CAMBRIDGE DRAFT SUBMISSION POLICIES MAP - JULY 2013

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SOUTH CAMBRIDGESHIRE DISTRICT COUNCIL

North West Cambridge Area Action Plan

Cambridge East Area Action Plan

Key

- Cambridge City Boundary
- Conservation Area
- Protected Open Space
- Open Space - North West Cambridge Area Action Plan
- Site of Special Scientific Interest
- City Wildlife, County Wildlife and Local Nature Reserve
- Green Belt
- Strategic District Heating Area
- Cambridge Airport Public Safety Zone
- City Centre
- Primary Shopping Frontage
- Secondary Shopping Frontage
- Primary Shopping Area
- District, Local or Neighbourhood Centre
- Protected Industrial Site
- Indicative Boundary of National Geological Interest (inc. 10m buffer)
- Proposal Site
- Major Development - North West Cambridge Area Action Plan
- City Safeguarded Land
- Opportunity Area
- Area of Major Change
- Area Action Plan

MINERAL AND WASTE SAFEGUARDING

- Mineral Safeguarding Area - Sand and Gravel
- Allocation
- Area of Search
- Existing Site
- Transport Safeguarding Area
- Waste Consultation Area
- Waste Water Treatment Works Safeguarding Area

0 500 1,000 1,500 Metres

This Draft Submission Policies Map illustrates graphically the policies as set out in the Draft Submission Local Plan (2013).
It is proposed that this Map replaces the existing Cambridge Proposals Map: October 2009 in its entirety.

The entirety of the area within the Cambridge City Council administrative boundary is covered by the Mullard Radio Astronomy Observatory, Lord's Bridge Consultation area. See Policy 39.

Reference numbers refer to the main relevant policies in the Draft Submission Local Plan.

For the up-to-date information for the Flood Plain extent please check the Environment Agency's website at www.environment-agency.gov.uk

CAMBRIDGE CITY COUNCIL

Bell School (R42d)

3.60 Outline approval has been granted for up to 347 dwellings and 100-bed student residential accommodation. This has not yet been implemented. Reserved matters approval has been granted for the vehicular access off Babraham Road.

3.61 Figure 3.5 provides a diagrammatic representation of the principal land uses, access and transport arrangements, and landscape provision for the Southern Fringe and its relationship with the Cambridge Biomedical Campus (including Addenbrooke's Hospital) and the rest of the city.

3.62 Any further planning applications within this area will need to be in accordance with the outline consents and/or this policy. Opportunities should be taken to enhance amenity and biodiversity in the associated Green Belt land and access to this and the open countryside beyond. Key features to be taken into account include Hobson's Brook and other features important for biodiversity, existing trees, and the sensitive transition between the urban fringe and the open countryside.

Policy 18: West Cambridge Area of Major Change

Development of this area will be permitted in line with the existing planning permissions. The principal land uses will be:

a. D1 educational uses, associated sui generis research establishments[8] and academic research institutes where it is in the national interest or where they can show a special need to be located close to the University of Cambridge in order to share staff, equipment or data, and to undertake joint collaborative working; and
b. a mix of commercial research uses within use class B1(b) that can demonstrate a special need to be located close to the University of Cambridge;

The development will also include further phases of the sports centre.

Small-scale community facilities, amenities, and A1 (local shop), A3 (café), A4 (public house), D1 (crèche) type uses and student accommodation will be acceptable, if they support existing occupants on the site and add to the social spaces and vibrancy of the area, essential to its continued success.

[8] Research establishments/institutions are taken to mean sui generis uses affiliated with one of the Universities, the Medical Research Council or Addenbrooke's Hospital, where there is a need for regular day-to-day contact or sharing of materials, staff and equipment.

Any densification of development on the site that results in a significant increase in floorspace, over that already approved, will be supported providing that:

c. a revised masterplan has been proposed that takes an integrated and comprehensive approach to the provision and distribution of the uses, and supporting facilities and amenities;
d. phasing of the development will be determined through the masterplan and as the need is proven;
e. development should not exceed four commercial storeys (16 metres in total) and given the sensitivity of the Green Belt to the south and west a lower overall height may be appropriate along these edges;
f. proposals respect the important adjacent Green Belt setting to the south and west, and other neighbouring residential uses and views of the city from the west;
g. it includes a comprehensive transport strategy for the site, incorporating a sustainable transport plan to minimise reliance on private cars. This should include assessing the level, form and type of car parking on the site;
h. that walking, cycling and public transport links (including access for all) to the city centre, railway station(s), other principal educational and employment sites, and other key locations within the city are enhanced to support sustainable development; and
i. that proposals provide appropriate green infrastructure which is well integrated with the existing and new development and with the surrounding area.

The council will be supportive of a site-wide approach to renewable or low carbon energy generation or the future proofing of buildings to allow for connections to energy networks.

Supporting text:

3.63 The West Cambridge site is allocated for uses related to the University of Cambridge. Development has begun in accordance with an approved planning permission and supported by an agreed masterplan and development guidelines.

3.64 The overall site (allocation reference M13), which covers 66.5 hectares, was the subject of an outline planning approval in 1999 that set out the density of development permitted. A masterplan was subsequently agreed with the University of Cambridge for the development of approximately 250,000 sq m of space, which creates a strategic framework to guide future development of the site. It also includes guidelines for monitoring the progress of development.

3.65 Reserved matters and full applications have been approved on a number of plots and a number have been completed or are in the pipeline. The precise sequence and timing of development has been down to the availability of funding and that is likely to continue.

3.66 Figure 3.6 provides a diagrammatic representation of the principal land uses, access and transport arrangements and landscape provision for the West Cambridge site and its relationship with North West Cambridge, the National Institute of Agricultural Botany (NIAB), and the rest of the city.

3.67 The Council has identified an overall strategic need for further employment growth across the city, including making more efficient use of existing employment sites. The University of Cambridge supports that approach and wishes to intensify future development on the West Cambridge site. This is welcomed, as it will provide a more efficient use of land, increased opportunities to meet employment needs, a different approach to place making and enable the provision of more shared social spaces and other ancillary support services to enhance the vibrancy of the area. The latter may be best achieved through grouping of facilities, e.g. near the sports centre.

3.68 There is a generous supply of employment land for these uses around the city. The Council therefore will not be looking at West Cambridge to provide land for general research and development, but instead to provide a development cluster focusing on occupiers with strong links to the University of Cambridge and academic association with cognate activities that would benefit from proximity. This will encourage the development of the higher education cluster and thus benefit the economy of Cambridge and the United Kingdom. It will be appropriate for firms who wish to locate on West Cambridge to demonstrate a clear need to be close to other research facilities associated with the University of Cambridge.

3.69 Accordingly, a needs statement is required to support planning applications for West Cambridge, for built development to satisfactorily demonstrate the need for the development on West Cambridge at the time and that it cannot reasonably be met elsewhere. This would take into account factors such as viability, the demand for various uses, land availability, ownership, location, accessibility and suitability.

3.70 The new proposals will need to be accompanied by a new site-wide masterplan to advise on the form, content, density and phasing of the development, and how it will be integrated with the existing city. The increased density will provide further opportunities to enhance the built form, public realm and street scene of the area. Progress will be monitored and reviewed against the masterplan over the period of the plan.

3.71 The increased activity may put further pressure on the environment and the amenity of nearby residents; in particular the impact on biodiversity and

noise and light pollution in the area will need to be considered in any masterplan review. The sensitivities in relation to the Green Belt and western setting of the city will also need to be appropriately considered.

3.72 Key to the success of the new proposals will be an integrated and accessible sustainable public transport strategy (which considers all modes of travel, including public transport) to ensure that development has an acceptable impact on the surrounding transport network. This should take into account committed planned improvements to the public transport network that will be delivered by North West Cambridge. The additional development would have the advantage of establishing more activity, which will make public transport routes to and from the site more viable. It will also provide an opportunity to review cycle and walking links, and car parking across the site.

3.73 The increased densities being sought on the site, coupled with the possible provision of a swimming pool within the West Cambridge Sports Centre, could open up the potential of combined heat and power technology. There may also be potential for a more comprehensive scheme by linking the site to wider energy networks, for example the heat network being provided at the North West Cambridge site.

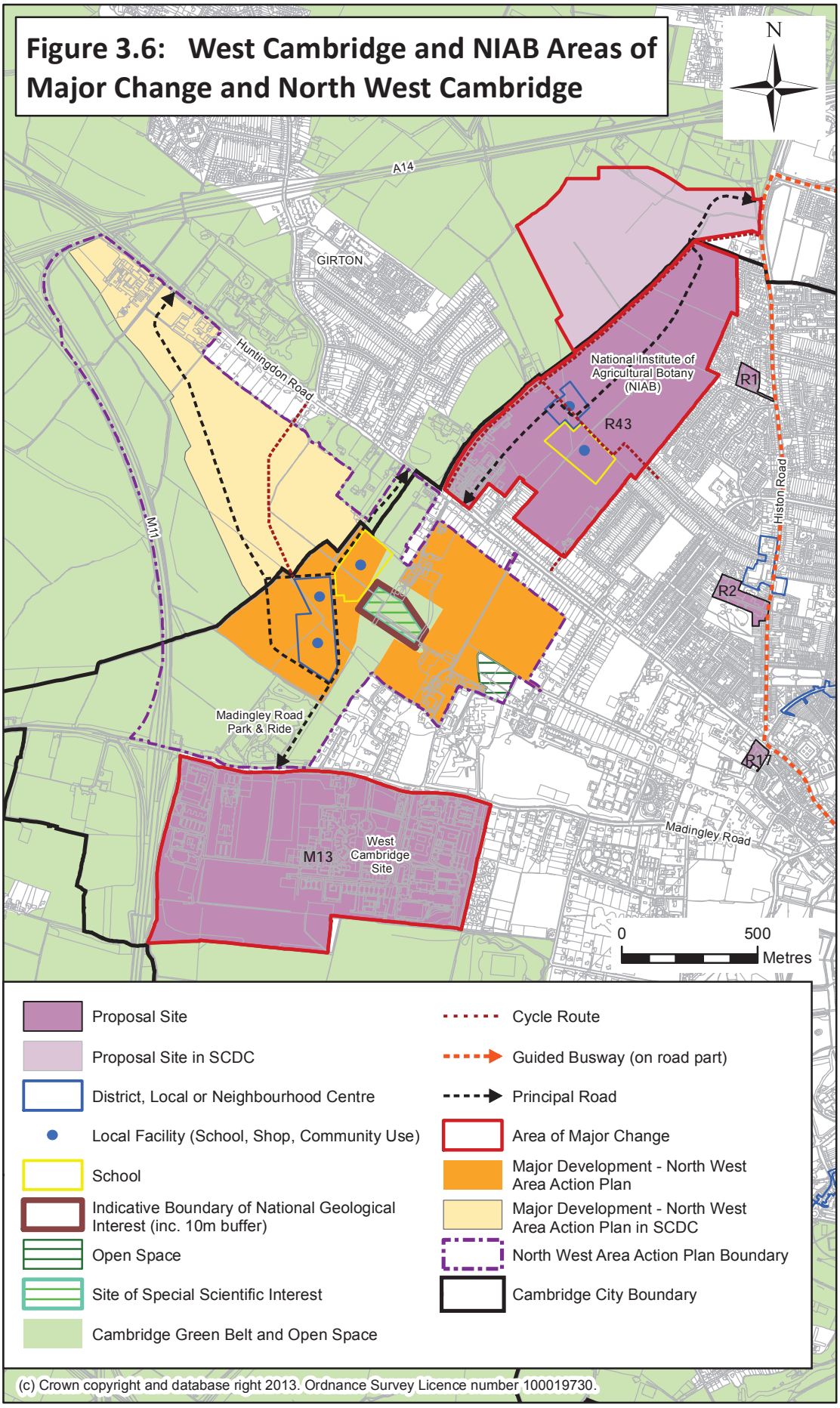
Figure 3.6: West Cambridge and NIAB Areas of Major Change and North West Cambridge
N
A14
GIRTON
Huntingdon Road
M11
National Institute of Agricultural Botany (NIAB)
R1
R43
Histon Road
R2
R17
Madingley Road Park & Ride
M13
West Cambridge Site
Madingley Road
0
500
Metres
Proposal Site
Proposal Site in SCDC
District, Local or Neighbourhood Centre
Local Facility (School, Shop, Community Use)
School
Indicative Boundary of National Geological Interest (inc. 10m buffer)
Open Space
Site of Special Scientific Interest
Cambridge Green Belt and Open Space
Cycle Route
Guided Busway (on road part)
Principal Road
Area of Major Change
Major Development - North West Area Action Plan
Major Development - North West Area Action Plan in SCDC
North West Area Action Plan Boundary
Cambridge City Boundary
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measures. Where an applicant has recently had a Green Deal assessment undertaken or the property has an Energy Performance Certificate (EPC), these could also be submitted as part of the planning application to demonstrate the need to comply with the policy.

4.23 The aim of the policy is to help homeowners implement measures that will enhance the energy efficiency of their homes, helping to reduce fuel costs at a time of rising energy prices. This might help reduce the risk of some homeowners finding themselves in fuel poverty, or in cases where residents are already in fuel poverty, help get them out of this situation. The focus is on cost-effective measures with a simple payback of seven years or less and that would be relatively simple to install with limited disruption. Many of these measures will be eligible for funding through the national Green Deal scheme.

4.24 Care will need to be taken in applying the policy to listed buildings and other heritage assets, to ensure that they are not damaged by inappropriate interventions. The implementation of the policy will be case by case, with officers recommending measures that would be suitable for that particular property, bearing in mind its age, type of construction and historic significance. There may be cases where improvements cannot be made to an existing dwelling without causing harm to the significance of the heritage asset, and in such circumstances the requirements of this policy will not be implemented.

Policy 31: Integrated water management and the water cycle

Development will be permitted provided that:

a. surface water is managed close to its source and on the surface where reasonably practicable to do so;
b. priority is given to the use of nature services[14];
c. water is seen as a resource and is re-used where practicable, offsetting potable water demand, and that a water sensitive approach is taken to the design of the development;
d. the features that manage surface water are commensurate with the design of the development in terms of size, form and materials and make an active contribution to making places for people;
e. surface water management features are multi-functional wherever possible in their land use;
f. any flat roof is a green or brown roof, providing that it is acceptable in terms of its context in the historic environment of Cambridge (see Policy 62: Conservation and Enhancement of Cambridge's Historic Environment)

[14]Nature services are defined by the National Planning Policy Framework as: 'The benefits people obtain from ecosystems such as, food, water, flood and disease control and recreation'. These are also known as ecosystem services.

and the structural capacity of the roof if it is a refurbishment. Green or brown roofs should be widely used in large-scale new communities;

g. there is no discharge from the developed site for rainfall depths up to 5 mm of any rainfall event;
h. the run-off from all hard surfaces shall receive an appropriate level of treatment in accordance with Sustainable Drainage Systems guidelines, SUDS Manual (CIRIA C697), to minimise the risk of pollution;
i. development adjacent to a water body actively seeks to enhance the water body in terms of its hydromorphology, biodiversity potential and setting;
j. watercourses are not culverted and any opportunity to remove culverts is taken; and
k. all hard surfaces are permeable surfaces where reasonably practicable.

Supporting Text:

4.25 The Surface Water Management Plan[15] and Strategic Flood Risk Assessment for Cambridge[16] have found there is little or no capacity in our rivers and watercourses that eventually receive surface water run-off from Cambridge and that it needs to be adequately managed so that flood risk is not increased elsewhere. The appropriate application of sustainable drainage systems to manage surface water within a development is the approach recommended within the technical guidance to the National Planning Policy Framework[17] (NPPF) as a way of managing this risk.

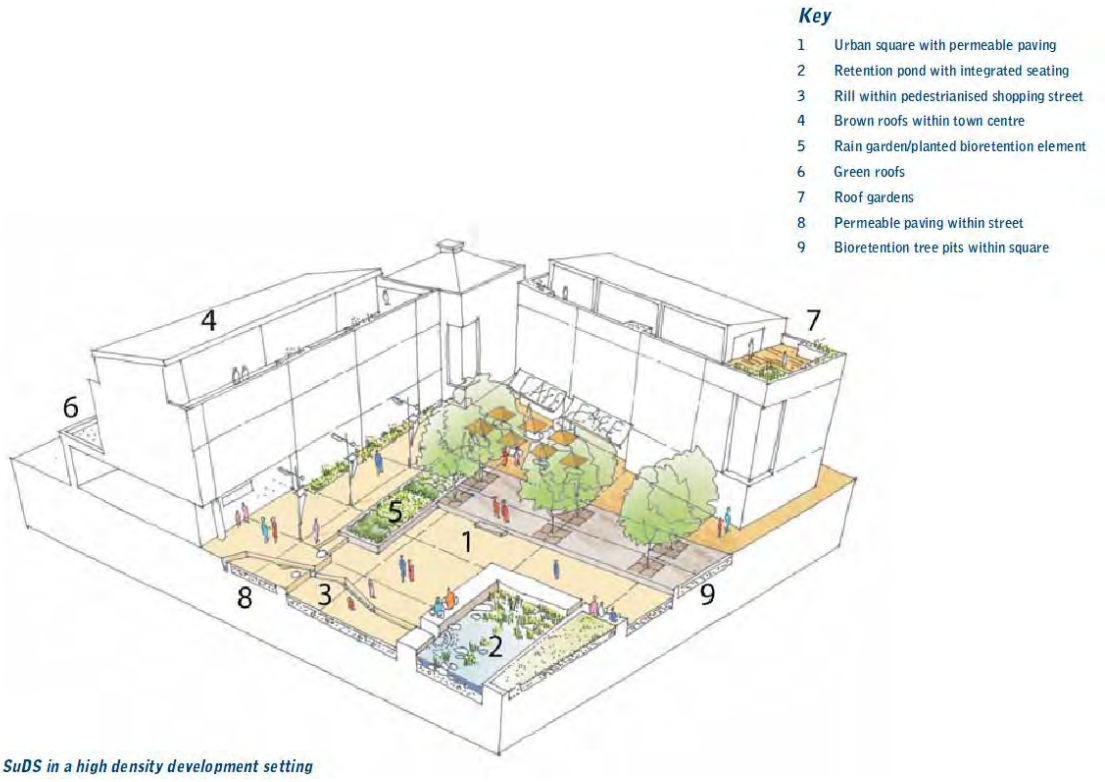
4.26 Current best practice guidance such as the SUDS Manual and Planning for SUDS (CIRIA C697 and C687) should be followed in the design of developments of all sizes, with design principles that are important to Cambridge set out in this policy. Smaller, more resilient features distributed throughout a development should be used, instead of one large management feature. Figure 4.4 provides examples of how to successfully integrate SuDS into a range of developments.

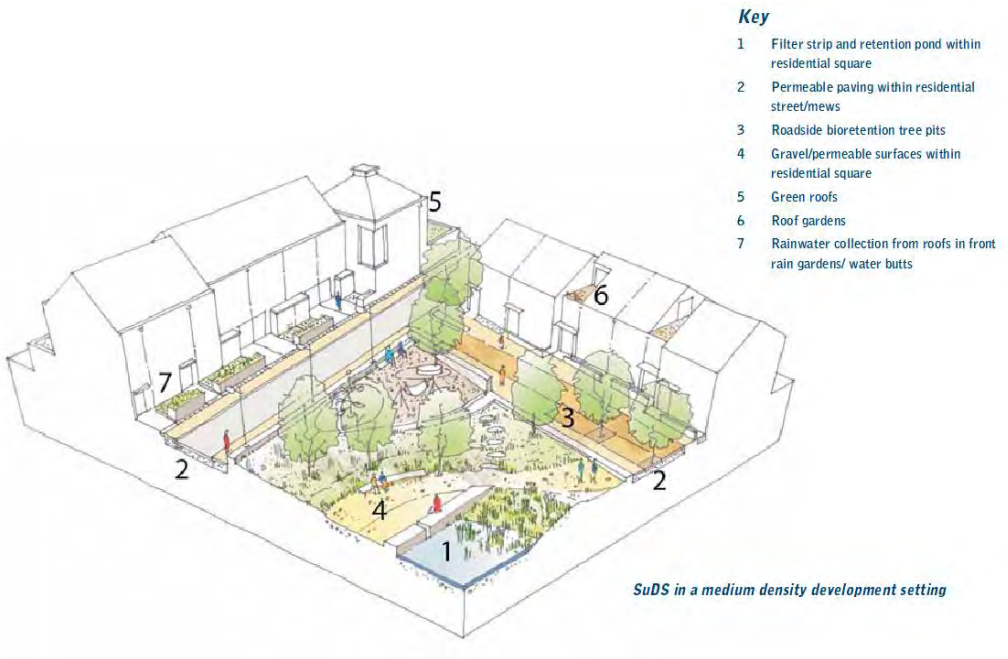
4.27 Managing water close to where it falls and on the surface is often the most cost-effective way to manage surface water. Early consideration in the design process helps achieve this. Managing water on the surface is an opportunity to celebrate water and create developments distinctive to Cambridge.

4.28 Climate change will in future see times of too much water and times of too little water more frequently than now. The design of new developments should reflect this change and value water as a resource than can be stored in times of plenty for re-use in times of deficit.

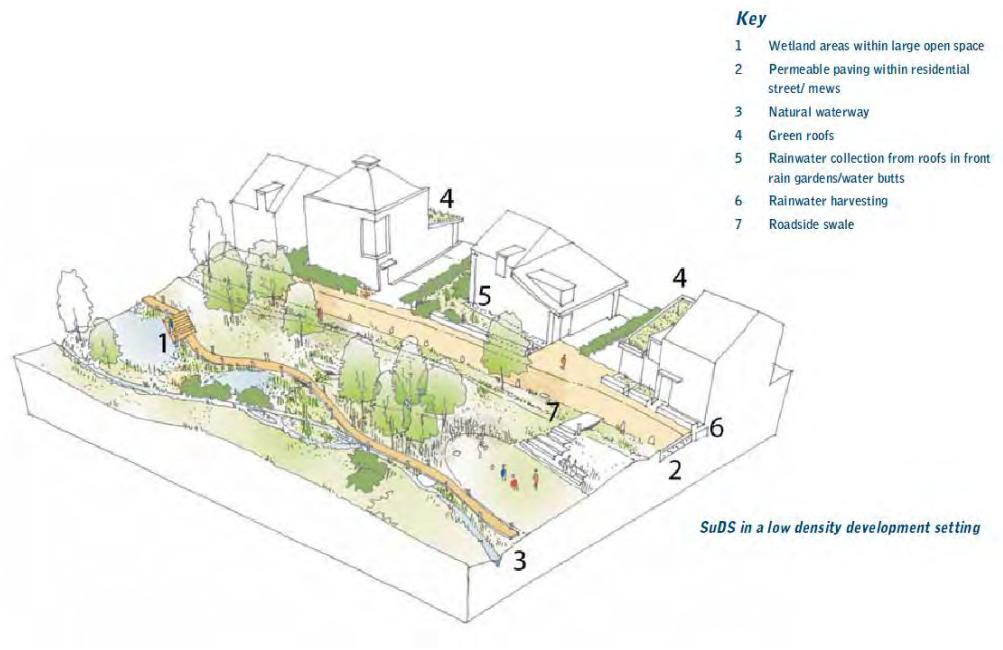
[15] https://www.cambridge.gov.uk/background-documents
[16] https://www.cambridge.gov.uk/strategic-flood-risk-assessment
[17] https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance

Figure 4.4: Examples of integrating SuDS into developments[18]





[18] Source: Dickie, S, McKay, G, Ions, L, Shaffer, P (2010) Planning for SUDS - Making it happen, CIRIA, C687, London (ISBN: 978-0-86017-687-9) Go to: www.ciria.org



4.29 Green and brown roofs are a key measure in terms of Cambridge's climate change adaptation policy. They offer multiple benefits for a comparatively small additional construction cost, including forming part of an effective sustainable drainage solution, reducing the amounts of storm water run-off and attenuating peak flow rates. In the summer, a green roof can typically retain 70-80 per cent of rainfall run-off. Predicted climate change means that Cambridge will experience increasing risks of flooding, overheating and drought, manifested through hotter drier summers and warmer wetter winters. Living roofs can reduce the negative effects of climate change, for example by improving a building's energy balance and reducing carbon emissions. The use of vegetation on a roof surface ameliorates the negative thermal effects of conventional roof surfaces through the cooling effect of evapotranspiration, which can also help ameliorate the urban heat island effect (UHI). It can also provide benefit in the form of insulation, helping to reduce the internal cooling load of buildings, thereby reducing energy use and associated carbon emissions. The biodiversity benefits of green roofs are manifold, supporting rare and interesting types of plant, which in turn can host a variety of rare and interesting fauna. Accessible roof space can also provide outdoor living space, particularly in high-density developments. As such, accessible roof space should be viewed as an integral element of a well-designed, high-quality, high-density, more efficient, attractive and liveable city.

4.30 Green/brown roofs can be more cost effective than a traditional roof over the lifetime of a development. A flat roof is defined as a roof with a pitch of between 0° and 10°.

4.31 The EU Water Framework Directive and the associated River Basin Management Plan for the Anglian region[19] require public bodies to have a positive impact on the quality of lakes, rivers and groundwater, collectively called water bodies. The water bodies in Cambridge are currently failing to achieve the required status of 'good'. Quality refers to the quality of the water body in terms of the quality of the water itself, the quality of the shape and form of the water body, and the quality of its biodiversity.

4.32 This policy seeks to ensure all surface water that is discharged to ground or into rivers, watercourses and sewers has an appropriate level of treatment to reduce the risk of diffuse pollution.

4.33 The policy also recognises that development adjacent to a water body provides an opportunity for both the development and the water body and that they should complement and enhance each other.

Policy 32: Flood risk

Potential flood risk from the development

Development will be permitted providing it is demonstrated that:

a. the peak rate of run-off over the lifetime of the development, allowing for climate change, is no greater for the developed site than it was for the undeveloped site;
b. the post-development volume of run-off, allowing for climate change over the development lifetime, is no greater than it would have been for the undeveloped site. If this cannot be achieved then the limiting discharge is 2 litre/s/ha for all events up to the 100-year return period event[20];
c. the development is designed so that the flooding of property in and adjacent to the development would not occur for a 1 in 100 year event, plus an allowance for climate change and in the event of local drainage system failure;
d. the discharge locations have the capacity to receive all foul and surface water flows from the development, including discharge by infiltration, into water bodies and into sewers;
e. there is a management and maintenance plan for the lifetime of the development, which shall include the arrangements for adoption by any

[19] Environment Agency (2009). Water for life and livelihoods. River Basin Management Plan – Anglian River Basin District

[20] Where the pre-development peak rate of run-off for the site would result in a requirement for the post-development flow rate to be less than 5 litre/s at a discharge point, a flow rate of up to 5 litre/s may be used where required to reduce the risk of blockage. If discharge is to be pumped then this allowance does not apply.

public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime; and

f. the destination of the discharge obeys the following priority order:
    - firstly, to ground via infiltration;
    - then, to a water body;
    - then, to a surface water sewer.

Discharge to a foul water or combined sewer is unacceptable.

Potential flood risk to the development

Development will be permitted if an assessment of the flood risk is undertaken following the principles of the National Planning Policy Framework and additionally:

For an undeveloped site:

g. if it is not located within the Environment Agency's flood zone 3b, unless it is a water-compatible development and does not increase flood risk elsewhere by either displacement of flood water or interruption of flood flow routes and employs flood resilient and resistant construction, including appropriate boundary treatment and has a safe means of evacuation; and

h. if it is not located within the Environment Agency's flood zone 3a, unless it is a water compatible development or minor development when the principles in a) above apply; and

i. if it is located within the Environment Agency's flood zone 2 or a surface water wetspot and employs flood resilient and resistant construction as appropriate; and

j. floor levels are 300mm above the 1-in-100-years flood level, plus an allowance for climate change where appropriate and/or 300mm above adjacent highway levels where appropriate.

For a previously developed site:

Opportunities should be taken to reduce the existing flood risk by the positioning of any development so that it does not increase flood risk elsewhere by either displacement of flood water or interruption of flood flow routes, and it employs flood resilient and resistant construction including appropriate boundary treatment and has a safe means of evacuation.

Supporting Text:

4.34 Both the Strategic Flood Risk Assessment[21] and Surface Water Management Plan for Cambridge[22] have found that without the mitigation measures outlined in this policy, developments could increase flood risk elsewhere.

[21] https://www.cambridge.gov.uk/strategic-flood-risk-assessment
[22] https://www.cambridge.gov.uk/background-documents

Flood risk assessments should make reference to the latest version of these studies. There is also an opportunity to reduce the overall flood risk in Cambridge through redevelopment. This policy seeks to address this with the same design standards applied to new developments on previously developed sites as undeveloped sites, as this refers to the site in its natural state prior to any development taking place.

4.35 The rivers, watercourses, sewers and ground conditions throughout Cambridge have varying amounts of capacity for flow from new developments and an adequate assessment of this capacity must be undertaken to support any development proposals. This policy builds upon the standards currently being achieved in the major growth sites on the fringes of Cambridge.

4.36 The appropriate responsible bodies including the Environment Agency, Anglian Water and Cambridgeshire County Council should be consulted, as appropriate, during the initial design process for any new development or redevelopment. The policies map also shows the area of the city covered by the Environment Agency's flood zones[23] (note that this relates to fluvial flooding only).

4.37 The Great Ouse Catchment Flood Management Plan[24] has assessed how an increase in the flow of water in rivers and watercourses due to climate change will affect Cambridge. It has concluded that flood zones will be inundated more frequently and for longer. This seeks to clarify what development would be acceptable in which flood zones. The findings of the Surface Water Management Plan for Cambridge highlights the importance of a careful consideration of the levels within a development such that if extreme events occur or there is a maintenance issue that causes the drainage system to stop working, properties will not flood as a result of surface water flooding (pluvial).

4.38 In the Environment Agency's flood zone 3, water may be flowing in the general direction of the river and interruption of these flows can increase flood risk to adjacent developments. Careful consideration must be given to the positioning of development on the site so there is no interruption of these flows. This should also include the consideration of boundary treatments to enable floodwater to flow with a minimum of hindrance to the flow.

4.39 Discharge of surface water to a foul or combined sewer is unacceptable.

[23] For further information on the flood zones please see the Environment Agency's website www.environment-agency.gov.uk
[24] http://www.environment-agency.gov.uk/research/planning/114303.aspx

uses alongside the railway and on industrial estates in Cambridge. Over the last ten years, and beyond, Cambridge has seen a loss of land and premises in industrial use as higher value uses, such as residential and retail, have put pressure on sites. The offices and industrial uses make up an important part of the economy; they meet the needs of people and businesses in the local area, in particular the business services that high technology firms rely on, as well as helping to provide a diverse range of jobs. The low technology businesses operate in a more local marketplace and their competitors are more likely to be in other businesses operating in the Cambridge area, and in some cases other businesses around the UK.

Policy 40: Development and expansion of business space

New offices, research and development and research facilities are encouraged to come forward within the following locations:

a. in the City Centre and the Eastern Gateway, providing they are of an appropriate scale and are part of mixed-use schemes with active frontage uses where practicable at ground floor level;
b. in the areas around the two stations (defined and subject to policies in Section Three); and
c. research and research and development facilities will be supported in the Cambridge Biomedical Campus and Addenbrooke's, and at the West Cambridge site, provided they satisfy relevant policies in Section Three of the plan.

Proposals for the development of these uses elsewhere in the city will be considered on their merits and alongside the policies in Section Three of the plan.

Development of larger employment sites, with multiple occupiers, should consider whether they want to provide shared social spaces within the site, to enhance the vitality and attractiveness of the site.

Supporting text:

5.6 The Council will support the forecast growth of 22,100 net additional jobs in Cambridge by 2031, including a net gain of some 8,800 jobs in the 'B' use classes (offices and industry). Growth of jobs in other use classes (including retail, health and education) is more difficult to quantify. Land requirements for and plans for other employment-generating development are considered elsewhere in the plan. Growth on this scale would generate a net demand for just around 70,200 sq m of additional floorspace or 7.4 hectares of land, as shown in Table 5.1, below. Planning for this employment space will ensure the local plan will support the continued development of a strong local

Policy 43: University faculty development

The development or redevelopment of faculty, research and administrative sites for the University of Cambridge and Anglia Ruskin University (including teaching hospital facilities) will be supported when it meets the principles set out in this policy and other planning policies.

Faculty development in the City Centre

In the City Centre, these uses will be permitted provided they:

a. optimise the use of land, including a mix of uses on larger sites to meet the needs of the relevant institution, and
b. take reasonable opportunities to improve circulation for pedestrians and cyclists, together with public realm improvements, reductions in car parking provision and the introduction of active frontages at ground floor level.

The following sites are allocated for these uses and shown on the policies map:

c. mixed-use redevelopment of the Mill Lane/Old Press site (Policy 25); and
d. mixed-use redevelopment of the New Museums site (Site U2).

In addition, development of sites in the Eastern Gateway or near East Road should consider including a significant element of faculty development.

Faculty development outside the City Centre

Beyond the City Centre, the following sites will provide opportunity for enhanced faculty and research facilities:

e. the development of medical teaching facilities and related university research institutes at Cambridge Biomedical Campus (see Policy 16); and
f. the continued development of the West Cambridge site at Madingley Road (see Policy 18).

Other proposals for these uses will be treated on their merits, although there will be a presumption against proposals if they result in a shortage of land for other uses as identified in this plan.

Supporting text:

5.21 Cambridge is a university city, home to both the University of Cambridge and Anglia Ruskin University.

5.22 The University of Cambridge continues to be a world leader in higher education and research. The University of Cambridge is consistently ranked in the top three research universities globally, based on the two internationally recognised measures. It is a vital driver of the Cambridge economy and is the reason why so many high technology and knowledge-based employers decide to locate in the city. It contributes to and is dependent upon the quality of life in the city and City Centre. The University of Cambridge's esteemed reputation has underpinned the Cambridge Phenomenon and much of the city's prosperity in recent years. The University of Cambridge and its colleges are also significant employers in their own right, providing over 12,000 jobs. Their reputation and heritage continues to attract students from across the world, tourists, language students, spin-off enterprise and medical research, and it continues to be a vital driver of the local and national economy.

5.23 The University of Cambridge has an overall estate comprising around 650,000 sq m on 247 hectares, distributed across a number of key locations in the City Centre and West Cambridge. West and North West Cambridge have been the focus of the University of Cambridge's growth and relocations in the past 14 years. Remaining development there will focus on further academic development and commercial research and development. Cambridge Biomedical Campus now has outline consent. The only other key locations where significant change is still planned are the Old Press/Mill Lane area and the New Museums site.

5.24 The University of Cambridge has plans to grow undergraduate numbers by 0.5 per cent a year and postgraduates by 2 per cent a year in order to maintain its globally successful institution. The University of Cambridge's key growth needs are being met by the developments in West and North West Cambridge and around Addenbrooke's, including those satellite centres where the plan is seeking densification and a broader mix of uses. The development of the University of Cambridge's North West Cambridge site is assessed in accordance with the North West Cambridge AAP. The policy acknowledges existing plans of the University of Cambridge on sites outside the City Centre and also provides an opportunity for redevelopment of sites in the City Centre where plans are evolving. The University of Cambridge has other, less advanced, plans for development of faculty uses, for example at Madingley Rise. These will be considered on their merits, and against other relevant policies in the plan – for instance, at Madingley Rise much of the open space is protected.

5.25 Anglia Ruskin University has made significant progress on the East Road site in modernising the faculty accommodation within the framework of the agreed 2009 masterplan. A planning application was subsequently approved and this work is now largely complete and provides around 9,000 sq m of new accommodation.

5.26 When the masterplan was written in 2008, Anglia Ruskin University needed around 12,000 sq m. The campus on East Road remains one of the tightest in the sector. However, implementation of the masterplan has left a shortfall in teaching space. The most recent Anglia Ruskin University estate strategy and corporate plan 2012-2014 has identified a need for at least 6,000 sq m of additional space. As well as catering for growth in student numbers, there is also a need to enhance existing space and recently redeveloped space, e.g. for laboratories, which are not meeting current requirements, and to reconsider the future of Anglia Ruskin University's library on the site. This will require the masterplan for Anglia Ruskin University to be revisited.

5.27 The East Road site and area remain the most sustainable location for Anglia Ruskin University during the next plan period, and any future needs for this institution should, in the first instance, be met close to this site. Therefore, any development proposals that come forward in these areas should consider whether faculty development is an appropriate use.

Policy 44: Specialist colleges and language Schools

The development of existing and new specialist schools will not be permitted unless they provide residential accommodation, social and amenity facilities for all non-local students (students arriving to study from outside Cambridge and the Cambridge sub-region), with controls in place to ensure that the provision of accommodation is in step with the expansion of student places.

Supporting text:

5.28 There are a growing number of specialist schools in Cambridge, including secretarial and tutorial colleges, pre-university foundation courses and crammer schools. These schools concentrate on GCSE and A level qualifications and pre-university foundation courses. They attract a large number of students and contribute significantly to the local economy.

5.29 Cambridge is also an important centre for the study of English as a foreign language. For more than 50 years, overseas students have been coming to Cambridge to study English in language schools (another form of specialist college). The city has 22 permanent foreign language schools and a fluctuating number of around 30 temporary schools, which set up in temporary premises over the summer months. Currently, the annual student load at these centres is thought to be around 31,000, although the average stay is only five weeks.

5.30 The industry has matured in recent years and more and more courses are being run throughout the year and are being focused at a much broader range of students, including people working in business as well as the more traditional younger students.

Table 5.2 Key employment sites in Cambridge

Site	Employment use	Net floorspace (sq m)	Net land (hectares)
Station Areas West	Offices	34,096	5.97
West Cambridge (NB: increased land and floorspace to be determined through development management)	Research and development	19,896	3.03
Cambridge Biomedical Campus and Addenbrooke's	Offices and research and development	151,333	16.43
North West Cambridge	Research and development	6,883	0.87
Fulbourn Road (GB3 and GB4)	Offices and research and development	25,193	3.7
Cambridge Northern Fringe East	Offices and research and development	To be determined through an area action plan	To be determined through an area action plan

5.9 There are six key employment sites in Cambridge that will deliver new jobs and prosperity to the Cambridge area. Developments on these sites will help grow the Cambridge Cluster, by ensuring there is sufficient employment land available in the right locations. Most of these new allocations are for new office or research and development land, as indicated by the forecasts. Many of these sites are highly specialised and their occupancy is restricted; for example, Addenbrooke's has a strong clinical, health and biomedical focus, while West Cambridge has an academic and physical science focus. The specialised nature of these sites means that their build out may be slow as the site managers have particular objectives when seeking to find occupants.

