	Circular	55.162	54.250	0.762	55.162	54.000	1.012
2.001	5.577	15.9	150	Circular	55.162	54.000	1.012	54.940	53.650	1.140
1.002	70.418	140.8	300	Circular	54.940	53.500	1.140	54.492	53.000	1.192
3.000	29.958	149.8	150	Circular	54.915	54.000	0.765	54.755	53.800	0.805
3.001	34.432	149.7	150	Circular	54.755	53.800	0.805	54.720	53.570	1.000
3.002	5.291	151.2	150	Circular	54.720	53.570	1.000	54.737	53.535	1.052
3.003	13.603	143.2	150	Circular	54.737	53.535	1.052	54.494	53.440	0.904
3.004	9.153	31.6	150	Circular	54.494	53.440	0.904	54.492	53.150	1.192
5.000	36.713	146.9	225	Circular	55.064	53.925	0.914	55.065	53.675	1.165
5.001	7.539	150.8	225	Circular	55.065	53.675	1.165	54.918	53.625	1.068
5.002	34.656	106.6	225	Circular	54.918	53.625	1.068	54.884	53.300	1.359

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	TB1	600	Manhole	Adoptable	TB2	600	Manhole	Adoptable
1.001	TB2	600	Manhole	Adoptable	PH3-S2	1200	Manhole	Adoptable
2.000	RE1	150	Manhole	Adoptable	PH3-S1	450	Manhole	Adoptable
2.001	PH3-S1	450	Manhole	Adoptable	PH3-S2	1200	Manhole	Adoptable
1.002	PH3-S2	1200	Manhole	Adoptable	PH3-S14	1200	Manhole	Adoptable
3.000	RE2	150	Manhole	Adoptable	PH3-S9	450	Manhole	Adoptable
3.001	PH3-S9	450	Manhole	Adoptable	PH3-S10	450	Manhole	Adoptable
3.002	PH3-S10	450	Manhole	Adoptable	PH3-S11	450	Manhole	Adoptable
3.003	PH3-S11	450	Manhole	Adoptable	PH3-S12	450	Manhole	Adoptable
3.004	PH3-S12	450	Manhole	Adoptable	PH3-S14	1200	Manhole	Adoptable
5.000	PH3-S3	450	Manhole	Adoptable	PH3-S4	600	Manhole	Adoptable
5.001	PH3-S4	600	Manhole	Adoptable	PH3-S5	600	Manhole	Adoptable
5.002	PH3-S5	600	Manhole	Adoptable	PH3-S8	1200	Manhole	Adoptable



Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
6.000	27.775	92.6	150	Circular	55.070	54.000	0.920	54.982	53.700	1.132
6.001	16.748	51.5	225	Circular	54.982	53.625	1.132	54.884	53.300	1.359
5.003	11.395	50.6	300	Circular	54.884	53.225	1.359	54.492	53.000	1.192
4.000	27.829	146.5	150	Circular	54.732	53.750	0.832	54.736	53.560	1.026
4.001	9.614	17.2	150	Circular	54.736	53.560	1.026	54.492	53.000	1.342
1.003	13.317	14.6	300	Circular	54.492	53.000	1.192	54.080	52.090	1.690
8.000	45.076	150.3	150	Circular	55.004	54.100	0.754	54.927	53.800	0.977
8.001	28.252	141.3	150	Circular	54.927	53.800	0.977	54.425	53.600	0.675
8.002	10.091	40.4	150	Circular	54.425	53.600	0.675	54.420	53.350	0.920
7.000	53.000	53000.0	200	HiCap 5200	54.730	54.100	0.230	54.730	54.099	0.231
7.001	14.356	33.4	300	Circular	54.730	53.630	0.800	54.420	53.200	0.920
7.002	10.232	34.1	300	Circular	54.420	53.200	0.920	54.192	52.900	0.992
9.000	4.241	17.0	150	Circular	54.089	53.300	0.639	54.192	53.050	0.992
10.000	2.968	11.9	150	Circular	54.118	53.300	0.668	54.192	53.050	0.992
7.003	13.614	34.0	300	Circular	54.192	52.900	0.992	54.316	52.500	1.516
7.004	1.500	30.0	300	Circular	54.316	52.500	1.516	54.124	52.450	1.374
7.006	1.782	89.1	300	Circular	54.124	52.110	1.714	54.080	52.090	1.690
11.000	17.940	87.5	150	Circular	54.316	53.465	0.701	53.913	53.260	0.503
11.001	4.730	4.7	150	Circular	53.913	53.260	0.503	54.080	52.260	1.670
1.004	14.251	219.3	300	Circular	54.080	52.090	1.690	53.500	52.025	1.175
12.000	19.749	52.7	150	Circular	53.616	52.250	1.216	53.220	51.875	1.195
1.005	6.770	67.7	225	Circular	53.500	52.000	1.275	53.500	51.900	1.375
1.006	11.890	118.9	225	Circular	53.500	51.900	1.375	53.220	51.800	1.195
1.007	39.637	63.4	225	Circular	53.220	51.800	1.195	52.409	51.175	1.009

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6.000	PH3-S6	450	Manhole	Adoptable	PH3-S7	600	Manhole	Adoptable
6.001	PH3-S7	600	Manhole	Adoptable	PH3-S8	1200	Manhole	Adoptable
5.003	PH3-S8	1200	Manhole	Adoptable	PH3-S14	1200	Manhole	Adoptable
4.000	RE3	150	Manhole	Adoptable	PH3-S13	450	Manhole	Adoptable
4.001	PH3-S13	450	Manhole	Adoptable	PH3-S14	1200	Manhole	Adoptable
1.003	PH3-S14	1200	Manhole	Adoptable	PH3-S21	1200	Manhole	Adoptable
8.000	RE4	150	Manhole	Adoptable	PH3-S15	450	Manhole	Adoptable
8.001	PH3-S15	450	Manhole	Adoptable	PH3-S16	450	Manhole	Adoptable
8.002	PH3-S16	450	Manhole	Adoptable	PH3-S17	600	Manhole	Adoptable
7.000	TB3	600	Manhole	Adoptable	TB4	600	Manhole	Adoptable
7.001	TB4	600	Manhole	Adoptable	PH3-S17	600	Manhole	Adoptable
7.002	PH3-S17	600	Manhole	Adoptable	PH3-S19	1200	Manhole	Adoptable
9.000	SU		Junction		PH3-S19	1200	Manhole	Adoptable
10.000	PH3-S18	450	Manhole	Adoptable	PH3-S19	1200	Manhole	Adoptable
7.003	PH3-S19	1200	Manhole	Adoptable	PH3-S20	1200	Manhole	Adoptable
7.004	PH3-S20	1200	Manhole	Adoptable	Tank		Junction	
7.006	Tank		Junction		PH3-S21	1200	Manhole	Adoptable
11.000	PH3-S22	450	Manhole	Adoptable	PH3-S23	450	Manhole	Adoptable
11.001	PH3-S23	450	Manhole	Adoptable	PH3-S21	1200	Manhole	Adoptable
1.004	PH3-S21	1200	Manhole	Adoptable	Basin 1 Inlet	1200	Manhole	Adoptable
12.000	PH3-S25	1200	Manhole	Adoptable	PH3-S26	1200	Manhole	Adoptable
1.005	Basin 1	1200	Manhole	Adoptable	PH3-S24	1500	Manhole	Adoptable
1.006	PH3-S24	1500	Manhole	Adoptable	PH3-S26	1200	Manhole	Adoptable
1.007	PH3-S26	1200	Manhole	Adoptable	PH3-S27	1200	Manhole	Adoptable

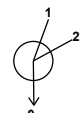
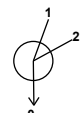


Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.008	9.570	127.6	225	Circular	52.409	51.175	1.009	51.862	51.100	0.537
1.009	10.366	51.8	225	Circular	51.862	51.100	0.537	51.500	50.900	0.375
1.010	38.640	35.1	900	1:3 Swale	51.500	50.200	0.400	50.000	49.100	0.000
1.011	15.489	11.5	225	Circular	50.000	49.100	0.675	49.463	47.750	1.488
13.000	16.203	92.6	150	Circular	49.179	48.075	0.954	49.529	47.900	1.479
13.001	7.396	98.6	150	Circular	49.529	47.900	1.479	49.463	47.825	1.488
1.012	6.367	127.3	225	Circular	49.463	47.750	1.488	49.150	47.700	1.225
1.013	5.642	56.4	150	Circular	49.150	47.650	1.350	49.150	47.550	1.450
1.014	4.271	5.3	225	Circular	49.150	47.550	1.375	48.600	46.750	1.625
1.015	20.958	59.9	225	Circular	48.600	46.750	1.625	48.350	46.400	1.725
1.016	24.179	50.9	225	Circular	48.350	46.400	1.725	47.150	45.925	1.000

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.008	PH3-S27	1200	Manhole	Adoptable	PH3-S28	1200	Manhole	Adoptable
1.009	PH3-S28	1200	Manhole	Adoptable	Swale Inlet		Junction	
1.010	Swale Inlet		Junction		Swale Outlet		Junction	
1.011	Swale Outlet		Junction		PH3-S31	1500	Manhole	Adoptable
13.000	PH3-S29	1200	Manhole	Adoptable	PH3-S30	1200	Manhole	Adoptable
13.001	PH3-S30	1200	Manhole	Adoptable	PH3-S31	1500	Manhole	Adoptable
1.012	PH3-S31	1500	Manhole	Adoptable	Basin 2 Inlet		Junction	
1.013	Basin 2	1200	Manhole	Adoptable	PH3-S32	1500	Manhole	Adoptable
1.014	PH3-S32	1500	Manhole	Adoptable	PH3-S34	1200	Manhole	Adoptable
1.015	PH3-S34	1200	Manhole	Adoptable	PH3-S35	1200	Manhole	Adoptable
1.016	PH3-S35	1200	Manhole	Adoptable	SWMH54	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link	IL (m)	Dia (mm)	
TB1	509420.900	126630.322	54.925	0.625	600	Adoptable		0	1.000	54.300	200
TB2	509381.335	126630.322	54.925	1.125	600	Adoptable		1	1.000	54.299	200
								0	1.001	53.800	300
RE1	509417.440	126644.320	55.162	0.912	150	Adoptable		0	2.000	54.250	150
PH3-S1	509379.952	126644.306	55.162	1.162	450	Adoptable		1	2.000	54.000	150
								0	2.001	54.000	150
PH3-S2	509373.239	126625.897	54.940	1.440	1200	Adoptable		1	2.001	53.650	150
								2	1.001	53.500	300
								0	1.002	53.500	300

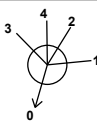
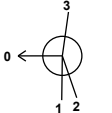
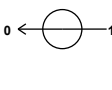
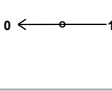


Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link	IL (m)	Dia (mm)	
RE2	509364.603	126644.320	54.915	0.915	150	Adoptable		0	3.000	54.000	150
PH3-S9	509364.615	126614.362	54.755	0.955	450	Adoptable		1	3.000	53.800	150
								0	3.001	53.800	150
PH3-S10	509364.593	126579.930	54.720	1.150	450	Adoptable		1	3.001	53.570	150
								0	3.002	53.570	150
PH3-S11	509367.623	126575.593	54.737	1.202	450	Adoptable		1	3.002	53.535	150
								0	3.003	53.535	150
PH3-S12	509367.681	126562.064	54.494	1.054	450	Adoptable		1	3.003	53.440	150
								0	3.004	53.440	150
PH3-S3	509414.840	126609.242	55.064	1.139	450	Adoptable		0	5.000	53.925	225
PH3-S4	509414.829	126572.529	55.065	1.390	600	Adoptable		1	5.000	53.675	225
								0	5.001	53.675	225
PH3-S5	509414.786	126564.990	54.918	1.293	600	Adoptable		1	5.001	53.625	225
								0	5.002	53.625	225
PH3-S6	509380.110	126609.689	55.070	1.070	450	Adoptable		0	6.000	54.000	150
PH3-S7	509380.110	126581.914	54.982	1.357	600	Adoptable		1	6.000	53.700	150
								0	6.001	53.625	225
PH3-S8	509380.130	126565.166	54.884	1.659	1200	Adoptable		1	6.001	53.300	225
								2	5.002	53.300	225
								0	5.003	53.225	300
RE3	509411.518	126556.423	54.732	0.982	150	Adoptable		0	4.000	53.750	150
PH3-S13	509383.689	126556.409	54.736	1.176	450	Adoptable		1	4.000	53.560	150
								0	4.001	53.560	150

