



Drainage Strategy

Project:

Proposed Residential Development, Keston Fields, Pinchbeck, Lincolnshire

Document Ref: DR-REP-0422	Revision: 00	Original Issue Date: 03/11/2025	Author: B. Jackson
Reason for Issue: For Planning	Revision Note: 00 - Initial Issue		



Contents

Introduction	4
Existing Site	4
Flood Risk	5
Development Proposals	6
Proposed Drainage Strategy	6
Surface Water Drainage	6
Infiltration	6
Watercourse	8
Surface Water Sewer	9
Run-off Rates	9
Existing greenfield run-off	9
Proposed Run-off	10
Proposed Surface Water Drainage Design	10
Surface Water Drainage Summary	12
Urban Creep	12
Flood Routing	12
Finished Floor Levels + Finished Levels	12
Water Quality	13
Maintenance	15
Pump Maintenance	16
Attenuation Basin Maintenance	16
Filter Strip Maintenance	17
Swale Maintenance	18
Porous Paving Maintenance	19
Foul Proposals	20
Conclusion	21
Appendices	22
Appendix A – Drainage Calculations	22
 Figure 1 - Site Location	 4
Figure 2 - Bedrock	7
Figure 3 - Superficial Deposits	8
Figure 4 - Local IDB Features	9



Figure 5 - Existing Greenfield Runoff Rates	10
Figure 6 – Drainage Model.....	11
Figure 7 - Pollution hazard indices for different land use classifications	14
Figure 8 - Indicative SuDS mitigation indices for discharging to a surface water.....	14



Introduction

Jackson consulting engineers have been appointed to undertake a drainage strategy forming part of the supporting evidence for planning conditions for the proposed residential development, to land east of Millgreen Road, Pinchbeck. The following document is to assist the planners and Lead Local Flood Authority (LLFA) in demonstrating that the development is acceptable in terms of sustainable drainage strategy and flood risk as a result of the development.

Existing Site

The site lies to the east of Mill Green Road within the village Pinchbeck. An aerial location plan, with approximate site boundary is shown in figure 1, noting that the redline boundary does not constitute as the planning boundary. The site is greenfield with a total site area of approximately 2.3 hectares.



Figure 1 - Site Location

The topographical survey identifies that the site is currently greenfield. It shows that the site has been reworked and used to store surplus arising from the original development – therefore not all levels are natural.



The site (apart from the arisings) fall towards the northern part of the site, ranging from approximate levels of 4m AOD down to, down to roughly 3.3m AOD – therefore given the sites size, it is relatively flat.

There is a ditch to the north west of the site, this is accessible directly through the larger part of the site, so entry will not be an issue. This has an invert level of approximately 2.10m AOD – this shows that there is not much of a level difference between the site levels and the invert of the ditch.

The north of the site is bounded by the existing development – an access road. The south of the site is currently used as a storage yard. To the east and west the site is bounded by residential development.

Flood Risk

The FRA is being addressed by another consultant and will be provided as part of the overall planning application.



Development Proposals

The development consists of residential detached dwellings with the majority having either detached or attached dwellings.

Proposed Drainage Strategy

The following section provides narrative on the principles behind the drainage strategy and has been carried out in general accordance with “CIRIA’s C753 – the SUDS Manual”, where appropriate.

Surface Water Drainage

For new developments there is a requirement to apply sustainable drainage principles (SuDS) to the disposal of surface water from the site where practicable. As required by Building Regulations and PPG, surface water must discharge to the following, listed in priority.

1. To ground – in an adequate soakaway or some other adequate infiltration system.
2. To a watercourse.
3. To a surface water sewer, highway drain or other drainage system.
4. To a combined sewer.

Infiltration

At this stage of the project a phase 2 ground investigation report has not been undertaken, and therefore a desktop study is being undertaken to understand the prospect of infiltration.

BGS mapping shows that the bedrock of the area is ‘Oxford Clay Formation - Mudstone’, as shown in the figure below. This is generally considered as an impermeable strata.



Figure 2 - Bedrock

The superficial deposits, as shown in the figure below, is shown as 'Tidal Flat Deposits – Clay and Silt'. It is very likely that the silt content will block any pores available through the clay and the clay would be generally seen as impermeable.

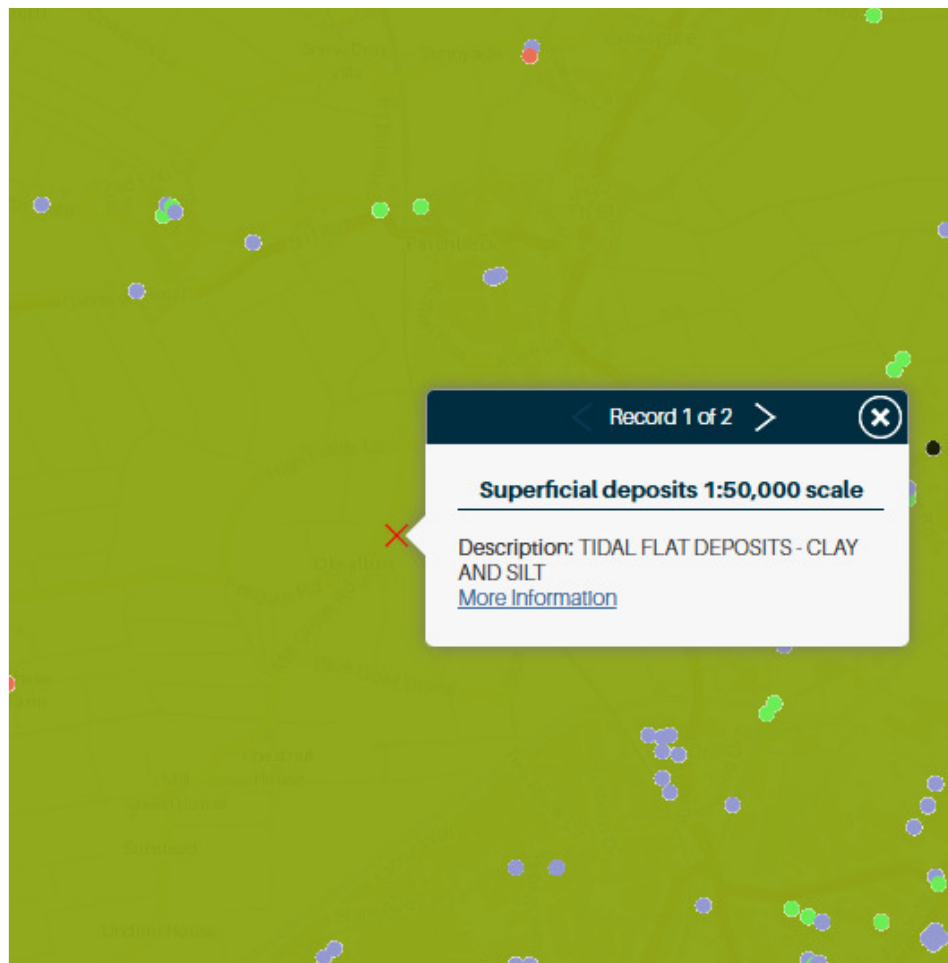


Figure 3 - Superficial Deposits

From the mapping there is no local borehole information.

A phase 2 ground investigation has been undertaken for the scheme, this would be available upon request from the developer. The description of the logs generally matches the above BGS descriptions. The key point is the water table. The range of the water table was at most 1.8m below ground level, and up to 0.8m below. Working on the 1m exclusion for soakaways, this would generally rule out a 'crate' soakaway system, or deeper infiltration basin. Therefore, infiltration is ruled out.

Watercourse

As previously identified – there is an open watercourse to the west of the site. This flows to the north, towards an IDB drain – the 'Reedy Graft'. The open watercourse will be riparian, and part of the initial phase of the development.

Bylaw consent will still be required from the IDB.

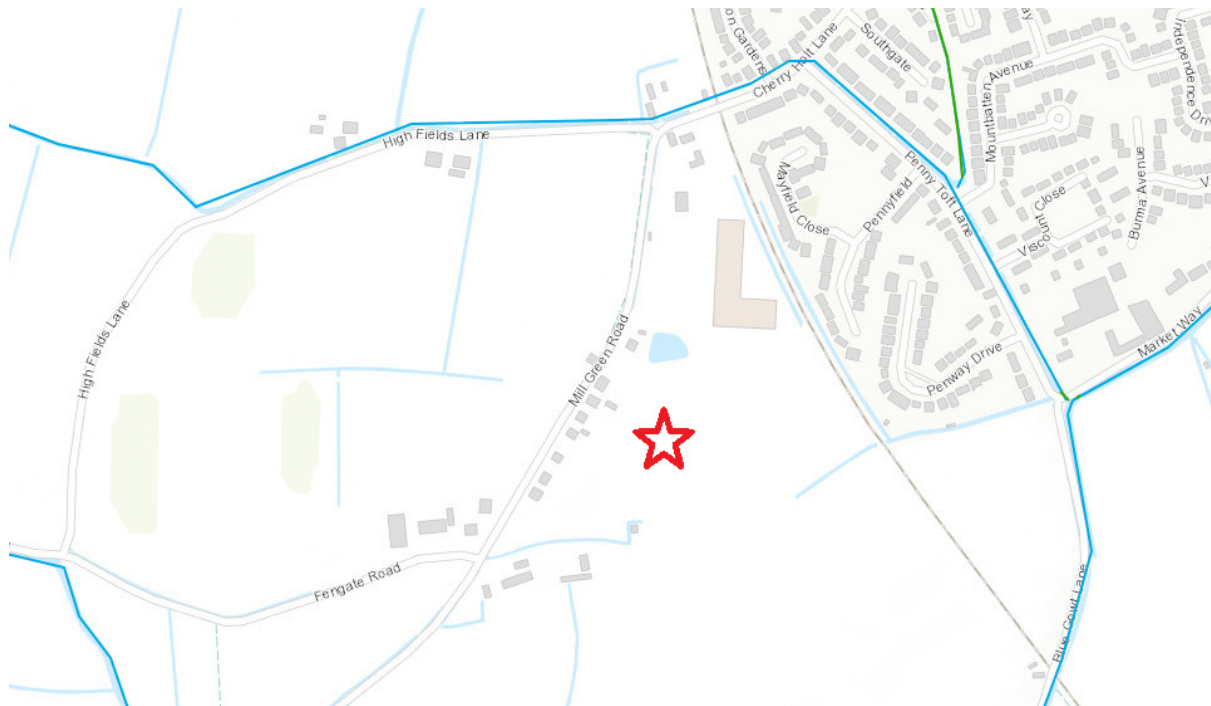


Figure 4 - Local IDB Features

As this is an adequate point of discharge, this is being considered as the discharge for the site.