Table 5.3 Employment land supply at March 2012

Employment land provision 2011 to 2031	Net land (hectares)	Net floorspace (sq m)
Employment land developed between April 2011 and March 2012	-7.31	2,812
Employment land allocated or with planning permission at March 2012	19.32	218,955
Total employment land built, allocated or with planning permission 2011 to 2031	12.01	221,767

Appendix L Micro Drainage Simulation Results
- 1 in 30 Pipe Simulations
- 1 in 100 (+40%) Storage Simulations (including WINDES Node Plan)

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes SW PIPES Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	5	Add Flow / Climate Change (%)	0
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.450	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.491	8-12	0.377	16-20	0.248	24-28	1.255	32-36	3.316	40-44	3.786
4-8	0.883	12-16	0.276	20-24	0.000	28-32	9.086	36-40	1.953	44-48	0.745

Total Area Contributing (ha) = 22.416

Total Pipe Volume (m^3) = 2786.274

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	17.966	0.072	249.5	0.747	4.00	0.0	0.600	o	525	Pipe/Conduit	
S1.001	79.485	0.318	250.0	0.865	0.00	0.0	0.600	o	600	Pipe/Conduit	
S2.000	104.530	0.418	250.1	0.952	4.00	0.0	0.600	o	525	Pipe/Conduit	
S2.001	35.691	0.143	249.6	0.975	0.00	0.0	0.600	o	675	Pipe/Conduit	
S2.002	79.737	0.319	250.0	0.204	0.00	0.0	0.600	o	675	Pipe/Conduit	
S1.002	61.629	0.185	333.1	0.526	0.00	0.0	0.600	o	875	Pipe/Conduit	
S1.003	51.618	0.230	224.4	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	
S1.004	13.469	0.068	198.1	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	75.00	4.21	17.475	0.747	0.0	0.0	0.0	1.41	306.0	151.7
S1.001	75.00	5.07	17.328	1.612	0.0	0.0	0.0	1.54	434.2	327.4
S2.000	75.00	5.23	17.965	0.952	0.0	0.0	0.0	1.41	305.6	193.4
S2.001	75.00	5.59	17.397	1.927	0.0	0.0	0.0	1.65	592.0	391.4
S2.002	75.00	6.40	17.254	2.131	0.0	0.0	0.0	1.65	591.6	432.8
S1.002	75.00	7.01	16.735	4.269	0.0	0.0	0.0	1.68	1011.1	867.1
S1.003	75.00	7.43	16.550	4.269	0.0	0.0	0.0	2.05	1233.5	867.1
S1.004	75.00	7.53	16.320	4.269	0.0	0.0	0.0	2.18	1313.5	867.1

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.005	12.368	0.062	199.5	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	
S3.000	25.768	0.170	151.6	0.286	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	22.011	0.110	200.1	0.162	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.006	66.006	0.290	227.6	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.007	18.446	0.092	200.5	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.008	130.205	0.651	200.0	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.009	9.571	0.057	167.9	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.010	136.324	0.775	175.9	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S4.000	129.886	0.649	200.1	1.173	4.00	0.0	0.600	o	525	Pipe/Conduit	
S5.000	69.831	0.349	200.1	1.085	4.00	0.0	0.600	o	525	Pipe/Conduit	
S4.001	43.224	0.216	200.1	0.077	0.00	0.0	0.600	o	675	Pipe/Conduit	
S4.002	6.272	0.031	202.3	0.405	0.00	0.0	0.600	o	750	Pipe/Conduit	
S4.003	44.802	0.224	200.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S6.000	99.776	0.500	199.6	0.246	4.00	0.0	0.600	o	300	Pipe/Conduit	
S7.000	51.619	0.340	151.8	0.398	4.00	0.0	0.600	o	375	Pipe/Conduit	
S7.001	64.724	0.430	150.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.002	43.463	0.290	149.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.003	28.540	0.276	103.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.001	80.238	0.300	267.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.005	75.00	7.63	16.252	4.269	0.0	0.0	0.0	2.18	1308.8	867.1
S3.000	75.00	4.34	17.045	0.286	0.0	0.0	0.0	1.27	90.1	58.1
S3.001	75.00	4.67	16.875	0.448	0.0	0.0	0.0	1.11	78.3«	91.0
S1.006	75.00	8.16	16.165	4.717	0.0	0.0	0.0	2.07	1318.6	958.1
S1.007	75.00	8.30	15.875	4.717	0.0	0.0	0.0	2.21	1405.5	958.1
S1.008	71.09	9.28	15.783	4.717	0.0	0.0	0.0	2.21	1407.2	958.1
S1.009	70.82	9.34	15.132	4.717	0.0	0.0	0.0	2.42	1536.6	958.1
S1.010	67.25	10.24	15.075	4.717	0.0	0.0	0.0	2.52	1978.0	958.1
S4.000	75.00	5.37	16.755	1.173	0.0	0.0	0.0	1.58	342.0	238.3
S5.000	75.00	4.74	16.455	1.085	0.0	0.0	0.0	1.58	342.0	220.4
S4.001	75.00	5.76	15.956	2.335	0.0	0.0	0.0	1.85	661.7	474.3
S4.002	75.00	5.81	15.665	2.740	0.0	0.0	0.0	1.96	867.6	556.5
S4.003	75.00	6.19	15.634	2.740	0.0	0.0	0.0	1.98	872.6	556.5
S6.000	75.00	5.50	18.719	0.246	0.0	0.0	0.0	1.11	78.4	50.0
S7.000	75.00	4.59	19.480	0.398	0.0	0.0	0.0	1.47	162.2	80.8
S7.001	75.00	5.32	19.140	0.398	0.0	0.0	0.0	1.47	162.9	80.8
S7.002	75.00	5.81	18.710	0.398	0.0	0.0	0.0	1.48	163.2	80.8
S7.003	75.00	6.07	18.420	0.398	0.0	0.0	0.0	1.78	196.8	80.8
S6.001	75.00	6.98	17.919	0.644	0.0	0.0	0.0	1.48	419.7	130.8

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.002	3.433	0.179	19.2	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S6.003	61.378	0.780	78.7	1.316	0.00	0.0	0.600	o	680	Pipe/Conduit	
S6.004	6.371	0.020	318.6	0.000	0.00	0.0	0.600	o	680	Pipe/Conduit	
S6.005	40.521	0.110	368.4	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S8.000	55.053	0.300	183.5	0.171	4.00	0.0	0.600	o	450	Pipe/Conduit	
S8.001	100.444	0.300	334.8	0.504	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.002	7.271	0.120	60.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S6.006	49.044	1.040	47.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S4.004	73.185	0.410	178.5	0.280	0.00	0.0	0.600	o	900	Pipe/Conduit	
S4.005	126.298	0.550	229.6	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S9.000	63.403	0.317	200.0	0.476	4.00	0.0	0.600	o	450	Pipe/Conduit	
S9.001	6.518	0.033	197.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.002	62.164	0.249	249.7	0.784	0.00	0.0	0.600	o	525	Pipe/Conduit	
S9.003	68.571	0.274	250.3	0.353	0.00	0.0	0.600	o	600	Pipe/Conduit	
S10.000	86.241	0.300	287.5	1.118	4.00	0.0	0.600	o	525	Pipe/Conduit	
S10.001	23.031	0.119	193.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S9.004	40.000	0.160	250.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.005	81.776	0.327	250.1	0.244	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.006	65.659	0.263	249.7	0.282	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.007	6.999	0.028	250.0	0.412	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.008	8.392	0.034	246.8	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S6.002	75.00	6.99	17.619	0.644	0.0	0.0	0.0	5.58	1577.0	130.8
S6.003	75.00	7.33	17.360	1.960	0.0	0.0	0.0	2.97	1078.6	398.1
S6.004	75.00	7.40	16.580	1.960	0.0	0.0	0.0	1.47	533.8	398.1
S6.005	75.00	7.87	16.560	1.960	0.0	0.0	0.0	1.45	641.5	398.1
S8.000	75.00	4.61	17.470	0.171	0.0	0.0	0.0	1.50	238.2	34.7
S8.001	75.00	6.13	17.170	0.675	0.0	0.0	0.0	1.11	175.8	137.1
S8.002	75.00	6.17	16.870	0.675	0.0	0.0	0.0	2.62	416.0	137.1
S6.006	75.00	8.07	16.450	2.635	0.0	0.0	0.0	4.08	1803.1	535.2
S4.004	74.14	8.59	15.260	5.655	0.0	0.0	0.0	2.34	1490.0	1135.5
S4.005	69.98	9.54	14.850	5.655	0.0	0.0	0.0	2.20	1729.9	1135.5
S9.000	75.00	4.74	16.949	0.476	0.0	0.0	0.0	1.43	228.1	96.7
S9.001	75.00	4.81	16.632	0.476	0.0	0.0	0.0	1.44	229.5	96.7
S9.002	75.00	5.55	16.524	1.260	0.0	0.0	0.0	1.41	305.9	255.9
S9.003	75.00	6.29	16.200	1.613	0.0	0.0	0.0	1.53	434.0	327.6
S10.000	75.00	5.09	16.420	1.118	0.0	0.0	0.0	1.32	284.9	227.1
S10.001	75.00	5.33	16.120	1.118	0.0	0.0	0.0	1.61	347.8	227.1
S9.004	75.00	6.67	15.776	2.731	0.0	0.0	0.0	1.77	779.9	554.7
S9.005	75.00	7.44	15.616	2.975	0.0	0.0	0.0	1.77	779.8	604.3
S9.006	75.00	8.06	15.289	3.257	0.0	0.0	0.0	1.77	780.5	661.6
S9.007	75.00	8.12	14.876	3.669	0.0	0.0	0.0	1.98	1257.9	745.2
S9.008	75.00	8.19	14.848	3.669	0.0	0.0	0.0	1.99	1265.9	745.2

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S9.009	44.429	0.219	202.9	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.010	54.698	0.278	196.8	0.476	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.011	4.281	0.017	251.8	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.012	105.226	0.001	105226.1	0.000	0.00	0.0	0.600	o	2000	Pipe/Conduit	
S11.000	73.423	0.370	198.4	0.370	4.00	0.0	0.600	o	375	Pipe/Conduit	
S11.001	37.894	0.190	199.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.002	76.449	0.350	218.4	1.969	0.00	0.0	0.600	o	675	Pipe/Conduit	
S11.003	104.843	0.001	104843.5	0.000	0.00	0.0	0.600	o	2000	Pipe/Conduit	
S12.000	19.206	0.230	83.5	0.177	4.00	0.0	0.600	o	450	Pipe/Conduit	
S12.001	69.246	0.745	92.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S12.002	97.217	0.570	170.6	1.098	0.00	0.0	0.600	o	525	Pipe/Conduit	
S12.003	24.661	0.090	274.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S12.004	204.153	0.400	510.4	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S13.000	25.044	0.039	642.1	0.697	4.00	0.0	0.600	o	525	Pipe/Conduit	
S13.001	146.187	1.030	141.9	1.313	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S1.011	219.264	0.000	0.0	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S14.000	72.359	0.750	96.5	0.000	4.00	3.7	0.600	o	225	Pipe/Conduit	
S15.000	56.376	0.370	152.4	0.000	4.00	1.0	0.600	o	225	Pipe/Conduit	
S14.001	7.451	0.050	149.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S9.009	74.43	8.53	14.814	3.669	0.0	0.0	0.0	2.20	1397.2	745.2
S9.010	72.57	8.93	14.595	4.145	0.0	0.0	0.0	2.23	1418.9	814.7
S9.011	72.41	8.97	14.317	4.145	0.0	0.0	0.0	1.97	1253.2	814.7
S9.012	43.38	20.81	14.300	4.145	0.0	0.0	0.0	0.15	465.4«	814.7
S11.000	75.00	4.95	15.510	0.370	0.0	0.0	0.0	1.28	141.7	75.2
S11.001	75.00	5.45	15.140	0.370	0.0	0.0	0.0	1.28	141.3	75.2
S11.002	75.00	6.17	14.650	2.339	0.0	0.0	0.0	1.77	633.2	475.1
S11.003	47.81	17.94	14.300	2.339	0.0	0.0	0.0	0.15	466.3«	475.1
S12.000	75.00	4.14	17.010	0.177	0.0	0.0	0.0	2.23	354.1	36.0
S12.001	75.00	4.69	16.780	0.177	0.0	0.0	0.0	2.11	335.5	36.0
S12.002	75.00	5.64	15.960	1.275	0.0	0.0	0.0	1.71	370.7	259.0
S12.003	75.00	5.94	15.390	1.275	0.0	0.0	0.0	1.35	291.9	259.0
S12.004	75.00	8.25	15.300	1.275	0.0	0.0	0.0	1.47	1157.1	259.0
S13.000	75.00	4.48	15.370	0.697	0.0	0.0	0.0	0.88	189.7	141.6
S13.001	75.00	5.34	15.330	2.010	0.0	0.0	0.0	2.81	2203.1	408.3
S1.011	33.82	30.00	13.700	20.141	0.0	0.0	0.0	0.33	256.0«	1844.6
S14.000	75.00	4.91	14.500	0.000	3.7	0.0	0.0	1.33	52.9	3.7
S15.000	75.00	4.89	14.120	0.000	1.0	0.0	0.0	1.06	42.0	1.0
S14.001	75.00	5.02	13.750	0.000	4.7	0.0	0.0	1.07	42.5	4.7

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.012	231.624	0.000	0.0	0.524	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S1.013	12.906	0.050	258.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.014	126.321	0.850	148.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.015	12.556	0.060	209.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S16.000	104.352	0.420	248.5	1.090	4.00	0.0	0.600	o	600	Pipe/Conduit	
S16.001	5.155	0.021	245.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.002	36.163	0.150	241.1	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.003	113.458	0.450	252.1	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.004	63.606	0.250	254.4	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.005	76.774	0.305	251.7	0.151	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.006	22.768	0.091	250.2	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	
S16.007	3.934	0.016	245.9	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S16.008	55.166	0.700	78.8	0.510	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S16.009	8.864	0.235	37.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.016	8.662	0.040	216.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.017	12.722	0.040	318.1	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S17.000	140.671	0.736	191.1	0.000	4.00	20.0	0.600	o	225	Pipe/Conduit	
S17.001	32.478	0.180	180.0	0.000	0.00	15.0	0.600	o	225	Pipe/Conduit	
S17.002	92.714	0.669	138.6	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S17.003	64.485	0.370	174.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.004	59.956	0.340	176.3	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.005	52.143	0.300	173.8	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.006	24.212	0.140	172.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.012	33.82	30.00	13.700	20.665	4.7	0.0	0.0	0.33	256.0«	1897.3
S1.013	33.82	30.00	12.800	20.665	4.7	0.0	0.0	1.26	200.5«	1897.3
S1.014	33.82	30.00	12.750	20.665	4.7	0.0	0.0	1.67	264.9«	1897.3
S1.015	33.82	30.00	11.900	20.665	4.7	0.0	0.0	1.40	222.9«	1897.3
S16.000	75.00	5.13	14.853	1.090	0.0	0.0	0.0	1.54	435.5	221.4
S16.001	75.00	5.18	14.433	1.090	0.0	0.0	0.0	1.55	438.2	221.4
S16.002	75.00	5.57	14.412	1.090	0.0	0.0	0.0	1.56	442.2	221.4
S16.003	75.00	6.81	14.262	1.090	0.0	0.0	0.0	1.53	432.3	221.4
S16.004	75.00	7.50	13.812	1.090	0.0	0.0	0.0	1.52	430.4	221.4
S16.005	75.00	8.34	13.562	1.241	0.0	0.0	0.0	1.53	432.7	252.1
S16.006	74.23	8.57	13.182	1.241	0.0	0.0	0.0	1.65	591.3	252.1
S16.007	74.06	8.61	13.016	1.241	0.0	0.0	0.0	1.78	786.5	252.1
S16.008	72.95	8.85	13.000	1.751	0.0	0.0	0.0	3.77	2960.1	345.9
S16.009	72.64	8.92	12.300	1.751	0.0	0.0	0.0	2.14	85.0«	345.9
S1.016	33.82	30.00	11.690	22.416	4.7	0.0	0.0	1.65	466.8«	2057.6
S1.017	33.82	30.00	11.650	22.416	4.7	0.0	0.0	1.87	1468.4«	2057.6
S17.000	75.00	6.49	18.140	0.000	20.0	0.0	0.0	0.94	37.5	20.0
S17.001	75.00	7.05	17.404	0.000	35.0	0.0	0.0	0.97	38.6	35.0
S17.002	75.00	8.20	17.149	0.000	45.0	0.0	0.0	1.33	94.3	45.0
S17.003	71.81	9.11	16.480	0.000	45.0	0.0	0.0	1.19	84.0	45.0
S17.004	68.35	9.95	16.110	0.000	50.0	0.0	0.0	1.18	83.5	50.0
S17.005	65.65	10.69	15.770	0.000	55.0	0.0	0.0	1.19	84.1	55.0
S17.006	64.48	11.02	15.470	0.000	55.0	0.0	0.0	1.19	84.3	55.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S18.000	97.343	1.217	80.0	0.000	4.00	10.0	0.600	o	150	Pipe/Conduit	
S18.001	58.953	0.781	75.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S18.002	7.027	0.045	156.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.007	128.495	0.740	173.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S19.000	85.961	0.530	162.2	0.000	4.00	10.0	0.600	o	225	Pipe/Conduit	
S19.001	74.193	0.370	200.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S19.002	11.170	1.655	6.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.008	105.664	0.638	165.6	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S17.009	48.123	0.280	171.9	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.010	38.176	0.191	199.9	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.011	23.099	0.115	200.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.012	10.047	0.056	179.4	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.013	37.869	0.210	180.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.014	169.468	0.850	199.4	0.000	0.00	20.0	0.600	o	375	Pipe/Conduit	
S20.000	96.242	0.650	148.1	0.000	4.00	10.0	0.600	o	225	Pipe/Conduit	
S20.001	112.685	0.770	146.3	0.000	0.00	10.0	0.600	o	225	Pipe/Conduit	
S21.000	36.158	0.250	144.6	0.000	4.00	5.0	0.600	o	225	Pipe/Conduit	
S21.001	56.055	0.340	164.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S20.002	72.674	0.490	148.3	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S22.000	13.976	0.252	55.5	0.000	4.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S18.000	75.00	5.44	17.523	0.000	10.0	0.0	0.0	1.12	19.9	10.0
S18.001	75.00	6.09	16.231	0.000	10.0	0.0	0.0	1.51	59.9	10.0
S18.002	75.00	6.21	15.450	0.000	10.0	0.0	0.0	1.04	41.5	10.0
S17.007	58.97	12.82	15.330	0.000	65.0	0.0	0.0	1.19	84.1	65.0
S19.000	75.00	5.40	17.220	0.000	10.0	0.0	0.0	1.02	40.7	10.0
S19.001	75.00	6.74	16.690	0.000	10.0	0.0	0.0	0.92	36.6	10.0
S19.002	75.00	6.78	16.320	0.000	10.0	0.0	0.0	5.07	201.6	10.0
S17.008	55.25	14.27	14.590	0.000	85.0	0.0	0.0	1.22	86.2	85.0
S17.009	53.70	14.94	13.952	0.000	90.0	0.0	0.0	1.20	84.6«	90.0
S17.010	52.45	15.51	13.672	0.000	95.0	0.0	0.0	1.11	78.4«	95.0
S17.011	51.72	15.86	13.481	0.000	95.0	0.0	0.0	1.11	78.2«	95.0
S17.012	51.43	16.00	13.366	0.000	100.0	0.0	0.0	1.17	82.7«	100.0
S17.013	50.36	16.54	13.310	0.000	100.0	0.0	0.0	1.17	82.5«	100.0
S17.014	46.46	18.75	13.100	0.000	120.0	0.0	0.0	1.28	141.3	120.0
S20.000	75.00	5.50	14.830	0.000	10.0	0.0	0.0	1.07	42.6	10.0
S20.001	75.00	7.24	14.180	0.000	20.0	0.0	0.0	1.08	42.9	20.0
S21.000	75.00	4.56	14.000	0.000	5.0	0.0	0.0	1.09	43.1	5.0
S21.001	75.00	5.48	13.750	0.000	5.0	0.0	0.0	1.02	40.4	5.0
S20.002	75.00	8.18	13.335	0.000	35.0	0.0	0.0	1.29	91.1	35.0
S22.000	75.00	4.11	14.821	0.000	0.0	0.0	0.0	2.12	149.5	0.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S22.001	26.732	0.100	267.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.002	75.286	0.362	208.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.003	90.053	0.250	360.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.004	39.019	0.112	348.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.005	114.216	0.450	253.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.006	154.404	0.430	359.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S22.007	3.120	0.020	156.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S20.003	136.173	0.520	261.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S17.015	63.087	0.250	252.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S17.016	5.657	0.340	16.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.018	17.396	0.019	915.6	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S22.001	75.00	4.58	14.569	0.000	0.0	0.0	0.0	0.96	67.6	0.0
S22.002	75.00	5.73	14.469	0.000	0.0	0.0	0.0	1.09	76.8	0.0
S22.003	75.00	7.56	14.107	0.000	0.0	0.0	0.0	0.82	58.1	0.0
S22.004	75.00	8.33	13.857	0.000	0.0	0.0	0.0	0.84	59.1	0.0
S22.005	67.15	10.27	13.745	0.000	0.0	0.0	0.0	0.98	69.4	0.0
S22.006	58.54	12.98	13.220	0.000	0.0	0.0	0.0	0.95	105.0	0.0
S22.007	58.45	13.01	12.790	0.000	0.0	0.0	0.0	1.45	160.0	0.0
S20.003	53.45	15.05	12.770	0.000	35.0	0.0	0.0	1.11	123.1	35.0
S17.015	45.02	19.68	12.250	0.000	155.0	0.0	0.0	1.14	125.5«	155.0
S17.016	44.98	19.70	12.000	0.000	155.0	0.0	0.0	4.46	492.7	155.0
S1.018	33.82	30.00	11.620	22.416	159.7	0.0	0.0	1.10	861.5«	2212.6

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S28	21.240	3.765	Open Manhole	1500	S1.000	17.475	525				
S29	21.060	3.732	Open Manhole	1500	S1.001	17.328	600	S1.000	17.403	525	
S117	20.170	2.205	Open Manhole	1500	S2.000	17.965	525				
S4	20.590	3.193	Open Manhole	1500	S2.001	17.397	675	S2.000	17.547	525	
S5	20.920	3.666	Open Manhole	1500	S2.002	17.254	675	S2.001	17.254	675	
S24	20.910	4.175	Open Manhole	1800	S1.002	16.735	875	S1.001	17.010	600	
								S2.002	16.935	675	
S6	19.820	3.270	Open Manhole	1800	S1.003	16.550	875	S1.002	16.550	875	
S7	19.110	2.790	Open Manhole	1800	S1.004	16.320	875	S1.003	16.320	875	
S8	19.200	2.948	Open Manhole	1800	S1.005	16.252	875	S1.004	16.252	875	
S16	18.860	1.815	Open Manhole	1200	S3.000	17.045	300				
S17	19.020	2.145	Open Manhole	1200	S3.001	16.875	300	S3.000	16.875	300	
S9	18.920	2.755	Open Manhole	1800	S1.006	16.165	900	S1.005	16.190	875	
								S3.001	16.765	300	
S10	18.080	2.205	Open Manhole	1800	S1.007	15.875	900	S1.006	15.875	900	
S11	18.100	2.317	Open Manhole	1800	S1.008	15.783	900	S1.007	15.783	900	
S12	16.430	1.298	Open Manhole	1800	S1.009	15.132	900	S1.008	15.132	900	
S13	16.500	1.425	Open Manhole	1900	S1.010	15.075	1000	S1.009	15.075	900	
S32	21.140	4.385	Open Manhole	1500	S4.000	16.755	525				
S34	20.200	3.745	Open Manhole	1500	S5.000	16.455	525				
S32	20.600	4.644	Open Manhole	1500	S4.001	15.956	675	S4.000	16.106	525	
								S5.000	16.106	525	
S33	20.960	5.295	Open Manhole	1800	S4.002	15.665	750	S4.001	15.740	675	
S34	21.150	5.516	Open Manhole	1800	S4.003	15.634	750	S4.002	15.634	750	
S38	20.360	1.641	Open Manhole	1200	S6.000	18.719	300				
S39	20.330	0.850	Open Manhole	1350	S7.000	19.480	375				
S51	20.840	1.700	Open Manhole	1350	S7.001	19.140	375	S7.000	19.140	375	
S52	21.310	2.600	Open Manhole	1350	S7.002	18.710	375	S7.001	18.710	375	
S53	20.980	2.560	Open Manhole	1350	S7.003	18.420	375	S7.002	18.420	375	
S39	21.560	3.641	Open Manhole	1500	S6.001	17.919	600	S6.000	18.219	300	
								S7.003	18.144	375	
S40	20.970	3.351	Open Manhole	1500	S6.002	17.619	600	S6.001	17.619	600	
S41	20.920	3.560	Open Manhole	1500	S6.003	17.360	680	S6.002	17.440	600	
S42	20.430	3.850	Open Manhole	1500	S6.004	16.580	680	S6.003	16.580	680	
S43	20.490	3.930	Open Manhole	1800	S6.005	16.560	750	S6.004	16.560	680	
S46	18.830	1.360	Open Manhole	1350	S8.000	17.470	450				
S57	19.250	2.080	Open Manhole	1350	S8.001	17.170	450	S8.000	17.170	450	
S47	20.170	3.300	Open Manhole	1350	S8.002	16.870	450	S8.001	16.870	450	
S44	20.170	3.720	Open Manhole	1800	S6.006	16.450	750	S6.005	16.450	750	
								S8.002	16.750	450	
S35	21.380	6.120	Open Manhole	1800	S4.004	15.260	900	S4.003	15.410	750	
								S6.006	15.410	750	
S36	16.500	1.650	Open Manhole	1900	S4.005	14.850	1000	S4.004	14.850	900	
S46	18.770	1.821	Open Manhole	1350	S9.000	16.949	450				
S44	18.110	1.478	Open Manhole	1350	S9.001	16.632	450	S9.000	16.632	450	
S47	17.970	1.446	Open Manhole	1500	S9.002	16.524	525	S9.001	16.599	450	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S48	18.270	2.070	Open Manhole	1500	S9.003	16.200	600	S9.002	16.275	525	
S52	20.080	3.660	Open Manhole	1500	S10.000	16.420	525				
S53	18.810	2.690	Open Manhole	1500	S10.001	16.120	525	S10.000	16.120	525	
S40	18.680	2.904	Open Manhole	1800	S9.004	15.776	750	S9.003	15.926	600	
								S10.001	16.001	525	
S41	17.810	2.194	Open Manhole	1800	S9.005	15.616	750	S9.004	15.616	750	
S42	18.870	3.581	Open Manhole	1800	S9.006	15.289	750	S9.005	15.289	750	
S43	16.400	1.524	Open Manhole	1800	S9.007	14.876	900	S9.006	15.026	750	
S44	16.420	1.572	Open Manhole	1800	S9.008	14.848	900	S9.007	14.848	900	
S45	16.300	1.486	Open Manhole	1800	S9.009	14.814	900	S9.008	14.814	900	
S46	16.280	1.685	Open Manhole	1800	S9.010	14.595	900	S9.009	14.595	900	
S47	16.330	2.013	Open Manhole	1800	S9.011	14.317	900	S9.010	14.317	900	
S48	16.500	2.200	Open Manhole	2900	S9.012	14.300	2000	S9.011	14.300	900	
S53	16.250	0.740	Open Manhole	1350	S11.000	15.510	375				
S54	16.350	1.210	Open Manhole	1350	S11.001	15.140	375	S11.000	15.140	375	
S63	16.410	1.760	Open Manhole	1500	S11.002	14.650	675	S11.001	14.950	375	
S64	16.500	2.200	Open Manhole	2900	S11.003	14.300	2000	S11.002	14.300	675	
S66	19.020	2.010	Open Manhole	1350	S12.000	17.010	450				
S67	18.710	1.930	Open Manhole	1350	S12.001	16.780	450	S12.000	16.780	450	
S68	18.820	2.860	Open Manhole	1500	S12.002	15.960	525	S12.001	16.035	450	
S69	17.290	1.900	Open Manhole	1500	S12.003	15.390	525	S12.002	15.390	525	
S70	16.500	1.200	Open Manhole	1900	S12.004	15.300	1000	S12.003	15.300	525	
S74	16.500	1.130	Open Manhole	1500	S13.000	15.370	525				
S75	16.500	1.170	Open Manhole	1900	S13.001	15.330	1000	S13.000	15.331	525	
S83	16.500	2.800	Open Manhole	2900	S1.011	13.700	1000	S1.010	14.300	1000	600
								S4.005	14.300	1000	600
								S9.012	14.299	2000	1599
								S11.003	14.299	2000	1599
								S12.004	14.900	1000	1200
								S13.001	14.300	1000	600
S69	17.510	3.010	Open Manhole	1200	S14.000	14.500	225				
S74	15.000	0.880	Open Manhole	1200	S15.000	14.120	225				
S74	14.550	0.800	Open Manhole	1200	S14.001	13.750	225	S14.000	13.750	225	
								S15.000	13.750	225	
S16	14.700	1.000	Open Manhole	1900	S1.012	13.700	1000	S1.011	13.700	1000	
								S14.001	13.700	225	
S84	14.700	1.900	Open Manhole	1900	S1.013	12.800	450	S1.012	13.700	1000	1450
S76	13.750	1.000	Open Manhole	1350	S1.014	12.750	450	S1.013	12.750	450	
S70	13.000	1.100	Open Manhole	1350	S1.015	11.900	450	S1.014	11.900	450	
S102	17.310	2.457	Open Manhole	1500	S16.000	14.853	600				
S103	17.190	2.757	Open Manhole	1500	S16.001	14.433	600	S16.000	14.433	600	
S104	16.800	2.388	Open Manhole	1500	S16.002	14.412	600	S16.001	14.412	600	
S105	16.290	2.028	Open Manhole	1500	S16.003	14.262	600	S16.002	14.262	600	
S108	14.980	1.168	Open Manhole	1500	S16.004	13.812	600	S16.003	13.812	600	
S109	16.150	2.588	Open Manhole	1500	S16.005	13.562	600	S16.004	13.562	600	
S110	15.320	2.138	Open Manhole	1500	S16.006	13.182	675	S16.005	13.257	600	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S73	14.100	1.084	Open Manhole	1800	S16.007	13.016	750	S16.006	13.091	675	
S111	14.100	1.100	Open Manhole	1900	S16.008	13.000	1000	S16.007	13.000	750	
S81	13.300	1.000	Open Manhole	1900	S16.009	12.300	225	S16.008	12.300	1000	
S88	14.000	2.310	Open Manhole	1500	S1.016	11.690	600	S1.015	11.840	450	
								S16.009	12.065	225	
S79	14.000	2.350	Open Manhole	1900	S1.017	11.650	1000	S1.016	11.650	600	
S94	19.800	1.660	Open Manhole	1200	S17.000	18.140	225				
S85	20.000	2.596	Open Manhole	1200	S17.001	17.404	225	S17.000	17.404	225	
S66a	19.500	2.351	Open Manhole	1200	S17.002	17.149	300	S17.001	17.224	225	
S86	19.580	3.100	Open Manhole	1200	S17.003	16.480	300	S17.002	16.480	300	
S67	18.950	2.840	Open Manhole	1200	S17.004	16.110	300	S17.003	16.110	300	
S68	19.850	4.080	Open Manhole	1200	S17.005	15.770	300	S17.004	15.770	300	
S69	19.340	3.870	Open Manhole	1200	S17.006	15.470	300	S17.005	15.470	300	
S90	20.229	2.706	Open Manhole	1200	S18.000	17.523	150				
S90a	20.000	3.769	Open Manhole	1200	S18.001	16.231	225	S18.000	16.306	150	
S91	19.670	4.220	Open Manhole	1200	S18.002	15.450	225	S18.001	15.450	225	
S70	19.270	3.940	Open Manhole	1200	S17.007	15.330	300	S17.006	15.330	300	
								S18.002	15.405	225	
S72	18.060	0.840	Open Manhole	1200	S19.000	17.220	225				
S97	19.270	2.580	Open Manhole	1200	S19.001	16.690	225	S19.000	16.690	225	
S73	19.320	3.000	Open Manhole	1200	S19.002	16.320	225	S19.001	16.320	225	
S71	19.330	4.740	Open Manhole	1200	S17.008	14.590	300	S17.007	14.590	300	
								S19.002	14.665	225	
S72	18.270	4.318	Open Manhole	1200	S17.009	13.952	300	S17.008	13.952	300	
S73	15.870	2.198	Open Manhole	1200	S17.010	13.672	300	S17.009	13.672	300	
S74	15.500	2.019	Open Manhole	1200	S17.011	13.481	300	S17.010	13.481	300	
S74a	15.010	1.644	Open Manhole	1200	S17.012	13.366	300	S17.011	13.366	300	
S74b	15.000	1.690	Open Manhole	1200	S17.013	13.310	300	S17.012	13.310	300	
S106	14.140	1.040	Open Manhole	1350	S17.014	13.100	375	S17.013	13.100	300	
S110	16.240	1.410	Open Manhole	1200	S20.000	14.830	225				
S111	16.040	1.860	Open Manhole	1200	S20.001	14.180	225	S20.000	14.180	225	
S107	16.800	2.800	Open Manhole	1200	S21.000	14.000	225				
S108	16.389	2.639	Open Manhole	1200	S21.001	13.750	225	S21.000	13.750	225	
S106	15.870	2.535	Open Manhole	1200	S20.002	13.335	300	S20.001	13.410	225	
								S21.001	13.410	225	
S111	16.760	1.939	Open Manhole	1200	S22.000	14.821	300				
S111a	17.000	2.431	Open Manhole	1200	S22.001	14.569	300	S22.000	14.569	300	
S112	17.830	3.361	Open Manhole	1200	S22.002	14.469	300	S22.001	14.469	300	
S113	17.110	3.003	Open Manhole	1200	S22.003	14.107	300	S22.002	14.107	300	
S114	17.590	3.733	Open Manhole	1200	S22.004	13.857	300	S22.003	13.857	300	
S85	17.950	4.205	Open Manhole	1200	S22.005	13.745	300	S22.004	13.745	300	
S86	14.900	1.680	Open Manhole	1350	S22.006	13.220	375	S22.005	13.295	300	
S87	14.800	2.010	Open Manhole	1350	S22.007	12.790	375	S22.006	12.790	375	
S111	14.730	1.960	Open Manhole	1350	S20.003	12.770	375	S20.002	12.845	300	
								S22.007	12.770	375	
S111	13.730	1.480	Open Manhole	1350	S17.015	12.250	375	S17.014	12.250	375	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
								S20.003	12.250	375	
S88	13.300	1.300	Open Manhole	1350	S17.016	12.000	375	S17.015	12.000	375	
S89	14.000	2.390	Open Manhole	1900	S1.018	11.620	1000	S1.017	11.610	1000	
								S17.016	11.660	375	
S	12.800	1.199	Open Manhole	0		OUTFALL		S1.018	11.601	1000	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	525	S28	21.240	17.475	3.240	Open Manhole	1500
S1.001	o	600	S29	21.060	17.328	3.132	Open Manhole	1500
S2.000	o	525	S117	20.170	17.965	1.680	Open Manhole	1500
S2.001	o	675	S4	20.590	17.397	2.518	Open Manhole	1500
S2.002	o	675	S5	20.920	17.254	2.991	Open Manhole	1500
S1.002	o	875	S24	20.910	16.735	3.300	Open Manhole	1800
S1.003	o	875	S6	19.820	16.550	2.395	Open Manhole	1800
S1.004	o	875	S7	19.110	16.320	1.915	Open Manhole	1800
S1.005	o	875	S8	19.200	16.252	2.073	Open Manhole	1800
S3.000	o	300	S16	18.860	17.045	1.515	Open Manhole	1200
S3.001	o	300	S17	19.020	16.875	1.845	Open Manhole	1200
S1.006	o	900	S9	18.920	16.165	1.855	Open Manhole	1800
S1.007	o	900	S10	18.080	15.875	1.305	Open Manhole	1800
S1.008	o	900	S11	18.100	15.783	1.417	Open Manhole	1800
S1.009	o	900	S12	16.430	15.132	0.398	Open Manhole	1800
S1.010	o	1000	S13	16.500	15.075	0.425	Open Manhole	1900
S4.000	o	525	S32	21.140	16.755	3.860	Open Manhole	1500
S5.000	o	525	S34	20.200	16.455	3.220	Open Manhole	1500
S4.001	o	675	S32	20.600	15.956	3.969	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	17.966	249.5	S29	21.060	17.403	3.132	Open Manhole	1500
S1.001	79.485	250.0	S24	20.910	17.010	3.300	Open Manhole	1800
S2.000	104.530	250.1	S4	20.590	17.547	2.518	Open Manhole	1500
S2.001	35.691	249.6	S5	20.920	17.254	2.991	Open Manhole	1500
S2.002	79.737	250.0	S24	20.910	16.935	3.300	Open Manhole	1800
S1.002	61.629	333.1	S6	19.820	16.550	2.395	Open Manhole	1800
S1.003	51.618	224.4	S7	19.110	16.320	1.915	Open Manhole	1800
S1.004	13.469	198.1	S8	19.200	16.252	2.073	Open Manhole	1800
S1.005	12.368	199.5	S9	18.920	16.190	1.855	Open Manhole	1800
S3.000	25.768	151.6	S17	19.020	16.875	1.845	Open Manhole	1200
S3.001	22.011	200.1	S9	18.920	16.765	1.855	Open Manhole	1800
S1.006	66.006	227.6	S10	18.080	15.875	1.305	Open Manhole	1800
S1.007	18.446	200.5	S11	18.100	15.783	1.417	Open Manhole	1800
S1.008	130.205	200.0	S12	16.430	15.132	0.398	Open Manhole	1800
S1.009	9.571	167.9	S13	16.500	15.075	0.525	Open Manhole	1900
S1.010	136.324	175.9	S83	16.500	14.300	1.200	Open Manhole	2900
S4.000	129.886	200.1	S32	20.600	16.106	3.969	Open Manhole	1500
S5.000	69.831	200.1	S32	20.600	16.106	3.969	Open Manhole	1500
S4.001	43.224	200.1	S33	20.960	15.740	4.545	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.002	o	750	S33	20.960	15.665	4.545	Open Manhole	1800
S4.003	o	750	S34	21.150	15.634	4.766	Open Manhole	1800
S6.000	o	300	S38	20.360	18.719	1.341	Open Manhole	1200
S7.000	o	375	S39	20.330	19.480	0.475	Open Manhole	1350
S7.001	o	375	S51	20.840	19.140	1.325	Open Manhole	1350
S7.002	o	375	S52	21.310	18.710	2.225	Open Manhole	1350
S7.003	o	375	S53	20.980	18.420	2.185	Open Manhole	1350
S6.001	o	600	S39	21.560	17.919	3.041	Open Manhole	1500
S6.002	o	600	S40	20.970	17.619	2.751	Open Manhole	1500
S6.003	o	680	S41	20.920	17.360	2.880	Open Manhole	1500
S6.004	o	680	S42	20.430	16.580	3.170	Open Manhole	1500
S6.005	o	750	S43	20.490	16.560	3.180	Open Manhole	1800
S8.000	o	450	S46	18.830	17.470	0.910	Open Manhole	1350
S8.001	o	450	S57	19.250	17.170	1.630	Open Manhole	1350
S8.002	o	450	S47	20.170	16.870	2.850	Open Manhole	1350
S6.006	o	750	S44	20.170	16.450	2.970	Open Manhole	1800
S4.004	o	900	S35	21.380	15.260	5.220	Open Manhole	1800
S4.005	o	1000	S36	16.500	14.850	0.650	Open Manhole	1900
S9.000	o	450	S46	18.770	16.949	1.371	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.002	6.272	202.3	S34	21.150	15.634	4.766	Open Manhole	1800
S4.003	44.802	200.0	S35	21.380	15.410	5.220	Open Manhole	1800
S6.000	99.776	199.6	S39	21.560	18.219	3.041	Open Manhole	1500
S7.000	51.619	151.8	S51	20.840	19.140	1.325	Open Manhole	1350
S7.001	64.724	150.5	S52	21.310	18.710	2.225	Open Manhole	1350
S7.002	43.463	149.9	S53	20.980	18.420	2.185	Open Manhole	1350
S7.003	28.540	103.4	S39	21.560	18.144	3.041	Open Manhole	1500
S6.001	80.238	267.5	S40	20.970	17.619	2.751	Open Manhole	1500
S6.002	3.433	19.2	S41	20.920	17.440	2.880	Open Manhole	1500
S6.003	61.378	78.7	S42	20.430	16.580	3.170	Open Manhole	1500
S6.004	6.371	318.6	S43	20.490	16.560	3.250	Open Manhole	1800
S6.005	40.521	368.4	S44	20.170	16.450	2.970	Open Manhole	1800
S8.000	55.053	183.5	S57	19.250	17.170	1.630	Open Manhole	1350
S8.001	100.444	334.8	S47	20.170	16.870	2.850	Open Manhole	1350
S8.002	7.271	60.6	S44	20.170	16.750	2.970	Open Manhole	1800
S6.006	49.044	47.2	S35	21.380	15.410	5.220	Open Manhole	1800
S4.004	73.185	178.5	S36	16.500	14.850	0.750	Open Manhole	1900
S4.005	126.298	229.6	S83	16.500	14.300	1.200	Open Manhole	2900
S9.000	63.403	200.0	S44	18.110	16.632	1.028	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S9.001	o	450	S44	18.110	16.632	1.028	Open Manhole	1350
S9.002	o	525	S47	17.970	16.524	0.921	Open Manhole	1500
S9.003	o	600	S48	18.270	16.200	1.470	Open Manhole	1500
S10.000	o	525	S52	20.080	16.420	3.135	Open Manhole	1500
S10.001	o	525	S53	18.810	16.120	2.165	Open Manhole	1500
S9.004	o	750	S40	18.680	15.776	2.154	Open Manhole	1800
S9.005	o	750	S41	17.810	15.616	1.444	Open Manhole	1800
S9.006	o	750	S42	18.870	15.289	2.831	Open Manhole	1800
S9.007	o	900	S43	16.400	14.876	0.624	Open Manhole	1800
S9.008	o	900	S44	16.420	14.848	0.672	Open Manhole	1800
S9.009	o	900	S45	16.300	14.814	0.586	Open Manhole	1800
S9.010	o	900	S46	16.280	14.595	0.785	Open Manhole	1800
S9.011	o	900	S47	16.330	14.317	1.113	Open Manhole	1800
S9.012	o	2000	S48	16.500	14.300	0.200	Open Manhole	2900
S11.000	o	375	S53	16.250	15.510	0.365	Open Manhole	1350
S11.001	o	375	S54	16.350	15.140	0.835	Open Manhole	1350
S11.002	o	675	S63	16.410	14.650	1.085	Open Manhole	1500
S11.003	o	2000	S64	16.500	14.300	0.200	Open Manhole	2900
S12.000	o	450	S66	19.020	17.010	1.560	Open Manhole	1350
S12.001	o	450	S67	18.710	16.780	1.480	Open Manhole	1350
S12.002	o	525	S68	18.820	15.960	2.335	Open Manhole	1500
S12.003	o	525	S69	17.290	15.390	1.375	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S9.001	6.518	197.5	S47	17.970	16.599	0.921	Open Manhole	1500
S9.002	62.164	249.7	S48	18.270	16.275	1.470	Open Manhole	1500
S9.003	68.571	250.3	S40	18.680	15.926	2.154	Open Manhole	1800
S10.000	86.241	287.5	S53	18.810	16.120	2.165	Open Manhole	1500
S10.001	23.031	193.5	S40	18.680	16.001	2.154	Open Manhole	1800
S9.004	40.000	250.0	S41	17.810	15.616	1.444	Open Manhole	1800
S9.005	81.776	250.1	S42	18.870	15.289	2.831	Open Manhole	1800
S9.006	65.659	249.7	S43	16.400	15.026	0.624	Open Manhole	1800
S9.007	6.999	250.0	S44	16.420	14.848	0.672	Open Manhole	1800
S9.008	8.392	246.8	S45	16.300	14.814	0.586	Open Manhole	1800
S9.009	44.429	202.9	S46	16.280	14.595	0.785	Open Manhole	1800
S9.010	54.698	196.8	S47	16.330	14.317	1.113	Open Manhole	1800
S9.011	4.281	251.8	S48	16.500	14.300	1.300	Open Manhole	2900
S9.012	105.226	105226.1	S83	16.500	14.299	0.201	Open Manhole	2900
S11.000	73.423	198.4	S54	16.350	15.140	0.835	Open Manhole	1350
S11.001	37.894	199.4	S63	16.410	14.950	1.085	Open Manhole	1500
S11.002	76.449	218.4	S64	16.500	14.300	1.525	Open Manhole	2900
S11.003	104.843	104843.5	S83	16.500	14.299	0.201	Open Manhole	2900
S12.000	19.206	83.5	S67	18.710	16.780	1.480	Open Manhole	1350
S12.001	69.246	92.9	S68	18.820	16.035	2.335	Open Manhole	1500
S12.002	97.217	170.6	S69	17.290	15.390	1.375	Open Manhole	1500
S12.003	24.661	274.0	S70	16.500	15.300	0.675	Open Manhole	1900

