



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

DRAINAGE STATEMENT

MILLER HOMES

16 DECEMBER 2025





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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 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.
- 3.6.4 Refer to drawing A389-R7&R13-RM-501 in **Appendix A** for the drainage strategy.
- 3.6.5 Outputs from the hydraulic model are included in **Appendix C**.

R13 Basin Catchment

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



- 3.6.8 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.
- 3.6.9 Tree pits within the streets will act as bioretention areas.
- 3.6.10 A swale has been incorporated along the western edge of the development to convey water towards the basin.
- 3.6.11 The manhole chambers of the proposed network will utilise strategic catchpits or proprietary devices, to minimize the amount of silt reaching the basins.
- 3.6.12 The proposed basin will be lined with a geomembrane and will provide attenuation only and not infiltration.
- 3.6.13 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.
- 3.6.14 The basin will have 1:3 side slopes, in accordance with the SuDS manual, and will incorporate 400mm freeboard above the maximum water level.
- 3.6.15 Large grass tiered steps have been incorporated on the eastern edge of the basin to facilitate access during dry periods.
- 3.6.16 Refer to drawing A389-R7&R13-RM-530 and 531 for cross section drawings of the basin and swale.

R7 Catchment

- 3.6.17 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.
- 3.6.18 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.
- 3.6.19 Tree pits acting as bioretention areas are proposed along streets throughout the development parcel.
- 3.6.20 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.

3.9 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

- 5.1.9 For the purposes of the water quality assessment, benefits drawn from the inclusion of rain garden/tree pits along the Link Road and other streets within the development, as they are classified as bioretention areas.
- 5.1.10 Each part of the development primarily utilises a detention Basin (TSS:0.5, Metals:0.5, Hydrocarbons:0.6). prior to discharge. Further pollution prevention will be achieved with tree pits located along the road corridor (TSS:0.8, Metals:0.8, Hydrocarbons:0.8) and to the west, the swale will also provide pollution reduction (TSS:0.5, Metals:0.6, Hydrocarbons:0.6).



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 To supplement the Construction Management Plan document, the requirement to manage surface water during the construction phase of the development requires mitigation to protect against adverse effects on surface water quality and to provide pollution control.

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 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.



- 6.2.4 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 undertake all necessary maintenance until such time as the assets are passed over for adoption or management.

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

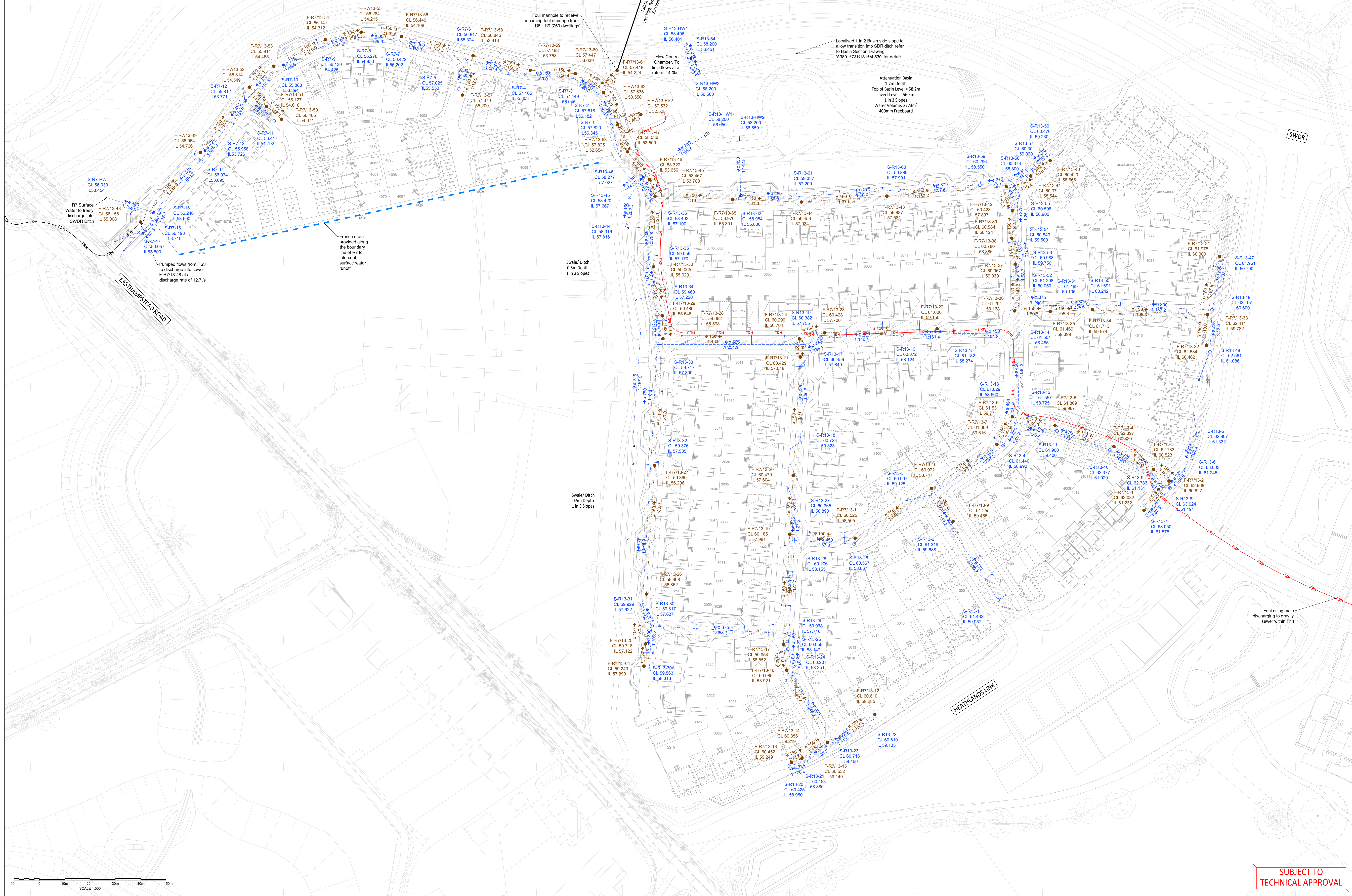
A389-R7&R13-RM-505 Surface Water Catchment Plan

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

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

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

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

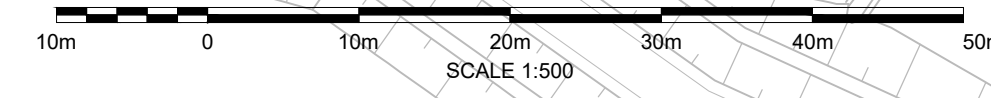
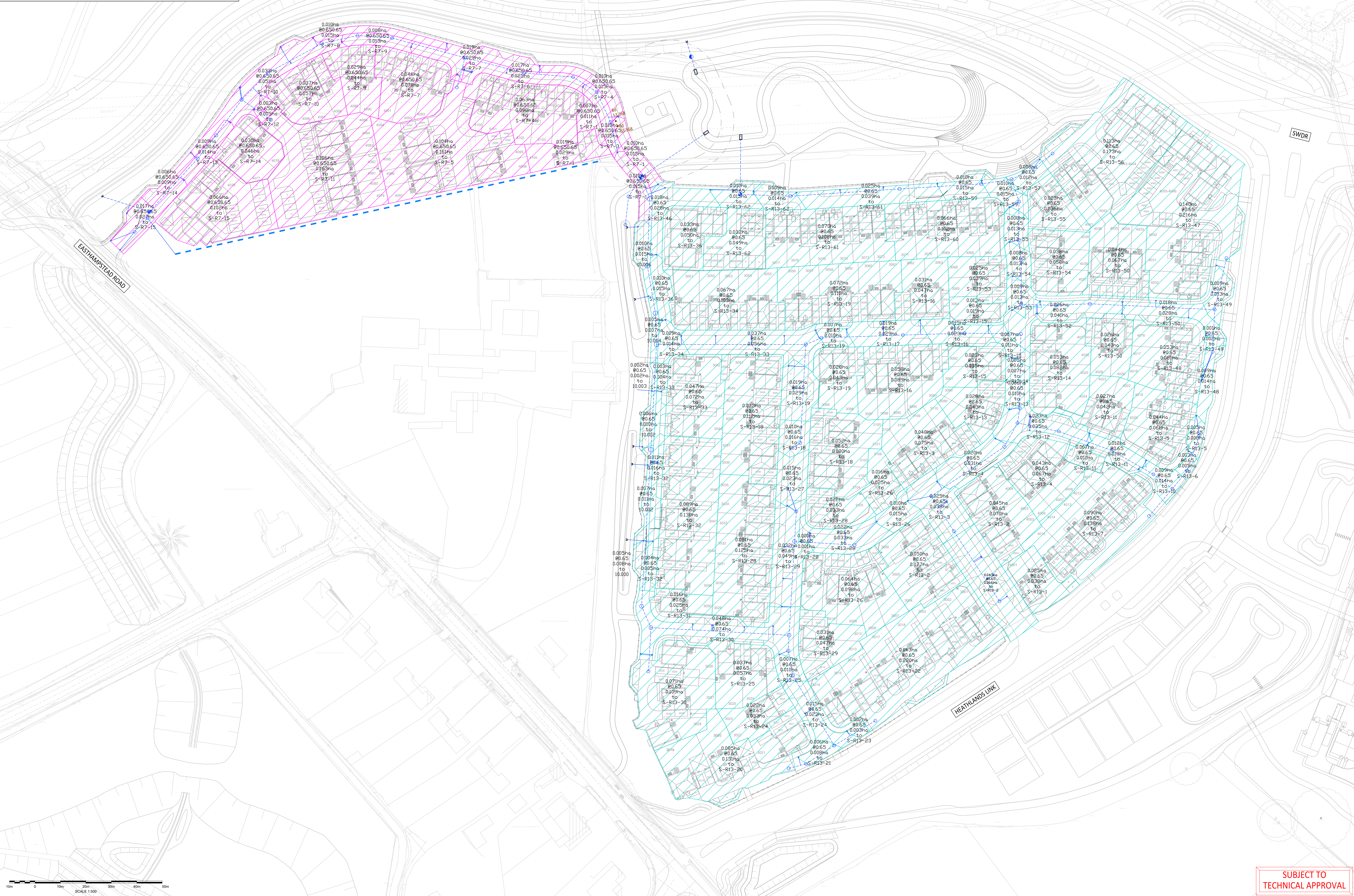
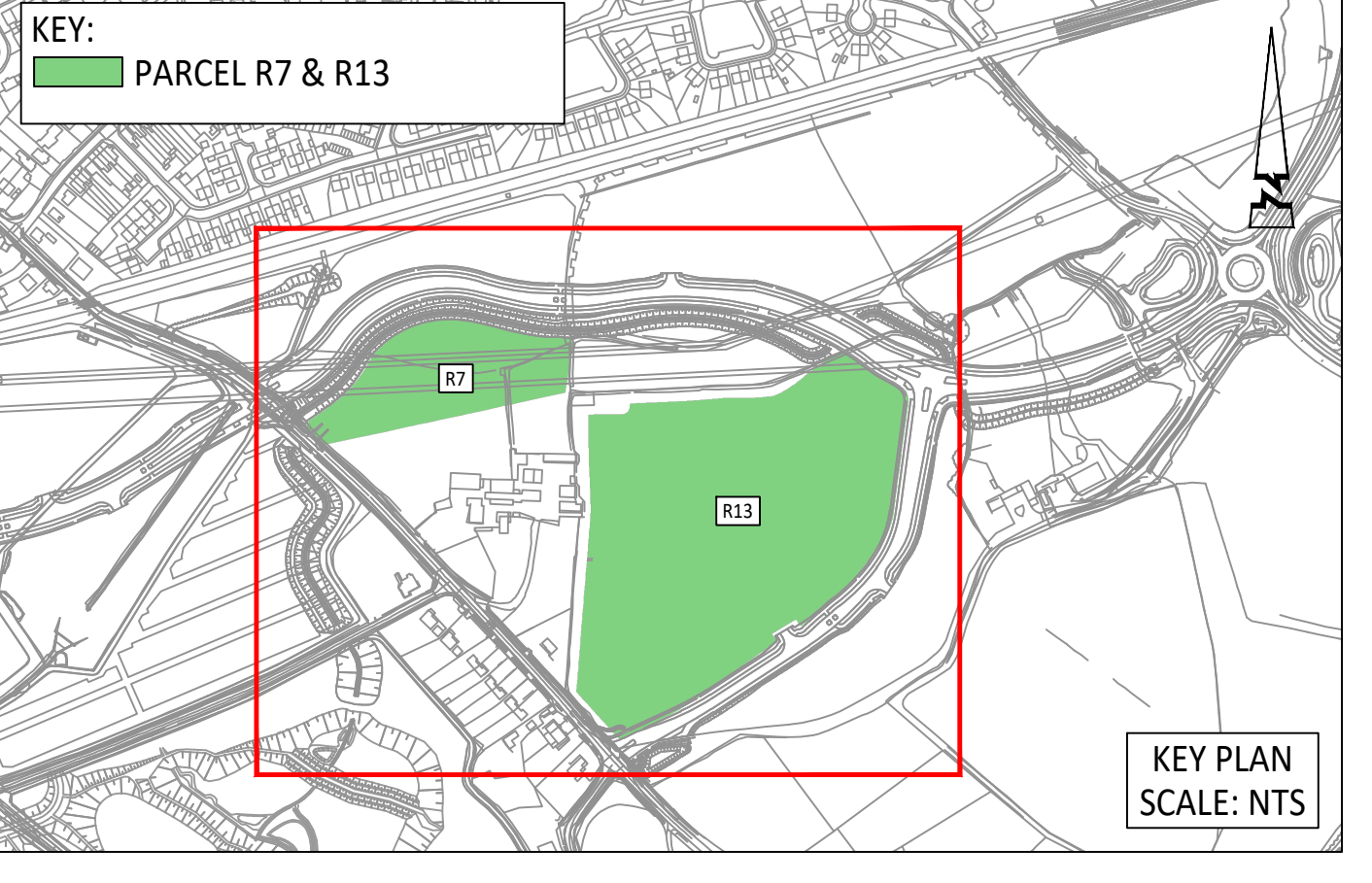


KEY

	FOUL		STORM
			Proposed adoptable sewer & Manhole connection
			Highway gully and 150mmØ connection
			Proposed Control Manhole
			Proposed Catchpit Manhole
			Proposed P52 Foul Water Rising Main
			P53 Foul Water Rising Main
			Proposed Headwall
			Proposed Althton 50C Headwall
			Proposed French Drain
			Proposed Swale/ Basin

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

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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. Any anomaly or contradiction between any of the above is to be reported to the Engineer.

