

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

Bowlee Football and Community Wellbeing
Hub

For

Rochdale AFC & Rochdale Borough Council



Bowlee Football and Community Wellbeing Hub
Flood Risk Assessment & Drainage Strategy
REF: 0813

Rev	Description	Date
A	Issued for Planning	29/07/26



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EXECUTIVE SUMMARY

- The proposed development is for new and improved sports pitches, new football training facilities for Rochdale AFC and a new community health and wellbeing facility at Bowlee, Heywood Old Road, Middleton, M24 4SD.
- The Site is located within Flood Zone 1.
- An assessment of the flood risks on site found the risk to be low for all sources. Downstream of the site, there is a high risk of fluvial/surface water flooding.
- As the site is considered 'water compatible ', it is considered suitable for development from a sequential test perspective.
- A SuDS scheme has been considered utilising either infiltration or at-ground storage alongside water recycling and permeable paving.
- The proposed development reduces the flood risk in the area through the introduction of SuDS.

1 INTRODUCTION

MAB Consultancy Ltd have been commissioned by Rochdale AFC and Rochdale Borough Council to produce a Flood Risk Assessment (FRA) in support of a full planning application for a new first team training ground and community health and wellbeing facility to replace the existing Bowlee Playing fields at Heywood Old Road, Middleton, M24 4SD.

1.1 FRA Aims and Objectives

The purpose of this report is to provide information on the flood risks associated with the proposed development and to advise on mitigation measures at the Site to enable the development to proceed without objection from the Environment Agency (EA), Lead Local Flood Authority (LLFA) or others.

This is to be achieved by ensuring that the development is safe from flooding to the recognised standards and does not increase flood risk to the development or to third parties.

This report follows the guidance set out in the National Planning Policy Framework (NPPF), alongside other national guidance such as the National Standards for Sustainable Drainage Systems (SUDS), CIRIA SuDS Manual (C753) and the EA Flood Risk Assessments Climate Change Allowances guidance. The report also follows relevant local authority policies and guidance from bodies such as Rochdale Borough Council (acting as the LLFA), the Environment Agency (EA) and United Utilities (UU).

1.2 Data Collected

The following data was collected as part of this assessment.

- BRE 365 Testing February 2026
- United Utility Sewer Records
- Online flood maps and records
- Topographic Survey

2 PLANNING POLICY

2.1 NPPF

The NPPF is explicit in that it directs any proposed development away from sites which are at risk of flooding. In addition, it states that any proposed development should not increase the risk of flooding and should, in itself, be safe from flooding.

This should be done in the first instance via the sequential test, which should be applied at a strategic and specific site level.

2.2 National Standards for Sustainable Drainage Systems (NSSDS)

The NSSDS has seven standards for SUDS

Standard 1 – Run-off Destinations

These are given in the following priority order;

1. Collected for non-potable use.
2. Infiltration into the ground
3. Discharged to an above-ground surface water body
4. Discharged to a surface water sewer or another piped surface water system
5. Discharge rainwater to the combined sewer

Standard 2 - Management of Everyday Rainfall (inception)

SuDS should accommodate the first 5mm of rainfall from the majority of events

Standard 3 – Management of Extreme Rainfall and Flooding

Flooding from the 1% AEP event shall be managed within the development

Standard 4 – Water Quality

SuDS should protect the surface water, groundwater and coastal waters

Standard 5 - Amenity

SuDS should adopt an approach that maximises the benefit for amenity

Standard 6 – Biodiversity

SuDS shall enhance and create systems which contribute to the net gains in biodiversity

Standard 7 – Design of Drainage for Construction, Operation, Maintenance, Decommissioning and Structural Integrity

2.3 Local Plan

The current Local Plan is grouped within a number of documents, including the Rochdale Adopted Core Strategy (2016). Within this core strategy, there are a number of policies which relate to flood risk and drainage, including:

G1: Tackling and Adapting to Climate Change

G8: Managing Water Resources and Flood Risk

As part of this Core Strategy, an SPD was produced in 2012 on Climate Change and Adaptation.

A new Draft Local Plan is proposed to be adopted in 2027. This contains two key policies relating to flood risk and drainage.

Policy S2: Climate Resilience

Policy S4: Managing Water Resources and Flood Risk

The S4 policy points towards documents such as the 'North West Basin District Flood Management Plan' and the 'Irwell Catchment Plan'.

A number of papers have been produced to shape the Draft Plan, including Climate Change and Flood Risk Topic Paper. This confirms that the site is not within a Source Protection Zone.

Due to the Core Strategy's age, the national policies on flood risk and SuDS have superseded much of the policy wording, and as such, this document will defer to the most recent national policies where relevant.

2.4 Strategic Flood Risk Assessment (SFRA)

A Preliminary FRA, Level 1 and 2 SFRA for the area was undertaken in 2009. The flood information in these reports has been largely superseded by more up-to-date modelling, but the historical records are helpful. These reports state that there have been no recorded historic floods on the site.

However, they do identify a significant flood risk due to surface water/fluviial flooding associated with the culverted Langley Brook. This has had an impact on businesses, including

the car boot site to the south of the development and has resulted in access roads being inaccessible on a regular basis, as detailed in RBC's Bowlee Community Park Drainage Review (ref: 682-034-Bowlee Community Park) Jan 2026.

It is noted that the site was not assessed as an allocated site as part of the Level 2 SFRA.

2.5 Lead Local Flood Authority

Rochdale Borough Council (RBC), in their role as LLFA, have produced the 'Rochdale Borough's Strategy for Flood Risk Management (2014-2024)'. This highlights the need for suitable SuDS, but as with the above, the information on SuDS has been superseded by the introduction of the NSSDS.

2.6 Climate Change

Due to the location of the Site, the factors for climate change, as defined by DEFRA, should be applied to the peak rainfall intensity. A 60-year lifespan for the development has been considered.

DEFRA provide climate change figures is shown in Table 1 below. It indicates that for small and urban catchments, a central level of 25% and upper end of 40% peak rainfall intensity allowance should be assessed in order to determine the future impacts of climate change.

Epoch	Central Allowance	Upper End Allowance
2050's	25%	40%
2070's	30%	45%

Table 1: DEFRA Climate change allowances

The lifespan of the scheme will be into the 2050's, and for this report, it is proposed that a conservative approach is considered and that a climate change factor of +40% is utilised on all drainage calculations.

3 DEVELOPMENT DESCRIPTION & LOCATION

3.1 Site Location

The Site is located to the north-west of Middleton at Bowlee Sports Field, Heywood Old Road, Middleton, M24 4SB, and comprises 10.744Ha on land which is currently used for recreational purposes, namely sports pitches.

Figure 1 indicates the Site location, which is centred on Grid Reference SD 85052 07184 (E: 385052, N: 407184). Heywood Old Road forms the north-western boundary and provides access to the Site. A limited number of residential properties adjoin a short section of the site's south-western boundary, with the majority of surrounding residential development situated to the north-east and south-east of the site. The remaining boundaries are predominantly defined by Bowlee Park, while Langley Brook forms part of the south-east boundary.

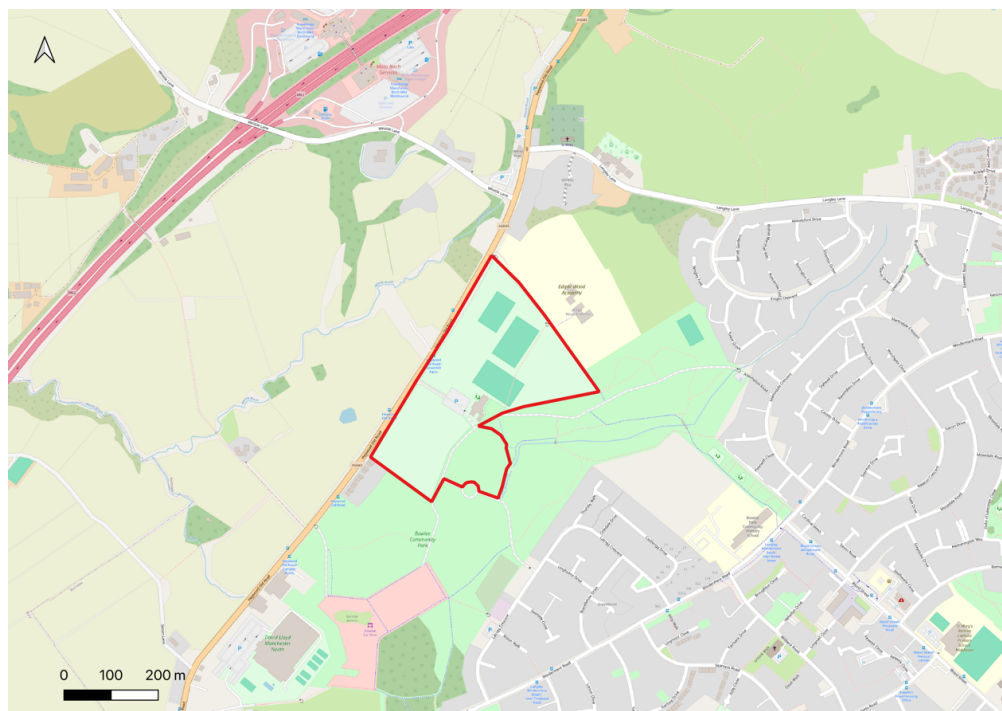


Figure 1: Site Location

As shown within Appendix A, at present, the site is occupied by a sports complex which, along with a number of grass football pitches, has an impermeable car park, community building and an artificial cricket strip. The existing site area is shown within Table 2 below.

Description	Existing Area
Impermeable Hard standing	2,905.5m ²
Roof Area	675m ²
Cricket Strip	73m ²
Grass Pitches	103,790.5m ²
Total	107,444m²

Table 2: Existing Site Area

An investigation of the historical drainage records on the site found that the existing car park and buildings drain via a network of drains into what is assumed to be the Langley Brook culvert to the south of the site. In addition, there are a number of existing pitch drains which also connect into this system. These are shown within the existing drainage plan in Appendix A.

A foul pumping station is also located on site, which site personnel state connects via rising main to the housing development to the east of the site.

3.2 Development Description

The development includes two distinct parts: a new training facility for Rochdale AFC and a community wellbeing hub/pavilion for Rochdale Borough Council, as shown within Appendix B.

Rochdale AFC Training Centre will include two new pitches, one grass and one artificial surface, as well as a club building and car parking.

The community wellbeing hub/pavilion will include two full-size grass pitches, two 3G pitches and other smaller grass pitches. It will also include a new Community Health and Wellbeing Hub, play area and a cricket training net, with potential for expansion.

A detailed breakdown of the existing and proposed areas is shown in Appendix C and summarised in Figure 2 and Table 3 below.



Figure 2: Proposed Site Areas

Description	Proposed Area
1. RAFC Grass Pitch	7,953m ²
2. RAFC 3G Pitch	8,022m ²
3. Grass Pitch (Junior)	5,225m ²
4. RAFC Clubhouse	393m ²
5. Car Park/Paths	10,758 m ²
6. Community Health and Wellbeing Hub	802m ²
7. Play Area	146m ²
8. Grass Pitch	6,397m ²
9. Grass Pitch	6,397m ²
10. 3G Pitch	6,077m ²
11. 3G Pitch	7,682m ²
12. Grass Pitch (Junior)	2,035m ²
13. Cricket Nets	480m ²
14. Landscaping	45,077m ²
Total	107,444m²

Table 3: Proposed Site Areas

4 EXISTING FLOOD RISK

4.1 Flooding from Rivers

Fluvial flooding is flooding caused by rivers and other watercourses and occurs when the river or watercourse channel capacity is exceeded by the flow.

There are a number of watercourses which flow around the site, including Langley Brook (ordinary Watercourse) which runs along the south-east boundary and Whittle Brook (main river), circa 300m to the north-west, which Langley Brook joins 600m to the west of the development.

The online flood maps (Figure 3 below) indicate that the Site is within Flood Zone 1 and therefore at a low risk of flooding from rivers.

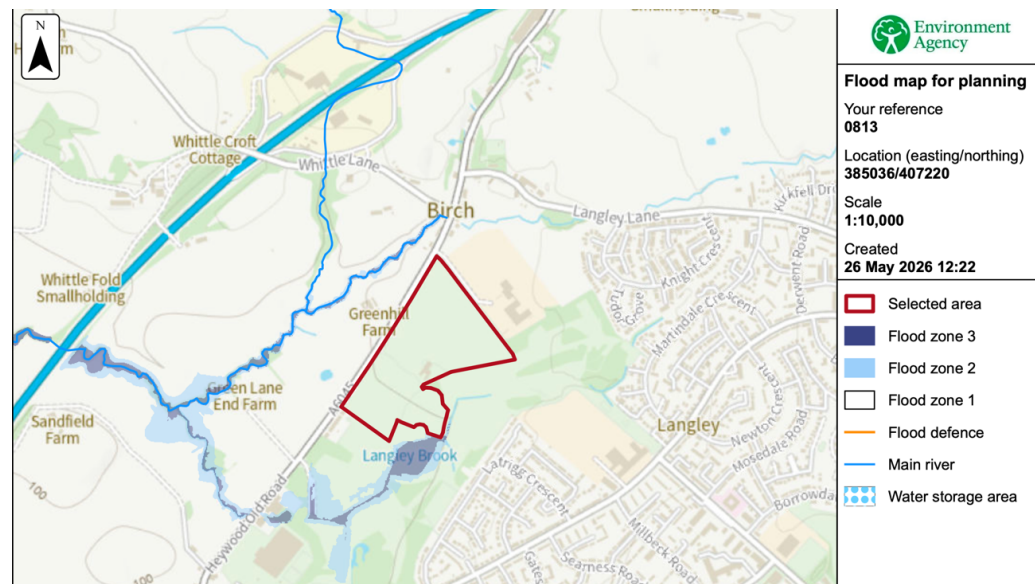


Figure 3: Flooding from Rivers Risk Map

It is noted that Langley Brook is not shown to flood along the Site boundary. As this is considered a non-main river, it would appear that they have not been modelled by the EA. When the surface water mapping is examined, it is clear that Langley Brook does have a flood extent, and this will be assessed in Section 4.3 below.

4.2 Flooding from the Sea

Tidal flooding from the sea occurs when high tides and storm surges raise the level of tidal waters above the level of the shore or river bank. These can be sudden and severe but are dependent on a number of factors which are well known and predictable. There are two ways in which the sea could potentially flood the Site:

a) From the Open Coast

The Site is not considered at risk from open coast flooding.

b) Flooding from the Tidal Influence of Rivers

The watercourses in the area are not tidally affected.

Therefore, the risk from the Sea is considered low.

4.3 Flooding from Surface Water

Within urban areas where there are large areas of impermeable surfacing, e.g. roof areas, car parking and roads, it is possible for high-intensity rainfall storms to be unable to soak into the ground or enter the man-made drainage system at a quick enough rate to cope with the volume of water. Where this occurs, the excess water can flow across land and potentially cause flooding.

The Defra Risk of Flooding from Surface Water download gov.uk website (see Figure 4 below) indicates that within the Site boundary, there is a low risk of surface water flooding in the majority of the Site, with some medium/high risk identified near the driveway.

From the site operator, this flooding is associated with a manhole located in this area and from the topographic survey in Appendix A, a localised low area can be seen around the manhole, and this does not flow onto the road or third-party land.

A small element of low-risk flooding can be seen along the north-western boundary, but this is again isolated and not a flow path through the site, which impacts others or the site in any great measure.

It is highlighted that the flooding associated with Langley Brook does not enter the site.

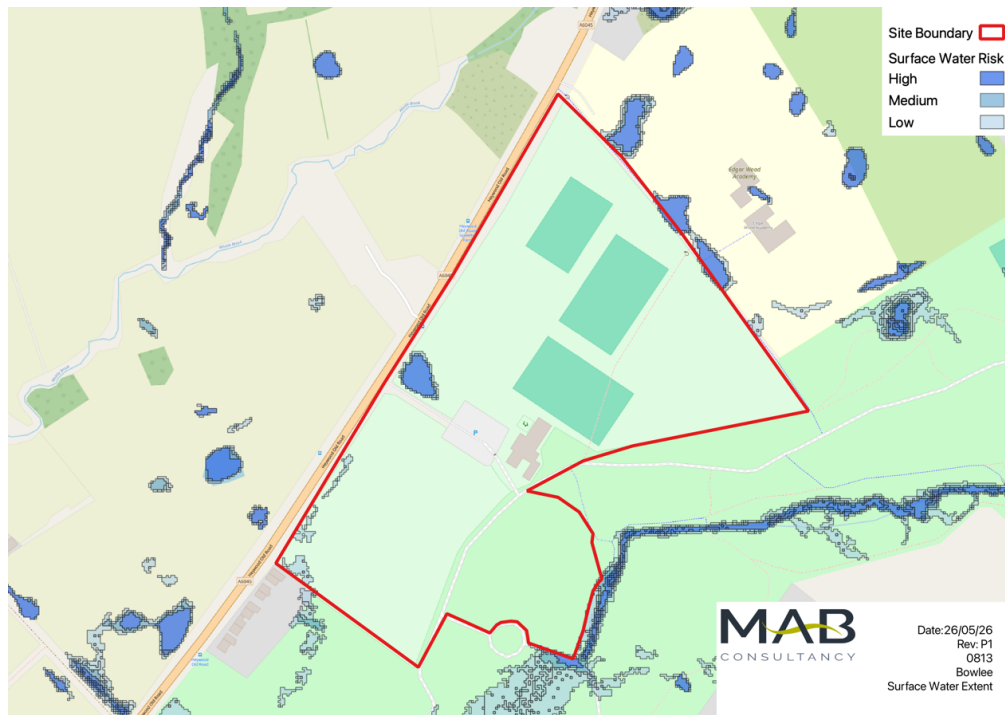


Figure 4: Defra Long-Term Risk of Surface Water Flooding

With regards to the existing run off rate, Table 4 below displays the existing and greenfield runoff rates at the Site (Appendix D contains the calculations).

Event	Green Run-Off Rate	Existing Run-Off Rate
Q _{bar}	69.4l/s	116.6l/s
Q ₁	64.9l/s	106.0l/s
Q ₃₀	126.9l/s	207.1l/s
Q ₁₀₀	155.2l/s	253.7l/s

Table 4: Existing and Greenfield Runoff Rates

4.4 Flooding from The Ground

In areas where the level of groundwater is high, rainfall that soaks into the ground can raise groundwater to a level where structures within the ground are at risk of flooding. Structures such as basements or detention ponds can be at risk, although this is dependent upon the ground conditions of the Site.

The ground conditions from the British Geological Society (BGS) maps indicate that the Site has bedrock of Pennine Lower Coal Measures Formation-Mudstone, siltstone and sandstone, with Till, Devensian-Diamicton superficial deposits.

The historic borehole ref SD80NW508 is located 265m to the south west of the site and no groundwater was recorded to a depth of 10m. Several trial holes were dug across the site by OBi Sports to assess the soil conditions, and they found no groundwater to a depth of 1.5m.

These boreholes also confirmed that the superficial deposits were of a clayey silt which was not conducive to infiltration.

Therefore, the flood risk from the ground is considered as low.

4.5 Flooding from Artificial Sources

Infrastructure failure flooding includes that from sewers, reservoirs and canals. Sewer flooding occurs when the quantity of water flowing into the sewers exceeds the capacity of the sewer and backs up to an extent where it floods out of manholes or gullies.

Alternatively, and more commonly, sewers flood when a blockage occurs in a pipe. This is more likely in private drains, but is usually less severe than flooding from larger public sewers, which can cause extensive flooding due to the greater quantity of surface area and properties which they drain.

Adopted Drains: From the United Utilities (UU) sewer record plans (Appendix E), there are no surface water or foul water sewers in the area.

Private Drains: The Site's formal drainage has no record of flooding other than that described in Section 4.3 and will be replaced, and as such, presents a low risk.

Reservoirs: The Site is not within an area which is at risk of reservoir flooding.

4.6 Existing Flood Risk Summary

From the above assessment, the risks of flooding can be summarised in Table 5 below.

Source of Flooding	Risk	Action Required
Rivers	Low	No action
Sea	Low	No action
Surface Water	Low/medium/high*	Suitable SuDS and levels
Ground water	Low	No Action
Sewers	Low	No action
Reservoirs	Low	No action

Table 5: Flood Risk Summary

4.7 Sequential Test All Sources

4.7.1 Vulnerability Classification

The various types of built development are classified by national planning policy with regard to vulnerability to flood risk. NPPG Table 2 provides a detailed list of which types of development fall into the five flood risk vulnerability classifications. This list is recognised as not being exclusive, but it provides guidance on the various uses and their associated Flood Risk Vulnerability Classification.

The proposed development is for a sports complex, placing this development into the 'water compatible' classification.

4.7.2 Sequential Test

Table 3 of the NPPG identifies which types of development are appropriate for the various Flood Zones, and this is as shown below in Table 6.

For 'water compatible' development, the site can be considered as suitable as any in the Borough from a flood risk sequential test perspective.

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone Classification	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception test required	✓	✓
	Zone 3a	Exception test required	✓	✗	Exception test required	✓
	Zone 3b	Exception test required	✓	✗	✗	✗

Table 6: Type of Development & Appropriate Flood Zone

- ✓ Suitable for Development
- ✗ Not Suitable for Development

5 POST DEVELOPMENT FLOOD RISK

5.1 Surface Water Drainage (SuDS)

5.1.1 Drainage Hierarchy

In identifying SuDS options, it is important to take into consideration any constraints at the Site which may influence the preferred surface water drainage criteria of National Standards on SuDS:

- 1) Collected for non-potable use.
- 2) Infiltration into the ground
- 3) Discharged to an above-ground surface water body
- 4) Discharged to a surface water sewer or another piped surface water system
- 5) Discharge rainwater to the combined sewer

The pitches do require regular watering, and as such, the reuse of water on site could be utilised.

Infiltration is not considered suitable due to the ground conditions.

As the whole site currently discharges to Langley Brook, it is proposed to replicate the current scenario. Therefore, the existing pipe connection which runs to the south and intercepts the assumed culverted Langley Brook will be reused.

5.1.2 Contributing Area

For the proposed development, a key component to making the pitches more accessible and in line with Sport England's standard is the installation of a positive drainage system on the grass pitches. This will consist of a number of lateral drains, which are typically laid at between 550mm and 650mm deep in line with Sport England guidance.

By positively draining the grass pitch, this introduces an area which can be deemed to be equivalent to an impermeable area. Although this is historically a grey area, a report undertaken by Loughborough University (ref: Drainage behaviour of sports pitches – findings from a research study - August 2016) indicates that well-drained pitches can be considered as having an impermeable area equivalent to 25% of the total proposed pitch area.

By applying this figure to the proposed areas, the equivalent impermeable areas are shown within Table 7 below.

Description	Proposed Area	Equivalent Impermeable Area
1. RAFC Grass Pitch	7,953m ²	1,988 m ²
2. RAFC 3G Pitch	8,022m ²	8,022 m ²
3. Grass Pitch (Junior)	5,225m ²	1,306 m ²
4. RAFC Clubhouse	393m ²	393 m ²
5. Car Park/Paths	10,758 m ²	10,758 m ²
6. Community Health and Wellbeing Hub	802m ²	802 m ²
7. Play Area	146m ²	146 m ²
8. Grass Pitch	6,397m ²	1,599 m ²
9. Grass Pitch	6,397m ²	1,599 m ²
10. 3G Pitch	6,077m ²	6,077 m ²
11. 3G Pitch	7,682m ²	7,682 m ²
12. Grass Pitch (Junior)	2,035m ²	509 m ²
13. Cricket Nets	480m ²	480 m ²
14. Landscaping	45,077m ²	NA
Total	107,444m²	41,362m²

Table 7: Equivalent Impermeable Areas

5.1.3 SuDS Options

As detailed within Table 7.1 of the SuDS Manual, the below are considered suitable.