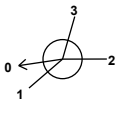
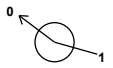
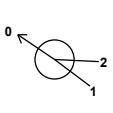
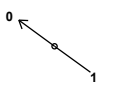


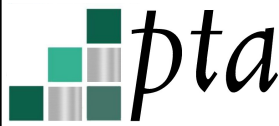
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link	IL (m)	Dia (mm)
PH3-S14	509374.120	126555.485	54.492	1.492	1200	Adoptable		1 4.001 2 5.003 3 3.004 4 1.002 0 1.003	53.000 53.000 53.150 53.000 53.000	150 300 150 300 300
RE4	509449.625	126625.818	55.004	0.904	150	Adoptable		0 8.000	54.100	150
PH3-S15	509446.720	126580.836	54.927	1.127	450	Adoptable		1 8.000 0 8.001	53.800 53.800	150 150
PH3-S16	509444.964	126552.639	54.425	0.825	450	Adoptable		1 8.001 0 8.002	53.600 53.600	150 150
TB3	509434.900	126620.699	54.730	0.630	600	Adoptable		0 7.000	54.100	200
TB4	509434.900	126567.188	54.730	1.100	600	Adoptable		1 7.000 0 7.001	54.099 53.630	200 300
PH3-S17	509434.875	126552.832	54.420	1.220	600	Adoptable		1 7.001 2 8.002 0 7.002	53.200 53.350 53.200	300 150 300
SU	509434.835	126538.689	54.089	0.789				0 9.000	53.300	150
PH3-S18	509433.415	126539.732	54.118	0.818	450	Adoptable		0 10.000	53.300	150
PH3-S19	509433.456	126542.699	54.192	1.292	1200	Adoptable		1 10.000 2 9.000 3 7.002 0 7.003	53.050 53.050 52.900 52.900	150 150 300 300
PH3-S20	509419.842	126542.688	54.316	1.816	1200	Adoptable		1 7.003 0 7.004	52.500 52.500	300 300
Tank	509372.230	126542.688	54.124	2.014				1 7.004 0 7.006	52.450 52.110	300 300
PH3-S22	509397.803	126539.613	54.316	0.851	450	Adoptable		0 11.000	53.465	150

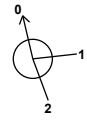


Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link	IL (m)	Dia (mm)
PH3-S23	509366.863	126539.599	53.913	0.653	450	Adoptable		1 11.000	53.260	150
							0	11.001	53.260	150
PH3-S21	509370.448	126542.684	54.080	1.990	1200	Adoptable		1 11.001	52.260	150
							2	7.006	52.090	300
							3	1.003	52.090	300
							0	1.004	52.090	300
Basin 1 Inlet	509356.351	126540.592	53.500	1.500	1200	Adoptable		1 1.004	52.025	300
PH3-S25	509340.552	126549.791	53.616	1.366	1200	Adoptable		0 12.000	52.250	150
Basin 1	509336.854	126541.778	53.500	1.500	1200	Adoptable		0 1.005	52.000	225
PH3-S24	509330.336	126543.609	53.500	1.600	1500	Adoptable		1 1.005	51.900	225
							0	1.006	51.900	225
PH3-S26	509320.826	126550.746	53.220	1.420	1200	Adoptable		1 1.006	51.800	225
							2	12.000	51.875	150
							0	1.007	51.800	225
PH3-S27	509287.968	126572.913	52.409	1.234	1200	Adoptable		1 1.007	51.175	225
							0	1.008	51.175	225
PH3-S28	509278.498	126571.533	51.862	0.762	1200	Adoptable		1 1.008	51.100	225
							0	1.009	51.100	225
Swale Inlet	509270.099	126577.608	51.500	1.300				1 1.009	50.900	225
							0	1.010	50.200	900
Swale Outlet	509233.665	126604.253	50.000	0.900				1 1.010	49.100	900
							0	1.011	49.100	225
PH3-S29	509238.873	126636.569	49.179	1.104	1200	Adoptable		0 13.000	48.075	150
PH3-S30	509235.191	126620.789	49.529	1.629	1200	Adoptable		1 13.000	47.900	150
							0	13.001	47.900	150



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	MH Type	Connections	Link	IL (m)	Dia (mm)	
PH3-S31	509227.840	126619.970	49.463	1.713	1500	Adoptable		1	13.001	47.825	150
								2	1.011	47.750	225
								0	1.012	47.750	225
Basin 2 Inlet	509226.388	126626.169	49.150	1.500				1	1.012	47.700	225
Basin 2	509210.105	126641.073	49.150	1.500	1200	Adoptable					
								0	1.013	47.650	150
PH3-S32	509204.805	126643.011	49.150	1.600	1500	Adoptable		1	1.013	47.550	150
								0	1.014	47.550	225
PH3-S34	509201.279	126645.422	48.600	1.850	1200	Adoptable		1	1.014	46.750	225
								0	1.015	46.750	225
PH3-S35	509180.373	126645.095	48.350	1.950	1200	Adoptable		1	1.015	46.400	225
								0	1.016	46.400	225
SWMH54	509157.247	126652.312	47.150	1.225	1200	Adoptable		1	1.016	45.925	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s) x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume x
Winter CV	1.000	Additional Storage (m³/ha)	0.0	

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	40	0	0
100	45	0	0

Node SWMH54 Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		
Applies to All storms					



Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.000	2000	1.000	4000	1.000	6000	1.000	8000	1.000	10000	1.000
1000	1.000	3000	1.000	5000	1.000	7000	1.000	9000	1.000	11000	1.000

Node PH3-S24 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	51.900	Product Number	CTL-SHE-0148-1080-1200-1080
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	10.8	Min Node Diameter (mm)	1500

Node PH3-S32 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	47.550	Product Number	CTL-SHE-0152-1140-1200-1140
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	11.4	Min Node Diameter (mm)	1500

Node Basin 1 Pond Storage Structure

Invert Level (m)	52.000	Time to half empty (mins)	Analyse flow through structure	x
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Inlets

Basin 1 Inlet

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	105.3	0.300	153.6	0.600	208.2	0.900	267.9	1.200	332.6	1.500	402.5

Node Basin 2 Pond Storage Structure

Invert Level (m)	47.650	Time to half empty (mins)	360	Analyse flow through structure	x
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Inlets

Basin 2 Inlet

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	75.6	0.300	121.6	0.600	172.5	0.900	228.4	1.200	289.4	1.500	355.5

Node Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	52.110
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.96	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	439.0	439.0	1.090	439.0	520.0	1.091	0.0	520.0



Node RE1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.600	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	19.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.600	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	20.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node RE2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.250	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	8	Depth (m)	0.350
Safety Factor	2.0	Width (m)	15.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S9 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.250	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	15	Depth (m)	0.350
Safety Factor	2.0	Width (m)	30.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S10 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.100	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	6	Depth (m)	0.350
Safety Factor	2.0	Width (m)	24.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S12 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.960	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	15.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node RE3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.225	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	6.200	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PH3-S13 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.225	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	16.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		



Node RE4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.500	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	24.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.500	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	33.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S16 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.825	Slope (1:X)	60.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	5	Depth (m)	0.350
Safety Factor	2.0	Width (m)	18.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S23 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.420	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.350
Safety Factor	2.0	Width (m)	18.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S22 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.800	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	2	Depth (m)	0.350
Safety Factor	2.0	Width (m)	27.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Node PH3-S18 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.600	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	24.000	Inf Depth (m)	
Porosity	0.30	Length (m)	8.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	73.507	20.800
1 year 15 minute winter	51.584	20.800
1 year 30 minute summer	48.769	13.800
1 year 30 minute winter	34.224	13.800
1 year 60 minute summer	32.542	8.600
1 year 60 minute winter	21.620	8.600
1 year 120 minute summer	24.028	6.350
1 year 120 minute winter	15.964	6.350
1 year 180 minute summer	19.903	5.122
1 year 180 minute winter	12.937	5.122



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 240 minute summer	16.435	4.343
1 year 240 minute winter	10.919	4.343
1 year 360 minute summer	13.182	3.392
1 year 360 minute winter	8.569	3.392
1 year 480 minute summer	10.653	2.815
1 year 480 minute winter	7.078	2.815
1 year 600 minute summer	8.870	2.426
1 year 600 minute winter	6.060	2.426
1 year 720 minute summer	7.999	2.144
1 year 720 minute winter	5.376	2.144
1 year 960 minute summer	6.681	1.759
1 year 960 minute winter	4.426	1.759
1 year 1440 minute summer	4.971	1.332
1 year 1440 minute winter	3.341	1.332
1 year 2160 minute summer	3.667	1.014
1 year 2160 minute winter	2.527	1.014
1 year 2880 minute summer	3.137	0.841
1 year 2880 minute winter	2.109	0.841
1 year 4320 minute summer	2.520	0.659
1 year 4320 minute winter	1.660	0.659
1 year 5760 minute summer	2.194	0.562
1 year 5760 minute winter	1.420	0.562
1 year 7200 minute summer	1.961	0.500
1 year 7200 minute winter	1.266	0.500
1 year 8640 minute summer	1.794	0.458
1 year 8640 minute winter	1.158	0.458
1 year 10080 minute summer	1.672	0.426
1 year 10080 minute winter	1.079	0.426
30 year +40% CC 15 minute summer	398.429	112.742
30 year +40% CC 15 minute winter	279.599	112.742
30 year +40% CC 30 minute summer	264.210	74.762
30 year +40% CC 30 minute winter	185.411	74.762
30 year +40% CC 60 minute summer	179.654	47.477
30 year +40% CC 60 minute winter	119.358	47.477
30 year +40% CC 120 minute summer	106.663	28.188
30 year +40% CC 120 minute winter	70.865	28.188
30 year +40% CC 180 minute summer	80.411	20.692
30 year +40% CC 180 minute winter	52.269	20.692
30 year +40% CC 240 minute summer	62.743	16.581
30 year +40% CC 240 minute winter	41.685	16.581
30 year +40% CC 360 minute summer	46.980	12.090
30 year +40% CC 360 minute winter	30.539	12.090
30 year +40% CC 480 minute summer	36.497	9.645
30 year +40% CC 480 minute winter	24.248	9.645
30 year +40% CC 600 minute summer	29.591	8.094
30 year +40% CC 600 minute winter	20.218	8.094
30 year +40% CC 720 minute summer	26.174	7.015
30 year +40% CC 720 minute winter	17.590	7.015
30 year +40% CC 960 minute summer	21.285	5.605
30 year +40% CC 960 minute winter	14.100	5.605
30 year +40% CC 1440 minute summer	15.299	4.100
30 year +40% CC 1440 minute winter	10.282	4.100



Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +40% CC 2160 minute summer	10.953	3.027
30 year +40% CC 2160 minute winter	7.547	3.027
30 year +40% CC 2880 minute summer	9.154	2.453
30 year +40% CC 2880 minute winter	6.152	2.453
30 year +40% CC 4320 minute summer	7.025	1.837
30 year +40% CC 4320 minute winter	4.627	1.837
30 year +40% CC 5760 minute summer	5.879	1.505
30 year +40% CC 5760 minute winter	3.805	1.505
30 year +40% CC 7200 minute summer	5.079	1.296
30 year +40% CC 7200 minute winter	3.278	1.296
30 year +40% CC 8640 minute summer	4.506	1.150
30 year +40% CC 8640 minute winter	2.909	1.150
30 year +40% CC 10080 minute summer	4.082	1.041
30 year +40% CC 10080 minute winter	2.634	1.041
100 year +45% CC 15 minute summer	525.069	148.577
100 year +45% CC 15 minute winter	368.470	148.577
100 year +45% CC 30 minute summer	350.895	99.291
100 year +45% CC 30 minute winter	246.242	99.291
100 year +45% CC 60 minute summer	239.837	63.382
100 year +45% CC 60 minute winter	159.342	63.382
100 year +45% CC 120 minute summer	139.543	36.877
100 year +45% CC 120 minute winter	92.709	36.877
100 year +45% CC 180 minute summer	104.332	26.848
100 year +45% CC 180 minute winter	67.819	26.848
100 year +45% CC 240 minute summer	81.065	21.423
100 year +45% CC 240 minute winter	53.858	21.423
100 year +45% CC 360 minute summer	60.482	15.564
100 year +45% CC 360 minute winter	39.315	15.564
100 year +45% CC 480 minute summer	46.958	12.410
100 year +45% CC 480 minute winter	31.198	12.410
100 year +45% CC 600 minute summer	38.088	10.418
100 year +45% CC 600 minute winter	26.024	10.418
100 year +45% CC 720 minute summer	33.716	9.036
100 year +45% CC 720 minute winter	22.659	9.036
100 year +45% CC 960 minute summer	27.469	7.233
100 year +45% CC 960 minute winter	18.196	7.233
100 year +45% CC 1440 minute summer	19.842	5.318
100 year +45% CC 1440 minute winter	13.335	5.318
100 year +45% CC 2160 minute summer	14.247	3.937
100 year +45% CC 2160 minute winter	9.817	3.937
100 year +45% CC 2880 minute summer	11.896	3.188
100 year +45% CC 2880 minute winter	7.995	3.188
100 year +45% CC 4320 minute summer	9.063	2.369
100 year +45% CC 4320 minute winter	5.968	2.369
100 year +45% CC 5760 minute summer	7.507	1.922
100 year +45% CC 5760 minute winter	4.859	1.922
100 year +45% CC 7200 minute summer	6.409	1.635
100 year +45% CC 7200 minute winter	4.137	1.635
100 year +45% CC 8640 minute summer	5.619	1.433
100 year +45% CC 8640 minute winter	3.627	1.433
100 year +45% CC 10080 minute summer	5.029	1.283
100 year +45% CC 10080 minute winter	3.246	1.283



Results for 1 year Critical Storm Duration. Lowest mass balance: 99.43%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	TB1	1	54.300	0.000	0.0	0.0000	0.0000	OK
15 minute summer	TB2	10	53.858	0.058	16.7	0.0164	0.0000	OK
15 minute summer	RE1	10	54.285	0.035	1.7	0.0006	0.0000	OK
15 minute summer	PH3-S1	10	54.030	0.030	3.7	0.0048	0.0000	OK
15 minute summer	PH3-S2	10	53.595	0.095	20.3	0.1080	0.0000	OK
15 minute summer	RE2	11	54.031	0.031	1.4	0.0006	0.0000	OK
15 minute summer	PH3-S9	11	53.876	0.076	7.6	0.0120	0.0000	OK
15 minute summer	PH3-S10	11	53.697	0.127	12.9	0.0202	0.0000	OK
15 minute summer	PH3-S11	11	53.647	0.112	12.8	0.0178	0.0000	OK
15 minute summer	PH3-S12	11	53.521	0.081	15.4	0.0128	0.0000	OK
15 minute summer	PH3-S3	10	53.971	0.046	4.1	0.0074	0.0000	OK
15 minute summer	PH3-S4	11	53.745	0.070	8.1	0.0198	0.0000	OK
15 minute summer	PH3-S5	11	53.686	0.061	8.0	0.0174	0.0000	OK
15 minute summer	PH3-S6	10	54.048	0.048	4.1	0.0077	0.0000	OK
15 minute summer	PH3-S7	10	53.677	0.052	8.1	0.0147	0.0000	OK
15 minute summer	PH3-S8	11	53.291	0.066	15.9	0.0744	0.0000	OK
15 minute summer	RE3	11	53.772	0.022	0.7	0.0004	0.0000	OK
15 minute summer	PH3-S13	10	53.585	0.025	2.6	0.0040	0.0000	OK
15 minute summer	PH3-S14	11	53.089	0.089	57.1	0.1011	0.0000	OK
15 minute summer	RE4	11	54.140	0.040	2.3	0.0007	0.0000	OK
15 minute summer	PH3-S15	11	53.864	0.064	5.4	0.0102	0.0000	OK
15 minute summer	PH3-S16	11	53.653	0.053	6.9	0.0085	0.0000	OK
15 minute summer	TB3	1	54.100	0.000	0.0	0.0000	0.0000	OK
15 minute summer	TB4	10	53.712	0.082	30.0	0.0233	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	TB1	1.000	TB2	0.0	0.000	0.000	0.0002	
15 minute summer	TB2	1.001	PH3-S2	16.7	1.188	0.083	0.1328	
15 minute summer	RE1	2.000	PH3-S1	1.7	0.584	0.114	0.1065	
15 minute summer	PH3-S1	2.001	PH3-S2	3.6	1.473	0.080	0.0137	
15 minute summer	PH3-S2	1.002	PH3-S14	20.0	1.087	0.214	1.2943	
15 minute summer	RE2	3.000	PH3-S9	1.4	0.250	0.097	0.1732	
15 minute summer	PH3-S9	3.001	PH3-S10	7.4	0.590	0.511	0.4264	
15 minute summer	PH3-S10	3.002	PH3-S11	12.8	0.851	0.889	0.0793	
15 minute summer	PH3-S11	3.003	PH3-S12	12.8	1.074	0.867	0.1615	
15 minute summer	PH3-S12	3.004	PH3-S14	15.4	1.692	0.486	0.0836	
15 minute summer	PH3-S3	5.000	PH3-S4	4.0	0.497	0.094	0.2999	
15 minute summer	PH3-S4	5.001	PH3-S5	8.0	0.841	0.189	0.0726	
15 minute summer	PH3-S5	5.002	PH3-S8	8.0	0.923	0.158	0.2990	
15 minute summer	PH3-S6	6.000	PH3-S7	4.0	0.830	0.217	0.1341	
15 minute summer	PH3-S7	6.001	PH3-S8	8.0	1.185	0.110	0.1132	
15 minute summer	PH3-S8	5.003	PH3-S14	15.9	1.105	0.102	0.1652	
15 minute summer	RE3	4.000	PH3-S13	0.7	0.399	0.048	0.0492	
15 minute summer	PH3-S13	4.001	PH3-S14	2.6	0.451	0.060	0.0616	
15 minute summer	PH3-S14	1.003	PH3-S21	57.1	2.330	0.196	0.3285	
15 minute summer	RE4	8.000	PH3-S15	2.2	0.419	0.155	0.2456	
15 minute summer	PH3-S15	8.001	PH3-S16	5.3	0.831	0.356	0.1807	
15 minute summer	PH3-S16	8.002	PH3-S17	6.9	1.275	0.247	0.0549	
15 minute summer	TB3	7.000	TB4	0.0	0.000	0.000	0.0003	
15 minute summer	TB4	7.001	PH3-S17	29.9	1.712	0.155	0.2512	



Results for 1 year Critical Storm Duration. Lowest mass balance: 99.43%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PH3-S17	10	53.296	0.096	36.5	0.0270	0.0000	OK
15 minute summer	SU	10	53.332	0.032	4.0	0.0000	0.0000	OK
15 minute summer	PH3-S18	10	53.333	0.033	4.5	0.0052	0.0000	OK
15 minute summer	PH3-S19	10	53.005	0.105	44.8	0.1186	0.0000	OK
15 minute summer	PH3-S20	10	52.614	0.114	44.5	0.1287	0.0000	OK
360 minute summer	Tank	232	52.257	0.147	13.7	61.9559	0.0000	OK
15 minute summer	PH3-S22	10	53.532	0.067	6.5	0.0106	0.0000	OK
15 minute summer	PH3-S23	10	53.294	0.034	8.2	0.0054	0.0000	OK
360 minute summer	PH3-S21	232	52.257	0.167	20.6	0.1889	0.0000	OK
360 minute summer	Basin 1 Inlet	232	52.256	0.255	20.5	0.0000	0.0000	OK
15 minute summer	PH3-S25	10	52.282	0.032	2.4	0.0361	0.0000	OK
360 minute summer	Basin 1	232	52.246	0.246	16.1	32.0219	0.0000	SURCHARGED
360 minute summer	PH3-S24	232	52.241	0.341	12.5	0.6027	0.0000	SURCHARGED
30 minute summer	PH3-S26	19	51.866	0.066	12.1	0.0744	0.0000	OK
30 minute summer	PH3-S27	19	51.264	0.089	14.0	0.1005	0.0000	OK
30 minute summer	PH3-S28	20	51.167	0.067	13.4	0.0759	0.0000	OK
30 minute summer	Swale Inlet	19	50.241	0.041	17.7	0.0000	0.0000	OK
30 minute summer	Swale Outlet	20	49.184	0.084	17.7	0.0000	0.0000	OK
15 minute summer	PH3-S29	10	48.116	0.041	2.9	0.0460	0.0000	OK
15 minute summer	PH3-S30	10	47.942	0.042	2.9	0.0476	0.0000	OK
30 minute summer	PH3-S31	20	47.938	0.188	20.0	0.3330	0.0000	OK
480 minute winter	Basin 2 Inlet	368	47.906	0.256	13.2	0.0000	0.0000	OK
480 minute winter	Basin 2	368	47.895	0.245	12.3	24.0119	0.0000	SURCHARGED
480 minute winter	PH3-S32	368	47.861	0.311	11.2	0.5487	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PH3-S17	7.002	PH3-S19	36.3	1.763	0.190	0.2108	
15 minute summer	SU	9.000	PH3-S19	4.0	1.498	0.092	0.0113	
15 minute summer	PH3-S18	10.000	PH3-S19	4.5	1.688	0.086	0.0079	
15 minute summer	PH3-S19	7.003	PH3-S20	44.5	1.918	0.233	0.3159	
15 minute summer	PH3-S20	7.004	Tank	44.2	2.043	0.217	0.0326	
360 minute summer	Tank	7.006	PH3-S21	10.7	0.632	0.091	0.0665	
15 minute summer	PH3-S22	11.000	PH3-S23	6.5	1.241	0.340	0.0950	
15 minute summer	PH3-S23	11.001	PH3-S21	8.1	2.846	0.099	0.0135	
360 minute summer	PH3-S21	1.004	Basin 1 Inlet	20.5	0.782	0.274	0.7010	
15 minute summer	PH3-S25	12.000	PH3-S26	2.3	0.871	0.096	0.0533	
360 minute summer	Basin 1	1.005	PH3-S24	12.5	0.391	0.198	0.2693	
360 minute summer	PH3-S24	1.006	PH3-S26	10.6	1.030	0.223	0.1250	
30 minute summer	PH3-S26	1.007	PH3-S27	12.3	1.021	0.188	0.4798	
30 minute summer	PH3-S27	1.008	PH3-S28	13.4	1.100	0.292	0.1171	
30 minute summer	PH3-S28	1.009	Swale Inlet	13.2	1.366	0.182	0.1003	
30 minute summer	Swale Inlet	1.010	Swale Outlet	17.7	0.378	0.002	1.9520	
30 minute summer	Swale Outlet	1.011	PH3-S31	17.1	0.680	0.298	0.3802	
15 minute summer	PH3-S29	13.000	PH3-S30	2.9	0.736	0.156	0.0640	
15 minute summer	PH3-S30	13.001	PH3-S31	2.9	0.682	0.161	0.0570	
30 minute summer	PH3-S31	1.012	Basin 2 Inlet	19.9	0.692	1.151	0.1793	
480 minute winter	Basin 2	1.013	PH3-S32	11.2	0.638	0.474	0.0993	
480 minute winter	PH3-S32	1.014	PH3-S34	11.2	0.979	0.050	0.0874	



Results for 1 year Critical Storm Duration. Lowest mass balance: 99.43%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	PH3-S34	34	46.977	0.227	10.6	0.2571	0.0000	SURCHARGED
30 minute winter	PH3-S35	23	46.973	0.573	10.1	0.6479	0.0000	SURCHARGED
15 minute summer	SWMH54	1	46.925	1.000	12.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	PH3-S34	1.015	PH3-S35	10.6	0.519	0.157	0.8334	
30 minute winter	PH3-S35	1.016	SWMH54	10.1	0.255	0.139	0.9616	69.9



Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	TB1	1	54.300	0.000	0.0	0.0000	0.0000	OK
15 minute summer	TB2	11	54.182	0.382	90.6	0.1081	0.0000	SURCHARGED
15 minute summer	RE1	10	54.340	0.090	9.4	0.0016	0.0000	OK
15 minute summer	PH3-S1	11	54.147	0.147	20.3	0.0234	0.0000	OK
15 minute summer	PH3-S2	11	54.085	0.585	105.7	0.6619	0.0000	SURCHARGED
30 minute summer	RE2	23	54.433	0.433	9.0	3.0376	0.0000	SURCHARGED
30 minute summer	PH3-S9	23	54.427	0.627	30.7	5.7361	0.0000	SURCHARGED
15 minute summer	PH3-S10	13	54.276	0.706	41.1	4.6027	0.0000	SURCHARGED
15 minute summer	PH3-S11	12	54.147	0.612	27.3	0.0974	0.0000	SURCHARGED
15 minute summer	PH3-S12	12	53.898	0.458	37.2	0.0728	0.0000	SURCHARGED
15 minute summer	PH3-S3	10	54.038	0.113	22.2	0.0180	0.0000	OK
15 minute summer	PH3-S4	11	53.886	0.211	44.2	0.0598	0.0000	OK
15 minute summer	PH3-S5	11	53.793	0.168	43.2	0.0476	0.0000	OK
15 minute summer	PH3-S6	11	54.258	0.257	22.2	0.0409	0.0000	SURCHARGED
15 minute summer	PH3-S7	10	53.761	0.136	43.3	0.0385	0.0000	OK
15 minute summer	PH3-S8	12	53.549	0.324	86.5	0.3663	0.0000	SURCHARGED
15 minute summer	RE3	10	53.804	0.054	4.0	0.0010	0.0000	OK
15 minute summer	PH3-S13	11	53.623	0.063	14.3	0.0100	0.0000	OK
15 minute summer	PH3-S14	12	53.451	0.451	251.7	0.5098	0.0000	SURCHARGED
15 minute summer	RE4	12	54.554	0.454	12.5	0.6491	0.0000	SURCHARGED
15 minute summer	PH3-S15	11	54.477	0.677	25.1	0.1076	0.0000	SURCHARGED
15 minute summer	PH3-S16	13	53.975	0.375	31.6	3.6835	0.0000	SURCHARGED
15 minute summer	TB3	12	54.271	0.171	10.9	0.0484	0.0000	OK
15 minute summer	TB4	11	54.252	0.622	162.4	0.1761	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	TB1	1.000	TB2	0.0	0.000	0.000	0.0002	
15 minute summer	TB2	1.001	PH3-S2	87.5	1.619	0.435	0.6497	
15 minute summer	RE1	2.000	PH3-S1	9.3	0.898	0.645	0.5232	
15 minute summer	PH3-S1	2.001	PH3-S2	19.6	2.024	0.438	0.0979	
15 minute summer	PH3-S2	1.002	PH3-S14	100.9	1.485	1.079	4.9588	
30 minute summer	RE2	3.000	PH3-S9	13.4	0.762	0.927	0.5274	
30 minute summer	PH3-S9	3.001	PH3-S10	18.8	1.070	1.302	0.6062	
15 minute summer	PH3-S10	3.002	PH3-S11	27.3	1.550	1.895	0.0931	
15 minute summer	PH3-S11	3.003	PH3-S12	27.8	1.579	1.878	0.2395	
15 minute summer	PH3-S12	3.004	PH3-S14	35.6	2.024	1.121	0.1611	
15 minute summer	PH3-S3	5.000	PH3-S4	22.0	0.745	0.514	1.0719	
15 minute summer	PH3-S4	5.001	PH3-S5	43.2	1.243	1.022	0.2661	
15 minute summer	PH3-S5	5.002	PH3-S8	43.9	1.381	0.872	1.2133	
15 minute summer	PH3-S6	6.000	PH3-S7	21.5	1.224	1.166	0.4735	
15 minute summer	PH3-S7	6.001	PH3-S8	42.9	1.812	0.591	0.5250	
15 minute summer	PH3-S8	5.003	PH3-S14	85.6	1.423	0.547	0.8024	
15 minute summer	RE3	4.000	PH3-S13	3.9	0.652	0.270	0.1735	
15 minute summer	PH3-S13	4.001	PH3-S14	14.2	1.003	0.328	0.1183	
15 minute summer	PH3-S14	1.003	PH3-S21	242.5	3.445	0.831	0.9378	
15 minute summer	RE4	8.000	PH3-S15	11.7	0.667	0.813	0.7936	
15 minute summer	PH3-S15	8.001	PH3-S16	22.6	1.282	1.514	0.4974	
15 minute summer	PH3-S16	8.002	PH3-S17	33.7	1.914	1.201	0.1777	
15 minute summer	TB3	7.000	TB4	-10.9	-0.392	-2.156	1.4770	
15 minute summer	TB4	7.001	PH3-S17	147.9	2.142	0.766	1.0109	



Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PH3-S17	11	53.885	0.685	159.3	0.1938	0.0000	SURCHARGED
15 minute summer	SU	11	53.620	0.320	21.5	0.0000	0.0000	SURCHARGED
15 minute summer	PH3-S18	11	53.629	0.329	24.2	0.1740	0.0000	SURCHARGED
15 minute summer	PH3-S19	11	53.541	0.641	200.7	0.7251	0.0000	SURCHARGED
240 minute winter	PH3-S20	236	52.936	0.436	44.0	0.4934	0.0000	SURCHARGED
240 minute winter	Tank	236	52.936	0.826	70.9	348.1852	0.0000	SURCHARGED
15 minute summer	PH3-S22	12	53.904	0.439	35.4	1.8347	0.0000	SURCHARGED
15 minute summer	PH3-S23	8	53.330	0.070	34.5	0.0111	0.0000	OK
240 minute winter	PH3-S21	236	52.936	0.846	64.7	0.9570	0.0000	SURCHARGED
240 minute winter	Basin 1 Inlet	240	52.935	0.935	38.1	0.0000	0.0000	OK
15 minute summer	PH3-S25	10	52.331	0.081	13.0	0.0912	0.0000	OK
240 minute winter	Basin 1	240	52.923	0.923	26.6	174.3913	0.0000	SURCHARGED
240 minute winter	PH3-S24	240	52.919	1.019	12.3	1.8000	0.0000	SURCHARGED
15 minute summer	PH3-S26	10	51.926	0.126	40.4	0.1426	0.0000	OK
15 minute summer	PH3-S27	11	51.387	0.212	51.0	0.2400	0.0000	OK
15 minute summer	PH3-S28	11	51.248	0.148	50.8	0.1679	0.0000	OK
15 minute summer	Swale Inlet	11	50.294	0.094	78.7	0.0000	0.0000	OK
30 minute summer	Swale Outlet	22	49.460	0.360	74.1	0.0000	0.0000	SURCHARGED
30 minute summer	PH3-S29	19	48.717	0.642	14.5	0.7257	0.0000	SURCHARGED
2160 minute winter	PH3-S30	2100	48.702	0.802	0.5	0.9072	0.0000	SURCHARGED
2160 minute winter	PH3-S31	2100	48.702	0.952	13.7	1.6824	0.0000	SURCHARGED
2160 minute winter	Basin 2 Inlet	2100	48.680	1.030	13.8	0.0000	0.0000	OK
2160 minute winter	Basin 2	2100	48.667	1.017	12.9	164.7277	0.0000	SURCHARGED
2160 minute winter	PH3-S32	2100	48.635	1.085	11.4	1.9174	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PH3-S17	7.002	PH3-S19	158.2	2.247	0.829	0.7205	
15 minute summer	SU	9.000	PH3-S19	20.6	1.916	0.474	0.0747	
15 minute summer	PH3-S18	10.000	PH3-S19	23.1	2.108	0.445	0.0523	
15 minute summer	PH3-S19	7.003	PH3-S20	200.3	2.844	1.048	0.9587	
240 minute winter	PH3-S20	7.004	Tank	43.8	2.029	0.215	0.1056	
240 minute winter	Tank	7.006	PH3-S21	-27.2	-0.795	-0.231	0.1255	
15 minute summer	PH3-S22	11.000	PH3-S23	25.8	1.767	1.357	0.2298	
15 minute summer	PH3-S23	11.001	PH3-S21	34.4	3.584	0.418	0.0602	
240 minute winter	PH3-S21	1.004	Basin 1 Inlet	38.1	0.782	0.510	1.0035	
15 minute summer	PH3-S25	12.000	PH3-S26	12.8	1.370	0.523	0.1850	
240 minute winter	Basin 1	1.005	PH3-S24	12.3	0.582	0.195	0.2693	
240 minute winter	PH3-S24	1.006	PH3-S26	10.8	1.010	0.226	0.1394	
15 minute summer	PH3-S26	1.007	PH3-S27	40.0	1.274	0.611	1.2229	
15 minute summer	PH3-S27	1.008	PH3-S28	50.8	1.489	1.105	0.3188	
15 minute summer	PH3-S28	1.009	Swale Inlet	50.9	1.909	0.703	0.2762	
15 minute summer	Swale Inlet	1.010	Swale Outlet	78.8	0.572	0.008	12.3274	
30 minute summer	Swale Outlet	1.011	PH3-S31	48.1	1.264	0.837	0.6160	
30 minute summer	PH3-S29	13.000	PH3-S30	13.4	0.808	0.725	0.2853	
2160 minute winter	PH3-S30	13.001	PH3-S31	0.5	0.271	0.026	0.1302	
2160 minute winter	PH3-S31	1.012	Basin 2 Inlet	13.6	0.558	0.791	0.2532	
2160 minute winter	Basin 2	1.013	PH3-S32	11.4	0.648	0.481	0.0993	
2160 minute winter	PH3-S32	1.014	PH3-S34	11.4	0.545	0.050	0.0877	



Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PH3-S34	12	46.987	0.237	11.8	0.2681	0.0000	SURCHARGED
60 minute summer	PH3-S35	19	46.974	0.574	11.4	0.6493	0.0000	SURCHARGED
15 minute summer	SWMH54	1	46.925	1.000	12.9	0.0000	0.0000	OK

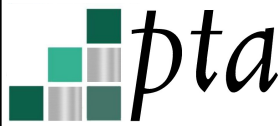
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	PH3-S34	1.015	PH3-S35	11.5	1.103	0.171	0.8335	
60 minute summer	PH3-S35	1.016	SWMH54	11.4	0.286	0.156	0.9616	183.3



Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	TB1	12	54.715	0.415	18.7	0.1174	0.0000	FLOOD RISK
15 minute summer	TB2	12	54.682	0.882	119.4	0.2496	0.0000	FLOOD RISK
15 minute summer	RE1	13	54.668	0.418	12.4	0.7983	0.0000	SURCHARGED
15 minute summer	PH3-S1	12	54.630	0.630	25.4	0.2652	0.0000	SURCHARGED
15 minute summer	PH3-S2	12	54.565	1.065	111.5	1.2047	0.0000	SURCHARGED
30 minute summer	RE2	25	54.492	0.492	12.3	5.1250	0.0000	SURCHARGED
30 minute summer	PH3-S9	25	54.486	0.686	40.8	9.8767	0.0000	FLOOD RISK
30 minute summer	PH3-S10	23	54.362	0.792	47.2	9.4626	0.0000	SURCHARGED
30 minute summer	PH3-S11	22	54.261	0.726	28.2	0.1154	0.0000	SURCHARGED
15 minute summer	PH3-S12	13	54.078	0.638	37.9	1.3520	0.0000	SURCHARGED
15 minute summer	PH3-S3	12	54.495	0.570	29.3	0.0907	0.0000	SURCHARGED
15 minute summer	PH3-S4	12	54.403	0.728	55.0	0.2061	0.0000	SURCHARGED
15 minute summer	PH3-S5	12	54.297	0.672	52.3	0.1902	0.0000	SURCHARGED
15 minute summer	PH3-S6	11	54.808	0.808	29.3	0.1285	0.0000	FLOOD RISK
15 minute summer	PH3-S7	12	54.126	0.501	54.1	0.1417	0.0000	SURCHARGED
15 minute summer	PH3-S8	12	53.930	0.705	100.4	0.7971	0.0000	SURCHARGED
15 minute summer	RE3	12	53.898	0.148	5.3	0.0027	0.0000	OK
15 minute summer	PH3-S13	12	53.877	0.317	18.9	0.0505	0.0000	SURCHARGED
15 minute summer	PH3-S14	12	53.785	0.785	271.6	0.8875	0.0000	SURCHARGED
15 minute summer	RE4	14	54.605	0.504	16.5	2.3742	0.0000	SURCHARGED
15 minute summer	PH3-S15	12	54.548	0.747	28.0	0.7929	0.0000	SURCHARGED
15 minute summer	PH3-S16	14	54.136	0.536	45.3	10.6148	0.0000	FLOOD RISK
15 minute summer	TB3	12	54.688	0.588	24.7	0.1665	0.0000	FLOOD RISK
15 minute summer	TB4	12	54.699	1.069	214.1	0.3025	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	TB1	1.000	TB2	-18.7	-0.605	-3.156	3.1561	
15 minute summer	TB2	1.001	PH3-S2	101.8	1.634	0.506	0.6497	
15 minute summer	RE1	2.000	PH3-S1	15.4	1.005	1.067	0.6600	
15 minute summer	PH3-S1	2.001	PH3-S2	27.8	2.142	0.620	0.0982	
15 minute summer	PH3-S2	1.002	PH3-S14	110.0	1.562	1.176	4.9588	
30 minute summer	RE2	3.000	PH3-S9	14.3	0.810	0.986	0.5274	
30 minute summer	PH3-S9	3.001	PH3-S10	20.0	1.137	1.384	0.6062	
30 minute summer	PH3-S10	3.002	PH3-S11	28.2	1.604	1.961	0.0931	
30 minute summer	PH3-S11	3.003	PH3-S12	28.6	1.627	1.934	0.2395	
15 minute summer	PH3-S12	3.004	PH3-S14	39.9	2.266	1.255	0.1611	
15 minute summer	PH3-S3	5.000	PH3-S4	27.0	0.766	0.631	1.4601	
15 minute summer	PH3-S4	5.001	PH3-S5	52.3	1.325	1.238	0.2998	
15 minute summer	PH3-S5	5.002	PH3-S8	49.5	1.292	0.984	1.3783	
15 minute summer	PH3-S6	6.000	PH3-S7	25.9	1.473	1.405	0.4890	
15 minute summer	PH3-S7	6.001	PH3-S8	52.2	1.764	0.719	0.6661	
15 minute summer	PH3-S8	5.003	PH3-S14	99.5	1.422	0.636	0.8024	
15 minute summer	RE3	4.000	PH3-S13	5.7	0.632	0.388	0.4890	
15 minute summer	PH3-S13	4.001	PH3-S14	16.4	1.072	0.380	0.1693	
15 minute summer	PH3-S14	1.003	PH3-S21	270.4	3.840	0.926	0.9378	
15 minute summer	RE4	8.000	PH3-S15	13.0	0.737	0.898	0.7936	
15 minute summer	PH3-S15	8.001	PH3-S16	23.2	1.319	1.557	0.4974	
15 minute summer	PH3-S16	8.002	PH3-S17	38.9	2.209	1.385	0.1777	
15 minute summer	TB3	7.000	TB4	28.0	-0.653	5.533	6.2990	
15 minute summer	TB4	7.001	PH3-S17	184.9	2.626	0.958	1.0109	



Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PH3-S17	12	54.118	0.918	184.9	0.2598	0.0000	SURCHARGED
15 minute summer	SU	11	53.811	0.511	28.4	0.0000	0.0000	FLOOD RISK
15 minute summer	PH3-S18	13	53.738	0.438	31.9	2.8315	0.0000	SURCHARGED
15 minute summer	PH3-S19	12	53.691	0.791	214.6	0.8942	0.0000	SURCHARGED
360 minute winter	PH3-S20	352	53.193	0.693	41.5	0.7836	0.0000	SURCHARGED
360 minute winter	Tank	352	53.193	1.083	63.6	456.3194	0.0000	SURCHARGED
15 minute summer	PH3-S22	13	53.964	0.499	46.7	4.4214	0.0000	SURCHARGED
30 minute summer	PH3-S23	19	53.342	0.082	38.1	0.0130	0.0000	OK
360 minute winter	PH3-S21	352	53.193	1.103	60.8	1.2471	0.0000	SURCHARGED
360 minute winter	Basin 1 Inlet	352	53.191	1.191	38.8	0.0000	0.0000	OK
15 minute summer	PH3-S25	10	52.347	0.097	17.2	0.1099	0.0000	OK
360 minute winter	Basin 1	352	53.177	1.177	26.2	251.9506	0.0000	SURCHARGED
360 minute winter	PH3-S24	352	53.172	1.272	13.8	2.2480	0.0000	SURCHARGED
15 minute summer	PH3-S26	11	51.948	0.148	50.4	0.1670	0.0000	OK
15 minute summer	PH3-S27	11	51.506	0.331	64.1	0.3745	0.0000	SURCHARGED
15 minute summer	PH3-S28	11	51.278	0.178	64.0	0.2018	0.0000	OK
15 minute summer	Swale Inlet	11	50.307	0.107	100.7	0.0000	0.0000	OK
30 minute summer	Swale Outlet	23	49.624	0.524	94.9	0.0000	0.0000	SURCHARGED
30 minute summer	PH3-S29	19	49.003	0.928	19.3	1.0495	0.0000	FLOOD RISK
30 minute summer	PH3-S30	20	48.843	0.943	17.2	1.0666	0.0000	SURCHARGED
4320 minute winter	PH3-S31	3360	48.806	1.056	12.9	1.8662	0.0000	SURCHARGED
4320 minute winter	Basin 2 Inlet	3420	48.782	1.132	13.1	0.0000	0.0000	OK
4320 minute winter	Basin 2	3420	48.768	1.118	12.4	191.7090	0.0000	SURCHARGED
4320 minute winter	PH3-S32	3420	48.734	1.184	11.4	2.0920	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PH3-S17	7.002	PH3-S19	176.1	2.501	0.923	0.7205	
15 minute summer	SU	9.000	PH3-S19	27.4	1.825	0.631	0.0747	
15 minute summer	PH3-S18	10.000	PH3-S19	37.0	2.166	0.712	0.0523	
15 minute summer	PH3-S19	7.003	PH3-S20	214.8	3.050	1.124	0.9587	
360 minute winter	PH3-S20	7.004	Tank	41.1	1.926	0.202	0.1056	
360 minute winter	Tank	7.006	PH3-S21	-22.8	-0.726	-0.194	0.1255	
15 minute summer	PH3-S22	11.000	PH3-S23	27.5	1.827	1.448	0.2430	
30 minute summer	PH3-S23	11.001	PH3-S21	38.0	3.565	0.460	0.0648	
360 minute winter	PH3-S21	1.004	Basin 1 Inlet	38.8	0.760	0.519	1.0035	
15 minute summer	PH3-S25	12.000	PH3-S26	17.0	1.455	0.692	0.2304	
360 minute winter	Basin 1	1.005	PH3-S24	13.8	0.565	0.218	0.2693	
360 minute winter	PH3-S24	1.006	PH3-S26	10.8	1.041	0.227	0.1363	
15 minute summer	PH3-S26	1.007	PH3-S27	49.7	1.344	0.761	1.3354	
15 minute summer	PH3-S27	1.008	PH3-S28	64.0	1.643	1.392	0.3519	
15 minute summer	PH3-S28	1.009	Swale Inlet	64.1	1.983	0.885	0.3346	
15 minute summer	Swale Inlet	1.010	Swale Outlet	100.9	0.591	0.010	21.3372	
30 minute summer	Swale Outlet	1.011	PH3-S31	47.6	1.265	0.828	0.6160	
30 minute summer	PH3-S29	13.000	PH3-S30	17.2	0.977	0.932	0.2853	
30 minute summer	PH3-S30	13.001	PH3-S31	16.0	0.910	0.896	0.1302	
4320 minute winter	PH3-S31	1.012	Basin 2 Inlet	12.9	0.560	0.748	0.2532	
4320 minute winter	Basin 2	1.013	PH3-S32	11.4	0.647	0.480	0.0993	
4320 minute winter	PH3-S32	1.014	PH3-S34	11.4	0.688	0.050	0.0877	



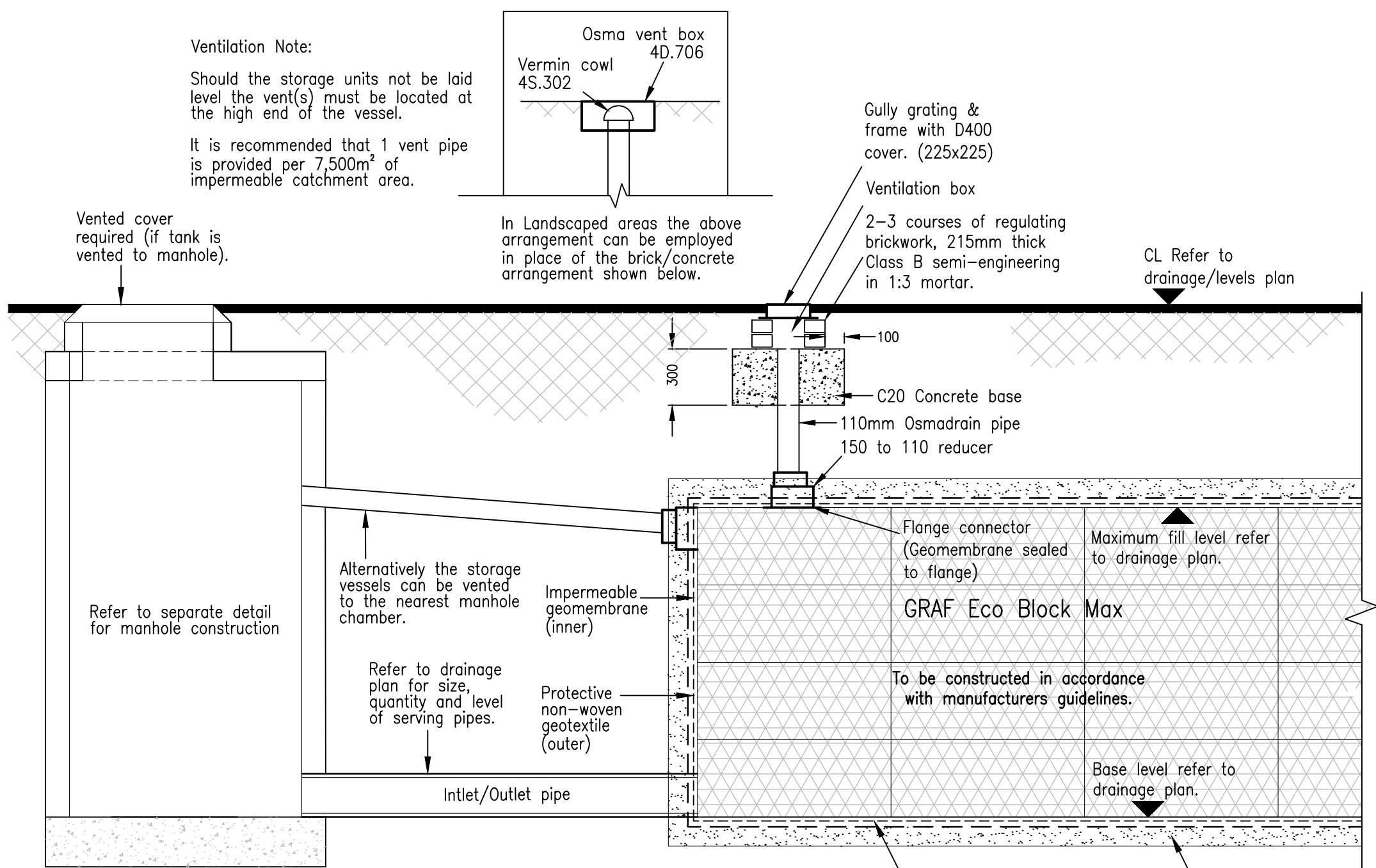
Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	PH3-S34	14	46.984	0.234	12.3	0.2648	0.0000	SURCHARGED
60 minute summer	PH3-S35	17	46.960	0.560	11.4	0.6339	0.0000	SURCHARGED
15 minute summer	SWMH54	1	46.925	1.000	15.4	0.0000	0.0000	OK

