
Technical Note

Project:	Finchwood, Parcels 11 & 12	SMA Ref:	7292.TN02
Subject:	Parcels 11 & 12 Drainage Strategy	Revised:	D – 15.10.2025
Prepared by:	Tyler Andrews	Date:	27.03.2025
Checked by:	Kate Marshall	Date:	29.03.2025

INTRODUCTION

This Technical Note (TN) has been prepared by Stuart Michael Associates Limited (SMA) on behalf of Countryside Properties (UK) Ltd to support the reserved matters planning application for Parcels 11 & 12 of the Finchwood Development. This is following the approval of the Outline Planning Application (as varied by Section 73 application Ref. 181194) for the wider development at Hogwood Farm. This Reserved Matters application is for the erection of 161 dwellings and connection to existing associated accesses. This is in relation to two of the Parcels that sit as part of the wider development which benefits from Outline planning permission.

The TN confirms the compliance of the proposed surface water drainage strategy for Parcels 11 & 12 with the approved drainage strategy as part of the flood risk assessment (Ref C85672-R001A prepared by JNP group) submitted as part of the Section 73 application Ref. 181194.

For ease of reference, drawing: 'C85672-SK-204 rev B' from the outline strategy is included in **Appendix F**.

ICOSA have obtained a NAV agreement for the entirety of the Finchwood development. As such, Parcels 11 & 12 have been designed in accordance with ICOSA's requirements and the Design and Construction Guidance for foul and surface water drainage systems, published by Water UK.

DRAINAGE STRATEGY SUMMARY:

Finchwood parcels 11 & 12 contain an overall 161 dwellings split across 6 smaller networks and 1 larger network. The surface water drainage for these areas is separated due to a proposed underground diversion of a HV electrical line creating an easement through the middle of the parcel. The outline strategy, and drainage strategy design for the neighbouring Parcel 10, leaves an impermeable area allowance for certain sections of Parcels 11 & 12 to discharge through.

The surface water strategy is based on utilising Sustainable Drainage Systems (SuDS) and source control techniques to provide on-plot attenuation and underground storage, in conjunction with off-plot basins. As well as the allocated impermeable areas permitted to outfall into neighbouring parcels, the runoff is controlled through the use of SuDS features such as attenuation tanks, permeable paving with integrated tree pits & bio-retention strips before reaching the basins and discharging at a restricted rate into the existing ditches located on the southern and northeastern site boundaries.

Drainage strategy drawings which show the reserved matters proposals are presented as **Appendix A**.

SURFACE WATER DRAINAGE:

To confirm the strategy approved to date that parcels 11 & 12 follow, the surface water runoff from the site has been separated into 5 networks, which are as follows:

- A. One network serving surface water runoff for 32 plots and associated highways, which outfalls into a proposed basin located in the northeast corner of the site prior to discharging into an existing ditch network on the southern site boundary at a restricted rate of 2.0l/s.
- B. A second network serving surface water runoff for 7 plots and associated highways. This discharges northwest into Parcel 10. Where the layout has developed on, and levels altered there is an increase in impermeable area compared to what was allowed for within the Parcel 10 designs. This network still discharges at the QBAR greenfield runoff rate of 2.0l/s which is the equivalent flow from the previously allocated impermeable area.

The following four networks all discharge via Parcel 10 at an unrestricted rate because the impermeable area is compliant with the allowance compensated for within the Parcel 10 designs:

- C. The third network serves surface water runoff for 5 plots and associated highways.
- D. The fourth network serves surface water runoff for 4 plots and associated highways.
- E. The fifth network serves surface water runoff for 7 plots and associated highways.
- F. The sixth network serves surface water runoff for 8 plots and associated highways.
- G. The seventh and final network is the largest and serves 98 plots and associated highways. This network outfalls via Basin 1 located in the southwest corner of the site and discharges into an existing ditch network on the southern site boundary at a restricted rate of 4.2l/s.

The reserved matters surface water drainage strategy follows the principles and details set out during the outline application.

The table below shows the comparison between the discharge rates and storage volumes estimated during the outline strategy and calculated in detail for this reserved matter strategy.

Item	Outline Strategy	Reserved Matters Strategy
Impermeable Area	2.762ha	2.139ha
Catchment Discharge Rate	4.2l/s & 2.0l/s	4.2l/s & 2.0l/s
Storage provided with Porous Paving & Integrated Tree Pits	N/A	595m ³
Storage provided with Attenuation Crates	N/A	186m ³

Storage provided within Swales	N/A	154m ³
Storage provided within Basins	1350m ³	1038m ³
Other Attenuation Volume	763m ³	N/A
Total Storage	2113m ³	1973m ³

Comparison of discharge rates and volumes

KEY DESIGN INPUTS:

The overall Finchwood Development greenfield run-off rates are as follows:

QBAR Discharge Rate = 2.04l/s/ha

Q1 Discharge Rate = 1.74/s/ha

Q30 Discharge Rate = 4.7/s/ha

Q100 Discharge Rate = 6.52/s/ha

At outline planning approval stage, a discharge rate of 4.2l/s was agreed for Parcels 11 & 12A and a rate of 2.0l/s was also agreed for Parcel 12B in line with the surface water drainage strategy. The reserve matters strategy follows these principles and discharge rates as set out in the outline application.

During the development of the RM pack for Parcel 10, the site levels & easement for the HV diversion within Parcels 11 & 12 was considered and therefore catchments within these Parcels were allocated to discharge via Parcel 10.

An extract of the impermeable area plan, to exhibit the contributing areas to each network, is presented as **Appendix D**.

CAUSEWAY FLOW CALCULATIONS:

The detailed Causeway Flow calculations for this parcel showing the maximum discharge rate and storage volume compliance are presented as **Appendix B**. FEH22 model characteristics have been used throughout the modelling process.

EXCEEDANCE ROUTING:

All storms up to the 100-year + 40% climate change storm event are contained within the drainage system and there is no flooding. During the 100-year + 40% climate change storm event there is minor flooding at manholes S36 & S38. An exceedance routing plan has been produced and is presented as **Appendix C**.

SURFACE WATER DISCHARGE QUALITY:

The quality of surface water collected and discharged to the surrounding environment, by direct discharge to watercourses or by infiltration into the ground water, should be managed such that

the receiving bodies are protected from pollution. ICOSA also encourage the reduction of hydrocarbons prior to the outfall into their network. The implementation and installation of suitable SuDS features within the overall surface water drainage network can improve water quality through the removal of pollutants.

'The SuDS Manual' (CIRIA 753) has been developed which includes details of the pollution hazard indices for various land uses. The types of pollution hazards assessed include Total Suspended Solids (TSS), Metals and Hydrocarbons. The pollution indices range between 0 (no pollution) and 1 (high pollution) and are included in Table 26.2 of the SuDS Manual.

The various SuDS features available have been assessed for their suitability and effectiveness for the removal of pollutants from surface water discharge. These pollution mitigation indices are included in Table 26.3 of the SuDS Manual.

To deliver suitable treatment, the proposed SuDS features should provide total pollution mitigation index equal to or that exceed the pollution hazard indices for each contaminant type. (The pollution mitigation and pollution indices should always be assessed for each contaminant type).

The proposed development site has been assessed, and the relevant pollution hazard indices present on the developed site have been shown below in the table below, which is an extract from Table 26.2 of the SuDS Manual.

Land use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons HCs
Residential Roofs	Very Low	0.2	0.2	0.05
Individual property highways, car parks, low traffic roads.	Low	0.5	0.4	0.4

Pollution Hazard Indices for **Parcels 11 & 12**

To deliver adequate treatment, the selected SuDS components should have a total pollution mitigation index (for each contaminant type) that equals or exceeds the pollution hazard indices (for each contaminant type):

$$\text{Total SuDS mitigation indices (for each contaminant type)} \geq \text{Pollution hazard indices (for each contaminant type)}$$

The proposed SuDS features to be included in the surface water drainage strategy have been shown below. There are three forms of the treatment train present within the drainage strategy. The first form of treatment will be 100% effective, but the efficiency decreases as the treatment train continues due to prior treatments already having an impact on the runoff. The four treatment trains are as follows and summary tables for each can be found below:

1. Surface water runoff discharges via bio-retention into the proposed basin
2. Surface water runoff discharges via permeable paving into the proposed basin
3. Surface water runoff discharges via a swale into the proposed basin

4. Surface water runoff discharges directly into the proposed basin

Land use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons HCs
Residential Roofs	Very Low	0.2	0.2	0.05
Individual property highways, car parks, low traffic roads.	Low	0.5	0.4	0.4
Pollution Mitigation Index for Treatment Train 1 - SuDS Measure				
Bio-retention	-	0.8	0.8	0.8
Pond	-	0.7	0.7	0.5

SuDS measure 1 - 100%	0.8	0.8	0.8
SuDS measure 2 - 50%	0.35	0.35	0.25
Total Treatment	1.15	1.15	1.05
Treatment ≥ Requirement	✓		

Pollution Mitigation Index for Treatment Train 2 - SuDS Measure				
Permeable paving	-	0.7	0.6	0.7
Pond	-	0.7	0.7	0.5

SuDS measure 1 - 100%	0.7	0.6	0.7
SuDS measure 2 - 50%	0.35	0.35	0.25
Total Treatment	1.05	0.95	0.95
Treatment ≥ Requirement	✓		

Pollution Mitigation Index for Treatment Train 3 - SuDS Measure				
Swale		0.5	0.6	0.6
Pond	-	0.7	0.7	0.5

SuDS measure 1 - 100%	0.5	0.6	0.6
SuDS measure 2 – 50%	0.35	0.35	0.25
Total Treatment	0.85	0.95	0.5
Treatment ≥ Requirement	✓		

Pollution Mitigation Index for Treatment Train 4 - SuDS Measure				
Pond	-	0.7	0.7	0.5

SuDS measure 1 - 100%	0.7	0.7	0.5
Total Treatment	0.7	0.7	0.5
Treatment ≥ Requirement	✓		

As shown above, the SuDS management train provides a total pollution mitigation index that are equal to or greater than the pollution hazard indices for each contaminant, therefore, the proposed surface water drainage system is considered suitable and sufficient to allow for the discharge to the environment.

Furthermore, the wider development surface water drainage system drains south through Parcel 10 which includes other SuDS components such as attenuation basins and swales. As such, any surface water from Parcels 11 & 12 which discharge via Parcel 10 is at the head of run, will also benefit from all downstream treatment trains before exiting the overall development.

SuDS MAINTENANCE:

It is anticipated that the Client will seek to have the surface water infrastructure adopted and therefore maintained by ICOSA.

The long-term management of surface water drainage assets, including any SuDS components, is essential to ensure they continue to function to their design standard. As such, a management and maintenance plan will need to be developed to ensure the systems continue to work effectively. A summary of the maintenance requirements is summarised in the table below.

Feature	Schedule	Required Action	Frequency
Swale	Regular maintenance	Remove litter and debris	Monthly, or as required
		Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
		Manage other vegetation and remove nuisance plants	Monthly at start, then as required
		Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
		Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
		Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
		Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
	Occasional maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
	Remedial actions	Repair erosion or other damage by re-turfing or reseed	As required
		Relevel uneven surfaces and reinstate design levels	As required
		Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
		Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
		Remove and dispose of oils or petrol residues using safe standard practices	As required
Bioretention Systems	Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess	Quarterly

		standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	
		Check operation of underdrains by inspection of flows after rain	Annually
		Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
		Inspect inlets and outlets for blockage	Quarterly
	Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
		Replace any plants, to maintain planting density	As required
		Remove sediment, litter, and debris build-up from around inlets or from forebays	Quarterly to biannually
	Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
		Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
	Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years
Pervious Pavements	Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
	Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
		Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
	Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
	Monitoring	Initial inspection	Monthly for three months after installation
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	Annually
Attenuation storage tanks	Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
		Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
		For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by	Annually

		sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	
		Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
	Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
	Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
		Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required
Pond	Regular maintenance	Remove litter and debris	Monthly (or as required)
		Cut the grass – public areas	Monthly (during growing season)
		Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
		Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
		Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
		Inspect water body for signs of poor water quality	Monthly (May – October)
		Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
		Check any mechanical devices, e.g., penstocks	Half yearly
		Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
		Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
		Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
		Remove sediment from any forebay.	Every 1–5 years, or as required
		Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
	Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
	Remedial actions	Repair erosion or other damage	As required
		Replant, where necessary	As required
		Aerate pond when signs of eutrophication are detected	As required
		Realign rip-rap or repair other damage	As required
		Repair / rehabilitate inlets, outlets and overflows.	As required
Hydrobrake flow control Chamber	Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Six-monthly
		Remove sediment and debris from flow control chamber.	Annually (or as required after heavy rainfall events).
	Remedial actions	Repair/rehabilitation of inlets.	As required.
	Monitoring	Inspect inlets for blockages, and clear if required. If faults persist jetting an CCTV survey may be required.	Monthly and after large storms.

Summary of SuDS Maintenance Requirements.

FOUL WATER DRAINAGE

The foul water strategy is also split, into 4 smaller networks and 1 larger network. As above, these areas are separated due to the HV cable easement, and an allowance being made for a certain number of plots to discharge via Parcel 10.

All the foul sewers flow via gravity sewer and ultimately reach the proposed foul water pumping station located to the south in Parcels 14 & 15 which form part of the wider development.

Drainage strategy drawings which show the reserved matters proposals are presented as **Appendix A**.

SUMMARY

The attached reserved matters drainage strategy for Parcels 11 & 12 and accompanying calculations show that the proposed development can be drained effectively and complies with the overall approved outline application strategy.

The surface water discharge rate from the proposed parcels which outfall via the proposed basins will be controlled by hydrobrakes at a restricted flow rate of 4.2l/s and 2.0l/s respectively, to control the discharge of surface water into the existing ditches, during all event up to the 1 in 100 year plus 40% climate change in accordance with the SuDS manual CIRIA C753.

Four of the networks which outfall via parcel 10 have unrestricted flows as the impermeable area allowance matches with that which has been compensated for in the parcel 10 designs. The other network which outfalls via parcel 10 is controlled via a hydrobrake restricted to the QBAR greenfield runoff rate of 2l/s as the impermeable area is an increase of that which was allowed for in the Parcel 10 design. This 2l/s is equivalent to the greenfield runoff from the allocated impermeable area.

For all networks, during the 1 in 30-year storm event, there is no flooding.

For all networks, during the 100-year plus 40% climate change storm event, there is minimal flooding at manholes S36 & S38. A flood exceedance plan has been prepared to demonstrate this flooding will not run into any plots and is presented as **Appendix C**.

For return periods greater than the 100-year plus 40% climate change, the finished levels have been designed to direct the surface water away from properties and into the open space areas to the south.

The designed SuDS features provide sufficient treatment for the surface water discharge as the total mitigation indices exceed the pollution hazard indices for each contaminant; therefore, the proposed surface water drainage system is considered suitable and sufficient to allow for the discharge to the environment.

The foul water will be collected by gravity via a proposed piped foul network and will discharge to pump stations contained within the wider development.

It is assumed no section 106 applications will likely be required for discharge connections to existing sewers, but a S104 application will be required for the adoption of sewers & OWC consents will be required for discharge into existing ditches.

This drainage strategy together with accompanying appendices complies with the SuDS manual and the planning conditions.

The pre-development consultation recommendations from Wokingham Borough Council (dated 28.01.25) can be found in **Appendix E**, have been understood and incorporated within the design and throughout the technical note.