Component Type	Collection Mechanism	Design Criteria						Suitable	Reason
		Water Quantity			Water Quality	Amenity	Biodiversity		
		Peak Run off Rate	Runoff Volume						
			Small Events	Large Events					
Rainwater Harvesting Systems	P		●	●		●		Y	
Green Roofs	S	○	●		●	●	●	Y	
Infiltration Systems	P	●	●	●	●	●	●	Y	Tbc
Proprietary Treatment Systems	P				●			Y	
Filter Strips	L		●		●	○	○	Y	
Filter Drains	L	●			●	○	○	Y	
Swales	L	●	●	●	●	●	●	Y	
Bio-retention Systems	P	●	●	●	●	●	●	Y	
Trees	P	●	●		●	●	●	Y	
Pervious Pavements	S	●	●	●	●	○	○	Y	
Attenuation Storage Tanks	P	●						Y	
Detention Basins	P	●	●		●	●	●	Y	
Ponds and Wetlands	P	●			●	●	●	Y	

Table 8: SuDS Component Assessment

Key: P = Point, L=Lateral, S=Surface, ●=Likely Valuable Contribution, ○=Some potential contribution

5.1.4 Proposed SuDS Scheme

If water recycling can be utilised, then it will be included subject to feasibility.

Two connections will be made into the existing surface water drain from the site. These are split into the Rochdale AFC facility and the Rochdale Borough Council facility.

For both areas, a new connection into the existing pipe will be provided, with the flow from the respective areas controlled at the Q_1 greenfield run-off rate to the 1 in 100-year event 360-minute storm as a worst-case scenario. This will then require open storage in line with the SuDS hierarchy and to achieve the four pillars of SuDS design, as shown within Appendix F.

5.1.5 Water Quality

As the site will discharge to Langley Brook, where water quality is considered critical, suitable SuDS treatment will be required. A simple index approach to water quality, as described in Table 26.1 of the SuDS Manual (C753), has been used. Table 26.2 indicates the pollution indices for the development, with Table 9 below summarising the pollution indices for the Site.

It is highlighted that for the artificial pitches, a series of catch pits will be utilised in order to prevent any solids from the pitches migrating into the watercourse.

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydro-carbons
Footpaths	Very Low	0.3	0.2	0.05
Pitches	Very Low	0.3	0.2	0.05
Commercial Roofs	Low	0.3	0.2	0.05
Car Park/Maintenance Yard	Medium	0.7	0.6	0.7

Table 9: Pollution Hazard Indices

The proposed SUDS will bring a benefit to the Site and reduce the flood risk in the area. In addition, from Table 26.4 of the SuDS Manual (C753), the use of the proposed SUDS is deemed to reduce the pollution indices to an acceptable level. Table 10 below includes the pollution indices assessment.

Land Use	Total Suspended Solids	Metals	Hydro-carbons
Footpaths	0.3	0.2	0.05
Permeable Paving	0.7	0.6	0.7
Suitable	Yes	Yes	Yes
Pitches	0.3	0.2	0.05
Detention Basin	0.5	0.5	0.6
Suitable	Yes	Yes	Yes
Commercial Roof	0.3	0.2	0.05
Detention Basin	0.5	0.5	0.6
Suitable	Yes	Yes	Yes
Car Park	0.7	0.6	0.7
Permeable Paving	0.7	0.6	0.7
Suitable	Yes	Yes	Yes

Table 10: Pollution Hazard Indices Post Development

For the exceedance events, Appendix G shows the direction of flow from the Site. This replicates the existing scenario and will not change or increase the risk to the surrounding properties.

5.2 Maintenance

The maintenance for the surface water system will be critical in ensuring that the components function as they are designed to do over their design lifetime. A maintenance plan is included within Appendix H and will be the responsibility of the site owner to enact.

5.3 Post-Development Flood Risk

Table 11 below provides a summary of the post-development flood risk to the Site and surrounding area from various sources as a function of the changes undertaken from the construction of the scheme.

Source of Flooding	Risk	Acceptable Level of Risk
From rivers	low	Yes
From the sea	low	Yes
From the land	low	Yes
From the ground	low	Yes
From sewers	low	Yes
From reservoirs	low	Yes

Table 11: Post Development Flood Risk Summary

5.4 Levels

Thresholds of the proposed buildings will be set 150mm above the surrounding hardstandings to prevent surface water incursion.

5.5 Foul Water

As per the UU records in Appendix E, there are no UU sewers in the area. The current site does have a foul connection; this will be reused, subject to approval from UU. A new pumping station will be required as shown in Appendix F, which will then reuse the existing rising main from the site, subject to a condition survey.

If no connection is available, then a new suitably sized private treatment plant will be installed such as Bio disc treatment plant. This will discharge the treated water to either infiltration, if available in a suitably sized drainage field, or into Langley Brook.

6 RESIDUAL RISKS

The residual risks to the development are considered as:

6.1 Flood Exceedance

Should a rainfall event occur that exceeds the capacity of the surface water drainage event, considered as the 1 in 100-year 360-minute plus climate change event, then the exceedance flow from the landscaping areas will be as shown in Appendix G.

6.2 Construction Run-Off

During construction, the SuDS will not be constructed, and therefore the contractor should ensure that no exceedance or contaminated runoff from the Site enters the ground.

6.3 Lack of Maintenance

As discussed above, SuDS drainage systems are more susceptible to failure due to a lack of maintenance. The Maintenance plan within Appendix H will mitigate this risk.

7 OFF-SITE IMPACTS

7.1 Impact of Surface Water Drainage

The proposed surface water design optimises SuDS, reducing the peak flow from the Site. Therefore, the proposal is deemed to have a **positive** impact on the surface water drainage in the area and will assist in reducing the flood risk to the surrounding area.

7.2 Impact of Development on Hydrological Morphology

The proposed system will not impinge on the hydrological morphology of the area, and therefore, the Site is considered as **neutral**.

7.3 Impact on Groundwater

The proposed development will not negatively impact the groundwater in the local area, and therefore, the Site is considered as **neutral**.

8 SUMMARY

The development consists of a full planning application for a new first team training ground and community health and wellbeing facility to replace the existing Bowlee Playing fields at Heywood Old Road, Middleton, M24 4SD, set within a red line boundary of 10.74Ha

After a full assessment of policies, geographical and hydrology, the Site is considered at a low risk of flooding from all sources of flooding.

The SUDS applied include permeable paving and a detention basin, which will discharge via a positive connection via an existing drain and have capacity for all events up to and including the 1 in 100-year 360-minute storm, plus climate change.

Overall, the proposals will have a positive impact on the flood risk in the area, reducing the extent of surface water flooding and reducing flood risk to the downstream properties.

APPENDIX A

Topographic Survey

SURVEY STATIONS		
Name	Easting	Northing
101	206409.22	407237.81
102	206474.54	407340.80
103	206568.52	407505.71
104	206746.14	407585.32

SURVEY STATIONS		
Name	Easting	Northing
101	206409.22	407237.81
102	206474.54	407340.80
103	206568.52	407505.71
104	206746.14	407585.32

STANDARD REFERENCE & ABBREVIATIONS

Case	Case description	Case description	Case description
1	Case 1: A 45-year-old male with a history of chronic kidney disease (CKD) and hypertension (HTN) presented with a 2-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 10 g/dL, serum ferritin of 150 ng/mL, and a serum transferrin saturation (TSAT) of 25%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 4 weeks, the hemoglobin level improved to 12 g/dL, and the TSAT increased to 35%.	Case 2: A 60-year-old female with a history of CKD and HTN presented with a 3-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 9 g/dL, serum ferritin of 100 ng/mL, and a TSAT of 20%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 6 weeks, the hemoglobin level improved to 11 g/dL, and the TSAT increased to 30%.	Case 3: A 55-year-old male with a history of CKD and HTN presented with a 4-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 8 g/dL, serum ferritin of 80 ng/mL, and a TSAT of 15%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 8 weeks, the hemoglobin level improved to 10 g/dL, and the TSAT increased to 25%.
2	Case 4: A 70-year-old female with a history of CKD and HTN presented with a 5-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 7 g/dL, serum ferritin of 60 ng/mL, and a TSAT of 10%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 10 weeks, the hemoglobin level improved to 9 g/dL, and the TSAT increased to 20%.	Case 5: A 65-year-old male with a history of CKD and HTN presented with a 6-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 6 g/dL, serum ferritin of 40 ng/mL, and a TSAT of 5%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 12 weeks, the hemoglobin level improved to 8 g/dL, and the TSAT increased to 15%.	Case 6: A 50-year-old female with a history of CKD and HTN presented with a 7-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 5 g/dL, serum ferritin of 20 ng/mL, and a TSAT of 2%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 14 weeks, the hemoglobin level improved to 7 g/dL, and the TSAT increased to 10%.
3	Case 7: A 40-year-old male with a history of CKD and HTN presented with a 8-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 4 g/dL, serum ferritin of 10 ng/mL, and a TSAT of 1%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 16 weeks, the hemoglobin level improved to 6 g/dL, and the TSAT increased to 5%.	Case 8: A 35-year-old female with a history of CKD and HTN presented with a 9-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 3 g/dL, serum ferritin of 5 ng/mL, and a TSAT of 0.5%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 18 weeks, the hemoglobin level improved to 5 g/dL, and the TSAT increased to 2.5%.	Case 9: A 30-year-old male with a history of CKD and HTN presented with a 10-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 2 g/dL, serum ferritin of 2 ng/mL, and a TSAT of 0.2%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 20 weeks, the hemoglobin level improved to 4 g/dL, and the TSAT increased to 1%.
4	Case 10: A 25-year-old female with a history of CKD and HTN presented with a 11-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 1 g/dL, serum ferritin of 1 ng/mL, and a TSAT of 0.1%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 22 weeks, the hemoglobin level improved to 3 g/dL, and the TSAT increased to 0.5%.	Case 11: A 20-year-old male with a history of CKD and HTN presented with a 12-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 0.5 g/dL, serum ferritin of 0.5 ng/mL, and a TSAT of 0.05%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 24 weeks, the hemoglobin level improved to 1.5 g/dL, and the TSAT increased to 0.25%.	Case 12: A 15-year-old female with a history of CKD and HTN presented with a 13-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 0.2 g/dL, serum ferritin of 0.2 ng/mL, and a TSAT of 0.02%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 26 weeks, the hemoglobin level improved to 0.6 g/dL, and the TSAT increased to 0.1%.
5	Case 13: A 10-year-old male with a history of CKD and HTN presented with a 14-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 0.1 g/dL, serum ferritin of 0.1 ng/mL, and a TSAT of 0.01%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 28 weeks, the hemoglobin level improved to 0.3 g/dL, and the TSAT increased to 0.05%.	Case 14: A 5-year-old female with a history of CKD and HTN presented with a 15-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 0.05 g/dL, serum ferritin of 0.05 ng/mL, and a TSAT of 0.005%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 30 weeks, the hemoglobin level improved to 0.15 g/dL, and the TSAT increased to 0.025%.	Case 15: A 2-year-old male with a history of CKD and HTN presented with a 16-week history of fatigue, weight loss, and anorexia. Laboratory tests revealed a hemoglobin level of 0.02 g/dL, serum ferritin of 0.02 ng/mL, and a TSAT of 0.002%. The patient was started on oral iron therapy (ferrous sulfate 325 mg twice daily) and folic acid (5 mg daily). After 32 weeks, the hemoglobin level improved to 0.06 g/dL, and the TSAT increased to 0.001%.

2	1
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Smith Street, Saffron Walden, Essex, UK
Tel: 01629 729462 Fax: 01629 51816
Email: enquiries@uk-wwa.co.uk - www.uk-wwa.co.uk

Topographical Survey of Land at:

Modula
Sheet 1 of 2

Date	May 26
Attn: Ms. Wilson	

Sheet Size & Dwg Number & Revision
A0 26C329/001



SURVEY STATIONS		
Name	Easting	Northing
S01	286489.22	457237.81
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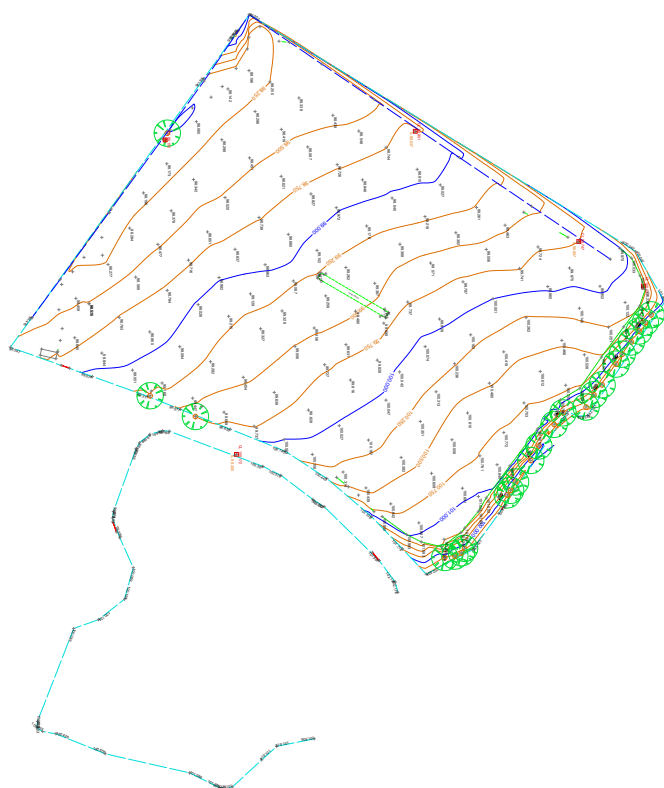


Scale(s)	1:500	Surveyor
Date	MAY 26	DC/S
Job Number	26C329	Drawn
		JR
		Checked
		TP

A0 26C329/002

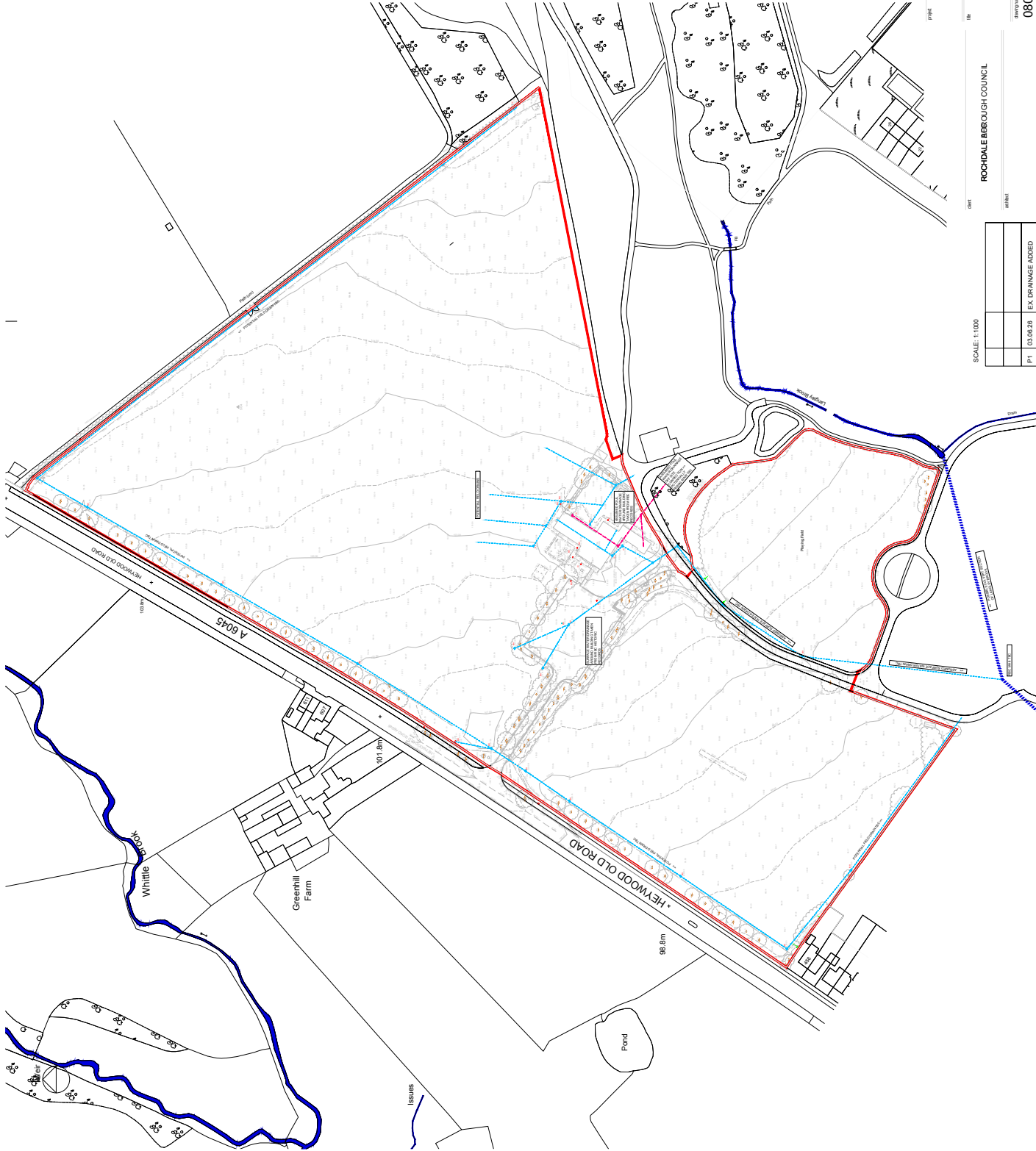
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Legend

- Contour Lines
- River
- Road
- Point of Interest



- KEY:
- EX SURFACE WATER DRAIN TBC
 - EX SURFACE WATER MANHOLE TBC
 - SITE BOUNDARY
 - EX Foul Water Drain TBC
 - EX Foul Water Manhole
 - EX CULVERTED LANGLEY BROOK TBC
 - EX MANHOLE ON WATERCOURSE TBC
 - AS PER FBC RECORDS
 - EXISTING WATERCOURSE

NOTES:

1. THE DRAWINGS DESIGN AND ALL INFORMATION CONTAINED THEREIN ARE FOR INFORMATION ONLY. NO GUARANTEE IS GIVEN FOR THE ACCURACY OF THE INFORMATION. THE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
2. DIMENSIONS MUST NOT BE SCALED FROM THE ENGINEERS DRAWINGS.
3. ALL DESIGNS, CONNECTIONS, WORKMANSHIP AND MATERIAL ARE TO BE IN ACCORDANCE WITH THE LATEST RELEVANT BRITISH STANDARD SPECIFICATION AND CODES OF PRACTICE OR OTHERWISE BE TO THE SPECIFIC WRITTEN APPROVAL OF THE ENGINEER.
4. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.
5. THE SITE BOUNDARY IS APPROXIMATE.
6. EXISTING DRAINS TAKEN FROM ROCHDALE BOROUGH COUNCIL MICROFISH RECORDS. LOCATION, COVER LEVEL AND INVERT LEVEL TBC.
7. NINE ON POTENTIAL CULVERT OF LANGLEY BROOK TAKEN FROM ROCHDALE BOROUGH COUNCIL DRAWING A6045/BOWLEE001 JAN 20. SUBJECT TO CONFIRMATION.
8. ALL DIMENSIONS ARE APPROXIMATE AND REQUIRE CONFIRMATION.



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Tel: 01937 547777 Fax: 01937 547778

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P1	23.09.20	EX DRAINAGE ADDED	

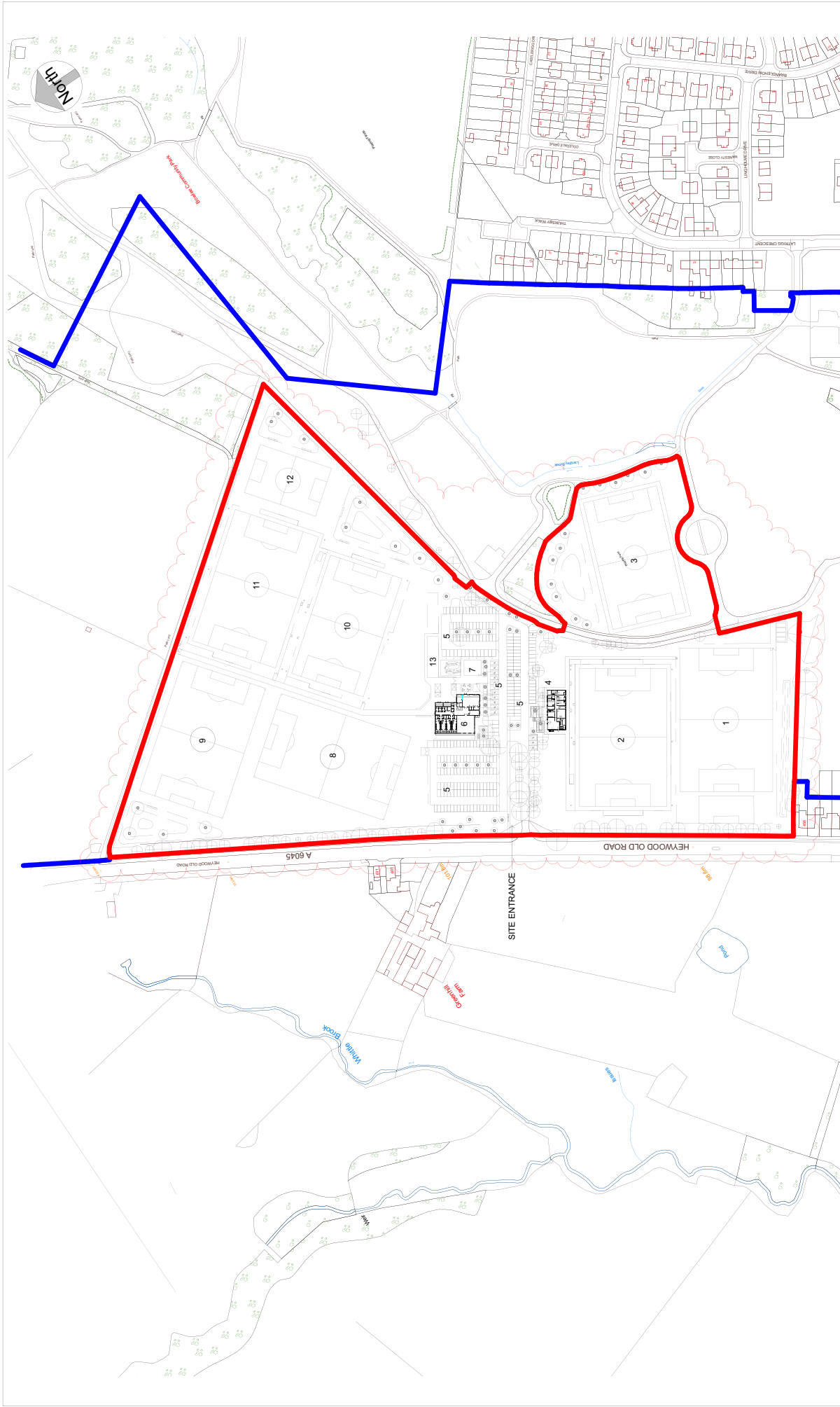
ROCHDALE BOROUGH COUNCIL

EXISTING DRAINAGE

BOWLEE

APPENDIX B

Proposed Development



Proposed Location Plan
1: 1250

- 1 Full Size Grass Training Pitch (Rochdale AFC to operate)
- 2 Full Size 3G Community Training Pitch (Rochdale AFC to operate)
- 3 Playing Field with Full Size Grass Pitch
- 4 Rochdale AFC Clubhouse
- 5 Car Parking

- 6 Community Health and Wellbeing Hub Building
- 7 Outdoor Play Area
- 8 Full Size Grass pitch
- 9 Full Size Grass Pitch
- 10 Full Size 3G Community Pitch
- 11 Full Size 3G Community Pitch
- 12 Grass Training Pitch
- 13 Two Lane Cricket Training Nets

prepared by the Club on behalf of Rochdale Borough Council

pozzoni

Rochdale Borough Council
Proposed Location Plan
Design
Version: 1.0
Date: 15/03/20
Author: DAS
Status: E
Scale: 1:1250
Drawing No: BOWLE-PC-XX-XX-A-11000

Rev: A
Date: 15/03/20
Description: Initial design and layout of the site.
Rev: B
Date: 15/03/20
Description: Revised design and layout of the site.
Rev: C
Date: 15/03/20
Description: Revised design and layout of the site.
Rev: D
Date: 15/03/20
Description: Revised design and layout of the site.
Rev: E
Date: 15/03/20
Description: Revised design and layout of the site.

