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Land south of Northlands Lane: Outline Drainage Strategy

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Land south of Northlands Lane: Outline Drainage Strategy

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1. Introduction

1.1. Instruction

Aqua Terra Consultants Ltd (Aqua Terra) was instructed by Fairfax Acquisitions Ltd (the Client) to provide an Outline Drainage (SuDS) Strategy for a proposed residential led development of a parcel of land to the south of Northlands Lane, Storrington (the Site).

1.2. Background

The SuDS Strategy is to support an outline planning application for the erection of up to 56 dwellings, together with the provision of landscaping, open space, and associated works, with access from an adjoining Site ("land north of Melton Drive") which constitutes the western portion of the Site boundary. No development relating to the current planning application is proposed in this western section which is to show access to the public highway through the adjoining Site. An illustrative masterplan depicting the proposed development was provided to Aqua Terra which is included as Figure 3-1.

The Site comprises predominantly agricultural land, and is approximately 7.0 Hectares (Ha) in size, of which 2.43 Ha relates to the access arrangements through the adjoining Site.

1.3. Scope

This report provides an outline SuDS strategy to mitigate the potential increase in runoff and deterioration in water quality as well as providing amenity and biodiversity benefits as a result of the proposed development. The scope of work undertaken for this assessment includes the following:

- Review of the baseline hydrology, hydrogeology and flood risk for the Site;
- Review of national, regional and local guidance and policies on surface water management;
- Details of the proposed development and outline planning application;
- Estimated surface water runoff rates and preliminary attenuation storage requirements;
- Assessment of potential surface water runoff destinations;
- An appraisal of potentially feasible SuDS features for the Site; and,
- An outline SuDS strategy for managing surface water runoff from the proposed development.

The outline SuDS strategy primarily focuses on the east of the Site where the Proposed Development is proposed. The design and management of a drainage scheme for the access road through the adjoining site is the responsibility of the landowner of that site.

1.4. Data Sources

The information and assessments in this report are predominantly based on secondary data analyses associated with both the Site itself and the surrounding land area. The main sources of data utilised in this assessment are summarised below:

- The proposed development plans as provided by the Client;
- LiDAR Digital Terrain Model (DTM) data obtained through data.gov.uk (DeFRA, 2020-22);
- Environment Agency (EA) flood risk data (Flood map for planning) obtained through data.gov.uk (Environment Agency, 2025);
- Topographic Survey (Marvin & Partners Limited, June 2016);
- Soilsclapes soil mapping (Cranfield Soil and AgriFood Institute, 2024);
- British Geological Survey (BGS) 1:50,000 scale mapping and borehole logs (British Geological Society, 2025);
- Horsham District Council – Strategic Flood Risk Assessment, Level 1 (AECOM, 2024);

- Horsham District Council – Surface Water Drainage Statement ([Surface Water Drainage Statement | Horsham District Council](#));
- Water. People. Places. A guide for master planning sustainable drainage into developments. Prepared by the Lead Local Flood Authorities of the South East of England (AECOM, 2013);
- Hydrological descriptor data from the Flood Estimation Handbook (FEH) website (CEH, 2025);
- Land South of Northlands Lane: Soakaway Testing (Aqua Terra Consulting Ltd, 2025);
- Land South of Northlands Lane: Groundwater monitoring (Aqua Terra Consulting, 2026); and,
- Land south of Northlands Lane: Flood Risk Assessment (Aqua Terra Consulting Ltd, 2026).

1.5. Limitations

This report is written strictly for the benefit of the Client and bound by the conditions presented in Appendix A.

2. Site setting

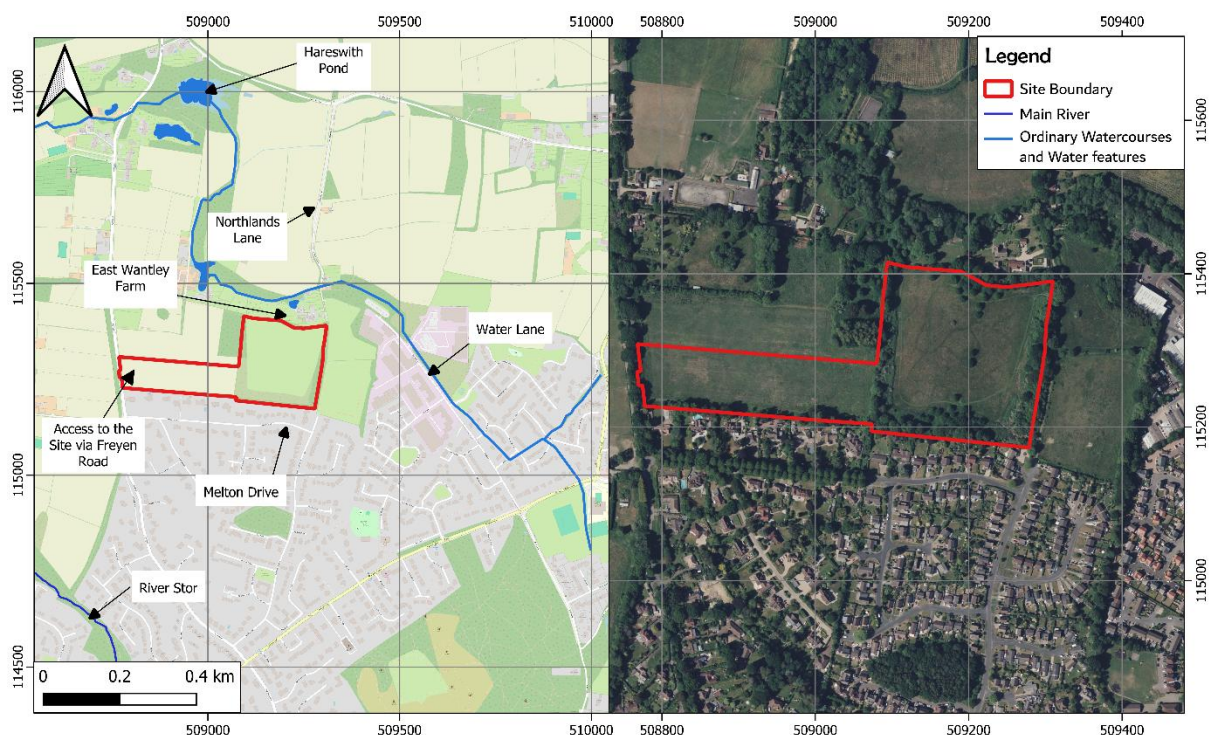
The following section collates and presents available information pertinent to the Site and its local environs.

2.1. Site location and description

The Site is located to the north of Storrington, within the Horsham District in West Sussex. The Site spans across an approximate area of 7.0 Ha and is centred on National Grid Reference 509187, 115294. The Site is currently a greenfield site and is covered primarily with grass and isolated trees (see Figure 2-1). The north is East Wantley Farm, and to the south, Melton Drive. Third party planning applications are in process for land to the west of the Site "Land North of Melton Drive" and the field to the east of the Site "Croudace".

There is an ordinary watercourse which passes to the north of the Site. This watercourse flows east to west, and joins the River Stor north-west of the Site. There are also a number of ponds located along or adjacent to the ordinary watercourse. The largest of these is Hareswith Pond.

Figure 2-1 Site location



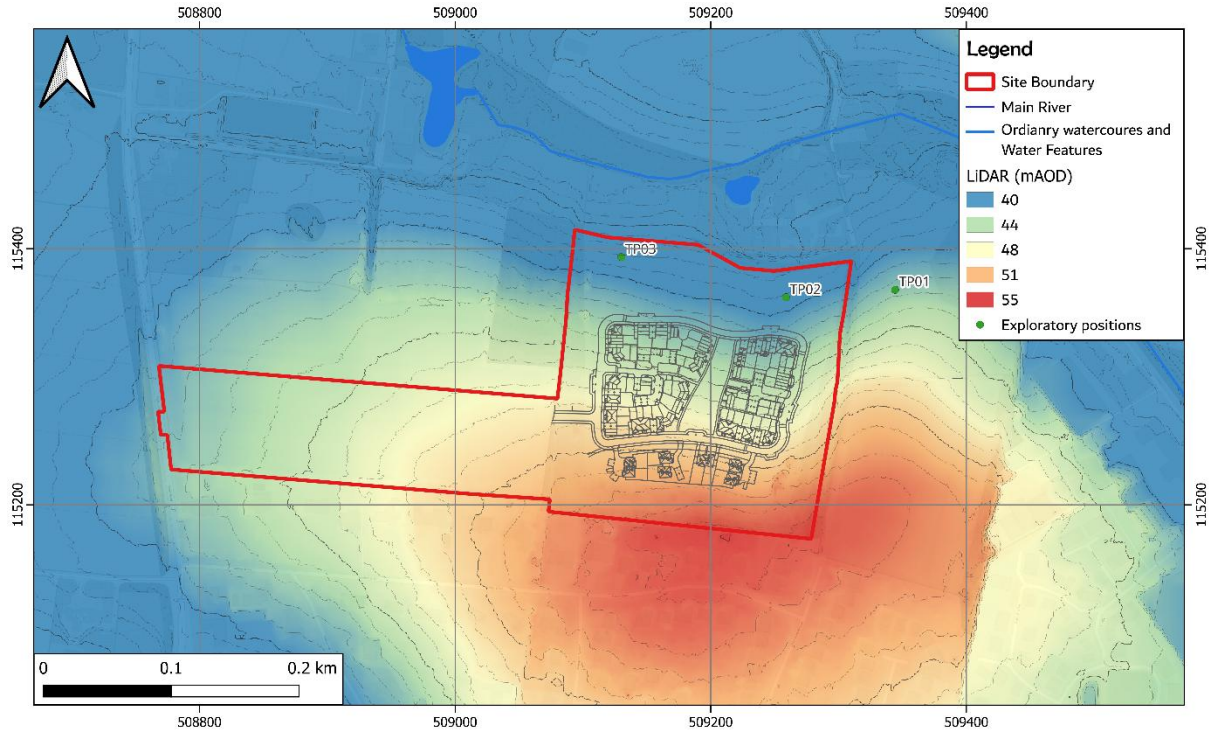
Contains Open Street Map data © OpenStreetMap and Bing Aerial imagery © Microsoft

2.2. Topography

Ground elevation across Site, fall from 54m above Ordnance Datum (m aOD) along the southern boundary to an elevation of around 34.5m aOD in the norther corner. Figure 2-2 presents LiDAR topographical data overlain by the proposed development plans. Topographical survey has also been undertaken for the Site in August 2017. This is presented in Appendix B.

The Site does not currently have a formal drainage system and at present, the surface water runoff will either infiltrate or flow overland northwards towards the watercourse to the north of the Site.

Figure 2-2 Existing ground elevations from LiDAR data



Contains Open Street Map data © OpenStreetMap

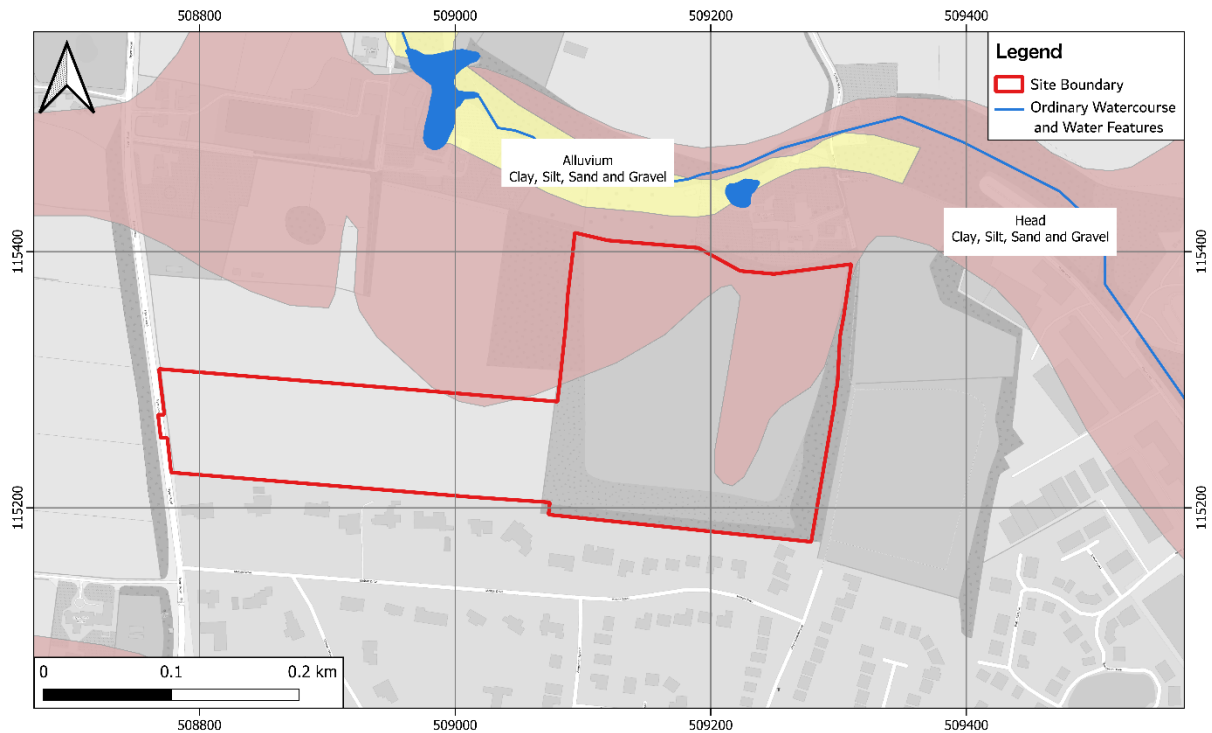
2.3. Soils, Geology and hydrogeology

2.3.1. Published soils and geology

According to Soilscales mapping and British Geological Survey (BGS) 1:50,000 scale mapping, the general geological sequence underlying the Site is as follows:

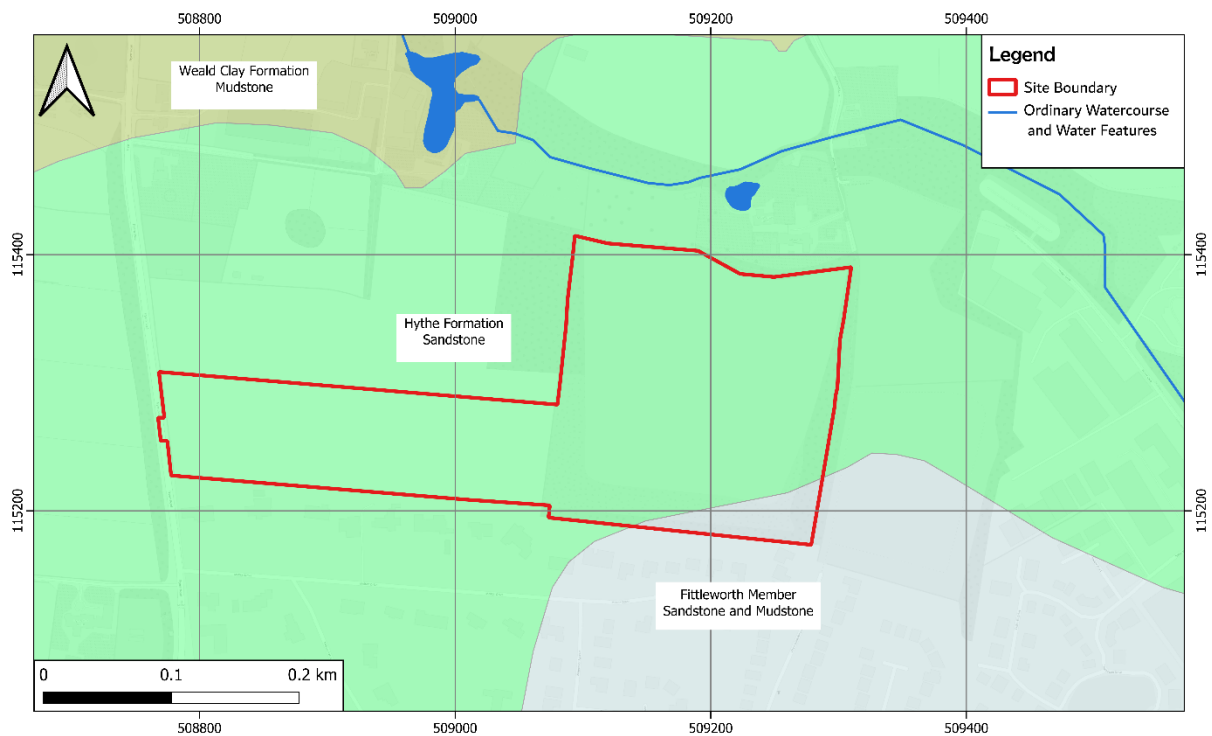
- **Soils:** Freely draining slightly acid loamy soils.
- **Superficial deposits:** (see Figure 2-3) Head Deposits across the northern portion of the Site closest to the ordinary watercourse. Absent across the remainder of Site.
- **Solid geology** (see Figure 2-4): Predominantly Hythe Formation Sandstone, with a small outcrop of Fittleworth Member (Sandstone and Mudstone) in the far south of the Site.