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.004	o	1000	S70	16.500	15.300	0.200	Open Manhole	1900
S13.000	o	525	S74	16.500	15.370	0.605	Open Manhole	1500
S13.001	o	1000	S75	16.500	15.330	0.170	Open Manhole	1900
S1.011	o	1000	S83	16.500	13.700	1.800	Open Manhole	2900
S14.000	o	225	S69	17.510	14.500	2.785	Open Manhole	1200
S15.000	o	225	S74	15.000	14.120	0.655	Open Manhole	1200
S14.001	o	225	S74	14.550	13.750	0.575	Open Manhole	1200
S1.012	o	1000	S16	14.700	13.700	0.000	Open Manhole	1900
S1.013	o	450	S84	14.700	12.800	1.450	Open Manhole	1900
S1.014	o	450	S76	13.750	12.750	0.550	Open Manhole	1350
S1.015	o	450	S70	13.000	11.900	0.650	Open Manhole	1350
S16.000	o	600	S102	17.310	14.853	1.857	Open Manhole	1500
S16.001	o	600	S103	17.190	14.433	2.157	Open Manhole	1500
S16.002	o	600	S104	16.800	14.412	1.788	Open Manhole	1500
S16.003	o	600	S105	16.290	14.262	1.428	Open Manhole	1500
S16.004	o	600	S108	14.980	13.812	0.568	Open Manhole	1500
S16.005	o	600	S109	16.150	13.562	1.988	Open Manhole	1500
S16.006	o	675	S110	15.320	13.182	1.463	Open Manhole	1500
S16.007	o	750	S73	14.100	13.016	0.334	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.004	204.153	510.4	S83	16.500	14.900	0.600	Open Manhole	2900
S13.000	25.044	642.1	S75	16.500	15.331	0.644	Open Manhole	1900
S13.001	146.187	141.9	S83	16.500	14.300	1.200	Open Manhole	2900
S1.011	219.264	0.0	S16	14.700	13.700	0.000	Open Manhole	1900
S14.000	72.359	96.5	S74	14.550	13.750	0.575	Open Manhole	1200
S15.000	56.376	152.4	S74	14.550	13.750	0.575	Open Manhole	1200
S14.001	7.451	149.0	S16	14.700	13.700	0.775	Open Manhole	1900
S1.012	231.624	0.0	S84	14.700	13.700	0.000	Open Manhole	1900
S1.013	12.906	258.1	S76	13.750	12.750	0.550	Open Manhole	1350
S1.014	126.321	148.6	S70	13.000	11.900	0.650	Open Manhole	1350
S1.015	12.556	209.3	S88	14.000	11.840	1.710	Open Manhole	1500
S16.000	104.352	248.5	S103	17.190	14.433	2.157	Open Manhole	1500
S16.001	5.155	245.5	S104	16.800	14.412	1.788	Open Manhole	1500
S16.002	36.163	241.1	S105	16.290	14.262	1.428	Open Manhole	1500
S16.003	113.458	252.1	S108	14.980	13.812	0.568	Open Manhole	1500
S16.004	63.606	254.4	S109	16.150	13.562	1.988	Open Manhole	1500
S16.005	76.774	251.7	S110	15.320	13.257	1.463	Open Manhole	1500
S16.006	22.768	250.2	S73	14.100	13.091	0.334	Open Manhole	1800
S16.007	3.934	245.9	S111	14.100	13.000	0.350	Open Manhole	1900

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.008	o	1000	S111	14.100	13.000	0.100	Open Manhole	1900
S16.009	o	225	S81	13.300	12.300	0.775	Open Manhole	1900
S1.016	o	600	S88	14.000	11.690	1.710	Open Manhole	1500
S1.017	o	1000	S79	14.000	11.650	1.350	Open Manhole	1900
S17.000	o	225	S94	19.800	18.140	1.435	Open Manhole	1200
S17.001	o	225	S85	20.000	17.404	2.371	Open Manhole	1200
S17.002	o	300	S66a	19.500	17.149	2.051	Open Manhole	1200
S17.003	o	300	S86	19.580	16.480	2.800	Open Manhole	1200
S17.004	o	300	S67	18.950	16.110	2.540	Open Manhole	1200
S17.005	o	300	S68	19.850	15.770	3.780	Open Manhole	1200
S17.006	o	300	S69	19.340	15.470	3.570	Open Manhole	1200
S18.000	o	150	S90	20.229	17.523	2.556	Open Manhole	1200
S18.001	o	225	S90a	20.000	16.231	3.544	Open Manhole	1200
S18.002	o	225	S91	19.670	15.450	3.995	Open Manhole	1200
S17.007	o	300	S70	19.270	15.330	3.640	Open Manhole	1200
S19.000	o	225	S72	18.060	17.220	0.615	Open Manhole	1200
S19.001	o	225	S97	19.270	16.690	2.355	Open Manhole	1200
S19.002	o	225	S73	19.320	16.320	2.775	Open Manhole	1200
S17.008	o	300	S71	19.330	14.590	4.440	Open Manhole	1200
S17.009	o	300	S72	18.270	13.952	4.018	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.008	55.166	78.8	S81	13.300	12.300	0.000	Open Manhole	1900
S16.009	8.864	37.7	S88	14.000	12.065	1.710	Open Manhole	1500
S1.016	8.662	216.5	S79	14.000	11.650	1.750	Open Manhole	1900
S1.017	12.722	318.1	S89	14.000	11.610	1.390	Open Manhole	1900
S17.000	140.671	191.1	S85	20.000	17.404	2.371	Open Manhole	1200
S17.001	32.478	180.0	S66a	19.500	17.224	2.051	Open Manhole	1200
S17.002	92.714	138.6	S86	19.580	16.480	2.800	Open Manhole	1200
S17.003	64.485	174.3	S67	18.950	16.110	2.540	Open Manhole	1200
S17.004	59.956	176.3	S68	19.850	15.770	3.780	Open Manhole	1200
S17.005	52.143	173.8	S69	19.340	15.470	3.570	Open Manhole	1200
S17.006	24.212	172.9	S70	19.270	15.330	3.640	Open Manhole	1200
S18.000	97.343	80.0	S90a	20.000	16.306	3.544	Open Manhole	1200
S18.001	58.953	75.5	S91	19.670	15.450	3.995	Open Manhole	1200
S18.002	7.027	156.2	S70	19.270	15.405	3.640	Open Manhole	1200
S17.007	128.495	173.6	S71	19.330	14.590	4.440	Open Manhole	1200
S19.000	85.961	162.2	S97	19.270	16.690	2.355	Open Manhole	1200
S19.001	74.193	200.5	S73	19.320	16.320	2.775	Open Manhole	1200
S19.002	11.170	6.7	S71	19.330	14.665	4.440	Open Manhole	1200
S17.008	105.664	165.6	S72	18.270	13.952	4.018	Open Manhole	1200
S17.009	48.123	171.9	S73	15.870	13.672	1.898	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.010	o	300	S73	15.870	13.672	1.898	Open Manhole	1200
S17.011	o	300	S74	15.500	13.481	1.719	Open Manhole	1200
S17.012	o	300	S74a	15.010	13.366	1.344	Open Manhole	1200
S17.013	o	300	S74b	15.000	13.310	1.390	Open Manhole	1200
S17.014	o	375	S106	14.140	13.100	0.665	Open Manhole	1350
S20.000	o	225	S110	16.240	14.830	1.185	Open Manhole	1200
S20.001	o	225	S111	16.040	14.180	1.635	Open Manhole	1200
S21.000	o	225	S107	16.800	14.000	2.575	Open Manhole	1200
S21.001	o	225	S108	16.389	13.750	2.414	Open Manhole	1200
S20.002	o	300	S106	15.870	13.335	2.235	Open Manhole	1200
S22.000	o	300	S111	16.760	14.821	1.639	Open Manhole	1200
S22.001	o	300	S111a	17.000	14.569	2.131	Open Manhole	1200
S22.002	o	300	S112	17.830	14.469	3.061	Open Manhole	1200
S22.003	o	300	S113	17.110	14.107	2.703	Open Manhole	1200
S22.004	o	300	S114	17.590	13.857	3.433	Open Manhole	1200
S22.005	o	300	S85	17.950	13.745	3.905	Open Manhole	1200
S22.006	o	375	S86	14.900	13.220	1.305	Open Manhole	1350
S22.007	o	375	S87	14.800	12.790	1.635	Open Manhole	1350
S20.003	o	375	S111	14.730	12.770	1.585	Open Manhole	1350
S17.015	o	375	S111	13.730	12.250	1.105	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.010	38.176	199.9	S74	15.500	13.481	1.719	Open Manhole	1200
S17.011	23.099	200.9	S74a	15.010	13.366	1.344	Open Manhole	1200
S17.012	10.047	179.4	S74b	15.000	13.310	1.390	Open Manhole	1200
S17.013	37.869	180.3	S106	14.140	13.100	0.740	Open Manhole	1350
S17.014	169.468	199.4	S111	13.730	12.250	1.105	Open Manhole	1350
S20.000	96.242	148.1	S111	16.040	14.180	1.635	Open Manhole	1200
S20.001	112.685	146.3	S106	15.870	13.410	2.235	Open Manhole	1200
S21.000	36.158	144.6	S108	16.389	13.750	2.414	Open Manhole	1200
S21.001	56.055	164.9	S106	15.870	13.410	2.235	Open Manhole	1200
S20.002	72.674	148.3	S111	14.730	12.845	1.585	Open Manhole	1350
S22.000	13.976	55.5	S111a	17.000	14.569	2.131	Open Manhole	1200
S22.001	26.732	267.3	S112	17.830	14.469	3.061	Open Manhole	1200
S22.002	75.286	208.0	S113	17.110	14.107	2.703	Open Manhole	1200
S22.003	90.053	360.2	S114	17.590	13.857	3.433	Open Manhole	1200
S22.004	39.019	348.4	S85	17.950	13.745	3.905	Open Manhole	1200
S22.005	114.216	253.8	S86	14.900	13.295	1.305	Open Manhole	1350
S22.006	154.404	359.1	S87	14.800	12.790	1.635	Open Manhole	1350
S22.007	3.120	156.0	S111	14.730	12.770	1.585	Open Manhole	1350
S20.003	136.173	261.9	S111	13.730	12.250	1.105	Open Manhole	1350
S17.015	63.087	252.3	S88	13.300	12.000	0.925	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.016	o	375	S88	13.300	12.000	0.925	Open Manhole	1350
S1.018	o	1000	S89	14.000	11.620	1.380	Open Manhole	1900

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.016	5.657	16.6	S89	14.000	11.660	1.965	Open Manhole	1900
S1.018	17.396	915.6	S	12.800	11.601	0.199	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.747	0.747	0.747
1.001	-	-	100	0.865	0.865	0.865
2.000	-	-	100	0.952	0.952	0.952
2.001	-	-	100	0.975	0.975	0.975
2.002	-	-	100	0.204	0.204	0.204
1.002	-	-	100	0.526	0.526	0.526
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.286	0.286	0.286
3.001	-	-	100	0.162	0.162	0.162
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.000	0.000	0.000
4.000	-	-	100	1.173	1.173	1.173
5.000	-	-	100	1.085	1.085	1.085
4.001	-	-	100	0.077	0.077	0.077
4.002	-	-	100	0.405	0.405	0.405
4.003	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.246	0.246	0.246
7.000	-	-	100	0.398	0.398	0.398
7.001	-	-	100	0.000	0.000	0.000
7.002	-	-	100	0.000	0.000	0.000
7.003	-	-	100	0.000	0.000	0.000
6.001	-	-	100	0.000	0.000	0.000
6.002	-	-	100	0.000	0.000	0.000
6.003	-	-	100	1.316	1.316	1.316
6.004	-	-	100	0.000	0.000	0.000
6.005	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.171	0.171	0.171
8.001	-	-	100	0.504	0.504	0.504
8.002	-	-	100	0.000	0.000	0.000
6.006	-	-	100	0.000	0.000	0.000
4.004	-	-	100	0.280	0.280	0.280
4.005	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.476	0.476	0.476
9.001	-	-	100	0.000	0.000	0.000
9.002	-	-	100	0.784	0.784	0.784
9.003	-	-	100	0.353	0.353	0.353
10.000	-	-	100	1.118	1.118	1.118
10.001	-	-	100	0.000	0.000	0.000
9.004	-	-	100	0.000	0.000	0.000
9.005	-	-	100	0.244	0.244	0.244
9.006	-	-	100	0.282	0.282	0.282
9.007	-	-	100	0.412	0.412	0.412
9.008	-	-	100	0.000	0.000	0.000
9.009	-	-	100	0.000	0.000	0.000
9.010	-	-	100	0.476	0.476	0.476
9.011	-	-	100	0.000	0.000	0.000
9.012	-	-	100	0.000	0.000	0.000
11.000	-	-	100	0.370	0.370	0.370
11.001	-	-	100	0.000	0.000	0.000
11.002	-	-	100	1.969	1.969	1.969
11.003	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.177	0.177	0.177
12.001	-	-	100	0.000	0.000	0.000
12.002	-	-	100	1.098	1.098	1.098
12.003	-	-	100	0.000	0.000	0.000
12.004	-	-	100	0.000	0.000	0.000
13.000	-	-	100	0.697	0.697	0.697

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
13.001	-	-	100	1.313	1.313	1.313
1.011	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.000	0.000	0.000
15.000	-	-	100	0.000	0.000	0.000
14.001	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.524	0.524	0.524
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.000	0.000	0.000
16.000	-	-	100	1.090	1.090	1.090
16.001	-	-	100	0.000	0.000	0.000
16.002	-	-	100	0.000	0.000	0.000
16.003	-	-	100	0.000	0.000	0.000
16.004	-	-	100	0.000	0.000	0.000
16.005	-	-	100	0.151	0.151	0.151
16.006	-	-	100	0.000	0.000	0.000
16.007	-	-	100	0.000	0.000	0.000
16.008	-	-	100	0.510	0.510	0.510
16.009	-	-	100	0.000	0.000	0.000
1.016	-	-	100	0.000	0.000	0.000
1.017	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.000	0.000	0.000
17.001	-	-	100	0.000	0.000	0.000
17.002	-	-	100	0.000	0.000	0.000
17.003	-	-	100	0.000	0.000	0.000
17.004	-	-	100	0.000	0.000	0.000
17.005	-	-	100	0.000	0.000	0.000
17.006	-	-	100	0.000	0.000	0.000
18.000	-	-	100	0.000	0.000	0.000
18.001	-	-	100	0.000	0.000	0.000
18.002	-	-	100	0.000	0.000	0.000
17.007	-	-	100	0.000	0.000	0.000
19.000	-	-	100	0.000	0.000	0.000
19.001	-	-	100	0.000	0.000	0.000
19.002	-	-	100	0.000	0.000	0.000
17.008	-	-	100	0.000	0.000	0.000
17.009	-	-	100	0.000	0.000	0.000
17.010	-	-	100	0.000	0.000	0.000
17.011	-	-	100	0.000	0.000	0.000
17.012	-	-	100	0.000	0.000	0.000
17.013	-	-	100	0.000	0.000	0.000
17.014	-	-	100	0.000	0.000	0.000
20.000	-	-	100	0.000	0.000	0.000
20.001	-	-	100	0.000	0.000	0.000
21.000	-	-	100	0.000	0.000	0.000
21.001	-	-	100	0.000	0.000	0.000
20.002	-	-	100	0.000	0.000	0.000
22.000	-	-	100	0.000	0.000	0.000
22.001	-	-	100	0.000	0.000	0.000
22.002	-	-	100	0.000	0.000	0.000
22.003	-	-	100	0.000	0.000	0.000
22.004	-	-	100	0.000	0.000	0.000
22.005	-	-	100	0.000	0.000	0.000
22.006	-	-	100	0.000	0.000	0.000
22.007	-	-	100	0.000	0.000	0.000
20.003	-	-	100	0.000	0.000	0.000
17.015	-	-	100	0.000	0.000	0.000
17.016	-	-	100	0.000	0.000	0.000
1.018	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				22.416	22.416	22.416

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.018	S	12.800	11.601	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	4.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	2

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 3	Number of Storage Structures 3	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.317
Return Period (years)	100	F (1km)	2.449
Site Location	GB 542450 258450 TL 42450 58450	Summer Storms	No
C (1km)	-0.026	Winter Storms	Yes
D1 (1km)	0.311	Cv (Summer)	0.750
D2 (1km)	0.261	Cv (Winter)	0.840
D3 (1km)	0.300	Storm Duration (mins)	60

Online Controls for Storm

Depth/Flow Relationship Manhole: S83, DS/PN: S1.011, Volume (m³): 1134.1

Invert Level (m) 14.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	53.0500	0.600	53.0500	1.600	53.0500	2.400	53.0500	2.900	53.0500
0.200	53.0500	0.800	53.0500	1.800	53.0500	2.500	53.0500	3.000	53.0500
0.300	53.0500	1.000	53.0500	2.100	53.0500	2.600	53.0500		
0.400	53.0500	1.200	53.0500	2.200	53.0500	2.700	53.0500		
0.500	53.0500	1.400	53.0500	2.300	53.0500	2.800	53.0500		

Depth/Flow Relationship Manhole: S84, DS/PN: S1.013, Volume (m³): 185.8

Invert Level (m) 13.700

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	59.5200	0.400	59.5200	0.630	59.5200	0.920	59.5200	1.200	59.5200
0.200	59.5200	0.500	59.5200	0.640	59.5200	0.930	59.5200	1.400	59.5200
0.300	59.5200	0.600	59.5200	0.800	59.5200	1.000	59.5200		

Depth/Flow Relationship Manhole: S81, DS/PN: S16.009, Volume (m³): 44.7

Invert Level (m) 12.300

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0000	0.700	5.0000	1.300	5.0000	1.900	5.0000	2.500	5.0000
0.200	5.0000	0.800	5.0000	1.400	5.0000	2.000	5.0000	2.600	5.0000
0.300	5.0000	0.900	5.0000	1.500	5.0000	2.100	5.0000	2.700	5.0000
0.400	5.0000	1.000	5.0000	1.600	5.0000	2.200	5.0000	2.800	5.0000
0.500	5.0000	1.100	5.0000	1.700	5.0000	2.300	5.0000	2.900	5.0000
0.600	5.0000	1.200	5.0000	1.800	5.0000	2.400	5.0000	3.000	5.0000

Storage Structures for Storm

Infiltration Basin Manhole: S83, DS/PN: S1.011

Invert Level (m) 14.300 Safety Factor 5.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	7926.0	0.500	8862.0	1.000	9822.0	1.500	10807.0	2.000	11841.0
0.100	8112.0	0.600	9052.0	1.100	10017.0	1.600	11007.0		
0.200	8299.0	0.700	9243.0	1.200	10213.0	1.700	11208.0		
0.300	8485.0	0.800	9435.0	1.300	10410.0	1.800	11411.0		
0.400	8673.0	0.900	9628.0	1.400	10608.0	1.900	11614.0		

Tank or Pond Manhole: S84, DS/PN: S1.013

Invert Level (m) 13.700

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1725.0	0.100	1830.0	0.200	1936.0	0.300	2041.0

Tank or Pond Manhole: S81, DS/PN: S16.009

Invert Level (m) 12.300

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2200.0	0.200	2300.0	0.400	2421.0	0.600	2622.0
0.100	2250.0	0.300	2300.0	0.500	2522.0	0.700	2720.0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 1 year Winter I+0%	21.240	17.736	-0.264	0.000	0.49	115.5	OK
S1.001	S29	15 minute 1 year Winter I+0%	21.060	17.638	-0.290	0.000	0.51	202.3	OK
S2.000	S117	15 minute 1 year Winter I+0%	20.170	18.231	-0.259	0.000	0.47	135.5	OK
S2.001	S4	15 minute 1 year Winter I+0%	20.590	17.739	-0.333	0.000	0.51	243.1	OK
S2.002	S5	15 minute 1 year Winter I+0%	20.920	17.589	-0.340	0.000	0.48	258.4	OK
S1.002	S24	15 minute 1 year Winter I+0%	20.910	17.219	-0.391	0.000	0.58	494.7	OK
S1.003	S6	15 minute 1 year Winter I+0%	19.820	16.983	-0.442	0.000	0.48	487.6	OK
S1.004	S7	15 minute 1 year Winter I+0%	19.110	16.821	-0.374	0.000	0.62	487.0	OK
S1.005	S8	15 minute 1 year Winter I+0%	19.200	16.761	-0.366	0.000	0.64	486.0	OK
S3.000	S16	15 minute 1 year Winter I+0%	18.860	17.204	-0.141	0.000	0.54	43.9	OK
S3.001	S17	15 minute 1 year Winter I+0%	19.020	17.101	-0.074	0.000	0.92	63.2	OK
S1.006	S9	15 minute 1 year Winter I+0%	18.920	16.591	-0.474	0.000	0.45	509.6	OK
S1.007	S10	15 minute 1 year Winter I+0%	18.080	16.355	-0.420	0.000	0.56	507.1	OK
S1.008	S11	15 minute 1 year Winter I+0%	18.100	16.175	-0.508	0.000	0.38	493.9	OK
S1.009	S12	15 minute 1 year Winter I+0%	16.430	15.640	-0.392	0.000	0.61	490.0	OK
S1.010	S13	15 minute 1 year Winter I+0%	16.500	15.429	-0.646	0.000	0.27	489.7	OK
S4.000	S32	15 minute 1 year Winter I+0%	21.140	17.035	-0.245	0.000	0.51	165.8	OK
S5.000	S34	15 minute 1 year Winter I+0%	20.200	16.728	-0.252	0.000	0.51	160.2	OK
S4.001	S32	15 minute 1 year Winter I+0%	20.600	16.338	-0.293	0.000	0.58	323.5	OK
S4.002	S33	15 minute 1 year Winter I+0%	20.960	16.209	-0.206	0.000	0.87	368.4	OK
S4.003	S34	15 minute 1 year Winter I+0%	21.150	16.012	-0.372	0.000	0.50	361.9	OK
S6.000	S38	15 minute 1 year Winter I+0%	20.360	18.869	-0.150	0.000	0.50	37.8	OK
S7.000	S39	15 minute 1 year Winter I+0%	20.330	19.646	-0.209	0.000	0.39	58.8	OK
S7.001	S51	15 minute 1 year Winter I+0%	20.840	19.301	-0.214	0.000	0.37	56.5	OK
S7.002	S52	15 minute 1 year Winter I+0%	21.310	18.870	-0.215	0.000	0.37	55.8	OK
S7.003	S53	15 minute 1 year Winter I+0%	20.980	18.567	-0.228	0.000	0.32	55.9	OK
S6.001	S39	15 minute 1 year Winter I+0%	21.560	18.115	-0.404	0.000	0.22	86.5	OK
S6.002	S40	15 minute 1 year Winter I+0%	20.970	17.803	-0.416	0.000	0.20	85.4	OK
S6.003	S41	15 minute 1 year Winter I+0%	20.920	17.586	-0.454	0.000	0.24	227.2	OK
S6.004	S42	15 minute 1 year Winter I+0%	20.430	17.054	-0.206	0.000	0.85	226.6	OK
S6.005	S43	15 minute 1 year Winter I+0%	20.490	16.902	-0.408	0.000	0.43	223.2	OK
S8.000	S46	15 minute 1 year Winter I+0%	18.830	17.574	-0.346	0.000	0.12	25.7	OK
S8.001	S57	15 minute 1 year Winter I+0%	19.250	17.391	-0.229	0.000	0.45	76.0	OK

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.002	S47	15 minute 1 year Winter I+0%	20.170	17.064	-0.256	0.000	0.39	75.6	OK
S6.006	S44	15 minute 1 year Winter I+0%	20.170	16.676	-0.524	0.000	0.20	298.4	OK
S4.004	S35	15 minute 1 year Winter I+0%	21.380	15.721	-0.439	0.000	0.51	659.5	OK
S4.005	S36	15 minute 1 year Winter I+0%	16.500	15.301	-0.549	0.000	0.42	654.7	OK
S9.000	S46	15 minute 1 year Winter I+0%	18.770	17.132	-0.267	0.000	0.33	70.1	OK
S9.001	S44	15 minute 1 year Winter I+0%	18.110	16.855	-0.227	0.000	0.49	69.8	OK
S9.002	S47	15 minute 1 year Winter I+0%	17.970	16.807	-0.242	0.000	0.55	154.3	OK
S9.003	S48	15 minute 1 year Winter I+0%	18.270	16.496	-0.304	0.000	0.48	186.5	OK
S10.000	S52	15 minute 1 year Winter I+0%	20.080	16.729	-0.216	0.000	0.61	161.1	OK
S10.001	S53	15 minute 1 year Winter I+0%	18.810	16.413	-0.232	0.000	0.59	156.7	OK
S9.004	S40	15 minute 1 year Winter I+0%	18.680	16.165	-0.361	0.000	0.53	330.1	OK
S9.005	S41	15 minute 1 year Winter I+0%	17.810	15.993	-0.373	0.000	0.49	342.5	OK
S9.006	S42	15 minute 1 year Winter I+0%	18.870	15.678	-0.361	0.000	0.52	355.5	OK
S9.007	S43	15 minute 1 year Winter I+0%	16.400	15.403	-0.373	0.000	0.64	376.5	OK
S9.008	S44	15 minute 1 year Winter I+0%	16.420	15.348	-0.400	0.000	0.60	375.9	OK
S9.009	S45	15 minute 1 year Winter I+0%	16.300	15.185	-0.529	0.000	0.35	374.2	OK
S9.010	S46	15 minute 1 year Winter I+0%	16.280	15.000	-0.495	0.000	0.33	382.0	OK
S9.011	S47	15 minute 1 year Winter I+0%	16.330	14.890	-0.327	0.000	0.73	377.6	OK
S9.012	S48	15 minute 1 year Winter I+0%	16.500	14.713	-1.587	0.000	0.10	377.1	OK
S11.000	S53	15 minute 1 year Winter I+0%	16.250	15.680	-0.205	0.000	0.39	52.8	OK
S11.001	S54	15 minute 1 year Winter I+0%	16.350	15.307	-0.208	0.000	0.41	52.5	OK
S11.002	S63	15 minute 1 year Winter I+0%	16.410	14.981	-0.344	0.000	0.47	270.7	OK
S11.003	S64	15 minute 1 year Winter I+0%	16.500	14.639	-1.661	0.000	0.07	268.5	OK
S12.000	S66	15 minute 1 year Summer I+0%	19.020	17.105	-0.355	0.000	0.10	27.5	OK
S12.001	S67	15 minute 1 year Summer I+0%	18.710	16.870	-0.360	0.000	0.08	26.5	OK
S12.002	S68	15 minute 1 year Winter I+0%	18.820	16.201	-0.284	0.000	0.42	146.5	OK
S12.003	S69	15 minute 1 year Winter I+0%	17.290	15.689	-0.226	0.000	0.62	146.1	OK
S12.004	S70	15 minute 1 year Winter I+0%	16.500	15.543	-0.757	0.000	0.13	146.1	OK
S13.000	S74	15 minute 1 year Winter I+0%	16.500	15.711	-0.184	0.000	0.73	99.3	OK
S13.001	S75	15 minute 1 year Winter I+0%	16.500	15.562	-0.768	0.000	0.12	245.9	OK
S1.011	S83	240 minute 1 year Winter I+0%	16.500	14.587	-0.113	0.000	0.07	53.1	OK
S14.000	S69	60 minute 1 year Winter I+0%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	60 minute 1 year Winter I+0%	15.000	14.144	-0.201	0.000	0.02	1.0	OK
S14.001	S74	30 minute 1 year Winter I+0%	14.550	13.945	-0.030	0.000	0.16	5.1	OK
S1.012	S16	30 minute 1 year Winter I+0%	14.700	13.940	-0.760	0.000	0.13	101.6	OK
S1.013	S84	480 minute 1 year Winter I+0%	14.700	13.821	0.571	0.000	0.40	59.4	SURCHARGED
S1.014	S76	960 minute 1 year Winter I+0%	13.750	12.897	-0.303	0.000	0.23	59.4	OK
S1.015	S70	960 minute 1 year Winter I+0%	13.000	12.206	-0.144	0.000	0.36	59.4	OK
S16.000	S102	15 minute 1 year Winter I+0%	17.310	15.122	-0.331	0.000	0.38	156.2	OK
S16.001	S103	15 minute 1 year Winter I+0%	17.190	14.795	-0.238	0.000	0.67	148.2	OK
S16.002	S104	15 minute 1 year Winter I+0%	16.800	14.674	-0.338	0.000	0.39	145.4	OK
S16.003	S105	15 minute 1 year Winter I+0%	16.290	14.510	-0.352	0.000	0.34	137.7	OK
S16.004	S108	15 minute 1 year Winter I+0%	14.980	14.058	-0.354	0.000	0.34	133.2	OK
S16.005	S109	15 minute 1 year Winter I+0%	16.150	13.811	-0.351	0.000	0.35	137.9	OK
S16.006	S110	15 minute 1 year Winter I+0%	15.320	13.439	-0.418	0.000	0.31	137.7	OK
S16.007	S73	15 minute 1 year Winter I+0%	14.100	13.339	-0.427	0.000	0.39	136.6	OK
S16.008	S111	15 minute 1 year Winter I+0%	14.100	13.172	-0.828	0.000	0.07	158.4	OK
S16.009	S81	480 minute 1 year Winter I+0%	13.300	12.410	-0.115	0.000	0.07	5.0	OK
S1.016	S88	960 minute 1 year Winter I+0%	14.000	12.181	-0.109	0.000	0.23	64.4	OK
S1.017	S79	960 minute 1 year Winter I+0%	14.000	12.160	-0.490	0.000	0.08	64.4	OK
S17.000	S94	60 minute 1 year Winter I+0%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	120 minute 1 year Winter I+0%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	120 minute 1 year Winter I+0%	19.500	17.298	-0.151	0.000	0.49	45.0	OK
S17.003	S86	120 minute 1 year Winter I+0%	19.580	16.641	-0.139	0.000	0.56	45.0	OK
S17.004	S67	1440 minute 1 year Winter I+0%	18.950	16.357	-0.053	0.000	0.63	50.0	OK
S17.005	S68	1440 minute 1 year Winter I+0%	19.850	16.222	0.152	0.000	0.69	55.0	SURCHARGED
S17.006	S69	1440 minute 1 year Winter I+0%	19.340	16.078	0.308	0.000	0.73	55.0	SURCHARGED
S18.000	S90	60 minute 1 year Winter I+0%	20.229	17.599	-0.074	0.000	0.51	10.0	OK
S18.001	S90a	60 minute 1 year Winter I+0%	20.000	16.294	-0.162	0.000	0.17	10.0	OK
S18.002	S91	1440 minute 1 year Winter I+0%	19.670	15.986	0.311	0.000	0.34	10.1	SURCHARGED

