



PARCEL R7 & R13 – PHASE 2B OF THE SOUTH WOKINGHAM STRATEGIC
DEVELOPMENT LOCATION

DRAINAGE STATEMENT

MILLER HOMES

15 MAY 2026





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1.0 Introduction

1.1 Context

- 1.1.1 This report has been prepared by Abley Letchford on behalf of Miller Homes, to support the Reserved Matters application pursuant to Condition 1 attached to planning application 191068, for the erection of 215 dwellings.

Planning Context

- 1.1.2 The SDL site is an urban extension of Wokingham in Berkshire and is bisected by an existing railway line linking Wokingham and Bracknell. The SDL proposals comprise of approximately 2,500 homes, a new South Wokingham Distributor Road and other facilities such as two primary schools and a community centre.
- 1.1.3 Planning permission for the South Wokingham SDL has been granted by Wokingham Borough Council at different times for the various phases of the SDL.
- 1.1.4 The first phase of the South Wokingham SDL is located at Montague Park located in the north-east area of the South Wokingham SDL. This phase of development was granted planning permission (ref: O/2010/1712) and has been subsequently constructed and includes approximately 620 dwellings. A section of road between Montague Park heading south over the railway line to a new four arm roundabout with Waterloo Road was subsequently approved in 2019 (WBC Planning Reference: 172934) and constructed. The road over the railway line is named William Heelas Way and the new roundabout junction with Waterloo Road is known as the Eastern Gateway roundabout.
- 1.1.5 The second phase of the South Wokingham SDL is split into Phase 2a (WBC Planning Reference: 190914) and Phase 2b (WBC Planning Reference: 191068) and they are both located south of the railway line and include proposals for 215 and 1,434 dwellings respectively.
- 1.1.6 The new South Wokingham Distributor Road (SWDR) was approved in 2021 (WBC Planning Reference: 192928). It routes east to west through the larger Phase 2b parcel and will ultimately connect Finchampstead Road at the west to the Eastern Gateway roundabout.
- 1.1.7 Parcels R7 and R13 are located to the west of the Eastern Gateway roundabout and to the south of the South Wokingham Distributor Road.

1.2 Report Aims and Formation

- 1.2.1 This Reserved Matters Planning Application pertains to the R7 and R13 parcels, located in the centre of Phase 2b, to the east of Easthampstead Road and to the south of the South Wokingham Distributor Road. The proposal includes 215 residential dwellings, comprising a mix of 1 and 2-bedroom flats, as well as 2, 3, and 4-bedroom houses together with associated access and parking.



1.2.2 This report has taken cognisance from the original Flood Risk Assessment (FRA) carried out by WSP in August 2020, Ref: 70001684-FRA-SDL-001, and the Technical Note produced by Abley Letchford in January 2025 (A389-TN004E) submitted to discharge Condition 29, and presents a detailed drainage design to ensure that the guiding principles are upheld.

1.2.3 The aim of this Report is to propose a suitable drainage system for the R7 & R13 residential development parcel, to demonstrate compliance and discharge the conditions listed below:

Condition 30 – Reserved matters for each phase shall include details of SuDS to serve the phase, based on the approved SuDS strategy). SuDS shall be provided before occupation of the development it is to serve in accordance with the approved details and the phasing details pursuant to condition 3 and retained thereafter.

Reason: to prevent increased flood risk from surface water run-off in accordance with NPPF Section 14 (Meeting the Challenge of Climate Change, Flooding and Coastal Change); Core Strategy policy CP1; and Managing Development Delivery Local Plan policies CC09 and CC10 and Design principles 1d(ii) of the South Wokingham SDP SPD.

Condition 32 – Development shall not commence in each phase until details of any proposed points of connection, including connection into a drainage system or ordinary watercourse or third party land, have been submitted to and approved in writing by the Local Planning Authority and no discharge of surface water from the site shall be accepted into the public system until the drainage works have been completed in accordance with the approved details. The details shall demonstrate any connections onto third party land have the approval of the third party landowner and that the system immediately downstream is clear from obstruction.

Reason: to prevent increased risk of flooding, and to protect water quality in accordance with NPPF Section 14 (Meeting the Challenge of Climate Change, Flooding and Coastal Change), Technical guidance on the NPPF (Flood Risk), Core strategy policies CP1 & CP21; Managing Development Delivery Local plan policies CC09 & CC10; and the South Wokingham SDL SPD.

Condition 33 – Reserved matters for each phase of the development shall include measures for effective water quality treatment (using the methodology set out in the SuDS Strategy and Section 26.7 of the CIRIA SuDS Manual(C753) or any guidance that supersedes it) including phasing and measures shall be provided in accordance with the approved details.

Reason: to protect water quality in accordance with NPPF Section 14 (Meeting the Challenge of Climate Change, Flooding and Coastal Change, Technical Guidance on the NPPF (Flood Risk), Core Strategy policies CP1 & CP21; and the South Wokingham SDP SPD.

Condition 34 (ii)– Reserved matters shall be accompanied by a detailed exceedance flow routing plan consistent with the approved strategy.



2.0 Report Structure

2.1.1 This report addresses the following aspects:

- Section 2: Surface Water Strategy
- Section 3: Foul Water Strategy
- Section 4: Water Quality and enhancement
- Section 5: Adoption, Maintenance and Management
- Section 6: Summary

2.2 Basis of Report

2.2.1 Abley Letchford follows accepted procedures in providing professional services, but given the residual risk associated with any prediction and the variability which can be experienced in flood condition, Abley Letchford takes no liability for and gives no warranty against actual flooding of any property (client's or third party) or the consequences of flooding in relation to the performance of the service. This report has been prepared for the purposes of planning approval only and is to assist our client and the Local Planning Authority (LPA) to make an informed decision on the flood risks associated with the development of the Site under consideration.



3.0 Surface Water Drainage Strategy

3.1 Introduction

- 3.1.1 This chapter provides details on the proposed surface water drainage strategy and measures to drain the proposed 215 residential dwellings (R7: 38 dwellings and R13: 177 Dwellings).

3.2 Methodology

- 3.2.1 The proposed drainage strategy has been designed to meet the requirements of the NPPF by providing a drainage system which embraces the SuDS philosophy and key principals. The utilisation of Sustainable Drainage Systems (SuDS) not only provides the benefit of controlling waters at source and online treatment of collected surface water, but also allows enhanced aesthetics through improved landscaping, biodiversity, and ecological opportunities.
- 3.2.2 Additionally, the Drainage Strategy meets the requirements of Wokingham Borough Council's Standards and Guidance documents. References to how the scheme reflects the relevant individual National and Local Standards is included where appropriate.

3.3 Existing Drainage Conditions

- 3.3.1 The R7 & R13 parcels are predominantly a greenfield area which currently drains via infiltration and overland flows.

3.4 Sustainable Drainage Systems (SuDS)

- 3.4.1 Sustainable water management measures should be used to control the surface water runoff from the proposed development site therefore, managing the flood risk to the site and surrounding areas from surface water runoff.
- 3.4.2 Current guidance, CIRIA (2004) Report C609, provides that a hierarchy of techniques should be identified, namely:
- **Prevention** – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g., minimise areas of hard standing).
 - **Source Control** – control of runoff at or very near its source (such as the use of rainwater harvesting).
 - **Site Control** – management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).
 - **Regional Control** – management of runoff from several sites, typically in a detention pond or wetland.
- 3.4.3 In 2015, CIRIA published The SuDS Manual (C753) providing best practice guidance on the planning, design, construction, operation and maintenance of SuDS.
- 3.4.4 The SuDS Manual provides guidance to ensure SuDS are planned and designed to maximise the opportunities and benefits of surface water management.
- 3.4.5 The four main categories of benefits that can be achieved by SuDS, referred to as the four pillars of SuDS design, are:



- **Water quantity** – control the quantity of runoff to support the management of flood risk and maintain and protect the natural water cycle.
- **Water quality** – manage the quality of the runoff to prevent pollution.
- **Amenity** – create and sustain better places for people.
- **Biodiversity** – Create and sustain better places for nature.

3.5 Post Development Areas and Rates

- 3.5.1 To quantify any potential increase in surface water runoff, the existing Greenfield/Pre-Development runoff rate from the site must be determined. The rates of runoff have been established as part of the original Flood Risk Assessment (FRA) carried out by WSP in August 2020, Ref: 70001684-FRA-SDL-001. The proposed greenfield runoff rate (QBAR) is 4.4l/ha/s.
- 3.5.2 The total area of the proposed development is approximately 8.5ha and the impermeable area of the residential development is approximately 5.54ha.
- 3.5.3 To comply with best practice as stipulated in EA Report SC030219 'Rainfall Runoff Management for Developments', proposed discharge rates should be restricted for all storms up to and including the 1 in a 100-year storm event (1% AEP) plus a 40% allowance for climate change.

3.6 Surface Water Proposals and Rationale

- 3.6.1 As part of the Outline Permission, the approved Flood Risk Assessment (FRA) dated August 2020 by WSP (Ref: 70001684-FRA-SDL-001) provided a surface water drainage strategy generally dependant on a discharge rate of 4.4l/ha/s.
- 3.6.2 The approved FRA allowed for a different approach for Plot R7 and the local centre to the west with unattenuated discharge directly into the SWDR swale as attenuation for these plots was provided within the basin to be constructed in the SANG. Therefore, the drainage strategy for R7 included in this RM application, allows for unattenuated discharge to the SWDR swale.
- 3.6.3 The SWDR swale and attenuation basin is due to be delivered in advance of construction on the R7 site.
- 3.6.4 As part of the drainage strategy for R7 & R13 parcels, it is proposed to provide a network of pipes and Sustainable Drainage (SuDS) features to collect and attenuate the surface water runoff from the impermeable areas. The conventional drainage system will work in combination with SuDS such as rain garden/tree pits, swales and detention basins to provide attenuation storage and high-quality water benefits.
- 3.6.5 Refer to drawing A389-R7&R13-RM-501 in **Appendix A** for the drainage strategy.
- 3.6.6 Outputs from the hydraulic model are included in **Appendix C**.

R13 Basin Catchment

- 3.6.7 The R13 catchment drains to a basin situated in the north of the plot, immediately south of the SWDR.



- 3.6.8 The R13 catchment has an impermeable area of approximately 4.51ha. A 10% urban creep is included in these impermeable areas to account for future development of the proposed dwellings.
- 3.6.9 A flow control device on the outfall of the basin will restrict discharge to 14l/s prior to discharging to the SWDR swale. This discharge rate is the rate calculated in the approved site wide strategy submitted for discharge of planning condition 29.
- 3.6.10 Tree pits within the streets will act as bioretention areas and parking courts for the apartment blocks are proposed to be permeable block paving to provide water quality benefits.
- 3.6.11 A swale has been incorporated along the western edge of the development to convey water towards the basin.
- 3.6.12 The manhole chambers of the proposed network will utilise strategic catchpits or proprietary devices, to minimize the amount of silt reaching the basins.
- 3.6.13 The proposed basin will be lined with a geomembrane and will provide attenuation only and not infiltration.
- 3.6.14 The basin has been designed in conjunction with the landscape architects to maximise its amenity value when not in use attenuating water. The public open space within which the basin is located has been defined as Parks and Gardens – the most formal landscape type.
- 3.6.15 The basin will have 1:3 side slopes, in accordance with the SuDS manual, and will incorporate 400mm freeboard above the maximum water level.
- 3.6.16 Large grass tiered steps have been incorporated on the eastern edge of the basin to facilitate access during dry periods.
- 3.6.17 Refer to drawing A389-R7&R13-RM-530 and 531 for cross section drawings of the basin and swale.

R7 Catchment

- 3.6.18 The R7 catchment includes approximately 1.03ha of impermeable area. A 10% urban creep is included in these impermeable areas to account for future development of the proposed dwellings.
- 3.6.19 Surface water from this plot will discharge via gravity, unattenuated into the SWDR swale, in accordance with the agreed site wide strategy. This is because the basin within the SANG to the west of the site has been sized to attenuate these flows.
- 3.6.20 Tree pits acting as bioretention areas are proposed along streets throughout the development parcel.
- 3.6.21 Parking areas for the apartment block and houses off the main spine road are proposed to be permeable block paving to provide water quality benefits prior to discharging to the SWDR swale.
- 3.6.22 The manhole chambers of the proposed network will utilise strategic catchpits or proprietary devices, to minimize the amount of silt reaching the basin.

3.7 Points of Connection

- 3.7.1 Attenuated flows from basin R13 will discharge to the SWDR swale to the north.



3.7.2 R7 will discharge to the SWDR swale to the north.

3.8 Exceedance Flood Routing

3.8.1 Storms in excess of the 1 in 100-year storm event (1% AEP) plus 40% climate change may flood from the network and will be kept within the internal road network, until such time as they can be directed into adjacent landscaping areas or existing vegetation/woodland.

3.8.2 Refer to drawing A389-R7&R13-RM-507 for the Exceedance Plan.

3.8.3 The hydraulic modelling shows flooding at a single manhole in the 1 in 100 + 40% event. This is located by a rain garden so in the first instance, flood water would enter the rain garden then flow down the road to the west, being contained within the kerb which through this area has a 25mm upstand, and re-entering the drainage network through the gullies. Refer to plan A389-R7&R13-RM-508 for an indication of the extent of flooding.

3.9 Safe Access

3.9.1 The site is located outside of the fluvial and surface water flood extents. Continuous safe access is therefore available during a flood event.



4.0 Foul Water Drainage Strategy

4.1 Introduction

- 4.1.1 This section provides details on the proposed foul water drainage strategy and measures to convey effluent. Refer to drawings A389-R7&R13-RM-501 in **Appendix A**.

4.2 Existing Drainage Conditions

- 4.2.1 No foul network is present in the area that the R7 and R13 residential development is proposed to be built.

4.3 Foul Water Drainage Strategy

- 4.3.1 Foul water from each residential plot will discharge via a gravity network to a pump station (PS2) located between parcels R7 and R13 which in turn will discharge to the pump station located with parcel R10 (PS1). This pump station then discharges to the Thames Water pump station in Montague Park to the north of the site. Refer to drawing A389-003 P9 for the sitewide foul drainage strategy overview in **Appendix B**.
- 4.3.2 The proposed foul water sewers and pump station have been designed in accordance with the new Sewerage Sector Guidance (SSG), British Standards and Building Regulations, and will be offered to a NAV (IWNL) for adoption under Section 104 Agreement of the Water Industry Act.

4.4 Point of connection

- 4.4.1 Foul drainage from both the R7 and R13 plot will discharge into pump station 2 (PS2) located between the two parcels. This will discharge to pump station 1 located within parcel R10.
- 4.4.2 R7 and R13 also makes allowance for the pumped flows from pump station 3, located further west and foul water from future parcels R8 and R9 to the North.



5.0 Water Quality Enhancement

- 5.1.1 CIRIA report C753 The SuDS Manual outlines the methodology for assessing water quality risks associated with new development. This is a simple index approach which provides a high-level scoping analysis of the land usage and gives guidelines for appropriate treatment stages.
- 5.1.2 This process identifies features necessary to provide adequate substance removal in line with Environment Agency requirements. This is a three-step process of Allocation, Mitigation and Review.
- 5.1.3 Surfaces generating runoff are ‘graded’ on their potential to contribute to various harmful pollutants and gives each surface a risk of pollution from each element. An extract of Table 26.2 within the SuDS Manual is set out in **Figure 1**.

Figure 1 – Extract from Table 26.2 SuDS Manual

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydrocarbons
Residential Roofs	Very Low	0.2	0.2	0.05
Other Roofs	Low	0.3	0.2-0.8	0.05
Low traffic residential roads and non-residential parking with infrequent change.	Low	0.5	0.4	0.4
Commercial yard, parking with frequent change, other roads,	Medium	0.7	0.6	0.7
Sites with heavy pollution	High	0.8	0.8	0.9

- 5.1.4 Historically, PPG3 documentation would recommend that pollutants were removed utilising oil separators, but since its superseding, more recent guidance has shifted to the use of SuDS features to remove pollutants; thereby providing significant improvements in treatment.
- 5.1.5 The use of non-mechanical features decreases the requirements for maintenance and increase natural biodiversity. That said, the SuDS Manual does not remove the possibility of utilising separators, so long as they are considered in partnership with a comprehensive overall SuDS regime.
- 5.1.6 Without adequate treatment, the pollutants would cause damage if they were to enter the watercourse or water table in large volumes. The use of SuDS features to slow down and degrade these pollutants is critical to the provision of an acceptable discharge.
- 5.1.7 The proposed residential development is classified between “Very Low” and “Medium” in accordance with the Pollution Hazard Level, which equals to Total Suspended Solids: 0.7, Metals: 0.6 and Hydrocarbons: 0.7 for “Medium” and Total Suspended Solids: 0.5, Metals: 0.4 and Hydrocarbons: 0.4 for “Low”.
- 5.1.8 The respective cleansing abilities of common SuDS features are given by corresponding mitigation indices within the SuDS Manual. An extract of Table 26.3 is set out below and is set out in **Figure 2**.



Figure 2 – Extract from Table 26.3 SuDS Manual

Type of SuDS component	Total Suspended Solids	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter Drain	0.4	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable Paving	0.7	0.6	0.7
Detention Basin	0.5	0.5	0.6
Pond	0.7	0.7	0.5
Wetland	0.8	0.8	0.8

5.2 R13

- 5.2.1 Parking courts for apartment blocks are proposed to have lined permeable paving. The mitigation indices stated above provide sufficient treatment for the likely pollutants outlined in Figure 1.
- 5.2.2 Rain gardens within the road corridors will act as bio retention areas providing treatment for the roads within the development.
- 5.2.3 Run off from residential roofs discharging directly to the piped network will receive a level of treatment within the detention basin prior to discharge to the SWDR swale.

5.3 R7

- 5.3.1 Parking courts for apartment blocks and houses located off the main spine road are proposed to have lined permeable paving. The mitigation indices stated above provide sufficient treatment for the likely pollutants outlined in Figure 1.



6.0 Adoption, Maintenance and Management

6.1.1 This section of the strategy considers the maintenance requirements of the drainage provisions during the construction phase and post construction phase of the development lifecycle.

6.2 Construction Phase

6.2.1 During the construction phase, the Developer will be responsible for all surface water matters especially water quality and pollution control. They or their Principal Contractor will develop a Construction Surface Water Management Plan (CSWMP) based on the CIRIA best practice guidance listed below. The aim of the CSWMP is to ensure the risk of flooding on and off site is not increased due to construction activities, and that quality of receiving water bodies is not impacted by construction activities.

6.2.2 CIRIA C532 Control of Water Pollution from Construction Sites and CIRIA C753 The SuDS Manual provide specific measures for the protection of surface water quality during construction activities, including:

- Management of construction works to comply with the necessary surface water quality standards and any consent conditions from planning approval.
- Surface water run-off from the road will be managed through a temporary and/or permanent drainage infrastructure, including measures for removing suspended solids and potential contaminants.
- Plant machinery and vehicles to be maintained in a good working condition, with wheel washing and dust suppression measures at all entry and exit points used to prevent the migration of pollutants (particularly in relation to works using concrete and with areas where dust and mud can build up);
- Areas at risk of spillage will be carefully sited and protected (e.g., bunds and impervious walls and floor) to minimise the risk of hazardous substances affecting surface water quality – this may include vehicle maintenance and storage areas for hazardous materials.
- The movement of plant machinery and vehicles and the storage of materials during the construction works will be limited near to surface water features.
- Excavation activities will carefully be monitored and coordinated with forecasted dry periods, where possible, with excavation works covered during periods of heavy rain to minimise the entry and collection of rainwater and transport of pollutants; and
- The movement of plant and machinery over bare soil areas will be limited to avoid soil compaction and smearing, with suitable preparatory works included where this cannot be avoided so as to minimise effects on the surface water runoff regime.

6.2.3 The CSWMP will identify the key activities being undertaken on the site and how run off will be managed both in terms of quantity – directed to suitable areas to reduce flood risk, and quality – ensuring treatment is provided prior to discharging to water courses or sewers.



- 6.2.4 Temporary onsite drainage facilities will be provided during the construction phase to ensure the controlled discharge of surface water run-off, until such a time as the permanent surface water drainage strategy is implemented.