Figure 2-3 BGS mapped Superficial Geology (1:50,000)



Contains Open Street Map data © OpenStreetMap

Figure 2-4 BGS mapped bedrock geology (1:50,000)



Contains Open Street Map data © OpenStreetMap

2.3.2. Site Investigation

Aqua Terra undertook a site investigation in July 2025 which comprised three trial pit locations across the Site. Due to accessibility constraints, soakaway testing was only undertaken at two of the trial pits, of which only a single test was undertaken at TP01, and was required to be extrapolated. A full three tests, in accordance with the methodology set out in BRE 365, was undertaken at TP03.

The strata encountered during the fieldwork are summarised as follows:

- **Topsoil:** 0.3m to 0.4m thick. Encountered in all positions as a grass covered, light brown, slightly gravelly, slightly clayey SAND.
- **Head Deposits:** Encountered in all positions as an orangish brown, gravelly, fine to coarse SAND to a gravelly sandy CLAY.

A summary of the infiltration testing is presented in Table 2-1 below. Full results including exploratory logs are provided in Land south of Northlands Lane: soakaway testing (Aqua Terra Consulting Ltd, 2025). No seepages or groundwater strikes were noted during the site investigations.

Table 2-1 Summary of Infiltration testing

Trial pit	Test	Depth of pit (m)	Geological test section	Permeability (m/s)	Average (m/s)
TP01	1	2.67	Head Deposits/ Hythe Formation	7.13E-06	7.13E-06*
TP02	1	2.9	Head Deposits/ Hythe Formation	3.7E-05	7.31E-05
	2	2.63		8.13E-05	
	3	2.56		1.01E-04	

* Extrapolated

Groundwater monitoring was also undertaken within TP02 for a period of 6 months from 31st July 2025 through to 9th April 2026. Throughout this period water levels were for the most part at least 2m below ground level, with a short period (approximately 2 days) following heaving rainfall when levels reached a maximum of 1.6m below ground level. Full results are provided in Land South of Northlands Lane: Groundwater monitoring (Aqua Terra Consulting, 2026).

2.3.3. Hydrogeology

The Hythe Formation is classified by the Environment Agency (EA) as a Principal Aquifer. These are defined as having a high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

The Fittleworth Member is classified by the EA as a Secondary A Aquifer. These are defined as having comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers.

The superficial Head Deposits across Site are classified by the EA as a Secondary Undifferentiated Aquifer. These are defined where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non- aquifer in different locations due to the variable characteristics of the rock type.

Groundwater vulnerability across Site is classed as medium to high.

The Water Framework Directive (WFD) classifies the Lower Greensand Arun & Western Streams water body which includes the on Site aquifer, as having an overall and chemical rating of poor, and a quantitative rating of good in 2019.

The Site does not lie within a Source Protection Zone. However, potable water abstractions are recorded 93m south and 108m east of the Site. Both abstractions are associated with Croudace Homes Limited and are used for drinking, cooking, sanitary and washing (commercial/ industrial/ public services). Pumping tests indicated that water was struck at 26 m below ground level within both boreholes.

2.4. Climate

The Standard Average Annual Rainfall (SAAR) for the Site area is 891mm per annum (mm/a).

2.5. Hydrology

Mapped water features in the vicinity of the Site are presented in Figure 2-1. An unnamed ordinary watercourse passes near the northern boundary of the Site, flowing towards the River Stor to the north-west of the Site.

There are also a number of ponds located along or adjacent to the ordinary watercourse. The largest of these is Hareswith Pond.

Hydrological descriptors for the Site (sourced from FEH webservice) are provided in Table 2-2. The Base Flow Index (BFI) is higher than the national average, indicating that more of the incident rainfall is infiltrated to ground. This is consistent with the sandy soils encountered during the Site investigation.

Table 2-2 Hydrological point descriptors

Descriptor	Value
NGR	TQ 09185 15317
BFIHOST19	0.657
PROPWET	0.34
SAAR6190	891 mm

3. Proposed development

The Proposed Development comprises the erection of up to 56 dwellings, together with the provision of landscaping, open space, and associated development works, from an adjoining Site ("land north of Melton Drive") to the west of the Site.

An illustrative masterplan of the proposed development has been supplied to Aqua Terra and is presented in Figure 3-1. The development is split into three regions. The first, to the south of the main access road, and the second and third to the west and east respectively of an open green space. The large field to the south-east is proposed to remain undeveloped, whilst the land to the north will provide amenity space and an area for drainage features.

Figure 3-1 Illustrative masterplan



Source: Paul Hewitt (April 2026)

4. Sustainable Drainage (SuDS) Strategy

The NPPF stipulates that all new developments must be “safe, without increasing flood risk elsewhere”. The National Standards for Sustainable Drainage Systems (HM Government, 2025) expand on these principles by setting a clear hierarchy for runoff destinations and defining seven technical standards covering runoff control, management of everyday and extreme rainfall, water quality, amenity, biodiversity and consideration of structural design, construction and long-term maintenance.

The proposed drainage design is described under Section 4.1 with subsequent sections covering each of the 7 standards that are required to be demonstrated for all SuDS schemes.

4.1. Proposed Drainage Design

An outline SuDS Strategy has been drafted and includes at source controls through porous paving acting on some of the low traffic and communal parking areas, leading to a swale and infiltration basin in the north of the Site. Based on site infiltration rates infiltration is likely to be feasible across the Site. Exceedance flow from the infiltration basin in the north of the Site would be towards the unnamed watercourse and thereon following the local topography.

Calculation of impermeable areas on the Site is detailed in Appendix D. The Site has been split into three catchments (see Figure 4-1), and impermeable area calculations undertaken for each catchment. This has allowed a simplified application of contributing areas to be applied across a number of nodes/manholes within the drainage network suitable at this outline design stage. A 10% allowance for urban creep on all non-adoptable surfaces has been applied. Rural ReFH hydrographs have also been applied to the network to represent runoff from permeable surfaces that could drain to the drainage network.

The SuDS features are summarised in Table 4-1 and shown in Figure 4-2, as well as a more detailed drawing in Appendix F. A gravity fed system should be possible across the Site and no pumping has been proposed.

All porous paving areas have overflow weirs to the piped network although are designed to infiltrate the full 1 in 100 year with climate change runoff. Areas of porous paving have been assumed to have a 30% porosity and a gravel sub-grade depth of 0.45 m.

The swale has a design depth of 0.5 m and side slopes of 1:3. The swale is stepped using weirs to ensure maximum infiltration potential and to provide additional visual impact. The infiltration basin has a design depth 0.5 m and side slopes of 1:4.

As the layout plans for the Site progress it may be possible to incorporate additional swales to step water down the slopes from south to north and maximise the above ground features.

Infiltration has been assumed as the slowest rate of the three tests undertaken at TP02 (i.e 3.7E-05 m/s, with a factor of safety of 2). Whilst TP02 is not located where the main infiltration basin is proposed, the ground conditions are similar. It is recommended that for detailed design additional infiltration testing is undertaken at the proposed infiltration basin location and porous paving areas to confirm the infiltration rates across the Site.

Causeway Flow software has been used to model the proposed drainage design for the 50%, 3.3% and 100% AEP events with a 40% and 45% allowance for climate change for the 3.3% and 100% AEP events respectively. This represents an upper end peak rainfall climate change allowance for the Arun and Western Streams Management Catchment. FEH22 Rainfall has been used and the volumetric runoff coefficient has been set to 1.0 to represent capture of all runoff from impermeable areas for both summer and winter storms.

The results from the modelling are presented under the relevant standards, with a detailed output report from Causeway Flow presented in Appendix E.

Figure 4-1 Sub-catchments and Impermeable surfaces



Figure 4-2 SuDS features

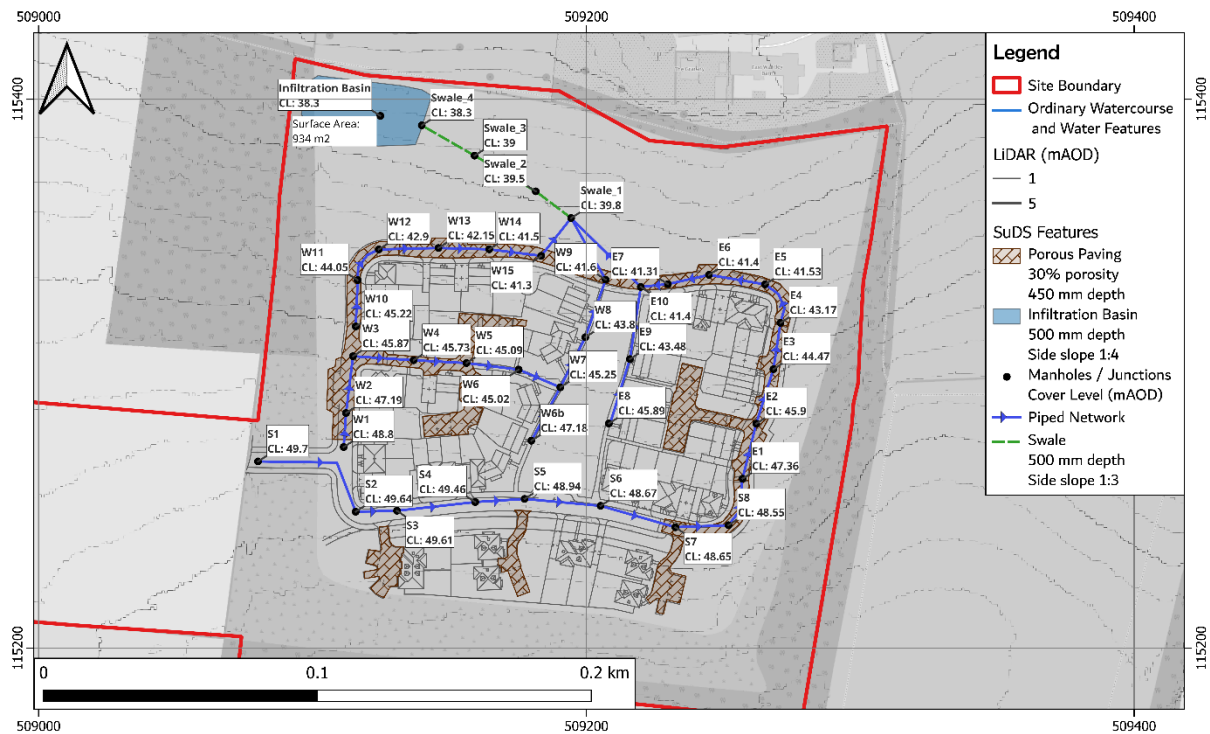


Table 4-1 SuDS features details

SuDS Feature	Invert level (m aOD)	Depth (m)	Porosity	Freeboard (mm)	Side slope	Surface area (m ²)	Volume (m ³)	Time to half empty (min)	Outlet type
Southern Catchment – Porous Paving	Various	0.45	0.3	N/A	N/A	720	97.2	43	Overflow Weir
Eastern Catchment – Porous Paving	Various	0.45	0.3	N/A	N/A	1056	142.6	38	Overflow Weir
Western Catchment – Porous Paving	Various	0.45	0.3	N/A	N/A	1680	226.8	11	Overflow Weir
Swale	Various	0.5	N/A	300*	1:3	N/A	N/A	448	Stepped weirs
Infiltration Basin	37.8	0.5	N/A	150	1:4	934	416	388	None - Infiltration

* Weirs set at least 300 mm below top of bank of Swale although flow spilling over weir exceeds this.

4.2. Standard 1: Runoff Destinations

Surface water runoff must be disposed of according to a hierarchy of destinations as follows:

- Priority 1: Collected for non-potable use.
- Priority 2: Infiltrated to ground.
- Priority 3: Discharged to an above ground surface water body.
- Priority 4: Discharged to a surface water sewer, or another piped surface water drainage system.
- Priority 5: Discharged to a combined sewer.

The suitability of each of these options is discussed below.

4.2.1. Water re-use

Water re-use (i.e. the use of water butts or more sophisticated tank systems to capture rainwater for re-use) could be implemented at the Site. These sites collect water from clean surfaces (such as rooftops) for (generally non-potable) use on Site. This has the benefit of reducing both the demand for potable water and the volume of surface water runoff requiring disposal. Rainwater harvesting for each unit will be included as part of the detailed design of the Proposed Development

It is difficult to accurately determine the volume of roof runoff that would be intercepted and re-used by each individual rainwater harvesting system (this will be a detailed design consideration). The inclusion of rainwater interception and re-use systems in this way will however reduce the overall volume of runoff that will need to be stored by each subsequent element of the SuDS Management Train.

Rainwater harvesting has not been included in the outline drainage to ensure the system has sufficient capacity should they not be implemented, or fail to work consistently.

4.2.2. Infiltration to ground

Site investigation work, summarised in Section 2.3.2 found acceptable infiltration rates at the single location where three full tests in line BRE 365 methodology were undertaken. Groundwater monitoring within the head superficial deposits, undertaken at the site over a 6 month winter period found groundwater levels were typically at least 2 m below ground level, with only a short period (approximately 2 days following heavy rainfall) when ground water levels rose to 1.6 m below ground level. With a proposed infiltration basin and swale depth of 0.5 m, groundwater levels are over 1 m below the base of the proposed infiltration basin and swale bases.

Depth to groundwater is also likely to be greater in the south of the Site where superficial deposits are absent. Nearby boreholes (within 110m of the Site) indicate that typical depths to groundwater within the bedrock are 26m. Infiltration is therefore considered feasible for the Site, and no other means of discharge is proposed.

4.2.3. Discharge to surface water body, surface water drains and/or combined drain

Given the likely feasibility of infiltrating all runoff to ground, discharge to surface water body, surface water drains or combined drains are unlikely to be used in this instance. Exceedance flows from the proposed infiltration basin however are likely to spill northwards towards the un-named watercourse to the north of the Site.

4.3. Standard 2: Management of everyday rainfall

Drainage schemes should ensure that at least the first 5mm of rainfall for the majority of rainfall events does not result in runoff from the site to surface waters or piped drainage systems. Runoff from positively drained surfaces, for at least 5mm of rainfall must either be collected for use, infiltrated into the ground, or else captured, conveyed and stored within SuDS features where these features will naturally absorb or retain runoff and therefore not discharge off the Site.

As the Site is proposed to be fully drained through infiltration, no runoff from the site to surface waters or piped drainage systems will occur for all events up to the design event (1% AEP with climate change).

4.4. Standard 3: Management of extreme rainfall and flooding

Greenfield runoff rates and volumes have not been calculated for the Site as it is not proposed to discharge runoff from the Site to watercourses.