Key

- Proposed adoptable sewer & MH
- Highway gully and 150mmØ connection
- Proposed Control Manhole
- Proposed Catchpit Manhole
- Proposed H50C Headwall
- Proposed Headwall
- Proposed French Drain
- R7 Catchment Area
- R13 Catchment Area

A	12.24	FIRST ISSUE	AD	RF
Rev	1	Description	Date	By

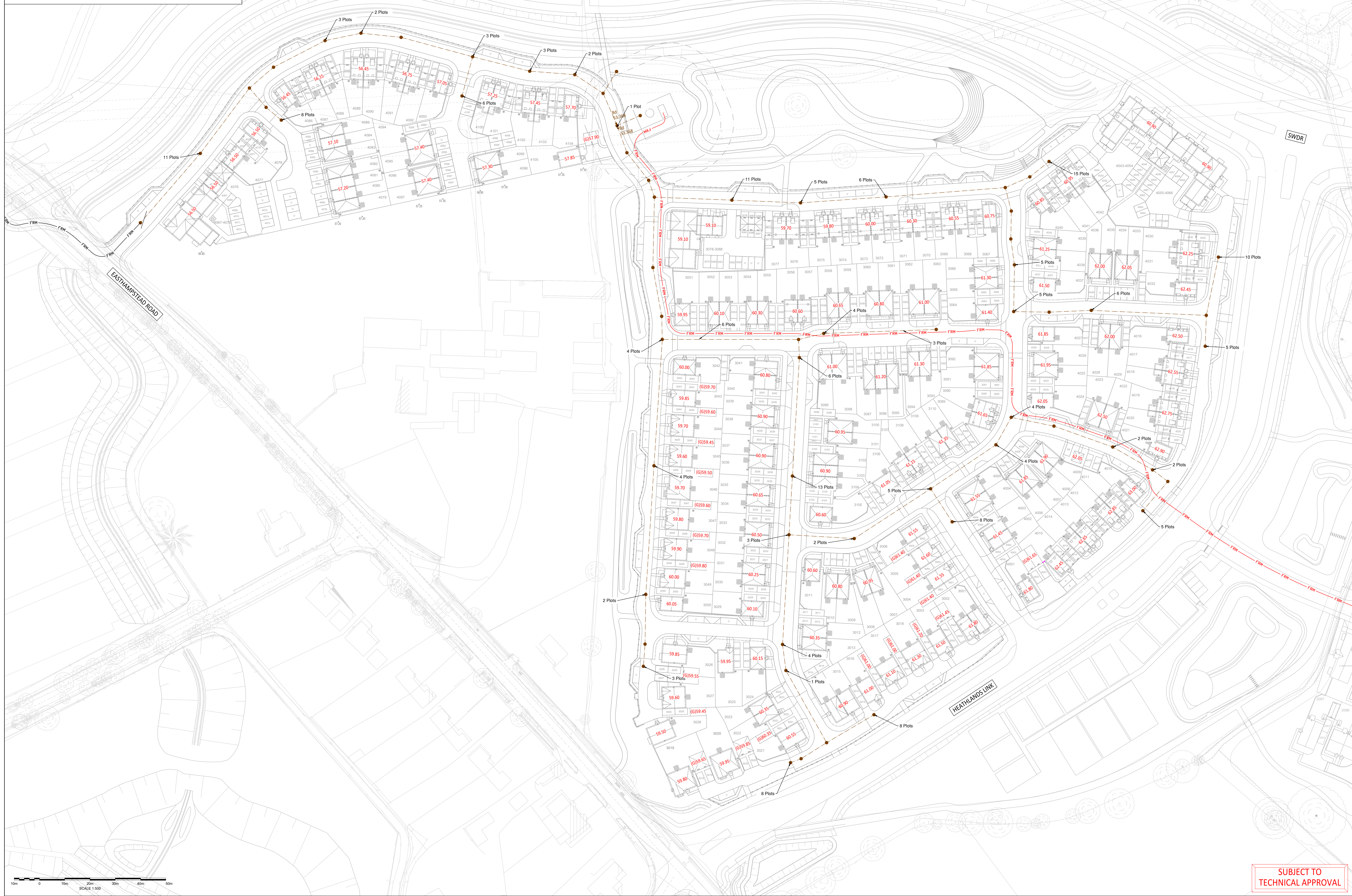
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Client
MILLER HOMES

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

Drawn
**SURFACE WATER
CATCHMENT PLAN**

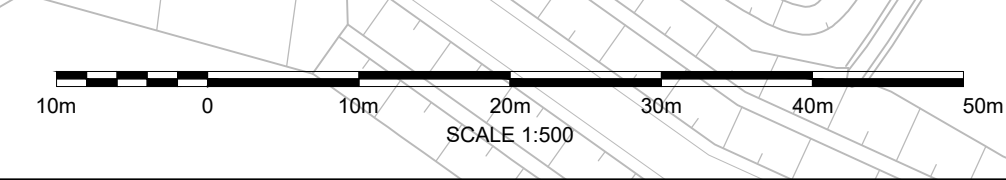
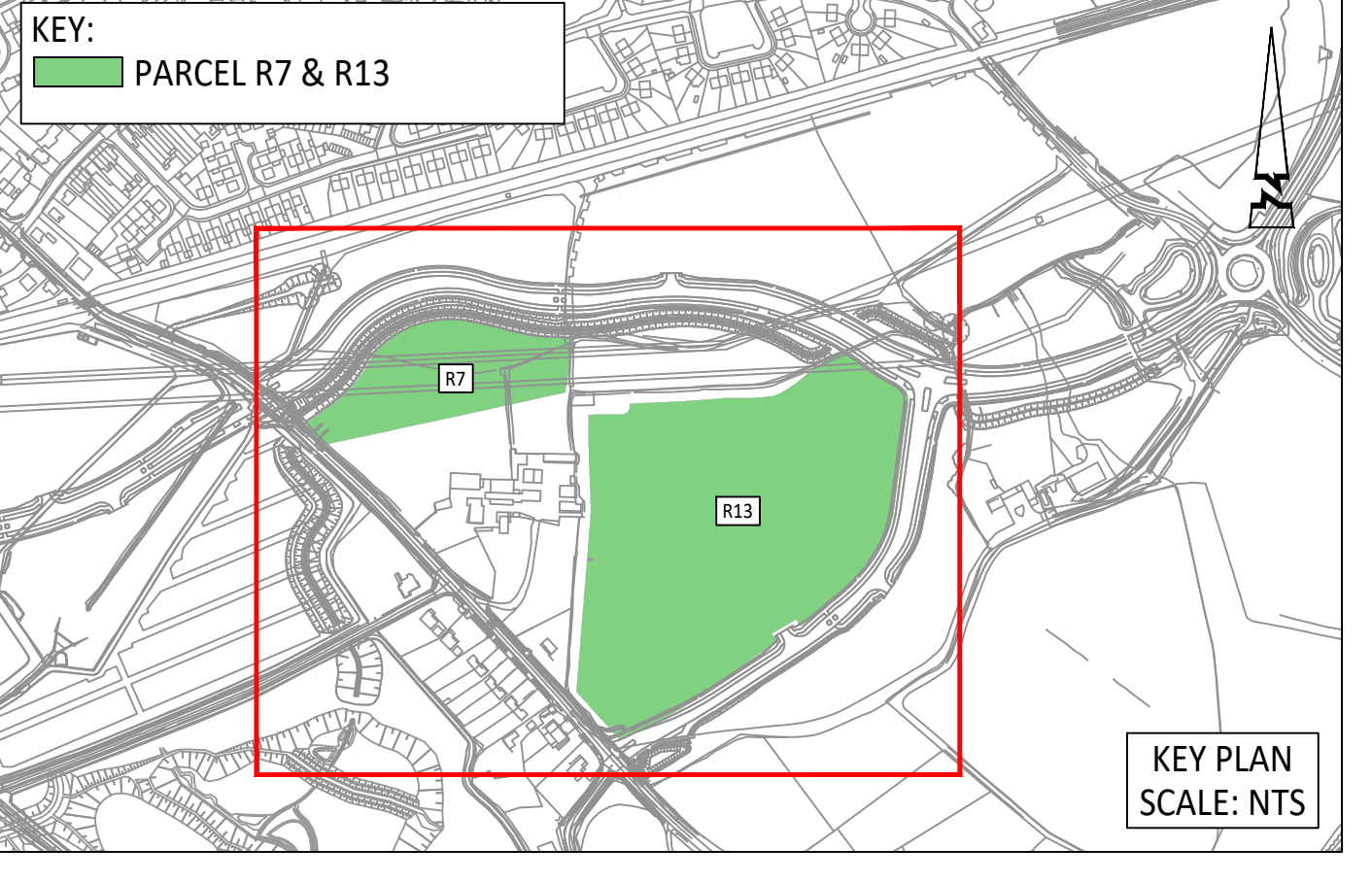
Scale	1:500 @ AD	Date	DEC 2025	Drawn	AS	Checked	RF	
Drawing No	A389-R7&R13-RM-505						Revision	A



KEY

- Proposed adaptable sewer & M
- Proposed PS2 Foul Water Rising Main
- PS1 Foul Water Rising Main
- Finished Floor Level

A



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GENERAL ARRANGEMENT NOTES:

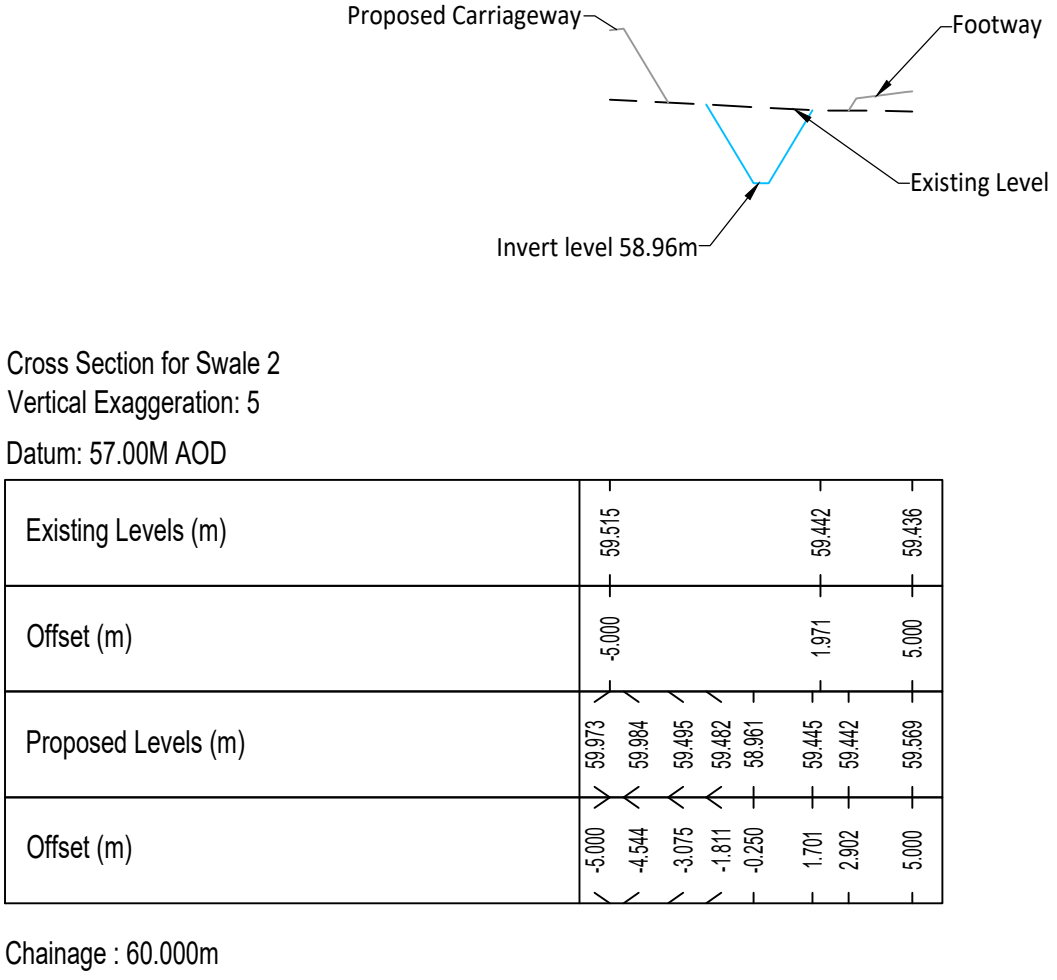
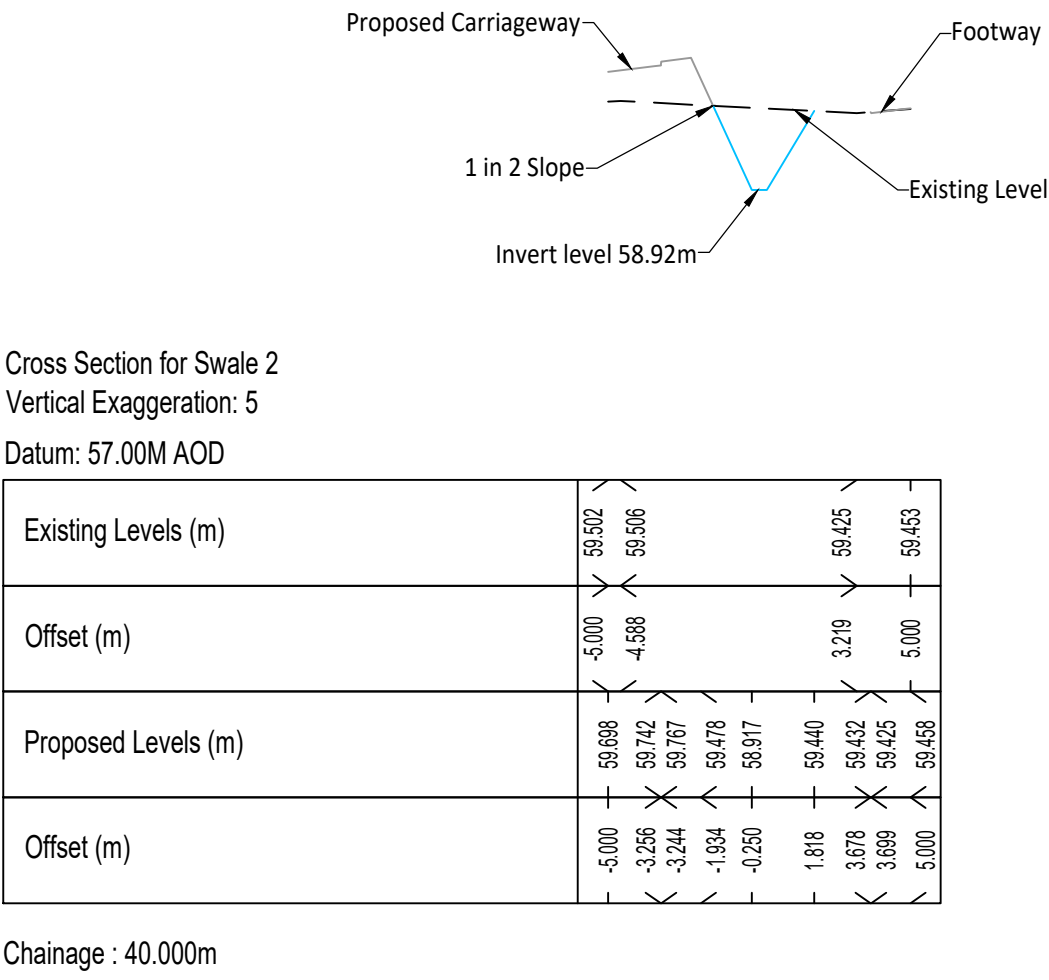
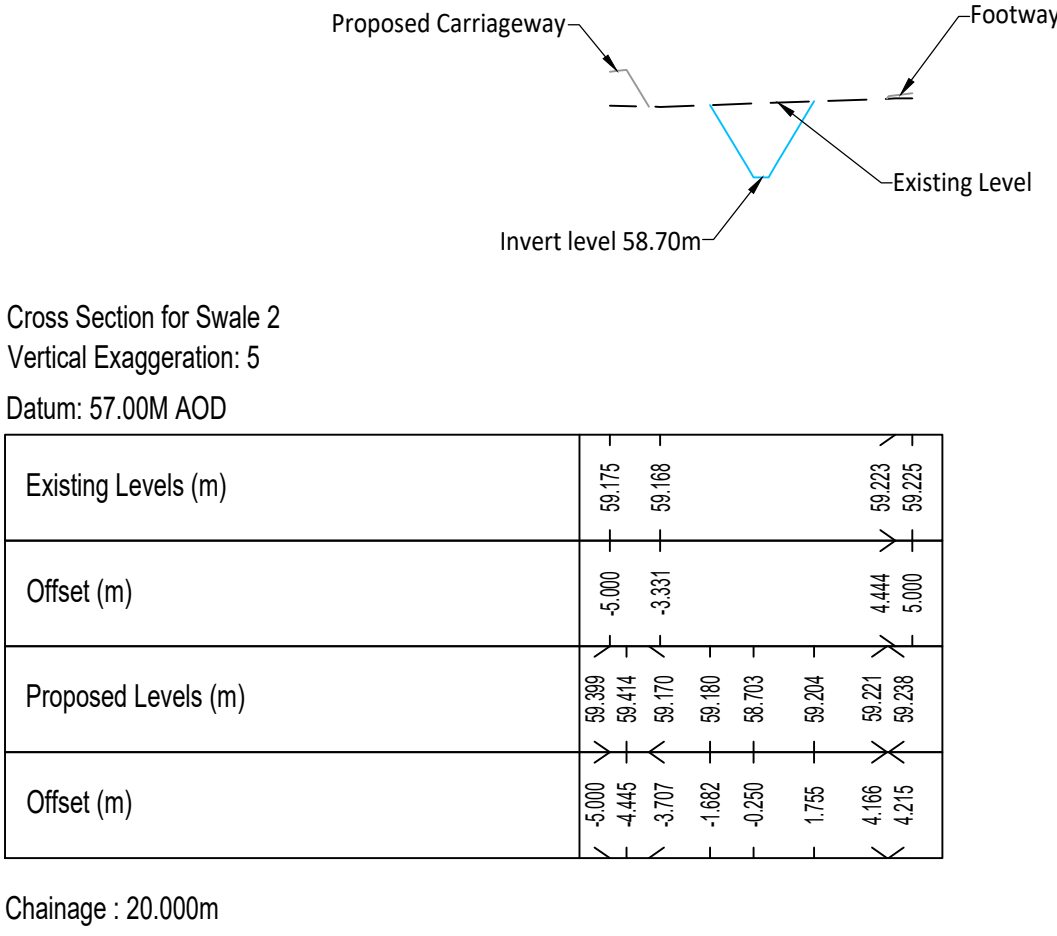
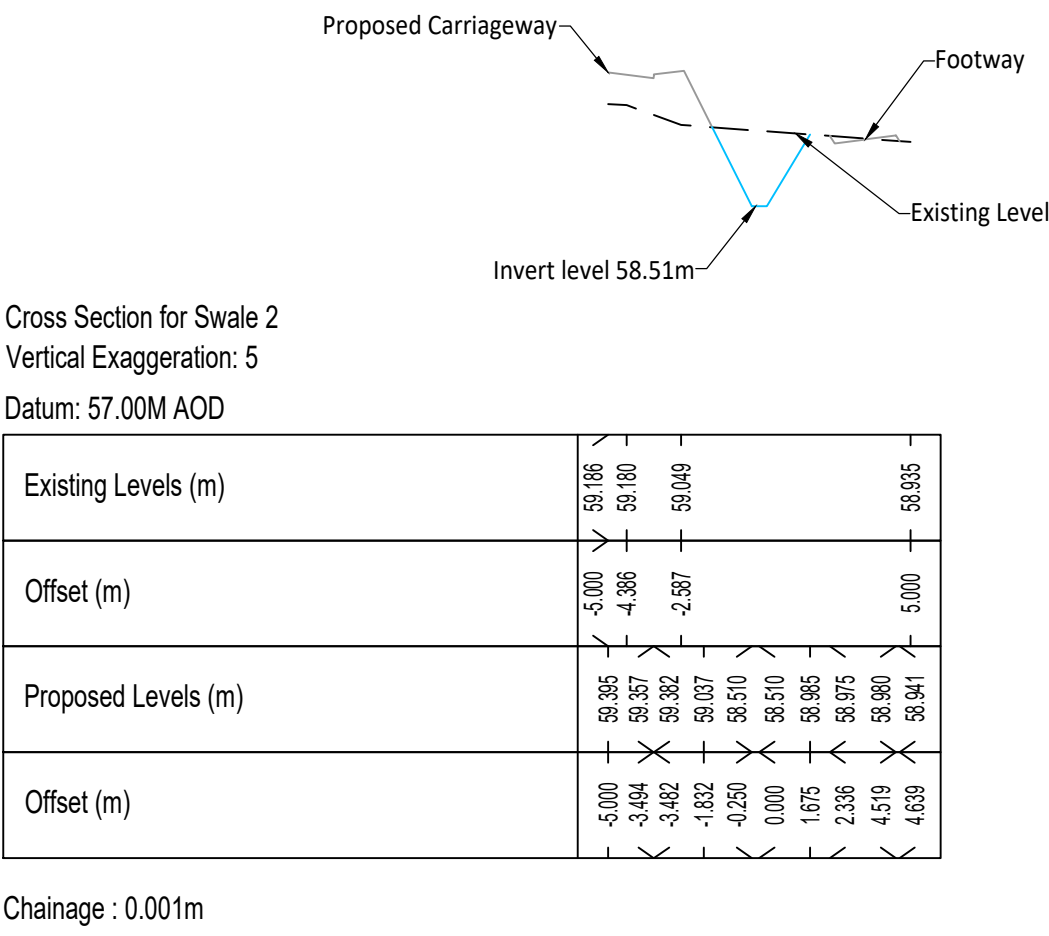
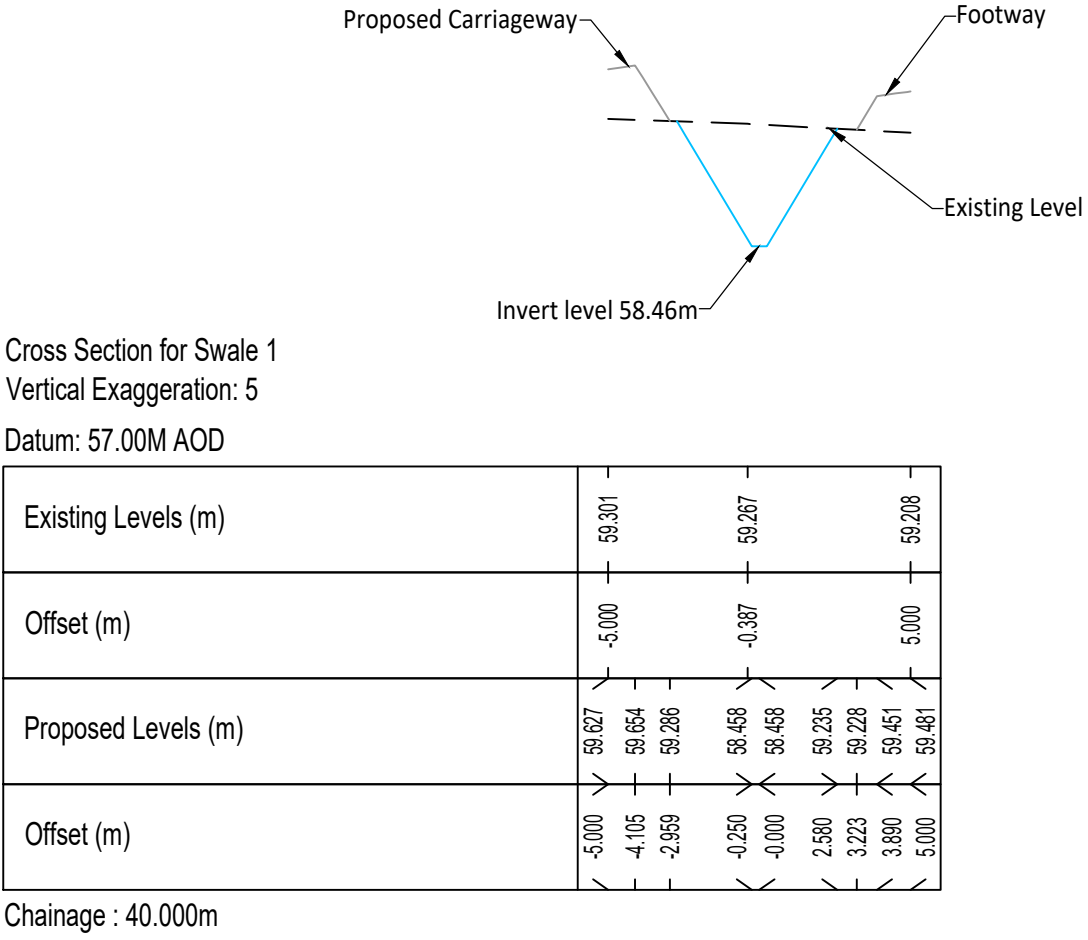
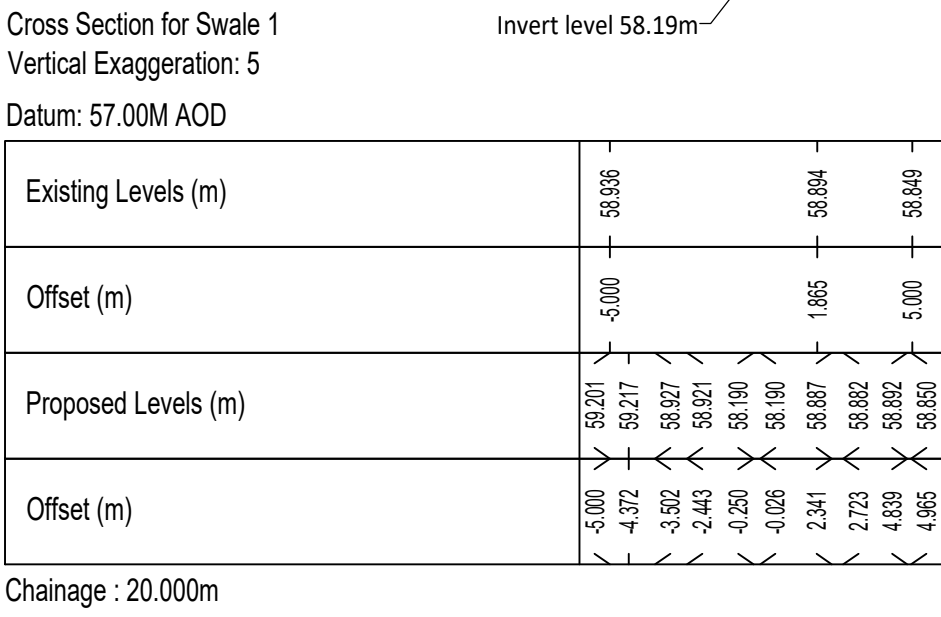
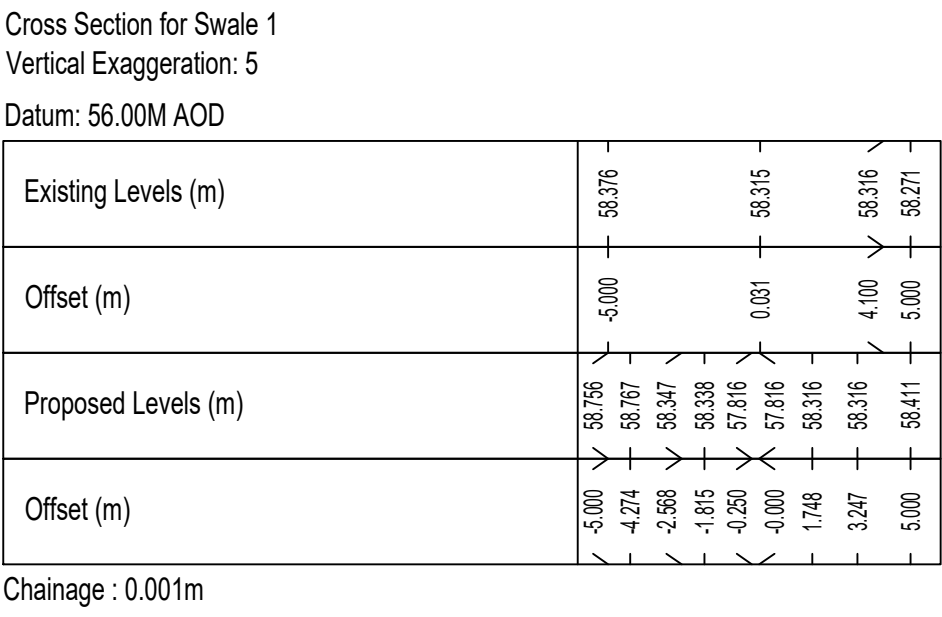
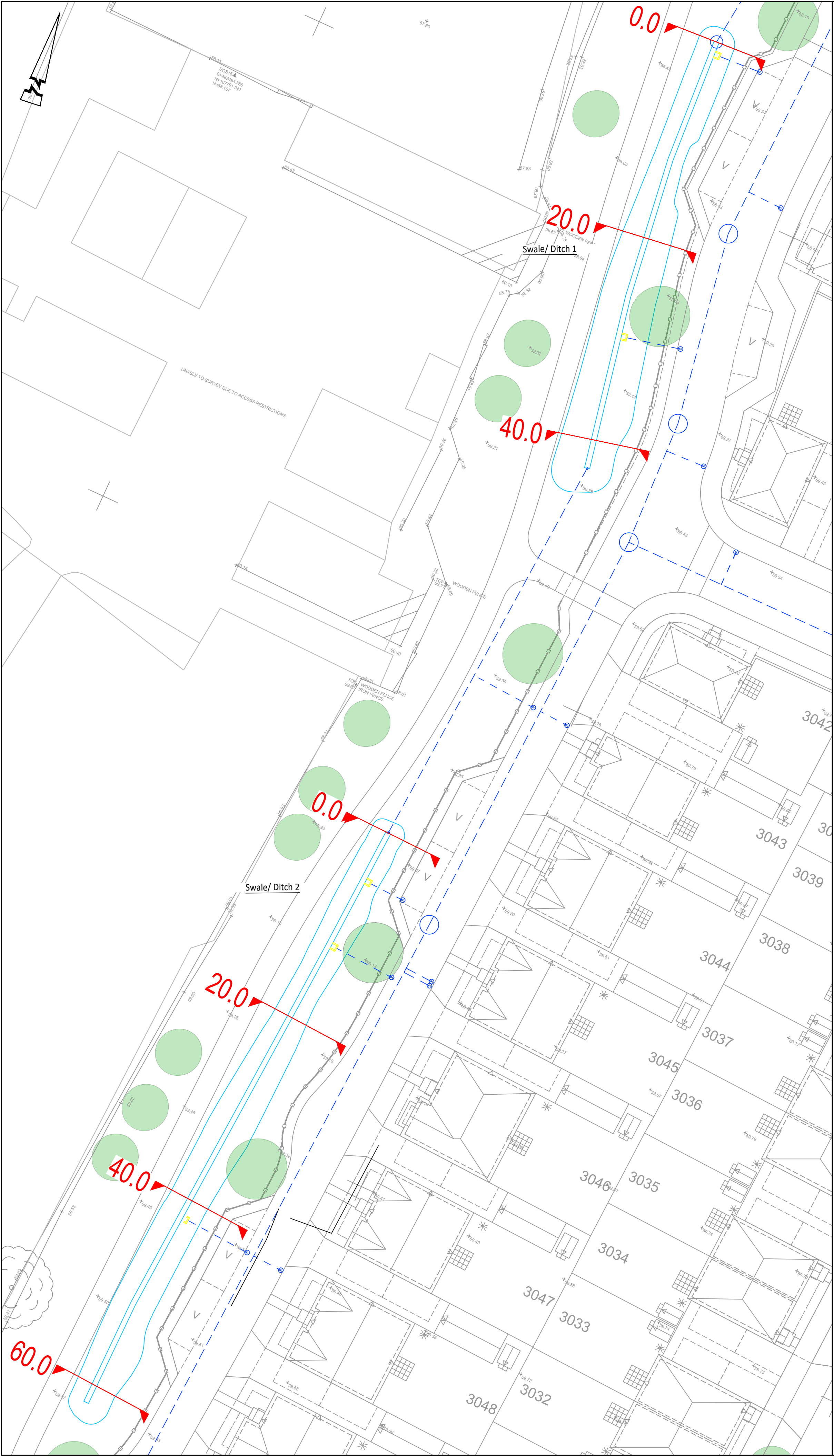
- Do Not Scale.
- This Drawing is to be read in conjunction with and checked against all other drawings. Engineering details, specification and any structural, Geotechnical or other specialist document provided.
- Any anomaly or contradiction between any of the above is to be reported to the Engineer.