Approved: DAS
Status: E
Scale: 1:1250
Drawing No: BOWLE-PC-XX-XX-A-11000

Approved: DAS
Status: E
Scale: 1:1250
Drawing No: BOWLE-PC-XX-XX-A-11000

Approved: DAS
Status: E
Scale: 1:1250
Drawing No: BOWLE-PC-XX-XX-A-11000

Approved: DAS
Status: E
Scale: 1:1250
Drawing No: BOWLE-PC-XX-XX-A-11000

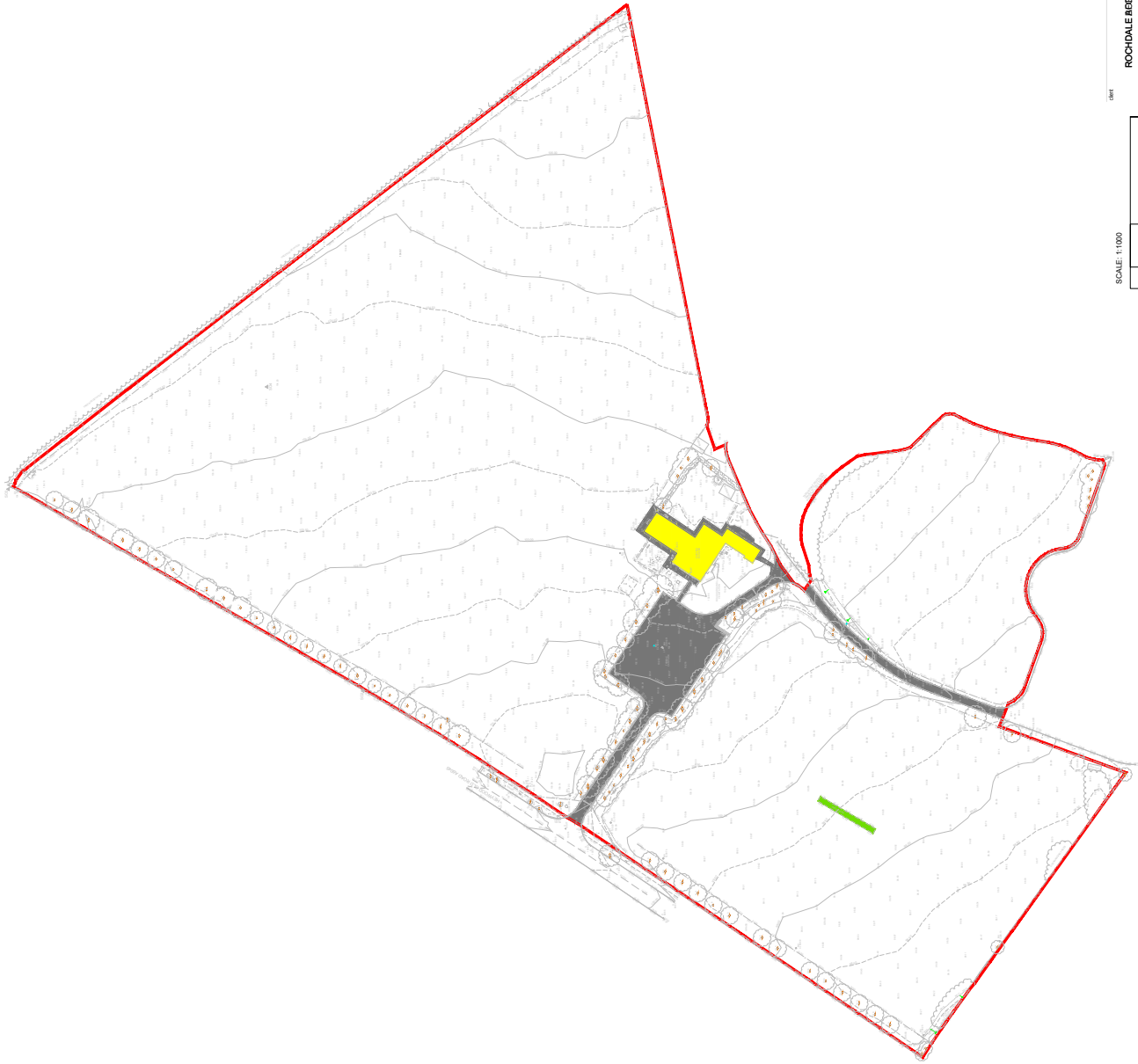
APPENDIX C

Existing and Proposed Areas





- KEY:
- GRASS PITCHES
 - 3G PITCHES
 - ROOF AREA
 - CAR PARK/PATH AREA
 - SITE BOUNDARY



NOTES

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 4. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.
- FLOOD LEVELS ARE BASED ON DEFRA MODELLED SURFACE WATER MAPS JAN 2020
5. THE SITE BOUNDARY IS APPROXIMATE

PROJECT	BOWLEE
DATE	
EXISTING CONTRIBUTING AREA	
REVISION	
0807-001-P1	

ROCHDALE BOROUGH COUNCIL

SCALE: 1:1000

P1	20.03.20	ISSUED FOR INFORMATION	

THIS DESIGN IS PROVIDED WITHIN THE FRAMEWORK OF THE CONSULTATION DESIGN AND DRAWING SERVICE. IT IS THE RESPONSIBILITY OF THE CLIENT TO ENSURE THAT THE DESIGN IS USED IN ACCORDANCE WITH THE INTENT OF THE DESIGN AND THAT THE DESIGN IS NOT USED FOR ANY OTHER PURPOSE.

MAB
CONSULTANCY

MAB Consultancy Ltd, Wyreham, Norfolk
Email: office@mabconsulting.co.uk
Tel: 01937 547777



- KEY:
- GRASS PITCHES
 - 3G PITCHES
 - ROOF AREA
 - CAR PARK/PATH AREA
 - SITE BOUNDARY

- NOTES:
1. THE DRAWINGS DESIGN AND ALL INFORMATION CONTAINED THEREIN ARE THE PROPERTY OF MAB CONSULTANCY LTD. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM MAB CONSULTANCY LTD.
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 4. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.
 5. THE SITE BOUNDARY IS APPROXIMATE.
- FLOOD LEVELS ARE BASED ON DEFRA MODELED SURFACE WATER MAPS JAN 2020

MAB
CONSULTANCY

MAB Consultancy Ltd, Wyvernham, Nodok
100, Wyvernham Road, Nodok, Nodok
Email: office@mabconsultancy.co.uk
Tel: 01273 777777 Fax: 01273 777778

PROPOSED CONTRIBUTING AREA

ROCHDALE BOROUGH COUNCIL

SCALE: 1:1000

P3	20.07.26	ISSUED FOR PLANNING
P2	20.07.26	ISSUED FOR INFORMATION
P1	20.04.26	ISSUED FOR INFORMATION

0807-002-P3

APPENDIX D

Greenfield Runoff Rates

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	26/05/2026
Calculated by	MAB
Reference	0813
Model version	2.2.3

Location

Site name	Bowlee
Site location	Middleton



Site easting (British National Grid)	384992
Site northing (British National Grid)	407202

Site details

Total site area (ha)	1.82	ha
----------------------	-----------------------------------	----

Greenfield runoff

Method

Method

FEH statistical (2025)

FEH statistical (2025)

	My value	Map value
SAAR9120 (mm)	1157	mm
BFIHOST19scaled	0.531	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	11.8 l/s	
QBar (FEH statistical 2025) (l/s)	12.6 l/s	

Growth curve factors

	My value	Map value
Hydrological region	10	10
1 year growth factor	0.87	
2 year growth factor	0.93	
10 year growth factor	1.38	
30 year growth factor	1.7	
100 year growth factor	2.08	
200 year growth factor	2.37	

Results

Method

FEH statistical (2025)	
11.0	l/s
11.8	l/s
17.4	l/s
21.5	l/s
26.3	l/s
30.0	l/s

Flow rate 1 year (l/s)

Flow rate 2 year (l/s)

Flow rate 10 years (l/s)

Flow rate 30 years (l/s)

Flow rate 100 years (l/s)

Flow rate 200 years (l/s)

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	26/05/2026
Calculated by	MAB
Reference	0813
Model version	2.2.3

Location

Site name	Bowlee
Site location	Middleton



Site easting (British National Grid)	384992
Site northing (British National Grid)	407202

Site details

Total site area (ha)	5.46	ha
----------------------	------	----

Greenfield runoff

Method

Method

FEH statistical (2025)

FEH statistical (2025)

	My value	Map value
SAAR9120 (mm)	1157	mm
BFIHOST19scaled	0.531	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	35.3 l/s	
QBar (FEH statistical 2025) (l/s)	37.9 l/s	

Growth curve factors

	My value	Map value
Hydrological region	10	10
1 year growth factor	0.87	
2 year growth factor	0.93	
10 year growth factor	1.38	
30 year growth factor	1.7	
100 year growth factor	2.08	
200 year growth factor	2.37	

Results

Method

FEH statistical (2025)	
33.0	l/s
35.3	l/s
52.3	l/s
64.5	l/s
78.9	l/s
89.9	l/s

Flow rate 1 year (l/s)

Flow rate 2 year (l/s)

Flow rate 10 years (l/s)

Flow rate 30 years (l/s)

Flow rate 100 years (l/s)

Flow rate 200 years (l/s)

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.



Rochdale AFC, Bowlee Sports Field, Heywood Old Road, Middleton
Existing Discharge Rates

Surface Water Calculations

Job No. 0807

Revision 00

Contents

Page 1	Network Details
Page 2	Manhole Schedule
Page 3	Pipeline Schedule
Pages 4 – 5	Simulation Criteria and Results for the 2-Year Storm Event (Summer)
Pages 6 – 7	Simulation Criteria and Results for the 2-Year Storm Event (Winter)
Pages 8 - 9	Simulation Criteria and Results for the 30-Year Storm Event (Summer)
Pages 10 – 11	Simulation Criteria and Results for the 30-Year Storm Event (Winter)
Pages 12 – 13	Simulation Criteria and Results for the 100-Year Storm Event (Summer)
Pages 14 – 15	Simulation Criteria and Results for the 100-Year Storm Event (Winter)

BLI Consulting		Page 1
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

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
1.000	10.000	0.100	100.0	0.365	4.00	0.0	0.600	o	450	Pipe/Conduit
1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	450	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)
1.000	50.00	4.08	1.000	0.365	0.0	0.0	0.0	2.03	323.4	49.4
1.001	50.00	4.16	0.900	0.365	0.0	0.0	0.0	2.03	323.4	49.4

BLI Consulting		Page 2
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW 1	3.000	2.000	Open Manhole	1350	1.000	1.000	450				
SW 2	3.000	2.100	Open Manhole	1350	1.001	0.900	450	1.000	0.900	450	
Outfall	3.000	2.200	Open Manhole	0		OUTFALL		1.001	0.800	450	

No coordinates have been specified, layout information cannot be produced.

BLI Consulting		Page 3
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd	Diam	MH	C.Level	I.Level	D.Depth	MH	MH DIAM., L*W
	Sect	(mm)	Name	(m)	(m)	(m)	Connection	(mm)
1.000	o	450	SW 1	3.000	1.000	1.550	Open Manhole	1350
1.001	o	450	SW 2	3.000	0.900	1.650	Open Manhole	1350

Downstream Manhole

PN	Length	Slope	MH	C.Level	I.Level	D.Depth	MH	MH DIAM., L*W
	(m)	(1:X)	Name	(m)	(m)	(m)	Connection	(mm)
1.000	10.000	100.0	SW 2	3.000	0.900	1.650	Open Manhole	1350
1.001	10.000	100.0	Outfall	3.000	0.800	1.750	Open Manhole	0

BLI Consulting		Page 4
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 2 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

Summary of Results for 15 minute 2 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW 1	1.176	-0.274	0.000	0.33		57.9	OK
1.001	SW 2	1.077	-0.273	0.000	0.33		58.1	OK

BLI Consulting		Page 6																				
Norwich	Rochdale AFC																					
Norfolk	Bowlee Sports Field																					
.	Heywood Old Road, Middleton																					
Date 09/07/2026	Designed by RSM																					
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB																					
Causeway	Network 2020.1.3																					
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> <table> <tr> <td>Rainfall Model</td> <td>FEH</td> <td>Summer Storms</td> <td>No</td> </tr> <tr> <td>Return Period (years)</td> <td>2</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>FEH Rainfall Version</td> <td>2013</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Site Location</td> <td>GB 385036 407187 SD 85036 07187</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>Data Type</td> <td></td> <td>Point Storm Duration (mins)</td> <td>15</td> </tr> </table>			Rainfall Model	FEH	Summer Storms	No	Return Period (years)	2	Winter Storms	Yes	FEH Rainfall Version	2013	Cv (Summer)	0.750	Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840	Data Type		Point Storm Duration (mins)	15
Rainfall Model	FEH	Summer Storms	No																			
Return Period (years)	2	Winter Storms	Yes																			
FEH Rainfall Version	2013	Cv (Summer)	0.750																			
Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840																			
Data Type		Point Storm Duration (mins)	15																			
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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

Summary of Results for 15 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW 1	1.176	-0.274	0.000	0.33		58.0	OK
1.001	SW 2	1.077	-0.273	0.000	0.33		58.1	OK

BLI Consulting		Page 8
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 30 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
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Causeway	Network 2020.1.3	

Summary of Results for 15 minute 30 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW 1	1.281	-0.169	0.000	0.71			126.9	OK
1.001	SW 2	1.184	-0.166	0.000	0.71			127.2	OK

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 30 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Causeway	Network 2020.1.3	

Summary of Results for 15 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW 1	1.281	-0.169	0.000	0.71		126.9	OK
1.001	SW 2	1.183	-0.167	0.000	0.71		127.2	OK

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Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 100 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Norfolk	Bowlee Sports Field	
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Causeway	Network 2020.1.3	

Summary of Results for 15 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW 1	1.331	-0.119	0.000	0.89		159.5	OK
1.001	SW 2	1.234	-0.116	0.000	0.90		159.9	OK

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
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Date 09/07/2026	Designed by RSM	
File NETWORK DESIGN_EXISTING_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 0 Number of Storage Structures 0 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 100 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Causeway	Network 2020.1.3	

Summary of Results for 15 minute 100 year Winter (Storm)

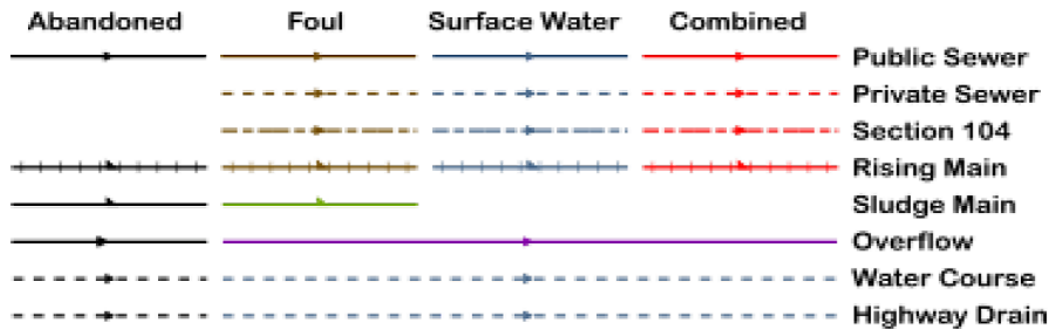
Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status OFF
 Inertia Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW 1	1.331	-0.119	0.000	0.89		159.5	OK
1.001	SW 2	1.234	-0.116	0.000	0.90		159.8	OK

APPENDIX E

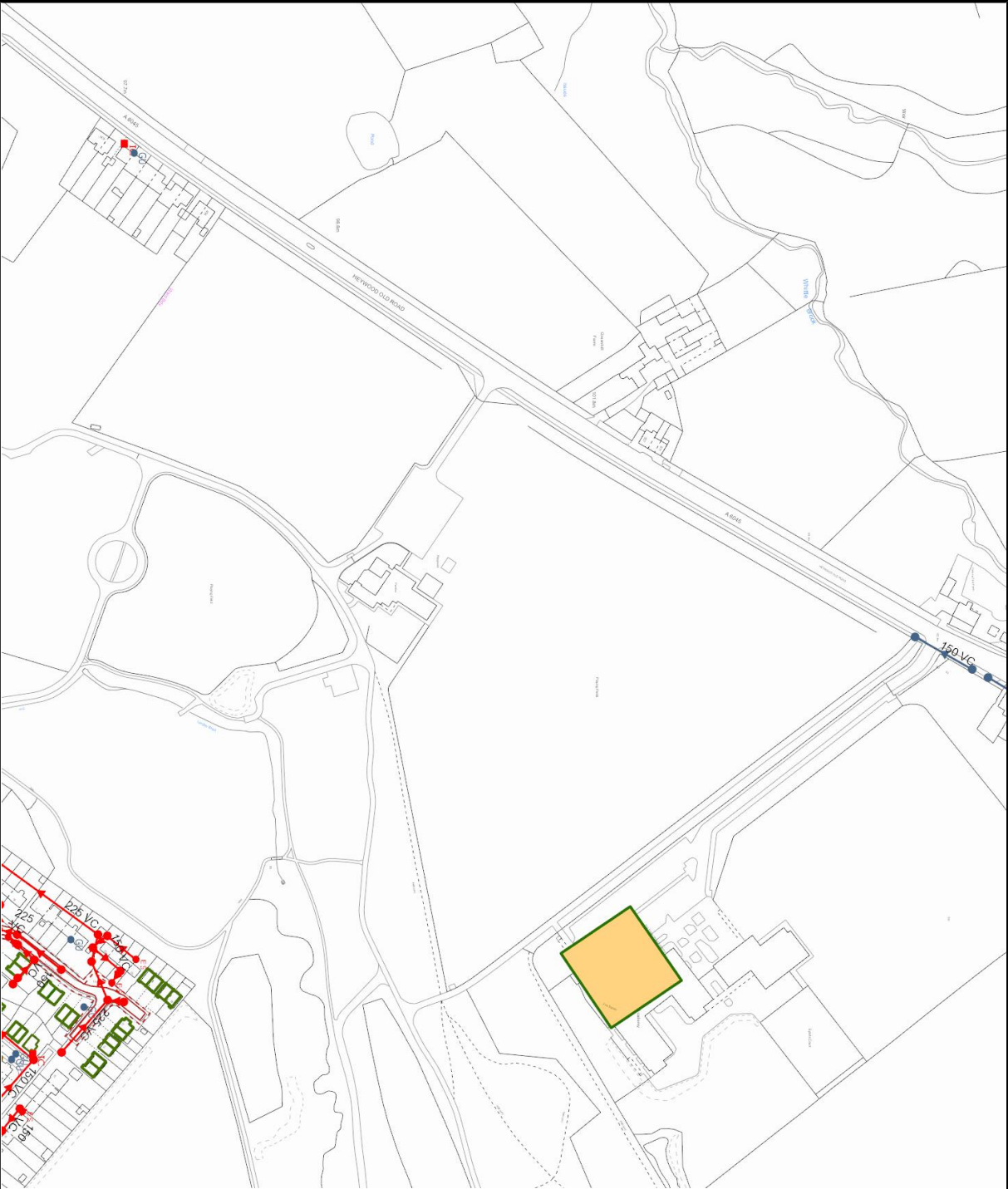
United Utilities Sewer Records

Wastewater Symbolology



All point assets follow the standard colour convention: red – combined brown - foul
blue – surface water purple - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	DNM Network Monitoring Point
Drop Shaft	Change of Characteristic
Orifice Plate	



Water for the North West

SEWER RECORDS

Address or Site Reference

BOWLEE PLAYING FIELDS
HEYWOOD OLD ROAD,
MIDDLETON,
MANCHESTER,
M24 4SD

Scale: 1:2500

Date: 06/05/2026

Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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APPENDIX F

Drainage Plan and Calculations



Rochdale AFC, Bowlee Sports Field, Heywood Old Road, Middleton

Surface Water Calculations – Network 1

Job No. 0807

Revision 00

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Page 5	Storage Structure
Pages 6 – 18	Simulation Criteria and Results for the 2-Year (+40%) Storm Event (Summer)
Pages 19 – 31	Simulation Criteria and Results for the 2-Year (+40%) Storm Event (Winter)
Pages 32 – 44	Simulation Criteria and Results for the 30-Year (+40%) Storm Event (Summer)
Pages 45 – 57	Simulation Criteria and Results for the 30-Year (+40%) Storm Event (Winter)
Pages 58 – 70	Simulation Criteria and Results for the 100-Year (+45%) Storm Event (Summer)
Pages 71 – 83	Simulation Criteria and Results for the 100-Year (+45%) Storm Event (Winter)

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Causeway	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