4.4.1. Performance assessment

The principal SuDS features have been modelled using Causeway Flow software. Simulations were run for the 50% AEP, 3.33% AEP +40% and the 1% AEP + 45% events. The drainage pipe network includes a 300mm freeboard allowance at the manhole locations to ensure:

- Flooding does not occur on any part of the development for rainfall events up to the 3.3% AEP + 40% event; and,
- Flooding does not occur during rainfall events up to a 1% AEP +45% event in any part of: a building, any utility plant susceptible to water within the development; or any route designed to provide safe access and escape during flooding.

Table 4-2 and Table 4-3 summarise the model results at the SuDS features for the 3.3% AEP +40% and 1% AEP + 45% scenarios. Where a feature is spread out across several nodes (such as permeable paving) the critical depth has been reported across all nodes.

During the 3.3% AEP + 40% scenario there is no flooding. During the 1% AEP + 45% scenario there is a maximum of 8 m³ of flooding along the swale, immediately adjacent to the infiltration basin, for events under 60 minutes. This flow will follow the natural topography towards the infiltration basin, which during these shorter events is not at full capacity (critical duration for the infiltration basin is the 4 hour event). Therefore this flooding will not result in any increase in risk to residents or increase in off-site flood risk. Therefore, based on the parameters described above, the proposed drainage scheme will be able infiltrate all runoff to ground.

Detailed model outputs are provided in Appendix E. This shows that some of the velocities within the pipes exceed the recommended maximum of 3 m/s. As the detailed design is undertaken, it is likely that the drainage path lengths will increase and slope decrease – leading to a reduction in velocity. It may also be possible to replace the piped reaches that drain south to north down the slope (i.e. those with the steepest gradients) with stepped swales. This should be reviewed as part of the detailed design.

Table 4-2 Summary of 1 in 30 year + 40% climate change model results

Feature name	Critical storm	Peak depth below cover level	Flood Risk Status
Southern Catchment – Porous Paving	60 Min: Summer	0.395	-
Eastern Catchment – Porous Paving	60 Min: Summer	0.451	-
Western Catchment – Porous Paving	60 Min: Summer	0.478	-
Swale	15Min: Summer	0.01	Flood Risk
Infiltration Basin	180 Min: Summer	0.135	Flood Risk

Table 4-3 Summary of 1 in 100 year + 45% climate change model results

Feature name	Critical storm	Peak water depth (m aOD)	Flood Risk Status
Southern Catchment – Porous Paving	60 Min: Summer	0.319	-
Eastern Catchment – Porous Paving	60 Min: Summer	0.307	-
Western Catchment – Porous Paving	60 Min: Summer	0.432	-
Swale	15 Min: Summer / 30 Min: Summer	-0.01	Flood Risk
Infiltration Basin	240 Min: Summer	0.008	Flood Risk

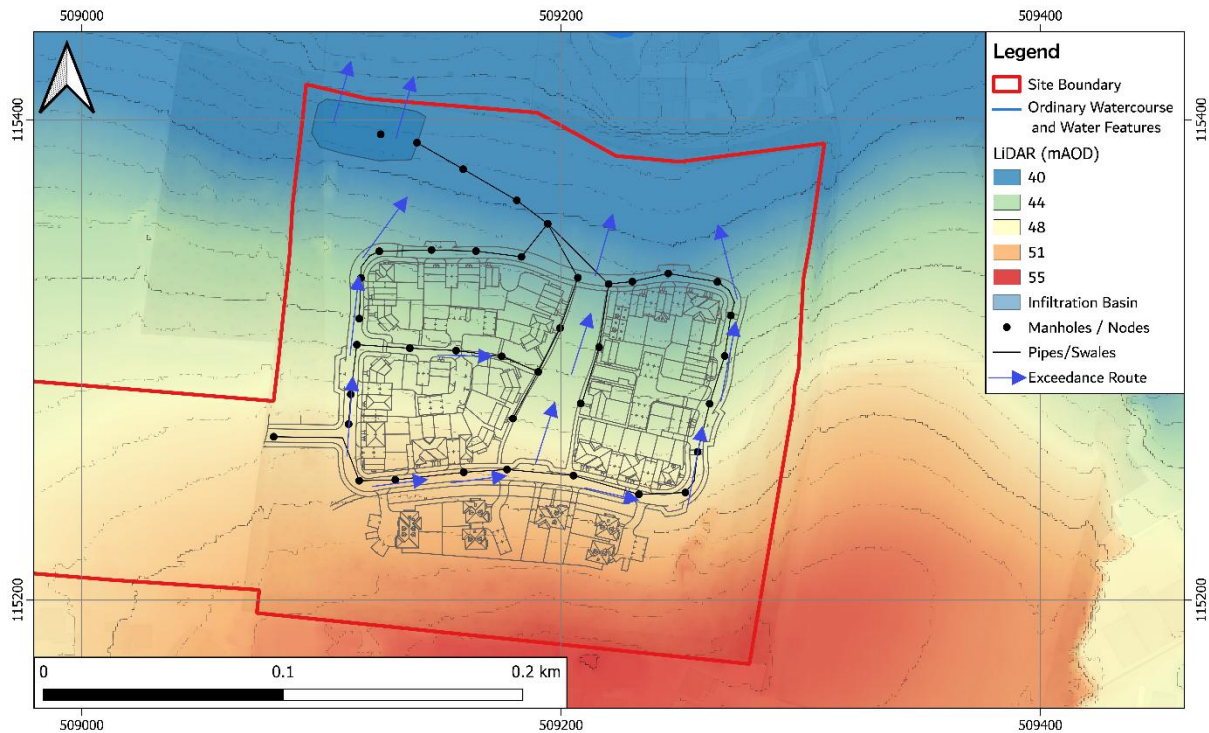
4.4.2. Exceedance flow paths

Whilst the strategy has aimed to ensure no flooding during the extreme 1 in 100 year + 45% climate change scenario, there is always a residual risk that flooding may occur for example due to more extreme events or blockage of structures. Under these conditions, exceedance flows will be designed to follow the existing flow paths from south to north across the Site, via the road network. Raised kerbs or bunds will be created along roads to direct flows where required. Flow will be directed away

from the main access roads, and where already on the road, directed towards the nearest downslope green space to ensure that safe access is maintained for emergency services. Exceedance flow will exit the Site in the north-west corner, over an area of rural land towards the un-named watercourse located 50 m to the north.

Very high level exceedance flow directions are illustrated in Figure 4-3 based on topographic data. A more detailed analysis of exceedance flows will be undertaken during as part of the detailed drainage strategy.

Figure 4-3 Exceedance flow routes



4.5. Standard 4: Water Quality

SuDS techniques can be used to effectively manage the quality of surface water flowing across a site. Different methods can be used to intercept pollutants and allow them to degrade or be stored in-situ without impacting the quality of water further downstream. Frequent and short duration rainfall events are those that are most loaded with potential contaminants (silts, fines, heavy metals and various organic and inorganic contaminants). Therefore, the first 5mm to 10mm of rainfall (i.e. the 'first flush') should be adequately treated using SuDS.

The proposed development will primarily consist of residential dwellings, low traffic roads and driveways. The CIRIA SuDS manual categorises runoff from residential dwellings as presenting a very low water quality hazard and runoff from low usage roads and residential driveways as presenting a low hazard rating (see Table 4-4).

Table 4-4 Water quality hazard ratings (CIRIA, 2015)

Land use	Hazard level
Residential roof drainage	Very low
Residential, amenity uses including low usage car parking spaces and roads, other roof drainage . Non-residential car parking with infrequent change (<e.g. schools, offices, i.e. < 300 traffic movements/day)	Low
Commercial uses including car parking spaces and roads (e.g. hospitals, retail, excluding low usage roads, trunk roads and motorways)	Medium
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemical and fuels (other than domestic fuel oil) are delivered, handled, stored used or manufactured, industrial sites	High
Trunk roads and motorways	High

The CIRIA SuDS manual advocates a qualitative approach to designing a SuDS scheme for a site with a low hazard rating. This should provide adequate controls on pollutants contained in runoff water.

As the proposed development is predominantly residential in nature with a low hazard rating, hazard indices of 0.5 for Total Suspended Solids (TSS), 0.4 for Metals and 0.4 for Hydrocarbons are considered applicable.

The measures detailed in Table 4-5 are examples which are suitable for inclusion in a drainage strategy for a residential development to mitigate a potential increase in pollutant load within on-site and off-site runoff – note text in bold are measures included in this SuDS Strategy. Removal indices are included for each feature type relative to the specific pollutant.

Table 4-5 Mitigation indices for SuDS components

Component type	TSS	Metals	Hydrocarbons
Filter drain	0.4	0.4	0.4
Infiltration basin	0.6	0.5	0.6
Swale	0.5	0.6	0.6
Permeable paving	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5

The inclusion of permeable paving, swales and an infiltration basin, within the SuDS strategy for the Site will each individually provide adequate treatment to mitigate the low hazard associated with runoff from the development provided all runoff flows through at least one of these components (as per the outline strategy).

Sediment traps (i.e. sumps within the inspection chambers of the final manhole upstream of each feature) will be used to facilitate the maintenance of these SuDS features and reduce the build-up of potentially polluted material.

4.6. Standard 5 & 6: Amenity and Biodiversity

SuDS schemes present opportunities to enhance habitat for wildlife on-site and this often improves the biodiversity of the surrounding areas. Ponds, constructed wetlands and other surface water

features are landscape assets that have amenity value and improve the aesthetics of a site more than conventional drainage systems.

The use of grassed detention basins and swales will enhance the biodiversity and amenity value of the Site post-development. Ecological diversity should be enhanced by the use of native planting within/around each feature – further details of this will be provided in the detailed drainage strategy and landscape reports.

There is also potential to incorporate the Swale into a nature based play area if suitably designed for safety, accessibility and durability. To achieve this at the detailed design stage, the swale may need widening to allow shallow depths but maintain sufficient volume.

4.7. Standard 7: Design of drainage for construction, operation, maintenance, decommissioning and structural integrity

The Construction (Design and Management) Regulations 2015 include requirements for designers to take account of the health and safety risks associated with the construction, operation and maintenance and decommissioning of the drainage system to minimise these risk as far as reasonably practicable.

SuDS features should be built and operated in accordance with guidance outlined in the CiRIA SuDS Manual.

The drainage design can be delivered as a gravity fed system which reduces the reliance on mechanical systems and the cost of operation.

4.7.1. Maintenance Schedules

Inspection and long-term maintenance of SuDS components ensures efficient operation and prevents failure. Management of the surface water drainage system will be undertaken by a Management Company.

This section outlines the maintenance and management schedules for the proposed drainage system. The schedules have been formulated in line with guidelines contained within the CIRIA SuDS Manual (CIRIA, 2015). There are three categories of maintenance activities referred to in this report, although not all are required for each SuDS feature:

- **Regular maintenance** – tasks which are required to be undertaken on a weekly or monthly basis, or as required.
- **Occasional maintenance** – tasks which are required to be undertaken periodically, typically at intervals of three months or more.
- **Remedial maintenance** – tasks which are not required on a regular basis but are done when necessary.

This section is intended to give an overview of the operation and maintenance for the range of drainage features included within the surface water drainage strategy and in relation to typical/standard details only.

Maintenance schedules for the proposed SuDS components are provided in the following tables. These schedules are not exhaustive and should be reassessed at regular intervals to determine if any additional maintenance requirements are required to preserve the performance and condition of the drainage system.

Table 4-6 Maintenance for pipes and manholes

Maintenance schedule	Required action	Frequency
Regular maintenance	Remove any accumulation of silt, sediment, leaves and debris etc	Monthly, or as required
	Inspect for evidence of poor operation	Monthly (during the first year), then half yearly
Occasional maintenance	High pressure water jet removal of silt build-up and avoid blockages, particularly at bends or changes in direction	Six monthly, or as required
	Remove or control tree roots where they are encroaching pipe runs, using recommended methods	As required
Remedial actions	Clear pipework and gully grates of blockages	As required
	Replace any damaged or failed pipes, gullies or manholes	As required

Table 4-7 Maintenance for swales

Maintenance schedule	Required action	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 as 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 reseedling	As required

Maintenance schedule	Required action	Frequency
	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 stripe	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Table 4-8 Maintenance for pervious pavements

Maintenance schedule	Required action	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 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 glyphosphate 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

Maintenance schedule	Required action	Frequency
		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

Table 4-9 Maintenance for control devices

Maintenance schedule	Required action	Frequency
Regular maintenance	Inspect/check pipework to ensure that the flow control is in good condition and operating as designed	Monthly
	Inspect for evidence of poor operation	Monthly, or as required
Occasional maintenance	High pressure water jet removal of silt build-up	Six monthly, or as required
Remedial actions	Clear pipework of blockages	As required
	Replace the flow control if it becomes damaged	As required

Table 4-10 Maintenance for infiltration basins

Maintenance schedule	Required action	Frequency
Regular maintenance	Remove litter, debris and trash	Monthly
	Cut grass – for landscaped areas 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), or as required
Occasional maintenance	Reseed areas of poor vegetation growth	Annually, or as required
	Prune and trim any trees and remove cuttings	As required
	Remove sediment from pre-treatment system when 50% full	As required
Remedial actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	As required

Maintenance schedule	Required action	Frequency
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Rehabilitate infiltration surface using scarifying and spiking techniques if performance deteriorates	As required
	Relevel uneven surfaces and reinstate design levels	As required

4.8. Further SuDS considerations

The detailed design strategy should include:

- Infiltration testing in line with BRE 365 methodology at proposed infiltration basin and porous paving locations.
- Assessment of potential rainfall harvesting measures.
- Stepped sub-base to areas of porous paving to ensure that they can maintain the required volume of storage across the fall of the Site.
- Options for improving the amenity and biodiversity benefit of the swale, for example through including a natural play area and/or mini waterfalls as the levels are stepped down towards the infiltration basin.

5. Foul Drainage

Foul water from the proposed development will be managed through a connection to the public foul sewerage network. A capacity check is currently in progress with Southern Water the statutory undertaker responsible for foul water drainage services.

Sewer asset plans (Appendix C) indicate a foul sewer to the south of the Site on Melton Drive. It is proposed to connect to manhole 0102 or 0101.

A formal S106 application will be required to be completed and approved by Southern Water prior to a connection being made. No surface water will be discharged into the foul sewer network. The Site is unlikely to be able to discharge under gravity as the foul sewer network is upslope of the Site and therefore a pumping station is likely to be required.

6. Conclusions

This report provides an Outline SuDS Strategy for the Site, a previously undeveloped, 'greenfield' area located on the outskirts of Storrington. The Site currently predominantly infiltrates to ground with excess flow draining northwards towards an un-named watercourse.

Based on the sandy soils and bedrock, and confirmed through soakaway testing infiltration is likely to be feasible at the Site and the drainage design has been developed to infiltrate all runoff to ground up to the 0.1% AEP with 45% climate change event.

A design lifespan of 100 years has been assumed for the development, based upon the EA guidance rainfall increases of 40% and 45% have been applied to the 1 in 30 year and 1 in 100 year events respectively.

The proposed Outline SuDS scheme comprises of storage and infiltration within porous paving areas along low traffic roads and communal parking areas. Excess flow from porous paving areas and runoff from areas without porous paving are conveyed northwards via a piped network into a swale and to an infiltration basin in the north-west of the Site. No flooding is shown for the 3.3% AEP event, however there is some minor flooding (8m³) during the 1% AEP shortest duration events. This flooding occurs within the swale adjacent to the infiltration basin and flow will continue towards the basin which is not at capacity during these short events. It is therefore considered that there is no additional risk to residents from this flood risk.

The Site is not expected to require land raising / lowering to accommodate a gravity driven drainage system as there is a suitable gradient over the Site.

The detailed drainage design should consider the potential for incorporating additional SuDS features such as rain water harvesting, and if additional swales could be added to help step flow down the slopes from south to north. Further infiltration testing should also be undertaken where porous paving is proposed and at the proposed location for the infiltration basin.

Foul drainage is expected to discharge to the existing sewer network. A pre-planning capacity check is in progress with Southern Water for connection to a sewer to the north of the Site on Melton Road. A pumping station would be required as this is upslope of the Proposed Development. There are no foul or combined sewers to the north of the Site which would allow discharge under gravity.