KEY:

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

A 12.24 FIRST ISSUE		AD	RF
Revised		Revised	Revised
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Client MILLER HOMES			
Project SOUTH WOKINGHAM SDL PHASE 2B R7 & R13 RESERVED MATTERS APPLICATION			
Title EXCEEDANCE ROUTE PLAN			
Status			
Scale 1:500 @ A0	Date DEC 2025	Drawn AS	Checked RF
Drawing No A389-R7&R13-RM-507			Revision A

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GENERAL NOTES:

- Do not scale.
- 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.
- The proposed works on this drawing could impact on existing services/ statutory undertakers apparatus, therefore the contractor should check the position of existing services on site prior to starting work.
- Any anomaly or contradiction between any of the above is to be reported to the Engineer.

Key:

- Proposed adoptable sewer & MH
- Highway gully and 150mmØ connection
- Proposed Swale
- Proposed Trees

Sections Key:

- Existing Ground Levels
- Proposed Centerline Profile
- Swale Levels

A	12.25	FIRST ISSUE	AS	RF
Rev	Date	Description	Drawn	Checked

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Client

MILLER HOMES

Project

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

Title

R13 SWALE CROSS SECTIONS

Status

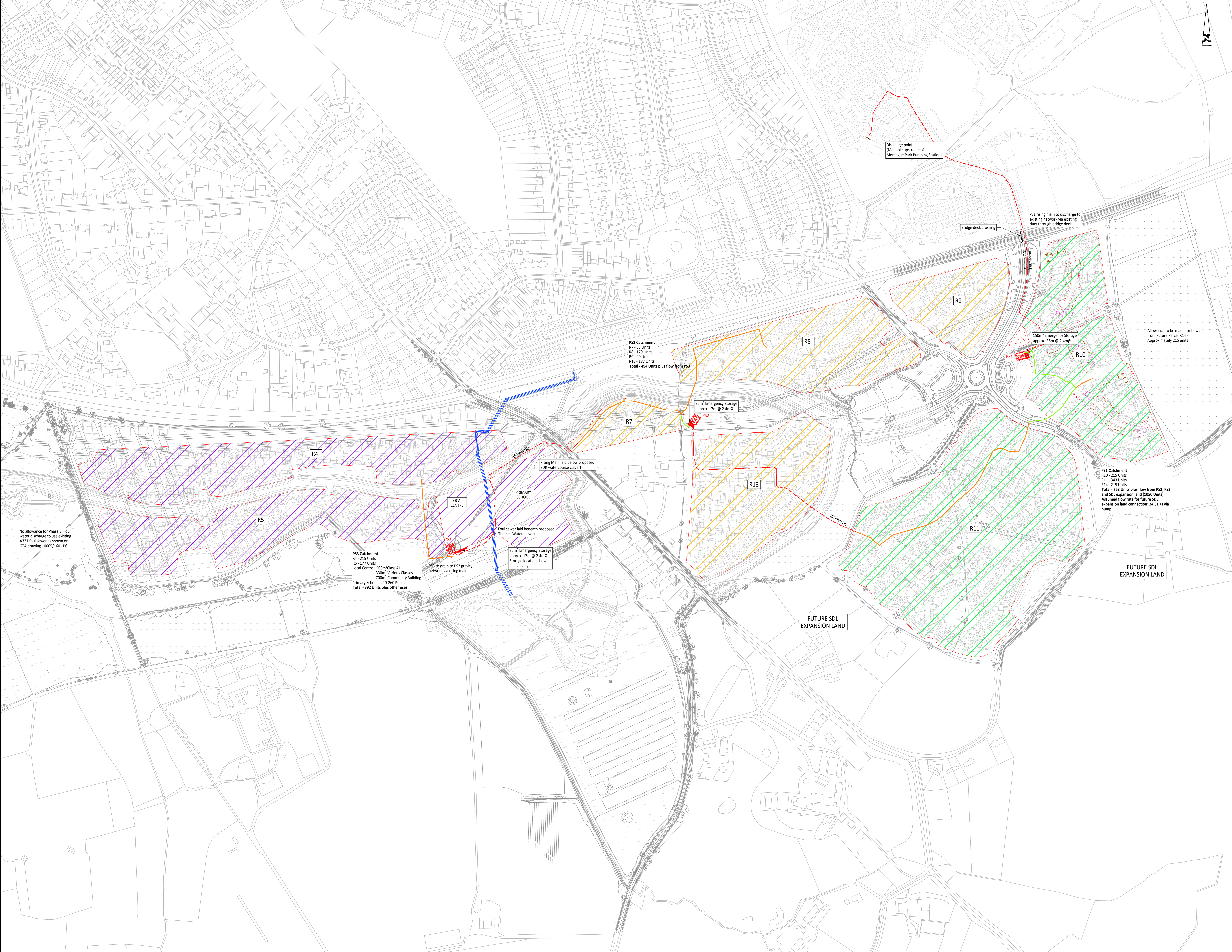
Scale	Date	Drawn	Checked
1:250 @ A1	DEC 2025	AS	RF

Drawing No: A389-R7&R13-RM-531

Revision	A
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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

P51 Catchment Area

P52 Catchment Area

P53 Catchment Area

PS	PS1	INTERIM RISING MAIN REMOVED	CS	RF
PS	PS2	R10 DWELLING NUMBERS UPDATED	CS	RF
PS	PS3	UPDATED TO SUIT LATEST ACCOMMODATION SCHEDULE AND CONCURRENT FOUl ROUTES	CS	LPA
PS	PS4	PS1 FOUl RISING MAIN AMENDED	CS	LPA
PS	PS5	GENERAL AMENDMENTS	CS	LPA
PS	PS6	EMERGENCY STORAGE ADDED	CS	LPA
PS	PS7	CATCHMENT AREAS UPDATED KEY UPDATED	CS	LPA
PS	PS8	PUMP STATION ADDED TO ALLOW EARLY CONSTRUCTION OF PHASE R10	KLW	LPA
PS	PS9	FIRST ISSUE	JA	KLW

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Client
MILLER HOMES
KIER VENTURES

Project
SOUTH WOKINGHAM SDL

Title
SITE OVERVIEW
FOUL WATER STRATEGY

Scale
1:2000 @ A0
Date
JULY 2022
Author
KLW
Checked
LPA
Drawing No
A389-003
Revision
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	59.454		482535.440	167670.797	0.500
S-R13-38			59.669		482534.749	167680.727	0.757
S-R13-39			59.224		482537.546	167719.548	0.500
S-R13-40			59.002		482538.298	167731.954	0.500
S-R13-41			59.333		482541.133	167771.668	1.069
S-R13-43			58.676		482536.139	167801.942	0.500
S-R13-44			58.316	1200	482535.475	167814.026	0.500
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	62.807	1200	482761.028	167731.034	1.475
S-R13-6	0.003	5.00	63.003	1200	482756.212	167717.267	1.758
S-R13-7	0.090	5.00	63.050	1200	482741.232	167699.436	1.475
S-R13-8			63.024	1200	482750.420	167710.168	1.833
S-R13-9			62.783	1200	482742.955	167715.804	1.652
S-R13-10	0.009	5.00	62.377	1200	482726.663	167725.172	1.357
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	61.961	1200	482771.654	167800.763	1.261
S-R13-48	0.061	5.00	62.561	1200	482766.227	167763.957	1.475
S-R13-49	0.010	5.00	62.407	1200	482767.027	167780.550	1.807
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	0.113	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	0.051	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			59.008		482537.886	167788.284	0.808
S-R13-30A		5.00	59.563	1200	482544.571	167638.385	1.250

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	61.332	61.245	0.087	168.3	225	5.24	54.6
2.001	S-R13-6	S-R13-8	9.153	0.600	61.245	61.191	0.054	169.5	225	5.26	54.5
3.000	S-R13-7	S-R13-8	14.408	0.600	61.575	61.191	0.384	37.5	225	5.24	54.6
2.002	S-R13-8	S-R13-9	10.066	0.600	61.191	61.131	0.060	167.8	225	5.43	53.9

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	1.533	0.049	0.0	73	0.820
2.001	1.001	39.8	9.8	1.533	1.608	0.052	0.0	76	0.832
3.000	2.142	85.2	16.8	1.250	1.608	0.090	0.0	67	1.672
2.002	1.006	40.0	26.2	1.608	1.427	0.142	0.0	133	1.072

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)
2.003	S-R13-9	S-R13-10	18.793	0.600	61.131	61.020	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
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