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
1.000	99.525	0.670	148.5	0.186	4.00	0.0	0.600	o	300	Pipe/Conduit
1.001	88.043	0.590	149.2	0.686	0.00	0.0	0.600	o	600	Pipe/Conduit
2.000	65.514	0.440	148.9	0.186	4.00	0.0	0.600	o	300	Pipe/Conduit
2.001	19.926	0.140	142.3	0.029	0.00	0.0	0.600	o	375	Pipe/Conduit
1.002	68.341	0.460	148.6	0.847	0.00	0.0	0.600	o	750	Pipe/Conduit
1.003	56.606	1.410	40.1	0.048	0.00	0.0	0.600	o	750	Pipe/Conduit
3.000	50.192	0.500	100.4	0.286	4.00	0.0	0.600	o	450	Pipe/Conduit
3.001	39.537	0.400	98.8	0.255	0.00	0.0	0.600	o	600	Pipe/Conduit
1.004	17.036	0.080	213.0	0.271	0.00	0.0	0.600	o	900	Pipe/Conduit
4.000	123.663	0.880	140.5	0.231	4.00	0.0	0.600	o	450	Pipe/Conduit
1.005	29.327	0.140	209.5	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit
1.006	16.664	0.080	208.3	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit
1.007	50.705	0.250	202.8	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)
1.000	0.00	5.29	102.670	0.186	0.0	0.0	0.0	1.29	91.0	0.0
1.001	0.00	6.02	102.000	0.872	0.0	0.0	0.0	1.99	563.0	0.0
2.000	0.00	4.85	101.850	0.186	0.0	0.0	0.0	1.29	90.9	0.0
2.001	0.00	5.07	101.410	0.215	0.0	0.0	0.0	1.52	167.5	0.0
1.002	0.00	6.52	101.270	1.934	0.0	0.0	0.0	2.29	1013.4	0.0
1.003	0.00	6.73	100.810	1.982	0.0	0.0	0.0	4.42	1954.7	0.0
3.000	0.00	4.41	100.300	0.286	0.0	0.0	0.0	2.03	322.7	0.0
3.001	0.00	4.68	99.800	0.541	0.0	0.0	0.0	2.45	692.6	0.0
1.004	0.00	6.87	99.400	2.794	0.0	0.0	0.0	2.14	1363.5	0.0
4.000	0.00	5.20	100.200	0.231	0.0	0.0	0.0	1.71	272.5	0.0
1.005	0.00	7.09	99.320	3.025	0.0	0.0	0.0	2.16	1374.8	0.0
1.006	0.00	7.22	99.180	3.025	0.0	0.0	0.0	2.17	1378.7	0.0
1.007	0.00	7.99	99.100	3.025	0.0	0.0	0.0	1.10	77.8	0.0

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK 1_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

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)
1.000	o	300	SW1.0	103.670	102.670	0.700	Open Manhole	1200
1.001	o	600	SW1.1	104.200	102.000	1.600	Open Manhole	1500
2.000	o	300	SW2.0	102.850	101.850	0.700	Open Manhole	1200
2.001	o	375	SW2.1	103.150	101.410	1.365	Open Manhole	1350
1.002	o	750	SW1.2	103.650	101.270	1.630	Open Manhole	1800
1.003	o	750	SW1.3	103.650	100.810	2.090	Open Manhole	1800
3.000	o	450	SW3.0	101.300	100.300	0.550	Open Manhole	1350
3.001	o	600	SW3.1	101.300	99.800	0.900	Open Manhole	1500
1.004	o	900	SW1.4	101.300	99.400	1.000	Open Manhole	1800
4.000	o	450	SW4.0	101.200	100.200	0.550	Open Manhole	1350
1.005	o	900	SW1.5	102.400	99.320	2.180	Open Manhole	1800
1.006	o	900	SW1.6	102.270	99.180	2.190	Open Manhole	1800
1.007	o	300	SW1.7	100.950	99.100	1.550	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)
1.000	99.525	148.5	SW1.1	104.200	102.000	1.900	Open Manhole	1500
1.001	88.043	149.2	SW1.2	103.650	101.410	1.640	Open Manhole	1800
2.000	65.514	148.9	SW2.1	103.150	101.410	1.440	Open Manhole	1350
2.001	19.926	142.3	SW1.2	103.650	101.270	2.005	Open Manhole	1800
1.002	68.341	148.6	SW1.3	103.650	100.810	2.090	Open Manhole	1800
1.003	56.606	40.1	SW1.4	101.300	99.400	1.150	Open Manhole	1800
3.000	50.192	100.4	SW3.1	101.300	99.800	1.050	Open Manhole	1500
3.001	39.537	98.8	SW1.4	101.300	99.400	1.300	Open Manhole	1800
1.004	17.036	213.0	SW1.5	102.400	99.320	2.180	Open Manhole	1800
4.000	123.663	140.5	SW1.5	102.400	99.320	2.630	Open Manhole	1800
1.005	29.327	209.5	SW1.6	102.270	99.180	2.190	Open Manhole	1800
1.006	16.664	208.3	SW1.7	100.950	99.100	0.950	Open Manhole	1800
1.007	50.705	202.8	Existing MH	100.170	98.850	1.020	Open Manhole	0

BLI Consulting		Page 4							
Norwich	Rochdale AFC								
Norfolk	Bowlee Sports Field								
.	Heywood Old Road, Middleton								
Date 09/07/2026	Designed by RSM								
File NETWORK 1_REV00.MDX	Checked by MAB								
Causeway	Network 2020.1.3								
<u>Online Controls for Storm</u>									
<u>Hydro-Brake® Optimum Manhole: SW1.7, DS/PN: 1.007, Volume (m³): 14.2</u>									
Unit Reference MD-SHE-0242-3300-1400-3300									
Design Head (m) 1.400									
Design Flow (l/s) 33.0									
Flush-Flo™ Calculated									
Objective Minimise upstream storage									
Application Surface									
Sump Available Yes									
Diameter (mm) 242									
Invert Level (m) 99.100									
Minimum Outlet Pipe Diameter (mm) 300									
Suggested Manhole Diameter (mm) 1800									
Control Points		Head (m)	Flow (l/s)	Control Points		Head (m)	Flow (l/s)		
Design Point (Calculated)		1.400	32.9	Kick-Flo®		0.977	27.7		
Flush-Flo™		0.452	32.9	Mean Flow over Head Range		-	28.0		
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)	Depth (m)	Flow (l/s)
0.100	7.9	0.800	31.2	2.000	39.1	4.000	54.6	7.000	71.6
0.200	24.5	1.000	28.0	2.200	40.9	4.500	57.8	7.500	74.1
0.300	32.0	1.200	30.6	2.400	42.7	5.000	60.8	8.000	76.4
0.400	32.8	1.400	32.9	2.600	44.3	5.500	63.7	8.500	78.7
0.500	32.8	1.600	35.1	3.000	47.5	6.000	66.5	9.000	81.0
0.600	32.5	1.800	37.1	3.500	51.2	6.500	69.1	9.500	83.1
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Storage Structures for Storm

Tank or Pond Manhole: SW1.7, DS/PN: 1.007

Invert Level (m) 99.100

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	887.3	1.800	1752.0	1.801	0.1	1.850	0.1

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 2 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.814	-0.156	0.000	0.42			37.1	OK
1.001	SW1.1	102.209	-0.391	0.000	0.26			135.5	OK
2.000	SW2.0	101.996	-0.154	0.000	0.45			39.0	OK
2.001	SW2.1	101.595	-0.190	0.000	0.31			43.0	OK
1.002	SW1.2	101.570	-0.450	0.000	0.33			298.4	OK
1.003	SW1.3	101.025	-0.535	0.000	0.18			303.8	OK
3.000	SW3.0	100.441	-0.309	0.000	0.22			63.1	OK
3.001	SW3.1	99.971	-0.429	0.000	0.18			104.4	OK
1.004	SW1.4	99.852	-0.448	0.000	0.50			431.9	OK
4.000	SW4.0	100.335	-0.315	0.000	0.18			46.4	OK
1.005	SW1.5	99.764	-0.456	0.000	0.49			469.5	OK
1.006	SW1.6	99.653	-0.427	0.000	0.54			468.5	OK
1.007	SW1.7	99.355	-0.045	0.000	0.42			31.2	OK

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Summary of Results for 30 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.804	-0.166	0.000	0.38			33.4	OK
1.001	SW1.1	102.206	-0.394	0.000	0.26			132.8	OK
2.000	SW2.0	101.985	-0.165	0.000	0.40			34.9	OK
2.001	SW2.1	101.588	-0.197	0.000	0.27			38.1	OK
1.002	SW1.2	101.568	-0.452	0.000	0.33			294.2	OK
1.003	SW1.3	101.023	-0.537	0.000	0.18			301.0	OK
3.000	SW3.0	100.433	-0.317	0.000	0.19			54.3	OK
3.001	SW3.1	99.961	-0.439	0.000	0.16			95.1	OK
1.004	SW1.4	99.844	-0.456	0.000	0.49			420.3	OK
4.000	SW4.0	100.325	-0.325	0.000	0.16			41.9	OK
1.005	SW1.5	99.757	-0.463	0.000	0.48			456.2	OK
1.006	SW1.6	99.644	-0.436	0.000	0.52			453.2	OK
1.007	SW1.7	99.420	0.020	0.000	0.44			32.2	SURCHARGED

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Summary of Results for 60 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.783	-0.187	0.000	0.28			24.8	OK
1.001	SW1.1	102.187	-0.413	0.000	0.21			108.8	OK
2.000	SW2.0	101.964	-0.186	0.000	0.29			25.2	OK
2.001	SW2.1	101.559	-0.226	0.000	0.20			28.6	OK
1.002	SW1.2	101.536	-0.484	0.000	0.27			238.7	OK
1.003	SW1.3	101.002	-0.558	0.000	0.15			244.6	OK
3.000	SW3.0	100.412	-0.338	0.000	0.14			40.0	OK
3.001	SW3.1	99.940	-0.460	0.000	0.12			70.5	OK
1.004	SW1.4	99.798	-0.502	0.000	0.40			343.7	OK
4.000	SW4.0	100.306	-0.344	0.000	0.12			30.8	OK
1.005	SW1.5	99.713	-0.507	0.000	0.39			373.2	OK
1.006	SW1.6	99.593	-0.487	0.000	0.43			376.0	OK
1.007	SW1.7	99.480	0.080	0.000	0.45			32.7	SURCHARGED

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Summary of Results for 120 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.761	-0.209	0.000	0.20			17.9	OK
1.001	SW1.1	102.161	-0.439	0.000	0.16			82.1	OK
2.000	SW2.0	101.942	-0.208	0.000	0.21			18.0	OK
2.001	SW2.1	101.530	-0.255	0.000	0.15			20.6	OK
1.002	SW1.2	101.502	-0.518	0.000	0.20			180.7	OK
1.003	SW1.3	100.978	-0.582	0.000	0.11			184.1	OK
3.000	SW3.0	100.392	-0.358	0.000	0.09			27.6	OK
3.001	SW3.1	99.920	-0.480	0.000	0.09			52.0	OK
1.004	SW1.4	99.743	-0.557	0.000	0.30			259.2	OK
4.000	SW4.0	100.288	-0.362	0.000	0.09			22.3	OK
1.005	SW1.5	99.658	-0.562	0.000	0.29			276.9	OK
1.006	SW1.6	99.552	-0.528	0.000	0.32			275.1	OK
1.007	SW1.7	99.550	0.150	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 180 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.752	-0.218	0.000	0.17			14.6	OK
1.001	SW1.1	102.144	-0.456	0.000	0.13			67.0	OK
2.000	SW2.0	101.933	-0.217	0.000	0.17			14.8	OK
2.001	SW2.1	101.512	-0.273	0.000	0.12			16.9	OK
1.002	SW1.2	101.476	-0.544	0.000	0.17			148.9	OK
1.003	SW1.3	100.962	-0.598	0.000	0.09			152.7	OK
3.000	SW3.0	100.383	-0.367	0.000	0.08			22.8	OK
3.001	SW3.1	99.906	-0.494	0.000	0.07			42.6	OK
1.004	SW1.4	99.705	-0.595	0.000	0.25			214.6	OK
4.000	SW4.0	100.278	-0.372	0.000	0.07			18.2	OK
1.005	SW1.5	99.621	-0.599	0.000	0.24			233.3	OK
1.006	SW1.6	99.583	-0.497	0.000	0.27			233.9	OK
1.007	SW1.7	99.581	0.181	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 240 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.744	-0.226	0.000	0.14			12.4	OK
1.001	SW1.1	102.133	-0.467	0.000	0.11			57.5	OK
2.000	SW2.0	101.925	-0.225	0.000	0.14			12.4	OK
2.001	SW2.1	101.500	-0.285	0.000	0.10			14.3	OK
1.002	SW1.2	101.459	-0.561	0.000	0.14			127.1	OK
1.003	SW1.3	100.949	-0.611	0.000	0.08			129.8	OK
3.000	SW3.0	100.374	-0.376	0.000	0.07			19.1	OK
3.001	SW3.1	99.896	-0.504	0.000	0.06			36.0	OK
1.004	SW1.4	99.682	-0.618	0.000	0.21			183.0	OK
4.000	SW4.0	100.270	-0.380	0.000	0.06			15.4	OK
1.005	SW1.5	99.602	-0.618	0.000	0.21			197.0	OK
1.006	SW1.6	99.599	-0.481	0.000	0.22			195.5	OK
1.007	SW1.7	99.597	0.197	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 360 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.735	-0.235	0.000	0.11			9.5	OK
1.001	SW1.1	102.117	-0.483	0.000	0.09			44.3	OK
2.000	SW2.0	101.916	-0.234	0.000	0.11			9.5	OK
2.001	SW2.1	101.485	-0.300	0.000	0.08			11.0	OK
1.002	SW1.2	101.435	-0.585	0.000	0.11			98.1	OK
1.003	SW1.3	100.928	-0.632	0.000	0.06			100.4	OK
3.000	SW3.0	100.364	-0.386	0.000	0.05			14.6	OK
3.001	SW3.1	99.883	-0.517	0.000	0.05			27.6	OK
1.004	SW1.4	99.643	-0.657	0.000	0.16			141.6	OK
4.000	SW4.0	100.261	-0.389	0.000	0.05			11.8	OK
1.005	SW1.5	99.612	-0.608	0.000	0.16			152.4	OK
1.006	SW1.6	99.609	-0.471	0.000	0.17			150.6	OK
1.007	SW1.7	99.607	0.207	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 480 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.730	-0.240	0.000	0.09			7.8	OK
1.001	SW1.1	102.104	-0.496	0.000	0.07			36.6	OK
2.000	SW2.0	101.910	-0.240	0.000	0.09			7.8	OK
2.001	SW2.1	101.475	-0.310	0.000	0.06			9.0	OK
1.002	SW1.2	101.422	-0.598	0.000	0.09			81.1	OK
1.003	SW1.3	100.917	-0.643	0.000	0.05			83.1	OK
3.000	SW3.0	100.358	-0.392	0.000	0.04			12.0	OK
3.001	SW3.1	99.876	-0.524	0.000	0.04			22.7	OK
1.004	SW1.4	99.619	-0.681	0.000	0.14			117.2	OK
4.000	SW4.0	100.256	-0.394	0.000	0.04			9.7	OK
1.005	SW1.5	99.608	-0.612	0.000	0.13			126.1	OK
1.006	SW1.6	99.605	-0.475	0.000	0.14			124.7	OK
1.007	SW1.7	99.603	0.203	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 600 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.724	-0.246	0.000	0.08			6.7	OK
1.001	SW1.1	102.095	-0.505	0.000	0.06			31.4	OK
2.000	SW2.0	101.905	-0.245	0.000	0.08			6.7	OK
2.001	SW2.1	101.468	-0.317	0.000	0.06			7.7	OK
1.002	SW1.2	101.408	-0.612	0.000	0.08			69.6	OK
1.003	SW1.3	100.909	-0.651	0.000	0.04			71.3	OK
3.000	SW3.0	100.354	-0.396	0.000	0.04			10.3	OK
3.001	SW3.1	99.871	-0.529	0.000	0.03			19.5	OK
1.004	SW1.4	99.606	-0.694	0.000	0.12			100.5	OK
4.000	SW4.0	100.252	-0.398	0.000	0.03			8.3	OK
1.005	SW1.5	99.598	-0.622	0.000	0.11			108.2	OK
1.006	SW1.6	99.595	-0.485	0.000	0.12			107.0	OK
1.007	SW1.7	99.592	0.192	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 720 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.720	-0.250	0.000	0.07			5.9	OK
1.001	SW1.1	102.089	-0.511	0.000	0.05			27.6	OK
2.000	SW2.0	101.901	-0.249	0.000	0.07			5.9	OK
2.001	SW2.1	101.463	-0.322	0.000	0.05			6.8	OK
1.002	SW1.2	101.398	-0.622	0.000	0.07			61.3	OK
1.003	SW1.3	100.903	-0.657	0.000	0.04			62.8	OK
3.000	SW3.0	100.352	-0.398	0.000	0.03			9.1	OK
3.001	SW3.1	99.867	-0.533	0.000	0.03			17.2	OK
1.004	SW1.4	99.595	-0.705	0.000	0.10			88.6	OK
4.000	SW4.0	100.250	-0.400	0.000	0.03			7.3	OK
1.005	SW1.5	99.584	-0.636	0.000	0.10			95.5	OK
1.006	SW1.6	99.580	-0.500	0.000	0.11			94.4	OK
1.007	SW1.7	99.577	0.177	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 960 minute 2 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.715	-0.255	0.000	0.05			4.8	OK
1.001	SW1.1	102.080	-0.520	0.000	0.04			22.6	OK
2.000	SW2.0	101.895	-0.255	0.000	0.06			4.8	OK
2.001	SW2.1	101.458	-0.327	0.000	0.04			5.6	OK
1.002	SW1.2	101.384	-0.636	0.000	0.06			50.2	OK
1.003	SW1.3	100.896	-0.664	0.000	0.03			51.4	OK
3.000	SW3.0	100.348	-0.402	0.000	0.03			7.4	OK
3.001	SW3.1	99.862	-0.538	0.000	0.02			14.0	OK
1.004	SW1.4	99.575	-0.725	0.000	0.08			72.5	OK
4.000	SW4.0	100.246	-0.404	0.000	0.02			6.0	OK
1.005	SW1.5	99.554	-0.666	0.000	0.08			78.2	OK
1.006	SW1.6	99.548	-0.532	0.000	0.09			77.4	OK
1.007	SW1.7	99.545	0.145	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 1440 minute 2 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.709	-0.261	0.000	0.04		3.6	OK
1.001	SW1.1	102.070	-0.530	0.000	0.03		17.1	OK
2.000	SW2.0	101.889	-0.261	0.000	0.04		3.6	OK
2.001	SW2.1	101.452	-0.333	0.000	0.03		4.2	OK
1.002	SW1.2	101.369	-0.651	0.000	0.04		37.8	OK
1.003	SW1.3	100.887	-0.673	0.000	0.02		38.8	OK
3.000	SW3.0	100.341	-0.409	0.000	0.02		5.6	OK
3.001	SW3.1	99.851	-0.549	0.000	0.02		10.6	OK
1.004	SW1.4	99.547	-0.753	0.000	0.06		54.6	OK
4.000	SW4.0	100.237	-0.413	0.000	0.02		4.5	OK
1.005	SW1.5	99.501	-0.719	0.000	0.06		59.0	OK
1.006	SW1.6	99.482	-0.598	0.000	0.07		58.5	OK
1.007	SW1.7	99.480	0.080	0.000	0.45		32.7	SURCHARGED

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 2 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 2 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.814	-0.156	0.000	0.43			37.8	OK
1.001	SW1.1	102.219	-0.381	0.000	0.28			147.5	OK
2.000	SW2.0	101.996	-0.154	0.000	0.45			39.4	OK
2.001	SW2.1	101.609	-0.176	0.000	0.31			43.3	OK
1.002	SW1.2	101.584	-0.436	0.000	0.36			323.9	OK
1.003	SW1.3	101.036	-0.524	0.000	0.20			330.2	OK
3.000	SW3.0	100.441	-0.309	0.000	0.22			63.2	OK
3.001	SW3.1	99.975	-0.425	0.000	0.18			106.7	OK
1.004	SW1.4	99.870	-0.430	0.000	0.54			465.0	OK
4.000	SW4.0	100.335	-0.315	0.000	0.18			47.3	OK
1.005	SW1.5	99.785	-0.435	0.000	0.52			501.0	OK
1.006	SW1.6	99.673	-0.407	0.000	0.58			504.1	OK
1.007	SW1.7	99.384	-0.016	0.000	0.43			31.7	OK

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Summary of Results for 30 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.794	-0.176	0.000	0.34		30.1	OK
1.001	SW1.1	102.204	-0.396	0.000	0.25		130.8	OK
2.000	SW2.0	101.975	-0.175	0.000	0.36		30.8	OK
2.001	SW2.1	101.584	-0.201	0.000	0.24		34.2	OK
1.002	SW1.2	101.564	-0.456	0.000	0.32		289.3	OK
1.003	SW1.3	101.021	-0.539	0.000	0.18		295.9	OK
3.000	SW3.0	100.422	-0.328	0.000	0.16		47.7	OK
3.001	SW3.1	99.953	-0.447	0.000	0.15		86.5	OK
1.004	SW1.4	99.838	-0.462	0.000	0.48		414.2	OK
4.000	SW4.0	100.315	-0.335	0.000	0.14		37.6	OK
1.005	SW1.5	99.752	-0.468	0.000	0.47		445.5	OK
1.006	SW1.6	99.638	-0.442	0.000	0.51		447.1	OK
1.007	SW1.7	99.458	0.058	0.000	0.44		32.6	SURCHARGED