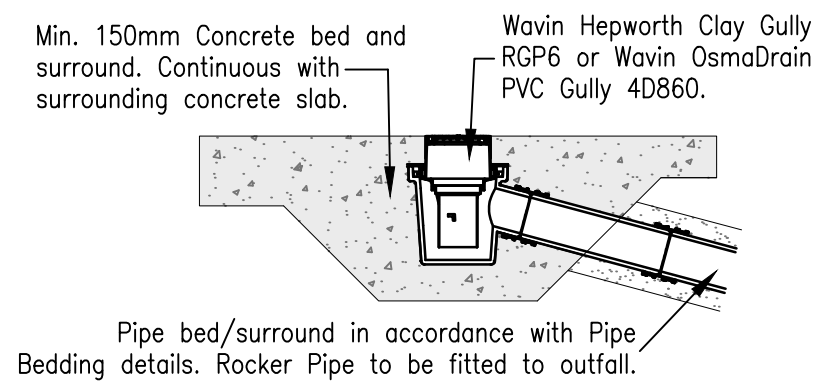
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	PH3-S34	1.015	PH3-S35	11.4	0.975	0.170	0.8335	
60 minute summer	PH3-S35	1.016	SWMH54	11.4	0.286	0.156	0.9616	165.0

Appendix D

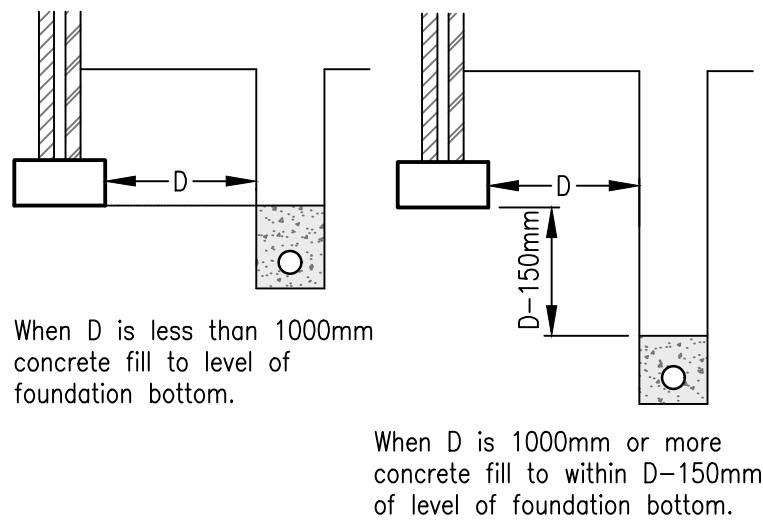
Construction Drawings



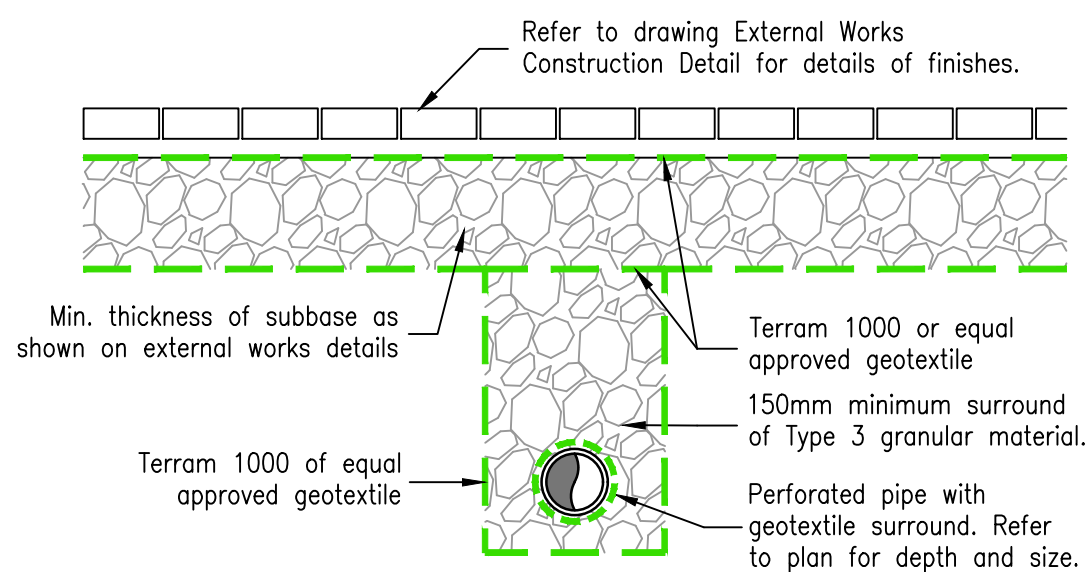
Attenuation Tank Storage Detail
1:25



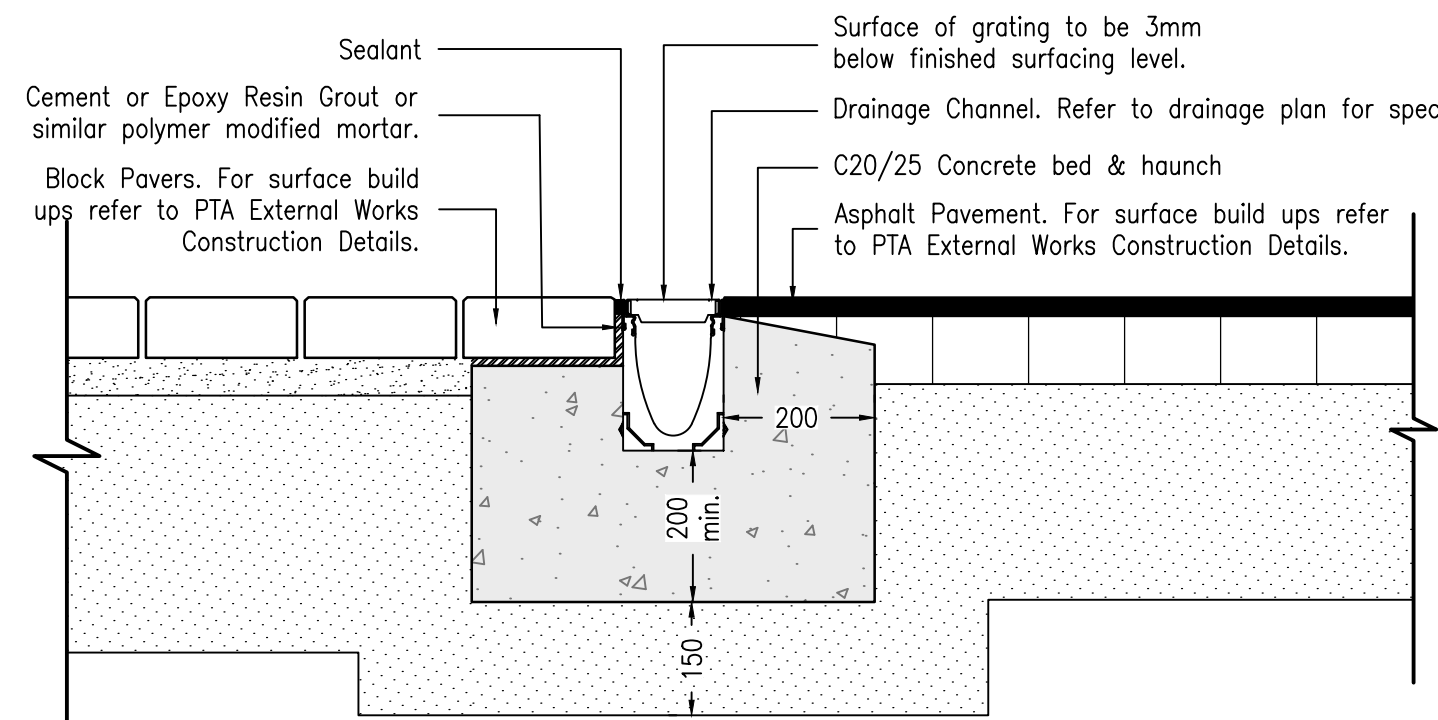
External Trapped Yard Gully
1:20



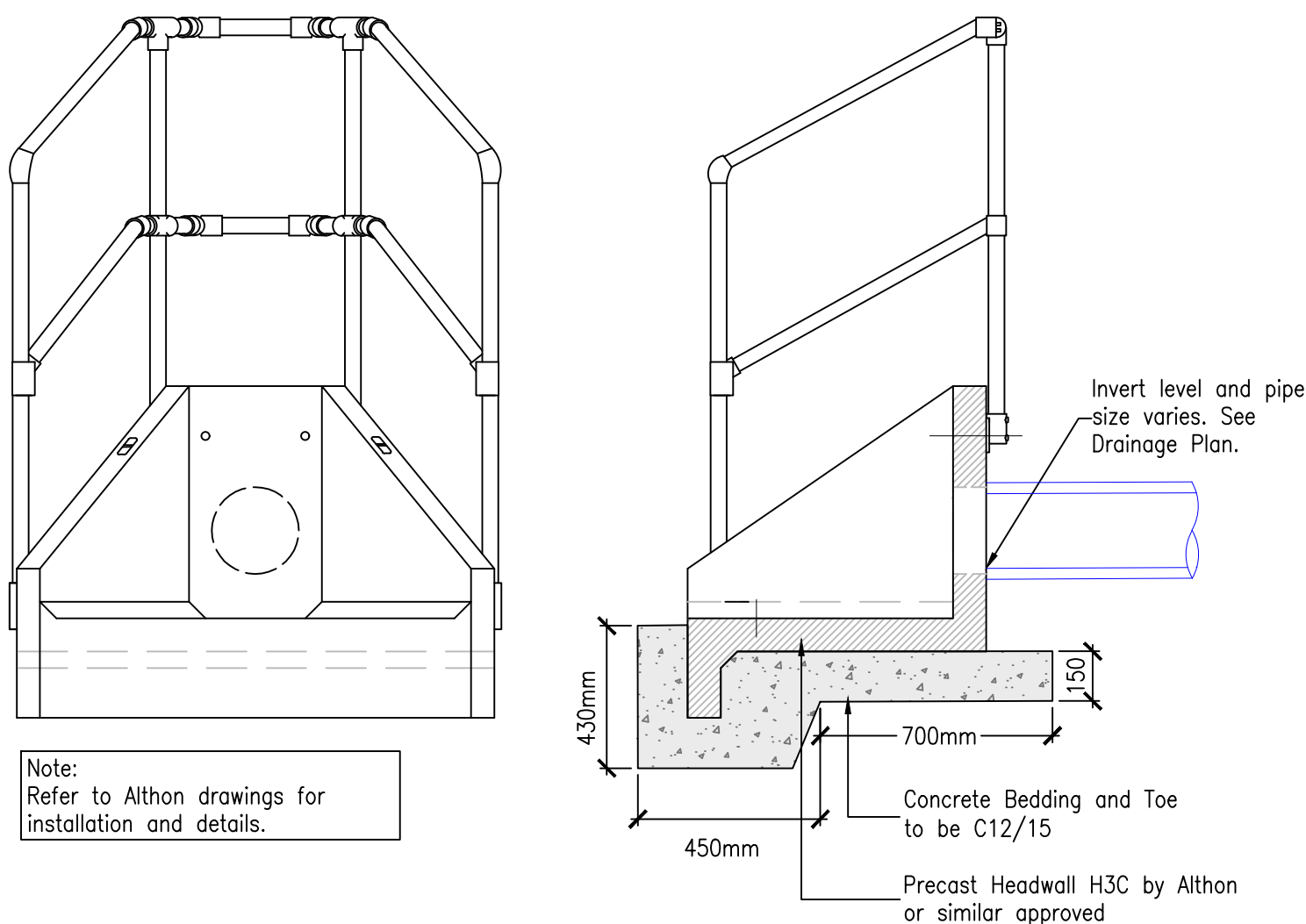
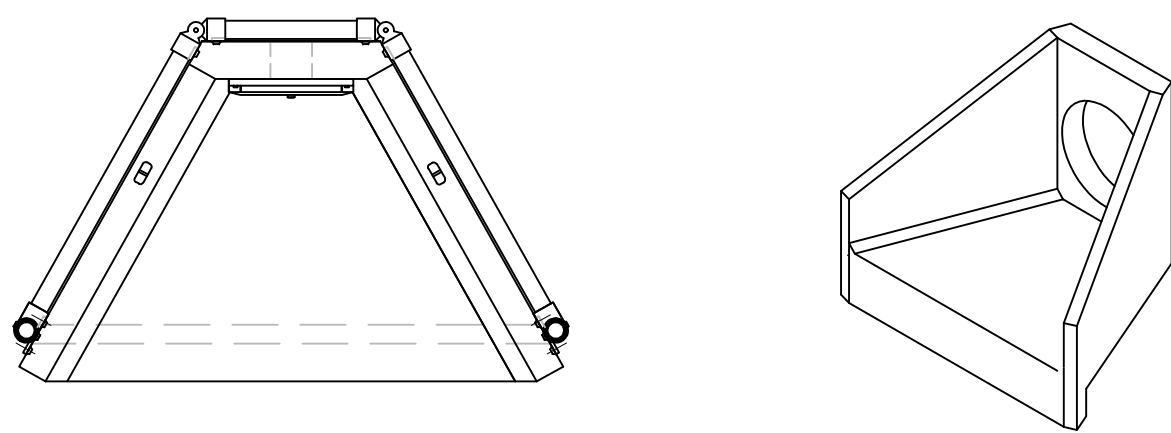
Concreting of Drains Laid Near Foundations
1:50