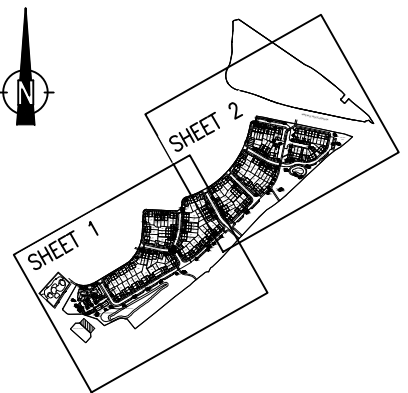
Further to discussions with Wokingham Borough Council, the request for SuDS features and drainage integration within landscaping areas has been reviewed thoroughly. Where possible, these features have been incorporated within the designs. Permeable paving, with integrated tree pits, are proposed in various locations across the parcels. Bio-retention areas are also specified as a highway SuDS feature where the levels allow the carriageway to drain directly into these prior to discharging into the sewers. A small swale is also utilised to drain some of the private driveway areas. Also, as proposed within the original planning application, SuDS features will be incorporated into the wider downstream network to improve both the storage and treatment of surface water runoff. There will be ample treatment to any surface water runoff as a whole site. At detailed design stage, the potential for small on-plot SuDS is to be reviewed and incorporated if possible. Features such as water butts will be incorporated site wide as they are required under Condition 51 of the S73 application. These will provide further benefit when capturing rainwater at its source.

Appendix A

DRAINAGE STRATEGY DRAWINGS



- NOTES:
1. DO NOT SCALE FROM THIS DRAWING.
 2. ALL DIMENSIONS ARE IN METRES, UNLESS STATED OTHERWISE.
 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT SCHEME DRAWINGS AND SPECIFICATIONS.



SHEET KEY

- KEY
- SITE BOUNDARY
 - UNDERGROUND DIVERSION EASEMENT OF EXISTING OVERHEAD ELECTRIC CABLE
 - EXISTING OIL MAIN EASEMENT
 - PROPOSED PERMEABLE PAVING
 - PROPOSED ATTENUATION TANK
 - PROPOSED BIORETENTION STRIP
 - BIORETENTION INGRESS WITH EROSION PROTECTION
 - PROPOSED INDICATIVE ROAD GULLY
 - PROPOSED SW SEWER
 - PROPOSED FW SEWER
 - SURROUNDING PARCEL SW SEWER
 - SURROUNDING PARCEL FW SEWER
 - HIGHWAY DRAIN
 - TREE ROOT PROTECTION AREA
 - PROPOSED HEADWALL

PRELIMINARY ISSUE

SO P06	BACKGROUND SITE LAYOUT UPDATE	HF	TA	14.10.25
SO P05	UPDATED TO SUIT LATEST SITE LAYOUT	TV	TA	23.09.25
SO P04	UPDATED TO SUIT LATEST SITE LAYOUT & WBC COMMENTS	HF	TA	11.09.25
SO P03	UPDATED TO SUIT LATEST SITE LAYOUT & WBC COMMENTS	HF	TA	07.08.25
SO P02	UPDATED TO SUIT LATEST SITE LAYOUT	HF	TA	10.04.25
ST Rev	Description	Drm	Chk	Date

REVISIONS				
Preliminary Issue	✓	Submitted for S104		
Planning Issue		Issued for Tender		
Submitted for S38		Issued for Construction		
Submitted for S278		As Built		
DRAWING STATUS				

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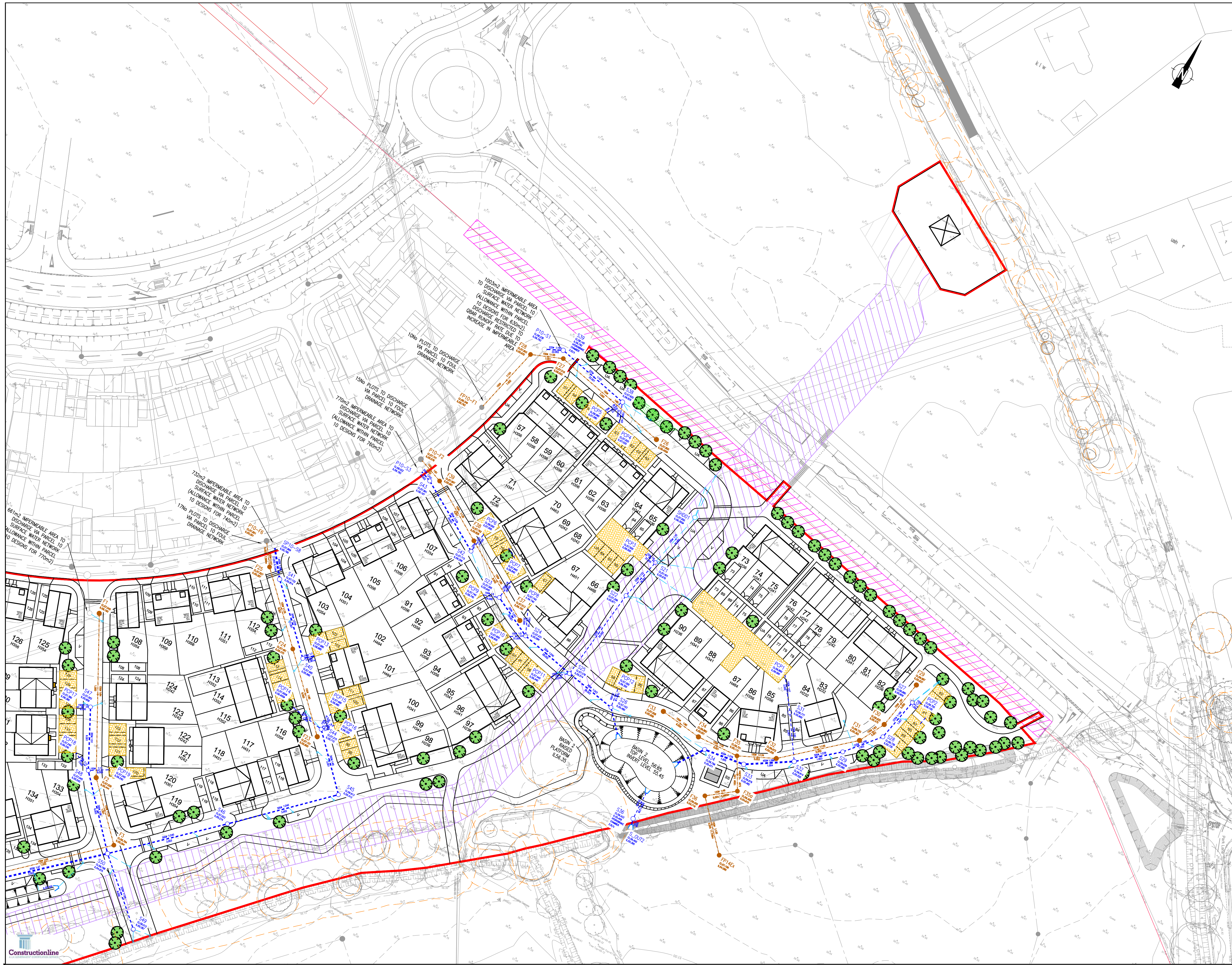
Bovis Homes **Linden Homes** **Countryside Homes** **Countryside Partnerships**

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JOB TITLE
FINCHWOOD PARCELS 11, 12 & 13

DRAWING TITLE
**PARCEL 11 AND 12 PROPOSED DRAINAGE
SHEET 1 OF 2**

DATE	3 MARCH 2025	DRAWN	TA	CHECKED	KJM	SCALE	1:500	BY	SO
DRAWING NO.	7292.011	REV							
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SHEET KEY

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- UNDERGROUND DIVERSION EASEMENT OF EXISTING OVERHEAD ELECTRIC CABLE
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S0 P04	UPDATED TO SUIT LATEST SITE LAYOUT & WBC COMMENTS	HF	TA	11.09.25
S0 P03	UPDATED TO SUIT LATEST SITE LAYOUT & WBC COMMENTS	HF	TA	07.08.25
S0 P02	UPDATED TO SUIT LATEST SITE LAYOUT	HF	TA	10.04.25
ST Rev	Description	Dwn	Chk	Date

Preliminary Issue	Submitted for S104	
Planning Issue	Issued for Tender	
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DRAWING STATUS

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Bovis Homes **Linden Homes** **COUNTRYSIDE HOMES** **Countryside Partnerships**

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JOB TITLE

FINCHWOOD PARCELS 11, 12 & 13

DRAWING TITLE

PARCEL 11 AND 12
PROPOSED DRAINAGE
SHEET 2 OF 2

DATE	DRAWN	CHECKED	SCALE	SHEET
MARCH 2025	TA	KJM	1:500	041

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Appendix B

CAUSEWAY SURFACE WATER FLOW 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	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
PCP2	0.012	5.00	56.700	1200	477648.100	164484.725	0.600
27	0.037	5.00	56.934	1200	477646.055	164485.155	1.125
28	0.015	5.00	56.739	1200	477643.512	164472.269	1.009
29	0.017	5.00	56.639	1200	477635.496	164462.728	1.059
PCP1	0.073	5.00	56.860	1200	477610.068	164473.766	0.800
31	0.008	5.00	56.777	1200	477616.516	164465.109	0.877
32	0.007	5.00	56.614	1350	477624.619	164453.376	1.094
33	0.018	5.00	56.679	1350	477612.261	164445.447	1.197
34	0.029	5.00	56.796	1200	477600.266	164443.603	1.346
PCP14	0.028	5.00	57.450	1200	477490.282	164395.425	1.000
PCP15	0.013	5.00	57.480	1200	477500.702	164399.261	1.000
PCP16	0.022	5.00	57.320	1200	477503.212	164396.796	1.000
44	0.022	5.00	57.215	1200	477500.483	164394.015	1.500
45	0.043	5.00	56.913	1200	477514.171	164379.948	1.500
46	0.036	5.00	57.023	1200	477490.293	164356.714	1.749
PCP17	0.018	5.00	57.380	1200	477435.458	164364.707	1.000
47	0.041	5.00	57.409	1200	477439.019	164366.717	1.500
PCP18	0.022	5.00	57.240	1200	477441.832	164353.082	1.000
PCP19	0.019	5.00	57.240	1200	477452.570	164353.447	1.000
48	0.025	5.00	57.045	1200	477447.522	164350.337	1.500
49	0.020	5.00	56.512	1200	477481.557	164316.670	1.125
50	0.032	5.00	56.768	1350	477464.240	164332.111	1.793
7	0.038	5.00	55.686	1350	477431.815	164302.460	1.650
8	0.032	5.00	56.768	1350	477408.674	164281.052	3.068
SWALE1	0.052	5.00	56.000	1200	477456.585	164316.660	0.800
SWALE2	0.011	5.00	55.000	1200	477411.600	164276.276	0.800
SWALE3	0.000		54.900	1200	477403.522	164268.313	0.800
9	0.000		55.102	1350	477395.662	164271.602	1.650
1	0.044	5.00	57.216	1200	477377.897	164355.317	1.966
PCP21	0.026	5.00	56.640	1200	477381.396	164328.317	1.000
PCP20	0.026	5.00	56.420	1200	477371.948	164325.202	1.000
2	0.041	5.00	56.441	1200	477375.625	164324.602	1.941
3	0.020	5.00	56.241	1200	477319.524	164299.776	2.241
PCP22	0.035	5.00	56.200	1200	477330.945	164291.612	1.000
4	0.065	5.00	56.063	1200	477337.238	164296.081	2.425
5	0.015	5.00	55.865	1200	477356.664	164293.146	2.500
6	0.061	5.00	55.740	1200	477365.959	164294.438	2.801
10	0.104	5.00	54.890	1350	477383.816	164264.507	2.246
11	0.063	5.00	54.092	1350	477339.692	164237.882	1.582
12	0.090	5.00	53.580	1350	477303.710	164216.685	1.181
PCP24	0.040	5.00	54.750	1200	477217.458	164193.220	1.000
PCP23	0.053	5.00	54.500	1200	477221.732	164186.017	1.000

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
PCP25	0.058	5.00	54.850	1200	477226.408	164200.918	1.000
13	0.045	5.00	54.850	1200	477229.198	164196.010	1.650
14	0.090	5.00	55.764	1200	477240.228	164230.409	1.425
15	0.016	5.00	54.924	1200	477253.105	164209.256	2.534
16	0.012	5.00	54.518	1350	477259.293	164198.975	2.163
17	0.005	5.00	54.318	1350	477264.190	164196.045	1.978
18	0.037		54.098	1200	477271.172	164196.594	1.798
HD01	0.025	5.00	57.650	1200	477564.730	164500.873	1.350
PCP4	0.022	5.00	57.920	1200	477532.070	164513.881	0.900
PCP5	0.029	5.00	58.080	1200	477527.559	164514.800	1.000
38	0.026	5.00	57.920	1350	477529.933	164519.653	0.991
39	0.000		58.140	1350	477507.589	164524.289	1.348
P10-S1	0.000		58.238	1200	477503.303	164522.172	1.475
BASIN 1		5.00	53.500	1200	477278.897	164178.542	1.200
S_OUT	0.000	5.00	53.250	1200	477286.046	164141.896	1.130
PCP13	0.012	5.00	57.680	1200	477488.249	164411.528	1.000
40	0.023	5.00	57.490	1200	477485.732	164409.270	1.500
41	0.049	5.00	57.732	1350	477468.592	164425.951	1.918
P10-S8	0.000		57.869	1200	477462.948	164433.120	2.079
PCP6	0.017	5.00	58.000	1200	477513.753	164466.454	1.000
42	0.035	5.00	57.715	1200	477512.950	164460.383	1.419
43	0.022	5.00	57.961	1200	477492.489	164472.226	1.764
P10-S3	0.000		58.022	1200	477489.231	164473.390	1.839
BASIN 2		5.00	56.650	1200	477591.609	164425.696	1.200
36	0.000		56.433	1350	477592.070	164415.933	1.024
S_OUT2	0.000		56.400	1200	477592.857	164412.938	1.010
PCP3	0.029	5.00	57.500	1200	477557.440	164484.496	1.000
21	0.043	5.00	57.401	1200	477561.140	164483.782	1.425
22	0.000		57.296	1200	477558.440	164471.281	1.425
PCP7	0.023	5.00	57.840		477527.318	164458.513	1.000
PCP9	0.018	5.00	57.740		477522.229	164451.074	1.000
23	0.011	5.00	57.565	1200	477526.709	164452.704	1.925
PCP8	0.019	5.00	57.740		477535.580	164453.847	1.000
PCP10	0.019	5.00	57.600		477534.861	164444.346	1.000
24	0.011	5.00	57.431	1200	477538.807	164446.767	1.847
PCP11	0.023	5.00	57.440		477551.039	164440.007	1.000
25	0.010	5.00	57.278	1200	477555.279	164443.511	1.764
PCP12	0.020	5.00	57.300		477569.696	164446.562	1.000
26	0.017		57.101	1200	477570.582	164440.887	1.651
19			53.500	1200	477282.760	164174.217	1.245