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Summary of Results for 60 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.769	-0.201	0.000	0.23		20.6	OK
1.001	SW1.1	102.172	-0.428	0.000	0.18		94.2	OK
2.000	SW2.0	101.950	-0.200	0.000	0.24		20.7	OK
2.001	SW2.1	101.542	-0.243	0.000	0.17		23.8	OK
1.002	SW1.2	101.516	-0.504	0.000	0.23		207.9	OK
1.003	SW1.3	100.988	-0.572	0.000	0.13		213.4	OK
3.000	SW3.0	100.399	-0.351	0.000	0.11		32.2	OK
3.001	SW3.1	99.928	-0.472	0.000	0.10		59.5	OK
1.004	SW1.4	99.767	-0.533	0.000	0.35		299.6	OK
4.000	SW4.0	100.295	-0.355	0.000	0.10		25.6	OK
1.005	SW1.5	99.683	-0.537	0.000	0.34		325.9	OK
1.006	SW1.6	99.560	-0.520	0.000	0.38		326.5	OK
1.007	SW1.7	99.526	0.126	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 120 minute 2 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.750	-0.220	0.000	0.16			14.1	OK
1.001	SW1.1	102.141	-0.459	0.000	0.13			65.7	OK
2.000	SW2.0	101.931	-0.219	0.000	0.16			14.1	OK
2.001	SW2.1	101.509	-0.276	0.000	0.12			16.3	OK
1.002	SW1.2	101.473	-0.547	0.000	0.16			145.4	OK
1.003	SW1.3	100.961	-0.599	0.000	0.09			148.7	OK
3.000	SW3.0	100.380	-0.370	0.000	0.07			21.7	OK
3.001	SW3.1	99.903	-0.497	0.000	0.07			41.0	OK
1.004	SW1.4	99.701	-0.599	0.000	0.24			209.7	OK
4.000	SW4.0	100.276	-0.374	0.000	0.07			17.5	OK
1.005	SW1.5	99.617	-0.603	0.000	0.24			226.3	OK
1.006	SW1.6	99.608	-0.472	0.000	0.26			225.5	OK
1.007	SW1.7	99.605	0.205	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 180 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
	US/MH	Level	Depth	Volume	Flow / Overflow	Time	Flow	
PN	Name	(m)	(m)	(m ³)	Cap. (l/s)	(mins)	(l/s)	Status
1.000	SW1.0	102.740	-0.230	0.000	0.13		11.1	OK
1.001	SW1.1	102.126	-0.474	0.000	0.10		51.7	OK
2.000	SW2.0	101.921	-0.229	0.000	0.13		11.1	OK
2.001	SW2.1	101.493	-0.292	0.000	0.09		12.8	OK
1.002	SW1.2	101.448	-0.572	0.000	0.13		114.7	OK
1.003	SW1.3	100.940	-0.620	0.000	0.07		117.6	OK
3.000	SW3.0	100.370	-0.380	0.000	0.06		17.1	OK
3.001	SW3.1	99.890	-0.510	0.000	0.05		32.2	OK
1.004	SW1.4	99.666	-0.634	0.000	0.19		165.6	OK
4.000	SW4.0	100.266	-0.384	0.000	0.05		13.8	OK
1.005	SW1.5	99.640	-0.580	0.000	0.19		179.4	OK
1.006	SW1.6	99.637	-0.443	0.000	0.20		177.5	OK
1.007	SW1.7	99.635	0.235	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 240 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.734	-0.236	0.000	0.10		9.2	OK
1.001	SW1.1	102.115	-0.485	0.000	0.08		43.2	OK
2.000	SW2.0	101.915	-0.235	0.000	0.11		9.2	OK
2.001	SW2.1	101.484	-0.301	0.000	0.08		10.7	OK
1.002	SW1.2	101.433	-0.587	0.000	0.11		95.8	OK
1.003	SW1.3	100.927	-0.633	0.000	0.06		98.1	OK
3.000	SW3.0	100.363	-0.387	0.000	0.05		14.2	OK
3.001	SW3.1	99.882	-0.518	0.000	0.05		26.9	OK
1.004	SW1.4	99.658	-0.642	0.000	0.16		138.3	OK
4.000	SW4.0	100.260	-0.390	0.000	0.04		11.5	OK
1.005	SW1.5	99.655	-0.565	0.000	0.16		148.7	OK
1.006	SW1.6	99.653	-0.427	0.000	0.17		146.9	OK
1.007	SW1.7	99.650	0.250	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 360 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.726	-0.244	0.000	0.08		7.1	OK
1.001	SW1.1	102.098	-0.502	0.000	0.06		33.1	OK
2.000	SW2.0	101.907	-0.243	0.000	0.08		7.1	OK
2.001	SW2.1	101.471	-0.314	0.000	0.06		8.2	OK
1.002	SW1.2	101.413	-0.607	0.000	0.08		73.3	OK
1.003	SW1.3	100.911	-0.649	0.000	0.04		75.2	OK
3.000	SW3.0	100.356	-0.394	0.000	0.04		10.9	OK
3.001	SW3.1	99.872	-0.528	0.000	0.03		20.5	OK
1.004	SW1.4	99.662	-0.638	0.000	0.12		105.9	OK
4.000	SW4.0	100.253	-0.397	0.000	0.03		8.8	OK
1.005	SW1.5	99.660	-0.560	0.000	0.12		113.9	OK
1.006	SW1.6	99.657	-0.423	0.000	0.13		112.5	OK
1.007	SW1.7	99.654	0.254	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 480 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.720	-0.250	0.000	0.07		5.8	OK
1.001	SW1.1	102.088	-0.512	0.000	0.05		27.2	OK
2.000	SW2.0	101.900	-0.250	0.000	0.07		5.8	OK
2.001	SW2.1	101.463	-0.322	0.000	0.05		6.7	OK
1.002	SW1.2	101.397	-0.623	0.000	0.07		60.4	OK
1.003	SW1.3	100.903	-0.657	0.000	0.04		61.9	OK
3.000	SW3.0	100.351	-0.399	0.000	0.03		8.9	OK
3.001	SW3.1	99.867	-0.533	0.000	0.03		16.9	OK
1.004	SW1.4	99.650	-0.650	0.000	0.10		87.1	OK
4.000	SW4.0	100.249	-0.401	0.000	0.03		7.2	OK
1.005	SW1.5	99.647	-0.573	0.000	0.10		93.8	OK
1.006	SW1.6	99.644	-0.436	0.000	0.11		92.7	OK
1.007	SW1.7	99.641	0.241	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 600 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.716	-0.254	0.000	0.06		5.0	OK
1.001	SW1.1	102.081	-0.519	0.000	0.04		23.4	OK
2.000	SW2.0	101.896	-0.254	0.000	0.06		5.0	OK
2.001	SW2.1	101.459	-0.326	0.000	0.04		5.8	OK
1.002	SW1.2	101.386	-0.634	0.000	0.06		51.8	OK
1.003	SW1.3	100.897	-0.663	0.000	0.03		53.1	OK
3.000	SW3.0	100.348	-0.402	0.000	0.03		7.7	OK
3.001	SW3.1	99.863	-0.537	0.000	0.02		14.5	OK
1.004	SW1.4	99.629	-0.671	0.000	0.09		74.7	OK
4.000	SW4.0	100.247	-0.403	0.000	0.02		6.2	OK
1.005	SW1.5	99.626	-0.594	0.000	0.08		80.6	OK
1.006	SW1.6	99.623	-0.457	0.000	0.09		79.7	OK
1.007	SW1.7	99.620	0.220	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 720 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.713	-0.257	0.000	0.05		4.4	OK
1.001	SW1.1	102.076	-0.524	0.000	0.04		20.6	OK
2.000	SW2.0	101.893	-0.257	0.000	0.05		4.4	OK
2.001	SW2.1	101.456	-0.329	0.000	0.04		5.1	OK
1.002	SW1.2	101.379	-0.641	0.000	0.05		45.7	OK
1.003	SW1.3	100.892	-0.668	0.000	0.03		46.8	OK
3.000	SW3.0	100.346	-0.404	0.000	0.02		6.8	OK
3.001	SW3.1	99.860	-0.540	0.000	0.02		12.8	OK
1.004	SW1.4	99.606	-0.694	0.000	0.08		65.9	OK
4.000	SW4.0	100.244	-0.406	0.000	0.02		5.5	OK
1.005	SW1.5	99.600	-0.620	0.000	0.07		71.0	OK
1.006	SW1.6	99.597	-0.483	0.000	0.08		70.3	OK
1.007	SW1.7	99.595	0.195	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 960 minute 2 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.709	-0.261	0.000	0.04		3.6	OK
1.001	SW1.1	102.070	-0.530	0.000	0.03		16.8	OK
2.000	SW2.0	101.889	-0.261	0.000	0.04		3.6	OK
2.001	SW2.1	101.452	-0.333	0.000	0.03		4.2	OK
1.002	SW1.2	101.368	-0.652	0.000	0.04		37.3	OK
1.003	SW1.3	100.887	-0.673	0.000	0.02		38.3	OK
3.000	SW3.0	100.340	-0.410	0.000	0.02		5.5	OK
3.001	SW3.1	99.850	-0.550	0.000	0.02		10.4	OK
1.004	SW1.4	99.564	-0.736	0.000	0.06		53.9	OK
4.000	SW4.0	100.236	-0.414	0.000	0.02		4.5	OK
1.005	SW1.5	99.548	-0.672	0.000	0.06		58.2	OK
1.006	SW1.6	99.542	-0.538	0.000	0.07		57.7	OK
1.007	SW1.7	99.540	0.140	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 1440 minute 2 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.704	-0.266	0.000	0.03			2.7	OK
1.001	SW1.1	102.063	-0.537	0.000	0.02			12.7	OK
2.000	SW2.0	101.884	-0.266	0.000	0.03			2.7	OK
2.001	SW2.1	101.448	-0.337	0.000	0.02			3.1	OK
1.002	SW1.2	101.357	-0.663	0.000	0.03			28.2	OK
1.003	SW1.3	100.871	-0.689	0.000	0.02			28.9	OK
3.000	SW3.0	100.330	-0.420	0.000	0.01			4.2	OK
3.001	SW3.1	99.838	-0.562	0.000	0.01			7.9	OK
1.004	SW1.4	99.525	-0.775	0.000	0.05			40.7	OK
4.000	SW4.0	100.227	-0.423	0.000	0.01			3.4	OK
1.005	SW1.5	99.472	-0.748	0.000	0.05			44.0	OK
1.006	SW1.6	99.442	-0.638	0.000	0.05			43.8	OK
1.007	SW1.7	99.440	0.040	0.000	0.44			32.4	SURCHARGED

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<u>Simulation Criteria for Storm</u> <table><tr><td>Volumetric Runoff Coeff</td><td>0.750</td><td>Foul Sewage per hectare (l/s)</td><td>0.000</td></tr><tr><td>Areal Reduction Factor</td><td>1.000</td><td>Additional Flow - % of Total Flow</td><td>40.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>MADD Factor * 10m³/ha Storage</td><td>0.000</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Run Time (mins)</td><td>60</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Output Interval (mins)</td><td>1</td></tr></table> Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> <table><tr><td>Rainfall Model</td><td>FEH</td><td>Summer Storms</td><td>Yes</td></tr><tr><td>Return Period (years)</td><td>30</td><td>Winter Storms</td><td>No</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Site Location</td><td>GB 385036 407187 SD 85036 07187</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>Data Type</td><td></td><td>Point Storm Duration (mins)</td><td>15</td></tr></table>			Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000	Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000	Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000	Hot Start Level (mm)	0	Run Time (mins)	60	Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1	Rainfall Model	FEH	Summer Storms	Yes	Return Period (years)	30	Winter Storms	No	FEH Rainfall Version	2013	Cv (Summer)	0.750	Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840	Data Type		Point Storm Duration (mins)	15
Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000																																							
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000																																							
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000																																							
Hot Start Level (mm)	0	Run Time (mins)	60																																							
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1																																							
Rainfall Model	FEH	Summer Storms	Yes																																							
Return Period (years)	30	Winter Storms	No																																							
FEH Rainfall Version	2013	Cv (Summer)	0.750																																							
Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840																																							
Data Type		Point Storm Duration (mins)	15																																							
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Summary of Results for 15 minute 30 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	103.047	0.077	0.000	0.93			82.1	SURCHARGED
1.001	SW1.1	102.350	-0.250	0.000	0.62			320.3	OK
2.000	SW2.0	102.301	0.151	0.000	0.97			83.8	SURCHARGED
2.001	SW2.1	101.840	0.055	0.000	0.67			94.2	SURCHARGED
1.002	SW1.2	101.778	-0.242	0.000	0.78			690.6	OK
1.003	SW1.3	101.153	-0.407	0.000	0.42			711.7	OK
3.000	SW3.0	100.546	-0.204	0.000	0.47			138.1	OK
3.001	SW3.1	100.478	0.078	0.000	0.37			214.9	SURCHARGED
1.004	SW1.4	100.443	0.143	0.000	1.11			960.1	SURCHARGED
4.000	SW4.0	100.406	-0.244	0.000	0.39			101.5	OK
1.005	SW1.5	100.354	0.134	0.000	1.03			987.1	SURCHARGED
1.006	SW1.6	100.157	0.077	0.000	1.14			993.0	SURCHARGED
1.007	SW1.7	99.628	0.228	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 30 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.900	-0.070	0.000	0.84		74.4	OK
1.001	SW1.1	102.339	-0.261	0.000	0.59		308.9	OK
2.000	SW2.0	102.169	0.019	0.000	0.88		76.5	SURCHARGED
2.001	SW2.1	101.821	0.036	0.000	0.61		85.9	SURCHARGED
1.002	SW1.2	101.768	-0.252	0.000	0.76		677.7	OK
1.003	SW1.3	101.145	-0.415	0.000	0.41		690.2	OK
3.000	SW3.0	100.504	-0.246	0.000	0.41		120.9	OK
3.001	SW3.1	100.417	0.017	0.000	0.35		206.1	SURCHARGED
1.004	SW1.4	100.384	0.084	0.000	1.09		946.6	SURCHARGED
4.000	SW4.0	100.393	-0.257	0.000	0.36		93.3	OK
1.005	SW1.5	100.302	0.082	0.000	1.01		964.5	SURCHARGED
1.006	SW1.6	100.136	0.056	0.000	1.10		957.2	SURCHARGED
1.007	SW1.7	99.773	0.373	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 60 minute 30 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.853	-0.117	0.000	0.63			55.8	OK
1.001	SW1.1	102.296	-0.304	0.000	0.48			250.4	OK
2.000	SW2.0	102.035	-0.115	0.000	0.65			56.7	OK
2.001	SW2.1	101.739	-0.046	0.000	0.46			64.9	OK
1.002	SW1.2	101.698	-0.322	0.000	0.62			551.8	OK
1.003	SW1.3	101.110	-0.450	0.000	0.34			563.0	OK
3.000	SW3.0	100.474	-0.276	0.000	0.31			90.2	OK
3.001	SW3.1	100.116	-0.284	0.000	0.28			163.8	OK
1.004	SW1.4	100.079	-0.221	0.000	0.92			796.4	OK
4.000	SW4.0	100.364	-0.286	0.000	0.27			69.3	OK
1.005	SW1.5	99.999	-0.221	0.000	0.89			850.0	OK
1.006	SW1.6	99.922	-0.158	0.000	0.98			851.6	OK
1.007	SW1.7	99.920	0.520	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 120 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.803	-0.167	0.000	0.41		36.0	OK
1.001	SW1.1	102.235	-0.365	0.000	0.32		166.4	OK
2.000	SW2.0	101.985	-0.165	0.000	0.42		36.2	OK
2.001	SW2.1	101.634	-0.151	0.000	0.29		41.1	OK
1.002	SW1.2	101.609	-0.411	0.000	0.41		366.8	OK
1.003	SW1.3	101.052	-0.508	0.000	0.22		374.2	OK
3.000	SW3.0	100.432	-0.318	0.000	0.19		55.6	OK
3.001	SW3.1	100.017	-0.383	0.000	0.18		105.0	OK
1.004	SW1.4	100.015	-0.285	0.000	0.61		527.9	OK
4.000	SW4.0	100.325	-0.325	0.000	0.17		44.8	OK
1.005	SW1.5	100.011	-0.209	0.000	0.59		567.0	OK
1.006	SW1.6	100.006	-0.074	0.000	0.65		562.6	OK
1.007	SW1.7	100.002	0.602	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 180 minute 30 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.787	-0.183	0.000	0.32			28.1	OK
1.001	SW1.1	102.204	-0.396	0.000	0.25			128.7	OK
2.000	SW2.0	101.968	-0.182	0.000	0.33			28.3	OK
2.001	SW2.1	101.584	-0.201	0.000	0.23			32.3	OK
1.002	SW1.2	101.564	-0.456	0.000	0.32			283.8	OK
1.003	SW1.3	101.022	-0.538	0.000	0.17			291.6	OK
3.000	SW3.0	100.416	-0.334	0.000	0.15			43.8	OK
3.001	SW3.1	100.055	-0.345	0.000	0.14			82.5	OK
1.004	SW1.4	100.054	-0.246	0.000	0.47			409.1	OK
4.000	SW4.0	100.310	-0.340	0.000	0.13			34.9	OK
1.005	SW1.5	100.051	-0.169	0.000	0.46			436.8	OK
1.006	SW1.6	100.046	-0.034	0.000	0.49			430.2	OK
1.007	SW1.7	100.036	0.636	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 240 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.774	-0.196	0.000	0.26		23.1	OK
1.001	SW1.1	102.185	-0.415	0.000	0.21		107.3	OK
2.000	SW2.0	101.955	-0.195	0.000	0.27		23.1	OK
2.001	SW2.1	101.556	-0.229	0.000	0.19		26.6	OK
1.002	SW1.2	101.534	-0.486	0.000	0.27		237.4	OK
1.003	SW1.3	101.000	-0.560	0.000	0.14		242.8	OK
3.000	SW3.0	100.404	-0.346	0.000	0.12		35.5	OK
3.001	SW3.1	100.071	-0.329	0.000	0.11		67.1	OK
1.004	SW1.4	100.070	-0.230	0.000	0.39		339.6	OK
4.000	SW4.0	100.299	-0.351	0.000	0.11		28.7	OK
1.005	SW1.5	100.068	-0.152	0.000	0.38		361.1	OK
1.006	SW1.6	100.064	-0.016	0.000	0.41		353.9	OK
1.007	SW1.7	100.051	0.651	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 360 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.759	-0.211	0.000	0.19		17.1	OK
1.001	SW1.1	102.156	-0.444	0.000	0.15		80.0	OK
2.000	SW2.0	101.940	-0.210	0.000	0.20		17.1	OK
2.001	SW2.1	101.526	-0.259	0.000	0.14		19.8	OK
1.002	SW1.2	101.496	-0.524	0.000	0.20		177.3	OK
1.003	SW1.3	100.974	-0.586	0.000	0.11		181.5	OK
3.000	SW3.0	100.391	-0.359	0.000	0.09		26.3	OK
3.001	SW3.1	100.072	-0.328	0.000	0.08		49.7	OK
1.004	SW1.4	100.071	-0.229	0.000	0.29		252.8	OK
4.000	SW4.0	100.285	-0.365	0.000	0.08		21.2	OK
1.005	SW1.5	100.069	-0.151	0.000	0.28		268.2	OK
1.006	SW1.6	100.065	-0.015	0.000	0.30		262.8	OK
1.007	SW1.7	100.054	0.654	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 480 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.749	-0.221	0.000	0.16		13.9	OK
1.001	SW1.1	102.140	-0.460	0.000	0.12		65.0	OK
2.000	SW2.0	101.930	-0.220	0.000	0.16		13.9	OK
2.001	SW2.1	101.507	-0.278	0.000	0.11		16.0	OK
1.002	SW1.2	101.471	-0.549	0.000	0.16		144.1	OK
1.003	SW1.3	100.959	-0.601	0.000	0.09		147.7	OK
3.000	SW3.0	100.379	-0.371	0.000	0.07		21.3	OK
3.001	SW3.1	100.066	-0.334	0.000	0.07		40.3	OK
1.004	SW1.4	100.065	-0.235	0.000	0.24		205.3	OK
4.000	SW4.0	100.275	-0.375	0.000	0.07		17.2	OK
1.005	SW1.5	100.063	-0.157	0.000	0.23		217.7	OK
1.006	SW1.6	100.059	-0.021	0.000	0.25		213.5	OK
1.007	SW1.7	100.049	0.649	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 600 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.742	-0.228	0.000	0.13		11.8	OK
1.001	SW1.1	102.130	-0.470	0.000	0.11		55.3	OK
2.000	SW2.0	101.923	-0.227	0.000	0.14		11.8	OK
2.001	SW2.1	101.496	-0.289	0.000	0.10		13.6	OK
1.002	SW1.2	101.454	-0.566	0.000	0.14		122.6	OK
1.003	SW1.3	100.945	-0.615	0.000	0.07		125.6	OK
3.000	SW3.0	100.372	-0.378	0.000	0.06		18.1	OK
3.001	SW3.1	100.055	-0.345	0.000	0.06		34.3	OK
1.004	SW1.4	100.054	-0.246	0.000	0.20		174.4	OK
4.000	SW4.0	100.268	-0.382	0.000	0.06		14.6	OK
1.005	SW1.5	100.052	-0.168	0.000	0.19		184.9	OK
1.006	SW1.6	100.048	-0.032	0.000	0.21		181.5	OK
1.007	SW1.7	100.040	0.640	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 720 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.738	-0.232	0.000	0.12		10.3	OK
1.001	SW1.1	102.123	-0.477	0.000	0.09		48.5	OK
2.000	SW2.0	101.918	-0.232	0.000	0.12		10.3	OK
2.001	SW2.1	101.489	-0.296	0.000	0.09		11.9	OK
1.002	SW1.2	101.442	-0.578	0.000	0.12		107.5	OK
1.003	SW1.3	100.935	-0.625	0.000	0.07		110.2	OK
3.000	SW3.0	100.367	-0.383	0.000	0.05		15.9	OK
3.001	SW3.1	100.042	-0.358	0.000	0.05		30.0	OK
1.004	SW1.4	100.041	-0.259	0.000	0.18		152.9	OK
4.000	SW4.0	100.264	-0.386	0.000	0.05		12.8	OK
1.005	SW1.5	100.039	-0.181	0.000	0.17		162.1	OK
1.006	SW1.6	100.035	-0.045	0.000	0.18		159.2	OK
1.007	SW1.7	100.029	0.629	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 960 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.732	-0.238	0.000	0.10		8.4	OK
1.001	SW1.1	102.109	-0.491	0.000	0.08		39.5	OK
2.000	SW2.0	101.912	-0.238	0.000	0.10		8.4	OK
2.001	SW2.1	101.479	-0.306	0.000	0.07		9.7	OK
1.002	SW1.2	101.427	-0.593	0.000	0.10		87.5	OK
1.003	SW1.3	100.921	-0.639	0.000	0.05		89.7	OK
3.000	SW3.0	100.360	-0.390	0.000	0.04		12.9	OK
3.001	SW3.1	100.012	-0.388	0.000	0.04		24.5	OK
1.004	SW1.4	100.010	-0.290	0.000	0.14		124.5	OK
4.000	SW4.0	100.258	-0.392	0.000	0.04		10.5	OK
1.005	SW1.5	100.008	-0.212	0.000	0.14		132.2	OK
1.006	SW1.6	100.005	-0.075	0.000	0.15		129.9	OK
1.007	SW1.7	100.001	0.601	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 1440 minute 30 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.723	-0.247	0.000	0.07		6.3	OK
1.001	SW1.1	102.092	-0.508	0.000	0.06		29.7	OK
2.000	SW2.0	101.903	-0.247	0.000	0.07		6.3	OK
2.001	SW2.1	101.466	-0.319	0.000	0.05		7.3	OK
1.002	SW1.2	101.404	-0.616	0.000	0.07		65.9	OK
1.003	SW1.3	100.906	-0.654	0.000	0.04		67.5	OK
3.000	SW3.0	100.353	-0.397	0.000	0.03		9.7	OK
3.001	SW3.1	99.952	-0.448	0.000	0.03		18.4	OK
1.004	SW1.4	99.950	-0.350	0.000	0.11		94.1	OK
4.000	SW4.0	100.251	-0.399	0.000	0.03		7.9	OK
1.005	SW1.5	99.948	-0.272	0.000	0.10		100.2	OK
1.006	SW1.6	99.945	-0.135	0.000	0.11		98.6	OK
1.007	SW1.7	99.943	0.543	0.000	0.45		32.8	SURCHARGED