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)
2.003	1.002	39.8	25.6	1.427	1.132	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
5.007	1.001	358.2	112.2	1.632	1.166	0.744	0.0	259	0.890

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)
5.008	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	58.954	58.912	0.042	237.2	500	5.07	55.3
10.001	S-R13-38	S-R13-39	38.927	0.600	58.912	58.724	0.188	207.1	500	5.34	54.2
10.002	S-R13-39	S-R13-40	12.441	0.600	58.724	58.502	0.222	56.0	500	5.38	54.1
10.003	S-R13-40	S-R13-41	39.815	0.600	58.502	58.264	0.238	167.0	225	6.04	51.4
10.004	S-R13-41	S-R13-42	16.936	0.600	58.264	58.200	0.064	264.6	500	6.17	51.0
10.005	S-R13-42	S-R13-43	13.773	0.600	58.200	58.176	0.024	573.9	500	6.33	50.4
10.006	S-R13-43	S-R13-44	12.102	0.600	58.176	57.816	0.360	33.6	500	6.36	50.3
10.007	S-R13-44	S-R13-45	30.147	0.600	57.816	57.667	0.149	202.3	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
11.000	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
11.001	S-R13-49	S-R13-50	49.123	0.600	60.600	60.242	0.358	137.2	300	5.99	51.6
11.002	S-R13-50	S-R13-51	13.371	0.600	60.242	60.185	0.057	234.6	300	6.10	51.2
11.003	S-R13-51	S-R13-52	13.609	0.600	60.105	60.050	0.055	247.4	375	6.14	51.1
11.004	S-R13-52	S-R13-53	17.612	0.600	60.050	59.750	0.300	58.7	375	7.46	46.5
11.005	S-R13-53	S-R13-54	7.768	0.600	59.750	59.500	0.250	31.1	375	7.59	46.1
11.006	S-R13-54	S-R13-55	15.086	0.600	59.500	58.900	0.600	25.1	375	7.84	45.3
11.007	S-R13-55	S-R13-58	9.242	0.600	58.900	58.800	0.100	92.4	375	7.99	44.8

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)
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	2.288	2287.9	1.0	0.000	0.257	0.005	0.0	8	0.222
10.001	2.450	2449.6	1.0	0.257	0.000	0.005	0.0	8	0.238
10.002	4.721	4720.7	3.5	0.000	0.000	0.019	0.0	11	0.572
10.003	1.009	40.1	3.7	0.275	0.844	0.021	0.0	46	0.635
10.004	2.165	2165.4	4.4	0.569	0.308	0.025	0.0	21	0.384
10.005	1.466	1466.3	4.4	0.308	0.000	0.025	0.0	26	0.293
10.006	6.099	6098.7	6.0	0.000	0.000	0.035	0.0	13	0.823
10.007	0.703	12.4	5.9	0.350	0.603	0.035	0.0	73	0.694
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
11.000	1.088	76.9	26.1	0.961	1.507	0.140	0.0	120	0.987
12.000_1	2.024	80.5	11.5	1.250	1.507	0.061	0.0	58	1.451
11.001	1.340	94.7	37.5	1.507	1.149	0.212	0.0	131	1.264
11.002	1.022	72.2	52.7	1.149	1.014	0.300	0.0	191	1.112
11.003	1.147	126.7	52.5	1.019	0.873	0.300	0.0	168	1.095
11.004	2.368	261.6	52.0	0.873	0.863	0.326	0.0	112	1.859
11.005	3.260	360.1	57.0	0.863	0.974	0.360	0.0	100	2.404
11.006	3.626	400.4	63.2	0.974	1.323	0.406	0.0	100	2.674
11.007	1.885	208.2	67.4	1.323	1.198	0.438	0.0	146	1.688

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)
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
13.001	S-R13-57	S-R13-58	9.430	0.600	59.020	58.875	0.145	65.0	375	5.25	54.6
11.008	S-R13-58	S-R13-59	12.017	0.600	58.800	58.550	0.250	48.1	375	8.19	44.2
11.009	S-R13-59	S-R13-60	32.183	0.600	58.550	57.991	0.559	57.6	375	8.72	42.8
11.010	S-R13-60	S-R13-61	42.925	0.600	57.991	57.275	0.716	60.0	375	9.43	41.0
11.011	S-R13-61	S-R13-62	19.762	0.600	57.200	56.875	0.325	60.8	450	9.53	40.7
11.012	S-R13-62	S-R13-HW2	21.418	0.600	56.800	56.650	0.150	142.8	450	9.69	40.4
14.000	S-R13-HW3	S-R13-64	8.316	0.600	56.500	56.451	0.049	169.7	225	5.14	55.0
14.001	S-R13-64	S-R13-HW4	8.316	0.600	56.451	56.401	0.050	166.3	225	5.28	54.5

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)
12.000	1.026	40.8	21.3	1.021	0.906	0.113	0.0	116	1.037
13.001	2.249	248.4	22.5	0.906	1.123	0.120	0.0	76	1.419
11.008	2.619	289.2	84.7	1.198	1.371	0.558	0.0	139	2.288
11.009	2.392	264.1	84.9	1.371	1.523	0.578	0.0	146	2.142
11.010	2.343	258.8	90.7	1.523	1.687	0.644	0.0	153	2.143
11.011	2.610	415.2	103.3	1.687	1.659	0.740	0.0	152	2.185
11.012	1.699	270.2	109.7	1.734	1.100	0.791	0.0	199	1.613
14.000	1.001	39.8	0.0	1.475	1.524	0.000	0.0	0	0.000
14.001	1.011	40.2	0.0	1.524	1.870	0.000	0.0	0	0.000

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	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	62.807	61.332	1.250	63.003	61.245	1.533
2.001	9.153	169.5	225	ADOPTABLE	63.003	61.245	1.533	63.024	61.191	1.608
3.000	14.408	37.5	225	ADOPTABLE	63.050	61.575	1.250	63.024	61.191	1.608
2.002	10.066	167.8	225	ADOPTABLE	63.024	61.191	1.608	62.783	61.131	1.427
2.003	18.793	169.3	225	ADOPTABLE	62.783	61.131	1.427	62.377	61.020	1.132
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

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
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

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)
1.004	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
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

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
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
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

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)
1.014	9.302	127.4	750	ADOPTABLE	58.492	57.100	0.642	58.277	57.027	0.500
10.000	9.962	237.2	500	DRY SWALE	59.454	58.954	0.000	59.669	58.912	0.257
10.001	38.927	207.1	500	DRY SWALE	59.669	58.912	0.257	59.224	58.724	0.000
10.002	12.441	56.0	500	DRY SWALE	59.224	58.724	0.000	59.002	58.502	0.000
10.003	39.815	167.0	225	ADOPTABLE	59.002	58.502	0.275	59.333	58.264	0.844
10.004	16.936	264.6	500	DRY SWALE	59.333	58.264	0.569	59.008	58.200	0.308
10.005	13.773	573.9	500	DRY SWALE	59.008	58.200	0.308	58.676	58.176	0.000
10.006	12.102	33.6	500	DRY SWALE	58.676	58.176	0.000	58.316	57.816	0.000
10.007	30.147	202.3	150	ADOPTABLE	58.316	57.816	0.350	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
11.000	20.736	207.4	300	ADOPTABLE	61.961	60.700	0.961	62.407	60.600	1.507
12.000_1	17.256	42.0	225	ADOPTABLE	62.561	61.086	1.250	62.407	60.675	1.507
11.001	49.123	137.2	300	ADOPTABLE	62.407	60.600	1.507	61.691	60.242	1.149
11.002	13.371	234.6	300	ADOPTABLE	61.691	60.242	1.149	61.499	60.185	1.014
11.003	13.609	247.4	375	ADOPTABLE	61.499	60.105	1.019	61.298	60.050	0.873
11.004	17.612	58.7	375	ADOPTABLE	61.298	60.050	0.873	60.988	59.750	0.863
11.005	7.768	31.1	375	ADOPTABLE	60.988	59.750	0.863	60.849	59.500	0.974
11.006	15.086	25.1	375	ADOPTABLE	60.849	59.500	0.974	60.598	58.900	1.323
11.007	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
13.001	9.430	65.0	375	ADOPTABLE	60.301	59.020	0.906	60.373	58.875	1.123
11.008	12.017	48.1	375	ADOPTABLE	60.373	58.800	1.198	60.296	58.550	1.371
11.009	32.183	57.6	375	ADOPTABLE	60.296	58.550	1.371	59.889	57.991	1.523
11.010	42.925	60.0	375	ADOPTABLE	59.889	57.991	1.523	59.337	57.275	1.687

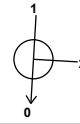
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.014	S-R13-36	1800	Manhole	Adoptable	S-R13-46	1800	Manhole	Adoptable
10.000	S-R13-37		Junction		S-R13-38		Junction	
10.001	S-R13-38		Junction		S-R13-39		Junction	
10.002	S-R13-39		Junction		S-R13-40		Junction	
10.003	S-R13-40		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	
11.000	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
11.001	S-R13-49	1200	Manhole	Adoptable	S-R13-50	1200	Manhole	Adoptable
11.002	S-R13-50	1200	Manhole	Adoptable	S-R13-51	1200	Manhole	Adoptable
11.003	S-R13-51	1200	Manhole	Adoptable	S-R13-52	1350	Manhole	Adoptable
11.004	S-R13-52	1350	Manhole	Adoptable	S-R13-53	1350	Manhole	Adoptable
11.005	S-R13-53	1350	Manhole	Adoptable	S-R13-54	1350	Manhole	Adoptable
11.006	S-R13-54	1350	Manhole	Adoptable	S-R13-55	1350	Manhole	Adoptable
11.007	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
13.001	S-R13-57	1200	Manhole	Adoptable	S-R13-58	1350	Manhole	Adoptable
11.008	S-R13-58	1350	Manhole	Adoptable	S-R13-59	1350	Manhole	Adoptable
11.009	S-R13-59	1350	Manhole	Adoptable	S-R13-60	1350	Manhole	Adoptable
11.010	S-R13-60	1350	Manhole	Adoptable	S-R13-61	1350	Manhole	Adoptable

Pipeline Schedule

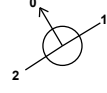
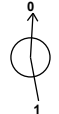
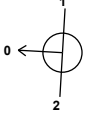
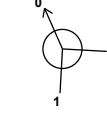
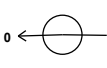
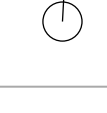
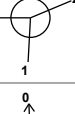
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
11.011	19.762	60.8	450	ADOPTABLE	59.337	57.200	1.687	58.984	56.875	1.659
11.012	21.418	142.8	450	ADOPTABLE	58.984	56.800	1.734	58.200	56.650	1.100
14.000	8.316	169.7	225	ADOPTABLE	58.200	56.500	1.475	58.200	56.451	1.524
14.001	8.316	166.3	225	ADOPTABLE	58.200	56.451	1.524	58.496	56.401	1.870

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
11.011	S-R13-61	1350	Manhole	Adoptable	S-R13-62	1350	Manhole	Adoptable
11.012	S-R13-62	1350	Manhole	Adoptable	S-R13-HW2		Junction	
14.000	S-R13-HW3		Junction		S-R13-64	1500	Manhole	Adoptable
14.001	S-R13-64	1500	Manhole	Adoptable	S-R13-HW4		Junction	

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
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

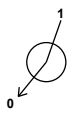
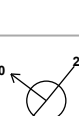
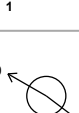
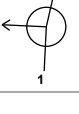
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R13-23	482617.530	167609.226	60.716	2.256	1200		1	6.000	58.535	225
							2	5.001	58.535	225
							0	5.002	58.460	300
S-R13-24	482601.288	167636.705	60.207	1.956	1350		1	5.002	58.326	300
					0		5.003	58.251	375	
S-R13-25	482599.445	167646.548	60.056	1.909	1350		1	5.003	58.222	375
							0	5.004	58.147	450
S-R13-29	482599.798	167652.587	59.968	2.252	1500		1	7.001	57.866	525
							2	5.004	57.941	450
							0	5.005	57.716	675
S-R13-30	482545.531	167655.610	59.817	2.180	1500		1	9.000	58.151	300
							2	5.005	57.637	675
							0	5.006	57.637	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
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
							0	1.010	57.755	525
S-R13-33	482547.712	167766.870	59.717	2.417	1800		1	5.008	57.300	750
							2	1.010	57.525	525
							0	1.011	57.300	750

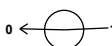
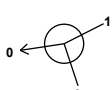
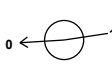
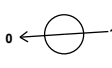
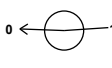
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R13-34	482547.289	167779.171	59.460	2.240	1800	0 1	1	1.011	57.220	750
S-R13-35	482544.118	167797.758	59.056	1.886	1800	0 1	1	1.012	57.220	750
						0 1	0	1.013	57.170	750
S-R13-36	482545.026	167824.049	58.492	1.392	1800	0 1	1	1.013	57.100	750
S-R13-37	482535.440	167670.797	59.454	0.500		0 0				
						0 0	0	10.000	58.954	500
S-R13-38	482534.749	167680.727	59.669	0.757		0 0	1	10.000	58.912	500
S-R13-39	482537.546	167719.548	59.224	0.500		0 0	0	10.001	58.912	500
						0 0	1	10.001	58.724	500
S-R13-40	482538.298	167731.954	59.002	0.500		0 0	1	10.002	58.724	500
S-R13-41	482541.133	167771.668	59.333	1.069		0 0	0	10.002	58.502	500
						0 0	1	10.003	58.502	225
S-R13-43	482541.133	167771.668	59.333	1.069		0 0	1	10.003	58.264	225
S-R13-43	482536.139	167801.942	58.676	0.500		0 0	0	10.004	58.264	500
						0 0	1	10.005	58.264	500
S-R13-44	482536.139	167801.942	58.676	0.500		0 0	1	10.005	58.176	500
S-R13-44	482535.475	167814.026	58.316	0.500	1200	0 0	0	10.006	58.176	500
						0 0	1	10.006	57.816	500
S-R13-45	482535.475	167814.026	58.316	0.500	1200	0 0	1	10.007	57.816	150
S-R13-45	482536.734	167825.000	58.420	0.753	1200	0 0	0	10.007	57.816	150
						0 0	1	10.007	57.667	150
S-R13-46	482536.734	167825.000	58.420	0.753	1200	0 0	1	10.008	57.667	150
S-R13-46	482541.743	167832.752	58.277	1.250	1800	0 0	2	1.014	57.627	750
						0 0	0	1.015	57.027	750
S-R13-HW1	482541.743	167832.752	58.277	1.250	1800	0 0	1	1.015	57.027	750
S-R13-HW1	482568.056	167850.638	58.200	1.550		0 0	1	1.015	56.650	750