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	PCP2	27	2.090	0.600	56.100	55.809	0.291	7.2	150	5.01	50.0
1.001	27	28	13.135	0.600	55.809	55.730	0.079	166.3	225	5.23	50.0
1.002	28	29	12.461	0.600	55.730	55.655	0.075	166.1	225	5.43	50.0
1.003	29	32	14.345	0.600	55.580	55.520	0.060	239.1	300	5.67	50.0
2.000	PCP1	31	10.794	0.600	56.060	55.900	0.160	67.5	150	5.15	50.0
2.001	31	32	14.259	0.600	55.900	55.670	0.230	62.0	150	5.33	50.0
1.004	32	33	14.683	0.600	55.520	55.482	0.038	386.4	450	5.91	50.0
1.005	33	34	12.136	0.600	55.482	55.450	0.032	379.3	450	6.10	50.0
3.000	PCP14	44	10.298	0.600	56.450	55.865	0.585	17.6	150	5.07	50.0
4.000	PCP15	44	5.251	0.600	56.480	55.865	0.615	8.5	150	5.03	50.0
5.000	PCP16	44	3.896	0.600	56.320	55.865	0.455	8.6	150	5.02	50.0
3.001	44	45	19.628	0.600	55.715	55.413	0.302	65.0	300	5.24	50.0
3.002	45	46	33.316	0.600	55.413	55.274	0.139	239.7	300	5.79	50.0
3.003	46	50	35.834	0.600	55.274	55.125	0.149	240.5	300	6.38	50.0
6.000	PCP17	47	4.089	0.600	56.380	56.059	0.321	12.7	150	5.02	50.0
6.001	47	48	18.455	0.600	55.909	55.545	0.364	50.7	300	5.16	50.0
7.000	PCP18	48	6.318	0.600	56.240	55.695	0.545	11.6	150	5.04	50.0
8.000	PCP19	48	5.929	0.600	56.240	55.695	0.545	10.9	150	5.03	50.0
6.002	48	50	24.732	0.600	55.545	55.125	0.420	58.9	300	5.36	50.0
9.000	49	50	23.201	0.600	55.387	55.200	0.187	124.1	225	5.33	50.0
3.004	50	7	43.938	0.600	54.975	54.036	0.939	46.8	450	6.63	50.0
3.005	7	8	31.525	0.600	54.036	53.700	0.336	93.8	450	6.88	50.0
3.006	8	9	16.082	0.600	53.700	53.452	0.248	64.8	450	6.98	50.0
10.000	SWALE1	SWALE2	60.453	0.035	55.200	54.200	1.000	60.5	500	5.49	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	3.783	66.9	1.6	0.450	0.975	0.012	0.0	16	1.589
1.001	1.011	40.2	6.6	0.900	0.784	0.049	0.0	62	0.753
1.002	1.011	40.2	8.7	0.784	0.759	0.064	0.0	71	0.810
1.003	1.012	71.5	11.0	0.759	0.794	0.081	0.0	79	0.737
2.000	1.226	21.7	9.9	0.650	0.727	0.073	0.0	71	1.199
2.001	1.279	22.6	11.0	0.727	0.794	0.081	0.0	74	1.269
1.004	1.028	163.5	22.9	0.644	0.747	0.169	0.0	113	0.732
1.005	1.038	165.0	25.3	0.747	0.896	0.187	0.0	118	0.758
3.000	2.412	42.6	3.8	0.850	1.200	0.028	0.0	30	1.497
4.000	3.469	61.3	1.8	0.850	1.200	0.013	0.0	17	1.524
5.000	3.464	61.2	3.0	0.850	1.200	0.022	0.0	23	1.802
3.001	1.953	138.0	11.5	1.200	1.200	0.085	0.0	58	1.200
3.002	1.011	71.5	17.3	1.200	1.449	0.128	0.0	100	0.838
3.003	1.009	71.3	22.2	1.449	1.343	0.164	0.0	115	0.894
6.000	2.838	50.1	2.4	0.850	1.200	0.018	0.0	23	1.475
6.001	2.213	156.4	8.0	1.200	1.200	0.059	0.0	45	1.172
7.000	2.975	52.6	3.0	0.850	1.200	0.022	0.0	24	1.621
8.000	3.072	54.3	2.6	0.850	1.200	0.019	0.0	22	1.571
6.002	2.052	145.1	16.9	1.200	1.343	0.125	0.0	69	1.388
9.000	1.172	46.6	2.7	0.900	1.343	0.020	0.0	36	0.641
3.004	2.978	473.6	46.2	1.343	1.200	0.341	0.0	94	1.916
3.005	2.099	333.8	51.4	1.200	2.618	0.379	0.0	118	1.537
3.006	2.527	402.0	55.7	2.618	1.200	0.411	0.0	112	1.798
10.000	2.052	4760.7	7.0	0.000	0.000	0.052	0.0	34	0.344

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
10.001	SWALE2	SWALE3	11.343	0.035	54.200	54.100	0.100	113.4	500	5.62	50.0
10.002	SWALE3	9	8.520	0.600	54.100	53.602	0.498	17.1	150	5.68	50.0
3.007	9	10	13.808	0.600	53.452	53.240	0.212	65.1	450	7.07	50.0
11.000	1	2	30.799	0.600	55.250	54.575	0.675	45.6	225	5.26	50.0
12.000	PCP21	2	6.863	0.600	55.640	54.650	0.990	6.9	150	5.03	50.0
13.000	PCP20	2	3.726	0.600	55.420	54.650	0.770	4.8	150	5.01	50.0
11.001	2	6	31.675	0.600	54.500	52.939	1.561	20.3	300	5.42	50.0
14.000	3	4	18.095	0.600	54.000	53.638	0.362	50.0	300	5.14	50.0
15.000	PCP22	4	7.718	0.600	55.200	53.713	1.487	5.2	150	5.03	50.0
14.001	4	5	19.646	0.600	53.638	53.440	0.198	99.2	300	5.34	50.0
14.002	5	6	9.384	0.600	53.365	52.939	0.426	22.0	300	5.39	50.0
11.002	6	10	34.853	0.600	52.939	52.794	0.145	240.4	300	5.99	50.0
3.008	10	11	51.535	0.600	52.644	52.510	0.134	384.6	450	7.91	50.0
3.009	11	12	41.761	0.600	52.510	52.399	0.111	376.2	450	8.57	50.0
3.010	12	18	38.241	0.600	52.399	52.300	0.099	386.3	450	9.19	50.0
17.000	PCP24	13	12.067	0.600	53.750	53.350	0.400	30.2	150	5.11	50.0
16.000	PCP23	13	12.474	0.600	53.500	53.350	0.150	83.2	150	5.19	50.0
18.000	PCP25	13	5.646	0.600	53.850	53.350	0.500	11.3	150	5.03	50.0
16.001	13	15	27.331	0.600	53.200	52.465	0.735	37.2	300	5.36	50.0
19.000	14	15	24.764	0.600	54.339	52.540	1.799	13.8	225	5.12	50.0
16.002	15	16	12.000	0.600	52.390	52.355	0.035	342.9	450	5.55	50.0
16.003	16	17	5.707	0.600	52.355	52.340	0.015	380.5	450	5.64	50.0
16.004	17	18	7.004	0.600	52.340	52.320	0.020	350.2	450	5.75	50.0
26.000_1	HD01	21	17.464	0.600	56.300	56.051	0.249	70.1	150	5.24	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
10.001	1.498	3475.5	8.5	0.000	0.000	0.063	0.0	46	0.297
10.002	2.447	43.2	8.5	0.650	1.350	0.063	0.0	45	1.904
3.007	2.522	401.1	64.2	1.200	1.200	0.474	0.0	121	1.869
11.000	1.941	77.2	6.0	1.741	1.641	0.044	0.0	42	1.155
12.000	3.851	68.1	3.5	0.850	1.641	0.026	0.0	23	2.036
13.000	4.612	81.5	3.5	0.850	1.641	0.026	0.0	21	2.323
11.001	3.505	247.8	18.6	1.641	2.501	0.137	0.0	55	2.080
14.000	2.229	157.5	2.7	1.941	2.125	0.020	0.0	27	0.857
15.000	4.453	78.7	4.7	0.850	2.200	0.035	0.0	25	2.464
14.001	1.578	111.6	16.3	2.125	2.125	0.120	0.0	77	1.136
14.002	3.364	237.8	18.3	2.200	2.501	0.135	0.0	56	2.021
11.002	1.009	71.4	45.1	2.501	1.796	0.333	0.0	173	1.066
3.008	1.030	163.9	123.5	1.796	1.132	0.911	0.0	293	1.128
3.009	1.042	165.7	132.0	1.132	0.731	0.974	0.0	305	1.151
3.010	1.028	163.5	144.2	0.731	1.348	1.064	0.0	330	1.154
17.000	1.839	32.5	5.4	0.850	1.350	0.040	0.0	41	1.368
16.000	1.103	19.5	7.2	0.850	1.350	0.053	0.0	63	1.020
18.000	3.015	53.3	7.9	0.850	1.350	0.058	0.0	39	2.171
16.001	2.586	182.8	26.6	1.350	2.159	0.196	0.0	77	1.864
19.000	3.545	141.0	12.2	1.200	2.159	0.090	0.0	44	2.191
16.002	1.092	173.7	40.9	2.084	1.713	0.302	0.0	148	0.899
16.003	1.036	164.8	42.6	1.713	1.528	0.314	0.0	155	0.873
16.004	1.080	171.8	43.2	1.528	1.328	0.319	0.0	153	0.906
26.000_1	1.202	21.2	3.4	1.200	1.200	0.025	0.0	41	0.885

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
22.000	PCP4	38	5.722	0.600	57.020	56.929	0.091	62.9	150	5.08	50.0
23.000_1	PCP5	38	5.699	0.600	57.080	56.929	0.151	37.7	150	5.06	50.0
22.001	38	39	22.820	0.600	56.929	56.792	0.137	166.6	225	5.45	50.0
22.002	39	P10-S1	4.780	0.600	56.792	56.763	0.029	164.8	225	5.53	50.0
23.000	BASIN 1	19	5.799	0.600	52.300	52.255	0.045	128.9	300	5.07	50.0
24.000	PCP13	40	3.381	0.600	56.680	56.210	0.470	7.2	150	5.01	50.0
24.001	40	41	23.917	0.600	55.990	55.890	0.100	239.2	300	5.41	50.0
24.002	41	P10-S8	9.124	0.600	55.814	55.790	0.024	380.2	450	5.56	50.0
25.000	PCP6	42	6.124	0.600	57.000	56.573	0.427	14.3	150	5.04	50.0
25.001	42	43	23.641	0.600	56.296	56.197	0.099	238.8	300	5.43	50.0
25.002	43	P10-S3	3.460	0.600	56.197	56.183	0.014	247.1	300	5.49	50.0
26.000	BASIN 2	36	9.774	0.600	55.450	55.409	0.041	238.4	300	5.16	50.0
26.001	36	S_OUT2	3.097	0.600	55.409	55.390	0.019	163.0	300	5.20	50.0
27.000	PCP3	21	3.768	0.600	56.500	56.087	0.413	9.1	150	5.02	50.0
27.001	21	22	12.789	0.600	55.976	55.871	0.105	121.8	225	5.42	50.0
27.002	22	25	27.949	0.600	55.871	55.589	0.282	99.1	225	5.78	50.0
28.000	PCP7	23	5.841	0.600	56.840	55.790	1.050	5.6	150	5.02	50.0
29.000	PCP9	23	4.767	0.600	56.740	55.790	0.950	5.0	150	5.02	50.0
28.001	23	24	13.476	0.600	55.640	55.584	0.056	240.6	300	5.25	50.0
30.000	PCP8	24	7.781	0.600	56.740	55.734	1.006	7.7	150	5.04	50.0
31.000	PCP10	24	4.629	0.600	56.600	55.734	0.866	5.3	150	5.02	50.0
28.002	24	25	16.791	0.600	55.584	55.514	0.070	239.9	300	5.52	50.0
32.000	PCP11	25	5.501	0.600	56.440	55.664	0.776	7.1	150	5.02	50.0
27.003	25	26	15.526	0.600	55.514	55.450	0.064	242.6	300	6.03	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
22.000	1.270	22.4	3.0	0.750	0.841	0.022	0.0	37	0.881
23.000_1	1.643	29.0	3.9	0.850	0.841	0.029	0.0	37	1.151
22.001	1.010	40.2	10.4	0.766	1.123	0.077	0.0	78	0.850
22.002	1.015	40.4	10.4	1.123	1.250	0.077	0.0	78	0.854
23.000	1.383	97.8	0.0	0.900	0.945	0.000	0.0	0	0.000
24.000	3.780	66.8	1.6	0.850	1.130	0.012	0.0	16	1.588
24.001	1.012	71.5	4.7	1.200	1.542	0.035	0.0	52	0.578
24.002	1.036	164.8	11.4	1.468	1.629	0.084	0.0	80	0.604
25.000	2.674	47.2	2.3	0.850	0.992	0.017	0.0	23	1.389
25.001	1.013	71.6	7.0	1.119	1.464	0.052	0.0	63	0.649
25.002	0.995	70.4	10.0	1.464	1.539	0.074	0.0	76	0.709
26.000	1.014	71.7	0.0	0.900	0.724	0.000	0.0	0	0.000
26.001	1.229	86.8	0.0	0.724	0.710	0.000	0.0	0	0.000
27.000	3.355	59.3	3.9	0.850	1.164	0.029	0.0	26	1.908
27.001	1.183	47.0	13.1	1.200	1.200	0.097	0.0	81	1.019
27.002	1.313	52.2	13.1	1.200	1.464	0.097	0.0	77	1.099
28.000	4.301	76.0	3.1	0.850	1.625	0.023	0.0	21	2.128
29.000	4.529	80.0	2.4	0.850	1.625	0.018	0.0	18	2.035
28.001	1.009	71.3	7.0	1.625	1.547	0.052	0.0	64	0.650
30.000	3.645	64.4	2.6	0.850	1.547	0.019	0.0	20	1.770
31.000	4.388	77.5	2.6	0.850	1.547	0.019	0.0	18	2.013
28.002	1.011	71.4	13.7	1.547	1.464	0.101	0.0	89	0.785
32.000	3.808	67.3	3.1	0.850	1.464	0.023	0.0	22	1.949
27.003	1.005	71.0	31.3	1.464	1.351	0.231	0.0	139	0.974

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
33.000	PCP12	26	5.744	0.600	56.300	55.600	0.700	8.2	150	5.03	50.0
23.001	19	S_OUT	32.488	0.600	52.255	52.120	0.135	240.7	300	5.61	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
33.000	3.539	62.5	2.7	0.850	1.351	0.020	0.0	21	1.781
23.001	1.009	71.3	0.0	0.945	0.830	0.000	0.0	0	0.000