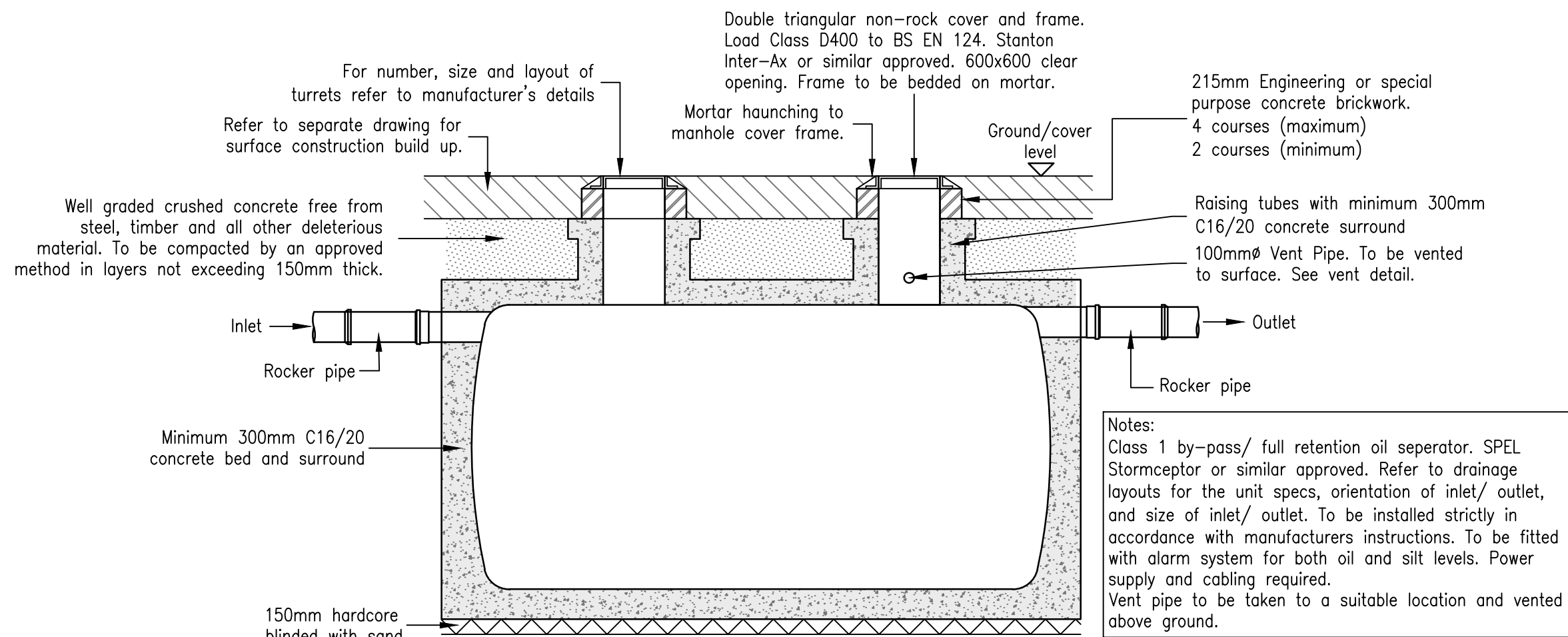
Typical Perforated Pipe Bedding Details for Untanked Permeable Paving
1:20



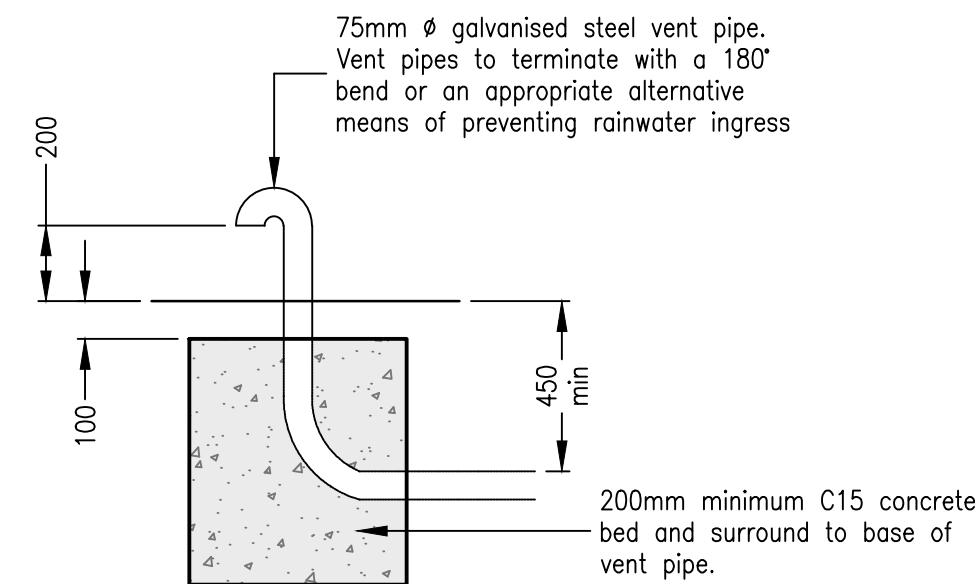
Typical External Drainage Channel Block and Asphalt Pavement Detail
1:10



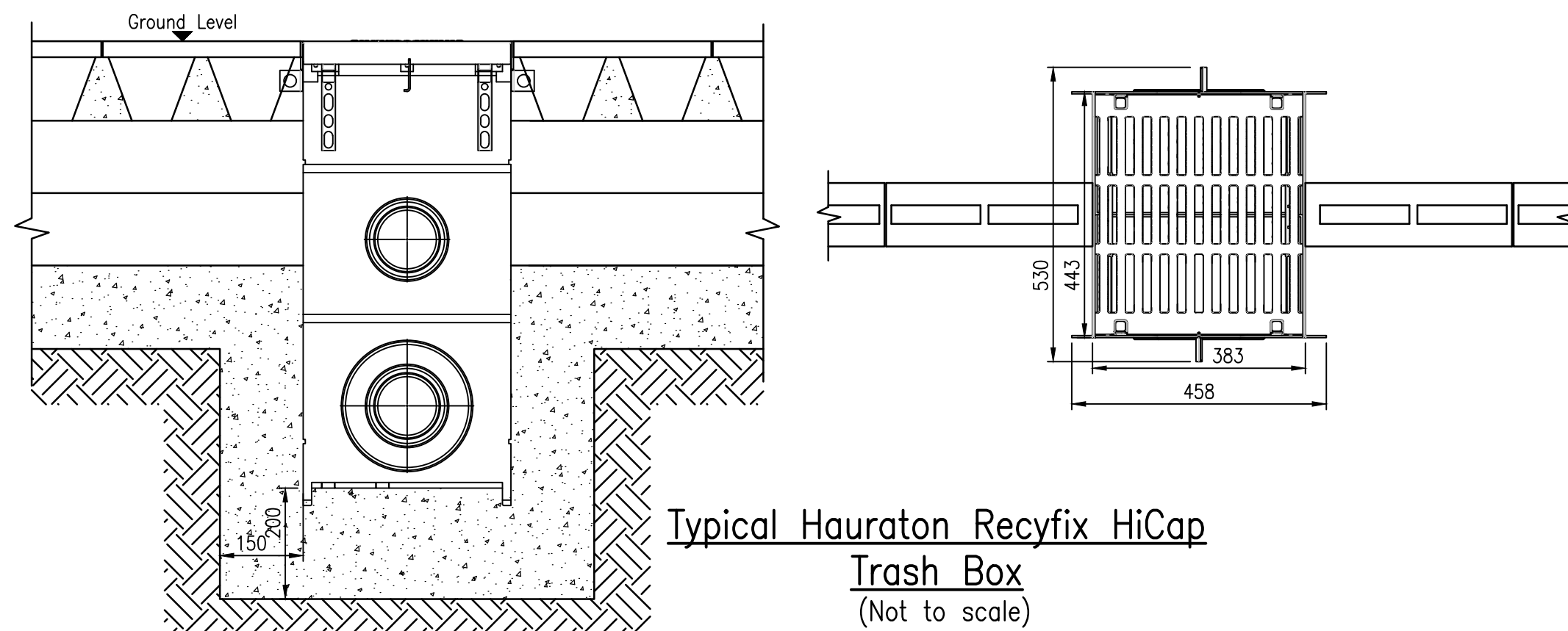
Althon Headwall Typical Detail (H3C)
(1:20)