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S17.007	S70	1440 minute 1 year Winter I+0%	19.270	15.976	0.346	0.000	0.79	65.0	SURCHARGED
S19.000	S72	60 minute 1 year Winter I+0%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	60 minute 1 year Winter I+0%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	60 minute 1 year Winter I+0%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	960 minute 1 year Summer I+0%	19.330	15.512	0.622	0.000	1.02	85.0	SURCHARGED
S17.009	S72	960 minute 1 year Summer I+0%	18.270	14.854	0.602	0.000	1.13	90.0	SURCHARGED
S17.010	S73	960 minute 1 year Summer I+0%	15.870	14.495	0.523	0.000	1.31	95.0	SURCHARGED
S17.011	S74	1440 minute 1 year Winter I+0%	15.500	14.168	0.387	0.000	1.37	95.0	SURCHARGED
S17.012	S74a	1440 minute 1 year Winter I+0%	15.010	13.951	0.285	0.000	1.63	100.0	SURCHARGED
S17.013	S74b	960 minute 1 year Summer I+0%	15.000	13.792	0.182	0.000	1.31	100.0	SURCHARGED
S17.014	S106	1440 minute 1 year Winter I+0%	14.140	13.432	-0.043	0.000	0.87	120.0	OK
S20.000	S110	60 minute 1 year Winter I+0%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	60 minute 1 year Winter I+0%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	60 minute 1 year Winter I+0%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	60 minute 1 year Winter I+0%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	60 minute 1 year Winter I+0%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	60 minute 1 year Winter I+0%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	60 minute 1 year Winter I+0%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	60 minute 1 year Winter I+0%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	60 minute 1 year Winter I+0%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	60 minute 1 year Winter I+0%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	60 minute 1 year Winter I+0%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	60 minute 1 year Winter I+0%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	1440 minute 1 year Winter I+0%	14.800	12.919	-0.246	0.000	0.00	0.0	OK
S20.003	S111	1440 minute 1 year Winter I+0%	14.730	12.919	-0.226	0.000	0.29	35.0	OK
S17.015	S111	960 minute 1 year Summer I+0%	13.730	12.789	0.164	0.000	1.32	155.0	SURCHARGED
S17.016	S88	960 minute 1 year Winter I+0%	13.300	12.308	-0.067	0.000	0.68	155.3	OK
S1.018	S89	960 minute 1 year Winter I+0%	14.000	12.152	-0.468	0.000	0.64	219.4	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 30 year Winter I+0%	21.240	18.264	0.264	0.000	1.12	260.4	SURCHARGED
S1.001	S29	15 minute 30 year Winter I+0%	21.060	18.157	0.229	0.000	1.24	493.2	SURCHARGED
S2.000	S117	15 minute 30 year Winter I+0%	20.170	18.653	0.163	0.000	1.09	314.4	SURCHARGED
S2.001	S4	15 minute 30 year Winter I+0%	20.590	18.227	0.155	0.000	1.08	517.3	SURCHARGED
S2.002	S5	15 minute 30 year Winter I+0%	20.920	18.084	0.155	0.000	1.01	543.0	SURCHARGED
S1.002	S24	15 minute 30 year Winter I+0%	20.910	17.863	0.253	0.000	1.27	1085.6	SURCHARGED
S1.003	S6	15 minute 30 year Winter I+0%	19.820	17.649	0.224	0.000	0.96	976.3	SURCHARGED
S1.004	S7	15 minute 30 year Winter I+0%	19.110	17.440	0.245	0.000	1.23	966.6	SURCHARGED
S1.005	S8	15 minute 30 year Winter I+0%	19.200	17.231	0.104	0.000	1.28	972.6	SURCHARGED
S3.000	S16	15 minute 30 year Winter I+0%	18.860	17.813	0.468	0.000	1.18	95.3	SURCHARGED
S3.001	S17	15 minute 30 year Winter I+0%	19.020	17.572	0.397	0.000	2.16	148.9	SURCHARGED
S1.006	S9	15 minute 30 year Winter I+0%	18.920	17.038	-0.027	0.000	0.91	1019.6	OK
S1.007	S10	15 minute 30 year Winter I+0%	18.080	16.832	0.057	0.000	1.06	970.0	SURCHARGED
S1.008	S11	15 minute 30 year Winter I+0%	18.100	16.384	-0.299	0.000	0.74	950.4	OK
S1.009	S12	15 minute 30 year Winter I+0%	16.430	16.049	0.017	0.000	1.18	947.8	SURCHARGED
S1.010	S13	15 minute 30 year Winter I+0%	16.500	15.592	-0.483	0.000	0.52	926.3	OK
S4.000	S32	15 minute 30 year Winter I+0%	21.140	17.818	0.538	0.000	1.15	375.0	SURCHARGED
S5.000	S34	15 minute 30 year Winter I+0%	20.200	17.341	0.361	0.000	1.16	364.8	SURCHARGED
S4.001	S32	15 minute 30 year Winter I+0%	20.600	17.005	0.374	0.000	1.23	686.9	SURCHARGED
S4.002	S33	15 minute 30 year Winter I+0%	20.960	16.717	0.302	0.000	1.83	773.3	SURCHARGED
S4.003	S34	15 minute 30 year Winter I+0%	21.150	16.476	0.092	0.000	1.04	753.7	SURCHARGED
S6.000	S38	15 minute 30 year Winter I+0%	20.360	19.157	0.138	0.000	1.13	86.0	SURCHARGED
S7.000	S39	15 minute 30 year Winter I+0%	20.330	19.781	-0.074	0.000	0.96	144.7	OK
S7.001	S51	15 minute 30 year Winter I+0%	20.840	19.426	-0.089	0.000	0.91	139.7	OK
S7.002	S52	15 minute 30 year Winter I+0%	21.310	18.994	-0.091	0.000	0.91	135.9	OK
S7.003	S53	15 minute 30 year Winter I+0%	20.980	18.674	-0.121	0.000	0.79	136.9	OK
S6.001	S39	15 minute 30 year Winter I+0%	21.560	18.244	-0.275	0.000	0.55	211.5	OK
S6.002	S40	15 minute 30 year Winter I+0%	20.970	17.918	-0.301	0.000	0.50	210.9	OK
S6.003	S41	15 minute 30 year Winter I+0%	20.920	17.727	-0.313	0.000	0.55	523.8	OK
S6.004	S42	15 minute 30 year Winter I+0%	20.430	17.373	0.113	0.000	1.97	522.7	SURCHARGED
S6.005	S43	15 minute 30 year Winter I+0%	20.490	17.172	-0.138	0.000	0.99	521.1	OK
S8.000	S46	15 minute 30 year Winter I+0%	18.830	17.738	-0.182	0.000	0.28	60.5	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.001	S57	15 minute 30 year Winter I+0%	19.250	17.684	0.064	0.000	1.07	178.8	SURCHARGED
S8.002	S47	15 minute 30 year Winter I+0%	20.170	17.203	-0.117	0.000	0.90	176.2	OK
S6.006	S44	15 minute 30 year Winter I+0%	20.170	16.806	-0.394	0.000	0.46	693.1	OK
S4.004	S35	15 minute 30 year Winter I+0%	21.380	16.249	0.089	0.000	1.13	1458.5	SURCHARGED
S4.005	S36	15 minute 30 year Winter I+0%	16.500	15.609	-0.241	0.000	0.91	1418.9	OK
S9.000	S46	15 minute 30 year Winter I+0%	18.770	17.380	-0.019	0.000	0.78	164.6	OK
S9.001	S44	15 minute 30 year Winter I+0%	18.110	17.228	0.146	0.000	1.02	144.2	SURCHARGED
S9.002	S47	15 minute 30 year Winter I+0%	17.970	17.203	0.154	0.000	1.24	345.6	SURCHARGED
S9.003	S48	15 minute 30 year Winter I+0%	18.270	16.840	0.040	0.000	1.00	393.5	SURCHARGED
S10.000	S52	15 minute 30 year Winter I+0%	20.080	17.372	0.427	0.000	1.43	379.8	SURCHARGED
S10.001	S53	15 minute 30 year Winter I+0%	18.810	16.756	0.111	0.000	1.36	361.2	SURCHARGED
S9.004	S40	15 minute 30 year Winter I+0%	18.680	16.570	0.044	0.000	1.15	718.0	SURCHARGED
S9.005	S41	15 minute 30 year Winter I+0%	17.810	16.400	0.034	0.000	0.99	695.1	SURCHARGED
S9.006	S42	15 minute 30 year Winter I+0%	18.870	16.079	0.040	0.000	1.03	705.9	SURCHARGED
S9.007	S43	15 minute 30 year Winter I+0%	16.400	15.794	0.018	0.000	1.25	731.7	SURCHARGED
S9.008	S44	15 minute 30 year Summer I+0%	16.420	15.748	0.000	0.000	1.04	658.6	OK
S9.009	S45	15 minute 30 year Winter I+0%	16.300	15.439	-0.275	0.000	0.69	729.7	OK
S9.010	S46	30 minute 30 year Winter I+0%	16.280	15.336	-0.159	0.000	0.65	759.3	OK
S9.011	S47	15 minute 30 year Winter I+0%	16.330	15.217	0.000	0.000	1.45	749.0	OK
S9.012	S48	480 minute 30 year Winter I+0%	16.500	15.044	-1.256	0.000	0.04	144.4	OK
S11.000	S53	15 minute 30 year Winter I+0%	16.250	15.827	-0.058	0.000	0.95	127.9	OK
S11.001	S54	15 minute 30 year Winter I+0%	16.350	15.544	0.029	0.000	0.92	117.8	SURCHARGED
S11.002	S63	15 minute 30 year Winter I+0%	16.410	15.393	0.068	0.000	1.11	632.9	SURCHARGED
S11.003	S64	480 minute 30 year Winter I+0%	16.500	15.039	-1.261	0.000	0.02	79.8	OK
S12.000	S66	15 minute 30 year Winter I+0%	19.020	17.162	-0.298	0.000	0.25	67.4	OK
S12.001	S67	15 minute 30 year Summer I+0%	18.710	16.921	-0.309	0.000	0.21	65.3	OK
S12.002	S68	15 minute 30 year Winter I+0%	18.820	16.584	0.099	0.000	1.00	348.0	SURCHARGED
S12.003	S69	15 minute 30 year Winter I+0%	17.290	16.002	0.087	0.000	1.46	344.9	SURCHARGED
S12.004	S70	15 minute 30 year Winter I+0%	16.500	15.687	-0.613	0.000	0.32	346.2	OK
S13.000	S74	15 minute 30 year Winter I+0%	16.500	15.949	0.054	0.000	1.87	255.6	SURCHARGED
S13.001	S75	15 minute 30 year Winter I+0%	16.500	15.721	-0.609	0.000	0.32	647.8	OK
S1.011	S83	480 minute 30 year Winter I+0%	16.500	15.039	0.339	0.000	0.07	53.0	SURCHARGED
S14.000	S69	60 minute 30 year Winter I+0%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	60 minute 30 year Winter I+0%	15.000	14.144	-0.201	0.000	0.02	1.0	OK
S14.001	S74	30 minute 30 year Winter I+0%	14.550	14.019	0.044	0.000	0.21	6.6	SURCHARGED
S1.012	S16	30 minute 30 year Winter I+0%	14.700	14.014	-0.686	0.000	0.22	167.9	OK
S1.013	S84	960 minute 30 year Winter I+0%	14.700	13.871	0.621	0.000	0.40	59.4	SURCHARGED
S1.014	S76	1440 minute 30 year Summer I+0%	13.750	12.897	-0.303	0.000	0.23	59.4	OK
S1.015	S70	1440 minute 30 year Summer I+0%	13.000	12.206	-0.144	0.000	0.36	59.4	OK
S16.000	S102	15 minute 30 year Winter I+0%	17.310	15.445	-0.008	0.000	0.90	366.1	OK
S16.001	S103	15 minute 30 year Winter I+0%	17.190	15.104	0.071	0.000	1.60	351.7	SURCHARGED
S16.002	S104	15 minute 30 year Winter I+0%	16.800	14.874	-0.138	0.000	0.94	350.0	OK
S16.003	S105	15 minute 30 year Winter I+0%	16.290	14.691	-0.171	0.000	0.81	328.2	OK
S16.004	S108	15 minute 30 year Winter I+0%	14.980	14.229	-0.183	0.000	0.80	308.3	OK
S16.005	S109	15 minute 30 year Winter I+0%	16.150	13.970	-0.192	0.000	0.78	307.1	OK
S16.006	S110	15 minute 30 year Winter I+0%	15.320	13.611	-0.246	0.000	0.67	297.6	OK
S16.007	S73	15 minute 30 year Winter I+0%	14.100	13.546	-0.220	0.000	0.84	298.7	OK
S16.008	S111	15 minute 30 year Winter I+0%	14.100	13.252	-0.748	0.000	0.14	330.4	OK
S16.009	S81	960 minute 30 year Winter I+0%	13.300	12.572	0.047	0.000	0.07	5.1	SURCHARGED
S1.016	S88	1440 minute 30 year Summer I+0%	14.000	12.181	-0.109	0.000	0.23	64.5	OK
S1.017	S79	1440 minute 30 year Summer I+0%	14.000	12.160	-0.490	0.000	0.08	64.5	OK
S17.000	S94	60 minute 30 year Winter I+0%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	120 minute 30 year Winter I+0%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	120 minute 30 year Winter I+0%	19.500	17.298	-0.151	0.000	0.49	45.0	OK
S17.003	S86	120 minute 30 year Winter I+0%	19.580	16.641	-0.139	0.000	0.56	45.0	OK
S17.004	S67	1440 minute 30 year Winter I+0%	18.950	16.357	-0.053	0.000	0.63	50.0	OK
S17.005	S68	1440 minute 30 year Winter I+0%	19.850	16.222	0.152	0.000	0.69	55.0	SURCHARGED
S17.006	S69	1440 minute 30 year Winter I+0%	19.340	16.078	0.308	0.000	0.73	55.0	SURCHARGED
S18.000	S90	60 minute 30 year Winter I+0%	20.229	17.599	-0.074	0.000	0.51	10.0	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S18.001	S90a	60 minute 30 year Winter I+0%	20.000	16.294	-0.162	0.000	0.17	10.0	OK
S18.002	S91	1440 minute 30 year Winter I+0%	19.670	15.986	0.311	0.000	0.34	10.1	SURCHARGED
S17.007	S70	1440 minute 30 year Winter I+0%	19.270	15.976	0.346	0.000	0.79	65.0	SURCHARGED
S19.000	S72	60 minute 30 year Winter I+0%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	60 minute 30 year Winter I+0%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	60 minute 30 year Winter I+0%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	960 minute 30 year Summer I+0%	19.330	15.512	0.622	0.000	1.02	85.0	SURCHARGED
S17.009	S72	960 minute 30 year Summer I+0%	18.270	14.854	0.602	0.000	1.13	90.0	SURCHARGED
S17.010	S73	960 minute 30 year Summer I+0%	15.870	14.495	0.523	0.000	1.31	95.0	SURCHARGED
S17.011	S74	1440 minute 30 year Winter I+0%	15.500	14.168	0.387	0.000	1.37	95.0	SURCHARGED
S17.012	S74a	1440 minute 30 year Winter I+0%	15.010	13.951	0.285	0.000	1.63	100.0	SURCHARGED
S17.013	S74b	960 minute 30 year Summer I+0%	15.000	13.792	0.182	0.000	1.31	100.0	SURCHARGED
S17.014	S106	1440 minute 30 year Winter I+0%	14.140	13.432	-0.043	0.000	0.87	120.0	OK
S20.000	S110	60 minute 30 year Winter I+0%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	60 minute 30 year Winter I+0%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	60 minute 30 year Winter I+0%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	60 minute 30 year Winter I+0%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	60 minute 30 year Winter I+0%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	60 minute 30 year Winter I+0%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	60 minute 30 year Winter I+0%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	60 minute 30 year Winter I+0%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	60 minute 30 year Winter I+0%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	60 minute 30 year Winter I+0%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	60 minute 30 year Winter I+0%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	60 minute 30 year Winter I+0%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	1440 minute 30 year Winter I+0%	14.800	12.919	-0.246	0.000	0.00	0.0	OK
S20.003	S111	1440 minute 30 year Winter I+0%	14.730	12.919	-0.226	0.000	0.29	35.0	OK
S17.015	S111	960 minute 30 year Summer I+0%	13.730	12.789	0.164	0.000	1.32	155.0	SURCHARGED
S17.016	S88	960 minute 30 year Winter I+0%	13.300	12.309	-0.066	0.000	0.68	155.0	OK
S1.018	S89	1440 minute 30 year Summer I+0%	14.000	12.152	-0.468	0.000	0.64	219.5	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 100 year Winter I+40%	21.240	20.931	2.931	0.000	1.78	416.5	SURCHARGED
S1.001	S29	15 minute 100 year Winter I+40%	21.060	20.832	2.904	0.000	1.85	735.4	FLOOD RISK
S2.000	S117	15 minute 100 year Winter I+40%	20.170	20.285	1.795	116.286	1.38	397.6	FLOOD
S2.001	S4	15 minute 100 year Winter I+40%	20.590	20.591	2.519	2.941	1.48	710.7	FLOOD
S2.002	S5	15 minute 100 year Winter I+40%	20.920	20.580	2.651	0.000	1.43	763.4	SURCHARGED
S1.002	S24	15 minute 100 year Winter I+40%	20.910	20.199	2.589	0.000	1.86	1597.0	SURCHARGED
S1.003	S6	15 minute 100 year Winter I+40%	19.820	19.591	2.166	0.000	1.52	1546.0	FLOOD RISK
S1.004	S7	15 minute 100 year Winter I+40%	19.110	19.116	1.921	6.490	1.91	1498.7	FLOOD
S1.005	S8	15 minute 100 year Winter I+40%	19.200	18.704	1.577	0.000	1.97	1498.7	SURCHARGED
S3.000	S16	15 minute 100 year Winter I+40%	18.860	18.864	1.519	4.274	1.72	138.5	FLOOD
S3.001	S17	15 minute 100 year Winter I+40%	19.020	18.646	1.471	0.000	3.44	237.2	SURCHARGED
S1.006	S9	15 minute 100 year Winter I+40%	18.920	18.291	1.226	0.000	1.44	1621.7	SURCHARGED
S1.007	S10	15 minute 100 year Winter I+40%	18.080	17.768	0.993	0.000	1.76	1603.9	SURCHARGED
S1.008	S11	15 minute 100 year Winter I+40%	18.100	17.297	0.614	0.000	1.18	1523.7	SURCHARGED
S1.009	S12	15 minute 100 year Winter I+40%	16.430	16.400	0.368	0.000	1.90	1532.2	FLOOD RISK
S1.010	S13	15 minute 100 year Winter I+40%	16.500	15.787	-0.288	0.000	0.82	1475.5	OK
S4.000	S32	15 minute 100 year Winter I+40%	21.140	21.143	3.863	2.659	1.70	553.8	FLOOD
S5.000	S34	15 minute 100 year Winter I+40%	20.200	20.200	3.220	0.070	1.66	522.4	FLOOD
S4.001	S32	15 minute 100 year Winter I+40%	20.600	19.526	2.895	0.000	1.96	1093.7	SURCHARGED
S4.002	S33	15 minute 100 year Winter I+40%	20.960	18.768	2.353	0.000	2.98	1256.8	SURCHARGED
S4.003	S34	15 minute 100 year Winter I+40%	21.150	18.166	1.782	0.000	1.69	1226.1	SURCHARGED
S6.000	S38	15 minute 100 year Winter I+40%	20.360	20.227	1.208	0.000	1.75	133.2	FLOOD RISK
S7.000	S39	15 minute 100 year Winter I+40%	20.330	20.333	0.478	3.664	1.36	203.8	FLOOD
S7.001	S51	15 minute 100 year Winter I+40%	20.840	19.937	0.422	0.000	1.23	188.6	SURCHARGED
S7.002	S52	15 minute 100 year Winter I+40%	21.310	19.688	0.603	0.000	1.07	160.1	SURCHARGED
S7.003	S53	15 minute 100 year Winter I+40%	20.980	19.448	0.653	0.000	1.03	177.5	SURCHARGED
S6.001	S39	15 minute 100 year Winter I+40%	21.560	19.170	0.651	0.000	0.78	299.9	SURCHARGED
S6.002	S40	15 minute 100 year Winter I+40%	20.970	19.039	0.820	0.000	0.96	407.6	SURCHARGED
S6.003	S41	15 minute 100 year Winter I+40%	20.920	18.880	0.840	0.000	0.80	761.6	SURCHARGED
S6.004	S42	15 minute 100 year Winter I+40%	20.430	18.443	1.183	0.000	2.75	729.9	SURCHARGED
S6.005	S43	15 minute 100 year Winter I+40%	20.490	18.151	0.841	0.000	1.37	718.8	SURCHARGED
S8.000	S46	15 minute 100 year Winter I+40%	18.830	18.834	0.914	3.629	0.38	83.3	FLOOD

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.001	S57	15 minute 100 year Winter I+40%	19.250	18.862	1.242	0.000	1.70	284.6	SURCHARGED
S8.002	S47	15 minute 100 year Winter I+40%	20.170	18.185	0.865	0.000	1.37	267.6	SURCHARGED
S6.006	S44	15 minute 100 year Winter I+40%	20.170	17.955	0.755	0.000	0.66	1007.7	SURCHARGED
S4.004	S35	15 minute 100 year Winter I+40%	21.380	17.547	1.387	0.000	1.70	2186.2	SURCHARGED
S4.005	S36	15 minute 100 year Winter I+40%	16.500	16.342	0.492	0.000	1.37	2143.7	FLOOD RISK
S9.000	S46	15 minute 100 year Winter I+40%	18.770	18.664	1.265	0.000	1.24	261.2	FLOOD RISK
S9.001	S44	15 minute 100 year Winter I+40%	18.110	18.122	1.040	12.310	1.44	203.2	FLOOD
S9.002	S47	15 minute 100 year Winter I+40%	17.970	18.085	1.036	114.989	1.43	397.6	FLOOD
S9.003	S48	15 minute 100 year Winter I+40%	18.270	18.100	1.300	0.000	1.29	505.6	FLOOD RISK
S10.000	S52	15 minute 100 year Winter I+40%	20.080	19.721	2.776	0.000	2.15	570.8	SURCHARGED
S10.001	S53	15 minute 100 year Winter I+40%	18.810	18.534	1.889	0.000	2.09	553.3	FLOOD RISK
S9.004	S40	15 minute 100 year Winter I+40%	18.680	18.040	1.514	0.000	1.58	990.7	SURCHARGED
S9.005	S41	15 minute 100 year Winter I+40%	17.810	17.780	1.414	0.000	1.44	1008.2	FLOOD RISK
S9.006	S42	15 minute 100 year Winter I+40%	18.870	17.127	1.088	0.000	1.58	1077.0	SURCHARGED
S9.007	S43	30 minute 100 year Winter I+40%	16.400	16.411	0.635	11.762	1.85	1084.7	FLOOD
S9.008	S44	30 minute 100 year Winter I+40%	16.420	16.191	0.443	0.000	1.72	1088.6	FLOOD RISK
S9.009	S45	30 minute 100 year Winter I+40%	16.300	15.975	0.261	0.000	1.03	1087.4	SURCHARGED
S9.010	S46	30 minute 100 year Winter I+40%	16.280	15.756	0.261	0.000	1.04	1216.6	SURCHARGED
S9.011	S47	960 minute 100 year Winter I+40%	16.330	15.695	0.478	0.000	0.28	146.7	SURCHARGED
S9.012	S48	960 minute 100 year Winter I+40%	16.500	15.694	-0.606	0.000	0.04	145.1	OK
S11.000	S53	15 minute 100 year Winter I+40%	16.250	16.286	0.401	35.696	1.23	164.7	FLOOD
S11.001	S54	15 minute 100 year Winter I+40%	16.350	16.289	0.774	0.000	1.20	153.5	FLOOD RISK
S11.002	S63	15 minute 100 year Winter I+40%	16.410	16.207	0.882	0.000	1.82	1039.5	FLOOD RISK
S11.003	S64	960 minute 100 year Winter I+40%	16.500	15.684	-0.616	0.000	0.02	78.5	OK
S12.000	S66	15 minute 100 year Winter I+40%	19.020	18.264	0.804	0.000	0.43	115.9	SURCHARGED
S12.001	S67	15 minute 100 year Winter I+40%	18.710	18.131	0.901	0.000	0.29	89.6	SURCHARGED
S12.002	S68	15 minute 100 year Winter I+40%	18.820	17.951	1.466	0.000	1.65	573.1	SURCHARGED
S12.003	S69	15 minute 100 year Winter I+40%	17.290	16.375	0.460	0.000	2.40	568.6	SURCHARGED
S12.004	S70	15 minute 100 year Winter I+40%	16.500	15.815	-0.485	0.000	0.53	569.3	OK
S13.000	S74	15 minute 100 year Winter I+40%	16.500	16.253	0.358	0.000	3.33	454.6	FLOOD RISK
S13.001	S75	15 minute 100 year Winter I+40%	16.500	15.880	-0.450	0.000	0.57	1153.8	OK
S1.011	S83	960 minute 100 year Winter I+40%	16.500	15.683	0.983	0.000	0.07	53.0	SURCHARGED
S14.000	S69	60 minute 100 year Winter I+40%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	15 minute 100 year Winter I+40%	15.000	14.146	-0.199	0.000	0.03	1.0	OK
S14.001	S74	15 minute 100 year Winter I+40%	14.550	14.111	0.136	0.000	0.29	9.0	SURCHARGED
S1.012	S16	15 minute 100 year Winter I+40%	14.700	14.106	-0.594	0.000	0.35	269.1	OK
S1.013	S84	960 minute 100 year Winter I+40%	14.700	13.954	0.704	0.000	0.40	59.4	SURCHARGED
S1.014	S76	960 minute 100 year Winter I+40%	13.750	12.897	-0.303	0.000	0.23	59.4	OK
S1.015	S70	1440 minute 100 year Summer I+40%	13.000	12.206	-0.144	0.000	0.36	59.4	OK
S16.000	S102	15 minute 100 year Winter I+40%	17.310	16.776	1.323	0.000	1.46	594.9	SURCHARGED
S16.001	S103	15 minute 100 year Winter I+40%	17.190	15.958	0.925	0.000	2.65	583.1	SURCHARGED
S16.002	S104	15 minute 100 year Winter I+40%	16.800	15.630	0.618	0.000	1.55	574.9	SURCHARGED
S16.003	S105	15 minute 100 year Winter I+40%	16.290	15.279	0.417	0.000	1.31	531.2	SURCHARGED
S16.004	S108	15 minute 100 year Winter I+40%	14.980	14.603	0.191	0.000	1.19	461.8	SURCHARGED
S16.005	S109	15 minute 100 year Winter I+40%	16.150	14.264	0.102	0.000	1.16	457.0	SURCHARGED
S16.006	S110	15 minute 100 year Winter I+40%	15.320	13.871	0.014	0.000	1.04	459.7	SURCHARGED
S16.007	S73	15 minute 100 year Winter I+40%	14.100	13.766	0.000	0.000	1.29	458.7	OK
S16.008	S111	30 minute 100 year Winter I+40%	14.100	13.328	-0.672	0.000	0.23	536.2	OK
S16.009	S81	960 minute 100 year Winter I+40%	13.300	12.828	0.303	0.000	0.07	5.1	SURCHARGED
S1.016	S88	1440 minute 100 year Summer I+40%	14.000	12.181	-0.109	0.000	0.23	64.4	OK
S1.017	S79	960 minute 100 year Winter I+40%	14.000	12.160	-0.490	0.000	0.08	64.4	OK
S17.000	S94	60 minute 100 year Winter I+40%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	120 minute 100 year Winter I+40%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	120 minute 100 year Winter I+40%	19.500	17.298	-0.151	0.000	0.49	45.0	OK
S17.003	S86	120 minute 100 year Winter I+40%	19.580	16.641	-0.139	0.000	0.56	45.0	OK
S17.004	S67	1440 minute 100 year Winter I+40%	18.950	16.357	-0.053	0.000	0.63	50.0	OK
S17.005	S68	1440 minute 100 year Winter I+40%	19.850	16.222	0.152	0.000	0.69	55.0	SURCHARGED
S17.006	S69	1440 minute 100 year Winter I+40%	19.340	16.078	0.308	0.000	0.73	55.0	SURCHARGED
S18.000	S90	60 minute 100 year Winter I+40%	20.229	17.599	-0.074	0.000	0.51	10.0	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S18.001	S90a	60 minute 100 year Winter I+40%	20.000	16.294	-0.162	0.000	0.17	10.0	OK
S18.002	S91	1440 minute 100 year Winter I+40%	19.670	15.986	0.311	0.000	0.34	10.1	SURCHARGED
S17.007	S70	1440 minute 100 year Winter I+40%	19.270	15.976	0.346	0.000	0.79	65.0	SURCHARGED
S19.000	S72	60 minute 100 year Winter I+40%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	60 minute 100 year Winter I+40%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	60 minute 100 year Winter I+40%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	960 minute 100 year Summer I+40%	19.330	15.512	0.622	0.000	1.02	85.0	SURCHARGED
S17.009	S72	960 minute 100 year Summer I+40%	18.270	14.854	0.602	0.000	1.13	90.0	SURCHARGED
S17.010	S73	960 minute 100 year Summer I+40%	15.870	14.495	0.523	0.000	1.31	95.0	SURCHARGED
S17.011	S74	1440 minute 100 year Winter I+40%	15.500	14.168	0.387	0.000	1.37	95.0	SURCHARGED
S17.012	S74a	1440 minute 100 year Winter I+40%	15.010	13.951	0.285	0.000	1.63	100.0	SURCHARGED
S17.013	S74b	960 minute 100 year Summer I+40%	15.000	13.792	0.182	0.000	1.31	100.0	SURCHARGED
S17.014	S106	1440 minute 100 year Winter I+40%	14.140	13.432	-0.043	0.000	0.87	120.0	OK
S20.000	S110	60 minute 100 year Winter I+40%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	60 minute 100 year Winter I+40%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	60 minute 100 year Winter I+40%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	60 minute 100 year Winter I+40%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	60 minute 100 year Winter I+40%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	60 minute 100 year Winter I+40%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	60 minute 100 year Winter I+40%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	60 minute 100 year Winter I+40%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	60 minute 100 year Winter I+40%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	60 minute 100 year Winter I+40%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	60 minute 100 year Winter I+40%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	60 minute 100 year Winter I+40%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	1440 minute 100 year Winter I+40%	14.800	12.919	-0.246	0.000	0.00	0.0	OK
S20.003	S111	1440 minute 100 year Winter I+40%	14.730	12.919	-0.226	0.000	0.29	35.0	OK
S17.015	S111	960 minute 100 year Summer I+40%	13.730	12.789	0.164	0.000	1.32	155.0	SURCHARGED
S17.016	S88	1440 minute 100 year Summer I+40%	13.300	12.308	-0.067	0.000	0.68	155.0	OK
S1.018	S89	960 minute 100 year Winter I+40%	14.000	12.152	-0.468	0.000	0.64	219.4	OK

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes SW PIPES Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	5	Add Flow / Climate Change (%)	0
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.450	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.491	8-12	0.377	16-20	0.248	24-28	1.255	32-36	3.316	40-44	3.786
4-8	0.883	12-16	0.276	20-24	0.000	28-32	9.086	36-40	1.953	44-48	0.745

Total Area Contributing (ha) = 22.416

Total Pipe Volume (m^3) = 2786.274

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	17.966	0.072	249.5	0.747	4.00	0.0	0.600	o	525	Pipe/Conduit	
S1.001	79.485	0.318	250.0	0.865	0.00	0.0	0.600	o	600	Pipe/Conduit	
S2.000	104.530	0.418	250.1	0.952	4.00	0.0	0.600	o	525	Pipe/Conduit	
S2.001	35.691	0.143	249.6	0.975	0.00	0.0	0.600	o	675	Pipe/Conduit	
S2.002	79.737	0.319	250.0	0.204	0.00	0.0	0.600	o	675	Pipe/Conduit	
S1.002	61.629	0.185	333.1	0.526	0.00	0.0	0.600	o	875	Pipe/Conduit	
S1.003	51.618	0.230	224.4	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	
S1.004	13.469	0.068	198.1	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	75.00	4.21	17.475	0.747	0.0	0.0	0.0	1.41	306.0	151.7
S1.001	75.00	5.07	17.328	1.612	0.0	0.0	0.0	1.54	434.2	327.4
S2.000	75.00	5.23	17.965	0.952	0.0	0.0	0.0	1.41	305.6	193.4
S2.001	75.00	5.59	17.397	1.927	0.0	0.0	0.0	1.65	592.0	391.4
S2.002	75.00	6.40	17.254	2.131	0.0	0.0	0.0	1.65	591.6	432.8
S1.002	75.00	7.01	16.735	4.269	0.0	0.0	0.0	1.68	1011.1	867.1
S1.003	75.00	7.43	16.550	4.269	0.0	0.0	0.0	2.05	1233.5	867.1
S1.004	75.00	7.53	16.320	4.269	0.0	0.0	0.0	2.18	1313.5	867.1

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.005	12.368	0.062	199.5	0.000	0.00	0.0	0.600	o	875	Pipe/Conduit	
S3.000	25.768	0.170	151.6	0.286	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	22.011	0.110	200.1	0.162	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.006	66.006	0.290	227.6	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.007	18.446	0.092	200.5	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.008	130.205	0.651	200.0	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.009	9.571	0.057	167.9	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S1.010	136.324	0.775	175.9	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S4.000	129.886	0.649	200.1	1.173	4.00	0.0	0.600	o	525	Pipe/Conduit	
S5.000	69.831	0.349	200.1	1.085	4.00	0.0	0.600	o	525	Pipe/Conduit	
S4.001	43.224	0.216	200.1	0.077	0.00	0.0	0.600	o	675	Pipe/Conduit	
S4.002	6.272	0.031	202.3	0.405	0.00	0.0	0.600	o	750	Pipe/Conduit	
S4.003	44.802	0.224	200.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S6.000	99.776	0.500	199.6	0.246	4.00	0.0	0.600	o	300	Pipe/Conduit	
S7.000	51.619	0.340	151.8	0.398	4.00	0.0	0.600	o	375	Pipe/Conduit	
S7.001	64.724	0.430	150.5	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.002	43.463	0.290	149.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.003	28.540	0.276	103.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.001	80.238	0.300	267.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.005	75.00	7.63	16.252	4.269	0.0	0.0	0.0	2.18	1308.8	867.1
S3.000	75.00	4.34	17.045	0.286	0.0	0.0	0.0	1.27	90.1	58.1
S3.001	75.00	4.67	16.875	0.448	0.0	0.0	0.0	1.11	78.3«	91.0
S1.006	75.00	8.16	16.165	4.717	0.0	0.0	0.0	2.07	1318.6	958.1
S1.007	75.00	8.30	15.875	4.717	0.0	0.0	0.0	2.21	1405.5	958.1
S1.008	71.09	9.28	15.783	4.717	0.0	0.0	0.0	2.21	1407.2	958.1
S1.009	70.82	9.34	15.132	4.717	0.0	0.0	0.0	2.42	1536.6	958.1
S1.010	67.25	10.24	15.075	4.717	0.0	0.0	0.0	2.52	1978.0	958.1
S4.000	75.00	5.37	16.755	1.173	0.0	0.0	0.0	1.58	342.0	238.3
S5.000	75.00	4.74	16.455	1.085	0.0	0.0	0.0	1.58	342.0	220.4
S4.001	75.00	5.76	15.956	2.335	0.0	0.0	0.0	1.85	661.7	474.3
S4.002	75.00	5.81	15.665	2.740	0.0	0.0	0.0	1.96	867.6	556.5
S4.003	75.00	6.19	15.634	2.740	0.0	0.0	0.0	1.98	872.6	556.5
S6.000	75.00	5.50	18.719	0.246	0.0	0.0	0.0	1.11	78.4	50.0
S7.000	75.00	4.59	19.480	0.398	0.0	0.0	0.0	1.47	162.2	80.8
S7.001	75.00	5.32	19.140	0.398	0.0	0.0	0.0	1.47	162.9	80.8
S7.002	75.00	5.81	18.710	0.398	0.0	0.0	0.0	1.48	163.2	80.8
S7.003	75.00	6.07	18.420	0.398	0.0	0.0	0.0	1.78	196.8	80.8
S6.001	75.00	6.98	17.919	0.644	0.0	0.0	0.0	1.48	419.7	130.8

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S6.002	3.433	0.179	19.2	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S6.003	61.378	0.780	78.7	1.316	0.00	0.0	0.600	o	680	Pipe/Conduit	
S6.004	6.371	0.020	318.6	0.000	0.00	0.0	0.600	o	680	Pipe/Conduit	
S6.005	40.521	0.110	368.4	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S8.000	55.053	0.300	183.5	0.171	4.00	0.0	0.600	o	450	Pipe/Conduit	
S8.001	100.444	0.300	334.8	0.504	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.002	7.271	0.120	60.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S6.006	49.044	1.040	47.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S4.004	73.185	0.410	178.5	0.280	0.00	0.0	0.600	o	900	Pipe/Conduit	
S4.005	126.298	0.550	229.6	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S9.000	63.403	0.317	200.0	0.476	4.00	0.0	0.600	o	450	Pipe/Conduit	
S9.001	6.518	0.033	197.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S9.002	62.164	0.249	249.7	0.784	0.00	0.0	0.600	o	525	Pipe/Conduit	
S9.003	68.571	0.274	250.3	0.353	0.00	0.0	0.600	o	600	Pipe/Conduit	
S10.000	86.241	0.300	287.5	1.118	4.00	0.0	0.600	o	525	Pipe/Conduit	
S10.001	23.031	0.119	193.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S9.004	40.000	0.160	250.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.005	81.776	0.327	250.1	0.244	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.006	65.659	0.263	249.7	0.282	0.00	0.0	0.600	o	750	Pipe/Conduit	
S9.007	6.999	0.028	250.0	0.412	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.008	8.392	0.034	246.8	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S6.002	75.00	6.99	17.619	0.644	0.0	0.0	0.0	5.58	1577.0	130.8
S6.003	75.00	7.33	17.360	1.960	0.0	0.0	0.0	2.97	1078.6	398.1
S6.004	75.00	7.40	16.580	1.960	0.0	0.0	0.0	1.47	533.8	398.1
S6.005	75.00	7.87	16.560	1.960	0.0	0.0	0.0	1.45	641.5	398.1
S8.000	75.00	4.61	17.470	0.171	0.0	0.0	0.0	1.50	238.2	34.7
S8.001	75.00	6.13	17.170	0.675	0.0	0.0	0.0	1.11	175.8	137.1
S8.002	75.00	6.17	16.870	0.675	0.0	0.0	0.0	2.62	416.0	137.1
S6.006	75.00	8.07	16.450	2.635	0.0	0.0	0.0	4.08	1803.1	535.2
S4.004	74.14	8.59	15.260	5.655	0.0	0.0	0.0	2.34	1490.0	1135.5
S4.005	69.98	9.54	14.850	5.655	0.0	0.0	0.0	2.20	1729.9	1135.5
S9.000	75.00	4.74	16.949	0.476	0.0	0.0	0.0	1.43	228.1	96.7
S9.001	75.00	4.81	16.632	0.476	0.0	0.0	0.0	1.44	229.5	96.7
S9.002	75.00	5.55	16.524	1.260	0.0	0.0	0.0	1.41	305.9	255.9
S9.003	75.00	6.29	16.200	1.613	0.0	0.0	0.0	1.53	434.0	327.6
S10.000	75.00	5.09	16.420	1.118	0.0	0.0	0.0	1.32	284.9	227.1
S10.001	75.00	5.33	16.120	1.118	0.0	0.0	0.0	1.61	347.8	227.1
S9.004	75.00	6.67	15.776	2.731	0.0	0.0	0.0	1.77	779.9	554.7
S9.005	75.00	7.44	15.616	2.975	0.0	0.0	0.0	1.77	779.8	604.3
S9.006	75.00	8.06	15.289	3.257	0.0	0.0	0.0	1.77	780.5	661.6
S9.007	75.00	8.12	14.876	3.669	0.0	0.0	0.0	1.98	1257.9	745.2
S9.008	75.00	8.19	14.848	3.669	0.0	0.0	0.0	1.99	1265.9	745.2

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S9.009	44.429	0.219	202.9	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.010	54.698	0.278	196.8	0.476	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.011	4.281	0.017	251.8	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
S9.012	105.226	0.001	105226.1	0.000	0.00	0.0	0.600	o	2000	Pipe/Conduit	
S11.000	73.423	0.370	198.4	0.370	4.00	0.0	0.600	o	375	Pipe/Conduit	
S11.001	37.894	0.190	199.4	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.002	76.449	0.350	218.4	1.969	0.00	0.0	0.600	o	675	Pipe/Conduit	
S11.003	104.843	0.001	104843.5	0.000	0.00	0.0	0.600	o	2000	Pipe/Conduit	
S12.000	19.206	0.230	83.5	0.177	4.00	0.0	0.600	o	450	Pipe/Conduit	
S12.001	69.246	0.745	92.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S12.002	97.217	0.570	170.6	1.098	0.00	0.0	0.600	o	525	Pipe/Conduit	
S12.003	24.661	0.090	274.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S12.004	204.153	0.400	510.4	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S13.000	25.044	0.039	642.1	0.697	4.00	0.0	0.600	o	525	Pipe/Conduit	
S13.001	146.187	1.030	141.9	1.313	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S1.011	219.264	0.000	0.0	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S14.000	72.359	0.750	96.5	0.000	4.00	3.7	0.600	o	225	Pipe/Conduit	
S15.000	56.376	0.370	152.4	0.000	4.00	1.0	0.600	o	225	Pipe/Conduit	
S14.001	7.451	0.050	149.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S9.009	74.43	8.53	14.814	3.669	0.0	0.0	0.0	2.20	1397.2	745.2
S9.010	72.57	8.93	14.595	4.145	0.0	0.0	0.0	2.23	1418.9	814.7
S9.011	72.41	8.97	14.317	4.145	0.0	0.0	0.0	1.97	1253.2	814.7
S9.012	43.38	20.81	14.300	4.145	0.0	0.0	0.0	0.15	465.4«	814.7
S11.000	75.00	4.95	15.510	0.370	0.0	0.0	0.0	1.28	141.7	75.2
S11.001	75.00	5.45	15.140	0.370	0.0	0.0	0.0	1.28	141.3	75.2
S11.002	75.00	6.17	14.650	2.339	0.0	0.0	0.0	1.77	633.2	475.1
S11.003	47.81	17.94	14.300	2.339	0.0	0.0	0.0	0.15	466.3«	475.1
S12.000	75.00	4.14	17.010	0.177	0.0	0.0	0.0	2.23	354.1	36.0
S12.001	75.00	4.69	16.780	0.177	0.0	0.0	0.0	2.11	335.5	36.0
S12.002	75.00	5.64	15.960	1.275	0.0	0.0	0.0	1.71	370.7	259.0
S12.003	75.00	5.94	15.390	1.275	0.0	0.0	0.0	1.35	291.9	259.0
S12.004	75.00	8.25	15.300	1.275	0.0	0.0	0.0	1.47	1157.1	259.0
S13.000	75.00	4.48	15.370	0.697	0.0	0.0	0.0	0.88	189.7	141.6
S13.001	75.00	5.34	15.330	2.010	0.0	0.0	0.0	2.81	2203.1	408.3
S1.011	33.82	30.00	13.700	20.141	0.0	0.0	0.0	0.33	256.0«	1844.6
S14.000	75.00	4.91	14.500	0.000	3.7	0.0	0.0	1.33	52.9	3.7
S15.000	75.00	4.89	14.120	0.000	1.0	0.0	0.0	1.06	42.0	1.0
S14.001	75.00	5.02	13.750	0.000	4.7	0.0	0.0	1.07	42.5	4.7