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	2.090	7.2	150	Circular_Default Sewer Type	56.700	56.100	0.450	56.934	55.809	0.975
1.001	13.135	166.3	225	Circular_Default Sewer Type	56.934	55.809	0.900	56.739	55.730	0.784
1.002	12.461	166.1	225	Circular_Default Sewer Type	56.739	55.730	0.784	56.639	55.655	0.759
1.003	14.345	239.1	300	Circular_Default Sewer Type	56.639	55.580	0.759	56.614	55.520	0.794
2.000	10.794	67.5	150	Circular_Default Sewer Type	56.860	56.060	0.650	56.777	55.900	0.727
2.001	14.259	62.0	150	Circular_Default Sewer Type	56.777	55.900	0.727	56.614	55.670	0.794
1.004	14.683	386.4	450	Circular_Default Sewer Type	56.614	55.520	0.644	56.679	55.482	0.747
1.005	12.136	379.3	450	Circular_Default Sewer Type	56.679	55.482	0.747	56.796	55.450	0.896
3.000	10.298	17.6	150	Circular_Default Sewer Type	57.450	56.450	0.850	57.215	55.865	1.200
4.000	5.251	8.5	150	Circular_Default Sewer Type	57.480	56.480	0.850	57.215	55.865	1.200
5.000	3.896	8.6	150	Circular_Default Sewer Type	57.320	56.320	0.850	57.215	55.865	1.200
3.001	19.628	65.0	300	Circular_Default Sewer Type	57.215	55.715	1.200	56.913	55.413	1.200
3.002	33.316	239.7	300	Circular_Default Sewer Type	56.913	55.413	1.200	57.023	55.274	1.449
3.003	35.834	240.5	300	Circular_Default Sewer Type	57.023	55.274	1.449	56.768	55.125	1.343
6.000	4.089	12.7	150	Circular_Default Sewer Type	57.380	56.380	0.850	57.409	56.059	1.200
6.001	18.455	50.7	300	Circular_Default Sewer Type	57.409	55.909	1.200	57.045	55.545	1.200
7.000	6.318	11.6	150	Circular_Default Sewer Type	57.240	56.240	0.850	57.045	55.695	1.200
8.000	5.929	10.9	150	Circular_Default Sewer Type	57.240	56.240	0.850	57.045	55.695	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	PCP2	1200	Manhole	Adoptable	27	1200	Manhole	Adoptable
1.001	27	1200	Manhole	Adoptable	28	1200	Manhole	Adoptable
1.002	28	1200	Manhole	Adoptable	29	1200	Manhole	Adoptable
1.003	29	1200	Manhole	Adoptable	32	1350	Manhole	Adoptable
2.000	PCP1	1200	Manhole	Adoptable	31	1200	Manhole	Adoptable
2.001	31	1200	Manhole	Adoptable	32	1350	Manhole	Adoptable
1.004	32	1350	Manhole	Adoptable	33	1350	Manhole	Adoptable
1.005	33	1350	Manhole	Adoptable	34	1200	Manhole	Adoptable
3.000	PCP14	1200	Manhole	Adoptable	44	1200	Manhole	Adoptable
4.000	PCP15	1200	Manhole	Adoptable	44	1200	Manhole	Adoptable
5.000	PCP16	1200	Manhole	Adoptable	44	1200	Manhole	Adoptable
3.001	44	1200	Manhole	Adoptable	45	1200	Manhole	Adoptable
3.002	45	1200	Manhole	Adoptable	46	1200	Manhole	Adoptable
3.003	46	1200	Manhole	Adoptable	50	1350	Manhole	Adoptable
6.000	PCP17	1200	Manhole	Adoptable	47	1200	Manhole	Adoptable
6.001	47	1200	Manhole	Adoptable	48	1200	Manhole	Adoptable
7.000	PCP18	1200	Manhole	Adoptable	48	1200	Manhole	Adoptable
8.000	PCP19	1200	Manhole	Adoptable	48	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)
6.002	24.732	58.9	300	Circular_Default Sewer Type	57.045	55.545	1.200	56.768	55.125	1.343
9.000	23.201	124.1	225	Circular_Default Sewer Type	56.512	55.387	0.900	56.768	55.200	1.343
3.004	43.938	46.8	450	Circular_Default Sewer Type	56.768	54.975	1.343	55.686	54.036	1.200
3.005	31.525	93.8	450	Circular_Default Sewer Type	55.686	54.036	1.200	56.768	53.700	2.618
3.006	16.082	64.8	450	Circular_Default Sewer Type	56.768	53.700	2.618	55.102	53.452	1.200
10.000	60.453	60.5	500	SWALE	56.000	55.200	0.000	55.000	54.200	0.000
10.001	11.343	113.4	500	SWALE	55.000	54.200	0.000	54.900	54.100	0.000
10.002	8.520	17.1	150	Circular_Default Sewer Type	54.900	54.100	0.650	55.102	53.602	1.350
3.007	13.808	65.1	450	Circular_Default Sewer Type	55.102	53.452	1.200	54.890	53.240	1.200
11.000	30.799	45.6	225	Circular_Default Sewer Type	57.216	55.250	1.741	56.441	54.575	1.641
12.000	6.863	6.9	150	Circular_Default Sewer Type	56.640	55.640	0.850	56.441	54.650	1.641
13.000	3.726	4.8	150	Circular_Default Sewer Type	56.420	55.420	0.850	56.441	54.650	1.641
11.001	31.675	20.3	300	Circular_Default Sewer Type	56.441	54.500	1.641	55.740	52.939	2.501
14.000	18.095	50.0	300	Circular_Default Sewer Type	56.241	54.000	1.941	56.063	53.638	2.125
15.000	7.718	5.2	150	Circular_Default Sewer Type	56.200	55.200	0.850	56.063	53.713	2.200
14.001	19.646	99.2	300	Circular_Default Sewer Type	56.063	53.638	2.125	55.865	53.440	2.125
14.002	9.384	22.0	300	Circular_Default Sewer Type	55.865	53.365	2.200	55.740	52.939	2.501
11.002	34.853	240.4	300	Circular_Default Sewer Type	55.740	52.939	2.501	54.890	52.794	1.796
3.008	51.535	384.6	450	Circular_Default Sewer Type	54.890	52.644	1.796	54.092	52.510	1.132
3.009	41.761	376.2	450	Circular_Default Sewer Type	54.092	52.510	1.132	53.580	52.399	0.731
3.010	38.241	386.3	450	Circular_Default Sewer Type	53.580	52.399	0.731	54.098	52.300	1.348
17.000	12.067	30.2	150	Circular_Default Sewer Type	54.750	53.750	0.850	54.850	53.350	1.350
16.000	12.474	83.2	150	Circular_Default Sewer Type	54.500	53.500	0.850	54.850	53.350	1.350
18.000	5.646	11.3	150	Circular_Default Sewer Type	54.850	53.850	0.850	54.850	53.350	1.350
16.001	27.331	37.2	300	Circular_Default Sewer Type	54.850	53.200	1.350	54.924	52.465	2.159

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6.002	48	1200	Manhole	Adoptable	50	1350	Manhole	Adoptable
9.000	49	1200	Manhole	Adoptable	50	1350	Manhole	Adoptable
3.004	50	1350	Manhole	Adoptable	7	1350	Manhole	Adoptable
3.005	7	1350	Manhole	Adoptable	8	1350	Manhole	Adoptable
3.006	8	1350	Manhole	Adoptable	9	1350	Manhole	Adoptable
10.000	SWALE1	1200	Manhole	Adoptable	SWALE2	1200	Manhole	Adoptable
10.001	SWALE2	1200	Manhole	Adoptable	SWALE3	1200	Manhole	Adoptable
10.002	SWALE3	1200	Manhole	Adoptable	9	1350	Manhole	Adoptable
3.007	9	1350	Manhole	Adoptable	10	1350	Manhole	Adoptable
11.000	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
12.000	PCP21	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
13.000	PCP20	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
11.001	2	1200	Manhole	Adoptable	6	1200	Manhole	Adoptable
14.000	3	1200	Manhole	Adoptable	4	1200	Manhole	Adoptable
15.000	PCP22	1200	Manhole	Adoptable	4	1200	Manhole	Adoptable
14.001	4	1200	Manhole	Adoptable	5	1200	Manhole	Adoptable
14.002	5	1200	Manhole	Adoptable	6	1200	Manhole	Adoptable
11.002	6	1200	Manhole	Adoptable	10	1350	Manhole	Adoptable
3.008	10	1350	Manhole	Adoptable	11	1350	Manhole	Adoptable
3.009	11	1350	Manhole	Adoptable	12	1350	Manhole	Adoptable
3.010	12	1350	Manhole	Adoptable	18	1200	Manhole	Adoptable
17.000	PCP24	1200	Manhole	Adoptable	13	1200	Manhole	Adoptable
16.000	PCP23	1200	Manhole	Adoptable	13	1200	Manhole	Adoptable
18.000	PCP25	1200	Manhole	Adoptable	13	1200	Manhole	Adoptable
16.001	13	1200	Manhole	Adoptable	15	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)
19.000	24.764	13.8	225	Circular_Default Sewer Type	55.764	54.339	1.200	54.924	52.540	2.159
16.002	12.000	342.9	450	Circular_Default Sewer Type	54.924	52.390	2.084	54.518	52.355	1.713
16.003	5.707	380.5	450	Circular_Default Sewer Type	54.518	52.355	1.713	54.318	52.340	1.528
16.004	7.004	350.2	450	Circular_Default Sewer Type	54.318	52.340	1.528	54.098	52.320	1.328
26.000_1	17.464	70.1	150	Circular_Default Sewer Type	57.650	56.300	1.200	57.401	56.051	1.200
22.000	5.722	62.9	150	Circular_Default Sewer Type	57.920	57.020	0.750	57.920	56.929	0.841
23.000_1	5.699	37.7	150	Circular_Default Sewer Type	58.080	57.080	0.850	57.920	56.929	0.841
22.001	22.820	166.6	225	Circular_Default Sewer Type	57.920	56.929	0.766	58.140	56.792	1.123
22.002	4.780	164.8	225	Circular_Default Sewer Type	58.140	56.792	1.123	58.238	56.763	1.250
23.000	5.799	128.9	300	Circular_Default Sewer Type	53.500	52.300	0.900	53.500	52.255	0.945
24.000	3.381	7.2	150	Circular_Default Sewer Type	57.680	56.680	0.850	57.490	56.210	1.130
24.001	23.917	239.2	300	Circular_Default Sewer Type	57.490	55.990	1.200	57.732	55.890	1.542
24.002	9.124	380.2	450	Circular_Default Sewer Type	57.732	55.814	1.468	57.869	55.790	1.629
25.000	6.124	14.3	150	Circular_Default Sewer Type	58.000	57.000	0.850	57.715	56.573	0.992
25.001	23.641	238.8	300	Circular_Default Sewer Type	57.715	56.296	1.119	57.961	56.197	1.464
25.002	3.460	247.1	300	Circular_Default Sewer Type	57.961	56.197	1.464	58.022	56.183	1.539
26.000	9.774	238.4	300	Circular_Default Sewer Type	56.650	55.450	0.900	56.433	55.409	0.724
26.001	3.097	163.0	300	Circular_Default Sewer Type	56.433	55.409	0.724	56.400	55.390	0.710
27.000	3.768	9.1	150	Circular_Default Sewer Type	57.500	56.500	0.850	57.401	56.087	1.164
27.001	12.789	121.8	225	Circular_Default Sewer Type	57.401	55.976	1.200	57.296	55.871	1.200
27.002	27.949	99.1	225	Circular_Default Sewer Type	57.296	55.871	1.200	57.278	55.589	1.464
28.000	5.841	5.6	150	Circular_Default Sewer Type	57.840	56.840	0.850	57.565	55.790	1.625
29.000	4.767	5.0	150	Circular_Default Sewer Type	57.740	56.740	0.850	57.565	55.790	1.625
28.001	13.476	240.6	300	Circular_Default Sewer Type	57.565	55.640	1.625	57.431	55.584	1.547
30.000	7.781	7.7	150	Circular_Default Sewer Type	57.740	56.740	0.850	57.431	55.734	1.547

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
19.000	14	1200	Manhole	Adoptable	15	1200	Manhole	Adoptable
16.002	15	1200	Manhole	Adoptable	16	1350	Manhole	Adoptable
16.003	16	1350	Manhole	Adoptable	17	1350	Manhole	Adoptable
16.004	17	1350	Manhole	Adoptable	18	1200	Manhole	Adoptable
26.000_1	HD01	1200	Manhole	Adoptable	21	1200	Manhole	Adoptable
22.000	PCP4	1200	Manhole	Adoptable	38	1350	Manhole	Adoptable
23.000_1	PCP5	1200	Manhole	Adoptable	38	1350	Manhole	Adoptable
22.001	38	1350	Manhole	Adoptable	39	1350	Manhole	Adoptable
22.002	39	1350	Manhole	Adoptable	P10-S1	1200	Manhole	Adoptable
23.000	BASIN 1	1200	Manhole	Adoptable	19	1200	Manhole	Adoptable
24.000	PCP13	1200	Manhole	Adoptable	40	1200	Manhole	Adoptable
24.001	40	1200	Manhole	Adoptable	41	1350	Manhole	Adoptable
24.002	41	1350	Manhole	Adoptable	P10-S8	1200	Manhole	Adoptable
25.000	PCP6	1200	Manhole	Adoptable	42	1200	Manhole	Adoptable
25.001	42	1200	Manhole	Adoptable	43	1200	Manhole	Adoptable
25.002	43	1200	Manhole	Adoptable	P10-S3	1200	Manhole	Adoptable
26.000	BASIN 2	1200	Manhole	Adoptable	36	1350	Manhole	Adoptable
26.001	36	1350	Manhole	Adoptable	S_OUT2	1200	Manhole	Adoptable
27.000	PCP3	1200	Manhole	Adoptable	21	1200	Manhole	Adoptable
27.001	21	1200	Manhole	Adoptable	22	1200	Manhole	Adoptable
27.002	22	1200	Manhole	Adoptable	25	1200	Manhole	Adoptable
28.000	PCP7		Junction		23	1200	Manhole	Adoptable
29.000	PCP9		Junction		23	1200	Manhole	Adoptable
28.001	23	1200	Manhole	Adoptable	24	1200	Manhole	Adoptable
30.000	PCP8		Junction		24	1200	Manhole	Adoptable

Pipeline Schedule

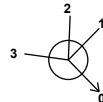
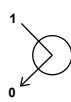
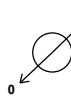
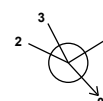
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
31.000	4.629	5.3	150	Circular_Default Sewer Type	57.600	56.600	0.850	57.431	55.734	1.547
28.002	16.791	239.9	300	Circular_Default Sewer Type	57.431	55.584	1.547	57.278	55.514	1.464
32.000	5.501	7.1	150	Circular_Default Sewer Type	57.440	56.440	0.850	57.278	55.664	1.464
27.003	15.526	242.6	300	Circular_Default Sewer Type	57.278	55.514	1.464	57.101	55.450	1.351
33.000	5.744	8.2	150	Circular_Default Sewer Type	57.300	56.300	0.850	57.101	55.600	1.351
23.001	32.488	240.7	300	Circular_Default Sewer Type	53.500	52.255	0.945	53.250	52.120	0.830

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
31.000	PCP10		Junction		24	1200	Manhole	Adoptable
28.002	24	1200	Manhole	Adoptable	25	1200	Manhole	Adoptable
32.000	PCP11		Junction		25	1200	Manhole	Adoptable
27.003	25	1200	Manhole	Adoptable	26	1200	Manhole	Adoptable
33.000	PCP12		Junction		26	1200	Manhole	Adoptable
23.001	19	1200	Manhole	Adoptable	S_OUT	1200	Manhole	Adoptable

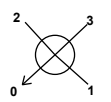
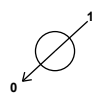
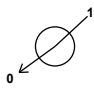
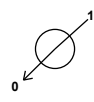
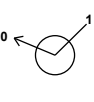
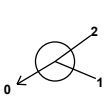
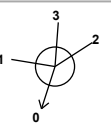
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PCP2	477648.100	164484.725	56.700	0.600	1200					
						0	1.000	56.100	150	
27	477646.055	164485.155	56.934	1.125	1200		1	1.000	55.809	150
						0	1.001	55.809	225	
28	477643.512	164472.269	56.739	1.009	1200		1	1.001	55.730	225
						0	1.002	55.730	225	
29	477635.496	164462.728	56.639	1.059	1200		1	1.002	55.655	225
						0	1.003	55.580	300	
PCP1	477610.068	164473.766	56.860	0.800	1200		0	2.000	56.060	150
31	477616.516	164465.109	56.777	0.877	1200		1	2.000	55.900	150
						0	2.001	55.900	150	
32	477624.619	164453.376	56.614	1.094	1350		1	2.001	55.670	150
						2	1.003	55.520	300	
						0	1.004	55.520	450	
33	477612.261	164445.447	56.679	1.197	1350		1	1.004	55.482	450
						0	1.005	55.482	450	

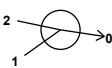
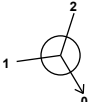
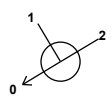
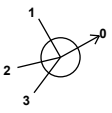
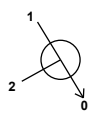
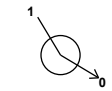
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
34	477600.266	164443.603	56.796	1.346	1200		1	1.005	55.450	450
PCP14	477490.282	164395.425	57.450	1.000	1200		0	3.000	56.450	150
PCP15	477500.702	164399.261	57.480	1.000	1200		0	4.000	56.480	150
PCP16	477503.212	164396.796	57.320	1.000	1200		0	5.000	56.320	150
44	477500.483	164394.015	57.215	1.500	1200		1 2 3 0	5.000 4.000 3.000 3.001	55.865 55.865 55.865 55.715	150 150 150 300
45	477514.171	164379.948	56.913	1.500	1200		1 0	3.001 3.002	55.413 55.413	300 300
46	477490.293	164356.714	57.023	1.749	1200		1 0	3.002 3.003	55.274 55.274	300 300
PCP17	477435.458	164364.707	57.380	1.000	1200		0	6.000	56.380	150
47	477439.019	164366.717	57.409	1.500	1200		1 0	6.000 6.001	56.059 55.909	150 300
PCP18	477441.832	164353.082	57.240	1.000	1200		0	7.000	56.240	150
PCP19	477452.570	164353.447	57.240	1.000	1200		0	8.000	56.240	150
48	477447.522	164350.337	57.045	1.500	1200		1 2 3 0	8.000 7.000 6.001 6.002	55.695 55.695 55.545 55.545	150 150 300 300
49	477481.557	164316.670	56.512	1.125	1200		0	9.000	55.387	225