7. References

- AECOM. (2013). *Water. People. Places. A Guide for masterplanning sustainable drainage into developments.*
- AECOM. (2024). *Horsham District Council - Level 1 Strategy Flood Risk Assessment.*
- Aqua Terra Consulting Ltd. (2025). *Land south of Northlands Lane: Flood Risk Assessment.*
- Aqua Terra Consulting Ltd. (2025). *Land south of Northlands Lane: Soakaway Testing.*
- British Geological Society. (2025). *BGS Geology Viewer.* Retrieved from <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/>
- CEH. (2025). Retrieved from Flood Estimation Handbook Web Service: <https://fehweb.ceh.ac.uk>
- CIRIA. (2015). *The SuDS Manual v2 C753.*
- Cranfield Soil and AgriFood Institute. (2024). Retrieved from Soil Scapes map: <http://www.landis.org.uk/soilscapes/>
- DeFRA. (2020-22). *data.gov.uk.* Retrieved from National Lidar Programme.
- Environment Agency. (2025). *Flood Map for Planning.*
- HM Government. (2025). *National Standards for Sustainable Drainage Systems.*

Appendix A Report conditions



Report Conditions

This report has been prepared by Aqua Terra Consultants Ltd. (Aqua Terra) in its professional capacity as soil and groundwater specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by Aqua Terra solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report, taking account of the terms of reference agreed with the client. The findings are based on the information made available to Aqua Terra at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology, and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

Where necessary and appropriate, the report represents and relies on published information from third party, publicly and commercially available sources which is used in good faith of its accuracy and efficacy. Aqua Terra cannot accept responsibility for the work of others.

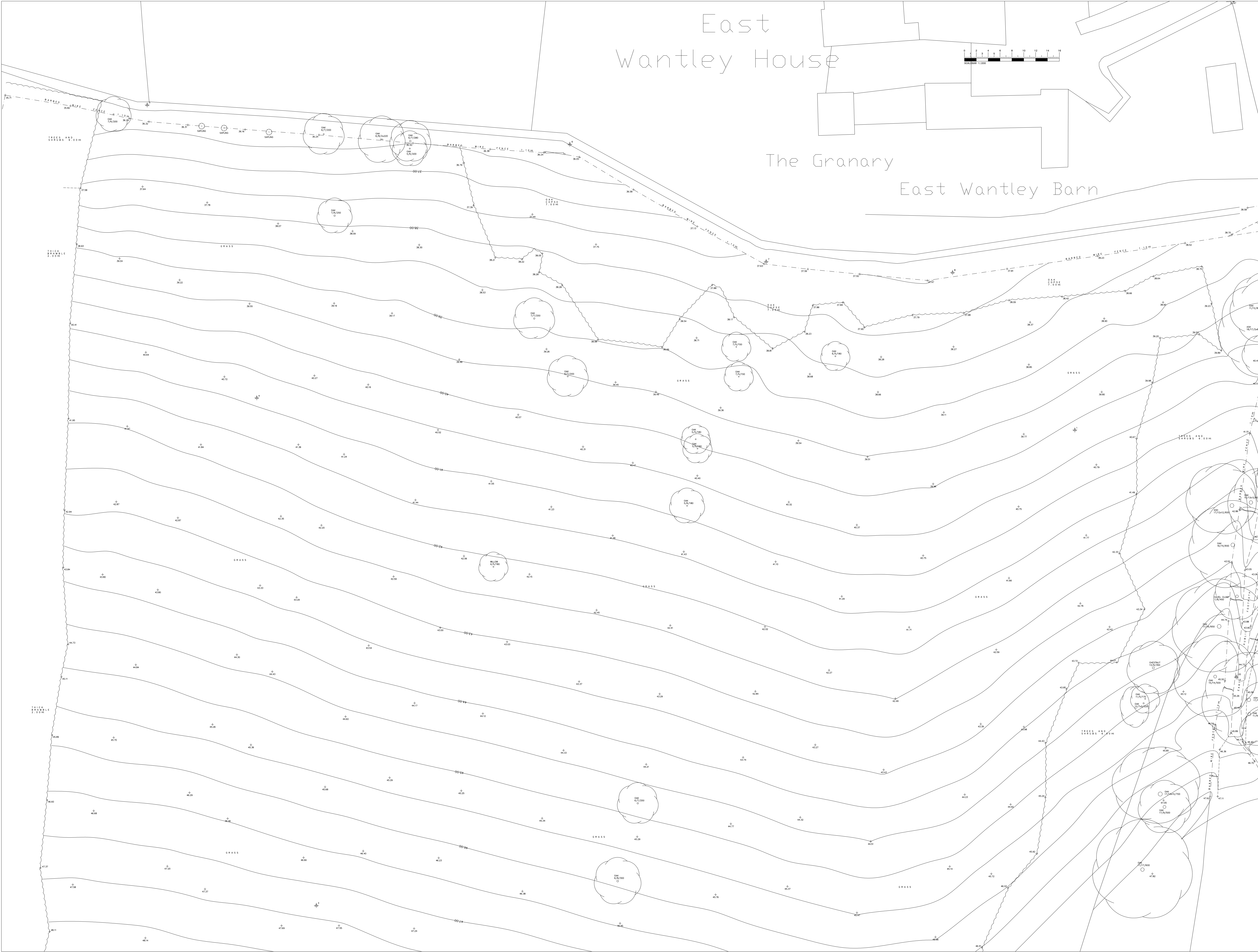
Site investigation results necessarily rely on tests and observations within exploratory holes only. The inherent variation in ground conditions mean that the results may not be representative of ground conditions between exploratory holes. Aqua Terra take no responsibility for variation in ground conditions between exploratory positions.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, Aqua Terra may, by prior written agreement, agree to such release, if it is acknowledged that Aqua Terra accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. Aqua Terra accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual, or otherwise, against Aqua Terra except as expressly agreed with Aqua Terra in writing. Aqua Terra reserves the right to withhold and/ or negotiate the transference of reliance on this report, subject to legal and commercial review.

Surveyed by:	R Finch
Plotted by:	S Brown
Drawn by:	Acad
Legend	
ACU	Air Conditioning Unit
AV	Air Valve
BC	Barrier Control
BOL	Bollard
BTB	British Telecom Junction Box
BTM	British Telecom Manhole
CL	Cover Level
CTV	Cable TV
ELCP	Electricity Cable Pit
EM	Electricity Cable Marker
EP	Electricity Pole
ER	Earth Rod
FM	Fire Hydrant
FP	Flag Pole
G	Gully
GV	Gas Valve
IB	Illuminated Bollard
IL	Invert Level
JB	Junction Box
LB	Letter Box
LC	Lamp Column
MH	Manhole
MCK	Concrete Marker
O/F	Outfall
PM	Parking Meter
RE	Rodding Eye
RWP	Rainwater Pipe
SC	Stop Cock
SP	Sign Post
SV	Sluice Valve
TGB	Telephone Kiosk
TL	Traffic Light
TLC	Traffic Light Cover
TM	Ticket Machine
TP	Telegraph Pole
UTR	Unable to Raise
UTS	Unable to Survey
VC	Vent Column
WM	Water Meter
WO	Wash Out
WPP	Waste Water Pipe

Data	
1)	Trees shown thus 9/6/200 indicates HT in metres/Span dia in metres Trunk dia in millimetres
12)	Trees shown thus 9/6/2/200 indicates HT in metres/Span dia in metres Trunk dia in millimetres
111)	Grid : Metric and oriented to north
11)	Levels : Metric and based on OS GPS DATA Sited on Survey station 1
Value:	40.143m

Client	FAIRFAX
Site	NORTHLANDS LANE STORRINGTON SHEET 1 OF 4
	Marvin & Partners Limited Plestor House Farnham Road West Liss Hampshire GU33 6JQ
Tel :	01428 751888
Email:	paul@maplimited.com
Date	AUG 2017
Scale	1/200 @ A0
Dwg/Job No.	17/4971
Checked By	



Surveyed by: R Finch

Plotted by: S Brown

Drawn by: Acad

Legend

ACU

Air Conditioning Unit

AV

Air Valve

BC

Barrier Control

BDL

Bollard

BTB

British Telecom Junction Box

BTM

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CL

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HT - in metres/Spans - dia in metres

Trunk dia. in millimetres

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Trees shown thus 0/66/200 indicates

HT - in metres/Spans - dia in metres

Trunk dia. in millimetres

iii)

Grid : Metric and oriented to north

iv)Levels : Metric and based on OS GPS DATA

Situated on Survey station 1

Value: 40.143m

Client

FAIRFAX

Site

NORTHLANDS LANE

STORRINGTON

SHEET 2 OF 4

MAP

Marvin & Partners Limited

Plestor House

Farnham Road

West Liss

Hampshire GU33 6JQ

Tel : 01428 751888

Email: paul@maplimited.com

Date

AUG 2017

Scale

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Surveyed by: R Finch

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Drawn by: Acad

Legend

ACU Air Conditioning Unit

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CL Cover Level

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ELP Electricity Cable Pit

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RMP Rainwater Pipe

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TLC Traffic Light

TLC Traffic Light Cover

TM Ticket Machine

TP Telegraph Pole

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WO Wash Out

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Trunk dia. in millimetres

ii) Trees shown thus 9/6/200 indicates

HT in metres/Spans dia in metres

Trunk dia. in millimetres

iii) Grid : Metric and oriented to north

iv) Levels : Metric and based on OS GPS DATA

Situated on Survey station 1

Value: 40.143m

Client

FAIRFAX

Site

NORTHLANDS LANE

STORRINGTON

SHEET 3 OF 4

Marvin & Partners Limited

Plestor House

Farnham Road

West Liss

Hampshire GU33 6JQ

Tel : 01428 751888

Email: paul@maplimited.com

Date

AUG 2017

Scale

1/200 @ A0

Dwg/Job No.

17/4971

Checked By



Surveyed by: R Finch

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AGU

Air Valve

AV

Air Valve

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Mt. in metres/Spans. dia in metres

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Mt. in metres/Spans. dia in metres

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Grid : Metric and oriented to north

iv)

Levels : Metric and based on OS GPS DATA

Situated on Survey station 1

Value:

40.143m

Client

FAIRFAX

Site

NORTHLANDS LANE

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SHEET 4 OF 4

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Limited

Plestor House
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Tel : 01428 751888
Email: paul@maplimited.com

Date

AUG 2017

Scale

1/200 @ A0

Dwg/Job No.

17/4971

Checked By

Land south of Northlands Lane: Outline Drainage Strategy
P25017_R4_REV2

Table C-1: Catchment area calculations (all areas in hectares)

Catchment	Total Area	Impermeable non-adoptable areas – roofs, driveways	Impermeable adoptable areas – roads, pavements, communal parking	Increase for urban creep (10% of non-adoptable areas)	SuDS Footprint	Total impermeable area	Remaining permeable area	30% estimate of permeable area to drain to network	Total positively drained area
	A	B	C	D = B*0.1	E	F = C+D+E	G= A-F	H = G*0.3	I = F + H
South	0.81	0.17	0.23	0.02	0	0.41	0.39	0.12	0.53
East	0.50	0.10	0.13	0.01	0	0.24	0.26	0.08	0.32
West	0.70	0.12	0.21	0.01	0	0.34	0.36	0.11	0.45
Infiltration Basin					0.09				0.09
Total									1.40

Appendix E Causeway Flow Drainage Report

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
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)
S1	0.041	5.00	49.700	1200	50982.068	115248.937	1.300
S2	0.041	5.00	49.640	1200	51015.762	115249.694	1.439
S_PP3	0.041	5.00	50.740		51032.589	115231.000	1.300
S3	0.041	5.00	49.610		51030.833	115250.048	1.573
S4	0.041	5.00	49.460	1200	51059.421	115253.215	1.541
S_PP5	0.041	5.00	48.940		51073.507	115235.717	1.300
S5	0.041	5.00	48.940	1350	51077.449	115254.364	1.896
S6	0.041	5.00	48.670	1350	51105.190	115251.842	1.712
S_PP7	0.041	5.00	50.490		51129.642	115223.467	1.300
S7	0.041	5.00	48.650	1350	51132.472	115244.047	1.780
S8			48.550	1350	51151.880	115244.775	2.440
E_PP1	0.024	5.00	47.360		51148.106	115263.591	1.300
E1			47.360	1350	51157.015	115261.733	2.678
E_PP2	0.048	5.00	45.900		51150.955	115283.960	1.300
E2			45.900	1350	51162.010	115281.774	2.637
E_PP3	0.024	5.00	44.470		51158.382	115304.148	1.300
E3			44.470	1350	51168.296	115301.643	2.647
E_PP4	0.024	5.00	43.170		51158.813	115317.237	1.300
E4			43.170	1350	51170.860	115318.524	2.829
E_PP5	0.024	5.00	41.530		51157.994	115322.841	1.300
E5			41.530		51165.237	115332.540	1.779
E_PP6	0.024	5.00	41.400		51144.690	115325.284	1.300
E6			41.400	1350	51144.744	115336.011	1.756
E_PP7	0.024	5.00	41.310		51129.918	115324.061	1.300
E7			41.310	1350	51129.773	115332.639	1.720
E8	0.024	5.00	45.890	1200	51108.210	115281.846	1.300
E9	0.024	5.00	43.480	1200	51115.877	115305.326	1.350
E10			41.400		51119.860	115331.621	1.841
W_PP1	0.025	5.00	48.800		51021.224	115263.007	1.300
W1			48.800	1200	51014.205	115263.433	1.419
W_PP2	0.025	5.00	47.190		51021.164	115284.430	1.300
W2			47.190	1200	51014.015	115285.653	1.422
W_PP3	0.025	5.00	45.870		51022.836	115297.997	1.300
W3			45.870	1200	51014.774	115306.354	1.546
W4	0.025	5.00	45.730	1200	51036.905	115304.900	1.626
W_PP5	0.050	5.00	45.090		51054.988	115293.723	1.300
W5			45.090	1200	51056.212	115303.873	1.477
W6			45.020	1200	51075.270	115301.491	1.521
W6b	0.025	5.00	47.180	1200	51079.904	115275.577	1.300
W7			45.250	1200	51090.469	115295.026	1.849
W8	0.025	5.00	43.800	1200	51099.593	115313.274	2.525

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
W9			41.600	1200	51107.036	115334.264	1.425
W_PP10	0.025	5.00	45.220		51022.460	115316.880	1.300
W10			45.220	1200	51015.784	115317.219	1.413
W_PP11	0.025	5.00	44.050		51022.097	115334.130	1.300
W11			44.050	1200	51016.487	115334.118	1.395
W12	0.025	5.00	42.900	1200	51024.178	115345.291	1.350
W13	0.025	5.00	42.150		51045.967	115345.799	1.350
W14	0.025	5.00	41.500		51064.534	115345.328	1.425
W_PP15	0.025	5.00	41.300		51079.977	115334.443	1.300
W15			41.300		51083.485	115342.943	1.580
Swale_1			39.800	4900	51094.430	115356.722	0.500
Swale_2			39.500		51081.522	115366.452	0.501
Swale_3			39.000		51059.157	115379.464	0.501
Swale_4			38.300	4900	51039.878	115390.493	0.501
Infiltration Basin	0.090	5.00	38.300		51024.754	115393.967	0.500