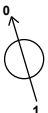
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-5	482761.028	167731.034	62.807	1.475	1200	 0	2.000	61.332	225
S-R13-6	482756.212	167717.267	63.003	1.758	1200	 1 0	2.000 2.001	61.245 61.245	225 225
S-R13-7	482741.232	167699.436	63.050	1.475	1200	 0	3.000	61.575	225
S-R13-8	482750.420	167710.168	63.024	1.833	1200	 1 2 0	3.000 2.001 2.002	61.191 61.191 61.191	225 225 225
S-R13-9	482742.955	167715.804	62.783	1.652	1200	 1 0	2.002 2.003	61.131 61.131	225 225
S-R13-10	482726.663	167725.172	62.377	1.357	1200	 1 0	2.003 2.004	61.020	225 225
S-R13-11	482705.747	167732.694	61.900	2.500	1200	 1 0	2.004 2.005	59.400	225 225
S-R13-12	482689.542	167736.003	61.557	2.832	1200	 1 2 0	2.005 1.003 1.004	58.950 58.725 58.725	225 450 450
S-R13-13	482690.445	167741.886	61.629	2.969	1200	 1 0	1.004 1.005	58.660	450 450
S-R13-47	482771.654	167800.763	61.961	1.261	1200	 0	11.000	60.700	300
S-R13-48	482766.227	167763.957	62.561	1.475	1200	 0	12.000_1	61.086	225
S-R13-49	482767.027	167780.550	62.407	1.807	1200	 1 2 0	12.000_1 11.000 11.001	60.675 60.600 60.600	225 300 300
S-R13-50	482717.958	167782.844	61.691	1.449	1200	 1 0	11.001 11.002	60.242	300 300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-51	482704.600	167782.262	61.499	1.394	1200	 1	11.002	60.185	300
						 0	11.003	60.105	375
S-R13-52	482690.995	167782.597	61.298	1.248	1350	 1	11.003	60.050	375
						 0	11.004	60.050	375
S-R13-53	482691.042	167800.209	60.988	1.238	1350	 1	11.004	59.750	375
						 0	11.005	59.750	375
S-R13-54	482689.944	167807.899	60.849	1.349	1350	 1	11.005	59.500	375
						 0	11.006	59.500	375
S-R13-55	482690.124	167822.984	60.598	1.698	1350	 1	11.006	58.900	375
						 0	11.007	58.900	375
S-R13-56	482703.334	167841.902	60.476	1.246	1200	 0	12.000	59.230	225
S-R13-57	482695.628	167836.029	60.301	1.281	1200	 1	12.000	59.170	225
						 0	13.001	59.020	375
S-R13-58	482687.221	167831.758	60.373	1.573	1350	 1	13.001	58.875	375
						 2	11.007	58.800	375
S-R13-59	482675.338	167829.966	60.296	1.746	1350	 1	11.008	58.800	375
						 0	11.008	58.550	375
S-R13-60	482643.216	167827.982	59.889	1.898	1350	 1	11.009	58.550	375
						 0	11.009	57.991	375
S-R13-61	482600.386	167825.133	59.337	2.137	1350	 1	11.010	57.991	375
						 0	11.010	57.275	375
S-R13-62	482580.637	167825.847	58.984	2.184	1350	 1	11.011	57.200	450
						 0	11.011	56.875	450
S-R13-HW2	482580.801	167849.375	58.200	1.550		 1	11.012	56.800	450
						 1	11.012	56.650	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S-R13-HW3	482563.421	167872.987	58.200	1.700					
						0	14.000	56.500	225
S-R13-64	482561.362	167879.919	58.200	1.749	1500		1	14.000	56.451
						0	14.001	56.451	225
S-R13-HW4	482559.664	167885.638	58.496	2.095			1	14.001	56.401
						1	1.002	58.990	450
S-R13-4	482684.397	167726.660	61.440	2.450	1350		0	1.003	58.990
						1	1.005	58.485	450
S-R13-14	482690.838	167770.988	61.504	3.019	1350		0	1.006	58.485
						1	10.004	58.200	500
S-R13-42	482537.886	167788.284	59.008	0.808			0	10.005	58.200
						1	9.000	58.313	300
S-R13-30A	482544.571	167638.385	59.563	1.250	1200				

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 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

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

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.69%

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	0.2218	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	0.1267	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	0.7229	0.0000	OK
60 minute summer	S-R13-30	34	58.074	0.437	230.8	0.7730	0.0000	OK
60 minute summer	S-R13-31	35	58.039	0.417	235.0	0.7373	0.0000	OK
60 minute summer	S-R13-32	35	57.953	0.418	263.7	1.0648	0.0000	OK
60 minute summer	S-R13-15	34	58.678	0.404	209.0	0.4568	0.0000	OK
60 minute summer	S-R13-16	34	58.567	0.443	239.0	0.5005	0.0000	OK
60 minute summer	S-R13-17	34	58.348	0.499	239.6	0.5644	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	58.246	0.491	321.2	0.7029	0.0000	OK
60 minute summer	S-R13-33	35	57.969	0.669	593.1	1.7026	0.0000	OK
60 minute summer	S-R13-34	35	57.896	0.676	617.7	1.7204	0.0000	OK
60 minute summer	S-R13-35	35	57.778	0.608	618.6	1.5470	0.0000	OK
60 minute summer	S-R13-36	35	57.606	0.506	630.4	1.2871	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	1.395	0.383	1.9215	
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	2.8342	
60 minute summer	S-R13-20	5.000	S-R13-21	27.7	1.441	0.535	0.1372	
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	12.4313	
60 minute summer	S-R13-30	5.006	S-R13-31	230.0	0.974	0.636	2.3659	
60 minute summer	S-R13-31	5.007	S-R13-32	231.7	1.063	0.647	13.6197	
60 minute summer	S-R13-32	5.008	S-R13-33	254.9	0.947	0.225	12.5068	
60 minute summer	S-R13-15	1.007	S-R13-16	205.4	1.499	0.808	3.7263	
60 minute summer	S-R13-16	1.008	S-R13-17	234.1	1.496	0.782	5.0637	
60 minute summer	S-R13-17	1.009	S-R13-19	239.5	1.512	1.365	1.0479	
60 minute summer	S-R13-18	4.000	S-R13-19	43.8	2.244	0.464	1.0464	
60 minute summer	S-R13-19	1.010	S-R13-33	318.7	1.625	1.053	11.8458	
60 minute summer	S-R13-33	1.011	S-R13-34	596.8	1.434	0.599	5.1236	
60 minute summer	S-R13-34	1.012	S-R13-35	618.6	1.542	0.976	7.5443	
60 minute summer	S-R13-35	1.013	S-R13-36	618.7	1.765	0.974	9.1833	
60 minute summer	S-R13-36	1.014	S-R13-46	628.8	2.179	0.575	2.6808	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.69%

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	58.954	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10.000:50%	32	58.944	0.011	1.7	0.0000	0.0000	OK
60 minute summer	S-R13-38	34	58.923	0.011	1.7	0.0000	0.0000	OK
60 minute summer	S-R13-39	34	58.731	0.007	1.7	0.0000	0.0000	OK
60 minute summer	10.002:50%	33	58.629	0.016	6.2	0.0000	0.0000	OK
60 minute summer	S-R13-40	33	58.561	0.059	6.2	0.0000	0.0000	OK
60 minute summer	10.003:50%	34	58.448	0.065	6.6	0.1334	0.0000	OK
60 minute summer	S-R13-41	34	58.290	0.026	6.6	0.0000	0.0000	OK
60 minute summer	10.004:50%	34	58.261	0.029	8.0	0.0220	0.0000	OK
60 minute summer	S-R13-43	34	58.192	0.016	7.9	0.0000	0.0000	OK
60 minute summer	10.006:50%	34	58.015	0.019	10.9	0.0000	0.0000	OK
60 minute summer	S-R13-44	35	57.928	0.112	10.9	0.1270	0.0000	OK
60 minute summer	S-R13-45	35	57.773	0.106	10.8	0.1197	0.0000	OK
60 minute summer	S-R13-46	35	57.456	0.429	644.5	1.0925	0.0000	OK
60 minute summer	S-R13-HW1	36	57.376	0.726	641.6	0.0000	0.0000	OK
60 minute summer	S-R13-5	34	61.468	0.136	16.0	0.1533	0.0000	OK
60 minute summer	S-R13-6	34	61.457	0.212	16.4	0.2393	0.0000	OK
60 minute summer	S-R13-7	33	61.665	0.090	29.1	0.1020	0.0000	OK
60 minute summer	S-R13-8	34	61.443	0.252	44.8	0.2851	0.0000	SURCHARGED
60 minute summer	S-R13-9	34	61.335	0.204	44.6	0.2307	0.0000	OK
60 minute summer	S-R13-10	34	61.109	0.089	47.5	0.1012	0.0000	OK
60 minute summer	S-R13-11	33	59.557	0.157	61.9	0.1773	0.0000	OK
60 minute summer	S-R13-12	33	59.045	0.320	167.1	0.3623	0.0000	OK
60 minute summer	S-R13-13	33	58.974	0.314	178.1	0.3546	0.0000	OK
60 minute summer	S-R13-47	33	60.882	0.182	45.6	0.2055	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-R13-37	10.000	10.000:50%	0.0	0.000	0.000	0.0150	
60 minute summer	S-R13-37	10.000	S-R13-38	1.7	0.285	0.001	0.0302	
60 minute summer	S-R13-38	10.001	S-R13-39	1.7	0.343	0.001	0.1932	
60 minute summer	S-R13-39	10.002	10.002:50%	1.7	0.286	0.000	0.0385	
60 minute summer	S-R13-39	10.002	S-R13-40	6.2	0.269	0.001	0.1508	
60 minute summer	S-R13-40	10.003	10.003:50%	6.1	0.694	0.152	0.1752	
60 minute summer	S-R13-40	10.003	S-R13-41	6.6	1.158	0.164	0.1186	
60 minute summer	S-R13-41	10.004	10.004:50%	6.6	0.415	0.003	0.1341	
60 minute summer	S-R13-41	10.004	S-R13-42	8.0	0.429	0.004	0.1574	
60 minute summer	S-R13-43	10.006	10.006:50%	7.9	0.835	0.001	0.0579	
60 minute summer	S-R13-43	10.006	S-R13-44	10.9	0.249	0.002	0.3156	
60 minute summer	S-R13-44	10.007	S-R13-45	10.8	0.786	0.866	0.4135	
60 minute summer	S-R13-45	10.008	S-R13-46	10.7	0.853	0.733	0.0738	
60 minute summer	S-R13-46	1.015	S-R13-HW1	641.6	1.774	0.476	11.0287	
60 minute summer	S-R13-HW1	Flow through Pond	S-R13-HW3	443.0	0.119	0.002	953.7063	
60 minute summer	S-R13-5	2.000	S-R13-6	15.4	0.692	0.386	0.4665	
60 minute summer	S-R13-6	2.001	S-R13-8	17.2	0.448	0.431	0.3595	
60 minute summer	S-R13-7	3.000	S-R13-8	29.1	0.982	0.342	0.3935	
60 minute summer	S-R13-8	2.002	S-R13-9	44.6	1.122	1.115	0.3907	
60 minute summer	S-R13-9	2.003	S-R13-10	44.7	1.637	1.122	0.4939	
60 minute summer	S-R13-10	2.004	S-R13-11	47.5	2.148	0.336	0.4915	
60 minute summer	S-R13-11	2.005	S-R13-12	61.8	2.226	0.718	0.4589	
60 minute summer	S-R13-12	1.004	S-R13-13	166.9	1.399	0.494	0.7101	
60 minute summer	S-R13-13	1.005	S-R13-14	177.7	1.522	0.710	3.3993	
60 minute summer	S-R13-47	11.000	S-R13-49	45.6	1.007	0.593	0.9405	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.69%

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	33	60.787	0.187	68.8	0.2112	0.0000	OK
60 minute summer	S-R13-50	33	60.591	0.349	97.3	0.3951	0.0000	SURCHARGED
60 minute summer	S-R13-51	33	60.347	0.242	97.1	0.2742	0.0000	OK
60 minute summer	S-R13-52	33	60.233	0.183	105.7	0.2625	0.0000	OK
60 minute summer	S-R13-53	33	59.928	0.178	116.6	0.2548	0.0000	OK
60 minute summer	S-R13-54	33	59.657	0.157	131.5	0.2242	0.0000	OK
60 minute summer	S-R13-55	33	59.183	0.283	141.7	0.4048	0.0000	OK
60 minute summer	S-R13-56	33	59.416	0.186	36.7	0.2109	0.0000	OK
60 minute summer	S-R13-57	32	59.135	0.115	39.1	0.1296	0.0000	OK
60 minute summer	S-R13-58	33	59.062	0.262	180.5	0.3750	0.0000	OK
60 minute summer	S-R13-59	33	58.802	0.252	186.4	0.3603	0.0000	OK
60 minute summer	S-R13-60	34	58.265	0.274	207.2	0.3923	0.0000	OK
60 minute summer	S-R13-61	34	57.520	0.320	237.2	0.4577	0.0000	OK
60 minute summer	S-R13-62	34	57.398	0.598	253.0	0.8564	0.0000	SURCHARGED
600 minute winter	S-R13-HW2	585	57.320	0.670	32.0	0.0000	0.0000	OK
360 minute winter	S-R13-HW3	360	57.281	0.781	99.7	0.0000	0.0000	SURCHARGED
360 minute winter	S-R13-64	360	57.274	0.823	14.1	1.4547	0.0000	SURCHARGED
120 minute winter	S-R13-HW4	72	56.492	0.091	14.0	0.0000	0.0000	OK
60 minute summer	S-R13-4	33	59.136	0.146	97.6	0.2084	0.0000	OK
60 minute summer	S-R13-14	34	58.794	0.309	196.5	0.4416	0.0000	OK
60 minute summer	S-R13-42	34	58.234	0.034	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

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	1.422	0.248	0.2713	
60 minute summer	S-R13-49	11.001	S-R13-50	68.7	1.065	0.725	2.8615	
60 minute summer	S-R13-50	11.002	S-R13-51	97.1	1.403	1.345	0.8779	
60 minute summer	S-R13-51	11.003	S-R13-52	97.1	1.504	0.766	0.8770	
60 minute summer	S-R13-52	11.004	S-R13-53	105.5	2.011	0.403	0.9254	
60 minute summer	S-R13-53	11.005	S-R13-54	116.5	2.455	0.323	0.3694	
60 minute summer	S-R13-54	11.006	S-R13-55	131.3	1.959	0.328	1.0016	
60 minute summer	S-R13-55	11.007	S-R13-58	141.3	1.653	0.679	0.7923	
60 minute summer	S-R13-56	12.000	S-R13-57	36.7	1.117	0.900	0.3174	
60 minute summer	S-R13-57	13.001	S-R13-58	39.2	1.227	0.158	0.3907	
60 minute summer	S-R13-58	11.008	S-R13-59	180.0	2.239	0.622	0.9669	
60 minute summer	S-R13-59	11.009	S-R13-60	185.9	2.258	0.704	2.6494	
60 minute summer	S-R13-60	11.010	S-R13-61	207.8	2.530	0.803	3.5231	
60 minute summer	S-R13-61	11.011	S-R13-62	237.2	2.079	0.571	2.7563	
60 minute summer	S-R13-62	11.012	S-R13-HW2	252.9	1.596	0.936	3.3935	
60 minute summer	S-R13-HW2	Flow through Pond	S-R13-HW3	443.0	0.119	0.002	953.7063	
60 minute winter	S-R13-HW3	14.000	S-R13-64	14.7	0.481	0.368	0.3307	
120 minute winter	S-R13-64	14.001	S-R13-HW4	14.0	0.907	0.348	0.1283	266.3
60 minute summer	S-R13-4	1.003	S-R13-12	97.9	1.184	0.192	0.8803	
60 minute summer	S-R13-14	1.006	S-R13-15	195.2	1.531	0.618	2.9390	
60 minute summer	S-R13-42	10.005	S-R13-43	7.9	0.559	0.005	0.1992	
60 minute summer	S-R13-30A	9.000	S-R13-30	0.0	0.000	0.000	0.0000	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-1	34	61.212	1.255	34.6	1.4200	0.0000	FLOOD RISK
60 minute summer	S-R13-2	34	61.172	1.484	94.6	1.6779	0.0000	FLOOD RISK
60 minute summer	S-R13-3	34	60.997	1.872	135.9	2.1172	7.6454	FLOOD
60 minute summer	S-R13-26	35	59.295	0.428	53.4	0.6131	0.0000	OK
60 minute summer	S-R13-27	35	59.317	0.427	9.0	0.4833	0.0000	SURCHARGED
60 minute summer	S-R13-28	35	59.296	1.141	136.0	2.0160	0.0000	SURCHARGED
60 minute summer	S-R13-20	35	60.049	1.099	50.4	1.2432	0.0000	SURCHARGED
60 minute summer	S-R13-21	35	59.972	1.092	50.6	1.2349	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	1.5594	0.0000	SURCHARGED
60 minute summer	S-R13-24	35	59.386	1.135	145.7	1.6237	0.0000	SURCHARGED
60 minute summer	S-R13-25	35	59.303	1.156	176.7	1.6548	0.0000	SURCHARGED
60 minute summer	S-R13-29	35	59.264	1.548	319.0	2.7354	0.0000	SURCHARGED
60 minute summer	S-R13-30	35	59.182	1.545	366.3	2.7304	0.0000	SURCHARGED
60 minute summer	S-R13-31	35	59.141	1.519	372.7	2.6847	0.0000	SURCHARGED
60 minute summer	S-R13-32	35	59.016	1.481	424.1	3.7693	0.0000	SURCHARGED
60 minute summer	S-R13-15	34	60.525	2.251	286.5	2.5455	0.0000	SURCHARGED
60 minute summer	S-R13-16	34	60.264	2.140	338.9	2.4208	0.0000	SURCHARGED
60 minute summer	S-R13-17	34	59.797	1.948	347.7	2.2026	0.0000	SURCHARGED
60 minute summer	S-R13-18	34	60.483	1.160	79.7	1.3119	0.0000	FLOOD RISK
60 minute summer	S-R13-19	35	59.605	1.850	489.4	2.6470	0.0000	SURCHARGED
60 minute summer	S-R13-33	35	58.938	1.638	938.0	4.1688	0.0000	SURCHARGED
60 minute summer	S-R13-34	35	58.753	1.533	975.7	3.9017	0.0000	SURCHARGED
60 minute summer	S-R13-35	35	58.514	1.344	974.2	3.4206	0.0000	SURCHARGED
60 minute summer	S-R13-36	36	58.231	1.131	994.9	2.8780	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	-19.9	0.854	-0.501	1.3095	
60 minute summer	S-R13-2	1.001	S-R13-3	94.6	2.287	0.535	1.1549	
60 minute summer	S-R13-3	1.002	S-R13-4	113.0	1.448	0.563	5.5005	
60 minute summer	S-R13-26	7.000	S-R13-28	53.2	1.799	0.100	3.7015	
60 minute summer	S-R13-27	8.000	S-R13-28	9.8	1.524	0.098	0.4708	
60 minute summer	S-R13-28	7.001	S-R13-29	125.9	1.222	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	47.1	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	1.760	1.751	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	169.2	2.268	0.283	0.9584	
60 minute summer	S-R13-29	5.005	S-R13-30	306.1	0.907	0.850	18.8477	
60 minute summer	S-R13-30	5.006	S-R13-31	364.5	1.059	1.008	3.5473	
60 minute summer	S-R13-31	5.007	S-R13-32	371.7	1.085	1.038	20.9610	
60 minute summer	S-R13-32	5.008	S-R13-33	423.2	0.962	0.373	19.5198	
60 minute summer	S-R13-15	1.007	S-R13-16	287.3	1.813	1.131	3.8361	
60 minute summer	S-R13-16	1.008	S-R13-17	337.1	2.128	1.126	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	0.773	1.5420	
60 minute summer	S-R13-19	1.010	S-R13-33	487.0	2.254	1.609	12.6634	
60 minute summer	S-R13-33	1.011	S-R13-34	937.5	2.130	0.942	5.4170	
60 minute summer	S-R13-34	1.012	S-R13-35	974.2	2.214	1.537	8.2989	
60 minute summer	S-R13-35	1.013	S-R13-36	973.5	2.212	1.533	11.5783	
60 minute summer	S-R13-36	1.014	S-R13-46	994.2	2.259	0.908	4.0940	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-37	1	58.954	0.000	0.0	0.0000	0.0000	OK
60 minute summer	10.000:50%	33	58.949	0.016	3.2	0.0000	0.0000	OK
60 minute summer	S-R13-38	33	58.929	0.017	3.2	0.0000	0.0000	OK
60 minute summer	S-R13-39	34	58.735	0.011	3.2	0.0000	0.0000	OK
60 minute summer	10.002:50%	33	58.635	0.022	11.2	0.0000	0.0000	OK
60 minute summer	S-R13-40	33	58.583	0.081	11.2	0.0000	0.0000	OK
60 minute summer	10.003:50%	34	58.469	0.086	12.0	0.2378	0.0000	OK
60 minute summer	S-R13-41	34	58.301	0.037	12.0	0.0000	0.0000	OK
60 minute summer	10.004:50%	34	58.273	0.041	14.6	0.0450	0.0000	OK
60 minute summer	S-R13-43	38	58.199	0.023	14.6	0.0000	0.0000	OK
60 minute summer	10.006:50%	38	58.200	0.204	20.0	0.0000	0.0000	OK
60 minute summer	S-R13-44	38	58.199	0.383	26.1	0.4332	0.0000	FLOOD RISK
60 minute summer	S-R13-45	36	58.075	0.408	16.8	0.4616	0.0000	SURCHARGED
60 minute summer	S-R13-46	36	58.049	1.022	1011.0	2.6014	0.0000	FLOOD RISK
600 minute winter	S-R13-HW1	645	57.866	1.216	149.1	0.0000	0.0000	OK
60 minute summer	S-R13-5	36	62.667	1.335	29.1	1.5094	0.0000	FLOOD RISK
60 minute summer	S-R13-6	36	62.633	1.388	28.1	1.5697	0.0000	SURCHARGED
60 minute summer	S-R13-7	36	62.715	1.140	53.0	1.2896	0.0000	SURCHARGED
60 minute summer	S-R13-8	36	62.604	1.413	75.5	1.5986	0.0000	SURCHARGED
60 minute summer	S-R13-9	36	62.383	1.252	73.0	1.4165	0.0000	SURCHARGED
60 minute summer	S-R13-10	36	62.024	1.004	75.8	1.1350	0.0000	SURCHARGED
60 minute summer	S-R13-11	35	61.562	2.162	95.6	2.4449	0.0000	SURCHARGED
60 minute summer	S-R13-12	34	60.973	2.248	232.7	2.5428	0.0000	SURCHARGED
60 minute summer	S-R13-13	34	60.909	2.249	245.4	2.5437	0.0000	SURCHARGED
60 minute summer	S-R13-47	33	61.961	1.261	83.0	1.4262	3.3037	FLOOD

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	0.0224	
60 minute summer	S-R13-37	10.000	S-R13-38	3.2	0.356	0.001	0.0450	
60 minute summer	S-R13-38	10.001	S-R13-39	3.2	0.434	0.001	0.2854	
60 minute summer	S-R13-39	10.002	10.002:50%	3.2	0.355	0.001	0.0567	
60 minute summer	S-R13-39	10.002	S-R13-40	11.2	0.333	0.002	0.2252	
60 minute summer	S-R13-40	10.003	10.003:50%	11.1	0.836	0.278	0.2653	
60 minute summer	S-R13-40	10.003	S-R13-41	12.0	1.369	0.300	0.1812	
60 minute summer	S-R13-41	10.004	10.004:50%	12.0	0.502	0.006	0.2029	
60 minute summer	S-R13-41	10.004	S-R13-42	14.6	0.532	0.007	0.2329	
60 minute summer	S-R13-43	10.006	10.006:50%	14.6	0.969	0.002	0.7264	
60 minute summer	S-R13-43	10.006	S-R13-44	26.1	0.262	0.004	2.5981	
60 minute summer	S-R13-44	10.007	S-R13-45	16.8	0.954	1.353	0.5307	
60 minute summer	S-R13-45	10.008	S-R13-46	17.5	0.995	1.200	0.1039	
60 minute summer	S-R13-46	1.015	S-R13-HW1	1009.0	2.293	0.749	13.9646	
60 minute summer	S-R13-HW1	Flow through Pond	S-R13-HW3	715.9	0.144	0.003	1737.6868	
60 minute summer	S-R13-5	2.000	S-R13-6	26.3	0.685	0.659	0.5822	
60 minute summer	S-R13-6	2.001	S-R13-8	25.9	0.652	0.652	0.3640	
60 minute summer	S-R13-7	3.000	S-R13-8	50.0	1.258	0.587	0.5730	
60 minute summer	S-R13-8	2.002	S-R13-9	73.0	1.835	1.823	0.4003	
60 minute summer	S-R13-9	2.003	S-R13-10	70.5	1.835	1.769	0.7474	
60 minute summer	S-R13-10	2.004	S-R13-11	82.1	2.099	0.581	0.8840	
60 minute summer	S-R13-11	2.005	S-R13-12	95.2	2.394	1.106	0.6578	
60 minute summer	S-R13-12	1.004	S-R13-13	226.5	1.430	0.670	0.9431	
60 minute summer	S-R13-13	1.005	S-R13-14	242.4	1.530	0.969	4.6115	
60 minute summer	S-R13-47	11.000	S-R13-49	78.6	1.117	1.023	1.4602	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.83%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	S-R13-48	34	62.000	0.914	36.4	1.0340	0.0000	SURCHARGED
60 minute summer	S-R13-49	34	61.900	1.300	116.8	1.4699	0.0000	SURCHARGED
60 minute summer	S-R13-50	34	61.503	1.261	164.2	1.4264	0.0000	FLOOD RISK
60 minute summer	S-R13-51	34	61.172	1.067	151.8	1.2063	0.0000	SURCHARGED
60 minute summer	S-R13-52	34	61.059	1.009	160.5	1.4435	0.0000	FLOOD RISK
60 minute summer	S-R13-53	34	60.895	1.145	177.6	1.6383	0.0000	FLOOD RISK
60 minute summer	S-R13-54	34	60.767	1.267	203.3	1.8124	0.0000	FLOOD RISK
60 minute summer	S-R13-55	34	60.520	1.620	221.6	2.3178	0.0000	FLOOD RISK
60 minute summer	S-R13-56	33	60.476	1.246	66.7	1.4092	0.9058	FLOOD
60 minute summer	S-R13-57	33	60.301	1.281	63.2	1.4488	7.2945	FLOOD
60 minute summer	S-R13-58	33	60.302	1.502	244.7	2.1489	0.0000	FLOOD RISK
60 minute summer	S-R13-59	34	60.023	1.473	252.7	2.1084	0.0000	FLOOD RISK
60 minute summer	S-R13-60	34	59.415	1.424	285.6	2.0380	0.0000	SURCHARGED
60 minute summer	S-R13-61	34	58.390	1.190	336.3	1.7029	0.0000	SURCHARGED
60 minute summer	S-R13-62	34	58.063	1.263	363.1	1.8077	0.0000	SURCHARGED
600 minute winter	S-R13-HW2	615	57.775	1.126	55.5	0.0000	0.0000	OK
600 minute winter	S-R13-HW3	600	57.767	1.267	118.6	0.0000	0.0000	SURCHARGED
600 minute winter	S-R13-64	600	57.760	1.309	14.1	2.3131	0.0000	SURCHARGED
120 minute winter	S-R13-HW4	58	56.492	0.091	14.0	0.0000	0.0000	OK
60 minute summer	S-R13-4	34	60.991	2.001	150.5	2.8638	0.0000	SURCHARGED
60 minute summer	S-R13-14	34	60.727	2.242	271.7	3.2082	0.0000	SURCHARGED
60 minute summer	S-R13-42	34	58.246	0.046	14.6	0.0000	0.0000	OK
60 minute summer	S-R13-30A	35	59.183	0.870	24.7	0.9836	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	35.0	1.428	0.435	0.6863	
60 minute summer	S-R13-49	11.001	S-R13-50	112.1	1.593	1.184	3.4592	
60 minute summer	S-R13-50	11.002	S-R13-51	151.8	2.155	2.101	0.9416	
60 minute summer	S-R13-51	11.003	S-R13-52	145.8	1.617	1.151	1.5010	
60 minute summer	S-R13-52	11.004	S-R13-53	158.5	2.055	0.606	1.9426	
60 minute summer	S-R13-53	11.005	S-R13-54	177.4	2.457	0.493	0.8568	
60 minute summer	S-R13-54	11.006	S-R13-55	203.7	1.946	0.509	1.6639	
60 minute summer	S-R13-55	11.007	S-R13-58	221.8	2.011	1.066	1.0194	
60 minute summer	S-R13-56	12.000	S-R13-57	58.8	1.480	1.442	0.3853	
60 minute summer	S-R13-57	13.001	S-R13-58	58.4	1.223	0.235	1.0401	
60 minute summer	S-R13-58	11.008	S-R13-59	243.3	2.258	0.841	1.3254	
60 minute summer	S-R13-59	11.009	S-R13-60	252.3	2.287	0.955	3.5497	
60 minute summer	S-R13-60	11.010	S-R13-61	280.3	2.542	1.083	4.7345	
60 minute summer	S-R13-61	11.011	S-R13-62	334.0	2.108	0.804	3.1312	
60 minute summer	S-R13-62	11.012	S-R13-HW2	362.7	2.290	1.342	3.3935	
60 minute summer	S-R13-HW2	Flow through Pond	S-R13-HW3	715.9	0.144	0.003	1737.6868	
60 minute summer	S-R13-HW3	14.000	S-R13-64	15.3	0.531	0.384	0.3307	
120 minute winter	S-R13-64	14.001	S-R13-HW4	14.0	0.907	0.348	0.1283	242.1
60 minute summer	S-R13-4	1.003	S-R13-12	140.6	1.221	0.275	1.6900	
60 minute summer	S-R13-14	1.006	S-R13-15	268.0	1.692	0.849	3.5032	
60 minute summer	S-R13-42	10.005	S-R13-43	14.6	0.707	0.010	0.2901	
60 minute summer	S-R13-30A	9.000	S-R13-30	-24.7	-0.441	-0.229	1.2149	