Surface Water Sewer

There are no identified surface water sewers within close proximity of the site, and as a watercourse has been identified as a sufficient point of discharge then this is not being further explored.

Run-off Rates

Existing greenfield run-off

The existing run-off rates for the site for the 1 in 1 year, Q_{BAR} , 1 in 30 year, 1 in 100 year and 1 in 200 year events are summarised in the figure below. The calculations consider the run-off for the entire development, minus large areas of public open space, given a contributing area of 1.94 hectares - this is in accordance with the methodology in CIRIA C753 and the HR Wallingford Methods.



Results

Method 	IH124
Flow rate 1 year (l/s) 	2.4 l/s
Flow rate 2 year (l/s) 	2.4 l/s
Flow rate 10 years (l/s) 	4.5 l/s
Flow rate 30 years (l/s) 	6.7 l/s
Flow rate 100 years (l/s) 	9.7 l/s
Flow rate 200 years (l/s) 	11.5 l/s

Figure 5 - Existing Greenfield Runoff Rates

Proposed Run-off

To comply with the LLFA, the site should be returned to greenfield runoff as fair as practical. There are two options to achieve this, to match the runoff to a maximum of Q_{Bar} , or to have a variable outflow, matching to the like for like predevelopment greenfield runoff. To keep the design straight forward at the planning stage, it is proposed that the sites discharge rate will be restricted to Q_{Bar} , although at detailed design, and through consultation with the IDB, the approach may be modified to suit the like-for-like storms.

The current approach means that the discharge is comparable than the pumpable catchment rate (this would equate to around 1.4l/s), the reality is that storms above the Q_{Bar} event (roughly 1 in 2), the greenfield runoff will be reduced as a result of the development as it is being properly managed, for example predevelopment the runoff for the 1 in 30 year storm is 6.7/s, but the post development will be 2.4l/s (the Q_{BAR} rate) for all design storms.

Proposed Surface Water Drainage Design

The proposed drainage layout is shown on JCE drawing 0422-JCE-00-SI-SK-C-3000, which has been provided as part of the overall planning submission.

All drainage models has been simulated for the 1 in 1, 30, 100 and 100 + 40% climate change events using FEH data, with a C_v value set to 1.

A full copy of the preliminary drainage calculations can be found in appendix A of this document, and a graphical representation of the model is shown in the figure below. Please note, that some of the drainage model has been simplified for this stage of the design. The final model will be fully represented and fine-tuned.

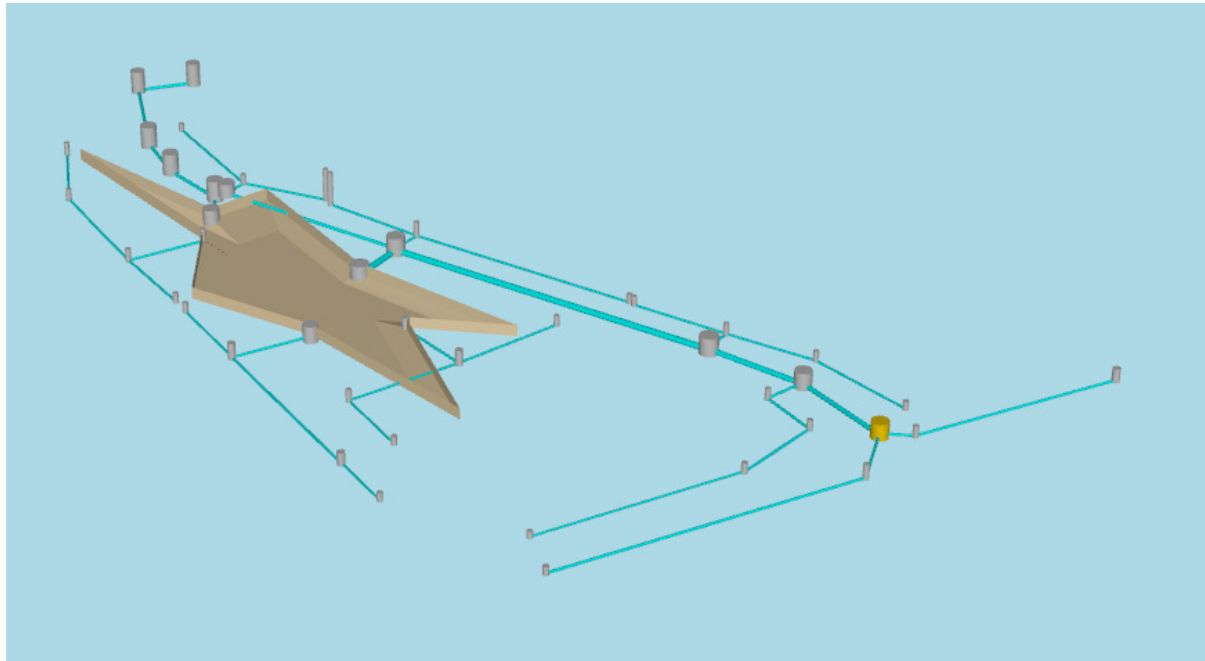


Figure 6 – Drainage Model

As outlined previously, it is assumed that infiltration is not feasible for this site, therefore the SuDS strategy for the surface water drainage will be achieved using the provision of surface water conveyance, cleansing and attenuation. The site layout has generally been designed to utilise a swale to collect highway and domestic water – leading into an attenuation basin, and eventual discharge into the existing ditch.

It is proposed the carriageway will generally be laid to a single crossfall, which will discharge into a filter strip before discharging into the swale. The filter drain will likely contain only highways water, and therefore will be put forward for adoption to Lincolnshire County Council. To meet CIRIA C753's mitigation indices, the swale will undergo pre-treatment via a 'filter strip' – this is also a detail requirement of LCC. Owing to the flat nature of the swale, an underdrain will likely be installed. There will be a small area of highway that will drain to gullies, before discharging into the basin. Part of the road directly adjacent to the basin will discharge directly into it, although it will pass over a filter strip.

Given the use of the filter strip, swale and attenuation basin, it is proposed that sufficient suds features are being used, and as a result the drainage from the dwellings are to discharge into traditional pipework before entering the SUDs features as mentioned above. As there is some above ground flooding in the 1 in 100 year + 40% CC event, strategic porous paving might be used to reduce this, although the extent of flooding is acceptable for this level of storm.

The final discharge into the drain – subject to byelaw consent (as the catchment is into the Welland and Deepings IDB), will be via a new insitu headwall. The direct connection into the headwall will be under gravity, with the riser main discharging into a manhole.

The attenuation basin has been designed to store all storms, up to and including the 1 in 100 year + 40% climate change storm events. All storms up to and including the 1 in 100 year + 40% climate change event will be stored below ground. This design ethos is in accordance with DEFRA guidance



and LCC's requirements. Given the amount of storage required, and to keep the maximum dept of water within safe levels, a supplementary attenuation tank has been provided.

Given the elevation of the site, and the reluctance to raise levels, it is proposed that the site will be served by an AW pumping station – subject to negotiation with them. The exact parameters will need to be agreed, but in accordance with the DCG, an additional storage volume of 125m³ per hectare will be provided, this is made up within the free board of the basin – this equates to around 100mm of depth. The top level of the basin will be below the finished floor level of the local properties. A copy of the calculations can be found in appendix A.

Surface Water Drainage Summary

In summary, the surface water drainage will be to the following.

- Domestic roofwater will discharge into a piped system before discharging into the attenuation basin.
- Domestic drives will discharge into a piped system before discharging into the attenuation basin.
- The highways will drain into filter strip and swale to the side of the roads before discharging into the attenuation basin.
- There is a very small section of highways which cannot drain via. swales, and will need to have gullies to discharge this element. This will still eventually pass through the basin so achieves a compliant SUDS scheme.
- The basin will discharge into the IDB drain to the north of the site. This will require a pump – a similar strategy to the earlier phases.

Urban Creep

In this instance, as the site is residential, an Urban Creep of 10% additional impermeable area has been included into the calculations. This has been included to each roof area only and not the highways are drives. The top of the basin area is also included in the total impermeable area.

Flood Routing

The scheme has been designed so that no above ground flooding is created in the 1 in 30 year event (other than to the basin) and manageable flooding in the 1 in 100 year + 40% climate change + 10% urban creep storm. The design compliments the natural ground levels, and any flood water will either be cut off by the swale, free board in the attenuation basin, or rear gardens. Indicative exceedance flow routes have been provided on the strategy drawing.

Finished Floor Levels + Finished Levels

The FRA stipulates that the FFL's are to be a minimum of 300mm above existing levels. The rear gardens will fall down to this level as quickly as practical, but the front doors (and rears in some locations) will likely be flush to offer building regs compliance. Garages will typically be set 150mm below FFL's unless detached.

The FFL's will try and stay above the road/footway levels, although the garages might be lower than this (this is in order to achieve gradient compliance to the roads, and part M compliance).



It was explored to achieve a gravity solution for the drainage, but this would have required a significant lifting of levels. It was felt that this would not have been in keeping with the heights of the surrounding properties.

Although a strict FFL is not required, it is recommended that the lowest FFL is higher than the surrounding roads, particularly to Millgreen Road. This sits at around 3.4m AOD. By ensuring that the FFL's are above this level, then the dwellings will always be protected from surface flooding, and realistically flood under catastrophic failures of the surrounding system.

Additionally, the levels should typically fall towards the basin. This will help to protect properties in storms of exceedance.

A number of key levels have been indicated on the plan. It should be noted that there are areas of stockpiled material on the site, and these have been ignored for this purpose.

All levels are preliminary only and subject to detailed design.

Water Quality

The methods of surface water disposal mentioned above have included provisions for water quality. In accordance with CIRIA C753, the pollution hazard features for the drainage areas are:

- Residential roofs - Very low
- Individual property driveways - Low
- Private access - Low
- Adoptable cul-de-sac - Low

To remove the pollution risks, CIRIA have developed 'Pollution hazard indices' and the 'mitigation indices' that the SuDS components provide, further details of these are found in the figures below.



Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/Industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways ¹	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways ¹	High	0.8 ²	0.8 ²	0.9 ²

Figure 7 - Pollution hazard indices for different land use classifications

Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond ⁴	0.7 ³	0.7	0.5
Wetland	0.8 ³	0.8	0.8
Proprietary treatment systems ^{5,6}	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Figure 8 - Indicative SuDS mitigation indices for discharging to a surface water

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 index (for each contaminant type):

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

Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required where:

$$\text{Total SuDS mitigation index} = \text{mitigation index}_1 + 0.5 (\text{mitigation index}_2)$$



Where:

Mitigation index_n = mitigation index for component n

Provided the total SuDS mitigation index exceeds the pollution hazard indices, then sufficient water quality will be provided.

For the calculations below the hazards are represented by;

Total suspended solids = Red

Metals = Blue

Hydrocarbons = Green

The figures are presented to show the actual achieved in the right-hand side column. The right-hand side's total must be higher than the left-hand side.

Roofs - attenuation basin

0.2 0.2 0.05 = Attenuation Basin 0.5 0.5 0.6

The mitigation provided by the SUDs features exceeds all the pollution indices, therefore sufficient treatment has been provided.

Individual property driveways - attenuation basin only

0.5 0.4 0.4 = Attenuation Basin 0.5 0.5 0.6

The mitigation provided by the SUDs features exceeds all the pollution indices, therefore sufficient treatment has been provided.

Adopted Roads

0.5 0.4 0.4 = Filter strip 0.4 0.4 0.5 + ½ Swale 0.25 0.3 0.3 + ½ Attenuation Basin 0.25 0.25 0.3 (Total 0.9 0.95 1.1)

The mitigation provided by the SUDs features exceeds all the pollution indices, therefore sufficient treatment has been provided.

Adopted Roads

0.5 0.4 0.4 = Attenuation Basin 0.5 0.5 0.6

The mitigation provided by the SUDs features exceeds all the pollution indices, therefore sufficient treatment has been provided.

All the methods above provide enough water quality in accordance with CIRIA's C753 mitigation indices.

Maintenance

It is crucial that the elements mentioned in the drainage elements and water quality are maintained to a sufficient standard to ensure that the devices can still function as designed. Generally, the maintenance requirements are either from CIRIA 753, or manufacturer guidance.



It is not possible to give full details of the proposed maintenance responsibilities as the project has not been developed enough, but it is expected that a full maintenance/management strategy will be put forward at detailed design and that this can be conditioned.

The maintenance for the devices outlined below are preliminary only and subject to detailed design. The final design will be subject to a full maintenance plan. At present, it will be intended that the swale, basin, pump and gullies will be adopted by highways/Anglian Water and that the private drives/houses will be under the responsibility of the homeowner.

Pump Maintenance

The pump will be put forward for adoption to AW and they will have their own specific requirements for maintenance.

Attenuation Basin Maintenance

Operation and maintenance requirements for detention basins		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	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 banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required



Filter Strip Maintenance

Operation and maintenance requirements for filter strips		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the 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 filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination (eg oils)	Monthly (at start, then half yearly)
	Check flow spreader and filter strip surface for even gradients	Monthly (at start, then half yearly)
	Inspect gravel flow spreader upstream of filter strip for clogging	Monthly (at start, then half yearly)
	Inspect silt accumulation rates and establish appropriate removal frequencies	Monthly (at start, then 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% of the filter strip area.
Remedial actions	Repair erosion or other damage by re-turfing or reseeding	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



Swale Maintenance

Maintenance schedule	Required action	Typical frequency
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 reseeded	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



Porous Paving Maintenance

Maintenance schedule	Required action	Typical frequency
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



Foul Proposals

There is an existing foul pumping station located to the entrance of the site. It is understood that the pump was designed for the number of properties associated with this application and the earlier phases.

It is understood that the pump has an agreed discharge rate, and that the inclusion of the additional properties have been allowed for, and as a result it is deemed that the foul proposals have a suitable outfall.

As the application is more than 10 properties, Anglian Water will comment during the planning application – at this point it is expected that they will confirm if the current section 106 covers all of the site. Dependant on the adoption status of the pump, a further S106 might be required to allow for the connection into the new pumping station. If it is not yet adopted, then it is assumed that asset owner permission will be required – this will not be an issue as the current and future developer are the same.

If the connection into the pumping station is acceptable, then the site can be drained via gravity. It is proposed that the main adoptable foul sewer will run through the main road, and adoptable laterals provided at strategic positions within the private plots.

In conclusion, it is understood that foul capacity has been established for this phase through the earlier phases, and Anglian Water will comment during the planning process.



Conclusion

- There is a natural site gradient to the north, where an existing ditch lies.
- The above drainage strategy demonstrates that the site can be drained through the use of a Sustainable Drainage System at an appropriate level for the development.
- The flow offsite will be restricted to ensure they do not exceed greenfield runoff rates for the Q_{BAR} event, although this is subject to further negotiation with the IDB and the pump supplier.
- Discharge from the site will be restricted to 2.4l/s, subject to IDB byelaw consent.
- No above ground flooding is present for the 1 in 30 climate change event.
- Limited on site flooding is present for the 1 in 100 year + 40% climate change event – no water in these events will leave the site. The flooding typically heads towards the basin.
- The proposed scheme does not increase the risk of flooding either on or off site as a result of the development, as storm water for all design storms are kept on site.
- The risk of flooding as a result of the development is reduced for storms greater than the Q_{BAR} event.
- A full maintenance strategy will be developed at the detailed design stage.
- A preliminary drainage layout can be found on JCE's Preliminary Drainage Strategy drawing: 0422-JCE-00-SI-DR-C-3000.
- Finished floor levels will be set at a minimum of 300mm above general proposed ground levels.
- The current pumping station design has allowed for this phase of the development, and it is understood the S106 allows for the final numbers of the development as a whole.



Appendices

Appendix A – Drainage Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	5.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	1.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	1.000
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
PS6	0.058	5.00	3.529	450	523549.949	324742.774	0.729	2.800
PS7	0.033	5.00	3.785	450	523599.555	324748.409	1.210	2.575
PS8	0.063	5.00	3.809	600	523644.818	324757.837	1.109	2.700
PS9			3.800	450	523611.249	324755.657	1.270	2.530
S1			3.663	1350	523606.964	324758.123	1.313	2.350
PS20	0.024	5.00	3.500	450	523551.283	324751.199	0.570	2.930
PS21	0.060	5.00	3.503	450	523584.903	324755.812	0.883	2.620
PS22			3.500	450	523598.454	324762.744	0.950	2.550
PS23			3.600	450	523596.940	324772.585	1.100	2.500
S2	0.040	5.00	3.598	1350	523603.676	324774.783	1.378	2.220
PS10	0.025	5.00	3.800	450	523613.303	324762.237	1.100	2.700
PS11	0.024	5.00	3.780	450	523608.190	324779.504	1.230	2.550
PS13	0.024	5.00	3.750	450	523590.767	324804.347	1.150	2.600
PS12			3.750	450	523599.724	324791.573	1.300	2.450
S3	0.021	5.00	3.577	1500	523595.718	324789.076	1.477	2.100
PS19	0.027	5.00	3.550	450	523546.513	324886.473	0.850	2.700
PS17	0.024	5.00	3.650	450	523560.076	324853.975	1.050	2.600
PS18			3.600	450	523549.980	324864.909	1.200	2.400
S5			3.468	1350	523546.505	324862.918	1.168	2.300
PS14	0.050	5.00	3.750	450	523590.388	324805.166	1.100	2.650
PS16	0.025	5.00	3.650	450	523560.319	324852.546	1.150	2.500
PS15			3.652	450	523569.180	324838.003	1.352	2.300
S4			3.512	1500	523564.806	324835.534	1.542	1.970
S6			3.350	1500	523556.911	324830.258	1.479	1.871
PS5	0.013	5.00	3.550	450	523536.729	324768.281	1.050	2.500
PS24	0.054	5.00	3.550	600	523535.270	324779.403	1.200	2.350
PS30	0.030	5.00	3.450	450	523528.704	324828.576	1.150	2.300
PS3			3.550	600	523530.893	324813.508	1.450	2.100
PS4	0.019	5.00	3.350	1200	523543.631	324815.250	1.479	1.871
PS27		5.00	3.500	450	523543.566	324780.833	0.900	2.600
PS26	0.025	5.00	3.500	450	523541.929	324794.395	1.000	2.500
PS25	0.026	5.00	3.600	450	523577.695	324803.099	1.000	2.600
PS28	0.017	5.00	3.526	600	523560.595	324799.019	1.276	2.250
PS29			3.350	600	523557.325	324811.959	1.479	1.871
S14	0.084	5.00	3.350	1200	523551.235	324933.279	1.575	1.775
PS1	0.071	5.00	3.653	450	523526.822	324885.929	1.253	2.400
PS2	0.032	5.00	3.550	450	523522.818	324870.877	1.350	2.200
PS31	0.033	5.00	3.500	450	523528.286	324832.022	1.200	2.300
PS32			3.500	450	523525.716	324848.021	1.450	2.050
PS33	0.104	5.00	3.350	450	523538.370	324850.106	1.479	1.871
S7		5.00	3.350	1350	523541.754	324856.285	1.499	1.851

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S8			3.455	1350	523545.111	324864.658	1.705	1.750
S9			3.443	1350	523541.482	324876.611	1.743	1.700
S10			3.430	1350	523541.218	324887.713	1.780	1.650
S11			3.412	1200	523545.952	324910.268	1.862	1.550
S12			3.430	1200	523555.544	324908.541	1.930	1.500
PS35		5.00	3.400	450	523514.191	324946.053	0.900	2.500
PS36	0.009	5.00	3.360	450	523552.206	324937.612	1.410	1.950
PS38	0.009	5.00	3.360	450	523555.610	324937.103	0.810	2.550