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 30 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	103.057	0.087	0.000	0.94		83.4	SURCHARGED
1.001	SW1.1	102.361	-0.239	0.000	0.65		337.5	OK
2.000	SW2.0	102.319	0.169	0.000	0.97		84.6	SURCHARGED
2.001	SW2.1	101.864	0.079	0.000	0.67		94.4	SURCHARGED
1.002	SW1.2	101.800	-0.220	0.000	0.83		738.0	OK
1.003	SW1.3	101.164	-0.396	0.000	0.45		756.7	OK
3.000	SW3.0	100.695	-0.055	0.000	0.47		138.3	OK
3.001	SW3.1	100.648	0.248	0.000	0.37		215.8	SURCHARGED
1.004	SW1.4	100.608	0.308	0.000	1.15		992.0	SURCHARGED
4.000	SW4.0	100.475	-0.175	0.000	0.39		103.0	OK
1.005	SW1.5	100.413	0.193	0.000	1.11		1063.8	SURCHARGED
1.006	SW1.6	100.183	0.103	0.000	1.23		1069.1	SURCHARGED
1.007	SW1.7	99.684	0.284	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 30 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.873	-0.097	0.000	0.76		67.0	OK
1.001	SW1.1	102.327	-0.273	0.000	0.57		295.7	OK
2.000	SW2.0	102.065	-0.085	0.000	0.79		68.4	OK
2.001	SW2.1	101.796	0.011	0.000	0.55		76.8	SURCHARGED
1.002	SW1.2	101.750	-0.270	0.000	0.73		649.2	OK
1.003	SW1.3	101.138	-0.422	0.000	0.40		665.4	OK
3.000	SW3.0	100.488	-0.262	0.000	0.36		106.2	OK
3.001	SW3.1	100.358	-0.042	0.000	0.32		186.9	OK
1.004	SW1.4	100.320	0.020	0.000	1.04		902.3	SURCHARGED
4.000	SW4.0	100.379	-0.271	0.000	0.32		83.6	OK
1.005	SW1.5	100.236	0.016	0.000	1.00		956.3	SURCHARGED
1.006	SW1.6	100.080	0.000	0.000	1.10		955.9	SURCHARGED
1.007	SW1.7	99.844	0.444	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 60 minute 30 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.827	-0.143	0.000	0.53			46.4	OK
1.001	SW1.1	102.268	-0.332	0.000	0.41			213.9	OK
2.000	SW2.0	102.009	-0.141	0.000	0.54			46.6	OK
2.001	SW2.1	101.691	-0.094	0.000	0.38			53.6	OK
1.002	SW1.2	101.660	-0.360	0.000	0.53			472.7	OK
1.003	SW1.3	101.085	-0.475	0.000	0.29			483.3	OK
3.000	SW3.0	100.452	-0.298	0.000	0.25			72.5	OK
3.001	SW3.1	100.053	-0.347	0.000	0.23			134.9	OK
1.004	SW1.4	100.020	-0.280	0.000	0.79			681.6	OK
4.000	SW4.0	100.344	-0.306	0.000	0.22			57.6	OK
1.005	SW1.5	100.014	-0.206	0.000	0.77			733.4	OK
1.006	SW1.6	100.009	-0.071	0.000	0.85			737.0	OK
1.007	SW1.7	100.005	0.605	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 120 minute 30 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.787	-0.183	0.000	0.32			28.4	OK
1.001	SW1.1	102.205	-0.395	0.000	0.25			132.5	OK
2.000	SW2.0	101.968	-0.182	0.000	0.33			28.4	OK
2.001	SW2.1	101.586	-0.199	0.000	0.23			32.7	OK
1.002	SW1.2	101.567	-0.453	0.000	0.33			293.3	OK
1.003	SW1.3	101.023	-0.537	0.000	0.18			300.2	OK
3.000	SW3.0	100.415	-0.335	0.000	0.15			43.7	OK
3.001	SW3.1	100.118	-0.282	0.000	0.14			82.6	OK
1.004	SW1.4	100.116	-0.184	0.000	0.49			421.9	OK
4.000	SW4.0	100.309	-0.341	0.000	0.13			35.3	OK
1.005	SW1.5	100.111	-0.109	0.000	0.47			449.8	OK
1.006	SW1.6	100.105	0.025	0.000	0.51			441.7	SURCHARGED
1.007	SW1.7	100.103	0.703	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 180 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.769	-0.201	0.000	0.24		21.2	OK
1.001	SW1.1	102.177	-0.423	0.000	0.19		98.9	OK
2.000	SW2.0	101.950	-0.200	0.000	0.24		21.3	OK
2.001	SW2.1	101.547	-0.238	0.000	0.17		24.5	OK
1.002	SW1.2	101.522	-0.498	0.000	0.25		219.3	OK
1.003	SW1.3	100.992	-0.568	0.000	0.13		224.9	OK
3.000	SW3.0	100.400	-0.350	0.000	0.11		32.7	OK
3.001	SW3.1	100.166	-0.234	0.000	0.10		61.8	OK
1.004	SW1.4	100.164	-0.136	0.000	0.36		312.8	OK
4.000	SW4.0	100.295	-0.355	0.000	0.10		26.4	OK
1.005	SW1.5	100.161	-0.059	0.000	0.35		331.9	OK
1.006	SW1.6	100.150	0.070	0.000	0.37		324.8	SURCHARGED
1.007	SW1.7	100.147	0.747	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 240 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.759	-0.211	0.000	0.19		17.2	OK
1.001	SW1.1	102.157	-0.443	0.000	0.15		80.5	OK
2.000	SW2.0	101.940	-0.210	0.000	0.20		17.2	OK
2.001	SW2.1	101.527	-0.258	0.000	0.14		19.9	OK
1.002	SW1.2	101.497	-0.523	0.000	0.20		178.4	OK
1.003	SW1.3	100.974	-0.586	0.000	0.11		182.8	OK
3.000	SW3.0	100.391	-0.359	0.000	0.09		26.4	OK
3.001	SW3.1	100.192	-0.208	0.000	0.08		49.9	OK
1.004	SW1.4	100.191	-0.109	0.000	0.29		253.8	OK
4.000	SW4.0	100.285	-0.365	0.000	0.08		21.4	OK
1.005	SW1.5	100.187	-0.033	0.000	0.28		269.0	OK
1.006	SW1.6	100.171	0.091	0.000	0.30		263.6	SURCHARGED
1.007	SW1.7	100.169	0.769	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 360 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
	US/MH	Level	Depth	Volume	Flow / Overflow	Time	Flow	
PN	Name	(m)	(m)	(m ³)	Cap. (l/s)	(mins)	(l/s)	Status
1.000	SW1.0	102.745	-0.225	0.000	0.14		12.7	OK
1.001	SW1.1	102.135	-0.465	0.000	0.11		59.7	OK
2.000	SW2.0	101.926	-0.224	0.000	0.15		12.7	OK
2.001	SW2.1	101.501	-0.284	0.000	0.10		14.7	OK
1.002	SW1.2	101.462	-0.558	0.000	0.15		132.4	OK
1.003	SW1.3	100.951	-0.609	0.000	0.08		135.6	OK
3.000	SW3.0	100.376	-0.374	0.000	0.07		19.6	OK
3.001	SW3.1	100.200	-0.200	0.000	0.06		36.9	OK
1.004	SW1.4	100.199	-0.101	0.000	0.22		187.6	OK
4.000	SW4.0	100.271	-0.379	0.000	0.06		15.8	OK
1.005	SW1.5	100.195	-0.025	0.000	0.21		198.5	OK
1.006	SW1.6	100.180	0.100	0.000	0.22		194.8	SURCHARGED
1.007	SW1.7	100.178	0.778	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 480 minute 30 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.738	-0.232	0.000	0.12			10.3	OK
1.001	SW1.1	102.123	-0.477	0.000	0.09			48.4	OK
2.000	SW2.0	101.918	-0.232	0.000	0.12			10.3	OK
2.001	SW2.1	101.489	-0.296	0.000	0.08			11.9	OK
1.002	SW1.2	101.442	-0.578	0.000	0.12			107.3	OK
1.003	SW1.3	100.934	-0.626	0.000	0.07			110.0	OK
3.000	SW3.0	100.367	-0.383	0.000	0.05			15.9	OK
3.001	SW3.1	100.183	-0.217	0.000	0.05			29.9	OK
1.004	SW1.4	100.181	-0.119	0.000	0.18			151.8	OK
4.000	SW4.0	100.264	-0.386	0.000	0.05			12.8	OK
1.005	SW1.5	100.179	-0.041	0.000	0.17			160.7	OK
1.006	SW1.6	100.169	0.089	0.000	0.18			157.8	SURCHARGED
1.007	SW1.7	100.167	0.767	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 600 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.733	-0.237	0.000	0.10		8.8	OK
1.001	SW1.1	102.112	-0.488	0.000	0.08		41.1	OK
2.000	SW2.0	101.913	-0.237	0.000	0.10		8.8	OK
2.001	SW2.1	101.481	-0.304	0.000	0.07		10.1	OK
1.002	SW1.2	101.430	-0.590	0.000	0.10		91.2	OK
1.003	SW1.3	100.923	-0.637	0.000	0.06		93.5	OK
3.000	SW3.0	100.362	-0.388	0.000	0.05		13.5	OK
3.001	SW3.1	100.170	-0.230	0.000	0.04		25.5	OK
1.004	SW1.4	100.168	-0.132	0.000	0.15		129.2	OK
4.000	SW4.0	100.259	-0.391	0.000	0.04		10.9	OK
1.005	SW1.5	100.165	-0.055	0.000	0.14		136.9	OK
1.006	SW1.6	100.157	0.077	0.000	0.15		134.6	SURCHARGED
1.007	SW1.7	100.154	0.754	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 720 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.729	-0.241	0.000	0.09		7.7	OK
1.001	SW1.1	102.103	-0.497	0.000	0.07		36.1	OK
2.000	SW2.0	101.910	-0.240	0.000	0.09		7.7	OK
2.001	SW2.1	101.475	-0.310	0.000	0.06		8.9	OK
1.002	SW1.2	101.421	-0.599	0.000	0.09		80.0	OK
1.003	SW1.3	100.916	-0.644	0.000	0.05		82.0	OK
3.000	SW3.0	100.358	-0.392	0.000	0.04		11.8	OK
3.001	SW3.1	100.152	-0.248	0.000	0.04		22.3	OK
1.004	SW1.4	100.150	-0.150	0.000	0.13		113.5	OK
4.000	SW4.0	100.255	-0.395	0.000	0.04		9.6	OK
1.005	SW1.5	100.148	-0.072	0.000	0.13		120.3	OK
1.006	SW1.6	100.141	0.061	0.000	0.14		118.3	SURCHARGED
1.007	SW1.7	100.139	0.739	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 960 minute 30 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.722	-0.248	0.000	0.07			6.3	OK
1.001	SW1.1	102.092	-0.508	0.000	0.06			29.4	OK
2.000	SW2.0	101.903	-0.247	0.000	0.07			6.3	OK
2.001	SW2.1	101.465	-0.320	0.000	0.05			7.2	OK
1.002	SW1.2	101.403	-0.617	0.000	0.07			65.2	OK
1.003	SW1.3	100.906	-0.654	0.000	0.04			66.8	OK
3.000	SW3.0	100.353	-0.397	0.000	0.03			9.6	OK
3.001	SW3.1	100.107	-0.293	0.000	0.03			18.2	OK
1.004	SW1.4	100.106	-0.194	0.000	0.11			92.7	OK
4.000	SW4.0	100.251	-0.399	0.000	0.03			7.8	OK
1.005	SW1.5	100.104	-0.116	0.000	0.10			98.6	OK
1.006	SW1.6	100.099	0.019	0.000	0.11			97.0	SURCHARGED
1.007	SW1.7	100.097	0.697	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 1440 minute 30 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.714	-0.256	0.000	0.05		4.7	OK
1.001	SW1.1	102.079	-0.521	0.000	0.04		22.1	OK
2.000	SW2.0	101.895	-0.255	0.000	0.05		4.7	OK
2.001	SW2.1	101.457	-0.328	0.000	0.04		5.5	OK
1.002	SW1.2	101.383	-0.637	0.000	0.06		49.1	OK
1.003	SW1.3	100.895	-0.665	0.000	0.03		50.3	OK
3.000	SW3.0	100.347	-0.403	0.000	0.02		7.3	OK
3.001	SW3.1	100.000	-0.400	0.000	0.02		13.7	OK
1.004	SW1.4	99.999	-0.301	0.000	0.08		70.2	OK
4.000	SW4.0	100.246	-0.404	0.000	0.02		5.9	OK
1.005	SW1.5	99.997	-0.223	0.000	0.08		74.9	OK
1.006	SW1.6	99.994	-0.086	0.000	0.08		73.9	OK
1.007	SW1.7	99.990	0.590	0.000	0.45		32.8	SURCHARGED

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 45.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 100 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	103.580	0.610	0.000	1.19		105.0	FLOOD RISK
1.001	SW1.1	102.419	-0.181	0.000	0.79		413.3	OK
2.000	SW2.0	102.755	0.605	0.000	1.25		108.2	FLOOD RISK
2.001	SW2.1	102.016	0.231	0.000	0.84		118.6	SURCHARGED
1.002	SW1.2	101.920	-0.100	0.000	1.00		888.3	OK
1.003	SW1.3	101.321	-0.239	0.000	0.55		927.3	OK
3.000	SW3.0	101.158	0.408	0.000	0.57		168.0	FLOOD RISK
3.001	SW3.1	101.032	0.632	0.000	0.48		280.9	FLOOD RISK
1.004	SW1.4	100.944	0.644	0.000	1.39		1200.9	SURCHARGED
4.000	SW4.0	100.833	0.183	0.000	0.49		127.8	SURCHARGED
1.005	SW1.5	100.651	0.431	0.000	1.38		1317.7	SURCHARGED
1.006	SW1.6	100.301	0.221	0.000	1.52		1318.5	SURCHARGED
1.007	SW1.7	99.767	0.367	0.000	0.45		32.7	SURCHARGED

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Summary of Results for 30 minute 100 year Summer (Storm)

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	SW1.0	103.350	0.380	0.000	1.10		97.1	SURCHARGED
1.001	SW1.1	102.410	-0.190	0.000	0.78		406.6	OK
2.000	SW2.0	102.563	0.413	0.000	1.15		99.6	FLOOD RISK
2.001	SW2.1	101.969	0.184	0.000	0.79		111.0	SURCHARGED
1.002	SW1.2	101.883	-0.137	0.000	0.99		882.1	OK
1.003	SW1.3	101.302	-0.258	0.000	0.54		909.0	OK
3.000	SW3.0	101.084	0.334	0.000	0.53		154.5	FLOOD RISK
3.001	SW3.1	100.988	0.588	0.000	0.44		261.5	SURCHARGED
1.004	SW1.4	100.922	0.622	0.000	1.39		1199.5	SURCHARGED
4.000	SW4.0	100.765	0.115	0.000	0.45		117.9	SURCHARGED
1.005	SW1.5	100.632	0.412	0.000	1.36		1305.4	SURCHARGED
1.006	SW1.6	100.293	0.213	0.000	1.50		1307.2	SURCHARGED
1.007	SW1.7	99.958	0.558	0.000	0.45		32.7	SURCHARGED

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Summary of Results for 60 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
	US/MH	Level	Depth	Volume	Flow / Overflow	Time	Flow	
PN	Name	(m)	(m)	(m³)	Cap. (l/s)	(mins)	(l/s)	Status
1.000	SW1.0	102.910	-0.060	0.000	0.84		74.3	OK
1.001	SW1.1	102.353	-0.247	0.000	0.64		333.1	OK
2.000	SW2.0	102.216	0.066	0.000	0.86		74.6	SURCHARGED
2.001	SW2.1	101.844	0.059	0.000	0.61		86.1	SURCHARGED
1.002	SW1.2	101.792	-0.228	0.000	0.82		731.5	OK
1.003	SW1.3	101.162	-0.398	0.000	0.44		745.4	OK
3.000	SW3.0	100.762	0.012	0.000	0.41		119.8	SURCHARGED
3.001	SW3.1	100.697	0.297	0.000	0.32		188.2	SURCHARGED
1.004	SW1.4	100.650	0.350	0.000	1.15		995.7	SURCHARGED
4.000	SW4.0	100.531	-0.119	0.000	0.35		90.8	OK
1.005	SW1.5	100.437	0.217	0.000	1.14		1087.2	SURCHARGED
1.006	SW1.6	100.194	0.114	0.000	1.26		1091.5	SURCHARGED
1.007	SW1.7	100.152	0.752	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 120 minute 100 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.826	-0.144	0.000	0.53			47.1	OK
1.001	SW1.1	102.273	-0.327	0.000	0.42			217.5	OK
2.000	SW2.0	102.008	-0.142	0.000	0.54			47.2	OK
2.001	SW2.1	101.700	-0.085	0.000	0.38			53.8	OK
1.002	SW1.2	101.667	-0.353	0.000	0.54			479.2	OK
1.003	SW1.3	101.089	-0.471	0.000	0.29			488.9	OK
3.000	SW3.0	100.451	-0.299	0.000	0.25			72.6	OK
3.001	SW3.1	100.273	-0.127	0.000	0.23			136.6	OK
1.004	SW1.4	100.270	-0.030	0.000	0.80			688.7	OK
4.000	SW4.0	100.344	-0.306	0.000	0.22			58.5	OK
1.005	SW1.5	100.259	0.039	0.000	0.77			737.1	SURCHARGED
1.006	SW1.6	100.253	0.173	0.000	0.84			728.6	SURCHARGED
1.007	SW1.7	100.251	0.851	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 180 minute 100 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Overflow		Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m ³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.805	-0.165	0.000	0.41			36.4	OK
1.001	SW1.1	102.236	-0.364	0.000	0.32			166.7	OK
2.000	SW2.0	101.987	-0.163	0.000	0.42			36.7	OK
2.001	SW2.1	101.635	-0.150	0.000	0.30			41.5	OK
1.002	SW1.2	101.610	-0.410	0.000	0.41			368.3	OK
1.003	SW1.3	101.053	-0.507	0.000	0.23			378.3	OK
3.000	SW3.0	100.434	-0.316	0.000	0.19			56.7	OK
3.001	SW3.1	100.309	-0.091	0.000	0.18			106.5	OK
1.004	SW1.4	100.307	0.007	0.000	0.61			525.3	SURCHARGED
4.000	SW4.0	100.326	-0.324	0.000	0.17			45.3	OK
1.005	SW1.5	100.303	0.083	0.000	0.58			555.3	SURCHARGED
1.006	SW1.6	100.299	0.219	0.000	0.63			543.9	SURCHARGED
1.007	SW1.7	100.297	0.897	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 240 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.790	-0.180	0.000	0.34		29.8	OK
1.001	SW1.1	102.211	-0.389	0.000	0.27		138.7	OK
2.000	SW2.0	101.971	-0.179	0.000	0.34		29.9	OK
2.001	SW2.1	101.595	-0.190	0.000	0.24		34.3	OK
1.002	SW1.2	101.575	-0.445	0.000	0.34		306.8	OK
1.003	SW1.3	101.030	-0.530	0.000	0.19		313.7	OK
3.000	SW3.0	100.418	-0.332	0.000	0.16		45.9	OK
3.001	SW3.1	100.332	-0.068	0.000	0.15		86.1	OK
1.004	SW1.4	100.330	0.030	0.000	0.50		433.8	SURCHARGED
4.000	SW4.0	100.330	-0.320	0.000	0.14		37.0	OK
1.005	SW1.5	100.327	0.107	0.000	0.48		459.0	SURCHARGED
1.006	SW1.6	100.324	0.244	0.000	0.52		449.4	SURCHARGED
1.007	SW1.7	100.321	0.921	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 360 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.771	-0.199	0.000	0.25		22.1	OK
1.001	SW1.1	102.181	-0.419	0.000	0.20		103.4	OK
2.000	SW2.0	101.952	-0.198	0.000	0.25		22.1	OK
2.001	SW2.1	101.551	-0.234	0.000	0.18		25.5	OK
1.002	SW1.2	101.527	-0.493	0.000	0.26		229.1	OK
1.003	SW1.3	100.996	-0.564	0.000	0.14		234.7	OK
3.000	SW3.0	100.401	-0.349	0.000	0.12		34.0	OK
3.001	SW3.1	100.345	-0.055	0.000	0.11		63.4	OK
1.004	SW1.4	100.344	0.044	0.000	0.37		321.3	SURCHARGED
4.000	SW4.0	100.342	-0.308	0.000	0.11		27.5	OK
1.005	SW1.5	100.342	0.122	0.000	0.35		339.3	SURCHARGED
1.006	SW1.6	100.339	0.259	0.000	0.38		333.0	SURCHARGED
1.007	SW1.7	100.337	0.937	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 480 minute 100 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.761	-0.209	0.000	0.20			18.0	OK
1.001	SW1.1	102.161	-0.439	0.000	0.16			84.2	OK
2.000	SW2.0	101.942	-0.208	0.000	0.21			18.0	OK
2.001	SW2.1	101.530	-0.255	0.000	0.15			20.8	OK
1.002	SW1.2	101.502	-0.518	0.000	0.21			186.9	OK
1.003	SW1.3	100.978	-0.582	0.000	0.11			191.5	OK
3.000	SW3.0	100.392	-0.358	0.000	0.09			27.6	OK
3.001	SW3.1	100.349	-0.051	0.000	0.09			51.4	OK
1.004	SW1.4	100.348	0.048	0.000	0.30			261.9	SURCHARGED
4.000	SW4.0	100.346	-0.304	0.000	0.09			22.3	OK
1.005	SW1.5	100.345	0.125	0.000	0.29			276.9	SURCHARGED
1.006	SW1.6	100.343	0.263	0.000	0.31			272.0	SURCHARGED
1.007	SW1.7	100.340	0.940	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 600 minute 100 year Summer (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.754	-0.216	0.000	0.17			15.3	OK
1.001	SW1.1	102.148	-0.452	0.000	0.14			71.9	OK
2.000	SW2.0	101.934	-0.216	0.000	0.18			15.3	OK
2.001	SW2.1	101.516	-0.269	0.000	0.13			17.7	OK
1.002	SW1.2	101.483	-0.537	0.000	0.18			159.5	OK
1.003	SW1.3	100.966	-0.594	0.000	0.10			163.5	OK
3.000	SW3.0	100.385	-0.365	0.000	0.08			23.6	OK
3.001	SW3.1	100.350	-0.050	0.000	0.07			43.9	OK
1.004	SW1.4	100.349	0.049	0.000	0.26			223.7	SURCHARGED
4.000	SW4.0	100.347	-0.303	0.000	0.07			19.1	OK
1.005	SW1.5	100.347	0.127	0.000	0.25			236.6	SURCHARGED
1.006	SW1.6	100.344	0.264	0.000	0.27			232.6	SURCHARGED
1.007	SW1.7	100.342	0.942	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 720 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.748	-0.222	0.000	0.15		13.5	OK
1.001	SW1.1	102.138	-0.462	0.000	0.12		63.3	OK
2.000	SW2.0	101.929	-0.221	0.000	0.16		13.5	OK
2.001	SW2.1	101.505	-0.280	0.000	0.11		15.6	OK
1.002	SW1.2	101.468	-0.552	0.000	0.16		140.5	OK
1.003	SW1.3	100.957	-0.603	0.000	0.09		144.0	OK
3.000	SW3.0	100.378	-0.372	0.000	0.07		20.8	OK
3.001	SW3.1	100.349	-0.051	0.000	0.07		38.7	OK
1.004	SW1.4	100.348	0.048	0.000	0.23		197.1	SURCHARGED
4.000	SW4.0	100.346	-0.304	0.000	0.06		16.8	OK
1.005	SW1.5	100.346	0.126	0.000	0.22		208.6	SURCHARGED
1.006	SW1.6	100.343	0.263	0.000	0.24		205.1	SURCHARGED
1.007	SW1.7	100.341	0.941	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 960 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.740	-0.230	0.000	0.13		11.1	OK
1.001	SW1.1	102.126	-0.474	0.000	0.10		52.0	OK
2.000	SW2.0	101.921	-0.229	0.000	0.13		11.1	OK
2.001	SW2.1	101.493	-0.292	0.000	0.09		12.8	OK
1.002	SW1.2	101.448	-0.572	0.000	0.13		115.2	OK
1.003	SW1.3	100.940	-0.620	0.000	0.07		118.1	OK
3.000	SW3.0	100.370	-0.380	0.000	0.06		17.0	OK
3.001	SW3.1	100.343	-0.057	0.000	0.05		31.9	OK
1.004	SW1.4	100.341	0.041	0.000	0.19		161.9	SURCHARGED
4.000	SW4.0	100.339	-0.311	0.000	0.05		13.8	OK
1.005	SW1.5	100.339	0.119	0.000	0.18		171.4	SURCHARGED
1.006	SW1.6	100.336	0.256	0.000	0.19		168.7	SURCHARGED
1.007	SW1.7	100.334	0.934	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 1440 minute 100 year Summer (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.732	-0.238	0.000	0.10		8.4	OK
1.001	SW1.1	102.109	-0.491	0.000	0.08		39.5	OK
2.000	SW2.0	101.912	-0.238	0.000	0.10		8.4	OK
2.001	SW2.1	101.479	-0.306	0.000	0.07		9.7	OK
1.002	SW1.2	101.427	-0.593	0.000	0.10		87.6	OK
1.003	SW1.3	100.921	-0.639	0.000	0.05		89.7	OK
3.000	SW3.0	100.360	-0.390	0.000	0.04		12.9	OK
3.001	SW3.1	100.315	-0.085	0.000	0.04		24.3	OK
1.004	SW1.4	100.313	0.013	0.000	0.14		123.2	SURCHARGED
4.000	SW4.0	100.312	-0.338	0.000	0.04		10.5	OK
1.005	SW1.5	100.311	0.091	0.000	0.14		130.7	SURCHARGED
1.006	SW1.6	100.309	0.229	0.000	0.15		128.7	SURCHARGED
1.007	SW1.7	100.306	0.906	0.000	0.45		32.8	SURCHARGED