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	S1	S2	33.703	0.600	48.400	48.201	0.199	169.4	225	5.56	50.0
1.001	S2	S3	15.075	0.600	48.201	48.112	0.089	169.4	225	5.81	50.0
2.000	S_PP3	S3	19.129	0.600	49.440	48.237	1.203	15.9	100	5.16	50.0
1.002	S3	S4	28.763	0.600	48.037	47.919	0.118	243.8	300	6.29	50.0
1.003	S4	S5	18.065	0.600	47.919	47.440	0.479	37.7	300	6.41	50.0
1.004	S5	S6	27.855	0.600	47.044	46.958	0.086	323.9	375	6.87	50.0
1.005	S6	S7	28.374	0.600	46.958	46.870	0.088	322.4	375	7.34	50.0
1.006	S7	S8	19.422	0.600	46.870	46.810	0.060	323.7	375	7.67	50.0
1.007	S8	E1	17.718	0.600	46.110	45.632	0.478	37.1	375	7.76	50.0
1.008	E1	E2	20.654	0.600	44.682	44.263	0.419	49.3	375	7.90	50.0
1.009	E2	E3	20.840	0.600	43.263	42.723	0.540	38.6	375	8.02	50.0
1.010	E3	E4	17.075	0.600	41.823	41.595	0.228	74.9	375	8.15	50.0
1.011	E4	E5	15.102	0.600	40.341	39.955	0.386	39.1	375	8.24	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)
1.000	1.002	39.8	7.4	1.075	1.214	0.041	0.0	65	0.769
1.001	1.001	39.8	14.8	1.214	1.273	0.082	0.0	95	0.931
2.000	1.947	15.3	7.4	1.200	1.273	0.041	0.0	49	1.927
1.002	1.002	70.9	29.6	1.273	1.241	0.164	0.0	135	0.958
1.003	2.568	181.5	37.0	1.241	1.200	0.205	0.0	92	2.033
1.004	1.001	110.6	51.9	1.521	1.337	0.287	0.0	181	0.986
1.005	1.003	110.8	59.3	1.337	1.405	0.328	0.0	195	1.019
1.006	1.001	110.6	74.1	1.405	1.365	0.410	0.0	225	1.071
1.007	2.984	329.5	74.1	2.065	1.353	0.410	0.0	120	2.429
1.008	2.586	285.6	78.4	2.303	1.262	0.434	0.0	134	2.218
1.009	2.924	322.9	87.1	2.262	1.372	0.482	0.0	132	2.494
1.010	2.095	231.4	91.4	2.272	1.200	0.506	0.0	164	1.978
1.011	2.904	320.7	95.8	2.454	1.200	0.530	0.0	140	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)
1.012	E5	E6	20.785	0.600	39.751	39.644	0.107	194.3	375	8.51	50.0
1.015	E10	Swale_1	35.732	0.600	39.559	39.425	0.134	266.7	375	9.45	50.0
1.016	Swale_1	Swale_2	16.164	0.600	39.300	38.999	0.300	53.9	500	9.50	50.0
1.017	Swale_2	Swale_3	25.875	0.600	38.999	38.499	0.500	51.7	500	9.59	50.0
1.018	Swale_3	Swale_4	22.211	0.600	38.499	37.799	0.700	31.7	500	9.64	50.0
13.005	W5	W6	19.206	0.600	43.613	43.499	0.114	168.5	225	6.37	50.0
12.000	E8	E9	24.700	0.600	44.590	42.180	2.410	10.2	100	5.17	50.0
12.001	E9	E10	26.595	0.600	42.130	40.050	2.080	12.8	150	5.33	50.0
1.013	E6	E7	15.346	0.600	39.644	39.590	0.054	284.2	375	8.75	50.0
1.014	E7	E10	9.965	0.600	39.590	39.559	0.031	321.5	375	8.91	50.0
17.000	W6b	W7	22.133	0.600	45.880	43.950	1.930	11.5	100	5.16	50.0
13.007	W7	W8	20.402	0.600	43.401	42.375	1.026	19.9	225	6.76	50.0
13.008	W8	W9	22.271	0.600	41.275	40.175	1.100	20.2	225	6.89	50.0
13.009	W9	Swale_1	25.754	0.600	40.175	39.575	0.600	42.9	225	7.10	50.0
18.006	W15	Swale_1	17.597	0.600	39.720	39.575	0.145	121.4	225	6.14	50.0
13.006	W6	W7	16.517	0.600	43.499	43.401	0.098	168.5	225	6.65	50.0
13.001	W1	W2	22.221	0.600	47.381	45.768	1.613	13.8	100	5.29	50.0
13.002	W2	W3	20.715	0.600	45.768	44.374	1.394	14.9	100	5.47	50.0
13.003	W3	W4	22.179	0.600	44.324	44.104	0.220	100.8	150	5.83	50.0
13.004	W4	W5	19.334	0.600	44.104	43.688	0.416	46.5	150	6.05	50.0
18.001	W10	W11	16.914	0.600	43.807	42.655	1.152	14.7	100	5.25	50.0
18.002	W11	W12	13.564	0.600	42.655	41.600	1.055	12.9	100	5.35	50.0
18.003	W12	W13	21.795	0.600	41.550	40.800	0.750	29.1	150	5.55	50.0
18.004	W13	W14	18.573	0.600	40.800	40.150	0.650	28.6	150	5.71	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)
1.012	1.296	143.2	100.1	1.404	1.381	0.554	0.0	232	1.398
1.015	1.105	122.0	117.5	1.466	0.000	0.650	0.0	298	1.251
1.016	5.113	6391.2	180.7	0.000	0.001	1.000	0.0	77	1.933
1.017	5.209	6511.0	180.7	0.001	0.001	1.000	0.0	76	1.956
1.018	6.656	8319.7	180.7	0.001	0.001	1.000	0.0	66	2.316
13.005	1.004	39.9	27.1	1.252	1.296	0.150	0.0	136	1.077
12.000	2.428	19.1	4.3	1.200	1.200	0.024	0.0	32	1.967
12.001	2.832	50.1	8.7	1.200	1.200	0.048	0.0	42	2.124
1.013	1.070	118.1	104.4	1.381	1.345	0.578	0.0	276	1.202
1.014	1.005	111.0	108.8	1.345	1.466	0.602	0.0	303	1.138
17.000	2.294	18.0	4.5	1.200	1.200	0.025	0.0	34	1.906
13.007	2.947	117.2	31.6	1.624	1.200	0.175	0.0	80	2.512
13.008	2.921	116.1	36.1	2.300	1.200	0.200	0.0	86	2.583
13.009	2.002	79.6	36.1	1.200	0.000	0.200	0.0	106	1.952
18.006	1.185	47.1	27.1	1.355	0.000	0.150	0.0	123	1.226
13.006	1.004	39.9	27.1	1.296	1.624	0.150	0.0	136	1.076
13.001	2.092	16.4	4.5	1.319	1.322	0.025	0.0	36	1.780
13.002	2.014	15.8	9.0	1.322	1.396	0.050	0.0	54	2.082
13.003	1.000	17.7	13.6	1.396	1.476	0.075	0.0	99	1.101
13.004	1.479	26.1	18.1	1.476	1.252	0.100	0.0	92	1.593
18.001	2.026	15.9	4.5	1.313	1.295	0.025	0.0	36	1.743
18.002	2.166	17.0	9.0	1.295	1.200	0.050	0.0	52	2.201
18.003	1.874	33.1	13.6	1.200	1.200	0.075	0.0	67	1.779
18.004	1.890	33.4	18.1	1.200	1.200	0.100	0.0	79	1.929

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)
18.005	W14	W15	19.100	0.600	40.075	39.720	0.355	53.8	225	5.89	50.0
4.000	S_PP7	S7	20.774	0.600	49.190	47.350	1.840	11.3	100	5.15	50.0
5.000	E_PP1	E1	9.101	0.600	46.060	45.907	0.153	59.5	100	5.15	50.0
6.000	E_PP2	E2	11.269	0.600	44.600	44.488	0.112	100.6	150	5.19	50.0
7.000	E_PP3	E3	10.226	0.600	43.170	42.998	0.172	59.5	100	5.17	50.0
8.000	E_PP4	E4	12.116	0.600	41.870	41.666	0.204	59.4	100	5.20	50.0
3.000	S_PP5	S5	19.059	0.600	47.640	47.319	0.321	59.4	100	5.32	50.0
9.000	E_PP5	E5	12.105	0.600	40.230	40.026	0.204	59.3	100	5.20	50.0
10.000	E_PP6	E6	10.727	0.600	40.100	39.919	0.181	59.3	100	5.18	50.0
11.000	E_PP7	E7	8.579	0.600	40.010	39.865	0.145	59.2	100	5.14	50.0
13.000	W_PP1	W1	7.032	0.600	47.500	47.381	0.119	59.1	100	5.12	50.0
14.000	W_PP2	W2	7.253	0.600	45.890	45.768	0.122	59.4	100	5.12	50.0
15.000	W_PP3	W3	11.612	0.600	44.570	44.374	0.196	59.2	100	5.19	50.0
16.000	W_PP5	W5	10.224	0.600	43.790	43.688	0.102	100.2	150	5.17	50.0
18.000	W_PP10	W10	6.685	0.600	43.920	43.807	0.113	59.2	100	5.11	50.0
19.000	W_PP11	W11	5.610	0.600	42.750	42.655	0.095	59.1	100	5.09	50.0
20.000	W_PP15	W15	9.195	0.600	40.000	39.845	0.155	59.3	100	5.15	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)
18.005	1.787	71.0	22.6	1.200	1.355	0.125	0.0	87	1.587
4.000	2.313	18.2	7.4	1.200	1.200	0.041	0.0	44	2.188
5.000	1.000	7.9	4.3	1.200	1.353	0.024	0.0	53	1.022
6.000	1.001	17.7	8.7	1.150	1.262	0.048	0.0	74	0.997
7.000	1.001	7.9	4.3	1.200	1.372	0.024	0.0	53	1.023
8.000	1.001	7.9	4.3	1.200	1.404	0.024	0.0	53	1.023
3.000	1.001	7.9	7.4	1.200	1.521	0.041	0.0	77	1.137
9.000	1.002	7.9	4.3	1.200	1.404	0.024	0.0	53	1.024
10.000	1.002	7.9	4.3	1.200	1.381	0.024	0.0	53	1.024
11.000	1.003	7.9	4.3	1.200	1.345	0.024	0.0	53	1.025
13.000	1.004	7.9	4.5	1.200	1.319	0.025	0.0	54	1.038
14.000	1.001	7.9	4.5	1.200	1.322	0.025	0.0	54	1.035
15.000	1.002	7.9	4.5	1.200	1.396	0.025	0.0	54	1.036
16.000	1.003	17.7	9.0	1.150	1.252	0.050	0.0	76	1.008
18.000	1.003	7.9	4.5	1.200	1.313	0.025	0.0	54	1.037
19.000	1.004	7.9	4.5	1.200	1.295	0.025	0.0	54	1.038
20.000	1.002	7.9	4.5	1.200	1.355	0.025	0.0	54	1.036

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	33.703	169.4	225	Circular	49.700	48.400	1.075	49.640	48.201	1.214
1.001	15.075	169.4	225	Circular	49.640	48.201	1.214	49.610	48.112	1.273
2.000	19.129	15.9	100	Circular	50.740	49.440	1.200	49.610	48.237	1.273
1.002	28.763	243.8	300	Circular	49.610	48.037	1.273	49.460	47.919	1.241
1.003	18.065	37.7	300	Circular	49.460	47.919	1.241	48.940	47.440	1.200
1.004	27.855	323.9	375	Circular	48.940	47.044	1.521	48.670	46.958	1.337
1.005	28.374	322.4	375	Circular	48.670	46.958	1.337	48.650	46.870	1.405
1.006	19.422	323.7	375	Circular	48.650	46.870	1.405	48.550	46.810	1.365
1.007	17.718	37.1	375	Circular	48.550	46.110	2.065	47.360	45.632	1.353
1.008	20.654	49.3	375	Circular	47.360	44.682	2.303	45.900	44.263	1.262
1.009	20.840	38.6	375	Circular	45.900	43.263	2.262	44.470	42.723	1.372
1.010	17.075	74.9	375	Circular	44.470	41.823	2.272	43.170	41.595	1.200
1.011	15.102	39.1	375	Circular	43.170	40.341	2.454	41.530	39.955	1.200
1.012	20.785	194.3	375	Circular	41.530	39.751	1.404	41.400	39.644	1.381
1.015	35.732	266.7	375	Circular	41.400	39.559	1.466	39.800	39.425	0.000
1.016	16.164	53.9	500	Swale	39.800	39.300	0.000	39.500	38.999	0.001
1.017	25.875	51.7	500	Swale	39.500	38.999	0.001	39.000	38.499	0.001
1.018	22.211	31.7	500	Swale	39.000	38.499	0.001	38.300	37.799	0.001
13.005	19.206	168.5	225	Circular	45.090	43.613	1.252	45.020	43.499	1.296
12.000	24.700	10.2	100	Circular	45.890	44.590	1.200	43.480	42.180	1.200
12.001	26.595	12.8	150	Circular	43.480	42.130	1.200	41.400	40.050	1.200
1.013	15.346	284.2	375	Circular	41.400	39.644	1.381	41.310	39.590	1.345
1.014	9.965	321.5	375	Circular	41.310	39.590	1.345	41.400	39.559	1.466
17.000	22.133	11.5	100	Circular	47.180	45.880	1.200	45.250	43.950	1.200
13.007	20.402	19.9	225	Circular	45.250	43.401	1.624	43.800	42.375	1.200

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1200	Manhole	Adoptable	S2	1200	Manhole	Adoptable
1.001	S2	1200	Manhole	Adoptable	S3		Junction	
2.000	S_PP3		Junction		S3		Junction	
1.002	S3		Junction		S4	1200	Manhole	Adoptable
1.003	S4	1200	Manhole	Adoptable	S5	1350	Manhole	Adoptable
1.004	S5	1350	Manhole	Adoptable	S6	1350	Manhole	Adoptable
1.005	S6	1350	Manhole	Adoptable	S7	1350	Manhole	Adoptable
1.006	S7	1350	Manhole	Adoptable	S8	1350	Manhole	Adoptable
1.007	S8	1350	Manhole	Adoptable	E1	1350	Manhole	Adoptable
1.008	E1	1350	Manhole	Adoptable	E2	1350	Manhole	Adoptable
1.009	E2	1350	Manhole	Adoptable	E3	1350	Manhole	Adoptable
1.010	E3	1350	Manhole	Adoptable	E4	1350	Manhole	Adoptable
1.011	E4	1350	Manhole	Adoptable	E5		Junction	
1.012	E5		Junction		E6	1350	Manhole	Adoptable
1.015	E10		Junction		Swale_1	4900	Manhole	Adoptable
1.016	Swale_1	4900	Manhole	Adoptable	Swale_2		Junction	
1.017	Swale_2		Junction		Swale_3		Junction	
1.018	Swale_3		Junction		Swale_4	4900	Manhole	Adoptable
13.005	W5	1200	Manhole	Adoptable	W6	1200	Manhole	Adoptable
12.000	E8	1200	Manhole	Adoptable	E9	1200	Manhole	Adoptable
12.001	E9	1200	Manhole	Adoptable	E10		Junction	
1.013	E6	1350	Manhole	Adoptable	E7	1350	Manhole	Adoptable
1.014	E7	1350	Manhole	Adoptable	E10		Junction	
17.000	W6b	1200	Manhole	Adoptable	W7	1200	Manhole	Adoptable
13.007	W7	1200	Manhole	Adoptable	W8	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)
13.008	22.271	20.2	225	Circular	43.800	41.275	2.300	41.600	40.175	1.200
13.009	25.754	42.9	225	Circular	41.600	40.175	1.200	39.800	39.575	0.000
18.006	17.597	121.4	225	Circular	41.300	39.720	1.355	39.800	39.575	0.000
13.006	16.517	168.5	225	Circular	45.020	43.499	1.296	45.250	43.401	1.624
13.001	22.221	13.8	100	Circular	48.800	47.381	1.319	47.190	45.768	1.322
13.002	20.715	14.9	100	Circular	47.190	45.768	1.322	45.870	44.374	1.396
13.003	22.179	100.8	150	Circular	45.870	44.324	1.396	45.730	44.104	1.476
13.004	19.334	46.5	150	Circular	45.730	44.104	1.476	45.090	43.688	1.252
18.001	16.914	14.7	100	Circular	45.220	43.807	1.313	44.050	42.655	1.295
18.002	13.564	12.9	100	Circular	44.050	42.655	1.295	42.900	41.600	1.200
18.003	21.795	29.1	150	Circular	42.900	41.550	1.200	42.150	40.800	1.200
18.004	18.573	28.6	150	Circular	42.150	40.800	1.200	41.500	40.150	1.200
18.005	19.100	53.8	225	Circular	41.500	40.075	1.200	41.300	39.720	1.355
4.000	20.774	11.3	100	Circular	50.490	49.190	1.200	48.650	47.350	1.200
5.000	9.101	59.5	100	Circular	47.360	46.060	1.200	47.360	45.907	1.353
6.000	11.269	100.6	150	Circular	45.900	44.600	1.150	45.900	44.488	1.262
7.000	10.226	59.5	100	Circular	44.470	43.170	1.200	44.470	42.998	1.372
8.000	12.116	59.4	100	Circular	43.170	41.870	1.200	43.170	41.666	1.404
3.000	19.059	59.4	100	Circular	48.940	47.640	1.200	48.940	47.319	1.521
9.000	12.105	59.3	100	Circular	41.530	40.230	1.200	41.530	40.026	1.404
10.000	10.727	59.3	100	Circular	41.400	40.100	1.200	41.400	39.919	1.381
11.000	8.579	59.2	100	Circular	41.310	40.010	1.200	41.310	39.865	1.345
13.000	7.032	59.1	100	Circular	48.800	47.500	1.200	48.800	47.381	1.319
14.000	7.253	59.4	100	Circular	47.190	45.890	1.200	47.190	45.768	1.322
15.000	11.612	59.2	100	Circular	45.870	44.570	1.200	45.870	44.374	1.396