6.3 Post Construction Phase

- 6.3.1 Whilst the drainage system has been designed to the appropriate standards including Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England ("the Code", 2021), the Building Regulations and the requirement of the National Planning Policy Framework, ongoing maintenance will be required to all drainage elements.

Surface Water Adoption

- 6.3.2 The onsite main drainage provision, including traditional sewers and manholes will be offered to IWNL for adoption under Section 104 of the Water Industry Act. Ultimately these assets will become owned and maintained in perpetuity by IWNL upon vesting.
- 6.3.3 The basin and swale, which are located the within public open space, will be offered to Wokingham Borough Council for adoption, along with rain gardens and drainage associated with adopted roads.
- 6.3.4 Smaller private drains and manholes within dwelling curtilages will be conveyed to purchasers, wherein responsibility for ongoing maintenance will lie with the homeowner.

Foul Water Adoption

- 6.3.5 The onsite main drainage provision including traditional sewers and manholes, and the pump station between parcel R7 and R13, will be offered to IWNL for adoption under Section 104 of the Water Industry Act. Ultimately these assets will become owned and maintained in perpetuity by IWNL upon vesting.
- 6.3.6 Smaller private drains and manholes within dwelling curtilages will be conveyed to purchasers, wherein responsibility for ongoing maintenance will lie with the homeowner.

SuDS Feature Maintenance

- 6.3.7 Regular maintenance/replacement of the fundamental SuDS features and associated drainage assets requires careful consideration.
- 6.3.8 Rain garden/tree pits/bioretenion areas will be maintained by Wokingham Borough Council as highway features with the SUDS basins also maintained by Wokingham Borough Council as part of the open space.
- 6.3.9 Tables 1 and 2 identify the recommended maintenance schedule for the various SUDS features.



Table 1: Maintenance Schedule for Detention Basins

Maintenance Schedule	Required action	Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets, and overflows for blockages, and clear if required	Monthly
	Inspect bank sides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year) then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlets, and forebays	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually
Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every two years, or as required
	Remove sediment from inlets, outlets, forebays, and main basin when required.	Every five years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets, and overflows	As required
	Re-level uneven surfaces and reinstate design levels	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly/after large storms.



Table 2: Maintenance Schedule for Tree Pits/Bio-retention Areas

Maintenance Schedule	Required action	Frequency
Regular Inspections	Inspect infiltration surface for silting and ponding, record dewatering time of the facility and assess standing water levels in under-drain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of under-drains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Inspect inlets and outlets for blockages	Quarterly
Regular Maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter, and debris buildup from around inlets or from forebays	Quarterly to biannually
Occasional Maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly/after large storms
	Inspect infiltration surfaces for ponding. Record dewatering time of the facility to determine if maintenance is necessary.	Monthly, or when required
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly
	Test planting soil for pH – if adjustment is necessary, amalgamate with appropriate substances.	Annually



7.0 Summary

- 7.1.1 In accordance with the Flood Risk Assessment (FRA) dated August 2020 and produced by WSP (Ref: 70001684-FRA-SDL-001), as part of the Outline Permission, a discharge rate of 14l/s has been adopted for plot R13.
- 7.1.2 For plot R7, an unattenuated discharge has been used, in accordance with the WSP FRA.
- 7.1.3 Discharge points from the site are into the proposed SWDR swale located to the north of the developments.
- 7.1.4 The Drainage Strategy encompasses SuDS to mitigate and manage surface water flows from the proposed residential development in parcels R7 and R13.
- 7.1.5 The proposed surface water drainage strategy will manage the flood risk posed by uncontrolled surface water runoff from the residential development. Any increase in surface water run-off can be managed using SuDS as well as attenuation features to provide storage in extreme storm events.
- 7.1.6 The site is located outside of the fluvial and surface water flood extents. Continuous safe access is therefore available during a flood event.
- 7.1.7 All the water quality parameters have been considered to enhance the water quality of the proposed surface water network in accordance with The SuDS Manual 2015 (C753).
- 7.1.8 Surface water attenuation for all storm events is provided within the proposed surface water drainage network for all storm events up to and including the 1 in 100-year storm event (1% AEP) plus the allowance for a 40% increase in rainfall intensities as a result of climate change.
- 7.1.9 A gravity-based foul water network is proposed as for the site, discharging to a pump station located between R7 and R13. This in turn pumps to the gravity network in R11 and on to the pump station within R10. Flows from the pump station in R10 are discharged to the existing Thames Water Montague Park SPS. Both the network and the foul pumping station will be offered to IWNL for adoption.
- 7.1.10 The proposed residential development complies with national and local planning policy in response to flood risk. The risk of flooding is adequately managed, and the offsite flood risk is not increase.
- 7.1.11 The proposed residential development is therefore deemed appropriate in this location in terms of flood risk and drainage.



Appendices



Appendix A – Proposed Drawings

A389-R7&R13-RM-501 Drainage Strategy

A389-R7&R13-RM-505 Surface Water Catchment Plan

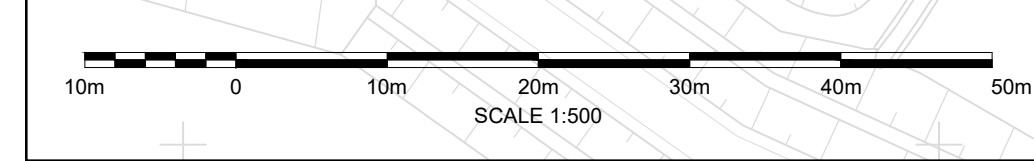
A389-R7&R13-RM-506 Foul Water Catchment Plan

A389-R7&R13-RM-507 Exceedance Routing plan

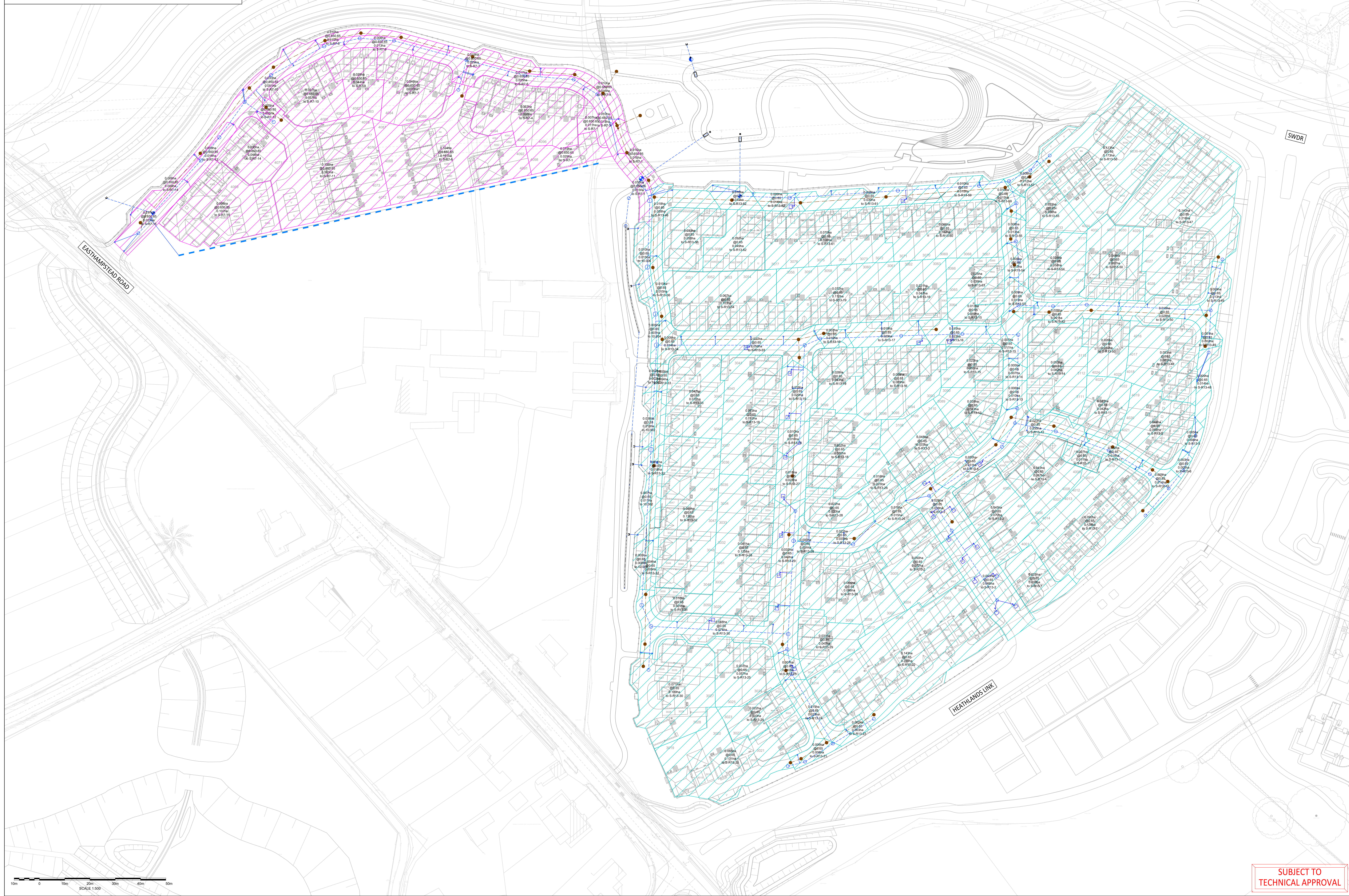
A389-R7&R13-RM-508 Flood Depths Plan

A389-R7&R13-RM-530 Basin Cross Sections

A389-R7&R13-RM-531 Swale Cross Sections

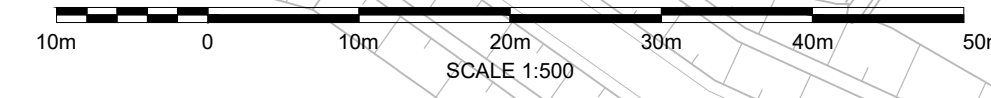
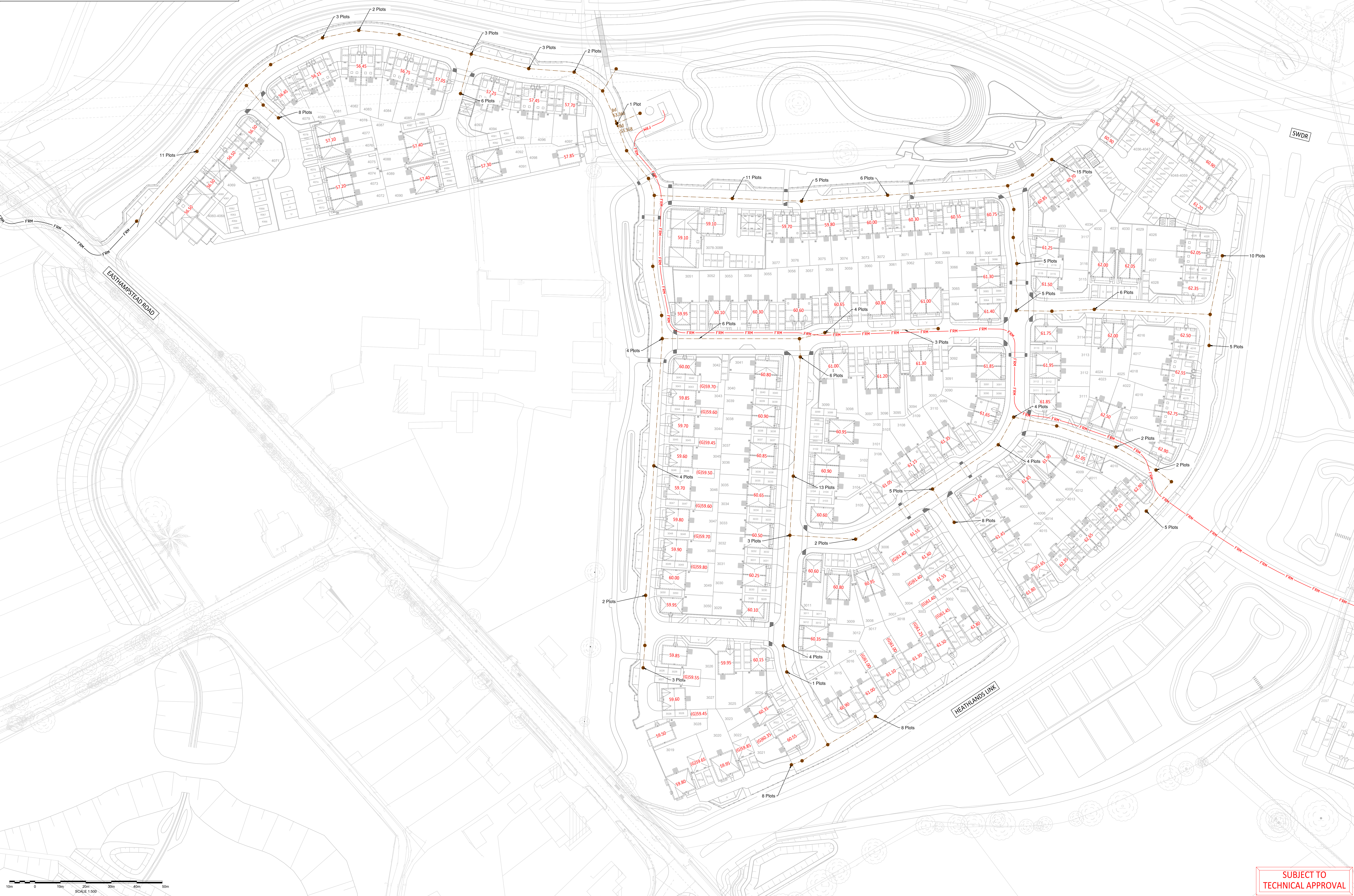
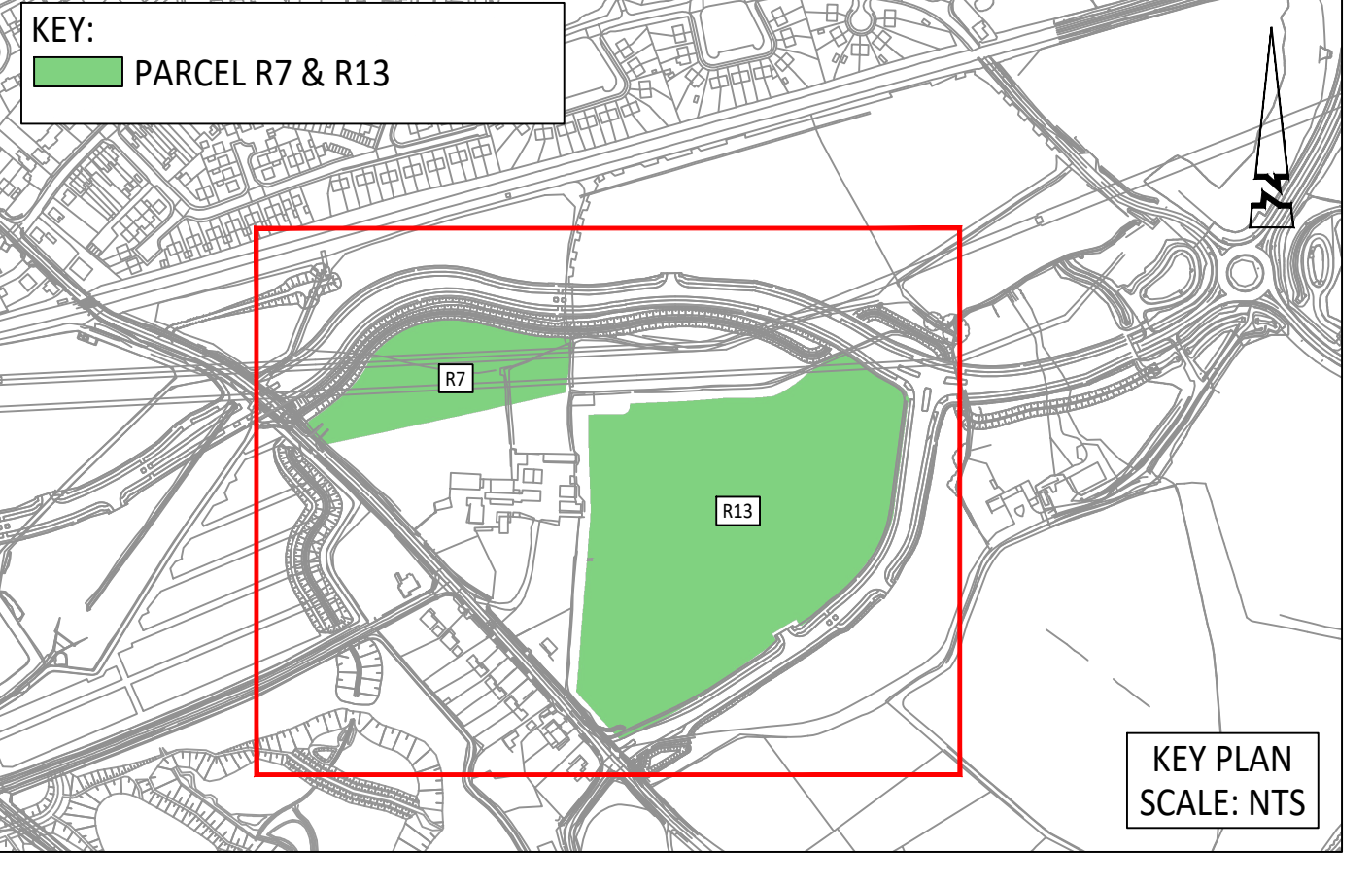


Scale 1:500 @ A0	Date DEC 2025	Drawn AS	Checked RG
Drawing No A389-R7&R13-RM-501			Revision C



S0805			
Scale 1:500 @ A0	Date DEC 2025	Drawn AS	Checked RF
Drawing No A389-R7&R13-RM-505			Revision C

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NOTES:
1. Do not scale.
2. This drawing is to be read in conjunction with and checked against all other drawings, Engineering details, Specification and any structural, Geotechnical or other specialist document provided.
3. Foul water discharge is based on 4000l/s per plot.
4. Catchment numbers refer only to parcels under current RM application.