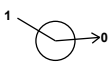
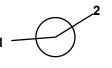
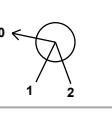
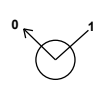
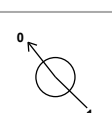
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
50	477464.240	164332.111	56.768	1.793	1350		1 9.000 55.200 225 2 6.002 55.125 300 3 3.003 55.125 300 0 3.004 54.975 450		
7	477431.815	164302.460	55.686	1.650	1350		1 3.004 54.036 450 0 3.005 54.036 450		
8	477408.674	164281.052	56.768	3.068	1350		1 3.005 53.700 450 0 3.006 53.700 450		
SWALE1	477456.585	164316.660	56.000	0.800	1200		0 10.000 55.200 500		
SWALE2	477411.600	164276.276	55.000	0.800	1200		1 10.000 54.200 500 0 10.001 54.200 500		
SWALE3	477403.522	164268.313	54.900	0.800	1200		1 10.001 54.100 500 0 10.002 54.100 150		
9	477395.662	164271.602	55.102	1.650	1350		1 10.002 53.602 150 2 3.006 53.452 450 0 3.007 53.452 450		
1	477377.897	164355.317	57.216	1.966	1200		0 11.000 55.250 225		
PCP21	477381.396	164328.317	56.640	1.000	1200		0 12.000 55.640 150		
PCP20	477371.948	164325.202	56.420	1.000	1200		0 13.000 55.420 150		
2	477375.625	164324.602	56.441	1.941	1200		1 13.000 54.650 150 2 12.000 54.650 150 3 11.000 54.575 225 0 11.001 54.500 300		
3	477319.524	164299.776	56.241	2.241	1200		0 14.000 54.000 300		
PCP22	477330.945	164291.612	56.200	1.000	1200		0 15.000 55.200 150		

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
4	477337.238	164296.081	56.063	2.425	1200		1 15.000	53.713	150
							2 14.000	53.638	300
							0 14.001	53.638	300
5	477356.664	164293.146	55.865	2.500	1200		1 14.001	53.440	300
							0 14.002	53.365	300
6	477365.959	164294.438	55.740	2.801	1200		1 14.002	52.939	300
							2 11.001	52.939	300
							0 11.002	52.939	300
10	477383.816	164264.507	54.890	2.246	1350		1 11.002	52.794	300
							2 3.007	53.240	450
							0 3.008	52.644	450
11	477339.692	164237.882	54.092	1.582	1350		1 3.008	52.510	450
							0 3.009	52.510	450
12	477303.710	164216.685	53.580	1.181	1350		1 3.009	52.399	450
							0 3.010	52.399	450
PCP24	477217.458	164193.220	54.750	1.000	1200		0 17.000	53.750	150
PCP23	477221.732	164186.017	54.500	1.000	1200		0 16.000	53.500	150
PCP25	477226.408	164200.918	54.850	1.000	1200		0 18.000	53.850	150
13	477229.198	164196.010	54.850	1.650	1200		1 18.000	53.350	150
							2 17.000	53.350	150
							3 16.000	53.350	150
							0 16.001	53.200	300
14	477240.228	164230.409	55.764	1.425	1200		0 19.000	54.339	225
							1 19.000	52.540	225
15	477253.105	164209.256	54.924	2.534	1200		2 16.001	52.465	300
							0 16.002	52.390	450
							1 16.002	52.355	450
16	477259.293	164198.975	54.518	2.163	1350		1 16.002	52.355	450
							0 16.003	52.355	450

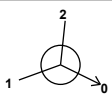
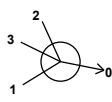
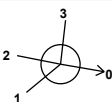
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
17	477264.190	164196.045	54.318	1.978	1350		1 16.003	52.340	450
							0 16.004	52.340	450
18	477271.172	164196.594	54.098	1.798	1200		1 16.004	52.320	450
							2 3.010	52.300	450
HD01	477564.730	164500.873	57.650	1.350	1200		0 26.000_1	56.300	150
PCP4	477532.070	164513.881	57.920	0.900	1200		0 22.000	57.020	150
PCP5	477527.559	164514.800	58.080	1.000	1200		0 23.000_1	57.080	150
38	477529.933	164519.653	57.920	0.991	1350		1 23.000_1	56.929	150
							2 22.000	56.929	150
							0 22.001	56.929	225
39	477507.589	164524.289	58.140	1.348	1350		1 22.001	56.792	225
							0 22.002	56.792	225
P10-S1	477503.303	164522.172	58.238	1.475	1200		1 22.002	56.763	225
BASIN 1	477278.897	164178.542	53.500	1.200	1200		0 23.000	52.300	300
S_OUT	477286.046	164141.896	53.250	1.130	1200		1 23.001	52.120	300
PCP13	477488.249	164411.528	57.680	1.000	1200		0 24.000	56.680	150
40	477485.732	164409.270	57.490	1.500	1200		1 24.000	56.210	150
							0 24.001	55.990	300
41	477468.592	164425.951	57.732	1.918	1350		1 24.001	55.890	300
							0 24.002	55.814	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
P10-S8	477462.948	164433.120	57.869	2.079	1200	 1	24.002	55.790	450
PCP6	477513.753	164466.454	58.000	1.000	1200	 0	25.000	57.000	150
42	477512.950	164460.383	57.715	1.419	1200	 0 1	25.000	56.573	150
43	477492.489	164472.226	57.961	1.764	1200	 0 1	25.001	56.296	300
						 1	25.001	56.197	300
P10-S3	477489.231	164473.390	58.022	1.839	1200	 1	25.002	56.197	300
						 1	25.002	56.183	300
BASIN 2	477591.609	164425.696	56.650	1.200	1200	 0	26.000	55.450	300
36	477592.070	164415.933	56.433	1.024	1350	 1 0	26.000	55.409	300
						 0	26.001	55.409	300
S_OUT2	477592.857	164412.938	56.400	1.010	1200	 1	26.001	55.390	300
PCP3	477557.440	164484.496	57.500	1.000	1200	 0	27.000	56.500	150
21	477561.140	164483.782	57.401	1.425	1200	 1 2 0	27.000	56.087	150
						 2	26.000_1	56.051	150
22	477558.440	164471.281	57.296	1.425	1200	0 1	27.001	55.976	225
						1	27.001	55.871	225
PCP7	477527.318	164458.513	57.840	1.000		0	27.002	55.871	225
						0	28.000	56.840	150
PCP9	477522.229	164451.074	57.740	1.000		0	29.000	56.740	150
						0	29.000	56.740	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
23	477526.709	164452.704	57.565	1.925	1200		1 29.000 2 28.000 0 28.001	55.790 55.790 55.640	150 150 300
PCP8	477535.580	164453.847	57.740	1.000			0 30.000	56.740	150
PCP10	477534.861	164444.346	57.600	1.000			0 31.000	56.600	150
24	477538.807	164446.767	57.431	1.847	1200		1 31.000 2 30.000 3 28.001 0 28.002	55.734 55.734 55.584 55.584	150 150 300 300
PCP11	477551.039	164440.007	57.440	1.000			0 32.000	56.440	150
25	477555.279	164443.511	57.278	1.764	1200		1 32.000 2 28.002 3 27.002 0 27.003	55.664 55.514 55.589 55.514	150 300 225 300
PCP12	477569.696	164446.562	57.300	1.000			0 33.000	56.300	150
26	477570.582	164440.887	57.101	1.651	1200		1 33.000 2 27.003	55.600 55.450	150 300
19	477282.760	164174.217	53.500	1.245	1200		1 23.000 0 23.001	52.255 52.255	300 300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	✓	Check Discharge Rate(s) ✓
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume ✓
Winter CV	0.840	Additional Storage (m³/ha)	20.0	100 year 360 minute (m³)

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m ³)	

Node PCP1 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.060	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP2 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP3 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.500	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP4 Online Orifice Control

Flap Valve	x	Invert Level (m)	57.020	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP5 Online Orifice Control

Flap Valve	x	Invert Level (m)	57.080	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP6 Online Orifice Control

Flap Valve	x	Invert Level (m)	57.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP7 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.840	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP8 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.740	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP9 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.740	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP10 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.600	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP11 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.440	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP12 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.300	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP13 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.680	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP14 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.450	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP15 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.480	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP16 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.320	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP17 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.380	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP18 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.240	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP19 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.240	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP20 Online Orifice Control

Flap Valve	x	Invert Level (m)	55.420	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP21 Online Orifice Control

Flap Valve	x	Invert Level (m)	55.640	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP22 Online Orifice Control

Flap Valve	x	Invert Level (m)	55.200	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP23 Online Orifice Control

Flap Valve	x	Invert Level (m)	53.500	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP24 Online Orifice Control

Flap Valve	x	Invert Level (m)	53.750	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node PCP25 Online Orifice Control

Flap Valve	x	Invert Level (m)	53.850	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.050		

Node 19 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	52.255	Product Number	CTL-SHE-0093-4200-1244-4200
Design Depth (m)	1.244	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	4.2	Min Node Diameter (mm)	1200

Node 36 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	55.409	Product Number	CTL-SHE-0067-2000-1023-2000
Design Depth (m)	1.023	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node 39 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	56.792	Product Number	CTL-SHE-0063-2000-1348-2000
Design Depth (m)	1.348	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node PCP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.060	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	208	Depth (m)	
Safety Factor	2.0	Width (m)	23.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.100	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	12.800	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.500	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	53	Depth (m)	
Safety Factor	2.0	Width (m)	14.100	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.020	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	206	Depth (m)	
Safety Factor	2.0	Width (m)	7.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.080	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	184	Depth (m)	
Safety Factor	2.0	Width (m)	5.800	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.000	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	17	Depth (m)	
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node PCP7 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.840	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	
Safety Factor	2.0	Width (m)	8.400	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP8 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.740	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	19	Depth (m)	
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	3.400		

Node PCP9 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.740	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	16	Depth (m)	
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node PCP10 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.600	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	17	Depth (m)	
Safety Factor	2.0	Width (m)	2.600	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP11 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.440	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	34	Depth (m)	
Safety Factor	2.0	Width (m)	6.800	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP12 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.300	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	24	Depth (m)	
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP13 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.680	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	22	Depth (m)	
Safety Factor	2.0	Width (m)	6.350	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP14 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.450	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	35	Depth (m)	
Safety Factor	2.0	Width (m)	5.900	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.480	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	23	Depth (m)	
Safety Factor	2.0	Width (m)	6.330	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP16 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.320	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	26	Depth (m)	
Safety Factor	2.0	Width (m)	5.500	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP17 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.380	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	23	Depth (m)	
Safety Factor	2.0	Width (m)	5.450	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP18 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.240	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	26	Depth (m)	
Safety Factor	2.0	Width (m)	5.450	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP19 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.240	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	34	Depth (m)	
Safety Factor	2.0	Width (m)	7.950	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP20 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.420	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	42	Depth (m)	
Safety Factor	2.0	Width (m)	9.600	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP21 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.640	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	35	Depth (m)	
Safety Factor	2.0	Width (m)	5.900	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP22 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.200	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	41	Depth (m)	
Safety Factor	2.0	Width (m)	6.700	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP23 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.500	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	66	Depth (m)	
Safety Factor	2.0	Width (m)	15.500	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP24 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.750	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	54	Depth (m)	
Safety Factor	2.0	Width (m)	11.200	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node PCP25 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	53.850	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	65	Depth (m)	
Safety Factor	2.0	Width (m)	12.500	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node BASIN 1 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	10.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	52.300	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.600

Inlets

18

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	467.5	0.0	1.200	1127.0	0.0

Node BASIN 2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	10.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.450	Main Channel Slope (1:X)	500.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.600

Inlets

26 | 34

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	180.0	0.0	0.900	389.3	0.0	1.200	458.9	0.0

Node 10 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	52.644
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	13

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	80.0	0.0	1.200	80.0	0.0	1.201	0.0	0.0