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<u>Simulation Criteria for Storm</u> <table><tr><td>Volumetric Runoff Coeff</td><td>0.840</td><td>Foul Sewage per hectare (l/s)</td><td>0.000</td></tr><tr><td>Areal Reduction Factor</td><td>1.000</td><td>Additional Flow - % of Total Flow</td><td>45.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>MADD Factor * 10m³/ha Storage</td><td>0.000</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Run Time (mins)</td><td>60</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Output Interval (mins)</td><td>1</td></tr></table> Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> <table><tr><td>Rainfall Model</td><td>FEH</td><td>Summer Storms</td><td>No</td></tr><tr><td>Return Period (years)</td><td>100</td><td>Winter Storms</td><td>Yes</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Site Location</td><td>GB 385036 407187 SD 85036 07187</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>Data Type</td><td></td><td>Point Storm Duration (mins)</td><td>15</td></tr></table>			Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000	Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000	Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000	Hot Start Level (mm)	0	Run Time (mins)	60	Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1	Rainfall Model	FEH	Summer Storms	No	Return Period (years)	100	Winter Storms	Yes	FEH Rainfall Version	2013	Cv (Summer)	0.750	Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840	Data Type		Point Storm Duration (mins)	15
Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000																																							
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000																																							
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000																																							
Hot Start Level (mm)	0	Run Time (mins)	60																																							
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1																																							
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Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840																																							
Data Type		Point Storm Duration (mins)	15																																							
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Summary of Results for 15 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	103.596	0.626	0.000	1.21		106.6	FLOOD RISK
1.001	SW1.1	102.440	-0.160	0.000	0.84		435.4	OK
2.000	SW2.0	102.789	0.639	0.000	1.25		108.5	FLOOD RISK
2.001	SW2.1	102.134	0.349	0.000	0.83		116.8	SURCHARGED
1.002	SW1.2	102.032	0.012	0.000	1.03		918.4	SURCHARGED
1.003	SW1.3	101.407	-0.153	0.000	0.57		965.4	OK
3.000	SW3.0	101.216	0.466	0.000	0.56		164.4	FLOOD RISK
3.001	SW3.1	101.082	0.682	0.000	0.50		292.4	FLOOD RISK
1.004	SW1.4	100.986	0.686	0.000	1.43		1238.1	SURCHARGED
4.000	SW4.0	100.875	0.225	0.000	0.49		128.0	SURCHARGED
1.005	SW1.5	100.679	0.459	0.000	1.42		1355.1	SURCHARGED
1.006	SW1.6	100.315	0.235	0.000	1.56		1353.8	SURCHARGED
1.007	SW1.7	99.835	0.435	0.000	0.45		32.7	SURCHARGED

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Summary of Results for 30 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	103.112	0.142	0.000	1.00		88.0	SURCHARGED
1.001	SW1.1	102.394	-0.206	0.000	0.75		390.0	OK
2.000	SW2.0	102.395	0.245	0.000	1.03		89.0	SURCHARGED
2.001	SW2.1	101.928	0.143	0.000	0.72		100.8	SURCHARGED
1.002	SW1.2	101.857	-0.163	0.000	0.96		855.2	OK
1.003	SW1.3	101.260	-0.300	0.000	0.52		875.0	OK
3.000	SW3.0	101.039	0.289	0.000	0.46		134.5	FLOOD RISK
3.001	SW3.1	100.949	0.549	0.000	0.40		237.8	SURCHARGED
1.004	SW1.4	100.884	0.584	0.000	1.37		1186.5	SURCHARGED
4.000	SW4.0	100.737	0.087	0.000	0.40		105.7	SURCHARGED
1.005	SW1.5	100.605	0.385	0.000	1.34		1285.1	SURCHARGED
1.006	SW1.6	100.279	0.199	0.000	1.48		1284.2	SURCHARGED
1.007	SW1.7	100.045	0.645	0.000	0.45		32.7	SURCHARGED

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Summary of Results for 60 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.859	-0.111	0.000	0.70			61.7	OK
1.001	SW1.1	102.317	-0.283	0.000	0.55			284.5	OK
2.000	SW2.0	102.041	-0.109	0.000	0.71			62.0	OK
2.001	SW2.1	101.780	-0.005	0.000	0.51			71.2	OK
1.002	SW1.2	101.738	-0.282	0.000	0.71			628.2	OK
1.003	SW1.3	101.132	-0.428	0.000	0.38			641.9	OK
3.000	SW3.0	100.478	-0.272	0.000	0.33			96.4	OK
3.001	SW3.1	100.343	-0.057	0.000	0.29			172.9	OK
1.004	SW1.4	100.300	0.000	0.000	1.02			882.0	SURCHARGED
4.000	SW4.0	100.368	-0.282	0.000	0.29			76.6	OK
1.005	SW1.5	100.269	0.049	0.000	1.00			953.7	SURCHARGED
1.006	SW1.6	100.262	0.182	0.000	1.09			952.0	SURCHARGED
1.007	SW1.7	100.259	0.859	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 120 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.805	-0.165	0.000	0.42		37.1	OK
1.001	SW1.1	102.239	-0.361	0.000	0.33		173.0	OK
2.000	SW2.0	101.987	-0.163	0.000	0.43		37.1	OK
2.001	SW2.1	101.640	-0.145	0.000	0.30		42.7	OK
1.002	SW1.2	101.614	-0.406	0.000	0.43		383.0	OK
1.003	SW1.3	101.055	-0.505	0.000	0.23		391.9	OK
3.000	SW3.0	100.434	-0.316	0.000	0.19		57.1	OK
3.001	SW3.1	100.392	-0.008	0.000	0.18		106.5	OK
1.004	SW1.4	100.385	0.085	0.000	0.63		541.5	SURCHARGED
4.000	SW4.0	100.384	-0.266	0.000	0.18		46.1	OK
1.005	SW1.5	100.379	0.159	0.000	0.60		574.2	SURCHARGED
1.006	SW1.6	100.374	0.294	0.000	0.65		562.7	SURCHARGED
1.007	SW1.7	100.371	0.971	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 180 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.785	-0.185	0.000	0.31			27.5	OK
1.001	SW1.1	102.202	-0.398	0.000	0.25			128.3	OK
2.000	SW2.0	101.966	-0.184	0.000	0.32			27.6	OK
2.001	SW2.1	101.580	-0.205	0.000	0.23			31.8	OK
1.002	SW1.2	101.561	-0.459	0.000	0.32			284.4	OK
1.003	SW1.3	101.019	-0.541	0.000	0.17			291.6	OK
3.000	SW3.0	100.442	-0.308	0.000	0.14			42.4	OK
3.001	SW3.1	100.439	0.039	0.000	0.13			79.3	SURCHARGED
1.004	SW1.4	100.437	0.137	0.000	0.46			399.9	SURCHARGED
4.000	SW4.0	100.436	-0.214	0.000	0.13			34.2	OK
1.005	SW1.5	100.433	0.213	0.000	0.44			422.7	SURCHARGED
1.006	SW1.6	100.430	0.350	0.000	0.48			414.5	SURCHARGED
1.007	SW1.7	100.427	1.027	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 240 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.772	-0.198	0.000	0.25		22.2	OK
1.001	SW1.1	102.181	-0.419	0.000	0.20		104.0	OK
2.000	SW2.0	101.953	-0.197	0.000	0.26		22.2	OK
2.001	SW2.1	101.552	-0.233	0.000	0.18		25.7	OK
1.002	SW1.2	101.528	-0.492	0.000	0.26		230.6	OK
1.003	SW1.3	100.996	-0.564	0.000	0.14		236.3	OK
3.000	SW3.0	100.472	-0.278	0.000	0.12		34.2	OK
3.001	SW3.1	100.469	0.069	0.000	0.11		63.6	SURCHARGED
1.004	SW1.4	100.468	0.168	0.000	0.37		322.9	SURCHARGED
4.000	SW4.0	100.467	-0.183	0.000	0.11		27.6	OK
1.005	SW1.5	100.465	0.245	0.000	0.36		341.0	SURCHARGED
1.006	SW1.6	100.461	0.381	0.000	0.39		334.9	SURCHARGED
1.007	SW1.7	100.459	1.059	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 360 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.757	-0.213	0.000	0.19		16.5	OK
1.001	SW1.1	102.153	-0.447	0.000	0.15		77.1	OK
2.000	SW2.0	101.938	-0.212	0.000	0.19		16.5	OK
2.001	SW2.1	101.523	-0.262	0.000	0.14		19.0	OK
1.002	SW1.2	101.492	-0.528	0.000	0.19		171.1	OK
1.003	SW1.3	100.971	-0.589	0.000	0.10		175.3	OK
3.000	SW3.0	100.499	-0.251	0.000	0.09		25.3	OK
3.001	SW3.1	100.497	0.097	0.000	0.08		47.0	SURCHARGED
1.004	SW1.4	100.496	0.196	0.000	0.28		239.5	SURCHARGED
4.000	SW4.0	100.494	-0.156	0.000	0.08		20.4	OK
1.005	SW1.5	100.493	0.273	0.000	0.26		253.4	SURCHARGED
1.006	SW1.6	100.490	0.410	0.000	0.29		249.2	SURCHARGED
1.007	SW1.7	100.487	1.087	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 480 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.747	-0.223	0.000	0.15		13.4	OK
1.001	SW1.1	102.138	-0.462	0.000	0.12		62.7	OK
2.000	SW2.0	101.928	-0.222	0.000	0.15		13.4	OK
2.001	SW2.1	101.505	-0.280	0.000	0.11		15.5	OK
1.002	SW1.2	101.467	-0.553	0.000	0.16		139.1	OK
1.003	SW1.3	100.956	-0.604	0.000	0.08		142.6	OK
3.000	SW3.0	100.505	-0.245	0.000	0.07		20.6	OK
3.001	SW3.1	100.504	0.104	0.000	0.06		38.2	SURCHARGED
1.004	SW1.4	100.502	0.202	0.000	0.22		194.8	SURCHARGED
4.000	SW4.0	100.500	-0.150	0.000	0.06		16.6	OK
1.005	SW1.5	100.500	0.280	0.000	0.22		206.3	SURCHARGED
1.006	SW1.6	100.497	0.417	0.000	0.23		203.2	SURCHARGED
1.007	SW1.7	100.494	1.094	0.000	0.45		32.9	SURCHARGED

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Summary of Results for 600 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.741	-0.229	0.000	0.13		11.4	OK
1.001	SW1.1	102.128	-0.472	0.000	0.10		53.6	OK
2.000	SW2.0	101.922	-0.228	0.000	0.13		11.4	OK
2.001	SW2.1	101.495	-0.290	0.000	0.09		13.2	OK
1.002	SW1.2	101.451	-0.569	0.000	0.13		118.8	OK
1.003	SW1.3	100.942	-0.618	0.000	0.07		121.7	OK
3.000	SW3.0	100.500	-0.250	0.000	0.06		17.6	OK
3.001	SW3.1	100.498	0.098	0.000	0.06		32.6	SURCHARGED
1.004	SW1.4	100.497	0.197	0.000	0.19		166.5	SURCHARGED
4.000	SW4.0	100.495	-0.155	0.000	0.05		14.2	OK
1.005	SW1.5	100.495	0.275	0.000	0.18		176.4	SURCHARGED
1.006	SW1.6	100.492	0.412	0.000	0.20		173.9	SURCHARGED
1.007	SW1.7	100.490	1.090	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 720 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	SW1.0	102.737	-0.233	0.000	0.11			10.1	OK
1.001	SW1.1	102.121	-0.479	0.000	0.09			47.2	OK
2.000	SW2.0	101.918	-0.232	0.000	0.12			10.1	OK
2.001	SW2.1	101.488	-0.297	0.000	0.08			11.6	OK
1.002	SW1.2	101.440	-0.580	0.000	0.12			104.6	OK
1.003	SW1.3	100.933	-0.627	0.000	0.06			107.2	OK
3.000	SW3.0	100.499	-0.251	0.000	0.05			15.5	OK
3.001	SW3.1	100.497	0.097	0.000	0.05			28.7	SURCHARGED
1.004	SW1.4	100.496	0.196	0.000	0.17			146.7	SURCHARGED
4.000	SW4.0	100.493	-0.157	0.000	0.05			12.5	OK
1.005	SW1.5	100.493	0.273	0.000	0.16			155.6	SURCHARGED
1.006	SW1.6	100.490	0.410	0.000	0.18			153.5	SURCHARGED
1.007	SW1.7	100.488	1.088	0.000	0.45			32.8	SURCHARGED

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Summary of Results for 960 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.731	-0.239	0.000	0.09		8.3	OK
1.001	SW1.1	102.107	-0.493	0.000	0.07		38.7	OK
2.000	SW2.0	101.912	-0.238	0.000	0.10		8.3	OK
2.001	SW2.1	101.478	-0.307	0.000	0.07		9.5	OK
1.002	SW1.2	101.425	-0.595	0.000	0.10		85.8	OK
1.003	SW1.3	100.920	-0.640	0.000	0.05		87.9	OK
3.000	SW3.0	100.486	-0.264	0.000	0.04		12.7	OK
3.001	SW3.1	100.484	0.084	0.000	0.04		23.6	SURCHARGED
1.004	SW1.4	100.482	0.182	0.000	0.14		120.5	SURCHARGED
4.000	SW4.0	100.480	-0.170	0.000	0.04		10.2	OK
1.005	SW1.5	100.480	0.260	0.000	0.13		128.0	SURCHARGED
1.006	SW1.6	100.477	0.397	0.000	0.15		126.3	SURCHARGED
1.007	SW1.7	100.475	1.075	0.000	0.45		32.8	SURCHARGED

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Summary of Results for 1440 minute 100 year Winter (Storm)

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

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW1.0	102.722	-0.248	0.000	0.07		6.3	OK
1.001	SW1.1	102.092	-0.508	0.000	0.06		29.4	OK
2.000	SW2.0	101.903	-0.247	0.000	0.07		6.3	OK
2.001	SW2.1	101.465	-0.320	0.000	0.05		7.2	OK
1.002	SW1.2	101.403	-0.617	0.000	0.07		65.2	OK
1.003	SW1.3	100.906	-0.654	0.000	0.04		66.8	OK
3.000	SW3.0	100.434	-0.316	0.000	0.03		9.6	OK
3.001	SW3.1	100.432	0.032	0.000	0.03		18.0	SURCHARGED
1.004	SW1.4	100.430	0.130	0.000	0.11		91.9	SURCHARGED
4.000	SW4.0	100.428	-0.222	0.000	0.03		7.8	OK
1.005	SW1.5	100.428	0.208	0.000	0.10		97.7	SURCHARGED
1.006	SW1.6	100.425	0.345	0.000	0.11		96.4	SURCHARGED
1.007	SW1.7	100.423	1.023	0.000	0.45		32.8	SURCHARGED



Rochdale AFC, Bowlee Sports Field, Heywood Old Road, Middleton

Surface Water Calculations – Network 2

Job No. 0807

Revision 00

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STORM SEWER DESIGN by the Modified Rational Method

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
1.000	84.861	0.850	99.8	0.862	4.00	0.0	0.600	o	525	Pipe/Conduit
1.001	6.874	0.740	9.3	0.213	0.00	0.0	0.600	o	525	Pipe/Conduit
1.002	31.066	0.200	155.3	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)
1.000	0.00	4.63	98.090	0.862	0.0	0.0	0.0	2.24	485.3	0.0
1.001	0.00	4.65	97.240	1.075	0.0	0.0	0.0	7.38	1597.4	0.0
1.002	0.00	5.14	96.500	1.075	0.0	0.0	0.0	1.05	41.6	0.0

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW100.0	99.590	1.500	Open Manhole	1500	1.000	98.090	525				
SW100.1	99.180	1.940	Open Manhole	1500	1.001	97.240	525	1.000	97.240	525	
SW100.2	98.500	2.000	Open Manhole	1500	1.002	96.500	225	1.001	96.500	525	
Existing Sewer	98.500	2.200	Open Manhole	0		OUTFALL		1.002	96.300	225	

No coordinates have been specified, layout information cannot be produced.

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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)
1.000	o	525	SW100.0	99.590	98.090	0.975	Open Manhole	1500
1.001	o	525	SW100.1	99.180	97.240	1.415	Open Manhole	1500
1.002	o	225	SW100.2	98.500	96.500	1.775	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)
1.000	84.861	99.8	SW100.1	99.180	97.240	1.415	Open Manhole	1500
1.001	6.874	9.3	SW100.2	98.500	96.500	1.475	Open Manhole	1500
1.002	31.066	155.3	Existing Sewer	98.500	96.300	1.975	Open Manhole	0

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SW100.2, DS/PN: 1.002, Volume (m³): 4.7

Unit Reference	MD-SHE-0149-1100-1200-1100
Design Head (m)	1.200
Design Flow (l/s)	11.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	149
Invert Level (m)	96.500
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	11.0	Kick-Flo®	0.782	9.0
Flush-Flo™	0.357	11.0	Mean Flow over Head Range	-	9.5

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)	Depth (m)	Flow (l/s)
0.100	5.4	0.800	9.1	2.000	14.0	4.000	19.5	7.000	25.5
0.200	10.4	1.000	10.1	2.200	14.7	4.500	20.6	7.500	26.4
0.300	10.9	1.200	11.0	2.400	15.3	5.000	21.7	8.000	27.2
0.400	11.0	1.400	11.8	2.600	15.9	5.500	22.7	8.500	28.0
0.500	10.8	1.600	12.6	3.000	17.0	6.000	23.7	9.000	28.8
0.600	10.5	1.800	13.3	3.500	18.3	6.500	24.6	9.500	29.5

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Storage Structures for Storm

Tank or Pond Manhole: SW100.2, DS/PN: 1.002

Invert Level (m) 96.500

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	202.0	1.500	1210.0	1.501	0.1	2.000	0.1

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 2 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.328	-0.287	0.000	0.41		186.4	OK
1.001	SW100.1	97.451	-0.314	0.000	0.33		219.7	OK
1.002	SW100.2	96.815	0.090	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 30 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.312	-0.303	0.000	0.36			163.2	OK
1.001	SW100.1	97.436	-0.329	0.000	0.30			197.8	OK
1.002	SW100.2	96.880	0.155	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 60 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.277	-0.338	0.000	0.26		118.9	OK
1.001	SW100.1	97.409	-0.356	0.000	0.22		143.5	OK
1.002	SW100.2	96.934	0.209	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 120 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.241	-0.374	0.000	0.18		83.3	OK
1.001	SW100.1	97.378	-0.387	0.000	0.16		103.8	OK
1.002	SW100.2	96.994	0.269	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
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Causeway	Network 2020.1.3	

Summary of Results for 180 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.226	-0.389	0.000	0.15		68.7	OK
1.001	SW100.1	97.365	-0.400	0.000	0.13		85.0	OK
1.002	SW100.2	97.016	0.291	0.000	0.28		10.9	SURCHARGED

BLI Consulting		Page 12
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
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Causeway	Network 2020.1.3	

Summary of Results for 240 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.214	-0.401	0.000	0.13		57.5	OK
1.001	SW100.1	97.355	-0.410	0.000	0.11		71.8	OK
1.002	SW100.2	97.025	0.300	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
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Summary of Results for 360 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.199	-0.416	0.000	0.10		44.0	OK
1.001	SW100.1	97.341	-0.424	0.000	0.08		54.8	OK
1.002	SW100.2	97.027	0.302	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
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Summary of Results for 480 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.188	-0.427	0.000	0.08			36.2	OK
1.001	SW100.1	97.329	-0.436	0.000	0.07			45.1	OK
1.002	SW100.2	97.018	0.293	0.000	0.28			10.9	SURCHARGED

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Causeway	Network 2020.1.3	

Summary of Results for 600 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.179	-0.436	0.000	0.07		31.0	OK
1.001	SW100.1	97.322	-0.443	0.000	0.06		38.7	OK
1.002	SW100.2	97.004	0.279	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 720 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.173	-0.442	0.000	0.06			27.3	OK
1.001	SW100.1	97.316	-0.449	0.000	0.05			34.1	OK
1.002	SW100.2	96.988	0.263	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 960 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.165	-0.450	0.000	0.05			22.4	OK
1.001	SW100.1	97.309	-0.456	0.000	0.04			27.9	OK
1.002	SW100.2	96.952	0.227	0.000	0.28			10.9	SURCHARGED

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Norfolk	Bowlee Sports Field	
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Causeway	Network 2020.1.3	

Summary of Results for 1440 minute 2 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.155	-0.460	0.000	0.04		16.9	OK
1.001	SW100.1	97.301	-0.464	0.000	0.03		21.0	OK
1.002	SW100.2	96.883	0.158	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
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Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 2 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.328	-0.287	0.000	0.41		187.4	OK
1.001	SW100.1	97.452	-0.313	0.000	0.34		223.0	OK
1.002	SW100.2	96.845	0.120	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 30 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.295	-0.320	0.000	0.32		143.6	OK
1.001	SW100.1	97.424	-0.341	0.000	0.27		176.3	OK
1.002	SW100.2	96.917	0.192	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 60 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.255	-0.360	0.000	0.21			96.5	OK
1.001	SW100.1	97.391	-0.374	0.000	0.18			119.0	OK
1.002	SW100.2	96.978	0.253	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 120 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.222	-0.393	0.000	0.14			65.5	OK
1.001	SW100.1	97.362	-0.403	0.000	0.12			81.6	OK
1.002	SW100.2	97.048	0.323	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 180 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.207	-0.408	0.000	0.11		51.5	OK
1.001	SW100.1	97.349	-0.416	0.000	0.10		64.1	OK
1.002	SW100.2	97.072	0.347	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 240 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.198	-0.417	0.000	0.09		42.8	OK
1.001	SW100.1	97.339	-0.426	0.000	0.08		53.4	OK
1.002	SW100.2	97.080	0.355	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 360 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.182	-0.433	0.000	0.07		32.7	OK
1.001	SW100.1	97.324	-0.441	0.000	0.06		40.8	OK
1.002	SW100.2	97.078	0.353	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 480 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.172	-0.443	0.000	0.06			26.9	OK
1.001	SW100.1	97.316	-0.449	0.000	0.05			33.6	OK
1.002	SW100.2	97.061	0.336	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 600 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.166	-0.449	0.000	0.05		23.1	OK
1.001	SW100.1	97.310	-0.455	0.000	0.04		28.8	OK
1.002	SW100.2	97.037	0.312	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 720 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.161	-0.454	0.000	0.04		20.3	OK
1.001	SW100.1	97.306	-0.459	0.000	0.04		25.4	OK
1.002	SW100.2	97.010	0.285	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 960 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.155	-0.460	0.000	0.04		16.6	OK
1.001	SW100.1	97.301	-0.464	0.000	0.03		20.8	OK
1.002	SW100.2	96.951	0.226	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 1440 minute 2 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.148	-0.467	0.000	0.03			12.6	OK
1.001	SW100.1	97.295	-0.470	0.000	0.02			15.7	OK
1.002	SW100.2	96.838	0.113	0.000	0.28			10.9	SURCHARGED