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.012	231.624	0.000	0.0	0.524	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S1.013	12.906	0.050	258.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.014	126.321	0.850	148.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.015	12.556	0.060	209.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S16.000	104.352	0.420	248.5	1.090	4.00	0.0	0.600	o	600	Pipe/Conduit	
S16.001	5.155	0.021	245.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.002	36.163	0.150	241.1	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.003	113.458	0.450	252.1	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.004	63.606	0.250	254.4	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.005	76.774	0.305	251.7	0.151	0.00	0.0	0.600	o	600	Pipe/Conduit	
S16.006	22.768	0.091	250.2	0.000	0.00	0.0	0.600	o	675	Pipe/Conduit	
S16.007	3.934	0.016	245.9	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S16.008	55.166	0.700	78.8	0.510	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S16.009	8.864	0.235	37.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.016	8.662	0.040	216.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.017	12.722	0.040	318.1	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	
S17.000	140.671	0.736	191.1	0.000	4.00	20.0	0.600	o	225	Pipe/Conduit	
S17.001	32.478	0.180	180.0	0.000	0.00	15.0	0.600	o	225	Pipe/Conduit	
S17.002	92.714	0.669	138.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.003	64.485	0.370	174.3	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S17.004	59.956	0.340	176.3	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.005	52.143	0.300	173.8	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.006	24.212	0.140	172.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.012	33.82	30.00	13.700	20.665	4.7	0.0	0.0	0.33	256.0«	1897.3
S1.013	33.82	30.00	12.800	20.665	4.7	0.0	0.0	1.26	200.5«	1897.3
S1.014	33.82	30.00	12.750	20.665	4.7	0.0	0.0	1.67	264.9«	1897.3
S1.015	33.82	30.00	11.900	20.665	4.7	0.0	0.0	1.40	222.9«	1897.3
S16.000	75.00	5.13	14.853	1.090	0.0	0.0	0.0	1.54	435.5	221.4
S16.001	75.00	5.18	14.433	1.090	0.0	0.0	0.0	1.55	438.2	221.4
S16.002	75.00	5.57	14.412	1.090	0.0	0.0	0.0	1.56	442.2	221.4
S16.003	75.00	6.81	14.262	1.090	0.0	0.0	0.0	1.53	432.3	221.4
S16.004	75.00	7.50	13.812	1.090	0.0	0.0	0.0	1.52	430.4	221.4
S16.005	75.00	8.34	13.562	1.241	0.0	0.0	0.0	1.53	432.7	252.1
S16.006	74.23	8.57	13.182	1.241	0.0	0.0	0.0	1.65	591.3	252.1
S16.007	74.06	8.61	13.016	1.241	0.0	0.0	0.0	1.78	786.5	252.1
S16.008	72.95	8.85	13.000	1.751	0.0	0.0	0.0	3.77	2960.1	345.9
S16.009	72.64	8.92	12.300	1.751	0.0	0.0	0.0	2.14	85.0«	345.9
S1.016	33.82	30.00	11.690	22.416	4.7	0.0	0.0	1.65	466.8«	2057.6
S1.017	33.82	30.00	11.650	22.416	4.7	0.0	0.0	1.87	1468.4«	2057.6
S17.000	75.00	6.49	18.140	0.000	20.0	0.0	0.0	0.94	37.5	20.0
S17.001	75.00	7.05	17.404	0.000	35.0	0.0	0.0	0.97	38.6	35.0
S17.002	75.00	8.20	17.149	0.000	35.0	0.0	0.0	1.33	94.3	35.0
S17.003	71.81	9.11	16.480	0.000	45.0	0.0	0.0	1.19	84.0	45.0
S17.004	68.35	9.95	16.110	0.000	50.0	0.0	0.0	1.18	83.5	50.0
S17.005	65.65	10.69	15.770	0.000	55.0	0.0	0.0	1.19	84.1	55.0
S17.006	64.48	11.02	15.470	0.000	55.0	0.0	0.0	1.19	84.3	55.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S18.000	97.343	1.217	80.0	0.000	4.00	10.0	0.600	o	150	Pipe/Conduit	
S18.001	58.953	0.781	75.5	0.000	0.00	15.0	0.600	o	225	Pipe/Conduit	
S18.002	7.027	0.045	156.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.007	128.495	0.740	173.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S19.000	85.961	0.530	162.2	0.000	4.00	10.0	0.600	o	225	Pipe/Conduit	
S19.001	74.193	0.370	200.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S19.002	11.170	1.655	6.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.008	105.664	0.638	165.6	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S17.009	48.123	0.280	171.9	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.010	38.176	0.191	199.9	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.011	23.099	0.115	200.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.012	10.047	0.056	179.4	0.000	0.00	5.0	0.600	o	300	Pipe/Conduit	
S17.013	37.869	0.210	180.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S17.014	169.468	0.850	199.4	0.000	0.00	20.0	0.600	o	375	Pipe/Conduit	
S20.000	96.242	0.650	148.1	0.000	4.00	10.0	0.600	o	225	Pipe/Conduit	
S20.001	112.685	0.770	146.3	0.000	0.00	10.0	0.600	o	225	Pipe/Conduit	
S21.000	36.158	0.250	144.6	0.000	4.00	5.0	0.600	o	225	Pipe/Conduit	
S21.001	56.055	0.340	164.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S20.002	72.674	0.490	148.3	0.000	0.00	10.0	0.600	o	300	Pipe/Conduit	
S22.000	13.976	0.252	55.5	0.000	4.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S18.000	75.00	5.44	17.523	0.000	10.0	0.0	0.0	1.12	19.9	10.0
S18.001	75.00	6.09	16.231	0.000	25.0	0.0	0.0	1.51	59.9	25.0
S18.002	75.00	6.21	15.450	0.000	25.0	0.0	0.0	1.04	41.5	25.0
S17.007	58.97	12.82	15.330	0.000	80.0	0.0	0.0	1.19	84.1	80.0
S19.000	75.00	5.40	17.220	0.000	10.0	0.0	0.0	1.02	40.7	10.0
S19.001	75.00	6.74	16.690	0.000	10.0	0.0	0.0	0.92	36.6	10.0
S19.002	75.00	6.78	16.320	0.000	10.0	0.0	0.0	5.07	201.6	10.0
S17.008	55.25	14.27	14.590	0.000	100.0	0.0	0.0	1.22	86.2«	100.0
S17.009	53.70	14.94	13.952	0.000	105.0	0.0	0.0	1.20	84.6«	105.0
S17.010	52.45	15.51	13.672	0.000	110.0	0.0	0.0	1.11	78.4«	110.0
S17.011	51.72	15.86	13.481	0.000	110.0	0.0	0.0	1.11	78.2«	110.0
S17.012	51.43	16.00	13.366	0.000	115.0	0.0	0.0	1.17	82.7«	115.0
S17.013	50.36	16.54	13.310	0.000	115.0	0.0	0.0	1.17	82.5«	115.0
S17.014	46.46	18.75	13.100	0.000	135.0	0.0	0.0	1.28	141.3	135.0
S20.000	75.00	5.50	14.830	0.000	10.0	0.0	0.0	1.07	42.6	10.0
S20.001	75.00	7.24	14.180	0.000	20.0	0.0	0.0	1.08	42.9	20.0
S21.000	75.00	4.56	14.000	0.000	5.0	0.0	0.0	1.09	43.1	5.0
S21.001	75.00	5.48	13.750	0.000	5.0	0.0	0.0	1.02	40.4	5.0
S20.002	75.00	8.18	13.335	0.000	35.0	0.0	0.0	1.29	91.1	35.0
S22.000	75.00	4.11	14.821	0.000	0.0	0.0	0.0	2.12	149.5	0.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S22.001	26.732	0.100	267.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.002	75.286	0.362	208.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.003	90.053	0.250	360.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.004	39.019	0.112	348.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.005	114.216	0.450	253.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S22.006	154.404	0.430	359.1	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S22.007	3.120	0.020	156.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S20.003	136.173	0.520	261.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S17.015	63.087	0.250	252.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S17.016	5.657	0.340	16.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.018	17.396	0.019	915.6	0.000	0.00	0.0	0.600	o	1000	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S22.001	75.00	4.58	14.569	0.000	0.0	0.0	0.0	0.96	67.6	0.0
S22.002	75.00	5.73	14.469	0.000	0.0	0.0	0.0	1.09	76.8	0.0
S22.003	75.00	7.56	14.107	0.000	0.0	0.0	0.0	0.82	58.1	0.0
S22.004	75.00	8.33	13.857	0.000	0.0	0.0	0.0	0.84	59.1	0.0
S22.005	67.15	10.27	13.745	0.000	0.0	0.0	0.0	0.98	69.4	0.0
S22.006	58.54	12.98	13.220	0.000	0.0	0.0	0.0	0.95	105.0	0.0
S22.007	58.45	13.01	12.790	0.000	0.0	0.0	0.0	1.45	160.0	0.0
S20.003	53.45	15.05	12.770	0.000	35.0	0.0	0.0	1.11	123.1	35.0
S17.015	45.02	19.68	12.250	0.000	170.0	0.0	0.0	1.14	125.5«	170.0
S17.016	44.98	19.70	12.000	0.000	170.0	0.0	0.0	4.46	492.7	170.0
S1.018	33.82	30.00	11.620	22.416	174.7	0.0	0.0	1.10	861.5«	2227.6

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S28	21.240	3.765	Open Manhole	1500	S1.000	17.475	525				
S29	21.060	3.732	Open Manhole	1500	S1.001	17.328	600	S1.000	17.403	525	
S117	20.170	2.205	Open Manhole	1500	S2.000	17.965	525				
S4	20.590	3.193	Open Manhole	1500	S2.001	17.397	675	S2.000	17.547	525	
S5	20.920	3.666	Open Manhole	1500	S2.002	17.254	675	S2.001	17.254	675	
S24	20.910	4.175	Open Manhole	1800	S1.002	16.735	875	S1.001	17.010	600	
								S2.002	16.935	675	
S6	19.820	3.270	Open Manhole	1800	S1.003	16.550	875	S1.002	16.550	875	
S7	19.110	2.790	Open Manhole	1800	S1.004	16.320	875	S1.003	16.320	875	
S8	19.200	2.948	Open Manhole	1800	S1.005	16.252	875	S1.004	16.252	875	
S16	18.860	1.815	Open Manhole	1200	S3.000	17.045	300				
S17	19.020	2.145	Open Manhole	1200	S3.001	16.875	300	S3.000	16.875	300	
S9	18.920	2.755	Open Manhole	1800	S1.006	16.165	900	S1.005	16.190	875	
								S3.001	16.765	300	
S10	18.080	2.205	Open Manhole	1800	S1.007	15.875	900	S1.006	15.875	900	
S11	18.100	2.317	Open Manhole	1800	S1.008	15.783	900	S1.007	15.783	900	
S12	16.430	1.298	Open Manhole	1800	S1.009	15.132	900	S1.008	15.132	900	
S13	16.500	1.425	Open Manhole	1900	S1.010	15.075	1000	S1.009	15.075	900	
S32	21.140	4.385	Open Manhole	1500	S4.000	16.755	525				
S34	20.200	3.745	Open Manhole	1500	S5.000	16.455	525				
S32	20.600	4.644	Open Manhole	1500	S4.001	15.956	675	S4.000	16.106	525	
								S5.000	16.106	525	
S33	20.960	5.295	Open Manhole	1800	S4.002	15.665	750	S4.001	15.740	675	
S34	21.150	5.516	Open Manhole	1800	S4.003	15.634	750	S4.002	15.634	750	
S38	20.360	1.641	Open Manhole	1200	S6.000	18.719	300				
S39	20.330	0.850	Open Manhole	1350	S7.000	19.480	375				
S51	20.840	1.700	Open Manhole	1350	S7.001	19.140	375	S7.000	19.140	375	
S52	21.310	2.600	Open Manhole	1350	S7.002	18.710	375	S7.001	18.710	375	
S53	20.980	2.560	Open Manhole	1350	S7.003	18.420	375	S7.002	18.420	375	
S39	21.560	3.641	Open Manhole	1500	S6.001	17.919	600	S6.000	18.219	300	
								S7.003	18.144	375	
S40	20.970	3.351	Open Manhole	1500	S6.002	17.619	600	S6.001	17.619	600	
S41	20.920	3.560	Open Manhole	1500	S6.003	17.360	680	S6.002	17.440	600	
S42	20.430	3.850	Open Manhole	1500	S6.004	16.580	680	S6.003	16.580	680	
S43	20.490	3.930	Open Manhole	1800	S6.005	16.560	750	S6.004	16.560	680	
S46	18.830	1.360	Open Manhole	1350	S8.000	17.470	450				
S57	19.250	2.080	Open Manhole	1350	S8.001	17.170	450	S8.000	17.170	450	
S47	20.170	3.300	Open Manhole	1350	S8.002	16.870	450	S8.001	16.870	450	
S44	20.170	3.720	Open Manhole	1800	S6.006	16.450	750	S6.005	16.450	750	
								S8.002	16.750	450	
S35	21.380	6.120	Open Manhole	1800	S4.004	15.260	900	S4.003	15.410	750	
								S6.006	15.410	750	
S36	16.500	1.650	Open Manhole	1900	S4.005	14.850	1000	S4.004	14.850	900	
S46	18.770	1.821	Open Manhole	1350	S9.000	16.949	450				
S44	18.110	1.478	Open Manhole	1350	S9.001	16.632	450	S9.000	16.632	450	
S47	17.970	1.446	Open Manhole	1500	S9.002	16.524	525	S9.001	16.599	450	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S48	18.270	2.070	Open Manhole	1500	S9.003	16.200	600	S9.002	16.275	525	
S52	20.080	3.660	Open Manhole	1500	S10.000	16.420	525				
S53	18.810	2.690	Open Manhole	1500	S10.001	16.120	525	S10.000	16.120	525	
S40	18.680	2.904	Open Manhole	1800	S9.004	15.776	750	S9.003	15.926	600	
								S10.001	16.001	525	
S41	17.810	2.194	Open Manhole	1800	S9.005	15.616	750	S9.004	15.616	750	
S42	18.870	3.581	Open Manhole	1800	S9.006	15.289	750	S9.005	15.289	750	
S43	16.400	1.524	Open Manhole	1800	S9.007	14.876	900	S9.006	15.026	750	
S44	16.420	1.572	Open Manhole	1800	S9.008	14.848	900	S9.007	14.848	900	
S45	16.300	1.486	Open Manhole	1800	S9.009	14.814	900	S9.008	14.814	900	
S46	16.280	1.685	Open Manhole	1800	S9.010	14.595	900	S9.009	14.595	900	
S47	16.330	2.013	Open Manhole	1800	S9.011	14.317	900	S9.010	14.317	900	
S48	16.500	2.200	Open Manhole	2900	S9.012	14.300	2000	S9.011	14.300	900	
S53	16.250	0.740	Open Manhole	1350	S11.000	15.510	375				
S54	16.350	1.210	Open Manhole	1350	S11.001	15.140	375	S11.000	15.140	375	
S63	16.410	1.760	Open Manhole	1500	S11.002	14.650	675	S11.001	14.950	375	
S64	16.500	2.200	Open Manhole	2900	S11.003	14.300	2000	S11.002	14.300	675	
S66	19.020	2.010	Open Manhole	1350	S12.000	17.010	450				
S67	18.710	1.930	Open Manhole	1350	S12.001	16.780	450	S12.000	16.780	450	
S68	18.820	2.860	Open Manhole	1500	S12.002	15.960	525	S12.001	16.035	450	
S69	17.290	1.900	Open Manhole	1500	S12.003	15.390	525	S12.002	15.390	525	
S70	16.500	1.200	Open Manhole	1900	S12.004	15.300	1000	S12.003	15.300	525	
S74	16.500	1.130	Open Manhole	1500	S13.000	15.370	525				
S75	16.500	1.170	Open Manhole	1900	S13.001	15.330	1000	S13.000	15.331	525	
S83	16.500	2.800	Open Manhole	2900	S1.011	13.700	1000	S1.010	14.300	1000	600
								S4.005	14.300	1000	600
								S9.012	14.299	2000	1599
								S11.003	14.299	2000	1599
								S12.004	14.900	1000	1200
								S13.001	14.300	1000	600
S69	17.510	3.010	Open Manhole	1200	S14.000	14.500	225				
S74	15.000	0.880	Open Manhole	1200	S15.000	14.120	225				
S74	14.550	0.800	Open Manhole	1200	S14.001	13.750	225	S14.000	13.750	225	
								S15.000	13.750	225	
S16	14.700	1.000	Open Manhole	1900	S1.012	13.700	1000	S1.011	13.700	1000	
								S14.001	13.700	225	
S84	14.700	1.900	Open Manhole	1900	S1.013	12.800	450	S1.012	13.700	1000	1450
S76	13.750	1.000	Open Manhole	1350	S1.014	12.750	450	S1.013	12.750	450	
S70	13.000	1.100	Open Manhole	1350	S1.015	11.900	450	S1.014	11.900	450	
S102	17.310	2.457	Open Manhole	1500	S16.000	14.853	600				
S103	17.190	2.757	Open Manhole	1500	S16.001	14.433	600	S16.000	14.433	600	
S104	16.800	2.388	Open Manhole	1500	S16.002	14.412	600	S16.001	14.412	600	
S105	16.290	2.028	Open Manhole	1500	S16.003	14.262	600	S16.002	14.262	600	
S108	14.980	1.168	Open Manhole	1500	S16.004	13.812	600	S16.003	13.812	600	
S109	16.150	2.588	Open Manhole	1500	S16.005	13.562	600	S16.004	13.562	600	
S110	15.320	2.138	Open Manhole	1500	S16.006	13.182	675	S16.005	13.257	600	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S73	14.100	1.084	Open Manhole	1800	S16.007	13.016	750	S16.006	13.091	675	
S111	14.100	1.100	Open Manhole	1900	S16.008	13.000	1000	S16.007	13.000	750	
S81	13.300	1.000	Open Manhole	1900	S16.009	12.300	225	S16.008	12.300	1000	
S88	14.000	2.310	Open Manhole	1500	S1.016	11.690	600	S1.015	11.840	450	
								S16.009	12.065	225	
S79	14.000	2.350	Open Manhole	1900	S1.017	11.650	1000	S1.016	11.650	600	
S94	19.800	1.660	Open Manhole	1200	S17.000	18.140	225				
S85	20.000	2.596	Open Manhole	1200	S17.001	17.404	225	S17.000	17.404	225	
S66a	19.500	2.351	Open Manhole	1200	S17.002	17.149	300	S17.001	17.224	225	
S86	19.580	3.100	Open Manhole	1200	S17.003	16.480	300	S17.002	16.480	300	
S67	18.950	2.840	Open Manhole	1200	S17.004	16.110	300	S17.003	16.110	300	
S68	19.850	4.080	Open Manhole	1200	S17.005	15.770	300	S17.004	15.770	300	
S69	19.340	3.870	Open Manhole	1200	S17.006	15.470	300	S17.005	15.470	300	
S90	20.229	2.706	Open Manhole	1200	S18.000	17.523	150				
S90a	20.000	3.769	Open Manhole	1200	S18.001	16.231	225	S18.000	16.306	150	
S91	19.670	4.220	Open Manhole	1200	S18.002	15.450	225	S18.001	15.450	225	
S70	19.270	3.940	Open Manhole	1200	S17.007	15.330	300	S17.006	15.330	300	
								S18.002	15.405	225	
S72	18.060	0.840	Open Manhole	1200	S19.000	17.220	225				
S97	19.270	2.580	Open Manhole	1200	S19.001	16.690	225	S19.000	16.690	225	
S73	19.320	3.000	Open Manhole	1200	S19.002	16.320	225	S19.001	16.320	225	
S71	19.330	4.740	Open Manhole	1200	S17.008	14.590	300	S17.007	14.590	300	
								S19.002	14.665	225	
S72	18.270	4.318	Open Manhole	1200	S17.009	13.952	300	S17.008	13.952	300	
S73	15.870	2.198	Open Manhole	1200	S17.010	13.672	300	S17.009	13.672	300	
S74	15.500	2.019	Open Manhole	1200	S17.011	13.481	300	S17.010	13.481	300	
S74a	15.010	1.644	Open Manhole	1200	S17.012	13.366	300	S17.011	13.366	300	
S74b	15.000	1.690	Open Manhole	1200	S17.013	13.310	300	S17.012	13.310	300	
S106	14.140	1.040	Open Manhole	1350	S17.014	13.100	375	S17.013	13.100	300	
S110	16.240	1.410	Open Manhole	1200	S20.000	14.830	225				
S111	16.040	1.860	Open Manhole	1200	S20.001	14.180	225	S20.000	14.180	225	
S107	16.800	2.800	Open Manhole	1200	S21.000	14.000	225				
S108	16.389	2.639	Open Manhole	1200	S21.001	13.750	225	S21.000	13.750	225	
S106	15.870	2.535	Open Manhole	1200	S20.002	13.335	300	S20.001	13.410	225	
								S21.001	13.410	225	
S111	16.760	1.939	Open Manhole	1200	S22.000	14.821	300				
S111a	17.000	2.431	Open Manhole	1200	S22.001	14.569	300	S22.000	14.569	300	
S112	17.830	3.361	Open Manhole	1200	S22.002	14.469	300	S22.001	14.469	300	
S113	17.110	3.003	Open Manhole	1200	S22.003	14.107	300	S22.002	14.107	300	
S114	17.590	3.733	Open Manhole	1200	S22.004	13.857	300	S22.003	13.857	300	
S85	17.950	4.205	Open Manhole	1200	S22.005	13.745	300	S22.004	13.745	300	
S86	14.900	1.680	Open Manhole	1350	S22.006	13.220	375	S22.005	13.295	300	
S87	14.800	2.010	Open Manhole	1350	S22.007	12.790	375	S22.006	12.790	375	
S111	14.730	1.960	Open Manhole	1350	S20.003	12.770	375	S20.002	12.845	300	
								S22.007	12.770	375	
S111	13.730	1.480	Open Manhole	1350	S17.015	12.250	375	S17.014	12.250	375	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
								S20.003	12.250	375	
S88	13.300	1.300	Open Manhole	1350	S17.016	12.000	375	S17.015	12.000	375	
S89	14.000	2.390	Open Manhole	1900	S1.018	11.620	1000	S1.017	11.610	1000	
								S17.016	11.660	375	
S	12.800	1.199	Open Manhole	0		OUTFALL		S1.018	11.601	1000	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	525	S28	21.240	17.475	3.240	Open Manhole	1500
S1.001	o	600	S29	21.060	17.328	3.132	Open Manhole	1500
S2.000	o	525	S117	20.170	17.965	1.680	Open Manhole	1500
S2.001	o	675	S4	20.590	17.397	2.518	Open Manhole	1500
S2.002	o	675	S5	20.920	17.254	2.991	Open Manhole	1500
S1.002	o	875	S24	20.910	16.735	3.300	Open Manhole	1800
S1.003	o	875	S6	19.820	16.550	2.395	Open Manhole	1800
S1.004	o	875	S7	19.110	16.320	1.915	Open Manhole	1800
S1.005	o	875	S8	19.200	16.252	2.073	Open Manhole	1800
S3.000	o	300	S16	18.860	17.045	1.515	Open Manhole	1200
S3.001	o	300	S17	19.020	16.875	1.845	Open Manhole	1200
S1.006	o	900	S9	18.920	16.165	1.855	Open Manhole	1800
S1.007	o	900	S10	18.080	15.875	1.305	Open Manhole	1800
S1.008	o	900	S11	18.100	15.783	1.417	Open Manhole	1800
S1.009	o	900	S12	16.430	15.132	0.398	Open Manhole	1800
S1.010	o	1000	S13	16.500	15.075	0.425	Open Manhole	1900
S4.000	o	525	S32	21.140	16.755	3.860	Open Manhole	1500
S5.000	o	525	S34	20.200	16.455	3.220	Open Manhole	1500
S4.001	o	675	S32	20.600	15.956	3.969	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	17.966	249.5	S29	21.060	17.403	3.132	Open Manhole	1500
S1.001	79.485	250.0	S24	20.910	17.010	3.300	Open Manhole	1800
S2.000	104.530	250.1	S4	20.590	17.547	2.518	Open Manhole	1500
S2.001	35.691	249.6	S5	20.920	17.254	2.991	Open Manhole	1500
S2.002	79.737	250.0	S24	20.910	16.935	3.300	Open Manhole	1800
S1.002	61.629	333.1	S6	19.820	16.550	2.395	Open Manhole	1800
S1.003	51.618	224.4	S7	19.110	16.320	1.915	Open Manhole	1800
S1.004	13.469	198.1	S8	19.200	16.252	2.073	Open Manhole	1800
S1.005	12.368	199.5	S9	18.920	16.190	1.855	Open Manhole	1800
S3.000	25.768	151.6	S17	19.020	16.875	1.845	Open Manhole	1200
S3.001	22.011	200.1	S9	18.920	16.765	1.855	Open Manhole	1800
S1.006	66.006	227.6	S10	18.080	15.875	1.305	Open Manhole	1800
S1.007	18.446	200.5	S11	18.100	15.783	1.417	Open Manhole	1800
S1.008	130.205	200.0	S12	16.430	15.132	0.398	Open Manhole	1800
S1.009	9.571	167.9	S13	16.500	15.075	0.525	Open Manhole	1900
S1.010	136.324	175.9	S83	16.500	14.300	1.200	Open Manhole	2900
S4.000	129.886	200.1	S32	20.600	16.106	3.969	Open Manhole	1500
S5.000	69.831	200.1	S32	20.600	16.106	3.969	Open Manhole	1500
S4.001	43.224	200.1	S33	20.960	15.740	4.545	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.002	o	750	S33	20.960	15.665	4.545	Open Manhole	1800
S4.003	o	750	S34	21.150	15.634	4.766	Open Manhole	1800
S6.000	o	300	S38	20.360	18.719	1.341	Open Manhole	1200
S7.000	o	375	S39	20.330	19.480	0.475	Open Manhole	1350
S7.001	o	375	S51	20.840	19.140	1.325	Open Manhole	1350
S7.002	o	375	S52	21.310	18.710	2.225	Open Manhole	1350
S7.003	o	375	S53	20.980	18.420	2.185	Open Manhole	1350
S6.001	o	600	S39	21.560	17.919	3.041	Open Manhole	1500
S6.002	o	600	S40	20.970	17.619	2.751	Open Manhole	1500
S6.003	o	680	S41	20.920	17.360	2.880	Open Manhole	1500
S6.004	o	680	S42	20.430	16.580	3.170	Open Manhole	1500
S6.005	o	750	S43	20.490	16.560	3.180	Open Manhole	1800
S8.000	o	450	S46	18.830	17.470	0.910	Open Manhole	1350
S8.001	o	450	S57	19.250	17.170	1.630	Open Manhole	1350
S8.002	o	450	S47	20.170	16.870	2.850	Open Manhole	1350
S6.006	o	750	S44	20.170	16.450	2.970	Open Manhole	1800
S4.004	o	900	S35	21.380	15.260	5.220	Open Manhole	1800
S4.005	o	1000	S36	16.500	14.850	0.650	Open Manhole	1900
S9.000	o	450	S46	18.770	16.949	1.371	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S4.002	6.272	202.3	S34	21.150	15.634	4.766	Open Manhole	1800
S4.003	44.802	200.0	S35	21.380	15.410	5.220	Open Manhole	1800
S6.000	99.776	199.6	S39	21.560	18.219	3.041	Open Manhole	1500
S7.000	51.619	151.8	S51	20.840	19.140	1.325	Open Manhole	1350
S7.001	64.724	150.5	S52	21.310	18.710	2.225	Open Manhole	1350
S7.002	43.463	149.9	S53	20.980	18.420	2.185	Open Manhole	1350
S7.003	28.540	103.4	S39	21.560	18.144	3.041	Open Manhole	1500
S6.001	80.238	267.5	S40	20.970	17.619	2.751	Open Manhole	1500
S6.002	3.433	19.2	S41	20.920	17.440	2.880	Open Manhole	1500
S6.003	61.378	78.7	S42	20.430	16.580	3.170	Open Manhole	1500
S6.004	6.371	318.6	S43	20.490	16.560	3.250	Open Manhole	1800
S6.005	40.521	368.4	S44	20.170	16.450	2.970	Open Manhole	1800
S8.000	55.053	183.5	S57	19.250	17.170	1.630	Open Manhole	1350
S8.001	100.444	334.8	S47	20.170	16.870	2.850	Open Manhole	1350
S8.002	7.271	60.6	S44	20.170	16.750	2.970	Open Manhole	1800
S6.006	49.044	47.2	S35	21.380	15.410	5.220	Open Manhole	1800
S4.004	73.185	178.5	S36	16.500	14.850	0.750	Open Manhole	1900
S4.005	126.298	229.6	S83	16.500	14.300	1.200	Open Manhole	2900
S9.000	63.403	200.0	S44	18.110	16.632	1.028	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S9.001	o	450	S44	18.110	16.632	1.028	Open Manhole	1350
S9.002	o	525	S47	17.970	16.524	0.921	Open Manhole	1500
S9.003	o	600	S48	18.270	16.200	1.470	Open Manhole	1500
S10.000	o	525	S52	20.080	16.420	3.135	Open Manhole	1500
S10.001	o	525	S53	18.810	16.120	2.165	Open Manhole	1500
S9.004	o	750	S40	18.680	15.776	2.154	Open Manhole	1800
S9.005	o	750	S41	17.810	15.616	1.444	Open Manhole	1800
S9.006	o	750	S42	18.870	15.289	2.831	Open Manhole	1800
S9.007	o	900	S43	16.400	14.876	0.624	Open Manhole	1800
S9.008	o	900	S44	16.420	14.848	0.672	Open Manhole	1800
S9.009	o	900	S45	16.300	14.814	0.586	Open Manhole	1800
S9.010	o	900	S46	16.280	14.595	0.785	Open Manhole	1800
S9.011	o	900	S47	16.330	14.317	1.113	Open Manhole	1800
S9.012	o	2000	S48	16.500	14.300	0.200	Open Manhole	2900
S11.000	o	375	S53	16.250	15.510	0.365	Open Manhole	1350
S11.001	o	375	S54	16.350	15.140	0.835	Open Manhole	1350
S11.002	o	675	S63	16.410	14.650	1.085	Open Manhole	1500
S11.003	o	2000	S64	16.500	14.300	0.200	Open Manhole	2900
S12.000	o	450	S66	19.020	17.010	1.560	Open Manhole	1350
S12.001	o	450	S67	18.710	16.780	1.480	Open Manhole	1350
S12.002	o	525	S68	18.820	15.960	2.335	Open Manhole	1500
S12.003	o	525	S69	17.290	15.390	1.375	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S9.001	6.518	197.5	S47	17.970	16.599	0.921	Open Manhole	1500
S9.002	62.164	249.7	S48	18.270	16.275	1.470	Open Manhole	1500
S9.003	68.571	250.3	S40	18.680	15.926	2.154	Open Manhole	1800
S10.000	86.241	287.5	S53	18.810	16.120	2.165	Open Manhole	1500
S10.001	23.031	193.5	S40	18.680	16.001	2.154	Open Manhole	1800
S9.004	40.000	250.0	S41	17.810	15.616	1.444	Open Manhole	1800
S9.005	81.776	250.1	S42	18.870	15.289	2.831	Open Manhole	1800
S9.006	65.659	249.7	S43	16.400	15.026	0.624	Open Manhole	1800
S9.007	6.999	250.0	S44	16.420	14.848	0.672	Open Manhole	1800
S9.008	8.392	246.8	S45	16.300	14.814	0.586	Open Manhole	1800
S9.009	44.429	202.9	S46	16.280	14.595	0.785	Open Manhole	1800
S9.010	54.698	196.8	S47	16.330	14.317	1.113	Open Manhole	1800
S9.011	4.281	251.8	S48	16.500	14.300	1.300	Open Manhole	2900
S9.012	105.226	105226.1	S83	16.500	14.299	0.201	Open Manhole	2900
S11.000	73.423	198.4	S54	16.350	15.140	0.835	Open Manhole	1350
S11.001	37.894	199.4	S63	16.410	14.950	1.085	Open Manhole	1500
S11.002	76.449	218.4	S64	16.500	14.300	1.525	Open Manhole	2900
S11.003	104.843	104843.5	S83	16.500	14.299	0.201	Open Manhole	2900
S12.000	19.206	83.5	S67	18.710	16.780	1.480	Open Manhole	1350
S12.001	69.246	92.9	S68	18.820	16.035	2.335	Open Manhole	1500
S12.002	97.217	170.6	S69	17.290	15.390	1.375	Open Manhole	1500
S12.003	24.661	274.0	S70	16.500	15.300	0.675	Open Manhole	1900

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.004	o	1000	S70	16.500	15.300	0.200	Open Manhole	1900
S13.000	o	525	S74	16.500	15.370	0.605	Open Manhole	1500
S13.001	o	1000	S75	16.500	15.330	0.170	Open Manhole	1900
S1.011	o	1000	S83	16.500	13.700	1.800	Open Manhole	2900
S14.000	o	225	S69	17.510	14.500	2.785	Open Manhole	1200
S15.000	o	225	S74	15.000	14.120	0.655	Open Manhole	1200
S14.001	o	225	S74	14.550	13.750	0.575	Open Manhole	1200
S1.012	o	1000	S16	14.700	13.700	0.000	Open Manhole	1900
S1.013	o	450	S84	14.700	12.800	1.450	Open Manhole	1900
S1.014	o	450	S76	13.750	12.750	0.550	Open Manhole	1350
S1.015	o	450	S70	13.000	11.900	0.650	Open Manhole	1350
S16.000	o	600	S102	17.310	14.853	1.857	Open Manhole	1500
S16.001	o	600	S103	17.190	14.433	2.157	Open Manhole	1500
S16.002	o	600	S104	16.800	14.412	1.788	Open Manhole	1500
S16.003	o	600	S105	16.290	14.262	1.428	Open Manhole	1500
S16.004	o	600	S108	14.980	13.812	0.568	Open Manhole	1500
S16.005	o	600	S109	16.150	13.562	1.988	Open Manhole	1500
S16.006	o	675	S110	15.320	13.182	1.463	Open Manhole	1500
S16.007	o	750	S73	14.100	13.016	0.334	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S12.004	204.153	510.4	S83	16.500	14.900	0.600	Open Manhole	2900
S13.000	25.044	642.1	S75	16.500	15.331	0.644	Open Manhole	1900
S13.001	146.187	141.9	S83	16.500	14.300	1.200	Open Manhole	2900
S1.011	219.264	0.0	S16	14.700	13.700	0.000	Open Manhole	1900
S14.000	72.359	96.5	S74	14.550	13.750	0.575	Open Manhole	1200
S15.000	56.376	152.4	S74	14.550	13.750	0.575	Open Manhole	1200
S14.001	7.451	149.0	S16	14.700	13.700	0.775	Open Manhole	1900
S1.012	231.624	0.0	S84	14.700	13.700	0.000	Open Manhole	1900
S1.013	12.906	258.1	S76	13.750	12.750	0.550	Open Manhole	1350
S1.014	126.321	148.6	S70	13.000	11.900	0.650	Open Manhole	1350
S1.015	12.556	209.3	S88	14.000	11.840	1.710	Open Manhole	1500
S16.000	104.352	248.5	S103	17.190	14.433	2.157	Open Manhole	1500
S16.001	5.155	245.5	S104	16.800	14.412	1.788	Open Manhole	1500
S16.002	36.163	241.1	S105	16.290	14.262	1.428	Open Manhole	1500
S16.003	113.458	252.1	S108	14.980	13.812	0.568	Open Manhole	1500
S16.004	63.606	254.4	S109	16.150	13.562	1.988	Open Manhole	1500
S16.005	76.774	251.7	S110	15.320	13.257	1.463	Open Manhole	1500
S16.006	22.768	250.2	S73	14.100	13.091	0.334	Open Manhole	1800
S16.007	3.934	245.9	S111	14.100	13.000	0.350	Open Manhole	1900

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.008	o	1000	S111	14.100	13.000	0.100	Open Manhole	1900
S16.009	o	225	S81	13.300	12.300	0.775	Open Manhole	1900
S1.016	o	600	S88	14.000	11.690	1.710	Open Manhole	1500
S1.017	o	1000	S79	14.000	11.650	1.350	Open Manhole	1900
S17.000	o	225	S94	19.800	18.140	1.435	Open Manhole	1200
S17.001	o	225	S85	20.000	17.404	2.371	Open Manhole	1200
S17.002	o	300	S66a	19.500	17.149	2.051	Open Manhole	1200
S17.003	o	300	S86	19.580	16.480	2.800	Open Manhole	1200
S17.004	o	300	S67	18.950	16.110	2.540	Open Manhole	1200
S17.005	o	300	S68	19.850	15.770	3.780	Open Manhole	1200
S17.006	o	300	S69	19.340	15.470	3.570	Open Manhole	1200
S18.000	o	150	S90	20.229	17.523	2.556	Open Manhole	1200
S18.001	o	225	S90a	20.000	16.231	3.544	Open Manhole	1200
S18.002	o	225	S91	19.670	15.450	3.995	Open Manhole	1200
S17.007	o	300	S70	19.270	15.330	3.640	Open Manhole	1200
S19.000	o	225	S72	18.060	17.220	0.615	Open Manhole	1200
S19.001	o	225	S97	19.270	16.690	2.355	Open Manhole	1200
S19.002	o	225	S73	19.320	16.320	2.775	Open Manhole	1200
S17.008	o	300	S71	19.330	14.590	4.440	Open Manhole	1200
S17.009	o	300	S72	18.270	13.952	4.018	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S16.008	55.166	78.8	S81	13.300	12.300	0.000	Open Manhole	1900
S16.009	8.864	37.7	S88	14.000	12.065	1.710	Open Manhole	1500
S1.016	8.662	216.5	S79	14.000	11.650	1.750	Open Manhole	1900
S1.017	12.722	318.1	S89	14.000	11.610	1.390	Open Manhole	1900
S17.000	140.671	191.1	S85	20.000	17.404	2.371	Open Manhole	1200
S17.001	32.478	180.0	S66a	19.500	17.224	2.051	Open Manhole	1200
S17.002	92.714	138.6	S86	19.580	16.480	2.800	Open Manhole	1200
S17.003	64.485	174.3	S67	18.950	16.110	2.540	Open Manhole	1200
S17.004	59.956	176.3	S68	19.850	15.770	3.780	Open Manhole	1200
S17.005	52.143	173.8	S69	19.340	15.470	3.570	Open Manhole	1200
S17.006	24.212	172.9	S70	19.270	15.330	3.640	Open Manhole	1200
S18.000	97.343	80.0	S90a	20.000	16.306	3.544	Open Manhole	1200
S18.001	58.953	75.5	S91	19.670	15.450	3.995	Open Manhole	1200
S18.002	7.027	156.2	S70	19.270	15.405	3.640	Open Manhole	1200
S17.007	128.495	173.6	S71	19.330	14.590	4.440	Open Manhole	1200
S19.000	85.961	162.2	S97	19.270	16.690	2.355	Open Manhole	1200
S19.001	74.193	200.5	S73	19.320	16.320	2.775	Open Manhole	1200
S19.002	11.170	6.7	S71	19.330	14.665	4.440	Open Manhole	1200
S17.008	105.664	165.6	S72	18.270	13.952	4.018	Open Manhole	1200
S17.009	48.123	171.9	S73	15.870	13.672	1.898	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.010	o	300	S73	15.870	13.672	1.898	Open Manhole	1200
S17.011	o	300	S74	15.500	13.481	1.719	Open Manhole	1200
S17.012	o	300	S74a	15.010	13.366	1.344	Open Manhole	1200
S17.013	o	300	S74b	15.000	13.310	1.390	Open Manhole	1200
S17.014	o	375	S106	14.140	13.100	0.665	Open Manhole	1350
S20.000	o	225	S110	16.240	14.830	1.185	Open Manhole	1200
S20.001	o	225	S111	16.040	14.180	1.635	Open Manhole	1200
S21.000	o	225	S107	16.800	14.000	2.575	Open Manhole	1200
S21.001	o	225	S108	16.389	13.750	2.414	Open Manhole	1200
S20.002	o	300	S106	15.870	13.335	2.235	Open Manhole	1200
S22.000	o	300	S111	16.760	14.821	1.639	Open Manhole	1200
S22.001	o	300	S111a	17.000	14.569	2.131	Open Manhole	1200
S22.002	o	300	S112	17.830	14.469	3.061	Open Manhole	1200
S22.003	o	300	S113	17.110	14.107	2.703	Open Manhole	1200
S22.004	o	300	S114	17.590	13.857	3.433	Open Manhole	1200
S22.005	o	300	S85	17.950	13.745	3.905	Open Manhole	1200
S22.006	o	375	S86	14.900	13.220	1.305	Open Manhole	1350
S22.007	o	375	S87	14.800	12.790	1.635	Open Manhole	1350
S20.003	o	375	S111	14.730	12.770	1.585	Open Manhole	1350
S17.015	o	375	S111	13.730	12.250	1.105	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.010	38.176	199.9	S74	15.500	13.481	1.719	Open Manhole	1200
S17.011	23.099	200.9	S74a	15.010	13.366	1.344	Open Manhole	1200
S17.012	10.047	179.4	S74b	15.000	13.310	1.390	Open Manhole	1200
S17.013	37.869	180.3	S106	14.140	13.100	0.740	Open Manhole	1350
S17.014	169.468	199.4	S111	13.730	12.250	1.105	Open Manhole	1350
S20.000	96.242	148.1	S111	16.040	14.180	1.635	Open Manhole	1200
S20.001	112.685	146.3	S106	15.870	13.410	2.235	Open Manhole	1200
S21.000	36.158	144.6	S108	16.389	13.750	2.414	Open Manhole	1200
S21.001	56.055	164.9	S106	15.870	13.410	2.235	Open Manhole	1200
S20.002	72.674	148.3	S111	14.730	12.845	1.585	Open Manhole	1350
S22.000	13.976	55.5	S111a	17.000	14.569	2.131	Open Manhole	1200
S22.001	26.732	267.3	S112	17.830	14.469	3.061	Open Manhole	1200
S22.002	75.286	208.0	S113	17.110	14.107	2.703	Open Manhole	1200
S22.003	90.053	360.2	S114	17.590	13.857	3.433	Open Manhole	1200
S22.004	39.019	348.4	S85	17.950	13.745	3.905	Open Manhole	1200
S22.005	114.216	253.8	S86	14.900	13.295	1.305	Open Manhole	1350
S22.006	154.404	359.1	S87	14.800	12.790	1.635	Open Manhole	1350
S22.007	3.120	156.0	S111	14.730	12.770	1.585	Open Manhole	1350
S20.003	136.173	261.9	S111	13.730	12.250	1.105	Open Manhole	1350
S17.015	63.087	252.3	S88	13.300	12.000	0.925	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.016	o	375	S88	13.300	12.000	0.925	Open Manhole	1350
S1.018	o	1000	S89	14.000	11.620	1.380	Open Manhole	1900