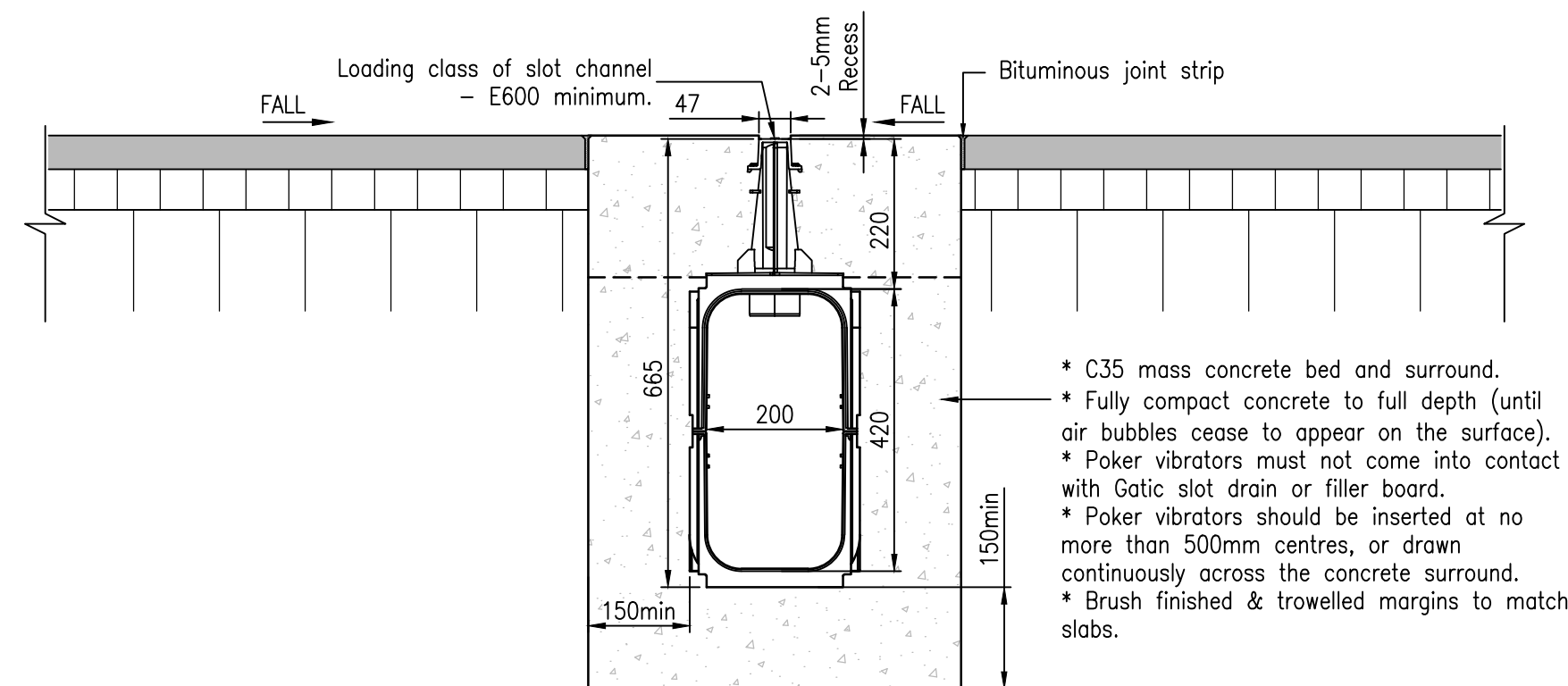
Typical Oil Separator Detail
NTS



Vent Pipe Detail
1:20



- * HiCap Channel should be installed strictly in accordance with Manufacturers instructions.
- * Ensure a fall in concrete surround so that the top of throat is 2-5mm below concrete slab level.
- * 2 Part Crack inducer/joint former by SCP Concrete Sealing Technology Ltd or similar approved to be installed at max 3m centres. Seal over top of crack inducer with Thioflex 600 from Fosroc or similar.
- * Contractor to ensure no concrete enters slot drain.



Hauraton Recyfix HiCap 5200 Channel Detail
(1:10)

Notes:

1. Do not scale from this drawing.
2. In case of any discrepancies in drawings, details or bills, refer to engineers for clarification: unilateral decisions by the Contractor will not be accepted.
3. This drawing is to be read in conjunction with all related Architects, Consultants & Sub-Contractors drawings and specifications.
4. The Contractor is advised that all design drawings and information are to be read concurrently and any discrepancies or omissions reported directly to PTA's Civil Engineering Department.

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DRAWING STATUS / PURPOSE OF ISSUE

PRELIMINARY COMMENT/COSTING/APPROVAL NOT FOR CONSTRUCTION

ISO 19650 STATUS CODE

S3

PROJECT TITLE

Billingshurst Trade Park Phase 3

DRAWING TITLE

Drainage Construction Details Sheet 2

DATE

March 2026

This drawing is issued only for the purposes described in the drawing status box.

PTA PROJ No

9950

REVISION

P01

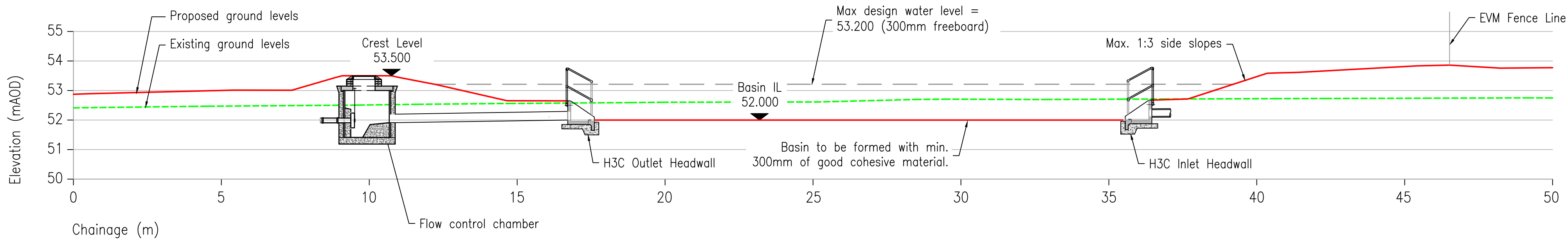
DRAWING No

9950-PTA-XX-XX-DR-C-9132

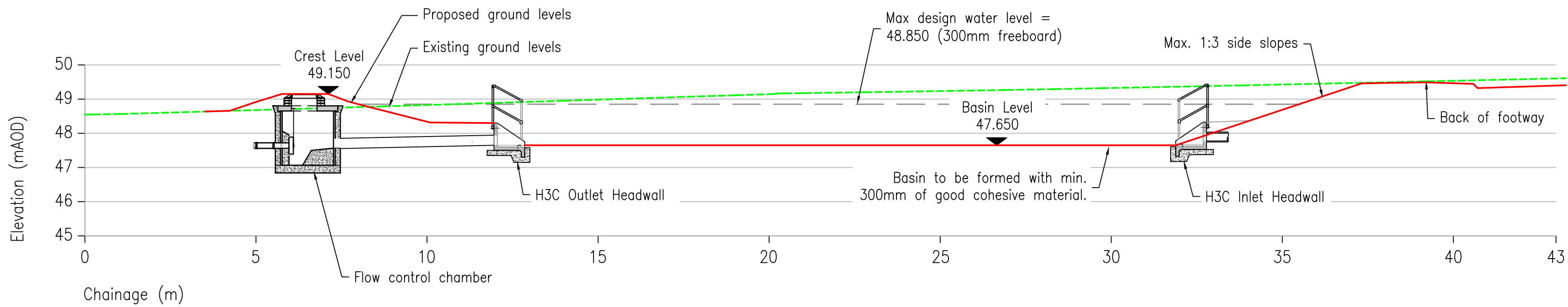
Consulting Civil & Structural Engineers

29 Red Lion Street, Chesham, Bucks, HP5 1EJ, Tel. 01494 772721

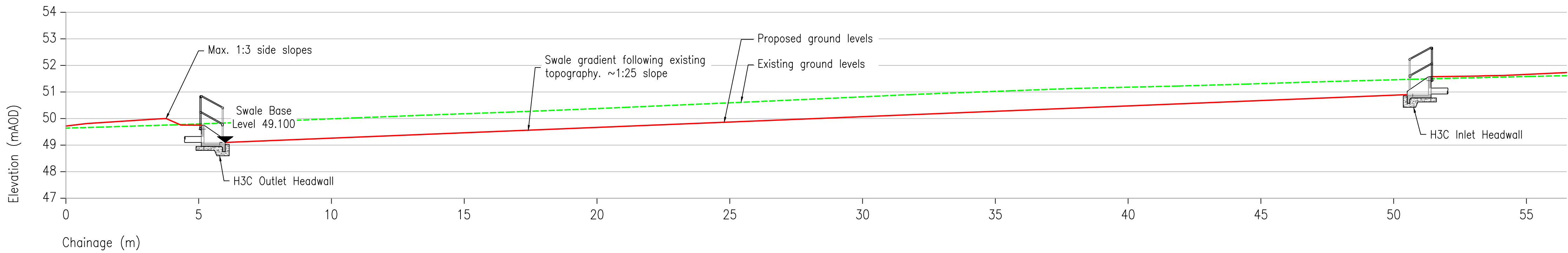
www.placonsult.co.uk



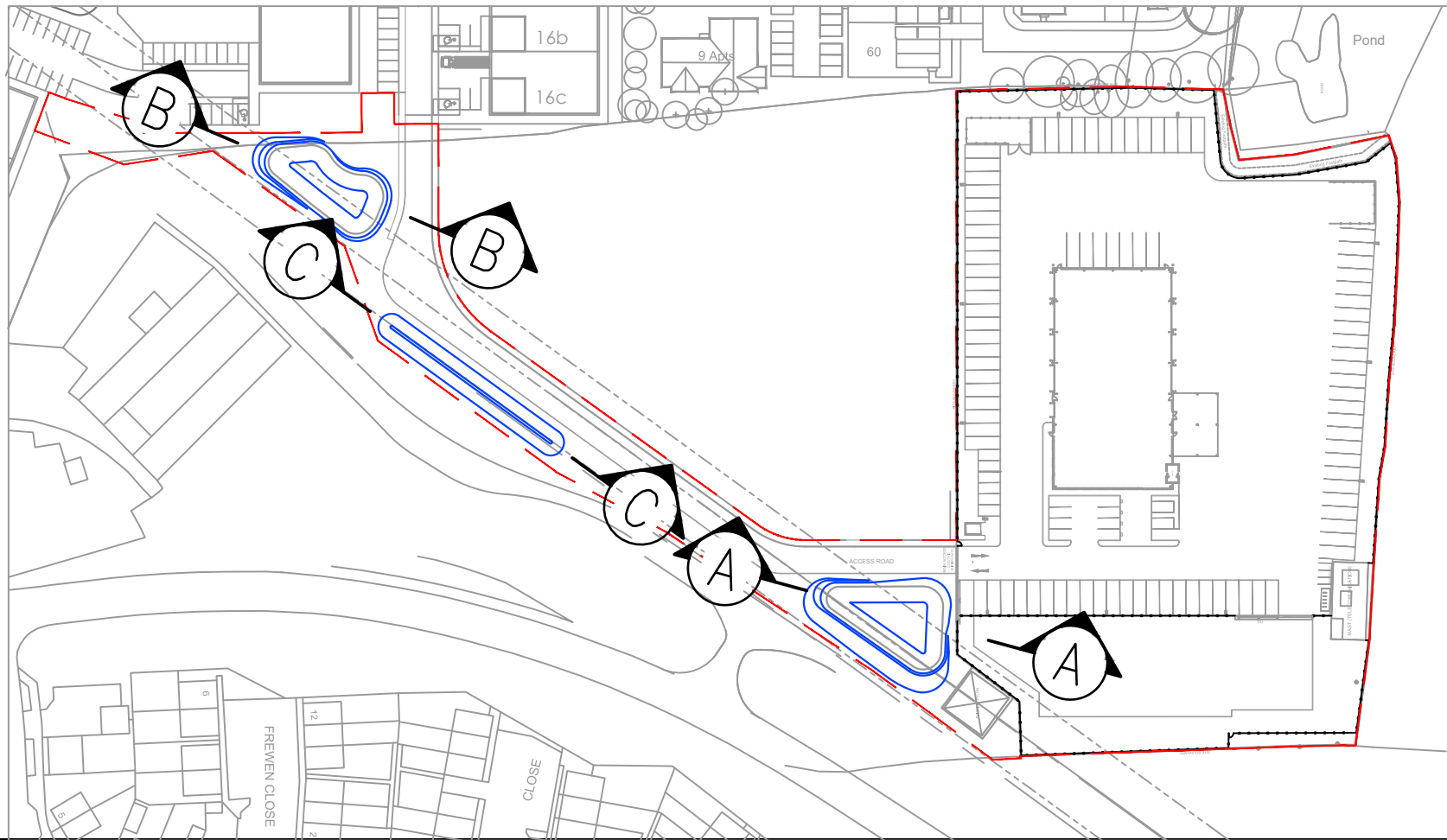
A Basin 1 – Section A
1:100



B Basin 2 – Section B
1:100



C Swale – Section C
1:100



Notes:

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P01 First Issue TA 15.05.26SLW

REV DESCRIPTION BY DATE CHKD

PROJECT TITLE
**Billingshurst Trade Park
Phase 3**

DRAWING TITLE
**Drainage Construction Details
Sheet 3**

DATE	May 2026	This drawing is issued only for the purposes described in the drawing status box.	PTA PROJ No
DRAWN	TA		9950
SCALE	As Shown		REVISION
DRG SIZE	A1		P01

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Appendix E

Maintenance Easement Drawing