Node 11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	52.510
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	125.0	0.0	0.800	125.0	0.0	0.801	0.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PCP2	80	56.128	0.028	0.6	0.7231	0.0000	OK
15 minute winter	27	10	55.865	0.056	5.3	0.1000	0.0000	OK
15 minute winter	28	11	55.797	0.067	7.3	0.0954	0.0000	OK
360 minute winter	29	352	55.736	0.156	1.9	0.2264	0.0000	OK
180 minute winter	PCP1	124	56.152	0.092	2.9	5.9568	0.0000	OK
15 minute winter	31	12	55.929	0.029	1.8	0.0383	0.0000	OK
360 minute winter	32	352	55.736	0.216	3.4	0.3366	0.0000	OK
360 minute winter	33	352	55.736	0.254	3.5	0.4394	0.0000	OK
360 minute winter	34	352	55.736	0.286	4.0	0.4462	0.0000	OK
30 minute winter	PCP14	24	56.526	0.076	2.9	1.2920	0.0000	OK
30 minute winter	PCP15	23	56.519	0.039	1.4	0.6104	0.0000	OK
30 minute winter	PCP16	23	56.384	0.064	2.3	0.9945	0.0000	OK
15 minute winter	44	11	55.754	0.039	5.0	0.0552	0.0000	OK
15 minute winter	45	11	55.490	0.077	10.6	0.1310	0.0000	OK
15 minute winter	46	11	55.368	0.094	15.2	0.1452	0.0000	OK
30 minute winter	PCP17	23	56.434	0.054	1.9	0.7951	0.0000	OK
15 minute winter	47	10	55.949	0.040	6.2	0.0676	0.0000	OK
30 minute winter	PCP18	23	56.304	0.064	2.3	0.9917	0.0000	OK
30 minute winter	PCP19	24	56.287	0.047	2.0	0.9443	0.0000	OK
15 minute winter	48	11	55.601	0.056	10.6	0.0817	0.0000	OK
15 minute winter	49	11	55.424	0.037	2.8	0.0550	0.0000	OK
15 minute winter	50	11	55.053	0.078	32.0	0.1396	0.0000	OK
15 minute winter	7	11	54.139	0.103	36.7	0.1944	0.0000	OK
15 minute winter	8	11	53.800	0.100	40.3	0.1645	0.0000	OK
15 minute winter	SWALE1	11	55.233	0.033	7.2	0.0809	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)
120 minute winter	PCP2	Orifice	27	0.3				
15 minute winter	27	1.001	28	5.2	0.596	0.129	0.1147	
15 minute winter	28	1.002	29	7.2	0.751	0.178	0.1189	
360 minute winter	29	1.003	32	1.9	0.349	0.027	0.6546	
180 minute winter	PCP1	Orifice	31	1.4				
15 minute winter	31	2.001	32	1.8	0.759	0.079	0.0337	
360 minute winter	32	1.004	33	3.1	0.313	0.019	1.2277	
360 minute winter	33	1.005	34	3.3	0.201	0.020	1.2022	
360 minute winter	34	Flow through Pond	BASIN 2	5.9	0.006	0.002	58.5242	
30 minute winter	PCP14	Orifice	44	1.2				
30 minute winter	PCP15	Orifice	44	0.6				
30 minute winter	PCP16	Orifice	44	1.0				
15 minute winter	44	3.001	45	5.0	0.557	0.036	0.1918	
15 minute winter	45	3.002	46	10.5	0.642	0.147	0.5518	
15 minute winter	46	3.003	50	14.7	0.797	0.206	0.6608	
30 minute winter	PCP17	Orifice	47	0.9				
15 minute winter	47	6.001	48	6.1	0.853	0.039	0.1343	
30 minute winter	PCP18	Orifice	48	1.0				
30 minute winter	PCP19	Orifice	48	0.7				
15 minute winter	48	6.002	50	10.6	1.194	0.073	0.2192	
15 minute winter	49	9.000	50	2.7	0.639	0.058	0.0974	
15 minute winter	50	3.004	7	31.8	1.406	0.067	1.0002	
15 minute winter	7	3.005	8	36.1	1.360	0.108	0.8428	
15 minute winter	8	3.006	9	40.1	1.413	0.100	0.4594	
15 minute winter	SWALE1	10.000	SWALE2	6.8	0.318	0.001	1.3700	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWALE2	12	54.242	0.042	8.2	0.0588	0.0000	OK
15 minute winter	SWALE3	13	54.144	0.044	7.4	0.0496	0.0000	OK
15 minute winter	9	12	53.565	0.113	47.3	0.1613	0.0000	OK
15 minute winter	1	10	55.293	0.043	6.1	0.0674	0.0000	OK
30 minute winter	PCP21	24	55.711	0.071	2.7	1.1950	0.0000	OK
30 minute winter	PCP20	25	55.474	0.054	2.7	1.3653	0.0000	OK
15 minute winter	2	11	54.546	0.046	12.8	0.0713	0.0000	OK
15 minute winter	3	10	54.028	0.028	2.8	0.0360	0.0000	OK
30 minute winter	PCP22	24	55.288	0.088	3.7	1.7207	0.0000	OK
15 minute winter	4	10	53.707	0.069	12.6	0.1154	0.0000	OK
15 minute winter	5	11	53.415	0.050	14.3	0.0620	0.0000	OK
15 minute winter	6	11	53.092	0.153	35.2	0.2397	0.0000	OK
15 minute winter	10	13	52.856	0.212	93.3	16.6091	0.0000	OK
30 minute winter	11	26	52.689	0.179	74.1	21.6236	0.0000	OK
360 minute winter	12	360	52.660	0.261	25.7	0.7705	0.0000	OK
120 minute winter	PCP24	80	53.824	0.074	2.0	2.3103	0.0000	OK
120 minute winter	PCP23	82	53.584	0.084	2.6	3.6307	0.0000	OK
120 minute winter	PCP25	82	53.953	0.103	2.9	3.7246	0.0000	OK
15 minute winter	13	11	53.244	0.044	8.5	0.0734	0.0000	OK
15 minute winter	14	10	54.385	0.046	12.4	0.1094	0.0000	OK
360 minute winter	15	360	52.660	0.270	6.6	0.3389	0.0000	OK
360 minute winter	16	360	52.660	0.305	6.7	0.4697	0.0000	OK
360 minute winter	17	360	52.660	0.320	6.5	0.4737	0.0000	OK
360 minute winter	18	360	52.660	0.360	31.9	0.5549	0.0000	OK
15 minute winter	HD01	10	56.341	0.041	3.5	0.0622	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	SWALE2	10.001	SWALE3	7.4	0.275	0.002	0.3051	
15 minute winter	SWALE3	10.002	9	7.3	1.763	0.169	0.0353	
15 minute winter	9	3.007	10	47.5	1.631	0.119	0.4027	
15 minute winter	1	11.000	2	5.9	1.145	0.077	0.1591	
30 minute winter	PCP21	Orifice	2	1.1				
30 minute winter	PCP20	Orifice	2	0.9				
15 minute winter	2	11.001	6	12.7	0.653	0.051	0.6795	
15 minute winter	3	14.000	4	2.8	0.375	0.017	0.1400	
30 minute winter	PCP22	Orifice	4	1.3				
15 minute winter	4	14.001	5	12.3	1.030	0.110	0.2348	
15 minute winter	5	14.002	6	14.3	0.710	0.060	0.2051	
15 minute winter	6	11.002	10	34.6	1.000	0.485	1.2068	
15 minute winter	10	3.008	11	76.4	1.563	0.466	2.8981	
30 minute winter	11	3.009	12	51.9	0.898	0.313	2.4124	
360 minute winter	12	3.010	18	25.0	0.610	0.153	4.4165	
120 minute winter	PCP24	Orifice	13	1.2				
120 minute winter	PCP23	Orifice	13	1.3				
120 minute winter	PCP25	Orifice	13	1.5				
15 minute winter	13	16.001	15	8.4	1.299	0.046	0.1816	
15 minute winter	14	19.000	15	12.2	2.162	0.087	0.1403	
360 minute winter	15	16.002	16	6.4	0.421	0.037	1.2800	
360 minute winter	16	16.003	17	6.4	0.397	0.039	0.6695	
360 minute winter	17	16.004	18	6.3	0.413	0.037	0.8713	
360 minute winter	18	Flow through Pond	BASIN 1	20.6	0.005	0.002	197.3656	
15 minute winter	HD01	26.000_1	21	3.4	0.868	0.159	0.0678	

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.61%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PCP4	90	57.108	0.088	1.2	1.7782	0.0000	OK
30 minute winter	PCP5	24	57.159	0.079	3.0	1.3421	0.0000	OK
120 minute winter	38	86	57.105	0.176	3.0	0.3450	0.0000	OK
120 minute winter	39	86	57.105	0.313	2.6	0.4481	0.0000	SURCHARGED
15 minute summer	P10-S1	1	56.763	0.000	1.6	0.0000	0.0000	OK
360 minute winter	BASIN 1	360	52.660	0.360	20.6	0.4068	0.0000	SURCHARGED
15 minute summer	S_OUT	1	52.120	0.000	3.9	0.0000	0.0000	OK
30 minute winter	PCP13	24	56.717	0.037	1.3	0.5639	0.0000	OK
15 minute winter	40	11	56.035	0.045	3.5	0.0647	0.0000	OK
15 minute winter	41	10	55.891	0.077	10.0	0.1493	0.0000	OK
15 minute winter	P10-S8	11	55.856	0.066	9.9	0.0000	0.0000	OK
30 minute winter	PCP6	22	57.070	0.070	1.8	0.5866	0.0000	OK
15 minute winter	42	11	56.352	0.056	5.6	0.0906	0.0000	OK
15 minute winter	43	11	56.273	0.076	8.4	0.1055	0.0000	OK
15 minute winter	P10-S3	11	56.252	0.069	8.5	0.0000	0.0000	OK
360 minute winter	BASIN 2	352	55.736	0.286	5.9	0.3231	0.0000	OK
360 minute winter	36	352	55.736	0.327	2.0	0.4674	0.0000	SURCHARGED
15 minute summer	S_OUT2	1	55.390	0.000	1.8	0.0000	0.0000	OK
120 minute winter	PCP3	80	56.551	0.051	1.4	1.8073	0.0000	OK
15 minute winter	21	10	56.048	0.072	9.6	0.1251	0.0000	OK
15 minute winter	22	11	55.937	0.066	9.5	0.0751	0.0000	OK
30 minute winter	PCP7	24	56.894	0.054	2.4	1.1290	0.0000	OK
15 minute winter	PCP9	13	56.820	0.080	2.5	0.5898	0.0000	OK
360 minute winter	23	344	55.736	0.096	1.2	0.1197	0.0000	OK
30 minute winter	PCP8	22	56.811	0.071	2.0	0.7162	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)
120 minute winter	PCP4	Orifice	38	0.9				
30 minute winter	PCP5	Orifice	38	1.2				
120 minute winter	38	22.001	39	2.6	0.345	0.065	0.8348	
120 minute winter	39	Hydro-Brake®	P10-S1	1.6				11.0
360 minute winter	BASIN 1	23.000	19	7.2	0.374	0.073	0.4084	
30 minute winter	PCP13	Orifice	40	0.5				
15 minute winter	40	24.001	41	3.4	0.530	0.048	0.1533	
15 minute winter	41	24.002	P10-S8	9.9	0.613	0.060	0.1480	5.4
30 minute winter	PCP6	Orifice	42	1.1				
15 minute winter	42	25.001	43	5.5	0.481	0.077	0.2734	
15 minute winter	43	25.002	P10-S3	8.5	0.643	0.120	0.0455	4.7
360 minute winter	BASIN 2	26.000	36	2.0	0.187	0.028	0.6824	
360 minute winter	36	Hydro-Brake®	S_OUT2	1.9				59.2
120 minute winter	PCP3	Orifice	21	0.8				
15 minute winter	21	27.001	22	9.5	0.930	0.202	0.1319	
15 minute winter	22	27.002	25	9.5	0.993	0.183	0.2683	
30 minute winter	PCP7	Orifice	23	0.9				
15 minute winter	PCP9	Orifice	23	1.2				
360 minute winter	23	28.001	24	1.2	0.294	0.017	0.3728	
30 minute winter	PCP8	Orifice	24	1.1				

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	PCP10	13	56.684	0.084	2.6	0.6131	0.0000	OK
360 minute winter	24	344	55.736	0.152	2.5	0.1902	0.0000	OK
30 minute winter	PCP11	24	56.500	0.060	2.4	1.0550	0.0000	OK
360 minute winter	25	344	55.736	0.222	5.3	0.2764	0.0000	OK
30 minute winter	PCP12	23	56.360	0.060	2.1	0.8547	0.0000	OK
360 minute winter	26	344	55.736	0.286	6.0	0.3826	0.0000	OK
360 minute winter	19	360	52.659	0.404	7.2	0.4575	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 winter	PCP10	Orifice	24	1.3				
360 minute winter	24	28.002	25	2.4	0.318	0.034	0.7708	
30 minute winter	PCP11	Orifice	25	1.0				
360 minute winter	25	27.003	26	5.1	0.309	0.072	0.9721	
30 minute winter	PCP12	Orifice	26	1.0				
360 minute winter	26	Flow through Pond	BASIN 2	5.9	0.006	0.002	58.5242	
360 minute winter	19	Hydro-Brake®	S_OUT	4.2				123.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	PCP2	44	56.160	0.060	2.4	2.0214	0.0000	OK
480 minute winter	27	496	56.102	0.293	2.0	0.5235	0.0000	SURCHARGED
480 minute winter	28	480	56.101	0.371	2.6	0.5294	0.0000	SURCHARGED
480 minute winter	29	496	56.100	0.520	3.3	0.7543	0.0000	SURCHARGED
120 minute winter	PCP1	92	56.307	0.247	9.2	17.0763	0.0000	SURCHARGED
480 minute winter	31	480	56.102	0.202	2.2	0.2646	0.0000	SURCHARGED
480 minute winter	32	496	56.100	0.580	5.2	0.9044	0.0000	SURCHARGED
480 minute winter	33	480	56.100	0.618	5.6	1.0704	0.0000	SURCHARGED
480 minute winter	34	480	56.102	0.652	6.5	1.0182	0.0000	OK
30 minute winter	PCP14	25	56.683	0.233	8.6	4.3375	0.0000	SURCHARGED
30 minute winter	PCP15	24	56.580	0.100	4.0	1.8592	0.0000	OK
30 minute winter	PCP16	25	56.508	0.188	6.7	3.2363	0.0000	SURCHARGED
15 minute winter	44	11	55.777	0.062	13.0	0.0878	0.0000	OK
15 minute winter	45	10	55.548	0.135	29.9	0.2302	0.0000	OK
15 minute winter	46	11	55.449	0.175	43.4	0.2700	0.0000	OK
30 minute winter	PCP17	25	56.533	0.153	5.5	2.5752	0.0000	SURCHARGED
15 minute winter	47	10	55.976	0.067	17.7	0.1131	0.0000	OK
30 minute winter	PCP18	25	56.429	0.189	6.7	3.2301	0.0000	SURCHARGED
30 minute winter	PCP19	25	56.366	0.126	5.8	2.9656	0.0000	OK
15 minute winter	48	10	55.641	0.096	30.2	0.1400	0.0000	OK
15 minute winter	49	10	55.451	0.064	8.0	0.0948	0.0000	OK
15 minute winter	50	11	55.108	0.133	92.3	0.2373	0.0000	OK
15 minute winter	7	11	54.221	0.185	106.7	0.3495	0.0000	OK
15 minute winter	8	11	53.888	0.188	118.8	0.3087	0.0000	OK
15 minute winter	SWALE1	11	55.261	0.061	20.7	0.1474	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 winter	PCP2	Orifice	27	1.0				
480 minute winter	27	1.001	28	2.0	0.481	0.050	0.5224	
480 minute winter	28	1.002	29	2.6	0.539	0.064	0.4956	
480 minute winter	29	1.003	32	3.0	0.297	0.042	1.0102	
120 minute winter	PCP1	Orifice	31	2.5				
480 minute winter	31	2.001	32	2.2	0.741	0.099	0.2510	
480 minute winter	32	1.004	33	4.8	0.293	0.030	2.3264	
480 minute winter	33	1.005	34	5.3	0.188	0.032	1.9229	
480 minute winter	34	Flow through Pond	BASIN 2	9.3	0.007	0.003	162.9741	
30 minute winter	PCP14	Orifice	44	2.4				
30 minute winter	PCP15	Orifice	44	1.4				
30 minute winter	PCP16	Orifice	44	2.1				
15 minute winter	44	3.001	45	13.0	0.730	0.094	0.4031	
15 minute winter	45	3.002	46	29.6	0.813	0.415	1.2213	
15 minute winter	46	3.003	50	42.9	1.062	0.602	1.4495	
30 minute winter	PCP17	Orifice	47	1.9				
15 minute winter	47	6.001	48	17.6	1.137	0.112	0.2870	
30 minute winter	PCP18	Orifice	48	2.1				
30 minute winter	PCP19	Orifice	48	1.7				
15 minute winter	48	6.002	50	29.7	1.589	0.205	0.4624	
15 minute winter	49	9.000	50	7.8	0.863	0.166	0.2093	
15 minute winter	50	3.004	7	92.4	1.851	0.195	2.2025	
15 minute winter	7	3.005	8	106.8	1.722	0.320	1.9555	
15 minute winter	8	3.006	9	118.5	1.756	0.295	1.0856	
15 minute winter	SWALE1	10.000	SWALE2	19.7	0.418	0.004	2.9357	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWALE2	12	54.277	0.077	23.8	0.1085	0.0000	OK
15 minute winter	SWALE3	12	54.185	0.085	22.5	0.0965	0.0000	OK
15 minute winter	9	11	53.661	0.209	139.8	0.2995	0.0000	OK
15 minute winter	1	10	55.324	0.074	17.6	0.1172	0.0000	OK
30 minute winter	PCP21	25	55.855	0.215	8.0	3.9772	0.0000	SURCHARGED
60 minute winter	PCP20	45	55.574	0.154	5.3	4.4144	0.0000	SURCHARGED
15 minute winter	2	10	54.577	0.077	36.5	0.1195	0.0000	OK
15 minute winter	3	10	54.045	0.045	8.0	0.0595	0.0000	OK
60 minute winter	PCP22	45	55.471	0.271	7.1	5.7384	0.0000	SURCHARGED
15 minute winter	4	10	53.760	0.122	35.6	0.2042	0.0000	OK
15 minute winter	5	10	53.448	0.083	40.8	0.1043	0.0000	OK
15 minute winter	6	11	53.357	0.418	101.2	0.6557	0.0000	SURCHARGED
15 minute winter	10	13	53.102	0.458	277.0	35.9166	0.0000	SURCHARGED
600 minute winter	11	600	53.015	0.505	33.6	61.1257	0.0000	SURCHARGED
600 minute winter	12	600	53.015	0.616	29.8	1.8216	0.0000	SURCHARGED
60 minute winter	PCP24	47	53.971	0.221	8.1	7.5140	0.0000	SURCHARGED
60 minute winter	PCP23	49	53.735	0.235	10.8	10.9864	0.0000	SURCHARGED
60 minute winter	PCP25	49	54.154	0.304	11.8	11.7184	0.0000	SURCHARGED
15 minute winter	13	10	53.270	0.070	22.7	0.1181	0.0000	OK
15 minute winter	14	10	54.419	0.080	35.9	0.1914	0.0000	OK
600 minute winter	15	600	53.015	0.625	9.5	0.7860	0.0000	SURCHARGED
600 minute winter	16	600	53.015	0.660	9.5	1.0181	0.0000	SURCHARGED
600 minute winter	17	600	53.015	0.675	9.5	1.0008	0.0000	SURCHARGED
600 minute winter	18	600	53.015	0.715	39.4	1.1037	0.0000	OK
15 minute winter	HD01	10	56.375	0.075	10.0	0.1125	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	SWALE2	10.001	SWALE3	22.5	0.376	0.006	0.6860	
15 minute winter	SWALE3	10.002	9	22.5	2.318	0.521	0.0827	
15 minute winter	9	3.007	10	138.8	2.126	0.346	0.9055	
15 minute winter	1	11.000	2	17.2	1.546	0.223	0.3437	
30 minute winter	PCP21	Orifice	2	2.3				
60 minute winter	PCP20	Orifice	2	1.9				
15 minute winter	2	11.001	6	36.2	0.776	0.146	1.3411	
15 minute winter	3	14.000	4	7.9	0.492	0.050	0.3051	
60 minute winter	PCP22	Orifice	4	2.6				
15 minute winter	4	14.001	5	34.8	1.356	0.312	0.5063	
15 minute winter	5	14.002	6	40.7	0.842	0.171	0.4053	
15 minute winter	6	11.002	10	99.1	1.429	1.389	2.4543	
15 minute winter	10	3.008	11	212.2	1.879	1.295	7.6615	
600 minute winter	11	3.009	12	26.7	0.646	0.161	6.6168	
600 minute winter	12	3.010	18	28.9	0.585	0.177	6.0590	
60 minute winter	PCP24	Orifice	13	2.3				
60 minute winter	PCP23	Orifice	13	2.4				
60 minute winter	PCP25	Orifice	13	2.8				
15 minute winter	13	16.001	15	22.4	1.392	0.123	0.7045	
15 minute winter	14	19.000	15	35.6	2.897	0.252	0.3040	
600 minute winter	15	16.002	16	9.1	0.360	0.052	1.9013	
600 minute winter	16	16.003	17	9.3	0.344	0.056	0.9042	
600 minute winter	17	16.004	18	9.4	0.401	0.055	1.1097	
600 minute winter	18	Flow through Pond	BASIN 1	21.7	0.006	0.002	466.7912	
15 minute winter	HD01	26.000_1	21	9.8	1.149	0.462	0.1491	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PCP4	116	57.439	0.419	4.1	9.2739	0.0000	SURCHARGED
60 minute winter	PCP5	51	57.452	0.372	6.6	6.9383	0.0000	SURCHARGED
120 minute winter	38	112	57.435	0.506	3.7	0.9889	0.0000	SURCHARGED
120 minute winter	39	112	57.434	0.642	2.9	0.9192	0.0000	SURCHARGED
15 minute summer	P10-S1	1	56.763	0.000	1.7	0.0000	0.0000	OK
600 minute winter	BASIN 1	600	53.015	0.715	21.7	0.8090	0.0000	SURCHARGED
15 minute summer	S_OUT	1	52.120	0.000	4.2	0.0000	0.0000	OK
30 minute winter	PCP13	24	56.773	0.093	3.7	1.7038	0.0000	OK
15 minute winter	40	11	56.067	0.077	10.1	0.1104	0.0000	OK
15 minute winter	41	10	55.947	0.133	29.3	0.2584	0.0000	OK
15 minute winter	P10-S8	10	55.906	0.116	28.9	0.0000	0.0000	OK
30 minute winter	PCP6	23	57.228	0.228	5.2	2.0048	0.0000	SURCHARGED
15 minute winter	42	10	56.390	0.094	15.8	0.1521	0.0000	OK
15 minute winter	43	10	56.331	0.134	24.3	0.1851	0.0000	OK
15 minute winter	P10-S3	11	56.301	0.118	23.9	0.0000	0.0000	OK
480 minute winter	BASIN 2	480	56.100	0.650	9.3	0.7353	0.0000	SURCHARGED
480 minute winter	36	480	56.100	0.691	2.0	0.9889	0.0000	SURCHARGED
15 minute summer	S_OUT2	1	55.390	0.000	1.9	0.0000	0.0000	OK
60 minute winter	PCP3	47	56.634	0.134	5.9	5.4854	0.0000	OK
15 minute winter	21	10	56.111	0.135	28.1	0.2340	0.0000	OK
480 minute winter	22	480	56.101	0.230	3.9	0.2596	0.0000	SURCHARGED
30 minute winter	PCP7	26	56.993	0.153	7.0	3.6767	0.0000	SURCHARGED
30 minute winter	PCP9	23	57.006	0.266	5.5	2.0513	0.0000	SURCHARGED
480 minute winter	23	480	56.101	0.461	2.2	0.5734	0.0000	SURCHARGED
30 minute winter	PCP8	24	56.972	0.232	5.8	2.4173	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)
120 minute winter	PCP4	Orifice	38	1.0				
60 minute winter	PCP5	Orifice	38	1.3				
120 minute winter	38	22.001	39	2.9	0.374	0.072	0.9076	
120 minute winter	39	Hydro-Brake®	P10-S1	1.6				28.0
600 minute winter	BASIN 1	23.000	19	9.8	0.344	0.100	0.4084	
30 minute winter	PCP13	Orifice	40	1.4				
15 minute winter	40	24.001	41	9.9	0.710	0.138	0.3325	
15 minute winter	41	24.002	P10-S8	28.9	0.814	0.175	0.3252	15.5
30 minute winter	PCP6	Orifice	42	2.3				
15 minute winter	42	25.001	43	15.5	0.631	0.216	0.5820	
15 minute winter	43	25.002	P10-S3	23.9	0.850	0.339	0.0972	13.6
480 minute winter	BASIN 2	26.000	36	2.0	0.201	0.029	0.6883	
480 minute winter	36	Hydro-Brake®	S_OUT2	1.9				67.6
60 minute winter	PCP3	Orifice	21	1.7				
15 minute winter	21	27.001	22	27.7	1.197	0.589	0.2964	
480 minute winter	22	27.002	25	3.9	0.657	0.074	1.1116	
30 minute winter	PCP7	Orifice	23	1.9				
30 minute winter	PCP9	Orifice	23	2.6				
480 minute winter	23	28.001	24	2.0	0.296	0.028	0.9490	
30 minute winter	PCP8	Orifice	24	2.4				

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	PCP10	23	56.876	0.276	5.8	2.1838	0.0000	SURCHARGED
480 minute winter	24	480	56.101	0.517	4.1	0.6457	0.0000	SURCHARGED
30 minute winter	PCP11	25	56.619	0.179	7.0	3.5252	0.0000	SURCHARGED
480 minute winter	25	480	56.101	0.587	9.0	0.7297	0.0000	SURCHARGED
30 minute winter	PCP12	25	56.478	0.178	6.1	2.8399	0.0000	SURCHARGED
480 minute winter	26	480	56.101	0.651	10.3	0.8698	0.0000	OK
600 minute winter	19	600	53.015	0.760	9.8	0.8597	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)
30 minute winter	PCP10	Orifice	24	2.6				
480 minute winter	24	28.002	25	3.8	0.301	0.054	1.1824	
30 minute winter	PCP11	Orifice	25	2.0				
480 minute winter	25	27.003	26	8.8	0.315	0.124	1.0933	
30 minute winter	PCP12	Orifice	26	2.0				
480 minute winter	26	Flow through Pond	BASIN 2	9.3	0.007	0.003	162.9741	
600 minute winter	19	Hydro-Brake®	S_OUT	4.2				166.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	PCP2	705	56.434	0.334	1.4	12.9430	0.0000	FLOOD RISK
480 minute winter	27	480	56.434	0.625	3.5	1.1181	0.0000	SURCHARGED
720 minute winter	28	705	56.435	0.705	3.2	1.0068	0.0000	SURCHARGED
720 minute winter	29	720	56.434	0.854	4.0	1.2405	0.0000	FLOOD RISK
120 minute winter	PCP1	112	56.531	0.471	16.5	33.1861	0.0000	SURCHARGED
480 minute winter	31	480	56.434	0.534	3.2	0.7015	0.0000	SURCHARGED
720 minute winter	32	705	56.435	0.915	6.8	1.4260	0.0000	FLOOD RISK
720 minute winter	33	705	56.435	0.953	7.6	1.6510	0.0000	FLOOD RISK
480 minute winter	34	480	56.435	0.985	12.1	1.5387	0.0000	OK
60 minute winter	PCP14	46	56.909	0.459	10.4	8.7164	0.0000	SURCHARGED
30 minute winter	PCP15	25	56.667	0.187	7.3	3.6185	0.0000	SURCHARGED
30 minute winter	PCP16	26	56.685	0.365	12.3	6.4302	0.0000	SURCHARGED
15 minute winter	44	11	55.794	0.079	21.7	0.1131	0.0000	OK
15 minute winter	45	11	55.618	0.205	52.3	0.3485	0.0000	OK
15 minute winter	46	11	55.545	0.271	76.0	0.4178	0.0000	OK
30 minute winter	PCP17	26	56.675	0.295	10.0	5.1015	0.0000	SURCHARGED
15 minute winter	47	10	56.001	0.092	31.4	0.1536	0.0000	OK
30 minute winter	PCP18	26	56.607	0.367	12.3	6.4205	0.0000	SURCHARGED
60 minute winter	PCP19	45	56.482	0.242	7.1	5.9058	0.0000	SURCHARGED
15 minute winter	48	10	55.677	0.132	52.9	0.1925	0.0000	OK
15 minute winter	49	10	55.475	0.088	14.4	0.1307	0.0000	OK
15 minute winter	50	11	55.154	0.179	161.8	0.3203	0.0000	OK
15 minute winter	7	11	54.301	0.265	188.0	0.5017	0.0000	OK
15 minute winter	8	11	53.980	0.280	210.7	0.4584	0.0000	OK
15 minute winter	SWALE1	11	55.284	0.084	37.4	0.2035	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)
720 minute winter	PCP2	Orifice	27	0.6				
480 minute winter	27	1.001	28	3.4	0.496	0.083	0.5224	
720 minute winter	28	1.002	29	3.1	0.491	0.076	0.4956	
720 minute winter	29	1.003	32	3.9	0.261	0.054	1.0102	
120 minute winter	PCP1	Orifice	31	3.3				
480 minute winter	31	2.001	32	3.1	0.731	0.135	0.2510	
720 minute winter	32	1.004	33	6.7	0.297	0.041	2.3264	
720 minute winter	33	1.005	34	7.5	0.201	0.045	1.9229	
480 minute winter	34	Flow through Pond	BASIN 2	15.6	0.008	0.005	285.5374	
60 minute winter	PCP14	Orifice	44	3.4				
30 minute winter	PCP15	Orifice	44	2.1				
30 minute winter	PCP16	Orifice	44	3.0				
15 minute winter	44	3.001	45	21.5	0.818	0.156	0.6485	
15 minute winter	45	3.002	46	50.8	0.881	0.711	1.9672	
15 minute winter	46	3.003	50	74.5	1.226	1.045	2.1582	
30 minute winter	PCP17	Orifice	47	2.7				
15 minute winter	47	6.001	48	31.1	1.307	0.199	0.4417	
30 minute winter	PCP18	Orifice	48	3.1				
60 minute winter	PCP19	Orifice	48	2.4				
15 minute winter	48	6.002	50	51.8	1.833	0.357	0.7022	
15 minute winter	49	9.000	50	14.0	1.010	0.301	0.3232	
15 minute winter	50	3.004	7	162.3	2.082	0.343	3.4264	
15 minute winter	7	3.005	8	189.0	1.884	0.566	3.1624	
15 minute winter	8	3.006	9	210.5	1.928	0.524	1.7552	
15 minute winter	SWALE1	10.000	SWALE2	35.8	0.494	0.008	4.5317	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SWALE2	11	54.306	0.106	43.2	0.1495	0.0000	OK
15 minute winter	SWALE3	13	54.258	0.158	41.2	0.1783	0.0000	SURCHARGED
15 minute winter	9	11	53.758	0.306	249.2	0.4380	0.0000	OK
15 minute winter	1	10	55.353	0.103	31.6	0.1630	0.0000	OK
60 minute winter	PCP21	45	56.062	0.422	9.7	7.9904	0.0000	SURCHARGED
60 minute winter	PCP20	47	55.720	0.300	9.7	8.8614	0.0000	SURCHARGED
15 minute winter	2	10	54.603	0.103	64.6	0.1606	0.0000	OK
15 minute winter	3	12	54.280	0.280	14.4	0.3663	0.0000	OK
60 minute winter	PCP22	47	55.742	0.542	13.0	11.6972	0.0000	SURCHARGED
15 minute winter	4	12	54.275	0.637	63.4	1.0614	0.0000	SURCHARGED
15 minute winter	5	12	54.223	0.858	67.7	1.0731	0.0000	SURCHARGED
15 minute winter	6	12	54.181	1.242	152.0	1.9468	0.0000	SURCHARGED
30 minute winter	10	23	53.600	0.956	385.5	74.9480	0.0000	SURCHARGED
720 minute winter	11	720	53.462	0.952	44.0	97.1803	0.0000	SURCHARGED
720 minute winter	12	720	53.462	1.063	40.8	3.1422	0.0000	FLOOD RISK
60 minute winter	PCP24	49	54.178	0.428	14.9	14.8895	0.0000	SURCHARGED
60 minute winter	PCP23	57	53.950	0.450	19.7	21.4547	0.0000	SURCHARGED
60 minute winter	PCP25	54	54.438	0.588	21.6	23.0413	0.0000	SURCHARGED
720 minute winter	13	720	53.462	0.262	8.4	0.4392	0.0000	OK
15 minute winter	14	10	54.445	0.106	64.7	0.2542	0.0000	OK
720 minute winter	15	720	53.462	1.072	13.7	1.3476	0.0000	SURCHARGED
720 minute winter	16	720	53.462	1.107	14.0	1.7071	0.0000	SURCHARGED
720 minute winter	17	720	53.462	1.122	14.2	1.6629	0.0000	SURCHARGED
720 minute winter	18	720	53.462	1.162	56.6	1.7930	0.0000	OK
600 minute winter	HD01	570	56.435	0.135	1.5	0.2027	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	SWALE2	10.001	SWALE3	41.2	0.420	0.012	1.3241	
15 minute winter	SWALE3	10.002	9	38.6	2.425	0.893	0.1499	
15 minute winter	9	3.007	10	248.1	2.409	0.619	1.6202	
15 minute winter	1	11.000	2	31.1	1.803	0.403	0.5315	
60 minute winter	PCP21	Orifice	2	3.3				
60 minute winter	PCP20	Orifice	2	2.7				
15 minute winter	2	11.001	6	64.3	1.179	0.259	1.4560	
15 minute winter	3	14.000	4	15.8	0.543	0.101	1.2559	
60 minute winter	PCP22	Orifice	4	3.8				
15 minute winter	4	14.001	5	57.5	1.422	0.516	1.3835	
15 minute winter	5	14.002	6	56.1	0.973	0.236	0.6608	
15 minute winter	6	11.002	10	147.2	2.090	2.063	2.4543	
30 minute winter	10	3.008	11	275.8	1.741	1.683	8.1654	
720 minute winter	11	3.009	12	36.1	0.587	0.218	6.6168	
720 minute winter	12	3.010	18	40.6	0.665	0.248	6.0590	
60 minute winter	PCP24	Orifice	13	3.3				
60 minute winter	PCP23	Orifice	13	3.4				
60 minute winter	PCP25	Orifice	13	3.9				
720 minute winter	13	16.001	15	8.4	0.925	0.046	1.8544	
15 minute winter	14	19.000	15	64.4	2.879	0.457	0.6483	
720 minute winter	15	16.002	16	13.4	0.369	0.077	1.9013	
720 minute winter	16	16.003	17	13.9	0.369	0.085	0.9042	
720 minute winter	17	16.004	18	14.1	0.423	0.082	1.1097	
720 minute winter	18	Flow through Pond	BASIN 1	30.2	0.007	0.003	903.6519	
600 minute winter	HD01	26.000_1	21	1.5	0.691	0.071	0.2996	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	PCP4	120	57.882	0.862	7.1	19.2814	0.0000	FLOOD RISK
120 minute winter	PCP5	118	57.904	0.824	7.5	15.5814	0.0000	FLOOD RISK
30 minute winter	38	20	57.920	0.991	14.5	1.9384	0.4995	FLOOD
30 minute winter	39	20	57.928	1.136	4.7	1.6258	0.0000	FLOOD RISK
15 minute summer	P10-S1	1	56.763	0.000	1.8	0.0000	0.0000	OK
720 minute winter	BASIN 1	720	53.462	1.162	30.2	1.3143	0.0000	FLOOD RISK
15 minute summer	S_OUT	1	52.120	0.000	4.2	0.0000	0.0000	OK
30 minute winter	PCP13	25	56.851	0.171	6.7	3.3050	0.0000	SURCHARGED
15 minute winter	40	10	56.095	0.105	17.9	0.1515	0.0000	OK
15 minute winter	41	10	55.996	0.182	52.8	0.3529	0.0000	OK
15 minute winter	P10-S8	10	55.947	0.157	52.1	0.0000	0.0000	OK
30 minute winter	PCP6	24	57.463	0.463	9.5	4.1184	0.0000	SURCHARGED
15 minute winter	42	10	56.430	0.134	27.7	0.2177	0.0000	OK
15 minute winter	43	10	56.383	0.186	43.0	0.2569	0.0000	OK
15 minute winter	P10-S3	10	56.342	0.159	42.3	0.0000	0.0000	OK
600 minute winter	BASIN 2	570	56.433	0.983	13.4	1.1123	0.0000	FLOOD RISK
600 minute winter	36	570	56.433	1.024	3.7	1.4653	2.7475	FLOOD
15 minute summer	S_OUT2	1	55.390	0.000	1.9	0.0000	0.0000	OK
60 minute winter	PCP3	49	56.755	0.255	10.8	10.7942	0.0000	SURCHARGED
600 minute winter	21	570	56.435	0.459	5.5	0.7959	0.0000	SURCHARGED
600 minute winter	22	570	56.435	0.564	5.4	0.6378	0.0000	SURCHARGED
60 minute winter	PCP7	46	57.139	0.299	8.6	7.4120	0.0000	SURCHARGED
30 minute winter	PCP9	24	57.286	0.546	10.0	4.2568	0.0000	SURCHARGED
600 minute winter	23	570	56.435	0.795	3.0	0.9896	0.0000	SURCHARGED
30 minute winter	PCP8	25	57.206	0.466	10.6	4.8994	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)
120 minute winter	PCP4	Orifice	38	0.8				
120 minute winter	PCP5	Orifice	38	1.3				
30 minute winter	38	22.001	39	4.7	0.532	0.117	0.9076	
30 minute winter	39	Hydro-Brake®	P10-S1	1.9				24.1
720 minute winter	BASIN 1	23.000	19	10.1	0.325	0.104	0.4084	
30 minute winter	PCP13	Orifice	40	2.0				
15 minute winter	40	24.001	41	17.6	0.810	0.246	0.5289	
15 minute winter	41	24.002	P10-S8	52.1	0.957	0.316	0.4972	27.8
30 minute winter	PCP6	Orifice	42	3.5				
15 minute winter	42	25.001	43	27.2	0.711	0.379	0.9029	
15 minute winter	43	25.002	P10-S3	42.3	1.010	0.601	0.1450	24.5
600 minute winter	BASIN 2	26.000	36	3.7	0.225	0.052	0.6883	
600 minute winter	36	Hydro-Brake®	S_OUT2	2.0				89.4
60 minute winter	PCP3	Orifice	21	2.5				
600 minute winter	21	27.001	22	5.4	0.771	0.115	0.5086	
600 minute winter	22	27.002	25	5.0	0.614	0.096	1.1116	
60 minute winter	PCP7	Orifice	23	2.7				
30 minute winter	PCP9	Orifice	23	3.8				
600 minute winter	23	28.001	24	3.0	0.274	0.042	0.9490	
30 minute winter	PCP8	Orifice	24	3.5				