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	PS6	PS7	49.925	0.600	2.800	2.575	0.225	221.9	225	5.00	1.0
1.001	PS7	S1	12.217	0.600	2.575	2.500	0.075	162.9	225	5.00	1.0
2.000	PS8	PS9	33.640	0.600	2.700	2.530	0.170	197.9	225	5.00	1.0
2.001	PS9	S1	4.944	0.600	2.530	2.500	0.030	164.8	225	5.00	1.0
1.002	S1	S2	16.982	0.600	2.350	2.295	0.055	308.8	375	5.00	1.0
3.000	PS20	PS21	33.935	0.600	2.930	2.695	0.235	144.4	150	5.00	1.0
3.001	PS21	PS22	15.221	0.600	2.620	2.550	0.070	217.4	225	5.00	1.0
3.002	PS22	PS23	9.956	0.600	2.550	2.500	0.050	199.1	225	5.00	1.0
3.003	PS23	S2	7.085	0.600	2.500	2.445	0.055	128.8	225	5.00	1.0
1.003	S2	S3	16.358	0.600	2.220	2.175	0.045	363.5	450	5.00	1.0
4.000	PS10	PS11	18.008	0.600	2.700	2.550	0.150	120.1	150	5.00	1.0
4.001	PS11	PS12	14.743	0.600	2.550	2.525	0.025	589.7	150	5.00	1.0
5.000	PS13	PS12	15.601	0.600	2.600	2.525	0.075	208.0	150	5.00	1.0
4.002	PS12	S3	4.720	0.600	2.450	2.400	0.050	94.4	225	5.00	1.0
1.004	S3	S4	55.802	0.600	2.100	1.970	0.130	429.2	525	5.00	1.0
6.000	PS19	PS18	21.841	0.600	2.700	2.475	0.225	97.1	150	5.00	1.0
7.000	PS17	PS18	14.883	0.600	2.600	2.475	0.125	119.1	150	5.00	1.0

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	0.873	34.7	0.2	0.504	0.985	0.058	0.0	11	0.214
1.001	1.021	40.6	0.2	0.985	0.938	0.091	0.0	13	0.279
2.000	0.926	36.8	0.2	0.884	1.045	0.063	0.0	11	0.228
2.001	1.015	40.4	0.2	1.045	0.938	0.063	0.0	11	0.250
1.002	1.026	113.3	0.4	0.938	0.928	0.154	0.0	16	0.242
3.000	0.834	14.7	0.1	0.420	0.658	0.024	0.0	7	0.199
3.001	0.882	35.1	0.2	0.658	0.725	0.084	0.0	13	0.240
3.002	0.923	36.7	0.2	0.725	0.875	0.084	0.0	13	0.252
3.003	1.150	45.7	0.2	0.875	0.928	0.084	0.0	12	0.300
1.003	1.060	168.6	0.8	0.928	0.952	0.278	0.0	22	0.268
4.000	0.916	16.2	0.1	0.950	1.080	0.025	0.0	7	0.219
4.001	0.407	7.2	0.1	1.080	1.075	0.050	0.0	14	0.153
5.000	0.693	12.2	0.1	1.000	1.075	0.024	0.0	8	0.174
4.002	1.346	53.5	0.2	1.075	0.952	0.074	0.0	10	0.315
1.004	1.074	232.6	1.0	0.952	1.017	0.373	0.0	25	0.271
6.000	1.020	18.0	0.1	0.700	0.975	0.027	0.0	7	0.245
7.000	0.920	16.3	0.1	0.900	0.975	0.024	0.0	7	0.220

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)
6.001	PS18	S5	4.004	0.600	2.400	2.375	0.025	160.2	225	5.00	1.0
6.002	S5	S4	32.937	0.600	2.300	2.195	0.105	313.7	300	5.00	1.0
8.000	PS14	PS15	39.091	0.600	2.650	2.375	0.275	142.1	150	5.00	1.0
9.000	PS16	PS15	17.029	0.600	2.500	2.375	0.125	136.2	150	5.00	1.0
8.001	PS15	S4	5.023	0.600	2.300	2.270	0.030	167.4	225	5.00	1.0
1.005	S4	S6	9.495	0.600	1.970	1.950	0.020	474.8	525	5.00	1.0
10.002_1	S14	S11	23.610	0.600	1.775	1.625	0.150	157.4	225	5.00	1.0
10.000	PS5	PS24	11.217	0.600	2.500	2.425	0.075	149.6	150	5.00	1.0
10.001	PS24	PS3	34.385	0.600	2.350	2.100	0.250	137.5	225	5.00	1.0
11.000	PS30	PS3	15.226	0.600	2.300	2.175	0.125	121.8	150	5.00	1.0
10.002	PS3	PS4	12.857	0.600	2.100	2.025	0.075	171.4	225	5.00	1.0
12.000	PS27	PS26	13.660	0.600	2.600	2.500	0.100	136.6	150	5.00	1.0
12.001	PS26	PS28	19.231	0.600	2.500	2.325	0.175	109.9	150	5.00	1.0
13.000	PS25	PS28	17.580	0.600	2.600	2.325	0.275	63.9	150	5.00	1.0
12.002	PS28	PS29	13.347	0.600	2.250	2.075	0.175	76.3	225	5.00	1.0
14.000	PS1	PS2	15.576	0.600	2.400	2.275	0.125	124.6	150	5.00	1.0
14.001	PS2	PS32	23.039	0.600	2.200	2.050	0.150	153.6	225	5.00	1.0
15.000	PS31	PS32	16.204	0.600	2.300	2.125	0.175	92.6	150	5.00	1.0
14.002	PS32	PS33	12.825	0.600	2.050	1.975	0.075	171.0	225	5.00	1.0
1.008	S7	S8	9.021	0.600	1.851	1.750	0.101	89.3	300	5.00	1.0
1.009	S8	S9	12.492	0.600	1.750	1.700	0.050	249.8	300	5.00	1.0

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)
6.001	1.030	41.0	0.1	0.975	0.868	0.052	0.0	10	0.239
6.002	0.882	62.4	0.1	0.868	1.017	0.052	0.0	11	0.178
8.000	0.841	14.9	0.1	0.950	1.127	0.050	0.0	10	0.255
9.000	0.859	15.2	0.1	1.000	1.127	0.025	0.0	7	0.205
8.001	1.007	40.1	0.2	1.127	1.017	0.075	0.0	12	0.262
1.005	1.021	221.0	1.4	1.017	0.875	0.500	0.0	29	0.285
10.002_1	1.039	41.3	0.4	1.350	1.562	0.137	0.0	15	0.324
10.000	0.819	14.5	0.0	0.900	0.975	0.013	0.0	6	0.159
10.001	1.113	44.2	0.2	0.975	1.225	0.067	0.0	11	0.275
11.000	0.909	16.1	0.1	1.000	1.225	0.030	0.0	8	0.230
10.002	0.995	39.6	0.3	1.225	1.100	0.096	0.0	13	0.272
12.000	0.858	15.2	0.0	0.750	0.850	0.000	0.0	0	0.000
12.001	0.958	16.9	0.1	0.850	1.051	0.025	0.0	7	0.230
13.000	1.260	22.3	0.1	0.850	1.051	0.026	0.0	6	0.268
12.002	1.499	59.6	0.2	1.051	1.050	0.068	0.0	9	0.330
14.000	0.899	15.9	0.2	1.103	1.125	0.071	0.0	11	0.295
14.001	1.052	41.8	0.3	1.125	1.225	0.103	0.0	14	0.302
15.000	1.044	18.5	0.1	1.050	1.225	0.033	0.0	8	0.266
14.002	0.997	39.6	0.4	1.225	1.150	0.136	0.0	15	0.310
1.008	1.664	117.6	0.0	1.199	1.405	0.000	0.0	0	0.000
1.009	0.990	70.0	0.0	1.405	1.443	0.000	0.0	0	0.000

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)
1.010	S9	S10	11.105	0.600	1.700	1.650	0.050	222.1	300	5.00	1.0
1.011	S10	S11	21.858	0.600	1.650	1.550	0.100	218.6	300	5.00	1.0
1.012	S11	S12	9.689	0.600	1.550	1.500	0.050	193.8	300	5.00	1.0
10.000_1	PS35	PS36	38.941	0.600	2.500	1.950	0.550	70.8	150	5.00	1.0
11.000_1	PS38	PS36	3.442	0.600	2.550	1.950	0.600	5.7	150	5.00	1.0
10.001_1	PS36	S14	4.440	0.600	1.950	1.850	0.100	44.4	150	5.00	1.0

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)
1.010	1.051	74.3	0.0	1.443	1.480	0.000	0.0	0	0.000
1.011	1.059	74.9	0.0	1.480	1.562	0.000	0.0	0	0.000
1.012	1.126	79.6	0.4	1.562	1.630	0.137	0.0	15	0.287
10.000_1	1.196	21.1	0.1	0.750	1.260	0.035	0.0	7	0.289
11.000_1	4.235	74.8	0.0	0.660	1.260	0.009	0.0	2	0.403
10.001_1	1.514	26.8	0.1	1.260	1.350	0.053	0.0	8	0.388

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	49.925	221.9	225	Circular	3.529	2.800	0.504	3.785	2.575	0.985
1.001	12.217	162.9	225	Circular	3.785	2.575	0.985	3.663	2.500	0.938
2.000	33.640	197.9	225	Circular	3.809	2.700	0.884	3.800	2.530	1.045
2.001	4.944	164.8	225	Circular	3.800	2.530	1.045	3.663	2.500	0.938
1.002	16.982	308.8	375	Circular	3.663	2.350	0.938	3.598	2.295	0.928
3.000	33.935	144.4	150	Circular	3.500	2.930	0.420	3.503	2.695	0.658
3.001	15.221	217.4	225	Circular	3.503	2.620	0.658	3.500	2.550	0.725
3.002	9.956	199.1	225	Circular	3.500	2.550	0.725	3.600	2.500	0.875
3.003	7.085	128.8	225	Circular	3.600	2.500	0.875	3.598	2.445	0.928
1.003	16.358	363.5	450	Circular	3.598	2.220	0.928	3.577	2.175	0.952
4.000	18.008	120.1	150	Circular	3.800	2.700	0.950	3.780	2.550	1.080
4.001	14.743	589.7	150	Circular	3.780	2.550	1.080	3.750	2.525	1.075
5.000	15.601	208.0	150	Circular	3.750	2.600	1.000	3.750	2.525	1.075