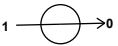
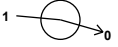
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
13.008	W8	1200	Manhole	Adoptable	W9	1200	Manhole	Adoptable
13.009	W9	1200	Manhole	Adoptable	Swale_1	4900	Manhole	Adoptable
18.006	W15		Junction		Swale_1	4900	Manhole	Adoptable
13.006	W6	1200	Manhole	Adoptable	W7	1200	Manhole	Adoptable
13.001	W1	1200	Manhole	Adoptable	W2	1200	Manhole	Adoptable
13.002	W2	1200	Manhole	Adoptable	W3	1200	Manhole	Adoptable
13.003	W3	1200	Manhole	Adoptable	W4	1200	Manhole	Adoptable
13.004	W4	1200	Manhole	Adoptable	W5	1200	Manhole	Adoptable
18.001	W10	1200	Manhole	Adoptable	W11	1200	Manhole	Adoptable
18.002	W11	1200	Manhole	Adoptable	W12	1200	Manhole	Adoptable
18.003	W12	1200	Manhole	Adoptable	W13		Junction	
18.004	W13		Junction		W14		Junction	
18.005	W14		Junction		W15		Junction	
4.000	S_PP7		Junction		S7	1350	Manhole	Adoptable
5.000	E_PP1		Junction		E1	1350	Manhole	Adoptable
6.000	E_PP2		Junction		E2	1350	Manhole	Adoptable
7.000	E_PP3		Junction		E3	1350	Manhole	Adoptable
8.000	E_PP4		Junction		E4	1350	Manhole	Adoptable
3.000	S_PP5		Junction		S5	1350	Manhole	Adoptable
9.000	E_PP5		Junction		E5		Junction	
10.000	E_PP6		Junction		E6	1350	Manhole	Adoptable
11.000	E_PP7		Junction		E7	1350	Manhole	Adoptable
13.000	W_PP1		Junction		W1	1200	Manhole	Adoptable
14.000	W_PP2		Junction		W2	1200	Manhole	Adoptable
15.000	W_PP3		Junction		W3	1200	Manhole	Adoptable

Pipeline Schedule

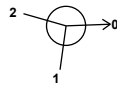
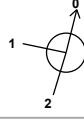
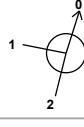
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
16.000	10.224	100.2	150	Circular	45.090	43.790	1.150	45.090	43.688	1.252
18.000	6.685	59.2	100	Circular	45.220	43.920	1.200	45.220	43.807	1.313
19.000	5.610	59.1	100	Circular	44.050	42.750	1.200	44.050	42.655	1.295
20.000	9.195	59.3	100	Circular	41.300	40.000	1.200	41.300	39.845	1.355

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
16.000	W_PP5		Junction		W5	1200	Manhole	Adoptable
18.000	W_PP10		Junction		W10	1200	Manhole	Adoptable
19.000	W_PP11		Junction		W11	1200	Manhole	Adoptable
20.000	W_PP15		Junction		W15		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	50982.068	115248.937	49.700	1.300	1200		0	1.000	48.400	225
S2	51015.762	115249.694	49.640	1.439	1200		1	1.000	48.201	225
						0	0	1.001	48.201	225
S_PP3	51032.589	115231.000	50.740	1.300			0	2.000	49.440	100
S3	51030.833	115250.048	49.610	1.573			1	2.000	48.237	100
						2	2	1.001	48.112	225
						0	0	1.002	48.037	300
S4	51059.421	115253.215	49.460	1.541	1200		1	1.002	47.919	300
						0	0	1.003	47.919	300
S_PP5	51073.507	115235.717	48.940	1.300			0	3.000	47.640	100
S5	51077.449	115254.364	48.940	1.896	1350		1	3.000	47.319	100
						2	2	1.003	47.440	300
						0	0	1.004	47.044	375
S6	51105.190	115251.842	48.670	1.712	1350		1	1.004	46.958	375
						0	0	1.005	46.958	375
S_PP7	51129.642	115223.467	50.490	1.300			0	4.000	49.190	100

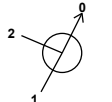
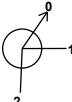
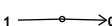
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S7	51132.472	115244.047	48.650	1.780	1350		1	4.000	47.350	100
							2	1.005	46.870	375
							0	1.006	46.870	375
S8	51151.880	115244.775	48.550	2.440	1350		1	1.006	46.810	375
							0	1.007	46.110	375
E_PP1	51148.106	115263.591	47.360	1.300			0	5.000	46.060	100
E1	51157.015	115261.733	47.360	2.678	1350		1	5.000	45.907	100
							2	1.007	45.632	375
							0	1.008	44.682	375
E_PP2	51150.955	115283.960	45.900	1.300			0	6.000	44.600	150
E2	51162.010	115281.774	45.900	2.637	1350		1	6.000	44.488	150
							2	1.008	44.263	375
							0	1.009	43.263	375
E_PP3	51158.382	115304.148	44.470	1.300			0	7.000	43.170	100
E3	51168.296	115301.643	44.470	2.647	1350		1	7.000	42.998	100
							2	1.009	42.723	375
							0	1.010	41.823	375
E_PP4	51158.813	115317.237	43.170	1.300			0	8.000	41.870	100
E4	51170.860	115318.524	43.170	2.829	1350		1	8.000	41.666	100
							2	1.010	41.595	375
							0	1.011	40.341	375
E_PP5	51157.994	115322.841	41.530	1.300			0	9.000	40.230	100
E5	51165.237	115332.540	41.530	1.779			1	9.000	40.026	100
							2	1.011	39.955	375
							0	1.012	39.751	375
E_PP6	51144.690	115325.284	41.400	1.300			0	10.000	40.100	100

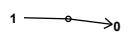
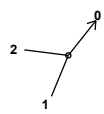
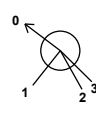
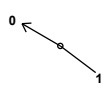
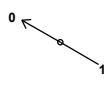
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
E6	51144.744	115336.011	41.400	1.756	1350	0 2 1	1 2 0	10.000 1.012 1.013	39.919 39.644 39.644	100 375 375
E_PP7	51129.918	115324.061	41.310	1.300		0	0	11.000	40.010	100
E7	51129.773	115332.639	41.310	1.720	1350	0 2 1	1 2 0	11.000 1.013 1.014	39.865 39.590 39.590	100 375 375
E8	51108.210	115281.846	45.890	1.300	1200	0	0	12.000	44.590	100
E9	51115.877	115305.326	43.480	1.350	1200	0 1	1 0	12.000 12.001	42.180 42.130	100 150
E10	51119.860	115331.621	41.400	1.841		0 2 1	1 2 0	12.001 1.014 1.015	40.050 39.559 39.559	150 375 375
W_PP1	51021.224	115263.007	48.800	1.300		0	0	13.000	47.500	100
W1	51014.205	115263.433	48.800	1.419	1200	0 1	1 0	13.000 13.001	47.381 47.381	100 100
W_PP2	51021.164	115284.430	47.190	1.300		0	0	14.000	45.890	100
W2	51014.015	115285.653	47.190	1.422	1200	0 1 2	1 2 0	14.000 13.001 13.002	45.768 45.768 45.768	100 100 100
W_PP3	51022.836	115297.997	45.870	1.300		0	0	15.000	44.570	100
W3	51014.774	115306.354	45.870	1.546	1200	0 1 2	1 2 0	15.000 13.002 13.003	44.374 44.374 44.324	100 100 150
W4	51036.905	115304.900	45.730	1.626	1200	1 0	1 0	13.003 13.004	44.104 44.104	150 150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
W_PP5	51054.988	115293.723	45.090	1.300						
						0	16.000	43.790	150	
W5	51056.212	115303.873	45.090	1.477	1200		1	16.000	43.688	150
						2	13.004	43.688	150	
						0	13.005	43.613	225	
W6	51075.270	115301.491	45.020	1.521	1200		1	13.005	43.499	225
						0	13.006	43.499	225	
W6b	51079.904	115275.577	47.180	1.300	1200					
						0	17.000	45.880	100	
W7	51090.469	115295.026	45.250	1.849	1200		1	17.000	43.950	100
						2	13.006	43.401	225	
						0	13.007	43.401	225	
W8	51099.593	115313.274	43.800	2.525	1200		1	13.007	42.375	225
						0	13.008	41.275	225	
W9	51107.036	115334.264	41.600	1.425	1200		1	13.008	40.175	225
						0	13.009	40.175	225	
W_PP10	51022.460	115316.880	45.220	1.300						
						0	18.000	43.920	100	
W10	51015.784	115317.219	45.220	1.413	1200		1	18.000	43.807	100
						0	18.001	43.807	100	
W_PP11	51022.097	115334.130	44.050	1.300						
						0	19.000	42.750	100	
W11	51016.487	115334.118	44.050	1.395	1200		1	19.000	42.655	100
						2	18.001	42.655	100	
						0	18.002	42.655	100	
W12	51024.178	115345.291	42.900	1.350	1200		1	18.002	41.600	100
						0	18.003	41.550	150	
W13	51045.967	115345.799	42.150	1.350			1	18.003	40.800	150
						0	18.004	40.800	150	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
W14	51064.534	115345.328	41.500	1.425		1 	18.004	40.150	150
						0	18.005	40.075	225
W_PP15	51079.977	115334.443	41.300	1.300					
						0	20.000	40.000	100
W15	51083.485	115342.943	41.300	1.580		1 2 	20.000	39.845	100
						2	18.005	39.720	225
						0	18.006	39.720	225
Swale_1	51094.430	115356.722	39.800	0.500	4900	1 2 3 	18.006	39.575	225
						2	13.009	39.575	225
						3	1.015	39.425	375
						0	1.016	39.300	500
Swale_2	51081.522	115366.452	39.500	0.501		1 	1.016	38.999	500
						0	1.017	38.999	500
Swale_3	51059.157	115379.464	39.000	0.501		1 	1.017	38.499	500
						0	1.018	38.499	500
Swale_4	51039.878	115390.493	38.300	0.501	4900	1 	1.018	37.799	500
Infiltration Basin	51024.754	115393.967	38.300	0.500					

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	20.0		

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	40	0	0
100	45	0	0

Node Swale_3 Online Weir Control

Flap Valve	x	Invert Level (m)	38.650	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node Swale 2 Online Weir Control

Flap Valve	x	Replaces Downstream Link	x	Width (m)	1.000
Downstream Link	1.017	Invert Level (m)	39.150	Discharge Coefficient	0.590

Node Swale 4 Online Weir Control

Flap Valve	x	Invert Level (m)	38.000	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node S_PP3 Online Weir Control

Flap Valve	x	Invert Level (m)	50.440	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node S_PP7 Online Weir Control

Flap Valve	x	Invert Level (m)	50.190	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP1 Online Weir Control

Flap Valve	x	Invert Level (m)	47.060	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP2 Online Weir Control

Flap Valve	x	Invert Level (m)	45.600	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP3 Online Weir Control

Flap Valve	x	Invert Level (m)	44.170	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP4 Online Weir Control

Flap Valve	x	Invert Level (m)	42.870	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node S_PP5 Online Weir Control

Flap Valve	x	Invert Level (m)	48.640	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP5 Online Weir Control

Flap Valve	x	Invert Level (m)	41.230	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP6 Online Weir Control

Flap Valve	x	Invert Level (m)	40.650	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node E_PP7 Online Weir Control

Flap Valve	x	Invert Level (m)	41.010	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP1 Online Weir Control

Flap Valve	x	Invert Level (m)	48.500	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP2 Online Weir Control

Flap Valve	x	Invert Level (m)	46.890	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP3 Online Weir Control

Flap Valve	x	Invert Level (m)	45.570	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP5 Online Weir Control

Flap Valve	x	Invert Level (m)	44.790	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP10 Online Weir Control

Flap Valve	x	Invert Level (m)	44.920	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP11 Online Weir Control

Flap Valve	x	Invert Level (m)	43.750	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node W_PP15 Online Weir Control

Flap Valve	x	Invert Level (m)	41.000	Discharge Coefficient	0.590
Replaces Downstream Link	x	Width (m)	1.000		

Node S_PP3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	50.040	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	43	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	40.000		

Node Swale_3 Link Infiltration Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Porosity	1.00	Link	1.017
Side Inf Coefficient (m/hr)	0.13300	Invert Level (m)	38.499		
Safety Factor	2.0	Time to half empty (mins)	248		

Node Swale_2 Link Infiltration Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Porosity	1.00	Link	1.016
Side Inf Coefficient (m/hr)	0.13300	Invert Level (m)	38.999		
Safety Factor	2.0	Time to half empty (mins)	263		

Node Swale_4 Link Infiltration Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Porosity	1.00	Link	1.018
Side Inf Coefficient (m/hr)	0.13300	Invert Level (m)	37.799		
Safety Factor	2.0	Time to half empty (mins)	448		

Node Infiltration Basin Infiltration Basin Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	37.800
Side Inf Coefficient (m/hr)	0.13300	Time to half empty (mins)	388
Safety Factor	2.0	Analyse flow through structure	x
Porosity	1.00		

Inlets Swale_4

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	730.0	730.0	0.500	934.1	958.9

Node S_PP7 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	49.790	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	43	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	40.000		

Node E_PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	46.660	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node E_PP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	45.200	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	38	Depth (m)	0.450
Safety Factor	2.0	Width (m)	12.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node E_PP3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	43.770	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node E_PP4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	42.470	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node S_PP5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	48.240	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	43	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	40.000		

Node E_PP5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	40.830	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node E_PP6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	40.250	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	25	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node E_PP7 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	40.610	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	37	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	22.000		

Node W_PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	48.100	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	46.490	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	45.170	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	44.390	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	11	Depth (m)	0.450
Safety Factor	2.0	Width (m)	12.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP10 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	44.520	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP11 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	43.350	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Node W_PP15 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.13300	Invert Level (m)	40.600	Slope (1:X)	150.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	10	Depth (m)	0.450
Safety Factor	2.0	Width (m)	6.000	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Results for 2 year Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	48.468	0.068	8.1	0.1194	0.0000	OK
15 minute summer	S2	11	48.302	0.101	16.0	0.1716	0.0000	OK
120 minute summer	S_PP3	74	50.174	0.734	4.2	2.8766	0.0000	SURCHARGED
15 minute summer	S3	11	48.157	0.120	23.7	0.0626	0.0000	OK
15 minute summer	S4	11	48.008	0.089	31.6	0.1484	0.0000	OK
120 minute summer	S_PP5	74	48.374	0.734	4.2	2.8766	0.0000	SURCHARGED
15 minute summer	S5	11	47.208	0.164	39.5	0.3058	0.0000	OK
15 minute summer	S6	11	47.139	0.181	47.4	0.3465	0.0000	OK
120 minute summer	S_PP7	74	49.924	0.734	4.2	2.8766	0.0000	SURCHARGED
15 minute summer	S7	11	47.062	0.192	54.5	0.3631	0.0000	OK
15 minute summer	S8	12	46.219	0.109	53.8	0.1563	0.0000	OK
120 minute summer	E_PP1	72	46.752	0.692	2.5	1.3981	0.0000	SURCHARGED
15 minute summer	E1	12	44.799	0.117	54.1	0.1677	0.0000	OK
30 minute summer	E_PP2	22	45.295	0.695	8.6	2.9439	0.0000	SURCHARGED
15 minute summer	E2	12	43.373	0.110	54.2	0.1570	0.0000	OK
120 minute summer	E_PP3	72	43.862	0.692	2.5	1.3981	0.0000	SURCHARGED
15 minute summer	E3	12	41.956	0.133	54.2	0.1902	0.0000	OK
120 minute summer	E_PP4	72	42.562	0.692	2.5	1.3981	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	1.000	S2	8.0	0.591	0.200	0.4583
15 minute summer	S2	1.001	S3	15.9	0.941	0.399	0.2547
15 minute summer	S_PP3	2.000	S3	0.0	0.000	0.000	0.0000
120 minute summer	S_PP3	Infiltration		2.2			
15 minute summer	S3	1.002	S4	23.8	1.089	0.336	0.6313
15 minute summer	S4	1.003	S5	31.7	1.882	0.175	0.3047
15 minute summer	S_PP5	3.000	S5	0.0	0.000	0.000	0.0000
120 minute summer	S_PP5	Infiltration		2.2			
15 minute summer	S5	1.004	S6	39.6	0.799	0.358	1.3804
15 minute summer	S6	1.005	S7	46.7	0.854	0.422	1.5538
15 minute summer	S_PP7	4.000	S7	0.0	0.000	0.000	0.0000
120 minute summer	S_PP7	Infiltration		2.2			
15 minute summer	S7	1.006	S8	53.8	1.029	0.486	1.0152
15 minute summer	S8	1.007	E1	54.1	2.133	0.164	0.4491
15 minute summer	E_PP1	5.000	E1	0.0	0.000	0.000	0.0000
120 minute summer	E_PP1	Infiltration		1.5			
15 minute summer	E1	1.008	E2	54.2	1.935	0.190	0.5790
15 minute summer	E_PP2	6.000	E2	0.0	0.000	0.000	0.0000
30 minute summer	E_PP2	Infiltration		3.1			
15 minute summer	E2	1.009	E3	54.2	2.117	0.168	0.5341
15 minute summer	E_PP3	7.000	E3	0.0	0.000	0.000	0.0000
120 minute summer	E_PP3	Infiltration		1.5			
15 minute summer	E3	1.010	E4	54.0	1.641	0.233	0.5623
15 minute summer	E_PP4	8.000	E4	0.0	0.000	0.000	0.0000
120 minute summer	E_PP4	Infiltration		1.5			

Results for 2 year Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E4	12	40.448	0.107	54.0	0.1538	0.0000	OK
120 minute summer	E_PP5	72	40.922	0.692	2.5	1.3981	0.0000	SURCHARGED
15 minute summer	E5	12	39.919	0.168	53.8	0.0000	0.0000	OK
30 minute summer	E_PP6	22	40.346	0.246	4.3	1.3415	0.0000	SURCHARGED
15 minute summer	E6	13	39.843	0.199	53.7	0.2849	0.0000	OK
120 minute summer	E_PP7	72	40.702	0.692	2.5	1.3981	0.0000	SURCHARGED
15 minute summer	E7	13	39.785	0.195	54.1	0.2793	0.0000	OK
15 minute summer	E8	10	44.625	0.035	4.8	0.0519	0.0000	OK
15 minute summer	E9	10	42.175	0.045	9.5	0.0663	0.0000	OK
15 minute summer	E10	13	39.747	0.188	59.7	0.0000	0.0000	OK
120 minute summer	W_PP1	72	48.194	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W1	1	47.381	0.000	0.0	0.0000	0.0000	OK
120 minute summer	W_PP2	72	46.584	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W2	1	45.768	0.000	0.0	0.0000	0.0000	OK
120 minute summer	W_PP3	72	45.264	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W3	1	44.324	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W4	10	44.149	0.045	5.0	0.0646	0.0000	OK
30 minute summer	W_PP5	22	44.487	0.697	8.9	3.0809	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	E4	1.011	E5	53.8	2.133	0.168	0.3809
15 minute summer	E_PP5	9.000	E5	0.0	0.000	0.000	0.0000
120 minute summer	E_PP5	Infiltration		1.5			
15 minute summer	E5	1.012	E6	53.7	1.017	0.375	1.1085
15 minute summer	E_PP6	10.000	E6	0.0	0.000	0.000	0.0000
30 minute summer	E_PP6	Infiltration		1.6			
15 minute summer	E6	1.013	E7	54.1	0.922	0.458	0.9005
15 minute summer	E_PP7	11.000	E7	0.0	0.000	0.000	0.0000
120 minute summer	E_PP7	Infiltration		1.5			
15 minute summer	E7	1.014	E10	54.1	0.957	0.487	0.5634
15 minute summer	E8	12.000	E9	4.7	1.991	0.248	0.0586
15 minute summer	E9	12.001	E10	9.4	2.163	0.188	0.1156
15 minute summer	E10	1.015	Swale_1	59.6	1.124	0.489	1.9016
15 minute summer	W_PP1	13.000	W1	0.0	0.000	0.000	0.0000
120 minute summer	W_PP1	Infiltration		1.6			
15 minute summer	W1	13.001	W2	0.0	0.000	0.000	0.0000
15 minute summer	W_PP2	14.000	W2	0.0	0.000	0.000	0.0000
120 minute summer	W_PP2	Infiltration		1.6			
15 minute summer	W2	13.002	W3	0.0	0.000	0.000	0.0000
15 minute summer	W_PP3	15.000	W3	0.0	0.000	0.000	0.0000
120 minute summer	W_PP3	Infiltration		1.6			
15 minute summer	W3	13.003	W4	0.0	0.000	0.000	0.0491
15 minute summer	W4	13.004	W5	4.9	1.116	0.186	0.0840
15 minute summer	W_PP5	16.000	W5	0.0	0.000	0.000	0.0000

Results for 2 year Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W5	11	43.667	0.054	4.9	0.0611	0.0000	OK
15 minute summer	W6	11	43.554	0.055	4.9	0.0622	0.0000	OK
15 minute summer	W6b	10	45.917	0.037	5.0	0.0554	0.0000	OK
15 minute summer	W7	11	43.446	0.045	9.6	0.0504	0.0000	OK
15 minute summer	W8	11	41.328	0.053	14.3	0.0708	0.0000	OK
15 minute summer	W9	11	40.241	0.066	14.4	0.0750	0.0000	OK
120 minute summer	W_PP10	72	44.614	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W10	1	43.807	0.000	0.0	0.0000	0.0000	OK
120 minute summer	W_PP11	72	43.444	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W11	1	42.655	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W12	10	41.589	0.039	5.0	0.0589	0.0000	OK
15 minute summer	W13	10	40.856	0.056	9.9	0.0206	0.0000	OK
15 minute summer	W14	10	40.144	0.069	14.8	0.0243	0.0000	OK
120 minute summer	W_PP15	72	40.694	0.694	2.6	1.4665	0.0000	SURCHARGED
15 minute summer	W15	11	39.808	0.088	14.7	0.0000	0.0000	OK
15 minute summer	Swale_1	13	39.348	0.048	81.6	0.9036	0.0000	OK
15 minute summer	Swale_2	13	39.274	0.275	82.1	0.0000	0.0000	OK
15 minute summer	Swale_3	14	38.772	0.273	80.6	0.0000	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
30 minute summer	W_PP5	Infiltration		3.2			
15 minute summer	W5	13.005	W6	4.9	0.663	0.122	0.1421
15 minute summer	W6	13.006	W7	4.9	0.750	0.122	0.1077
15 minute summer	W6b	17.000	W7	4.9	1.931	0.273	0.0565
15 minute summer	W7	13.007	W8	9.7	1.767	0.082	0.1115
15 minute summer	W8	13.008	W9	14.4	1.714	0.124	0.1885
15 minute summer	W9	13.009	Swale_1	14.3	1.501	0.180	0.2461
15 minute summer	W_PP10	18.000	W10	0.0	0.000	0.000	0.0000
120 minute summer	W_PP10	Infiltration		1.6			
15 minute summer	W10	18.001	W11	0.0	0.000	0.000	0.0000
15 minute summer	W_PP11	19.000	W11	0.0	0.000	0.000	0.0000
120 minute summer	W_PP11	Infiltration		1.6			
15 minute summer	W11	18.002	W12	0.0	0.000	0.000	0.0000
15 minute summer	W12	18.003	W13	4.9	1.034	0.149	0.1048
15 minute summer	W13	18.004	W14	9.8	1.646	0.293	0.1104
15 minute summer	W14	18.005	W15	14.7	1.202	0.207	0.2337
15 minute summer	W_PP15	20.000	W15	0.0	0.000	0.000	0.0000
120 minute summer	W_PP15	Infiltration		1.6			
15 minute summer	W15	18.006	Swale_1	14.7	1.043	0.311	0.2475
15 minute winter	Swale_1	1.016	Swale_2	77.3	0.342	0.012	4.3863
15 minute winter	Swale_2	1.017	Swale_3	76.0	0.813	0.012	6.9381
15 minute summer	Swale_2	Infiltration		0.5			
30 minute winter	Swale_3	1.018	Swale_4	63.3	1.187	0.008	6.8662
15 minute summer	Swale_3	Infiltration		0.6			

Results for 2 year Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute summer	Swale_4	23	38.113	0.314	74.2	5.9126	0.0000	OK
240 minute summer	Infiltration Basin	160	37.883	0.083	38.4	62.2014	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)
30 minute summer	Swale_4	Infiltration		0.5			
240 minute summer	Infiltration Basin	Infiltration		13.8			

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	11	48.613	0.213	29.9	0.3761	0.0000	OK
15 minute summer	S2	11	48.511	0.310	56.3	0.5276	0.0000	SURCHARGED
60 minute summer	S_PP3	44	50.345	0.905	20.6	12.9479	0.0000	SURCHARGED
15 minute summer	S3	11	48.316	0.279	84.9	0.1455	0.0000	OK
15 minute summer	S4	11	48.121	0.202	113.2	0.3356	0.0000	OK
60 minute summer	S_PP5	44	48.545	0.905	20.6	12.9479	0.0000	SURCHARGED
15 minute summer	S5	11	47.834	0.790	141.8	1.4717	0.0000	SURCHARGED
15 minute summer	S6	11	47.656	0.698	166.5	1.3338	0.0000	SURCHARGED
60 minute summer	S_PP7	44	50.095	0.905	20.6	12.9479	0.0000	SURCHARGED
15 minute summer	S7	11	47.397	0.527	194.5	0.9978	0.0000	SURCHARGED
15 minute summer	S8	11	46.349	0.239	194.0	0.3416	0.0000	OK
60 minute summer	E_PP1	44	46.909	0.849	12.1	7.2829	0.0000	SURCHARGED
15 minute summer	E1	11	44.940	0.258	193.7	0.3697	0.0000	OK
60 minute summer	E_PP2	44	45.451	0.851	24.2	14.6807	0.0000	SURCHARGED
15 minute summer	E2	11	43.500	0.237	193.6	0.3396	0.0000	OK
60 minute summer	E_PP3	44	44.019	0.849	12.1	7.2829	0.0000	SURCHARGED
15 minute summer	E3	12	42.130	0.307	193.3	0.4389	0.0000	OK
60 minute summer	E_PP4	44	42.719	0.849	12.1	7.2829	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	1.000	S2	28.8	0.761	0.723	1.3271
15 minute summer	S2	1.001	S3	55.5	1.396	1.393	0.5854
15 minute summer	S_PP3	2.000	S3	0.0	0.000	0.000	0.0636
60 minute summer	S_PP3	Infiltration		4.4			
15 minute summer	S3	1.002	S4	83.9	1.477	1.184	1.7074
15 minute summer	S4	1.003	S5	112.1	2.447	0.618	1.0914
15 minute summer	S_PP5	3.000	S5	4.0	0.589	0.514	0.1491
60 minute summer	S_PP5	Infiltration		4.4			
15 minute summer	S5	1.004	S6	138.0	1.251	1.248	3.0723
15 minute summer	S6	1.005	S7	166.0	1.505	1.498	3.1296
15 minute summer	S_PP7	4.000	S7	0.0	0.000	0.000	0.0379
60 minute summer	S_PP7	Infiltration		4.4			
15 minute summer	S7	1.006	S8	194.0	1.770	1.754	2.0452
15 minute summer	S8	1.007	E1	193.7	2.867	0.588	1.1963
15 minute summer	E_PP1	5.000	E1	0.0	0.000	0.000	0.0000
60 minute summer	E_PP1	Infiltration		2.4			
15 minute summer	E1	1.008	E2	193.5	2.598	0.678	1.5389
15 minute summer	E_PP2	6.000	E2	0.0	0.000	0.000	0.0000
60 minute summer	E_PP2	Infiltration		4.9			
15 minute summer	E2	1.009	E3	193.3	2.861	0.599	1.4105
15 minute summer	E_PP3	7.000	E3	0.0	0.000	0.000	0.0000
60 minute summer	E_PP3	Infiltration		2.4			
15 minute summer	E3	1.010	E4	194.1	2.183	0.839	1.5123
15 minute summer	E_PP4	8.000	E4	0.0	0.000	0.000	0.0000
60 minute summer	E_PP4	Infiltration		2.4			

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E4	13	40.896	0.555	194.1	0.7944	0.0000	SURCHARGED
60 minute summer	E_PP5	44	41.079	0.849	12.1	7.2829	0.0000	SURCHARGED
15 minute summer	E5	13	40.733	0.982	191.8	0.0000	0.0000	SURCHARGED
60 minute summer	E_PP6	44	40.502	0.402	12.1	7.2072	0.0000	SURCHARGED
15 minute summer	E6	13	40.513	0.869	187.5	1.2440	0.0000	SURCHARGED
60 minute summer	E_PP7	44	40.859	0.849	12.1	7.2829	0.0000	SURCHARGED
15 minute summer	E7	13	40.300	0.710	188.9	1.0162	0.0000	SURCHARGED
15 minute summer	E8	10	44.669	0.079	17.5	0.1181	0.0000	OK
15 minute summer	E9	10	42.224	0.094	34.8	0.1398	0.0000	OK
15 minute summer	E10	13	40.170	0.611	208.7	0.0000	0.0000	SURCHARGED
60 minute summer	W_PP1	42	48.322	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W1	1	47.381	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP2	42	46.712	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W2	1	45.768	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP3	42	45.392	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W3	1	44.324	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W4	10	44.201	0.097	18.2	0.1390	0.0000	OK
60 minute summer	W_PP5	41	44.613	0.823	25.2	14.1076	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
30 minute summer	E4	1.011	E5	179.5	2.687	0.560	1.6657
30 minute summer	E_PP5	9.000	E5	-5.1	-0.768	-0.652	0.0947
60 minute summer	E_PP5	Infiltration		2.4			
15 minute summer	E5	1.012	E6	187.2	1.697	1.308	2.2925
15 minute summer	E_PP6	10.000	E6	-5.2	-0.662	-0.658	0.0839
60 minute summer	E_PP6	Infiltration		2.4			
15 minute summer	E6	1.013	E7	188.4	1.708	1.595	1.6926
15 minute summer	E_PP7	11.000	E7	-4.8	-0.612	-0.608	0.0671
60 minute summer	E_PP7	Infiltration		2.4			
15 minute summer	E7	1.014	E10	189.6	1.719	1.708	1.0991
15 minute summer	E8	12.000	E9	17.3	2.679	0.907	0.1594
15 minute summer	E9	12.001	E10	34.5	3.018	0.690	0.3121
15 minute summer	E10	1.015	Swale_1	209.9	1.906	1.721	3.8100
15 minute summer	W_PP1	13.000	W1	0.0	0.000	0.000	0.0000
60 minute summer	W_PP1	Infiltration		3.7			
15 minute summer	W1	13.001	W2	0.0	0.000	0.000	0.0000
15 minute summer	W_PP2	14.000	W2	0.0	0.000	0.000	0.0000
60 minute summer	W_PP2	Infiltration		3.7			
15 minute summer	W2	13.002	W3	0.0	0.000	0.000	0.0000
15 minute summer	W_PP3	15.000	W3	0.0	0.000	0.000	0.0000
60 minute summer	W_PP3	Infiltration		3.7			
15 minute summer	W3	13.003	W4	0.0	0.000	0.000	0.1330
15 minute summer	W4	13.004	W5	17.9	1.545	0.684	0.2239
15 minute summer	W_PP5	16.000	W5	0.0	0.000	0.000	0.0165

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W5	11	43.724	0.111	17.9	0.1253	0.0000	OK
15 minute summer	W6	11	43.609	0.110	17.9	0.1249	0.0000	OK
15 minute summer	W6b	10	45.964	0.084	18.2	0.1269	0.0000	OK
15 minute summer	W7	11	43.491	0.090	35.7	0.1013	0.0000	OK
15 minute summer	W8	10	41.382	0.107	53.2	0.1421	0.0000	OK
15 minute summer	W9	11	40.319	0.144	53.3	0.1627	0.0000	OK
60 minute summer	W_PP10	42	44.742	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W10	1	43.807	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP11	42	43.572	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W11	1	42.655	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W12	10	41.629	0.079	18.2	0.1186	0.0000	OK
15 minute summer	W13	10	40.933	0.133	36.3	0.0491	0.0000	OK
15 minute summer	W14	10	40.220	0.145	53.7	0.0508	0.0000	OK
60 minute summer	W_PP15	42	40.822	0.822	12.6	6.9859	0.0000	SURCHARGED
15 minute summer	W15	11	39.970	0.250	53.4	0.0000	0.0000	SURCHARGED
15 minute summer	Swale_1	13	39.409	0.109	305.2	2.0646	0.0000	OK
15 minute summer	Swale_2	12	39.446	0.447	295.7	0.0000	0.0000	OK
15 minute summer	Swale_3	13	38.946	0.447	297.7	0.0000	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
60 minute summer	W_PP5	Infiltration		7.4			
15 minute summer	W5	13.005	W6	17.9	0.923	0.449	0.3729
15 minute summer	W6	13.006	W7	18.0	1.064	0.452	0.2815
30 minute summer	W6b	17.000	W7	16.7	2.530	0.926	0.1460
15 minute summer	W7	13.007	W8	35.8	2.521	0.306	0.2898
15 minute summer	W8	13.008	W9	53.3	2.356	0.459	0.5053
15 minute summer	W9	13.009	Swale_1	53.5	2.079	0.672	0.6623
15 minute summer	W_PP10	18.000	W10	0.0	0.000	0.000	0.0000
60 minute summer	W_PP10	Infiltration		3.7			
15 minute summer	W10	18.001	W11	0.0	0.000	0.000	0.0000
15 minute summer	W_PP11	19.000	W11	0.0	0.000	0.000	0.0000
60 minute summer	W_PP11	Infiltration		3.7			
15 minute summer	W11	18.002	W12	0.0	0.000	0.000	0.0128
15 minute winter	W12	18.003	W13	16.9	1.387	0.512	0.2627
15 minute summer	W13	18.004	W14	35.6	2.167	1.066	0.3154
15 minute summer	W14	18.005	W15	53.4	1.596	0.752	0.6378
15 minute summer	W_PP15	20.000	W15	0.0	0.000	0.000	0.0360
60 minute summer	W_PP15	Infiltration		3.7			
15 minute summer	W15	18.006	Swale_1	53.4	1.351	1.132	0.6664
15 minute summer	Swale_1	1.016	Swale_2	295.7	0.608	0.046	9.5435
30 minute winter	Swale_2	1.017	Swale_3	244.0	0.782	0.037	13.2134
15 minute summer	Swale_2	Infiltration		0.9			
15 minute summer	Swale_3	1.018	Swale_4	298.8	1.198	0.036	14.6634
15 minute summer	Swale_3	Infiltration		1.1			

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Swale_4	14	38.290	0.491	298.8	9.2652	0.0000	OK
180 minute summer	Infiltration Basin	184	38.165	0.365	138.6	295.3769	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	Swale_4	Infiltration		0.7			
180 minute summer	Infiltration Basin	Infiltration		16.4			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	12	49.271	0.871	39.0	1.5348	0.0000	SURCHARGED
15 minute summer	S2	12	49.104	0.903	68.9	1.5366	0.0000	SURCHARGED
60 minute summer	S_PP3	47	50.421	0.981	27.2	18.4302	0.0000	SURCHARGED
15 minute summer	S3	11	48.805	0.768	101.4	0.4001	0.0000	SURCHARGED
15 minute summer	S4	11	48.542	0.623	135.5	1.0357	0.0000	SURCHARGED
60 minute summer	S_PP5	47	48.621	0.981	27.2	18.4302	0.0000	SURCHARGED
15 minute summer	S5	11	48.181	1.137	169.7	2.1186	0.0000	SURCHARGED
15 minute summer	S6	11	47.926	0.968	202.1	1.8494	0.0000	SURCHARGED
60 minute summer	S_PP7	47	50.171	0.981	27.2	18.4302	0.0000	SURCHARGED
15 minute summer	S7	11	47.547	0.677	237.6	1.2814	0.0000	SURCHARGED
15 minute summer	S8	11	46.388	0.278	236.4	0.3974	0.0000	OK
60 minute summer	E_PP1	48	46.990	0.930	15.9	10.4945	0.0000	SURCHARGED
15 minute summer	E1	12	44.986	0.304	235.5	0.4357	0.0000	OK
60 minute summer	E_PP2	48	45.532	0.932	31.9	21.2011	0.0000	SURCHARGED
15 minute summer	E2	12	43.540	0.277	236.5	0.3961	0.0000	OK
60 minute summer	E_PP3	48	44.100	0.930	15.9	10.4945	0.0000	SURCHARGED
15 minute summer	E3	12	42.304	0.481	237.4	0.6876	0.0000	SURCHARGED
60 minute summer	E_PP4	48	42.800	0.930	15.9	10.4945	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	S1	1.000	S2	33.6	0.844	0.843	1.3404
15 minute summer	S2	1.001	S3	67.2	1.689	1.687	0.5995
15 minute summer	S_PP3	2.000	S3	0.0	0.000	0.000	0.0748
60 minute summer	S_PP3	Infiltration		4.4			
15 minute summer	S3	1.002	S4	100.4	1.586	1.418	2.0255
15 minute winter	S4	1.003	S5	126.7	2.418	0.698	1.2721
15 minute summer	S_PP5	3.000	S5	4.4	-0.712	0.560	0.1491
60 minute summer	S_PP5	Infiltration		4.4			
15 minute summer	S5	1.004	S6	168.6	1.529	1.525	3.0723
15 minute summer	S6	1.005	S7	201.4	1.826	1.817	3.1296
15 minute summer	S_PP7	4.000	S7	0.0	0.000	0.000	0.0813
60 minute summer	S_PP7	Infiltration		4.4			
15 minute summer	S7	1.006	S8	236.4	2.145	2.138	2.0980
15 minute summer	S8	1.007	E1	235.5	2.973	0.715	1.4041
15 minute summer	E_PP1	5.000	E1	0.0	0.000	0.000	0.0000
60 minute summer	E_PP1	Infiltration		2.4			
15 minute summer	E1	1.008	E2	236.4	2.681	0.828	1.8141
15 minute summer	E_PP2	6.000	E2	0.0	0.000	0.000	0.0000
60 minute summer	E_PP2	Infiltration		4.9			
15 minute summer	E2	1.009	E3	237.4	2.964	0.735	1.6653
15 minute summer	E_PP3	7.000	E3	0.0	0.000	0.000	0.0000
60 minute summer	E_PP3	Infiltration		2.4			
30 minute summer	E3	1.010	E4	224.9	2.223	0.972	1.7238
15 minute summer	E_PP4	8.000	E4	0.0	0.000	0.000	0.0000
60 minute summer	E_PP4	Infiltration		2.4			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	E4	13	41.481	1.140	237.8	1.6312	0.0000	SURCHARGED
60 minute summer	E_PP5	48	41.160	0.930	15.9	10.4945	0.0000	SURCHARGED
15 minute summer	E5	13	41.222	1.471	234.1	0.0000	0.0000	SURCHARGED
30 minute summer	E_PP6	30	40.591	0.491	22.5	10.7764	0.0000	SURCHARGED
15 minute summer	E6	13	40.886	1.242	229.7	1.7771	0.0000	SURCHARGED
60 minute summer	E_PP7	48	40.940	0.930	15.9	10.4945	0.0000	SURCHARGED
15 minute summer	E7	13	40.589	0.999	222.8	1.4292	0.0000	SURCHARGED
15 minute summer	E8	12	44.984	0.394	22.8	0.5909	0.0000	SURCHARGED
15 minute summer	E9	9	42.236	0.106	40.9	0.1580	0.0000	OK
15 minute summer	E10	13	40.409	0.850	253.5	0.0000	0.0000	SURCHARGED
60 minute summer	W_PP1	43	48.368	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W1	1	47.381	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP2	43	46.758	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W2	1	45.768	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP3	43	45.438	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W3	1	44.324	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W4	10	44.224	0.120	23.8	0.1722	0.0000	OK
60 minute summer	W_PP5	43	44.660	0.870	33.2	19.9494	0.0000	SURCHARGED

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	E4	1.011	E5	234.1	2.692	0.730	1.6657
15 minute summer	E_PP5	9.000	E5	-7.5	-0.953	-0.948	0.0947
60 minute summer	E_PP5	Infiltration		2.4			
15 minute summer	E5	1.012	E6	229.7	2.083	1.605	2.2925
15 minute summer	E_PP6	10.000	E6	-7.9	-1.008	-1.002	0.0839
30 minute summer	E_PP6	Infiltration		2.4			
15 minute summer	E6	1.013	E7	222.4	2.016	1.882	1.6926
15 minute summer	E_PP7	11.000	E7	-6.1	-0.832	-0.781	0.0671
60 minute summer	E_PP7	Infiltration		2.4			
15 minute summer	E7	1.014	E10	223.3	2.025	2.012	1.0991
30 minute summer	E8	12.000	E9	19.5	2.677	1.025	0.1924
15 minute summer	E9	12.001	E10	40.8	3.110	0.815	0.4052
15 minute summer	E10	1.015	Swale_1	254.1	2.304	2.083	3.8817
15 minute summer	W_PP1	13.000	W1	0.0	0.000	0.000	0.0000
60 minute summer	W_PP1	Infiltration		3.9			
15 minute summer	W1	13.001	W2	0.0	0.000	0.000	0.0000
15 minute summer	W_PP2	14.000	W2	0.0	0.000	0.000	0.0000
60 minute summer	W_PP2	Infiltration		3.9			
15 minute summer	W2	13.002	W3	0.0	0.000	0.000	0.0000
15 minute summer	W_PP3	15.000	W3	0.0	0.000	0.000	0.0000
60 minute summer	W_PP3	Infiltration		3.9			
15 minute summer	W3	13.003	W4	0.0	0.000	0.000	0.1672
15 minute summer	W4	13.004	W5	23.3	1.612	0.890	0.2796
15 minute summer	W_PP5	16.000	W5	0.0	0.000	0.000	0.0308

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W5	11	43.744	0.131	23.4	0.1485	0.0000	OK
15 minute summer	W6	11	43.628	0.129	23.4	0.1460	0.0000	OK
15 minute summer	W6b	12	46.498	0.618	23.8	0.9376	0.0000	SURCHARGED
15 minute summer	W7	11	43.500	0.099	42.5	0.1117	0.0000	OK
15 minute summer	W8	11	41.396	0.121	65.0	0.1608	0.0000	OK
15 minute summer	W9	11	40.342	0.167	65.0	0.1889	0.0000	OK
60 minute summer	W_PP10	43	44.788	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W10	1	43.807	0.000	0.0	0.0000	0.0000	OK
60 minute summer	W_PP11	43	43.618	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W11	1	42.655	0.000	0.0	0.0000	0.0000	OK
15 minute summer	W12	12	41.756	0.206	23.8	0.3089	0.0000	SURCHARGED
15 minute summer	W13	11	41.447	0.647	45.9	0.2394	0.0000	SURCHARGED
15 minute summer	W14	11	40.368	0.293	65.4	0.1028	0.0000	SURCHARGED
60 minute summer	W_PP15	43	40.868	0.868	16.6	9.8924	0.0000	SURCHARGED
15 minute summer	W15	11	40.064	0.344	63.9	0.0000	0.0000	SURCHARGED
30 minute summer	Swale_1	20	39.455	0.155	361.0	2.9209	0.0000	OK
15 minute summer	Swale_2	13	39.500	0.501	470.4	0.0000	0.1123	FLOOD
15 minute summer	Swale_3	14	38.982	0.483	380.6	0.0000	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
60 minute summer	W_PP5	Infiltration		7.7			
15 minute summer	W5	13.005	W6	23.4	0.985	0.587	0.4570
15 minute summer	W6	13.006	W7	23.5	1.168	0.590	0.3329
60 minute summer	W6b	17.000	W7	16.6	2.529	0.921	0.1452
15 minute summer	W7	13.007	W8	42.3	2.626	0.361	0.3289
15 minute summer	W8	13.008	W9	65.0	2.435	0.560	0.5941
15 minute summer	W9	13.009	Swale_1	64.8	2.148	0.814	0.7767
15 minute summer	W_PP10	18.000	W10	0.0	0.000	0.000	0.0000
60 minute summer	W_PP10	Infiltration		3.9			
15 minute summer	W10	18.001	W11	0.0	0.000	0.000	0.0000
15 minute summer	W_PP11	19.000	W11	0.0	0.000	0.000	0.0000
60 minute summer	W_PP11	Infiltration		3.9			
15 minute summer	W11	18.002	W12	0.0	0.000	0.000	0.0531
15 minute summer	W12	18.003	W13	22.2	1.399	0.669	0.3837
15 minute summer	W13	18.004	W14	41.6	2.362	1.244	0.3270
15 minute summer	W14	18.005	W15	63.9	1.639	0.900	0.7596
15 minute summer	W_PP15	20.000	W15	-1.5	0.283	-0.194	0.0588
60 minute summer	W_PP15	Infiltration		3.9			
15 minute summer	W15	18.006	Swale_1	62.9	1.582	1.334	0.6818
30 minute summer	Swale_1	1.016	Swale_2	521.4	0.835	0.082	11.4005
15 minute winter	Swale_2	1.017	Swale_3	379.1	0.970	0.058	16.9143
15 minute summer	Swale_2	Infiltration		1.0			
15 minute summer	Swale_3	1.018	Swale_4	352.7	1.587	0.042	15.2820
15 minute summer	Swale_3	Infiltration		1.2			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 94.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	Swale_4	12	38.300	0.501	352.7	9.4474	7.6841	FLOOD
240 minute summer	Infiltration Basin	244	38.292	0.492	147.8	410.0313	0.0000	OK

Link Event (Velocity)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	Swale_4	Infiltration		0.8			
240 minute summer	Infiltration Basin	Infiltration		17.6			

Northlands Lane: Outline Drainage Study

P2507_R3_D01: Drainage Scheme

Legend

 Site Boundary

Connections

→ Pipe

--- Swale

Surfaces

Impervious Surfaces - Adoptable

Impervious Surfaces - Non Adoptable

Porous Pathway - Excluded from

Calculations

Porous Paving

Infiltration Basin