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
S-R7-6	0.017	5.00	56.817	1200	482472.463	167879.574	1.493
S-R7-7	0.064	5.00	56.422	1200	482443.802	167887.294	1.220
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
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
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	0.106	5.00	56.417	1350	482396.176	167855.165	1.625
S-R7-5	0.104	5.00	57.025	1200	482469.292	167867.896	1.475
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
2.000	S-R7-5	S-R7-6	12.101	0.600	55.550	55.399	0.151	80.0	225	5.20	54.8
1.004	S-R7-6	S-R7-7	29.683	0.600	55.324	55.202	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
2.000	1.463	58.2	19.6	1.250	1.193	0.104	0.0	90	1.325
1.004	1.003	70.9	44.0	1.193	0.920	0.249	0.0	171	1.055

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
3.000	S-R7-11	S-R7-12	14.036	0.600	54.792	53.953	0.839	16.7	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

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	54.9	0.920	1.128	0.314	0.0	113	2.237
1.006	2.457	173.7	56.2	1.128	1.330	0.323	0.0	117	2.199
1.007	2.707	299.0	60.8	1.330	1.619	0.360	0.0	114	2.139
1.008	1.022	112.9	72.3	1.619	1.591	0.430	0.0	219	1.082
3.000	3.862	273.0	17.5	1.325	1.559	0.106	0.0	51	2.189
1.009	1.033	164.2	100.8	1.591	1.782	0.540	0.0	255	1.083
1.010	1.042	165.7	101.1	1.782	1.929	0.548	0.0	254	1.091
1.011	1.031	163.9	102.7	1.928	2.196	0.584	0.0	259	1.086
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	117.1	2.196	2.126	0.668	0.0	198	1.729

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
2.000	12.101	80.0	225	ADOPTABLE	57.025	55.550	1.250	56.817	55.399	1.193
1.004	29.683	243.3	300	ADOPTABLE	56.817	55.324	1.193	56.422	55.202	0.920
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

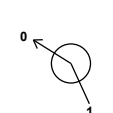
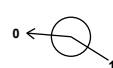
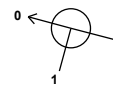
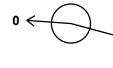
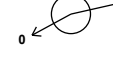
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S-R7-1	1200	Manhole	Adoptable	S-R7-2	1200	Manhole	Adoptable
1.001	S-R7-2	1200	Manhole	Adoptable	S-R7-3	1200	Manhole	Adoptable
1.002	S-R7-3	1200	Manhole	Adoptable	S-R7-4	1200	Manhole	Adoptable
1.003	S-R7-4	1200	Manhole	Adoptable	S-R7-6	1200	Manhole	Adoptable
2.000	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
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

Pipeline Schedule

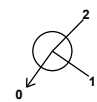
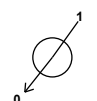
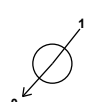
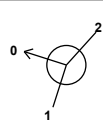
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.008	14.916	310.8	375	ADOPTABLE	55.888	53.894	1.619	55.812	53.846	1.591
3.000	14.036	16.7	300	ADOPTABLE	56.417	54.792	1.325	55.812	53.953	1.559
1.009	17.235	383.0	450	ADOPTABLE	55.812	53.771	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

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.008	S-R7-10	1350	Manhole	Adoptable	S-R7-12	1350	Manhole	Adoptable
3.000	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	

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	
S-R7-6	482472.463	167879.574	56.817	1.493	1200		1	2.000	55.399	225
							2	1.003	55.399	225
							0	1.004	55.324	300
S-R7-7	482443.802	167887.294	56.422	1.220	1200		1	1.004	55.202	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	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S-R7-10	482395.177	167873.708	55.888	1.994	1350		1	1.007	53.894	375
							0	1.008	53.894	375
S-R7-12	482384.717	167863.074	55.812	2.041	1350		1	3.000	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
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		0	3.000	54.792	300
S-R7-5	482469.292	167867.896	57.025	1.475	1200		0	2.000	55.550	225
S-R7-15	482348.558	167819.066	56.246	2.646	1350		1	4.001	53.675	225
							2	1.011	53.600	450
							0	1.012	53.600	450
S-R7-16	482347.750	167816.530	56.193	2.483	1200		1	4.000	53.710	225
							0	4.001	53.710	225
S-R7-17	482342.649	167811.132	56.057	2.257	1200		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			

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.96%

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	33	55.935	0.132	41.7	0.1494	0.0000	OK
60 minute summer	S-R7-6	33	55.595	0.271	81.1	0.3069	0.0000	OK
60 minute summer	S-R7-7	33	55.386	0.184	101.4	0.2081	0.0000	OK
60 minute summer	S-R7-8	33	55.042	0.192	104.3	0.2170	0.0000	OK
60 minute summer	S-R7-9	33	54.585	0.160	116.1	0.2288	0.0000	OK
60 minute summer	S-R7-10	34	54.351	0.457	138.8	0.6543	0.0000	SURCHARGED
60 minute summer	S-R7-12	34	54.241	0.470	172.6	0.6719	0.0000	SURCHARGED
60 minute summer	S-R7-13	34	54.164	0.438	175.0	0.6273	0.0000	OK
60 minute summer	S-R7-14	34	54.097	0.402	186.2	0.5749	0.0000	OK
60 minute summer	S-R7-HW	34	53.733	0.279	212.5	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	54.863	0.071	34.4	0.1022	0.0000	OK
60 minute summer	S-R7-5	32	55.691	0.141	34.0	0.1592	0.0000	OK
60 minute summer	S-R7-15	34	53.901	0.301	212.4	0.4311	0.0000	OK
60 minute summer	S-R7-16	34	53.901	0.191	1.6	0.2165	0.0000	OK
60 minute summer	S-R7-17	34	53.902	0.102	0.7	0.1152	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	0.939	0.308	0.3708	
60 minute summer	S-R7-4	1.003	S-R7-6	41.7	1.434	0.617	0.7317	
60 minute summer	S-R7-6	1.004	S-R7-7	80.4	1.427	1.134	1.6671	
60 minute summer	S-R7-7	1.005	S-R7-8	101.2	2.180	0.564	0.6317	
60 minute summer	S-R7-8	1.006	S-R7-9	104.0	2.381	0.599	0.6297	
60 minute summer	S-R7-9	1.007	S-R7-10	116.0	1.293	0.388	1.8527	
60 minute summer	S-R7-10	1.008	S-R7-12	138.0	1.252	1.223	1.6452	
60 minute summer	S-R7-12	1.009	S-R7-13	172.2	1.087	1.048	2.7213	
60 minute summer	S-R7-13	1.010	S-R7-14	175.2	1.138	1.057	1.7889	
60 minute summer	S-R7-14	1.011	S-R7-15	186.6	1.409	1.138	4.8304	
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	3.000	S-R7-12	34.4	2.034	0.126	0.5742	
60 minute summer	S-R7-5	2.000	S-R7-6	34.0	1.207	0.585	0.3797	
60 minute summer	S-R7-15	1.012	S-R7-HW	212.5	1.965	0.732	1.9569	230.1
60 minute summer	S-R7-16	4.001	S-R7-15	-1.6	-0.072	-0.027	0.1008	
60 minute summer	S-R7-17	4.000	S-R7-16	-0.7	-0.089	-0.012	0.1985	

Results for 100 year +40% CC 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	35	57.273	1.091	25.1	1.2341	0.0000	SURCHARGED
60 minute summer	S-R7-3	35	57.240	1.195	33.3	1.3516	0.0000	FLOOD RISK
60 minute summer	S-R7-4	35	57.165	1.362	64.7	1.5404	0.3375	FLOOD
60 minute summer	S-R7-6	35	56.780	1.456	122.7	1.6465	0.0000	FLOOD RISK
60 minute summer	S-R7-7	35	56.326	1.124	156.5	1.2708	0.0000	FLOOD RISK
60 minute summer	S-R7-8	35	55.921	1.071	160.9	1.2109	0.0000	SURCHARGED
60 minute summer	S-R7-9	35	55.467	1.042	180.5	1.4911	0.0000	SURCHARGED
60 minute summer	S-R7-10	34	55.204	1.310	217.6	1.8742	0.0000	SURCHARGED
60 minute summer	S-R7-12	34	54.925	1.154	277.1	1.6515	0.0000	SURCHARGED
60 minute summer	S-R7-13	34	54.719	0.993	281.5	1.4210	0.0000	SURCHARGED
60 minute summer	S-R7-14	34	54.549	0.854	300.9	1.2220	0.0000	SURCHARGED
60 minute summer	S-R7-HW	34	53.857	0.403	347.2	0.0000	0.0000	OK
60 minute summer	S-R7-1	35	57.309	0.964	26.9	1.0902	0.0000	SURCHARGED
60 minute summer	S-R7-11	34	54.953	0.161	62.5	0.2305	0.0000	OK
60 minute summer	S-R7-5	35	56.962	1.412	61.8	1.5971	0.0000	FLOOD RISK
60 minute summer	S-R7-15	34	54.131	0.531	347.4	0.7605	0.0000	SURCHARGED
60 minute summer	S-R7-16	34	54.131	0.421	4.6	0.4767	0.0000	SURCHARGED
60 minute summer	S-R7-17	34	54.132	0.332	2.7	0.3750	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	30.8	1.205	0.530	0.4356	
60 minute summer	S-R7-3	1.002	S-R7-4	38.6	0.970	0.663	0.7686	
60 minute summer	S-R7-4	1.003	S-R7-6	66.1	1.663	0.978	0.9541	
60 minute summer	S-R7-6	1.004	S-R7-7	123.1	1.748	1.736	2.0903	
60 minute summer	S-R7-7	1.005	S-R7-8	156.1	2.247	0.871	0.9580	
60 minute summer	S-R7-8	1.006	S-R7-9	161.8	2.426	0.932	1.0146	
60 minute summer	S-R7-9	1.007	S-R7-10	181.7	1.647	0.608	2.6357	
60 minute summer	S-R7-10	1.008	S-R7-12	218.1	1.978	1.932	1.6452	
60 minute summer	S-R7-12	1.009	S-R7-13	277.0	1.748	1.686	2.7308	
60 minute summer	S-R7-13	1.010	S-R7-14	282.3	1.782	1.704	1.8482	
60 minute summer	S-R7-14	1.011	S-R7-15	301.1	1.900	1.836	5.8448	
60 minute summer	S-R7-1	1.000	S-R7-2	25.1	1.303	0.431	0.5187	
60 minute summer	S-R7-11	3.000	S-R7-12	60.7	2.021	0.223	0.7645	
60 minute summer	S-R7-5	2.000	S-R7-6	57.0	1.433	0.980	0.4813	
60 minute summer	S-R7-15	1.012	S-R7-HW	347.2	2.193	1.197	2.7878	417.7
60 minute summer	S-R7-16	4.001	S-R7-15	-4.6	-0.115	-0.076	0.1059	
60 minute summer	S-R7-17	4.000	S-R7-16	-2.7	-0.083	-0.048	0.2954	