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	PS6	450	Manhole	Adoptable	PS7	450	Manhole	Adoptable
1.001	PS7	450	Manhole	Adoptable	S1	1350	Manhole	Adoptable
2.000	PS8	600	Manhole	Adoptable	PS9	450	Manhole	Adoptable
2.001	PS9	450	Manhole	Adoptable	S1	1350	Manhole	Adoptable
1.002	S1	1350	Manhole	Adoptable	S2	1350	Manhole	Adoptable
3.000	PS20	450	Manhole	Adoptable	PS21	450	Manhole	Adoptable
3.001	PS21	450	Manhole	Adoptable	PS22	450	Manhole	Adoptable
3.002	PS22	450	Manhole	Adoptable	PS23	450	Manhole	Adoptable
3.003	PS23	450	Manhole	Adoptable	S2	1350	Manhole	Adoptable
1.003	S2	1350	Manhole	Adoptable	S3	1500	Manhole	Adoptable
4.000	PS10	450	Manhole	Adoptable	PS11	450	Manhole	Adoptable
4.001	PS11	450	Manhole	Adoptable	PS12	450	Manhole	Adoptable
5.000	PS13	450	Manhole	Adoptable	PS12	450	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)
4.002	4.720	94.4	225	Circular	3.750	2.450	1.075	3.577	2.400	0.952
1.004	55.802	429.2	525	Circular	3.577	2.100	0.952	3.512	1.970	1.017
6.000	21.841	97.1	150	Circular	3.550	2.700	0.700	3.600	2.475	0.975
7.000	14.883	119.1	150	Circular	3.650	2.600	0.900	3.600	2.475	0.975
6.001	4.004	160.2	225	Circular	3.600	2.400	0.975	3.468	2.375	0.868
6.002	32.937	313.7	300	Circular	3.468	2.300	0.868	3.512	2.195	1.017
8.000	39.091	142.1	150	Circular	3.750	2.650	0.950	3.652	2.375	1.127
9.000	17.029	136.2	150	Circular	3.650	2.500	1.000	3.652	2.375	1.127
8.001	5.023	167.4	225	Circular	3.652	2.300	1.127	3.512	2.270	1.017
1.005	9.495	474.8	525	Circular	3.512	1.970	1.017	3.350	1.950	0.875
10.002_1	23.610	157.4	225	Circular	3.350	1.775	1.350	3.412	1.625	1.562
10.000	11.217	149.6	150	Circular	3.550	2.500	0.900	3.550	2.425	0.975
10.001	34.385	137.5	225	Circular	3.550	2.350	0.975	3.550	2.100	1.225
11.000	15.226	121.8	150	Circular	3.450	2.300	1.000	3.550	2.175	1.225
10.002	12.857	171.4	225	Circular	3.550	2.100	1.225	3.350	2.025	1.100
12.000	13.660	136.6	150	Circular	3.500	2.600	0.750	3.500	2.500	0.850
12.001	19.231	109.9	150	Circular	3.500	2.500	0.850	3.526	2.325	1.051
13.000	17.580	63.9	150	Circular	3.600	2.600	0.850	3.526	2.325	1.051
12.002	13.347	76.3	225	Circular	3.526	2.250	1.051	3.350	2.075	1.050
14.000	15.576	124.6	150	Circular	3.653	2.400	1.103	3.550	2.275	1.125
14.001	23.039	153.6	225	Circular	3.550	2.200	1.125	3.500	2.050	1.225
15.000	16.204	92.6	150	Circular	3.500	2.300	1.050	3.500	2.125	1.225
14.002	12.825	171.0	225	Circular	3.500	2.050	1.225	3.350	1.975	1.150

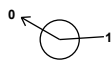
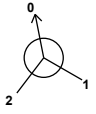
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.002	PS12	450	Manhole	Adoptable	S3	1500	Manhole	Adoptable
1.004	S3	1500	Manhole	Adoptable	S4	1500	Manhole	Adoptable
6.000	PS19	450	Manhole	Adoptable	PS18	450	Manhole	Adoptable
7.000	PS17	450	Manhole	Adoptable	PS18	450	Manhole	Adoptable
6.001	PS18	450	Manhole	Adoptable	S5	1350	Manhole	Adoptable
6.002	S5	1350	Manhole	Adoptable	S4	1500	Manhole	Adoptable
8.000	PS14	450	Manhole	Adoptable	PS15	450	Manhole	Adoptable
9.000	PS16	450	Manhole	Adoptable	PS15	450	Manhole	Adoptable
8.001	PS15	450	Manhole	Adoptable	S4	1500	Manhole	Adoptable
1.005	S4	1500	Manhole	Adoptable	S6	1500	Manhole	Adoptable
10.002_1	S14	1200	Manhole	Adoptable	S11	1200	Manhole	Adoptable
10.000	PS5	450	Manhole	Adoptable	PS24	600	Manhole	Adoptable
10.001	PS24	600	Manhole	Adoptable	PS3	600	Manhole	Adoptable
11.000	PS30	450	Manhole	Adoptable	PS3	600	Manhole	Adoptable
10.002	PS3	600	Manhole	Adoptable	PS4	1200	Manhole	Adoptable
12.000	PS27	450	Manhole	Adoptable	PS26	450	Manhole	Adoptable
12.001	PS26	450	Manhole	Adoptable	PS28	600	Manhole	Adoptable
13.000	PS25	450	Manhole	Adoptable	PS28	600	Manhole	Adoptable
12.002	PS28	600	Manhole	Adoptable	PS29	600	Manhole	Adoptable
14.000	PS1	450	Manhole	Adoptable	PS2	450	Manhole	Adoptable
14.001	PS2	450	Manhole	Adoptable	PS32	450	Manhole	Adoptable
15.000	PS31	450	Manhole	Adoptable	PS32	450	Manhole	Adoptable
14.002	PS32	450	Manhole	Adoptable	PS33	450	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.008	9.021	89.3	300	Circular	3.350	1.851	1.199	3.455	1.750	1.405
1.009	12.492	249.8	300	Circular	3.455	1.750	1.405	3.443	1.700	1.443
1.010	11.105	222.1	300	Circular	3.443	1.700	1.443	3.430	1.650	1.480
1.011	21.858	218.6	300	Circular	3.430	1.650	1.480	3.412	1.550	1.562
1.012	9.689	193.8	300	Circular	3.412	1.550	1.562	3.430	1.500	1.630
10.000_1	38.941	70.8	150	Circular	3.400	2.500	0.750	3.360	1.950	1.260
11.000_1	3.442	5.7	150	Circular	3.360	2.550	0.660	3.360	1.950	1.260
10.001_1	4.440	44.4	150	Circular	3.360	1.950	1.260	3.350	1.850	1.350

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.008	S7	1350	Manhole	Adoptable	S8	1350	Manhole	Adoptable
1.009	S8	1350	Manhole	Adoptable	S9	1350	Manhole	Adoptable
1.010	S9	1350	Manhole	Adoptable	S10	1350	Manhole	Adoptable
1.011	S10	1350	Manhole	Adoptable	S11	1200	Manhole	Adoptable
1.012	S11	1200	Manhole	Adoptable	S12	1200	Manhole	Adoptable
10.000_1	PS35	450	Manhole	Adoptable	PS36	450	Manhole	Adoptable
11.000_1	PS38	450	Manhole	Adoptable	PS36	450	Manhole	Adoptable
10.001_1	PS36	450	Manhole	Adoptable	S14	1200	Manhole	Adoptable

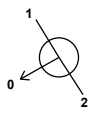
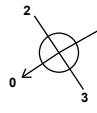
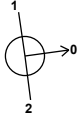
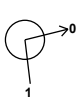
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PS6	523549.949	324742.774	3.529	0.729	450		0	1.000	2.800	225
PS7	523599.555	324748.409	3.785	1.210	450		1	1.000	2.575	225
							0	1.001	2.575	225
PS8	523644.818	324757.837	3.809	1.109	600		0	2.000	2.700	225
PS9	523611.249	324755.657	3.800	1.270	450		1	2.000	2.530	225
							0	2.001	2.530	225
S1	523606.964	324758.123	3.663	1.313	1350		1	2.001	2.500	225
							2	1.001	2.500	225
							0	1.002	2.350	375
PS20	523551.283	324751.199	3.500	0.570	450		0	3.000	2.930	150

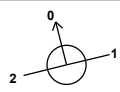
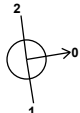
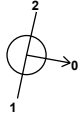
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PS21	523584.903	324755.812	3.503	0.883	450		1	3.000	2.695	150
						0	3.001	2.620	225	
PS22	523598.454	324762.744	3.500	0.950	450		1	3.001	2.550	225
						0	3.002	2.550	225	
PS23	523596.940	324772.585	3.600	1.100	450		1	3.002	2.500	225
						0	3.003	2.500	225	
S2	523603.676	324774.783	3.598	1.378	1350		1	3.003	2.445	225
							2	1.002	2.295	375
							0	1.003	2.220	450
PS10	523613.303	324762.237	3.800	1.100	450					
							0	4.000	2.700	150
PS11	523608.190	324779.504	3.780	1.230	450		1	4.000	2.550	150
							0	4.001	2.550	150
PS13	523590.767	324804.347	3.750	1.150	450					
							0	5.000	2.600	150
PS12	523599.724	324791.573	3.750	1.300	450		1	5.000	2.525	150
							2	4.001	2.525	150
							0	4.002	2.450	225
S3	523595.718	324789.076	3.577	1.477	1500		1	4.002	2.400	225
							2	1.003	2.175	450
							0	1.004	2.100	525
PS19	523546.513	324886.473	3.550	0.850	450					
							0	6.000	2.700	150
PS17	523560.076	324853.975	3.650	1.050	450					
							0	7.000	2.600	150
PS18	523549.980	324864.909	3.600	1.200	450		1	7.000	2.475	150
							2	6.000	2.475	150
							0	6.001	2.400	225
S5	523546.505	324862.918	3.468	1.168	1350		1	6.001	2.375	225
							0	6.002	2.300	300