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.016	5.657	16.6	S89	14.000	11.660	1.965	Open Manhole	1900
S1.018	17.396	915.6	S	12.800	11.601	0.199	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.747	0.747	0.747
1.001	-	-	100	0.865	0.865	0.865
2.000	-	-	100	0.952	0.952	0.952
2.001	-	-	100	0.975	0.975	0.975
2.002	-	-	100	0.204	0.204	0.204
1.002	-	-	100	0.526	0.526	0.526
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.286	0.286	0.286
3.001	-	-	100	0.162	0.162	0.162
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
1.010	-	-	100	0.000	0.000	0.000
4.000	-	-	100	1.173	1.173	1.173
5.000	-	-	100	1.085	1.085	1.085
4.001	-	-	100	0.077	0.077	0.077
4.002	-	-	100	0.405	0.405	0.405
4.003	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.246	0.246	0.246
7.000	-	-	100	0.398	0.398	0.398
7.001	-	-	100	0.000	0.000	0.000
7.002	-	-	100	0.000	0.000	0.000
7.003	-	-	100	0.000	0.000	0.000
6.001	-	-	100	0.000	0.000	0.000
6.002	-	-	100	0.000	0.000	0.000
6.003	-	-	100	1.316	1.316	1.316
6.004	-	-	100	0.000	0.000	0.000
6.005	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.171	0.171	0.171
8.001	-	-	100	0.504	0.504	0.504
8.002	-	-	100	0.000	0.000	0.000
6.006	-	-	100	0.000	0.000	0.000
4.004	-	-	100	0.280	0.280	0.280
4.005	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.476	0.476	0.476
9.001	-	-	100	0.000	0.000	0.000
9.002	-	-	100	0.784	0.784	0.784
9.003	-	-	100	0.353	0.353	0.353
10.000	-	-	100	1.118	1.118	1.118
10.001	-	-	100	0.000	0.000	0.000
9.004	-	-	100	0.000	0.000	0.000
9.005	-	-	100	0.244	0.244	0.244
9.006	-	-	100	0.282	0.282	0.282
9.007	-	-	100	0.412	0.412	0.412
9.008	-	-	100	0.000	0.000	0.000
9.009	-	-	100	0.000	0.000	0.000
9.010	-	-	100	0.476	0.476	0.476
9.011	-	-	100	0.000	0.000	0.000
9.012	-	-	100	0.000	0.000	0.000
11.000	-	-	100	0.370	0.370	0.370
11.001	-	-	100	0.000	0.000	0.000
11.002	-	-	100	1.969	1.969	1.969
11.003	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.177	0.177	0.177
12.001	-	-	100	0.000	0.000	0.000
12.002	-	-	100	1.098	1.098	1.098
12.003	-	-	100	0.000	0.000	0.000
12.004	-	-	100	0.000	0.000	0.000
13.000	-	-	100	0.697	0.697	0.697

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
13.001	-	-	100	1.313	1.313	1.313
1.011	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.000	0.000	0.000
15.000	-	-	100	0.000	0.000	0.000
14.001	-	-	100	0.000	0.000	0.000
1.012	-	-	100	0.524	0.524	0.524
1.013	-	-	100	0.000	0.000	0.000
1.014	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.000	0.000	0.000
16.000	-	-	100	1.090	1.090	1.090
16.001	-	-	100	0.000	0.000	0.000
16.002	-	-	100	0.000	0.000	0.000
16.003	-	-	100	0.000	0.000	0.000
16.004	-	-	100	0.000	0.000	0.000
16.005	-	-	100	0.151	0.151	0.151
16.006	-	-	100	0.000	0.000	0.000
16.007	-	-	100	0.000	0.000	0.000
16.008	-	-	100	0.510	0.510	0.510
16.009	-	-	100	0.000	0.000	0.000
1.016	-	-	100	0.000	0.000	0.000
1.017	-	-	100	0.000	0.000	0.000
17.000	-	-	100	0.000	0.000	0.000
17.001	-	-	100	0.000	0.000	0.000
17.002	-	-	100	0.000	0.000	0.000
17.003	-	-	100	0.000	0.000	0.000
17.004	-	-	100	0.000	0.000	0.000
17.005	-	-	100	0.000	0.000	0.000
17.006	-	-	100	0.000	0.000	0.000
18.000	-	-	100	0.000	0.000	0.000
18.001	-	-	100	0.000	0.000	0.000
18.002	-	-	100	0.000	0.000	0.000
17.007	-	-	100	0.000	0.000	0.000
19.000	-	-	100	0.000	0.000	0.000
19.001	-	-	100	0.000	0.000	0.000
19.002	-	-	100	0.000	0.000	0.000
17.008	-	-	100	0.000	0.000	0.000
17.009	-	-	100	0.000	0.000	0.000
17.010	-	-	100	0.000	0.000	0.000
17.011	-	-	100	0.000	0.000	0.000
17.012	-	-	100	0.000	0.000	0.000
17.013	-	-	100	0.000	0.000	0.000
17.014	-	-	100	0.000	0.000	0.000
20.000	-	-	100	0.000	0.000	0.000
20.001	-	-	100	0.000	0.000	0.000
21.000	-	-	100	0.000	0.000	0.000
21.001	-	-	100	0.000	0.000	0.000
20.002	-	-	100	0.000	0.000	0.000
22.000	-	-	100	0.000	0.000	0.000
22.001	-	-	100	0.000	0.000	0.000
22.002	-	-	100	0.000	0.000	0.000
22.003	-	-	100	0.000	0.000	0.000
22.004	-	-	100	0.000	0.000	0.000
22.005	-	-	100	0.000	0.000	0.000
22.006	-	-	100	0.000	0.000	0.000
22.007	-	-	100	0.000	0.000	0.000
20.003	-	-	100	0.000	0.000	0.000
17.015	-	-	100	0.000	0.000	0.000
17.016	-	-	100	0.000	0.000	0.000
1.018	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				22.416	22.416	22.416

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.018	S	12.800	11.601	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	4.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	120
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	2

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 3	Number of Storage Structures 3	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.317
Return Period (years)	100	F (1km)	2.449
Site Location	GB 542450 258450 TL 42450 58450	Summer Storms	No
C (1km)	-0.026	Winter Storms	Yes
D1 (1km)	0.311	Cv (Summer)	0.750
D2 (1km)	0.261	Cv (Winter)	0.840
D3 (1km)	0.300	Storm Duration (mins)	60

Online Controls for Storm

Depth/Flow Relationship Manhole: S83, DS/PN: S1.011, Volume (m³): 1134.1

Invert Level (m) 14.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	53.0500	0.600	53.0500	1.600	53.0500	2.400	53.0500	2.900	53.0500
0.200	53.0500	0.800	53.0500	1.800	53.0500	2.500	53.0500	3.000	53.0500
0.300	53.0500	1.000	53.0500	2.100	53.0500	2.600	53.0500		
0.400	53.0500	1.200	53.0500	2.200	53.0500	2.700	53.0500		
0.500	53.0500	1.400	53.0500	2.300	53.0500	2.800	53.0500		

Depth/Flow Relationship Manhole: S84, DS/PN: S1.013, Volume (m³): 185.8

Invert Level (m) 13.700

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	59.5200	0.400	59.5200	0.630	59.5200	0.920	59.5200	1.200	59.5200
0.200	59.5200	0.500	59.5200	0.640	59.5200	0.930	59.5200	1.400	59.5200
0.300	59.5200	0.600	59.5200	0.800	59.5200	1.000	59.5200		

Depth/Flow Relationship Manhole: S81, DS/PN: S16.009, Volume (m³): 44.7

Invert Level (m) 12.300

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0000	0.700	5.0000	1.300	5.0000	1.900	5.0000	2.500	5.0000
0.200	5.0000	0.800	5.0000	1.400	5.0000	2.000	5.0000	2.600	5.0000
0.300	5.0000	0.900	5.0000	1.500	5.0000	2.100	5.0000	2.700	5.0000
0.400	5.0000	1.000	5.0000	1.600	5.0000	2.200	5.0000	2.800	5.0000
0.500	5.0000	1.100	5.0000	1.700	5.0000	2.300	5.0000	2.900	5.0000
0.600	5.0000	1.200	5.0000	1.800	5.0000	2.400	5.0000	3.000	5.0000

Storage Structures for Storm

Infiltration Basin Manhole: S83, DS/PN: S1.011

Invert Level (m) 14.300 Safety Factor 5.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	7926.0	0.500	8862.0	1.000	9822.0	1.500	10807.0	2.000	11841.0
0.100	8112.0	0.600	9052.0	1.100	10017.0	1.600	11007.0		
0.200	8299.0	0.700	9243.0	1.200	10213.0	1.700	11208.0		
0.300	8485.0	0.800	9435.0	1.300	10410.0	1.800	11411.0		
0.400	8673.0	0.900	9628.0	1.400	10608.0	1.900	11614.0		

Tank or Pond Manhole: S84, DS/PN: S1.013

Invert Level (m) 13.700

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1725.0	0.100	1830.0	0.200	1936.0	0.300	2041.0

Tank or Pond Manhole: S81, DS/PN: S16.009

Invert Level (m) 12.300

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2200.0	0.200	2300.0	0.400	2421.0	0.600	2622.0
0.100	2250.0	0.300	2300.0	0.500	2522.0	0.700	2720.0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 1 year Winter I+0%	21.240	17.736	-0.264	0.000	0.49	115.5	OK
S1.001	S29	15 minute 1 year Winter I+0%	21.060	17.638	-0.290	0.000	0.51	202.3	OK
S2.000	S117	15 minute 1 year Winter I+0%	20.170	18.231	-0.259	0.000	0.47	135.5	OK
S2.001	S4	15 minute 1 year Winter I+0%	20.590	17.739	-0.333	0.000	0.51	243.1	OK
S2.002	S5	15 minute 1 year Winter I+0%	20.920	17.589	-0.340	0.000	0.48	258.4	OK
S1.002	S24	15 minute 1 year Winter I+0%	20.910	17.219	-0.391	0.000	0.58	494.7	OK
S1.003	S6	15 minute 1 year Winter I+0%	19.820	16.983	-0.442	0.000	0.48	487.6	OK
S1.004	S7	15 minute 1 year Winter I+0%	19.110	16.821	-0.374	0.000	0.62	487.0	OK
S1.005	S8	15 minute 1 year Winter I+0%	19.200	16.761	-0.366	0.000	0.64	486.0	OK
S3.000	S16	15 minute 1 year Winter I+0%	18.860	17.204	-0.141	0.000	0.54	43.9	OK
S3.001	S17	15 minute 1 year Winter I+0%	19.020	17.101	-0.074	0.000	0.92	63.2	OK
S1.006	S9	15 minute 1 year Winter I+0%	18.920	16.591	-0.474	0.000	0.45	509.6	OK
S1.007	S10	15 minute 1 year Winter I+0%	18.080	16.355	-0.420	0.000	0.56	507.1	OK
S1.008	S11	15 minute 1 year Winter I+0%	18.100	16.175	-0.508	0.000	0.38	493.9	OK
S1.009	S12	15 minute 1 year Winter I+0%	16.430	15.640	-0.392	0.000	0.61	490.0	OK
S1.010	S13	15 minute 1 year Winter I+0%	16.500	15.429	-0.646	0.000	0.27	489.7	OK
S4.000	S32	15 minute 1 year Winter I+0%	21.140	17.035	-0.245	0.000	0.51	165.8	OK
S5.000	S34	15 minute 1 year Winter I+0%	20.200	16.728	-0.252	0.000	0.51	160.2	OK
S4.001	S32	15 minute 1 year Winter I+0%	20.600	16.338	-0.293	0.000	0.58	323.5	OK
S4.002	S33	15 minute 1 year Winter I+0%	20.960	16.209	-0.206	0.000	0.87	368.4	OK
S4.003	S34	15 minute 1 year Winter I+0%	21.150	16.012	-0.372	0.000	0.50	361.9	OK
S6.000	S38	15 minute 1 year Winter I+0%	20.360	18.869	-0.150	0.000	0.50	37.8	OK
S7.000	S39	15 minute 1 year Winter I+0%	20.330	19.646	-0.209	0.000	0.39	58.8	OK
S7.001	S51	15 minute 1 year Winter I+0%	20.840	19.301	-0.214	0.000	0.37	56.5	OK
S7.002	S52	15 minute 1 year Winter I+0%	21.310	18.870	-0.215	0.000	0.37	55.8	OK
S7.003	S53	15 minute 1 year Winter I+0%	20.980	18.567	-0.228	0.000	0.32	55.9	OK
S6.001	S39	15 minute 1 year Winter I+0%	21.560	18.115	-0.404	0.000	0.22	86.5	OK
S6.002	S40	15 minute 1 year Winter I+0%	20.970	17.803	-0.416	0.000	0.20	85.4	OK
S6.003	S41	15 minute 1 year Winter I+0%	20.920	17.586	-0.454	0.000	0.24	227.2	OK
S6.004	S42	15 minute 1 year Winter I+0%	20.430	17.054	-0.206	0.000	0.85	226.6	OK
S6.005	S43	15 minute 1 year Winter I+0%	20.490	16.902	-0.408	0.000	0.43	223.2	OK
S8.000	S46	15 minute 1 year Winter I+0%	18.830	17.574	-0.346	0.000	0.12	25.7	OK
S8.001	S57	15 minute 1 year Winter I+0%	19.250	17.391	-0.229	0.000	0.45	76.0	OK

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.002	S47	15 minute 1 year Winter I+0%	20.170	17.064	-0.256	0.000	0.39	75.6	OK
S6.006	S44	15 minute 1 year Winter I+0%	20.170	16.676	-0.524	0.000	0.20	298.4	OK
S4.004	S35	15 minute 1 year Winter I+0%	21.380	15.721	-0.439	0.000	0.51	659.5	OK
S4.005	S36	15 minute 1 year Winter I+0%	16.500	15.301	-0.549	0.000	0.42	654.7	OK
S9.000	S46	15 minute 1 year Winter I+0%	18.770	17.132	-0.267	0.000	0.33	70.1	OK
S9.001	S44	15 minute 1 year Winter I+0%	18.110	16.855	-0.227	0.000	0.49	69.8	OK
S9.002	S47	15 minute 1 year Winter I+0%	17.970	16.807	-0.242	0.000	0.55	154.3	OK
S9.003	S48	15 minute 1 year Winter I+0%	18.270	16.496	-0.304	0.000	0.48	186.5	OK
S10.000	S52	15 minute 1 year Winter I+0%	20.080	16.729	-0.216	0.000	0.61	161.1	OK
S10.001	S53	15 minute 1 year Winter I+0%	18.810	16.413	-0.232	0.000	0.59	156.7	OK
S9.004	S40	15 minute 1 year Winter I+0%	18.680	16.165	-0.361	0.000	0.53	330.1	OK
S9.005	S41	15 minute 1 year Winter I+0%	17.810	15.993	-0.373	0.000	0.49	342.5	OK
S9.006	S42	15 minute 1 year Winter I+0%	18.870	15.678	-0.361	0.000	0.52	355.5	OK
S9.007	S43	15 minute 1 year Winter I+0%	16.400	15.403	-0.373	0.000	0.64	376.5	OK
S9.008	S44	15 minute 1 year Winter I+0%	16.420	15.348	-0.400	0.000	0.60	375.9	OK
S9.009	S45	15 minute 1 year Winter I+0%	16.300	15.185	-0.529	0.000	0.35	374.2	OK
S9.010	S46	15 minute 1 year Winter I+0%	16.280	15.000	-0.495	0.000	0.33	382.0	OK
S9.011	S47	15 minute 1 year Winter I+0%	16.330	14.890	-0.327	0.000	0.73	377.6	OK
S9.012	S48	15 minute 1 year Winter I+0%	16.500	14.713	-1.587	0.000	0.10	377.1	OK
S11.000	S53	15 minute 1 year Winter I+0%	16.250	15.680	-0.205	0.000	0.39	52.8	OK
S11.001	S54	15 minute 1 year Winter I+0%	16.350	15.307	-0.208	0.000	0.41	52.5	OK
S11.002	S63	15 minute 1 year Winter I+0%	16.410	14.981	-0.344	0.000	0.47	270.7	OK
S11.003	S64	15 minute 1 year Winter I+0%	16.500	14.639	-1.661	0.000	0.07	268.5	OK
S12.000	S66	15 minute 1 year Summer I+0%	19.020	17.105	-0.355	0.000	0.10	27.5	OK
S12.001	S67	15 minute 1 year Summer I+0%	18.710	16.870	-0.360	0.000	0.08	26.5	OK
S12.002	S68	15 minute 1 year Winter I+0%	18.820	16.201	-0.284	0.000	0.42	146.5	OK
S12.003	S69	15 minute 1 year Winter I+0%	17.290	15.689	-0.226	0.000	0.62	146.1	OK
S12.004	S70	15 minute 1 year Winter I+0%	16.500	15.543	-0.757	0.000	0.13	146.1	OK
S13.000	S74	15 minute 1 year Winter I+0%	16.500	15.711	-0.184	0.000	0.73	99.3	OK
S13.001	S75	15 minute 1 year Winter I+0%	16.500	15.562	-0.768	0.000	0.12	245.9	OK
S1.011	S83	30 minute 1 year Winter I+0%	16.500	14.496	-0.204	0.000	0.07	53.0	OK
S14.000	S69	15 minute 1 year Winter I+0%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	15 minute 1 year Winter I+0%	15.000	14.144	-0.201	0.000	0.02	1.0	OK
S14.001	S74	30 minute 1 year Winter I+0%	14.550	13.945	-0.030	0.000	0.16	5.1	OK
S1.012	S16	30 minute 1 year Winter I+0%	14.700	13.940	-0.760	0.000	0.13	101.6	OK
S1.013	S84	30 minute 1 year Winter I+0%	14.700	13.767	0.517	0.000	0.27	39.8	SURCHARGED
S1.014	S76	30 minute 1 year Winter I+0%	13.750	12.868	-0.332	0.000	0.15	39.3	OK
S1.015	S70	30 minute 1 year Winter I+0%	13.000	12.179	-0.171	0.000	0.24	39.0	OK
S16.000	S102	15 minute 1 year Winter I+0%	17.310	15.122	-0.331	0.000	0.38	156.2	OK
S16.001	S103	15 minute 1 year Winter I+0%	17.190	14.795	-0.238	0.000	0.67	148.2	OK
S16.002	S104	15 minute 1 year Winter I+0%	16.800	14.674	-0.338	0.000	0.39	145.4	OK
S16.003	S105	15 minute 1 year Winter I+0%	16.290	14.510	-0.352	0.000	0.34	137.7	OK
S16.004	S108	15 minute 1 year Winter I+0%	14.980	14.058	-0.354	0.000	0.34	133.2	OK
S16.005	S109	15 minute 1 year Winter I+0%	16.150	13.811	-0.351	0.000	0.35	137.9	OK
S16.006	S110	15 minute 1 year Winter I+0%	15.320	13.439	-0.418	0.000	0.31	137.7	OK
S16.007	S73	15 minute 1 year Winter I+0%	14.100	13.339	-0.427	0.000	0.39	136.6	OK
S16.008	S111	15 minute 1 year Winter I+0%	14.100	13.172	-0.828	0.000	0.07	158.4	OK
S16.009	S81	30 minute 1 year Winter I+0%	13.300	12.366	-0.159	0.000	0.05	3.3	OK
S1.016	S88	30 minute 1 year Winter I+0%	14.000	12.157	-0.133	0.000	0.15	42.1	OK
S1.017	S79	30 minute 1 year Winter I+0%	14.000	12.139	-0.511	0.000	0.05	42.0	OK
S17.000	S94	15 minute 1 year Winter I+0%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	15 minute 1 year Winter I+0%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	15 minute 1 year Winter I+0%	19.500	17.277	-0.172	0.000	0.38	35.0	OK
S17.003	S86	15 minute 1 year Winter I+0%	19.580	17.074	0.294	0.000	0.56	45.0	SURCHARGED
S17.004	S67	15 minute 1 year Winter I+0%	18.950	16.973	0.563	0.000	0.63	50.0	SURCHARGED
S17.005	S68	15 minute 1 year Winter I+0%	19.850	16.856	0.786	0.000	0.69	54.9	SURCHARGED
S17.006	S69	15 minute 1 year Winter I+0%	19.340	16.731	0.961	0.000	0.71	53.3	SURCHARGED
S18.000	S90	15 minute 1 year Winter I+0%	20.229	17.599	-0.074	0.000	0.51	10.0	OK
S18.001	S90a	15 minute 1 year Winter I+0%	20.000	16.829	0.373	0.000	0.43	25.0	SURCHARGED
S18.002	S91	15 minute 1 year Winter I+0%	19.670	16.691	1.016	0.000	0.84	25.0	SURCHARGED

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S17.007	S70	15 minute 1 year Winter I+0%	19.270	16.629	0.999	0.000	0.90	74.3	SURCHARGED
S19.000	S72	15 minute 1 year Winter I+0%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	15 minute 1 year Winter I+0%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	15 minute 1 year Winter I+0%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	15 minute 1 year Winter I+0%	19.330	16.020	1.130	0.000	1.12	93.6	SURCHARGED
S17.009	S72	15 minute 1 year Winter I+0%	18.270	15.216	0.964	0.000	1.24	98.3	SURCHARGED
S17.010	S73	15 minute 1 year Winter I+0%	15.870	14.786	0.814	0.000	1.42	103.0	SURCHARGED
S17.011	S74	15 minute 1 year Winter I+0%	15.500	14.399	0.618	0.000	1.48	102.8	SURCHARGED
S17.012	S74a	15 minute 1 year Winter I+0%	15.010	14.145	0.479	0.000	1.75	107.6	SURCHARGED
S17.013	S74b	15 minute 1 year Winter I+0%	15.000	13.960	0.350	0.000	1.41	107.4	SURCHARGED
S17.014	S106	15 minute 1 year Winter I+0%	14.140	13.543	0.068	0.000	0.92	126.7	SURCHARGED
S20.000	S110	15 minute 1 year Winter I+0%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	15 minute 1 year Winter I+0%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	15 minute 1 year Winter I+0%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	15 minute 1 year Winter I+0%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	15 minute 1 year Winter I+0%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	15 minute 1 year Winter I+0%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	15 minute 1 year Winter I+0%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	15 minute 1 year Winter I+0%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	15 minute 1 year Winter I+0%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	15 minute 1 year Winter I+0%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	15 minute 1 year Winter I+0%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	15 minute 1 year Winter I+0%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	15 minute 1 year Winter I+0%	14.800	12.926	-0.239	0.000	0.00	0.0	OK
S20.003	S111	15 minute 1 year Winter I+0%	14.730	12.926	-0.219	0.000	0.29	35.0	OK
S17.015	S111	15 minute 1 year Winter I+0%	13.730	12.819	0.194	0.000	1.36	159.9	SURCHARGED
S17.016	S88	30 minute 1 year Winter I+0%	13.300	12.297	-0.078	0.000	0.70	159.3	OK
S1.018	S89	30 minute 1 year Winter I+0%	14.000	12.131	-0.489	0.000	0.58	200.9	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 30 year Winter I+0%	21.240	18.264	0.264	0.000	1.12	260.4	SURCHARGED
S1.001	S29	15 minute 30 year Winter I+0%	21.060	18.157	0.229	0.000	1.24	493.2	SURCHARGED
S2.000	S117	15 minute 30 year Winter I+0%	20.170	18.653	0.163	0.000	1.09	314.4	SURCHARGED
S2.001	S4	15 minute 30 year Winter I+0%	20.590	18.227	0.155	0.000	1.08	517.3	SURCHARGED
S2.002	S5	15 minute 30 year Winter I+0%	20.920	18.084	0.155	0.000	1.01	543.0	SURCHARGED
S1.002	S24	15 minute 30 year Winter I+0%	20.910	17.863	0.253	0.000	1.27	1085.6	SURCHARGED
S1.003	S6	15 minute 30 year Winter I+0%	19.820	17.649	0.224	0.000	0.96	976.3	SURCHARGED
S1.004	S7	15 minute 30 year Winter I+0%	19.110	17.440	0.245	0.000	1.23	966.6	SURCHARGED
S1.005	S8	15 minute 30 year Winter I+0%	19.200	17.231	0.104	0.000	1.28	972.6	SURCHARGED
S3.000	S16	15 minute 30 year Winter I+0%	18.860	17.813	0.468	0.000	1.18	95.3	SURCHARGED
S3.001	S17	15 minute 30 year Winter I+0%	19.020	17.572	0.397	0.000	2.16	148.9	SURCHARGED
S1.006	S9	15 minute 30 year Winter I+0%	18.920	17.038	-0.027	0.000	0.91	1019.6	OK
S1.007	S10	15 minute 30 year Winter I+0%	18.080	16.832	0.057	0.000	1.06	970.0	SURCHARGED
S1.008	S11	15 minute 30 year Winter I+0%	18.100	16.384	-0.299	0.000	0.74	950.4	OK
S1.009	S12	15 minute 30 year Winter I+0%	16.430	16.049	0.017	0.000	1.18	947.8	SURCHARGED
S1.010	S13	15 minute 30 year Winter I+0%	16.500	15.592	-0.483	0.000	0.52	926.3	OK
S4.000	S32	15 minute 30 year Winter I+0%	21.140	17.818	0.538	0.000	1.15	375.0	SURCHARGED
S5.000	S34	15 minute 30 year Winter I+0%	20.200	17.341	0.361	0.000	1.16	364.8	SURCHARGED
S4.001	S32	15 minute 30 year Winter I+0%	20.600	17.005	0.374	0.000	1.23	686.9	SURCHARGED
S4.002	S33	15 minute 30 year Winter I+0%	20.960	16.717	0.302	0.000	1.83	773.3	SURCHARGED
S4.003	S34	15 minute 30 year Winter I+0%	21.150	16.476	0.092	0.000	1.04	753.7	SURCHARGED
S6.000	S38	15 minute 30 year Winter I+0%	20.360	19.157	0.138	0.000	1.13	86.0	SURCHARGED
S7.000	S39	15 minute 30 year Winter I+0%	20.330	19.781	-0.074	0.000	0.96	144.7	OK
S7.001	S51	15 minute 30 year Winter I+0%	20.840	19.426	-0.089	0.000	0.91	139.7	OK
S7.002	S52	15 minute 30 year Winter I+0%	21.310	18.994	-0.091	0.000	0.91	135.9	OK
S7.003	S53	15 minute 30 year Winter I+0%	20.980	18.674	-0.121	0.000	0.79	136.9	OK
S6.001	S39	15 minute 30 year Winter I+0%	21.560	18.244	-0.275	0.000	0.55	211.5	OK
S6.002	S40	15 minute 30 year Winter I+0%	20.970	17.918	-0.301	0.000	0.50	210.9	OK
S6.003	S41	15 minute 30 year Winter I+0%	20.920	17.727	-0.313	0.000	0.55	523.8	OK
S6.004	S42	15 minute 30 year Winter I+0%	20.430	17.373	0.113	0.000	1.97	522.7	SURCHARGED
S6.005	S43	15 minute 30 year Winter I+0%	20.490	17.172	-0.138	0.000	0.99	521.1	OK
S8.000	S46	15 minute 30 year Winter I+0%	18.830	17.738	-0.182	0.000	0.28	60.5	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.001	S57	15 minute 30 year Winter I+0%	19.250	17.684	0.064	0.000	1.07	178.8	SURCHARGED
S8.002	S47	15 minute 30 year Winter I+0%	20.170	17.203	-0.117	0.000	0.90	176.2	OK
S6.006	S44	15 minute 30 year Winter I+0%	20.170	16.806	-0.394	0.000	0.46	693.1	OK
S4.004	S35	15 minute 30 year Winter I+0%	21.380	16.249	0.089	0.000	1.13	1458.5	SURCHARGED
S4.005	S36	15 minute 30 year Winter I+0%	16.500	15.609	-0.241	0.000	0.91	1418.9	OK
S9.000	S46	15 minute 30 year Winter I+0%	18.770	17.380	-0.019	0.000	0.78	164.6	OK
S9.001	S44	15 minute 30 year Winter I+0%	18.110	17.228	0.146	0.000	1.02	144.2	SURCHARGED
S9.002	S47	15 minute 30 year Winter I+0%	17.970	17.203	0.154	0.000	1.24	345.6	SURCHARGED
S9.003	S48	15 minute 30 year Winter I+0%	18.270	16.840	0.040	0.000	1.00	393.5	SURCHARGED
S10.000	S52	15 minute 30 year Winter I+0%	20.080	17.372	0.427	0.000	1.43	379.8	SURCHARGED
S10.001	S53	15 minute 30 year Winter I+0%	18.810	16.756	0.111	0.000	1.36	361.2	SURCHARGED
S9.004	S40	15 minute 30 year Winter I+0%	18.680	16.570	0.044	0.000	1.15	718.0	SURCHARGED
S9.005	S41	15 minute 30 year Winter I+0%	17.810	16.400	0.034	0.000	0.99	695.1	SURCHARGED
S9.006	S42	15 minute 30 year Winter I+0%	18.870	16.079	0.040	0.000	1.03	705.9	SURCHARGED
S9.007	S43	15 minute 30 year Winter I+0%	16.400	15.794	0.018	0.000	1.25	731.7	SURCHARGED
S9.008	S44	15 minute 30 year Summer I+0%	16.420	15.748	0.000	0.000	1.04	658.6	OK
S9.009	S45	15 minute 30 year Winter I+0%	16.300	15.439	-0.275	0.000	0.69	729.7	OK
S9.010	S46	30 minute 30 year Winter I+0%	16.280	15.336	-0.159	0.000	0.65	759.3	OK
S9.011	S47	15 minute 30 year Winter I+0%	16.330	15.217	0.000	0.000	1.45	749.0	OK
S9.012	S48	30 minute 30 year Winter I+0%	16.500	14.892	-1.408	0.000	0.19	746.1	OK
S11.000	S53	15 minute 30 year Winter I+0%	16.250	15.827	-0.058	0.000	0.95	127.9	OK
S11.001	S54	15 minute 30 year Winter I+0%	16.350	15.544	0.029	0.000	0.92	117.8	SURCHARGED
S11.002	S63	15 minute 30 year Winter I+0%	16.410	15.393	0.068	0.000	1.11	632.9	SURCHARGED
S11.003	S64	15 minute 30 year Winter I+0%	16.500	14.831	-1.469	0.000	0.16	628.4	OK
S12.000	S66	15 minute 30 year Winter I+0%	19.020	17.162	-0.298	0.000	0.25	67.4	OK
S12.001	S67	15 minute 30 year Summer I+0%	18.710	16.921	-0.309	0.000	0.21	65.3	OK
S12.002	S68	15 minute 30 year Winter I+0%	18.820	16.584	0.099	0.000	1.00	348.0	SURCHARGED
S12.003	S69	15 minute 30 year Winter I+0%	17.290	16.002	0.087	0.000	1.46	344.9	SURCHARGED
S12.004	S70	15 minute 30 year Winter I+0%	16.500	15.687	-0.613	0.000	0.32	346.2	OK
S13.000	S74	15 minute 30 year Winter I+0%	16.500	15.949	0.054	0.000	1.87	255.6	SURCHARGED
S13.001	S75	15 minute 30 year Winter I+0%	16.500	15.721	-0.609	0.000	0.32	647.8	OK
S1.011	S83	30 minute 30 year Winter I+0%	16.500	14.776	0.076	0.000	0.07	53.0	SURCHARGED
S14.000	S69	15 minute 30 year Winter I+0%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	15 minute 30 year Winter I+0%	15.000	14.144	-0.201	0.000	0.02	1.0	OK
S14.001	S74	30 minute 30 year Winter I+0%	14.550	14.019	0.044	0.000	0.21	6.6	SURCHARGED
S1.012	S16	30 minute 30 year Winter I+0%	14.700	14.014	-0.686	0.000	0.22	167.9	OK
S1.013	S84	30 minute 30 year Winter I+0%	14.700	13.786	0.536	0.000	0.35	51.3	SURCHARGED
S1.014	S76	30 minute 30 year Winter I+0%	13.750	12.887	-0.313	0.000	0.20	51.1	OK
S1.015	S70	30 minute 30 year Winter I+0%	13.000	12.199	-0.151	0.000	0.31	50.9	OK
S16.000	S102	15 minute 30 year Winter I+0%	17.310	15.445	-0.008	0.000	0.90	366.1	OK
S16.001	S103	15 minute 30 year Winter I+0%	17.190	15.104	0.071	0.000	1.60	351.7	SURCHARGED
S16.002	S104	15 minute 30 year Winter I+0%	16.800	14.874	-0.138	0.000	0.94	350.0	OK
S16.003	S105	15 minute 30 year Winter I+0%	16.290	14.691	-0.171	0.000	0.81	328.2	OK
S16.004	S108	15 minute 30 year Winter I+0%	14.980	14.229	-0.183	0.000	0.80	308.3	OK
S16.005	S109	15 minute 30 year Winter I+0%	16.150	13.970	-0.192	0.000	0.78	307.1	OK
S16.006	S110	15 minute 30 year Winter I+0%	15.320	13.611	-0.246	0.000	0.67	297.6	OK
S16.007	S73	15 minute 30 year Winter I+0%	14.100	13.546	-0.220	0.000	0.84	298.7	OK
S16.008	S111	15 minute 30 year Winter I+0%	14.100	13.252	-0.748	0.000	0.14	330.4	OK
S16.009	S81	30 minute 30 year Winter I+0%	13.300	12.462	-0.063	0.000	0.07	5.0	OK
S1.016	S88	30 minute 30 year Winter I+0%	14.000	12.176	-0.114	0.000	0.20	55.8	OK
S1.017	S79	30 minute 30 year Winter I+0%	14.000	12.155	-0.495	0.000	0.07	55.8	OK
S17.000	S94	15 minute 30 year Winter I+0%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	15 minute 30 year Winter I+0%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	15 minute 30 year Winter I+0%	19.500	17.277	-0.172	0.000	0.38	35.0	OK
S17.003	S86	15 minute 30 year Winter I+0%	19.580	17.074	0.294	0.000	0.56	45.0	SURCHARGED
S17.004	S67	15 minute 30 year Winter I+0%	18.950	16.973	0.563	0.000	0.63	50.0	SURCHARGED
S17.005	S68	15 minute 30 year Winter I+0%	19.850	16.856	0.786	0.000	0.69	54.9	SURCHARGED
S17.006	S69	15 minute 30 year Winter I+0%	19.340	16.731	0.961	0.000	0.71	53.3	SURCHARGED
S18.000	S90	15 minute 30 year Winter I+0%	20.229	17.599	-0.074	0.000	0.51	10.0	OK

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S18.001	S90a	15 minute 30 year Winter I+0%	20.000	16.829	0.373	0.000	0.43	25.0	SURCHARGED
S18.002	S91	15 minute 30 year Winter I+0%	19.670	16.691	1.016	0.000	0.84	25.0	SURCHARGED
S17.007	S70	15 minute 30 year Winter I+0%	19.270	16.629	0.999	0.000	0.90	74.3	SURCHARGED
S19.000	S72	15 minute 30 year Winter I+0%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	15 minute 30 year Winter I+0%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	15 minute 30 year Winter I+0%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	15 minute 30 year Winter I+0%	19.330	16.020	1.130	0.000	1.12	93.6	SURCHARGED
S17.009	S72	15 minute 30 year Winter I+0%	18.270	15.216	0.964	0.000	1.24	98.3	SURCHARGED
S17.010	S73	15 minute 30 year Winter I+0%	15.870	14.786	0.814	0.000	1.42	103.0	SURCHARGED
S17.011	S74	15 minute 30 year Winter I+0%	15.500	14.399	0.618	0.000	1.48	102.8	SURCHARGED
S17.012	S74a	15 minute 30 year Winter I+0%	15.010	14.145	0.479	0.000	1.75	107.6	SURCHARGED
S17.013	S74b	15 minute 30 year Winter I+0%	15.000	13.960	0.350	0.000	1.41	107.4	SURCHARGED
S17.014	S106	15 minute 30 year Winter I+0%	14.140	13.543	0.068	0.000	0.92	126.7	SURCHARGED
S20.000	S110	15 minute 30 year Winter I+0%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	15 minute 30 year Winter I+0%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	15 minute 30 year Winter I+0%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	15 minute 30 year Winter I+0%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	15 minute 30 year Winter I+0%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	15 minute 30 year Winter I+0%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	15 minute 30 year Winter I+0%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	15 minute 30 year Winter I+0%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	15 minute 30 year Winter I+0%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	15 minute 30 year Winter I+0%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	15 minute 30 year Winter I+0%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	15 minute 30 year Winter I+0%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	15 minute 30 year Winter I+0%	14.800	12.926	-0.239	0.000	0.00	0.0	OK
S20.003	S111	15 minute 30 year Winter I+0%	14.730	12.926	-0.219	0.000	0.29	35.0	OK
S17.015	S111	15 minute 30 year Winter I+0%	13.730	12.819	0.194	0.000	1.36	159.9	SURCHARGED
S17.016	S88	30 minute 30 year Winter I+0%	13.300	12.313	-0.062	0.000	0.70	159.4	OK
S1.018	S89	30 minute 30 year Winter I+0%	14.000	12.147	-0.473	0.000	0.63	214.9	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	4.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.450	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S1.000	S28	15 minute 100 year Winter I+40%	21.240	20.931	2.931	0.000	1.78	416.5	SURCHARGED
S1.001	S29	15 minute 100 year Winter I+40%	21.060	20.832	2.904	0.000	1.85	735.4	FLOOD RISK
S2.000	S117	15 minute 100 year Winter I+40%	20.170	20.285	1.795	116.286	1.38	397.6	FLOOD
S2.001	S4	15 minute 100 year Winter I+40%	20.590	20.591	2.519	2.941	1.48	710.7	FLOOD
S2.002	S5	15 minute 100 year Winter I+40%	20.920	20.580	2.651	0.000	1.43	763.4	SURCHARGED
S1.002	S24	15 minute 100 year Winter I+40%	20.910	20.199	2.589	0.000	1.86	1597.0	SURCHARGED
S1.003	S6	15 minute 100 year Winter I+40%	19.820	19.591	2.166	0.000	1.52	1546.0	FLOOD RISK
S1.004	S7	15 minute 100 year Winter I+40%	19.110	19.116	1.921	6.490	1.91	1498.7	FLOOD
S1.005	S8	15 minute 100 year Winter I+40%	19.200	18.704	1.577	0.000	1.97	1498.7	SURCHARGED
S3.000	S16	15 minute 100 year Winter I+40%	18.860	18.864	1.519	4.274	1.72	138.5	FLOOD
S3.001	S17	15 minute 100 year Winter I+40%	19.020	18.646	1.471	0.000	3.44	237.2	SURCHARGED
S1.006	S9	15 minute 100 year Winter I+40%	18.920	18.291	1.226	0.000	1.44	1621.7	SURCHARGED
S1.007	S10	15 minute 100 year Winter I+40%	18.080	17.768	0.993	0.000	1.76	1603.9	SURCHARGED
S1.008	S11	15 minute 100 year Winter I+40%	18.100	17.297	0.614	0.000	1.18	1523.7	SURCHARGED
S1.009	S12	15 minute 100 year Winter I+40%	16.430	16.400	0.368	0.000	1.90	1532.2	FLOOD RISK
S1.010	S13	15 minute 100 year Winter I+40%	16.500	15.787	-0.288	0.000	0.82	1475.5	OK
S4.000	S32	15 minute 100 year Winter I+40%	21.140	21.143	3.863	2.659	1.70	553.8	FLOOD
S5.000	S34	15 minute 100 year Winter I+40%	20.200	20.200	3.220	0.070	1.66	522.4	FLOOD
S4.001	S32	15 minute 100 year Winter I+40%	20.600	19.526	2.895	0.000	1.96	1093.7	SURCHARGED
S4.002	S33	15 minute 100 year Winter I+40%	20.960	18.768	2.353	0.000	2.98	1256.8	SURCHARGED
S4.003	S34	15 minute 100 year Winter I+40%	21.150	18.166	1.782	0.000	1.69	1226.1	SURCHARGED
S6.000	S38	15 minute 100 year Winter I+40%	20.360	20.227	1.208	0.000	1.75	133.2	FLOOD RISK
S7.000	S39	15 minute 100 year Winter I+40%	20.330	20.333	0.478	3.664	1.36	203.8	FLOOD
S7.001	S51	15 minute 100 year Winter I+40%	20.840	19.937	0.422	0.000	1.23	188.6	SURCHARGED
S7.002	S52	15 minute 100 year Winter I+40%	21.310	19.688	0.603	0.000	1.07	160.1	SURCHARGED
S7.003	S53	15 minute 100 year Winter I+40%	20.980	19.448	0.653	0.000	1.03	177.5	SURCHARGED
S6.001	S39	15 minute 100 year Winter I+40%	21.560	19.170	0.651	0.000	0.78	299.9	SURCHARGED
S6.002	S40	15 minute 100 year Winter I+40%	20.970	19.039	0.820	0.000	0.96	407.6	SURCHARGED
S6.003	S41	15 minute 100 year Winter I+40%	20.920	18.880	0.840	0.000	0.80	761.6	SURCHARGED
S6.004	S42	15 minute 100 year Winter I+40%	20.430	18.443	1.183	0.000	2.75	729.9	SURCHARGED
S6.005	S43	15 minute 100 year Winter I+40%	20.490	18.151	0.841	0.000	1.37	718.8	SURCHARGED
S8.000	S46	15 minute 100 year Winter I+40%	18.830	18.834	0.914	3.629	0.38	83.3	FLOOD