KEY:
● Proposed adoptable sewer & MH
— FRM — Proposed PS2 Foul Water Rising Main
— FRM — PS1 Foul Water Rising Main
42.50 Finished Floor Level

C	15.02	AMENDMENTS TO SLAT UPDATED LAYOUT	RD	RF
B	15.02	AMENDMENTS TO SLAT UPDATED LAYOUT	RD	RF
A	12.02	FIRST ISSUE	AD	RF
Rev	Issue	Description	Author	Checker

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Client
MILLER HOMES

Project
**SOUTH WOKINGHAM SDL
PHASE 2B R7 & R13 RESERVED
MATTERS APPLICATION**

**FOUL WATER
CATCHMENT PLAN**

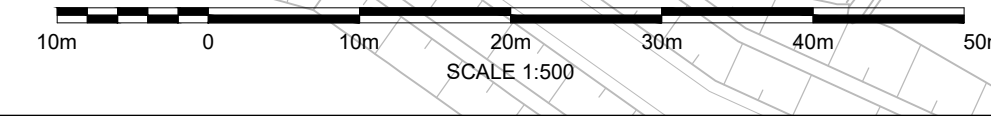
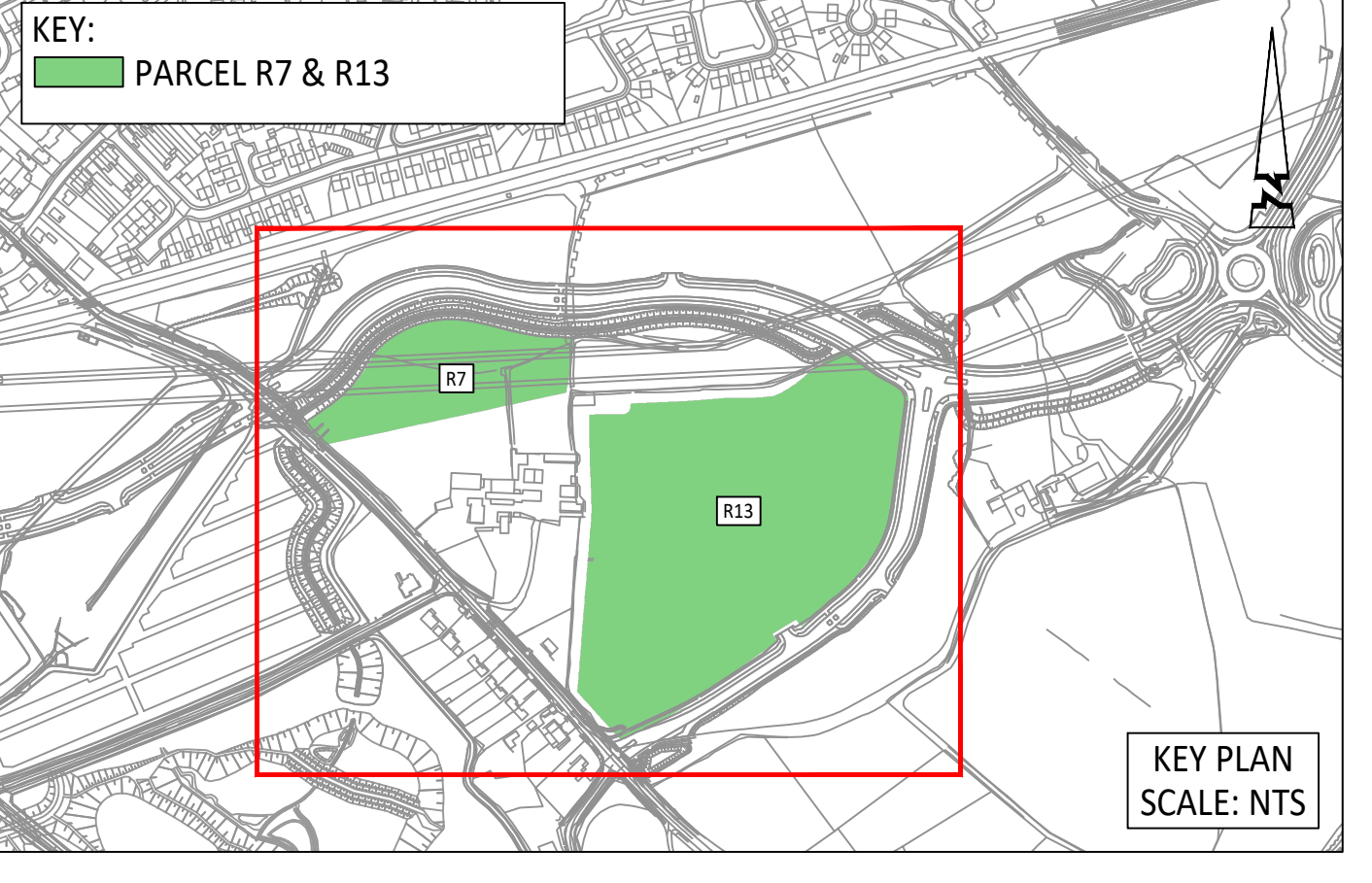
Drawn
1:500 @ A0
Date
DEC 2025
Drawn
AS
Checked
RF
Drawing No.
A389-R7&R13-RM-506
Revision
C



KEY:

	Proposed Highway Contours
	Exceedance Flow Route Arrow
	Exceedance Flow Route High Point
	Exceedance Flow Route Low Point

Scale 1:500 @ A0	Date DEC 2025	Drawn AS	Checked RF
Drawing No A389-R7&R13-RM-507			Revision C



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GENERAL ARRANGEMENT NOTES:
1. Do Not Scale.
2. This Drawing is to be read in conjunction with and checked against all other drawings. Engineering details, specification and any structural, Geotechnical or other specialist document provided.
3. Any anomaly or contradiction between any of the above is to be reported to the Engineer.

KEY:
Proposed Highway Contours
Exceedance Flow Route Arrow
HP Exceedance Flow Route High Point
LP Exceedance Flow Route Low Point

B	05.24	AMENDED TO SUIT UPDATED LAYOUT	RD	RF
A	12.24	FIRST ISSUE	AD	RF

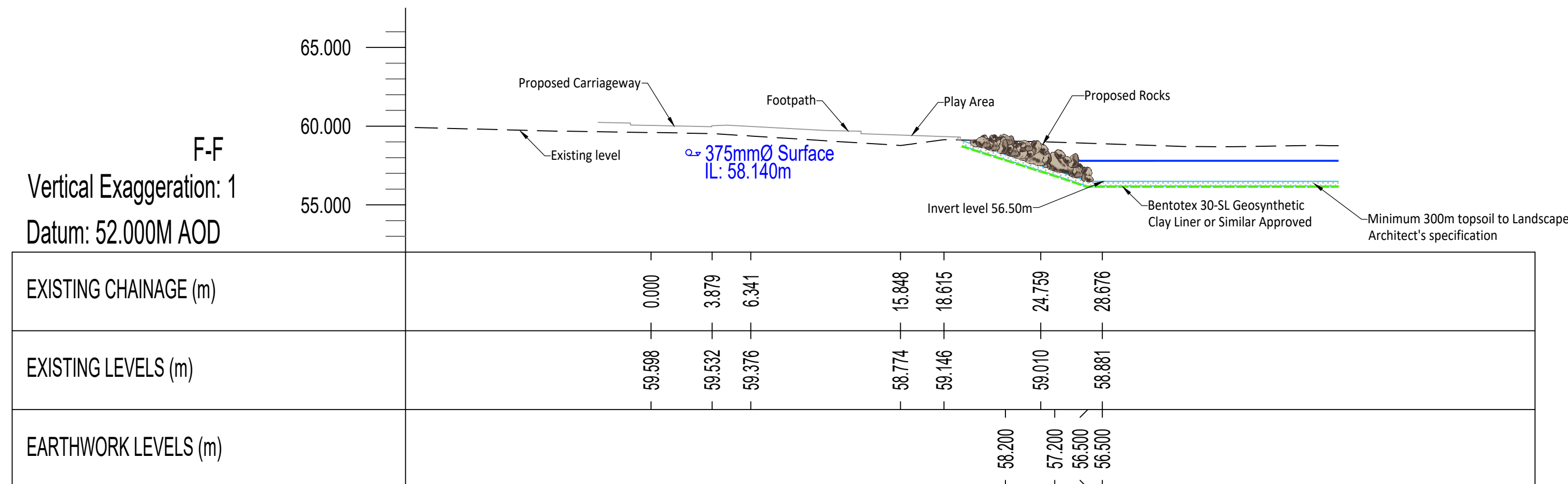
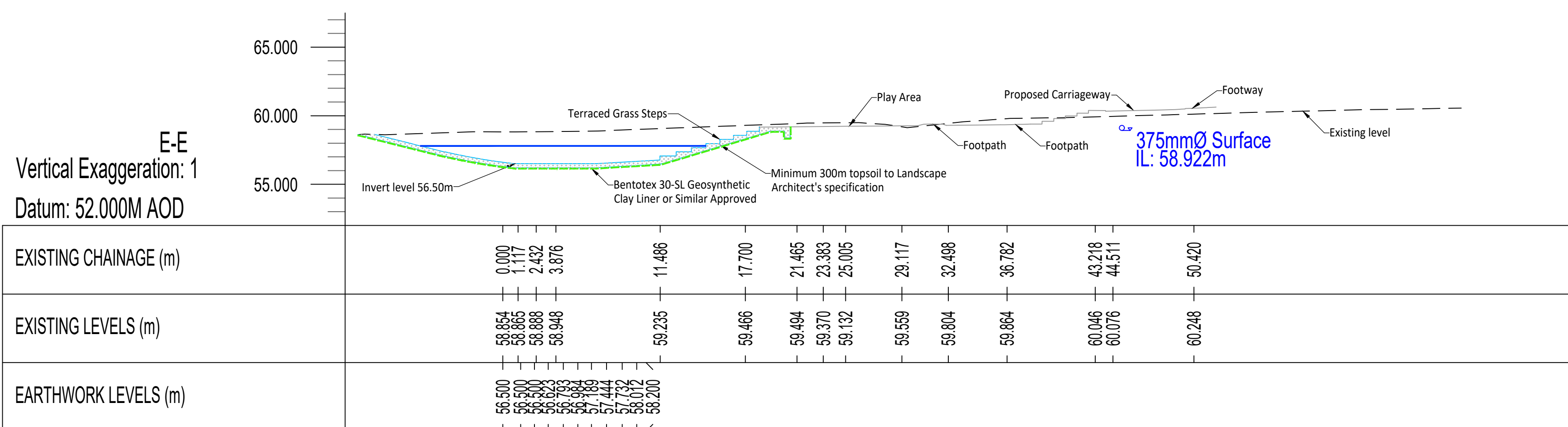
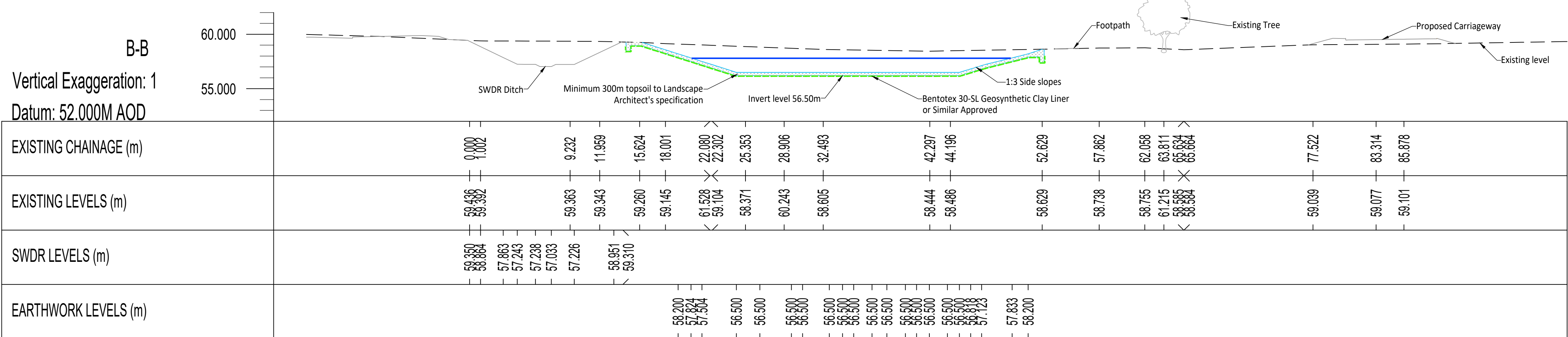
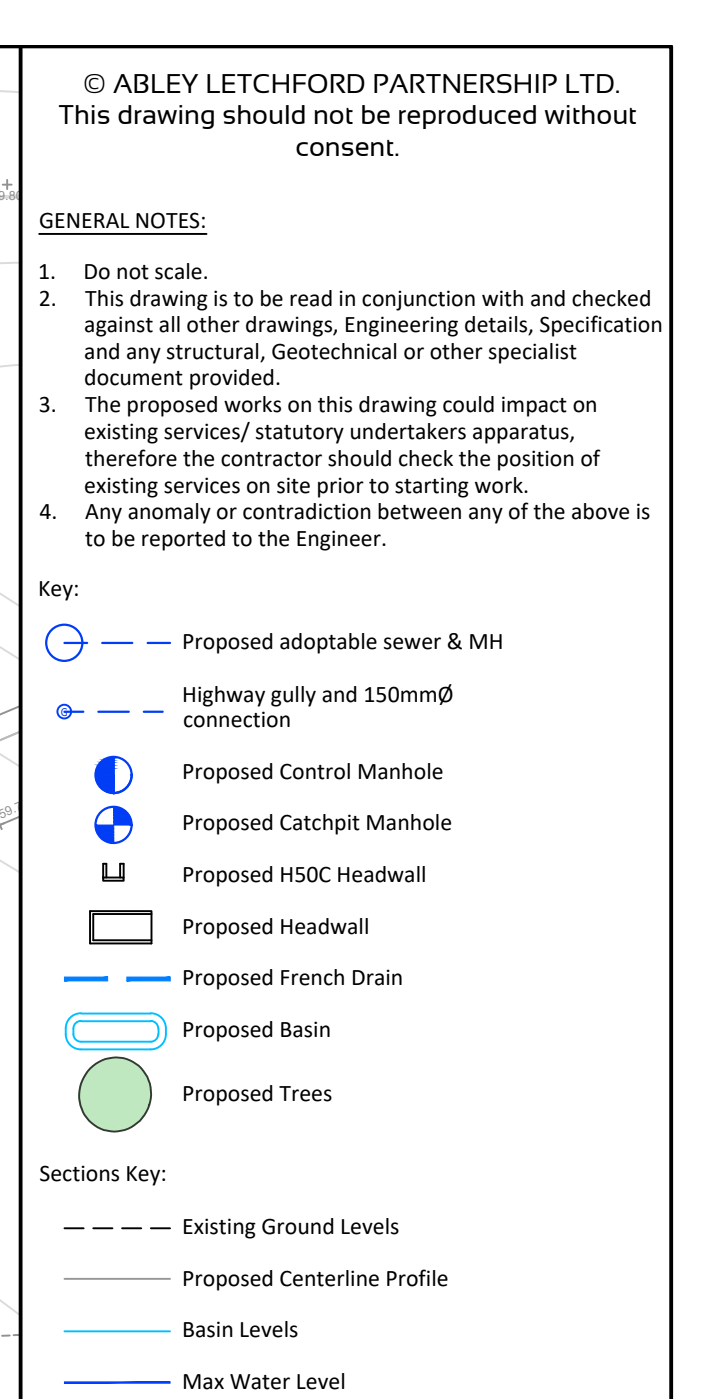
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Project:
**SOUTH WOKINGHAM SDL
PHASE 2B R7 & R13 RESERVED
MATTERS APPLICATION**

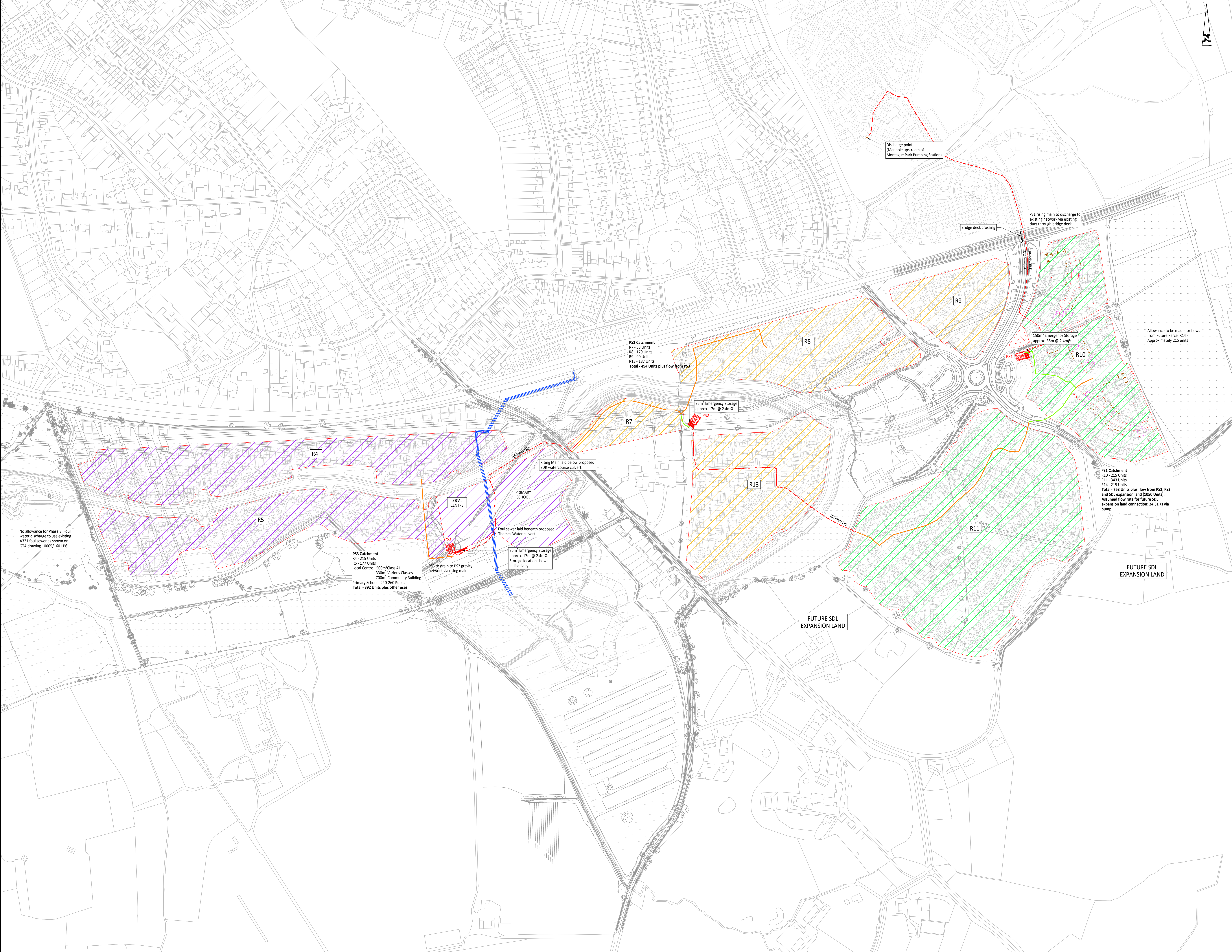
Title:
FLOOD DEPTH PLAN

Drawn:
1:500 @ A0
Date:
MAY 2026
By:
RF
Checked:
RF
Reviewed:
A





Appendix B – Sitewide Foul Drainage Strategy



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Notes:
1. Do not scale from this drawing.
2. Refer to all other project drawings and supporting notes.