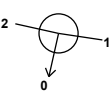
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PS14	523590.388	324805.166	3.750	1.100	450					
						0	8.000	2.650	150	
PS16	523560.319	324852.546	3.650	1.150	450					
						0	9.000	2.500	150	
PS15	523569.180	324838.003	3.652	1.352	450		1 2	9.000 8.000	2.375 2.375	150 150
						0	8.001	2.300	225	
S4	523564.806	324835.534	3.512	1.542	1500		1 2 3	8.001 6.002 1.004	2.270 2.195 1.970	225 300 525
						0	1.005	1.970	525	
S6	523556.911	324830.258	3.350	1.479	1500		1	1.005	1.950	525
PS5	523536.729	324768.281	3.550	1.050	450					
						0	10.000	2.500	150	
PS24	523535.270	324779.403	3.550	1.200	600		1	10.000	2.425	150
						0	10.001	2.350	225	
PS30	523528.704	324828.576	3.450	1.150	450					
						0	11.000	2.300	150	
PS3	523530.893	324813.508	3.550	1.450	600		1 2	11.000 10.001	2.175 2.100	150 225
						0	10.002	2.100	225	
PS4	523543.631	324815.250	3.350	1.479	1200		1	10.002	2.025	225
PS27	523543.566	324780.833	3.500	0.900	450					
						0	12.000	2.600	150	
PS26	523541.929	324794.395	3.500	1.000	450		1	12.000	2.500	150
						0	12.001	2.500	150	
PS25	523577.695	324803.099	3.600	1.000	450					
						0	13.000	2.600	150	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
PS28	523560.595	324799.019	3.526	1.276	600		1 13.000 2 12.001 0 12.002	2.325 2.325 2.250	150 150 225
PS29	523557.325	324811.959	3.350	1.479	600		1 12.002	2.075	225
S14	523551.235	324933.279	3.350	1.575	1200		1 10.001_1 0 10.002_1	1.850 1.775	150 225
PS1	523526.822	324885.929	3.653	1.253	450		0 14.000	2.400	150
PS2	523522.818	324870.877	3.550	1.350	450		1 14.000 0 14.001	2.275 2.200	150 225
PS31	523528.286	324832.022	3.500	1.200	450		0 15.000	2.300	150
PS32	523525.716	324848.021	3.500	1.450	450		1 15.000 2 14.001 0 14.002	2.125 2.050 2.050	150 225 225
PS33	523538.370	324850.106	3.350	1.479	450		1 14.002	1.975	225
S7	523541.754	324856.285	3.350	1.499	1350		0 1.008	1.851	300
S8	523545.111	324864.658	3.455	1.705	1350		1 1.008 0 1.009	1.750 1.750	300 300
S9	523541.482	324876.611	3.443	1.743	1350		1 1.009 0 1.010	1.700 1.650	300 300
S10	523541.218	324887.713	3.430	1.780	1350		1 1.010 0 1.011	1.650 1.650	300 300
S11	523545.952	324910.268	3.412	1.862	1200		1 1.011 2 10.002_1 0 1.012	1.550 1.625 1.550	300 225 300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S12	523555.544	324908.541	3.430	1.930	1200	1 	1.012	1.500	300
PS35	523514.191	324946.053	3.400	0.900	450		0	10.000_1	2.500 150
PS36	523552.206	324937.612	3.360	1.410	450	1 	1 11.000_1	1.950	150
						2	2 10.000_1	1.950	150
						0	0 10.001_1	1.950	150
PS38	523555.610	324937.103	3.360	0.810	450	0 	0	11.000_1	2.550 150

Simulation Settings

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

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440	2160
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------	------

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

Node S12 Online Pump Control

Flap Valve	x	Design Depth (m)	1.500	Switch off depth (m)	0.000
Replaces Downstream Link	✓	Design Flow (l/s)	2.4		
Invert Level (m)	1.500	Switch on depth (m)	0.010		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	2.400	2.000	2.400

Node S7 Pond Storage Structure

Invert Level (m)	1.851	Analyse flow through structure	✓	Main Channel Slope (1:X)	1000.0
Time to half empty (mins)		Main Channel Length (m)	20.000	Main Channel n	0.035

Inlets

PS29	PS4	S6	PS33
------	-----	----	------

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	652.0	1.500	1331.0

Node S7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	1.851
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	236.0	236.0	0.800	236.0	279.6	0.801	0.0	279.6

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS6	10	2.883	0.083	10.5	0.0132	0.0000	OK
15 minute summer	PS7	11	2.679	0.104	16.1	0.0166	0.0000	OK
15 minute summer	PS8	10	2.787	0.087	11.4	0.0246	0.0000	OK
15 minute summer	PS9	11	2.618	0.088	11.2	0.0141	0.0000	OK
15 minute summer	S1	11	2.481	0.131	27.2	0.1871	0.0000	OK
15 minute summer	PS20	11	2.985	0.055	4.3	0.0088	0.0000	OK
15 minute summer	PS21	10	2.728	0.108	14.9	0.0172	0.0000	OK
15 minute summer	PS22	10	2.655	0.105	14.8	0.0167	0.0000	OK
15 minute summer	PS23	11	2.596	0.096	14.7	0.0153	0.0000	OK
15 minute summer	S2	11	2.393	0.173	48.9	0.2474	0.0000	OK
15 minute summer	PS10	10	2.754	0.054	4.5	0.0085	0.0000	OK
15 minute summer	PS11	11	2.677	0.127	8.9	0.0203	0.0000	OK
15 minute summer	PS13	10	2.664	0.064	4.4	0.0101	0.0000	OK
15 minute summer	PS12	11	2.534	0.084	12.9	0.0134	0.0000	OK
15 minute summer	S3	11	2.292	0.192	65.5	0.3394	0.0000	OK
15 minute summer	PS19	10	2.754	0.054	4.9	0.0086	0.0000	OK
15 minute summer	PS17	10	2.655	0.055	4.4	0.0087	0.0000	OK
15 minute summer	PS18	10	2.480	0.080	9.2	0.0126	0.0000	OK
15 minute summer	S5	11	2.379	0.079	9.1	0.1129	0.0000	OK
15 minute summer	PS14	11	2.734	0.084	9.0	0.0134	0.0000	OK
15 minute summer	PS16	10	2.557	0.057	4.5	0.0091	0.0000	OK
15 minute summer	PS15	11	2.397	0.097	13.1	0.0155	0.0000	OK
15 minute summer	S4	12	2.199	0.229	87.1	0.4044	0.0000	OK
600 minute winter	S6	585	2.094	0.223	9.8	0.0000	0.0000	OK
15 minute summer	PS5	10	2.541	0.041	2.3	0.0066	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS6	1.000	PS7	10.2	0.664	0.295	0.7787	
15 minute summer	PS7	1.001	S1	16.0	0.931	0.394	0.2103	
15 minute summer	PS8	2.000	PS9	11.2	0.788	0.305	0.4797	
15 minute summer	PS9	2.001	S1	11.2	0.823	0.277	0.0671	
15 minute summer	S1	1.002	S2	27.3	0.854	0.241	0.5424	
15 minute summer	PS20	3.000	PS21	4.2	0.717	0.284	0.1980	
15 minute summer	PS21	3.001	PS22	14.8	0.798	0.422	0.2823	
15 minute summer	PS22	3.002	PS23	14.7	0.857	0.400	0.1708	
15 minute summer	PS23	3.003	S2	14.8	0.974	0.323	0.1075	
15 minute summer	S2	1.003	S3	48.9	0.952	0.290	0.8418	
15 minute summer	PS10	4.000	PS11	4.5	0.413	0.276	0.1937	
15 minute summer	PS11	4.001	PS12	8.7	0.647	1.207	0.1945	
15 minute summer	PS13	5.000	PS12	4.3	0.633	0.353	0.1067	
15 minute summer	PS12	4.002	S3	13.0	1.032	0.243	0.0594	
15 minute summer	S3	1.004	S4	64.9	0.811	0.279	4.4714	
15 minute summer	PS19	6.000	PS18	4.8	0.854	0.268	0.1234	
15 minute summer	PS17	7.000	PS18	4.3	0.766	0.267	0.0844	
15 minute summer	PS18	6.001	S5	9.1	0.782	0.223	0.0468	
15 minute summer	S5	6.002	S4	9.0	0.656	0.145	0.4537	
15 minute summer	PS14	8.000	PS15	8.8	0.872	0.591	0.3935	
15 minute summer	PS16	9.000	PS15	4.4	0.735	0.292	0.1028	
15 minute summer	PS15	8.001	S4	13.2	0.855	0.329	0.0775	
15 minute summer	S4	1.005	S6	86.4	1.061	0.391	0.7736	
600 minute winter	S6	Pond	S7	10.5	0.021	0.000		
15 minute summer	PS5	10.000	PS24	2.3	0.588	0.157	0.0433	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS24	10	2.429	0.079	12.0	0.0223	0.0000	OK
15 minute summer	PS30	10	2.362	0.062	5.4	0.0098	0.0000	OK
15 minute summer	PS3	11	2.209	0.109	17.1	0.0309	0.0000	OK
600 minute winter	PS4	585	2.093	0.222	2.4	0.0000	0.0000	OK
15 minute summer	PS27	1	2.600	0.000	0.0	0.0000	0.0000	OK
15 minute summer	PS26	10	2.554	0.054	4.5	0.0085	0.0000	OK
15 minute summer	PS25	10	2.648	0.048	4.7	0.0076	0.0000	OK
15 minute summer	PS28	10	2.322	0.072	12.0	0.0204	0.0000	OK
600 minute winter	PS29	585	2.093	0.222	1.3	0.0000	0.0000	OK
600 minute winter	S14	585	2.092	0.317	4.8	0.3581	0.0000	SURCHARGED
15 minute summer	PS1	10	2.507	0.107	12.7	0.0170	0.0000	OK
15 minute summer	PS2	10	2.306	0.106	18.3	0.0169	0.0000	OK
15 minute summer	PS31	10	2.360	0.060	5.9	0.0096	0.0000	OK
15 minute summer	PS32	11	2.186	0.136	24.1	0.0216	0.0000	OK
600 minute winter	PS33	585	2.093	0.222	4.7	0.0000	0.0000	OK
600 minute winter	S7	585	2.092	0.241	10.6	217.2174	0.0000	OK
600 minute winter	S8	585	2.092	0.342	3.7	0.4892	0.0000	SURCHARGED
600 minute winter	S9	585	2.092	0.392	3.2	0.5606	0.0000	SURCHARGED
600 minute winter	S10	585	2.092	0.442	2.7	0.6321	0.0000	SURCHARGED
600 minute winter	S11	585	2.092	0.542	4.1	0.6126	0.0000	SURCHARGED
600 minute winter	S12	585	2.092	0.592	8.1	0.6690	0.0000	OK
15 minute summer	PS35	1	2.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	10.000_1:50%	10	2.281	0.056	6.3	0.0000	0.0000	OK
600 minute winter	PS36	585	2.092	0.142	1.1	0.0225	0.0000	OK
15 minute summer	PS38	10	2.565	0.015	1.6	0.0024	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS24	10.001	PS3	11.8	0.760	0.267	0.5384	
15 minute summer	PS30	11.000	PS3	5.3	0.801	0.331	0.1011	
15 minute summer	PS3	10.002	PS4	17.0	0.930	0.430	0.2355	
600 minute winter	PS4	Pond	S7	10.5	0.021	0.000		
15 minute summer	PS27	12.000	PS26	0.0	0.000	0.000	0.0386	
15 minute summer	PS26	12.001	PS28	4.4	0.796	0.260	0.1065	
15 minute summer	PS25	13.000	PS28	4.6	0.981	0.209	0.0833	
15 minute summer	PS28	12.002	PS29	12.0	1.140	0.201	0.1402	
600 minute winter	PS29	Pond	S7	10.5	0.021	0.000		
600 minute winter	S14	10.002_1	S11	2.8	0.338	0.067	0.9390	
15 minute summer	PS1	14.000	PS2	12.5	0.967	0.790	0.2019	
15 minute summer	PS2	14.001	PS32	18.2	0.842	0.435	0.4980	
15 minute summer	PS31	15.000	PS32	5.9	0.896	0.319	0.1064	
15 minute summer	PS32	14.002	PS33	24.0	1.008	0.606	0.3056	
600 minute winter	PS33	Pond	S7	10.5	0.021	0.000		
600 minute winter	S7	1.008	S8	3.7	0.587	0.031	0.5911	
600 minute winter	S8	1.009	S9	3.2	0.474	0.046	0.8797	
600 minute winter	S9	1.010	S10	2.7	0.465	0.037	0.7820	
600 minute winter	S10	1.011	S11	2.5	0.172	0.033	1.5392	
600 minute winter	S11	1.012	S12	8.1	0.783	0.102	0.6823	
600 minute winter	S12	Pump		2.4				107.6
15 minute summer	PS35	10.000_1	10.000_1:50%	0.0	0.000	0.000	0.0579	
15 minute summer	PS35	10.000_1	PS36	6.2	0.899	0.295	0.1351	
600 minute winter	PS36	10.001_1	S14	3.2	0.576	0.120	0.0773	
15 minute summer	PS38	11.000_1	PS36	1.6	0.407	0.021	0.0152	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS6	11	2.986	0.186	31.9	0.0296	0.0000	OK
15 minute summer	PS7	11	2.831	0.256	48.1	0.0406	0.0000	SURCHARGED
15 minute summer	PS8	10	2.882	0.182	34.7	0.0516	0.0000	OK
15 minute summer	PS9	11	2.711	0.181	34.2	0.0288	0.0000	OK
15 minute summer	S1	11	2.632	0.282	82.0	0.4030	0.0000	OK
15 minute summer	PS20	11	3.162	0.232	13.2	0.0369	0.0000	SURCHARGED
15 minute summer	PS21	11	2.965	0.345	44.2	0.0549	0.0000	SURCHARGED
15 minute summer	PS22	11	2.818	0.268	44.3	0.0426	0.0000	SURCHARGED
15 minute summer	PS23	11	2.712	0.212	44.3	0.0337	0.0000	OK
15 minute summer	S2	11	2.581	0.361	147.0	0.5164	0.0000	OK
15 minute summer	PS10	11	3.161	0.461	13.9	0.0733	0.0000	SURCHARGED
15 minute summer	PS11	11	3.042	0.492	26.0	0.0782	0.0000	SURCHARGED
15 minute summer	PS13	10	2.741	0.141	13.4	0.0225	0.0000	OK
15 minute summer	PS12	11	2.618	0.168	38.9	0.0266	0.0000	OK
15 minute summer	S3	11	2.506	0.406	196.1	0.7177	0.0000	OK
15 minute summer	PS19	10	2.810	0.110	15.1	0.0175	0.0000	OK
15 minute summer	PS17	10	2.710	0.110	13.4	0.0175	0.0000	OK
15 minute summer	PS18	10	2.556	0.156	28.1	0.0249	0.0000	OK
15 minute summer	S5	10	2.444	0.144	28.0	0.2054	0.0000	OK
15 minute summer	PS14	11	3.414	0.764	27.6	0.1214	0.0000	SURCHARGED
15 minute summer	PS16	10	2.620	0.120	13.7	0.0190	0.0000	OK
15 minute summer	PS15	11	2.502	0.202	39.0	0.0322	0.0000	OK
720 minute winter	S4	705	2.438	0.468	19.5	0.8271	0.0000	OK
720 minute winter	S6	705	2.438	0.567	18.8	0.0000	0.0000	OK
15 minute summer	PS5	10	2.579	0.079	7.1	0.0125	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS6	1.000	PS7	30.6	0.835	0.881	1.8691	
15 minute summer	PS7	1.001	S1	48.0	1.226	1.182	0.4538	
15 minute summer	PS8	2.000	PS9	34.2	0.996	0.929	1.1554	
15 minute summer	PS9	2.001	S1	34.0	1.070	0.841	0.1564	
15 minute summer	S1	1.002	S2	81.7	0.966	0.721	1.5194	
15 minute summer	PS20	3.000	PS21	12.6	0.773	0.853	0.5974	
15 minute summer	PS21	3.001	PS22	44.3	1.114	1.262	0.6054	
15 minute summer	PS22	3.002	PS23	44.3	1.114	1.208	0.3912	
15 minute summer	PS23	3.003	S2	44.3	1.222	0.969	0.2552	
15 minute summer	S2	1.003	S3	146.2	1.184	0.867	2.1372	
15 minute summer	PS10	4.000	PS11	13.1	0.743	0.808	0.3170	
15 minute summer	PS11	4.001	PS12	25.9	1.470	3.600	0.2558	
15 minute summer	PS13	5.000	PS12	13.1	0.847	1.074	0.2385	
15 minute summer	PS12	4.002	S3	38.9	1.342	0.727	0.1366	
15 minute summer	S3	1.004	S4	192.4	1.047	0.827	10.2533	
15 minute summer	PS19	6.000	PS18	14.9	1.112	0.825	0.2924	
15 minute summer	PS17	7.000	PS18	13.2	0.993	0.815	0.1985	
15 minute summer	PS18	6.001	S5	28.0	1.031	0.684	0.1088	
15 minute summer	S5	6.002	S4	28.1	0.819	0.451	1.3737	
15 minute summer	PS14	8.000	PS15	25.9	1.472	1.744	0.6782	
15 minute summer	PS16	9.000	PS15	13.6	0.919	0.894	0.2589	
15 minute summer	PS15	8.001	S4	39.1	1.123	0.975	0.1732	
720 minute winter	S4	1.005	S6	18.8	0.619	0.085	1.9589	
720 minute winter	S6	Pond	S7	18.7	0.029	0.000		
15 minute summer	PS5	10.000	PS24	7.1	0.772	0.489	0.1183	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS24	11	2.523	0.173	36.7	0.0490	0.0000	OK
15 minute summer	PS30	11	2.533	0.233	16.4	0.0370	0.0000	SURCHARGED
720 minute winter	PS3	705	2.436	0.336	3.8	0.0951	0.0000	SURCHARGED
720 minute winter	PS4	705	2.436	0.565	4.4	0.0000	0.0000	OK
15 minute summer	PS27	10	2.607	0.007	0.1	0.0012	0.0000	OK
15 minute summer	PS26	10	2.606	0.106	13.8	0.0169	0.0000	OK
15 minute summer	PS25	10	2.693	0.093	14.5	0.0148	0.0000	OK
720 minute winter	PS28	705	2.436	0.186	2.7	0.0526	0.0000	OK
720 minute winter	PS29	705	2.436	0.565	2.7	0.0000	0.0000	OK
15 minute summer	S14	11	2.722	0.947	64.7	1.0713	0.0000	SURCHARGED
15 minute summer	PS1	11	3.614	1.214	38.9	0.1930	0.0000	FLOOD RISK
15 minute summer	PS2	11	2.798	0.598	53.3	0.0951	0.0000	SURCHARGED
15 minute summer	PS31	11	2.687	0.387	18.1	0.0616	0.0000	SURCHARGED
15 minute summer	PS32	11	2.501	0.451	70.1	0.0718	0.0000	SURCHARGED
720 minute winter	PS33	705	2.437	0.566	9.1	0.0000	0.0000	OK
720 minute winter	S7	720	2.435	0.584	21.5	581.9620	0.0000	SURCHARGED
720 minute winter	S8	720	2.435	0.685	4.8	0.9800	0.0000	SURCHARGED
720 minute winter	S9	720	2.435	0.735	4.1	1.0515	0.0000	SURCHARGED
720 minute winter	S10	720	2.435	0.785	3.3	1.1229	0.0000	SURCHARGED
720 minute winter	S11	720	2.435	0.885	6.0	1.0004	0.0000	SURCHARGED
720 minute winter	S12	720	2.434	0.934	5.2	1.0569	0.0000	OK
15 minute summer	PS35	12	3.026	0.526	3.9	0.0836	0.0000	SURCHARGED
15 minute summer	10.000_1:50%	12	3.021	0.796	19.3	0.0000	0.0000	SURCHARGED
15 minute summer	PS36	12	2.848	0.898	24.1	0.1427	0.0000	SURCHARGED
15 minute summer	PS38	12	2.852	0.302	5.0	0.0480	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS24	10.001	PS3	35.3	0.944	0.798	1.2479	
15 minute summer	PS30	11.000	PS3	15.8	0.946	0.985	0.2681	
720 minute winter	PS3	10.002	PS4	3.6	0.587	0.092	0.5113	
720 minute winter	PS4	Pond	S7	18.7	0.029	0.000		
15 minute summer	PS27	12.000	PS26	-0.1	-0.022	-0.009	0.0934	
15 minute summer	PS26	12.001	PS28	13.4	1.038	0.792	0.2485	
15 minute summer	PS25	13.000	PS28	14.3	1.298	0.645	0.1943	
720 minute winter	PS28	12.002	PS29	2.7	0.728	0.045	0.4996	
720 minute winter	PS29	Pond	S7	18.7	0.029	0.000		
15 minute summer	S14	10.002_1	S11	63.6	1.599	1.538	0.9390	
15 minute summer	PS1	14.000	PS2	36.5	2.071	2.296	0.2742	
15 minute summer	PS2	14.001	PS32	53.0	1.332	1.266	0.9163	
15 minute summer	PS31	15.000	PS32	17.1	0.972	0.927	0.2853	
15 minute summer	PS32	14.002	PS33	69.9	1.757	1.763	0.5019	
720 minute winter	PS33	Pond	S7	18.7	0.029	0.000		
720 minute winter	S7	1.008	S8	4.8	0.570	0.041	0.6353	
720 minute winter	S8	1.009	S9	4.1	0.494	0.059	0.8797	
720 minute winter	S9	1.010	S10	3.3	0.466	0.045	0.7820	
720 minute winter	S10	1.011	S11	-2.9	0.142	-0.039	1.5392	
720 minute winter	S11	1.012	S12	5.2	0.771	0.066	0.6823	
720 minute winter	S12	Pump		2.4				129.6
15 minute summer	PS35	10.000_1	10.000_1:50%	4.6	-0.274	0.216	0.3428	
15 minute summer	PS35	10.000_1	PS36	16.0	0.964	0.757	0.3428	
15 minute summer	PS36	10.001_1	S14	27.3	1.549	1.020	0.0782	
15 minute summer	PS38	11.000_1	PS36	5.6	0.441	0.075	0.0606	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.29%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS6	9	3.529	0.729	58.4	0.1159	4.2724	FLOOD
15 minute summer	PS7	11	3.314	0.739	74.8	0.1174	0.0000	SURCHARGED
15 minute summer	PS8	11	3.737	1.037	63.5	0.2935	0.0000	FLOOD RISK
15 minute summer	PS9	11	3.188	0.658	61.3	0.1047	0.0000	SURCHARGED
15 minute summer	S1	11	3.055	0.705	125.4	1.0086	0.0000	SURCHARGED
15 minute summer	PS20	9	3.500	0.570	24.1	0.0906	4.2000	FLOOD
15 minute summer	PS21	10	3.503	0.883	68.2	0.1404	0.4212	FLOOD
15 minute summer	PS22	11	3.265	0.715	63.9	0.1137	0.0000	FLOOD RISK
15 minute summer	PS23	11	3.092	0.592	59.7	0.0941	0.0000	SURCHARGED
1440 minute winter	S2	1410	3.015	0.795	11.4	1.1381	0.0000	SURCHARGED
15 minute summer	PS10	10	3.800	1.100	25.4	0.1749	1.7865	FLOOD
15 minute summer	PS11	11	3.697	1.147	40.4	0.1824	0.0000	FLOOD RISK
15 minute summer	PS13	11	3.283	0.683	24.5	0.1086	0.0000	SURCHARGED
1440 minute winter	PS12	1410	3.015	0.565	3.0	0.0899	0.0000	SURCHARGED
1440 minute winter	S3	1410	3.015	0.915	15.0	1.6174	0.0000	SURCHARGED
15 minute summer	PS19	11	3.287	0.587	27.6	0.0933	0.0000	FLOOD RISK
15 minute summer	PS17	11	3.045	0.445	24.5	0.0707	0.0000	SURCHARGED
1440 minute winter	PS18	1410	3.015	0.615	2.1	0.0978	0.0000	SURCHARGED
1440 minute winter	S5	1410	3.015	0.715	2.1	1.0236	0.0000	SURCHARGED
15 minute summer	PS14	9	3.750	1.100	50.5	0.1749	4.3990	FLOOD
15 minute summer	PS16	11	3.039	0.539	25.0	0.0857	0.0000	SURCHARGED
1440 minute winter	PS15	1410	3.015	0.715	3.1	0.1137	0.0000	SURCHARGED
1440 minute winter	S4	1410	3.015	1.045	19.2	1.8471	0.0000	SURCHARGED
1440 minute winter	S6	1410	3.015	1.144	18.9	0.0000	0.0000	OK
15 minute summer	PS5	11	3.430	0.930	13.0	0.1478	0.0000	FLOOD RISK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS6	1.000	PS7	43.2	1.086	1.244	1.9856	
15 minute summer	PS7	1.001	S1	71.4	1.797	1.759	0.4859	
15 minute summer	PS8	2.000	PS9	61.3	1.541	1.665	1.3379	
15 minute summer	PS9	2.001	S1	61.5	1.546	1.523	0.1966	
15 minute summer	S1	1.002	S2	125.6	1.139	1.109	1.8731	
15 minute summer	PS20	3.000	PS21	14.8	0.839	1.002	0.5974	
15 minute summer	PS21	3.001	PS22	63.9	1.607	1.821	0.6054	
15 minute summer	PS22	3.002	PS23	59.7	1.501	1.627	0.3960	
15 minute summer	PS23	3.003	S2	57.0	1.435	1.247	0.2818	
1440 minute winter	S2	1.003	S3	11.1	0.590	0.066	2.5918	
15 minute summer	PS10	4.000	PS11	17.8	1.008	1.097	0.3170	
15 minute summer	PS11	4.001	PS12	36.5	2.073	5.076	0.2595	
15 minute summer	PS13	5.000	PS12	23.3	1.326	1.906	0.2747	
1440 minute winter	PS12	4.002	S3	3.0	0.700	0.056	0.1877	
1440 minute winter	S3	1.004	S4	14.4	0.382	0.062	12.0551	
15 minute summer	PS19	6.000	PS18	26.1	1.483	1.448	0.3845	
15 minute summer	PS17	7.000	PS18	23.4	1.327	1.438	0.2620	
1440 minute winter	PS18	6.001	S5	2.1	0.525	0.051	0.1592	
1440 minute winter	S5	6.002	S4	1.9	0.405	0.030	2.3194	
15 minute summer	PS14	8.000	PS15	29.1	1.650	1.956	0.6882	
15 minute summer	PS16	9.000	PS15	23.9	1.359	1.577	0.2998	
1440 minute winter	PS15	8.001	S4	3.0	0.545	0.074	0.1998	
1440 minute winter	S4	1.005	S6	18.9	0.492	0.086	2.0512	
1440 minute winter	S6	Pond	S7	18.7	0.023	0.000		
15 minute summer	PS5	10.000	PS24	14.2	0.809	0.984	0.1975	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.29%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	PS24	11	3.364	1.014	63.5	0.2870	0.0000	FLOOD RISK
15 minute summer	PS30	11	3.250	0.950	30.0	0.1510	0.0000	FLOOD RISK
1440 minute winter	PS3	1410	3.013	0.913	3.8	0.2584	0.0000	SURCHARGED
1440 minute winter	PS4	1410	3.013	1.142	4.5	0.0000	0.0000	OK
1440 minute winter	PS27	1410	3.013	0.413	0.0	0.0656	0.0000	SURCHARGED
1440 minute winter	PS26	1410	3.013	0.513	1.0	0.0815	0.0000	SURCHARGED
1440 minute winter	PS25	1410	3.013	0.413	1.1	0.0656	0.0000	SURCHARGED
1440 minute winter	PS28	1410	3.013	0.763	2.8	0.2159	0.0000	SURCHARGED
1440 minute winter	PS29	1410	3.013	1.142	2.7	0.0000	0.0000	OK
15 minute summer	S14	10	3.350	1.575	93.6	1.7813	0.2569	FLOOD
15 minute summer	PS1	8	3.653	1.253	71.0	0.1992	9.5298	FLOOD
15 minute summer	PS2	11	3.121	0.921	62.4	0.1465	0.0000	SURCHARGED
15 minute summer	PS31	11	3.382	1.082	33.2	0.1720	0.0000	FLOOD RISK
1440 minute winter	PS32	1410	3.014	0.964	5.5	0.1533	0.0000	SURCHARGED
1440 minute winter	PS33	1410	3.014	1.143	9.8	0.0000	0.0000	OK
1440 minute winter	S7	1440	3.012	1.161	21.5	1234.5530	0.0000	SURCHARGED
1440 minute winter	S8	1440	3.012	1.262	4.5	1.8054	0.0000	SURCHARGED
1440 minute winter	S9	1440	3.012	1.312	4.3	1.8768	0.0000	SURCHARGED
1440 minute winter	S10	1440	3.011	1.361	3.8	1.9483	0.0000	SURCHARGED
1440 minute winter	S11	1440	3.011	1.461	5.5	1.6528	0.0000	SURCHARGED
1440 minute winter	S12	1440	3.011	1.511	3.7	1.7092	0.0000	OK
30 minute winter	PS35	17	3.400	0.900	4.5	0.1431	0.0400	FLOOD
15 minute summer	10.000_1:50%	13	3.390	1.165	36.5	5.3958	0.0000	PONDING
15 minute summer	PS36	10	3.360	1.410	31.6	0.2242	1.1109	FLOOD
15 minute summer	PS38	10	3.360	0.810	9.1	0.1288	1.3123	FLOOD

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	PS24	10.001	PS3	62.9	1.583	1.423	1.3675	
15 minute summer	PS30	11.000	PS3	28.2	1.602	1.756	0.2681	
1440 minute winter	PS3	10.002	PS4	3.7	0.494	0.093	0.5113	
1440 minute winter	PS4	Pond	S7	18.7	0.023	0.000		
1440 minute winter	PS27	12.000	PS26	0.0	-0.004	-0.002	0.2405	
1440 minute winter	PS26	12.001	PS28	1.0	0.509	0.059	0.3386	
1440 minute winter	PS25	13.000	PS28	1.1	0.634	0.049	0.3095	
1440 minute winter	PS28	12.002	PS29	2.7	0.634	0.046	0.5308	
1440 minute winter	PS29	Pond	S7	18.7	0.023	0.000		
15 minute summer	S14	10.002_1	S11	87.7	2.205	2.122	0.9390	
15 minute summer	PS1	14.000	PS2	36.7	2.085	2.311	0.2742	
15 minute summer	PS2	14.001	PS32	61.0	1.534	1.458	0.9163	
15 minute summer	PS31	15.000	PS32	31.9	1.811	1.727	0.2853	
1440 minute winter	PS32	14.002	PS33	5.5	0.495	0.138	0.5101	
1440 minute winter	PS33	Pond	S7	18.7	0.023	0.000		
1440 minute winter	S7	1.008	S8	4.5	0.529	0.038	0.6353	
1440 minute winter	S8	1.009	S9	4.3	0.445	0.062	0.8797	
1440 minute winter	S9	1.010	S10	3.8	0.464	0.051	0.7820	
1440 minute winter	S10	1.011	S11	3.2	0.137	0.042	1.5392	
1440 minute winter	S11	1.012	S12	3.7	0.640	0.046	0.6823	
1440 minute winter	S12	Pump		2.4				228.8
30 minute winter	PS35	10.000_1	10.000_1:50%	9.0	0.509	0.424	0.3428	
30 minute winter	PS35	10.000_1	PS36	25.6	1.452	1.209	0.3428	
15 minute summer	PS36	10.001_1	S14	32.5	1.849	1.216	0.0782	
15 minute summer	PS38	11.000_1	PS36	7.5	0.428	0.101	0.0606	