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S8.001	S57	15 minute 100 year Winter I+40%	19.250	18.862	1.242	0.000	1.70	284.6	SURCHARGED
S8.002	S47	15 minute 100 year Winter I+40%	20.170	18.185	0.865	0.000	1.37	267.6	SURCHARGED
S6.006	S44	15 minute 100 year Winter I+40%	20.170	17.955	0.755	0.000	0.66	1007.7	SURCHARGED
S4.004	S35	15 minute 100 year Winter I+40%	21.380	17.547	1.387	0.000	1.70	2186.2	SURCHARGED
S4.005	S36	15 minute 100 year Winter I+40%	16.500	16.342	0.492	0.000	1.37	2143.7	FLOOD RISK
S9.000	S46	15 minute 100 year Winter I+40%	18.770	18.664	1.265	0.000	1.24	261.2	FLOOD RISK
S9.001	S44	15 minute 100 year Winter I+40%	18.110	18.122	1.040	12.310	1.44	203.2	FLOOD
S9.002	S47	15 minute 100 year Winter I+40%	17.970	18.085	1.036	114.989	1.43	397.6	FLOOD
S9.003	S48	15 minute 100 year Winter I+40%	18.270	18.100	1.300	0.000	1.29	505.6	FLOOD RISK
S10.000	S52	15 minute 100 year Winter I+40%	20.080	19.721	2.776	0.000	2.15	570.8	SURCHARGED
S10.001	S53	15 minute 100 year Winter I+40%	18.810	18.534	1.889	0.000	2.09	553.3	FLOOD RISK
S9.004	S40	15 minute 100 year Winter I+40%	18.680	18.040	1.514	0.000	1.58	990.7	SURCHARGED
S9.005	S41	15 minute 100 year Winter I+40%	17.810	17.780	1.414	0.000	1.44	1008.2	FLOOD RISK
S9.006	S42	15 minute 100 year Winter I+40%	18.870	17.127	1.088	0.000	1.58	1077.0	SURCHARGED
S9.007	S43	30 minute 100 year Winter I+40%	16.400	16.411	0.635	11.762	1.85	1084.7	FLOOD
S9.008	S44	30 minute 100 year Winter I+40%	16.420	16.191	0.443	0.000	1.72	1088.6	FLOOD RISK
S9.009	S45	30 minute 100 year Winter I+40%	16.300	15.975	0.261	0.000	1.03	1087.4	SURCHARGED
S9.010	S46	30 minute 100 year Winter I+40%	16.280	15.756	0.261	0.000	1.04	1216.6	SURCHARGED
S9.011	S47	30 minute 100 year Winter I+40%	16.330	15.446	0.229	0.000	2.35	1212.6	SURCHARGED
S9.012	S48	30 minute 100 year Winter I+40%	16.500	15.150	-1.150	0.000	0.30	1185.5	OK
S11.000	S53	15 minute 100 year Winter I+40%	16.250	16.286	0.401	35.696	1.23	164.7	FLOOD
S11.001	S54	15 minute 100 year Winter I+40%	16.350	16.289	0.774	0.000	1.20	153.5	FLOOD RISK
S11.002	S63	15 minute 100 year Winter I+40%	16.410	16.207	0.882	0.000	1.82	1039.5	FLOOD RISK
S11.003	S64	30 minute 100 year Winter I+40%	16.500	15.130	-1.170	0.000	0.24	934.4	OK
S12.000	S66	15 minute 100 year Winter I+40%	19.020	18.264	0.804	0.000	0.43	115.9	SURCHARGED
S12.001	S67	15 minute 100 year Winter I+40%	18.710	18.131	0.901	0.000	0.29	89.6	SURCHARGED
S12.002	S68	15 minute 100 year Winter I+40%	18.820	17.951	1.466	0.000	1.65	573.1	SURCHARGED
S12.003	S69	15 minute 100 year Winter I+40%	17.290	16.375	0.460	0.000	2.40	568.6	SURCHARGED
S12.004	S70	15 minute 100 year Winter I+40%	16.500	15.815	-0.485	0.000	0.53	569.3	OK
S13.000	S74	15 minute 100 year Winter I+40%	16.500	16.253	0.358	0.000	3.33	454.6	FLOOD RISK
S13.001	S75	15 minute 100 year Winter I+40%	16.500	15.880	-0.450	0.000	0.57	1153.8	OK
S1.011	S83	30 minute 100 year Winter I+40%	16.500	15.130	0.430	0.000	0.07	53.0	SURCHARGED
S14.000	S69	15 minute 100 year Winter I+40%	17.510	14.539	-0.186	0.000	0.07	3.7	OK
S15.000	S74	15 minute 100 year Winter I+40%	15.000	14.146	-0.199	0.000	0.03	1.0	OK
S14.001	S74	15 minute 100 year Winter I+40%	14.550	14.111	0.136	0.000	0.29	9.0	SURCHARGED
S1.012	S16	15 minute 100 year Winter I+40%	14.700	14.106	-0.594	0.000	0.35	269.1	OK
S1.013	S84	30 minute 100 year Winter I+40%	14.700	13.819	0.569	0.000	0.40	59.4	SURCHARGED
S1.014	S76	30 minute 100 year Winter I+40%	13.750	12.897	-0.303	0.000	0.23	59.4	OK
S1.015	S70	30 minute 100 year Winter I+40%	13.000	12.212	-0.138	0.000	0.36	59.2	OK
S16.000	S102	15 minute 100 year Winter I+40%	17.310	16.776	1.323	0.000	1.46	594.9	SURCHARGED
S16.001	S103	15 minute 100 year Winter I+40%	17.190	15.958	0.925	0.000	2.65	583.1	SURCHARGED
S16.002	S104	15 minute 100 year Winter I+40%	16.800	15.630	0.618	0.000	1.55	574.9	SURCHARGED
S16.003	S105	15 minute 100 year Winter I+40%	16.290	15.279	0.417	0.000	1.31	531.2	SURCHARGED
S16.004	S108	15 minute 100 year Winter I+40%	14.980	14.603	0.191	0.000	1.19	461.8	SURCHARGED
S16.005	S109	15 minute 100 year Winter I+40%	16.150	14.264	0.102	0.000	1.16	457.0	SURCHARGED
S16.006	S110	15 minute 100 year Winter I+40%	15.320	13.871	0.014	0.000	1.04	459.7	SURCHARGED
S16.007	S73	15 minute 100 year Winter I+40%	14.100	13.766	0.000	0.000	1.29	458.7	OK
S16.008	S111	30 minute 100 year Winter I+40%	14.100	13.328	-0.672	0.000	0.23	536.2	OK
S16.009	S81	30 minute 100 year Winter I+40%	13.300	12.595	0.070	0.000	0.07	5.0	SURCHARGED
S1.016	S88	30 minute 100 year Winter I+40%	14.000	12.187	-0.103	0.000	0.23	64.2	OK
S1.017	S79	30 minute 100 year Winter I+40%	14.000	12.165	-0.485	0.000	0.08	64.1	OK
S17.000	S94	15 minute 100 year Winter I+40%	19.800	18.258	-0.107	0.000	0.54	20.0	OK
S17.001	S85	15 minute 100 year Winter I+40%	20.000	17.579	-0.050	0.000	0.97	35.0	OK
S17.002	S66a	15 minute 100 year Winter I+40%	19.500	17.277	-0.172	0.000	0.38	35.0	OK
S17.003	S86	15 minute 100 year Winter I+40%	19.580	17.074	0.294	0.000	0.56	45.0	SURCHARGED
S17.004	S67	15 minute 100 year Winter I+40%	18.950	16.973	0.563	0.000	0.63	50.0	SURCHARGED
S17.005	S68	15 minute 100 year Winter I+40%	19.850	16.856	0.786	0.000	0.69	54.9	SURCHARGED
S17.006	S69	15 minute 100 year Winter I+40%	19.340	16.731	0.961	0.000	0.71	53.3	SURCHARGED
S18.000	S90	15 minute 100 year Winter I+40%	20.229	17.599	-0.074	0.000	0.51	10.0	OK

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Pipe Flow (l/s)	Status
S18.001	S90a	15 minute 100 year Winter I+40%	20.000	16.829	0.373	0.000	0.43	25.0	SURCHARGED
S18.002	S91	15 minute 100 year Winter I+40%	19.670	16.691	1.016	0.000	0.84	25.0	SURCHARGED
S17.007	S70	15 minute 100 year Winter I+40%	19.270	16.629	0.999	0.000	0.90	74.3	SURCHARGED
S19.000	S72	15 minute 100 year Winter I+40%	18.060	17.296	-0.149	0.000	0.25	10.0	OK
S19.001	S97	15 minute 100 year Winter I+40%	19.270	16.771	-0.144	0.000	0.28	10.0	OK
S19.002	S73	15 minute 100 year Winter I+40%	19.320	16.355	-0.190	0.000	0.06	10.0	OK
S17.008	S71	15 minute 100 year Winter I+40%	19.330	16.020	1.130	0.000	1.12	93.6	SURCHARGED
S17.009	S72	15 minute 100 year Winter I+40%	18.270	15.216	0.964	0.000	1.24	98.3	SURCHARGED
S17.010	S73	15 minute 100 year Winter I+40%	15.870	14.786	0.814	0.000	1.42	103.0	SURCHARGED
S17.011	S74	15 minute 100 year Winter I+40%	15.500	14.399	0.618	0.000	1.48	102.8	SURCHARGED
S17.012	S74a	15 minute 100 year Winter I+40%	15.010	14.145	0.479	0.000	1.75	107.6	SURCHARGED
S17.013	S74b	15 minute 100 year Winter I+40%	15.000	13.960	0.350	0.000	1.41	107.4	SURCHARGED
S17.014	S106	15 minute 100 year Winter I+40%	14.140	13.543	0.068	0.000	0.92	126.7	SURCHARGED
S20.000	S110	15 minute 100 year Winter I+40%	16.240	14.904	-0.151	0.000	0.24	10.0	OK
S20.001	S111	15 minute 100 year Winter I+40%	16.040	14.289	-0.116	0.000	0.48	20.0	OK
S21.000	S107	15 minute 100 year Winter I+40%	16.800	14.052	-0.173	0.000	0.12	5.0	OK
S21.001	S108	15 minute 100 year Winter I+40%	16.389	13.803	-0.172	0.000	0.13	5.0	OK
S20.002	S106	15 minute 100 year Winter I+40%	15.870	13.467	-0.168	0.000	0.40	35.0	OK
S22.000	S111	15 minute 100 year Winter I+40%	16.760	14.821	-0.300	0.000	0.00	0.0	OK
S22.001	S111a	15 minute 100 year Winter I+40%	17.000	14.569	-0.300	0.000	0.00	0.0	OK
S22.002	S112	15 minute 100 year Winter I+40%	17.830	14.469	-0.300	0.000	0.00	0.0	OK
S22.003	S113	15 minute 100 year Winter I+40%	17.110	14.107	-0.300	0.000	0.00	0.0	OK
S22.004	S114	15 minute 100 year Winter I+40%	17.590	13.857	-0.300	0.000	0.00	0.0	OK
S22.005	S85	15 minute 100 year Winter I+40%	17.950	13.745	-0.300	0.000	0.00	0.0	OK
S22.006	S86	15 minute 100 year Winter I+40%	14.900	13.220	-0.375	0.000	0.00	0.0	OK
S22.007	S87	15 minute 100 year Winter I+40%	14.800	12.926	-0.239	0.000	0.00	0.0	OK
S20.003	S111	15 minute 100 year Winter I+40%	14.730	12.926	-0.219	0.000	0.29	35.0	OK
S17.015	S111	15 minute 100 year Winter I+40%	13.730	12.819	0.194	0.000	1.36	159.9	SURCHARGED
S17.016	S88	30 minute 100 year Summer I+40%	13.300	12.323	-0.052	0.000	0.70	159.5	OK
S1.018	S89	30 minute 100 year Winter I+40%	14.000	12.156	-0.464	0.000	0.65	223.4	OK

Cascade Summary of Results for Proposed Canel Works Storage Calculation (wth 10% betterment of greenfield runoff rates) 1in100 year + 40%cc.srcx

Upstream Structures

Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfiel

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	13.618	0.218	53.4	331.5	O K
30 min Summer	13.612	0.212	53.4	322.5	O K
60 min Summer	13.619	0.219	53.4	333.3	O K
120 min Summer	13.608	0.208	53.4	315.7	O K
180 min Summer	13.617	0.217	53.4	329.6	O K
240 min Summer	13.623	0.223	53.4	339.8	O K
360 min Summer	13.631	0.231	53.4	354.0	O K
480 min Summer	13.637	0.237	53.4	363.0	O K
600 min Summer	13.640	0.240	53.4	369.0	O K
720 min Summer	13.643	0.243	53.4	372.9	O K
960 min Summer	13.638	0.238	53.4	364.4	O K
1440 min Summer	13.628	0.228	53.4	349.0	O K
2160 min Summer	13.618	0.218	53.4	331.3	O K
2880 min Summer	13.609	0.209	53.4	317.6	O K
4320 min Summer	13.610	0.210	53.4	318.0	O K
5760 min Summer	13.613	0.213	53.4	322.7	O K
7200 min Summer	13.616	0.216	53.4	328.5	O K
8640 min Summer	13.620	0.220	53.4	335.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	212.964	0.0	4443.1	1440
30 min Summer	121.842	0.0	4426.3	1440
60 min Summer	69.708	0.0	8860.9	2308
120 min Summer	39.882	0.0	8851.1	124
180 min Summer	28.768	0.0	8811.7	184
240 min Summer	22.817	0.0	8686.8	244
360 min Summer	16.459	0.0	8523.6	362
480 min Summer	13.054	0.0	8420.0	482
600 min Summer	10.906	0.0	8345.3	602
720 min Summer	9.417	0.0	8288.2	722
960 min Summer	7.349	0.0	8178.1	960
1440 min Summer	5.182	0.0	8002.4	1028
2160 min Summer	3.654	0.0	16252.6	1388
2880 min Summer	2.852	0.0	15656.5	1732
4320 min Summer	2.043	0.0	14443.4	2440
5760 min Summer	1.613	0.0	24183.1	3248
7200 min Summer	1.342	0.0	25063.7	4080
8640 min Summer	1.155	0.0	25752.4	4928

Cascade Summary of Results for Proposed Canel Works Storage Calculation (wth 10% betterment of greenfield runoff rates) 1in100 year + 40%cc.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
10080 min Summer	13.642	0.242	53.4	372.3	O K
15 min Winter	13.616	0.216	53.4	328.3	O K
30 min Winter	13.599	0.199	53.4	301.4	O K
60 min Winter	13.616	0.216	53.4	328.7	O K
120 min Winter	13.636	0.236	53.4	361.3	O K
180 min Winter	13.649	0.249	53.4	383.4	O K
240 min Winter	13.658	0.258	53.5	399.6	O K
360 min Winter	13.672	0.272	53.9	422.7	O K
480 min Winter	13.681	0.281	54.2	438.7	O K
600 min Winter	13.688	0.288	54.4	450.7	O K
720 min Winter	13.693	0.293	54.5	459.9	O K
960 min Winter	13.693	0.293	54.5	459.6	O K
1440 min Winter	13.686	0.286	54.3	447.8	O K
2160 min Winter	13.667	0.267	53.8	414.1	O K
2880 min Winter	13.645	0.245	53.4	376.5	O K
4320 min Winter	13.622	0.222	53.4	338.2	O K
5760 min Winter	13.628	0.228	53.4	347.7	O K
7200 min Winter	13.634	0.234	53.4	357.7	O K
8640 min Winter	13.640	0.240	53.4	368.1	O K
10080 min Winter	13.646	0.246	53.4	378.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.018	0.0	26192.7	10080
15 min Winter	212.964	0.0	4443.3	1440
30 min Winter	121.842	0.0	4406.4	37
60 min Winter	69.708	0.0	8754.4	66
120 min Winter	39.882	0.0	8806.9	124
180 min Winter	28.768	0.0	8676.8	182
240 min Winter	22.817	0.0	8604.1	240
360 min Winter	16.459	0.0	8536.2	358
480 min Winter	13.054	0.0	8517.0	474
600 min Winter	10.906	0.0	8529.3	592
720 min Winter	9.417	0.0	8564.7	710
960 min Winter	7.349	0.0	8505.7	942
1440 min Winter	5.182	0.0	8271.9	1400
2160 min Winter	3.654	0.0	16492.6	2056
2880 min Winter	2.852	0.0	16000.4	2192
4320 min Winter	2.043	0.0	15098.7	2412
5760 min Winter	1.613	0.0	27014.9	3224
7200 min Winter	1.342	0.0	27903.7	4064
8640 min Winter	1.155	0.0	28414.5	4936
10080 min Winter	1.018	0.0	28520.0	5848

Cascade Rainfall Details for Proposed Canel Works Storage Calculation (wth 10% betterment of greenfield runoff rates) 1in100 year + 40%cc.srcx

Rainfall Model	FEH	D3 (1km)	0.297	Cv (Winter)	0.840
Return Period (years)	100	E (1km)	0.318	Shortest Storm (mins)	15
Site Location		F (1km)	2.445	Longest Storm (mins)	10080
C (1km)	-0.026	Summer Storms	Yes	Climate Change %	+40
D1 (1km)	0.314	Winter Storms	Yes		
D2 (1km)	0.258	Cv (Summer)	0.750		

Time Area Diagram

Total Area (ha) 0.658

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.329	4	8	0.329

Cascade Model Details for Proposed Canel Works Storage Calculation (wth 10% betterment of greenfield runoff rates) 1in100 year + 40%cc.srcx

Storage is Online Cover Level (m) 14.100

Tank or Pond Structure

Invert Level (m) 13.400

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1406.0	0.200	1624.0	0.400	1949.0	0.600	2307.0
0.100	1508.0	0.300	1774.0	0.500	2128.0	0.700	1934.0

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0307-5480-0900-5480
Design Head (m)	0.900
Design Flow (l/s)	54.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	307
Invert Level (m)	12.800
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	54.7
Flush-Flo™	0.448	54.8
Kick-Flo®	0.735	49.6
Mean Flow over Head Range	-	42.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.3	1.200	62.9	3.000	98.1	7.000	148.4
0.200	31.5	1.400	67.8	3.500	105.8	7.500	153.5
0.300	52.9	1.600	72.3	4.000	112.9	8.000	158.4
0.400	54.6	1.800	76.5	4.500	119.6	8.500	163.2
0.500	54.6	2.000	80.6	5.000	125.9	9.000	167.8
0.600	53.4	2.200	84.4	5.500	131.9	9.500	171.1
0.800	51.7	2.400	88.0	6.000	137.6		
1.000	57.6	2.600	91.5	6.500	143.1		

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	12.175	0.375	5.3	832.8	O K
30 min Summer	12.224	0.424	5.3	950.0	O K
60 min Summer	12.278	0.478	5.3	1080.8	O K
120 min Summer	12.336	0.536	5.3	1223.6	O K
180 min Summer	12.371	0.571	5.3	1310.5	O K
240 min Summer	12.396	0.596	5.3	1372.5	O K
360 min Summer	12.430	0.630	5.3	1457.4	O K
480 min Summer	12.452	0.652	5.3	1513.6	O K
600 min Summer	12.468	0.668	5.3	1553.1	O K
720 min Summer	12.479	0.679	5.3	1581.6	O K
960 min Summer	12.482	0.682	5.3	1588.4	O K
1440 min Summer	12.473	0.673	5.3	1566.7	O K
2160 min Summer	12.445	0.645	5.3	1494.7	O K
2880 min Summer	12.413	0.613	5.3	1416.2	O K
4320 min Summer	12.373	0.573	5.3	1316.2	O K
5760 min Summer	12.338	0.538	5.3	1227.9	O K
7200 min Summer	12.304	0.504	5.3	1144.1	O K
8640 min Summer	12.268	0.468	5.3	1056.0	O K
10080 min Summer	12.233	0.433	5.3	972.4	O K
15 min Winter	12.217	0.417	5.3	933.5	O K
30 min Winter	12.271	0.471	5.3	1065.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	212.964	0.0	451.9	23
30 min Summer	121.842	0.0	443.2	38
60 min Summer	69.708	0.0	884.2	68
120 min Summer	39.882	0.0	857.4	128
180 min Summer	28.768	0.0	843.0	188
240 min Summer	22.817	0.0	834.4	246
360 min Summer	16.459	0.0	824.7	366
480 min Summer	13.054	0.0	819.8	486
600 min Summer	10.906	0.0	817.3	606
720 min Summer	9.417	0.0	816.3	724
960 min Summer	7.349	0.0	813.5	964
1440 min Summer	5.182	0.0	809.0	1442
2160 min Summer	3.654	0.0	1644.9	2160
2880 min Summer	2.852	0.0	1596.1	2480
4320 min Summer	2.043	0.0	1486.1	3240
5760 min Summer	1.613	0.0	2437.4	4032
7200 min Summer	1.342	0.0	2535.6	4896
8640 min Summer	1.155	0.0	2619.2	5624
10080 min Summer	1.018	0.0	2691.7	6448
15 min Winter	212.964	0.0	445.5	23
30 min Winter	121.842	0.0	430.5	38

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	12.332	0.532	5.3	1212.6	O K
120 min Winter	12.397	0.597	5.3	1374.1	O K
180 min Winter	12.436	0.636	5.3	1473.2	O K
240 min Winter	12.464	0.664	5.3	1544.3	O K
360 min Winter	12.503	0.703	5.3	1642.9	O K
480 min Winter	12.529	0.729	5.3	1709.4	O K
600 min Winter	12.547	0.747	5.4	1757.3	O K
720 min Winter	12.561	0.761	5.4	1792.9	O K
960 min Winter	12.567	0.767	5.4	1807.4	O K
1440 min Winter	12.563	0.763	5.4	1796.9	O K
2160 min Winter	12.539	0.739	5.3	1736.1	O K
2880 min Winter	12.507	0.707	5.3	1653.6	O K
4320 min Winter	12.457	0.657	5.3	1525.9	O K
5760 min Winter	12.412	0.612	5.3	1411.7	O K
7200 min Winter	12.366	0.566	5.3	1298.2	O K
8640 min Winter	12.320	0.520	5.3	1184.0	O K
10080 min Winter	12.269	0.469	5.3	1058.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	69.708	0.0	862.7	68
120 min Winter	39.882	0.0	840.4	126
180 min Winter	28.768	0.0	831.8	184
240 min Winter	22.817	0.0	828.2	244
360 min Winter	16.459	0.0	827.6	362
480 min Winter	13.054	0.0	831.5	480
600 min Winter	10.906	0.0	838.6	596
720 min Winter	9.417	0.0	846.3	714
960 min Winter	7.349	0.0	849.7	946
1440 min Winter	5.182	0.0	844.7	1404
2160 min Winter	3.654	0.0	1660.1	2076
2880 min Winter	2.852	0.0	1620.9	2712
4320 min Winter	2.043	0.0	1542.8	3412
5760 min Winter	1.613	0.0	2730.0	4328
7200 min Winter	1.342	0.0	2840.1	5264
8640 min Winter	1.155	0.0	2907.8	6216
10080 min Winter	1.018	0.0	2890.3	7056

Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.297	Cv (Winter)	0.840
Return Period (years)	100	E (1km)	0.318	Shortest Storm (mins)	15
Site Location		F (1km)	2.445	Longest Storm (mins)	10080
C (1km)	-0.026	Summer Storms	Yes	Climate Change %	+40
D1 (1km)	0.314	Winter Storms	Yes		
D2 (1km)	0.258	Cv (Summer)	0.750		

Time Area Diagram

Total Area (ha) 2.100

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	1.050	4	8	1.050

Model Details

Storage is Online Cover Level (m) 13.100

Tank or Pond Structure

Invert Level (m) 11.800

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1772.0	0.400	2393.0	0.800	2613.0	1.200	2877.0
0.100	2229.0	0.500	2448.0	0.900	2667.0		
0.200	2283.0	0.600	2503.0	1.000	2721.0		
0.300	2338.0	0.700	2559.0	1.100	2792.0		

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0112-5400-0800-5400
Design Head (m)	0.800
Design Flow (l/s)	5.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	112
Invert Level (m)	11.750
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	5.4
Flush-Flo™	0.239	5.3
Kick-Flo®	0.534	4.5
Mean Flow over Head Range	-	4.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.9	1.200	6.5	3.000	10.0	7.000	15.0
0.200	5.3	1.400	7.0	3.500	10.7	7.500	15.5
0.300	5.3	1.600	7.4	4.000	11.5	8.000	15.9
0.400	5.1	1.800	7.8	4.500	12.1	8.500	16.4
0.500	4.8	2.000	8.2	5.000	12.7	9.000	16.9
0.600	4.7	2.200	8.6	5.500	13.3	9.500	17.3
0.800	5.4	2.400	9.0	6.000	13.9		
1.000	6.0	2.600	9.3	6.500	14.4		

FOUL SEWERAGE DESIGN

Network Design Table for 31500 EXISTING FOUL.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
F1.000	88.938	0.650	136.8	0.000	0	5.9	1.500	o	150	
F1.001	9.627	0.150	64.2	0.000	0	0.6	1.500	o	150	
F2.000	25.850	0.410	63.0	0.000	0	0.0	1.500	o	150	
F1.002	60.043	1.455	41.3	0.000	0	0.0	1.500	o	150	
F1.003	50.467	0.315	160.2	0.000	0	2.6	1.500	o	225	
F3.000	68.686	0.665	103.3	0.000	0	5.2	1.500	o	150	
F4.000	68.643	1.440	47.7	0.000	0	0.5	1.500	o	150	
F4.001	19.809	0.260	76.2	0.000	0	0.0	1.500	o	150	
F4.002	15.236	0.445	34.2	0.000	0	0.0	1.500	o	150	
F3.001	51.986	0.365	142.4	0.000	0	0.0	1.500	o	225	
F1.004	12.257	0.050	245.1	0.000	0	0.0	1.500	o	300	
F1.005	14.161	0.060	236.0	0.000	0	0.0	1.500	o	300	
F1.006	68.140	0.300	227.1	0.000	0	0.0	1.500	o	300	
F1.007	20.647	0.090	229.4	0.000	0	0.0	1.500	o	300	
F1.008	113.782	0.460	247.4	0.000	0	5.5	1.500	o	300	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.000	18.150	0.000	5.9	0	0.6	74	0.74	0.75	13.2	6.5
F1.001	17.500	0.000	6.5	0	0.7	63	1.01	1.09	19.3	7.2
F2.000	17.760	0.000	0.0	0	0.0	0	0.00	1.10	19.5	0.0
F1.002	17.350	0.000	6.5	0	0.7	56	1.19	1.37	24.1	7.2
F1.003	15.820	0.000	9.1	0	0.9	81	0.78	0.91	36.0	10.0
F3.000	16.610	0.000	5.2	0	0.5	64	0.80	0.86	15.2	5.7
F4.000	18.090	0.000	0.5	0	0.1	16	0.52	1.27	22.5	0.6
F4.001	16.650	0.000	0.5	0	0.1	18	0.44	1.00	17.7	0.6
F4.002	16.390	0.000	0.5	0	0.1	15	0.58	1.50	26.5	0.6
F3.001	15.870	0.000	5.7	0	0.6	62	0.71	0.96	38.2	6.3
F1.004	15.430	0.000	14.8	0	1.5	104	0.74	0.88	62.5	16.3
F1.005	15.380	0.000	14.8	0	1.5	103	0.75	0.90	63.7	16.3
F1.006	15.320	0.000	14.8	0	1.5	102	0.77	0.92	64.9	16.3
F1.007	15.020	0.000	14.8	0	1.5	103	0.76	0.91	64.6	16.3
F1.008	14.930	0.000	20.3	0	2.0	124	0.81	0.88	62.2	22.3

FOUL SEWERAGE DESIGN

Network Design Table for 31500 EXISTING FOUL.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
F1.009	49.545	0.300	165.2	0.000	0	0.0	1.500	o	300	
F1.010	104.204	0.300	347.3	0.000	0	2.3	1.500	o	300	
F5.000	83.152	0.460	180.8	0.000	0	0.0	1.500	o	225	
F5.001	75.888	0.420	180.7	0.000	0	0.0	1.500	o	225	
F6.000	208.601	1.555	134.1	0.000	0	8.0	1.500	o	150	
F5.002	32.288	0.370	87.3	0.000	0	5.4	1.500	o	225	
F5.003	49.316	0.080	616.5	0.000	0	0.0	1.500	o	225	
F7.000	56.798	0.575	98.8	0.000	0	3.0	1.500	o	150	
F5.004	118.324	0.800	147.9	0.000	0	1.5	1.500	o	225	
F8.000	25.252	0.305	82.8	0.000	0	0.4	1.500	o	150	
F9.000	47.119	0.415	113.5	0.000	0	6.8	1.500	o	150	
F9.001	23.959	0.240	99.8	0.000	0	0.0	1.500	o	225	
F9.002	36.771	0.370	99.4	0.000	0	0.7	1.500	o	225	
F9.003	62.338	0.730	85.4	0.000	0	0.0	1.500	o	225	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.009	14.470	0.000	20.3	0	2.0	111	0.94	1.08	76.2	22.3
F1.010	14.170	0.000	22.6	0	2.3	145	0.73	0.74	52.4	24.9
F5.000	18.050	0.000	0.0	0	0.0	0	0.00	0.85	33.9	0.0
F5.001	17.590	0.000	0.0	0	0.0	0	0.00	0.85	33.9	0.0
F6.000	18.800	0.000	8.0	0	0.8	89	0.81	0.76	13.4	8.8
F5.002	17.170	0.000	13.4	0	1.3	85	1.08	1.23	48.9	14.7
F5.003	16.800	0.000	13.4	0	1.3	153	0.51	0.46	18.3	14.7
F7.000	17.370	0.000	3.0	0	0.3	47	0.70	0.88	15.6	3.3
F5.004	16.720	0.000	17.9	0	1.8	116	0.95	0.94	37.5	19.7
F8.000	16.300	0.000	0.4	0	0.0	17	0.40	0.96	17.0	0.4
F9.000	17.750	0.000	6.8	0	0.7	76	0.83	0.82	14.5	7.5
F9.001	17.260	0.000	6.8	0	0.7	62	0.85	1.15	45.7	7.5
F9.002	17.020	0.000	7.5	0	0.8	65	0.87	1.15	45.8	8.3
F9.003	16.650	0.000	7.5	0	0.8	62	0.92	1.24	49.4	8.3

FOUL SEWERAGE DESIGN

Network Design Table for 31500 EXISTING FOUL.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
F5.005	113.630	1.975	57.5	0.000	0	1.7	1.500	o	225	
F10.000	49.090	0.690	71.1	0.000	0	1.3	1.500	o	150	
F1.011	8.463	0.085	100.0	0.000	0	0.8	1.500	o	300	
F1.012	83.707	0.541	154.7	0.000	0	2.4	1.500	o	300	
F11.000	52.827	0.681	77.6	0.000	0	1.0	1.500	o	150	
F1.013	127.302	0.468	272.0	0.000	0	0.5	1.500	o	375	
F12.000	118.313	1.105	107.1	0.000	0	2.2	1.500	o	150	
F13.000	31.072	0.330	94.2	0.000	0	0.0	1.500	o	150	
F14.000	195.191	1.526	127.9	0.000	0	12.7	1.500	o	225	
F14.001	25.073	0.160	156.7	0.000	0	2.4	1.500	o	225	
F14.002	66.673	0.444	150.2	0.000	0	0.0	1.500	o	225	
F14.003	114.512	0.763	150.1	0.000	0	9.2	1.500	o	225	
F14.004	57.446	0.383	150.0	0.000	0	0.0	1.500	o	225	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F5.005	15.920	0.000	27.5	0	2.8	113	1.52	1.52	60.2	30.3
F10.000	14.710	0.000	1.3	0	0.1	29	0.61	1.04	18.4	1.4
F1.011	13.870	0.000	52.2	0	5.2	165	1.44	1.39	98.0	57.4
F1.012	13.785	0.000	54.6	0	5.5	197	1.22	1.11	78.7	60.1
F11.000	14.000	0.000	1.0	0	0.1	26	0.55	1.00	17.6	1.1
F1.013	13.169	0.000	56.1	0	5.6	204	1.00	0.97	107.2	61.7
F12.000	15.180	0.000	2.2	0	0.2	41	0.62	0.85	15.0	2.4
F13.000	14.330	0.000	0.0	0	0.0	0	0.00	0.90	16.0	0.0
F14.000	18.800	0.000	12.7	0	1.3	91	0.92	1.01	40.3	14.0
F14.001	17.274	0.000	15.1	0	1.5	107	0.90	0.92	36.4	16.6
F14.002	17.114	0.000	15.1	0	1.5	105	0.91	0.94	37.2	16.6
F14.003	16.670	0.000	24.3	0	2.4	141	1.02	0.94	37.2	26.7
F14.004	15.907	0.000	24.3	0	2.4	141	1.02	0.94	37.2	26.7

FOUL SEWERAGE DESIGN

Network Design Table for 31500 EXISTING FOUL.FWS

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
F14.005	89.407	0.894	100.0	0.000	0	1.7	1.500	o	225	
F14.006	7.900	0.630	12.5	0.000	0	0.0	1.500	o	225	
F12.001	116.072	1.100	105.5	0.000	0	1.3	1.500	o	225	
F1.014	64.644	0.273	236.8	0.000	0	1.7	1.500	o	375	
F1.015	36.600	0.183	200.0	0.000	0	0.0	1.500	o	375	
F1.016	70.438	0.352	200.1	0.000	0	0.0	1.500	o	375	
F1.017	68.295	1.541	44.3	0.000	0	0.0	1.500	o	375	
F15.000	63.654	0.640	99.5	0.000	0	5.9	1.500	o	150	
F15.001	82.127	0.821	100.0	0.000	0	6.3	1.500	o	150	
F15.002	103.522	1.035	100.0	0.000	0	1.4	1.500	o	150	
F15.003	26.243	0.325	80.7	0.000	0	0.0	1.500	o	150	
F16.000	99.183	0.761	130.3	0.000	0	6.1	1.500	o	150	
F16.001	23.026	0.304	75.7	0.000	0	0.0	1.500	o	150	
F15.004	58.118	0.250	232.5	0.000	0	2.2	1.500	o	225	
F15.005	11.025	0.061	180.7	0.000	0	0.0	1.500	o	225	
F15.006	22.268	0.148	150.5	0.000	0	0.0	1.500	o	225	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F14.005	15.524	0.000	26.0	0	2.6	129	1.21	1.15	45.6	28.6
F14.006	14.630	0.000	26.0	0	2.6	72	2.61	3.25	129.3	28.6
F12.001	14.000	0.000	29.5	0	3.0	143	1.22	1.12	44.4	32.5
F1.014	12.700	0.000	87.3	0	8.7	263	1.16	1.04	114.9	96.0
F1.015	12.427	0.000	87.3	0	8.7	247	1.25	1.13	125.1	96.0
F1.016	12.244	0.000	87.3	0	8.7	247	1.25	1.13	125.0	96.0
F1.017	11.892	0.000	87.3	0	8.7	156	2.22	2.41	266.4	96.0
F15.000	14.012	0.000	5.9	0	0.6	68	0.84	0.88	15.5	6.5
F15.001	13.216	0.000	12.2	0	1.2	108	0.99	0.88	15.5	13.4
F15.002	12.395	0.000	13.6	0	1.4	119	1.00	0.88	15.5	15.0
F15.003	11.360	0.000	13.6	0	1.4	108	1.10	0.98	17.2	15.0
F16.000	12.100	0.000	6.1	0	0.6	75	0.76	0.77	13.5	6.7
F16.001	11.339	0.000	6.1	0	0.6	64	0.94	1.01	17.8	6.7
F15.004	10.960	0.000	21.9	0	2.2	153	0.83	0.75	29.9	24.1
F15.005	10.710	0.000	21.9	0	2.2	140	0.93	0.85	33.9	24.1
F15.006	10.649	0.000	21.9	0	2.2	132	0.99	0.93	37.2	24.1

FOUL SEWERAGE DESIGN

Network Design Table for 31500 EXISTING FOUL.FWS

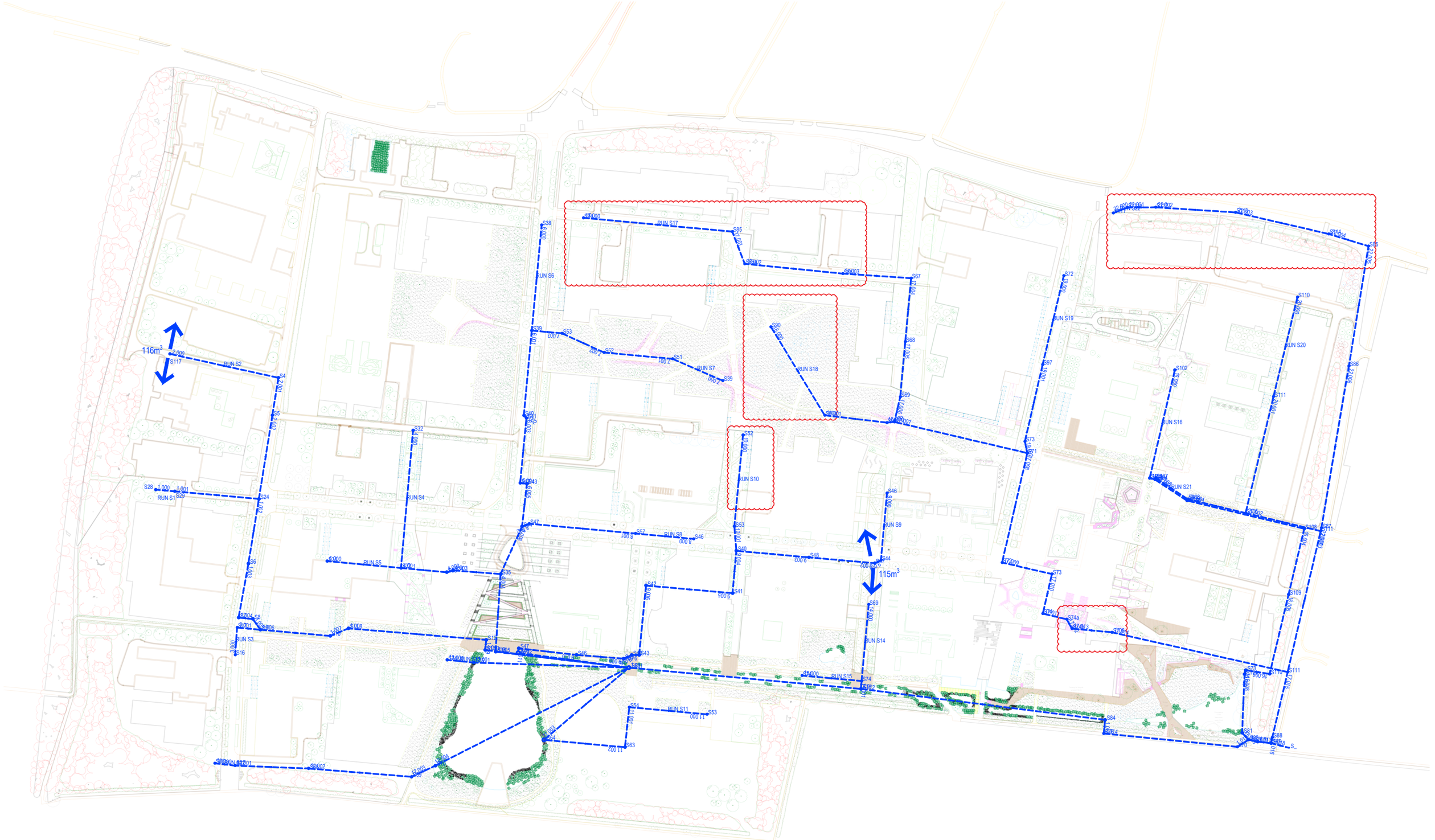
PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
F1.018	124.346	0.829	150.0	0.000	0	0.0	1.500	o	375	
F1.019	37.257	0.248	150.2	0.000	0	0.0	1.500	o	375	
F1.020	90.600	0.604	150.0	0.000	0	0.0	1.500	o	375	
F1.021	71.273	0.475	150.0	0.000	0	0.0	1.500	o	375	
F1.022	21.642	0.144	150.3	0.000	0	0.0	1.500	o	375	
F1.023	31.371	0.209	150.1	0.000	0	0.0	1.500	o	375	
F1.024	135.028	0.900	150.0	0.000	0	0.0	1.500	o	375	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.018	10.351	0.000	109.2	0	10.9	262	1.46	1.31	144.5	120.1
F1.019	9.528	0.000	109.2	0	10.9	262	1.46	1.31	144.4	120.1
F1.020	9.280	0.000	109.2	0	10.9	262	1.46	1.31	144.5	120.1
F1.021	8.676	0.000	109.2	0	10.9	262	1.46	1.31	144.5	120.1
F1.022	8.201	0.000	109.2	0	10.9	262	1.46	1.31	144.4	120.1
F1.023	8.057	0.000	109.2	0	10.9	262	1.46	1.31	144.5	120.1
F1.024	7.848	0.000	109.2	0	10.9	262	1.46	1.31	144.5	120.1