Key:

Proposed Foul Sewer (150mm Dia)

Proposed Foul Sewer (225mm Dia)

Proposed Foul Sewer (300mm Dia)

Proposed Pumping Station

Proposed Rising Main

Proposed Emergency Storage - 2.4mØ x Varies

PS1 Catchment Area

PS2 Catchment Area

PS3 Catchment Area

PS	06.25	INTERIM RISING MAIN REMOVED	CS	RF
PS	06.25	R10 DWELLING NUMBERS UPDATED	CS	RF
PS	11.24	UPDATED TO SUIT LATEST ACCOMMODATION SCHEDULE AND CONCURRENT FOU ROUTES	CS	LPA
PS	06.24	PS1 FOU RISING MAIN AMENDED	CS	LPA
PS	06.24	GENERAL AMENDMENTS	CS	LPA
PS	06.24	EMERGENCY STORAGE ADDED	CS	LPA
PS	06.24	CATCHMENT AREAS UPDATED KEY UPDATED	CS	LPA
PS	07.23	PUMP STATION ADDED TO ALLOW EARLY CONSTRUCTION OF PHASE R10	KLW	LPA
PS	07.22	FIRST ISSUE	JA	KLW

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Client
MILLER HOMES
KIER VENTURES

Project
SOUTH WOKINGHAM SDL

Task
SITE OVERVIEW
FOUL WATER STRATEGY

Drawn
1:2000 @ A0
Date
JULY 2022
Project
KLW
Checked
LPA
Drawn by
A389-003
Project
P9



Appendix C – Surface Water Hydraulic Model Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	9.999
CV	0.950	Preferred Cover Depth (m)	1.250
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	550.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S-R13-1	0.025	5.00	61.432	1200	482682.490	167665.912	1.475
S-R13-2	0.138	5.00	61.319	1200	482664.534	167693.510	1.631
S-R13-3	0.073	5.00	60.997	1200	482655.604	167707.265	1.872
S-R13-26	0.090	5.00	60.567	1350	482625.481	167688.044	1.700
S-R13-27	0.015	5.00	60.365	1200	482602.649	167701.239	1.475
S-R13-28	0.125	5.00	60.206	1500	482601.957	167689.422	2.051
S-R13-20	0.085	5.00	60.425	1200	482599.655	167600.285	1.475
S-R13-21	0.006	5.00	60.453	1200	482606.473	167602.044	1.573
S-R13-22	0.143	5.00	60.610	1200	482633.689	167619.009	1.475
S-R13-23	0.002	5.00	60.716	1200	482617.530	167609.226	2.256
S-R13-24	0.037	5.00	60.207	1350	482601.288	167636.705	1.956
S-R13-25	0.044	5.00	60.056	1350	482599.445	167646.548	1.909
S-R13-29	0.062	5.00	59.968	1500	482599.798	167652.587	2.252
S-R13-30	0.119	5.00	59.817	1500	482545.531	167655.610	2.180
S-R13-31	0.016	5.00	59.929	1500	482541.843	167663.968	2.307
S-R13-32	0.104	5.00	59.376	1800	482545.518	167725.552	1.841
S-R13-15	0.043	5.00	61.182	1200	482668.730	167771.287	2.908
S-R13-16	0.103	5.00	60.872	1200	482644.530	167770.565	2.748
S-R13-17	0.019	5.00	60.459	1200	482612.532	167769.441	2.610
S-R13-18	0.135	5.00	60.723	1200	482604.241	167728.132	1.400
S-R13-19	0.125	5.00	60.382	1350	482606.330	167766.848	2.627
S-R13-33	0.086	5.00	59.717	1800	482547.712	167766.870	2.417
S-R13-34	0.076	5.00	59.460	1800	482547.289	167779.171	2.240
S-R13-35			59.056	1800	482544.118	167797.758	1.886
S-R13-36	0.042	5.00	58.492	1800	482545.026	167824.049	1.392
S-R13-37		5.00	59.460		482535.440	167670.797	0.455
S-R13-38			59.469		482534.749	167680.727	0.629
S-R13-39			59.201		482537.546	167719.548	0.523
S-R13-40			59.004		482538.298	167731.954	0.485
S-R13-41			59.312		482541.133	167771.668	1.015
S-R13-43			58.725		482536.139	167801.942	0.684
S-R13-44			58.313	1200	482535.475	167814.026	0.493
S-R13-45			58.420	1200	482536.734	167825.000	0.753
S-R13-46	0.018	5.00	58.277	1800	482541.743	167832.752	1.250
S-R13-HW1			58.200		482568.056	167850.638	1.550
S-R13-5	0.049	5.00	62.745	1200	482761.028	167731.034	1.475
S-R13-6	0.003	5.00	63.003	1200	482756.212	167717.267	1.820
S-R13-7	0.090	5.00	63.035	1200	482741.232	167699.436	1.475
S-R13-8			63.024	1200	482750.420	167710.168	1.910
S-R13-9			62.783	1200	482742.955	167715.804	1.729
S-R13-10	0.009	5.00	62.377	1200	482726.663	167725.172	1.434
S-R13-11	0.046	5.00	61.900	1200	482705.747	167732.694	2.500

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S-R13-12	0.023	5.00	61.557	1200	482689.542	167736.003	2.832
S-R13-13	0.034	5.00	61.629	1200	482690.445	167741.886	2.969
S-R13-47	0.140	5.00	61.980	1200	482771.654	167800.763	1.280
S-R13-48	0.061	5.00	62.561	1200	482766.227	167763.957	1.475
S-R13-49	0.010	5.00	62.380	1200	482767.027	167780.550	1.780
S-R13-50	0.088	5.00	61.691	1200	482717.958	167782.844	1.449
S-R13-51			61.499	1200	482704.600	167782.262	1.394
S-R13-52	0.026	5.00	61.298	1350	482690.995	167782.597	1.248
S-R13-53	0.034	5.00	60.988	1350	482691.042	167800.209	1.238
S-R13-54	0.046	5.00	60.849	1350	482689.944	167807.899	1.349
S-R13-55	0.032	5.00	60.598	1350	482690.124	167822.984	1.698
S-R13-56	0.092	5.00	60.476	1200	482703.334	167841.902	1.246
S-R13-57	0.008	5.00	60.301	1200	482695.628	167836.029	1.281
S-R13-58			60.373	1350	482687.221	167831.758	1.573
S-R13-59	0.020	5.00	60.296	1350	482675.338	167829.966	1.746
S-R13-60	0.066	5.00	59.889	1350	482643.216	167827.982	1.898
S-R13-61	0.095	5.00	59.337	1350	482600.386	167825.133	2.137
S-R13-62	0.014	5.00	58.984	1350	482580.637	167825.847	2.184
S-R13-HW2			58.200		482580.801	167849.375	1.550
S-R13-HW3		5.00	58.200		482563.421	167872.987	1.700
S-R13-64			58.200	1500	482561.362	167879.919	1.749
S-R13-HW4			58.496		482559.664	167885.638	2.095
S-R13-4	0.063	5.00	61.440	1350	482684.397	167726.660	2.450
S-R13-14	0.058	5.00	61.504	1350	482690.838	167770.988	3.019
S-R13-42			59.028		482537.886	167788.284	0.832
S-R13-30A		5.00	59.563	1200	482544.571	167638.385	1.250
J4	0.037	5.00	58.984		482580.570	167815.264	1.350
J5	0.081	5.00	60.476		482724.386	167838.844	0.806
J6	0.075	5.00	61.961		482753.089	167821.819	0.800

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	S-R13-1	S-R13-2	32.925	0.600	59.957	59.763	0.194	169.7	225	5.32	54.3
1.001	S-R13-2	S-R13-3	16.400	0.600	59.688	59.275	0.413	39.7	300	5.40	54.0
1.002	S-R13-3	S-R13-4	34.716	0.600	59.125	58.990	0.135	257.2	450	5.86	52.1
1.003	S-R13-4	S-R13-12	10.666	0.600	58.990	58.725	0.265	40.2	450	5.91	51.9
2.000	S-R13-5	S-R13-6	14.638	0.600	61.270	61.183	0.087	168.3	225	5.24	54.6
2.001	S-R13-6	S-R13-8	9.153	0.600	61.183	61.114	0.069	132.7	225	5.26	54.5
3.000	S-R13-7	S-R13-8	14.408	0.600	61.560	61.114	0.446	32.3	225	5.24	54.6

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	1.000	39.8	4.6	1.250	1.331	0.025	0.0	51	0.671
1.001	2.502	176.9	30.2	1.331	1.422	0.163	0.0	83	1.884
1.002	1.263	200.8	42.3	1.422	2.000	0.237	0.0	139	1.008
1.003	3.212	510.8	53.5	2.000	2.382	0.300	0.0	97	2.110
2.000	1.005	40.0	9.2	1.250	1.595	0.049	0.0	73	0.820
2.001	1.133	45.1	9.8	1.595	1.685	0.052	0.0	71	0.908
3.000	2.310	91.8	16.8	1.250	1.685	0.090	0.0	65	1.764

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)
2.002	S-R13-8	S-R13-9	10.066	0.600	61.114	61.054	0.060	167.8	225	5.43	53.9
2.003	S-R13-9	S-R13-10	18.793	0.600	61.054	60.943	0.111	169.3	225	5.74	52.6
2.004	S-R13-10	S-R13-11	22.227	0.600	61.020	59.400	1.620	13.7	225	6.11	51.2
2.005	S-R13-11	S-R13-12	16.539	0.600	59.400	58.950	0.450	36.8	225	6.39	50.2
1.004	S-R13-12	S-R13-13	5.952	0.600	58.725	58.660	0.065	91.6	450	6.49	49.8
1.005	S-R13-13	S-R13-14	29.105	0.600	58.660	58.485	0.175	166.3	450	6.80	48.7
1.006	S-R13-14	S-R13-15	22.110	0.600	58.485	58.274	0.211	104.8	450	6.98	48.0
1.007	S-R13-15	S-R13-16	24.211	0.600	58.274	58.124	0.150	161.4	450	5.19	54.8
1.008	S-R13-16	S-R13-17	32.018	0.600	58.124	57.849	0.275	116.4	450	5.70	52.8
1.009	S-R13-17	S-R13-19	6.722	0.600	57.849	57.829	0.020	336.1	450	5.71	52.7
4.000	S-R13-18	S-R13-19	38.772	0.600	59.323	58.055	1.268	30.6	225	5.60	53.2
1.010	S-R13-19	S-R13-33	58.618	0.600	57.755	57.525	0.230	254.9	525	6.23	50.7
5.000	S-R13-20	S-R13-21	7.041	0.600	58.950	58.880	0.070	100.6	225	5.12	55.1
5.001	S-R13-21	S-R13-23	13.185	0.600	58.880	58.535	0.345	38.2	225	5.34	54.2
6.000	S-R13-22	S-R13-23	18.890	0.600	59.135	58.535	0.600	31.5	225	5.19	54.8
5.002	S-R13-23	S-R13-24	32.722	0.600	58.460	58.326	0.134	244.2	300	5.80	52.4
5.003	S-R13-24	S-R13-25	9.162	0.600	58.251	58.222	0.029	315.9	375	5.87	52.1
5.004	S-R13-25	S-R13-29	6.049	0.600	58.147	57.941	0.206	29.4	450	5.92	51.9
7.000	S-R13-26	S-R13-28	23.564	0.600	58.867	58.230	0.637	37.0	450	6.13	51.1
8.000	S-R13-27	S-R13-28	11.837	0.600	58.890	58.455	0.435	27.2	225	5.07	55.3
7.001	S-R13-28	S-R13-29	36.898	0.600	58.155	57.866	0.289	127.7	525	6.41	50.1
5.005	S-R13-29	S-R13-30	52.798	0.600	57.716	57.637	0.079	668.3	675	7.29	47.0
9.000	S-R13-30A	S-R13-30	17.252	0.600	58.313	58.151	0.162	106.5	300	5.19	54.8
5.006	S-R13-30	S-R13-31	9.937	0.600	57.637	57.622	0.015	662.5	675	7.35	46.8

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)
2.002	1.006	40.0	26.2	1.685	1.504	0.142	0.0	133	1.072
2.003	1.002	39.8	25.6	1.504	1.209	0.142	0.0	131	1.062
2.004	3.551	141.2	26.5	1.132	2.275	0.151	0.0	65	2.734
2.005	2.164	86.1	33.9	2.275	2.382	0.197	0.0	98	2.039
1.004	2.125	337.9	88.8	2.382	2.519	0.519	0.0	157	1.803
1.005	1.573	250.2	92.5	2.519	2.569	0.554	0.0	189	1.461
1.006	1.985	315.8	100.7	2.569	2.458	0.611	0.0	174	1.775
1.007	1.597	254.0	123.0	2.458	2.298	0.654	0.0	221	1.586
1.008	1.883	299.5	137.3	2.298	2.160	0.757	0.0	214	1.845
1.009	1.103	175.4	140.4	2.160	2.103	0.776	0.0	305	1.220
4.000	2.374	94.4	24.6	1.175	2.102	0.135	0.0	78	2.000
1.010	1.398	302.7	180.3	2.102	1.667	1.036	0.0	292	1.457
5.000	1.303	51.8	16.1	1.250	1.348	0.085	0.0	86	1.152
5.001	2.122	84.4	16.9	1.348	1.956	0.091	0.0	68	1.668
6.000	2.340	93.0	26.9	1.250	1.956	0.143	0.0	83	2.037
5.002	1.001	70.8	42.4	1.956	1.581	0.236	0.0	167	1.044
5.003	1.014	112.0	48.8	1.581	1.459	0.273	0.0	173	0.981
5.004	3.762	598.3	56.3	1.459	1.577	0.316	0.0	92	2.395
7.000	3.350	532.9	15.8	1.250	1.526	0.090	0.0	52	1.525
8.000	2.518	100.1	2.9	1.250	1.526	0.015	0.0	26	1.118
7.001	1.981	428.7	39.6	1.526	1.577	0.230	0.0	107	1.260
5.005	1.006	360.0	98.3	1.577	1.505	0.609	0.0	240	0.862
9.000	1.523	107.6	0.0	0.950	1.366	0.000	0.0	0	0.000
5.006	1.011	361.6	117.0	1.505	1.632	0.728	0.0	263	0.906

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)
5.007	S-R13-31	S-R13-32	58.718	0.600	57.622	57.535	0.087	674.9	675	8.32	43.9
5.008	S-R13-32	S-R13-33	44.351	0.600	57.674	57.300	0.374	118.6	750	9.06	41.9
1.011	S-R13-33	S-R13-34	12.308	0.600	57.300	57.220	0.080	153.9	750	9.10	41.8
1.012	S-R13-34	S-R13-35	18.856	0.600	57.220	57.170	0.050	377.1	750	9.35	41.4
1.013	S-R13-35	S-R13-36	26.307	0.600	57.170	57.100	0.070	375.8	750	9.63	40.5
1.014	S-R13-36	S-R13-46	9.302	0.600	57.100	57.027	0.073	127.4	750	9.73	40.3
10.000	S-R13-37	S-R13-38	9.962	0.600	59.005	58.840	0.165	60.4	500	5.04	55.4
10.001	S-R13-38	S-R13-39	38.927	0.600	58.840	58.678	0.162	240.3	500	5.32	54.3
10.002	S-R13-39	S-R13-40	12.441	0.600	58.678	58.519	0.159	78.2	500	5.37	54.1
10.003	S-R13-40	S-R13-41	39.815	0.600	58.519	58.297	0.222	179.3	225	6.06	51.4
10.004	S-R13-41	S-R13-42	16.936	0.600	58.297	58.196	0.101	167.7	500	6.16	51.0
10.005	S-R13-42	S-R13-43	13.773	0.600	58.196	58.041	0.155	88.9	500	6.22	50.8
10.006	S-R13-43	S-R13-44	12.102	0.600	58.041	57.820	0.221	54.8	500	6.26	50.6
10.007	S-R13-44	S-R13-45	30.147	0.600	57.820	57.667	0.153	197.0	150	6.57	49.5
10.008	S-R13-45	S-R13-46	5.901	0.600	57.667	57.627	0.040	147.5	150	6.62	49.3
1.015	S-R13-46	S-R13-HW1	31.729	0.600	57.027	56.650	0.377	84.2	750	10.25	39.1
11.001	S-R13-47	S-R13-49	20.736	0.600	60.700	60.600	0.100	207.4	300	5.34	54.2
12.000_1	S-R13-48	S-R13-49	17.256	0.600	61.086	60.675	0.411	42.0	225	5.22	54.7
11.002	S-R13-49	S-R13-50	49.123	0.600	60.600	60.242	0.358	137.2	300	5.99	51.6
11.003	S-R13-50	S-R13-51	13.371	0.600	60.242	60.185	0.057	234.6	300	6.10	51.2
11.004	S-R13-51	S-R13-52	13.609	0.600	60.105	60.050	0.055	247.4	375	6.14	51.1
11.005	S-R13-52	S-R13-53	17.612	0.600	60.050	59.750	0.300	58.7	375	7.46	46.5
11.006	S-R13-53	S-R13-54	7.768	0.600	59.750	59.500	0.250	31.1	375	7.59	46.1
11.007	S-R13-54	S-R13-55	15.086	0.600	59.500	58.900	0.600	25.1	375	7.84	45.3

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)
5.007	1.001	358.2	112.2	1.632	1.166	0.744	0.0	259	0.890
5.008	2.569	1134.7	122.0	0.952	1.667	0.848	0.0	164	1.707
1.011	2.253	995.5	282.7	1.667	1.490	1.970	0.0	272	1.954
1.012	1.435	633.8	290.7	1.490	1.136	2.045	0.0	356	1.405
1.013	1.437	635.0	284.4	1.136	0.642	2.045	0.0	351	1.399
1.014	2.477	1094.5	288.9	0.642	0.500	2.088	0.0	262	2.109
10.000	4.548	4547.5	1.0	-0.045	0.129	0.005	0.0	5	0.334
10.001	2.273	2273.0	1.0	0.129	0.023	0.005	0.0	8	0.221
10.002	3.993	3993.1	3.5	0.023	-0.015	0.019	0.0	12	0.509
10.003	0.973	38.7	3.6	0.260	0.790	0.021	0.0	46	0.612
10.004	2.723	2723.5	4.4	0.515	0.332	0.025	0.0	18	0.442
10.005	3.746	3746.1	4.4	0.332	0.184	0.025	0.0	15	0.548
10.006	4.776	4775.6	6.1	0.184	-0.007	0.035	0.0	15	0.701
10.007	0.712	12.6	5.9	0.343	0.603	0.035	0.0	72	0.701
10.008	0.825	14.6	5.9	0.603	0.500	0.035	0.0	67	0.782
1.015	3.051	1348.0	287.4	0.500	0.800	2.141	0.0	233	2.452
11.001	1.088	76.9	40.1	0.980	1.480	0.215	0.0	154	1.099
12.000_1	2.024	80.5	11.5	1.250	1.480	0.061	0.0	58	1.451
11.002	1.340	94.7	50.8	1.480	1.149	0.287	0.0	156	1.362
11.003	1.022	72.2	65.8	1.149	1.014	0.375	0.0	226	1.153
11.004	1.147	126.7	65.7	1.019	0.873	0.375	0.0	192	1.157
11.005	2.368	261.6	64.0	0.873	0.863	0.401	0.0	126	1.969
11.006	3.260	360.1	68.9	0.863	0.974	0.435	0.0	110	2.533
11.007	3.626	400.4	74.8	0.974	1.323	0.481	0.0	109	2.798

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)
11.008	S-R13-55	S-R13-58	9.242	0.600	58.900	58.800	0.100	92.4	375	7.99	44.8
12.000	S-R13-56	S-R13-57	9.689	0.600	59.230	59.170	0.060	161.5	225	5.16	54.9
13.002	S-R13-57	S-R13-58	9.430	0.600	59.020	58.875	0.145	65.0	375	5.25	54.6
11.009	S-R13-58	S-R13-59	12.017	0.600	58.800	58.550	0.250	48.1	375	8.19	44.2
11.010	S-R13-59	S-R13-60	32.183	0.600	58.550	57.991	0.559	57.6	375	8.72	42.8
11.011	S-R13-60	S-R13-61	42.925	0.600	57.991	57.275	0.716	60.0	375	9.43	41.0
11.012	S-R13-61	S-R13-62	19.762	0.600	57.200	56.875	0.325	60.8	450	9.53	40.7
11.013	S-R13-62	S-R13-HW2	21.418	0.600	56.800	56.650	0.150	142.8	450	9.69	40.4
15.000	S-R13-HW3	S-R13-64	8.316	0.600	56.500	56.451	0.049	169.7	225	5.14	55.0
15.001	S-R13-64	S-R13-HW4	8.316	0.600	56.451	56.401	0.050	166.3	225	5.28	54.5
14.000	J4	S-R13-62	10.583	0.600	57.634	57.150	0.484	21.9	100	5.11	55.2
13.000	J5	S-R13-56	21.273	0.600	59.670	59.230	0.440	48.3	150	5.24	54.6
11.000	J6	S-R13-47	28.072	0.600	61.161	60.700	0.461	60.9	150	5.36	54.1

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)
11.008	1.885	208.2	78.9	1.323	1.198	0.513	0.0	160	1.761
12.000	1.026	40.8	32.6	1.021	0.906	0.173	0.0	152	1.136
13.002	2.249	248.4	33.8	0.906	1.123	0.181	0.0	93	1.590
11.009	2.619	289.2	105.3	1.198	1.371	0.694	0.0	156	2.421
11.010	2.392	264.1	104.8	1.371	1.523	0.713	0.0	164	2.257
11.011	2.343	258.8	109.7	1.523	1.687	0.779	0.0	170	2.251
11.012	2.610	415.2	122.2	1.687	1.659	0.875	0.0	167	2.282
11.013	1.699	270.2	128.4	1.734	1.100	0.926	0.0	218	1.679
15.000	1.001	39.8	0.0	1.475	1.524	0.000	0.0	0	0.000
15.001	1.011	40.2	0.0	1.524	1.870	0.000	0.0	0	0.000
14.000	1.658	13.0	7.0	1.250	1.734	0.037	0.0	52	1.684
13.000	1.450	25.6	15.2	0.656	1.096	0.081	0.0	83	1.509
11.000	1.291	22.8	13.9	0.650	1.130	0.075	0.0	85	1.353

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	32.925	169.7	225	ADOPTABLE	61.432	59.957	1.250	61.319	59.763	1.331
1.001	16.400	39.7	300	ADOPTABLE	61.319	59.688	1.331	60.997	59.275	1.422
1.002	34.716	257.2	450	ADOPTABLE	60.997	59.125	1.422	61.440	58.990	2.000
1.003	10.666	40.2	450	ADOPTABLE	61.440	58.990	2.000	61.557	58.725	2.382
2.000	14.638	168.3	225	ADOPTABLE	62.745	61.270	1.250	63.003	61.183	1.595
2.001	9.153	132.7	225	ADOPTABLE	63.003	61.183	1.595	63.024	61.114	1.685
3.000	14.408	32.3	225	ADOPTABLE	63.035	61.560	1.250	63.024	61.114	1.685