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.61%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	PCP10	24	57.167	0.567	10.6	4.5613	0.0000	SURCHARGED
600 minute winter	24	570	56.435	0.851	6.0	1.0636	0.0000	SURCHARGED
60 minute winter	PCP11	45	56.787	0.347	8.6	7.0441	0.0000	SURCHARGED
600 minute winter	25	570	56.435	0.921	12.8	1.1455	0.0000	SURCHARGED
30 minute winter	PCP12	26	56.647	0.347	11.2	5.6982	0.0000	SURCHARGED
600 minute winter	26	570	56.435	0.985	14.8	1.3166	0.0000	OK
720 minute winter	19	720	53.462	1.207	10.1	1.3650	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)
30 minute winter	PCP10	Orifice	24	3.8				
600 minute winter	24	28.002	25	5.9	0.266	0.083	1.1824	
60 minute winter	PCP11	Orifice	25	3.0				
600 minute winter	25	27.003	26	12.6	0.351	0.178	1.0933	
30 minute winter	PCP12	Orifice	26	3.0				
600 minute winter	26	Flow through Pond	BASIN 2	13.4	0.007	0.004	285.6089	
720 minute winter	19	Hydro-Brake®	S_OUT	4.2				208.9

Appendix C

EXCEEDANCE ROUTING PLAN



7292.019 P06 S0

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Appendix D

IMPERMEABLE AREAS PLAN

Appendix E

PRE-DEVELOPMENT CONSULTATION WITH WBC

Date: 28 January 2025
Application: 250163



**WOKINGHAM
BOROUGH COUNCIL**

SDL Flood Risk Officer

Development Management &
Compliance

P.O. Box 157

Shute End, Wokingham

Berkshire, RG40 1BN

Tel: (0118) 974 6000

Minicom No: (0118) 974 6991

Dear SDL Flood Risk Officer,

Pre-app consultation Consultation

Application Number: 250163

Applicant: Vistry Thames Valley

Site Address: Parcels 11 12 and 13, Finchwood Park, Finchampstead

Parish: Finchampstead

Grid Reference: Easting - 477375, Northing - 164400

Type of Development:

Proposal: Pre-application advice for the proposed erection of circa. 217no. residential dwellings, ancillary structures, internal roads, car parking, landscaping and public open space, drainage features, and associated works split across Parcels 11, 12 and 13.

Case Officer: Nick Chancellor

Development Management has received the above application and we require your comments on the proposal using the recommended memorandum below. The documents associated with this are available to view in NEC DM using the application number 250163. Alternatively, public documents are available to view on the Council's planning application search page: [Wokingham Borough Council Online Planning](#).

Please index your response into NEC DM against the application. If you are recommending conditions, you should give a reason with reference to relevant policies. A list of standard conditions can be found on the Z Drive at: [Z:\Standard Planning Conditions](#).

Your observations are required in respect of this application within **10 working days** of the above date or **15 working days** if the development type is classed as a major development. As this is a pre-application request, you are reminded that all correspondence should be through the case officer. If the developer contacts you direct, please refer them to the case officer unless otherwise directed. It is possible

you will be required to attend a meeting with the developer as part of the pre-application process and you will be contacted if this is the case.

Yours sincerely,
Development Management & Compliance

MEMORANDUM

From:	Boniface Ngu Flood Risk & Drainage		
Service	SDL Flood Risk Officer	App No:	250163
Address:	Parcels 11 12 and 13, Finchwood Park, Finchampstead.		
Proposal:	Pre-application advice for the proposed erection of circa. 217no. residential dwellings, ancillary structures, internal roads, car parking, landscaping and public open space, drainage features, and associated works split across Parcels 11, 12 and 13.		
Type of Development:			
Site Visit Made:	No		

Summary Of Recommendations

Comments On Proposal

The site is within flood zone 1 and we note that there is an existing outline planning application for the wider site with approved overall sitewide drainage strategy.

Site layout drawings PL1004 D dated 17/01/2025 (Parcel 13) and PL04 J dated 17/01/2025 (parcels 11 & 12) show the general proposed development layout.

We would need to see how the proposed development of parcels 11, 12 and 13 feed into the most up to date approved sitewide drainage strategy, taking the SuDS management train into consideration, ensuring that runoff is attenuated and discharge controlled at the approved greenfield rates.

Attenuation provided should include various forms of SuDS, designed to cater for the 1 in 100-year flood event with a 40 % allowance for climate change, with adequate freeboard (minimum 300mm) and shallow side slopes (minimum 1:3).

We would also require understanding the drainage maintenance details for the SuDS features within the parcels, who will be responsible for the maintenance and adequate maintenance access for the attenuation features.

In calculating the attenuation volumes, we need to see a clear demonstration of the impermeable areas considered, with calculations making use of FEH 22 model characteristics.

There should be no surcharging for events up to the 1 in 30 flood event and ideally no flooding for the 1 in 100-year flood event with a 40% allowance for climate change.

If there is however flooding for the 1 in 100-year + 40% climate change, it should be demonstrated how this flooding will be catered for within the development boundary, so that flood risk is not increased elsewhere.

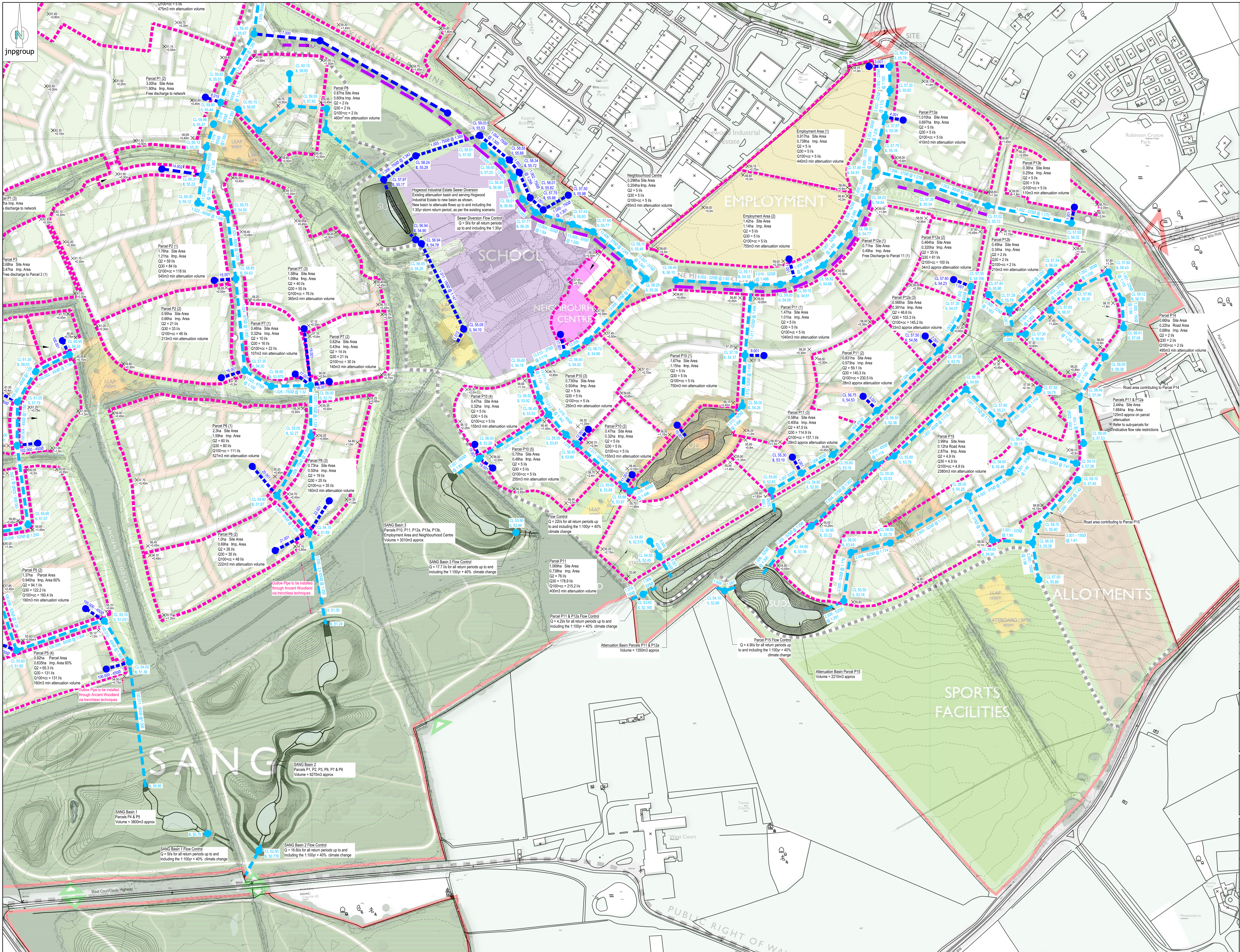
Conditions & Reasons (if required)

Please use this section to detail any conditions that are required to make this development acceptable in planning terms. All conditions should be accompanied by reasons.

Date:	30/01/2025	Signed:	Boniface Ngu
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Appendix F

OUTLINE PLANNING SURFACE WATER DRAINAGE STRATEGY



Notes:

- Where this drawing has been issued in electronic .dwg format it has been done so in good faith. jnp group do not take any responsibility for any inaccuracies in the electronic data, which should be checked against the paper (or .pdf) drawing issue. Any apparent discrepancies should be immediately reported to jnp group. The electronic .dwg file should not be assumed to be to scale and should not be used for overlaying, setting out or checking of any third party information. All dimensions should be taken from the paper (or .pdf) version of the drawing. Electronic drawings may contain third party information, jnp group take no responsibility for this information, which should be checked against the originators paper drawing(s).
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- Do not scale.
- Any discrepancies between drawings of different scales, and between drawings and specification where appropriate to be notified to The Engineer for decision.
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Health and Safety Note:
The details on this drawing have been prepared on the assumption that a competent contractor will be carrying out the works. If the contractor considers that there is insufficient Health and Safety information on this drawing, this should be immediately brought to the attention of the designer.

Key

- Surface Water Lateral
- Surface Water Storage
- Surface Water Main Sewer
- Surface Water Network Label
- Development Parcel
- Parcel P10 Catchment Area
- Possible Levels
- Proposed Levels
- Existing Contours

CATCHMENT ANALYSIS NOTES

1. Impervious areas for different land use is based on:
1.1. 60% of residential parcel area
1.2. 60% of neighbourhood centre area
1.3. 70% of employment area

Further allowances for urban creep (10%) and POS (5%) have been included in the impervious area figures.

2. Impervious areas from the spine road are in addition to the impervious areas indicated and are not subject to POS or urban creep allowances.

3. Refer to MicroDrainage calculations for full contributing areas.

4. Flow controls for each parcel are based on Hydrobrake or similar with either 'Linear Discharge Profile' or 'Minimise Upstream Storage' flow curves. Refer to parcel specific notes for flow rates for given return periods.

5. On parcel attenuation volumes indicated represent the minimum volumes required.

6. This drawing is indicative only and subject to development of the site-wide Masterplan and Detailed design.

Rev	Date	Amendment	By	CHK
A	02.10.19	Strategy updated to suit removal of permeable paving and site masterplan.	KM	KT
B	08.08.18	Site layout updated and SUDs basin contours indicated.	MIT	MV

Status Preliminary

Legal & General HOMES

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Client Legal & General Homes

Job Hogwood Farm, Finchampstead

Title Outline Drainage Strategy

Scale 1:1250 Date April 2018
Drawn by HS Checked by MV Approved by MV

Drawing No. C85672-SK-204

Rev. B