Free Flowing Outfall Details for 31500 EXISTING FOUL.FWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
F1.024	F66	10.960	6.948	0.000	0	0


116m³
115m³
RUN S1
RUN S2
RUN S3
RUN S4
RUN S5
RUN S6
RUN S7
RUN S8
RUN S9
RUN S10
RUN S11
RUN S12
RUN S13
RUN S14
RUN S15
RUN S16
RUN S17
RUN S18
RUN S19
RUN S20
RUN S21
RUN S22

Cascade Summary of Results for Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfield runoff rates) +40%cc.srcx

Upstream Structures **Outflow To**

(None) Proposed Canel Works Storage Calculation (wth 10% betterment of greenfield runoff rates) 1in100

Half Drain Time : 2894 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control Σ Outflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	15.223	0.923	0.0	53.1	53.1	8112.0	O K
30 min Summer	15.340	1.040	0.0	53.1	53.1	9262.7	O K
60 min Summer	15.469	1.169	0.0	53.1	53.1	10551.3	O K
120 min Summer	15.607	1.307	0.0	53.1	53.1	11972.9	O K
180 min Summer	15.690	1.390	0.0	53.1	53.1	12848.4	O K
240 min Summer	15.749	1.449	0.0	53.1	53.1	13476.3	O K
360 min Summer	15.830	1.530	0.0	53.1	53.1	14348.9	O K
480 min Summer	15.884	1.584	0.0	53.1	53.1	14938.4	O K
600 min Summer	15.923	1.623	0.0	53.1	53.1	15362.9	O K
720 min Summer	15.951	1.651	0.0	53.1	53.1	15678.5	O K
960 min Summer	15.964	1.664	0.0	53.1	53.1	15817.0	O K
1440 min Summer	15.956	1.656	0.0	53.1	53.1	15734.4	O K
2160 min Summer	15.907	1.607	0.0	53.1	53.1	15187.8	O K
2880 min Summer	15.847	1.547	0.0	53.1	53.1	14530.3	O K
4320 min Summer	15.768	1.468	0.0	53.1	53.1	13679.9	O K
5760 min Summer	15.692	1.392	0.0	53.1	53.1	12865.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	212.964	0.0	4512.1	31
30 min Summer	121.842	0.0	4448.3	46
60 min Summer	69.708	0.0	8747.7	76
120 min Summer	39.882	0.0	8598.6	134
180 min Summer	28.768	0.0	8386.6	194
240 min Summer	22.817	0.0	8236.8	254
360 min Summer	16.459	0.0	8037.3	372
480 min Summer	13.054	0.0	7905.0	492
600 min Summer	10.906	0.0	7807.2	610
720 min Summer	9.417	0.0	7731.5	730
960 min Summer	7.349	0.0	7598.4	968
1440 min Summer	5.182	0.0	7389.8	1444
2160 min Summer	3.654	0.0	15604.2	2160
2880 min Summer	2.852	0.0	14982.2	2484
4320 min Summer	2.043	0.0	13717.4	3240
5760 min Summer	1.613	0.0	23418.1	4040

Cascade Summary of Results for Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfield runoff rates) +40%cc.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
7200 min Summer	15.615	1.315	0.0	53.1	53.1	12052.8	O K
8640 min Summer	15.530	1.230	0.0	53.1	53.1	11178.6	O K
10080 min Summer	15.450	1.150	0.0	53.1	53.1	10359.8	O K
15 min Winter	15.323	1.023	0.0	53.1	53.1	9092.5	O K
30 min Winter	15.452	1.152	0.0	53.1	53.1	10386.3	O K
60 min Winter	15.594	1.294	0.0	53.1	53.1	11838.2	O K
120 min Winter	15.746	1.446	0.0	53.1	53.1	13437.9	O K
180 min Winter	15.837	1.537	0.0	53.1	53.1	14426.6	O K
240 min Winter	15.902	1.602	0.0	53.1	53.1	15140.4	O K
360 min Winter	15.993	1.693	0.0	53.1	53.1	16141.3	O K
480 min Winter	16.054	1.754	0.0	53.1	53.1	16826.5	O K
600 min Winter	16.098	1.798	0.0	53.1	53.1	17327.5	O K
720 min Winter	16.131	1.831	0.0	53.1	53.1	17706.9	O K
960 min Winter	16.149	1.849	0.0	53.1	53.1	17912.1	O K
1440 min Winter	16.149	1.849	0.0	53.1	53.1	17921.2	O K
2160 min Winter	16.110	1.810	0.0	53.1	53.1	17465.8	O K
2880 min Winter	16.048	1.748	0.0	53.1	53.1	16769.1	O K
4320 min Winter	15.949	1.649	0.0	53.1	53.1	15658.3	O K
5760 min Winter	15.854	1.554	0.0	53.1	53.1	14606.8	O K
7200 min Winter	15.753	1.453	0.0	53.1	53.1	13516.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
7200 min Summer	1.342	0.0	24269.8	4896
8640 min Summer	1.155	0.0	24932.8	5624
10080 min Summer	1.018	0.0	25345.1	6368
15 min Winter	212.964	0.0	4477.3	31
30 min Winter	121.842	0.0	4364.9	45
60 min Winter	69.708	0.0	8685.7	74
120 min Winter	39.882	0.0	8367.2	132
180 min Winter	28.768	0.0	8200.6	192
240 min Winter	22.817	0.0	8100.8	250
360 min Winter	16.459	0.0	7990.6	366
480 min Winter	13.054	0.0	7940.8	484
600 min Winter	10.906	0.0	7927.2	602
720 min Winter	9.417	0.0	7940.5	718
960 min Winter	7.349	0.0	7926.3	952
1440 min Winter	5.182	0.0	7794.3	1412
2160 min Winter	3.654	0.0	15765.7	2080
2880 min Winter	2.852	0.0	15244.7	2716
4320 min Winter	2.043	0.0	14285.3	3412
5760 min Winter	1.613	0.0	26160.2	4328
7200 min Winter	1.342	0.0	27014.5	5264

Cascade Summary of Results for Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfield runoff rates) +40%cc.srcx

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
8640 min Winter	15.647	1.347	0.0	53.1	53.1	12388.4	O K
10080 min Winter	15.524	1.224	0.0	53.1	53.1	11112.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Winter	1.155	0.0	27495.0	6152
10080 min Winter	1.018	0.0	27576.2	7056

Cascade Rainfall Details for Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfield runoff rates) +40%cc.srcx

Rainfall Model	FEH	D3 (1km)	0.297	Cv (Winter)	0.840
Return Period (years)	100	E (1km)	0.318	Shortest Storm (mins)	15
Site Location		F (1km)	2.445	Longest Storm (mins)	10080
C (1km)	-0.026	Summer Storms	Yes	Climate Change %	+40
D1 (1km)	0.314	Winter Storms	Yes		
D2 (1km)	0.258	Cv (Summer)	0.750		

Time Area Diagram

Total Area (ha) 20.480

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	5.120	4	8	5.120	8	12	5.120	12	16	5.120

Cascade Model Details for Existing Lake Storage Calculation (with flow control lowered to 14.300 aod and 10% betterment of greenfield runoff rates) +40%cc.srcx

Storage is Online Cover Level (m) 16.500

Infiltration Basin Structure

Invert Level (m) 14.300 Safety Factor 5.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	7926.0	0.600	9052.0	1.200	10213.0	1.800	11411.0
0.100	8112.0	0.700	9243.0	1.300	10410.0	1.900	11614.0
0.200	8299.0	0.800	9435.0	1.400	10608.0	2.000	11841.0
0.300	8485.0	0.900	9628.0	1.500	10807.0		
0.400	8673.0	1.000	9822.0	1.600	11007.0		
0.500	8862.0	1.100	10017.0	1.700	11208.0		

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0291-5310-1900-5310
Design Head (m)	1.900
Design Flow (l/s)	53.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	291
Invert Level (m)	14.300
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	2100

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	53.1
Flush-Flo™	0.587	53.1
Kick-Flo®	1.285	44.0
Mean Flow over Head Range	-	45.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.0	1.000	50.7	2.400	59.4	5.500	88.8
0.200	29.9	1.200	47.0	2.600	61.8	6.000	92.7
0.300	49.3	1.400	45.8	3.000	66.2	6.500	96.4
0.400	51.8	1.600	48.9	3.500	71.3	7.000	99.9
0.500	52.9	1.800	51.7	4.000	76.1	7.500	103.3
0.600	53.1	2.000	54.4	4.500	80.6	8.000	106.6
0.800	52.3	2.200	57.0	5.000	84.8	8.500	109.8

Hydro-Brake Optimum® Outflow Control

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
9.000	112.9	9.500	115.9				

Appendix M LLFA Correspondence

Cambridgeshire County Council

CAMBRIDGESHIRE COUNTY COUNCIL FLOOD ASSETS DATA REPORT

Customer

Peter Brett Associates
Telford House, Fulbourn, Cambridge, CB21 5HB

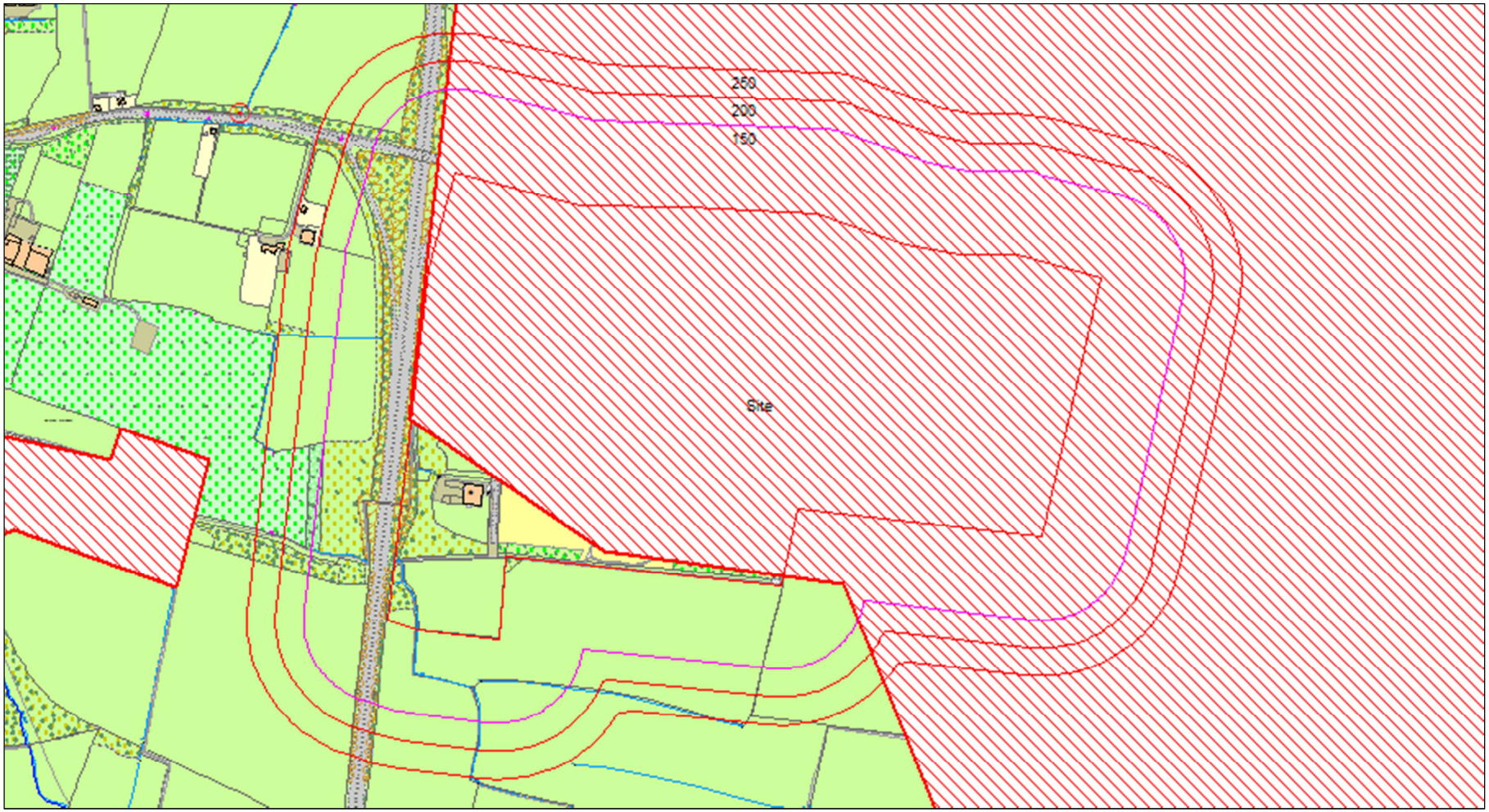
Customer Representative: Christina Vlachou-Ess

1. CAMBRIDGESHIRE FLOOD ASSETS REPORT

DATE: 13 October 2015 TIME: 11:24

Site Centre Coordinates (British National Grid): 542651, 258935
Site Area: 702924.00 sq.metres
Buffer Search Type: Polygon buffer search
Buffer Search Radius: 150 and 250 metres
Selection Summary: A total of 35 features were selected on 4 out of 27 target layers.

2. Site Map

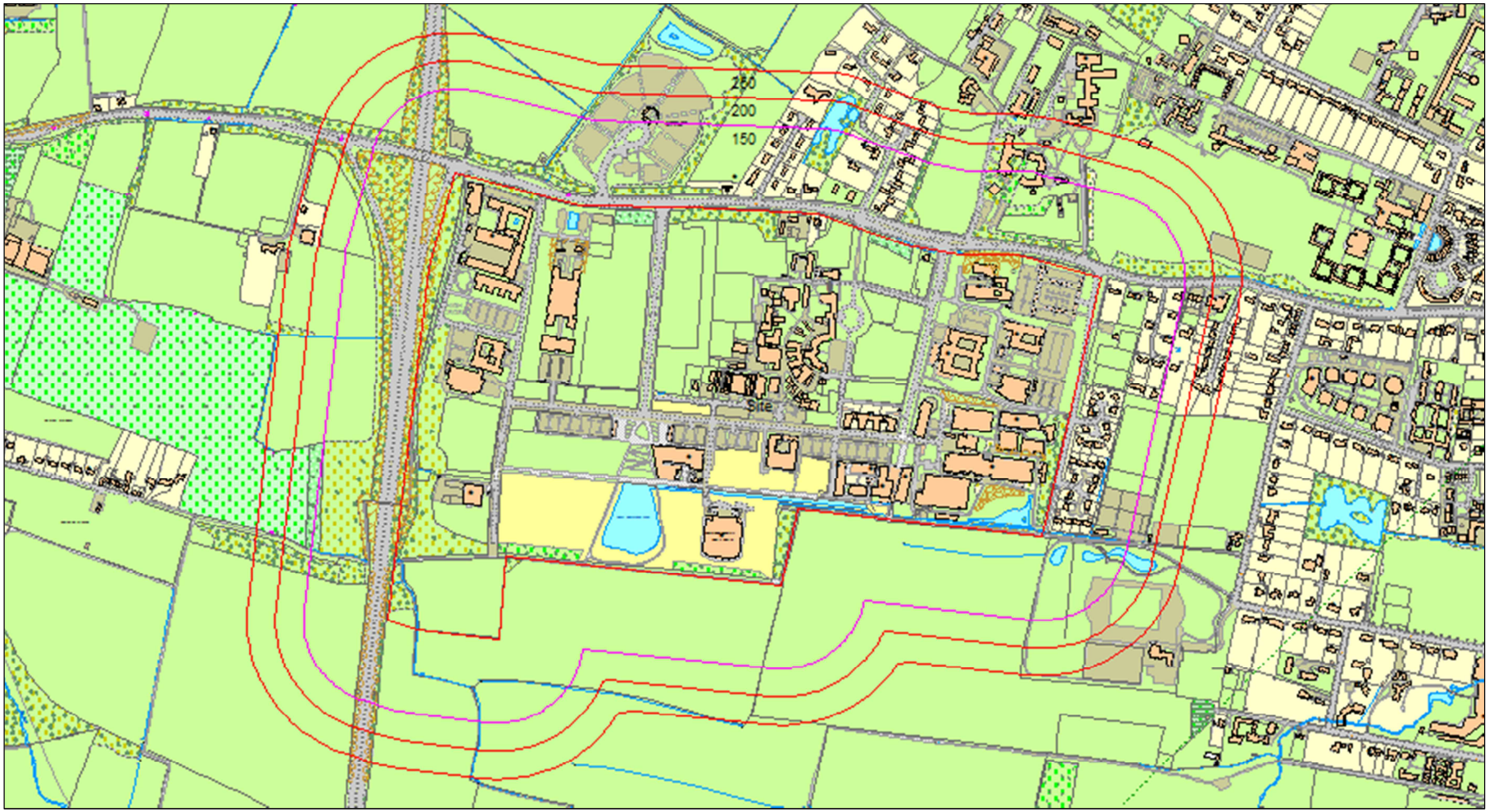


3. Summary Report Datasheet

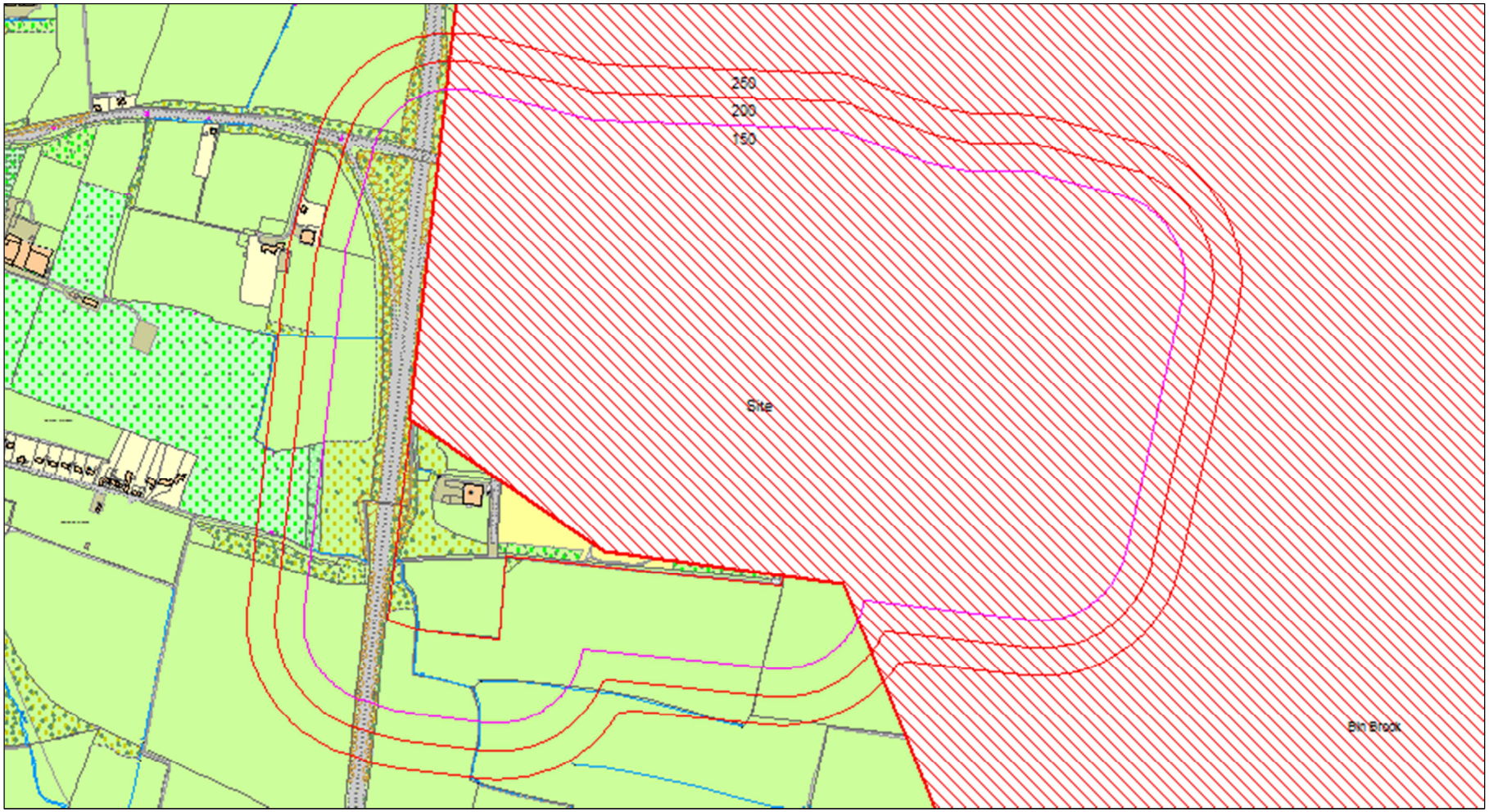
Key	Layer Name	Search Distance	Selected?	No. Selected
	Total County Wide Wetspots DV	0 m	Yes	1
	Enforcement	150 m	No	0
	Flood Investigations	150 m	No	0
	Pre-applications-consents	150 m	No	0
	Formal Application - Consents	150 m	No	0
	Gravity discharge outfall	0 m	No	0
	Flood storage reservoir	0 m	No	0
	Balancing pond	0 m	No	0
	Flood defence wall	0 m	No	0
	Flood defence bank	0 m	No	0
	Inlet	0 m	No	0
	Culvert	200 m	No	0
	Bridges	150 m	No	0
	Piped Watercourse	200 m	No	0
	Awarded Watercourses	200 m	No	0
	Inspection Chamber	150 m	Yes	9
	Gully	150 m	Yes	24
	Lock	0 m	No	0
	Ordinary Watercourse	0 m	No	0
	Pumping station	0 m	No	0
	Sewer	0 m	No	0
	Sluice gate	0 m	No	0
	Spillway	0 m	No	0
	Syphon	0 m	No	0
	Telemetry	0 m	No	0
	Weir	0 m	No	0
	Weedscreen	0 m	No	0

End of summary report

4. Site Location Map



5. Layer Name: Total County Wide Wetspots DV

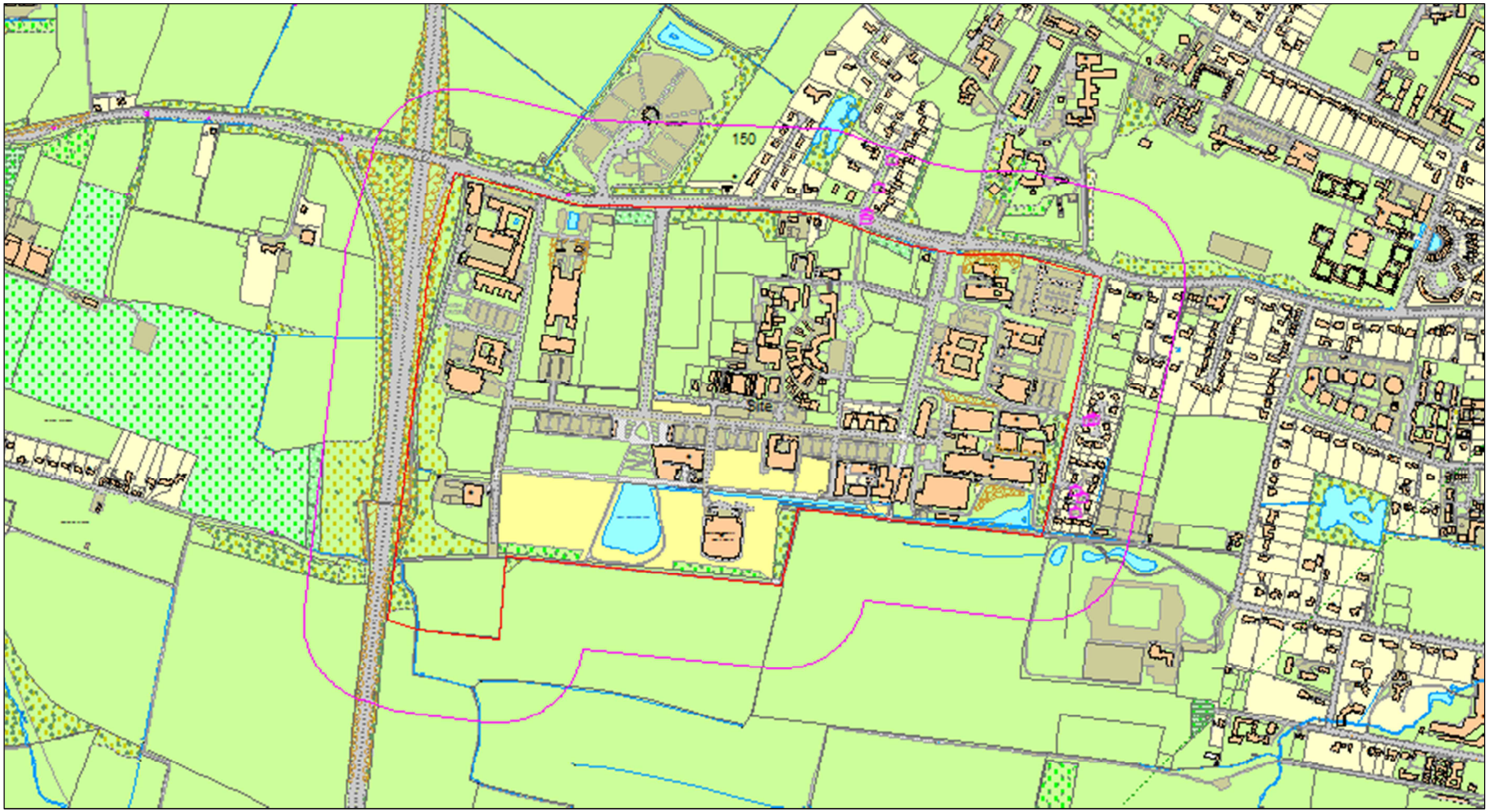


5.1 GIS Attribute Data for Total County Wide Wetspots DV

Total of 1 record(s) identified within 0 metres
1 record(s) identified on site.

Record 1 of 1
Area: Bin Brook
District: Cambridge City
Area_Ha: 435.199
Deep_200yr: 0
Shallow_200yr: 0
MCA_Score: 0
Why_Defined: No Data
Main_River_Only: No Data
Agri_1_ha: 0
Agri_2_ha: 0
Agri_3_ha: 0
Agri_4_ha: 0
Agri_5_ha: 0
Agri_6_ha: 0
Agri_7_ha: 0
Agri_1_ha_Deep: 0
Agri_1_ha_Shallow: 0
Agri_2_ha_Deep: 0
Agri_2_ha_Shallow: 0
Agri_3_ha_Deep: 0
Agri_3_ha_Shallow: 0

6. Layer Name: Inspection Chamber

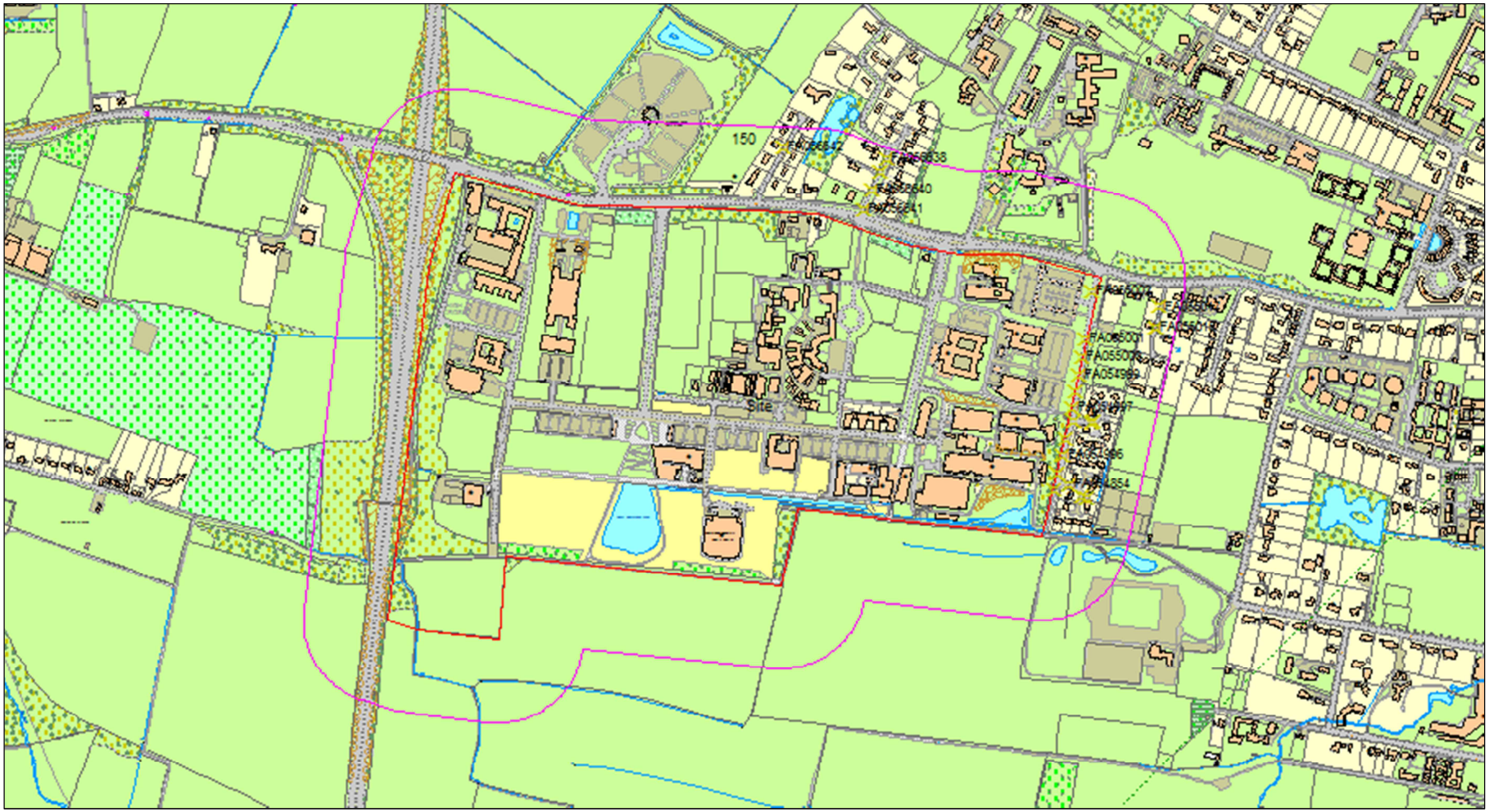


7.1 GIS Attribute Data for Inspection Chamber

Key: Symbols -

site_seq_n	site_id	site_nar	site_typ	site_addre	location_nar	invert_lev	principal_materia	Grid Ref.
On site								
None								
Off site - Within 150m								
100320890	FA010890	FA010890	Inspection Chamber	No data	No data	No data	No data	543252, 258778
100320891	FA010891	FA010891	Inspection Chamber	No data	No data	No data	No data	543242, 258788
100320892	FA010892	FA010892	Inspection Chamber	No data	No data	No data	No data	543264, 258913
100320893	FA010893	FA010893	Inspection Chamber	No data	No data	No data	No data	543274, 258916
100321061	FA011061	FA011061	Inspection Chamber	No data	No data	No data	No data	542916, 259375
100321062	FA011062	FA011062	Inspection Chamber	No data	No data	No data	No data	542893, 259327
100321063	FA011063	FA011063	Inspection Chamber	No data	No data	No data	No data	542871, 259280
100321072	FA011072	FA011072	Inspection Chamber	No data	No data	No data	No data	542870, 259271
100321232	FA011232	FA011232	Inspection Chamber	No data	No data	No data	No data	543241, 258750

8. Layer Name: Gully



8.1 GIS Attribute Data for Gully

Key: Symbols -

site_seq_n	id	site_type	site_addres	location_nar	status	asset_own	Grid Ref.
On site							
100365001	FA055001	Gully	No data	FA055001	No data	Unknown	543258, 259053
100365002	FA055002	Gully	No data	FA055002	No data	Unknown	543271, 259138
Off site - Within 150m							
100364854	FA054854	Gully	No data	FA054854	No data	Unknown	543231, 258796
100364855	FA054855	Gully	No data	FA054855	No data	Unknown	543254, 258776
100364856	FA054856	Gully	No data	FA054856	No data	Unknown	543262, 258772
100364994	FA054994	Gully	No data	FA054994	No data	Unknown	543204, 258786
100364995	FA054995	Gully	No data	FA054995	No data	Unknown	543211, 258816
100364996	FA054996	Gully	No data	FA054996	No data	Unknown	543219, 258848
100364997	FA054997	Gully	No data	FA054997	No data	Unknown	543237, 258932
100364998	FA054998	Gully	No data	FA054998	No data	Unknown	543243, 258961
100364999	FA054999	Gully	No data	FA054999	No data	Unknown	543248, 258991
100365000	FA055000	Gully	No data	FA055000	No data	Unknown	543253, 259022
100365003	FA055003	Gully	No data	FA055003	No data	Unknown	543225, 258878
100365004	FA055004	Gully	No data	FA055004	No data	Unknown	543240, 258910
100365005	FA055005	Gully	No data	FA055005	No data	Unknown	543272,

site_seq_n	id	site_type	site_addre	location_nar	status	asset_own	Grid Ref.
							258907
100365006	FA055006	Gully	No data	FA055006	No data	Unknown	543273, 258908
100365015	FA055015	Gully	No data	FA055015	No data	Unknown	543383, 259074
100365016	FA055016	Gully	No data	FA055016	No data	Unknown	543383, 259075
100365017	FA055017	Gully	No data	FA055017	No data	Unknown	543391, 259111
100366638	FA056638	Gully	No data	FA056638	No data	Unknown	542906, 259376
100366639	FA056639	Gully	No data	FA056639	No data	Unknown	542896, 259351
100366640	FA056640	Gully	No data	FA056640	No data	Unknown	542880, 259319
100366641	FA056641	Gully	No data	FA056641	No data	Unknown	542865, 259283
100366642	FA056642	Gully	No data	FA056642	No data	Unknown	542724, 259394

End of detailed report

8 Wetspot Selection and Prioritisation

Flood Risk Regulations
The assessment of the possible harmful consequences of future floods from local sources of flood risk

8.1 Approach

The principal purpose of a strategic assessment is to identify broad locations which are considered more or less vulnerable to surface water flooding. These are then taken through an intermediate assessment. This chapter describes the selection and prioritisation of areas in line with the strategic and intermediate risk assessment phases. This section is divided into three sub-sections to facilitate the above objective. These are:

- Identification of Potential Wetspot Areas within Cambridge and Milton using the results of the bare earth modelling described in Section 7. This is referred to as Stage 2 of the modelling strategy
- Multi-Criteria Assessment (MCA) Methodology. This describes the agreed MCA approach agreed with the SWMP Project Board.
- Prioritisation of Wetspots within Cambridge and Milton using the MCA methodology.

The objective of the MCA assessment and prioritisation is the identification of two agreed wetspots to be taken forward to the intermediate assessment stage. The workflow to establish the prioritisation is shown in Figure 2.2

8.2 Stage 2 - Identification of Potential Wetspot Areas

A wetspot is an area deemed to be at significant risk of surface water flooding. This risk is identified using either historical flooding reports and / or the Environment Agency‘s Flood Maps and localised modelling. A number of principles were established in relation to identifying wetspot areas within the Cambridge and Milton SWMP. These were:

- The wetspots were initially identified by depth using the Stage 1 bare earth modelling of north and south Cambridge, historical data and supporting information from Cambridge City Council.
- The wetspots must include all of the upstream contributing areas to ensure that flood flows to the area where water accumulates are considered by the detailed assessment. In order to meet this criterion the velocity and flow outputs from the Stage 1 bare earth model were interrogated to delineate the wetspot, sub-catchment areas.

Figure 8.1 shows the results of the Stage 1 bare earth modelling for a 1 in 200 year (0.5% AEP) return period for Cambridge. Areas of inundation shown in blue are equivalent to a flood depth of between 0.1m and 0.3m. Areas of inundation shown red are equivalent to flood depths greater than 0.3m. The figures allow a preliminary delineation of the wetspot catchments. In particular, there is clearly a well defined accumulation area on the axis of Perne Road and Cherry Hinton Road. There is also evidence of historical flooding within the St Thomas Square area to support the modelling.

Based solely on depth the distinction between various wetspots is less clear to the north of the Cam where there appears to be several separate areas of accumulation. In order to address

Figure Ref	Wetspot
8.3	Bin Brook
8.4	Vicar‘s Brook / Hobson‘s Conduit
8.5	Cherry Hinton
8.6	Cherry Hinton Village
8.7	Coldham‘s Common
8.8	Milton Village
8.9	North Chesterton
8.10	South Chesterton
8.11	Castle School
8.12	King‘s Hedges and Arbury
8.13	Cambridge City Centre

Table 8.1 Stage 2 Wetspots for Cambridge and Milton and their associated figure numbers

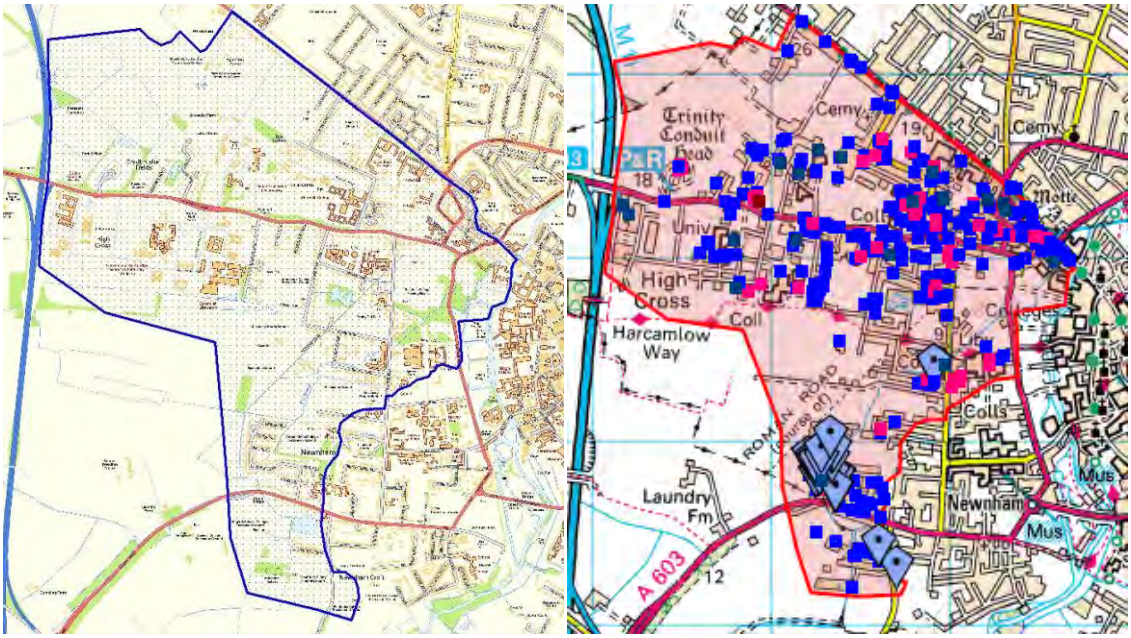


Figure 8-3 Location of Bin Brook wetspot