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S-R13-1	1200	Manhole	Adoptable	S-R13-2	1200	Manhole	Adoptable
1.001	S-R13-2	1200	Manhole	Adoptable	S-R13-3	1200	Manhole	Adoptable
1.002	S-R13-3	1200	Manhole	Adoptable	S-R13-4	1350	Manhole	Adoptable
1.003	S-R13-4	1350	Manhole	Adoptable	S-R13-12	1200	Manhole	Adoptable
2.000	S-R13-5	1200	Manhole	Adoptable	S-R13-6	1200	Manhole	Adoptable
2.001	S-R13-6	1200	Manhole	Adoptable	S-R13-8	1200	Manhole	Adoptable
3.000	S-R13-7	1200	Manhole	Adoptable	S-R13-8	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)
2.002	10.066	167.8	225	ADOPTABLE	63.024	61.114	1.685	62.783	61.054	1.504
2.003	18.793	169.3	225	ADOPTABLE	62.783	61.054	1.504	62.377	60.943	1.209
2.004	22.227	13.7	225	ADOPTABLE	62.377	61.020	1.132	61.900	59.400	2.275
2.005	16.539	36.8	225	ADOPTABLE	61.900	59.400	2.275	61.557	58.950	2.382
1.004	5.952	91.6	450	ADOPTABLE	61.557	58.725	2.382	61.629	58.660	2.519
1.005	29.105	166.3	450	ADOPTABLE	61.629	58.660	2.519	61.504	58.485	2.569
1.006	22.110	104.8	450	ADOPTABLE	61.504	58.485	2.569	61.182	58.274	2.458
1.007	24.211	161.4	450	ADOPTABLE	61.182	58.274	2.458	60.872	58.124	2.298
1.008	32.018	116.4	450	ADOPTABLE	60.872	58.124	2.298	60.459	57.849	2.160
1.009	6.722	336.1	450	ADOPTABLE	60.459	57.849	2.160	60.382	57.829	2.103
4.000	38.772	30.6	225	ADOPTABLE	60.723	59.323	1.175	60.382	58.055	2.102
1.010	58.618	254.9	525	ADOPTABLE	60.382	57.755	2.102	59.717	57.525	1.667
5.000	7.041	100.6	225	ADOPTABLE	60.425	58.950	1.250	60.453	58.880	1.348
5.001	13.185	38.2	225	ADOPTABLE	60.453	58.880	1.348	60.716	58.535	1.956
6.000	18.890	31.5	225	ADOPTABLE	60.610	59.135	1.250	60.716	58.535	1.956
5.002	32.722	244.2	300	ADOPTABLE	60.716	58.460	1.956	60.207	58.326	1.581
5.003	9.162	315.9	375	ADOPTABLE	60.207	58.251	1.581	60.056	58.222	1.459
5.004	6.049	29.4	450	ADOPTABLE	60.056	58.147	1.459	59.968	57.941	1.577
7.000	23.564	37.0	450	ADOPTABLE	60.567	58.867	1.250	60.206	58.230	1.526
8.000	11.837	27.2	225	ADOPTABLE	60.365	58.890	1.250	60.206	58.455	1.526
7.001	36.898	127.7	525	ADOPTABLE	60.206	58.155	1.526	59.968	57.866	1.577
5.005	52.798	668.3	675	ADOPTABLE	59.968	57.716	1.577	59.817	57.637	1.505
9.000	17.252	106.5	300	ADOPTABLE	59.563	58.313	0.950	59.817	58.151	1.366
5.006	9.937	662.5	675	ADOPTABLE	59.817	57.637	1.505	59.929	57.622	1.632
5.007	58.718	674.9	675	ADOPTABLE	59.929	57.622	1.632	59.376	57.535	1.166

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.002	S-R13-8	1200	Manhole	Adoptable	S-R13-9	1200	Manhole	Adoptable
2.003	S-R13-9	1200	Manhole	Adoptable	S-R13-10	1200	Manhole	Adoptable
2.004	S-R13-10	1200	Manhole	Adoptable	S-R13-11	1200	Manhole	Adoptable
2.005	S-R13-11	1200	Manhole	Adoptable	S-R13-12	1200	Manhole	Adoptable
1.004	S-R13-12	1200	Manhole	Adoptable	S-R13-13	1200	Manhole	Adoptable
1.005	S-R13-13	1200	Manhole	Adoptable	S-R13-14	1350	Manhole	Adoptable
1.006	S-R13-14	1350	Manhole	Adoptable	S-R13-15	1200	Manhole	Adoptable
1.007	S-R13-15	1200	Manhole	Adoptable	S-R13-16	1200	Manhole	Adoptable
1.008	S-R13-16	1200	Manhole	Adoptable	S-R13-17	1200	Manhole	Adoptable
1.009	S-R13-17	1200	Manhole	Adoptable	S-R13-19	1350	Manhole	Adoptable
4.000	S-R13-18	1200	Manhole	Adoptable	S-R13-19	1350	Manhole	Adoptable
1.010	S-R13-19	1350	Manhole	Adoptable	S-R13-33	1800	Manhole	Adoptable
5.000	S-R13-20	1200	Manhole	Adoptable	S-R13-21	1200	Manhole	Adoptable
5.001	S-R13-21	1200	Manhole	Adoptable	S-R13-23	1200	Manhole	Adoptable
6.000	S-R13-22	1200	Manhole	Adoptable	S-R13-23	1200	Manhole	Adoptable
5.002	S-R13-23	1200	Manhole	Adoptable	S-R13-24	1350	Manhole	Adoptable
5.003	S-R13-24	1350	Manhole	Adoptable	S-R13-25	1350	Manhole	Adoptable
5.004	S-R13-25	1350	Manhole	Adoptable	S-R13-29	1500	Manhole	Adoptable
7.000	S-R13-26	1350	Manhole	Adoptable	S-R13-28	1500	Manhole	Adoptable
8.000	S-R13-27	1200	Manhole	Adoptable	S-R13-28	1500	Manhole	Adoptable
7.001	S-R13-28	1500	Manhole	Adoptable	S-R13-29	1500	Manhole	Adoptable
5.005	S-R13-29	1500	Manhole	Adoptable	S-R13-30	1500	Manhole	Adoptable
9.000	S-R13-30A	1200	Manhole	Adoptable	S-R13-30	1500	Manhole	Adoptable
5.006	S-R13-30	1500	Manhole	Adoptable	S-R13-31	1500	Manhole	Adoptable
5.007	S-R13-31	1500	Manhole	Adoptable	S-R13-32	1800	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)
5.008	44.351	118.6	750	ADOPTABLE	59.376	57.674	0.952	59.717	57.300	1.667
1.011	12.308	153.9	750	ADOPTABLE	59.717	57.300	1.667	59.460	57.220	1.490
1.012	18.856	377.1	750	ADOPTABLE	59.460	57.220	1.490	59.056	57.170	1.136
1.013	26.307	375.8	750	ADOPTABLE	59.056	57.170	1.136	58.492	57.100	0.642
1.014	9.302	127.4	750	ADOPTABLE	58.492	57.100	0.642	58.277	57.027	0.500
10.000	9.962	60.4	500	DRY SWALE	59.460	59.005	-0.045	59.469	58.840	0.129
10.001	38.927	240.3	500	DRY SWALE	59.469	58.840	0.129	59.201	58.678	0.023
10.002	12.441	78.2	500	DRY SWALE	59.201	58.678	0.023	59.004	58.519	-0.015
10.003	39.815	179.3	225	ADOPTABLE	59.004	58.519	0.260	59.312	58.297	0.790
10.004	16.936	167.7	500	DRY SWALE	59.312	58.297	0.515	59.028	58.196	0.332
10.005	13.773	88.9	500	DRY SWALE	59.028	58.196	0.332	58.725	58.041	0.184
10.006	12.102	54.8	500	DRY SWALE	58.725	58.041	0.184	58.313	57.820	-0.007
10.007	30.147	197.0	150	ADOPTABLE	58.313	57.820	0.343	58.420	57.667	0.603
10.008	5.901	147.5	150	ADOPTABLE	58.420	57.667	0.603	58.277	57.627	0.500
1.015	31.729	84.2	750	ADOPTABLE	58.277	57.027	0.500	58.200	56.650	0.800
11.001	20.736	207.4	300	ADOPTABLE	61.980	60.700	0.980	62.380	60.600	1.480
12.000_1	17.256	42.0	225	ADOPTABLE	62.561	61.086	1.250	62.380	60.675	1.480
11.002	49.123	137.2	300	ADOPTABLE	62.380	60.600	1.480	61.691	60.242	1.149
11.003	13.371	234.6	300	ADOPTABLE	61.691	60.242	1.149	61.499	60.185	1.014
11.004	13.609	247.4	375	ADOPTABLE	61.499	60.105	1.019	61.298	60.050	0.873
11.005	17.612	58.7	375	ADOPTABLE	61.298	60.050	0.873	60.988	59.750	0.863
11.006	7.768	31.1	375	ADOPTABLE	60.988	59.750	0.863	60.849	59.500	0.974
11.007	15.086	25.1	375	ADOPTABLE	60.849	59.500	0.974	60.598	58.900	1.323
11.008	9.242	92.4	375	ADOPTABLE	60.598	58.900	1.323	60.373	58.800	1.198
12.000	9.689	161.5	225	ADOPTABLE	60.476	59.230	1.021	60.301	59.170	0.906

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
5.008	S-R13-32	1800	Manhole	Adoptable	S-R13-33	1800	Manhole	Adoptable
1.011	S-R13-33	1800	Manhole	Adoptable	S-R13-34	1800	Manhole	Adoptable
1.012	S-R13-34	1800	Manhole	Adoptable	S-R13-35	1800	Manhole	Adoptable
1.013	S-R13-35	1800	Manhole	Adoptable	S-R13-36	1800	Manhole	Adoptable
1.014	S-R13-36	1800	Manhole	Adoptable	S-R13-46	1800	Manhole	Adoptable
10.000	S-R13-37		Junction		S-R13-38		Junction	
10.001	S-R13-38		Junction		S-R13-39		Junction	
10.002	S-R13-39		Junction		S-R13-40		Junction	
10.003	S-R13-40		Junction		S-R13-41		Junction	
10.004	S-R13-41		Junction		S-R13-42		Junction	
10.005	S-R13-42		Junction		S-R13-43		Junction	
10.006	S-R13-43		Junction		S-R13-44	1200	Manhole	Adoptable
10.007	S-R13-44	1200	Manhole	Adoptable	S-R13-45	1200	Manhole	Adoptable
10.008	S-R13-45	1200	Manhole	Adoptable	S-R13-46	1800	Manhole	Adoptable
1.015	S-R13-46	1800	Manhole	Adoptable	S-R13-HW1		Junction	
11.001	S-R13-47	1200	Manhole	Adoptable	S-R13-49	1200	Manhole	Adoptable
12.000_1	S-R13-48	1200	Manhole	Adoptable	S-R13-49	1200	Manhole	Adoptable
11.002	S-R13-49	1200	Manhole	Adoptable	S-R13-50	1200	Manhole	Adoptable
11.003	S-R13-50	1200	Manhole	Adoptable	S-R13-51	1200	Manhole	Adoptable
11.004	S-R13-51	1200	Manhole	Adoptable	S-R13-52	1350	Manhole	Adoptable
11.005	S-R13-52	1350	Manhole	Adoptable	S-R13-53	1350	Manhole	Adoptable
11.006	S-R13-53	1350	Manhole	Adoptable	S-R13-54	1350	Manhole	Adoptable
11.007	S-R13-54	1350	Manhole	Adoptable	S-R13-55	1350	Manhole	Adoptable
11.008	S-R13-55	1350	Manhole	Adoptable	S-R13-58	1350	Manhole	Adoptable
12.000	S-R13-56	1200	Manhole	Adoptable	S-R13-57	1200	Manhole	Adoptable

Pipeline Schedule

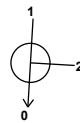
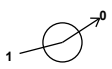
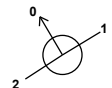
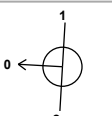
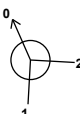
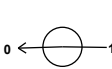
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
13.002	9.430	65.0	375	ADOPTABLE	60.301	59.020	0.906	60.373	58.875	1.123
11.009	12.017	48.1	375	ADOPTABLE	60.373	58.800	1.198	60.296	58.550	1.371
11.010	32.183	57.6	375	ADOPTABLE	60.296	58.550	1.371	59.889	57.991	1.523
11.011	42.925	60.0	375	ADOPTABLE	59.889	57.991	1.523	59.337	57.275	1.687
11.012	19.762	60.8	450	ADOPTABLE	59.337	57.200	1.687	58.984	56.875	1.659
11.013	21.418	142.8	450	ADOPTABLE	58.984	56.800	1.734	58.200	56.650	1.100
15.000	8.316	169.7	225	ADOPTABLE	58.200	56.500	1.475	58.200	56.451	1.524
15.001	8.316	166.3	225	ADOPTABLE	58.200	56.451	1.524	58.496	56.401	1.870
14.000	10.583	21.9	100	ADOPTABLE	58.984	57.634	1.250	58.984	57.150	1.734
13.000	21.273	48.3	150	ADOPTABLE	60.476	59.670	0.656	60.476	59.230	1.096
11.000	28.072	60.9	150	ADOPTABLE	61.961	61.161	0.650	61.980	60.700	1.130

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
13.002	S-R13-57	1200	Manhole	Adoptable	S-R13-58	1350	Manhole	Adoptable
11.009	S-R13-58	1350	Manhole	Adoptable	S-R13-59	1350	Manhole	Adoptable
11.010	S-R13-59	1350	Manhole	Adoptable	S-R13-60	1350	Manhole	Adoptable
11.011	S-R13-60	1350	Manhole	Adoptable	S-R13-61	1350	Manhole	Adoptable
11.012	S-R13-61	1350	Manhole	Adoptable	S-R13-62	1350	Manhole	Adoptable
11.013	S-R13-62	1350	Manhole	Adoptable	S-R13-HW2		Junction	
15.000	S-R13-HW3		Junction		S-R13-64	1500	Manhole	Adoptable
15.001	S-R13-64	1500	Manhole	Adoptable	S-R13-HW4		Junction	
14.000	J4		Junction		S-R13-62	1350	Manhole	Adoptable
13.000	J5		Junction		S-R13-56	1200	Manhole	Adoptable
11.000	J6		Junction		S-R13-47	1200	Manhole	Adoptable

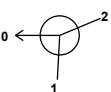
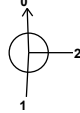
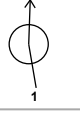
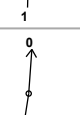
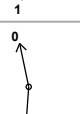
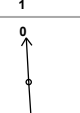
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-1	482682.490	167665.912	61.432	1.475	1200				
						0	1.000	59.957	225
S-R13-2	482664.534	167693.510	61.319	1.631	1200				
						0	1.001	59.688	300
S-R13-3	482655.604	167707.265	60.997	1.872	1200				
						0	1.002	59.125	450
S-R13-26	482625.481	167688.044	60.567	1.700	1350				
						0	7.000	58.867	450
S-R13-27	482602.649	167701.239	60.365	1.475	1200				
						0	8.000	58.890	225

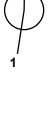
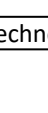
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R13-28	482601.957	167689.422	60.206	2.051	1500		1	8.000	58.455	225
						2	7.000	58.230	450	
						0	7.001	58.155	525	
S-R13-20	482599.655	167600.285	60.425	1.475	1200		0	5.000	58.950	225
S-R13-21	482606.473	167602.044	60.453	1.573	1200		1	5.000	58.880	225
							0	5.001	58.880	225
S-R13-22	482633.689	167619.009	60.610	1.475	1200		0	6.000	59.135	225
							1	6.000	58.535	225
S-R13-23	482617.530	167609.226	60.716	2.256	1200		2	5.001	58.535	225
							0	5.002	58.460	300
							1	5.002	58.326	300
S-R13-24	482601.288	167636.705	60.207	1.956	1350		0	5.003	58.251	375
							1	5.003	58.222	375
S-R13-25	482599.445	167646.548	60.056	1.909	1350		0	5.004	58.147	450
							1	7.001	57.866	525
S-R13-29	482599.798	167652.587	59.968	2.252	1500		2	5.004	57.941	450
							0	5.005	57.716	675
							1	9.000	58.151	300
S-R13-30	482545.531	167655.610	59.817	2.180	1500		2	5.005	57.637	675
							0	5.006	57.637	675
							1	5.006	57.622	675
S-R13-31	482541.843	167663.968	59.929	2.307	1500		1	5.006	57.622	675
							0	5.007	57.622	675
S-R13-32	482545.518	167725.552	59.376	1.841	1800		1	5.007	57.535	675
							0	5.008	57.674	750
S-R13-15	482668.730	167771.287	61.182	2.908	1200		1	1.006	58.274	450
							0	1.007	58.274	450
S-R13-16	482644.530	167770.565	60.872	2.748	1200		1	1.007	58.124	450
							0	1.008	58.124	450

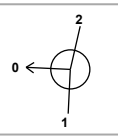
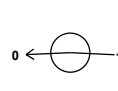
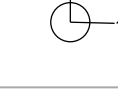
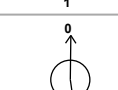
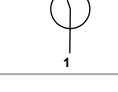
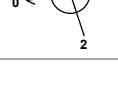
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R13-17	482612.532	167769.441	60.459	2.610	1200		1	1.008	57.849	450
						0	1.009	57.849	450	
S-R13-18	482604.241	167728.132	60.723	1.400	1200		0	4.000	59.323	225
S-R13-19	482606.330	167766.848	60.382	2.627	1350		1	4.000	58.055	225
						2	1.009	57.829	450	
S-R13-33	482547.712	167766.870	59.717	2.417	1800		0	1.010	57.755	525
						1	5.008	57.300	750	
S-R13-34	482547.289	167779.171	59.460	2.240	1800		2	1.010	57.525	525
						0	1.011	57.300	750	
S-R13-35	482547.289	167779.171	59.460	2.240	1800		1	1.011	57.220	750
						0	1.012	57.220	750	
S-R13-36	482544.118	167797.758	59.056	1.886	1800		1	1.012	57.170	750
						0	1.013	57.170	750	
S-R13-37	482545.026	167824.049	58.492	1.392	1800		1	1.013	57.100	750
						0	1.014	57.100	750	
S-R13-38	482535.440	167670.797	59.460	0.455			0	10.000	59.005	500
S-R13-39	482534.749	167680.727	59.469	0.629			1	10.000	58.840	500
						0	10.001	58.840	500	
S-R13-40	482537.546	167719.548	59.201	0.523			1	10.001	58.678	500
						0	10.002	58.678	500	
S-R13-41	482538.298	167731.954	59.004	0.485			1	10.002	58.519	500
						0	10.003	58.519	225	
S-R13-43	482541.133	167771.668	59.312	1.015			1	10.003	58.297	225
						0	10.004	58.297	500	
S-R13-43	482536.139	167801.942	58.725	0.684			1	10.005	58.041	500
						0	10.006	58.041	500	

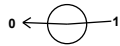
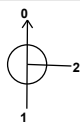
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-44	482535.475	167814.026	58.313	0.493	1200	 1	10.006	57.820	500
S-R13-45	482536.734	167825.000	58.420	0.753	1200	 1	10.007	57.820	150
S-R13-46	482541.743	167832.752	58.277	1.250	1800	 0	10.007	57.667	150
S-R13-46	482541.743	167832.752	58.277	1.250	1800	 1	10.008	57.667	150
S-R13-46	482541.743	167832.752	58.277	1.250	1800	 2	10.008	57.627	150
S-R13-46	482541.743	167832.752	58.277	1.250	1800	 2	1.014	57.027	750
S-R13-46	482541.743	167832.752	58.277	1.250	1800	 0	1.015	57.027	750
S-R13-HW1	482568.056	167850.638	58.200	1.550		 1	1.015	56.650	750
S-R13-5	482761.028	167731.034	62.745	1.475	1200	 0			
S-R13-6	482756.212	167717.267	63.003	1.820	1200	 0	2.000	61.270	225
S-R13-6	482756.212	167717.267	63.003	1.820	1200	 1	2.000	61.183	225
S-R13-6	482756.212	167717.267	63.003	1.820	1200	 0	2.001	61.183	225
S-R13-7	482741.232	167699.436	63.035	1.475	1200	 0			
S-R13-7	482741.232	167699.436	63.035	1.475	1200	 0	3.000	61.560	225
S-R13-8	482750.420	167710.168	63.024	1.910	1200	1	3.000	61.114	225
S-R13-8	482750.420	167710.168	63.024	1.910	1200	2	2.001	61.114	225
S-R13-8	482750.420	167710.168	63.024	1.910	1200	0	2.002	61.114	225
S-R13-9	482742.955	167715.804	62.783	1.729	1200	1	2.002	61.054	225
S-R13-9	482742.955	167715.804	62.783	1.729	1200	0	2.003	61.054	225
S-R13-10	482726.663	167725.172	62.377	1.434	1200	1	2.003	60.943	225
S-R13-10	482726.663	167725.172	62.377	1.434	1200	0	2.004	61.020	225
S-R13-11	482705.747	167732.694	61.900	2.500	1200	1	2.004	59.400	225
S-R13-11	482705.747	167732.694	61.900	2.500	1200	0	2.005	59.400	225
S-R13-12	482689.542	167736.003	61.557	2.832	1200	1	2.005	58.950	225
S-R13-12	482689.542	167736.003	61.557	2.832	1200	2	1.003	58.725	450
S-R13-12	482689.542	167736.003	61.557	2.832	1200	0	1.004	58.725	450
S-R13-13	482690.445	167741.886	61.629	2.969	1200	1	1.004	58.660	450
S-R13-13	482690.445	167741.886	61.629	2.969	1200	0	1.005	58.660	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R13-47	482771.654	167800.763	61.980	1.280	1200		1	11.000	60.700	150
S-R13-48	482766.227	167763.957	62.561	1.475	1200		0	11.001	60.700	300
S-R13-49	482767.027	167780.550	62.380	1.780	1200		1	12.000_1	61.086	225
S-R13-50	482717.958	167782.844	61.691	1.449	1200		2	12.000_1	60.675	225
S-R13-51	482704.600	167782.262	61.499	1.394	1200		1	11.001	60.600	300
S-R13-52	482690.995	167782.597	61.298	1.248	1350		0	11.002	60.600	300
S-R13-53	482691.042	167800.209	60.988	1.238	1350		1	11.002	60.242	300
S-R13-54	482689.944	167807.899	60.849	1.349	1350		0	11.003	60.242	300
S-R13-55	482690.124	167822.984	60.598	1.698	1350		1	11.003	60.185	300
S-R13-56	482703.334	167841.902	60.476	1.246	1200		0	11.004	60.105	375
S-R13-57	482695.628	167836.029	60.301	1.281	1200		1	11.004	60.050	375
S-R13-58	482687.221	167831.758	60.373	1.573	1350		0	11.005	60.050	375
S-R13-59	482690.995	167782.597	61.298	1.248	1350		1	11.005	59.750	375
S-R13-60	482689.944	167807.899	60.849	1.349	1350		0	11.006	59.750	375
S-R13-61	482690.124	167822.984	60.598	1.698	1350		1	11.006	59.500	375
S-R13-62	482703.334	167841.902	60.476	1.246	1200		0	11.007	59.500	375
S-R13-63	482695.628	167836.029	60.301	1.281	1200		1	11.007	58.900	375
S-R13-64	482687.221	167831.758	60.373	1.573	1350		0	11.008	58.900	375
S-R13-65	482675.338	167829.966	60.296	1.746	1350		1	13.000	59.230	150
S-R13-66	482703.334	167841.902	60.476	1.246	1200		0	12.000	59.230	225
S-R13-67	482695.628	167836.029	60.301	1.281	1200		1	12.000	59.170	225
S-R13-68	482687.221	167831.758	60.373	1.573	1350		0	13.002	59.020	375
S-R13-69	482675.338	167829.966	60.296	1.746	1350		1	13.002	58.875	375
S-R13-70	482675.338	167829.966	60.296	1.746	1350		2	11.008	58.800	375
S-R13-71	482675.338	167829.966	60.296	1.746	1350		0	11.009	58.800	375
S-R13-72	482675.338	167829.966	60.296	1.746	1350		1	11.009	58.550	375
S-R13-73	482675.338	167829.966	60.296	1.746	1350		0	11.010	58.550	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-60	482643.216	167827.982	59.889	1.898	1350		1 11.010	57.991	375
						0	11.011	57.991	375
S-R13-61	482600.386	167825.133	59.337	2.137	1350		1 11.011	57.275	375
						0	11.012	57.200	450
S-R13-62	482580.637	167825.847	58.984	2.184	1350		1 14.000 2 11.012	57.150 56.875	100 450
						0	11.013	56.800	450
S-R13-HW2	482580.801	167849.375	58.200	1.550			1 11.013	56.650	450
S-R13-HW3	482563.421	167872.987	58.200	1.700			0		
						0	15.000	56.500	225
S-R13-64	482561.362	167879.919	58.200	1.749	1500		1 15.000	56.451	225
						0	15.001	56.451	225
S-R13-HW4	482559.664	167885.638	58.496	2.095			1 15.001	56.401	225
S-R13-4	482684.397	167726.660	61.440	2.450	1350		1 1.002	58.990	450
						0	1.003	58.990	450
S-R13-14	482690.838	167770.988	61.504	3.019	1350		1 1.005	58.485	450
						0	1.006	58.485	450
S-R13-42	482537.886	167788.284	59.028	0.832			1 10.004	58.196	500
						0	10.005	58.196	500
S-R13-30A	482544.571	167638.385	59.563	1.250	1200		0 9.000	58.313	300
J4	482580.570	167815.264	58.984	1.350			0 14.000	57.634	100
J5	482724.386	167838.844	60.476	0.806			0 13.000	59.670	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
J6	482753.089	167821.819	61.961	0.800			0	11.000	61.161	150

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	0.950	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.950	Additional Storage (m³/ha)	0.0		

Storm Durations

60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	0	0	0
100	40	0	0

Node S-R13-HW2 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.650	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.450		

Node S-R13-HW1 Online Orifice Control

Flap Valve	x	Invert Level (m)	56.650	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.750		

Node S-R13-64 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	56.451	Product Number	CTL-SHE-0163-1400-1443-1400
Design Depth (m)	1.443	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	14.0	Min Node Diameter (mm)	1500

Node S-R13-HW3 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	29.194
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.500	Main Channel Slope (1:X)	195.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.035

Inlets

S-R13-HW2	S-R13-HW1
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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1573.9	1573.9	1.700	3086.1	3991.6

Node J4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.634	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.400
Safety Factor	2.0	Width (m)	13.900	Inf Depth (m)	
Porosity	0.30	Length (m)	27.000		

Node J5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	59.670	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	14	Depth (m)	0.400
Safety Factor	2.0	Width (m)	17.300	Inf Depth (m)	
Porosity	0.30	Length (m)	23.400		

Node J6 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	61.161	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	9	Depth (m)	
Safety Factor	2.0	Width (m)	17.400	Inf Depth (m)	
Porosity	0.30	Length (m)	21.400		

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-1	33	60.027	0.070	8.1	0.0790	0.0000	OK
60 minute summer	S-R13-2	33	59.810	0.122	53.1	0.1378	0.0000	OK
60 minute summer	S-R13-3	33	59.321	0.196	77.0	0.2219	0.0000	OK
60 minute summer	S-R13-26	33	58.941	0.074	29.4	0.1054	0.0000	OK
60 minute summer	S-R13-27	33	58.925	0.035	4.9	0.0393	0.0000	OK
60 minute summer	S-R13-28	33	58.301	0.146	75.0	0.2575	0.0000	OK
60 minute summer	S-R13-20	32	59.078	0.128	27.7	0.1451	0.0000	OK
60 minute summer	S-R13-21	32	58.974	0.094	29.5	0.1059	0.0000	OK
60 minute summer	S-R13-22	32	59.247	0.112	46.5	0.1268	0.0000	OK
60 minute summer	S-R13-23	33	58.739	0.279	76.7	0.3150	0.0000	OK
60 minute summer	S-R13-24	33	58.511	0.260	88.0	0.3719	0.0000	OK
60 minute summer	S-R13-25	33	58.302	0.155	102.0	0.2219	0.0000	OK
60 minute summer	S-R13-29	34	58.125	0.409	197.2	0.7228	0.0000	OK
60 minute summer	S-R13-30	34	58.074	0.437	230.8	0.7729	0.0000	OK
60 minute summer	S-R13-31	35	58.039	0.417	235.0	0.7371	0.0000	OK
60 minute summer	S-R13-32	35	57.953	0.418	263.8	1.0634	0.0000	OK
60 minute summer	S-R13-15	34	58.671	0.397	208.1	0.4494	0.0000	OK
60 minute summer	S-R13-16	34	58.563	0.439	238.4	0.4964	0.0000	OK
60 minute summer	S-R13-17	34	58.347	0.498	238.7	0.5628	0.0000	SURCHARGED
60 minute summer	S-R13-18	33	59.430	0.107	43.8	0.1211	0.0000	OK
60 minute summer	S-R13-19	34	58.245	0.490	321.0	0.7010	0.0000	OK
60 minute summer	S-R13-33	35	57.969	0.669	592.9	1.7017	0.0000	OK
60 minute summer	S-R13-34	35	57.896	0.676	617.3	1.7196	0.0000	OK
60 minute summer	S-R13-35	35	57.778	0.608	618.2	1.5462	0.0000	OK
60 minute summer	S-R13-36	35	57.606	0.506	630.0	1.2867	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-1	1.000	S-R13-2	8.1	0.783	0.203	0.3393	
60 minute summer	S-R13-2	1.001	S-R13-3	53.1	2.093	0.300	0.4158	
60 minute summer	S-R13-3	1.002	S-R13-4	77.0	1.392	0.383	1.9256	
60 minute summer	S-R13-26	7.000	S-R13-28	29.4	1.793	0.055	0.3864	
60 minute summer	S-R13-27	8.000	S-R13-28	4.9	1.289	0.049	0.0450	
60 minute summer	S-R13-28	7.001	S-R13-29	75.0	1.231	0.175	2.8340	
60 minute summer	S-R13-20	5.000	S-R13-21	27.7	1.441	0.535	0.1373	
60 minute summer	S-R13-21	5.001	S-R13-23	29.5	1.394	0.350	0.3488	
60 minute summer	S-R13-22	6.000	S-R13-23	46.5	1.822	0.500	0.5430	
60 minute summer	S-R13-23	5.002	S-R13-24	76.0	1.227	1.074	2.0010	
60 minute summer	S-R13-24	5.003	S-R13-25	87.8	1.187	0.785	0.6767	
60 minute summer	S-R13-25	5.004	S-R13-29	101.9	2.299	0.170	0.3294	
60 minute summer	S-R13-29	5.005	S-R13-30	194.0	0.824	0.539	12.4306	
60 minute summer	S-R13-30	5.006	S-R13-31	230.0	0.974	0.636	2.3652	
60 minute summer	S-R13-31	5.007	S-R13-32	231.8	1.063	0.647	13.6072	
60 minute summer	S-R13-32	5.008	S-R13-33	255.5	0.947	0.225	12.4944	
60 minute summer	S-R13-15	1.007	S-R13-16	204.8	1.499	0.806	3.6988	
60 minute summer	S-R13-16	1.008	S-R13-17	233.4	1.496	0.779	5.0565	
60 minute summer	S-R13-17	1.009	S-R13-19	238.8	1.508	1.361	1.0469	
60 minute summer	S-R13-18	4.000	S-R13-19	43.8	2.244	0.464	1.0423	
60 minute summer	S-R13-19	1.010	S-R13-33	318.1	1.625	1.051	11.8295	
60 minute summer	S-R13-33	1.011	S-R13-34	596.4	1.433	0.599	5.1215	
60 minute summer	S-R13-34	1.012	S-R13-35	618.2	1.541	0.975	7.5412	
60 minute summer	S-R13-35	1.013	S-R13-36	618.2	1.765	0.974	9.1792	
60 minute summer	S-R13-36	1.014	S-R13-46	628.3	2.178	0.574	2.6800	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-37	1	59.005	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10.000:50%	33	58.930	0.007	1.7	0.0000	0.0000	OK
60 minute summer	S-R13-38	34	58.852	0.012	1.7	0.0000	0.0000	OK
60 minute summer	S-R13-39	34	58.686	0.008	1.7	0.0000	0.0000	OK
60 minute summer	10.002:50%	33	58.616	0.017	6.2	0.0000	0.0000	OK
60 minute summer	S-R13-40	33	58.579	0.060	6.1	0.0000	0.0000	OK
60 minute summer	10.003:50%	33	58.474	0.066	6.6	0.0000	0.0000	OK
60 minute summer	S-R13-41	34	58.320	0.023	6.6	0.0000	0.0000	OK
60 minute summer	10.004:50%	34	58.272	0.025	8.0	0.0173	0.0000	OK
60 minute summer	S-R13-43	34	58.059	0.018	8.0	0.0000	0.0000	OK
60 minute summer	10.006:50%	34	57.952	0.022	11.0	0.0205	0.0000	OK
60 minute summer	S-R13-44	35	57.932	0.112	11.0	0.1263	0.0000	OK
60 minute summer	S-R13-45	35	57.774	0.107	10.9	0.1211	0.0000	OK
60 minute summer	S-R13-46	35	57.456	0.429	644.1	1.0923	0.0000	OK
60 minute summer	S-R13-HW1	36	57.378	0.728	641.3	0.0000	0.0000	OK
60 minute summer	S-R13-5	34	61.416	0.146	16.0	0.1648	0.0000	OK
60 minute summer	S-R13-6	34	61.405	0.222	16.2	0.2512	0.0000	OK
60 minute summer	S-R13-7	33	61.647	0.087	29.1	0.0979	0.0000	OK
60 minute summer	S-R13-8	34	61.392	0.278	44.4	0.3141	0.0000	SURCHARGED
60 minute summer	S-R13-9	34	61.288	0.234	43.9	0.2641	0.0000	SURCHARGED
60 minute summer	S-R13-10	34	61.109	0.166	46.6	0.1873	0.0000	OK
60 minute summer	S-R13-11	34	59.555	0.155	60.8	0.1752	0.0000	OK
60 minute summer	S-R13-12	33	59.044	0.319	166.0	0.3603	0.0000	OK
60 minute summer	S-R13-13	33	58.972	0.312	177.0	0.3529	0.0000	OK
60 minute summer	S-R13-47	34	61.043	0.343	64.3	0.3879	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-37	10.000	10.000:50%	0.0	0.000	0.000	0.0098	
60 minute summer	S-R13-37	10.000	S-R13-38	1.7	0.343	0.000	0.0256	
60 minute summer	S-R13-38	10.001	S-R13-39	1.7	0.322	0.001	0.2060	
60 minute summer	S-R13-39	10.002	10.002:50%	1.7	0.257	0.000	0.0427	
60 minute summer	S-R13-39	10.002	S-R13-40	6.1	0.258	0.002	0.1564	
60 minute summer	S-R13-40	10.003	10.003:50%	6.1	0.672	0.158	0.1808	
60 minute summer	S-R13-40	10.003	S-R13-41	6.6	1.192	0.170	0.1170	
60 minute summer	S-R13-41	10.004	10.004:50%	6.6	0.481	0.002	0.1161	
60 minute summer	S-R13-41	10.004	S-R13-42	8.0	0.602	0.003	0.1129	
60 minute summer	S-R13-43	10.006	10.006:50%	8.0	0.713	0.002	0.0683	
60 minute summer	S-R13-43	10.006	S-R13-44	11.0	0.245	0.002	0.3196	
60 minute summer	S-R13-44	10.007	S-R13-45	10.9	0.793	0.863	0.4148	
60 minute summer	S-R13-45	10.008	S-R13-46	10.8	0.855	0.744	0.0747	
60 minute summer	S-R13-46	1.015	S-R13-HW1	641.3	1.772	0.476	11.0357	
60 minute summer	S-R13-HW1	Flow through Pond	S-R13-HW3	471.2	0.121	0.002	998.7274	
60 minute summer	S-R13-5	2.000	S-R13-6	15.2	0.787	0.381	0.4892	
60 minute summer	S-R13-6	2.001	S-R13-8	17.2	0.484	0.381	0.3635	
60 minute summer	S-R13-7	3.000	S-R13-8	29.1	0.985	0.317	0.3878	
60 minute summer	S-R13-8	2.002	S-R13-9	43.9	1.103	1.096	0.4003	
60 minute summer	S-R13-9	2.003	S-R13-10	43.8	1.194	1.101	0.6680	
60 minute summer	S-R13-10	2.004	S-R13-11	46.6	2.146	0.330	0.4850	
60 minute summer	S-R13-11	2.005	S-R13-12	60.8	2.220	0.707	0.4531	
60 minute summer	S-R13-12	1.004	S-R13-13	165.8	1.397	0.491	0.7061	
60 minute summer	S-R13-13	1.005	S-R13-14	176.6	1.520	0.706	3.3824	
60 minute summer	S-R13-47	11.001	S-R13-49	62.5	1.103	0.812	1.4602	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-48	33	61.162	0.076	20.0	0.0860	0.0000	OK
60 minute summer	S-R13-49	34	60.960	0.360	85.5	0.4073	0.0000	SURCHARGED
60 minute summer	S-R13-50	34	60.641	0.399	109.7	0.4508	0.0000	SURCHARGED
60 minute summer	S-R13-51	34	60.367	0.262	109.8	0.2961	0.0000	OK
60 minute summer	S-R13-52	34	60.247	0.197	118.0	0.2817	0.0000	OK
60 minute summer	S-R13-53	34	59.939	0.189	127.9	0.2703	0.0000	OK
60 minute summer	S-R13-54	34	59.665	0.165	141.7	0.2362	0.0000	OK
60 minute summer	S-R13-55	33	59.210	0.310	151.9	0.4432	0.0000	OK
60 minute summer	S-R13-56	33	59.495	0.265	50.3	0.2993	0.0000	SURCHARGED
60 minute summer	S-R13-57	33	59.157	0.137	52.5	0.1552	0.0000	OK
60 minute summer	S-R13-58	33	59.092	0.292	204.3	0.4173	0.0000	OK
60 minute summer	S-R13-59	33	58.829	0.279	210.4	0.3990	0.0000	OK
60 minute summer	S-R13-60	34	58.292	0.301	231.4	0.4305	0.0000	OK
60 minute summer	S-R13-61	34	57.670	0.470	261.1	0.6725	0.0000	SURCHARGED
60 minute summer	S-R13-62	34	57.476	0.676	271.5	0.9673	0.0000	SURCHARGED
600 minute winter	S-R13-HW2	570	57.353	0.703	38.3	0.0000	0.0000	OK
480 minute winter	S-R13-HW3	472	57.314	0.814	83.4	0.0000	0.0000	SURCHARGED
480 minute winter	S-R13-64	480	57.307	0.856	14.1	1.5125	0.0000	SURCHARGED
1440 minute summer	S-R13-HW4	750	56.492	0.091	14.0	0.0000	0.0000	OK
60 minute summer	S-R13-4	33	59.136	0.146	97.6	0.2092	0.0000	OK
60 minute summer	S-R13-14	34	58.792	0.307	195.4	0.4393	0.0000	OK
60 minute summer	S-R13-42	34	58.217	0.021	8.0	0.0000	0.0000	OK
60 minute summer	S-R13-30A	1	58.313	0.000	0.0	0.0000	0.0000	OK
60 minute summer	J4	35	57.716	0.082	12.0	1.3943	0.0000	OK
60 minute summer	J5	35	59.786	0.116	26.4	3.5294	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-48	12.000_1	S-R13-49	20.0	1.297	0.248	0.4449	
60 minute summer	S-R13-49	11.002	S-R13-50	82.5	1.171	0.871	3.4592	
60 minute summer	S-R13-50	11.003	S-R13-51	109.8	1.569	1.520	0.8977	
60 minute summer	S-R13-51	11.004	S-R13-52	109.9	1.557	0.868	0.9575	
60 minute summer	S-R13-52	11.005	S-R13-53	117.4	2.060	0.449	1.0052	
60 minute summer	S-R13-53	11.006	S-R13-54	127.4	2.500	0.354	0.3972	
60 minute summer	S-R13-54	11.007	S-R13-55	141.5	1.952	0.353	1.0863	
60 minute summer	S-R13-55	11.008	S-R13-58	151.9	1.607	0.730	0.8749	
60 minute summer	S-R13-56	12.000	S-R13-57	50.1	1.274	1.227	0.3629	
60 minute summer	S-R13-57	13.002	S-R13-58	52.4	1.312	0.211	0.4828	
60 minute summer	S-R13-58	11.009	S-R13-59	204.0	2.273	0.705	1.0806	
60 minute summer	S-R13-59	11.010	S-R13-60	209.8	2.309	0.794	2.9360	
60 minute summer	S-R13-60	11.011	S-R13-61	230.8	2.527	0.892	4.4012	
60 minute summer	S-R13-61	11.012	S-R13-62	258.1	2.094	0.622	3.1312	
60 minute summer	S-R13-62	11.013	S-R13-HW2	270.9	1.710	1.002	3.3935	
60 minute summer	S-R13-HW2	Flow through Pond	S-R13-HW3	471.2	0.121	0.002	998.7274	
60 minute summer	S-R13-HW3	15.000	S-R13-64	14.8	0.470	0.373	0.3307	
1440 minute summer	S-R13-64	15.001	S-R13-HW4	14.0	0.907	0.348	0.1283	1084.2
60 minute summer	S-R13-4	1.003	S-R13-12	97.8	1.185	0.192	0.8778	
60 minute summer	S-R13-14	1.006	S-R13-15	194.3	1.530	0.615	2.9113	
60 minute summer	S-R13-42	10.005	S-R13-43	8.0	0.723	0.002	0.1532	
60 minute summer	S-R13-30A	9.000	S-R13-30	0.0	0.000	0.000	0.0000	
60 minute summer	J4	14.000	S-R13-62	10.5	1.702	0.807	0.0776	
60 minute summer	J5	13.000	S-R13-56	22.3	1.306	0.869	0.3434	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	J6	35	61.279	0.118	24.4	3.6530	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	J6	11.000	S-R13-47	21.0	1.229	0.919	0.4560	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-1	34	61.211	1.254	33.8	1.4178	0.0000	FLOOD RISK
60 minute summer	S-R13-2	34	61.171	1.483	94.5	1.6776	0.0000	FLOOD RISK
60 minute summer	S-R13-3	34	60.997	1.872	136.0	2.1172	7.5525	FLOOD
60 minute summer	S-R13-26	35	59.295	0.428	53.4	0.6120	0.0000	OK
60 minute summer	S-R13-27	35	59.315	0.425	9.0	0.4801	0.0000	SURCHARGED
60 minute summer	S-R13-28	35	59.295	1.140	136.0	2.0140	0.0000	SURCHARGED
60 minute summer	S-R13-20	35	60.049	1.099	50.4	1.2434	0.0000	SURCHARGED
60 minute summer	S-R13-21	35	59.972	1.092	50.6	1.2351	0.0000	SURCHARGED
60 minute summer	S-R13-22	35	60.309	1.174	84.6	1.3280	0.0000	SURCHARGED
60 minute summer	S-R13-23	35	59.839	1.379	128.8	1.5593	0.0000	SURCHARGED
60 minute summer	S-R13-24	35	59.384	1.133	145.7	1.6213	0.0000	SURCHARGED
60 minute summer	S-R13-25	35	59.303	1.156	176.7	1.6537	0.0000	SURCHARGED
60 minute summer	S-R13-29	35	59.261	1.545	319.0	2.7308	0.0000	SURCHARGED
60 minute summer	S-R13-30	35	59.183	1.546	366.5	2.7314	0.0000	SURCHARGED
60 minute summer	S-R13-31	35	59.138	1.516	373.9	2.6790	0.0000	SURCHARGED
60 minute summer	S-R13-32	35	59.014	1.479	424.6	3.7646	0.0000	SURCHARGED
60 minute summer	S-R13-15	34	60.523	2.249	286.7	2.5440	0.0000	SURCHARGED
60 minute summer	S-R13-16	34	60.263	2.139	339.3	2.4197	0.0000	SURCHARGED
60 minute summer	S-R13-17	34	59.796	1.947	347.7	2.2021	0.0000	SURCHARGED
60 minute summer	S-R13-18	34	60.484	1.161	79.7	1.3129	0.0000	FLOOD RISK
60 minute summer	S-R13-19	35	59.603	1.848	489.5	2.6448	0.0000	SURCHARGED
60 minute summer	S-R13-33	35	58.936	1.636	938.8	4.1633	0.0000	SURCHARGED
60 minute summer	S-R13-34	35	58.751	1.531	976.0	3.8968	0.0000	SURCHARGED
60 minute summer	S-R13-35	35	58.512	1.342	975.0	3.4149	0.0000	SURCHARGED
60 minute summer	S-R13-36	36	58.229	1.129	995.2	2.8728	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-1	1.000	S-R13-2	20.0	0.854	0.504	1.3095	
60 minute summer	S-R13-2	1.001	S-R13-3	94.7	2.288	0.535	1.1549	
60 minute summer	S-R13-3	1.002	S-R13-4	113.5	1.445	0.565	5.5005	
60 minute summer	S-R13-26	7.000	S-R13-28	53.2	1.800	0.100	3.6999	
60 minute summer	S-R13-27	8.000	S-R13-28	9.7	1.524	0.097	0.4708	
60 minute summer	S-R13-28	7.001	S-R13-29	125.9	1.221	0.294	7.9712	
60 minute summer	S-R13-20	5.000	S-R13-21	47.3	1.533	0.913	0.2800	
60 minute summer	S-R13-21	5.001	S-R13-23	47.2	1.384	0.559	0.5244	
60 minute summer	S-R13-22	6.000	S-R13-23	80.5	2.023	0.865	0.7513	
60 minute summer	S-R13-23	5.002	S-R13-24	123.9	1.759	1.750	2.3043	
60 minute summer	S-R13-24	5.003	S-R13-25	150.9	1.380	1.348	1.0105	
60 minute summer	S-R13-25	5.004	S-R13-29	168.7	2.268	0.282	0.9584	
60 minute summer	S-R13-29	5.005	S-R13-30	306.3	0.908	0.851	18.8477	
60 minute summer	S-R13-30	5.006	S-R13-31	365.7	1.060	1.011	3.5473	
60 minute summer	S-R13-31	5.007	S-R13-32	372.3	1.085	1.039	20.9610	
60 minute summer	S-R13-32	5.008	S-R13-33	423.9	0.963	0.374	19.5198	
60 minute summer	S-R13-15	1.007	S-R13-16	287.2	1.813	1.131	3.8361	
60 minute summer	S-R13-16	1.008	S-R13-17	337.0	2.127	1.125	5.0730	
60 minute summer	S-R13-17	1.009	S-R13-19	346.1	2.185	1.973	1.0651	
60 minute summer	S-R13-18	4.000	S-R13-19	72.9	2.238	0.772	1.5420	
60 minute summer	S-R13-19	1.010	S-R13-33	487.2	2.255	1.610	12.6634	
60 minute summer	S-R13-33	1.011	S-R13-34	937.9	2.131	0.942	5.4170	
60 minute summer	S-R13-34	1.012	S-R13-35	975.0	2.216	1.538	8.2989	
60 minute summer	S-R13-35	1.013	S-R13-36	973.8	2.213	1.534	11.5783	
60 minute summer	S-R13-36	1.014	S-R13-46	993.8	2.258	0.908	4.0940	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-37	1	59.005	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10.000:50%	33	58.933	0.011	3.2	0.0000	0.0000	OK
60 minute summer	S-R13-38	33	58.857	0.017	3.2	0.0000	0.0000	OK
60 minute summer	S-R13-39	34	58.690	0.012	3.2	0.0000	0.0000	OK
60 minute summer	10.002:50%	33	58.623	0.025	11.2	0.0000	0.0000	OK
60 minute summer	S-R13-40	33	58.601	0.082	11.2	0.0000	0.0000	OK
60 minute summer	10.003:50%	34	58.496	0.088	12.0	0.0000	0.0000	OK
60 minute summer	S-R13-41	34	58.329	0.032	12.0	0.0000	0.0000	OK
60 minute summer	10.004:50%	34	58.282	0.036	14.7	0.0345	0.0000	OK
60 minute summer	S-R13-43	40	58.128	0.087	34.5	0.0000	0.0000	OK
60 minute summer	10.006:50%	39	58.118	0.187	54.5	1.4896	0.0000	OK
60 minute summer	S-R13-44	39	58.126	0.306	40.0	0.3459	0.0000	FLOOD RISK
60 minute summer	S-R13-45	36	58.058	0.391	15.7	0.4424	0.0000	SURCHARGED
60 minute summer	S-R13-46	36	58.047	1.020	1007.4	2.5947	0.0000	FLOOD RISK
720 minute winter	S-R13-HW1	720	57.917	1.267	127.7	0.0000	0.0000	OK
60 minute summer	S-R13-5	36	62.649	1.379	29.1	1.5602	0.0000	FLOOD RISK
60 minute summer	S-R13-6	36	62.616	1.433	27.8	1.6208	0.0000	SURCHARGED
60 minute summer	S-R13-7	36	62.698	1.138	53.0	1.2874	0.0000	SURCHARGED
60 minute summer	S-R13-8	36	62.588	1.474	74.3	1.6670	0.0000	SURCHARGED
60 minute summer	S-R13-9	36	62.369	1.315	71.2	1.4870	0.0000	SURCHARGED
60 minute summer	S-R13-10	36	62.013	1.070	73.7	1.2096	0.0000	SURCHARGED
60 minute summer	S-R13-11	35	61.554	2.154	96.3	2.4361	0.0000	SURCHARGED
60 minute summer	S-R13-12	34	60.973	2.248	232.5	2.5426	0.0000	SURCHARGED
60 minute summer	S-R13-13	34	60.907	2.247	245.2	2.5413	0.0000	SURCHARGED
60 minute summer	S-R13-47	34	61.879	1.179	83.0	1.3333	0.0000	FLOOD RISK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-37	10.000	10.000:50%	0.0	0.000	0.000	0.0145	
60 minute summer	S-R13-37	10.000	S-R13-38	3.2	0.426	0.001	0.0380	
60 minute summer	S-R13-38	10.001	S-R13-39	3.2	0.406	0.001	0.3044	
60 minute summer	S-R13-39	10.002	10.002:50%	3.2	0.319	0.001	0.0631	
60 minute summer	S-R13-39	10.002	S-R13-40	11.2	0.318	0.003	0.2344	
60 minute summer	S-R13-40	10.003	10.003:50%	11.1	0.810	0.287	0.2734	
60 minute summer	S-R13-40	10.003	S-R13-41	12.0	1.416	0.311	0.1776	
60 minute summer	S-R13-41	10.004	10.004:50%	12.1	0.591	0.004	0.1730	
60 minute summer	S-R13-41	10.004	S-R13-42	14.7	0.742	0.005	0.1678	
60 minute summer	S-R13-43	10.006	10.006:50%	51.4	0.759	0.011	0.7380	
60 minute summer	S-R13-43	10.006	S-R13-44	40.0	0.258	0.008	1.9134	
60 minute summer	S-R13-44	10.007	S-R13-45	15.7	0.891	1.246	0.5307	
60 minute summer	S-R13-45	10.008	S-R13-46	16.1	0.950	1.107	0.1039	
60 minute summer	S-R13-46	1.015	S-R13-HW1	1005.7	2.285	0.746	13.9646	
60 minute summer	S-R13-HW1	Flow through Pond	S-R13-HW3	730.7	0.146	0.004	1827.1328	
60 minute summer	S-R13-5	2.000	S-R13-6	26.0	0.780	0.650	0.5822	
60 minute summer	S-R13-6	2.001	S-R13-8	25.8	0.649	0.573	0.3640	
60 minute summer	S-R13-7	3.000	S-R13-8	49.6	1.248	0.540	0.5730	
60 minute summer	S-R13-8	2.002	S-R13-9	71.2	1.790	1.779	0.4003	
60 minute summer	S-R13-9	2.003	S-R13-10	68.4	1.719	1.717	0.7474	
60 minute summer	S-R13-10	2.004	S-R13-11	79.2	2.100	0.561	0.8840	
60 minute summer	S-R13-11	2.005	S-R13-12	95.4	2.400	1.109	0.6578	
60 minute summer	S-R13-12	1.004	S-R13-13	226.6	1.430	0.671	0.9431	
60 minute summer	S-R13-13	1.005	S-R13-14	242.2	1.531	0.968	4.6115	
60 minute summer	S-R13-47	11.001	S-R13-49	69.6	1.112	0.905	1.4602	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-48	34	61.900	0.814	36.4	0.9204	0.0000	SURCHARGED
60 minute summer	S-R13-49	34	61.807	1.207	104.3	1.3653	0.0000	SURCHARGED
60 minute summer	S-R13-50	35	61.398	1.156	151.7	1.3076	0.0000	FLOOD RISK
60 minute summer	S-R13-51	35	61.088	0.983	150.7	1.1113	0.0000	SURCHARGED
60 minute summer	S-R13-52	35	60.981	0.931	162.1	1.3327	0.0000	SURCHARGED
60 minute summer	S-R13-53	35	60.828	1.078	177.7	1.5428	0.0000	FLOOD RISK
60 minute summer	S-R13-54	35	60.710	1.210	196.4	1.7310	0.0000	FLOOD RISK
60 minute summer	S-R13-55	35	60.485	1.585	212.1	2.2681	0.0000	FLOOD RISK
60 minute summer	S-R13-56	35	60.323	1.093	64.5	1.2365	0.0000	FLOOD RISK
60 minute summer	S-R13-57	35	60.290	1.270	65.3	1.4367	0.0000	FLOOD RISK
60 minute summer	S-R13-58	35	60.287	1.487	241.1	2.1273	0.0000	FLOOD RISK
60 minute summer	S-R13-59	35	59.987	1.437	250.8	2.0560	0.0000	SURCHARGED
60 minute summer	S-R13-60	35	59.335	1.344	285.6	1.9234	0.0000	SURCHARGED
60 minute summer	S-R13-61	35	58.274	1.074	337.9	1.5373	0.0000	SURCHARGED
60 minute summer	S-R13-62	35	57.949	1.149	344.8	1.6445	0.0000	SURCHARGED
600 minute winter	S-R13-HW2	600	57.818	1.168	64.4	0.0000	0.0000	OK
600 minute winter	S-R13-HW3	600	57.811	1.311	113.7	0.0000	0.0000	SURCHARGED
600 minute winter	S-R13-64	600	57.804	1.353	14.1	2.3912	0.0000	SURCHARGED
480 minute winter	S-R13-HW4	200	56.492	0.091	14.0	0.0000	0.0000	OK
60 minute summer	S-R13-4	34	60.990	2.000	151.0	2.8621	0.0000	SURCHARGED
60 minute summer	S-R13-14	34	60.726	2.241	271.7	3.2064	0.0000	SURCHARGED
60 minute summer	S-R13-42	34	58.226	0.030	14.7	0.0000	0.0000	OK
60 minute summer	S-R13-30A	35	59.181	0.868	24.9	0.9817	0.0000	SURCHARGED
60 minute summer	J4	42	57.888	0.254	26.7	13.4376	0.0000	SURCHARGED
60 minute summer	J5	40	60.043	0.373	67.5	31.1207	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R13-48	12.000_1	S-R13-49	33.4	1.270	0.415	0.6863	
60 minute summer	S-R13-49	11.002	S-R13-50	102.4	1.454	1.081	3.4592	
60 minute summer	S-R13-50	11.003	S-R13-51	150.7	2.140	2.085	0.9416	
60 minute summer	S-R13-51	11.004	S-R13-52	147.3	1.618	1.163	1.5010	
60 minute summer	S-R13-52	11.005	S-R13-53	158.6	2.106	0.606	1.9426	
60 minute summer	S-R13-53	11.006	S-R13-54	170.6	2.489	0.474	0.8568	
60 minute summer	S-R13-54	11.007	S-R13-55	194.5	1.931	0.486	1.6639	
60 minute summer	S-R13-55	11.008	S-R13-58	211.1	1.914	1.014	1.0194	
60 minute summer	S-R13-56	12.000	S-R13-57	61.5	1.546	1.507	0.3853	
60 minute summer	S-R13-57	13.002	S-R13-58	60.7	1.494	0.244	1.0401	
60 minute summer	S-R13-58	11.009	S-R13-59	240.9	2.266	0.833	1.3254	
60 minute summer	S-R13-59	11.010	S-R13-60	251.2	2.301	0.951	3.5497	
60 minute summer	S-R13-60	11.011	S-R13-61	285.1	2.585	1.102	4.7345	
60 minute summer	S-R13-61	11.012	S-R13-62	336.9	2.127	0.812	3.1312	
60 minute summer	S-R13-62	11.013	S-R13-HW2	338.2	2.135	1.251	3.3935	
60 minute summer	S-R13-HW2	Flow through Pond	S-R13-HW3	730.7	0.146	0.004	1827.1328	
60 minute summer	S-R13-HW3	15.000	S-R13-64	15.3	0.537	0.383	0.3307	
480 minute winter	S-R13-64	15.001	S-R13-HW4	14.0	0.907	0.348	0.1283	502.6
60 minute summer	S-R13-4	1.003	S-R13-12	141.2	1.224	0.277	1.6900	
60 minute summer	S-R13-14	1.006	S-R13-15	268.0	1.691	0.849	3.5032	
60 minute summer	S-R13-42	10.005	S-R13-43	14.7	0.892	0.004	0.5329	
60 minute summer	S-R13-30A	9.000	S-R13-30	-24.9	-0.443	-0.231	1.2149	
60 minute summer	J4	14.000	S-R13-62	10.2	1.737	0.781	0.0828	
60 minute summer	J5	13.000	S-R13-56	27.7	1.576	1.083	0.3745	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	J6	39	61.530	0.369	63.3	29.2965	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	J6	11.000	S-R13-47	25.2	1.446	1.104	0.4942	

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	9.999
CV	0.950	Preferred Cover Depth (m)	1.250
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	550.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S-R7-2			57.618	1200	482524.226	167866.135	1.436
S-R7-3	0.010	5.00	57.449	1200	482514.939	167871.941	1.404
S-R7-4	0.073	5.00	57.165	1200	482495.680	167873.537	1.362
J1	0.085	5.00	56.246		482364.150	167824.998	1.400
S-R7-6	0.017	5.00	56.817	1200	482472.463	167879.574	1.645
S-R7-7	0.064	5.00	56.422	1200	482443.802	167887.294	1.372
S-R7-8	0.010	5.00	56.278	1200	482430.234	167888.279	1.428
S-R7-9	0.037	5.00	56.130	1350	482416.179	167885.107	1.705
S-R7-10	0.070	5.00	55.888	1350	482395.177	167873.708	1.994
J2	0.113	5.00	56.417		482403.102	167849.510	1.400
S-R7-12	0.003	5.00	55.812	1350	482384.717	167863.074	2.041
S-R7-13	0.009	5.00	55.958	1350	482374.680	167849.063	2.232
S-R7-14	0.036	5.00	56.074	1350	482367.425	167839.928	2.379
J3	0.078	5.00	57.025		482466.069	167859.465	1.400
S-R7-HW			56.030		482330.139	167824.933	2.576
S-R7-1	0.045	5.00	57.820	1200	482529.642	167854.272	1.475
S-R7-11	0.050	5.00	56.417	1350	482396.176	167855.165	1.625
S-R7-5	0.078	5.00	57.025	1200	482469.292	167867.896	1.627
S-R7-15	0.083	5.00	56.246	1350	482348.558	167819.066	2.646
S-R7-16			56.193	1200	482347.750	167816.530	2.483
S-R7-17		5.00	56.057	1200	482342.649	167811.132	2.257

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	S-R7-1	S-R7-2	13.041	0.600	56.345	56.182	0.163	80.0	225	5.13	55.1
1.001	S-R7-2	S-R7-3	10.953	0.600	56.182	56.045	0.137	80.0	225	5.24	54.6
1.002	S-R7-3	S-R7-4	19.325	0.600	56.045	55.803	0.242	80.0	225	5.45	53.8
1.003	S-R7-4	S-R7-6	23.989	0.600	55.803	55.399	0.404	59.4	225	5.70	52.8
2.001	S-R7-5	S-R7-6	12.101	0.600	55.398	55.247	0.151	80.0	225	5.20	54.8
1.004	S-R7-6	S-R7-7	29.683	0.600	55.172	55.050	0.122	243.3	300	6.02	51.5

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	1.463	58.2	8.6	1.250	1.211	0.045	0.0	58	1.057
1.001	1.463	58.2	8.5	1.211	1.179	0.045	0.0	58	1.048
1.002	1.463	58.2	10.2	1.179	1.137	0.055	0.0	64	1.108
1.003	1.700	67.6	23.2	1.137	1.193	0.128	0.0	91	1.547
2.001	1.463	58.2	29.4	1.402	1.345	0.156	0.0	113	1.465
1.004	1.003	70.9	53.2	1.345	1.072	0.301	0.0	194	1.097

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)
1.005	S-R7-7	S-R7-8	13.604	0.600	55.202	54.850	0.352	38.6	300	6.16	51.0
1.006	S-R7-8	S-R7-9	14.408	0.600	54.850	54.500	0.350	41.2	300	6.25	50.7
1.007	S-R7-9	S-R7-10	23.896	0.600	54.425	53.894	0.531	45.0	375	6.64	49.2
1.008	S-R7-10	S-R7-12	14.916	0.600	53.894	53.846	0.048	310.8	375	6.72	48.9
3.001	S-R7-11	S-R7-12	13.923	0.600	54.792	53.953	0.839	16.6	300	6.95	48.1
1.009	S-R7-12	S-R7-13	17.235	0.600	53.771	53.726	0.045	383.0	450	5.28	54.4
1.010	S-R7-13	S-R7-14	11.665	0.600	53.726	53.695	0.031	376.3	450	5.48	53.7
1.011	S-R7-14	S-R7-15	36.889	0.600	53.696	53.600	0.096	384.3	450	6.09	51.2
4.000	S-R7-17	S-R7-16	7.427	0.600	53.800	53.710	0.090	82.5	225	5.09	55.2
4.001	S-R7-16	S-R7-15	2.662	0.600	53.710	53.675	0.035	76.1	225	5.12	55.1
1.012	S-R7-15	S-R7-HW	18.100	0.600	53.600	53.454	0.146	124.0	450	6.13	51.1
4.000_1	J1	S-R7-15	16.682	0.600	54.846	53.900	0.946	17.6	150	5.12	55.1
3.000	J2	S-R7-11	8.941	0.600	55.017	54.866	0.151	59.2	150	5.11	55.1
2.000	J3	S-R7-5	9.026	0.600	55.625	55.473	0.152	59.4	150	5.12	55.1

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)
1.005	2.536	179.3	63.9	0.920	1.128	0.365	0.0	123	2.328
1.006	2.457	173.7	65.2	1.128	1.330	0.375	0.0	127	2.285
1.007	2.707	299.0	69.6	1.330	1.619	0.412	0.0	123	2.223
1.008	1.022	112.9	80.9	1.619	1.591	0.482	0.0	235	1.108
3.001	3.878	274.1	26.9	1.325	1.559	0.163	0.0	63	2.496
1.009	1.033	164.2	121.1	1.591	1.782	0.648	0.0	289	1.126
1.010	1.042	165.7	121.2	1.782	1.929	0.657	0.0	287	1.134
1.011	1.031	163.9	121.8	1.928	2.196	0.693	0.0	290	1.125
4.000	1.440	57.3	0.0	2.032	2.258	0.000	0.0	0	0.000
4.001	1.501	59.7	0.0	2.258	2.346	0.000	0.0	0	0.000
1.012	1.824	290.1	151.1	2.196	2.126	0.861	0.0	231	1.843
4.000_1	2.410	42.6	16.1	1.250	2.196	0.085	0.0	64	2.240
3.000	1.309	23.1	21.4	1.250	1.401	0.113	0.0	114	1.482
2.000	1.307	23.1	14.8	1.250	1.402	0.078	0.0	87	1.384

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	13.041	80.0	225	ADOPTABLE	57.820	56.345	1.250	57.618	56.182	1.211
1.001	10.953	80.0	225	ADOPTABLE	57.618	56.182	1.211	57.449	56.045	1.179
1.002	19.325	80.0	225	ADOPTABLE	57.449	56.045	1.179	57.165	55.803	1.137
1.003	23.989	59.4	225	ADOPTABLE	57.165	55.803	1.137	56.817	55.399	1.193
2.001	12.101	80.0	225	ADOPTABLE	57.025	55.398	1.402	56.817	55.247	1.345
1.004	29.683	243.3	300	ADOPTABLE	56.817	55.172	1.345	56.422	55.050	1.072

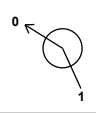
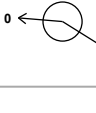
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S-R7-1	1200	Manhole	Adoptable	S-R7-2	1200	Manhole	Adoptable
1.001	S-R7-2	1200	Manhole	Adoptable	S-R7-3	1200	Manhole	Adoptable
1.002	S-R7-3	1200	Manhole	Adoptable	S-R7-4	1200	Manhole	Adoptable
1.003	S-R7-4	1200	Manhole	Adoptable	S-R7-6	1200	Manhole	Adoptable
2.001	S-R7-5	1200	Manhole	Adoptable	S-R7-6	1200	Manhole	Adoptable
1.004	S-R7-6	1200	Manhole	Adoptable	S-R7-7	1200	Manhole	Adoptable

Pipeline Schedule

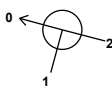
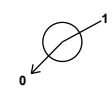
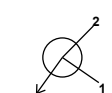
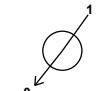
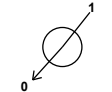
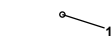
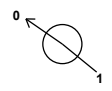
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.005	13.604	38.6	300	ADOPTABLE	56.422	55.202	0.920	56.278	54.850	1.128
1.006	14.408	41.2	300	ADOPTABLE	56.278	54.850	1.128	56.130	54.500	1.330
1.007	23.896	45.0	375	ADOPTABLE	56.130	54.425	1.330	55.888	53.894	1.619
1.008	14.916	310.8	375	ADOPTABLE	55.888	53.894	1.619	55.812	53.846	1.591
3.001	13.923	16.6	300	ADOPTABLE	56.417	54.792	1.325	55.812	53.953	1.559
1.009	17.235	383.0	450	ADOPTABLE	55.812	53.771	1.591	55.958	53.726	1.782
1.010	11.665	376.3	450	ADOPTABLE	55.958	53.726	1.782	56.074	53.695	1.929
1.011	36.889	384.3	450	ADOPTABLE	56.074	53.696	1.928	56.246	53.600	2.196
4.000	7.427	82.5	225	ADOPTABLE	56.057	53.800	2.032	56.193	53.710	2.258
4.001	2.662	76.1	225	ADOPTABLE	56.193	53.710	2.258	56.246	53.675	2.346
1.012	18.100	124.0	450	ADOPTABLE	56.246	53.600	2.196	56.030	53.454	2.126
4.000_1	16.682	17.6	150	ADOPTABLE	56.246	54.846	1.250	56.246	53.900	2.196
3.000	8.941	59.2	150	ADOPTABLE	56.417	55.017	1.250	56.417	54.866	1.401
2.000	9.026	59.4	150	ADOPTABLE	57.025	55.625	1.250	57.025	55.473	1.402

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.005	S-R7-7	1200	Manhole	Adoptable	S-R7-8	1200	Manhole	Adoptable
1.006	S-R7-8	1200	Manhole	Adoptable	S-R7-9	1350	Manhole	Adoptable
1.007	S-R7-9	1350	Manhole	Adoptable	S-R7-10	1350	Manhole	Adoptable
1.008	S-R7-10	1350	Manhole	Adoptable	S-R7-12	1350	Manhole	Adoptable
3.001	S-R7-11	1350	Manhole	Adoptable	S-R7-12	1350	Manhole	Adoptable
1.009	S-R7-12	1350	Manhole	Adoptable	S-R7-13	1350	Manhole	Adoptable
1.010	S-R7-13	1350	Manhole	Adoptable	S-R7-14	1350	Manhole	Adoptable
1.011	S-R7-14	1350	Manhole	Adoptable	S-R7-15	1350	Manhole	Adoptable
4.000	S-R7-17	1200	Manhole	Adoptable	S-R7-16	1200	Manhole	Adoptable
4.001	S-R7-16	1200	Manhole	Adoptable	S-R7-15	1350	Manhole	Adoptable
1.012	S-R7-15	1350	Manhole	Adoptable	S-R7-HW		Junction	
4.000_1	J1		Junction		S-R7-15	1350	Manhole	Adoptable
3.000	J2		Junction		S-R7-11	1350	Manhole	Adoptable
2.000	J3		Junction		S-R7-5	1200	Manhole	Adoptable

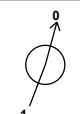
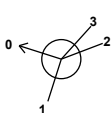
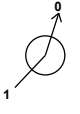
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R7-2	482524.226	167866.135	57.618	1.436	1200	 1	1.000	56.182	225
						0	1.001	56.182	225
S-R7-3	482514.939	167871.941	57.449	1.404	1200	 1	1.001	56.045	225
						0	1.002	56.045	225
S-R7-4	482495.680	167873.537	57.165	1.362	1200	 1	1.002	55.803	225
						0	1.003	55.803	225
J1	482364.150	167824.998	56.246	1.400		 0	4.000_1	54.846	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R7-6	482472.463	167879.574	56.817	1.645	1200		1	2.001	55.247	225
							2	1.003	55.399	225
							0	1.004	55.172	300
S-R7-7	482443.802	167887.294	56.422	1.372	1200		1	1.004	55.050	300
							0	1.005	55.202	300
S-R7-8	482430.234	167888.279	56.278	1.428	1200		1	1.005	54.850	300
							0	1.006	54.850	300
S-R7-9	482416.179	167885.107	56.130	1.705	1350		1	1.006	54.500	300
							0	1.007	54.425	375
S-R7-10	482395.177	167873.708	55.888	1.994	1350		1	1.007	53.894	375
							0	1.008	53.894	375
J2	482403.102	167849.510	56.417	1.400			0	3.000	55.017	150
S-R7-12	482384.717	167863.074	55.812	2.041	1350		1	3.001	53.953	300
							2	1.008	53.846	375
							0	1.009	53.771	450
S-R7-13	482374.680	167849.063	55.958	2.232	1350		1	1.009	53.726	450
							0	1.010	53.726	450
S-R7-14	482367.425	167839.928	56.074	2.379	1350		1	1.010	53.695	450
							0	1.011	53.696	450
J3	482466.069	167859.465	57.025	1.400			0	2.000	55.625	150
S-R7-HW	482330.139	167824.933	56.030	2.576			1	1.012	53.454	450
S-R7-1	482529.642	167854.272	57.820	1.475	1200		0	1.000	56.345	225
S-R7-11	482396.176	167855.165	56.417	1.625	1350		1	3.000	54.866	150
							0	3.001	54.792	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R7-5	482469.292	167867.896	57.025	1.627	1200		1 2.000	55.473	150
S-R7-15	482348.558	167819.066	56.246	2.646	1350		0 2.001 1 4.001 2 4.000_1 3 1.011 0 1.012	55.398 53.675 53.900 53.600 53.600	225 225 150 450 450
S-R7-16	482347.750	167816.530	56.193	2.483	1200		1 4.000	53.710	225
S-R7-17	482342.649	167811.132	56.057	2.257	1200		0 4.001	53.710	225
							0 4.000	53.800	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.950	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.950	Additional Storage (m³/ha)	0.0		

Storm Durations

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

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

Node J1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	54.846	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.400
Safety Factor	2.0	Width (m)	16.500	Inf Depth (m)	
Porosity	0.30	Length (m)	21.800		

Node J2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.017	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	4	Depth (m)	0.400
Safety Factor	2.0	Width (m)	18.300	Inf Depth (m)	
Porosity	0.30	Length (m)	31.000		

Node J3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.625	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	12	Depth (m)	0.400
Safety Factor	2.0	Width (m)	11.500	Inf Depth (m)	
Porosity	0.30	Length (m)	35.000		

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R7-2	33	56.264	0.082	14.8	0.0933	0.0000	OK
60 minute summer	S-R7-3	33	56.132	0.087	17.9	0.0984	0.0000	OK
60 minute summer	S-R7-4	32	55.933	0.130	41.7	0.1474	0.0000	OK
60 minute summer	J1	34	54.934	0.088	27.7	1.9451	0.0000	OK
60 minute summer	S-R7-6	33	55.616	0.444	85.7	0.5017	0.0000	SURCHARGED
60 minute summer	S-R7-7	33	55.393	0.343	106.7	0.3882	0.0000	OK
60 minute summer	S-R7-8	33	55.049	0.199	109.9	0.2255	0.0000	OK
60 minute summer	S-R7-9	33	54.589	0.164	121.9	0.2354	0.0000	OK
60 minute summer	S-R7-10	34	54.416	0.522	144.3	0.7472	0.0000	SURCHARGED
60 minute summer	J2	37	55.184	0.167	36.8	7.6713	0.0000	SURCHARGED
60 minute summer	S-R7-12	34	54.296	0.525	183.6	0.7509	0.0000	SURCHARGED
60 minute summer	S-R7-13	34	54.207	0.481	185.9	0.6878	0.0000	SURCHARGED
60 minute summer	S-R7-14	34	54.134	0.439	197.1	0.6279	0.0000	OK
60 minute summer	J3	36	55.787	0.162	25.4	4.5265	0.0000	SURCHARGED
60 minute summer	S-R7-HW	34	53.768	0.314	250.2	0.0000	0.0000	OK
60 minute summer	S-R7-1	33	56.427	0.082	14.8	0.0923	0.0000	OK
60 minute summer	S-R7-11	33	54.869	0.077	39.6	0.1095	0.0000	OK
60 minute summer	S-R7-5	33	55.709	0.311	39.8	0.3520	0.0000	SURCHARGED
60 minute summer	S-R7-15	34	53.940	0.340	249.8	0.4871	0.0000	OK
60 minute summer	S-R7-16	34	53.940	0.230	2.0	0.2606	0.0000	SURCHARGED
60 minute summer	S-R7-17	34	53.940	0.140	1.0	0.1587	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R7-2	1.001	S-R7-3	14.8	1.084	0.254	0.1496	
60 minute summer	S-R7-3	1.002	S-R7-4	17.9	0.944	0.308	0.3670	
60 minute summer	S-R7-4	1.003	S-R7-6	41.8	1.580	0.618	0.7567	
60 minute summer	J1	4.000_1	S-R7-15	26.4	2.494	0.620	0.1767	
60 minute summer	S-R7-6	1.004	S-R7-7	85.7	1.218	1.209	2.0903	
60 minute summer	S-R7-7	1.005	S-R7-8	106.8	2.199	0.595	0.6605	
60 minute summer	S-R7-8	1.006	S-R7-9	109.8	2.404	0.632	0.6573	
60 minute summer	S-R7-9	1.007	S-R7-10	121.5	1.335	0.407	1.8731	
60 minute summer	S-R7-10	1.008	S-R7-12	143.1	1.298	1.268	1.6452	
60 minute summer	J2	3.000	S-R7-11	23.4	1.439	1.013	0.1539	
60 minute summer	S-R7-12	1.009	S-R7-13	183.1	1.156	1.115	2.7308	
60 minute summer	S-R7-13	1.010	S-R7-14	186.1	1.175	1.123	1.8422	
60 minute summer	S-R7-14	1.011	S-R7-15	197.5	1.356	1.205	5.2739	
60 minute summer	J3	2.000	S-R7-5	23.1	1.441	1.001	0.1589	
60 minute summer	S-R7-1	1.000	S-R7-2	14.8	1.132	0.254	0.1705	
60 minute summer	S-R7-11	3.001	S-R7-12	39.6	2.346	0.144	0.5886	
60 minute summer	S-R7-5	2.001	S-R7-6	39.8	1.285	0.685	0.4813	
60 minute summer	S-R7-15	1.012	S-R7-HW	250.2	2.027	0.862	2.2328	296.1
60 minute summer	S-R7-16	4.001	S-R7-15	-2.0	-0.072	-0.034	0.1059	
60 minute summer	S-R7-17	4.000	S-R7-16	-1.0	-0.098	-0.018	0.2443	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.90%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R7-2	35	56.745	0.563	28.2	0.6364	0.0000	SURCHARGED
60 minute summer	S-R7-3	35	56.709	0.664	30.1	0.7513	0.0000	SURCHARGED
60 minute summer	S-R7-4	34	56.626	0.823	67.4	0.9305	0.0000	SURCHARGED
60 minute summer	J1	36	54.994	0.148	50.3	5.4157	0.0000	OK
60 minute summer	S-R7-6	37	56.196	1.024	115.7	1.1581	0.0000	SURCHARGED
60 minute summer	S-R7-7	34	55.874	0.824	140.3	0.9320	0.0000	SURCHARGED
60 minute summer	S-R7-8	34	55.591	0.741	144.6	0.8378	0.0000	SURCHARGED
60 minute summer	S-R7-9	34	55.272	0.847	159.2	1.2115	0.0000	SURCHARGED
60 minute summer	S-R7-10	34	55.070	1.176	195.9	1.6832	0.0000	SURCHARGED
60 minute summer	J2	39	55.303	0.286	66.9	22.4146	0.0000	SURCHARGED
60 minute summer	S-R7-12	34	54.843	1.072	253.9	1.5345	0.0000	SURCHARGED
60 minute summer	S-R7-13	34	54.669	0.943	259.1	1.3500	0.0000	SURCHARGED
60 minute summer	S-R7-14	34	54.525	0.830	279.3	1.1874	0.0000	SURCHARGED
60 minute summer	J3	37	56.696	1.071	68.8	27.2466	0.0000	SURCHARGED
60 minute summer	S-R7-HW	34	53.863	0.409	364.6	0.0000	0.0000	OK
60 minute summer	S-R7-1	35	56.782	0.437	26.9	0.4937	0.0000	SURCHARGED
60 minute summer	S-R7-11	34	54.901	0.109	56.5	0.1553	0.0000	OK
60 minute summer	S-R7-5	37	56.409	1.011	57.5	1.1435	0.0000	SURCHARGED
60 minute summer	S-R7-15	33	54.166	0.566	365.1	0.8099	0.0000	SURCHARGED
60 minute summer	S-R7-16	33	54.166	0.456	4.0	0.5157	0.0000	SURCHARGED
60 minute summer	S-R7-17	33	54.166	0.366	2.3	0.4140	0.0000	SURCHARGED

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	S-R7-2	1.001	S-R7-3	25.3	1.207	0.435	0.4356	
60 minute summer	S-R7-3	1.002	S-R7-4	32.2	0.966	0.553	0.7686	
60 minute summer	S-R7-4	1.003	S-R7-6	67.8	1.704	1.002	0.9541	
60 minute summer	J1	4.000_1	S-R7-15	42.7	2.606	1.003	0.2932	
60 minute summer	S-R7-6	1.004	S-R7-7	116.4	1.653	1.641	2.0903	
60 minute summer	S-R7-7	1.005	S-R7-8	141.1	2.237	0.787	0.9580	
60 minute summer	S-R7-8	1.006	S-R7-9	145.4	2.445	0.837	1.0146	
60 minute summer	S-R7-9	1.007	S-R7-10	160.3	1.454	0.536	2.6357	
60 minute summer	S-R7-10	1.008	S-R7-12	196.0	1.777	1.736	1.6452	
60 minute summer	J2	3.000	S-R7-11	29.7	1.686	1.283	0.1558	
60 minute summer	S-R7-12	1.009	S-R7-13	254.1	1.604	1.547	2.7308	
60 minute summer	S-R7-13	1.010	S-R7-14	259.2	1.636	1.564	1.8482	
60 minute summer	S-R7-14	1.011	S-R7-15	279.5	1.764	1.705	5.8448	
60 minute summer	J3	2.000	S-R7-5	33.7	1.913	1.457	0.1589	
60 minute summer	S-R7-1	1.000	S-R7-2	28.2	1.252	0.485	0.5187	
60 minute summer	S-R7-11	3.001	S-R7-12	56.1	2.389	0.205	0.6502	
60 minute summer	S-R7-5	2.001	S-R7-6	57.9	1.456	0.995	0.4813	
60 minute summer	S-R7-15	1.012	S-R7-HW	364.6	2.303	1.257	2.8028	538.6
60 minute summer	S-R7-16	4.001	S-R7-15	-4.0	-0.145	-0.067	0.1059	
60 minute summer	S-R7-17	4.000	S-R7-16	-2.3	-0.077	-0.040	0.2954	