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Causeway	Network 2020.1.3																																									
<u>Simulation Criteria for Storm</u> <table><tr><td>Volumetric Runoff Coeff</td><td>0.750</td><td>Foul Sewage per hectare (l/s)</td><td>0.000</td></tr><tr><td>Areal Reduction Factor</td><td>1.000</td><td>Additional Flow - % of Total Flow</td><td>40.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>MADD Factor * 10m³/ha Storage</td><td>0.000</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Run Time (mins)</td><td>60</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Output Interval (mins)</td><td>1</td></tr></table> Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> <table><tr><td>Rainfall Model</td><td>FEH</td><td>Summer Storms</td><td>Yes</td></tr><tr><td>Return Period (years)</td><td>30</td><td>Winter Storms</td><td>No</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Site Location</td><td>GB 385036 407187 SD 85036 07187</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>Data Type</td><td></td><td>Point Storm Duration (mins)</td><td>15</td></tr></table>			Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000	Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000	Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000	Hot Start Level (mm)	0	Run Time (mins)	60	Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1	Rainfall Model	FEH	Summer Storms	Yes	Return Period (years)	30	Winter Storms	No	FEH Rainfall Version	2013	Cv (Summer)	0.750	Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840	Data Type		Point Storm Duration (mins)	15
Volumetric Runoff Coeff	0.750	Foul Sewage per hectare (l/s)	0.000																																							
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	40.000																																							
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000																																							
Hot Start Level (mm)	0	Run Time (mins)	60																																							
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1																																							
Rainfall Model	FEH	Summer Storms	Yes																																							
Return Period (years)	30	Winter Storms	No																																							
FEH Rainfall Version	2013	Cv (Summer)	0.750																																							
Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840																																							
Data Type		Point Storm Duration (mins)	15																																							
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Summary of Results for 15 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.487	-0.128	0.000	0.90			408.2	OK
1.001	SW100.1	97.592	-0.173	0.000	0.77			505.2	OK
1.002	SW100.2	97.078	0.353	0.000	0.28			10.9	SURCHARGED

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.	Heywood Old Road, Middleton	
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File NETWORK 2_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

Summary of Results for 30 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.457	-0.158	0.000	0.80		363.2	OK
1.001	SW100.1	97.564	-0.201	0.000	0.69		454.5	OK
1.002	SW100.2	97.197	0.472	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
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Causeway	Network 2020.1.3	

Summary of Results for 60 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.390	-0.225	0.000	0.59			268.0	OK
1.001	SW100.1	97.511	-0.254	0.000	0.50			331.3	OK
1.002	SW100.2	97.309	0.584	0.000	0.28			10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
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Summary of Results for 120 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.311	-0.304	0.000	0.37		167.6	OK
1.001	SW100.1	97.442	-0.323	0.000	0.32		209.0	OK
1.002	SW100.2	97.367	0.642	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
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Causeway	Network 2020.1.3	

Summary of Results for 180 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.283	-0.332	0.000	0.29			131.7	OK
1.001	SW100.1	97.417	-0.348	0.000	0.25			163.7	OK
1.002	SW100.2	97.389	0.664	0.000	0.28			10.9	SURCHARGED

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Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
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Summary of Results for 240 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.262	-0.353	0.000	0.24		107.1	OK
1.001	SW100.1	97.399	-0.366	0.000	0.20		133.5	OK
1.002	SW100.2	97.397	0.672	0.000	0.28		10.9	SURCHARGED

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Causeway	Network 2020.1.3	

Summary of Results for 360 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.237	-0.378	0.000	0.18			79.3	OK
1.001	SW100.1	97.395	-0.370	0.000	0.15			98.9	OK
1.002	SW100.2	97.394	0.669	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 480 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.221	-0.394	0.000	0.14		64.2	OK
1.001	SW100.1	97.388	-0.377	0.000	0.12		80.1	OK
1.002	SW100.2	97.387	0.662	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 600 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.211	-0.404	0.000	0.12			54.6	OK
1.001	SW100.1	97.380	-0.385	0.000	0.10			68.1	OK
1.002	SW100.2	97.379	0.654	0.000	0.28			10.9	SURCHARGED

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Norfolk	Bowlee Sports Field	
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Summary of Results for 720 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.203	-0.412	0.000	0.11			47.9	OK
1.001	SW100.1	97.372	-0.393	0.000	0.09			59.7	OK
1.002	SW100.2	97.371	0.646	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 960 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.193	-0.422	0.000	0.09			39.0	OK
1.001	SW100.1	97.355	-0.410	0.000	0.07			48.7	OK
1.002	SW100.2	97.353	0.628	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 1440 minute 30 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.177	-0.438	0.000	0.06		29.4	OK
1.001	SW100.1	97.319	-0.446	0.000	0.06		36.6	OK
1.002	SW100.2	97.315	0.590	0.000	0.28		10.9	SURCHARGED

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Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.840 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 40.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms No Return Period (years) 30 Winter Storms Yes FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.487	-0.128	0.000	0.91			410.3	OK
1.001	SW100.1	97.593	-0.172	0.000	0.77			508.6	OK
1.002	SW100.2	97.126	0.401	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 30 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.421	-0.194	0.000	0.71			319.6	OK
1.001	SW100.1	97.536	-0.229	0.000	0.60			399.1	OK
1.002	SW100.2	97.253	0.528	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 60 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.349	-0.266	0.000	0.48		217.4	OK
1.001	SW100.1	97.475	-0.290	0.000	0.41		270.4	OK
1.002	SW100.2	97.372	0.647	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 120 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.283	-0.332	0.000	0.29			131.7	OK
1.001	SW100.1	97.439	-0.326	0.000	0.25			164.3	OK
1.002	SW100.2	97.437	0.712	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 180 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.255	-0.360	0.000	0.22			98.6	OK
1.001	SW100.1	97.466	-0.299	0.000	0.19			122.9	OK
1.002	SW100.2	97.465	0.740	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 240 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.237	-0.378	0.000	0.18			79.7	OK
1.001	SW100.1	97.479	-0.286	0.000	0.15			99.4	OK
1.002	SW100.2	97.477	0.752	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 360 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.215	-0.400	0.000	0.13		59.0	OK
1.001	SW100.1	97.482	-0.283	0.000	0.11		73.6	OK
1.002	SW100.2	97.481	0.756	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 480 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.203	-0.412	0.000	0.11			47.8	OK
1.001	SW100.1	97.473	-0.292	0.000	0.09			59.6	OK
1.002	SW100.2	97.472	0.747	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 600 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded			Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.196	-0.419	0.000	0.09			40.7	OK
1.001	SW100.1	97.462	-0.303	0.000	0.08			50.7	OK
1.002	SW100.2	97.461	0.736	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 720 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.187	-0.428	0.000	0.08			35.7	OK
1.001	SW100.1	97.452	-0.313	0.000	0.07			44.5	OK
1.002	SW100.2	97.450	0.725	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 960 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.176	-0.439	0.000	0.06			29.0	OK
1.001	SW100.1	97.426	-0.339	0.000	0.05			36.2	OK
1.002	SW100.2	97.424	0.699	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 1440 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.164	-0.451	0.000	0.05			21.9	OK
1.001	SW100.1	97.366	-0.399	0.000	0.04			27.3	OK
1.002	SW100.2	97.364	0.639	0.000	0.28			10.9	SURCHARGED

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Causeway	Network 2020.1.3	
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Foul Sewage per hectare (l/s) 0.000 Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 45.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000 Hot Start Level (mm) 0 Run Time (mins) 60 Manhole Headloss Coeff (Global) 0.500 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> Rainfall Model FEH Summer Storms Yes Return Period (years) 100 Winter Storms No FEH Rainfall Version 2013 Cv (Summer) 0.750 Site Location GB 385036 407187 SD 85036 07187 Cv (Winter) 0.840 Data Type Point Storm Duration (mins) 15		
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Summary of Results for 15 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.977	0.362	0.000	1.15		521.7	SURCHARGED
1.001	SW100.1	97.671	-0.094	0.000	0.97		641.1	OK
1.002	SW100.2	97.193	0.468	0.000	0.28		10.9	SURCHARGED

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Norwich	Rochdale AFC	
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Summary of Results for 30 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.765	0.150	0.000	1.06		481.5	SURCHARGED
1.001	SW100.1	97.652	-0.113	0.000	0.90		593.5	OK
1.002	SW100.2	97.339	0.614	0.000	0.28		10.9	SURCHARGED

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Norfolk	Bowlee Sports Field	
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Summary of Results for 60 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.455	-0.160	0.000	0.79			356.4	OK
1.001	SW100.1	97.565	-0.200	0.000	0.67			439.8	OK
1.002	SW100.2	97.472	0.747	0.000	0.28			10.9	SURCHARGED

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Norfolk	Bowlee Sports Field	
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Causeway	Network 2020.1.3	

Summary of Results for 120 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.347	-0.268	0.000	0.48			218.9	OK
1.001	SW100.1	97.537	-0.228	0.000	0.41			273.0	OK
1.002	SW100.2	97.533	0.808	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 180 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.314	-0.301	0.000	0.38		170.7	OK
1.001	SW100.1	97.563	-0.202	0.000	0.32		212.3	OK
1.002	SW100.2	97.560	0.835	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 240 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.288	-0.327	0.000	0.31			138.4	OK
1.001	SW100.1	97.576	-0.189	0.000	0.26			172.6	OK
1.002	SW100.2	97.574	0.849	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 360 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.259	-0.356	0.000	0.23			102.5	OK
1.001	SW100.1	97.584	-0.181	0.000	0.19			127.8	OK
1.002	SW100.2	97.582	0.857	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 480 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded			Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.241	-0.374	0.000	0.18			83.3	OK
1.001	SW100.1	97.582	-0.183	0.000	0.16			103.9	OK
1.002	SW100.2	97.581	0.856	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 600 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.228	-0.387	0.000	0.16		71.1	OK
1.001	SW100.1	97.580	-0.185	0.000	0.13		88.7	OK
1.002	SW100.2	97.579	0.854	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 720 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.219	-0.396	0.000	0.14			62.6	OK
1.001	SW100.1	97.579	-0.186	0.000	0.12			78.1	OK
1.002	SW100.2	97.577	0.852	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 960 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.207	-0.408	0.000	0.11			51.4	OK
1.001	SW100.1	97.574	-0.191	0.000	0.10			64.1	OK
1.002	SW100.2	97.572	0.847	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 1440 minute 100 year Summer (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.193	-0.422	0.000	0.09		39.0	OK
1.001	SW100.1	97.559	-0.206	0.000	0.07		48.7	OK
1.002	SW100.2	97.558	0.833	0.000	0.28		10.9	SURCHARGED

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Causeway	Network 2020.1.3																																									
<u>Simulation Criteria for Storm</u> <table><tr><td>Volumetric Runoff Coeff</td><td>0.840</td><td>Foul Sewage per hectare (l/s)</td><td>0.000</td></tr><tr><td>Areal Reduction Factor</td><td>1.000</td><td>Additional Flow - % of Total Flow</td><td>45.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>MADD Factor * 10m³/ha Storage</td><td>0.000</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Run Time (mins)</td><td>60</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Output Interval (mins)</td><td>1</td></tr></table> Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 <u>Synthetic Rainfall Details</u> <table><tr><td>Rainfall Model</td><td>FEH</td><td>Summer Storms</td><td>No</td></tr><tr><td>Return Period (years)</td><td>100</td><td>Winter Storms</td><td>Yes</td></tr><tr><td>FEH Rainfall Version</td><td>2013</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Site Location</td><td>GB 385036 407187 SD 85036 07187</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>Data Type</td><td></td><td>Point Storm Duration (mins)</td><td>15</td></tr></table>			Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000	Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000	Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000	Hot Start Level (mm)	0	Run Time (mins)	60	Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1	Rainfall Model	FEH	Summer Storms	No	Return Period (years)	100	Winter Storms	Yes	FEH Rainfall Version	2013	Cv (Summer)	0.750	Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840	Data Type		Point Storm Duration (mins)	15
Volumetric Runoff Coeff	0.840	Foul Sewage per hectare (l/s)	0.000																																							
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000																																							
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000																																							
Hot Start Level (mm)	0	Run Time (mins)	60																																							
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1																																							
Rainfall Model	FEH	Summer Storms	No																																							
Return Period (years)	100	Winter Storms	Yes																																							
FEH Rainfall Version	2013	Cv (Summer)	0.750																																							
Site Location	GB 385036 407187 SD 85036 07187	Cv (Winter)	0.840																																							
Data Type		Point Storm Duration (mins)	15																																							
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Summary of Results for 15 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.978	0.363	0.000	1.16		526.5	SURCHARGED
1.001	SW100.1	97.698	-0.067	0.000	0.98		644.3	OK
1.002	SW100.2	97.248	0.523	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 30 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.495	-0.120	0.000	0.93			422.5	OK
1.001	SW100.1	97.599	-0.166	0.000	0.80			527.9	OK
1.002	SW100.2	97.402	0.677	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 60 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.398	-0.217	0.000	0.64		289.2	OK
1.001	SW100.1	97.546	-0.219	0.000	0.54		359.7	OK
1.002	SW100.2	97.543	0.818	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 120 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.314	-0.301	0.000	0.38		172.1	OK
1.001	SW100.1	97.613	-0.152	0.000	0.33		214.6	OK
1.002	SW100.2	97.611	0.886	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 180 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status OFF

		Water	Surcharged	Flooded			Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.280	-0.335	0.000	0.28			127.8	OK
1.001	SW100.1	97.646	-0.119	0.000	0.24			159.3	OK
1.002	SW100.2	97.644	0.919	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 240 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.259	-0.356	0.000	0.23			103.0	OK
1.001	SW100.1	97.664	-0.101	0.000	0.19			128.5	OK
1.002	SW100.2	97.662	0.937	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 360 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.234	-0.381	0.000	0.17		76.3	OK
1.001	SW100.1	97.680	-0.085	0.000	0.14		95.2	OK
1.002	SW100.2	97.679	0.954	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 480 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.219	-0.396	0.000	0.14			62.0	OK
1.001	SW100.1	97.684	-0.081	0.000	0.12			77.2	OK
1.002	SW100.2	97.682	0.957	0.000	0.28			10.9	SURCHARGED

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Summary of Results for 600 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.209	-0.406	0.000	0.12		52.9	OK
1.001	SW100.1	97.681	-0.084	0.000	0.10		65.9	OK
1.002	SW100.2	97.679	0.954	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 720 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

		Water	Surcharged	Flooded		Half Drain	Pipe	
PN	US/MH Name	Level (m)	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Status
1.000	SW100.0	98.202	-0.413	0.000	0.10		46.6	OK
1.001	SW100.1	97.676	-0.089	0.000	0.09		58.1	OK
1.002	SW100.2	97.675	0.950	0.000	0.28		10.9	SURCHARGED

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Summary of Results for 960 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.192	-0.423	0.000	0.08			38.2	OK
1.001	SW100.1	97.668	-0.097	0.000	0.07			47.6	OK
1.002	SW100.2	97.667	0.942	0.000	0.28			10.9	SURCHARGED

BLI Consulting		Page 83
Norwich	Rochdale AFC	
Norfolk	Bowlee Sports Field	
.	Heywood Old Road, Middleton	
Date 09/07/2026	Designed by RSM	
File NETWORK 2_REV00.MDX	Checked by MAB	
Causeway	Network 2020.1.3	

Summary of Results for 1440 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status OFF

PN	US/MH Name	Water	Surcharged	Flooded			Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	
1.000	SW100.0	98.176	-0.439	0.000	0.06			29.1	OK
1.001	SW100.1	97.641	-0.124	0.000	0.05			36.2	OK
1.002	SW100.2	97.639	0.914	0.000	0.28			10.9	SURCHARGED

APPENDIX G

Exceedance Flood Flow



KEY
EXCESS FLOW DIRECTION

NOTES

1. THE DRAWINGS DESIGN AND ALL INFORMATION CONTAINED THEREIN ARE FOR INFORMATION ONLY. NO GUARANTEE IS MADE BY THE ENGINEER FOR THE ACCURACY OF THE INFORMATION OR THE COMPLETION OF THE PROJECTS. PERMISSIONS ARE FORBIDDEN UNLESS PERMISSION IS OBTAINED IN WRITING.
2. DIMENSIONS MUST NOT BE SCALED FROM THE ENGINEER'S DRAWINGS.
3. ALL DESIGNS, CONNECTIONS, WORKMANSHIP AND MATERIAL ARE TO BE IN ACCORDANCE WITH THE RELEVANT BRITISH STANDARD SPECIFICATION AND CODES OF PRACTICE OR OTHERWISE BE TO THE SPECIFIC WRITTEN APPROVAL OF THE ENGINEER.
4. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.
5. EXISTING DRAINAGE CONNECTIONS SUBJECT TO CITY AND LEVELS SURVEY. EXISTING DRAINAGE CONNECTIONS SHALL BE AS SHOWN ON THE DESIGN COUNCIL'S SITE VISIT. ANY CHANGES TO THE DESIGN SHALL BE THE DESIGN COUNCIL'S RESPONSIBILITY. SUBJECT TO SURVEY RESULTS.

PROJECT	BOWLEE
DATE	18/07/2026
ISSUED FOR PLANNING	20/07/26
ISSUED FOR INFORMATION	20/07/26
DESIGN	ROCHDALE BOROUGH COUNCIL
EXCESS FLOW EVENT	EXCESS FLOW EVENT
REFERENCE	0807-015-P2

SCALE: 1:1000

MAB
CONSULTANCY

MAB Consultancy Ltd, Wyndham, Rochdale
Email: office@mabconsultancy.com
Tel: 0161 275 7777
Fax: 0161 275 7778

APPENDIX H

Maintenance Plan

MAINTENANCE PLAN

Bowlee Football and Community Wellbeing
Hub

For

Rochdale AFC & Rochdale Borough Council



Bowlee Football and Community Wellbeing Hub

MAINTENANCE PLAN

REF: 0813

Rev	Description	Date
P1	First Issue Draft	22/07/26



MAB Consultancy (Norfolk) Ltd
Wymondham
Email: Office@MABConsultingltd.com
Tel: 07881 527107

1 INTRODUCTION

Rochdale AFC and Rochdale Borough Council are seeking to improve their sports facilities in line with Sport England standards in the location shown in Figure 1. This will include the installation of a new first team training ground and community health and wellbeing facility to replace the existing Bowlee Playing fields at Heywood Old Road, Middleton, M24 4SD.

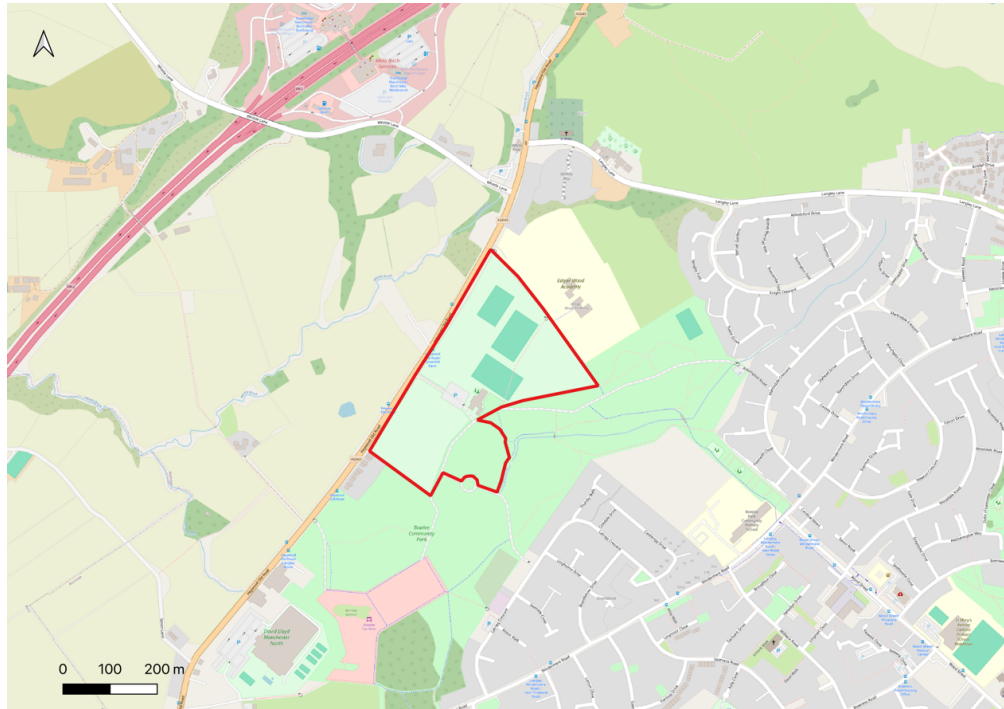


Figure 1: Site Location

The maintenance plan is directed at the maintenance of the Sustainable Drainage Systems (SUDS) included within the scheme, which are critical in draining the proposed development. The two SUDS elements for the site consist of;

- 1) Detention Basins – This is the excavated area which, in normal conditions, forms a dry pond. In more severe rainfall events, a flow control device restricts water flow out of the detention basins.
- 2) Permeable Surface – These are porous surfaces which allow water to enter into the sub-base before draining to the detention basin.

Failure to maintain these SUDS in the manner included within this plan could result in flooding to the property and to others. In the extreme, this could present a danger to life and limb or contribute to damage to property.

It is therefore recommended that a record be kept of when the maintenance actions outlined in this plan are undertaken, with suitable evidence retained.

2 MAINTENANCE CONTACT INFORMATION

Rochdale AFC and Rochdale Council are responsible for the maintenance of the SuDS in their control; their contact details are:

Rochdale AFC

The Crown Oil Arena
Rochdale
Lancashire
OL11 5DR

Email: office@rochdaleafc.co.uk

Tel: 01706 644648

Rochdale Borough Council

Number One Riverside
Smith Street
Rochdale
OL16 1XU

Email: council@rochdale.gov.uk

Tel: 01706 647474

3 DETENTION BASIN MAINTENANCE

Maintenance Schedule	Required Action	Typical Frequency
Regular Inspections	Remove litter and debris	Monthly (or as required)
	Cut grass to specified design range	Monthly (during growing season or as required)
	Check inlet and outlet for debris and scour	Monthly (or after large rain fall events)
	Inspect silt accumulation rates and establish appropriate removal frequencies	Monthly (at start and then half yearly)
Occasional Maintenance	Reseed areas of poor vegetation growth	As required or if bare soil is exposed in over 10% of the area
Remedial Actions	Repair erosion or other damage by re-turfing or seeding	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming	Once per year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations or clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this is most likely to collect sediments.
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracking or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure and upper substructure by remedial sweeping	Every 10-15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial Inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial actions	Three monthly-48 hr after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually